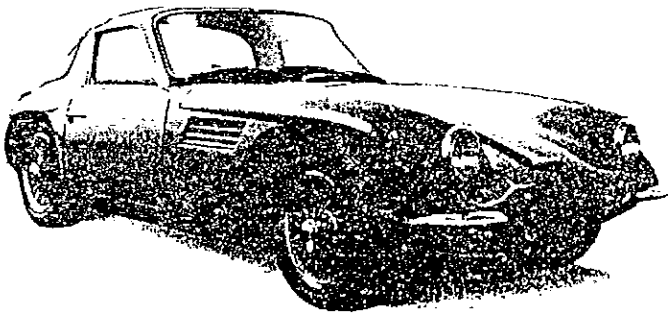
TVR

VIXEN S2



OWNER'S MANUAL

CONTENTS LIST

CONTENTS LIST

Originally issued by:

TVR ENGINEERING LTD.
Bristol Avenue,
Blackpool FY2 0JF,
England.

Telephone: 0253-56151

Photo-litho reprint 1979 for the TVR Car Club.

INTRODUCTION

This manual contains information necessary for satisfactory operation and maintenance of the TVR VIXEN S2. The handbook is divided into three main sections — OPERATING INSTRUCTIONS, which gives detailed information with regards to the controls; ROUTINE MAINTENANCE, which deals with the maintenance of the various components of the motor car at recommended mileage intervals; SERVICE INSTRUCTIONS, which deals with certain operations which should normally be undertaken by the owner or a TVR distributor or dealer. The Service Instructions contained within this handbook are included as a guide for TVR enthusiast or owner living in a remote district.

The satisfactory and the fine performance of which your TVR is capable depends upon, to a large extent, the car and attention it receives from you, its owner. It is therefore, recommended that careful attention is paid to the instructions given under the ROUTINE MAINTENANCE section of this handbook.

Any major service operations not described in this book, may be found in the workshop manual or the owner is recommended to see his TVR distributor or dealer.

Note.—All references in this handbook to right-hand side and left-hand side are made assuming the person to be looking from the rear of the car.

GENERAL DATA

Engine

Number of cylinders	4
Bore	3.188 in. (80.98 mm)
Stroke	3.056 in. (77.62 mm)
Cubic capacity	97.6 cu. in. (1599 cc)
Compression ratio	9 : 1
Firing order	1, 2, 4, 3
Valve clearances (engine hot):	
Inlet	0.012 in. (0.32 mm)
Exhaust	0.022 in. (0.58 mm)
Contact breaker point gap	0.025 in. (0.64 mm)
Sparking plug gap	0.023 in. (0.58 mm)
Sparking plug type	Autolite AG22A 14 mm
Ignition timing	8° B.T.D.C.
Igaition timing with exhaust emission control	4° B.T.D.C.
Valve seat angle: Inlet, Exhaust	45° to 45°15′
Carburettor	Weber Twin Choke
Recommended fuel	97 Octane
Oil pressure	40 lb/in² (2.81 kg/cm²)
Sump capacity	5.72 imp. pts. (6.87 US pints) (3.25 litre)
Water capacity	14.25 pts. (17 US pints) (8.2 litre)
Thermostat	Wax type
Commences opening	185°-192°F (85°-89°C)
Fully open	210°-216°F (99°-102°C)

NOTE: ELECTRICAL SYSTEM IS NEGATIVE EARTH TYPE.

Tightening Torque Figures:	
Cylinder head bolts	65-70 lb/ft (8.9-9.7 kg/m)
Flywheel	45-50 lb/ft (6.22-6.91 kg/m)
Camshaft thrust plate	2.5-3.5 lb/ft (0.35-0.48 kg/m)
Main bearings	65-70 lb/ft (8.9-9.7 kg/m)

Gearbox ... Type: Four speed — synchromesh on all gears

Front Suspension and Steering:	
Castor angle	Fixed
Camber angle	½°—1½° Positive
Front wheel alignment	Toe in 20′
Rear Suspension:	
Camber angle	1½° -2° Negative
Rear wheel alignment	Toe-in 30′
Rear Axle	Type: Hypoid semi-floating
Ratio	3·890
Tyres: 165 x 15	Type: Radial

Pressures:

Front: 22 lb/in² (1.55 kg/cm²) Rear: 24 lb/in² (1.69 kg/cm²)

Dimensions and Weight

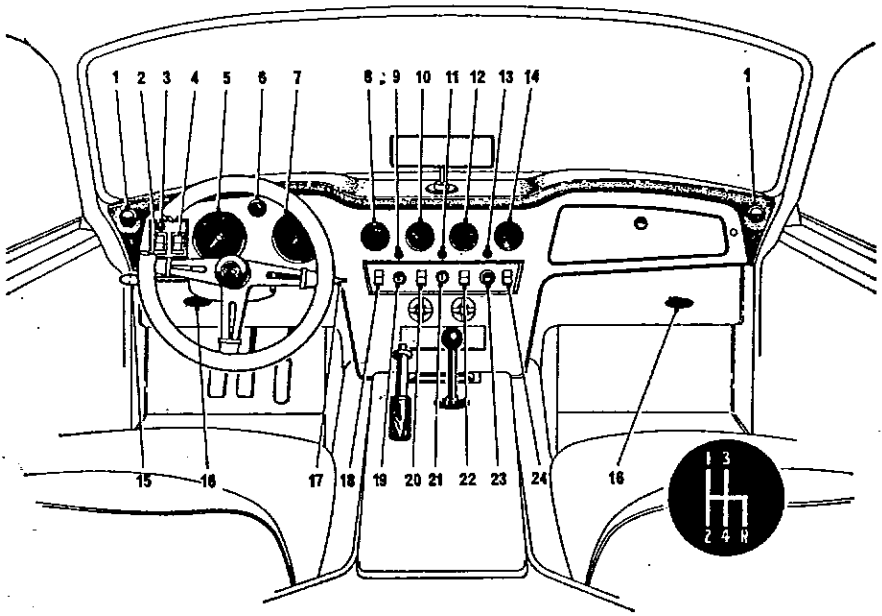
Wheelbase	90 in. (2286 mm)
Track, front	53 in. (1346 mm)
Track, rear	54 in. (1371 mm)
Overall length	145 in. (3683 mm)
Overall width	64 in. (1625 mm)
Overall height	48 in. (1219 mm)
Weight (dry) approximately	15 cwt. (762 kilo)
Turning circle	27 ft. (8.23 m)
Ground clearance	5 in. (127 mm)

LAMP	*Volts*	*Watts*	*Application*
Head (Sealed Beam Unit)	12	60-45	U.K.
(Sealed Beam Unit)	12	50-40	LHD Export
Side	12	6	U.K. & Export
	12	6-21	U.S.A.
Front/Side Marker Lights	12	6	U.S.A. only
Front and Rear Flashing Indicators	12	21	
Rear/Brake	12	5-21	
Number Plate and Illumination	12	6	
Reversing Light	12	21	
Interior Lights	12	6	
Instrument Illumination: Mainbeam warning light, Ignition warning light, Handbrake/brake fluid warning light	12	2	
Panel Lights	12	2.2	

PERFORMANCE DATA

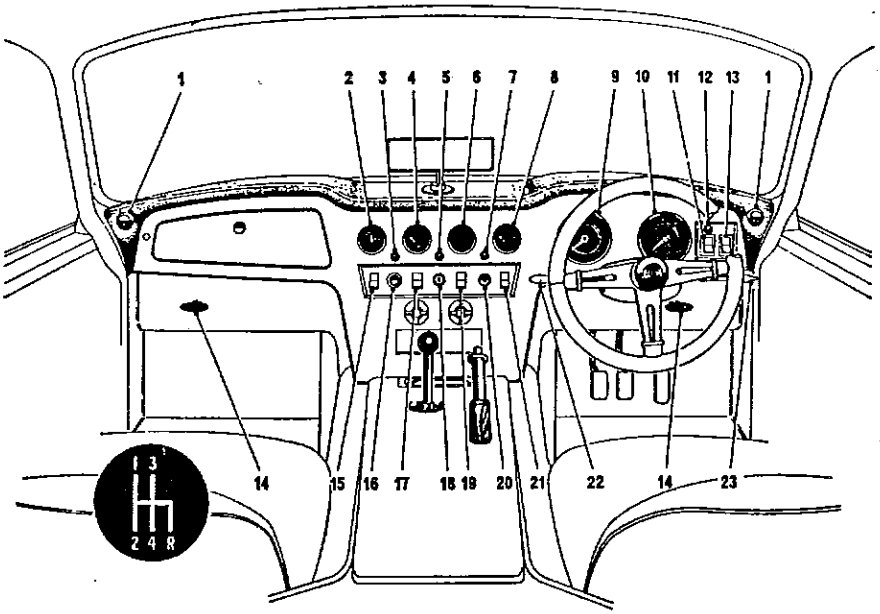
The following table shows the relationship between engine revs. per minute and road speed in miles and kilometres per hour,

ROAD SPEED		*ENGINE R.P.M.*			
Miles per hour	Kilometres per hour	1st Gear	2nd Gear	3rd Gear	Top Gear
10	16.1	1582	1089	743	532
20	32.2	3162	2139	1486	1064
30	48.3	4744	3208	2229	1596
40	64.4		4277	2972	2128
50	80.5		5346	3715	2660
60	96.6			4458	3192
70	112.7			5201	3724
80	128.7			5944	4256
90	144.8				4788
100	161.0				5320
110	177.0				5852
115	185.1				6118



LEFT HAND DRIVE

1. *Facia Air Vent*
2. *Windscreen Wiper Switch*
3. *Brake Fail Warning Light*
4. *Lights Switch*
5. *Speedometer*
6. *Hazard Warning Light*
7. *Tachometer*
8. *Ammeter*
9. *Reverse Warning Light*
10. *Temperature Gauge*
11. *Indicators Warning Light*
12. *Oil Pressure Gauge*
13. *Main Beam Warning Light*
14. *Fuel Gauge*
15. *Indicator Lever*
16. *Bonnet Lock Catch*
17. *Dip, Main Beam and Flasher Lever*
18. *Heater Blower Switch*
19. *Cigar Lighter*
20. *Reversing Light Switch*
21. *Ignition Switch*
22. *Panel Light Switch*
23. *Choke*
24. *Windscreen Washer Switch*



RIGHT HAND DRIVE

1. *Facia Air Vent*
2. *Ammeter*
3. *Reverse Warning Light*
4. *Temperature Gauge*
5. *Indicators Warning Light*
6. *Oil Pressure Gauge*
7. *Main Beam Warning Light*
8. *Fuel Gauge*
9. *Tachometer*
10. *Speedometer*
11. *Windscreen Wiper Switch*
12. *Brake Fail Warning Light*
13. *Lights Switch*
14. *Bonnet Lock Catch*
15. *Heater Blower Switch*
16. *Cigar Lighter*
17. *Reversing Light Switch*
18. *Ignition Switch*
19. *Panel Light Switch*
20. *Choke*
21. *Windscreen Washer Switch*
22. *Dip, Main Beam and Flasher Lever*
23. *Directional Indicator Lever*

OPERATING INSTRUCTIONS

INSTRUMENTS

Ammeter

The ammeter shows the current flow into or out of the battery. A compensated voltage control unit is incorporated in the charging circuit and thus the flow of current into the battery is automatically adjusted to the state of charge of the battery. Therefore, when the battery is fully charged, the charge rate delivered from the dynamo to the battery will only be small and conversely when the battery charge is low, a continuously high charge will be shown.

Water Temperature Gauge

The water temperature gauge is electrically operated via a temperature sensitive element screwed into the thermostat housing. The normal running temperature is 173°F (80°C) approximately.

Oil Pressure Gauge

The oil pressure gauge records the oil pressure being delivered by the engine oil pump to the engine oiling points. The minimum pressure at normal running speeds when the engine is at normal running temperature should be approximately 35-40 lb/in^2. The oil pressure gauge does not measure the oil level.

Fuel Level Gauge

The fuel level gauge is electrically operated and provides an indication of fuel level in the petrol tank.

Note.—The petrol tank holds 15 gallons (18 US gallons) (68 litres).

Tachometer

The tachometer indicates the engine speed in x100 revolutions per minute.

Speedometer

The speedometer indicates vehicle speed in miles per hour, total mileage and trip mileage. The trip mileage can be set to zero by pushing the winder upwards and rotating counter-clockwise.

SWITCHES

Heater Switch

This switches the heater blower on to provide a boosted air flow to the heater, demister and face level vents.

Cigar Lighter

To operate, press holder into socket and remove the hand. When the lighter has reached the required temperature the holder will return to the extended position with a noticeable 'click'.

WARNING: Do not hold the lighter in the 'pressed in' position manually.

Reversing Light

The reversing light is switched on with the switch marked 'reverse'. A green warning light on the left-hand side of the centre instrument cluster will light.

Ignition Switch

The ignition switch is a four position switch as follows:

1. Fully counter-clockwise from the central position provides an auxiliary position whereby the following electrical equipment is brought into circuit:
   (a) Radio when fitted
   (b) Heater blower motor
   (c) Wipers
   (d) Cigar lighter
2. Centre position OFF.
3. To the right (IGNITION ON), and all electrical circuits in operation.
4. Fully clockwise starter motor actuated.

