



Service Schedule Manual

Rolls-Royce & Bentley motor cars

Rolls-Royce Silver Spirit
Rolls-Royce Silver Spur
Rolls-Royce Camargue
Rolls-Royce and Bentley Corniche
Bentley Eight
Bentley Mulsanne
Bentley Mulsanne Turbo
Bentley Turbo R
Bentley Continental

Cars built from the following vehicle
identification number (VIN)

SCAZS0000ACH01001

TSD4406

April 1985

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Cheshire
CW1 3PL
England**

The information in this document is correct at the time of going to print but in view of the Company's continuing efforts to develop and improve its products it may have become out of date by the time you read it and you should, therefore, refer to the Company's service information sheets.

The information given here must not be taken as forming part of or establishing any contractual or other commitment by Rolls-Royce Motors Limited and no warranty or representation concerning the information is given.

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Introduction

This manual has been compiled to assist Service Personnel responsible for the maintenance of Rolls-Royce and Bentley motor cars (except Rolls-Royce Phantom VI) built from vehicle identification number (VIN)*SCAZS0000ACH01001*. For information relating to Phantom VI motor cars reference should be made to Service Schedule Manual publication number TSD 4117.

Information relating to any subsequent modification will be circulated by the issue of either amended pages or service information sheets, publication number TSD 4446.

At the beginning of each chapter is an issue record sheet showing the issue of sections and amended pages. When a section or amended page is issued a new issue record sheet will also be attached. This record sheet will record the amendment, thus providing an up-to-date record of sections and pages.

Throughout the manual reference is made to the right-hand and left-hand side of the car, this is determined when sitting in the driver's seat.

In order to identify the two banks of engine cylinders, it should be noted that 'A' bank of cylinders is on the right-hand side and 'B' bank on the left-hand side when viewed from the driver's seat.

Service Personnel at Rolls-Royce Motors Limited are always prepared to answer queries or give advice on individual servicing problems. When making an enquiry it is essential that the full vehicle identification number (VIN) is quoted.

Important

When obtaining information for a particular model always refer to the appropriate Chapter and/or Section contents page (see samples).

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All communications should be addressed to one of the following depending upon the car's domicile.

Rolls-Royce Motors Limited

Crewe Cheshire CW1 3PL England

Telephone: 0270 255155

Telex: 36121

Telegraphic address: Roycru Crewe

Rolls-Royce Motors International SA

39 Boulevard de Grancy

1006 Lausanne Switzerland

Telephone: Lausanne (021) 275363

Telex: 454216 RRM CH

Telegraphic address: Rollsint, Lausanne

Rolls-Royce Motors Inc.

P.O. Box 476 ,Lyndhurst

New Jersey 07071 USA

Telephone: (201) 460-9600

Telex: 427788

Telegraphic address: RRM Inc LYND

Rolls-Royce Motor Cars Limited

3870 Griffith Street St-Laurent

Quebec H4T 1A7 Canada

Telephone: (514) 342-4332

Telex: 05 824130

Rolls-Royce Motor Cars Limited

Suite 165 10551 Shellbridge Way

Richmond

BC V6X 2W8, Canada

Telephone: (604) 278-4724

Telex: 04 355815

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Service schedules

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Capacities and Lubricants

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November 1985

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TSD 4406

Capacities



Brake and height control system

*All cars other than those with series height control systems _____

*Cars with series height control systems _____

Cooling system _____

Engine - All cars except those fitted with an engine oil cooler

Without changing oil filter _____

When changing oil filter _____

Engine - Cars fitted with an engine oil cooler

Sump _____

Filter _____

Cooler _____

Total _____

Note

When changing the oil filter the oil loss from the oil cooler is negligible.

Final drive unit _____

Fuel tank _____

Steering system _____

Torque converter

Transmission (dry) _____

When changing fluid in sump only _____

When changing fluid in sump and renewing intake strainer _____

Combined windscreen/headlamp washer reservoir _____

Independent headlamp washer reservoir _____

Independent windscreen washer reservoir _____

Power operated hood reservoir _____

Metric	Imperial	US
4,0 litres	7.0 pt	8.4 pt
5,0 litres	8.8 pt	10.5 pt
16,0 litres	28.0 pt	33.6 pt
8,40 litres	14.8 pt	17.7 pt
9,40 litres	16.5 pt	19.8 pt
8,40 litres	14.8 pt	17.7 pt
1,0 litres	1.75 pt	2.1 pt
0,50 litres	0.9 pt	1.0 pt
9,90 litres	17.4 pt	20.8 pt
2,30 litres	4.0 pt	4.8 pt
108,0 litres	23.75 gal	28.5 gal
0,75 litres	1.33 pt	1.66 pt
10,60 litres	18.7 pt	22.5 pt
2,80 litres	5.0 pt	6.0 pt
4,50 litres	8.0 pt	9.6 pt
5,0 litres	8.8 pt	10.5 pt
6,5 litres	11.5 pt	13.7 pt
5,0 litres	8.8 pt	10.5 pt
0,43 litres	0.75 pt	0.9 pt

*Cars with series height control systems.

Bentley Turbo R and all four door cars from 1986 model year except Rolls-Royce cars conforming to a Japanese or North American specification.

†Engine, †SU Carburettor dampers, Hand oiling points**BP**

BP Super Viscostatic
 BP Visco 2000
 BP Visco-Nova
 BP Visco Route
 BP Visco Coranda
 BP Pilote 2500
 BP Pilote 3000
 BP Strato

Castrol

Castrol GTX
 Castrol GTX-2 Turbo Tested
 Castrolite

Duckhams

Duckhams Hypergrade

Esso

UNIFLO +
 Esso SUPERLUBE +

Mobil

Mobil Super

Shell

Shell Super Motor Oil (20W/50)
 Shell Super Motor Oil (15W/50)
 Shell Super Motor Oil (15W/40)
 Shell Super Motor Oil (10W/40)
 Shell Gemini

Silkolene

Chatsworth 20W/30

†Recommended engine oil grades for cars operating in low temperatures.

For constant operation in ambient temperatures of between 0°C and -23°C (32°F and -10°F) use a 10W/30 grade oil.

For constant operation in ambient temperatures of -23°C, (-10°F) and below, use a 5W/20 grade oil.

Torque converter transmission, *Steering pump*BP**

BP Autran DXII

Lubricants

All cars except Bentley Mulsanne Turbo and Bentley Turbo R

Castrol

Castrol TQ Dexron® II

Duckhams

D-Matic ATF (Dexron II)

Esso

Esso ATF Dexron II

Gulf

Gulf Automatic Transmission Fluid (Dexron)

Mobil

Mobil ATF 220 (Dexron)

Shell

Shell Automatic Transmission Fluid Dexron II

Texaco

Texamatic Fluid 9226 (Dexron II)

*Also approved any Dexron Transmission Fluid.

Drive-shaft ball and trunnion joints (if fitted), Final drive unit, Rack and pinion steering unit**BP**

BP Gear Oil EP 90
 BP Multigear FE 80W/90
 BP Multigear FE 85W/140

Castrol

Castrol Hypoy EP 90
 Castrol Hypoy B EP 90
 Castrol Hypoy C

Duckhams

Hypoid 90 S

Esso

Esso Gear Oil GX 85W/90
 Esso Gear Oil GX 80W

Gulf

Gulf Multi Purpose Gear Lubricant 80W/90

Mobil

Mobilube HD 90

Shell

Shell Spirax 90 EP

Front and rear hubs, Drive-shaft outer universal joints (if fitted), Propeller shaft universal joints (if applicable)

BP
BP Energrease L2

Castrol
Castrol LM Grease

Duckhams
LB 10 Grease

Esso
Multi-purpose Grease

Gulf
Gulfcrown Grease No. 2 EP

Mobil
Mobilgrease MP

Shell
‡Shell Retinax A

‡First preference

Rear drive-shaft constant velocity joints (if fitted), Height control valve operating rod ball joints, Steering joints (if applicable), Parking brake linkage clevis and fulcrum pins

Rocol MTS 1000 Grease

Fuel tank drain plug

Rocol MV3
Rocol AS Spray

Parking brake inner cable

Midland Silicones MS44 Grease

Refrigeration compressor

Frigidaire 525 Viscosity Oil



Hydraulic Brakes and Automatic height control system

Castrol
Castrol Hydraulic System Mineral Oil

Power operated hood reservoir

BP
BP Energol HLP22

Castrol
Castrol Hyspin VG22

Esso
Esso Nuto H22

Mobil
Mobil DTE 11
Mobil DTE 12
Mobil DTE 13

Shell
Shell Tellus Oil 22
Shell Tellus Oil 23

Gulf
Gulf Hydrasil 22

† Engine, Hand oiling points**BP**

BP Super Viscostatic
BP Visco 2000

Castrol

Castrol GTX
Castrol GTX-2 Turbo Tested

Duckhams

Duckhams Hypergrade

Esso

Esso SUPERLUBE +

Mobil

Mobil Super

Shell

Shell Super Motor Oil (20W/50)
Shell Super Motor Oil (15W/50)
Shell Super Motor Oil (15W/40)
Shell Gemini

† Recommended engine oil grades for cars operating in low temperatures.

For constant operation in ambient temperatures of between 0°C and -23°C (32°F and -10°F) use a 10W/30 grade oil.

For constant operation in ambient temperatures of -23°C (-10°F) and below, use a 5W/20 grade oil.

