

LOTUS EUROPA

OWNER'S 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 in no way 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 3,000 miles (5,000 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 product 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, capable of exceeding .9g retardation. 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 .8g 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 exhaust manifold, adjacent to the starter motor. The transmission number will be found on top of the rear cover, adjacent to 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.

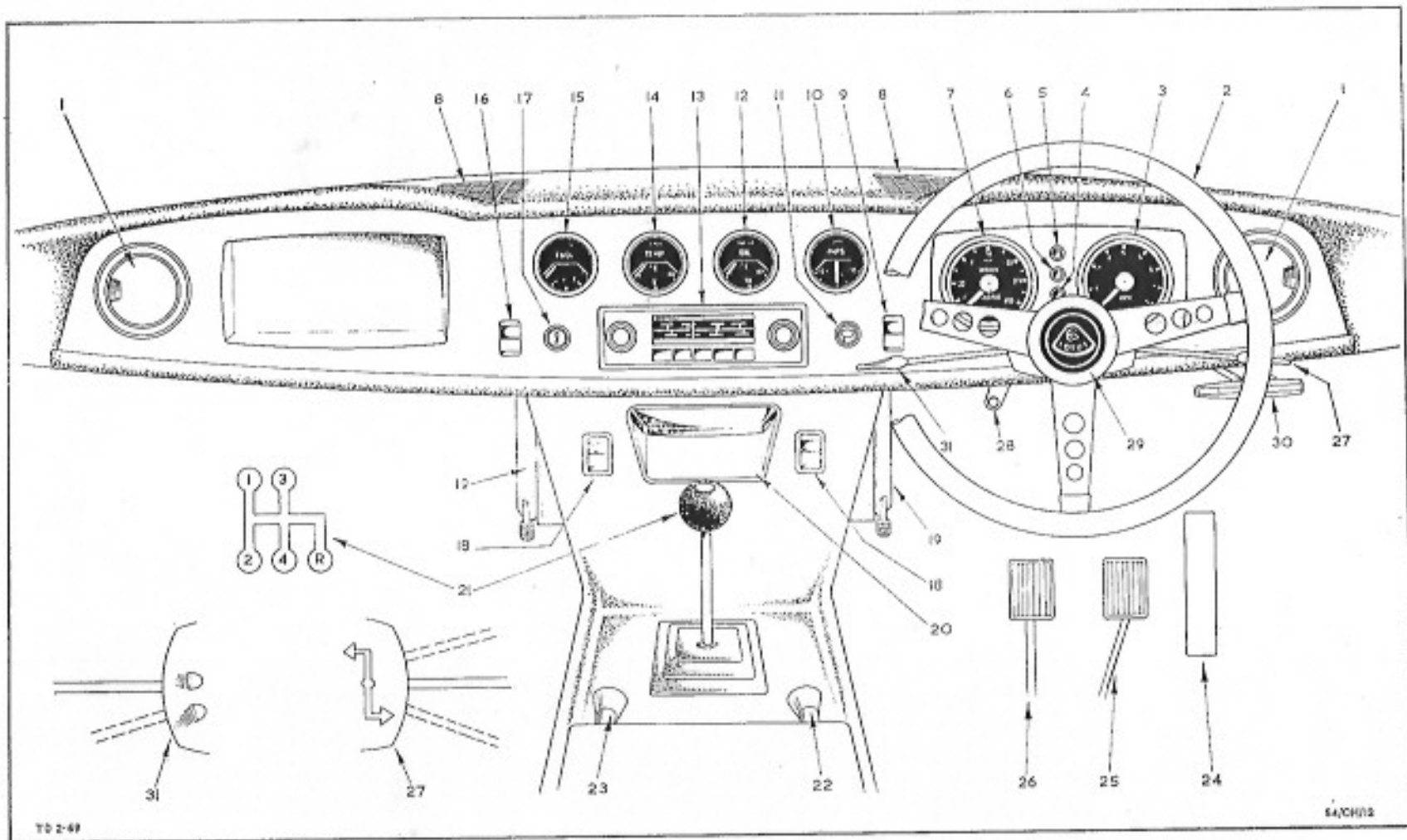


Fig. 1. R.H.D. Facia panel and controls

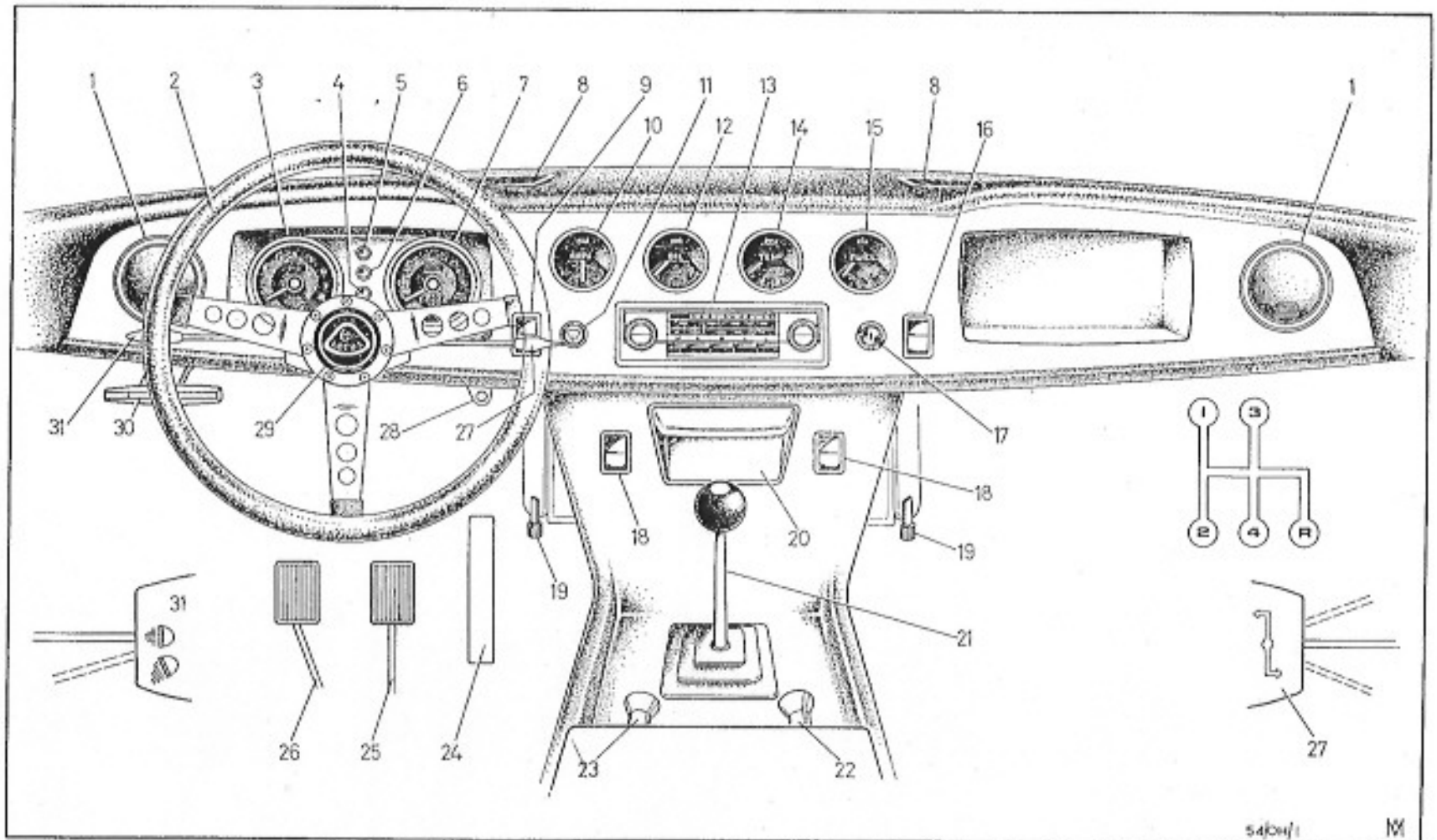


Fig. 2. L.H.D. Facia panel and controls
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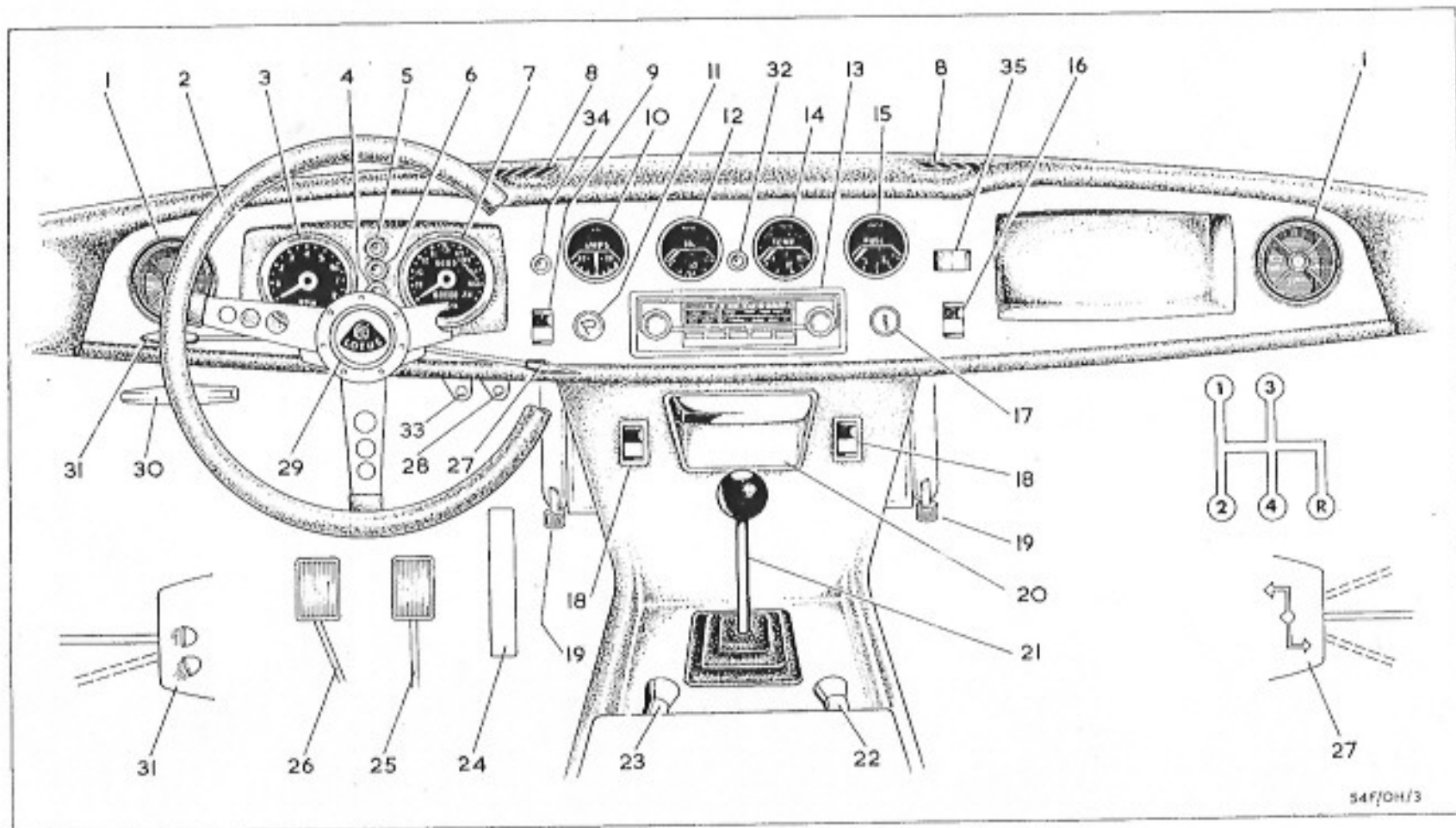


Fig. 3. L.H.D. Facia panel and controls (USA Federal)

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 5, 6 and 7.

17 Combined ignition/starter switch

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

If it is required to operate the radio (13), when fitted, with the engine stationary, the ignition key should be turned to its extreme left position.

4 Ignition warning lamp

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 will discharge itself through the ignition coil.

22 Choke control

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

9 Combined side, rear, tail and headlamp switch

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.

27 Direction indicators

When turning to the left or to the right, move the control lever UP or DOWN as appropriate. A warning lamp (6) 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.

31 Headlamps dipswitch

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 warning lamp (5) on the facia will illuminate.

29 Horns

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

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

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 anti-freeze, 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.

12 Oil pressure gauge

Should normally register a pressure of 60 lbs. in.² (4.2 kg. cm.) 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.

14 Water temperature gauge

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 slightly above the optimum 85° C. (approx.).

15 Fuel gauge

The fuel gauge is operative when the ignition is switched "ON" and indicates the approximate amount of fuel in the 6 Imperial gallons (7.2 U.S. gallons; 27 litres) tank.

10 Ammeter

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

7 Speedometer

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.

3 Tachometer

Maximum safe continuous engine speed is 6,000 r.p.m., which is indicated by the orange sector. It is permissible to use up to 6,300 r.p.m. for short bursts, but speeds in excess of this **MUST NOT BE USED.**

Brake fail warning (USA Federal model)

The lamp (32) located in the centre of the facia panel, will glow RED if a failure occurs anywhere within the braking system.