Note. Once the engine has fired the key should be allowed to spring-return to the (IGNITION ON) position.

Panel Switch

The panel switch turns on the lights to illuminate the instrument cluster. This switch is only operative when the side light switch is turned ON.

Choke Control
The choke control is pulled to provide a cold start facility for the engine.

Washer
The washers are operated by depression of the switch situated on the switch panel on the centre of the dash.

Wiper
The wiper switch is a three position switch giving an OFF/SLOW/FAST speed for the wipers.

Master Light On/Off Switch
The master light on/off switch, switches on the vehicle's side lights. The headlamp control (fig. 5) is situated on the steering column; in the first position the headlights are on full beam (this will be denoted by a blue light below the instrument cluster in the centre of the facia). Further depression of this control dips the headlamps. The headlamp control will operate only when the master light ON/OFF switch is in the ON position.

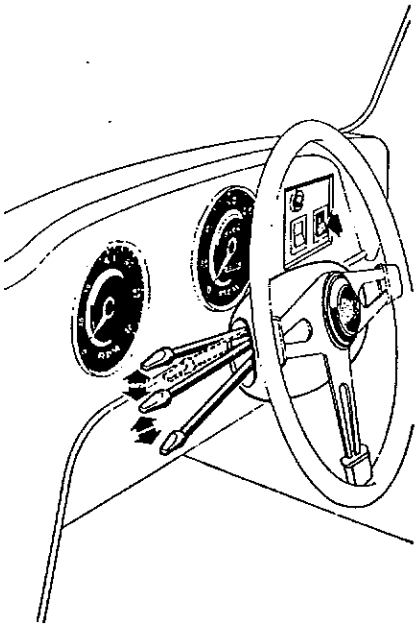


Fig. 5. Headlamp Switching

Indicator Switch
The indicator switch is situated on the off-side of the steering column, pushing the lever upwards turns the left-hand indicators on and similarly pushing the indicator switch downwards from the central position, switches the right-hand indicators on. The switch is self-cancelling. When the indicators are switched on in either direction, an amber warning light in the centre of the instrument cluster will flash.

Heating and Ventilating Equipment
For full instructions in the use of the heating and ventilating equipment, see page 17.

Bonnet Lock Control
The bonnet lock control is operated from the driving compartment. To open the bonnet, pull the control knobs situated on either side of the car beneath the facia panel. This will release the bonnet which may now be lifted forward away from the centre of the car giving full access to the engine and front suspension. When closing the bonnet do not let it slam shut.

Driving Controls
Accelerator Pedal — controls the speed of the engine.

Brake Pedal — operates the hydraulic disc brakes on the front and drum brakes on the rear giving braking to all four wheels.

Clutch Pedal — depression of the clutch pedal disconnects the transmission of the car from the engine.

Note.—Never drive with the foot resting on this pedal and do not keep this pedal depressed for long periods in traffic. Never coast the car with a gear engaged and the clutch depressed.

Handbrake Lever
The handbrake lever (fig. 6) is positioned between the driver and passenger seats and operates a mechanical linkage to the rear wheels. To release the handbrake, slightly lift the lever, depress the centre button and release. When applying the brake, pull the handbrake upwards and a trigger will automatically engage with a ratchet.

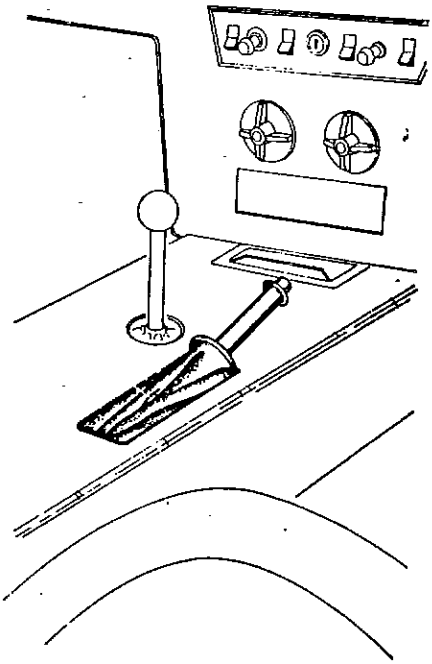


Fig. 6. Handbrake Lever

Gear Lever

The gear lever is centrally situated with the gear positions (figs. 3 & 4) indicated on the control knob. To engage reverse gear, move the gear lever to the extreme right and then backward. Always engage neutral and release clutch when the car is at rest.

Horn

Electric horns are operated from the horn push on the centre of the steering wheel.

Seat Adjustment (fig. 7)

Both seats are adjustable for reach. Rotate the lock handle and move the seat on its runner to the required position. Release the lock handle and slid until the mechanism engages with a 'click'.

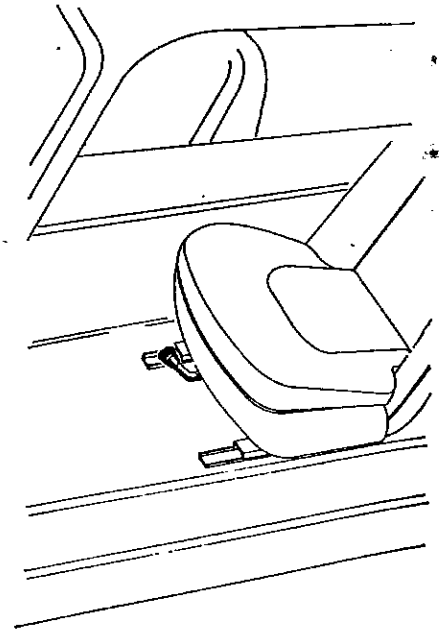


Fig. 7. Seat Adjustment

Braking Lights

Twin combine tail and braking lights are situated at the rear of the car. The brake lights light automatically when the footbrake is applied.

Headlamp Flasher

The headlamp switch on the nearside of the steering column may be utilised as a headlamp flasher without the master light switch being turned on. To operate lift the lever towards the steering wheel.

Note.—Headlamp flashing is not a recognised means of signalling in the U.K.

Fuel Tank Filler

A fuel tank filler is situated on the right-hand rear wing (fig. 8).

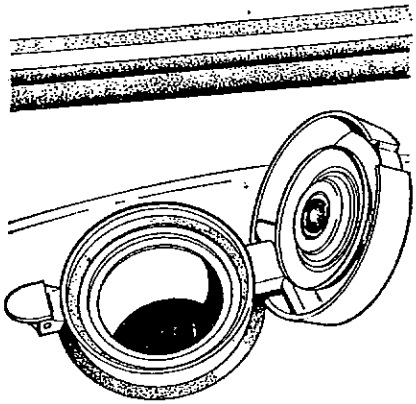


Fig. 8. Fuel Tank Filler

Spare Wheel and Jacking Equipment

A spare wheel is housed on the rear floor of the car (fig. 9). A scissor jack and tool kit is provided.

To remove the spare wheel:

1. Remove the wheel cover.
2. Unscrew the centre locking screw and lift the wheel out of the car.

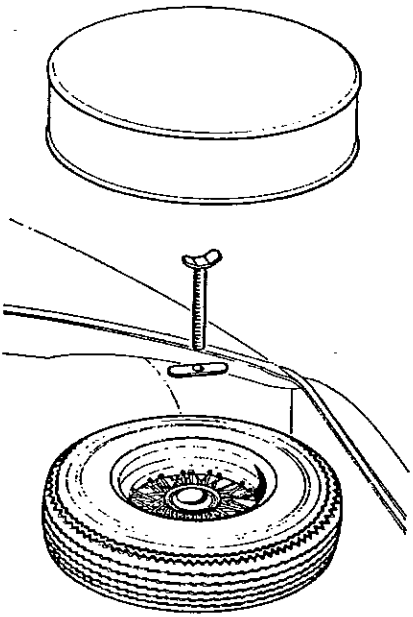


Fig. 9. Spare Wheel Housing

Tools

The tool kit, to be found under the spare wheel cover, comprises as follows:

1. Scissor jack and handle
2. Tool Roll containing:
   - i) plug box spanner
   - ii) tommy bar
   - iii) $\frac{5}{8}$ in. x $\frac{7}{16}$ in. AF open-ended spanner
   - iv) $\frac{1}{2}$ in. x $\frac{7}{16}$ in. AF open-ended spanner
   - v) $\frac{1}{4}$ in. x $\frac{7}{16}$ in. Whit. open-ended spanner
   - vi) adjustable spanner
   - vii) pair pliers
   - viii) copper-headed mallet
   - ix) screwdriver

Export models only: wheel nut spanner.

STARTING AND DRIVING

Prior to Starting

Before starting the engine the new owner should be familiar with the location and function of the instruments and controls. Open the bonnet and ensure that the water level in the radiator is at least 1 in. above the tubes and the oil level in the sump, using the dipstick, is at the correct level. Close the bonnet. Place the gear lever in neutral position and check that the handbrake is applied. Turn the ignition switch ON and ensure that there is sufficient fuel in the fuel tank. Return the ignition switch to off.

Starting from Cold

Note.—Do *not* put your foot on the accelerator control.

1. Pull out the choke control to the half-way position.

   Note.—In extremely cold weather, the choke control should be pulled fully out, but returned to the half-way position as soon as the engine begins to 'hunt' due to over rich mixture.

2. Rotate the starter switch fully clockwise and release the key immediately the engine fires.

3. Push in the choke control as far as possible without stalling the engine.

4. It is inadvisable to race a cold engine, but in order to reach normal running temperature quickly, drive away steadily as soon as the engine is running.
   Push the choke control home progressively as quickly as the warming engine will allow.

Driving

WARNING: Adhere to the running-in instructions given as follows.

1. During the running-in period, do not allow the engine to exceed the following speeds and do not allow the engine to labour on hills. It is preferable to select a lower gear and use a higher engine speed than to allow the engine to labour at low speeds. For the first 1,000 miles (1610 Km) do not exceed 3,000 r.p.m.; and between 1,000 (1610 Km) and 1,500 (2415 Km) miles, 3,500 r.p.m.

   Note.—After the first 500 miles (805 Km), have the oil drained from the sump and refilled. Check the body retaining bolts for tightness. This should be carried out in accordance with first service instructions (see your Service Maintenance Book). During the first 500 miles (805 Km) do not use the brakes fiercely. This bedding-in period will eliminate squealing brakes.

2. Check the oil pressure gauge, water temperature gauge and ammeter for correct functioning of the vehicle. Should abnormal reading be obtained, investigate immediately.

3. When starting from rest, always engage first gear (to start in a high gear would cause excessive clutch slip and premature wear). Never drive with the foot resting on the clutch pedal and do not keep the clutch depressed for long periods in traffic.

4. The synchromesh gearbox provides a synchronised change into all gears. When changing gears, the movement should be slow and deliberate, when changing down a smoother gear change will be obtained if the accelerator is left depressed to provide higher engine speed suitable for the lower gear. Always fully depress the clutch pedal when changing gear.

5. Always apply the footbrake progressively, fierce and sudden application is bad for the car and tyres. The handbrake is for use when parking the car or when driving away on a hill. The handbrake should be applied when at a standstill in traffic.

Wheel Changing

Front Wheels (fig. 10)

1. Remove the spare wheel and tool kit from the inside of the car.
2. Remove the copper mallet from the tool kit and, on export cars, remove the hub spanner from the tool kit.
3. Using the mallet slacken but do not remove the hub cap, the hub caps are marked right (off) side, or left (near) side and the direction of rotation to remove is clockwise for right-hand side and counter-clockwise for left-hand side.
4. Place the scissor jack under the chassis member at the front of the vehicle.
5. Insert the rotating handle and wind clockwise, and lift until the wheel is clear of the ground.
6. Undo hub cap and remove.
7. Pull the wheel off the splined shaft.
8. Locate the spare wheel on the splines and push home.
9. Locate the hub cap and tighten as much as possible in the required direction, i.e. counter-clockwise for right-hand side and clockwise for left-hand side.
10. Rotate the jack handle counter-clockwise and lower the car to the ground.
11. Tighten the hub cap fully with the copper mallet.

Note.—After a few miles, check that the hub cap is in fact tightened fully.

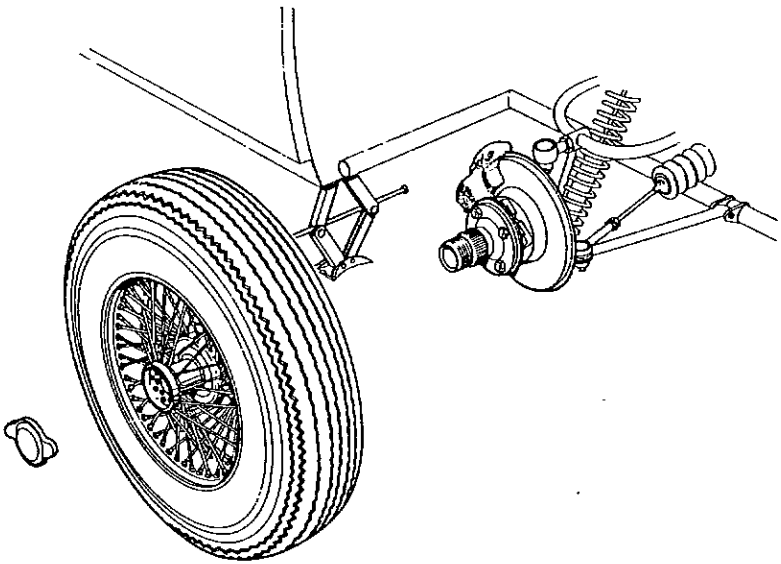


Fig. 10. Wheel Changing — Front Wheel

Rear Wheels (fig. 11)

Wheel changing for the rear wheels is exactly the same procedure as above, but the jacking point for the rear is just forward of the rear wheel arch.