Torque converter transmission, *Steering pump*BP**

BP Autran DX II

Castrol

Castrol TQ Dextron[®] II

Duckhams

D-Matic ATF (Dexron II)

Esso

Esso ATF (Dexron II)

Gulf

Gulf Automatic Transmission Fluid Dexron

Mobil

Mobil ATF 220 (Dexron)

Lubricants

Bentley Mulsanne Turbo and
Bentley Turbo R

Shell

Shell Automatic Transmission Fluid Dexron II

Texaco

Texamatic Fluid 9226 (Dexron II)

*Also approved any Dexron Transmission Fluid

Final drive unit, Rack and pinion steering unit**BP**

BP Gear Oil 90 EP
BP Multigear FE 80W/90
BP Multigear FE 85W/140

Castrol

Castrol Hypoy EP 90
Castrol Hypoy B EP 90
Castrol Hypoy C

Duckhams

Hypoid 90 S

Esso

Esso Gear Oil GX 85W/90
Esso Gear Oil GX 80W

Gulf

Gulf Multi Purpose Gear Lubricant 80W/90

Mobil

Mobilube HD 90

Shell

Shell Spirax 90 EP

Front and rear hubs, Propeller shaft universal joints**BP**

BP Energ grease L2

Castrol

Castrol LM Grease

Duckhams

LB 10 grease

Esso

Multi-purpose Grease

Gulf

Gulfcrown Grease No. 2 EP

Mobil

Mobilgrease MP

Shell

‡Shell Retinax A

‡First preference

**Rear drive-shaft constant velocity joints,
Height control valve operating rod ball joints,
Parking brake linkage clevis and fulcrum pins**

Rocol MTS 1000 Grease

Fuel tank drain plug

Rocol MV3

Rocol AS Spray

Parking brake inner cable

Midlands Silicones MS44 Grease

Refrigeration compressor

Frigidaire 525 Viscosity Oil



**Hydraulic brakes and Automatic
height control system**

Castrol

Castrol Hydraulic System Mineral Oil

†Engine, Hand oiling points**BP**

BP Super Viscostatic 10W/40

CastrolCastrol GTX (USA)
Castrol XLR (Canada)**Duckhams**

Duckhams Hypergrade

Exxon/Imperial

UNIFLO

Mobil

Mobil Super

ShellFire and Ice (USA)
Super Plus (Canada)

†Recommended engine oil grades for cars operating in low temperatures.

For constant operation in ambient temperatures of between 0°C and -23°C (32°F and -10°F), use a 10W/30 grade oil.

For constant operation in ambient temperatures of -23°C (-10°F) and below, use a 5W/20 grade oil.

Torque converter transmission, *Steering pump*BP**

BP Autran DX II

Castrol

Castrol TQ Dexron ® II

Duckhams

D-Matic ATF (Dexron II)

Exxon/Imperial

Esso ATF Dexron II

Gulf

Gulf Automatic Transmission Fluid Dexron

Mobil

Mobil ATF 220 (Dexron)

Lubricants

All cars except Bentley Mulsanne Turbo and Bentley Turbo R

ShellShell Donax T6
ATF Dexron**Texaco**

Texamatic Fluid 9226 (Dexron II)

*Also approved any Dexron Transmission Fluid

Final drive unit, Rack and pinion steering unit**BP**BP Gear Oil 90 EP
BP Multigear FE 80W/90
BP Multigear FE 85W/140**Castrol**Castrol Hypoy 80W/90
Castrol Hypoy C 80W/90**Duckhams**

Duckhams Hypoid Gear Oil 80W/90 EP

Exxon/ImperialEsso Gear Oil GX 85W/140
Esso Gear Oil GX 85W/90
Esso gear Oil GX 80W/90
Esso Gear Oil GX 80W
Esso Gear Oil GX 90W**Gulf**

Gulf Multi Purpose Lubricant 80W/90

Mobil

Mobilube HD 90

Shell

Shell Spirax 90 EP

Front and rear hubs, Propeller shaft universal joints (if applicable)**BP**

BP Energ grease L2

CastrolCastrol MP Grease
Castrol LM Grease
Castrol Wheel Bearing Grease (Canada)**Duckhams**

Duckhams LB 10

Exxon/Imperial
Ronex MP
Esso Unitol

Gulf
Gulfcrown Grease No. 2 EP

Mobil
Mobilgrease MP

Shell
Shell Darina AX

**Rear drive-shaft constant velocity joints,
Height control valve operating rod ball joints,
Steering joints, (if applicable), Parking brake
linkage clevis and fulcrum pins**

Rocol MTS 1000 Grease

Fuel tank drain plug

Rocol MV3
Rocol AS Spray

Parking brake inner cable

Midlands Silicones MS 44 Grease

Refrigeration compressor

Frigidaire 525 Viscosity Oil



**Hydraulic brakes and Automatic
height control system**

Castrol
Castrol Hydraulic System Mineral Oil

Power operated hood reservoir

BP
BP Energol HLP 22

Esso
Esso Nuto H22

Mobil
Mobil DTE 11
Mobil DTE 12
Mobil DTE 13

Shell
Shell Tellus Oil 22
Shell Tellus Oil 23

Gulf
Gulf Harmony 22 AW

Lubricants

Bentley Mulsanne Turbo

†Engine, Hand oiling points

BP

BP Super Viscostatic

Castrol

Castrol GTX

Castrol GTX-2 Turbo Tested

Duckhams

Duckhams 'Q' Motor Oil

Esso

Esso SUPERLUBE

Mobil

Mobil Super

Shell

Shell Super Motor Oil (20W/50)

Shell Super Motor Oil (15W/50)

Shell Super Motor Oil (15W/40)

†Recommended engine oil grades for cars operating in low temperatures.

For constant operation in ambient temperatures of between 0°C and -23°C use a 10W/30 grade oil.

For constant operation in ambient temperatures of -23°C and below, use a 5W/20 grade oil.

*Torque converter transmission, *Steering pump

BP

BP Autran DX II

Castrol

Castrol TO Dexron ® II

Duckhams

D-Matic ATF (Dexron II)

Esso

Esso Automatic Transmission Fluid (Dexron)

Mobil

Mobil ATF 220 (Dexron)

Shell

Shell Automatic Transmission Fluid Dexron II

Texaco

Texamatic Fluid 9226 (Dexron II)

*Also approved any Dexron Transmission Fluid.

Final drive unit, Rack and Pinion steering unit

BP

BP Gear Oil 90 EP

BP Gear Oil FE 80W/90 EP

BP Gear Oil FE 85W/140 EP

Castrol

Castrol Hypoy EP 90

Castrol Hypoy B EP 90

Castrol Hypoy C

Duckhams

Hypoid 90 S

Esso

Esso Gear Oil GX 85W/140

Esso Gear Oil GX 80W/90

Mobil

Mobilube HD 90

Shell

Shell Spirax 90 EP

Front and rear hubs, Propeller shaft universal joints

BP

BP Energrease L2

Castrol

Castrol LM Grease

Duckhams

LB 10 Grease

Esso

Multi-purpose Grease H

Mobil

Mobilgrease MP

Shell

†Shell Retinax A

†First preference

Rear drive-shaft constant velocity joints, Height control valve operating rod ball joints, Parking brake linkage clevis and fulcrum pins

Rocol MTS 1000 Grease

Fuel tank drain plug

Rocol MV3
Rocol AS Spray

Parking brake inner cable

Midland Silicones MS44 Grease

Refrigeration compressor

Frigidaire 525 Viscosity Oil



**Hydraulic brakes and Automatic
height control system**

BP

BP Hydraulic LHM

Castrol

‡Castrol Hydraulic System Mineral Oil

Mobil

Mobil Fluid LHM

Shell

Shell LHM Fluid (S.8214)

Hydraulic System Mineral (LHM) is also supplied by
Esso, Total, Lockheed, Antar, Agip, Cofran, Elf, Igol,
Motul, and Stop.

‡First preference

Service schedule procedures

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<i>Cars conforming to an Australian specification. 1981/B5 model year</i>	B2	—	—	—	B2	B2
<i>Cars conforming to an Australian specification. 1986 model year</i>	B2/1	—	—	—	—	—
<i>Cars conforming to a Japanese specification</i>	B3	—	—	—	B3	B3
<i>Cars conforming to a North American specification</i>	B4	—	—	—	B4	B4
<i>Cars conforming to a Middle East specification prior to 1984 model year</i>	B1	B1/1	—	—	B1	B1
<i>Cars conforming to a Middle East specification. 1984 model year</i>	B5	B1/1	—	—	B1	B1
<i>Cars conforming to a Middle East specification from 1985 model year</i>	B5	B5/1	B5	B5/1	B5	B5

Issue record sheet 1

June 1986

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Service schedule procedures

Contents	Pages					
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WARNING

Use only Hydraulic System Mineral Oil (LHM) to replenish the braking and levelling systems.

Do not use Brake Fluids (Castrol RR363, Universal, or any other type). The use of any type of brake fluid, even in very small amounts, will cause component failure necessitating extensive rectification to the braking and levelling systems of the car.

Always ensure before fitting any seals, hoses, pipes, etc. that they are suitable for a mineral oil system. For details of correct component identification reference should be made to Chapter G of the Workshop Manual.

Always ensure that a sealed container of Hydraulic System Mineral Oil (LHM) is fitted adjacent to the battery.

Always ensure that no foreign matter enters the systems when work is being carried out.

General information

The information contained in this chapter should be used in conjunction with the Service Schedule Charts and Workshop Manuals.

The following are the Workshop Manual publications to which reference should be made.

