

The
SUNBEAM
ALPINE



OWNER'S HANDBOOK

A PRODUCT OF THE ROOTES GROUP

**THE
SUNBEAM**

ALPINE

SERIES II

ISSUED BY

SUNBEAM-TALBOT LIMITED

SERVICE DEPT COVENTRY ENGLAND

WORLD EXPORTERS

ROOTES LIMITED

PICCADILLY LONDON ENGLAND

LONDON SERVICE

ROOTES LIMITED

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FOREWORD

This handbook gives concise information on the running and maintenance of the Sunbeam 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 Sunbeam 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.

The Pre-delivery Inspection

The pre-delivery inspection 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. To simplify this, a book of service vouchers is supplied with all cars sold on the home market (voucher books are also available for many Export markets). Each voucher gives the servicing required at different mileages, and, as each mileage is reached, the work detailed for that particular voucher should be carried out. This is a very convenient and easy system for owners, fleet owners, and dealers to follow, because the vouchers form a ready made job list for each servicing interval.

Lubrication Chart

In addition to the vouchers, there is a chart in the back of this book which gives the recommended lubricants, and the mileages at which maintenance should be carried out, together with a plan view of the vehicle showing the positions of items needing attention. Maintenance and Service that cannot easily be done by the owner should be entrusted to an authorised Rootes dealer.

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 the prefix and suffix letters, will be found on a plate fixed to the engine side of the scuttle, and it is also stamped on the right-hand side of the front portion of the under-frame. The number 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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GENERAL DATA

IMPORTANT NOTE: Screw threads of unified series are used on this car, and appropriate spanners must be used.

ENGINE

Number of cylinders	...	...	4
Nominal bore (subject to grading)	...	...	3.21" (81.5 mm.)
Stroke	...	...	3" (76.2 mm.)
Capacity	...	...	1,592 cc. (97.1 cu. in.)
Distributor contact gap	...	...	.015" (.38 mm.)
Spark plug point gap	...	...	.025" (.65 mm.)
† Sparking plug type	...	...	Champion N5
* Ignition timing—Static (at full retard)	...	...	5°-7° B.T.D.C. (6-9 mm.)
Max. torque	...	...	94 lb./ft. at 3,800 r.p.m.
Max. B.H.P.	...	...	85.5 (gross) at 5,000 r.p.m.
* Compression ratio	...	...	9:1:1
Engine oil pressure (Hot) at 50 m.p.h. (80 k.p.h.)	...	...	40-50 lb. sq. in. (2.8/3.5 kg.cm ²) engine in new condition.

Use Premium grade fuel only

†For prolonged high-speed driving, Champion N3 should be used.

*Cars delivered to certain export territories have a compression ratio of 8.5:1 and require an ignition setting of 8°-10° B.T.D.C. (10-12mm.)

Valve Timing

Inlet Opens	...	...	14° B.T.D.C.
Inlet Closes	...	...	52° A.B.D.C.
Exhaust Opens	...	...	56° B.B.D.C.
Exhaust Closes	...	...	10° A.T.D.C.

Valve Rocker Clearance (Engine Hot)

Inlet...	...	...	-.012" (.30 mm.)
Exhaust	...	...	-.014" (.35 mm.)

CARBURETTOR Type Zenith 36. WIP.2 Zenith 36.WIP.3

Models with gauze type air silencer

Settings—Venturi (Choke tube)	...	30 mm.	30 mm.
—Main jet	...	142	142
—Main discharge jet	...	016289	016289
—By-pass jet	...	Blank	Blank
—High speed bleed	...	100	100
—Pump jet	...	50	70
—Slow running jet	...	50	45

CARBURETTOR Type Zenith 36. WIA.2 Zenith 36.WIA.3

Models with dry element type air cleaner

Settings—Venturi (Choke tube)	...	28 mm.	28 mm.
—Main jet	...	112	112
—Main discharge jet	...	016219	016219
—By-pass jet	...	57	57
—High speed bleed	...	60	60
—Pump jet	...	50	70
—Slow running jet	...	45	45

CLUTCH

Type	Single dry plate 8" dia.; hydraulically operated
------	-----	-----	-----	-----	--

GEARBOX

Type	4 speed and reverse, synchromesh on 2nd, 3rd and top
------	-----	-----	-----	-----	--

Overall Ratios

With Overdrive

Overdrive top	3.39 : 1
Direct top	4.22 : 1
Overdrive 3rd	4.72 : 1
Direct 3rd	5.88 : 1
2nd	9.04 : 1
1st	14.13 : 1
Reverse	17.90 : 1

Without Overdrive

Top	3.89 : 1
3rd	5.41 : 1
2nd	8.33 : 1
1st	13.01 : 1
Reverse	16.48 : 1

REAR AXLE

Type	...	...	...	...	Hypoid semi-floating
Ratio	...	...	...	...	4.22 : 1 (with overdrive) or 3.89 : 1 (without overdrive)

DIMENSIONS AND WEIGHTS

Wheelbase	...	...	...	7' 2" (2184 mm.)
Track (tread) —Front	...	...	...	4' 3" (1295 mm.)—4' 3½" (1302 mm.) with wire wheels
—Rear	...	...	...	4' ½" (1232 mm.)—4' 2½" (1283 mm.) with wire wheels
Overall length	...	...	...	12' 11¼" (3944 mm.)
Overall height	...	...	...	4' 3½" (1308 mm.)
Overall width	...	...	...	5' ½" (1537 mm.)
Ground Clearance (laden)	...	...	...	4½"
Front wheel toe-in	...	...	...	⅛" (3 mm.)
(At tyre wall or periphery)	...	...	...	Measured with car laden
Front wheel camber	...	...	...	0° 45' ± 15'
	...	...	...	Measured with car laden
Weight dry	...	...	...	2082 lb. (944 kg.)
Weight unladen, with fuel and water	...	...	...	2165 lb. (983 kg.)

CAPACITIES—for lubricant recommendations see chart at back of book

Fuel tank	...	...	...	9 galls. (41 litres, 11 American galls.)
Engine oil*	...	...	...	8 pints (4.5 litres, 9.6 American pints) including filter
Gearbox oil	...	...	...	2½ pints (1.5 litres, 3.3 American pints) 4 pints (2.3 litres, 4.8 American pints) when overdrive is fitted
Rear axle oil	...	...	...	1½ pints (1 litre, 2.1 American pints)
Cooling system	...	...	...	14 pints (8 litres, 17 American pints) 15 pints (8.5 litres, 18 American pints) when heater is fitted

* See note on page 40

TYRES PRESSURES

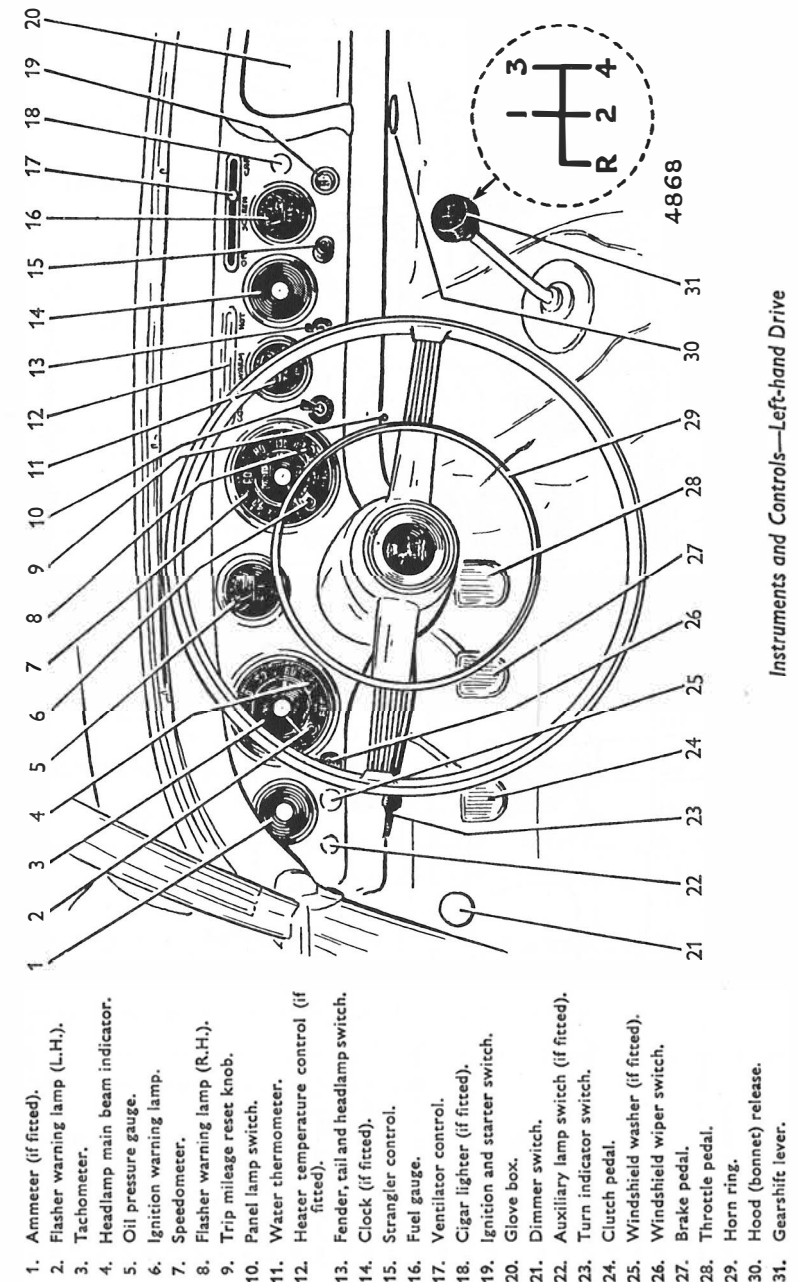
	Normal	Fast driving
5-60 x 13	Front 22 lb.in ² (1.5 kg.cm ²) Rear 23 lb.in ² (1.6 kg.cm ²)	25 lb.in ² (1.7 kg.cm ²) 27 lb.in ² (1.85 kg.cm ²)
5-90 x 13 (RS.4) "Road Speed" Optional extra	Front 22 lb.in ² (1.5 kg.cm ²) Rear 23 lb.in ² (1.6 kg.cm ²)	24 lb.in ² (1.65 kg.cm ²) 25 lb.in ² (1.7 kg.cm ²)
6-00 x 13	Front 24 lb.in ² (1.65 kg.cm ²) Rear 24 lb.in ² (1.65 kg.cm ²)	24 lb.in ² (1.65 kg.cm ²) 26 lb.in ² (1.8 kg.cm ²)
5-90 x 13 (RS.5) "Road Speed" Optional extra	Front 24 lb.in ² (1.65 kg.cm ²) Rear 24 lb.in ² (1.65 kg.cm ²)	30 lb.in ² (2.1 kg.cm ²) 30 lb.in ² (2.1 kg.cm ²)
<i>Prolonged high speed driving at near maximum speeds</i>		
5.60 x 13	Front 28 lb.in ² (1.9 kg.cm ²) Rear 29 lb.in ² (2.0 kg.cm ²)	
5-90 x 13 (RS.4) "Road speed" Optional extra	Front 28 lb.in ² (1.9 kg.cm ²) Rear 29 lb.in ² (2.0 kg.cm ²)	
6.00 x 13	Front 24 lb.in ² (1.65 kg.cm ²) Rear 26 lb.in ² (1.8 kg.cm ²)	
5-90 x 13 (RS.5) "Road speed" Optional extra	Front 30 lb.in ² (2.1 kg.cm ²) Rear 30 lb.in ² (2.1 kg.cm ²)	

ELECTRICAL SYSTEM

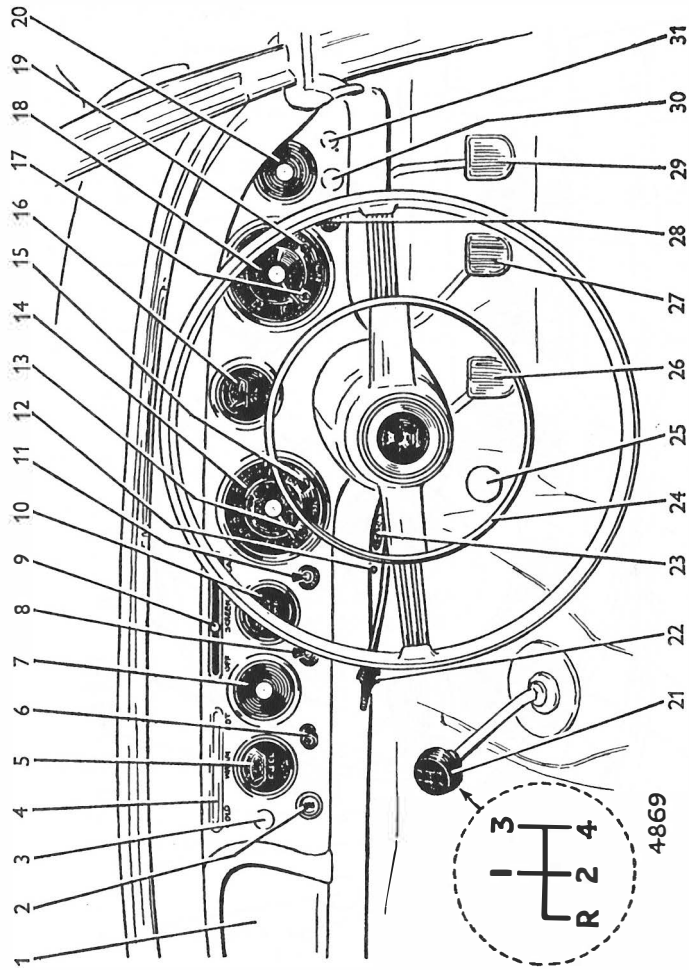
Type	12 volt. positive earth
Battery capacity	38 a/h (44 or 51 a/h in certain export territories)
Fuses	2—35 amp.