FROST PRECAUTIONS

Anti-Freeze

Protect the cooling system with anti-freeze when the operation conditions warrant. Use a proprietary anti-freeze having a long life characteristic. The following table provides the following protections:

% Concentration	*Pints*	*US Pints*	*Litres*	*Protection*
10	1.50	1.87	0.85	17°F (–8°C)
15	2.25	2.70	1.28	7°F (–14°C)
20	3.00	3.60	1.70	–3°F (–19°C)
25	3.75	4.50	2.10	–20°F (–29°C)

Note.—Before putting anti-freeze into the engine, all hoses should be checked for possible cracks and all water hose clips should be tightened. It is also advisable to tighten down the cylinder head bolts to prevent any possibility of the anti-freeze seeking out ingress to cylinders or crankcase, where it could cause serious damage.

Do not overfill the radiator as overflowing of water could reduce the specific gravity of the anti-freeze content of the cooling system.

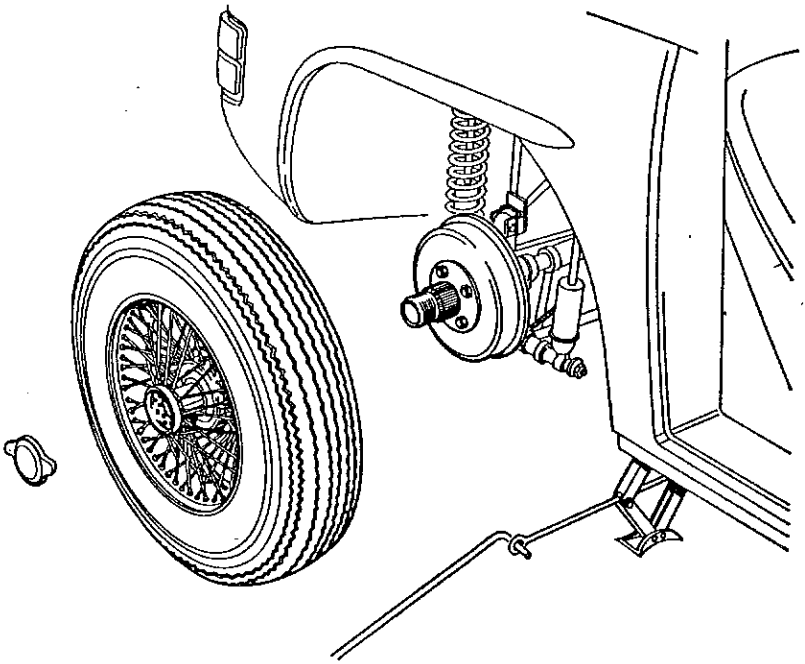


Fig. 11. Wheel Changing — Rear Wheel

To add anti-freeze:

1. Remove radiator top cap (fig. 17).

2. Remove radiator drain plug (fig. 12)

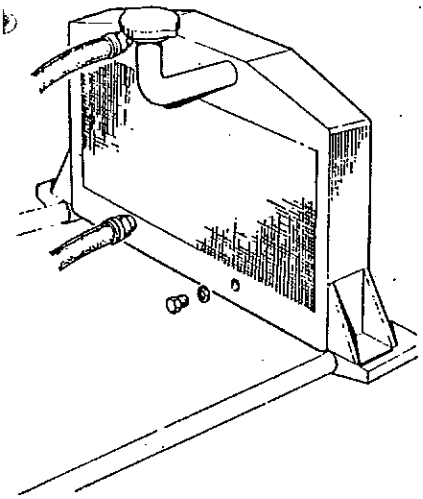


Fig. 12. Radiator Drain Plug

3. Move heater control to HOT.

4. Allow radiator to drain and flush cooling system with clean soft water.

5. Insert radiator drain plug.

6. Mix correct concentration of anti-freeze with clean soft water in a clean container.

   Note.—Water capacity is 14.25 pints (17 US pints) (8.20 litres).

7. Pour mixture into radiator.

8. Replace top cap.

9. Run engine until correct running temperature is reached.

10. Top up radiator as required.

CAR HEATING AND VENTILATING EQUIPMENT

Fresh Air System

Provision is made for admitting fresh air to the car interior. This air is ducted via the air intake on the bonnet by-passing the heater airbox through two outlet vents at either side of the dash panel. To obtain fresh air, move the circular discs to the required position and fresh air will be blown onto the driver and passenger's upper body.

Heating System

Fresh air is ducted from the same air intake as above through the heater airbox via the heater matrix and then to either demist ducts or to the car interior. Two outlets located on the inner foot wells to admit warm, hot or cold air to the interior of the car.

The forward motion of the car rams sufficient air, at 25 m.p.h. (40 Km.p.h.), to provide sufficient air to both demist and keep the interior of the car warm. An electric blower in the heater unit, and controlled by the switch as shown in fig. 13, on the facia panel augments the air supply when a greater quantity of air is required or when the car is travelling at low speeds or is stationary in traffic.

WARNING: Beware of exhaust fumes when in lines of traffic from entering the car. It is advisable to close all the heater controls at this time.

Controls

The right control operates a water valve connected to the engine cooling system. This valve controls the rate of flow of hot water to the heater matrix.

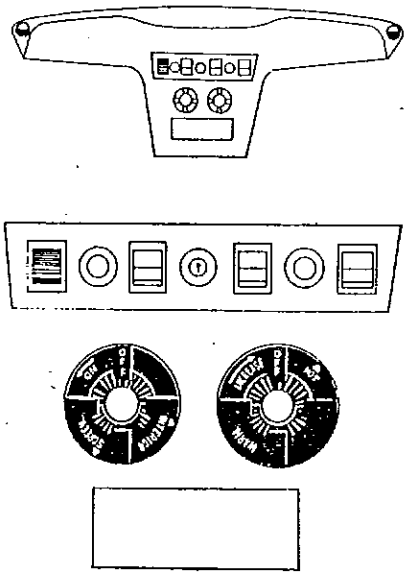


Fig. 13. Heater Controls

Move the control in the direction of the arrow to increase the heat supply from either warm through to hot. The left-hand control operates an air flap in the heater outlet box deflecting the air either to the screen or to the outlet doors, or via the outlet doors to the car interior. Rotate the control in the direction of the arrow to interior or screen to deflect the air to the car interior or to the windscreen.

Note.—Both controls may be set to any intermediate position to provide a wide variety of settings to cater for varying heating conditions.

Use of Controls

Note.—Full heat output will not be available until the engine has reached its operating temperature.

To obtain maximum heat supply inside the car proceed as follows:

1. Turn the air control to INTERIOR.
2. Turn the heat control to HOT.
3. Switch on the blower.

To defrost the windscreen proceed as follows:

1. Turn the air control to SCREEN.
2. Turn the heat control to HOT.
3. Switch on the blower.

To obtain cold air proceed as follows:

1. Turn the air control to INTERIOR.
2. Turn the heat control to OFF.
3. Switch on the blower.
4. Open the two side facia air vents.

To obtain a supply of unheated fresh air whilst on HOT:

1. Open the two side facia air vents.

WINDSCREEN WASHING EQUIPMENT

The windscreen washer is an electrically operated unit consisting of a plastic water container mounted in the engine compartment which is connected via tubing to two jets on the bonnet of the car. Water is delivered to the jets by an electrically driven pump incorporated in the water bottle.

Operation

The windscreen washer should be used in conjunction with the windscreen wipers to remove film etc. from the windscreen.

Note.—The windscreen washer should be turned on before the windscreen wipers to enable the windscreen to be dampened prior to dry windscreen wiper blades going over glass.

The windscreen washers are of the electric type and are activated by a spring return switch. They will continue to operate for as long as the switch is depressed.

WARNING: During cold weather if the washer does not function immediately, check the water in the container. The motor will be damaged if the switch is held depressed for more than one or two seconds if the water in the container has frozen. The washer should not be used under freezing conditions as the fine jets of water spread over the windscreen by the blades will tend to freeze. However, this can be overcome by adding denatured alcohol (methylated spirits) as follows:

1. Remove windscreen washer bottle filler cap (fig. 14).

2. Add approximately 2 tablespoonsfull of denatured alcohol.

3. Replace windscreen washer bottle filler cap.

In summer, the washer should be used freely to remove insects before they have time to dry and harden on the windscreen.

Filling Up

The water used in the washer should be absolutely clean, if possible use soft or rain water for filling the container. If soft water is not obtainable and hard water has to be used, the jet outlet holes should be inspected and cleaned occasionally to prevent the formation of calcium deposits and thus preventing the blockage of the nozzles.

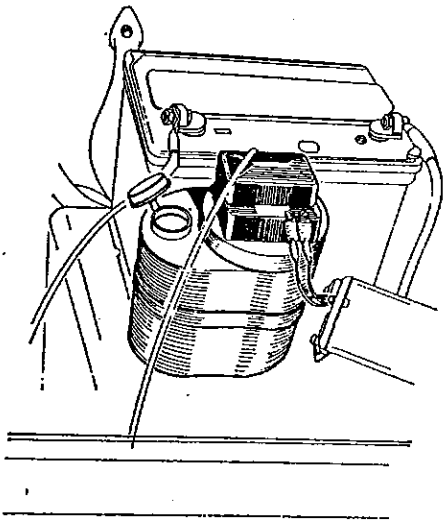
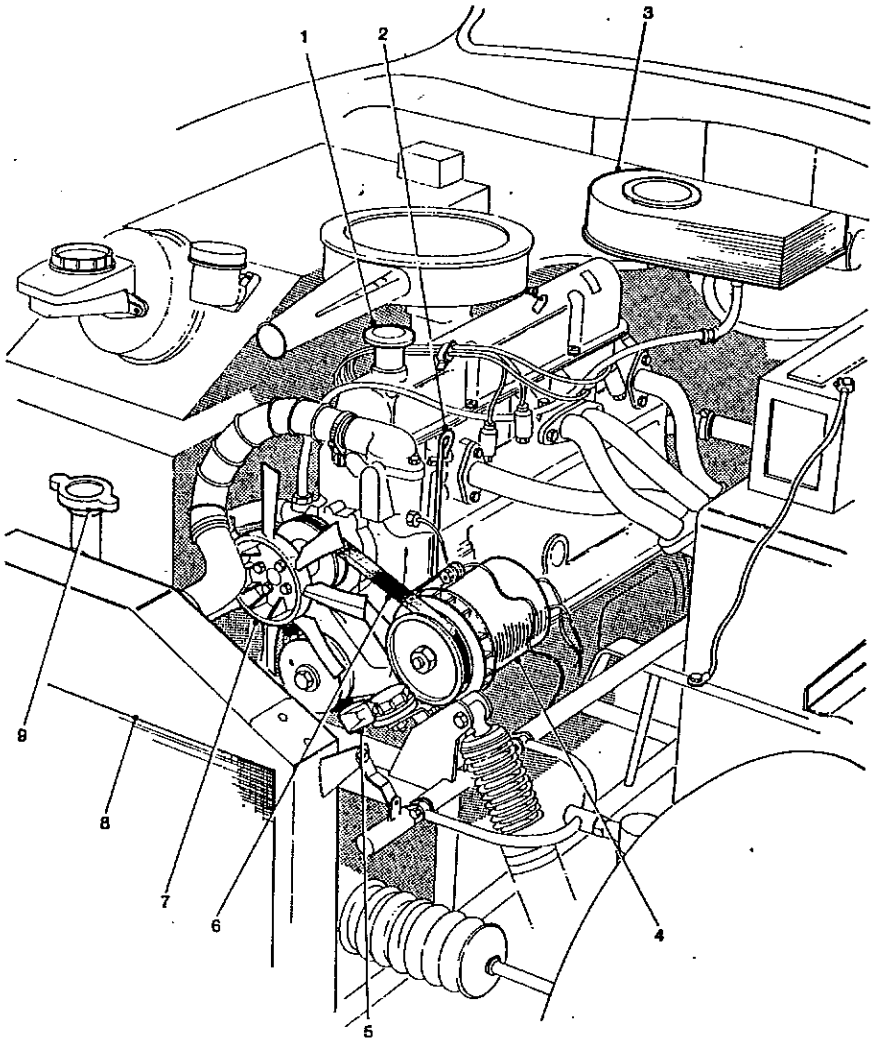


Fig. 14. Windscreen Washer Bottle

The correct water level is marked on the container. Do not overfill. Always replace the filler cover correctly ensuring that it is pressed fully home.