Silver Spirit, Silver Spur, Bentley Eight, and Mulsanne, from vehicle identification number (VIN) *SCAZS0000ACH01001* and Corniche/Continental from (VIN) *SCAZD0006CCH05037* publication number TSD 4400.

Corniche prior to vehicle identification number (VIN) *SCAZD0006CCH05037* and Camargue, publication number TSD 4200.

Where reference is made to 1985 model year cars the information is applicable to Silver Spirit, Silver Spur, and Mulsanne from vehicle identification number (VIN) *SCAZS42A3FCX12001* and Bentley Eight from (VIN) *SCBZS800XFCH12013*.

Car protection

Prior to commencing a service schedule, the car should be suitably protected. For this purpose car protection kit RH 2662, wing covers RH 2684, and wing cover liners RH 2685 should be used.

Regular maintenance

In addition to the service schedules listed, the following maintenance should be carried out.

Service schedule procedures

From vehicle identification number

SCAZS0000ACH01001

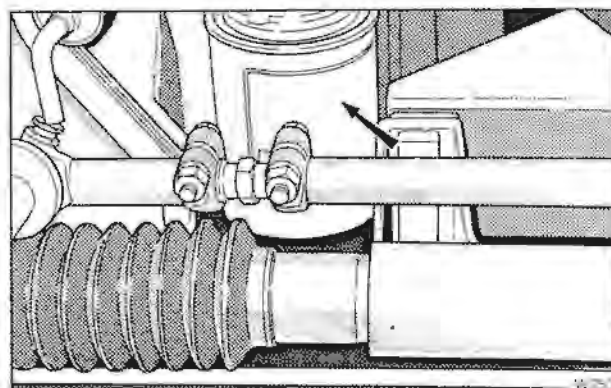


Fig. B1-1 Engine oil filter location (right-hand drive cars)

Engine

Weekly or every 800 kilometres (500 miles) whichever is the earlier; check the engine oil by means of the dipstick; top-up if necessary.

Lamp units

Weekly; check the lamp units for operation; rectify any faults.

Tyre pressures

Weekly; check the tyre pressures including the spare; adjust if necessary.

Windscreen and headlamp washer reservoirs

Weekly; check the washer fluid level; top-up if necessary.

Hydraulic reservoirs

Monthly; check the level of hydraulic mineral oil in the reservoirs.

Depressurize the hydraulic systems by pumping the brake pedal until the low brake pressure warning panels on the fascia illuminate. Continue to pump the pedal for at least a further 20 applications to ensure complete depressurization. Start and run the engine for four minutes with the car unladen, prior to checking the level. Top-up if necessary to the indicated maximum level. **Use only Hydraulic System Mineral Oil (LHM)**. Refer to page B1-17 for further information before carrying out this operation.

Engine cooling system

Every three months; check the coolant level. If necessary top-up with the correct anti-freeze/water mixture (see page B1-9)

Engine

1 Change the engine oil

The sump should be drained when the engine is warm, preferably after the car has completed a run.

To drain the oil, position the car over a pit or on a ramp.

Place a container in position beneath the drain plug situated on the right-hand side of the sump. Remove the drain plug and allow the oil to drain from the sump.

Do not flush the sump with paraffin or petrol.

Fit the drain plug ensuring that the washer is correctly positioned and in good condition.

Fill the engine sump with recommended lubricant until the MAX level is reached on the dipstick (see Check the engine oil level).

2 Renew the engine oil filter

Drain the engine oil as described under Change the engine oil.

Place a container under the filter to collect any oil that may be spilt.

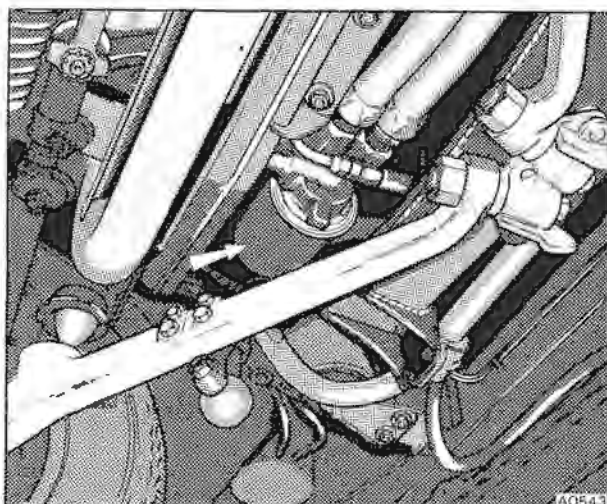


Fig. B1-2 Engine oil filter location
(1986 model year left-hand drive cars)

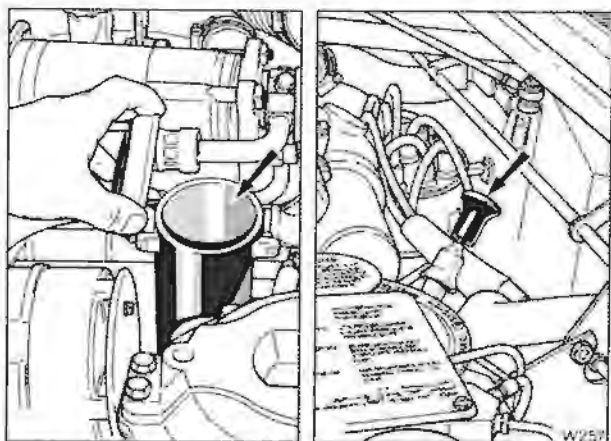


Fig. B1-3 Engine oil filler and dipstick

Remove the filter by unscrewing it from the engine in an anti-clockwise direction (see figs. B1-1 and B1-2).

Thoroughly clean the filter seating face on the engine.

Lightly smear the rubber sealing ring on the new filter with clean engine oil. Screw the filter onto the pedestal until the rubber seal contacts the sealing face, then tighten the filter a further half turn; **do not over-tighten**.

Fill the engine with clean engine oil until the MAX level is reached on the dipstick. Run the engine and check the filter joint for leakage.

Carry out the full oil level check procedure as described under Check the engine oil level.

3 Check the engine oil level

In order to obtain an accurate indication of the oil level, ensure that the car is standing on level ground. Check the engine oil by means of the dipstick marked ENGINE (see fig. B1-3).

It is recommended that the oil level is checked when the engine is cold. If the engine has been running, sufficient time should elapse after it has stopped to allow the oil to drain into the sump. Do not check the oil level with the engine running.

To replenish the sump with oil, open the filler cap marked ENGINE (see fig. B1-3). Add clean oil to the engine and after allowing sufficient time for the oil to reach the sump, check that the oil is up to the MAX mark on the dipstick. **Do not overfill**.

Important

On engine lubrication systems incorporating a thermostatically controlled oil cooler, if the oil has been drained from the engine the following additional procedure must be carried out to ensure the correct oil level is obtained.

Carry out the normal topping-up procedure as described previously to obtain the maximum oil level reading on the dipstick.

Drive the car to enable the engine oil to attain the temperature required to actuate the oil cooler thermostat.

To ascertain that the thermostat has actuated, a rise in the temperature of the oil cooler return pipe situated adjacent to the air intake filler can be felt. This temperature rise occurs as hot oil begins to flow from the oil filter housing, where the thermostat is situated, to the oil cooler mounted in front of the coolant radiator matrix.

Do not attempt to attain the required engine oil temperature rise with the car stationary.

When it has been ascertained that the engine oil has been passing through the cooler, thus filling this part of the lubrication system, check the oil level in the normal manner as described previously.

4 Check the drive belts

Before commencing to adjust the drive belts inspect them for signs of wear or cracking. Any belts found unsatisfactory should be renewed.

If after adjustment, a matched pair of belts have a marked variation in tension, a new pair should be fitted.

Always renew both belts in a matched pair, even if only one belt is faulty.

Two belt tension loads are specified; a new belt load for replacement (new) belts and a retensioning load for belts which are satisfactory for further service.

The belt tension must be checked at a point midway between two pulleys (see fig. B1-4) by use of a belt tension meter or by applying a spring balance to give a 9,50 mm (0.375 in) belt deflection at a specified load.

The variation in the spring balance loads for similar belt tension meter loads is due to the varying lengths of belt between individual belt centres.

Belt dressing must not be applied to prevent belt slip.

Crankshaft to coolant pump

Load may be applied on either side of the belt run.

New belt load

Belt tension meter 27,2 kgf to 31,7 kgf
(60 lbf to 70 lbf)

Spring balance 7,5 kgf to 8,2 kgf
(16.5 lbf to 18 lbf)

Retensioning load

Belt tension meter 22,7 kgf to 27,2 kgf
(50 lbf to 60 lbf)

Spring balance 6,8 kgf to 7,5 kgf
(15 lbf to 16.5 lbf)

The tension of this matched pair of belts is adjusted by altering the position of the jockey pulley (see fig. B1-4).

Slacken the nut and the setscrew securing the jockey pulley arm. Pivot the jockey pulley to adjust the belt tension then tighten the nut and setscrew. Check the belt tension and repeat the adjustment procedure if necessary.

Coolant pump to alternator

Load may be applied on either side of the belt run.

New belt load

Belt tension meter 36,3 kgf to 40,8 kgf
(80 lbf to 90 lbf)

Spring balance 5,0 kgf to 5,9 kgf
(11 lbf to 13 lbf)

Retensioning load

Belt tension meter 31,7 kgf to 36,3 kgf
(70 lbf to 80 lbf)

Spring balance 4,1 kgf to 5,0 kgf
(9 lbf to 11 lbf)

The tension of the belt is adjusted by altering the position of the alternator (see fig. B1-4).

