

LOTUS

EUROPA TWIN CAM

OWNERS HANDBOOK

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FOREWORD

This handbook which covers various specifications based on one model, has been compiled to give you, the owner, the essential information which you require. It is not intended to give all the technical information required, and, should any work become necessary which is not detailed in it, owners are strongly recommended to contact a Lotus Dealer.

The normal periodic services required by your vehicle is at intervals of 5,000 miles (8,000 km.). These services are given in the Service Voucher Book which is included in your car on purchase. Owners are requested to adhere to the recommended service at each mileage interval, otherwise the Warranty could be invalidated.

Please read this handbook and keep it in the car.

In line with our policy of continuous improvement, we earnestly recommend that, in your own interest, you keep in regular contact with your Lotus Dealer, in order that he may acquaint you with any technical developments or improvements that have been made to subsequent vehicles, which would improve the performance of your own vehicle.

We reserve the right to change prices, specifications and equipment at any time without notice.

Safety

The Europa has been built with safety in mind and incorporates "in-built" safety features.

Some of these features are:— excellent visibility including a very low bonnet line. Powerful front disc brakes giving repeated high performances with light pedal action. Light, accurate, high-g geared steering requiring the minimum of movement to change direction. Excellent road-holding and very high cornering ability, capable of exceeding 0.8 g lateral side load, vivid acceleration ensuring rapid overtaking with the minimum of delay.

It is pointed out that as with all things, there is an ultimate. This particularly applies to road-holding, therefore, the car should be driven at all times within the capabilities of your own experience.

Vehicle identification

The unit number (which is also the chassis number), engine and transmission numbers will be found on a plate fixed to the wall of the front luggage compartment. The engine number is duplicated on the side of the cylinder block below the manifold, adjacent to the starter motor. The transmission number will be found on top of the rear cover, adjacent to the mounting block. **It is essential that these numbers are quoted in all correspondence.**

HOW THE WARRANTY WORKS

United Kingdom

Should you find it necessary to have repairs carried out under the terms of the Warranty, wherever possible return your car to the Lotus Dealer from whom it was purchased. If this is not practicable, any other Lotus Dealer can undertake Warranty Service if you will provide proof of the car's Warranty.

By observing the following points, you should not find any difficulty in having your claim handled.

1. Explain the nature of your complaint to the Lotus Dealer and make it clear that the car is within the Warranty, convenient evidence of this being provided on the inside back cover of the "Service Voucher Book"; at the same time it is possible and necessary to show that the recommended routine services have been carried out at the specified intervals—which is, in fact, a requirement of the Warranty.
2. The Warranty covers only defects of material or workmanship; normal maintenance adjustments or replacements are excluded. Examples of these adjustments are fuel system cleaning; adjustments to fan belt, distributor points, carburettor idling, wheel bearings, body locks and catches; steering or headlamp alignment; tightening of nuts, bolts or hose clips; wheel balancing; rectification of interior or exterior finish due to wear and exposure; replacement of bulbs, sparking plugs, filters, etc., during normal servicing; or replacement of broken glass. Please note that tyres, the battery, certain electrical equipment, instruments and the radio are proprietary

parts and are Warranted separately by the individual manufacturers; however, Lotus Dealers will assist in making a claim if required.

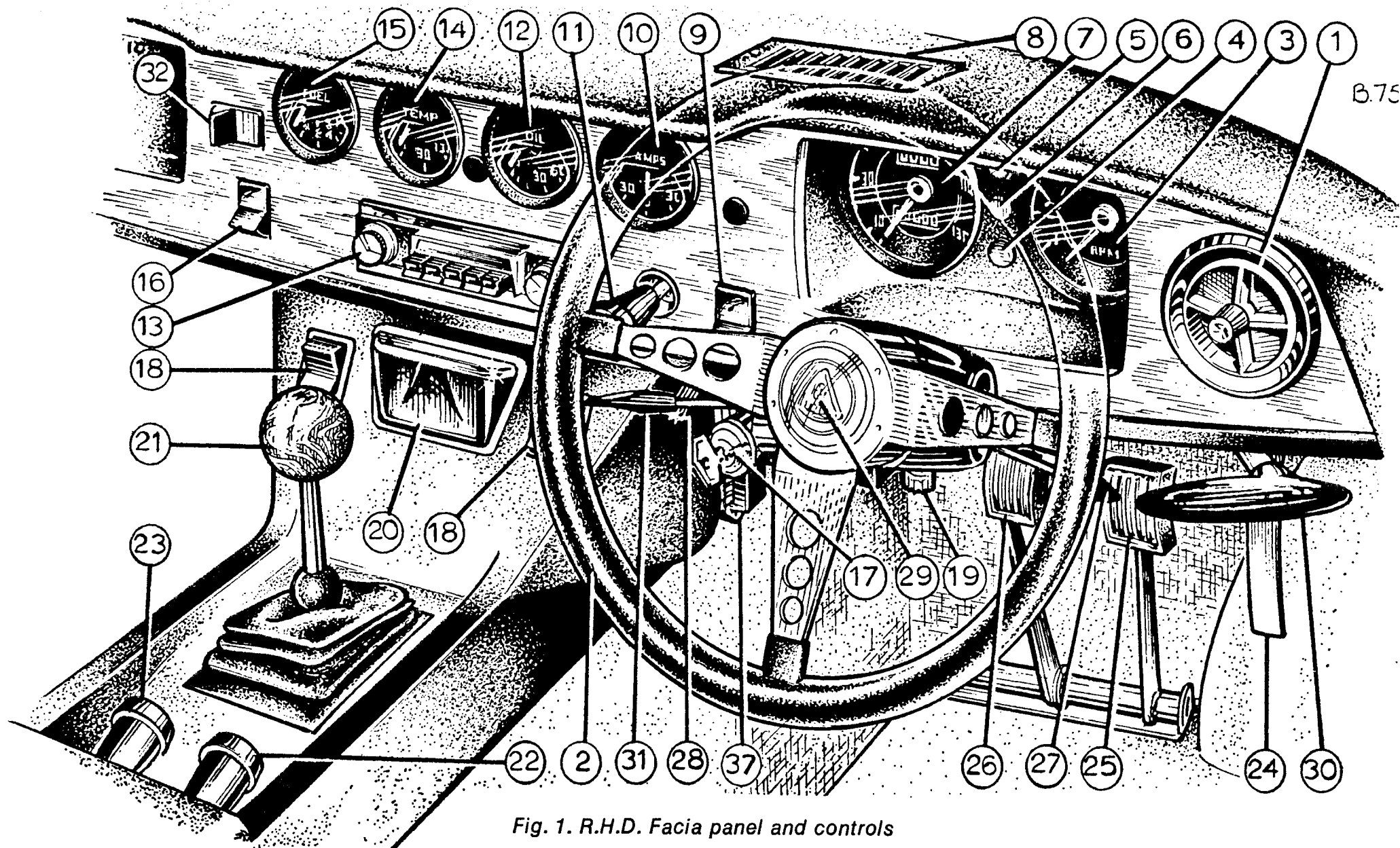
3. Lotus Dealers can settle most claims including labour charges without prior reference to the Factory. In some cases it is necessary for the Dealer to obtain authority from Lotus before proceeding with the repair. However, your Dealer will handle such matters for you with the minimum delay. Where the Dealer is not satisfied that the claim is due either to faulty material and/or workmanship, a charge may be made in respect of repairs. The claim will then be submitted to Lotus Cars Limited for adjudication and will be dealt with as quickly as possible; if accepted you will be reimbursed by the Dealer.

Export Territories

In order to give an expeditious service allied to local conditions, Lotus Cars Limited sell cars to Lotus Dealers/Importers who make and administer their own Warranty with their Dealer Network, which may well be in accordance with some, or all of the foregoing. Owners of cars in Export Territories are, therefore, recommended to familiarize themselves with the procedure as it applies when purchasing the car.

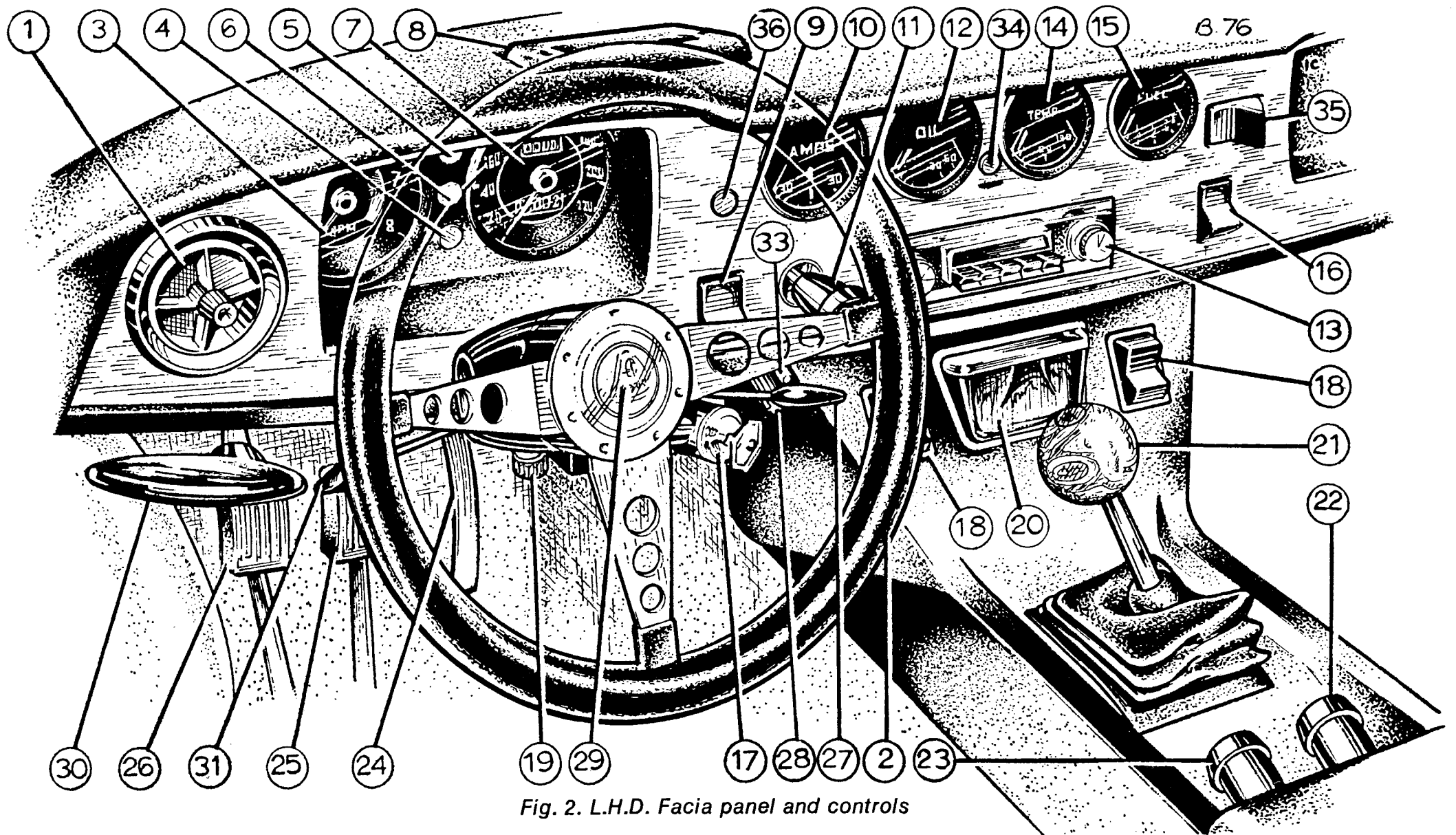
Where an owner removes his place of residence to another Territory, while the car is still within the Warranty, he should apply to the selling Dealer/Importer for the recommended warranty procedure.

N.B. This explanation is a quick guide only to Warranty and the owner is advised to consult the Warranty Document for full details.



KEY

1. Face level ventilator.
2. Steering wheel.
3. Tachometer.
4. Ignition warning lamp (red).
5. Direction indicator warning lamp (green).
6. Main beam warning lamp (blue).
7. Speedometer.
8. De-mist grille.
9. Side/headlamp switch.
10. Ammeter.
11. '2-speed' windscreen wiper/washer control.
12. Oil pressure gauge.
13. Radio.
14. Water temperature gauge.
15. Fuel gauge.
16. Heater fan switch. — Ventilateur air chaud
17. Ignition/starter switch.
18. Window lift switches.
19. Heater control flaps. — Tripp
20. Ashtray.
21. Gearshift lever.
22. Choke control. —
23. Heater control. —
24. Accelerator pedal.
25. Brake pedal.
26. Clutch pedal.
27. Direction indicator control.
28. Trip reset. —
29. Horn. —
30. Handbrake. —
31. Headlamp dip control. —
32. Panel switch.
33. Brake fail warning lamp test switch.
34. Brake fail warning lamp (red).
35. Hazard switch.
36. Hazard warning lamp (amber).
37. Fuses.



INTRODUCTION TO THE VEHICLE

This chapter outlines the various controls and instruments, explaining the function of each. It is hoped that both service engineer and owner will familiarize themselves with the vehicle's controls and instruments and their layout. The number references relate to the facia panels illustrated on pages 6 and 8, and the Key on page 7.

Combined ignition and starter switch and lock (17)

Turn the key to position II to switch on the ignition, and further to the right against spring pressure to III to operate the starter. When the engine starts, the key should be released, allowing it to spring back to II. If it is required to use the radio when the car is stationary, the key should be turned to position I. Turn to position O to remove the key. This locks the steering.

DO NOT PUSH OR TOW THE CAR WITHOUT THE KEY IN THE SWITCH.

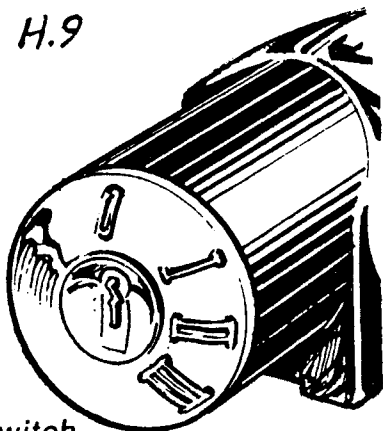


Fig. 3. Ignition switch

Ignition warning lamp (4)

The ignition warning lamp glows red when the ignition is switched on and will go out when the alternator is charging. It may glow when the engine is idling, but no harm will be done as long as the engine is running. The warning lamp must not be allowed to glow for more than a few moments with the engine stationary, otherwise the battery could discharge itself through the ignition coil.