Headlamps—R.H.D.	Lucas 414	50/40 W.
—L.H.D.	Lucas 410	45/50 W.
—France	Lucas 444	45/40 W.
—U.S.A. & Canada	Standard sealed beam unit	
Side (fender) and flasher	Lucas 380	6/21 W.
Panel and Warning lamps	Lucas 987	2.2 W.
Stop and Tail	Lucas 380	6/21W.
Rear Flasher	Lucas 382	21 W.
Rear number plate	Lucas 222	4 W.
Map Lamp	Lucas 12V	6 W. Festoon

Bulbs—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.



1. Ammeter (if fitted).
2. Flasher warning lamp (L.H.).
3. Tachometer.
4. Headlamp main beam indicator.
5. Oil pressure gauge.
6. Ignition warning lamp.
7. Speedometer.
8. Flasher warning lamp (R.H.).
9. Trip mileage reset knob.
10. Panel lamp switch.
11. Water thermometer.
12. Heater temperature control (if fitted).
13. Fender, tail and headlamp switch.
14. Clock (if fitted).
15. Strangler control.
16. Fuel gauge.
17. Ventilator control.
18. Cigar lighter (if fitted).
19. Ignition and starter switch.
20. Glove box.
21. Dimmer switch.
22. Auxiliary lamp switch (if fitted).
23. Turn indicator switch.
24. Clutch pedal.
25. Windshield washer (if fitted).
26. Windshield wiper switch.
27. Brake pedal.
28. Throttle pedal.
29. Horn ring.
30. Hood (bonnet) release.
31. Gearshift lever.



Instruments and Controls—Right-hand Drive

1. Glove box.
2. Ignition and starter switch.
3. Cigar lighter (if fitted).
4. Heater temperature control (if fitted).
5. Fuel gauge.
6. Choke control.
7. Clock (if fitted).
8. Side, tail and headlamp switch.
9. Ventilator control.
10. Water thermometer.
11. Panel lamp switch.
12. Trip mileage reset knob.
13. Flasher warning lamp (L.H.).
14. Speedometer.
15. Headlamp main beam indicator.
16. Oil pressure gauge.
17. Ignition warning lamp.
18. Tachometer.
19. Flasher warning lamp (R.H.).
20. Ammeter (if fitted).
21. Gear lever.
22. Flasher switch.
23. Bonnet release.
24. Horn ring.
25. Dip switch.
26. Clutch pedal.
27. Brake pedal.
28. Windscreen wiper switch.
29. Accelerator pedal.
30. Windscreen washer (if fitted).
31. Auxiliary lamp switch (if fitted).

INSTRUMENTS AND CONTROLS

The positions of the various instruments, switches and controls are clearly shown in the illustrations on pages 9 and 10.

COMBINED IGNITION AND STARTER SWITCH

Turn the key to the right to switch on the ignition. It is turned further to the right against a spring to operate the starter motor. When released, the key will spring back to the "ignition on" position.

If it is desired to operate the radio (if fitted) when the car is stationary with the engine switched off, the key is turned to the left, thus allowing use without the ignition remaining on.

The advantage of this arrangement is that it is impossible accidentally to leave the radio switched on when the car has been vacated and the key removed.

COMBINED SIDE AND HEADLAMP SWITCH

The switch (marked "L") is turned downwards to the halfway position to turn on the side (fender) and tail lamp bulbs, and fully down to turn on the headlamps.

COMBINED PANEL AND MAP LAMP SWITCH

Move switch (Marked 'P') downwards to halfway position to illuminate instrument panel and fully down to operate map lamp. These lamps operate only when side lights are also on.

WINDSCREEN WIPER SWITCH (Marked "W")

To turn on, move the switch down. 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.

HORNS

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

DIP SWITCH (DIMMER)

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

DIRECTION INDICATOR SWITCH

Flashing type indicators are fitted. The control switch is mounted at the side of the steering column.

The direction indicators are self-cancelling and will operate only when the ignition is switched on. Warning lights situated at the lower edge of the speedometer and revolution indicator dials show when the indicators are operating. Should a bulb filament fail in either the front or rear flashing lamp the warning light on the fascia will not light up, thus indicating that a lamp is not operating on that side of the vehicle.

OVERDRIVE SWITCH—On models so equipped

Move switch down to engage overdrive and up to disengage. See also "Overdrive" on page 30.

IGNITION AND GENERATOR WARNING LIGHT

The warning light glows when the ignition is switched on and remains alight while the engine is running at tick-over speed. As soon as the engine is above idling speed the warning light should immediately go out—indicating that the generator is charging the battery. Should the light fail to go out, or come on at normal engine speeds when the car is travelling, the cause should be investigated as soon as possible otherwise the battery may soon become discharged.

FUEL GAUGE

Registers only when the ignition is switched on. As a safety measure the fuel tank is designed so that a small reserve of fuel still remains when the gauge reads zero.

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 correct temperature is indicated after the ignition has been switched on. The normal tuning temperature is about 170°F. (77°C.) to 195°F. (91°C.), but the temperature may rise beyond this figure during the warm-up period, before the thermostat opens fully.

HEADLAMP MAIN BEAM INDICATOR

Situated on the dial of the revolution indicator. The light is on when the main (high) beam is in use and goes out when the dipped beam is in operation.

OIL PRESSURE GAUGE

The oil pressure gauge should normally register a pressure of 40/50 lbs. per sq. in. (2.8 to 3.5 kg. sq. cm) at 50 m.p.h. (80 k.p.m.) with the engine at its normal working temperature. It should be noted that the oil pressure gauge does not indicate the amount of oil in the sump.

If the gauge fails to register, the engine should be stopped at once and the cause sought and rectified before the engine is restarted, otherwise serious damage may be caused.

SPEEDOMETER

The speedometer, in addition to registering road speed, registers the total mileage (top row of figures) and "trip" mileage (lower row of figures). To set the "trip" reading to zero push the knob, protruding under the fascia (below the speedometer) inwards and turn.

REVOLUTION INDICATOR (TACHOMETER)

Indicates engine speed 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 a primary consideration without regard to performance, lower speeds will give better results. For maximum performance, engine R.P.M. should approach the figure for maximum Brake Horse Power. B.H.P. and torque figures

are quoted in "General Data" at the beginning of the book. The maximum safe engine speed is indicated by the red sector, representing 5,800 R.P.M. upwards as the hand moves on to the coloured area.

CHOKE (STRANGLER)

This control is situated on the instrument panel. For full details of its use see under heading "Starting Procedure".

VENTILATOR. (For heater see p. 28)

This control is situated on the facia panel. From the "OFF" position turn the control progressively to the right.

The first stage directs fresh air over the windscreen for demisting purposes, and the second stage allows fresh air to be brought into the car. By setting the control in a halfway position a balanced proportion of air can be distributed to both the car and the windscreen.

GEARSHIFT

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

A further point which will materially assist in obtaining a smooth change is the synchronization 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

Located beside the driver's seat. 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 release lever downwards to the off position.

The handbrake is of the cable type and operates on the rear wheels. It is independent of the hydraulic system in operation.

BONNET (HOOD) To open and close

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.

CLUTCH PEDAL

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

Provision is made on the clutch pedal to relocate the master cylinder push rod, which in effect moves the clutch pedal approximately $1\frac{1}{2}$ in. (38 mm.) nearer to the driver.

BRAKE PEDAL

Avoid severe braking except in an emergency. Use low 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 means of 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 relocate the master cylinder push rod, which in effect moves the brake pedal approximately $1\frac{1}{2}$ in. (38 mm.) nearer to the driver.

ACCELERATOR

Always operate the pedal smoothly, not in jerky movements. Do not pump the accelerator pedal. The discharge of fuel into the carburettors each time the accelerator is pumped results in an increase of fuel consumption.

The clutch and brake pedals have two positions and may be adjusted to the individual requirements of the owner. Initially, all pedals are set to the forward position, giving maximum leg room. The accelerator may also be adjusted by loosening and rotating the pedal on the shaft.

SEATS

The front seats are readily adjustable for leg room by pushing sideways the catch located at the front.

The seats will be found to slide forward or backward with ease. Always make sure that the catch is engaged after adjustment.

LOCKS AND KEYS

Two keys are supplied with the car, one operating the ignition and door locks, the other the baggage boot and the cubby box in the centre armrest. This arrangement allows items of personal property to be locked up and the ignition key handed to any other person who may be required to drive the car. It will be observed that the ignition and boot keys are differently shaped; this is to facilitate identification in the dark.

There is no key number on the face of any of the locks. This is a protection against theft. The key numbers should be carefully recorded for future reference, so that replacements may be obtained without difficulty in the event of loss.

You will be doubly protected if you record the key numbers among permanent papers such as insurance policies, etc.

The door locking system has been so arranged as to make it possible to lock either door from inside or outside. To leave the car secure, lock one door from inside by turning the interior handle forwards (whereupon it will spring back), leave the car by the other door and lock it by means of the key. External locks are fitted to both doors and re-entry may be made through either.

Since the internal handle will only lock the door after it has been closed, it is impossible for the owner to lock himself out of the car.

To lock the doors with the key, turn it a quarter of a turn only, then return it to the upright position and withdraw.

Right-hand door: clockwise to lock, anti-clockwise to unlock.

Left-hand door: anti-clockwise to lock, clockwise to unlock.

SPECIAL ACCESSORIES

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

The special accessories are tested and approved and, in many cases, special provision is made in the car to accommodate them.

BAGGAGE, SPARE WHEEL AND TOOL COMPARTMENT

BOOT LOCK

A slam type of lock is fitted to the boot lid; the method of operation is as follows:—

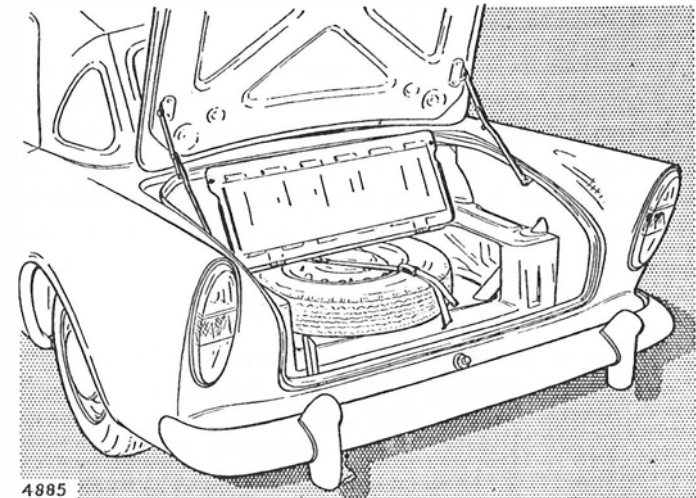
To unlock, insert key and turn it anti-clockwise a quarter of a turn.

To open from an unlocked position, press knob and release. The lock is now disengaged, and the boot lid may be lifted by the finger grip above the knob.

