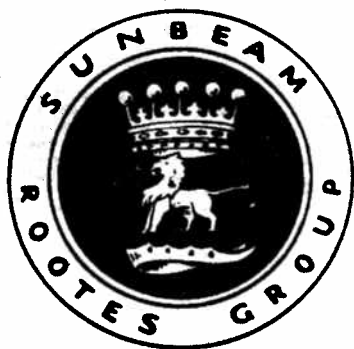


SUNBEAM ALPINE



OWNER'S HANDBOOK

SERIES V

A PRODUCT OF THE ROOTES GROUP

OWNER'S HANDBOOK

**THE
SUNBEAM ALPINE**

SERIES V

ISSUED BY
ROOTES SERVICE DIVISION
COVENTRY ENGLAND

CENTRAL PARTS ORGANISATION
ROOTES MOTORS (PARTS) LIMITED
COVENTRY ROAD
BIRMINGHAM, ENGLAND

WORLD EXPORTERS
ROOTES MOTORS OVERSEAS LIMITED
PICCADILLY . LONDON . ENGLAND

FOREWORD

This handbook gives concise information on the running and maintenance of this car. It should be carefully read.

It is not intended to be a service repair manual and, should any work become necessary which is not detailed in it, owners are strongly recommended to contact a dealer, if possible the same dealer who sold the car.

Rootes dealers form the link between the owner and the factory. They are constantly being advised of the latest technical developments and repair methods, and are, therefore, in a position to provide the best servicing facilities and, in addition, any advice or information which may be required.

NEW VEHICLE PREPARATION

New Vehicle preparation is carried out by the dealer who supplies the car. It is designed to ensure that the car reaches its owner in the finest possible condition. Continued efficiency as well as economy in operation, however, depends upon the care it receives during its life.

FREE SERVICE INSPECTION

After completing 500 miles (800 km.) you should, without fail, take advantage of the free service inspection available for your car (in certain countries this service is carried out at different mileages in accordance with locally accepted practice). The manufacturers attach so much importance to this that in the interests of the user, it is an obligation on the part of the dealer responsible for the sale of the car to provide this service free of charge (except for material) subject to the car being presented for this purpose.

LUBRICATION AND MAINTENANCE

Regular lubrication and maintenance are essential for long life and sustained performance.

A book of service vouchers is supplied with all cars sold on the Home market. Voucher books are also available for most Export markets. It is very important that the vouchers should be used in the correct sequence at the appropriate mileage.

IMPORTANT NOTE

Owners should appreciate that the warranty shall not apply to defects arising in any product which has not received the periodical maintenance as detailed in the Owner's Handbook and Service Voucher Book.

THIS WORK SHOULD BE CARRIED OUT BY AN AUTHORISED DEALER.

The counterfoil of the voucher should be dated and stamped by the servicing Rootes Dealer for record purposes.

This is a very convenient and easy system for owners, fleet owners and Rootes Dealers to follow because the vouchers form a ready-made job list for each servicing interval.

YOUR ROOTES DEALER

Whenever possible, owners are recommended to entrust their servicing to their Rootes Dealer. This is particularly important in the case of guarantee work which should always be carried out by a Rootes Dealer; preferably the dealer from whom the car was bought.

In all correspondence it is imperative that the full chassis number, including the prefix and suffix letters, is quoted and that reference be made to any previous correspondence.

VEHICLE IDENTIFICATION

The chassis number, including prefix and suffix letters will be found on a plate fixed to the bonnet lock platform, and it is visible from inside the bonnet.

The engine number will be found on the right-hand side of the cylinder block, immediately above the fuel pump.

This information may also be required for Customs purposes.

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NOTE: A list of Rootes Concessionaire Companies throughout the World appears on page 69.

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A lubrication chart is inserted between the centre pages of this publication.

GENERAL DATA

ENGINE

Capacity	1724 c.c. (105.2 cu. in.)
Type	Overhead valve
Number of cylinders	4
Nominal bore	81.5 mm. (3.21 in.) (subject to grading)
Stroke	3.25 in. (82.55 mm.)
Distributor contact gap	0.015 in. (0.38 mm.)
Sparking plug type	Champion N.9.Y.
Sparking plug gap	0.025 in. (0.63 mm.)
Compression ratio	9.2:1
Oil pressure (hot)	40 lb. per sq. in. (2.8 kg.cm. ²)
BHP gross	99 at 5,500 r.p.m.
nett	92.5 at 5,500 r.p.m.
Max. Torque lb. ft. (kg. in.)	103 (14.2) at 3,700 r.p.m.

IGNITION TIMING—STATIC (at full retard) †

6°—10° B.T.D.C.

The TDC mark is the LAST one to be reached when the engine is turned in the direction of rotation. The other marks are all at 5° progressive intervals B.T.D.C.

Firing Order 1-3-4-2

† The ignition setting given above may require slight variation according to the octane ratings of the fuels available.

VALVE ROCKER CLEARANCES (Hot)

Inlet (Intake)	0.012 in. (0.30 mm.)
Exhaust	0.014 in. (0.35 mm.)

CARBURETTOR (Twin Stromberg 150 C.D.)

Needle type	5.M.
Damper springs	(Uncoloured) (0.032 in.—0.81 mm.)

GEARBOX (TRANSMISSION)

Overall ratios (All Models).

	Standard	Overdrive
O/D Top	—	3.388:1
Top	3.890:1	4.220:1
O/D 3rd	—	4.388:1
3rd	5.037:1	5.465:1
2nd	7.741:1	8.397:1
1st	12.137:1	13.166:1
Reverse	13.014:1	14.010:1

FRONT SUSPENSION

Front wheel Camber *	½° (plus or minus ¼°) positive
Front wheel "Toe-in" †	¼ in. (3 mm.)

† Car must be fully laden for Camber and Toe-in check.

* As reckoned at the wall of the tyres.

DIMENSIONS

Wheel base	7 ft. 2 in. (218.4 cm.)
Track (Tread)—Front (disc wheels) ..	4 ft. 3 in. (129.5 cm.)
Track (Tread)—Front (wire wheels) ..	4 ft. 3½ in. (130.2 cm.)
Track (Tread)—Rear (disc wheels) ..	4 ft. 0½ in. (123.2 cm.)
Track (Tread)—Rear (wire wheels) ..	4 ft. 2½ in. (128.3 cm.)
Overall length	12 ft. 11¼ in. (394.4 cm.)
Overall height (laden)	4 ft. 3½ in. (130.8 cm.)
Overall width	5 ft. 0½ in. (153.7 cm.)
Ground clearance (laden)	0 ft. 4¼ in. (10.8 cm.)

KERB WEIGHT

STD.	2,180 lbs. (989 kg.) or 2,200 lbs. (998 kg.) when overdrive fitted
G.T.	2,230 lbs. (1,012 kg.) or 2,250 lbs. (1,020 kg.) when overdrive fitted

TYRE MAINTENANCE (Dunlop Nylon or Rayon tubeless tyres—tubed on wire wheels)**Size**

6.00 × 13 "C41" or 5.90 × 13 "RS.5" (optional)

Pressures (normal driving)

Front and rear	24 lbs. in. ² (1.69 kg. cm. ²)
------------------------	---

Pressures (high speed driving)

Front	24 lbs. in. ² (1.69 kg. cm. ²)
Rear	26 lbs. in. ² (1.82 kg. cm. ²)

CAPACITIES

Fuel capacity	11 gallons (13.2 U.S. gallons; 50 litres)
Oil capacity—Engine	8½ pints (including filter and oil cooler) (10 U.S. pints; 4.7 litres)
Oil capacity—Gearbox	3½ pints (4.2 U.S. pints; 1.9 litres)
—with Overdrive	4½ pints (5.4 U.S. pints; 2.5 litres)
Oil capacity—Rear Axle	1½ pints (2.1 U.S. pints; 1 litre)
Water capacity (with heater)	12½ pints (15 U.S. pints; 7.1 litres)
Battery capacity (12 V.) (Negative earth)	38 Amp. hr. normal service 51 Amp. hr. certain export territories
Fuse	2 × 35 Amp.

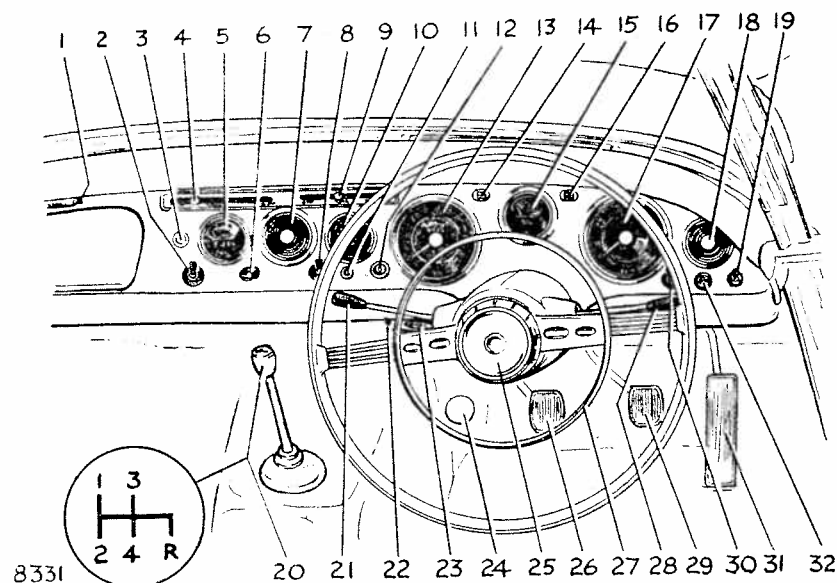
LAMP BULBS

Head (R.H.D.)	Sealed beam unit
Head (L.H.D.)	410 45/40 W.
Head (France)	411 45/40 W.
Head (U.S.A., Canada)	Sealed beam unit

NOTE: It is important that only the bulbs specified for each type of lamp are used, otherwise the maximum anti-dazzle properties will not be obtained.

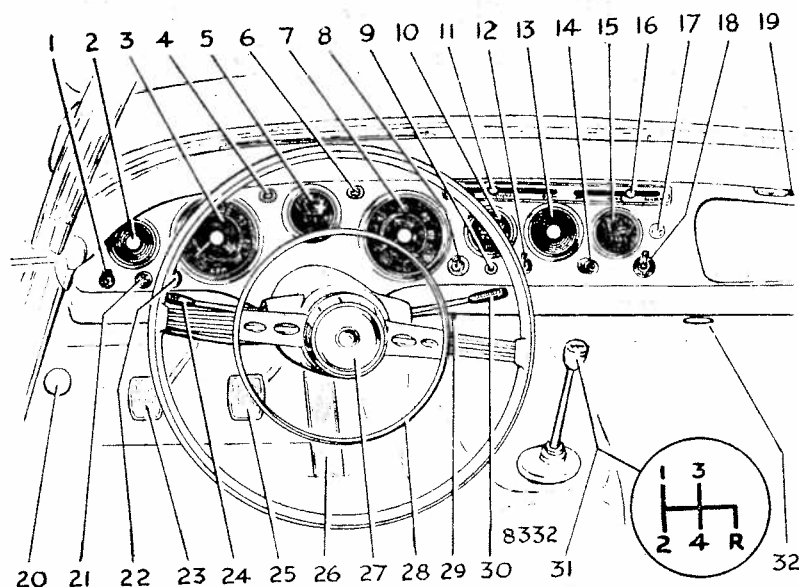
Side (Fender) lamp (Capless) ..	501 12 V. 5 W.
Warning lamps	Phillips 12879 12 V. 2 W.
Panel lamp bulbs	987 12 V. 2.2 W.
Stop and tail lamp	380 12 V. 21/6 W.
Rear number plate	989 12 V. 6 W. or 501 12 V. 5 W.
Interior lamp (if fitted)	254 12 V. 6 W. (festoon)
Front, rear flasher lamps	382 12 V. 21 W.
Map lamp	254 12 V. 6 W. (festoon)
Tachometer illumination	987 12 V. 2.2 W.

The Manufacturers
reserve the right to alter specifications
at any time, without notice.



Facia panel and controls—R.H.D. models

- | | |
|---------------------------------------|------------------------------------|
| 1. MAP LAMP SWITCH | 18. AMMETER (IF FITTED) |
| 2. PANEL LAMP SWITCH | 19. HEATER BLOWER SWITCH |
| 3. CIGAR LIGHTER (IF FITTED) | 20. GEAR LEVER |
| 4. HEATER TEMPERATURE CONTROL | 21. OVERDRIVE SWITCH (IF FITTED) |
| 5. FUEL GAUGE | 22. SPEEDOMETER TRIP CONTROL |
| 6. CHOKE | 23. BONNET LOCK RELEASE |
| 7. CLOCK (IF FITTED) | 24. DIP SWITCH |
| 8. LIGHTING SWITCH | 25. STEERING WHEEL ADJUSTMENT LOCK |
| 9. HEATER (SCREEN AND CAR) CONTROL | 26. CLUTCH PEDAL |
| 10. TEMPERATURE GAUGE | 27. HORN RING |
| 11. IGNITION WARNING LAMP | 28. FLASHER SWITCH |
| 12. IGNITION/STARTER SWITCH | 29. BRAKE PEDAL |
| 13. SPEEDOMETER | 30. WINDSCREEN WIPER SWITCH |
| 14. FLASHER WARNING LAMP | 31. ACCELERATOR PEDAL |
| 15. OIL PRESSURE GAUGE | 32. WINDSCREEN WASHER CONTROL |
| 16. HEADLAMP MAIN BEAM WARNING LAMP | |
| 17. REVOLUTION INDICATOR (TACHOMETER) | |



Facia panel and controls—L.H.D. models

- | | |
|--------------------------------------|------------------------------------|
| 1. HEATER BLOWER SWITCH | 18. PANEL LAMP SWITCH |
| 2. AMMETER (IF FITTED) | 19. MAP LAMP SWITCH |
| 3. REVOLUTION INDICATOR (TACHOMETER) | 20. DIP SWITCH |
| 4. HEADLAMP MAIN BEAM WARNING LAMP | 21. WINDSCREEN WASHER CONTROL |
| 5. OIL PRESSURE GAUGE | 22. WINDSCREEN WIPER SWITCH |
| 6. FLASHER WARNING LAMP | 23. CLUTCH PEDAL |
| 7. SPEEDOMETER | 24. FLASHER SWITCH |
| 8. IGNITION/STARTER SWITCH | 25. BRAKE PEDAL |
| 9. IGNITION WARNING LAMP | 26. ACCELERATOR PEDAL |
| 10. TEMPERATURE GAUGE | 27. STEERING WHEEL ADJUSTMENT LOCK |
| 11. HEATER TEMPERATURE CONTROL | 28. HORN RING |
| 12. LIGHTING SWITCH | 29. SPEEDOMETER TRIP CONTROL |
| 13. CLOCK (IF FITTED) | 30. OVERDRIVE SWITCH (IF FITTED) |
| 14. CHOKE | 31. GEAR LEVER |
| 15. FUEL GAUGE | 32. BONNET LOCK RELEASE |
| 16. HEATER (SCREEN AND CAR) CONTROL | |
| 17. CIGAR LIGHTER (IF FITTED) | |

INSTRUMENT PANEL, CONTROLS AND FITTINGS

The positions of all the various instruments, switches and controls are clearly shown in the illustrations. The following notes are given for the guidance of drivers.

SWITCHES

COMBINED IGNITION AND STARTER SWITCH

Turn key to the right to switch on the ignition, and turn further to the right, against spring pressure, to operate the starter. When the engine starts the key should be released, whereupon it will spring back to the "Ignition on position".