Choke control (22)

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

Combined side, rear, tail and headlamp switch (9)

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

Headlamps dipswitch (31)

Main beam is obtained with the lever in the upper position; to select dipped beam move the control lever down. Lifting the lever towards the steering wheel flashes the headlamps main beams.

When the headlamps are on main beam a blue warning lamp (6) on the facia will illuminate.

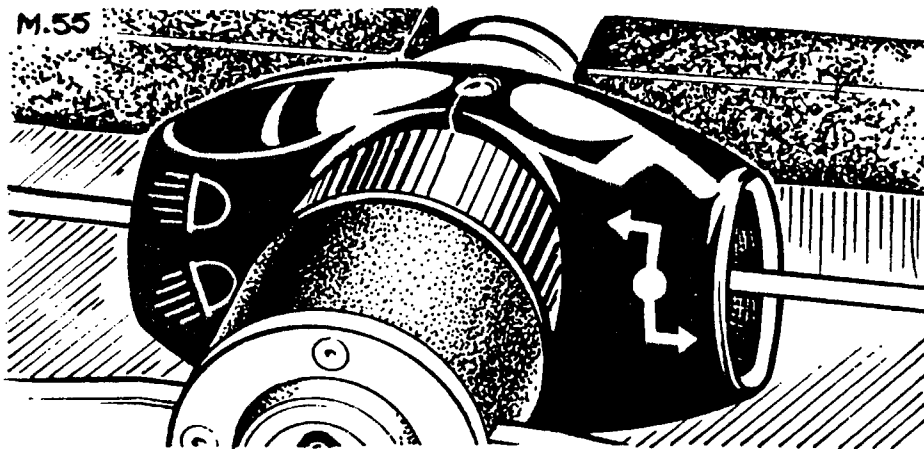


Fig. 4. Dipswitch & direction indicators

Direction indicators (27)

When turning to the left or to the right, move the control lever UP or DOWN as appropriate. A green warning lamp (5) on the facia will flash in unison with the lamps. Bulb failure on one side of the car will be indicated by the warning lamp either failing to flash, or to flash rapidly.

Horns (29)

The horns are operated by pressing the central button of the steering wheel.

Combined "2-speed" windscreen wiper/washer control (11)

To operate the windscreen wipers, rotate the wiper knob in a clockwise direction to the "ON"

position. If desired, the wiper speed can be increased by turning the knob further to the right.

If the blades become obstructed by, for example, ice or packed snow on the windscreen, the wipers should be switched "OFF" to prevent damage to the internal mechanism, the obstruction cleared, and the wipers then switched on again.

To use the screen washers, fully depress and release the control. The use of a proprietary additive to the washer bottle is recommended providing it contains nothing to harm the windscreen sealing rubber, windscreen wiper blades or body paintwork. DO NOT use radiator antifreeze, as this may damage the paintwork.

Interior lamp switch

The lamp is located between the seat headrests with the switch incorporated in its body.

The lamp will illuminate automatically when either door is opened through courtesy switches in the door pillars. The lamp can be switched on by hand when the doors are shut, but cannot be switched off if the doors are left open.

Oil pressure gauge (12)

Should normally register a pressure of 35/40 lbs. in.² (2.5/2.8 kg. cm.²) under normal running conditions.

The indicated pressure will fall to between 5/20 lbs. in.² (·35/1·4 kg. cm.²) when the engine is idling.

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

Water temperature gauge (14)

This instrument registers the engine coolant temperature and will give a reading of approximately 85° C. under normal running conditions.

It should be noted that although the boiling point of water is 100° C., with the pressurized system used of 7 lbs. in.² (·49 kg. cm.²) the boiling point of water is raised to 111·6° C. at sea level, so there is no cause for undue alarm should the temperature rise above the optimum 85° C.

In city traffic, it is advisable to "rev." the engine around 2,000–3,000 r.p.m. every few minutes, to enable the water pump to circulate the engine coolant.

A summer thermostat is available from your Lotus Dealer and is recommended if the car is used continually in city traffic.

Fuel gauge (15)

The fuel gauge is operative when the ignition is switched "ON" and indicates the approximate

amount of fuel in the twin 6¼ gallon fuel tanks. Total fuel capacity is 12½ Imperial gallons; 15 U.S. gallons; or 56 litres.

Ammeter (10)

The ammeter indicates the rate at which the alternator is charging the battery. Note that as the battery nears its fully charged condition the rate of charge will diminish.

Speedometer (7)

This instrument indicates the vehicle's speed and incorporates both a total distance recorder and a cancelling trip recorder.

The trip recorder is cancelled back to zero by pushing the milled knob (28) located beneath the speedometer head under the facia, in an upwards direction and turning clockwise. After resetting pull the knob down.

Tachometer (3)

Maximum safe continuous engine speed is 6,500 r.p.m., which is indicated by the red sector. This maximum speed of 6,500 r.p.m. cannot be exceeded as the distributor incorporates a "built-in" safety feature in the form of a "cut-out" type rotor arm. This type of rotor arm is fitted to prevent over-revving the engine as it is not governed in any

other way. Do not run the engine continually at the cut-out speed as this imposes high loads on the crankshaft connecting rods. Replacement of the "cut-out" rotor arm with a conventional one invalidates the Warranty.

Window lift switches (18)

The door windows are operated electrically by the rocker switches located in the centre of the facia panel below the radio aperture, left-hand switch for left-hand window, and right-hand switch for right-hand window. Press down and hold to lower the windows, pushing up and holding to raise the windows, releasing when window reaches its limit. Do NOT operate both switches together.

The switches are only live when the ignition key is in either position I, Auxilliary, or position II, Ignition on.

If difficulty is experienced in raising or lowering the windows in extreme cold conditions, this can be remedied by using a de-freezing fluid around the window seals. DO NOT use a radiator anti-freeze solution as this could have disastrous effects on the window seals and body paintwork.

WARNING: Do not leave small children unattended in car, as they could trap their fingers in windows.

Heater controls (19, 23)

Interior ventilation and heating can be controlled in the following manner and can operate satisfactorily with the windows closed thus reducing wind noise to a minimum. Air can be delivered, hot or cold and at any intermediate temperature, to the screen (8) or to the car interior (19) depending upon requirements.

Temperature is controlled by pulling out the knob (23) (from the cold position when fully in) to the hot in the fully extended position.

The demisters are fed with air at all times, but in order to dispel heavy misting, or to defrost the screen, close the flaps (19) on either side of the heater unit under the facia, by actuating the white toggles on these flaps with a sideways motion.

Heater fan switch (16)

Push the switch down to the "ON" position, and up to the "OFF".

When used in conjunction with the heater controls, the fan will deliver a greater quantity of air to either "screen" or "interior" of car at any temperature between "cold" and "hot".

For maximum windscreen defrosting in temperatures BELOW -10° C., run the engine at 2,500

r.p.m. for at least 5 minutes after starting and **BEFORE** driving away, releasing the choke as engine requirements dictate.

Face level ventilators (1)

This system is entirely independent from the normal screen and interior ventilation, although both systems can be used at the same time. If the heater fan is not operating then the system will operate by means of simple ram effect, delivering air at ambient temperature.

Direction of the vents is by pushing with the finger and thumb to the desired position. Open or close vents by turning the central knob.

Handbrake (30)

To apply, pull lever rearwards. To release, turn the handgrip anti-clockwise through 90° then push lever fully forwards to the OFF position.

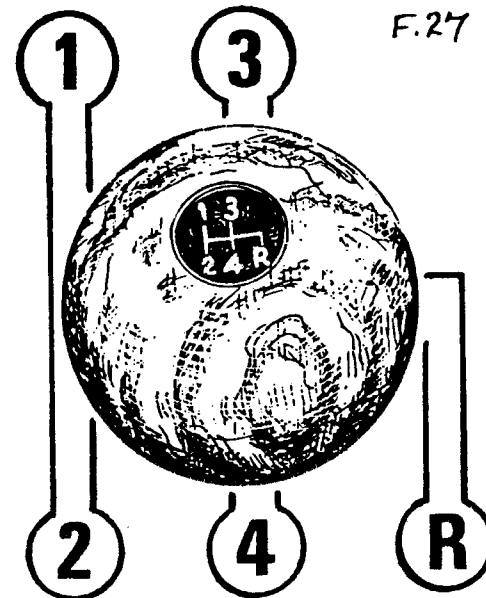
Air extraction system

This system is entirely automatic as the air pressure inside and outside the car will always tend to equalize where it can. The vents in the rear roof quarter panels permit the higher air pressure built up inside the car to discharge interior air to the

atmosphere, thus changing the air regularly inside the car.

Gearshift lever (21)—Type 336 transmission

First and second gears are selected by moving the lever to the left and engaged by moving it forwards for the first gear and backwards for second gear. Third and fourth gears are selected by moving the lever to the right and through neutral position until resistance is felt, then forwards for the third gear and backwards for fourth gear.

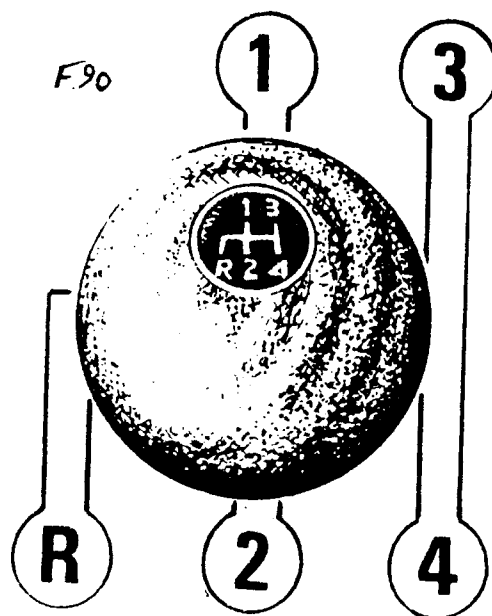


To engage reverse gear, move the lever to the right in the neutral position until resistance is felt, push the lever against the spring pressure and then move it rearwards until the stop is reached to engage gear.

Fig. 5. Gearshift positions

Gearshift lever (21)—Type 352 transmission

First and second gears are selected by moving the lever to the left and engaged by moving it forwards for the first gear and backwards for second gear. Third and fourth gears are selected by moving the lever to the right and through neutral position until resistance is felt, then forwards for the third gear and backwards for fourth gear.



To engage reverse gear, move the lever to the left in the neutral position until resistance is felt, push the lever against the spring pressure and then move it rearwards until the stop is reached to engage gear.

Fig. 6. Gearshift positions

Foot controls (24, 25, 26)

The foot controls are arranged in the orthodox position—namely the clutch pedal (26), brake pedal (25) and accelerator pedal (24), reading from left to right. Owners are reminded not to drive with their left foot resting on the clutch pedal. It is a bad practice and leads to rapid release bearing wear. It is also inadvisable to pump the accelerator pedal when the engine is not running as this causes flooding of the carburettor and subsequent difficulty in starting.

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

Ashtray (20)

The ashtray in the facia is opened by pulling the horizontal handle. The bin is removed for emptying by depressing the spring clip, visible when the ashtray is in the fully open position.

Rear view mirror

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

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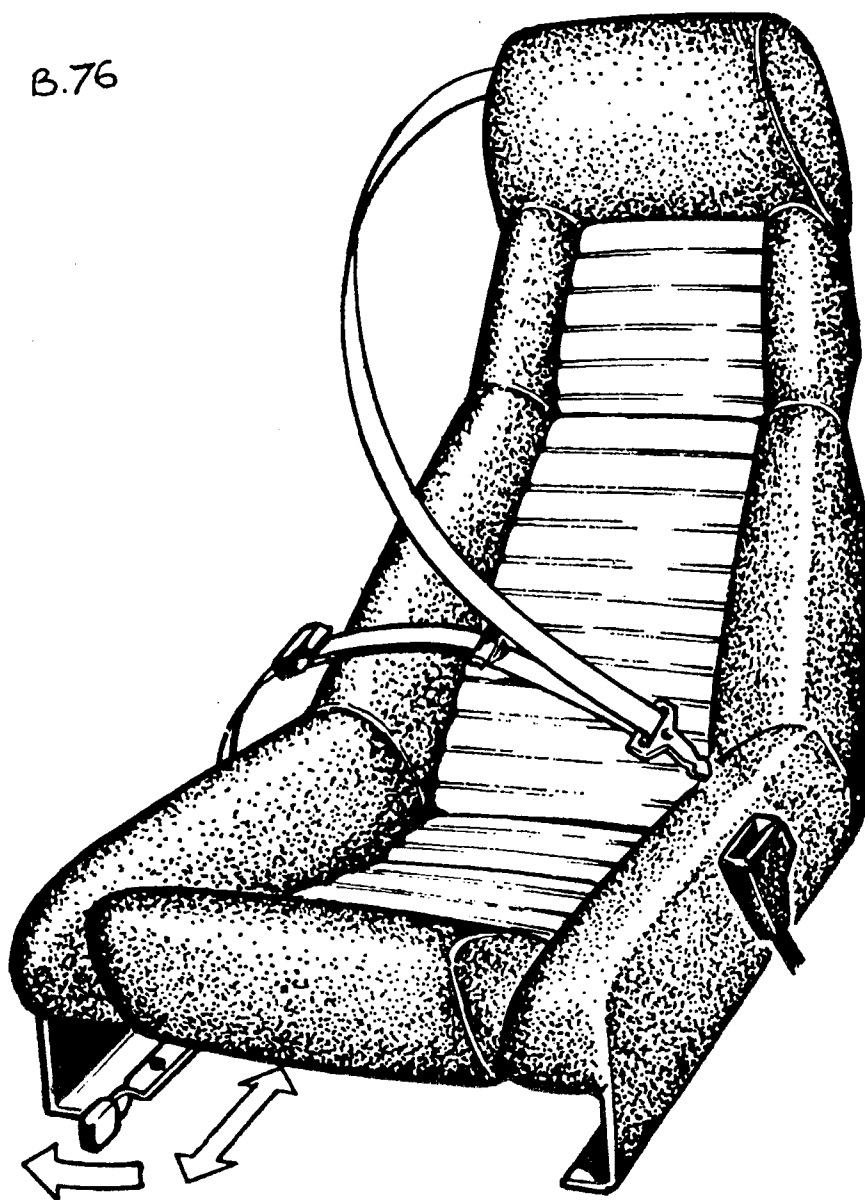


Fig. 7. Seat adjustment and safety belt fixing

Seats

The seats are adjustable in both a fore and aft direction by pushing the catch located at the front, sideways. The seat will slide forwards or rearwards easily. After adjustment ensure that the catch is re-engaged.