A test switch (33) is provided as a means of checking for bulb failure in the warning lamp.

Hazard warning (USA Federal model)

The lamp (34), located on the facia panel above the lighting switch, will flash in unison with all four direction indicators when the switch (35) is operated.

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

NOTE: When the hazard switch is "on" with the ignition "off" and the direction indicators switch is operated, this action will "make" the ignition circuit continuously. If any of the ignition-fed switches are operated under these conditions, the ignition coil could be burnt out.

18 Window lift switches

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 in the constant live position, thus enabling the windows to be operated without switching "on" the ignition.

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.

19, 23 Heater controls

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 fascia, by actuating the white toggles on these flaps with a sideways motion.

16 Heater fan switch

The fan ("heat") switch is three-positional; up—"off"; centre—"plenum chamber fan"; lower—"plenum chamber and radiator fan".

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".

When travelling in heavy traffic, press the switch to the lower position.

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.

1 Face level ventilators

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 pushing with finger.

30 Handbrake

To release, pull lever slightly rearwards (as when pulling "on") at the same time press the release trigger in the hand grip with the thumb, then push the lever fully forward to the "off" position.

21 Gearshift lever

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 the gear.

Foot controls

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

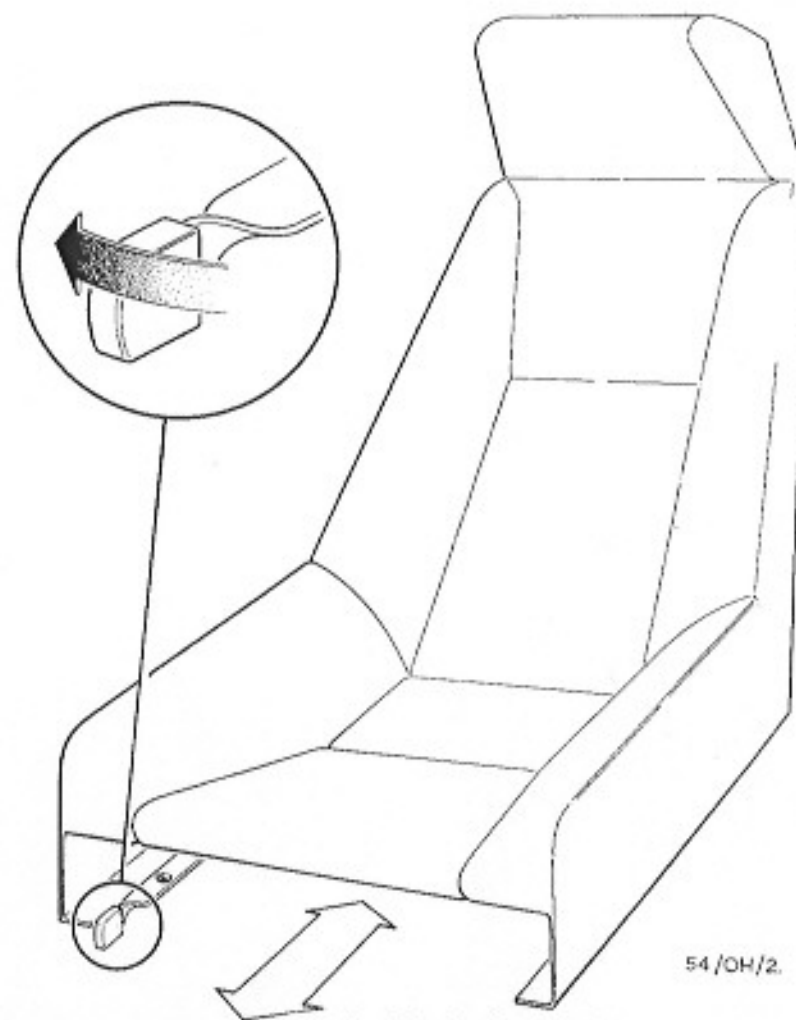


Fig. 4. Seat adjustment

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.

20 Ashtray

The ashtray in the fascia 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°.

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.

Steering column adjustment

In the interest of safety, the steering column is designed to telescope on impact, thereby lessening the danger of injury to the driver. This safety feature has the additional advantage of providing the driver with a limited amount of steering column

adjustment which, if necessary, may be carried out by your Lotus Dealer.

Locks and Keys

Three keys are supplied with the car; one operating the ignition, 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 (USA Federal model)

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. 5).

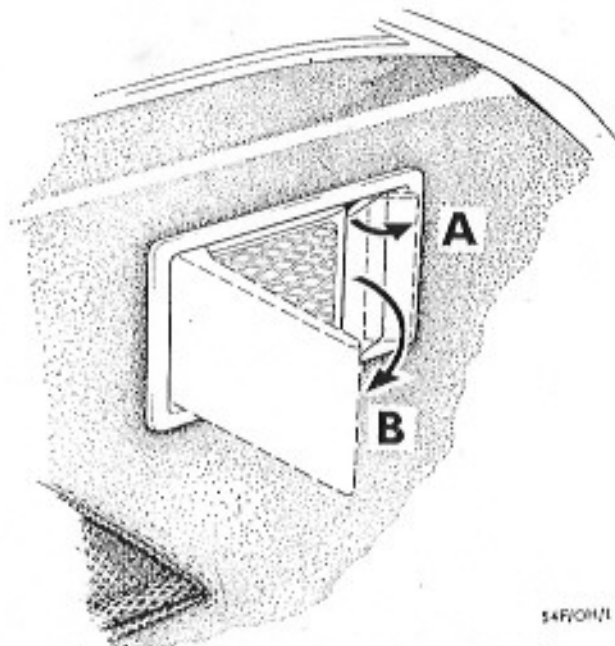


Fig. 5. Remote control operation

STARTING PROCEDURE

Note: Use Super grade fuel only
(5 star in the UK, 101 octane plus).

Starting engine when cold

Pull out the choke control as far as possible. Operate the starter. The engine should start imme-

diately 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 closed position. Push in the choke control fully as soon as it 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 an excessively rich mixture that will prevent the engine from starting.

Starting 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.

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 for the first 1,200 miles (2,000 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 1,200 miles (2,000 km.) do NOT EXCEED an indicated engine speed of 3,000 r.p.m. on the tachometer.

On completion of the first 300 miles (500 km.), then at 1,200 miles (2,000 km.) take your car to your Lotus Dealer so that the "free" services and inspections can be carried out.

SERVICING

Battery (Negative earth)

The battery is accessible in the right-hand side of the rear luggage 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 to the battery without first disconnecting the leads.