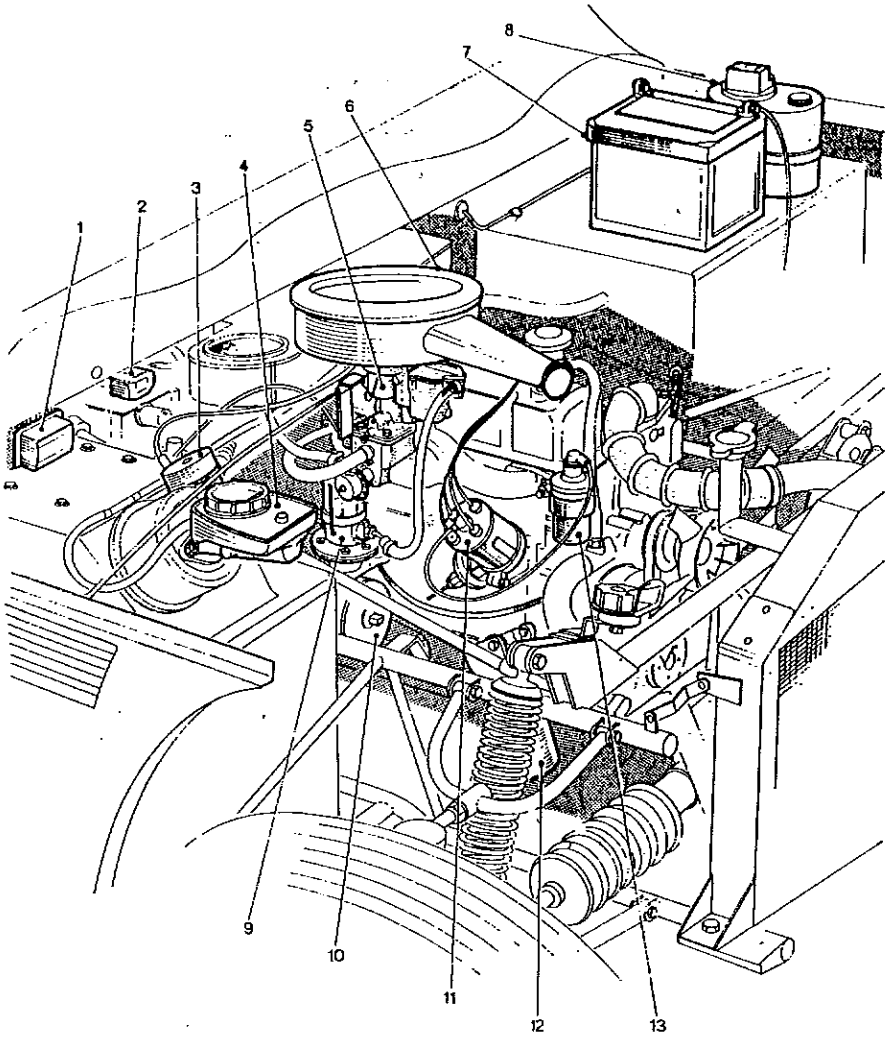
WARNING: Do not continue to operate the washer switch after all available water has been used up. This could lead to damage to the unit. Refilling the container will restore normal operation of the unit.



KEY

1. OIL FILLER
2. DIPSTICK
3. HEATER UNIT
4. DYNAMO
5. HORN
6. FAN BELT
7. FAN
8. RADIATOR
9. RADIATOR FILLER CAP

Engine Compartment Layout — Left-Hand View



KEY

1. VOLTAGE REGULATOR
2. FUSE BOX
3. CLUTCH FLUID RESERVOIR
4. BRAKE FLUID RESERVOIR
5. CARBURETTOR
6. AIR FILTER
7. BATTERY
8. WASHER UNIT
9. FUEL PUMP
10. STARTER MOTOR
11. DISTRIBUTOR
12. OIL FILTER
13. COIL

Engine Compartment Layout — Right-Hand View

ROUTINE MAINTENANCE

This section of the driver's manual deals with the lubrication and maintenance operations which require attention at regular intervals.

dependent on the attention it receives. It is, there-
fore, recommended that careful attention is paid to

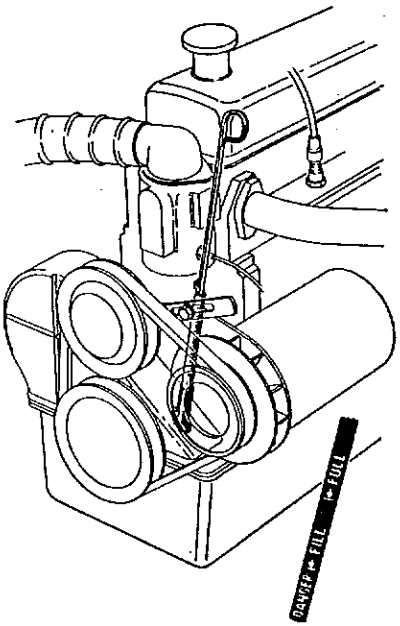


Fig. 15. Engine Dipstick

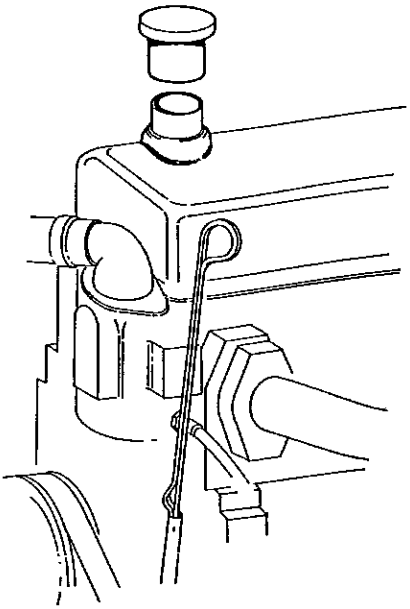


Fig. 16. Engine Oil Filler

The importance of regular maintenance cannot be over-stressed, the satisfactory running and high performance of which the TVR is capable is largely

the instructions detailed in this section and that servicing is carried out at the suggested periods.

DAILY

Engine

Check the engine oil level (fig. 15), the car should be standing on the level and the oil level checked with the dipstick. Withdraw dipstick and wipe it with a clean rag. Replace it and again withdraw it.

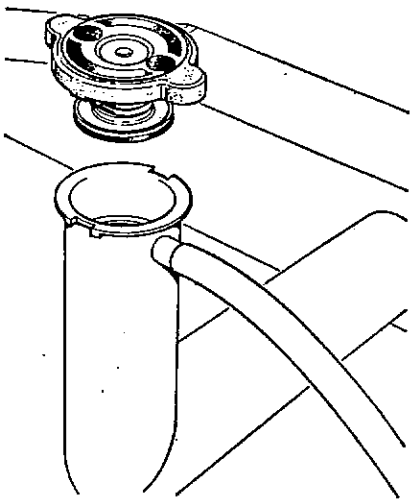


Fig. 17. Radiator Filler Cap

The mark made by the oil on the lower end of the dipstick indicates the level in the sump. If necessary, oil should be added to the oil filler orifice (fig. 16). Do not allow the oil level to rise above the full mark on the dipstick (fig. 15) (any extra oil will be wasted); on the other hand the oil level MUST NOT BE ALLOWED to fall below the 'Fill' mark into the 'Danger' sector.

Note.—Almost all modern motor oils contain special additives and while it is permissible to mix the recommended brands, it is undesirable. If it is desired to change from one brand of lubricant to another, this should be done when the sump is drained and the Oil Company's recommendation to flushing procedure is to be followed.

Radiator Level

WARNING: It is dangerous to remove the radiator cap when the water is hot as the system is pressurised. Remove the radiator filler cap (fig. 17) and if necessary, top up to a level 1 in. above the top of the tubes in the radiator. It is preferable to use soft water as hard water produces a calcium scale which in time will affect the efficiency of the cooling system.

WEEKLY

Tyre Pressure

Check tyre pressures, it is important to maintain the correct tyre pressures both from the operation of the vehicle and as it is now, in the U.K., also an offence to have incorrectly inflated tyres. Check the inflation pressures when the tyres are cold, and when they have not attained their normal running temperature. Tyre pressures are as follows:

Front: 22 lb/in^2 (1.55 kg/cm^2)
Rear: 24 lb/in^2 (1.69 kg/cm^2)

Battery Electrolyte Level

Examine the electrolyte level in the battery cells and top up if necessary with distilled water until the separators are just covered. Under no circumstances overfill above this level.

CAUTION: Do not use tap water to top up the battery as impurities in this type of water will harm the plates and decrease the life of the battery.

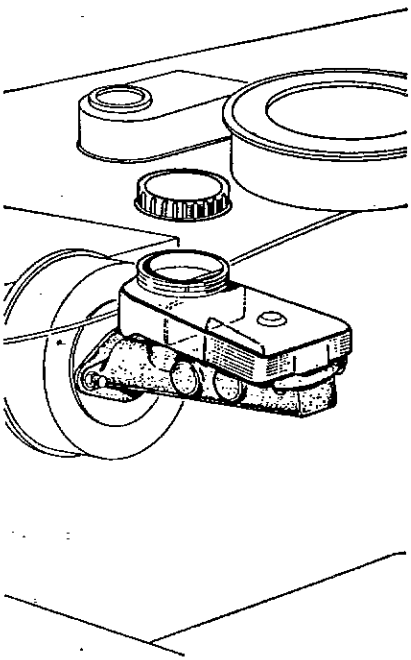


Fig. 18. Brake Fluid Reservoir

Brake Fluid Level

The brake fluid reservoir (fig. 18) for the hydraulic brakes is attached to the engine compartment rear scuttle. Unscrew the reservoir filler cap and check that the fluid in the reservoir is not below the level indicated on the cylinder.

CAUTION: Do not allow brake fluid to come into contact with paintwork of the car.

Clutch Fluid Level

The clutch is operated from a master cylinder situated on the engine compartment rear scuttle. The hydraulic fluid is held in a reservoir (fig. 19) which is combined with a master cylinder. It is important that the fluid does not fall below the level indicated on the cylinder.

CAUTION: Do not allow clutch fluid to come into contact with paintwork of the car.

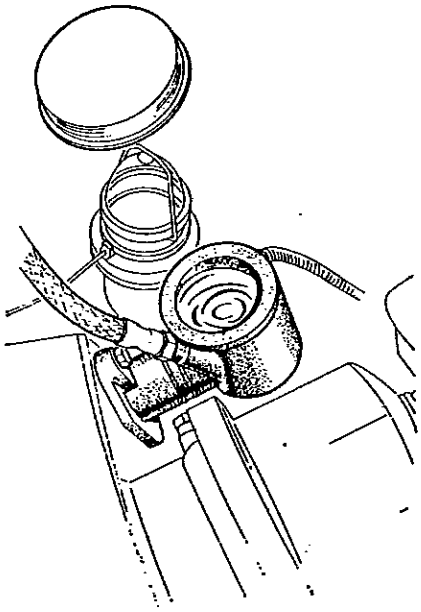


Fig. 19. Clutch Fluid Reservoir

EVERY 3,000 MILES (5000 KM)

Grease universal joints on drive shafts.

EVERY 6,000 MILES (10000 KM)

Engine

Note.—Under certain adverse conditions which is conducive to oil dilution and sludge formation, a more frequent oil changing of 3,000 miles (5000 km) is advised. These adverse conditions are as follows:

i) Where the car is used for low speed city driving.

ii) Stop/start driving, particularly in cold weather.

iii) In dusty territory.

The draining of the sump should be carried out at the end of a run when the oil is hot and therefore will flow freely.

1. Remove the sump drain plug and oil filler cap and allow oil to drain clear (fig. 20).

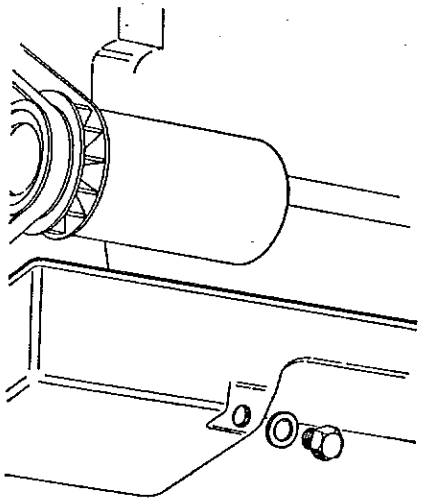


Fig. 20. Sump Drain Plug

2. Unscrew oil filter centre bolt (fig. 21).

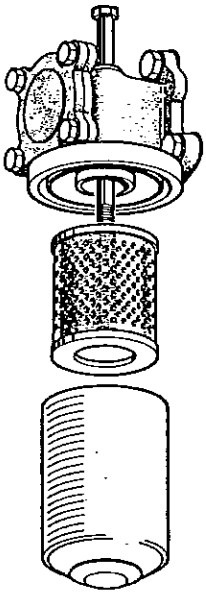


Fig. 21. Oil Filter

3. Remove casing, filter element and rubber sealing ring.
4. Wash out casing with petrol and thoroughly dry.
5. Fit new sealing ring and element and locate into clean casing.
6. Offer up the casing to the casing housing and locate the centre bolt.
7. Tighten bolt.
8. Replace the sump drain plug and tighten.
9. Wash oil filler cap in petrol.
10. Dry and immerse in clean engine oil. Shake out any surplus oil.
11. Refill engine with approved oil to the correct level.
12. Replace filler cap, start engine and check for oil leaks.

Distributor Points

1. Remove distributor cap and rotor.
2. Slacken adjusting screws and ensure that the moving contact breaker arm heel is on the highest point of the cam (fig. 22).