Safety belts—Static type B.88

Static safety belts, which only require one-handed fastening, are fitted as original equipment.

To fasten, take the key buckle in the outer hand, pass the belt across the body and push key buckle into the lock adjacent to the tunnel.

To tighten, pull the free strap towards the buckle.



Fig. 8. Safety belt lock

Safety belts—Reel type

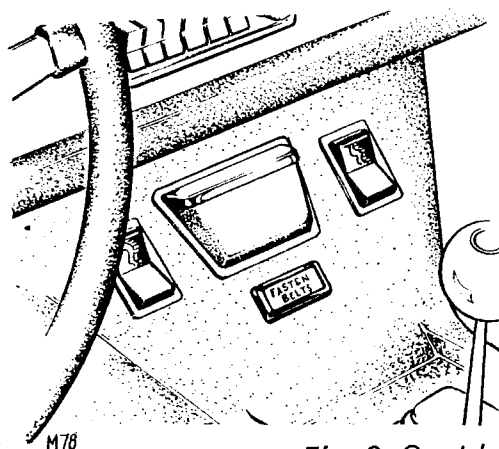
This type of safety belt, with both visible and audible warning systems, is fitted in certain markets.

The belts are fastened in the same way as the static type safety belts.

The seat belt warning system must provide an audible signal (buzzer) and a "fasten belts" warning lamp (situated on centre console below ashtray), which activate when all the following conditions exist:

- a. Ignition switch is "on" (position II and III).
- b. Driver's seat belt NOT fastened.
- c. Passenger seat occupied by at least an

average 6-year-old child and seat belt NOT fastened.



NOTE:

The warning signals must not activate when the hand-brake is "on".

Fig. 9. Seat belt warning lamp

To slacken, pull the adjusting bar away from the buckle.

To release, push the button at the rear of the lock.

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

Fluids which are harmful to nylon are those containing mineral acids, and **MUST NOT** be used.

Hazard warning (when fitted)

The hazard warning system is operated by the switch (35 of Fig. 2) on the right of the facia panel. All four direction indicators flash in unison, together with the warning lamp (34) in the centre of the facia panel.

Bulb failure in any of the direction indicator lamps will be shown by the warning lamp failing to flash, or flashing rapidly.

NOTE—DO NOT operate the direction indicator switch when the hazard warning system is in operation.

Locks and Keys

Three keys are supplied with the car; one operating the ignition, and front and rear luggage compartments while the other key (which is duplicated) operates the door locks.

Key operation is:

Ignition—See under “ignition/starter switch”.

Front luggage compartment—turn key a quarter turn anti-clockwise to lock.

Engine compartment—turn key a quarter turn anti-clockwise to lock.

Doors—Right-hand side—Turn key a half turn clockwise to lock.

—*Left-hand side*—Turn key a half turn anti-clockwise to lock.

Door lock remote control

To open the door, push the small flap “A” forwards to release the lock, then pull out the larger flap “B” which is pivoted at its rear edge.

Note that the locking flap “A” can only be operated when the door is shut (see Fig. 10).

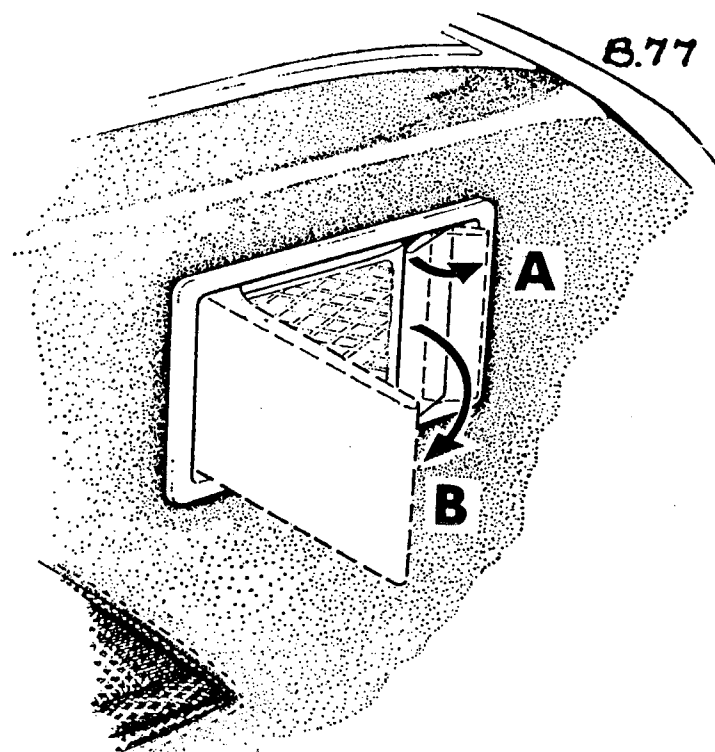


Fig. 10. Remote control operation

STARTING PROCEDURE

Fuel tanks

Use fuel of a minimum rating of 101 octane; Super grade, or 5 star.

Fill both tanks to obtain maximum fuel capacity. Filling one tank alone will give an initial false reading on the fuel gauge, until fuel level is balanced in both tanks.

DELLORTO CARBURETTORS

Starting engine when extremely cold

Pull out the choke control as far as possible. Operate the starter. The engine should start immediately and continue to run at a fast idle speed. If the engine fails to start do not operate the starter again until both 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 starts and shows signs of uneven running, push in the choke control far enough to obtain even running again, and then as soon as possible to within about $\frac{1}{2}$ in. (12 mm.) of the facia. Push in the choke control fully as soon as it can be done without stopping the engine.

Starting engine when cold

Fully depress the accelerator pedal and release.

Operate the starter, whereupon the engine should start immediately. If the engine fails to start pull out the choke control to the midway position, and operate the starter, returning the choke control fully as soon as this can be done without stopping the engine.

Starting engine when warm

Operate the starter without moving the accelerator pedal. Should the engine hesitate to start, depress the accelerator pedal slightly, releasing it when the engine starts.

The accelerator pedal **MUST NOT** be agitated as this will cause the accelerator pump to inject an excessive quantity of fuel into the inlet manifold. This fuel will quickly vaporise and produce an excessively rich mixture that will prevent the engine from starting.

Starting the engine when hot

If difficulty is experienced in starting a hot engine, the accelerator pedal should be fully depressed and the starter operated. Release the accelerator pedal immediately the engine starts.

ZENITH-STROMBERG CARBURETTERS

NOTE: Use super grade fuel only (5-star in United Kingdom; 101 octane plus).

Starting engine when cold

Pull out the choke control, fully if extremely cold, part-way if moderately cold. Operate the starter. After the engine starts push in the choke control progressively to maintain even running. Push in choke control fully as soon as possible.

Starting engine when warm

Operate the starter without using the choke. Should the engine hesitate to start, fully depress the accelerator pedal and operate the starter again. Release the accelerator pedal immediately the engine starts.

NOTE: Zenith-Stromberg carburetters are not equipped with accelerator pumps, hence pumping the accelerator pedal will not aid starting.

Pumping the pedal, particularly with the choke out, will in fact cancel the action of the choke.

RUNNING IN

The progressive "running-in" of a new engine and transmission is very important, to ensure that both give smooth performance, durability and economy throughout their life.

The process of "running-in" applies not only to the engine and transmission but also to many chassis components, and other moving parts. The process must be continued progressively during the first 1,000 miles (1,600 km.). It is important during the "running-in" period that the engine is not overloaded, as would occur when ascending hills in top gear at low speed; always make use of the gearbox. It should be remembered that the gearbox will not be "run-in" when constantly in top gear.

It is very important that the engine speed is kept moderate during the "running-in" period, both on the road and when stationary. During the first 1,000 miles (1,600 km.) do NOT EXCEED an indicated engine speed of 3,000 r.p.m. on the tachometer.

On completion of the first 500 miles (800 km.) take your car to your Lotus Dealer so that the "free" service and inspection can be carried out.

SERVICING

Battery (Negative earth)

The battery is accessible in the left-hand side of the engine compartment and should be examined weekly to check the level of the electrolyte.

1. Remove the vent chamber cover and top up levels if they are below the bottoms of filling tubes.
2. Pour distilled water into the trough until all tubes are filled.
3. Immediately replace the cover to allow the water in the trough and tubes to flow into the cells. Each cell will automatically receive the correct amount of water.
4. Keep the battery and its surroundings clean and dry.

NOTE: As the battery is of the **NEGATIVE** earth type, it is important to note that when fitting electrical equipment of any description (i.e. radio), this also must be of negative earth polarity. Never connect a battery charger without first disconnecting the leads.

Using the jack

The jack should be located at the rear of each wheel arch, as shown in Fig. 11 for the front wheels, and in Fig. 12 for the rear wheels. Apply the hand-brake before commencing to raise the vehicle. If parked on a slope, the wheels which are not being raised should be chocked.

ALWAYS strap the jack in its correct location (see Fig. 13). If stored on the floor it could, in certain circumstances (such as cornering hard), puncture or craze the fibreglass side of the body.

Wheel removal

1. Remove the nave plate in the centre of steel wheels with the aid of a screwdriver, inserting the blade between the wheel and the outer edge of the plate, and twisting off, using the wheel as a fulcrum.
2. Using the wheel nut wrench, slacken the nuts half a turn. All wheel nuts have right-hand threads, and are removed in an anti-clockwise direction.
3. Raise the vehicle with the jack.
4. Continue to release the wheel nuts, taking care not to damage the finish on the wheels.
5. Remove the wheel from the studs.

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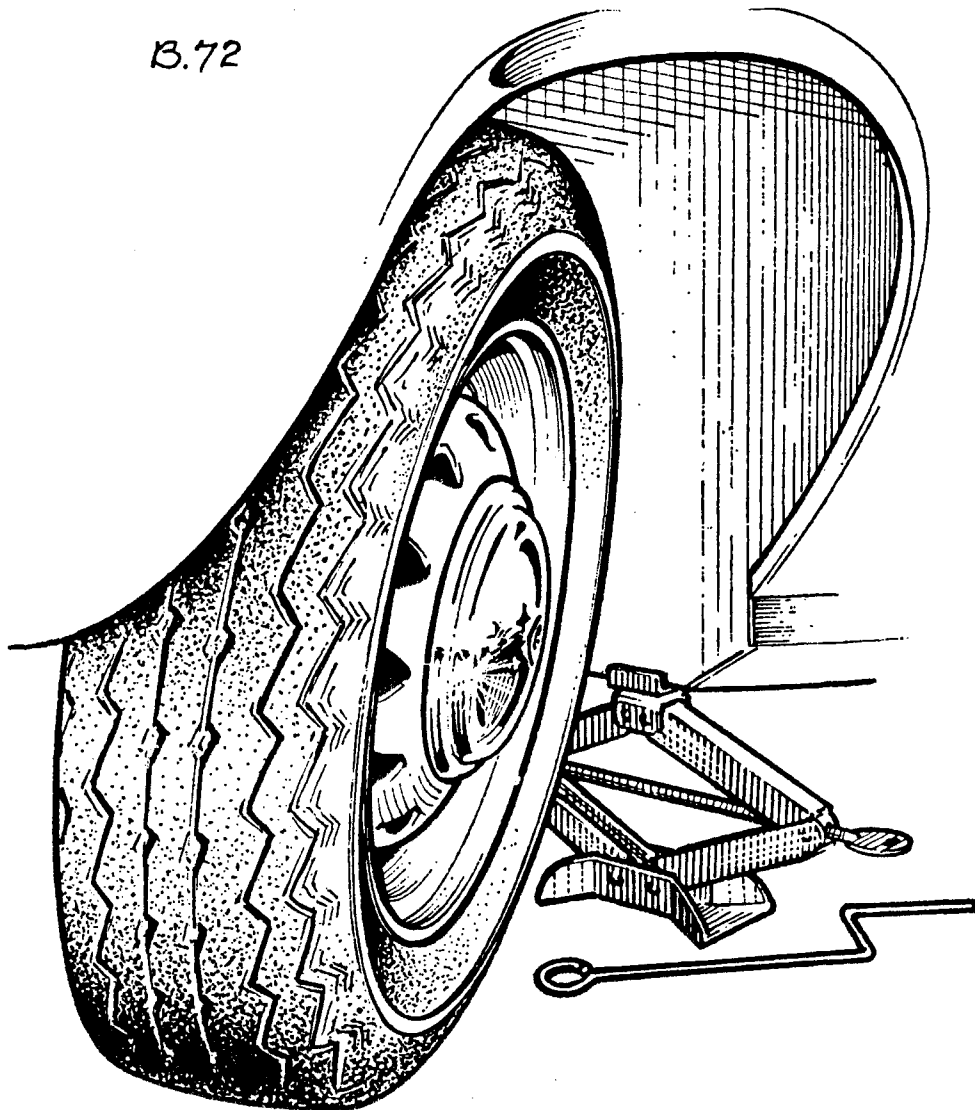


Fig. 11. Jack location—front wheel

Wheel replacement

1. Place wheel in position on studs.
2. Replace wheel nuts clockwise, with the rounded ends facing the wheel, and tighten securely to a minimum torque of 50 lbs. ft.
3. Check security of wheel nuts at weekly intervals.

Tyres

It is recommended that the complete assemblies of wheels and tyres are balanced at intervals of every 5,000 miles (8,000 km.).

Maintain the tyres at the correct pressures. Under-inflation will cause excessive wear and rapid deterioration of the tyre walls, whilst over-inflation will have a detrimental effect on the handling characteristics. Pressures should be checked at least once a week.

Because of their light, precise steering, these cars are highly sensitive to tyre radial run-out and concentricity. If trouble is experienced with replacement tyres reference should be made to the tyre manufacturers concerned.

When inadvertently running on reduced tyre pressures, the tyre could be suddenly deflated by hard cornering, as the wheel safety ledge is slightly tapered.