If the radio is needed when the engine is not running, the ignition key should be turned to its extreme left position.

COMBINED SIDE AND HEADLAMP SWITCH

The switch is pressed down to the halfway position to switch on the side and tail lamps, and fully down to switch on the headlamps.

DIP SWITCH

On the floor adjacent to the clutch pedal, when depressed, both headlamp beams deflect. Depress again to put the beams to the straight ahead position.

WINDSCREEN WIPER SWITCH

The switch is pressed down to the halfway position to switch on the wipers for slow speed, and fully down for high speed. The wipers will operate only if the ignition switch is in the "on" position.

When the wipers are switched off, the blades will automatically return to the "parked" position.

If the blades are obstructed by ice or packed snow, switch off the wiper motor to prevent damage to the internal mechanism, then with the ignition "ON", lift the wiper arms clear of the obstruction whence they will return to the parked position automatically.

DIRECTION INDICATORS

Flashing type indicators are fitted. The switch is mounted at the side of the steering column. The direction indicators will operate only when the ignition is switched on, and are self-cancelling.

A warning lamp is fitted to show when the indicators are operating. A built-in dimmer in the form of a roll-down lens is incorporated. Simply roll down the lens to dim the light.

The direction indicator switch also incorporates the switch for flashing the headlamps. This is achieved by moving the lever towards the steering wheel so that the headlamps will illuminate and will remain so until upward pressure on the lever is released, whereupon the lamps will be extinguished.

Headlamp flashing can be accomplished irrespective of the lever position, *i.e.*, when using either direction indicator.

OVERDRIVE SWITCH (if fitted)

The overdrive unit is controlled by a manually operated switch on the steering column and by a switch in the gearbox top cover. The switch in the gearbox is automatically operated when either top or third gear is selected so that the overdrive can be engaged only when the gear lever is in either of these gears.

To engage or disengage the overdrive when the gear lever is in either top or third gear, move the manual switch in the appropriate direction. This switch is of the self-cancelling type, which means that, when overdrive or direct drive is selected, the switch will return to the off position.

It is not necessary to move the clutch pedal when making these changes, which should be carried out with the accelerator pedal depressed.

It is generally advisable to disengage the overdrive switch before changing from third to second gear, as this will ensure that the transmission is not subjected to heavy loads due to by-passing direct third gear.

In the unlikely event of the overdrive failing to disengage, reverse gear must on no account be used.

PANEL LAMPS SWITCH

Press down to illuminate the instrument panel and lift upwards to turn off.

These lamps will only operate when the side lamps are on.

HORN SWITCH

The horns are controlled from a ring within the steering wheel. Press the ring in any position to operate the horns.

MAP LAMP SWITCH

The map lamp switch is mounted on the side of the lamp body, above the glove box.

INTERIOR LAMP SWITCH (if fitted)

Mounted on the side of the interior lamp. The lamp comes on automatically when either front door is opened. The lamp can be switched on by hand when the doors are shut, but cannot be switched off if the doors are left open.

INSTRUMENTS**IGNITION AND ALTERNATOR WARNING LAMP**

When the ignition key is turned "ON", the RED warning lamp illuminates but, as soon as the engine is started the warning lamp will extinguish and will remain so even at idling speed, assuming that this does not fall below the recommended speed of between 900-950 r.p.m.

In the event of the lamp failing to extinguish, this will at once indicate some fault in the charging circuit or a broken drive-belt. Should a fault occur, investigate the cause and rectify as soon as possible, otherwise the battery will discharge.

OIL PRESSURE GAUGE

Should normally register a pressure of 40 lbs. in.² (2.8 kg. cm.²) at 50 m.p.h. (80 k.p.h.) with the engine at its normal working temperature. The oil pressure gauge does not register the amount of oil in the sump.

If the gauge fails to register, the engine must be stopped at once and the cause sought and rectified before restarting the engine; otherwise serious damage may result.

FUEL GAUGE

Registers only when the ignition is switched on. A few seconds are required for the gauge to give a true reading after the ignition is switched on.

WATER TEMPERATURE GAUGE

This instrument is electrically operated and registers engine temperature only when the ignition is switched on.

A few seconds are required before the temperature is indicated after the ignition has been switched on. The normal running temperature is between 84°C. (183°F.) and 93°C. (200°F.) dependent on ambient temperature.

REVOLUTION INDICATOR (TACHOMETER)

The revolution indicator shows engine speeds in revolutions per minute (r.p.m.).

If the car is driven at engine speeds in the range where maximum torque is developed, the best balance between performance and fuel economy will be obtained, but, if economy is the prime consideration disregarding performance, lower speeds will give better results. Maximum safe engine speed is indicated by the red sector on the dial of the instrument.

HEADLAMP MAIN BEAM INDICATOR

The speedometer, in addition to indicating the road speed, main (high) beam is in use and goes out when the dipped beam is in operation. A built-in dimmer in the form of a roll-down lens is incorporated. Simply roll down the lens to dim the light.

SPEEDOMETER

The speedometer, in addition to indicating the road speed, registers the total mileage and "trip" mileage. To set the "trip" reading to zero operate the knob protruding from behind the facia.

HAND CONTROLS**CHOKE (STRANGLER) CONTROL**

This control is situated on the instrument panel.

Instructions for using the choke will be found under "Starting Procedure".

GEARSHIFT LEVER

The gearshift lever is floor mounted and the gear positions are indicated on the lever knob; make certain that the lever is in the neutral position before starting the engine.

USE OF GEARS

The gearbox (transmission) embodies synchromesh on all forward gears. To ensure a quiet change and smooth engagement, exert a steady pressure on the gear lever, in order that the synchromesh is given opportunity to operate smoothly.

A further point which will materially assist in obtaining a smooth change is the synchronisation of engine and road speeds. The engine speed should be allowed to decrease when changing up and increase when changing down.

The gearbox and axle ratios have been carefully chosen to make the best possible use of the engine power in all gears. This ensures progressive acceleration through the gears and effortless motorway cruising in top gear, coupled with maximum fuel economy. It is important, therefore, that the full range of the gearbox is used and the car started from rest in first gear.

HANDBRAKE

The handbrake is located to the right of the front seat. (Left side on left-hand drive vehicles.)

To release, pull lever slightly upwards (in the same direction as when pulling "on") at the same time pressing the button in the top of the hand grip with the thumb, then press lever downwards to "off" position. The handbrake is of the fully compensated rod and cable type operating on the rear wheels through levers incorporated in the rear hydraulic brake cylinders; it is independent of the hydraulic system in operation.

VENTILATOR

This control is situated in the top centre of the fascia panel. From the "off" position, move the control progressively to the "Screen" position.

With the control in the "Car" position, a balanced proportion of air will be directed to both the car and the windscreen; with the control in the "Screen" position, maximum air will be directed to the windscreen for demisting purposes.

STEERING WHEEL HEIGHT ADJUSTMENT

The steering wheel can be adjusted for height to accommodate various driving positions.

Unlock the large central boss in the centre of the steering wheel by turning in an anti-clockwise direction. The boss is provided with finger grips to assist the loosening operation.

Pull up (or push down) the steering wheel to the desired position and re-lock the central boss.

Spanners of any description must not be used for locking or unlocking the central boss.

FOOT CONTROLS

ACCELERATOR

Always operate the accelerator smoothly. Jerky movements increase fuel consumption. See also "Starting Procedure".

Provision is made on the accelerator to re-locate the pedal nearer to the driver.

BRAKE PEDAL

Avoid violent braking. Use lower gears when descending steep hills.

After negotiating a ford, water splash or when driving on flooded roads, it may be necessary to dry out the brakes to restore full braking power by a few light applications of the brake pedal. It is also advisable to do this after or during prolonged driving in wet weather, under circumstances where the brakes are not in use, such as may occur on high speed motorways, etc.

Provision is made on the brake pedal to re-locate the pedal nearer to the driver.

CLUTCH PEDAL

When using the clutch press the pedal down fully. If this is not done grating of the gears may result. **DO NOT ALLOW THE FOOT TO REST ON THE PEDAL WHEN NOT USING THE CLUTCH.** Never coast downhill with the clutch disengaged as this will cause clutch wear and possibly other damage to the transmission.

BONNET LOCK

TO OPEN AND CLOSE THE BONNET (HOOD)

Pull the release handle situated below the instrument panel and raise the bonnet lid. Release the bonnet prop and engage it in the bracket provided in the bonnet panel.

To close the bonnet, disengage the prop and insert it firmly in its clip. Lower the bonnet lid and press firmly down until the catch engages.

SEATS

The front seats are adjustable for leg room by pushing the catch located at the front, sideways, and for height by turning the rail on the underside of the frame, either forwards or rearwards.

The seat backs can be adjusted for rake by pulling up the handle located on the outside edge of the seats, moving the seat backs to the desired position, then pushing down the handle to lock.

FOOTWELL VENTILATION

To allow the entry of fresh air into the footwells, operate the knob marked "V" situated below the fascia panel.

This ventilator draws air from the intake on the scuttle grille, and is independent of the existing system operated from the controls on the fascia.

LOCKS AND KEYS

Either door may be locked with a key. When leaving the car one door must be locked from inside, the exit door can then be locked with the key. Both locks are self-cancelling to prevent the owner being locked out.

To lock the doors from the inside, push the interior handle forwards.

Two sets of keys are supplied with the car; one operating the ignition and door lock, and the other the baggage boot and cubby box in the centre armrest.

The ignition and boot keys are differently shaped so as to make them easier to identify in the dark.

To operate the door locks the key is turned a quarter of a turn only, returned to the horizontal position and withdrawn.

Right-hand: Turn the key clockwise to lock, and anti-clockwise to unlock.

Left-hand: Turn the key anti-clockwise to lock, and clockwise to unlock.

If the door locks become too stiff to operate they should be lubricated as described under "coachwork" elsewhere in this book.

IMPORTANT NOTE

There are no key numbers on the face of any of the locks; this is a protection against theft. It is important that owners should make a careful note of key numbers so that replacements may be obtained without difficulty in the event of loss.

DRIVING MIRROR

The driving mirror is adjustable for height by turning through 180°.

WINDSCREEN WASHERS

If windscreen washers are fitted and trouble-free operation is to be ensured, it is important to use only clean sediment-free water in the windscreen washer bottle. The use of soft water will avoid the possibility of lime deposits in the jets and valve mechanism and thus provide maximum life.

The bottle should be removed and thoroughly rinsed out periodically.

Anti-freeze solutions, alcohol or domestic detergents, should not be added to the water in the windscreen washer bottle. Owners who require to use an additive should use only a windscreen washer additive which is available in sachets from any Rootes dealer.

SPECIAL ACCESSORIES

A comprehensive range of special accessories, including radios (of various types and price ranges), are available for this car. These are obtainable from your dealer.

BAGGAGE, SPARE WHEEL AND TOOL COMPARTMENT

BAGGAGE BOOT

BOOT LOCK

A slam type lock is fitted and, if required, it can be locked before closing the boot.

To unlock, turn key anti-clockwise a quarter of a turn; to lock turn a quarter of a turn clockwise.

Do not lift the boot lid by the rear number plate lamp glass; lift it by holding the number plate illumination fairing.

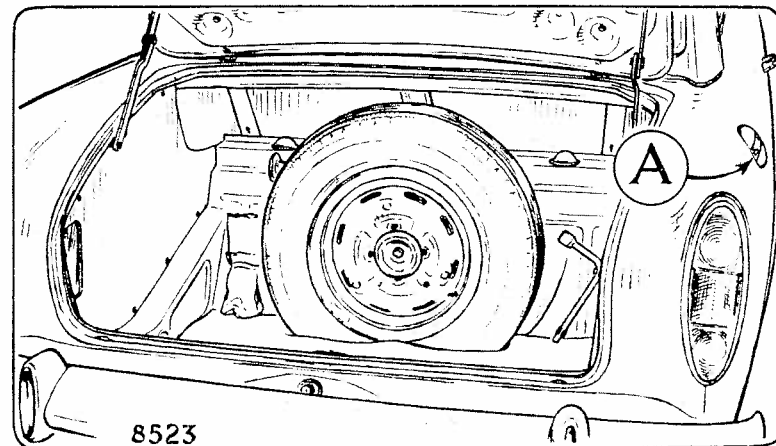
SPARE WHEEL

Mounted in the boot and attached to a mounting bracket by means of a bolt which is turned anti-clockwise to release.

FUEL FILLER CAP

Simply press to release lock, then lift up cap.

When closing, make certain that the cap is fully closed on its seal.



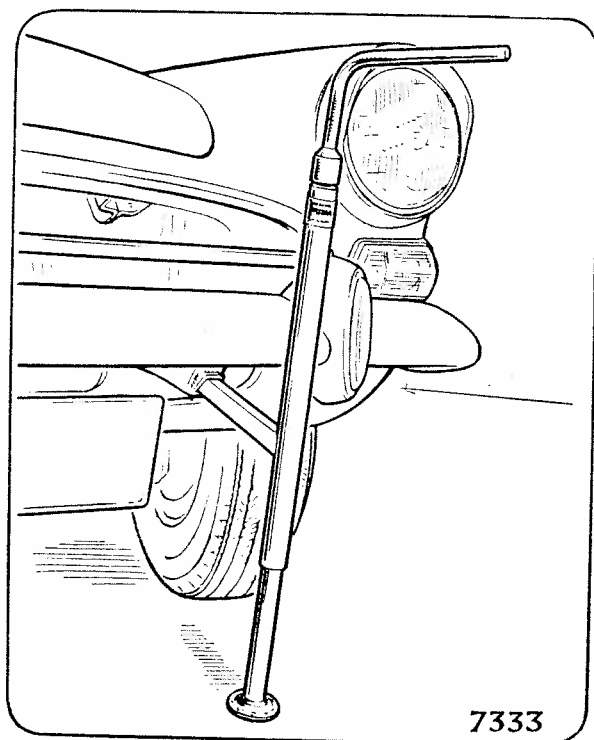
View of baggage compartment showing position of spare wheel and (A), the fuel filler cap

LIFTING JACK

The lifting jack is operated by turning the hexagon nut at the top with the wheel nut wrench.

When fixing the jack either to the front or rear of the car it will be noticed that there is a square section recess just underneath the bumper at each side, front and rear of the car, into which the extension of the jack is fitted.

It is most important to ensure that the jack extension is pushed fully home into the brackets before lifting the car. No attempt should be made to attach the jack in any position other than in the brackets provided. Always jack up the car on a hard surface.



Lifting jack position

Before jacking up the car it is essential always to make quite sure that the handbrake is securely "ON". If the car is on an incline, and one of the rear wheels is being raised, BOTH the front wheels must be chocked.

Under no circumstances should any work be carried out under the car when it is raised on the jack unless a proper chassis stand is used to support the car.

ROAD WHEELS

TO REMOVE AND REFIT (Pressed steel type)

Remove the nave plate from the centre of the wheel by inserting the key (supplied in tool kit) between the wheel and the outer edge of the plate, and twisting, holding the plate meanwhile with the other hand.

To remove the nuts, the wheel nut wrench, which is stowed in the baggage compartment, should be used. The nuts of all wheels have right-hand threads, *i.e.*, turn anti-clockwise to remove and clockwise to tighten.

The nuts should be slackened before lifting the car.

When refitting a wheel, make sure that the rounded ends of the nuts are facing the wheels.

Re-tighten the nuts fully and check periodically. This should be done only when the weight of the car is on the wheels, NOT when on the jack.