The lid is secured by slamming it down in the normal manner.

To lock, insert key and turn a quarter of a turn clockwise.

Care should be taken not to release the boot lid props accidentally, otherwise the lid may fall and trap the hands or protruding pieces of baggage, etc.



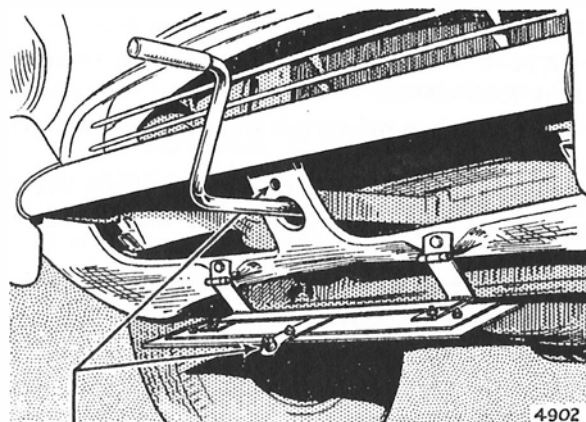
SPARE WHEEL

Mounted below the baggage platform and secured by a strap.

To remove. Lift hinged lid over spare wheel, release strap buckle and remove wheel.

To replace. With strap lying in correct position, replace wheel and fasten strap. Lower hinged lid.

STARTING HANDLE



NUMBER-PLATE CATCH

Access to the starting handle aperture may be obtained by turning the slotted number-plate catch a half-turn anticlockwise with a coin or screwdriver, and swinging the plate downwards on its hinges.

Close, and fasten by turning the slotted catch clockwise until it "clicks".

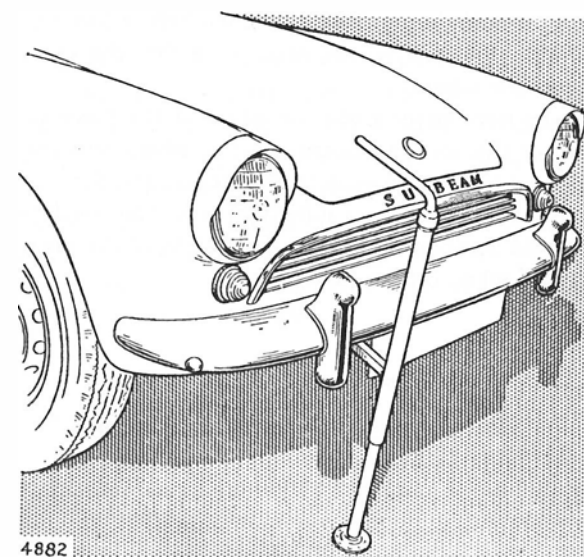
LIFTING JACK

Square section jacking sockets are provided at front and rear of the car, on either side, just underneath the bumper. The lifting peg of the jack is inserted into the appropriate socket (see illustration).

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

To eliminate the risk of the jack sinking in soft ground it is recommended that a suitable flat piece of wood is placed under the base of the jack.

It is important that the jack is fully located in the socket before lifting the car, and that no attempt should be made to attach the jack in any position other than the sockets provided.



Before jacking up the car it is essential always to make quite sure that the handbrake is securely "ON" and if the car is on an incline, or if one of the rear wheels is being raised, that BOTH the front wheels are 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

PRESSED STEEL WHEELS—to Remove and Refit

Remove the nave cover plate in the centre of the wheel by inserting the nave plate key (supplied in tool kit) between the wheel and the edge of the plate, and levering off, supporting the plate meanwhile with the other hand.

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

The nuts should be partially slackened before jacking the car. When refitting a road wheel, make sure that the conical ends of the nuts face the wheel.

To refit the nave cover plate the edges of the plate should be put over two of the locating bosses on the wheel and the centre of the plate given a sharp blow with the side of the fist.

See that road wheel nuts are fully tightened, and check periodically. This should be done only when the weight of the car is on the roadwheel, NOT when on the jack.

WIRE WHEELS—to Remove and Refit

Loosen wheel nuts by using the spanner provided. The wheel nuts are marked with an arrow showing way to remove.

Jack up the car.

Continue unscrewing wheel nut, and remove.

Grasping the tyre with both hands, pull the wheel off the hub.

Before refitting ensure that any corrosion is cleaned off. Wear at the serrations will be minimised by regularly ensuring that the hub caps are fully tightened.

A light coating of grease should be applied to the serrations, both to protect them from corrosion and to facilitate the removal and replacement of the wheel.

It is very important to ensure that the hub tapers are clean before a wheel is fitted. If necessary, the tapers should be polished to remove all dirt and rust; all mating faces should then be well greased.

Fully tighten the wheel nut when the weight of the car is on the road wheel, NOT when on the jack.

Although the wheels may not have been removed, the tightness of the wheel nuts should be regularly checked to avoid wear of the serrations.

WHEEL BALANCE AND ALIGNMENT

Correct static and dynamic balance are most important if the best steering characteristics are to be obtained.

When a tyre is to be removed from its wheel a chalk mark should first be made across both the tyre and the wheel and a note made of the position and amounts of any balance weights which may be fitted, so that on reassembly they can be fitted in the same relative positions.

It will be noted that there are one or two coloured balance spots near the bead. When fitting a new tyre the spots should be near the valve position or, if inner tubes are fitted, next to the coloured spots on the tube.

STARTING PROCEDURE

STARTING ENGINE WHEN COLD

Place gearshift lever in neutral and handbrake "on", switch on ignition noting that the ignition and generator warning lamp lights up. By looking at the fuel gauge, check that there is fuel in the tank. Pull out the choke control. Turn the ignition key clockwise as far as it will go. The engine should start immediately and continue to run at a fast idling speed. Release the ignition key, which will return to the normal "ON" position.

If the engine fails to start, do not operate the starter again until both engine and starter 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 begins to run erratically (or "hunt"), the choke control should be pushed in far enough to make it run smoothly again. The choke control should be pushed in fully as soon as is possible without causing the engine to misfire or stop. This is a very important point, as it means that for its last half inch of travel the choke control may be used to increase the idling speed of the engine before it reaches its normal working temperatures, which will prevent stalling.

STARTING ENGINE WHEN HOT

Switch on ignition and operate the starter. Depress accelerator pedal slightly and remove the foot as soon as the engine starts.

STARTING IN VERY HOT WEATHER

If difficulty in starting the engine when "hot" in very warm weather is experienced, DO NOT AGITATE THE ACCELERATOR but PRESS DOWN FULLY AND HOLD WITH FOOT, then operate starter, when the engine will start easily. The foot must then be removed from the accelerator at once to prevent racing.

"RUNNING-IN" THE NEW CAR

The preliminary and progressive "running-in" of a new car and the method by which it is carried out are of the utmost importance in order that the car may give of its best as regards durability, sweetness of running, economy and freedom from trouble. 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 k.m.) of the life of the car.

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

It is also 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 instructions as regards maximum road speeds in top (high) gear and strict observance of the corresponding maximum road speeds in the lower gears are of equal importance:—

35 miles per hour (56 k.p.h.) to 40 miles per hour (64 k.p.h.) should not be exceeded during the first 500 miles (800 k.m.).

Overdrive top should not be engaged under 35 m.p.h. (56 k.p.h.) and a maximum speed of 45 m.p.h. (72 k.p.h.) should not be exceeded in this gear.

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

25 m.p.h. (40 k.p.h.) in third gear.

15 m.p.h. (25 k.p.h.) in second gear.

10 m.p.h. (16 k.p.h.) in first gear.

If an upper cylinder lubricant is used, we recommend Shell Upper Cylinder Lubricant. This should be added to the fuel in the proportion of $\frac{1}{2}$ oz. (15 c.c.) per gallon.

On completion of the first 500 miles (800 km.) and for the second 500 miles, *i.e.* until 1,000 miles (1,600 k.m.) have been covered, the "running-in" speed in top gear may be increased progressively to a maximum of 55 miles per hour (88 k.p.h.) subject to favourable conditions, with correspondingly restricted speeds in the lower gears.

At the conclusion of 500 miles (800 k.m.) the car should be taken to the Dealer from whom it was purchased for the first Service inspection. A coupon 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 Sunbeam Dealer provided that the 500-mile Free Service coupon has been stamped by the Dealer who supplied the car.

Overseas Dealers will provide a Free Service Voucher on request.

HARDTOP

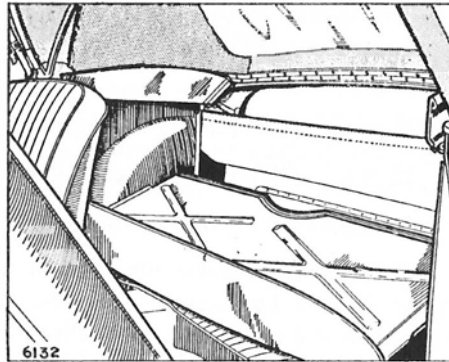
(Special Accessory)

The hardtop may readily be removed or refitted. Six fixing points are provided: two toggle clamps above the windscreen; two hexagon-headed bolts behind the top of each door, and two spring-loaded pegs which engage in sockets in the boot lid hinges, and which may be held retracted by turning their handles anti-clockwise.

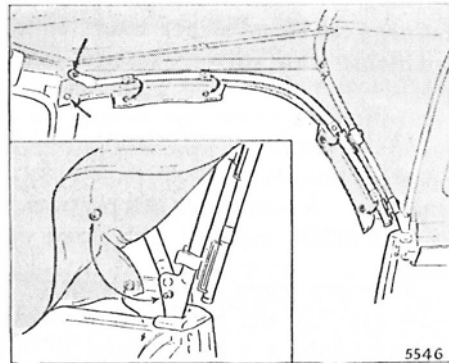
HOOD (TOP) OPERATING INSTRUCTIONS

TO LOWER THE HOOD

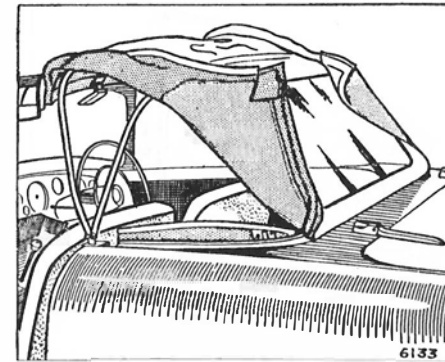
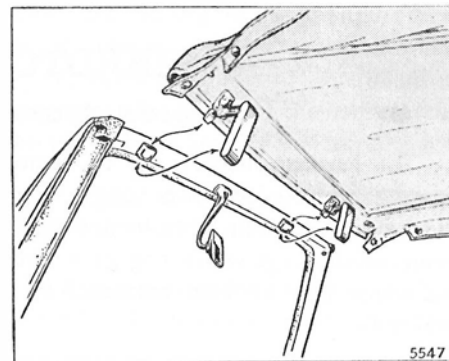
Slide seats forward, swing occasional seat backrest forwards, and open side covers inwards.



Release all snap fasteners on sides of hood, both inside and out. Undo turn buttons on header rail and remove hood side supports which should be placed in the pocket provided in the hood sling.

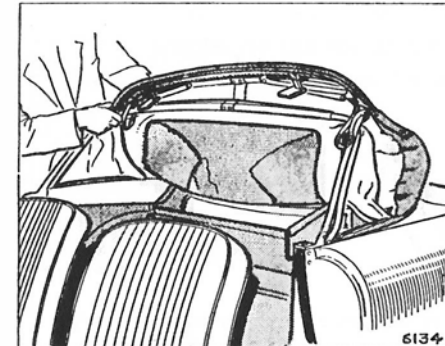


Release header rail toggle catches.

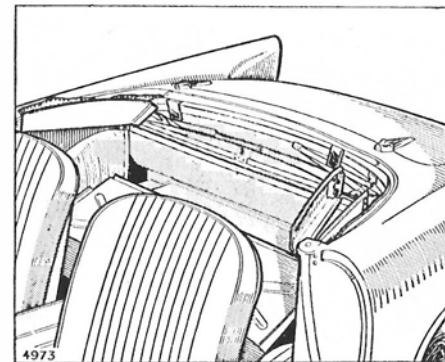


Push hinged linkage inwards and allow front of hood to hang down.

Fold side flaps fully inward over the hood.



Bring header rail back to hoodsticks, lift all hood material clear of hoodsticks and fold hood on to rear window.



Neatly feed window and hood material down as far as possible into well, followed by hoodsticks and header rail, and press firmly home.