Where recommended by the particular tyre

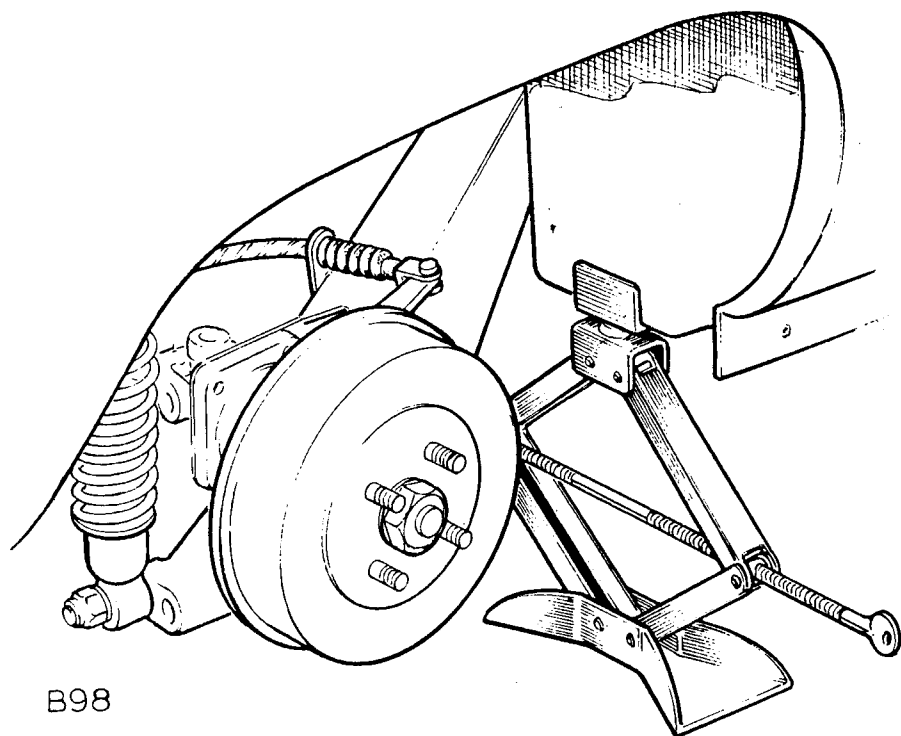


Fig. 12. Jack location—rear wheel

manufacturer, inner tubes are fitted in tubeless tyres as an added safety precaution.

It is pointed out, however, that when using the recommended pressures (see TECHNICAL SPECIFICATION) there is no danger whatever in using tubeless tyres without inner tubes. Check pressures every 1,000 miles (1,600 km.).

Spare wheel

This is located in the radiator compartment below the front bonnet (hood), the strap which holds the wheel in position also holds the jack and tool kit roll, as shown in Fig. 13.

When fitting the spare wheel, ensure that the pressure is adjusted to those recommended (see TECHNICAL SPECIFICATION).

When new tyres including a new spare, are fitted to the car, a "running-in" distance of between 50 to 100 miles (80 to 160 kilometres), at a speed of 50 m.p.h. (80 k.p.h.) or below, should be maintained to allow the tyres to settle without undue stress.

Alloy Wheels Options

With this option, larger section tyres are fitted to the rear wheels. The spare is fitted with a small section (front) tyre. Note that:

1. Under no circumstances must a rear tyre be fitted at the front of the car.
2. A front wheel and tyre assembly may be used as a "get you to the nearest garage" emergency spare provided that the pressure is adjusted for the rear position and less than moderate speeds and cornering loads are employed, *i.e.* no more than half the car's potential, relative to the pertaining road conditions.

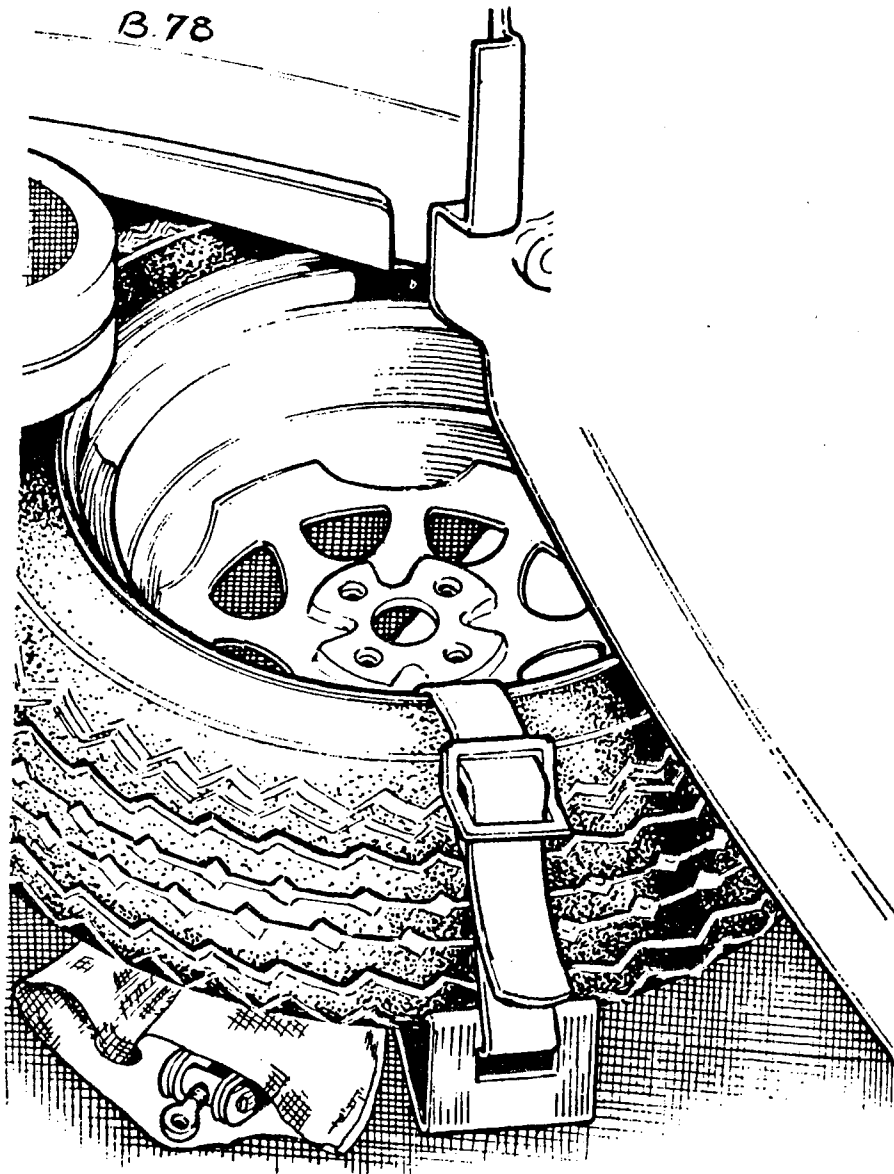


Fig. 13. Spare wheel location

Filling cooling system

1. Pull heater control to "HOT" position.
2. Remove vent plug, or open tap, on top of radiator (Fig. 14).
3. Remove filler cap on header tank, (Fig. 15), and fill with coolant until coolant escapes continuously from vent on radiator.
4. Replace vent plug finger tight, or close tap.

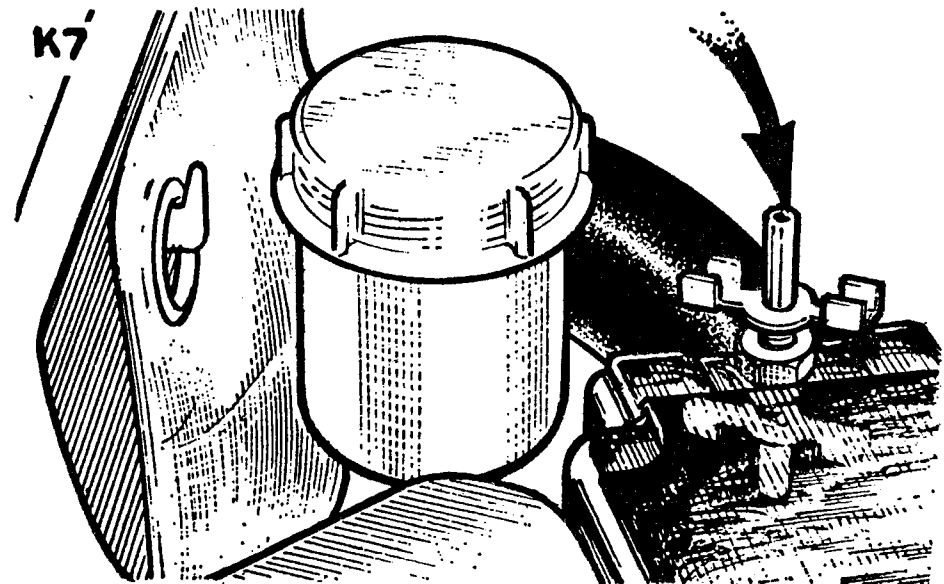


Fig. 14. Radiator vent tap

5. Fill header tank to brim—keep topped up.
6. Start engine and run at about 1,500 r.p.m. constantly topping up with coolant.
7. Remove clip and pull off outlet hose from pipe on heater valve. Close end of hose with thumb until coolant issues continuously from the pipe on heater valve. Refit hose to pipe.
8. Check that radiator and heater are warming up. If not, repeat 3 and 7.
9. Occasionally slacken vent plug or tap on radiator to bleed out air.
10. Run engine until hot—i.e. fan starts.
11. Top up and replace cap.
12. Check coolant level after first 100 miles (160 km.) and daily for first ten days of use. Take great care when removing filler cap if the system is not cold. Coolant level, when warm, should be up to the filler cap, and when cold it should be no lower than 4 in. (10 cm.) below the top.

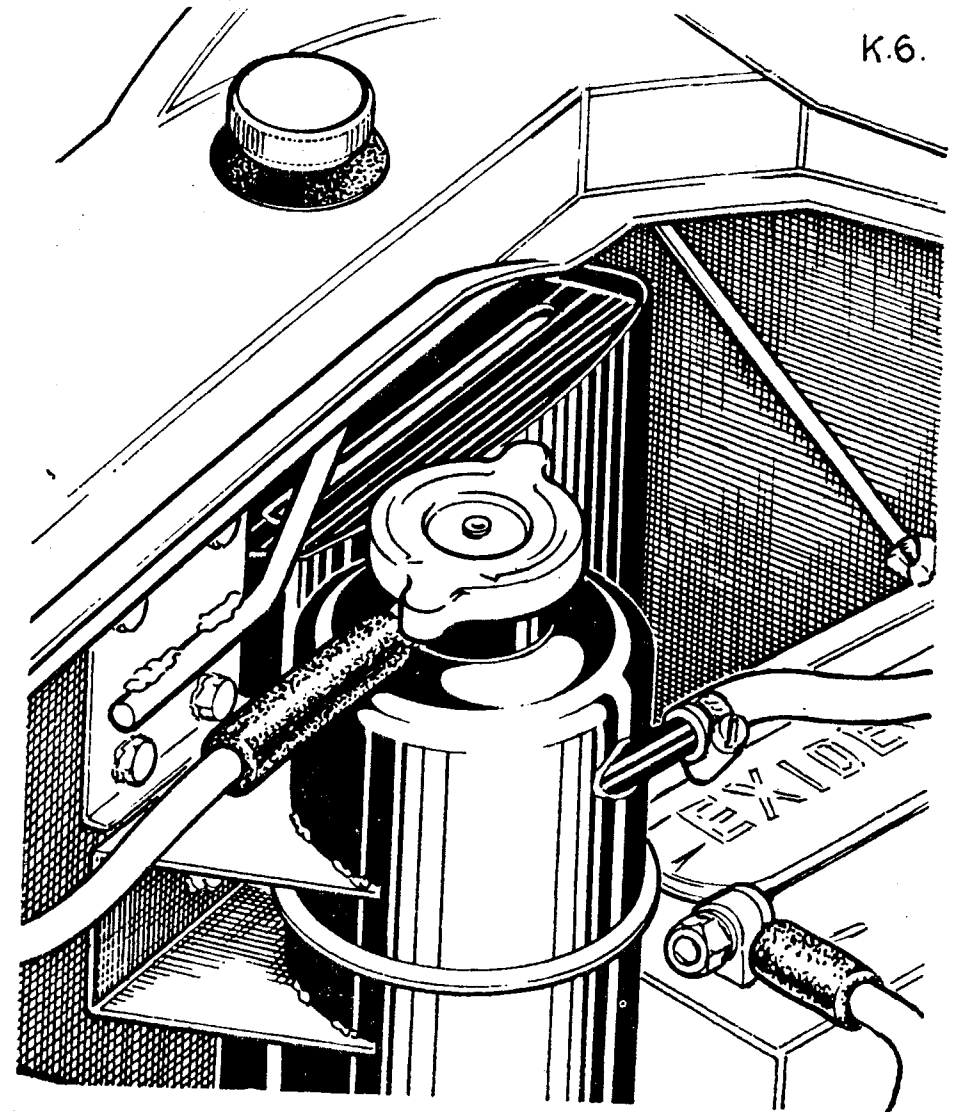


Fig. 15. Header tank and filler

Frost precautions

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

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

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

Alternator belt

The belt is correctly tensioned when a total of $\frac{3}{8}$ in. (9.5 mm.) movement can be obtained on the belt mid-way between the pulleys.

To adjust the tension, slacken the alternator mounting bolts, move the alternator until the correct tension is obtained, then tighten all bolts. Run engine briefly, then stop and re-check belt tension.

Body Care

When washing the vehicle, use plenty of cold water; never attempt to remove dust or mud from the paintwork when dry, as this will damage the high gloss finish.

Special preparations are marketed for adding to the washing water; the use of these mild "detergents", as directed by the manufacturers, will expedite washing. Only use preparations of a reputable manufacture. When dust and mud have been removed with sponge and water, finally dry with a chamois leather.

If the car is kept clean by frequent washing, it will be found that polishing is almost unnecessary.

The bodywork, can if desired be protected with a good soft wax polish, using a haze remover first to remove all "traffic film" and old polish.

Owners are warned that certain types of plastic and rubber covers can cause deterioration of any paintwork; before purchasing a cover, consult your LOTUS DEALER.

During the winter months, many countries use salt to assist in the clearance of ice and snow. Thoroughly wash the coachwork, the underside of the body and wings, and the chassis, either weekly or more frequently, depending on local conditions, to remove any salt deposit and prevent its corrosive action. The fibreglass coachwork will not, of

course, be affected by any corrosive action, but the metal parts attached could be.

Bright Metal—The attractive appearance of bright metal can be preserved if it is cleaned regularly. Each week, wash with a soap and water solution, rinse thoroughly with clean water and dry off. Staining or tarnish can be removed with a good-quality chromium cleaner. For further protection, apply a good-quality wax polish.