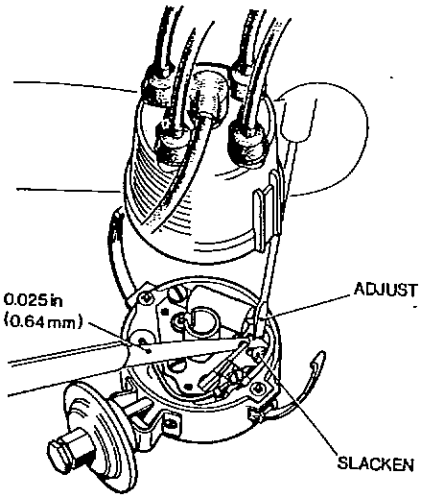


Fig. 22. Contact Breaker Point Adjustment

3. Move the fixed contact point to give a clearance of 0.025 in. (0.64 mm).
4. Tighten the adjusting screws and re-check gap.

Note.—If the contact breaker points are burnt, use a replacement set.

Fuel Filter

1. Unscrew the clamp nut on top of the fuel pump (fig. 23).
2. Detach the glass bowl and clean the sediment from the pump body and filter screen using petrol.
3. Check the gasket.
4. Replace filter screen and glass bowl
5. Tighten the clamp nut.

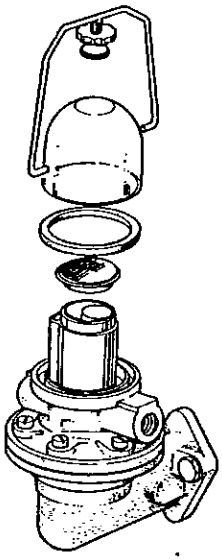


Fig. 23. Fuel Pump

Valve Clearance

Note.—Check the valve clearances when the engine is hot.

1. Remove the rocker cover retaining screws, air filter and throttle return spring.
2. Lift rocker cover off (fig. 24).
3. Disconnect and remove sparking plugs.

4. Turn engine over until valves 1 (exhaust) and 6 (inlet) are open (fig. 25). Adjust No. 3 (inlet) to 0.012 in. (0.31 mm) and No. 8 (exhaust) to 0.022 in. (0.58 mm).

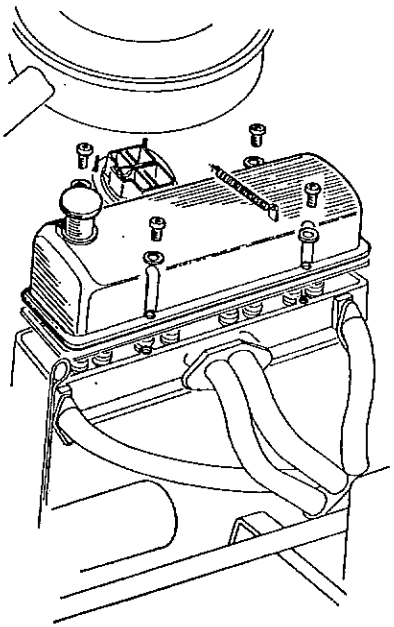


Fig. 24. Rocker Cover Removal

5. Turn engine over until No. 3 and No. 8 valves are open. Adjust No. 1 (exhaust) and No. 6 (inlet) to their respective clearances.

6. Turn engine over until Valves 2 and 4 are open and check No. 5 (exhaust) and No. 7 (inlet) for their respective clearances.

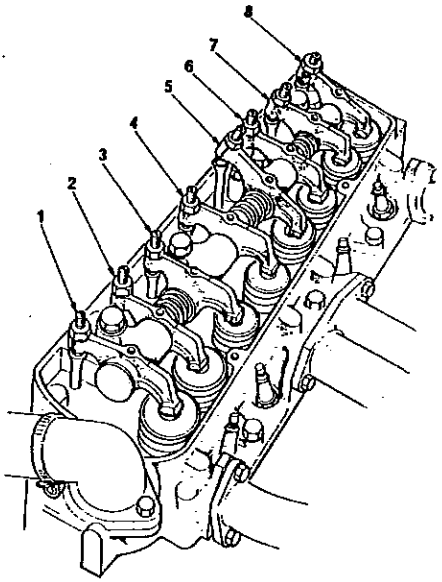


Fig. 25. Valve Numbers

7. Turn engine over until Valves 6 and 7 are open and check No. 2 (inlet) and No. 4 (exhaust) for their respective clearances. The adjustment is carried out as follows (fig. 26):

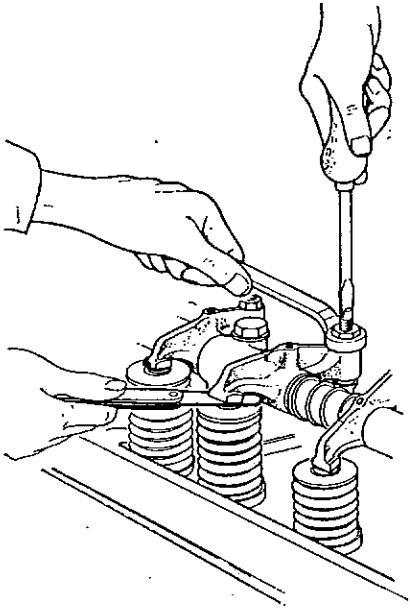


Fig. 26. Tappet Adjustment

i) Loosen the locknut.
ii) Insert feeler blade between valve head and rocker head.
iii) Rotate adjusting screw until a smooth fit is obtained.
iv) Tighten locknut and re-check clearance.

8. Following the above adjustments re-check that all nuts are tight and refit rocker cover.

Sparking Plugs

1. Check sparking plugs for a gap of 0.023 in. (0.58 mm).
2. Check that they are clean and re-insert into the engine location.
3. Re-connect electrical connection to the sparking plugs and replace rotor arm and distributor cap.
4. Start the engine and check for oil leaks round the rocker cover.
5. Stop the engine and check fan belt tension (fig. 27). A free movement of about ½ in. (13 mm)

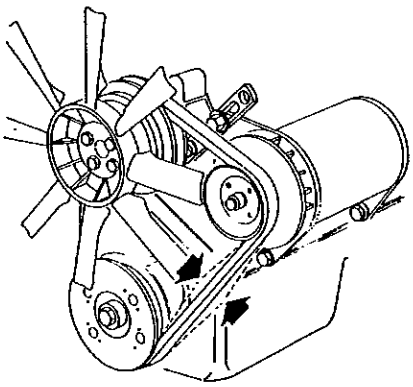


Fig. 27. Fan Belt Tension

is measured midway between the generator and the water pump pulleys. To adjust proceed as follows:

i) Slacken the front and rear lower mounting bolts (fig. 28).

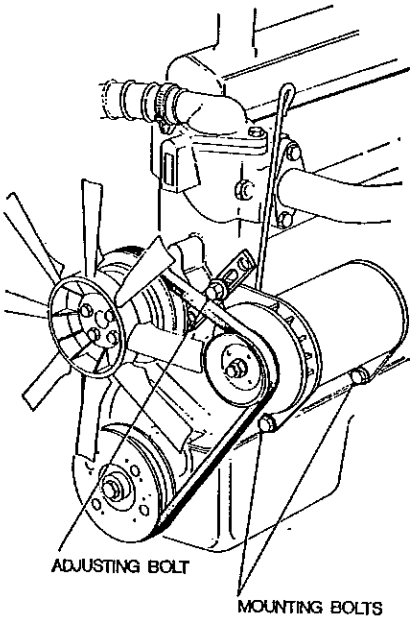


Fig. 28. Fan Belt Adjustment

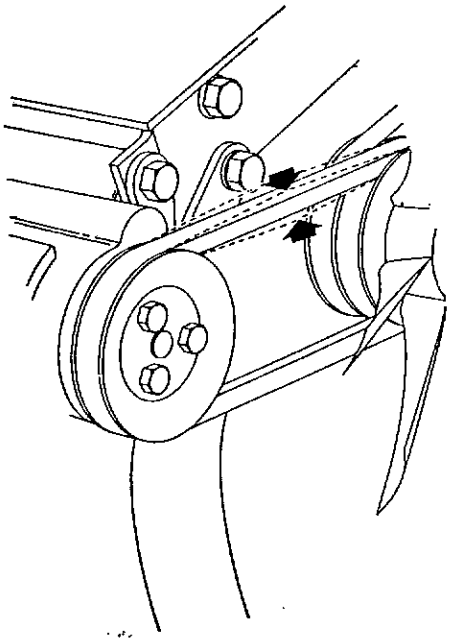


Fig. 29. Thermactor Drive Belt Tension

ii) Slacken the adjusting bolt.

iii) Move the generator to give a correct tension.

iv) Tighten bolts.

6. On U.S.A. cars only. Check the thermactor drive belt tension (fig. 29). A free movement of about $\frac{1}{2}$ in. (13 mm) is measured midway between the fan pulley and the drive pulley. To adjust proceed as follows:

i) Slacken the mounting nut and bolt (fig. 30).

ii) Slacken the adjuster arm mounting bolt to engine.

iii) Slacken the adjuster arm bolt to thermactor.

iv) Move the thermactor to give correct tension.

v) Tighten bolts.

Carburettor Slow Running Adjustment

1. When the engine is at normal operating temperature adjust the slow running screw (see fig 31) to obtain a satisfactory idling speed.

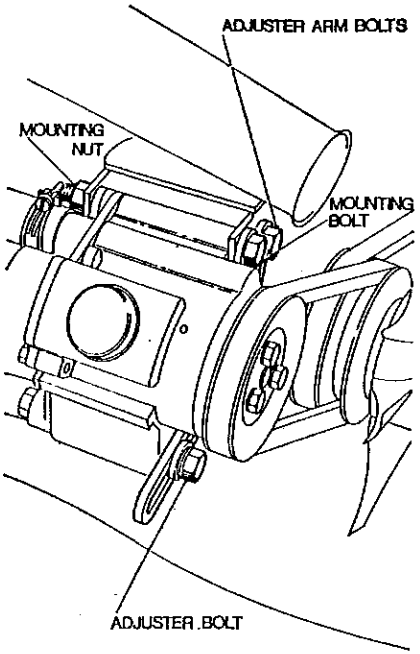


Fig. 30. Thermactor Drive Belt Adjustment

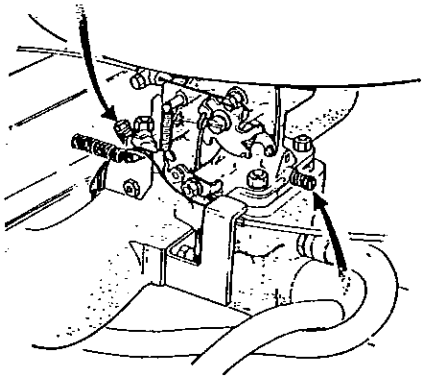


Fig. 31. Carburettor Adjustment Screws

2. Now unscrew the volume control adjusting screw until the engine 'hunts'. (This can be defined as irregular or lumpy running).
3. Screw in the volume control screw until the engine runs evenly then re-adjust the slow running screw to obtain a suitable engine idling speed.
4. Repeat the above operations if necessary until a satisfactory engine idling speed is obtained. As a guide the engine speed should be between 600-750 R.P.M.

Air Filter

The air filter is a paper element type. To clean proceed as follows:

1. Remove top cover (fig. 32).

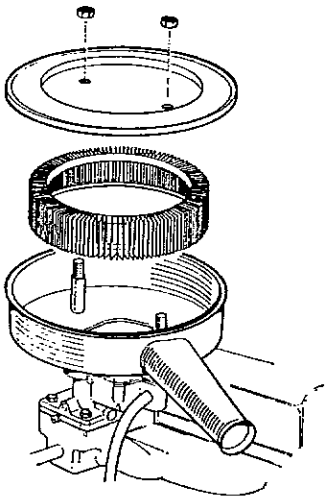


Fig. 32. Air Filter

2. Remove element.
3. Shake out element.
4. Re-locate element.
5. Refit cover and tighten screw.

Note.—The paper element should be periodically renewed at intervals dependent upon the general operating conditions of the car. This will become self evident upon appearance of paper element.

Battery

Check battery. The Battery should be subjected to a general inspection as follows:

1. Ensure that the battery exterior is clean and free from cracks and corrosion particularly around the terminals.
2. Check the specific gravity of the battery electrolyte using a hydrometer. If the electrolyte level is less than ¼ in. (0.7 mm) above the plates, distilled water should be added to the battery and the battery then charged for at least one hour before carrying out the check.
3. Draw enough electrolyte into the hydrometer to make the scale float. Repeat the test for each cell.
4. The following table relates the specific gravity to the battery condition at 60°F (16°C).

Hydrometer Reading	*Battery Condition*
1.280	Fully charged
1.240	75% charged
1.200	50% charged
1.160	25% charged
1.120	Discharged

Note.—If the electrolyte temperature varies from 60°F (16°C) adjust the reading obtained as follows:

Add 0.004 for every 10°F (5.5°C) above 60°F (16°C) and conversely subtract the same amount for that temperature below 60°F.

5. If one cell is about 0.030 lower than the rest of the cells, it is possibly failing. An extended bench charge may revive it. If the readings are irregular and one or more cells is 0.05 lower than the rest, the battery is not fit for further use. If

the readings are reasonably uniform the battery is probably healthy although low readings indicate a bench charge is required. It is advisable at this stage to apply a thin layer of Vaseline over the battery terminals.