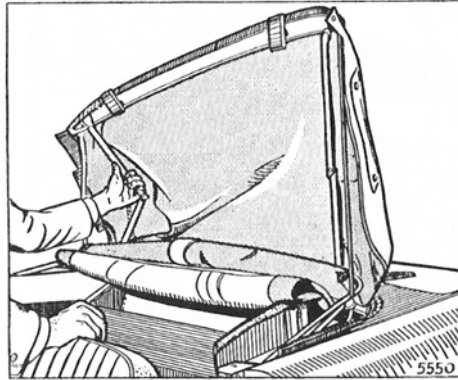
Close side covers and backrest.

Adjust seats to normal position.

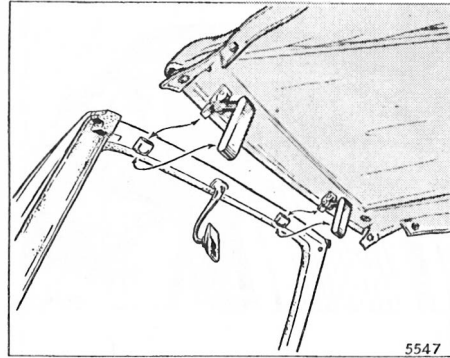
TO RAISE THE HOOD

Slide seats forward, swing occasional seat backrest forwards and open side covers inwards.

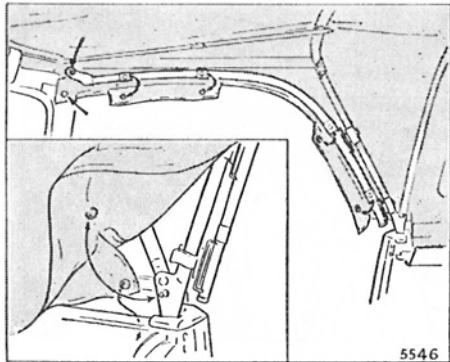
Lift front header rail right out and fully extend hinged linkage.



Withdraw hood material from well and unfold side windows of hood. Locate two tongues of header rail in sockets at top of windscreen (ensuring that rubber seal is forward of windscreen flange). Fasten toggle catches securely.



Refit hood side supports
Fasten all snap fasteners, both inside and outside the hood (7 each side). Close side covers and backrest.
Adjust seats to normal position.



TONNEAU COVER

(Special Accessory)

To fit: Secure the four fasteners at the lower edge of the windscreen. With the boot lid open, secure the two fasteners and locate the roll at the edge of the tonneau cover in the channel. Secure the fasteners at either side and close the zip.

To remove: Open the zip fastener, release the fasteners under the front edge of the boot lid, followed by those at the sides and the front.

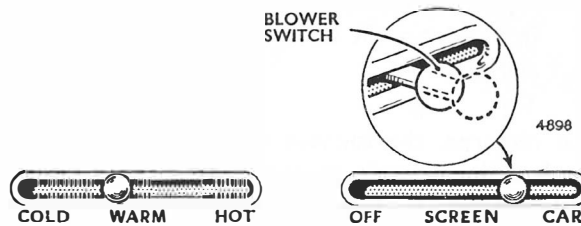
When required, the tonneau cover may be partially folded, leaving either the driver's or the driver's and the passenger's section open. When used in this way, the material should be held taut by securing the straps to the fastener on the transmission tunnel.

VENTILATION AND HEATING 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 "CAR" and "SCREEN", the ventilation will be divided in proportion.

BLOWER

An electrically driven blower fan is available as a special accessory to boost the flow of air through the system, and will be found particularly valuable in hot climates, and for augmenting the output of the heater, when fitted. The blower is switched on by pulling the ventilator control lever outwards, and switched off by pushing it in, with the lever itself in any position.



HEATER

When the special accessory heater kit 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 blower be used in conjunction.

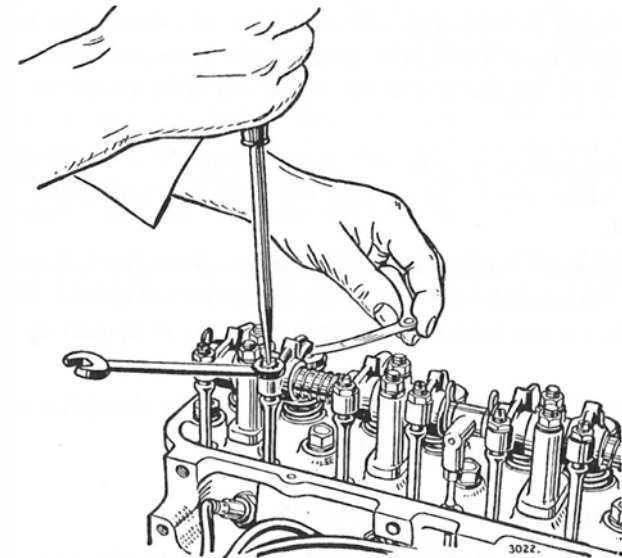
The temperature control lever is fitted to the left of the ventilator control, and may be adjusted to any position between "COLD" (when no hot water is passed through the heater) and "HOT" (when maximum heat is available, for defrosting, etc.).

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 the screwdriver until the correct clearance is obtained. At this stage the feeler gauge should drag when moved backwards and forwards.

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

Rocker Clearances (Engine hot)

Inlet valve	...	...	...	·012" (.30 mm.)
Exhaust valve	...	...	...	·014" (.35 mm.)

GEARBOX AND OVERDRIVE

OVERDRIVE UNIT (fitted at the factory as an optional extra)

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 these gears move the manual switch in the appropriate direction—downwards to engage overdrive and upwards to revert to direct drive.

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 overdrive 3rd to 2nd gear, as this will ensure that the transmission is not subjected to heavy loads due to by-passing direct 3rd gear.

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

MAINTENANCE

A combined level and filler plug is located in the side of the gearbox in order to facilitate checking and, when necessary, the replenishment of oil in the gearbox and overdrive to the correct level.

The correct oil level is to the filler hole. Always allow excess oil to drain off before replacing the plug.

When checking the oil ensure that the car is standing on a level surface.

Draining the gearbox will be easier if carried out shortly after the car has completed a run. The oil is then warm and will flow freely.

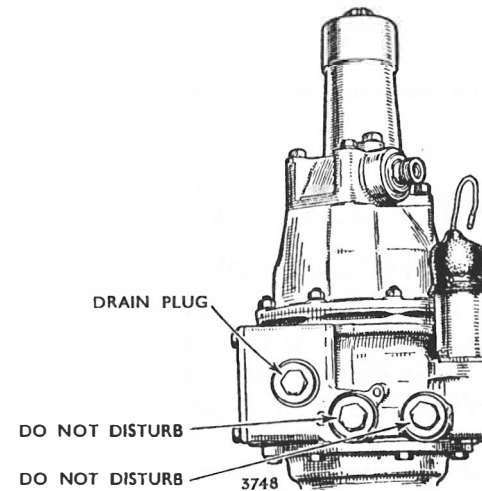
Only the specified grade of Shell oil should be used.

Draining the Gearbox and Overdrive

This should be carried out when the oil is warm.

The grades of oil recommended in the Lubrication and Maintenance Chart should be used (see end of book). Before draining, the overdrive switch should be moved to the engaged position and back again, with the ignition on and top gear selected, 10 or 12 times to empty the overdrive hydraulic system. Before draining, both gearbox and overdrive should be wiped clean, as any dirt which finds its way into the overdrive unit may cause restrictions in the overdrive hydraulic system. To drain the gearbox and overdrive unit remove the drain plug from the gearbox, as shown in the Lubrication and Maintenance Chart at the end of the book and also the large brass drain plug located under the overdrive unit. (See illustration). When refilling, the oil should be allowed to settle for a few minutes in order to allow surplus oil to drain off. A further check should be made when the car has been run.

NOTE THAT THE COMBINED OIL CAPACITY OF GEARBOX AND OVERDRIVE IS 4 PINTS (4.8 American Pints (2.3 litres)).



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 $\frac{3}{16}$ " (4.5 mm.) diameter rod can be passed through the hole in the solenoid lever into the hole in the overdrive casing with ignition switched on, top or third 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 rod to be inserted, the solenoid plunger must be adjusted.

Adjustment is effected by screwing the 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 $\frac{3}{16}$ " (4.5 mm.) rod in position.

Ensure that with the control in the "Overdrive" position the setting rod can be inserted, and that the solenoid current does not exceed 2 amperes.

Draining the Gearbox (Non-Overdrive Models)

This operation is carried out simply by removing the gearbox drain plug.

To refill, replace the drain plug, remove the filler plug and fill to the filler plug hole.

The capacity of the gearbox only is $2\frac{3}{4}$ pints (3.3 American Pints—1.56 litres).

FUEL SYSTEM

AIR SILENCERS—To Clean and Re-Oil

The gauze in the air intakes of the silencers only requires cleaning after long periods of use. If, however, dry and dusty conditions are prevalent, or if a car equipped with this type of air silencer is taken abroad to dusty areas, the air intake gauzes must be cleaned if it is evident that they are becoming choked with dust.

To clean the air intake gauzes, remove the complete silencers by unscrewing the clips that secure them to the carburettor intakes. Wash gauzes by dipping the open ends into a bowl of clean kerosene or gasoline. Allow to drain thoroughly and re-dip the gauzes in clean engine oil. Clean and wipe off all surplus oil and refit.

It should be understood that a dirty or partly choked gauze on this type of air silencer can be the cause of both high petrol consumption and reduced engine performance under full throttle conditions.

DRY ELEMENT TYPE AIR FILTER (When fitted)

The interval at which the element should be renewed will vary according to the conditions under which the car is operating.

For town work and areas where the roads and atmospheres are relatively dust-free, this should be done every 12,000 miles (19200 km.). Where the roads are bad and dust is prevalent, or when the atmosphere is laden with smoke and fog, renewal should be carried out at 6,000 miles (9600 km.) or more frequently under very bad conditions.

Under these circumstances it is also recommended that the filter element is shaken free of loose dust and that any dust which may have accumulated in the filter casing is cleaned out every 3,000 miles (4800 km.).

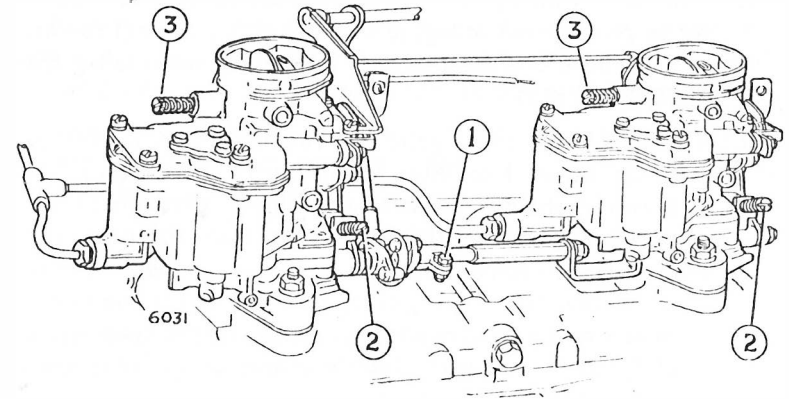
1. Disconnect the rubber intake hose from the filter unit after slackening the securing clip.
2. Remove the air cleaner assembly from the car after undoing the clip which holds the assembly to its mounting bracket.
3. Unscrew the wing nut at the end of the air cleaner. This will enable the two halves of the assembly to be separated, and the element to be removed.
4. Thoroughly clean out the interior of the casing.
5. Insert element and re-assemble air cleaner. Refit air cleaner to car and connect rubber intake hose.

CARBURETTORS

Synchronisation of Throttles and Slow Running Adjustment. (See illustration)

To obtain the best performance and fuel consumption the carburettor throttle stops and slow running volume control screws should be adjusted in the following manner, with the carburettors mounted in position.

1. Loosen the clamp bolt (1), to allow independent movement of each throttle.
2. Unscrew throttle stop screws (2) until both throttles are in the fully closed condition, and the screws are clear of their abutments.
3. Screw in each throttle stop screw until they just touch their abutments with the throttles held closed. This must be done very carefully to ensure that the throttles begin to open precisely together.
4. Screw in both throttle stop screws $1\frac{1}{2}$ turns in a clockwise direction.
5. Holding the throttles in the shut position tighten the clamp bolt (1) in the coupling yoke. Check that both throttle stop screws come against their abutments as the throttle is closed from an open position.
6. Screw in the slow running mixture control screws (3) by hand (if these are screwed in with a screwdriver the seatings will be damaged). Screw back each screw three-quarters of a turn in an anti-clockwise direction.
7. With the engine warmed to normal working temperature, adjust mixture volume control screw on front carburettor to position giving the smoothest idle, then adjust mixture control screw on rear carburettor in a similar manner. Re-adjust front carburettor adjustment screw if necessary.