Windscreen cleaning—The windscreen wiper is hinged so that it may be lifted clear of the glass, when cleaning the windscreen. Never push the blade across the windscreen as this will damage the mechanism.

Upholstery and roof lining—Normal cleaning consists of an occasional light wipe over with a cloth dampened in a mild soap and water solution; it is important that the cloth is only damp, not soaked.

Brakes

Hydraulically operated front disc brakes and rear drum brakes are fitted.

Rear brakes are adjusted by turning the square-headed adjusters anti-clockwise until the lining makes contact with the drums, then turning back until the drum spins freely.

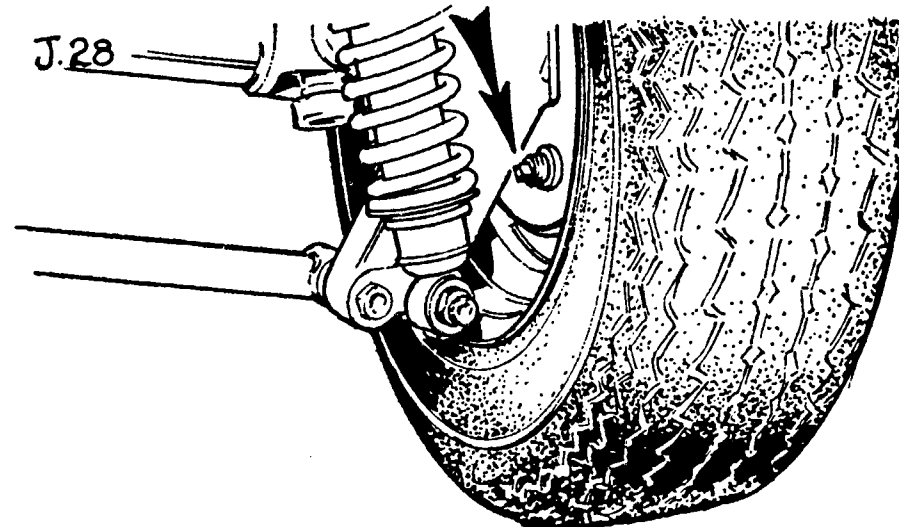


Fig. 16. Rear brake adjuster

Brake pads and shoes—These should be examined at intervals of every 5,000 miles (8,000 km.) as shown in the Service Voucher Book supplied with the car. If brakes are in constant use, as when driving in city traffic, it is advisable to examine at intervals of 1,000 miles (1,600 km.). Always use genuine parts on replacement.

A metallic hiss may be heard from the disc brakes when the car is moving. This is quite normal, but if it develops into a metallic squeal when the brakes are applied, the brakes are almost certainly due for renewal. In the interests of safety

see your Lotus Dealer without delay. Under no circumstances allow the pads to wear below 1/16 in. (1.6 mm.) thickness. They should therefore be renewed if of insufficient thickness to ensure safe braking for a further 5,000 miles (8,000 km.).

Servo unit air filter—Every 5,000 miles (8,000 km.) the filter element should be renewed. To

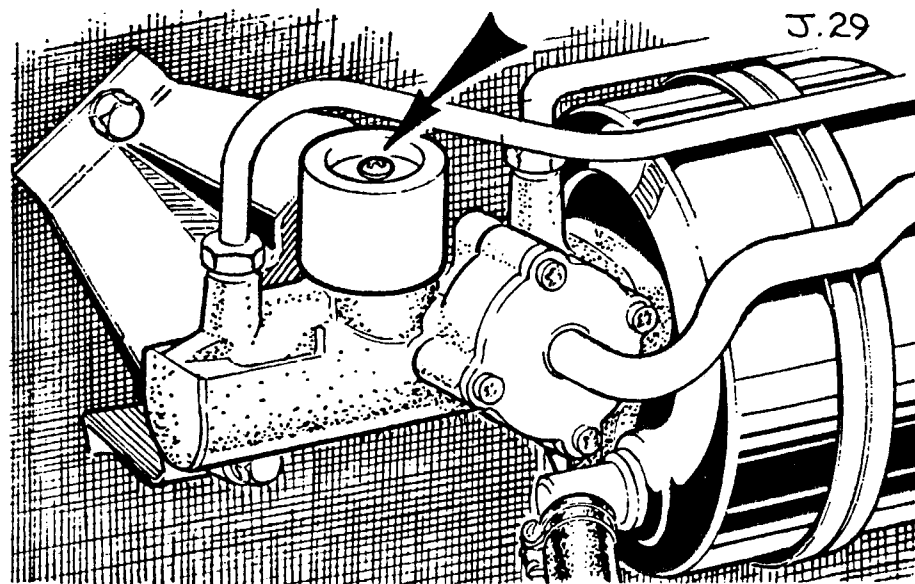


Fig. 17. Servo unit air filter

renew filter element, release central screw and remove cover to obtain access to the filter.

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

Hydraulic Pipes—It is of vital importance that there are no leaks in the hydraulic system, therefore it is essential that these should be checked at intervals of every 5,000 miles (8,000 km.) when the brakes are receiving normal maintenance inspection. Also check security of all pipes, including vacuum pipes, hoses and unions. This work should be entrusted to your Lotus Dealer.

Brake Fluid Reservoir—The brake fluid reservoir is located in the radiator compartment, on the driving side. See Fig. 18 or 19. Check fluid level in the reservoir at intervals of every 5,000 miles (8,000 km.), topping-up if necessary to within 1/2 in. (12 mm.) of the top. Use only the specified fluid for topping-up.

Brake seals, hoses and fluid—The brake manufacturers recommend that at intervals not EXCEEDING 40,000 miles (65,000 km.) or three years whichever is reached first, that the braking system be completely overhauled and all washers, seals and hoses renewed. Hydraulic servo units should

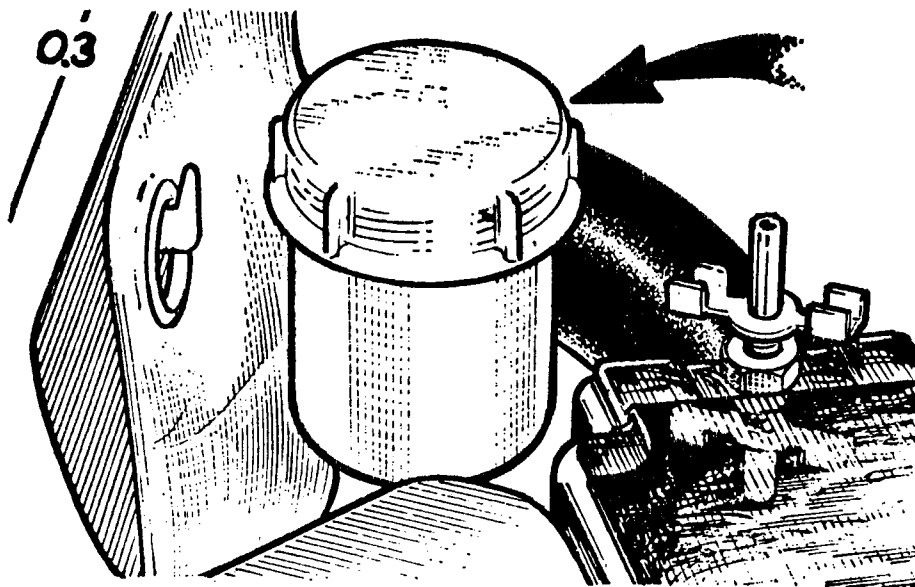


Fig. 18. Brake fluid reservoir

be stripped, all old seals discarded, component parts cleaned and examined and if in good condition, the unit rebuilt with the appropriate service kit.

It is also recommended that the brake fluid is renewed every 18 months. Additionally, if a continental journey (or similar long mileage trip) is being undertaken, it is recommended that the fluid is renewed, if this has not already been done within the previous nine months.

In the interests of safety, all of the foregoing work should be entrusted to your Lotus Dealer who

is fully equipped to carry out this work. At intervals of every six months (i.e. before and after winter months), inspect all brake pipes for salt or grit corrosion. Renew pipes where necessary.

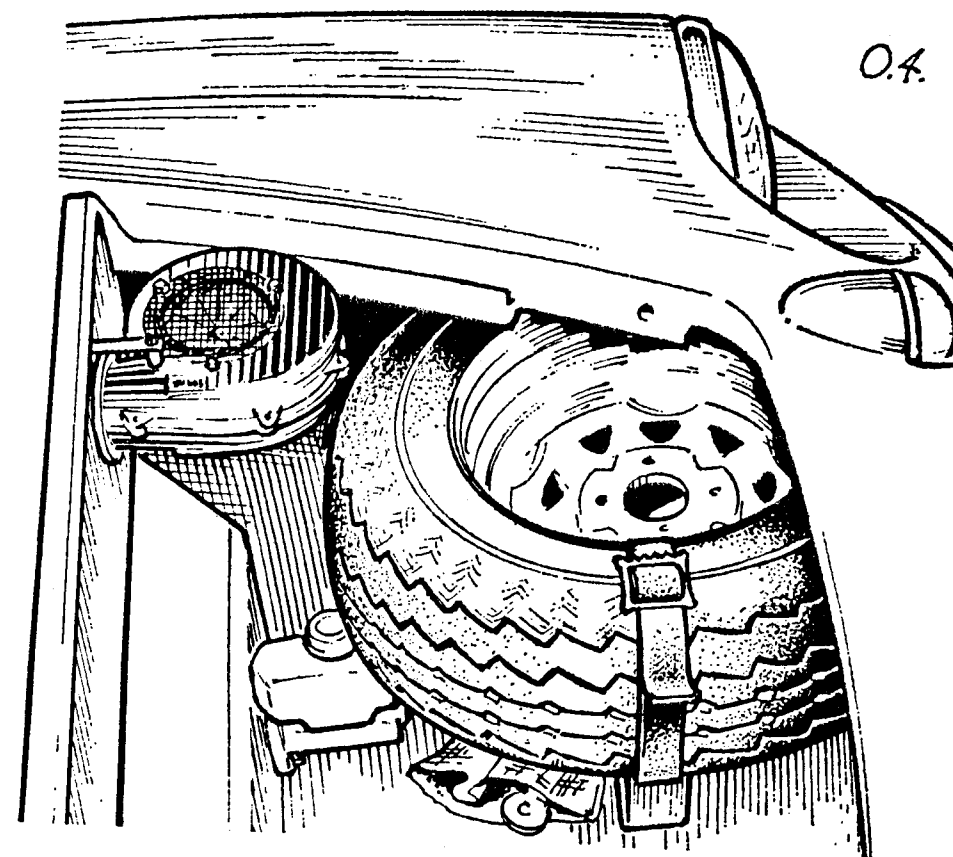


Fig. 19. Brake fluid reservoir, dual system

Dual braking system (when fitted)

The braking system is divided into separate front and rear systems, both operated from the tandem master cylinder.

In the event of a failure in the braking system the driver will still have either the front or the rear brakes operating.

Any failure in the hydraulic system will be signalled to the driver by the BRAKE FAIL WARNING LAMP (Item 34 in Fig. 2) glowing RED. A test switch (Item 33) is provided to check that the warning lamp is operating correctly.

WARNING: Under no circumstances must the tandem master cylinder be bled under pressure.

Ignition Timing and Carburettor Adjustment

To obtain the best results from any particular brand of fuel, the ignition timing and carburettor idle settings may require slight adjustment. Your Lotus Dealer will be pleased to advise you. It is suggested that once a setting has been made, that particular fuel should be used consistently to ensure optimum performance.

Sparkling plugs

To maintain peak performance, the sparking plugs should be cleaned and their points adjusted at intervals of every 5,000 miles (8,000 km.). The plugs should be renewed at intervals as recom-

mended by the plug manufacturers. Under certain fuel and operating conditions, particularly extended slow-speed town driving, sparking plugs may have to be serviced at shorter intervals.

Air cleaner

The intervals at which the air cleaner will require attention vary in accordance with the operating conditions.

In towns and areas where the roads are relatively dust free, the intervals given in the Service Voucher Book should be adhered to but, in areas where the atmosphere is smoke, or fog-laden, or where the roads are unmetalled, attention will be needed at more frequent intervals.

To Renew Element:

1. Remove the convoluted hose between the carburettor airbox and the air cleaner, by releasing the large wire clips.

2. Unscrew the wing nut in the luggage compartment, and remove the old element and rubber sealing rings from the body and front flange of the air cleaner.

3. Discard the old element and sealing rings.

4. Clean out the inside of the air cleaner body, and the front flange.

5. Fit new rubber sealing rings (supplied with element) to the cleaner body and front flange. Fit the new element into the cleaner body, refit front

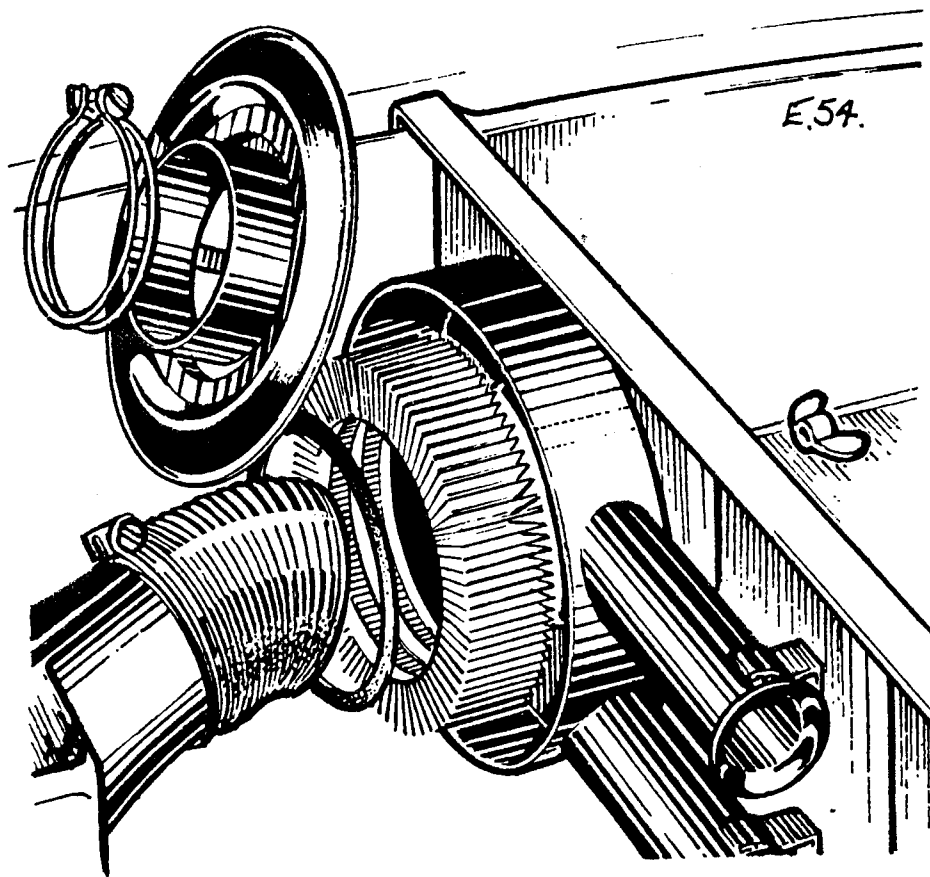


Fig. 20. Air cleaner—removing element

flange onto the body, replace the wing nut and tighten securely.