Slacken the setscrew securing the alternator at the upper mounting point.

Slacken the setscrew securing the adjustment strut to the front mounting plate and the nut and bolt in the adjustment slot. Pivot the alternator to adjust the belt tension then tighten the nut and bolt in the

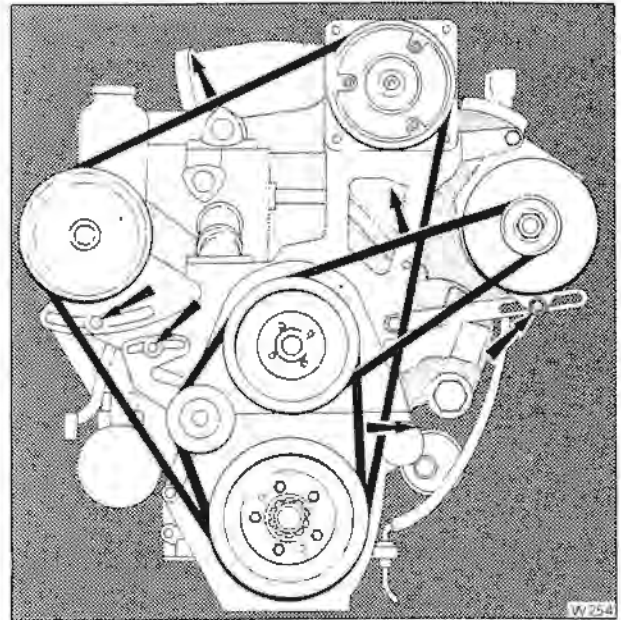


Fig. B1-4 Engine drive belt adjustment and tension check points

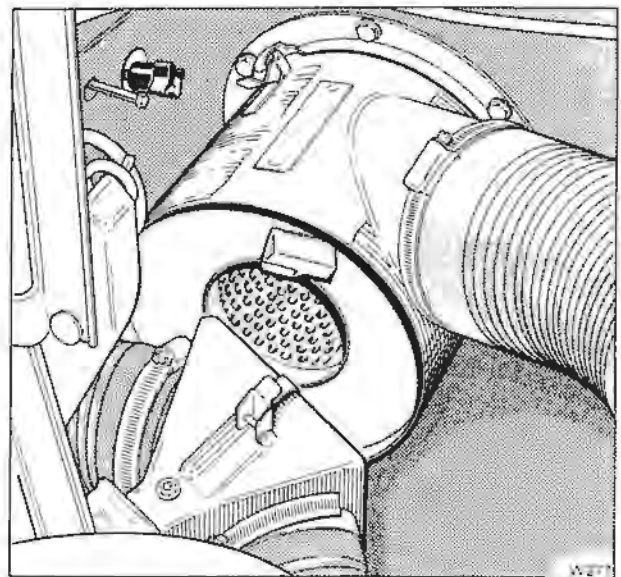


Fig. B1-5 Air filter (SU carburetters)

adjustment slot. Check the belt and repeat adjustment if necessary.

When the tension is correct, finally tighten the remaining setscrews and check the tension again.

Crankshaft to steering pump/refrigeration compressor

Load must be applied on the top run of the belts. Each belt to be checked individually.

New belt load

Belt tension meter 40,8 kgf to 45,4 kgf
(90 lbf to 100 lbf)

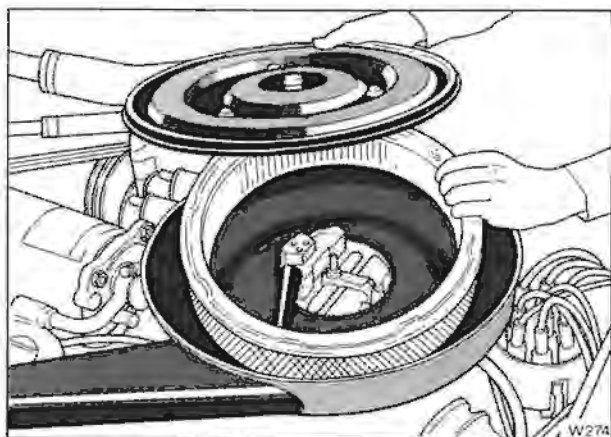


Fig. B1-6 Air filter (Solex carburettor)

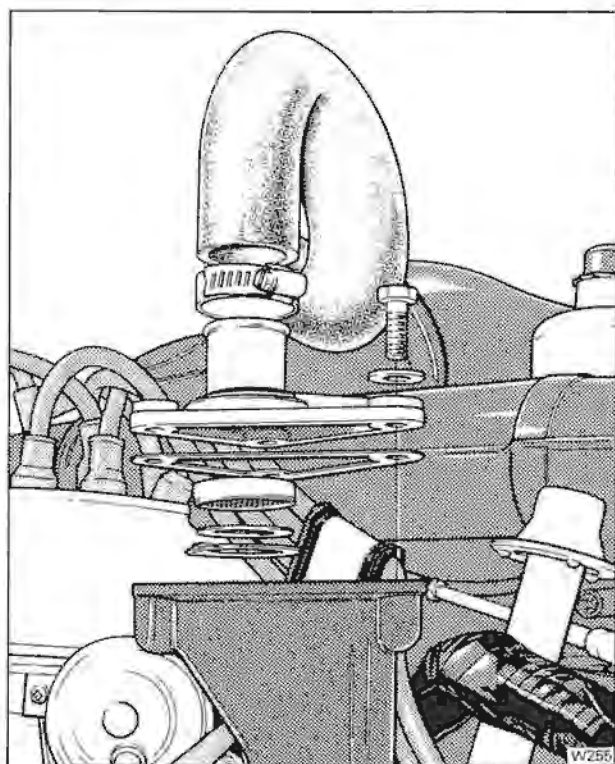


Fig. B1-7 Crankcase breather tube flame trap (SU carburettors)

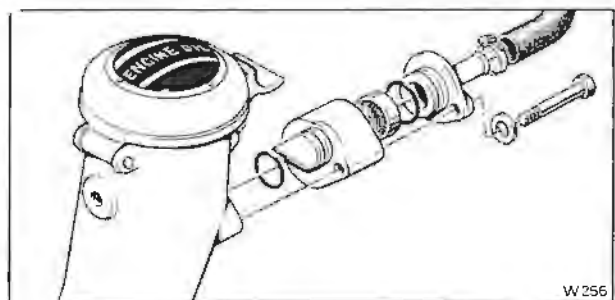


Fig. B1-8 Crankcase breather tube flame trap (Solex carburettor)

Spring balance 6,3 kgf to 7,7 kgf
(14 lbf to 17 lbf)

Retensioning load
Belt tension meter 36,3 kgf to 40,8 kgf
(80 lbf to 90 lbf)

Spring balance 4,1 kgf to 6,3 kgf
(9 lbf to 14 lbf)

The tension of this matched pair of belts is adjusted by altering the position of the steering pump (see fig. B1-4). Slacken the setscrew in the steering pump mounting bracket slot situated below the pump pulley.

Slacken the pump pivot setscrew and the union on the supply hose at the rear of the pump.

Pivot the pump to adjust the belt tension then tighten the setscrew in the adjustment slot. Check the belt tension and adjust again if necessary. When the tension is correct tighten the pivot setscrew and again check the belt tension. Finally tighten the supply hose connection; ensuring that the hose does not foul on other components.

On left-hand drive cars position the hose so that the soft rubber protective sleeve has clearance or minimal contact with the coolant pump to manifold elbow.

5 Renew the air filter element

Silver Spirit, Silver Spur, Bentley Eight, and Mulsanne
The air filter element is situated in the air intake housing at the front right-hand side of the engine compartment (see fig. B1-5).

To gain access to the element, release the two toggle clips retaining the air blending valve housing to the air cleaner housing. Carefully free the joint and move the housing away from the air cleaner.

Unscrew the worm drive clip securing the carburettor intake hose to the air cleaner housing. Detach the hose.

Support the air cleaner housing and release the three toggle clips securing the housing to the valance.

Carefully free the joint, then move the housing towards the engine and withdraw the housing and air filter element from the car.

Remove the filter element from the housing.

Ensure that the inside of the air cleaner housing (both the sections removed and the fixed sections in the valance) is clean.

Inspect the joint seals for serviceability. Renew if necessary.

Two types of filter element have been fitted, a tubular type, open at both ends or a conical type with the small end of the cone closed.

Dependent on the type of filter element to be fitted proceed as follows.

Tubular type

Enter the new element into the wing valance.

Fit the air cleaner housing to the valance. Ensure that it is located inside the valance retaining clamp ring. Hold the rubber seal in position over the housing

spigot by placing the fingers of one hand through the air intake aperture and onto the seal.

To allow the housing to pass over the end of the filter, it will be necessary to slightly withdraw the element during this operation.

Whilst ensuring that both the air filter element and sealing ring are correctly positioned on the housing spigot fit the assembly to the wing valance.

Align the three housing toggle clips with their respective securing points. Fasten the toggle clips.

Fit the remaining components by reversing the removal procedure.

Conical type

Locate the large end of the new filter element onto the locating spigot on the inside of the removable half of the housing.

Carefully position the housing and filter onto the valance allowing the filter to pass into the valance mounted section of the housing. Locate the small (blank) end of the filter into the spigot in the valance housing. Align the three housing toggle clips with their respective securing points. Special care should be taken during these operations to ensure that the paper element is not damaged during insertion.