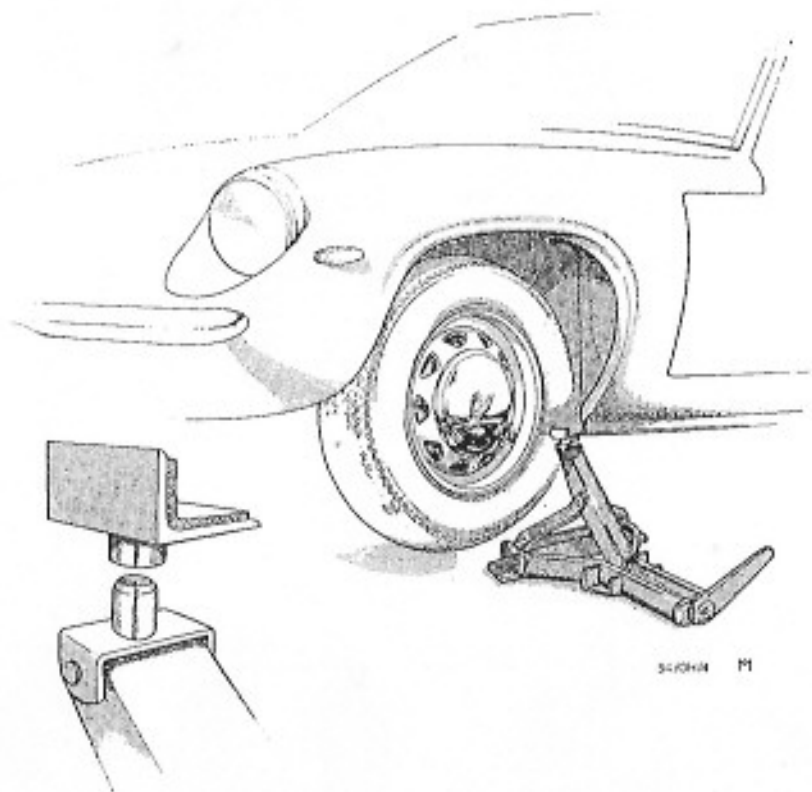


Fig. 6. Front jack location

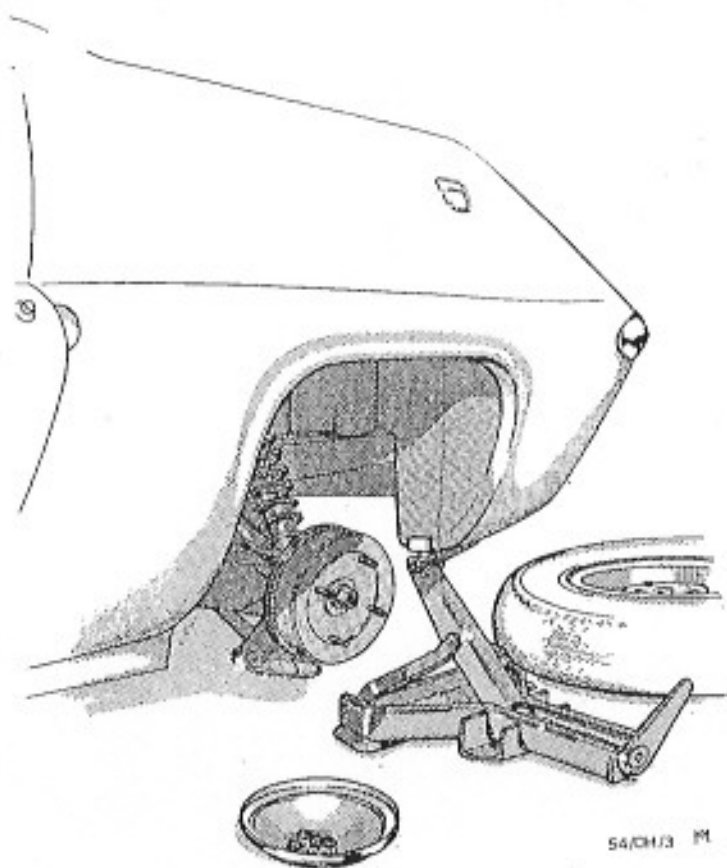


Fig. 7. Rear jack location

Using the jack

The jack should be located at the rear of each wheel arch, using the "L" shaped adaptor (in toolkit) on the head of the jack and between the car body depending on which wheel is being raised. Apply the handbrake before commencing to raise the vehicle. If parked on a slope, the wheels which are not being raised should be chocked.

ALWAYS store the jack in its correct location (see Fig. 8). 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 the wheel 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 a half-turn.

3) Raise the vehicle with the assistance of the jack.

4) Continue to release the wheel nuts, taking care not to damage the paint on the wheels.

5) Replace the wheel nuts by reversing these instructions.

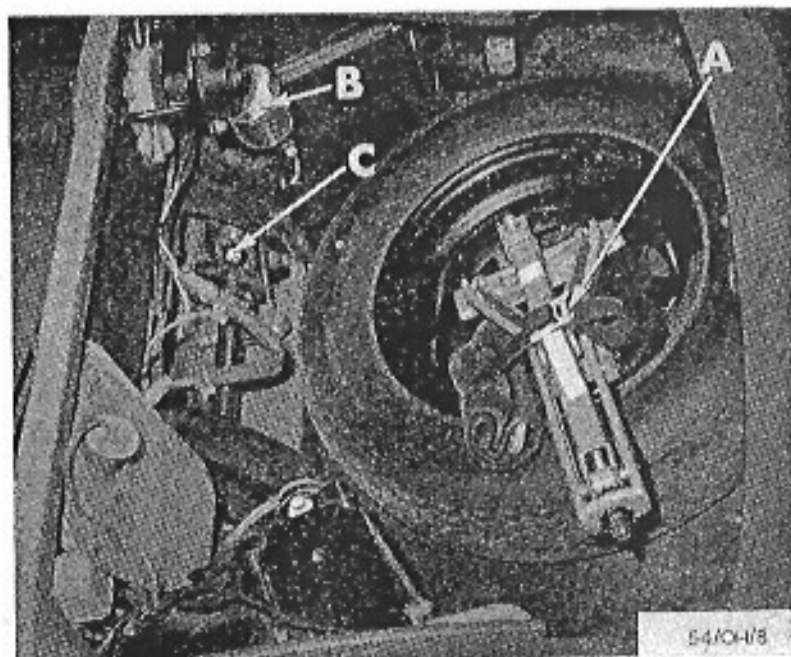


Fig. 8. A—Correct jack stowage
B—Brake master cylinder reservoir
C—Steering rack lubrication plug

6) Check security of wheel nuts at weekly intervals.

NOTE: All wheel nuts have right-hand threads and are removed in an anti-clockwise direction. When replacing nuts, ensure that their rounded ends are facing the wheel.

Tyres

It is recommended that the complete assemblies of wheels and tyres are balanced at intervals of every 3,000 miles (5,000 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 manufacturer concerned.