6. Replace the air hose between air cleaner and air box.

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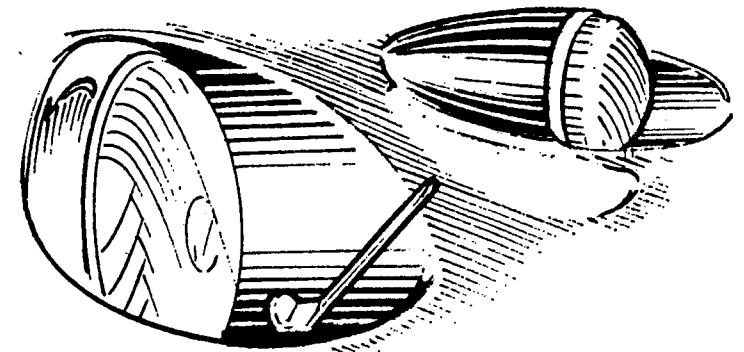


Fig. 21. Removing front bezel

Lamps bulb replacement

Headlamps:

1. Remove the front bezel by pulling from the bottom with a hooked tool. See Fig. 21.

2. Remove the cross-headed screws securing the front rim to the seating rim and withdraw front rim.

3. Lift the reflector/lens assembly from its location and detach the slotted connector plug.

4. The main bulb is removed by disengaging the two ends of the spring retaining clip so that the clip is released from the securing tabs on the bulb seating ring.

In certain countries, sealed beam units are used, the procedure for removal being almost identical except that there are no separate bulbs.

5. Replacement of the bulbs or light units is a reversal of the removal procedure, but ensure that the slotted connector plug is fully entered on the terminals on the bulb or light unit.

6. When fitting the front bezel, hook the top on first, then push over its clip at the bottom.

Front pilot lamps (where fitted):

1. Remove the bezel and reflector unit from the headlamp.

2. From the rear of the reflector, pull out the pilot lamp holder. The bulb is removed by pushing in and turning half-a-turn anti- (counter) clockwise.

3. Replace both bulb and lens by reversing the removal procedure.

Front flasher lamps:

1. Remove the screws securing the lens to the lamp body.

2. The bulbs are removed by pushing in and turning them half-a-turn anti- (counter) clockwise.

3. Replace the bulb and lens by reversing the removal procedure. Refit the lens and secure with its fixing screws, correctly positioning the foam rubber seal and avoiding overtightening.

Side marker lamp (where fitted):

1. Remove bezel by pulling from rubber body, and remove lens.

2. Remove bulb by pushing in and turning anti-clockwise.

3. Replace bulb and lens by reversing removal procedure.

Stop/tail, flasher and reverse lamps:

1. Remove the screws securing the lens.

2. Remove the bulbs for stop/tail and flasher by pushing in and turning anti- (counter) clockwise. The reverse lamp bulb is removed by pressing down on one end to free its clip from the opposite end, then lifting up and out.

3. Replacement of all bulbs is a reversal of the removal procedure.

Number plate lamp:

1. Remove the screws securing the lens.

2. Push bulb to one side to free its clip, then lift out.

3. Replace the bulb and lens by reversing the removal procedure.

Interior lamp:

1. Remove the screws securing the cover and lens.
2. Push bulb to one side to free from its clip, then lift out.
3. Replace the bulb and lens by reversing the removal procedure.

Fuses

The fuse unit is mounted on the right-hand side of the central tunnel, below the facia panel. (Item 37 in Fig. 1).

Removing the plastic cover exposes four 35 amp. fuses, and a spare. The top fuse protects the instruments, warning lights, turn signals, brake lamps and reverse lamps. The second fuse protects wipers, heater, engine cooling fan, horn and radio. The third fuse protects interior lamp, also hazard warning, map lamp and cigar lighter when fitted. The bottom fuse protects the side lamp circuit.

Zenith-Stromberg Carburetters

On vehicles equipped with Zenith-Stromberg carburetters, the following additional services to

those given in the Service Voucher Book, must also be carried out.

At first 1,000 miles (1,600 km.)

Check ignition timing and adjust if necessary.

Check, and adjust if necessary, engine idling speed.

Every 12,000 miles (20,000 km.)

Fit new float chamber gasket, float chamber plug "O" ring, needle valve washer and manifold to carburetter flange gasket.

Check oil level in carburetter damper reservoirs.

Every 24,000 miles (40,000 km.)

Fit new float chamber gasket, float chamber plug "O" ring, needle valve and washer, diaphragm, throttle spindle seals, temperature compensator seals, by-pass valve body gasket and manifold to carburetter flange gasket.

Check oil level in carburetter damper reservoirs.

LUBRICATION

Regular lubrication is essential for long life and sustained performance, and the correct intervals for lubrication, as given in the Service Voucher Book should be strictly followed. It is most important that only the grade of lubricant shown in the Recommended Lubricants table is used, otherwise serious damage may result.

Engine

The correct level is to the top mark on the dipstick, which is situated to the left-hand side of the timing cover. The oil filler cap is at the rear left-hand end of the camshafts cover. Inspect the oil level daily, topping-up if necessary to the correct

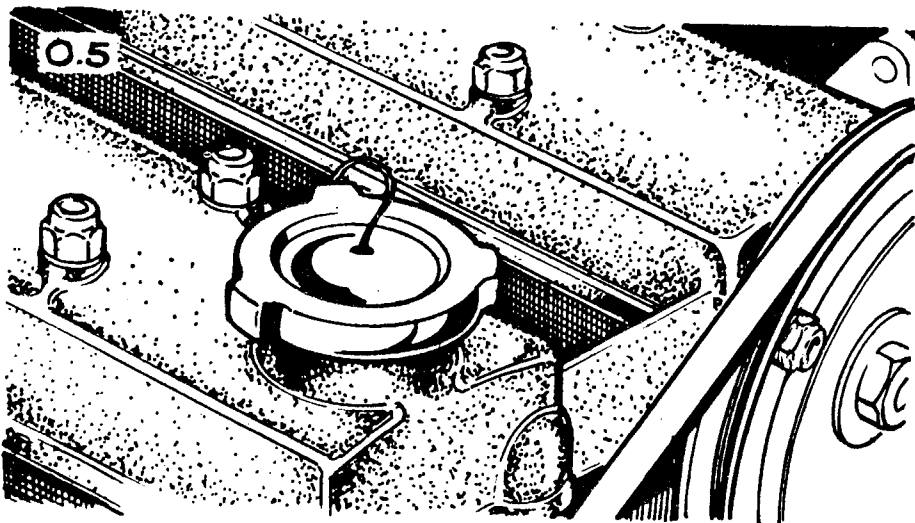


Fig. 22. Oil filler cap

level. DO NOT overfill. Replace the oil filler cap securely otherwise an oil loss will occur and could result in a complete failure of the engine lubrication system.

Renewing engine oil

Engine oil must be renewed every 5,000 miles

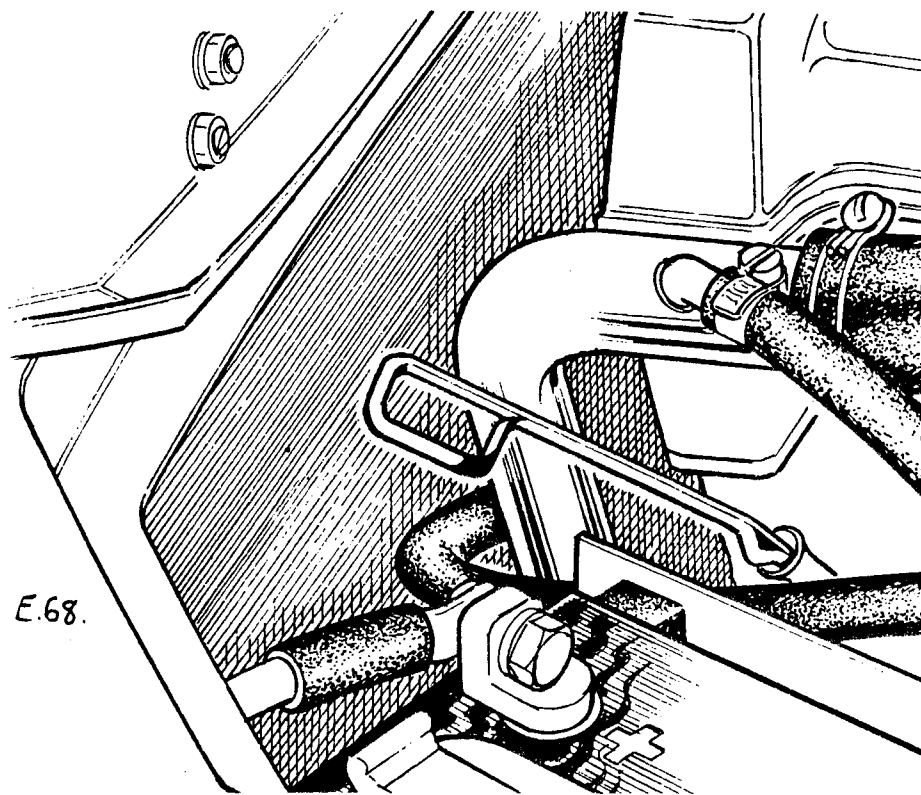


Fig. 23. Oil sump dipstick

(8,000 km.). Draining of the sump will be greatly facilitated if carried out when the car has just completed a run and the oil is warm.

The drain plug is located at the right hand of the sump.

Allow to drain thoroughly, clean the drain plug and replace.

Refill with new oil of the correct grade to the top mark on the dipstick.

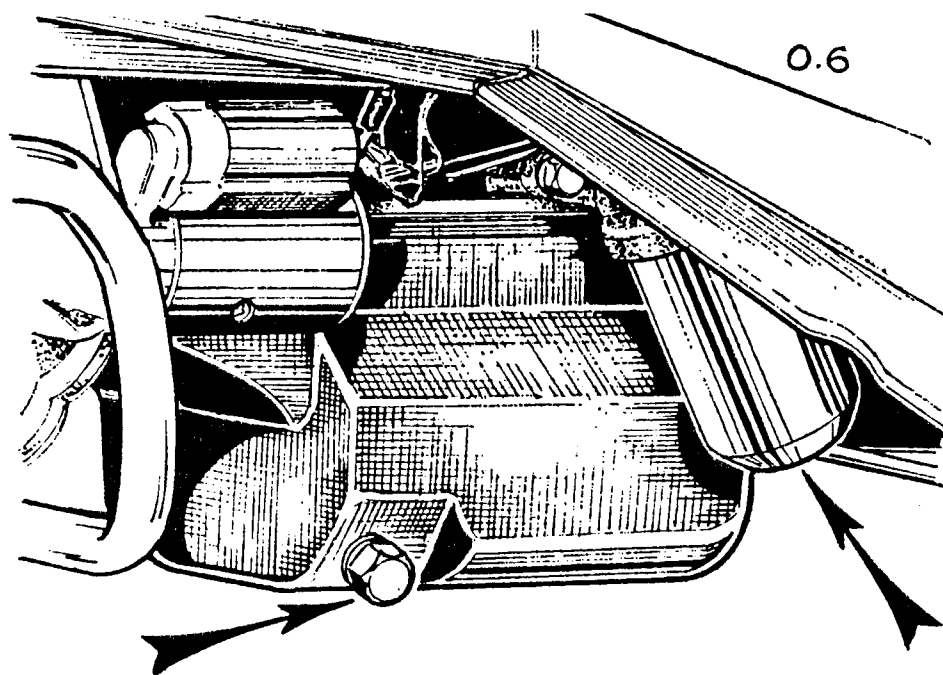


Fig. 24. Oil drain plug and filter

NOTE: If the engine oil is renewed at the recommended intervals of every 5,000 miles (8,000 km.) there is no necessity to use a flushing oil. The use of a flushing oil is NOT recommended because of the difficulty in draining it completely.

Oil Filter—A full flow, “throw-away” type of oil filter is fitted, which it is recommended is replaced at intervals of every 5,000 miles (8,000 km.).

It is pointed out that it is false economy to fit a new oil filter alone; always refill engine with new oil, after draining the sump.

The filter is removed by turning in an anti-clockwise direction. Discard the filter after removal.

Before fitting a new filter, clean the mating faces on both the new filter and the oil pump body. Screw on the filter by HAND just sufficient to make a seal, usually $\frac{2}{3}$ to $\frac{3}{4}$ turn to ensure an oil-tight joint.

Transmission

A combined filler/level plug is located on the left hand of the casing, while the drain plug is at the bottom of the casing. The oil level should be to the bottom of the filler plug orifice, and only oil of the correct grade added. At intervals of every 5,000 miles (8,000 km.) check the oil level and top up if required.