TO REMOVE AND REFIT (Wire type)

The wheels must be removed regularly and cleaned for examination. Wire wheels are fitted to splined hubs and secured by a hub nut. This may be either lug type or octagonal. When the latter type of nut is fitted, a spanner is provided in the tool kit for removal and tightening purposes. Hub nuts on the right-hand side of the car are removed by turning clockwise, those on the left-hand side by turning anti-clockwise. The nuts must be loosened slightly before the car is jacked up, and tightened with the wheel on the ground. Run the car a short distance and re-check the hub nuts. Extreme care must be taken not to damage the "O" ring on the hub when removing and refitting wheels.

SPOKES.—Wire wheels are built with predetermined spoke tension. It is important that this tension is maintained at all times, and wheels must be checked at regular intervals.

Looseness can be corrected and damaged spokes renewed, but care must be taken not to affect the alignment of the rim relative to the hub. Spoke tensioning must be carried out with the tyre and tube removed so that any protruding spoke ends can be filed off flush with the nipple.

If the condition of the wheel is in doubt, a wheel specialist must be consulted.

HUB TAPERS AND SERRATIONS.—Any surface corrosion must be cleaned off, and the extent of any wear noted.

It is important that the tapers and serrations are clean. All dirt and rust must be removed, and the mating faces greased before the wheel is fitted.

STARTING PROCEDURE

STARTING ENGINE WHEN COLD

Place gear lever in neutral and handbrake "on". Switch on the ignition, noting that the generator warning lamp lights up.

Pull out the choke control as far as possible. Operate the starter **WITHOUT MOVING THE ACCELERATOR PEDAL**. The engine should start immediately and continue to run at a fast idle speed. If the engine fails to start do not operate the starter again until both starter and engine have come to rest. A pause of one or two seconds will be sufficient and will obviate risk of damage to the starter mechanism.

When the engine starts and shows signs of uneven running, push in the choke control far enough to obtain even running for driving the car away. Push in the choke control fully as soon as it can be done without stopping the engine.

STARTING ENGINE WHEN PARTLY WARM

Very slightly depress the accelerator pedal, switch on the ignition and operate the starter. In most cases the engine will start immediately and idle correctly as soon as the accelerator is released.

If the engine will not start in this way, pull out the choke control to the halfway position, switch on the ignition and operate the starter **WITHOUT MOVING THE ACCELERATOR PEDAL**. Push in the choke control fully as soon as it can be done without stopping the engine.

STARTING ENGINE WHEN HOT

The choke control must never be used when the engine is hot.

If difficulty is experienced in starting the engine when hot, the accelerator pedal should be slowly fully depressed and the starter operated with the ignition switched on. Release the accelerator as soon as the engine starts to prevent racing of the engine.

"RUNNING-IN" THE NEW CAR

The preliminary and progressive "running-in" of a new car and the method by which it is carried out is of the utmost importance in order that the car may give of its best in durability, sweetness of running, economy and freedom from trouble throughout its life. The process of "running-in" applies not only to the engine, but equally to gearbox (transmission), rear axle and, in fact to the entire chassis. This process should continue, progressively, over the first 1,000 miles (1,600 km.) of the life of the car.

The most important point to be remembered is that at no time must the engine be allowed to labour, particularly at low engine speeds, as when attempting to pull up hills in high gear at low speed, or attempting to accelerate from very low speeds in top gear. Make full use of the gear shift lever in order to avoid overloading the engine.

It is most important that the engine speed should not be excessive during this period and that it is never "raced" in neutral. Adherence to the following instruction with regard to maximum road speeds in top (high) gear and strict observance of the corresponding maximum road speeds in the lower gears—third, second and first—is of equal importance:

Thirty-five miles per hour (55 k.p.h.) to forty miles per hour (65 k.p.h.) should be accepted as the maximum speed in top gear during the first 500 miles (800 km.).

Overdrive top should not be engaged under 35 miles per hour (55 k.p.h.) and a maximum speed of 45 miles per hour (70 k.p.h.) should not be exceeded in this gear.

The speeds in the lower gears—third, second and first—giving the equivalent engine revolutions per minute as when travelling at 35 miles per hour in top (high) gear are:

- 25 m.p.g. (40 k.p.h.) in third gear.
- 15 m.p.h. (25 k.p.h.) in second gear.
- 10 m.p.h. (15 k.p.h.) in first gear.

The engine of this car is fitted with chromium plated upper compression rings which will greatly increase the life of the cylinder bores. Experience has shown that due to the hardness of these rings a considerable mileage must be covered before they are fully bedded in. In consequence, rather more than the normal quantity of oil may be consumed during the first 5,000 miles (8,000 km.) of the engine's life. It is important to note that the consumption of a certain amount of engine oil is desirable in modern high performance engines in order to ensure adequate lubrication of the upper part of the cylinder bores and reduce wear. The engine of this car is neither intended nor designed to operate without using a certain amount of oil.

On completion of the first 500 miles (800 km.) and for the second 500 miles, *i.e.*, until 1,000 miles (1,600 km.) have been covered, the "running-in" speed in top (high) gear may be increased progressively subject to favourable conditions.

At the conclusion of 500 miles (800 km.) the car should be taken to the dealer from whom it was purchased, for the free service inspection. A voucher for this purpose is included in the OWNER'S SERVICE BOOK supplied with Home models.

If, for any reason, this work cannot be done by the dealer from whom your car was purchased, it can be carried out by any other Rootes dealer provided that the 500-Mile free service voucher has been stamped by the dealer who supplied the car.

Free service with vehicles delivered in overseas markets is always provided by the dealer in accordance with the recognised practice.

LUBRICATION

REGULAR LUBRICATION

Regular lubrication is essential for long life and sustained performance, and the correct intervals shown should be strictly followed. It is most important that only the type and grade of oil shown under "Recommended Lubricants" is used, otherwise serious damage may result.

SERVICE VOUCHERS

Full use should also be made of the book of service vouchers which is supplied with every car delivered to the Home market. These will be accepted by any authorised Dealer in the United Kingdom or the Republic of Ireland.

ENGINE OIL

The recommended engine oil (and filter) change period is every 6,000 miles (9,600 km.) or at least every 6 months (at seasonal service). However, there are certain cases where this should be done more frequently.

1. Habitual stop/start driving.
2. Operation during cold weather (below 5°C.; 41°F.).
3. When much driving is done under dusty conditions.

For continuous high speed driving use Shell Super Motor Oil or Shell X-100/40. This is particularly important in hot weather.

UPPER CYLINDER LUBRICANT

If an upper cylinder lubricant is used, we recommend Shell Upper Cylinder Lubricant. Half an ounce (15 c.c.) should be added for each gallon of fuel.

RECOMMENDED LUBRICANTS

ADDITIVES

Any addition to the following lubricants which may alter their characteristics sufficiently to affect mechanical efficiency should not be used. Additions must on no account be made to the lubricants specified for the gearbox or overdrive.

ENGINE.—Where prevailing climatic temperature is:

Sump (Oil pan)	{	Above 21°C. (70°F.)	Shell Super Motor Oil or Shell X-100 30
		27°C. to —7°C. (80°F. to 20°F.)	Shell Super Motor Oil or Shell X-100 20W
		0°C. to —18°C. (32°F. to 0°F.)	Shell Super Motor Oil or Shell X-100 10W
		Below —15°C. (5°F.)	Shell X-100 Multigrade 5W/20
Upper Cylinder Lubricant		...	Shell Upper Cylinder Lubricant

DISTRIBUTOR

Shaft and cam bearing	...	...	...	Engine oil
Contact breaker pivot	...	...	...	Engine oil
Cam profile	...	...	...	Shell Retinax A
Automatic timing (spark) control	...	...	...	Engine oil

CARBURETTOR DAMPERS Shell X-100 20W

BATTERY TERMINALS Petroleum jelly

STEERING UNIT... ... Shell Spirax 90 E.P.

GEAR SHIFT BALL JOINT AND MECHANISM ... Engine oil

ACCELERATOR LINKAGE Engine oil

GEARBOX

All temperatures Shell Super Motor Oil

REAR AXLE

Above minus 23°C. (minus 10°F.)	...	...	Shell Spirax 90 E.P.
Below minus 23°C. (minus 10°F.)	...	...	Shell Spirax 80 E.P.

FRONT WHEEL HUB BEARINGS Shell Retinax A

HANDBRAKE PULL-OFF SPRINGS Shell Retinax A

BRAKE AND CLUTCH PEDAL PIVOTS Engine oil

CLUTCH LINKAGE Engine oil

BRAKE AND CLUTCH Girling Fluid

MASTER CYLINDER S.A.E. Spec. 70 R.3

BODY HINGES, LOCKS... Engine oil or Shell silicone compound

COOLING SYSTEM

The radiator drain tap is in the radiator bottom tank and is easily accessible from below the car.

The cylinder block drain is on the left-hand side of the engine and is in the form of a pipe which passes through the front engine mounting support bracket, and terminates in a tap.

TO DRAIN

Remove the radiator cap.

Turn both the radiator and cylinder block drain taps anti-clockwise to open.

If a heater is fitted, set the temperature control to "Hot".

TO REFILL

Turn each tap clockwise.

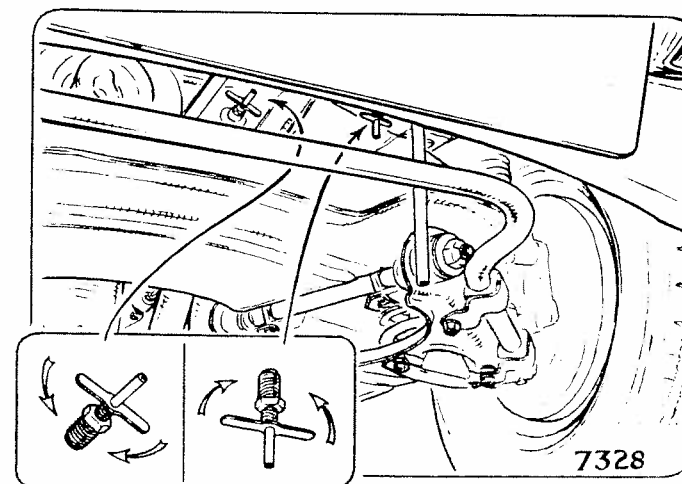
Set heater temperature control to "Hot" if fitted.

Refill the cooling system, but do not over-fill.

Replace the radiator cap.

Check after refilling to ensure that the heater (if fitted) is free of air locks.

If necessary, release the outlet (upper) hose clip to expel air, re-tighten hose clip and top up radiator.



Radiator drain tap and cylinder block drain tap

FROST PRECAUTIONS

To avoid the possibility of the cooling system freezing whilst the vehicle is stationary, or whilst being driven in very cold weather, it is recommended that an anti-freeze obtainable from an authorised Dealer should be used, and added in the quantities stipulated by the anti-freeze manufacturers.

We recommend anti-freeze based on inhibited ethylene glycol. Anti-freeze using alcohol as a base is not suitable, as it is subject to loss by evaporation.

Owing to the difficulty in completely draining the heater system with normal draining of the engine cooling system, *it is essential that anti-freeze is used when cold conditions are anticipated.*

Before putting anti-freeze of any kind in the cooling system, it is imperative that hose connections should be checked for tightness, as anti-freeze has a very searching effect.

If for any reason the cooling system is not protected with anti-freeze when extreme cold is anticipated, the radiator and cylinder block should be drained (2 taps; 1 on the radiator, 1 from the cylinder block).

IMPORTANT NOTE

If there is no anti-freeze in the cooling system and the atmospheric temperature is below freezing point, the radiator should be blanked right off with a rug or muff until the engine has reached its normal working temperature. Care must be taken when travelling under these conditions that the radiator does not freeze, blanking the lower portion of the radiator is advisable. It is equally important that overheating does not occur.

ANTI-FREEZE B.S.3151 or B.S.3152 RECOMMENDATIONS

Solution strength	Against frost damage	Safe pump circulation
25%	—15°F. (—26°C.)	10°F. (—12°C.)
30%	—28°F. (—33°C.)	3°F. (—16°C.)
35%	—38°F. (—39°C.)	—4°F. (—20°C.)
40%	—42°F. (—41°C.)	—10°F. (—23°C.)
50%	—53°F. (—47°C.)	—32°F. (—36°C.)

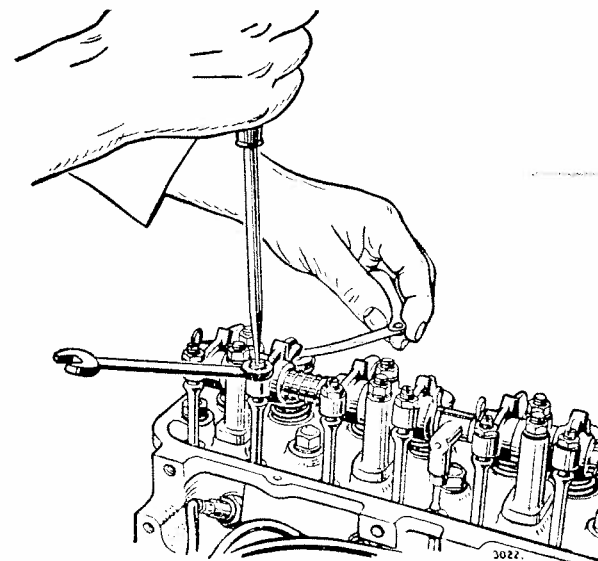
VALVE ROCKER ADJUSTMENT

In order to check the rocker clearance, it is necessary to ensure that the engine is really warm, then:

Remove rocker cover, which is secured by 4 nuts.

The engine must then be turned until the valve, at which the tappet clearance is to be checked, is fully open. A further complete revolution of the engine will ensure that the tappet is fully "down" and resting on the centre of the back of the cam.

Insert a feeler gauge of correct thickness between the valve stem and rocker foot. To adjust clearance, slacken the locknut situated on the rocker and turn the screw with screwdriver until the correct clearance is obtained. At this stage the feeler gauge should drag when moved backwards or forwards.



Valve rocker adjustment

Tighten the locknut and re-check the clearance. Check each valve in this manner and then refit rocker cover, ensuring that its gasket is correctly in position and is not damaged in any way.

Rocker clearance			(Engine hot)
Inlet valve	...	...	0.012 in. (0.30 mm.)
Exhaust valve	...	...	0.014 in. (0.35 mm.)

ENGINE IGNITION TIMING

It is sometimes noticeable that engine liveliness varies between different fuels of the same grade. For this reason a fine adjustment, called a vernier, is incorporated in the distributor, with arrow heads showing which way to turn the knurled control for advance or retard.

The correct ignition timing is 6° to 10° B.T.D.C. and the following method of checking is given for the owners who may need the information.

1. Turn the engine so that the T.D.C. mark on crankshaft pulley and the pointer on the timing case come exactly opposite. This gives T.D.C. on No. 1 and 4 cylinders. The T.D.C. mark is the LAST one to be reached when the engine is turned in the direction of rotation. The other marks are all at 5° progressive intervals B.T.D.C. This means that the *last but one* mark is 5° B.T.D.C., while the *first* mark is 30° B.T.D.C.
2. Adjust vernier control so that only one division can be seen.
3. Slacken distributor clamping screw and turn distributor in an anti-clockwise direction until vacuum diaphragm casing touches cylinder block.
4. Connect a 12 volt bulb between the low tension terminal and a good earth.
5. Switch on the ignition, remove distributor cap and, applying light finger pressure on the rotor in a clockwise direction, turn the distributor until the bulb just lights, indicating the contact points are opening. Tighten the distributor clamp screw.
6. This gives a firing position at T.D.C. on No. 1 and 4 cylinders. Re-check by turning engine one turn until pointers on pulley and timing case line up, when the bulb should just light.
7. The timing must now be advanced 6° to 10° by turning the knurled nut until a further $1\frac{1}{2}$ to $2\frac{1}{2}$ vernier divisions are visible. One vernier division is equal to 4° of crankshaft movement.