When inadvertently running on reduced tyre pressures, the tyre could be pulled off the wheel as the wheel safety ledge is slightly tapered. For this reason, inner tubes are fitted in tubeless tyres (where necessary) as an additional 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.).

Filling Cooling System

- 1) Pull heater control to 'HOT' position.

- 2) Remove vent plug, or open tap, on top of radiator.

- 3) Remove filler cap on header tank and fill with coolant until coolant escapes *continuously* from vent on radiator.

- 4) Replace vent plug finger tight, or close tap.

- 5) Fill header tank to brim—*keep topped up*.

- 6) Start engine and run at about 1500 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) Open vent screw on manifold vent pipe, and close when coolant escapes continuously.

- 9) Check that radiator and heater are warming up. If not, repeat 3, 7 and 8.

- 10) Occasionally slacken vent plug or tap on radiator to bleed out air.

- 11) Run engine until hot—i.e. fan starts.

- 12) Top up and replace cap.

- 13) 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.

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.**

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 months of winter, 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

Pressure on the brake pedal forces fluid from a master cylinder into cylinders at the wheels, exerting pressure on pistons which actuate the front brake pads, or the rear brake shoes.

The handbrake is mechanically operated, through a cable linkage and operates on the rear brakes. It is quite independent of the hydraulic system in operation.

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

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

Rear brakes can be adjusted by means of the square adjusters located on the brake backplates.

Brake pads and shoes—These should be examined at intervals of every 3,000 miles (5,000 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.

It should be understood that a metallic hiss is apparent with disc brakes. This is normal and should not be considered as a fault. If a metallic squeal is heard, this is general indication of brake pads OVERDUE for replacement. 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 3,000 miles (5,000 km.).

Servo unit air filter (if fitted)—Every 6,000 miles (10,000 km.) the filter element should be renewed.

To 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 3,000 miles (5,000 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 seals, hoses and fluid—The brake manufacturers recommend that at intervals not EXCEEDING 40,000 miles (65,000 km.) or 3 years whichever is reached first, that the braking system be completely overhauled and all washers, seals and hoses renewed. Hydraulic servo units should 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 9 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 6 months (i.e. before and after winter months), inspect all brake pipes for salt or grit corrosion. Renew pipes where necessary.

Brakes (USA Federal model)

Briefly, the braking system is split into two separate hydraulic units with its own master cylinder, two brakes (either front or rear). The object of the dual systems being, that in the unlikely event of a leak developing or a brake pipe splitting, at either front or rear of the car, the driver is not in a position of having no brakes and is thus able to stop in the event of a failure.

Also incorporated in the hydraulic system is a brake fail warning lamp. The lamp will glow RED if a failure occurs anywhere within the hydraulic system.

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 then, this fuel should be used consistently so ensuring optimum performance.

Sparking plugs

To maintain peak performance, the sparking plugs should be cleaned and their points adjusted at intervals of every 6,000 miles (10,000 km.). The plugs should be renewed at intervals of every 12,000 miles (20,000 km.). Under certain fuel and operating conditions, particularly extended slow-speed town driving, sparking plugs may have to be serviced at shorter intervals.

Lamps bulb replacement

Headlamps:

1) Remove the front bezel by prising up from the bottom.

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 reflector/lens assembly 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) When refitting the bulbs ensure that they are correctly tensioned in their holders.

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) When refitting bulbs ensure that they are correctly tensioned in their holders. Refit the lens and secure with its fixing screws, correctly posi-

tioning the foam rubber seal and avoiding over-tightening.

Flasher repeater lamps:

- 1) Remove the screws securing the lens.
- 2) Pull bulb from its holder.
- 3) Replace both bulb and lens by reversing the 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 from 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.

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 table is used, otherwise serious damage may result.

Recommended lubricants—see table page 28.

Engine

The correct level is to the top mark on the dipstick, which is located to the right-hand side of the cylinder block. The oil filler cap is at the forward end of the rocker cover. Inspect the oil level daily,

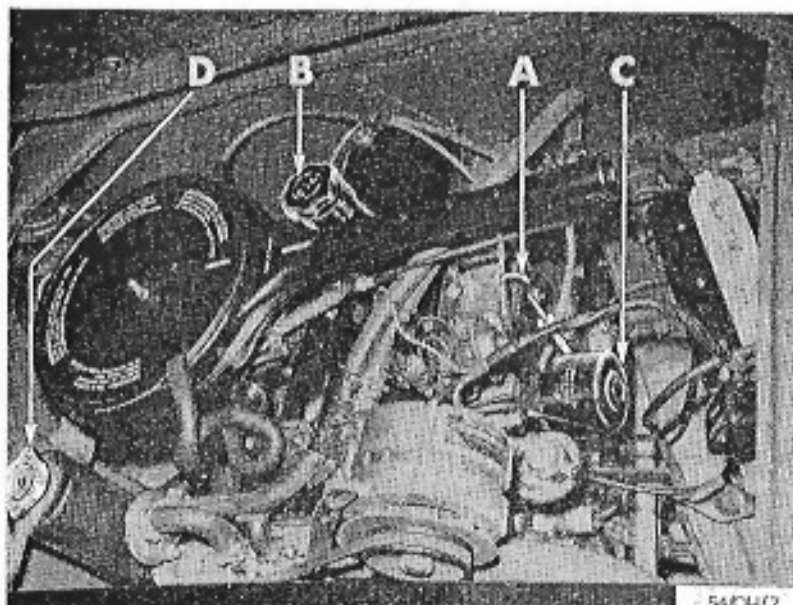


Fig. 9. A—Engine sump dipstick
 B—Engine oil filler cap
 C—Engine oil filter
 D—Cooling system filler cap

topping-up if necessary to the correct 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.

Draining the sump—Draining of the sump will be greatly facilitated if carried out when the car has

just completed a run and the oil is warm, thus flowing more readily. Allow to drain thoroughly, clean the drain plug and replace. Ensure that your garage attendant replaces the cap correctly.

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

NOTE: If the engine oil is renewed at the recommended intervals 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—It is recommended that the oil filter element be renewed at intervals of every 6,000 miles (10,000 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.