Ensure that the filter is correctly positioned on the location spigots, then secure the three toggle clips. It is essential that the filter is correctly located on the spigots before the toggle clips are fastened down, otherwise there is a serious risk of crushing the filter element.

Fit the remaining components by reversing the removal procedure.

Corniche/Continental and Camargue

The air filter element is situated in the air silencer housing above the carburetter.

To remove the element, unscrew the knurled nut situated on top of the air silencer, then unscrew the three reach nuts retaining the top cover (see fig. B1-6).

Remove the cover and lift out the paper element. Fit a new element and secure the top cover.

Note

When fitting the top cover, ensure that the word Front marked on the cover is towards the front of the car, then tighten the knurled nut by hand only.

Overtightening the nut can distort the carburetter body.

Torque tighten the three reach nuts to 0,7 kgf m (5 lbf ft).

6 Clean the crankcase breather tube flame trap

Silver Spirit, Silver Spur, Bentley Eight, and Mulsanne
The engine crankcase is ventilated through a breather tube connected to the carburetter air induction system. A flame trap in the form of a filter gauze is fitted into the system at the rear of 'A' bank cylinder (see fig. B1-7) and should be cleaned as follows.

Withdraw the windscreen wiper relay (wiper 3, see fig B1-19A) situated adjacent to the windscreen washer reservoir.

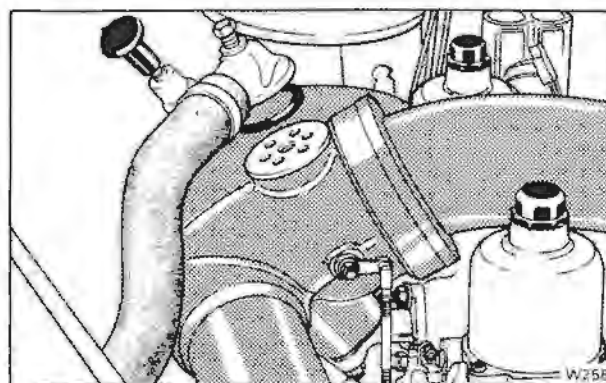


Fig. B1-9 Choke butterfly housing adapter (SU carburetters)

Remove the cover from the windscreen wiper mechanism (if fitted).

Disconnect the breather hose from the flame trap housing.

Remove the three setscrews from the housing cover and remove the cover.

Remove the circlip retaining the gauze filter situated on the underside of the housing cover.

Thoroughly clean the gauze with a suitable cleaning solvent and blow dry with compressed air.

Ensure that the breather pipe and housing are also clean.

Fit the filter gauze and housing cover by reversing the removal procedure.

Corniche/Continental and Camargue

On cars fitted with a Solex carburetter the flame trap filter gauze is situated in the crankcase breather pipe at its connection to the engine oil filler pedestal (see fig. B1-8).

To clean the filter gauze, first remove the setscrew securing the breather pipe to the oil filler pedestal.

Withdraw the connection from the pedestal; collect the gauze and adapter connection.

Thoroughly clean the components in a suitable cleaning solvent and then blow dry with compressed air.

Renew the sealing rings if required and fit the components by reversing the removal procedure.

7 Clean the choke butterfly housing adapter (SU carburetters)

The adapter is situated on the choke butterfly housing and is part of the crankcase breather system (see fig. B1-9).

To clean the adapter remove the retaining setscrew and detach the adapter from the breather pipe.

Clean the adapter using a recommended cleaning solvent and ensure that the holes are free of obstruction; blow dry using dry compressed air.

Ensuring that the 'O' ring is in good condition, fit the adapter by reversing the removal procedure.

8 Clean the air cleaner breather housing connection (Solex carburettor)

Remove the air cleaner element as described in Renew the air filter element.

Disconnect and withdraw the crankcase breather pipe from the underside of the air silencer housing (see fig. B1-10).

Thoroughly clean the air cleaner breather housing using a recommended cleaning solvent; blow dry using dry compressed air.

Fit the components by reversing the removal procedure.

9 Check the carburettor damper oil level (SU carburetters)

The upper portion of the guide spindle, attached to the air valve piston in each carburettor is hollow and should contain the same type of oil as used in the engine.

To check the oil level, unscrew the cap and withdraw the damper from the air valve piston (see fig. B1-11). Top-up the damper reservoir with clean engine oil to approximately 13 mm (0.50 in) from the top of the tube. Fit the damper into the tube and screw the cap firmly into position.

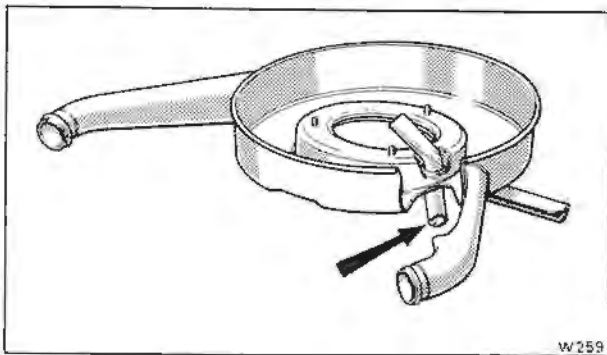


Fig. B1-10 Air cleaner breather connection (Solex carburettor)

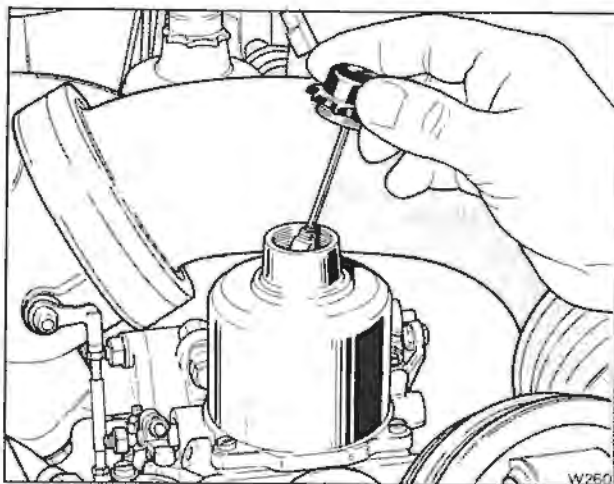


Fig. B1-11 SU carburettor damper

10 Renew the sparking plugs

Sparking plug type Champion RN 12 Y or RN 12 YC.

Plug gap setting 0,76 mm (0.030 in)

Note

The heat range of these sparking plugs has been increased to include the range previously covered by the RN14Y sparking plug.

Where RN14Y sparking plugs have been previously quoted, the RN12Y or RN12YC sparking plug may be used as a replacement.

It is recommended that the plugs are used in engine sets, and not mixed.

Before removing the sparking plugs the surrounding area should be thoroughly cleaned to prevent the ingress of foreign matter when the plugs are removed.

Fit the new plugs ensuring that the gaps are correctly set and that each plug is fitted with a sealing washer.

Torque tighten each plug to between 18 Nm and 23 Nm (1,8 kgf m and 2,3 kgf m, 13 lbf ft and 17 lbf ft).

11 Lubricate the distributor

Lubrication of the spindle is the only routine maintenance required.

To carry out this operation remove the moulded top cover of the distributor and the rotor arm. Do not remove the cover from the distributor baseplate (see fig. B1-12).

Lubricate the spindle shaft bearings by applying two drops of engine oil to the felt pad situated beneath the rotor arm.

On distributors not fitted with a felt pad beneath the rotor, lubrication is not necessary.

Clean and fit the rotor arm.

Clean the terminal posts and cover, then fit the cover ensuring that it is correctly located on the distributor base.

12 Lubricate the accelerator and carburettor linkage

Lubricate all the accelerator and carburettor linkage ball joint pivots and clevis pins.

Examine the ball knuckle joints for wear and adjust if necessary. Renew any worn clevis pins.

Examine the linkage for correct operation. For details of linkage setting procedures, reference should be made to Chapter K of the appropriate Workshop Manual.

13 Check the choke operation and choke stove pipe flow

Silver Spirit, Silver Spur, Bentley Eight, and Mulsanne
Apply the parking brake and ensure that the gear range selector lever is in the Park position. Remove the gear range thermal cut-out from the fuseboard.

Start and run the engine until the normal operating temperature is attained. Stop the engine.

Connect an impulse tachometer to the engine in accordance with the manufacturer's instructions.

Disconnect the stove pipe union at the intake elbow and connect a flowmeter to the pipe using connector RH 8945. The flowmeter must be a rotameter type capable of measuring 2,9 cu m/hr (100 cu ft/hr).

Start and run the engine at idle speed (650 rpm); observe the flowmeter, a correct reading is between 0,8 cu m/hr and 0,9 cu m/hr (28 cu ft/hr and 32 cu ft/hr).

If the reading is below 0,8 cu m/hr (28 cu ft/hr) check the stove pipes and union for leaks or blockage.

If the reading is in excess of 0,9 cu m/hr (32 cu ft/hr) fit a new restrictor in the choke bi-metal housing (see fig. B1-13). To fit a new restrictor, replace the union in the bi-metal housing, then test for correct stove pipe flow.

14 Check the float chamber depression

Silver Spirit, Silver Spur, Bentley Eight, and Mulsanne
For details of the procedure necessary to carry out this operation reference should be made to Chapter K of the appropriate Workshop Manual.

15 Check the ignition timing

For details of the ignition timing settings and procedures reference should be made to Chapter M of the appropriate Workshop Manual.