FUEL SYSTEM

AIR CLEANERS AND SILENCERS (Dry element type)

The intervals at which the air cleaner elements should be renewed will vary according to the conditions under which the car is operating.

For town work and areas where the roads and atmosphere are relatively dust free, this should be done every 12,000 miles (19,200 km.), but the filters should be renewed more frequently if the car is used in a smoke or fog laden atmosphere.

Where roads are unmetalled and dust is prevalent it is also recommended that the filters are renewed every 3,000 miles (4,800 km.).

To remove and refit filter element

These air cleaners are renewed as complete units. They are used in a DRY condition, and no attempt at cleaning must be made.

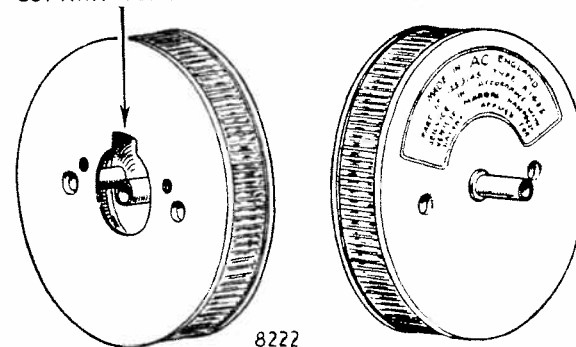
To remove, pull off the rubber pipe connected to both air cleaner centres. Remove the four bolts attaching the air cleaners to the carburettor flanges and remove the air cleaners.

When refitting, renew the gaskets between the air cleaners and carburettor flanges.

The cut-away portion must always be fitted uppermost.

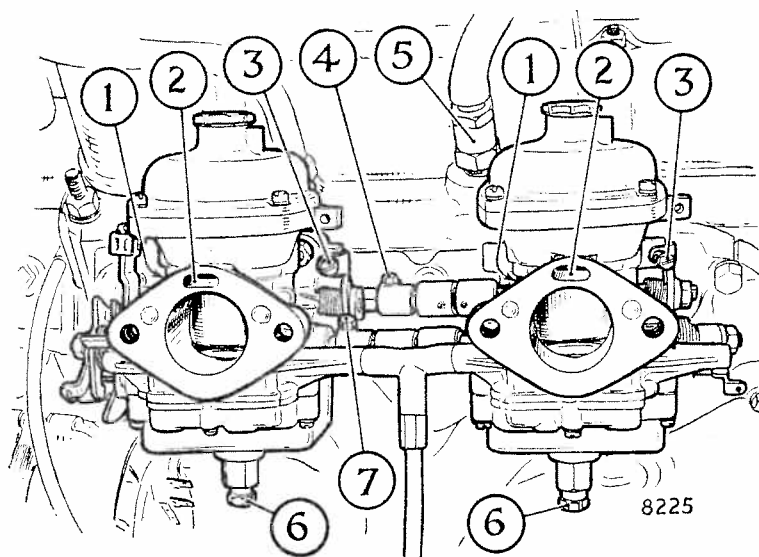
Incorrect fitting will cut off the air feed to the carburettor air valve and prevent the carburettor from operating correctly.

CUT AWAY PORTION



8222

CARBURETTORS



Stromberg 150 C.D. carburetors

- | | |
|---|--|
| 1. AIR VALVE PISTON LIFTING PINS | 4. CLAMPING BOLT—ON COUPLING FOR THROTTLES |
| 2. AIR FEED PORTS TO UNDERSIDES OF DIAPHRAGMS | 5. CRANKCASE VENTILATION VALVE |
| 3. SLOW RUNNING SPEED ADJUSTMENT SCREWS | 6. ADJUSTMENTS FOR JETS |
| | 7. CLAMPING BOLT—ON COUPLINGS FOR STARTER BARS |

ADJUSTMENTS

SLOW RUNNING AND SYNCHRONISING CARBURETTORS

When correctly adjusted and synchronised, each carburettor will provide the same amount of fuel/air mixture.

To make these adjustments, the following procedure must be adopted:

1. Loosen the clamping bolt (4) on the throttle coupling.
2. Remove the air cleaners and check that the shoulders of both needles are flush with the lower faces of the air valves.
3. Screw up each jet adjusting screw (6) until each jet makes contact with the lower side of the piston, **WITHOUT RAISING THE PISTON**. Then screw back each adjuster two and a quarter turns.

4. Slacken off both throttle slow running speed adjusting screws (3) until the ends are clear of the carburettor flanges with the throttles held closed.

Rotate each screw clockwise until a 0.002 in. (0.05 mm.) feeler can be lightly gripped between each screw end and the carburettor flanges, as the throttles are held closed.

From this position rotate each screw two turns clockwise, to open each throttle an equal amount.

5. Tighten the clamping nut (4).
6. Run the engine until it reaches full working temperature.
7. Adjust the engine slow running mixture with the screws (6) until the engine idles evenly at 900–950 r.p.m. Set each slow running speed adjusting screw to obtain this.
An upward or clockwise movement of the screw (6) weakens the mixture, the reverse movement enriches the mixture.
8. Check the throttle synchronisation by listening at the carburettor intakes with a suitable piece of rubber tubing. An equal "hiss" should be heard at each intake. If the synchronisation (balance) is incorrect, slacken the clamp bolt (4) and re-adjust.
9. Re-check or tighten clamp bolt and check the engine for even running with the throttle stop screws both touching the carburettor flanges.
10. Refit the air cleaners, making sure the joints and air cleaners are fitted the right way up, to avoid blocking the air vent in the carburettor flange face.

CARBURETTOR DAMPERS

At the recommended intervals of service, unscrew the damper plugs from the top of each carburettor and remove the dampers. Top up the damper bores with the recommended lubricant; the oil level is correct when, using the damper as a measure, its threaded plug is about a $\frac{1}{4}$ in. (6 mm.) above the "funnel" of the suction chamber at the moment of oil resistance.

Refit the damper into the suction chamber from whence it was removed, and screw fully home; do not overtighten.

INLET (INTAKE) MANIFOLD DRAIN PIPE (if fitted)—TO CLEAN

It is important that the manifold drain pipe is kept clear of obstruction. Fouling due to carbon or gum deposit from fuel will cause flooding of the manifold with consequent difficulty in starting.

To remove the drain pipe from the manifold, unscrew the brass union nut securing it. Clear the drilling in the manifold with a piece of wire.

Clear the small hole in the bottom end of the pipe by passing a piece of fine wire through it.

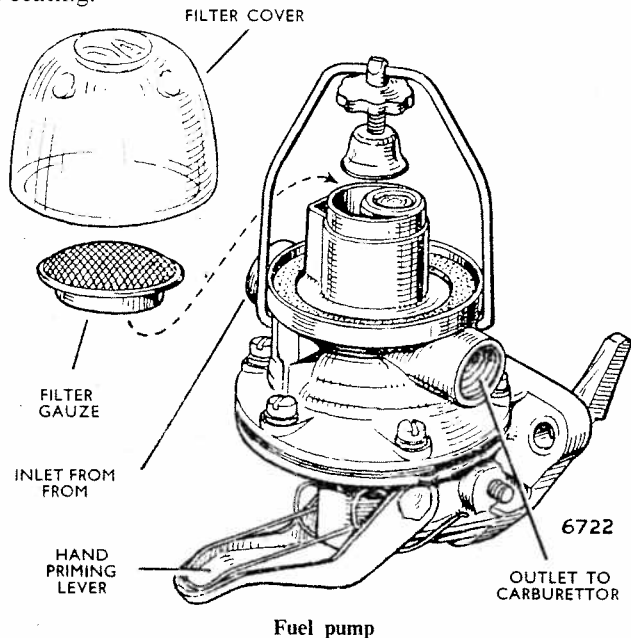
See that the pipe is clear and rinse with petrol (gasoline). Refit drain pipe assembly to engine, making sure that the brass union is fully tightened and making a good joint to the olive at the upper end of the pipe.

FUEL PUMP

CLEANING

The cleaning of the fuel pump gauze filter, exposed when the glass filter cover is removed, is the only item of maintenance required on the fuel pump. The filter cover is removed by unscrewing the retaining clip hand screw on the top of the cover and pulling aside the clip, when the cover can be lifted off. The filter gauze can now be lifted gently upwards from the neck of the pump, and should be washed in clean petrol (gasoline). Refit carefully and ensure the filter is pushed fully home downwards.

When replacing filter cover, care must be taken to see that the gasket around the body of the pump is intact and that it lies squarely on its seating.



The filter cover retaining screw must be tight enough to ensure an air-tight joint, but excessive pressure must not be applied, as this will cause rapid deterioration of the cork gasket.

FUEL SHORTAGE AT CARBURETTOR

If the pump should fail to deliver fuel to the carburettor, the following points should be checked.

1. That fuel is available in the tank and that the unions in the pipe connecting the tank to the pump are tight.
2. That the pump filter is clean and that the washer below the top cap is in good condition.

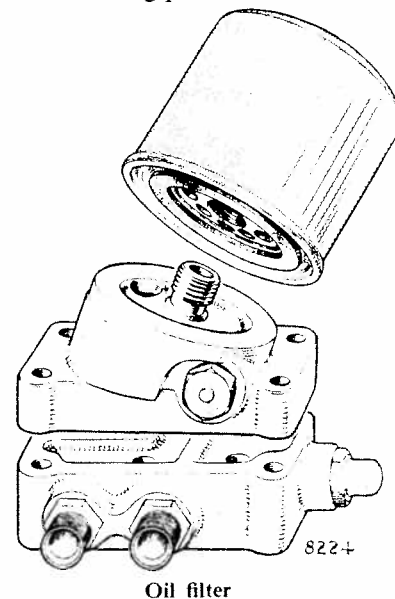
If, after extended service, trouble is experienced with the pump, no attempt should be made to remove it from the engine or to repair it. The services of the dealer should be sought as these pumps are of specified manufacture and their overhaul and repair is not normally within the scope of the owner-driver.

OIL FILTER

While the engine is running, lubricating oil is fed under pressure through a full flow oil filter to all the moving parts.

THE FILTER MUST BE RENEWED AT THE SPECIFIED MILEAGE.

To renew the filter, unscrew the complete filter unit and discard. Before fitting the new filter ensure that the joint faces of both the adaptor on the engine, and on the filter, are thoroughly clean. Lubricate the rubber gasket on the joint face of the filter with clean engine oil. Locate the filter centrally on the adaptor and screw down in a clockwise direction until the unit contacts the adaptor. **TIGHTEN TWO-THIRDS OF A TURN BY HAND ONLY.** After fitting the new filter, the engine should be run and the assembly checked for leaks.



Providing that the filter is changed at least every 6,000 miles (9,600 km.), periodic removal and cleaning of the sump is unnecessary. If, however, it is suspected that the filter has been in service longer than the specified mileage, it is recommended that the sump and oil pump filter are removed, cleaned, refitted and refilled with new engine oil.

NOTE: After draining the sump a certain amount of residual oil will be left in the oilways and passages of the engine and usually about 7 pints (8.4 U.S. pints—4 litres) will be sufficient to bring the oil level up to the “high” mark on the dipstick.

Before looking at the dipstick after refilling the sump with oil, run the engine for a few minutes to fill the oil filter and then allow to stand for at least ten minutes.

CRANKCASE VENTILATION REGULATOR

It is recommended that the crankcase ventilation regulator, located at the rear end of the inlet manifold, is removed and cleaned every 6,000 miles (9,600 km.).

To remove, clean and replace

Pull off the rubber pipe connecting the inlet end of the regulator body to the oil filler tube, and unscrew the complete assembly from the inlet manifold.

Strip the regulator and thoroughly wash all its items in paraffin (kerosene). If any of the items appear to be worn or corroded, a new regulator should be fitted.

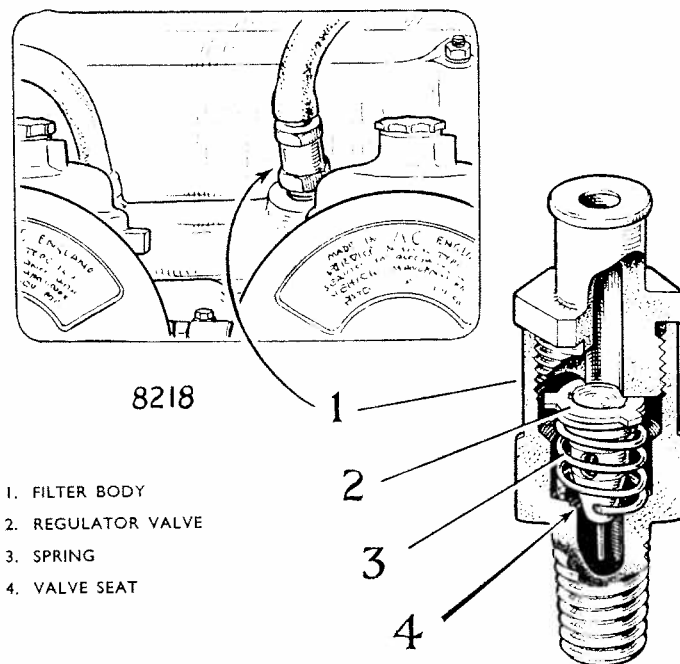
When reassembling, make sure that the spring is correctly located and the valve is not tilted in the body.

FLAME TRAP

In addition to the servicing of the crankcase ventilation regulator at every 6,000 miles (9,600 km.), the flame trap should also be serviced.

To remove, clean and refit

To remove the flame trap, pull off the rubber pipe from the top of the flame trap. Pull off the flame trap from the pipe connecting it to the oil filter tube. Immerse the flame trap in clean paraffin, allow to drain dry, and refit.



BREATHER FILTER

The crankcase breather filter located on the engine tappet cover should be removed and washed in paraffin at the same interval that the crankcase ventilator regulator is serviced. After cleaning, allow to dry before refitting.

STEERING BOX

TO CHECK OIL LEVEL

The correct level is to the bottom of the filler plug orifice. Replenishment, if necessary, should be made only with the specified lubricant.

Always make sure that the synthetic rubber filler plug is firmly replaced.

ENGINE

TO CHECK OIL LEVEL, OR DRAIN AND REFILL

The correct level is to the top mark on the dipstick. The filler is on the rear end of the valve rocker cover. After adding oil, allow a few seconds to elapse before re-checking the oil level. Use only the specified grade of Shell engine oil.

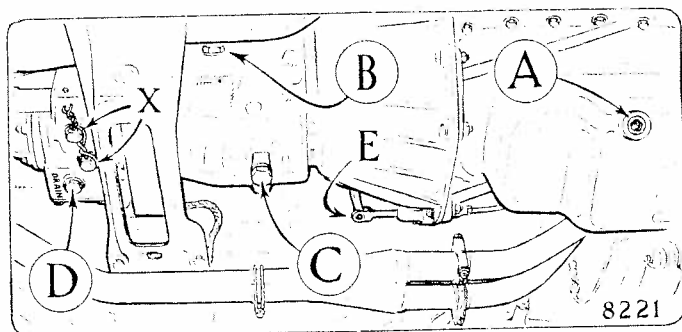
The sump level should only be checked when the engine is cold and when the car is standing on a level surface, otherwise a true reading will not be obtained.