Transmission

A combined filler/level plug is located on the left-hand side 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. Used lubricant should be drained at intervals of every 6,000 miles (10,000 km.) preferably when the oil is warm when the car has just completed a run, thus

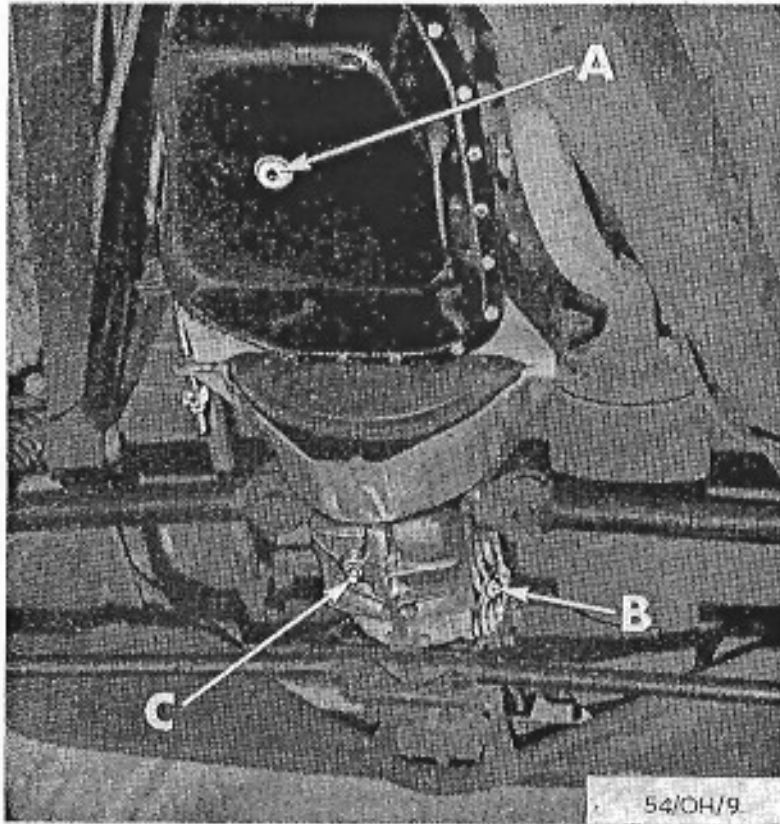


Fig. 10. A—Engine sump drain plug
 B—Transmission filler/level plug
 C—Transmission drain plug

allowing it to flow more readily. Allow to drain thoroughly, clean the drain plug and replace.

Lower steering swivels

At intervals of every 6,000 miles (10,000 km.), remove the plug "A" (Fig. 11) 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.

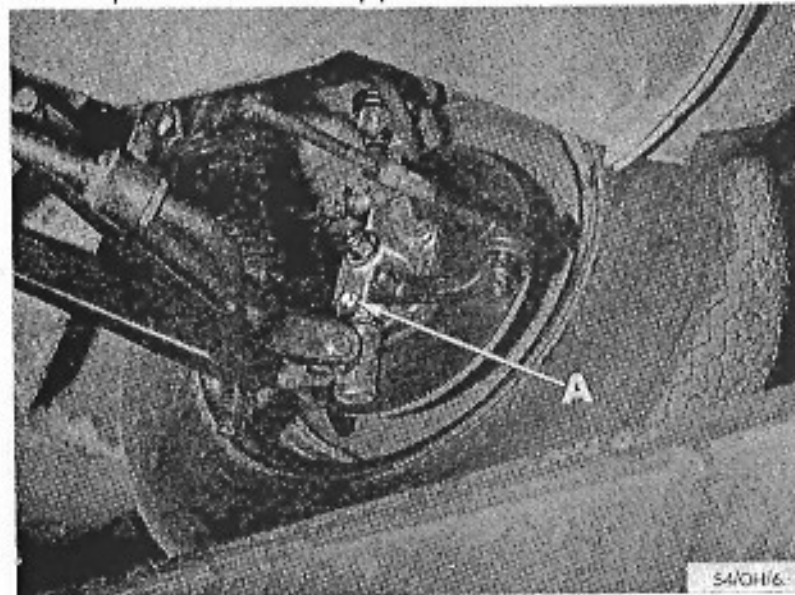


Fig. 11. A—Steering swivel plug

Brake fluid reservoir

The brake fluid reservoir is located in the front luggage compartment, on the driving side (see Fig. 8).

Check fluid level in the reservoir at intervals of every 3,000 miles (5,000 km.), topping-up if necessary to within $\frac{1}{8}$ in. (12 mm.) of the top. Use only the specified fluid for topping-up.

Handbrake cable

At intervals of every 3,000 miles (5,000 km.), the grease nipple on the handbrake cable (where fitted) should be lubricated using one of the recommended greases shown on page 28.

Steering unit

At intervals of every 12,000 miles (20,000 km.), remove the plug from the top of the unit and fit a screwed grease nipple. Apply the grease gun filled with one of the recommended greases (see page 28) and give FIVE STROKES ONLY as over-greasing can cause damage to the bellows. Remove the nipple and refit the plug.

SERVICING INTERVALS

USA Federal models

On vehicles equipped with Renault Double Carburation System (DCS) exhaust emission control,

the following additional services to those given in the Service Voucher Book, must be carried out.

At first 1,200 miles (2,000 km.)

Check condition of distributor points and adjust if necessary.

Check initial timing of distributor and adjust if necessary.

Check tightness of carburettor securing nuts.

Check engine idling r.p.m. and adjust if necessary to give 1050 ± 25 r.p.m.

Every 3,000 miles (5,000 km.)

Check and adjust sparking plug points.

Check initial timing of distributor and adjust if necessary.

Check engine idling r.p.m. and adjust if necessary to give 1050 ± 25 r.p.m.

Every 6,000 miles (10,000 km.)

Check and adjust sparking plug points, or replace if condition demands.

Check condition of distributor points and adjust if necessary.

Check initial timing of distributor and adjust if necessary.

Check engine idling r.p.m. and adjust if necessary to give 1050 ± 25 r.p.m.

Replace air cleaner element.

Clean "PCV" system flame arrester.

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

Renew sparking plugs.

Check condition of distributor points and adjust if necessary.

Check initial timing of distributor and adjust if necessary.

Clean exposed parts of carburettor—DO NOT DISMANTLE.

Check tightness of inlet and exhaust manifolds and carburettor securing nuts.

Check engine idling r.p.m. and adjust if necessary to give 1050 ± 25 r.p.m.

Clean "PCV" system flame arrester.

Clean the "AC" valve, or replace with new valve if condition demands.

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

For owners who are desirous of fitting a radio, we recommend that suppressors are also fitted, otherwise reception could be impaired by the fibre-glass body.

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. 46 T 327).

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

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	Castrolase 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 and Clutch Fluid Crimson to specification SAE 70 R.3.					