Clutch Pedal Free Travel

There should be approximately ½ in. (13 mm) free travel (fig. 33) on the pedal pad before feeling the resistance of the clutch mechanism. If this adjustment is incorrect rapid wear of the clutch withdrawal mechanism or other troubles may result.

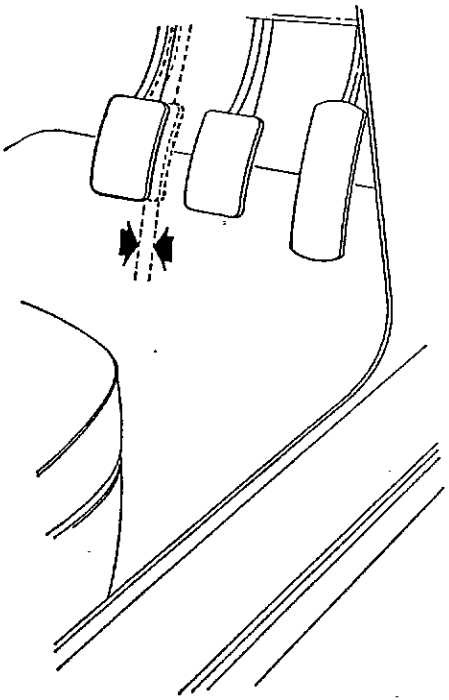


Fig. 33. Clutch Pedal Free Travel

Gearbox Oil Level

Check the oil level in the gearbox with the car standing on level ground. The gearbox oil level is checked as follows (fig. 34):

1. Remove the combined oil filter and level plug.
2. Ensure that the oil is level with the bottom of the filler plug threads.
3. Replace the oil filter/level plug.

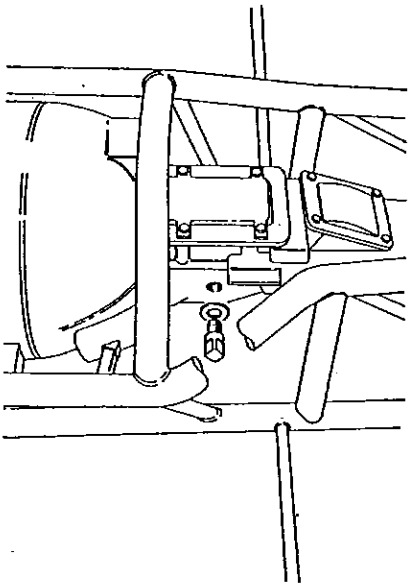


Fig. 34. Gearbox Oil Level Plug

Differential

Check the oil level in the differential with the car standing on level ground. The oil level is checked by removing the combined oil filler and level plug and ensuring that the oil is level with the bottom of the filler plug threads (fig. 35).

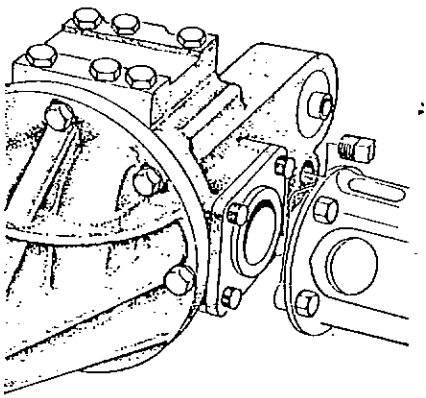


Fig. 35. Differential Oil Level

Brakes

Hydraulically operated disc brakes are fitted to the front wheels, and drum brakes to the rear wheels. Pressure applied to the brake pedal is transferred through the hydraulic system to operate the brakes. The handbrake is connected by cables and a compensating mechanism to levers incorporating the rear brake backing plates. Applying the handbrake operates the rear brakes only, independently of the hydraulic system.

Front Brake Adjustment

The disc brakes fitted to the front of the vehicle are self-adjusting. Replacement shoes should be fitted when the linings are reduced to approximately 0.125 in. (3 mm) thickness.

Pad Renewal (fig. 36)

Pad renewal is effected without bleeding the brake system.

1. Jack up the front of the car and remove the road wheels (fig. 10).
2. Withdraw the retaining pins and remove the pad retainers.
3. Remove the pads from the calipers.
4. Push the pistons in the bottom of their cylinders and fit new pads.
5. Refit the pad retainers and secure with retaining pins.
6. Pump foot pedal until solid resistance is felt.

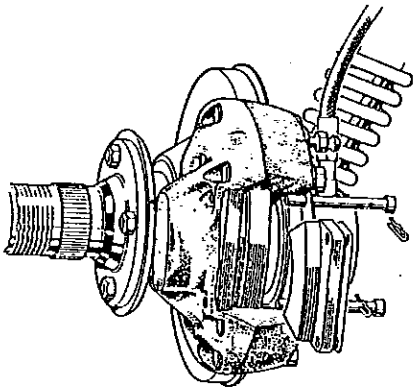


Fig. 36. Disc Brake Pad Renewal

Rear Brakes

Brake shoes contaminated with oil and grease are detrimental to brake efficiency. Should a brake be so affected, the drum and packing plate must be thoroughly washed, cleaned with petrol and the brake shoes renewed. When renewing or replacing the shoes, the pull-off springs behind the shoes must hook through the correct holes as shown in fig. 37.

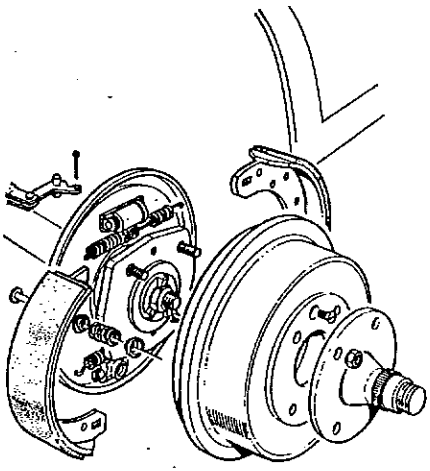


Fig. 37. Rear Brake Shoe Renewal

Adjustment

Excessive foot or handbrake travel indicates the need for rear brake adjustment. Each rear brake is provided with an adjuster (fig. 38) on the rear of the backing plate. To adjust the screw, turn the adjuster clockwise until the shoes are hard against the drum, then slacken the adjuster by one notch increments until the drum is free to rotate.

Note.—There is constant drag on the rear wheels caused by the action of the differential and axle oil, do not confuse this with brake drag.

Handbrake Adjustment

Adjustment of the rear brake shoes re-adjusts the handbrake mechanism. If cable slackness remains, re-adjust the handbrake cables. Do not overtighten cables (see Workshop Manual or your TVR dealer).

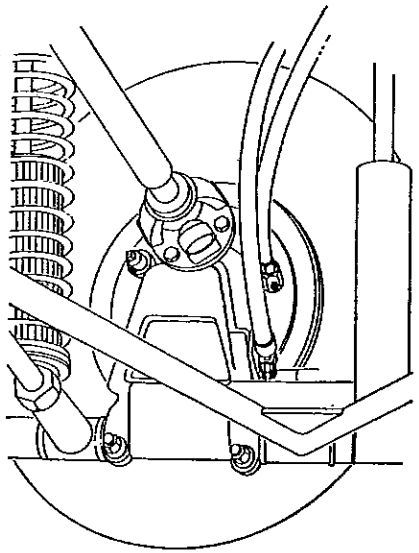


Fig. 38. Rear Brake Adjustment

Hydraulic System Bleeding

Should the hydraulic system require re-bleeding through a pipe joint having become uncoupled, or the brake pedals become spongy, bleed the system for each wheel cylinder in turn as fig. 39.

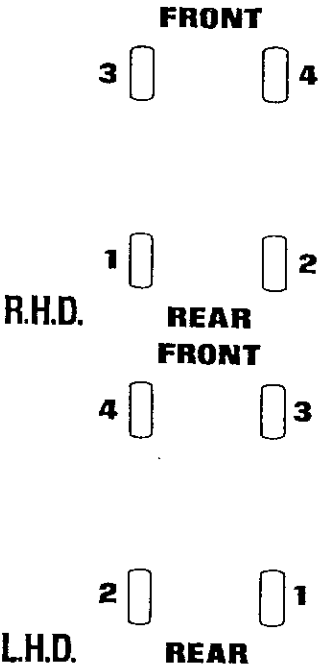


Fig. 39. Hydraulic System Bleeding

1. Apply handbrake before commencing to bleed brakes.
2. Ensure that the reservoir is topped up to a level marked on the master cylinder.
3. Wipe clean the bleed nipple and attach it to a short length of small-bore tubing. Allow the tube to hang in a clean container partially filled with hydraulic fluid, so this end is below the level of the fluid.
4. Unscrew the bleed nipple half-a-turn.

Note.—During bleeding, the reservoir level falls rapidly. Ensure that the level does not fall below half full by constantly replenishing the fluid that has been stored in the container sealed from the atmosphere. Immediately bleeding is completed, reseal residual fluid in container as exposure lowers the boiling point.

5. Operate the pedal with a succession of rapid, long and short strokes as follows:
   i) Push the pedal through its full stroke followed by two or three short rapid strokes; then allow the pedal to return to its stop unaided (foot removed).
   ii) Observe the fluid being discharged into the glass container and when all bubbles have ceased to appear, bleeding is complete.
   iii) Securely tighten the bleed screw and remove tubing from the nipple.

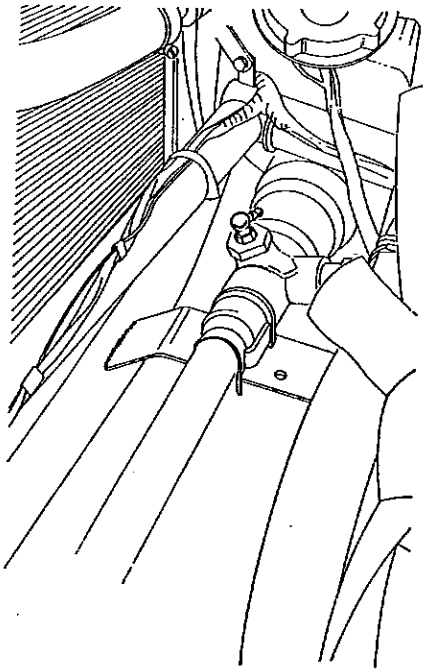


Fig. 40. Steering Unit Greasing

iv) Top up the master cylinder with hydraulic fluid, adjust the brake shoes and then road test the vehicle.

Steering Unit

To lubricate the steering unit, proceed as follows:

1. Apply a grease gun and give five strokes only to steering unit grease nipple (fig. 40).
   Note.—Over-greasing can cause damage to the rubber bellows.

Front Hubs

Jack up the front of the car:

1. Remove one front wheel (fig. 10).
2. Without disturbing the hydraulic pipe unions unscrew the caliper securing bolt (fig. 41), lift the caliper from the disc tying it to a convenient point to prevent it hanging by the attached hydraulic pipe. Note the number of shims fitted between the caliper and the vertical link.

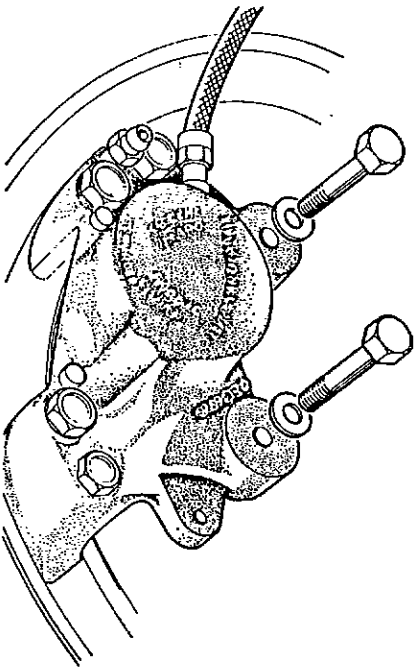


Fig. 41. Caliper Securing Bolts

3. Referring to fig. 42 prise off the grease cap (1), withdraw the split pin (2), unscrew the slotted nut (3) and remove the 'D' washer (4) and pull the hub assembly from the stub axle.

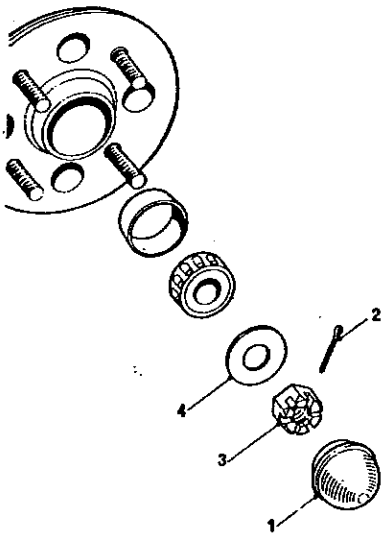


Fig. 42. Front Hub Greasing

4. Wash all grease from the hub bearings.
5. Pack the hub and bearings with grease working it well into the rollers and re-assemble.
6. Spin the hub and tighten nut until resistance is felt then slacken off the nut half-turn and fit a new split pin.
7. Re-assemble the brake caliper unit, refitting any shims removed during dismantling.
8. Refit the road wheel, lower the jack and repeat the above operations for the opposite wheel hub.