Turning the mixture control screw clockwise will richen the slow-running mixture. Unscrewing the mixture control screw will weaken the mixture.

8. If idling speed is now incorrect, increase or decrease speed as required by adjustment on both throttle stop screws. **IT IS IMPORTANT THAT THESE SCREWS ARE ADJUSTED EQUALLY ON BOTH CARBURETTORS.**

The idling speed should be controlled by throttle stop screws only.

The mixture control screw should always be set to give the smoothest possible idle for the throttle opening provided by the throttle stop screw.

IDLE SPEED SHOULD NEVER BE CONTROLLED BY ADJUSTMENT OF MIXTURE CONTROL SCREWS.

9. "The slow running mixture volume control screws should be set to give smooth idling, just off the rich (hunting) condition for a throttle opening the gives a HOT minimum idling speed of 750/850 R.P.M."
10. If it is difficult to obtain good slow running, a piece of cardboard tube can be used to listen at the carburettor intake. Each carburettor should give a similar "hiss", particularly when slight opening of the throttle brings the carburettors into the progression stage (at about 1,000 r.p.m.) To obtain this condition, slacken the coupling clamp bolt, and adjust one or other throttle stop screw very slightly. Re-clamp the coupling, and carefully check that both throttle screws come firmly against their abutments when idling.

It is emphasised that it is impossible correctly to adjust the slow running if air leaks exist in the induction system, or if the ignition is incorrectly timed.

CLEANING

In exceptional cases an obstruction in the carburettor may occur, in which case the following points may be checked:—

Main Metering Jet

This may be removed for cleaning. It is visible after removing the hexagon plug in the base of the float chamber.

Slow Running Jet

Remove the air silencers.

Pull the choke control fully out.

Remove six screws which secure the tops of the carburettors to the carburettor bodies and carefully lift off the carburettor tops.

Remove the joint gasket situated between the carburettor top and the main body of the carburettor. This will expose the slow running jet which can be removed with the aid of a suitable screw-driver.

The jet can be identified by a number stamped on its top.

Any obstruction in the jet should be removed by blowing through with compressed air. A tyre pump can be used in an emergency.

Replace the slow running jet and the gasket joint.

Replace the carburettor top, ensuring that the accelerator pump operating plunger enters the accelerator pump piston, and that the gasket does not become displaced during this operation.

Secure with six holding screws previously removed. Note that one screw is longer than the others, and should be inserted where the screw boss is the deepest.

Replace the air silencers and tighten the fixing clips.

Push in the choke control.

INLET (INTAKE) MANIFOLD DRAIN PIPE

To Clean

If the inlet (intake) manifold drain pipe is obstructed, this may cause difficult starting due to petrol accumulating in the bottom of the manifold, which will have an extremely adverse effect on carburation. The pipe is removed for checking and cleaning by detaching the union from the manifold. Clear the drilling in the manifold with a piece of wire. The pipe itself should then be checked by blowing through from the top end. If found to be obstructed, remove the small brass split pin from the lower end, thus releasing the ball valve. The pipe can then be cleared by means of a piece of wire of suitable size and at the same time the ball and its seating should be cleaned by washing in petrol or paraffin. Reassemble the ball valve to the drain pipe and secure with a new split pin.

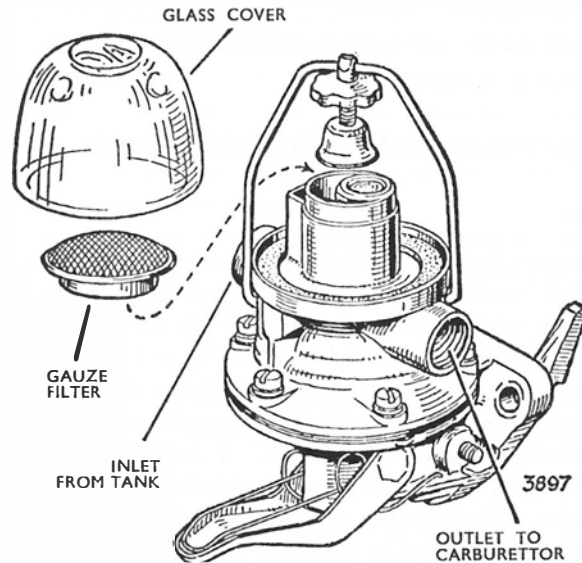
FUEL PUMP

To Clean

Cleaning the 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 simply by unscrewing the retaining clip hand screw on the top 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.

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



Hand Priming Lever

The hand priming lever is for use when, for any reason, the carburettor float chambers or pump bowl have become empty. A few strokes of the hand priming lever on these occasions will fill the float chambers with fuel and ensure easy starting without prolonged use of the starter and consequent excessive strain on the battery.

Owing to the special construction of the pump it is impossible to overfill the carburettors, as after several strokes with the hand priming lever the action will become free, indicating that the float chambers are full.

Should it be found that the hand priming lever will not operate, turn the engine with the starter, thus freeing the fuel pump operating lever mechanism from the eccentric on the engine camshaft.

Fuel Shortage at Carburettors

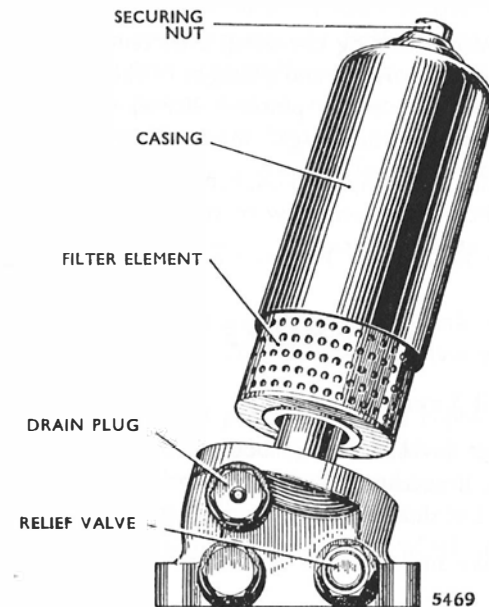
If the pump should fail to deliver fuel to the carburettors the following points should be checked.

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 specialised manufacture and their overhaul and repair is not normally within the scope of the owner-driver.

OIL FILTER

With engine life and reliability so greatly influenced by thorough oil filtration, particular care has been taken to ensure that this is adequately provided for. A large capacity full-flow external filter is fitted through which all oil passes before being fed to the moving



parts. In this way foreign matter is prevented from penetrating to the working parts to cause damage and accelerate wear. As an additional precaution, a large gauze-screen filter is attached to the oil pump intake, its function being to prevent sediment from reaching the full-flow filter and causing a partial blockage.

To renew the filter element, first drain the oil by removing the drain plug at the base of the filter (see illustration). Now slacken the nut at the top of the unit, when the casing may be removed upwards. Note the position of the washers and joint. The filter element is now exposed and may be withdrawn upwards. Before fitting the new element clean out the casing thoroughly with petrol or paraffin. A new joint washer should always be used when the casing is refitted. Do not omit to refit the filter drain plug.

Provided that the filter element is changed at least every 6,000 miles, (9,600 km) periodic removal and cleaning of the sump is unnecessary. If, however, on removal of the filter element this appears to have become clogged due to neglect, it is recommended that the sump and oil sump 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 American pints—4 litres) will be sufficient to bring the oil level up to the "high" mark on 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 before looking at the dipstick.

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 (See Lubrication and Maintenance Chart).

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

REAR AXLE

To Check Oil Level or to Drain and Refill

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

Draining 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 completely and refill with $1\frac{3}{4}$ pints (2.1 American pints, 1 litre) of the specified lubricant.

Rear Hubs

The rear hubs are lubricated from the axle and require no additional lubrication in service.

BRAKES

Girling hydraulic brakes are fitted, the front brakes being of the disc type and the rear brakes of the leading and trailing shoe drum type. In this system 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.

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

TO CHECK FLUID LEVEL IN MASTER CYLINDER SUPPLY TANK

The brake fluid is contained in a supply tank which is located in front of the scuttle (see Lubrication and Maintenance Chart at end of book).

Examine the fluid level periodically, and replenish if necessary to keep the supply tank to within $\frac{1}{2}$ " (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 ADJUSTMENT

Front

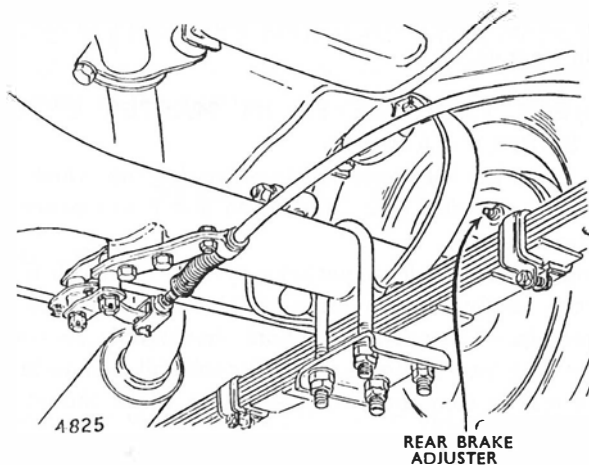
The front wheel brakes are so designed that no adjustment for lining wear is necessary or provided for, as the correct pad-to-disc clearance is maintained automatically when the foot brake is operated.

Rear

Adjust the brakes when the brake drums are cold.

Place chocks under the front wheels, release the handbrake and raise the rear of the car.

Turn the square-headed adjuster situated at the rear of the back plate in a clockwise direction until solid resistance is felt. Slacken back the adjuster until the brake drum rotates freely (usually two clicks). A slight drag may be felt from the trailing shoe but this should not be sufficient to prevent the wheel from turning freely. Spin the wheel and apply the brakes hard to centralise the shoes in the drum; re-check adjustment. Repeat for the other rear wheel.



Handbrake

Adjustment of the rear brakes will automatically adjust the handbrake. If, however, it is found that, with the rear brakes in correct adjustment, excessive handbrake free travel is still obtained, adjust the handbrake cable as follows:—

Jack up both rear wheels and lock shoes by means of the adjusters. With the handbrake off, adjust the cable length so that the slack is taken out of the linkage. Release adjusters until it is possible to turn the wheels. When the handbrake is released no tension should exist in the cable.

BLEEDING THE HYDRAULIC SYSTEM

“Bleeding” (expelling air from) the hydraulic system is not a routine maintenance operation, and should only be necessary when a portion of the hydraulic system has been disconnected, or if the level of the brake fluid has been allowed to fall so low that air has entered the master cylinder. Proceed as follows:—

With the hydraulic connections secure and the supply tank topped up with fluid, remove the rubber cap from the left-hand rear wheel cylinder bleed nipple and fit a bleed tube over the nipple, immersing the free end of the tube in a clean jar containing a little brake fluid.

Unscrew the bleed nipple about three-quarters of a turn and then operate the brake pedal with slow, full strokes until the fluid entering the jar is completely free of air bubbles. Then during a down-stroke of the brake pedal, tighten the bleed screw, remove bleed tube and replace the bleed nipple dust cap. Under no circumstances must excessive force be used when tightening the bleed screw.

This process must now be repeated for the bleed screw at each of the three remaining wheels, finishing at the wheel nearest the master cylinder. Always keep a careful check on the supply tank during bleeding since it is most important that a full level is maintained. Should air reach the master cylinder from the supply tank the whole of the bleeding operation must be repeated.

After bleeding, top up the supply tank to its correct level of $\frac{1}{2}$ " (12 mm.) below the filler neck.

Never use fluid that has been bled from a brake system for topping up the supply tank, since this brake fluid may be to some extent aerated. Cleanliness is essential when dealing with any part of the hydraulic system, and especially so where the brake fluid is concerned. Dirty fluid must never be added to the system.

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, and also at 3,000 mile (4,800 k.m.) intervals. If tightening of unions should be necessary, it is important to use spanners of short length, say 4 or 5 inches (100 to 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 THE DEALER.