Description

Front hubs
Repack with grease if necessary

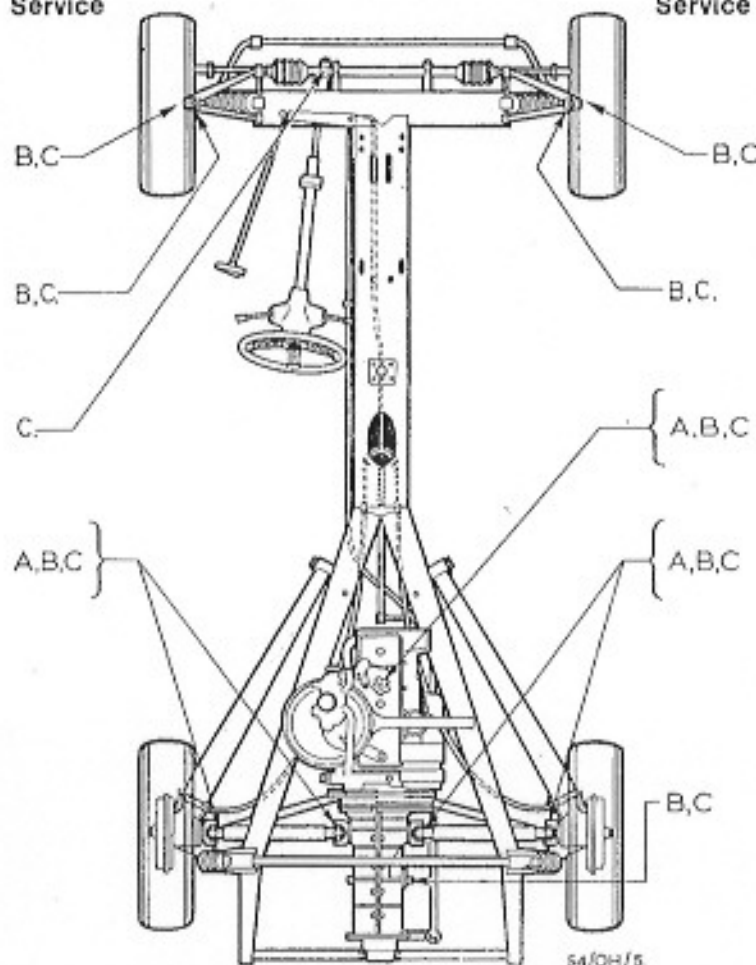
Steering swivels
Lubricate

Steering rack
Lubricate

Drive shafts
Lubricate

Fig. 12. Lubrication diagram (use in conjunction with Service Voucher Book)

Service



Service

Description

Front hubs
Repack with grease if necessary

Steering swivels
Lubricate

Engine
Check level daily
Drain when hot and refill

Drive shafts
Lubricate

Transmission
Check level at "A" service
Drain when hot and refill.

TECHNICAL SPECIFICATION

ENGINE

Capacity:	
Except USA Federal	1470 cc. (89.7 cu. in.)
USA Federal only	1565 cc. (95.5 cu. in.)
Type	Overhead valve
No. of cylinders	4
Bore	76 mm.
Stroke	81 mm.
Compression ratio	10.25:1
Firing order	1-3-4-2 (No. 1 at flywheel end)
Oil pressure (hot)	60 lbs. in. ² (4.2 kg. cm. ²)
Ignition timing (static):	
Except USA Federal	4° B.T.D.C.
USA Federal only	T.D.C.
Distributor contact breaker gap016/.019 in. (.40/.50 mm.)
Sparking plug—Type*	Marchal 34 HS
—Gap025/.028 in. (.635/.711 mm.)

VALVE CLEARANCES (Cold)

Inlet008 in. (.20 mm.)
Exhaust010 in. (.25 mm.)

TRANSMISSION

Overall ratios (synchromesh on all forward gears).

Top	3.66:1
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* Alternatively Champion N7Y may be used on USA Federal engines (1565 cc. capacity), with a gap of .020/.023 in. (.508/.584 mm.).

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

FRONT SUSPENSION

Front wheel toe-in ...	3/16 in. (4.8 mm.) to 1/16 in. (1.6 mm.)
Camber angle	0° to $\pm \frac{1}{2}$ °
Castor angle	3° $\pm \frac{1}{2}$ °
Swivel pin inclination	9° $\pm \frac{1}{2}$ °

REAR SUSPENSION

Rear wheel toe-in	3/16 in. (4.8 mm.) to zero
Camber angle	0° to 2° Negative

WHEELS AND TYRES

Wheel — Type	Pressed steel bolt-on
—Size	4 $\frac{1}{2}$ J
Tyres* — Type	Firestone F.100 tubeless, or Dunlop SP Sport with tubes*
—Size	155 x 13
Pressure (cold) at speeds BELOW 100 m.p.h. (160 k.p.h.)	
—Front	18 lbs. in. (1.27 kg. cm.)
—Rear	28 lbs. in. (1.97 kg. cm.)

Pressure (cold) at sustained speeds ABOVE 100 m.p.h.
(160 k.p.h.)
—Front 24 lbs. in. (1.69 kg. cm.)
—Rear 34 lbs. in. (2.39 kg. cm.)