Draining of the sump will be greatly facilitated if carried out when the car has just completed a run and the oil is warm and will therefore flow more readily. Allow to drain thoroughly. Refill with the specified lubricant.

The drain plug will be found at the right-hand side of the sump, and care should be taken to ensure that no grit or dirt enters the sump while the plug is removed or when it is being refitted. The plug must be cleaned thoroughly before fitting and screwed up tightly.

LUBRICATION CHART

This chart can be removed if desired without defacing the rest of the book.



Location of sump drain (A), gearbox filler (B), gearbox drain (C), and overdrive drain (D) plugs. Item (E) is the clutch slave cylinder pivot

Items (X) are the sump and relief valve plugs on the overdrive (if fitted); they **MUST** not be disturbed

KEY TO LUBRICATION CHART

EVERY 250 MILES (400 KM.) OR WEEKLY

1. **ENGINE**—Check level and top up if necessary.

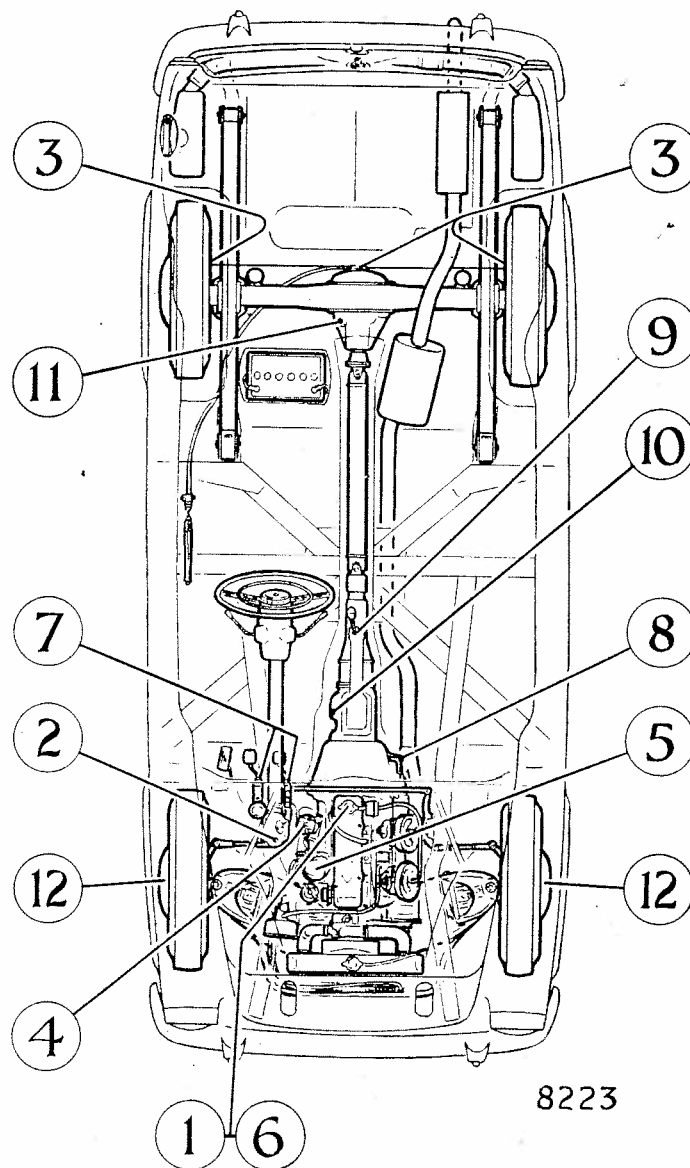
EVERY 6,000 MILES (9,600 KM.)

2. **STEERING UNIT**—Check level and top up.
3. **HANDBRAKE**—Lubricate cable pivots and handbrake pull-off springs, also bush of operating rod.
4. **DISTRIBUTOR**—Oil automatic timing mechanism, shaft and cam bearing, contact breaker moving contact pivot. Grease cam profile.
5. **OIL FILTER**—Renew filter unit.
6. **ENGINE**—Drain oil (when hot) and refill. Examine for leaks.
7. **BRAKE and CLUTCH PEDAL PIVOT BUSHES**—Lubricate.
8. **CLUTCH SLAVE CYLINDER**—Lubricate clevis pin.
9. **GEARSHIFT MECHANISM**—Lubricate.
10. **GEARBOX (and OVERDRIVE if fitted)**—Drain when hot and refill with fresh oil. Examine for leaks.
11. **REAR AXLE**—Drain when hot and refill with fresh oil. Clean breather hole. Examine for leaks.

EVERY 12,000 MILES (19,200 KM.) CARRY OUT 6,000 MILES (9,600 KM.) SERVICE PLUS THE FOLLOWING:

12. **FRONT HUBS**—Repack with grease and check endfloat unless already carried out at the AUTUMN service.

LUBRICATION CHART



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GEARBOX

TO CHECK OIL LEVEL, OR DRAIN AND REFILL

A combined filler/level plug is fitted in the right-hand side of the gearbox and is accessible through a cover (sealing a hole) in the raised section of the front floor.

The correct oil level is to the bottom of the plug orifice. If replenishment is necessary the specified grade of Shell engine oil only should be used.

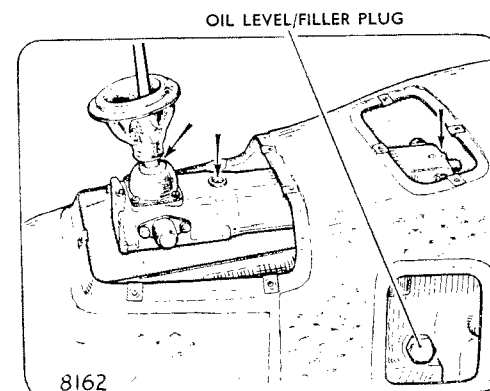
The oil level should only be checked when the car is standing on a level surface.

Draining of the gearbox will be greatly facilitated if carried out when the car has just completed a run and the oil is warm and will therefore flow more readily. Allow to drain thoroughly. Refill with the specified lubricant.

GEAR SHIFT MECHANISM

TO LUBRICATE

The lubrication points are indicated on the illustration by arrows. To obtain access to these points, first remove the facia console in the following manner:



Floor change lubrication points

Unscrew the gearshift lever knob. Remove the ashtray. From behind and above the blower switch, remove the single wing nut fixing which retains the upper edge of the console to the lower edge of the facia. Remove the single screw from in front of the ashtray aperture.

Finally, remove the front and rear gearbox tunnel covers.

OVERDRIVE

MAINTENANCE

The overdrive unit is filled from the gearbox and the oil level is correct when the gearbox oil is maintained at the correct level.

If replenishment is necessary only the specified grade of Shell engine oil must be used.

The oil level should only be checked when the car is standing on a level surface.

DRAINING THE OVERDRIVE

This should be carried out when the oil is warm. Before draining, the overdrive switch should be moved to the engaged position and back again, with the ignition switched on and top gear selected, 10 or 12 times to release the overdrive hydraulic pressure. Before draining, wipe away all dirt from the area of the drain plugs on both the gearbox and overdrive and remove the plugs.

Refill with the correct grade of oil.

ADJUSTMENT OF OVERDRIVE CONTROLS

The operation of the controls can be checked by means of the hole in the solenoid lever on the right-hand side of the unit, accessible from under the car after removal of the cover plate. The controls are operating correctly when a $\frac{3}{16}$ in. (4.5 mm.) diameter pin can be passed through the hole in the solenoid lever into the hole in the overdrive casing with the ignition switched on, top gear engaged and the control switch in the overdrive position.

If the solenoid operates, but does not move the setting lever far enough to allow the pin to be inserted, the solenoid plunger must be adjusted.

Adjustment is effected by screwing the self-locking nut on the plunger in or out, with the plunger pushed into the solenoid as far as it will go. The fork on the solenoid lever should just contact the nut with the $\frac{3}{16}$ in. (4.5 mm.) pin in position.

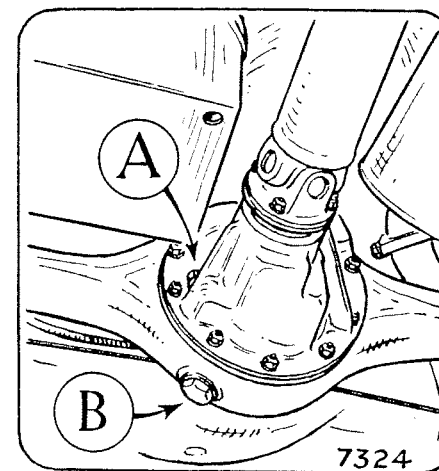
Ensure that, with the control in the overdrive position, the setting pin can be inserted, and that the solenoid current does not exceed 2 amperes. Adjust the stop pad by screwing in until, with the $\frac{3}{16}$ in. (4.5 mm.) pin in place, the inner recess of the pad face touches the end of the solenoid plunger. Then screw the pad back three full turns, tighten the locknut and secure with wire.

REAR AXLE

TO CHECK OIL LEVEL, OR DRAIN AND REFILL

The level plug is situated on the right-hand side of the differential housing, the correct level is up to the base of the level plug threads.

Draining of the rear axle should preferably be carried out at the end of a run, when the oil will be warm and will therefore flow more readily. Allow to drain thoroughly and refill with the specified lubricant.



Location of rear axle filler (A) and drain (B) plugs

BRAKES

The brakes are hydraulically operated, the front brakes being disc and the rear of the leading and trailing shoe type. Pressure on the brake pedal forces fluid from a master cylinder into cylinders at the wheels, exerting pressure on pistons which actuate the brake shoes and pads. A vacuum operated servo is incorporated in the system to ensure light pedal pressure.

The handbrake is mechanically operated, through a cable and linkage incorporating a compensator mounted on the rear axle casing and operates the rear brakes through levers incorporated in the rear backing plates. The handbrake, therefore, is quite independent of the hydraulic system in operation.

CHECK FLUID LEVEL IN MASTER CYLINDER SUPPLY TANK

The hydraulic brake fluid is contained in a supply tank which is located on the front of the scuttle.

Examine the fluid level periodically, and replenish if necessary to keep the supply tank to within $\frac{1}{4}$ in. (12 mm.) of the top. Do not fill completely. The addition of fluid should only be necessary at extremely long intervals, and a considerable fall in fluid level would indicate a leak at some point in the system which should be traced and rectified.

Ensure that the air vent in the filler cap of the supply tank is not choked; blockage at this point would cause the brakes to drag.

BRAKE ADJUSTMENTS

When properly adjusted there should be $\frac{1}{4}$ in. (6 mm.) free movement of the brake pedal pad before the piston in the master cylinder begins to move. When checking this setting take care that the mats are not fouling the pedal.

FRONT BRAKES

No adjustment to compensate for front brake pad wear is necessary or provided for, since the correct pad-to-disc relationship is maintained automatically as the brakes are operated.

REAR BRAKES

Self-adjusting rear brakes are fitted on this model, this means that as brake lining wear takes place adjustment of the shoes is automatically taken care of by a self-adjusting mechanism within each brake drum.

During manufacture of the car, the handbrake mechanism is adjusted to coincide with self-adjusting mechanism, therefore, as brake lining wear is provided for by the self-adjusters so too is the handbrake adjustment. In the event of the handbrake linkage becoming dismantled for any reason, it will then be necessary to re-adjust the handbrake in the manner explained on page 41.

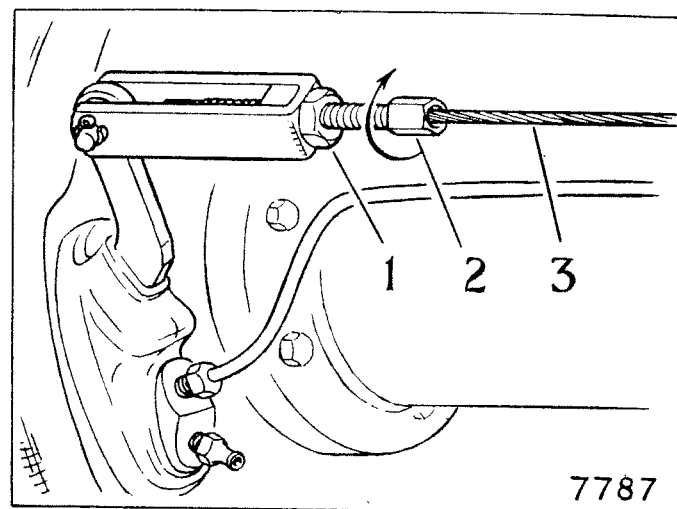
HANDBRAKE—To adjust

- (i) Place chocks in front and at the rear of both front wheels; fully release the handbrake lever.
- (ii) Raise both rear wheels clear of the ground to a comfortable working height.
- (iii) Slacken the locknut (1) and rotate the adjustment sleeve (2) in the direction of arrow until all slackness is removed from the cable (3), then re-tighten the locknut (1).

NOTE: Correct adjustment can be ascertained by counting the number of audible "clicks" made by the handbrake lever as it is pulled ON; these should number between 6 and 8. Should the requisite number of "clicks" fail to be heard, repeat operation (iii).

- (iv) After adjustment, rotate the rear road wheels to ensure the brakes are not binding.

Caution: Do not tamper with the self-adjusting mechanism within the brake drum.



BLEEDING THE HYDRAULIC SYSTEM

Bleeding the system, to expel all air, is not a routine maintenance operation and should only be necessary when some portion of the equipment has been disconnected or fluid drained off, thereby allowing air to enter. We strongly recommend that this work should be entrusted to your Rootes dealer.

HYDRAULIC PIPE CONNECTIONS

It is of vital importance that there are no leaks at any of the hydraulic brake pipe lines, unions, flexible hoses, etc.; therefore it is essential that these should be checked periodically, when the brakes are receiving normal maintenance inspection or adjustment. If tightening of unions should be necessary, it is important to use spanners of short length, say 4-5 in. (100-125 mm.) only to eliminate risk of damage to face joints of unions, etc., which might result from over-tightening. **THIS WORK SHOULD BE ENTRUSTED TO YOUR DEALER.**

BRAKE SERVO UNIT AIR FILTER

Every 6,000 miles (9,600 km.) the filter element should be renewed.

To renew filter element, withdraw the centre screw, and remove cover. The element may now be removed.

Replace cover and screw on completion.

NOTES

Hydraulically operated brakes are extremely efficient because there are no frictional losses and pressure applied at the foot pedal is equally distributed, by fluid via a system of pipe lines, to all four brakes. If a leak occurs through damage or neglect, pressure will drop equally on all four brakes and ultimately cause complete brake failure.

If any of the following symptoms arise, which may be an early warning of the above condition, consult your Rootes dealer without delay.

1. Excessive pedal travel.
2. Pedal feels spongy.
3. Brakes feel less effective than usual.
4. Brakes pulling to one side or the other, *i.e.*, unbalanced.

It is recommended that you contact your Rootes dealer when the car is three years old or has covered a distance of 40,000 miles (64,000 km.) for examination of the hydraulic system.

Make a point of checking front brake disc pads and rear brake linings for wear at regular intervals. Never allow rear brake linings to wear beyond the heads of rivets, or disc brake pad material to wear less than a total remaining thickness of $\frac{1}{8}$ in. (3 mm.).

Obtain replacement brake shoes and disc brake pads from your Rootes dealer when linings or pads have worn to the above-mentioned conditions, and always fit brake linings and pads in sets to both sides, never to one side only.

TYRES

Tubeless tyres are fitted. Maintain the correct inflation pressures (see GENERAL DATA) by checking at least weekly and adjust pressures when necessary. It is important that this should be done when tyres are cold, prior to the car being taken on the road, as incorrect pressures will be recorded if this is done when the tyres have attained normal running temperatures.