16 Check the engine idle speed

For full details of carburettor settings reference should be made to Chapter K of the appropriate Workshop Manual.

17 Check the choke idle speed

For details of choke fast idle settings reference should be made to Chapter K of the appropriate Workshop Manual.

Engine cooling system

1 Check the coolant anti-freeze concentration

The cooling system is filled initially with a coolant solution comprising equal parts of UT 184 (BP-Hythe Chemicals) or Prestone II and water. This mixture gives frost protection down to a temperature of -37°C . The coolant should contain fifty percent of an approved anti-freeze at all times. This not only provides frost protection but also prevents corrosion of the coolant passages, and raises the boiling temperature of the coolant.

The anti-freeze concentration should be checked in both the expansion bottle (where fitted) and the radiator.

If the strength of the coolant requires increasing, sufficient coolant should be drained from the radiator and replaced with undiluted anti-freeze (see fig. B1-14). Afterwards run the engine until normal operating temperature is attained and the anti-freeze has become thoroughly mixed with the coolant. Stop the engine and again check the concentration in the radiator.

An acceptable level of anti-freeze concentration is between 45% and 50%. Therefore, as a hydrometer

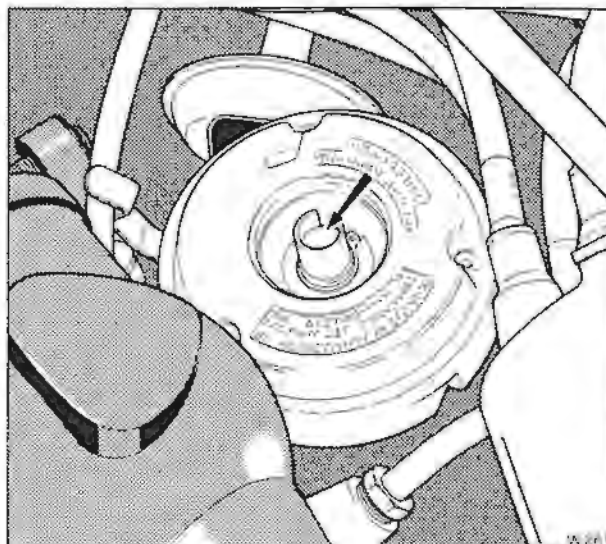


Fig. B1-12 Distributor lubrication point (if applicable)

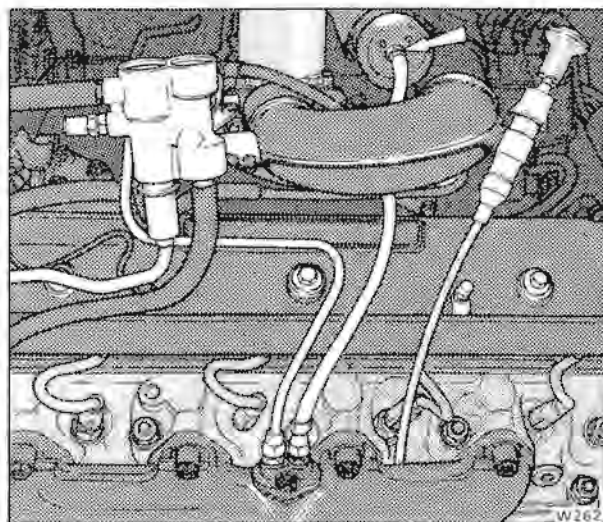


Fig. B1-13 Choke stove pipe restrictor

may be inaccurate where reading above 40% are expected, it is recommended that a refractometer is used.

For details refer to Chapter L of the appropriate Workshop Manual.

If a refractometer is not available, and a hydrometer has to be used a scale reading of between 1,06 and 1,07 should be obtained with the coolant at room temperature for the mixture to be correct.

2 Check the coolant level

Warning

Both types of cooling system become pressurized during engine running, therefore, extreme care should be taken when removing the radiator cap from a warm or hot radiator.

Cars fitted with a coolant expansion bottle (see fig. B1-15).

Routine check

To check the level outside a normal service schedule (e.g. Regular maintenance) and when no cooling/heating system fault is reported or suspected, proceed as follows.

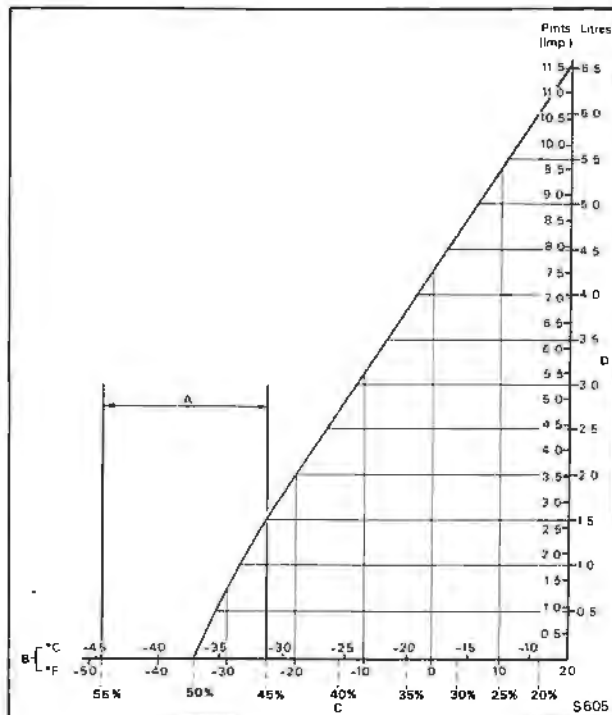


Fig. B1-14 Anti-freeze correction chart to give a 50% solution

- A** Acceptable service range of concentration
- B** Freezing point of coolant
- C** Percentage concentration
- D** Volume of 100% anti-freeze to be added to maintain a 50% solution after removal of the same volume of old coolant

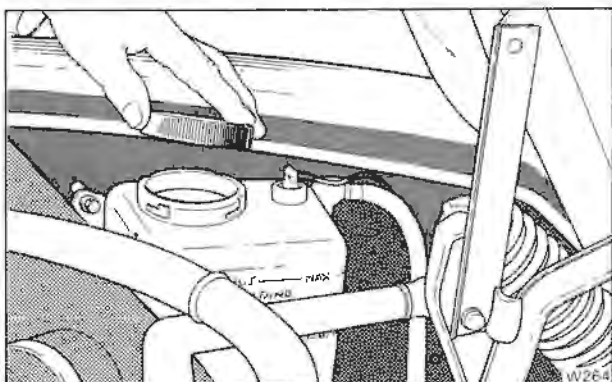


Fig. B1-15 Coolant expansion bottle

If the **engine is hot** ensure that the coolant level in the translucent expansion bottle is at the MAX mark. Top-up if necessary and replace the expansion bottle cap.

If the **engine is cold** ensure that the coolant level in the translucent expansion bottle is half-way between the MIN and MAX marks. Top-up if necessary and replace the expansion bottle cap.

If the coolant level in the expansion bottle is either below the MIN mark or there is no coolant in the expansion bottle, carry out the following Full check procedure.

Full check

Ensure the gear range selector is in the Park position and apply the parking brake.

Remove the gear range selector cut-out from the fuseboard.

Check the coolant level in the translucent expansion bottle (see fig. B1-15). If the level is low or the bottle is empty, add coolant to bring the level up to the MIN mark.

Ensure that the engine is not hot (to allow safe removal of the radiator cap).

Carefully remove the radiator cap.

Check the coolant level in the radiator. This should be halfway up the filler neck.

If the coolant level in the radiator is correct, fit the radiator cap.

Top-up the coolant in the expansion bottle in accordance with the Routine check procedure.

If the coolant level in the radiator is low but visible and no cooling/heating system fault is reported or suspected top-up the system using the following procedure. If however the coolant is not visible or a coolant/heating system leak is reported or suspected, the system should have any faults rectified and then be pressure tested prior to carrying out the topping-up procedure.

Top-up the radiator until the coolant is half-way up the filler neck.

Start and run the engine.

Turn the air conditioning system function control fully clockwise to the defrost position.

Set the air conditioning system override switch to the AUTO position.

Allow at least one minute for the air conditioning system to stabilize, then check to ensure that all air is being directed towards the windscreen (i.e. no air is delivered from the lower system and the facia outlets). This procedure opens the heater system water tap.

Run the engine, without the radiator pressure cap fitted, until normal operating temperature is attained. Top-up the coolant level in the radiator during this time.

Switch off the engine.

Fit the radiator cap.

Top-up the coolant level in the expansion bottle in accordance with the Routine check procedure.

Cars not fitted with a coolant expansion bottle

Ensure the gear range selector is in the Park position and apply the parking brake.

Remove the gear range selector cut-out from the fuseboard.

Start the engine and turn the air conditioning function control clockwise to the defrost position and set the upper system mode override switch to the AUTO position.

Allow approximately one minute for the system to attain the required setting, then check that all air is being directed towards the windscreen (i.e. no air is delivered from the lower system and the facia outlets).

This procedure opens the heater water tap and ensures that the cooling system can be correctly checked.

Switch off the ignition.

Remove the radiator cap. If the engine is hot, muffle the cap with a thick cloth and gradually turn the cap anti-clockwise until the pressure is reduced, then remove the cap.

If the coolant level is low, top-up the radiator header tank with the correct anti-freeze/water mixture. The correct level is when the coolant reaches the rubber seal in the filler neck. Fit the filler cap.

3 Check all coolant hose clips for tightness

Examine all the coolant hose connections for signs of leakage and check the worm drive clips for tightness. Never overtighten a clip in an attempt to seal a leaking connection.