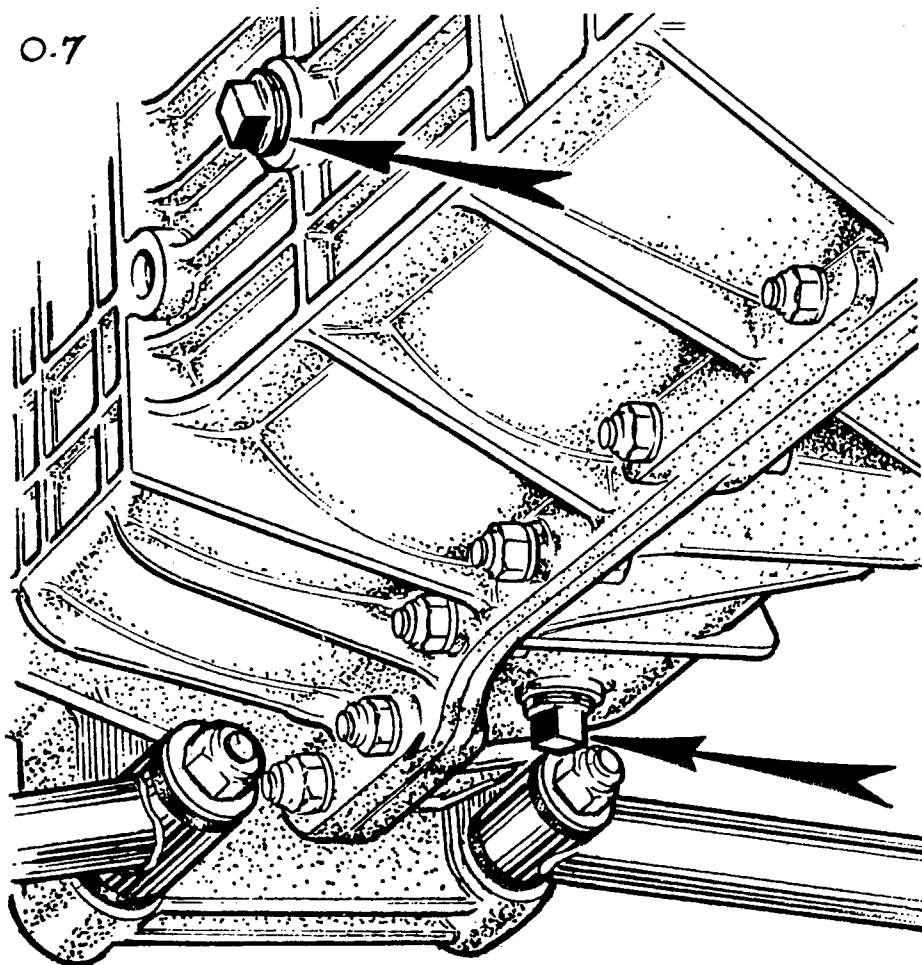


Fig. 25. Gearbox drain and filler plugs

Lower steering swivels

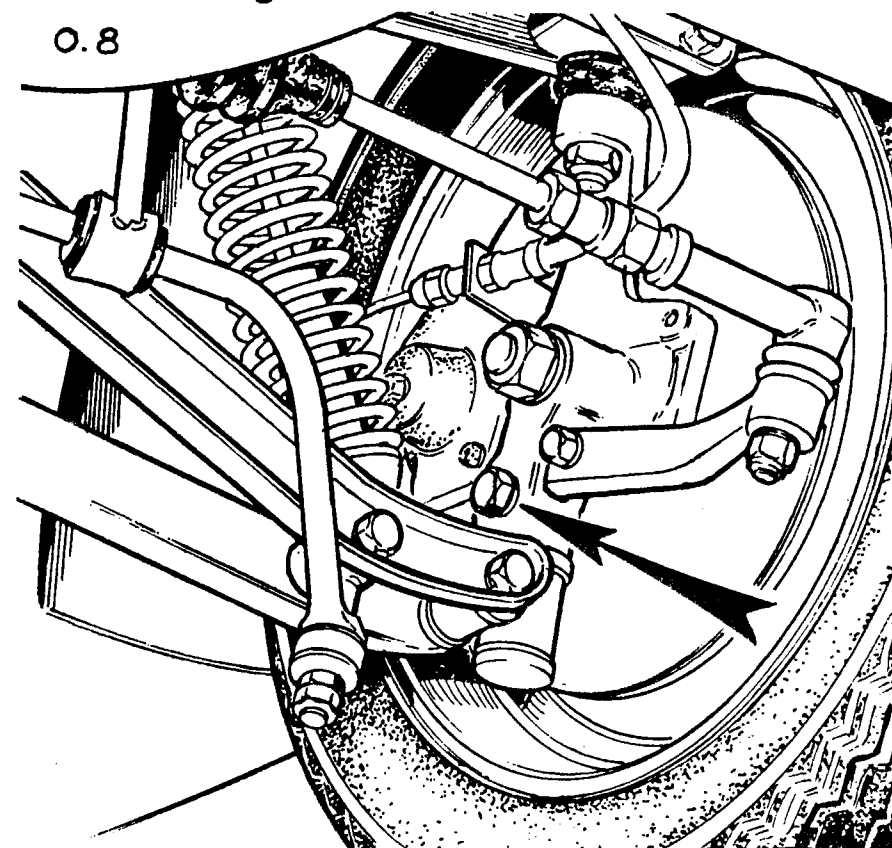


Fig. 26. Steering swivel grease point

At intervals of every 5,000 miles (8,000 km.) remove the plug and fit a screwed nipple. Apply a grease gun filled with 90 EP hypoid oil to the nipple and pump the gun until oil exudes from the swivel.

Remove the nipple, refit the plug and repeat with the opposite swivel.

Steering unit

At intervals of every 5,000 miles (8,000 km.) remove the plug from the top of the unit and fit a screwed, right-angled grease nipple. Apply the grease gun filled with one of the recommended lubricants. Give **FIVE STROKES ONLY** as over-lubricating can cause damage to the bellows. Remove the nipple and refit the plug.

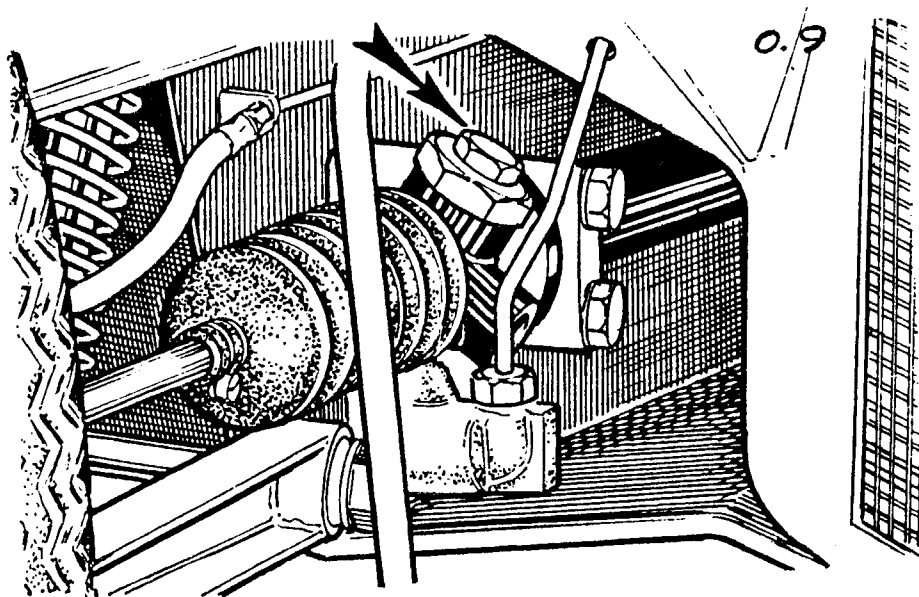


Fig. 27. Steering rack grease point

Drive shafts

Use the grease gun every 5,000 miles (8,000 km.) upon each of the four universal joints grease nipples, until grease starts to appear around the spider bearings.

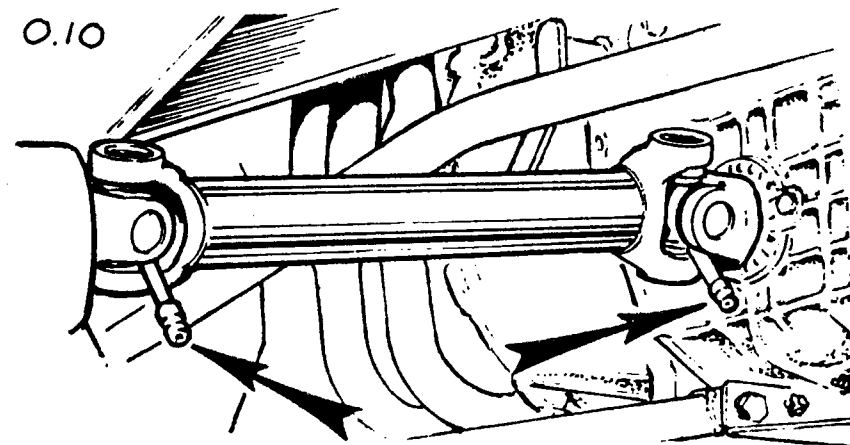


Fig. 28. Drive shaft grease points

Clutch cable adjustment

Every 5,000 miles (8,000 km.) adjust the cable to give a clearance of .10 in. (2.54 mm.) between end of release lever and clutch cable abutment. Pedal travel **MUST** be restricted by adjusting the forward stop to give .80 in. (20.32 mm.) **MAXIMUM** cable travel.

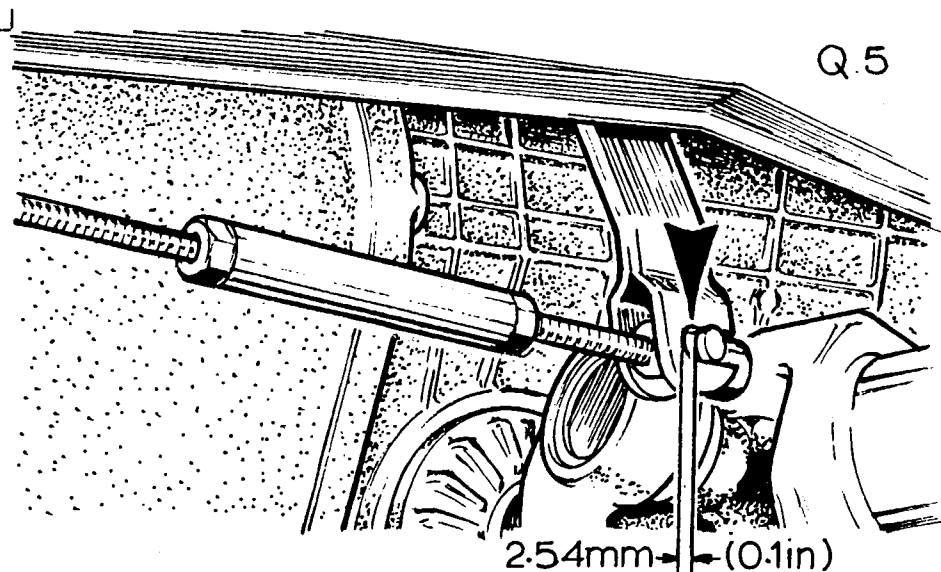


Fig. 29. Clutch cable adjustment

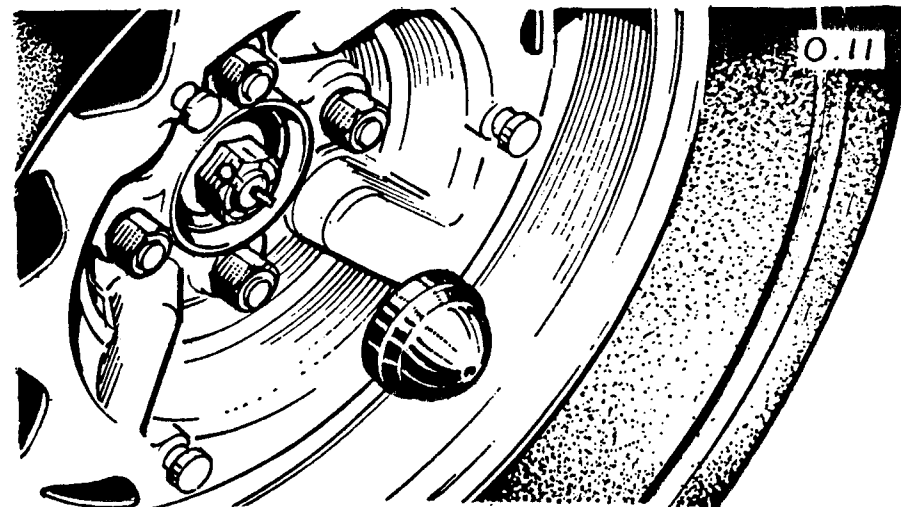
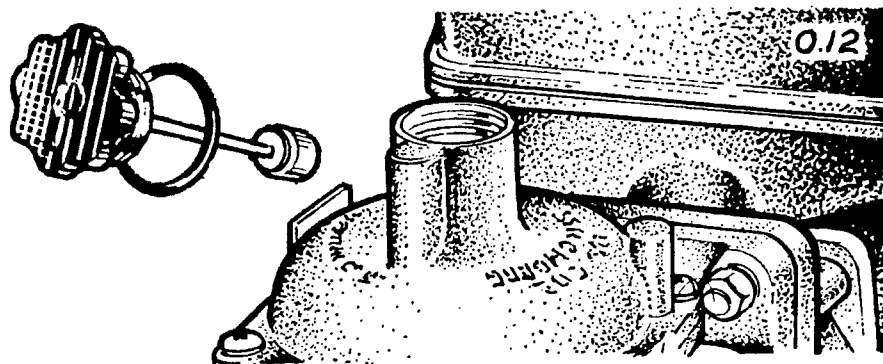


Fig. 30. Front hub grease cap

Front hubs

Every 10,000 miles (16,000 km.) grease the front hubs. With alloy wheels it will first be necessary to jack the car up and remove the wheels. Steel wheels must have the nave plate removed.

Remove the grease cap from the centre of the hub and apply grease past the nut and large washer. Do not over-grease. Replace the grease cap, and either nave plate on steel wheels, or the alloy wheels themselves.



*Fig. 31. Checking damper oil level in
Zenith-Stromberg Carburetter*

Zenith-Stromberg carburetters

At intervals of every 5,000 miles (8,000 km.) check the oil level in the carburetter reservoirs, by releasing the black cap (shown removed in Fig. 31) from the top of each carburetter and withdrawing the damper assembly. The oil level should be .25 in. (6.35 mm.) from the top of the centre rod. When topping-up, use the recommended engine oil. Replace the caps securely taking care not to over-tighten as this will extrude the rubber sealing rings.

SERVICE NOTES

Storage

If you wish to store your car for a period, it is desirable to take certain precautions, otherwise damage may result.

Your Lotus Dealer will be pleased to give you assistance according to the length of time the car will be out of use.

Lotus genuine parts

Lotus genuine spare parts are identical to the high-quality factory parts installed in new Lotus vehicles.

Always insist on Lotus genuine parts.