Rear Hubs (fig. 43)

1. Apply a grease gun until grease exudes from the blow hole.
2. Repeat for opposite side of car for other rear hub.

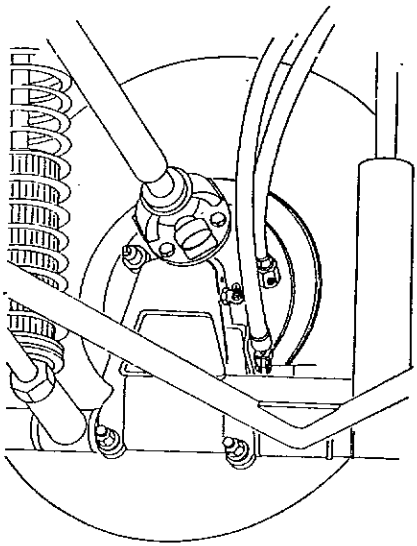


Fig. 43. Rear Wheel Greasing

Check Timing

WARNING: ON THOSE CARS FITTED WITH A THERMACTOR UNIT (U.S.A. ONLY), DO NOT ATTEMPT TO ADJUST IGNITION OR VALVE TIMING, THIS MUST BE DONE BY A FORD OR TVR DEALER.

For cars not fitted with Thermactor unit:
Slacken the distributor clamp bolt (fig. 44). Turn engine in a clockwise direction until pointers on crankshaft pulley (fig. 45) and engine block coincide to required setting i.e. 8° B.T.D.C.

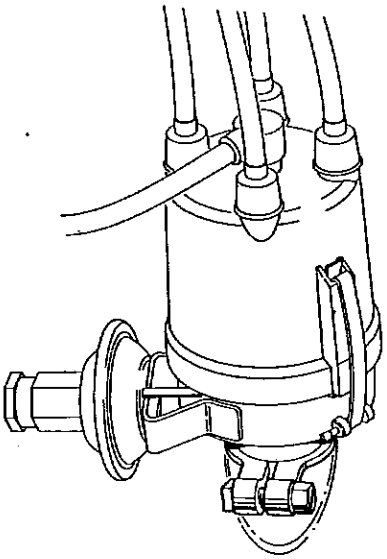


Fig. 44. Distributor Clamp Bolt

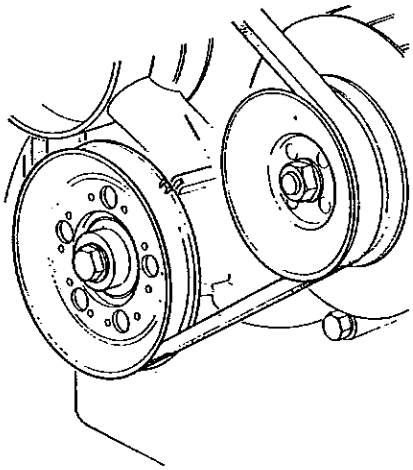


Fig. 45. Ignition Timing

1. Apply grease to nipples as shown on the lubrication chart (fig. 57).

2. Apply thin engine oil to the hinges of the doors.

3. Apply grease to the door locks and bonnet lock mechanisms and hinges.

4. Apply a small amount of grease to the handbrake lever ratchet (fig. 46).

5. Apply a small amount of thin oil to the windscreen wiper arm springs.

6. Apply a small amount of oil to accelerator linkage.

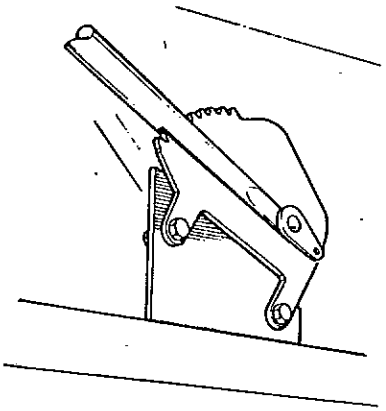


Fig. 46. Handbrake Greasing

CAMBER ANGLE ADJUSTMENT

To adjust Front Wheel camber angle:

1. Release the ball-joint nut under the king post (fig. 47).

2. Loosen the ball-joint locknut.

3. Pull the ball-joint out of the king post.

4. Screw ball-joint either clockwise or counter-clockwise to adjust to correct camber.

The correct camber angle is $\frac{1}{2}°$ to $1\frac{1}{2}°$ positive with the car unladen.

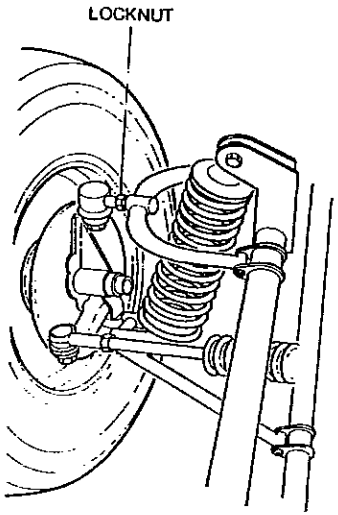


Fig. 47. Front Camber Angle Adjustment

To adjust Rear Wheel camber angle:

1. Loosen and remove the top two $\frac{1}{2}$ in. bolts securing the U-piece to the wishbone assembly (fig. 48).

2. Loosen the bottom two $\frac{1}{2}$ in. bolts securing the U-piece to the wishbone assembly.

3. Add or remove shims as required.
The correct camber angle is $1\frac{1}{2}°$ to 2° negative with the car unladen.

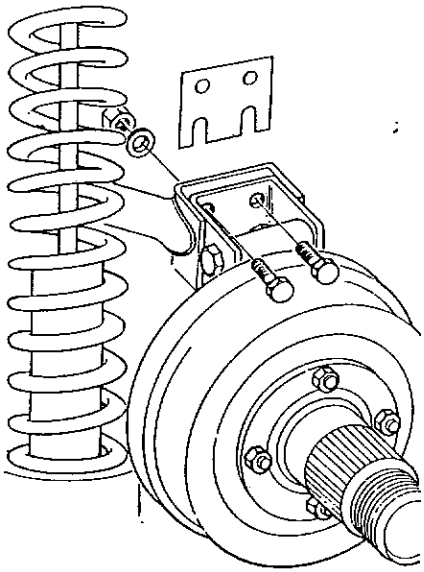


Fig. 48. Rear Camber Angle Adjustment

TRACK ADJUSTMENTS

To adjust Front Wheel track:

1. Loosen the track rod end locknut (fig. 49).

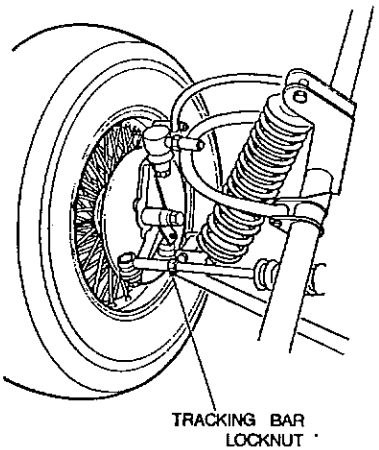


Fig. 49. Front Track Adjustment

2. Rotate steering track rod clockwise or counter-clockwise to achieve correct track.

   Note.—The correct track is 20 minutes toe-in. (10 min. on either side).

3. Tighten track rod end locknut.

To adjust Rear Wheel track:

1. Loosen locknuts at either end of tracking bar.

2. Rotate tracking bar in or out to provide correct track.

   Note.—The correct track is 30 minutes toe-in. (15 min. on either side).

3. Tighten tracking bar locknuts.

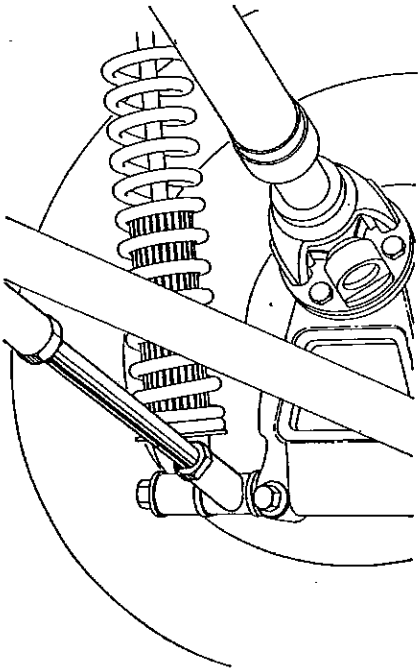


Fig. 50. Rear Track Adjustment

HEADLAMP BEAM SETTING

The alignment of the headlamp beams is set prior to the car being delivered with the exception of cars supplied in kit form. However, should it become necessary to re-adjust the beam setting, proceed as follows:

1. Place the car on a level surface approximately 25 ft. (7.5 m) away from a light coloured wall.
   Note.—The car should be square to the wall.
2. Unscrew the headlamp retaining screw.
3. Remove the headlamp rim.
4. Switch on headlamps to full beam.
5. Adjust the headlamps using the two adjusting screws as shown on fig. 51.

Note.—The one located at the top centre provides vertical adjustment and the one on the left-hand side provides for horizontal adjustment. To move the beam upwards, rotate the top screw clockwise and to adjust the beam to the off-side of the road, rotate the left-hand screw clockwise.

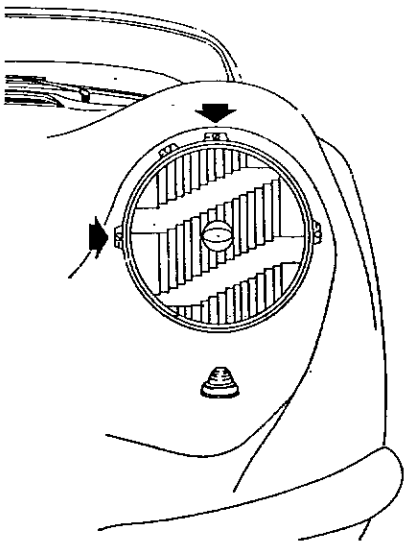


Fig. 51. Headlamp Adjustment

WARNING: With the headlamps on full beam position, the beams from the two headlamps should be parallel with the ground and with each other. Measurements should be taken from the centres of the headlamps and the horizontal and the vertical axes of the oval light areas on the wall.

LAMP BULB REPLACEMENTS

Panel Bulb and Warning Light Bulb Replacements

Access to a panel or warning light bulb is obtained by reaching behind the dash panel and pulling the necessary bulb holder out of its housing (fig. 52).

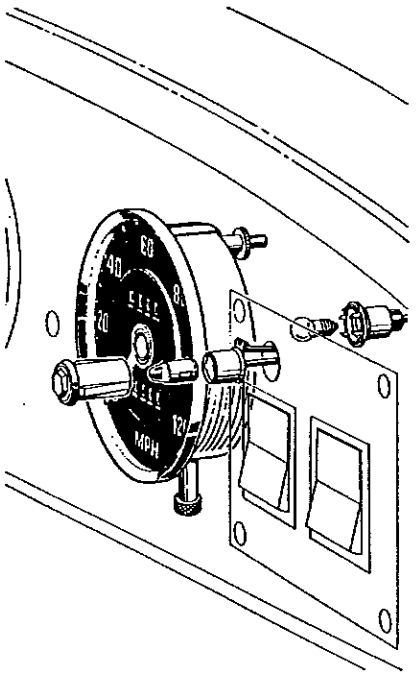


Fig. 52. Panel Bulb Replacement

Side Lamp Replacement (Home cars only)

To remove a sidelamp:

1. Remove the securing screw from sidelamp rim (fig. 53).

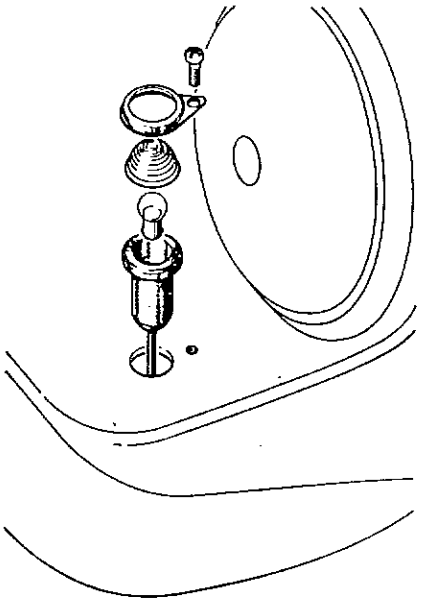


Fig. 53. Side Lamp Bulb Replacement

2. Remove the rim and the lens.
3. Replace bulb.
4. Re-assemble the sidelamp.

Front/Side Marker Light (U.S.A. only)

1. Remove lens securing screw (fig. 54).
2. Remove lens.
3. Replace bulb.
4. Re-assemble the front/side marker light.

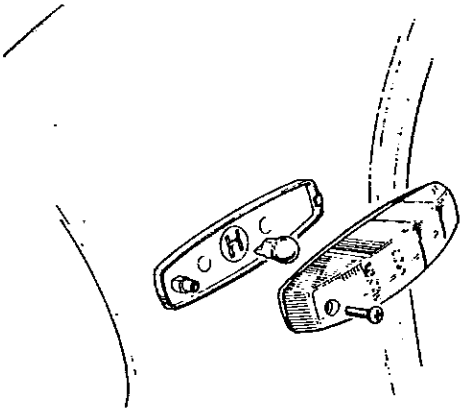


Fig. 54. Front/Side Marker Lights

Front Indicator Lamp Replacement (Side and Parking Lights — U.S.A. only)