Tyres lose their pressure owing to diffusion, even though there is no leakage owing to a puncture or faulty valve.

See that the caps are fitted to valves and are screwed down firmly by hand. The valve cap alone provides a positive air seal, even if the valve core fails to function, and excludes dust and dirt from inside the valve mechanism.

Continual kerb bumping is liable to fracture the tyre casing, resulting in early failure.

If excessive tyre wear is present or if the tyres squeal when cornering, it is advisable that the wheel camber and track should be checked and any necessary adjustments carried out.

Excessive tyre wear may result from a variety of causes such as continual excessive braking, continual bumping on the kerb when drawing up at the side of the road, or incorrect steering adjustments.

Rootes dealers have special equipment which enables them to undertake this work quickly and accurately.

To obtain the best mileage from your tyres it is necessary to interchange the tyres and wheels at regular intervals. Every 3,000 miles (4,800 km.) is suggested. Diagonal interchanging between left-hand front, and right-hand rear, and between right-hand front and left-hand rear provides the most satisfactory first change because this reverses the direction of rotation.

Normally, a tubeless tyre will not leak when the tread is penetrated by a nail or other small puncturing object, provided that it remains in the tyre.

It is, however, necessary to examine the tyres periodically and to withdraw such objects at a time when loss of air will cause least inconvenience.

When winter type tyres of heavier tread construction than the standard tyres, are fitted by owners for special purposes, prolonged maximum speed running must on no account occur. For safe maximum speeds and pressures, consult the Technical Department of the tyre manufacturers.

CLUTCH

MASTER CYLINDER SUPPLY TANK

Hydraulic fluid is contained in the clutch supply tank, located on the front of the scuttle.

Examine the fluid level periodically, and replenish if necessary to keep the supply tank to within $\frac{1}{2}$ in. (12 mm.) of the top. Do not fill completely. The addition of fluid should only be necessary at extremely long intervals and a considerable fall in fluid level would indicate a leak at some point in the system which should be traced and rectified. Ensure that the air vent in the filler cap of the supply tank is not choked.

FRONT HUBS

TO LUBRICATE

The hubs should be dismantled, thoroughly cleaned out and repacked with Shell Retinax "A".

Important. When re-assembling the hub it is essential that the taper roller bearings are adjusted to the correct running clearance which is 0.002 in. to 0.007 in. (0.05 mm. to 0.18 mm.). This clearance is the actual end float of the hub bearings, not side or radial clearance.

Do not grease more frequently than recommended.

NOTE: Do NOT completely fill hub caps with grease.

ALTERNATOR

The alternator is matched to a transistorised voltage regulator, this unit controls the alternator terminal voltage and, as the unit is completely sealed, no maintenance is necessary or required.

ROUTINE MAINTENANCE

To adjust fan belt tension

The belt is correctly tensioned when a total of $\frac{5}{8}$ in. (16 mm.) movement can be obtained on the longest run of the belt.

To adjust the tension, slacken the mounting bolts of the alternator, move the alternator about its mounting bolts until the correct belt tension is obtained, then re-tighten all bolts, "run" engine and re-check belt tension.

Lubrication

As the ball-bearing and needle-roller bearing, within the alternator, are packed with grease during assembly of the unit, no lubrication is required.

LAMPS

HEADLAMPS

Sealed beam headlamps incorporating completely sealed light units are fitted to the car. The front lens and reflector are joined together and no attempt should be made to separate them.

The two filaments, one for "high" beam and the other for "dip" beam are located in position in the light unit before the front lens and reflector are joined together. There is no separate bulb except on L.H.D. cars for use in Europe.

In the event of headlamp failure, and should the cause not be traced to loose or broken connections, the fault will be in the light unit itself, in which case the complete unit will have to be renewed.

TO RENEW LIGHT UNITS OR HEADLAMP BULBS

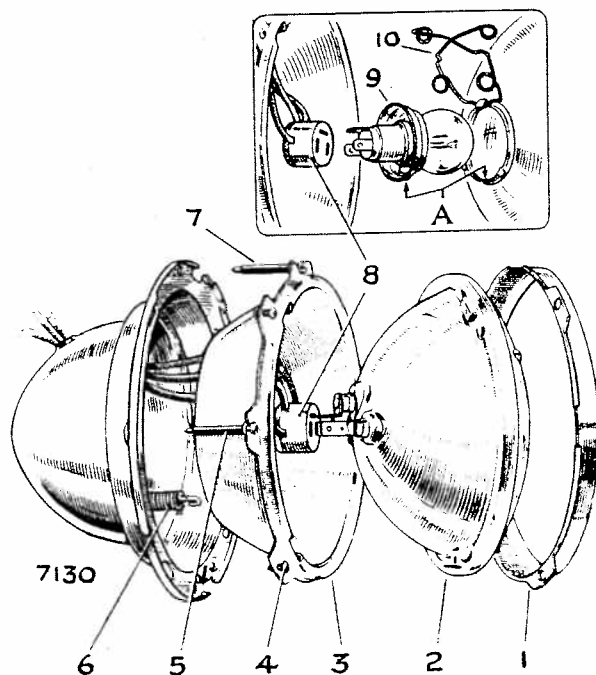
Remove the front rim and sealing ring.

Remove the three cross-headed screws (4) securing the retaining rim (1) to the seating rim (3).

The light unit (2) can now be withdrawn and detached from its slotted connector plug (8).

On L.H.D. cars for use in Europe, withdraw the slotted connector plug (8) and pinch together the two ends of the bulb retainer (10) to clear the bulb flange. The bulb may now be removed. It will be noted that the replacement bulb can only be inserted in one position (A), thus ensuring that the focus and dip deflection are correct.

Re-assembly is a reversal of the above.



Headlamp details

- | | |
|-----------------------------|-----------------------------------|
| 1. RETAINING RIM | 6. TENSIONING SPRING |
| 2. LIGHT UNIT | 7. VERTICAL ADJUSTMENT SCREW |
| 3. SEATING RIM | 8. SLOTTED CONNECTOR PLUG |
| 4. RETAINING RIM SCREW | 9. BULB |
| 5. LATERAL ADJUSTMENT SCREW | 10. BULB RETAINER { EUROPEAN TYPE |

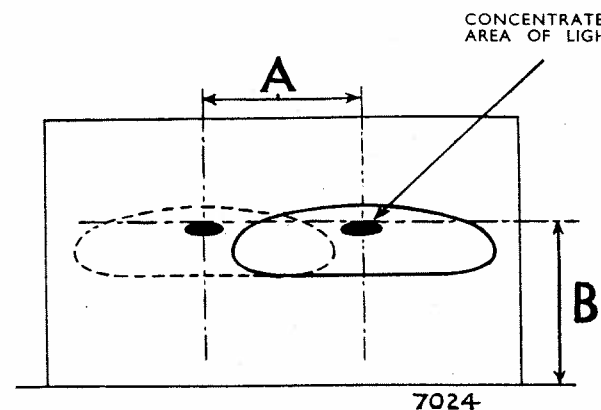
HEADLAMPS—TO ADJUST ALIGNMENT

If the car can be parked on a flat space in front of a garage door or wall so that the headlamps are at least 25 feet (7.6 m.) away, the adjusting of alignment can be carried out very easily, without taking the car on the road. The lamps must **not** be dipped during the check.

The settings are adjusted as follows:

1. Either load the car with two adults or simulate this load by adding weights.
2. Clean the glass of one headlamp.
3. Blank off the other lamp.
4. Turn the adjuster screws clockwise to their fullest extent.
5. With the lamp illuminated in the main beam condition, turn the adjusting screws anti-clockwise as necessary until the required setting is achieved.
6. Repeat operations 2 to 5 for the other headlamp.
7. Re-check the setting of both lamps.

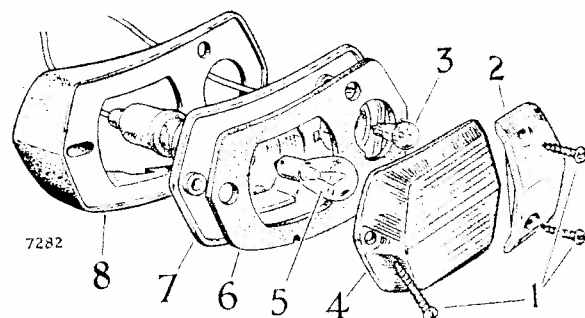
It is essential that the car is square with the door or wall. The lamps should be aligned so that the horizontal axis of the oval light area is level with the centres of the lamps. The vertical axis should, of course, be central with the front of the car.



Method of aligning lamps. Car must be square with screen

A—Distance between headlamp centres

B—Height of headlamp centres above ground



Side (Fender) lamp details

- | | |
|--------------------------|------------------------|
| 1. LENS RETAINING SCREWS | 5. FLASHER LAMP BULB |
| 2. SIDELAMP LENS | 6. LENS RUBBER SEAL |
| 3. SIDELAMP BULB | 7. LAMP BODY |
| 4. FLASHER LENS | 8. LAMP MOUNTING BLOCK |

TO RENEW SIDE (FENDER) FRONT FLASHER LAMP BULBS

Remove all the lens retaining screws (1) and lift off both the amber (4) and clear (2) lenses.

The flasher lamp bulb (5) is removed by pressing in and twisting, while the sidelamp bulb (3), which is capless, is simply pulled out to remove and pushed in to replace.

STOP/TAIL AND REAR FLASHER BULBS—TO RENEW

The bulbs are accessible from inside the luggage boot through the apertures in the fuel tank trim pads and are a push fit in the lamp bodies.

INSTRUMENT PANEL ILLUMINATION AND WARNING LAMPS

The instrument illumination bulb holders are a push fit in the backs of the instruments and access may be obtained from behind the fascia panel.

The warning lamp bulbs may be removed by carefully withdrawing the lens and bezel from the front of the instrument panel. The bulb holders are a push fit in the lens and bezel assembly.

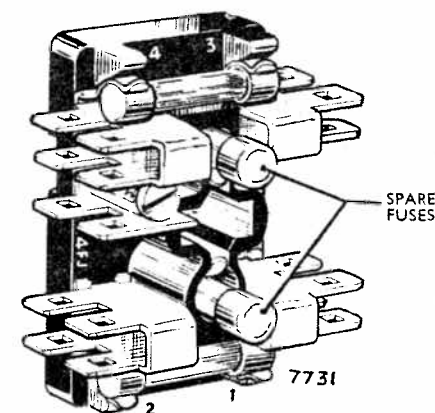
TO RENEW NUMBER PLATE LAMP BULB

Release the glass by sliding the clip to one side. Remove the glass and renew the bulb. Refit the glass and secure it with the clip.

FUSE UNIT

The fuse unit is mounted adjacent to the control unit. The fuse bridging 1—2 protects auxiliary circuits independent of the ignition switch, while 3—4 protects circuit controlled by the ignition switch. Two spare fuses are provided.

Should a short circuit occur in the wiring circuit the fuse will blow. Before replacing the fuse the defect in the circuit should be remedied.



BATTERY

Battery maintenance consists mainly of regular inspection and servicing. The battery is accessible after opening the cover plate in the floor under the rear seat cushion cover.

1. Keep the battery and its surroundings clean and dry.
2. Remove the vent plugs and see that the vent holes are clear.
3. Check the electrolyte level and top up, when necessary. The correct level is just up to the perforated splash guard. Do not over-fill or acid will escape through the vent holes with detrimental effect to the connections and adjacent parts of the car. The use of a Lucas battery filler will be found helpful in topping-up process, as it ensures that the correct electrolyte level is automatically maintained and also prevents distilled water being spilled over the top of the battery.

Distilled water should always be used for topping-up.

Never use a naked light when examining a battery, as the mixture of oxygen and hydrogen given off by the battery when on charge, and to a lesser extent when standing idle, can be dangerously explosive.

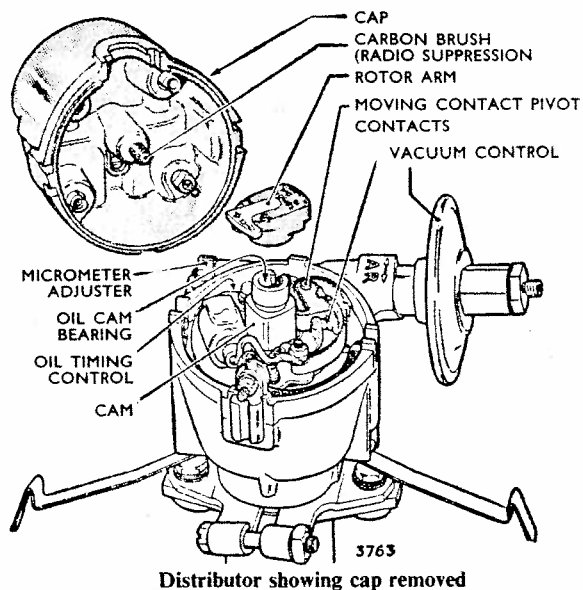
Never transfer electrolyte from one cell to another.

4. To refit the connectors to the battery, first smear the inside of the tapered hole of the connector with petroleum jelly and push on the connector by hand. Insert the self-tapping screw and tighten with medium pressure only; fill in the recess around the screw head with more petroleum jelly. If the connectors are fitted dry, or driven home with too much force, they may be difficult to remove at a later date.
5. Examine the earth connection to ensure that it is clean and free from rust and corrosion, and tight.

DISTRIBUTOR

SHAFT AND CAM BEARING—TO LUBRICATE

Remove the rotor arm from the top of the spindle by pulling upwards, and add one or two drops of engine oil to the top of the screw thus exposed. Refit the rotor, pushing it on to the cam as far as possible and making sure that the slot in the top of the cam registers with the projection on the inside of the rotor.



Give the cam a *SLIGHT* smear with Retinax "A" and apply a single drop of engine oil to the pivot of the moving contact.

AUTOMATIC TIMING (SPARK) CONTROL—TO OIL

Add a few drops of engine oil via the gaps in the base plate.
CONTACT GAP: 0.015 in. (0.38 mm.).

COACHWORK

When washing the vehicle, use plenty of water; the body should be hosed and sponged down lightly. Never remove dust or grit from the paintwork whilst dry, as this will damage the finish. Special preparations of several makes are marketed especially for adding to the rinsing water when washing car bodies. The use of these mild "detergents" as directed by the makers will improve and expedite washing. It is imperative that such preparations are of reputable manufacture and do not contain any chemicals which might be injurious to the body finishes or fittings. After the mud and dust have been removed by water and sponge, the body should finally be dried with a chamois leather.

If, after a period of service, the paintwork loses its gloss, it may be cleaned with Rootes polish to remove all traces of "traffic film" and old polish, after first washing down the car as previously described.

If the car is kept in a clean condition by subsequent washing and leathering, approximately once a week, it will be found that the frequent use of polish is unnecessary.

Do not use Silicone polishes on the windscreen.

Do not carry containers of motor body polish in your car. Continual agitation due to movement of the car may cause certain constituents of the polish to separate from the others, and after high mileages it is possible that the polish may become completely unusable.

Owners are warned that certain types of plastic or rubber car covers can cause serious deterioration of paintwork. Before purchasing car covers we strongly recommend that the advice of your nearest Dealer should be sought.

BODY PROTECTION

When a car is to be continuously used under adverse conditions, particularly when parked regularly in the open or used frequently on loose road surfaces, it will be to the advantage of owners to have the underside of the body and chassis frame treated with a reliable brand of preservative, additional to that applied by the manufacturers when the car is new.