Radio suppression

Owners who wish to fit a radio should note that suppressors will be necessary, otherwise reception

could be impaired by the fibreglass bodywork.

It is suggested that all suppression is carried out by your Lotus Dealer.

Special accessories

Special accessories are available for this car and in some instances provision is made in the car for their fitting. Full details are available from your Lotus Dealer.

Workshop Manual

For the owner who requires more detailed information than is contained in this handbook, there is available for purchase from any Lotus Dealer an extensively illustrated comprehensive Workshop Manual (Part No. X046 T 0327Z), together with supplement (Part No. X074 T 0348B).

This manual and its supplement, covers every operation necessary for servicing, adjustments or complete overhaul.

Windscreen insurance

It may be of interest to know that certain insurance companies will cover the cost of reinstatement of broken windscreens and glasses at a nominal premium.

This enables glass replacement to be undertaken without loss of "no claims" bonus which an owner may enjoy under a normal motoring policy.

Touring abroad

For owners who are planning a motor tour abroad, facilities exist for guidance in the preparation of the car. Amongst these facilities is a touring kit of spare parts, and a list entitled "Lotus Parts Supply", showing the names and addresses of all Dealers and Parts Stockists throughout the world. The list is available from Lotus Cars Ltd.

RECOMMENDED LUBRICANTS

	SHELL	ESSO	B.P.	CASTROL	MOBIL
Engine (Above 0° C.)	Shell Super 100	Uniflo	Super Viscostatic 20W/50	Castrol GTX	Mobiloil Super 10W/50
Engine (Below 0° C.)	Shell Super 10W/30	Uniflo	Super Viscostatic	Castrolite	Mobiloil Super 10W/50
Transmission	Shell Spirax 80 EP	Esso Gear Oil GX 80	B.P. Gear Oil 80 EP	Castrol Hypoy Light	Mobilube GX 80
Grease points	Shell Retinax A	Esso Multi-purpose Grease	Energrease L.2	Castrol LM	Mobilgrease MP
Steering swivels	Shell Spirax 90 EP	Esso Gear Oil GP 90/140	B.P. Gear Oil SAE 90 EP	Castrol Hypoy	Mobilube GX 90
Brake master cylinder reservoir: Castrol Girling Brake Fluid Green to specification SAE 70 J.1703B					

Servicing intervals:

A—Every 5,000 miles (8,000 km.)

B—Every 10,000 miles (16,000 km.)

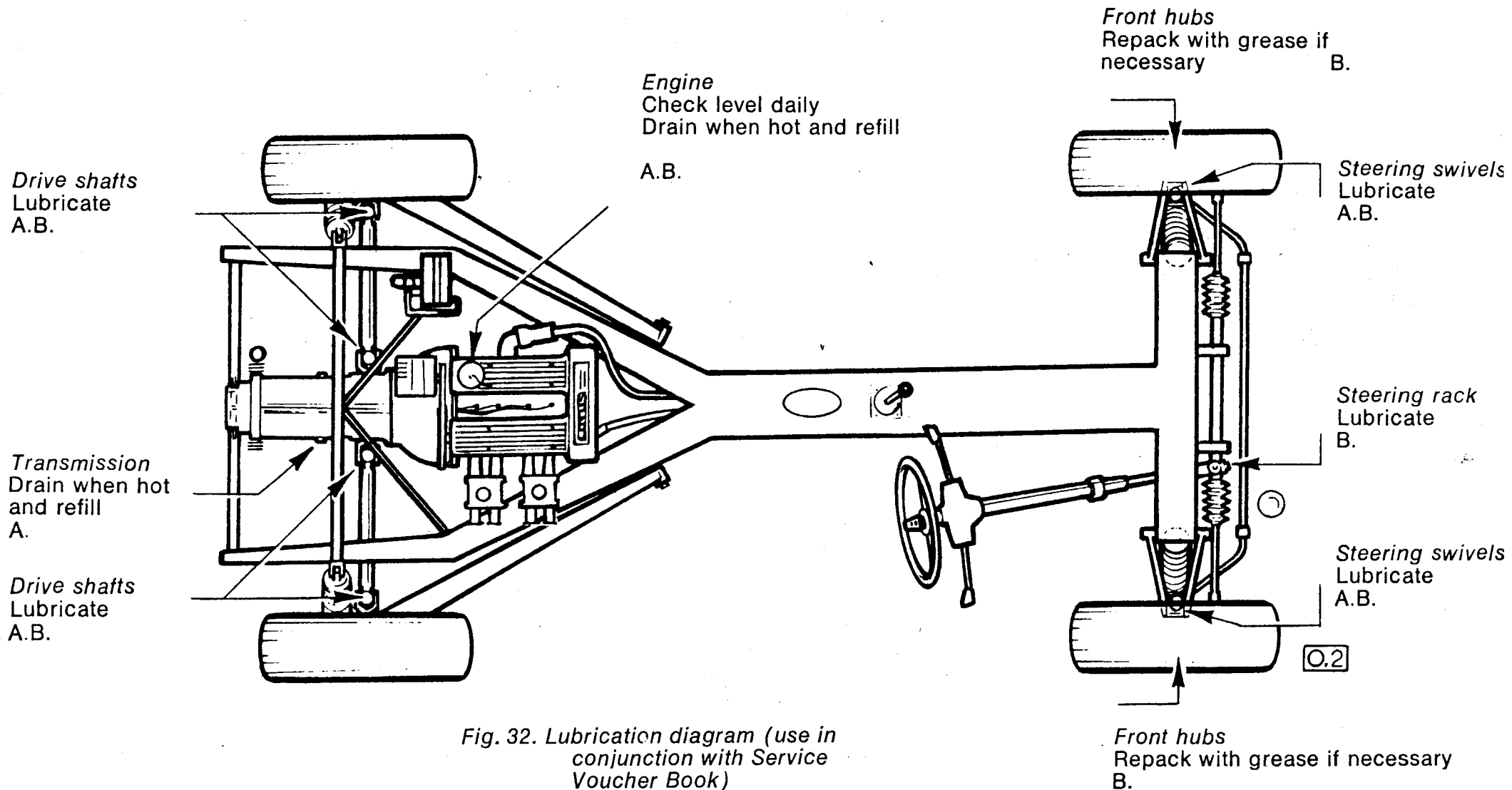


Fig. 32. Lubrication diagram (use in conjunction with Service Voucher Book)

TECHNICAL SPECIFICATION

ENGINE

Capacity 1558 c.c. (95.1 cu. in.)
Type Twin overhead camshaft
No. of cylinders 4
Bore 82.55 mm.
Stroke 72.7 mm.
Compression ratio 9.5:1
Firing order 1-3-4-2 (No. 1 at front)
Oil pressure (hot) 2.4/2.8 kg. cm.² (35/40 lbs. in.²)
Distributor contact breaker gap ... 35/40 mm. (.014/.016 in.)

Ignition timing (static)

Dellorto carburettors 12° B.T.D.C.
Zenith-Stromberg carburetters (USA Federal) 5° B.T.D.C.

Sparking plugs—Type

Dellorto carburettors Champion N7Y
Zenith-Stromberg carburetters
(USA Federal) Champion N7Y

Sparking plugs—Gap

All models 584/635 mm. (.023/.025 in.)

Valve clearances

Inlet 127/177 mm. (.005/.007 in.)
Exhaust 228/279 mm. (.009/.011 in.)

TRANSMISSION

Overall ratios (synchromesh on all forward gears).

Top 3.66:1
Third 5.26:1
Second 8.00:1
First 12.85:1

FRONT SUSPENSION

Front wheel toe-in

..... 4.8 mm. (3/16 in.; 48') to 1.6 mm. (1/16 in.; 16')

Camber angle 0° to $\pm \frac{1}{2}^{\circ}$

Castor angle $2\frac{1}{2}^{\circ} \pm \frac{1}{2}^{\circ}$

Swivel pin inclination $9^{\circ} \pm \frac{1}{2}^{\circ}$

REAR SUSPENSION

Rear wheel toe-in

..... 6.35 mm. (1/4 in.; 64') to 3.18 mm. (1/8 in.; 32')

Camber angle 1° Negative $\pm \frac{1}{2}^{\circ}$

WHEELS AND TYRES

Wheel—Type Pressed steel bolt-on
—Size 4½J

Tyres*—Type Dunlop SP Sport with tubes*
—Size 155 × HR13

Pressure (cold at speeds BELOW 160 k.p.h. (100 m.p.h.)

—Front 1.27 kg. cm². (18 lbs. in².)
—Rear 1.97 kg. cm². (28 lbs. in².)

Pressure (cold) at sustained speeds ABOVE 160 k.p.h.
(100 m.p.h.)

—Front 1.69 kg. cm². (24 lbs. in².)
—Rear 2.39 kg. cm². (34 lbs. in².)

NOTE: it is not necessary to increase the tyre pressures for any reason other than those given.

*When inner tubes are fitted, it is essential that these are of the correct type for radial ply tyres.

ALLOY WHEELS (Firestone "Cavalino" 175/185 × 13 tyres)

When optional alloy wheels are fitted, the following should be observed:

Tyre Pressures (cold at speeds BELOW 160 km.h.; 100 m.p.h.)

—Front 1.125 kg. cm². (16 lbs. in².)
—Rear 1.828 kg. cm². (26 lbs. in².)

Tyre Pressures (cold at speeds ABOVE 160 km.h.; 100 m.p.h.)

—Front 1.547 kg. cm². (22 lbs. in².)
—Rear 2.250 kg. cm². (32 lbs. in².)

Wheel Retaining Nuts

The wheel retaining nuts of alloy wheels should be tightened to a torque loading of:

between 5.53 kg. m. (40 lbs. ft.); and 6.22 kg. m. (45 lbs. ft.)

DIMENSIONS

Wheelbase 233.7 cm. (92 in.)

Track—Front 135.8 cm. (53.5 in.)

—Rear 134.6 cm. (53 in.)

Overall—Length 400 cm. (157½ in.)

—Width 163.8 cm. (64½ in.)

—Height 107.9 cm. (42½ in.)

Design ground clearance 15.2 cm. (6 in.)

Turning circle 12.5 m. (41 ft.)

Kerb weight (unladen) 710 kg. (1513 lbs.)

CAPACITIES

Fuel 56 litres (12.5 gall.; 15 US gall.)

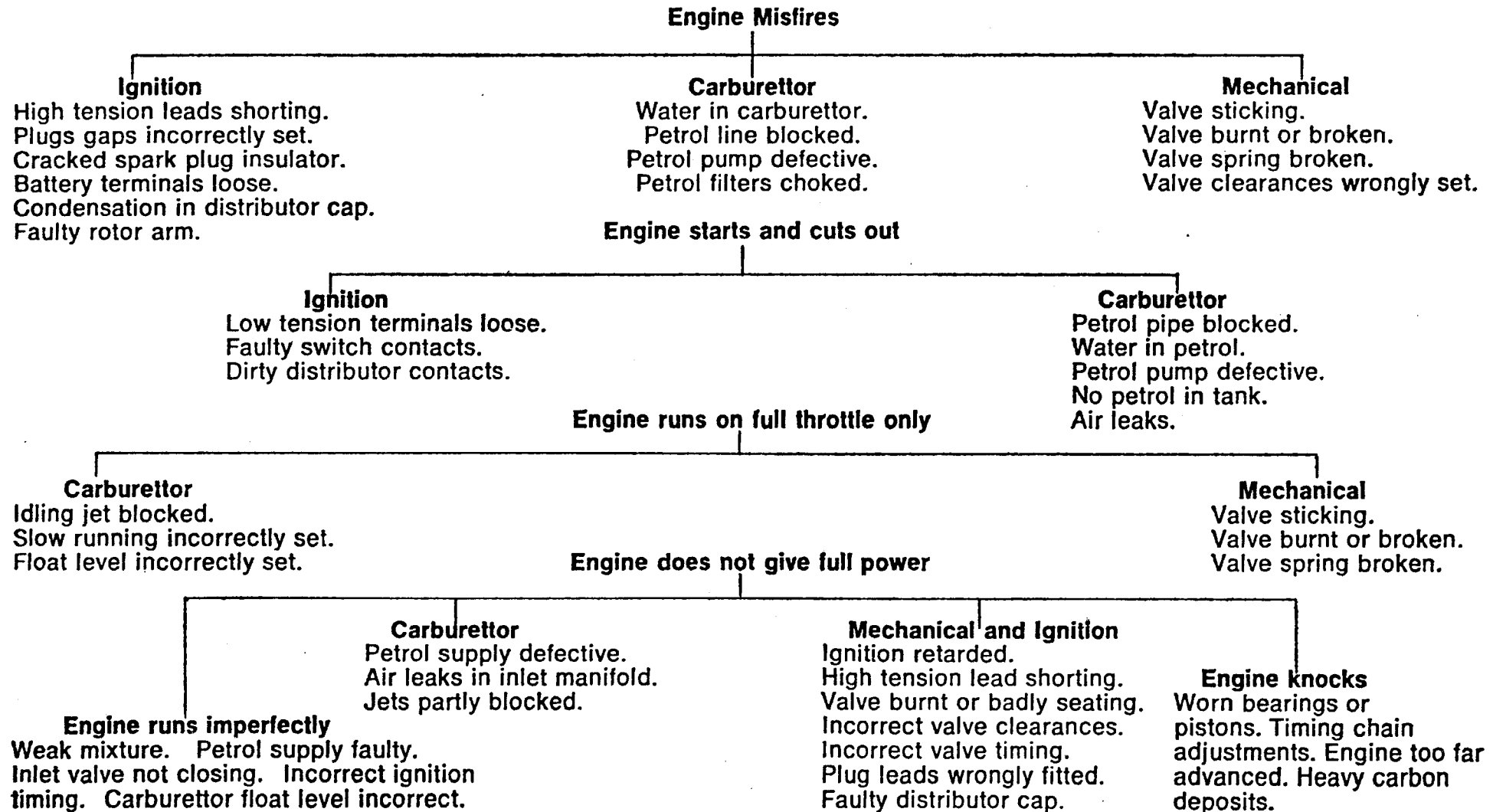
Engine (with filter) oil 4 litres (7½ pts.; 9 US pts.)

Transmission oil 1.75 litres (3 pts.; 3.6 US pts.)

Cooling system (with heater) 10.8 litres (19 pts.; 22.8 US pts.)

Battery (negative earth) 12 volt, 39 amp. hr.

FAULT DIAGNOSIS



FAULT DIAGNOSIS