1. Remove the two securing screws at either side of the indicator lamp housing rim (fig. 55).

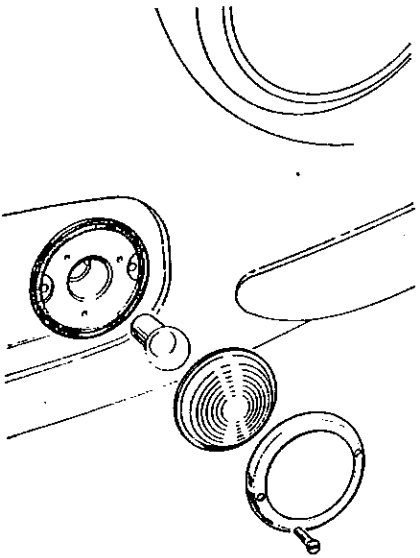


Fig. 55. Front Indicator Bulb Replacement

2. Remove rim and lens.

3. Replace bulb.

4. Re-assemble the indicator lamp.

Rear Stop/Tail/Indicator Bulb Replacement

1. Lower flap in rear of car (fig. 56).

2. Pull the necessary bulb holder out of housing.

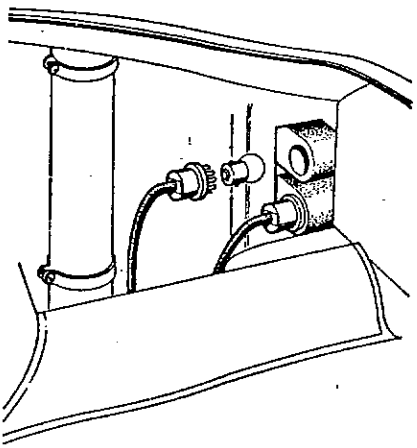


Fig. 56. Rear Stop/Rear/Indicator Bulb Replacement

3. Replace bulb.

4. Locate the bulb holder in the housing and push home.

5. Replace flap.

Number Plate and Reversing Light Bulb Replacement

1. Remove two screws at either side of reversing light.

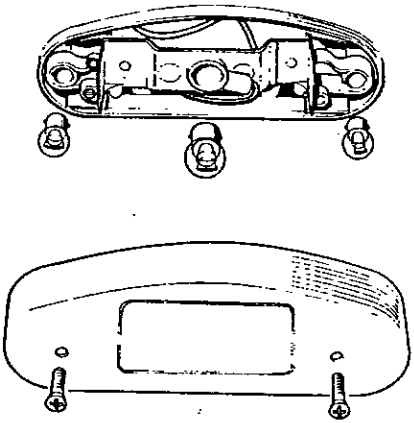


Fig. 57. Number Plate and Reversing Light Bulb Replacement

2. Pull the lens holder from bulb housing (fig. 57).

3. Replace bulb.

4. Locate lens holder on bulb housing and tighten screws.

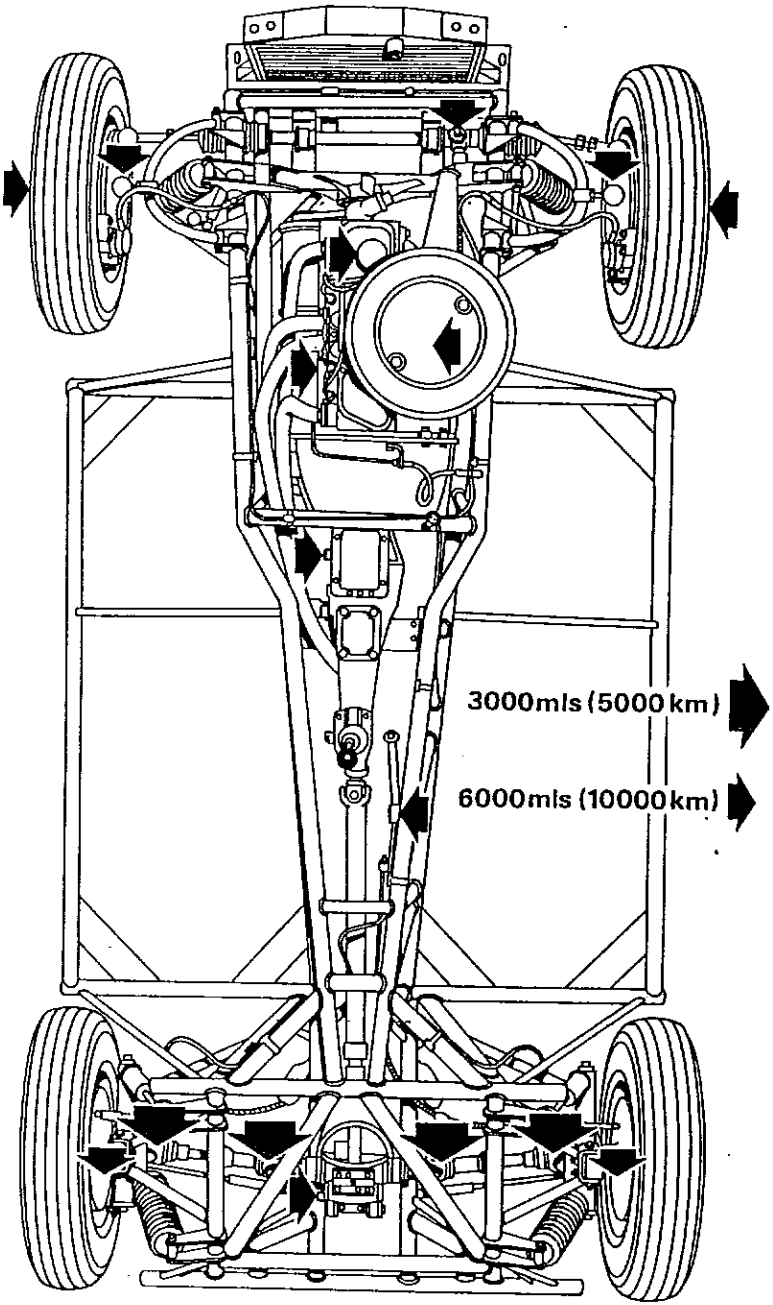


Fig. 58. Lubrication Diagram

TVR ENGINEERING LTD.
LAYTON BLACKPOOL
ENGLAND

VIXEN S2

RECOMMENDED LUBRICANTS

	LUBRICANT	CASTROL	SHELL	ESSO	MOBIL	B.P.	DUCKHAMS
ENGINE	A.P.I. Service MS	Castrol GTX	Shell Super 100	Esso Extra Motor Oil 20W/50	Mobiloil Super	BP Super Visco-static 20W/50	Duckhams Q20-50
GEARBOX	S.A.E. 80 EP Oil	Castrol Hypoy Light	Spirax 80 EP	Esso Gear Oil GP 80	Mobilube GX 80	BP Gear Oil S.A.E. 80 EP	Duckhams Hypoid 80
DIFFERENTIAL	S.A.E. 90 EP Oil	Castrol Hypoy	Spirax 90 EP	Esso Gear Oil GP 90/140	Mobilube GX 90	BP Gear Oil S.A.E. 90 EP	Duckhams Hypoid 90
GREASEPOINTS	Lithium Base Multi Purpose Grease	Castrolease LM	Retinax A	Esso Multi Purpose Grease H	Mobilgrease MP	BP Energrease L2	Duckhams LB 10
WHEEL HUBS	Lithium Base Multi Purpose Grease	Castrolease LM	Retinax A	Esso Multi Purpose Grease H	Mobilgrease MP	BP Energrease L2	Duckhams LB 10

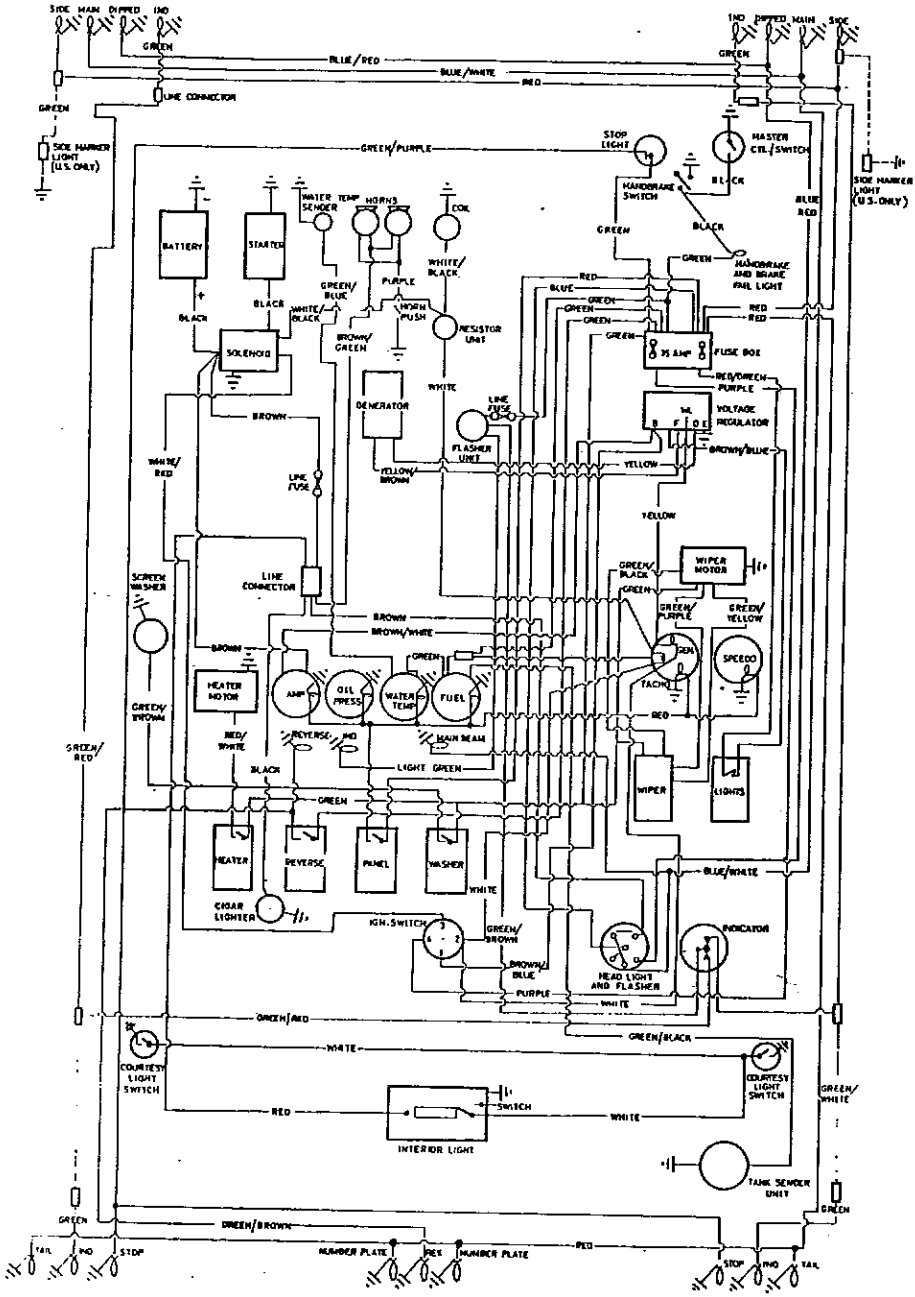


Fig. 59. Wiring Diagram

SERVICE

Should you require service or advice on your TVR Vixen S2 please address your enquiry to your nearest dealer or :

TVR Engineering Ltd
Bristol Avenue
Blackpool
Lancs FY2 0JF

Tel. Blackpool (0253) 56151

For American owners such enquiries should be addressed to:

TVR Cars of America Ltd
29 New York Avenue
Huntingdon
New York 11743 USA

Tel: (516) 423 6333

For Canadian owners such enquiries should be addressed to:

J. A. G. Auto Enterprises Ltd
206 Glencairn Avenue
Toronto, Ontario
MR4 1N2

When writing always quote the chassis number of the car.

CAR IDENTIFICATION

It is imperative that the car and engine numbers are quoted in all correspondence regarding this vehicle. The engine and chassis numbers may be found on the nearside front engine compartment bulkhead as shown in figure 1.

Key Number: the ignition switch and door lock key numbers are .....

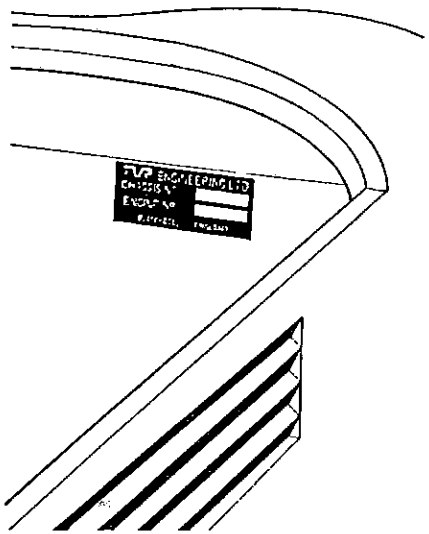


Fig. 1. Vehicle Identification