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

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

DIMENSIONS

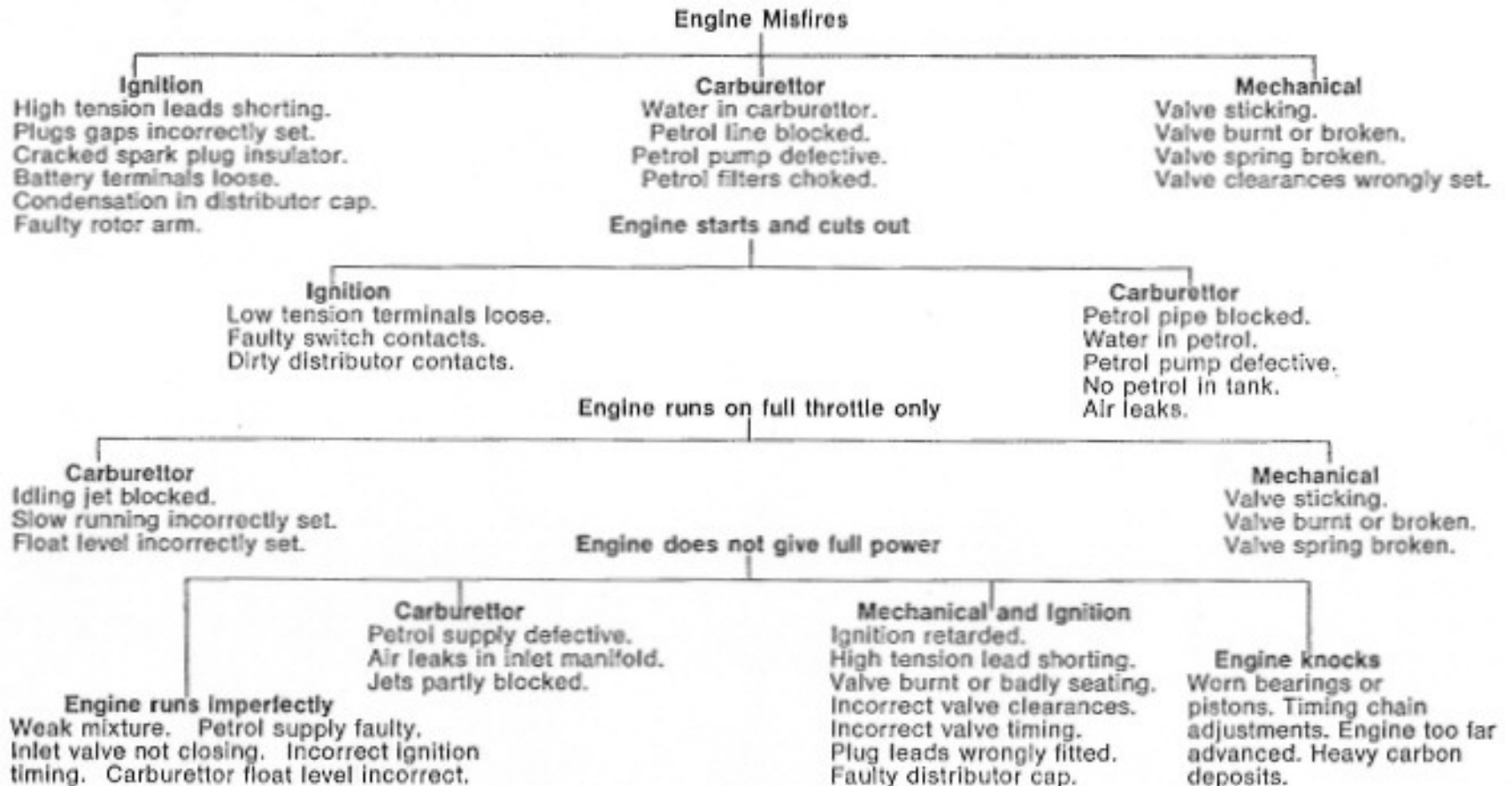
Wheelbase 91 in. (231.1 cm.)
Track (at wheel hub)—Front 53 in. (134.6 cm.)
—Rear 53 in. (134.6 cm.)
Overall—Length 157½ in. (399.4 cm.)

—Width 64½ in. (163.8 cm.)
—Height 42½ in. (107.9 cm.)
Design ground clearance 6½ in. (16.5 cm.)
Turning circle 44 ft. (13.4 m.)
Kerb weight (unladen) 1566 lbs. (710 kg.)

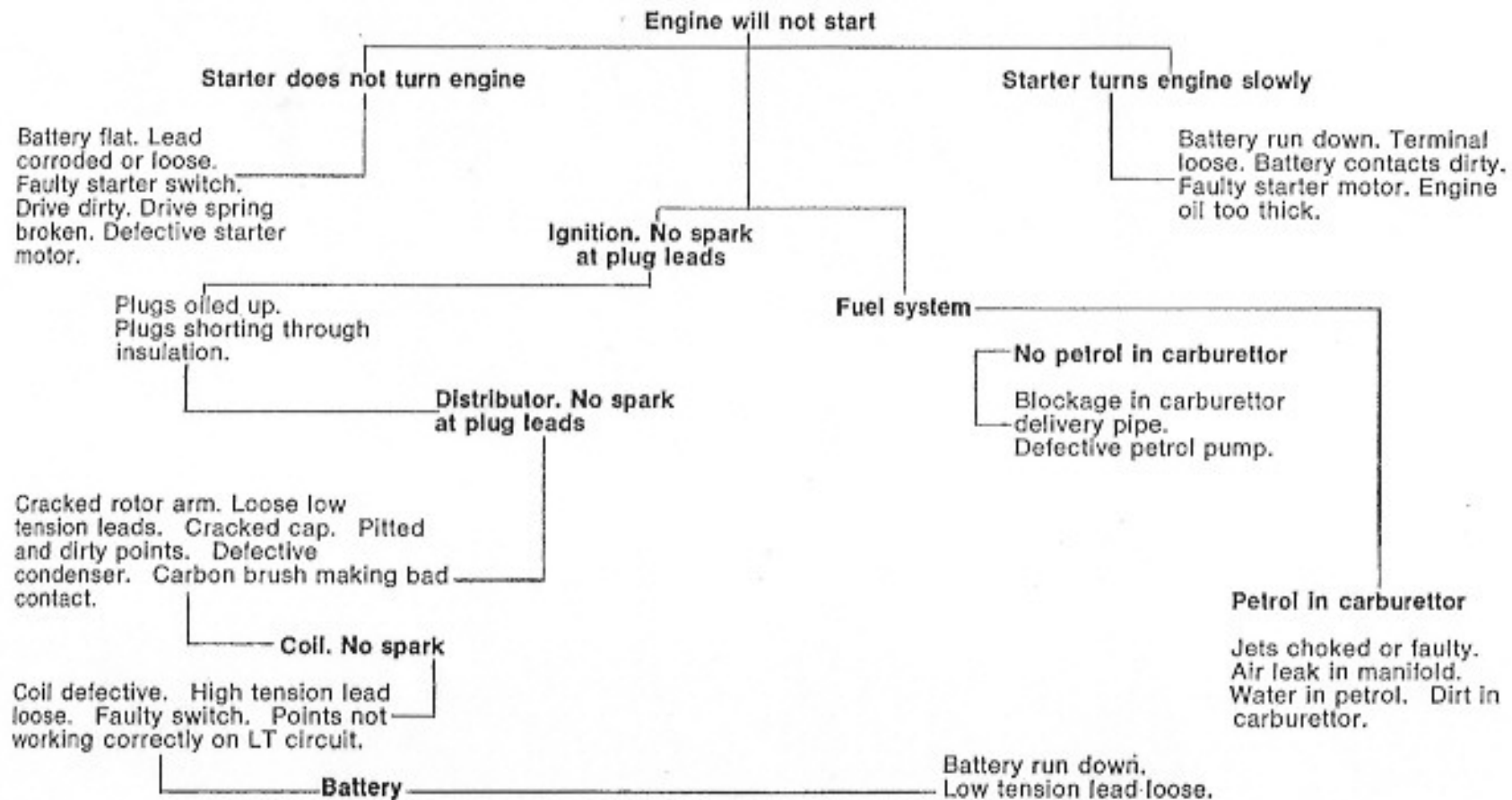
CAPACITIES

Fuel tank 6 gall. (27 litres; 7.2 US gall.)
Engine (with filter) oil 7½ pts. (4 litres; 9 US pts.)
Transmission oil 3 pts. (1.75 litres; 3.6 US pts.)
Cooling system (with heater) 18 pts. (10.3 litres; 21.6 US pts.)
Battery (negative earth) 12 volt, 39 amp. hr.

FAULT DIAGNOSIS



FAULT DIAGNOSIS



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