In the event of a hose connection leaking when the worm drive clip has been tightened, drain the cooling system to a level below the leaking hose. Remove and inspect the hose and its connecting component for signs of damage. If necessary renew the faulty component and refill the system with coolant as described in Renew the coolant.

4 Examine the condition of all coolant hoses

Inspect all coolant hoses for signs of deterioration, cracking, weak spots, etc. Any faulty hose should be removed and a new hose fitted. When renewing a hose always ensure that it does not foul other components and that it is not kinked so as to cause complete or partial restriction of coolant flow.

5 Fit a new heater tap feed hose

Drain the coolant system as described in Renew the coolant, but do not remove the engine crankcase drain plugs. Disconnect the heater tap feed hose from the engine and heater tap; remove the hose.

Fit the new hose; ensure that the hose is free from any sharp bends that may restrict coolant flow.

Fill the engine coolant system as described in Renew the coolant.

Ensure that the parking brake is applied and the gear range selector lever is in the Park position.

Remove the gear range selector cut-out from the fuseboard.

Start and run the engine; check the coolant hose for leaks.

Switch off the ignition and fit the gear range selector cut-out.

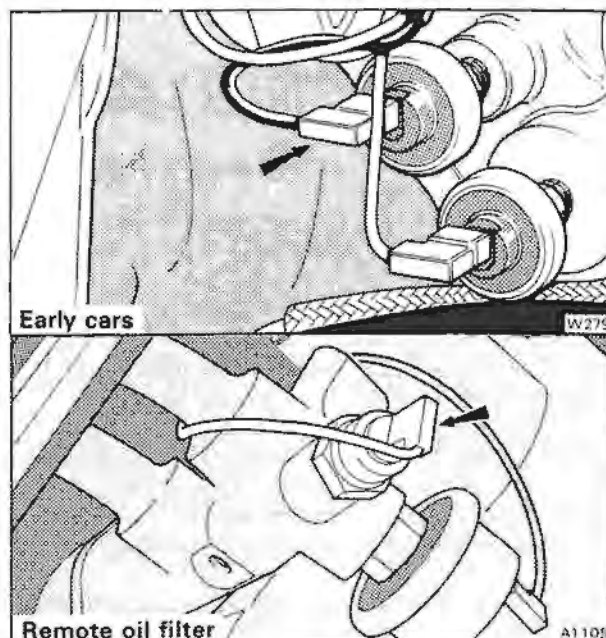


Fig. B1-16 Oil pressure switches

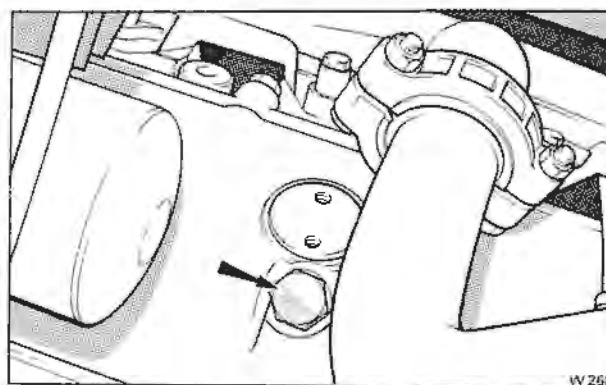


Fig. B1-17 Crankcase drain plug ('B' bank shown)

6 Renew the coolant

Drive the car onto a ramp; move the gear range selector to the Park position and apply the parking brake. Remove the gear range selector cut-out from the fuseboard.

Disconnect the Lucar connection from the pressure switch situated on the oil filter mounting (see fig. B1-16).

Switch on the ignition and rotate the air conditioning function switch to the windscreen defrost position, also set the upper system mode override switch to the AUTO position.

Wait approximately one minute for the system to attain the required setting and observe that all the air is being directed to the windscreen. This procedure opens the heater water tap and ensures the system can be completely drained.

Switch off the ignition.

Place a container beneath the radiator drain tap to collect the coolant. Connect a length of hose onto the drain tap to direct the coolant into the container.

Carefully unscrew and remove the radiator pressure cap.

Open the radiator drain tap and allow the coolant to drain from the radiator.

When the radiator has completely drained place a container beneath the crankcase drain plugs. Remove the drain plugs from the crankcase (see fig. B1-17) and allow the residue of coolant to drain from the crankcase.

Renew the washers on the drain plugs and fit the plugs into the crankcase.

To drain the coolant remaining in the expansion bottle (if applicable), disconnect the connection hose from the radiator and allow the coolant to drain from the expansion bottle into the container.

When the coolant has drained connect the hose to the radiator.

Check all hoses for serviceability and renew as necessary.

Fill the systems with fresh coolant of the specified concentration as follows.

Ensure the radiator drain tap is closed.

Slowly fill the radiator with coolant, thus reducing the possibility of air locks in the system.

Start and run the engine for a minimum of 10 minutes with the radiator pressure cap removed. After running for five minutes ensure that warm air is passing up the windscreen from the demister ducts. Top-up the radiator as necessary to ensure there is always coolant in the top tank of the radiator. Ensure that the thermostat has opened; indicated by a rapid warming of the top radiator hose.

Switch off the engine and top-up the radiator to half-way up the filler neck. Fit the cap.

On cars fitted with a coolant expansion bottle (see fig. B1-15), fill the bottle to a level midway between the maximum and minimum levels indicated on the tank.

Start and run the engine until normal engine running temperature is attained; switch off the engine and top-up the expansion bottle to the maximum level.

Allow the engine to cool. Carefully remove the radiator pressure cap and ensure the radiator is completely full of coolant. Top-up to half-way up the radiator filler neck if necessary. Fit the radiator filler cap.

Connect the Lucar connection previously disconnected from the pressure switch adjacent to the oil filter (see fig. B1-16).

Note

For the coolant system to operate correctly, i.e. for coolant to pass into the expansion bottle when hot and be drawn back in the radiator during cooling, the top of the radiator must not contain an air pocket.

7 Reverse flush the coolant system

Drain the engine coolant system as described in Renew the coolant.

Remove the top and bottom hoses from the radiator matrix.

Fit a waste pipe to the upper (inlet) connection of the radiator.

Apply mains water under pressure through the lower (outlet) connection of the radiator. This should remove all loose sediment in approximately 30 minutes.

Do not under any circumstances use an alkaline compound or detergent to clean the system. Such compounds have a detrimental chemical action on aluminium alloys.

Remove the engine coolant drain plugs from the crankcase.

Remove the thermostat as described in Renew the thermostat, then replace the cover.

Fit a suitable pipe to the drain plug aperture and apply mains water pressure to each aperture in turn.

Flush for approximately 30 minutes, or until the water runs clear of foreign matter.

Fit the drain plugs and a new thermostat by reversing the procedure for removal.

To flush the heater systems, detach the heater at the water tap and disconnect the return hose at the coolant pump.

Fit a waste pipe to the disconnected heater feed hose.

Flush the matrix for approximately 30 minutes.

Examine the coolant hoses for deterioration or damage and renew as necessary.

Connect all hoses and fill the system with the recommended coolant mixture as described under Renew the coolant.

8 Remove foreign matter from the radiator and refrigeration condenser

Using a pressure hose pipe, flush the radiator matrix and condenser matrix.

Hold the nose of the hose pipe close to the back of the radiator matrix and allow the water to pass between the veins of the matrix. Slowly move the hose over the whole matrix area until all foreign matter (insects, etc.) have been flushed clear. Care must be taken to ensure that the end of the hose does not damage the matrix face during this operation.

9 Renew the thermostat

Disconnect the battery

Place a container beneath the radiator. Attach a length of hose to the radiator drain tap to direct the coolant into the container.

Carefully remove the radiator pressure cap.

Open the radiator drain tap and allow sufficient coolant to drain from the system for the coolant level to fall below that of the thermostat housing. Close the drain tap and remove the hose previously attached.

Disconnect the electrical connector from the thermostat housing cover.

Remove the bolt from the air intake elbow and the four setscrews from the thermostat housing cover. Collect the bracket.

Remove the thermostat housing cover. The cover can be moved away from the housing without detaching the outlet hose.

Lift the thermostat from the housing (see fig. B1-18).

Remove the old gasket material from the thermostat housing and cover. Ensure that no material enters the thermostat housing.

Check that the two faces are clean and dry.

Insert a new thermostat into the housing.

Place a new gasket in position on the housing and fit the cover and air intake elbow bracket. Connect the elbow to the bracket.

Connect the electrical connection removed from the thermostat housing.

Top-up the cooling system with the correct coolant mixture as described under Renew the coolant.

Torque converter transmission

It is essential when adding fluid to, or working on the torque converter transmission that great attention is paid to cleanliness. The smallest partical of dirt in the transmission fluid could interfere with the correct operation of the unit. It is also important that only an approved fluid is used (see Chapter A).

1 Check the transmission fluid level

The fluid level can only be checked accurately when the car is standing on a level surface, the engine is running at idle speed, and transmission fluid is at normal operating temperature approximately 77°C (170°F).

The dipstick and filler tube are situated on the right-hand side of the engine compartment.

On Silver Spirit, Silver Spur, Bentley Eight, and Mulsanne cars, remove the protective cover (if fitted) from the windscreen wiper mechanism to gain access to the dipstick. Ensure that the following safety procedure is undertaken to isolate the mechanism prior to removing the cover.