TYRES

The standard equipment consists of tyres and tubes on pressed steel or wire wheels. Maintain the correct inflation by checking pressures at least weekly and adjusting when necessary. It is important that this should be done when the 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 by diffusion, even though there is no leakage from a puncture or faulty valve.

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

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

To obtain the best mileage from your tyres it is advisable to interchange the tyres and wheels at regular intervals. Every 3,000 miles (4,800 k.m.) 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.

It should be noted that where wire wheels are fitted, the offside hub should never be fitted to the nearside or vice versa. The offside hubs are marked RHS and the nearside LHS.

Do not allow flint or other road matter to remain embedded in the tread. These should be removed with a penknife or similar tool. If this is neglected the sharp objects may work through the cover and so puncture the inner tube (where fitted). Cuts and other damage affecting the rubber of the tread, except superficial injuries should have a vulcanised repair. By this means, any extension of the injury can be prevented. Damage affecting the tyre fabric needs attention at once and should always be entrusted to an expert tyre repairer. The use of gaiters or liners in damaged tyres should be permitted only as a temporary measure until repairs are possible.

Tyres are marked with coloured spots on the bead to indicate the lightest point, which should be positioned at the valve, or, when inner tubes are fitted, to coincide with the coloured spots on the tube.

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 Manufacturers of the tyres concerned.

For Dunlop Weathermaster Tyres, normal inflation pressures are suitable for sustained speeds up to 75 m.p.h. (120 kph). Speeds of up to 85 m.p.h. (136 kph) are permissible for brief periods only.

SHOCK ABSORBERS

The shock absorbers are sealed and normally require no attention in service. In overseas territories where indifferent road surfaces are encountered, the rear shock absorbers should be removed and topped up every 6,000 miles (9,600 km.). See Lubrication and Maintenance chart at the end of the book.

CLUTCH

Master Cylinder Supply Tank

The hydraulic fluid is contained in a supply tank, located on the front of the scuttle. (See Lubrication and Maintenance Chart at the end of the book).

Examine the fluid level periodically, and replenish if necessary to keep the supply tank to within $\frac{1}{2}$ " (12 mm.) of the top. Do not fill completely. The addition of fluid should be necessary only 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 and repacked with Shell Retinax 'A'.

When reassembling the hub it is essential that the taper-roller bearings are adjusted to the correct running clearance, which is .001" to .004" (.02 to .1 mm.). This clearance is the actual end-float of the hub bearings, not side or radial clearance.

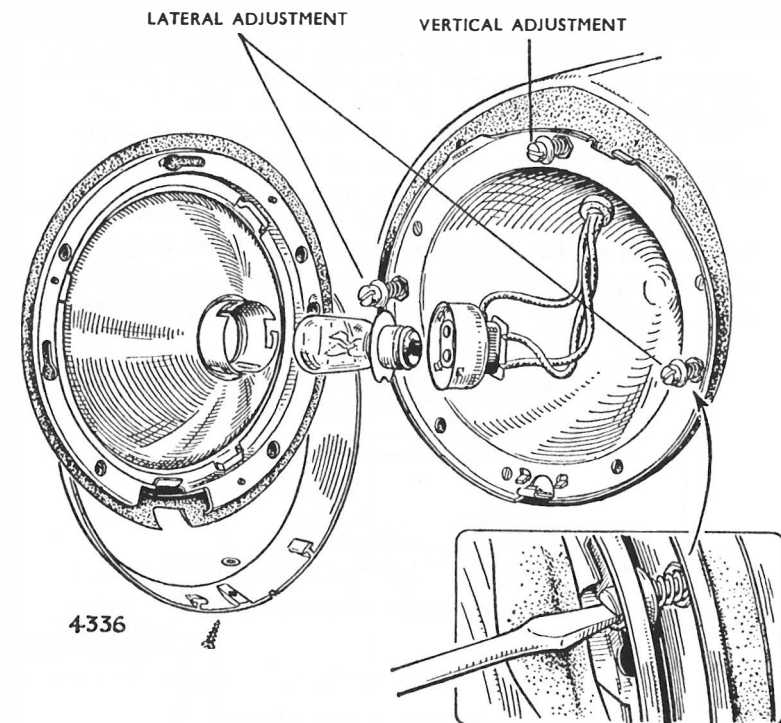
Do not grease more frequently than recommended. Do not overfill. See summary on Lubrication Chart.

LAMPS

HEADLAMPS

To Remove the Lamp Rim

Remove the screw at the base of the lamp rim. The rim can then be lifted off, leaving the glass and reflector, which are permanently sealed together as a unit, still in position. Reverse procedure to reassemble. (See illustration).



To Remove Glass and Reflector Assembly

Remove lamp rim as above. Grasp glass and reflector assembly with both hands, press rearwards and turn slightly anti-clockwise, which will release the three "key-hole" apertures in its rear edge from the three spring-loaded screws. Do not turn or remove these screws, as this will upset the alignment of the lamp. Reverse procedure to reassemble.

To Renew Bulbs. (See "Data" for specified lamp bulbs).

Remove the lamp rim and reflector assembly.

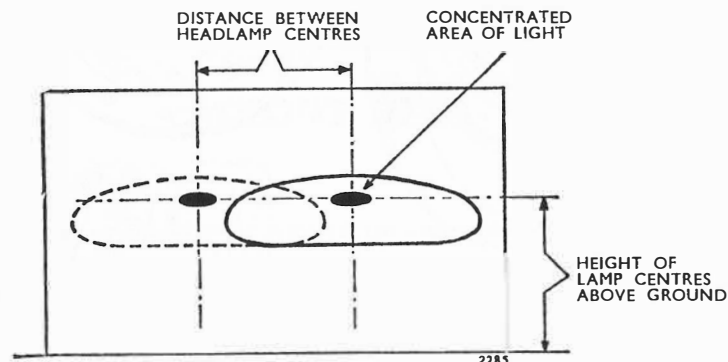
Press the adaptor inwards and turn slightly anti-clockwise and withdraw. (L.H.D. cars: pull the adaptor off the bulb and release the spring clip). The bulb may now be removed. It will be noted that the replacement bulb can be inserted in one position only, thus ensuring that the focus and dip deflection are correct.

Reassembly is a reversal of the above.

Do not attempt to remove the glass from the reflector assembly as this is a sealed unit, the bulbs being removable only from the rear of the reflector.

To Adjust Alignment

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



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.

If a lamp appears to be out of adjustment, proceed as follows:—

Remove lamp rim.

Switch on headlamps.

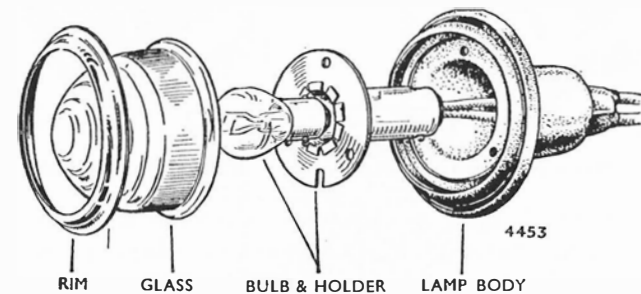
See that headlamps are not dipped.

The reflector can be aligned to the required position by adjusting the three spring-loaded screws as indicated in the illustration. Covering one lamp while adjusting the other will facilitate this. The setting should then be cross-checked on the road.

On cars delivered in North America the lateral adjustment is effected by the screw at one side of the lamp and vertical adjustment by the screw at the bottom.

Side (Fender) Lamps—To Renew Bulbs

The rim and glass are retained by shaped lips formed in the rubber surround. First remove the rim by easing back the rubber lip and then remove the glass by the same method. The lips may be carefully eased back by means of a screwdriver.



The bulb can then be removed; it will be noted that the bayonet pins are staggered, thus ensuring that the bright filament is connected to the flasher circuit.

Reassembly is a reversal of the above instructions.

Number Plate Lamp—To Renew Bulb

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

Stop/Tail and Rear Flasher Bulbs—To Renew

The bulbholders are accessible from inside the luggage boot, after removal of the trim pad, and are a push fit in the lamp bodies.

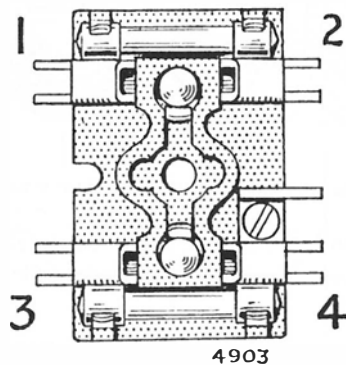
Instrument Panel Illumination and Warning Light Bulb—To Renew

The bulbholders are accessible from behind the facia panel, and are a push fit in the instrument bodies.

FUSES

Two fuses with spares are carried in the fuse unit which is situated on the bulkhead (see illustration). The fuse which bridges terminal plugs A1—A2 protects auxiliary circuits independent of the ignition switch, while the fuse bridging A3—A4 protects auxiliary circuits operative only when the ignition is switched on.

Two spares are carried in the fuse holder. *Before replacing a blown fuse the defect in the circuit should be rectified.*



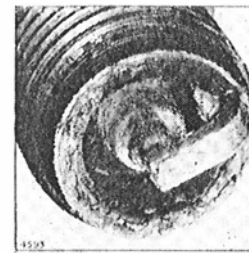
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SPARKING PLUGS

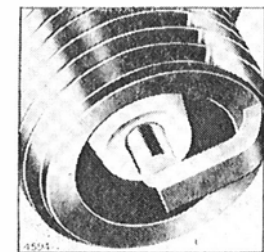
There is little to be gained by experimenting with different plugs, as the make and type specified (and the alternative type recommended for competitions, etc.), are best suited to the requirements of the engine.

The correct gap setting of sparking plugs (*i.e.* the clearance between the firing point of the centre electrode and earth electrode) is essential to good engine performance. The recommended gap setting is $\cdot 025''$ ($\cdot 65$ mm.). Do not guess this distance, but use the feeler gauge provided in the tool kit. When setting, bend the side electrode only. Never bend the centre electrode as this may split the insulator.

The plug threads should be wire-brushed, and the copper washer renewed if worn or badly flattened. Grease or oil should not be used on the threads and copper washers as they can act as an insulator and may cause the H.T. current to jump to earth on the outside of the plug.



Discard old, dirty plugs.



New, clean plugs restore performance.

To save fuel and ensure easy starting, plugs should be cleaned and tested at regular intervals, and it is suggested that this service be performed on a special "Air Blast" service unit. Plugs which are allowed to remain oily and dirty with corroded electrodes will impair the efficient running of the engine and waste fuel.

To obtain maximum performance from the engine, plugs should be changed in complete sets when a comparator test gives poor readings or when the electrodes show obvious signs of burning away.

DISTRIBUTOR

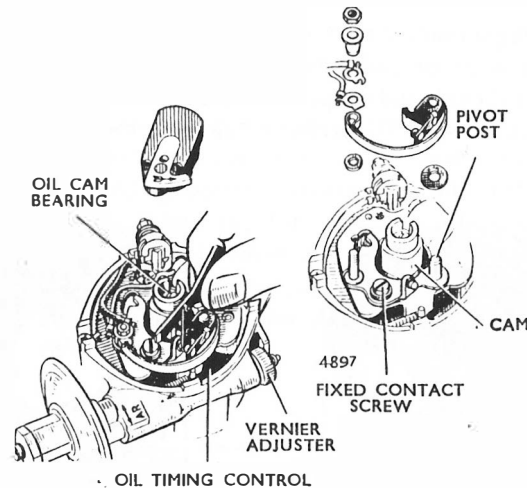
LUBRICATION

Timing Control, Cam Bearing and Contact Breaker Pivot

Add a few drops of engine oil through the aperture at the edge of the contact breaker base plate to lubricate the centrifugal timing control. Lightly smear the cam with Shell Retinax "A". Lift off the rotor arm and apply to the spindle a few drops of engine oil to lubricate the cam bearing. It is not necessary to remove the screw exposed since it affords a clearance to permit the passage of oil.

Refit the rotor arm, carefully locating its moulded projection in the keyway in the spindle and pushing it on as far as it will go.

Apply a single drop of oil to the moving contact pivot post.



CLEANING AND ADJUSTING

Clean the moulded distributor cover, inside and out, with a soft, dry cloth, paying particular attention to the areas between the metal electrodes. Ensure that the carbon brush moves freely in its holder.