In many countries, salt solutions are applied to the road surface during the winter months to assist in the breakdown of snow and ice. Under these circumstances it is imperative each spring, for the underside of the body structure and wings, to be thoroughly washed and all deposits of mud removed. The metal surfaces should then be treated with a suitable preservative, or if preservative has been previously applied, damaged areas should be made good.

The application of the preservative compound should be entrusted to your dealer, who will be in possession of the latest factory recommendations.

CHROMIUM PLATING

The attractive appearance of chromium plated or bright parts can be preserved if they are cleaned and treated regularly in the following manner:

Every week the chromium should be washed down with soap and water, rinsed and thoroughly dried off.

Any evidence of staining and tarnish can be removed by lightly rubbing with a mild glass cleaner of a proprietary brand. If the chromium plating is badly stained then a chromium cleaner may be used, allowing it to dry and then polishing with a clean, dry cloth. Care must be taken to ensure that all the chromium cleaner is removed.

Finally, apply a small quantity of good quality wax polish and polish with a clean duster: this operation helps to prevent discoloration.

DOOR LOCKS AND HINGES, BONNET (HOOD) LOCK AND HINGES, ETC.—TO LUBRICATE

Hinges should be lubricated with engine oil from an oil can, and surplus oil wiped off in order to prevent damage to clothing and the collection of dust.

In order to ensure smooth operation of the locks—ignition, door, bonnet release mechanism and cable, they should be lubricated periodically with light engine oil.

To lubricate the door locks, a small amount of Shell silicone compound should be applied to the key, which should then be inserted in the lock. Operate the lock a few times, withdraw the key, and wipe off any surplus compound.

WINDSCREEN—CLEANING

The windscreen wipers are hinged, thus enabling them to be lifted clear of the glass: this should be done when cleaning the windshield. Do not push the blades across the windshield as this may damage the mechanism.

UPHOLSTERY (ALL CARS) AND ROOF LINING (G.T. CARS)

Clean occasionally by wiping over with a damp cloth. It is important that the cloth should not be wet but merely damp. If necessary, a little soap should be used, but caustic soaps, petrol (gasoline) or spirit should **NOT** be used as these have a very harmful effect.

SOFT HOOD (TOP) MAINTENANCE (STD. CARS ONLY)

When stowed, the folded top must be pressed fully home into the well to avoid chafing of the material.

Never fold the top when the material is damp or wet.

The top should be washed with the same regularity as the rest of the car body. During the summer it should be washed at least once a month with warm water and a mild soap, and should be finished off by drying with a cloth.

Volatile and other clear cleaners, naphtha, gasoline or household cleansing and bleaching agents, should never be used, but it is permissible to use a cloth dampened with methylated spirits (alcohol) to remove spots and marks. Do not use detergents, wax polish or furniture cream.

Rear window

Do not under any circumstances attempt to clean the rear window by rubbing with a dry cloth. Wash with soap and water only; rinse with clean water and dry with a piece of soft material or a sponge. *Domestic detergents should not be used.*

HARDTOP

The hardtop (if fitted) may readily be removed or refitted. Six attachment points are provided: two toggle clamps above the windscreen, two toggle clamps behind the top of each door, and two pegs which engage in sockets in the boot lid hinges.

NOTE: If sun visors are fitted (standard equipment on G.T. cars) these must be removed before attempting to take off the hardtop.

Lower the visors, push their spines inwards towards the central pivot bracket, pull down outer ends and remove the visors.

On standard cars, the visors (if fitted) must also be removed before attempting to lower the hood.

SAFETY BELTS—CLEANING

The most suitable cleaner for safety belts is a mild soap and water solution, since nylon does not absorb water to any great extent and, therefore, will dry quickly.

Regular safety checks

It is most important that safety belts are inspected at regular intervals for twisting and chafing.

PERIODICAL ATTENTION

EVERY 250 MILES (400 KM.) OR WEEKLY (whichever is sooner)

ENGINE

Sump—Check oil level and top up if necessary.

COOLING SYSTEM

Radiator—Check water level (use soft or rain water).

TYRES

Tyres—Check pressures (including spare).

ELECTRICAL EQUIPMENT

Battery—Check electrolyte level (to just up to the splash guard only). When high mileages are covered in hot weather the battery will require topping up more frequently.

EVERY 6,000 MILES (9,600 KM.)

ENGINE

Sump—Drain oil (when hot) and refill. Examine engine for leaks.

Oil filter—Renew filter unit.

Fuel pump—Clean filter and sediment chamber.

Fan belt—Check tension and adjust if necessary. Check generator fixing bolts for tightness.

Manifold and carburettor flanges—Check fixings for tightness.

Crankcase ventilation regulator—Clean regulator and flame trap.

Carburettor—Top up damper bores.

CLUTCH

Pedal pivot bush—Lubricate.

Slave cylinder—Lubricate clevis pin.

BRAKES AND CONTROLS

Pedal pivot bush—Lubricate.

Master cylinder—Check fluid level and top up.

Handbrake—Lubricate linkage, pull-off springs and control rod bush.

Hydraulic pipes—Inspect connections for leaks.

Adjustment—Check and adjust pedal stop if necessary.

ELECTRICAL EQUIPMENT

Sparking plugs—Clean and check gaps.

Alternator—None required.

Battery—Check electrolyte level.

Distributor—Oil automatic timing mechanism. Grease cam profile. Oil contact breaker moving contact pivot. Oil shaft and cam bearing. Check contact breaker gap, clean and adjust if necessary and reset ignition timing.

TRANSMISSION

Gearshift mechanism—Lubricate.

Gearbox and Overdrive—Drain when hot and refill with fresh oil. Examine for leaks.

Rear axle—Drain when hot and refill with fresh oil. Clean breather hole. Examine for leaks.

Propeller shaft—Check bolts for tightness and condition of joints.

STEERING AND SUSPENSION

Steering and suspension—Check bolts for tightness with particular attention to bottom link fulcrum pin securing bolts (32 lbs. ft.; 4.4 kg. m.); bolts securing front cross member to frame; rear spring "U" bolts, shock absorbers and anti-roll bar.

Check condition of steering joints and swivel bearings, also damage to seals.

Steering unit—Check level and top up.

WHEELS AND TYRES

Wheels and tyres—Change positions of wheels diagonally, and examine wheels and tyres for damage or abnormal wear (including spare). (Checks or adjustments to steering geometry will be an additional charge.)

BODY

Body—Oil door strikers, locks, hinges, bonnet and boot hinges and locks. Clear drain holes in lower edge of each door. Check tightness of door dovetails.

EVERY 12,000 MILES (19,200 KM.) CARRY OUT 6,000 MILES (9,600 KM.) SERVICE PLUS THE FOLLOWING:

ENGINE

Air cleaners—Renew.

Mounting bolts—Check for tightness—front support and gearbox attachment to rear cross member.

ELECTRICAL EQUIPMENT

Starter motor—Check bolts for tightness.

Sparking plugs—Renew.

Battery—Clean terminals and smear with Shell silicone compound.

WHEELS AND TYRES

Front hub bearings—Repack with grease and check end float unless already carried out at the AUTUMN service.

SPRING**ENGINE**

- Check engine compressions and tune engine.
- Drain, flush and refill cooling system.
- Examine cooling system for leaks and inspect all hoses.
- Inspect fan belt for wear.
- Check exhaust system for leaks and security of mountings.

ELECTRICAL

- Check electrolyte level of battery.
- Check operation of all equipment.

SUSPENSION AND BRAKES

- Inspect brake linings and clean out drums.
- Examine brake pads for wear and pistons for freedom of action. Transpose pads to equalise wear if necessary.
- Check tyre pressures and examine for wear and damage.
- Check wheel camber and track.
- Check alignment of track rod ball joints.
- Check wire wheel spokes, hub tapers and serrations.

BODY

- Check window winders, seat runners and glare shields for ease of movement.
- Thoroughly clean underside of body and wings, examine for corrosion and damage, oil leaks from engine, gearbox and rear axle, broken leaves in rear springs.
- Clean and polish car, examine paintwork for damage.

AUTUMN**ENGINE**

- Tune engine.
- Check oil level and top up if necessary. (Renew oil if more than 6 months since previous change.)
- Drain and flush cooling system. Refill with anti-freeze solution.
- Examine cooling system for leaks and inspect all hoses.
- Inspect fan belt for wear.
- Check operation of heater and condition of hoses.
- Check exhaust system for leaks and security of mountings.

ELECTRICAL

- Check electrolyte level and specific gravity of battery.
- Check headlamp alignment and operation of all equipment.
- Check condition of windscreen wiper blades.
- Check operation of windscreen washer. Clean and refill reservoir.
- Check regulator settings and adjust if necessary.

SUSPENSION AND BRAKES

- Inspect brake linings and clean out drums.
- Examine brake pads for wear and pistons for freedom of action. Transpose pads to equalise wear if necessary.
- Check tyre pressures and examine for wear and damage.
- Check wheel camber and track.
- Check alignment of track rod ball joints.
- Check wire wheel spokes, hub tapers and serrations.

BODY

- Clean and polish car, examine paintwork for damage.

NOTE: Your Dealer will give you guidance on the protection of bright metal parts.

HEATING AND VENTILATING SYSTEM

Fresh air ducts from the inlet on the scuttle are fitted as standard equipment. Air may be directed into the car or to the screen *via* the demister slots by means of the control lever mounted at the upper edge of the instrument panel. If the control is positioned between "SCREEN" and "CAR", the ventilation will be divided in proportion.

TWO SPEED BLOWER

A separate switch, together with a switch position plate, is fitted into the facia at the outer end of the panel, next to the windscreen washer control.

Operation: The blower switch has three positions:

UP ..	..	..	..	OFF
CENTRE	..	..	..	SLOW
DOWN	..	..	..	FAST

HEATER

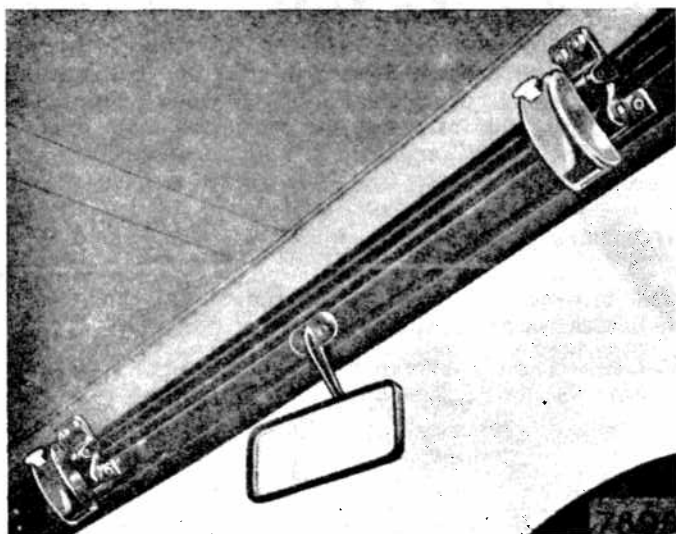
When the heater is fitted, the temperature of the fresh air ducted into the car or to the screen may be regulated to suit prevailing conditions. For full effectiveness it is recommended that the heater be used in conjunction with the blower.

The temperature control lever is fitted to the left of the ventilator control, and may be adjusted to any position between "COLD" (when no hot water is passed through the heater) and "HOT" (when maximum heat is available, for defrosting, etc.).

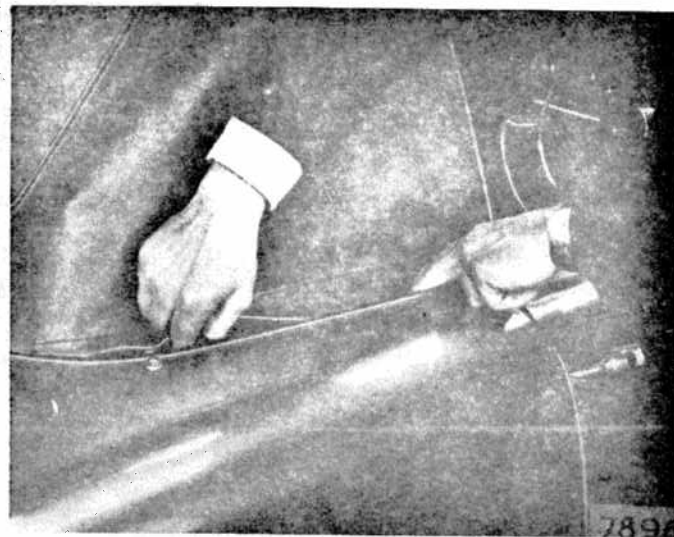
HOOD (TOP) OPERATING INSTRUCTIONS

TO LOWER

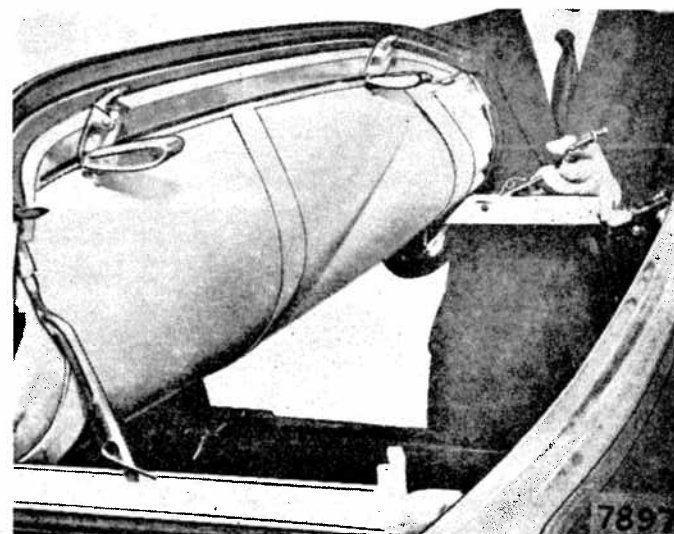
1. Lower the winding window glasses in both doors, and tilt the seat squabs fully forward.



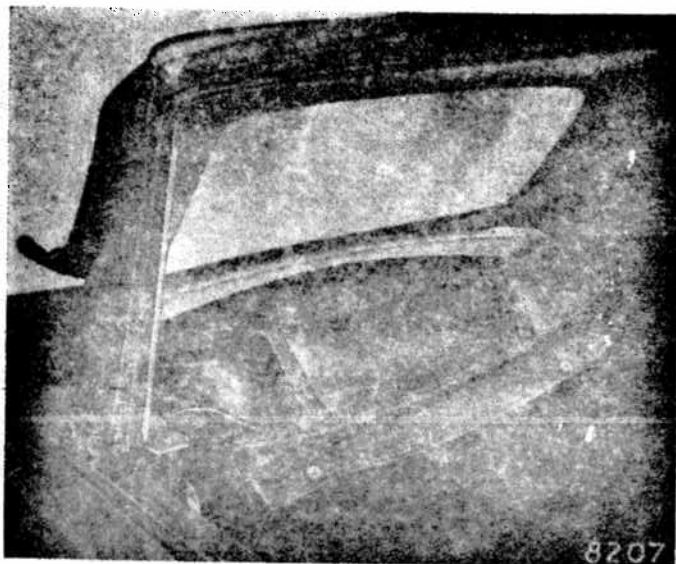
2. Release the header rail toggle catches.