Examine the contact breaker. The contacts must be quite free from grease or oil. If they are burned or blackened, clean them with very fine carborundum stone or emery cloth, then wipe with a petrol-moistened cloth. Cleaning is facilitated by removing

the contact breaker lever. To do this, remove the nut, insulating piece and connections from the post to which the end of the contact breaker spring is anchored. The contact breaker lever may now be removed from its pivot.

Before refitting the contact breaker lightly smear the pivot with oil.

After cleaning, check the contact breaker setting. Turn the engine by hand until the contacts show the maximum opening. This should measure .015" (.38 mm.). If the measurement is incorrect, keep the engine in a position giving maximum opening, and slacken screw securing the fixed contact plate. A slotted adjuster is fitted in this plate by means of which the contacts can be opened or closed, as required. Tighten the screw. Re-check the setting for other positions of the engine giving maximum contact opening.

IGNITION TIMING ADJUSTMENT

Small adjustments of the ignition timing are sometimes necessary before the best performance can be obtained from a particular fuel. For this reason a vernier adjustment is incorporated in the distributor. This consists of a knurled wheel which is turned to advance or retard the distributor, with arrow signs "A" and "R" cast on to the housing to indicate which way to turn the wheel to advance or retard. A graduated scale is provided so that fine adjustments can be made.

An alteration of one vernier scale division is equal to 4° of crankshaft rotation and one turn of the knurled adjustment to 3° of similar rotation.

Only half a vernier division alteration will sometimes noticeably alter the running of the engine. If the engine seems "harsh" or rough, it should be retarded, and if "sluggish" it may need advancing, but only small alterations from the correct static timing are permissible, and then only when it is certain that the rest of the ignition system is working correctly.

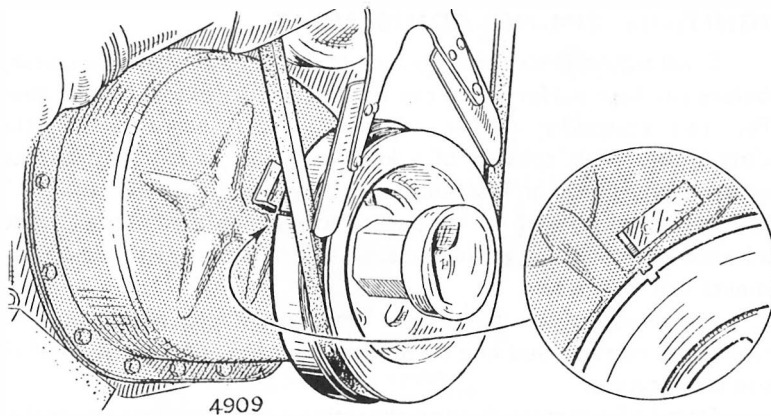
IGNITION TIMING

The firing order of the engine is 1 - 3 - 4 - 2. Before checking or re-timing the ignition it is necessary to ensure that the distributor contact breaker gap is correctly set.

The correct timing is given under "General Data" at the beginning of this book. This figure is known as the static ignition setting and is obtained by timing the ignition to fire at T.D.C. and advancing to the required setting by means of the vernier control.

The following procedure should be carried out when it is necessary to reset the ignition timing.

1. Turn the engine until the line on the crankshaft damper rim comes exactly opposite the pointer fixed to the timing case (see illustration). This gives a crankshaft position of Nos. 1 and 4 T.D.C. and for the purposes of checking the ignition timing it does not matter which of these cylinders is on the firing stroke, always assuming that the distributor is not being changed.



T.D.C. marks on crankshaft damper and timing cover.

2. Set the distributor vernier control so that only one division shows on the scale. Remove the distributor cap and connect a 12 v. bulb between the outside L.T. terminal and a good earth. With the ignition switched on the bulb will light when the contact breaker points open.
3. Slacken the distributor clamp screw and turn the distributor anti-clockwise as far as possible. If necessary, disconnect the vacuum advance pipe to avoid straining it.

4. Switch on the ignition and, applying light finger pressure on the rotor in a clockwise direction, turn the distributor body clockwise until the bulb just lights. Tighten the distributor clamp screw.
5. Re-check the ignition timing by turning the engine one complete revolution. The bulb should just light as the timing mark on the crankshaft damper rim comes opposite the pointer on the timing case. If the timing is now correct, switch off ignition, remove bulb and replace distributor cap.
6. The ignition timing is now set to T.D.C. and the vernier adjustment must be used to advance the ignition to the setting given under "General Data". One vernier division is equal to 4°, and one turn of the knurled adjustment is equal to 3° of the given setting.

GENERATOR

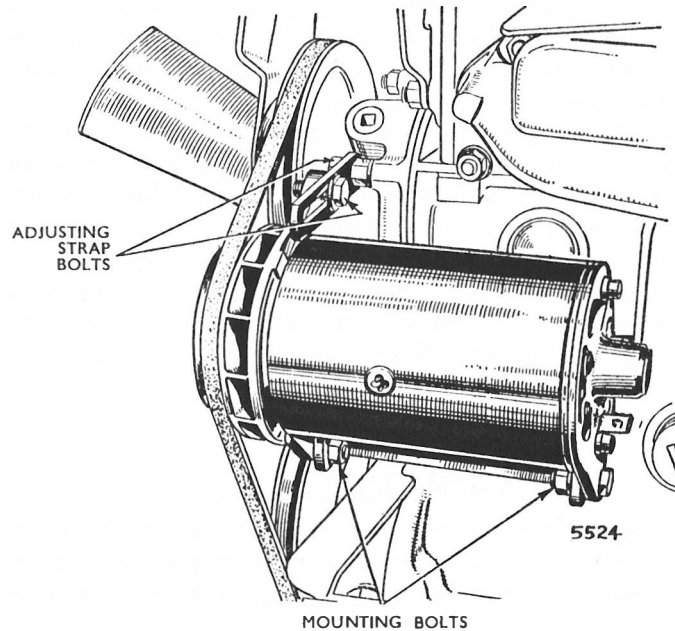
The output is controlled by the regulator and is dependent on the state of charge of the battery and the loading of the electrical equipment in use. When the battery is in a low state of charge, the generator gives a high output, whereas if the battery is fully charged the generator gives only sufficient output to keep the battery in good condition without any possibility of overcharging. In addition, an increase in output is given to balance the current taken by lamps and other accessories when in use. Further, a high boosting charge is given for a few minutes immediately after starting up, thus quickly restoring to the battery the energy taken from it by the starter motor.

ROUTINE MAINTENANCE

To Adjust Belt Tension

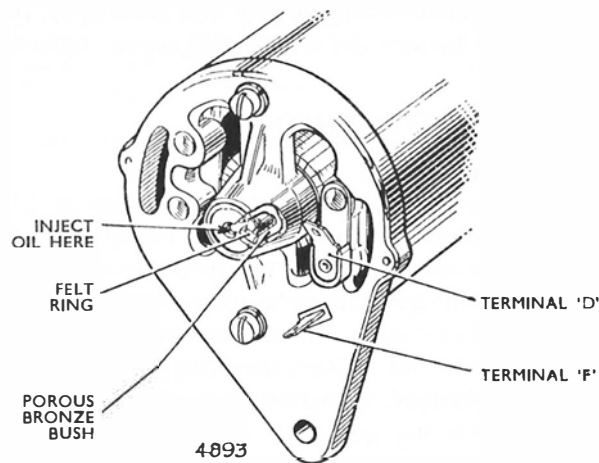
The belt is correctly tensioned when a total of $\frac{3}{8}$ " (16 mm.) movement can be obtained on the longest run of the belt.

To adjust the tension, slacken the mounting bolts at the bottom front and rear of the generator, the strap pivot bolt, and the screw through the slot in the strap. (See illustration overleaf). Move the generator about its two bottom mounting bolts until the correct belt tension is obtained, then re-tighten all bolts, run engine and re-check belt tension.



Lubrication

Lubrication is by means of a hole in the end cover through which engine oil is injected. (See illustration below). The oil is absorbed by a felt washer which acts as a reservoir.



Inspection of Commutator and Brushgear—every 24,000 miles (39200 km.)

Remove the generator from the engine. Inspect the commutator through the ventilator, which is the larger of the two apertures in the end cover.

The commutator should be clean, free from oil and dirt, and have a polished appearance. If it is dirty it should be cleaned through the smaller aperture in the end cover using a soft cloth. This operation will be facilitated if the cloth is wrapped round a piece of hard wood and pressed on the commutator while the armature is revolved by hand. In the event of the commutator being very dirty, the cloth should be moistened with petrol.

Examination of the brush gear is carried out by removing the two through bolts, the commutator end-bracket and the yoke.

Partly lift both brushes, and trap them in this raised position with the tension springs.

Loosely assemble the end-cover to the armature and release the brushes, so that they resume their correct position on the commutator.

Check that the brushes move freely in their holders, by holding back the tension springs and pulling gently on the flexible connectors. If a brush is inclined to stick, remove it from its holder and clean its sides with a petrol-moistened cloth.

In order to retain the "bedding", brushes must always be replaced in their original position.

Brushes which have worn so that they will not "bed" properly on the commutator or have worn to $\frac{1}{32}$ " (8.5 mm.) must be renewed.

STARTER MOTOR

The starter is controlled by a solenoid switch mounted on the front of the scuttle, operated by the ignition switch. In emergency or for testing purposes the solenoid can be operated by hand by depressing the rubber cap covering the plunger.

ROUTINE MAINTENANCE

Apart from periodic checking of the fixing bolts for tightness, the only maintenance normally required by the motor is an occasional checking of brushgear and cleaning of the commutator. This should be carried out every 24,000 miles (39200 km.).

Remove the metal band cover. Check that the brushes move freely in their holders by holding back the brush springs and pulling gently on the flexible connectors. If a brush is inclined to stick, remove it from its holder and clean its sides with a petrol moistened cloth. Be careful to replace brushes in their original positions in order to retain the "bedding". Brushes which have worn to $\frac{5}{16}$ " (8 mm.) must be renewed.

The commutator should be clean, free from oil or dirt and should have a polished appearance. If it is dirty, clean it by pressing a fine dry cloth against it while the starter is turned by hand by means of a spanner applied to the squared extension of the shaft. Access to the squared shaft is gained by removing the thimble-shaped metal cover. If the commutator is very dirty, moisten the cloth with petrol.

In the event of the pinion becoming jammed in mesh with the flywheel, it can usually be freed by turning the starter motor armature by means of a spanner applied to the shaft extension at the commutator end.

If any difficulty is experienced with the starter motor not meshing correctly with the flywheel, it may be that the drive requires cleaning. The pinion should move freely on the screwed sleeve; if there is any dirt or other foreign matter on the sleeve it must be washed off with paraffin. After washing the drive, lubricate very lightly with thin machine oil.

BATTERY

Battery maintenance consists mainly of regular inspection and servicing. The battery is accessible after removal of the cover plate in the floor behind the right-hand seat.

Keep the battery and its surroundings clean and dry.

Remove the vent plugs and see that the vent holes are clear.

Check the electrolyte level and top up when necessary. The correct level is just above 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 this topping-up process, as it ensures that the correct electrolyte level is automatically maintained and also prevents distilled water from 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.

To refit the connectors to the battery, first smear the inside of the tapered hole of the connector with silicone grease 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 silicone grease. If the connectors are fitted dry, and driven home with too much force, they may be difficult to remove at a later date.

Examine the earth connection to ensure that it is clean and free from corrosion.

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 while 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 has 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 Humber 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.

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

Body Protection

The underside of the body and chassis frame are treated with a reliable brand of preservative during manufacture.

In many districts, 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 that each Spring the underside of the body structure is thoroughly washed and all deposits of mud etc., removed. If the underbody preservative has any damaged areas, they 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 parts can be preserved if they are 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 discolouration.

Hood (Top) Maintenance

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

Never leave the top folded 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 neutral 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. 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.*

Carpets

To remove dust, the use of a vacuum cleaner is recommended. If not available, brush thoroughly.

To remove grease or oil stains, rub lightly with a cloth damped with a small quantity of Benzine, or a similar medium.

Locks, Hinges, Catches 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 ignition, door and baggage boot locks, they should be lubricated periodically with light machine oil. A few drops of oil 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 oil.

Windscreen—Cleaning

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

Upholstery

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 soft soap should be used, but caustic soaps, petrol (gasoline) or spirit should NOT be used as these have a very harmful effect.

FROST PRECAUTIONS

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

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

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

If the radiator is not protected with anti-freeze when extreme cold is anticipated, the radiator and cylinder block should be drained (2 taps: 1 radiator, 1 cylinder block. See Lubrication and Maintenance Chart for locations).

If there is no anti-freeze in the radiator 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 working temperature.

NOTE: It is impossible to drain the heater when fitted; anti-freeze is therefore essential under these conditions.

SCHEDULE OF FREE SERVICE

AFTER COMPLETING FIRST 500 MILES (800 KM.)

In overseas territories free Service Inspections are carried out at different mileages in accordance with locally accepted practice.

RADIATOR	...	Fill with water to correct level. Do not overfill.
ENGINE	.....	Drain sump (oil pan), and oil filter, when hot, and refill with new engine oil. Check tightness of cylinder head nuts with engine cold. (45 lb./ft.). Check valve clearances. Check ignition and reset contact breaker gap. Adjust carburettor slow running. Check tension of generator and fan belt, and adjusting nuts and bolts for tightness.
CLUTCH	...	Check withdrawal mechanism. Check level of fluid in master cylinder. Check master cylinder attachment bolts for tightness.

GEARBOX	...	Drain (when hot) and refill.
REAR AXLE	...	Drain (when hot) and refill.
FRONT SUSPENSION AND STEERING		Check wheel camber and track. Check and examine the following:— Wheel bearings for smoothness and end float. Steering arm nuts for tightness. Split pins securing front hub nuts. Swivel pin trunnion nut for tightness. Swivel bearing nut to axle carrier for tightness. Swivel bearing nut to upper link for tightness. Steering box fixing bolts. Bolts securing steering idler lever bracket to frame. Steering drop arm (swing lever) retaining nut and split pin. Steering ball joint split pins. Steering cross tube locknuts for tightness. Upper and lower eye bolt nuts for tightness. Bolts securing upper link fulcrum ball joint to frame for tightness. "U" bolts securing lower link fulcrum pins to cross member for tightness. Cross member to frame mounting bolts for tightness. Anti-sway torsion bar fixing for tightness.
CHASSIS DETAILS		Check rear spring "U" bolts for tightness. Check prop-shaft coupling bolts for tightness.
SHOCK ABSORBERS		Check fixing bolts for tightness.
WHEELS AND TYRES		Check all wheel nuts for tightness. Check tyre pressures. Examine tyres for correct fitting and condition.
BRAKES	... ..	Check and examine the following:— Fluid level in master cylinder. Master cylinder attachment bolts. Rear brake backing plate securing bolts for tightness. Front brake caliper securing bolts for tightness. Brake hoses for correct run, i.e., not twisted. Split pin securing brake pedal operating rod. Check hydraulic connections for leaks at the following points:— (a) Stop Light switch. (b) Pipe unions. (c) Bleeder screws. Test brakes and adjust if necessary.
ELECTRICAL EQUIPMENT		Examine generator, starter, lamps and switches, and effect adjustments where necessary. Examine battery and top-up if necessary—do not transfer electrolyte from one cell to another. Test instruments.
BODY	... ..	Check body and carry out minor adjustments as necessary. Lubricate door hinges, striking plates and door locks.
GENERAL	... ..	Make a general external inspection of entire vehicle without dismantling. Oil and grease throughout.

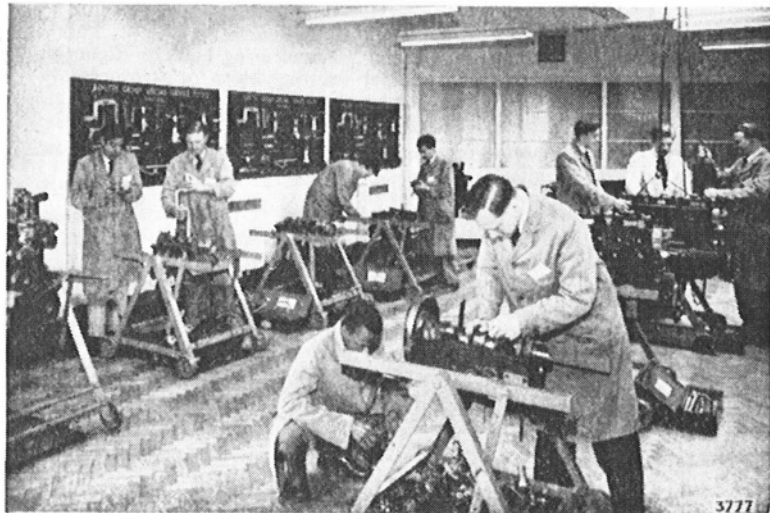
All materials used in carrying out the above to be charged to the customer.

STORAGE

If you wish to store your car for a period, it is desirable to take certain precautions, otherwise damage may result. Your Sunbeam Dealer will be pleased to give you advice and assistance according to the length of time the car will be out of use.

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 Company's products. Dealers have taken full advantage of this Service School and have, therefore, fully trained men on the spot.



The Technical School. An engine class in progress.

THE ROOTES SERVICE SIGN

Rootes Dealers display the Rootes Service sign.

Where you see this sign you are assured of efficient service based on the latest factory recommended methods.



Look for the Rootes Service Sign

GENUINE PARTS

Every owner should realise the importance of fitting only genuine Sunbeam parts.

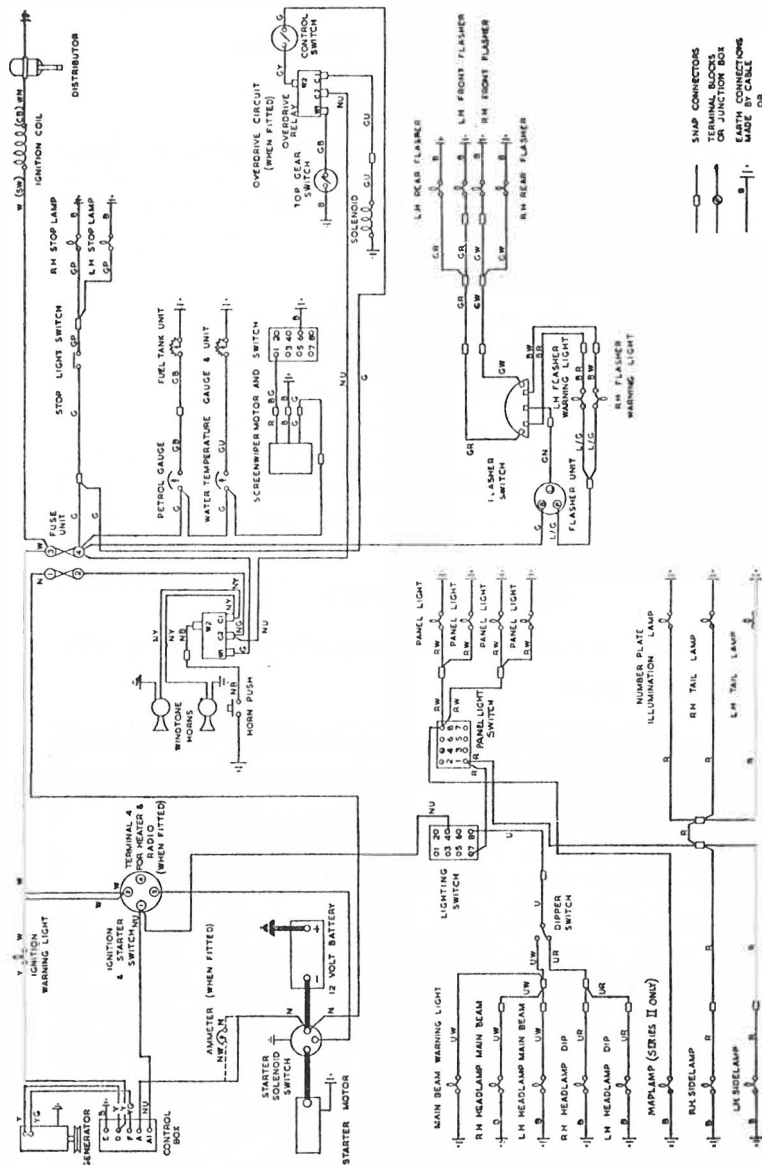
Genuine replacement parts are manufactured to the same specification and are of the same high quality as those originally fitted to the car, and they are guaranteed.

Insist on genuine parts—Sunbeam Dealers stock them.

TOURING ABROAD

For owners who are planning a motor tour of the Continent facilities exist for guidance in the preparation of the car and to assist should any difficulty be experienced while abroad. Full details can be obtained from any Rootes Main Dealer in the United Kingdom, or from the Sales Promotion Section of Rootes Motors (Parts) Limited, Coventry Road, Birmingham.

WIRING DIAGRAM



ROOTES CONCESSIONAIRE COMPANIES AND REGIONAL OFFICES

AUSTRALIA: Rootes (Australia) Ltd., P.O. Box 39, Port Melbourne, S.C.8.	Tel. No. MJY.441	EUROPE: Rootes (Belgique) S.A., Shell Building, 126, Rue de Linthout, BRUSSELS, 4, Belgium.	Tel. No. 33.94.58
UNITED STATES OF AMERICA: Rootes Motors Inc., 42-32 Twenty First Street, Long Island City, NEW YORK.	Stillwell 6-2305	Rootes Motors S.A., 6, Rond Point des Champs Elysees, PARIS, France.	04.37 & 04.38
Rootes Motors Inc., 9830, West Pico Boulevard, Los Angeles, 35, CALIFORNIA.	Crestview 6-4161	Rootes Autos S.A., 10, Rue du Commerce, GENEVA, Switzerland.	022.25.32.30
CENTRAL AMERICA: Rootes Motors (Panama) Inc., Estafeta No. 1, Apartado 3295, PANAMA, R.P.	3-6258/9	Rootes Italia, S.p.A., Torre Velasca, Via Velasca 5, MILAN, Italy	80.33.64
SOUTH AMERICA: Rootes Argentina, S.A., Casilla Correo 3478, BUENOS AIRES,	740 (OMBU) 0031/4	Rootes Autos (Deutschland) GmbH, Alleestrasse 33, DUSSELDORF, Germany.	81641/2
BRAZIL: Rootes Motors (Brazil) S.A., Ave. Rio Branco 39, (Caixa Postal 2647), RIO DE JANEIRO.	43-0012	Rootes Motor A.B. Osthammarsgatan 64-66, STOCKHOLM, Sweden.	63 01 05
CARIBBEAN: Rootes Motors (Caribbean) Ltd., P.O. Box 1479, NASSAU, Bahamas.	4174-5-6	EAST AFRICA Rootes (Kenya) Limited, P.O. Box 3020 NAIROBI, Kenya.	20761/2/3
MEXICO: Rootes Motors (Mexico) S.A., Ave. Insurgentes Norte, 514, MEXICO, 4, D.F. Mexico City	46-17-35 & 46-24-74	MID. AFRICA: Rootes (C.A.) Pvt. Ltd., P.O. Box 8382, Causeway, SALISBURY, Southern Rhodesia.	27726/7 & 23791
VENEZUELA: Motores e Industrias, Venezolanas S.A., Apartado 1098, MARACAIBO.	6024	UNION OF SOUTH AFRICA Rootes (Pty) Ltd., P.O. Box 4621, CAPE TOWN.	41-1825-7
CANADA: Rootes Motors (Canada) Ltd., P.O. Box 174, Station 'H', TORONTO, 13.	Plymouth 5-5255	Rootes (Pty) Ltd., 11th Floor, London House, P.O. Box 9168, Loveday Street, JOHANNESBURG.	34-1701/2
Rootes Motors (Canada) Ltd., 25, St. James Street, Ville St. Pierre, MONTREAL, P.Q.	Hudson 1-0365	MIDDLE EAST: Rootes Limited, P.O. Box 2289, BEIRUT, Lebanon.	21564
Rootes Motors (Canada) Ltd., 3135, West Broadway, VANCOUVER, B.C.	Regent 3177/8	FAR EAST: Rootes (Asia) Limited, Room 1003/4, Union House, Chater Road, HONG KONG.	34209
		Yamato Motor Co. Ltd., 2691, Oi-Sakashita-Cho, Shinagawa-Ku, TOKYO, Japan.	76 0121 & 76 2121

Names and addresses of dealers in the different territories can be obtained from the above.

WORKSHOP MANUALS

For owners who require more detailed technical information than is contained in this handbook a comprehensive Workshop Manual is available from any Sunbeam dealer.

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

When placing your order, please quote Part No. 6600865.

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