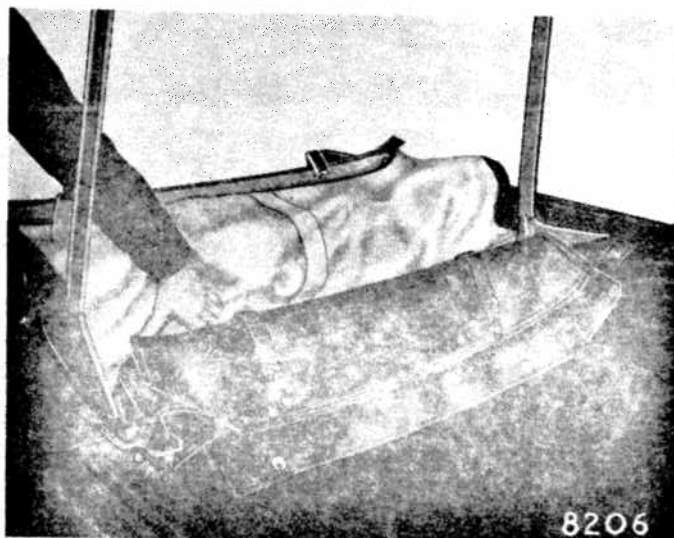
3. Release the stud fasteners retaining the hood at each side of the rear quarter, and tuck in the hood material.



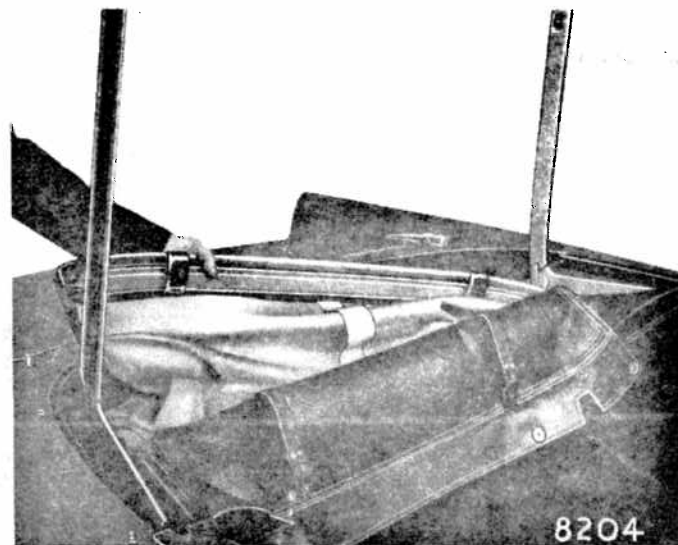
4. Lift the header rail sufficiently to detach the tension rods from their locations, then fold the tension rods into the nylon recesses at the ends of the cantrails. Fold down the header rail toggle catches.



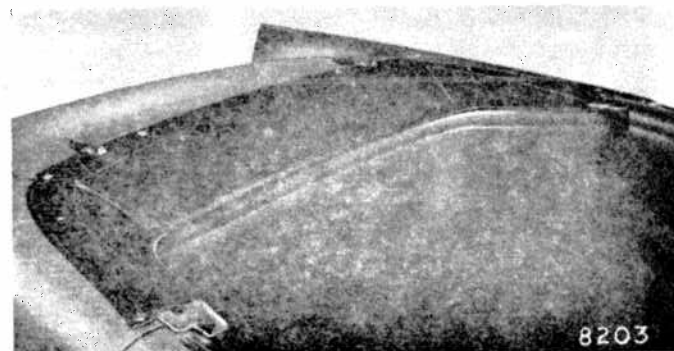
5. Grip the header rail and carry rearwards, pull back on the support rail and allow the header rail to rest on the boot lid.



6. Release the zip fasteners, fold the two side covers outwards and downwards, fold the centre cover over the top of the two side covers. Release the hooks on the two small straps and lay them over the centre cover.

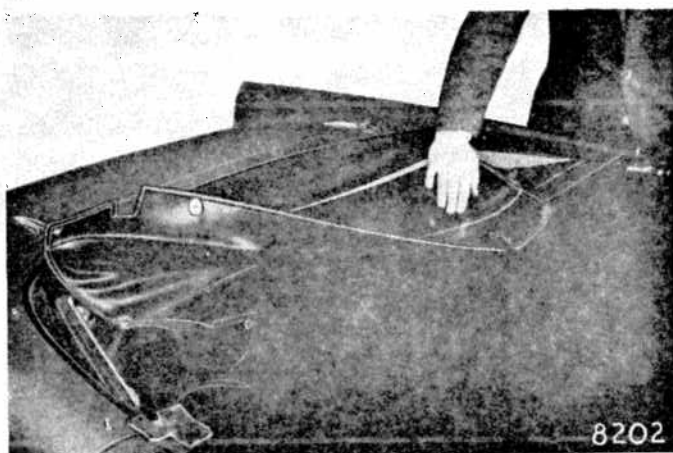


7. Lower the hood into the stowage compartment, pressing the rail down. Take care not to buckle the rear window.

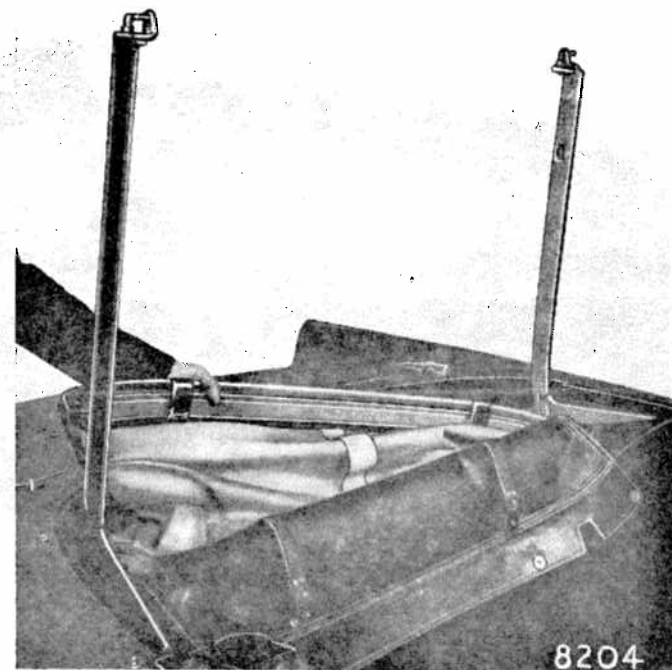


8. Lay the header rail into position in the stowage compartment by feeding one end in first, pushing it well into the corner of the compartment. When properly located, press the header rail well down.
9. Fold the two cantrails over and down on top of the header rail.
10. Place the two side covers and the centre cover into place over the stowage compartment, close the two zip fasteners, and retain by fixing the stud fasteners.

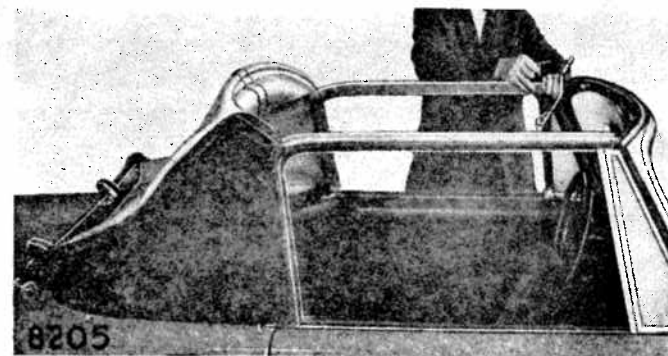
TO RAISE



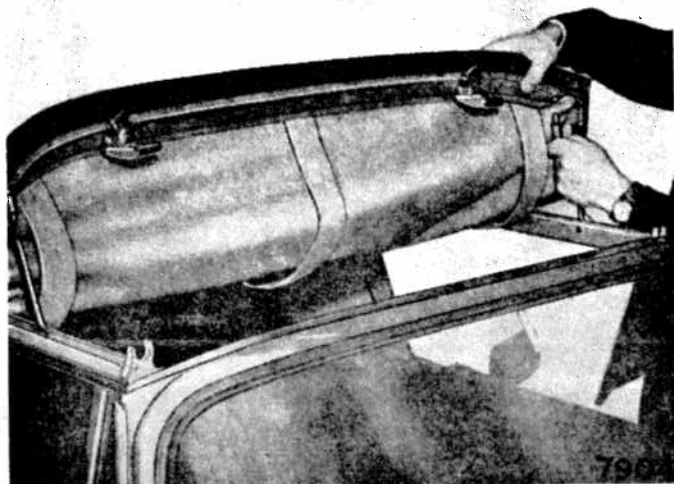
1. Lower the winding window glasses in both doors.
2. Release the stowage compartment covers from the two small straps and stud fasteners, and open the two zip fasteners.
3. Fold over the two side covers then fold in the centre flap. Lift over the two small straps.



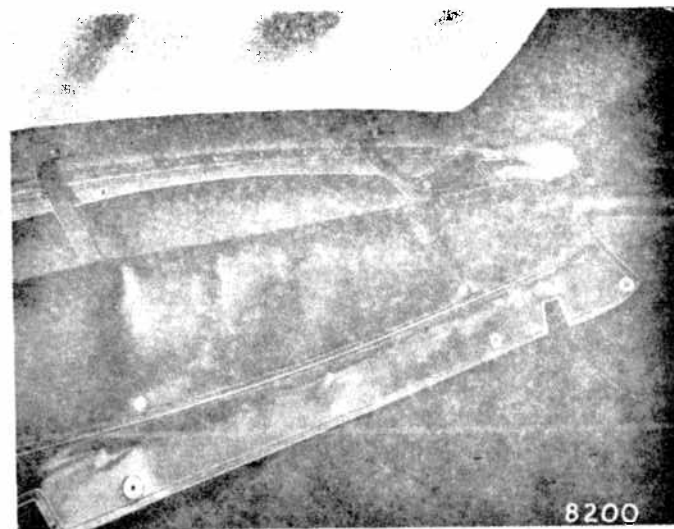
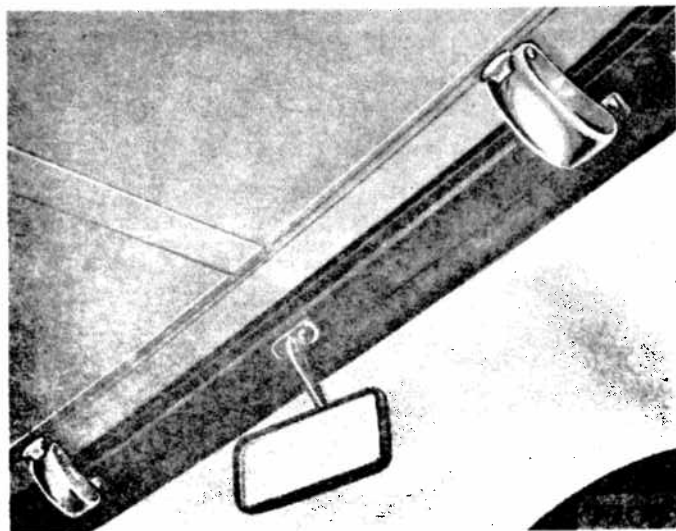
4. Raise the cantrails to the vertical position, and lift the header rail one end first, from the stowage compartment.
5. Withdraw the header rail and hood, and lay them back over the boot lid.



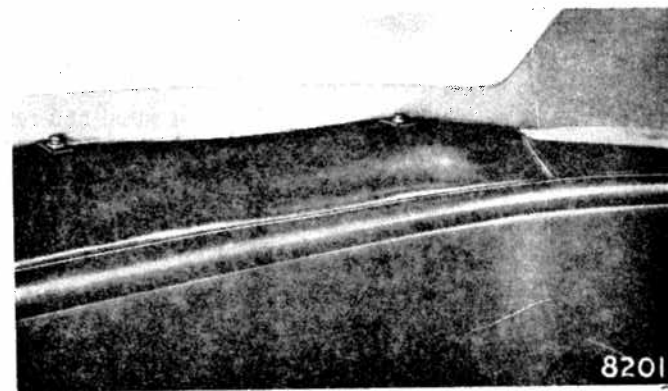
6. Fasten the two cantrails to the top of the windscreen and raise the tension rods.



7. Lift the header rail, locate the tension rods, draw the hood forward and fasten the toggles.



8. From inside the car, fold the edge of the side covers over and tuck the covers into position. Fasten the two small straps to the rear rail by the hooks provided.



9. Fold back the centre panel and close the zip fasteners. Clip the two strap ends into position on the centre cover.

SCHEDULE OF FREE SERVICE

AFTER COMPLETING FIRST 500 MILES (800 KM.)

In overseas territories free service is carried out at different mileages in accordance with locally accepted practice.

COOLING SYSTEM

Examine radiator level and top up if required.

ENGINE

Check tightness of aluminium cylinder head (cold) to correct torque figures.

Check manifold nuts for tightness.

Examine engine for oil leaks and rectify as necessary.

Adjust valve clearances.

Examine tension of fan belt and adjust as necessary.

Reset contact breaker gap.

Drain sump and oil filter when hot and refill with new engine oil.

CLUTCH AND BRAKES

Check master cylinder fluid levels. If low, examine for leakage and rectify. Top up as required. Make sure cap vent hole is clear. Examine flexible hoses for twisting or chafing and correct as necessary.

Examine bolts securing back plates or calipers for tightness and re-tighten as necessary.

TRANSMISSION AND CONTROLS

Drain gearbox when hot and overdrive if fitted and refill.

REAR AXLE

Drain when hot and refill.

FRONT SUSPENSION AND STEERING

Check the following for tightness:

- (a) Steering box fixing bolts.
- (b) Steering arm securing bolts.
- (c) Bolts securing idler lever to chassis.
- (d) Steering linkage ball joints.
- (e) Upper and lower swivel bearing nuts.
- (f) Lower ball joint bracket fixing.
- (g) Cross tube locknuts.

(h) Bolts securing upper and lower fulcrum pins to frame cross member.

(i) Bolts securing front cross member to frame.

Check wheel camber and track and reset if necessary. (Use gap gauges.)

Examine ball pin to socket alignment and correct if required.

Examine front hub bearings for smooth operation. Check end float and re-adjust if necessary.

CHASSIS DETAILS

Check rear road spring "U" bolts for tightness. Examine prop-shaft coupling bolts for tightness.

SHOCK ABSORBERS

Check fixing bolts for tightness.

LUBRICATION

Carry out complete lubrication of vehicle.

BATTERY

Examine electrolyte level and top up if required.

All materials used in carrying out the above to be charged to the customer.

SERVICE TECHNICAL SCHOOL

A service technical school is maintained at the factory for the express purpose of giving specialised instructions to mechanics of dealers in the mechanical details of the products of the company. Its aim is to make good mechanics expert in the servicing of the company's products. Dealers have taken full advantage of this Service School and have, therefore, fully trained men on the spot.

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TOURING ABROAD

For owners who are planning a motor tour of the Continent, facilities exist for guidance in the preparation of the car. A wallet, entitled "Rootes Service in Europe", containing the names and addresses of all Service Dealers on the Continent, is available.

These publications can be obtained from any Rootes Main Dealer in the United Kingdom or from the Sales Promotion Section, Rootes Motors (Parts) Ltd.

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Rootes Motors de Venezuela, S.A.,
Apartado 621,
VALENCIA, Edo., Carabobo,

Names and addresses of dealers in the different territories can be obtained from the above representatives or from the factory service department. Telephone numbers are available in relevant local directories.

WORKSHOP MANUAL

For owners who require more detailed technical information than is contained in this handbook a comprehensive Workshop Manual (Publication No. WSM.145, Part No. 6601231) is available from any authorised dealer.

Extensively illustrated, the Manual covers every operation necessary for servicing, adjustment or a complete overhaul.

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Printed in England by
ST NICHOLAS PRESS LTD
BIRMINGHAM