Ensure that the windscreen wiper control switch situated on the facia is in the off position. Remove a windscreen wiper relay, preferably number three, situated adjacent to the windscreen washer reservoir (see fig. 81-19). To remove the relay pull it vertically from its mounting.

Always clean the top of the dipstick before removing it from the filler tube.

As an initial check, the fluid level may be checked after starting from cold as follows.

Apply the parking brake.

Start and run the engine for three to four minutes at fast-idle speed, with the gear range selector in the Park position. Reduce the engine speed to slow idle.

Whilst sitting in the driving seat, **firmly apply the footbrake** and move the gear range selector through the full range of gear positions pausing briefly in each range. Return the selector to the Park position.

Immediately check the fluid level with the engine running at idle speed.

The level should be up to the circular dimple situated below the FILL mark on the dipstick or 10 mm (0.375 in) **below** the MIN mark, dependent on the type of dipstick fitted (see fig. B1-19).

Top-up to this level if necessary.

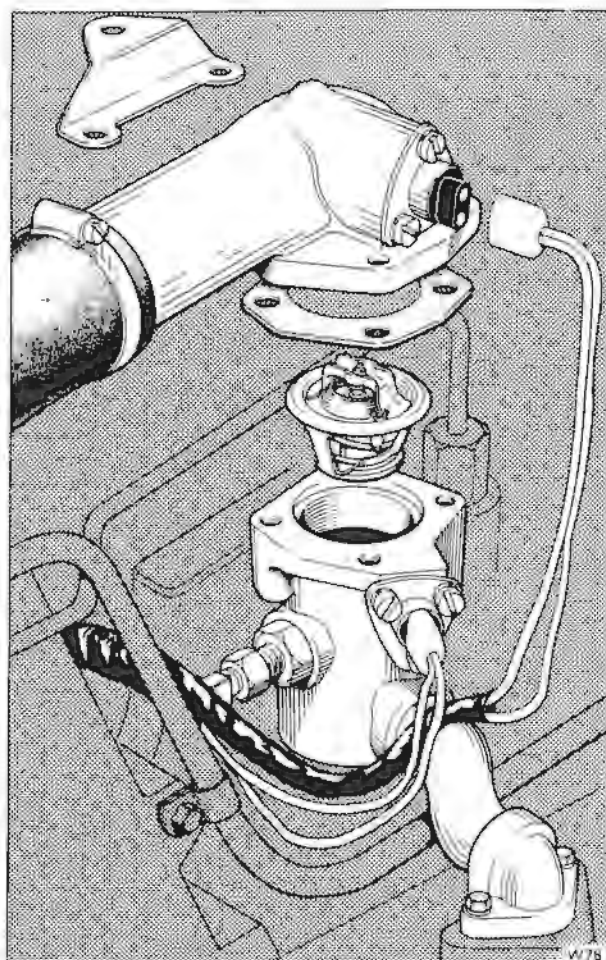


Fig. B1-18 Thermostat housing assembly

After this initial check a further check should be carried out as follows.

Drive the car for approximately 24 kilometres (15 miles) of highway/motorway driving or 16 kilometres (10 miles) of city driving. This should ensure the transmission has reached normal operating temperature.

It is essential that this temperature is attained. Do not top-up the fluid level to the MAX mark on the dipstick when the fluid is only warm, as this will result in an overflow situation when the normal operating temperature is attained. Overfilling will result in fluid being discharged from the transmission breather pipe.

Position the car on a level surface, firmly apply the parking brake and select Park with the gear selector lever.

Carry out the procedure described for the initial check.

With the transmission fluid at normal operating temperature the level of the fluid should be between the FILL and MAX HOT marks or the MIN and MAX marks (see fig. B1-19) dependent on the type of dipstick fitted.

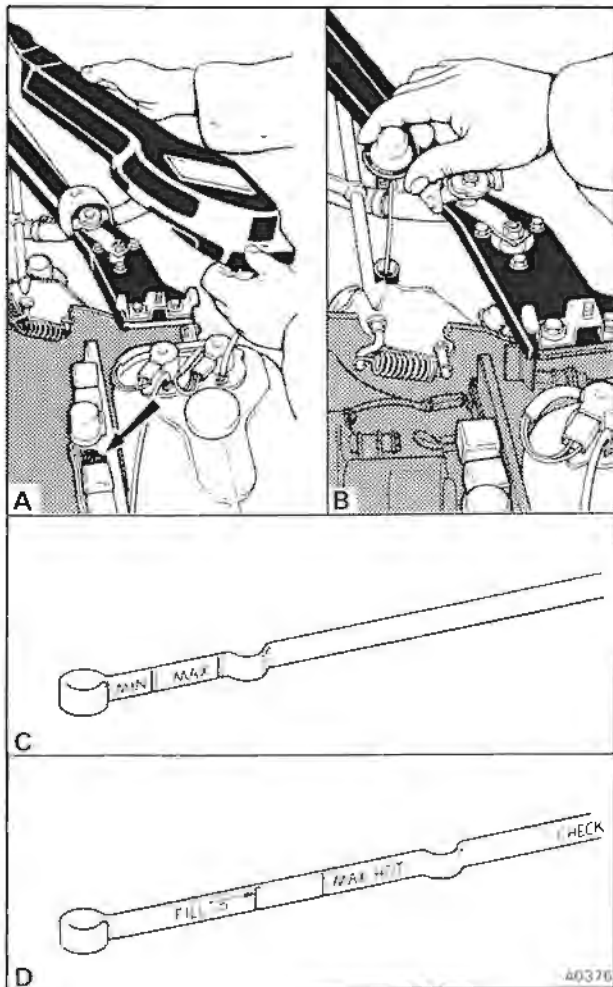


Fig. B1-19 Transmission filler tube and dipstick

- A Removing the windscreen wiper mechanism cover. The arrow indicates the wiper relay removed
- B Withdrawing the dipstick from the filler tube
- C Original dipstick markings
- D Revised dipstick markings

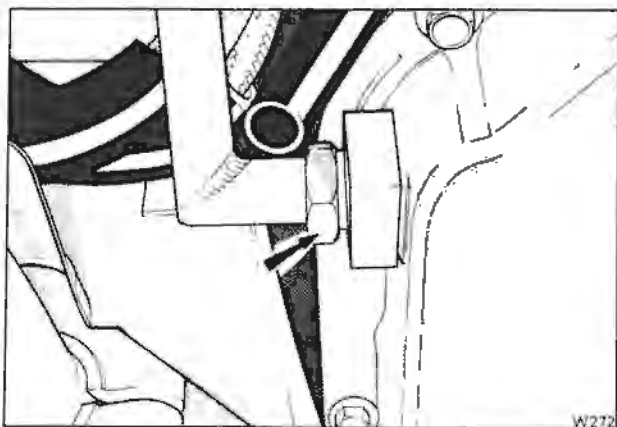


Fig. B1-20 Transmission drain point

If necessary add fluid by pouring it down the filler tube, with the engine still running, until the fluid is to the MAX mark on the dipstick.

Do not overfill

When the fluid level is correct, switch off the engine and fit the windscreen wiper mechanism cover and relay.

2 Renew the transmission fluid

Position the car on a ramp or over a pit.

Place a clean container having a minimum capacity of 3 litres (5 Imp pt, 6 US pt) under the nut which secures the transmission fluid filler tube to the sump (see fig. B1-20).

From within the engine compartment, remove the transmission dipstick as described under Check the transmission fluid level.

Slacken the setscrew securing the filler tube to the engine.

Unscrew the nut securing the filler tube to the side of the transmission sump (see fig. B1-20).

Withdraw the filler tube from the sump and move it to one side to allow the fluid to drain into the container.

After draining the sump, ensure that the filler tube is clean then fit it to the sump and tighten the nut.

Tighten the setscrew securing the filler tube clip to the engine.

Add 2,8 litres (5 Imp pt, 6 US pt) of an approved fluid to the sump, pouring the fluid down the filler tube.

Check the fluid level as described under Check the transmission fluid level.

3 Fit a new intake strainer

Drain the transmission sump as described under the heading, Renew the transmission fluid, then proceed as follows.

Remove the setscrews securing the transmission sump and lower the sump.

Drain the fluid from the sump and discard the gasket.

Unscrew the setscrew securing the intake strainer and pipe assembly to the transmission; remove the strainer assembly (see fig. B1-21).

Remove the intake pipe from the strainer and discard the strainer.

Clean the transmission sump and the intake pipe with paraffin and dry with compressed air.

Fit a new 'O' ring to the intake pipe and lubricate the 'O' ring with clean transmission fluid.

Ensure that a new rubber seal is fitted to the pipe bore in the new intake strainer, then fit the intake pipe into the strainer.

Fit the intake strainer and pipe assembly to the transmission and torque tighten the securing setscrew to 14 Nm (1,4 kgf m, 10 lbf ft).

Fit the transmission sump using a new gasket and torque tighten the sump setscrews to 16 Nm (1,7 kgf m, 12 lbf ft).

Fit the oil filler tube into the sump and tighten the nut. Tighten the setscrew securing the filler tube clip to the engine.

Add 4,5 litres (8 Imp pt, 9.6 US pt) of an approved fluid to the sump, pouring the fluid down the filler tube, then follow the fluid level checking procedure described under Check the transmission fluid level.

4 Lubricate the gear range selector control rod

Lubricate the clevis pins in the control rod linkage at the left-hand side of the transmission, with a few drops of clean engine oil. Also lubricate the manual shaft where it enters the transmission casing.

Propeller shaft

1 Lubricate the universal joints (if applicable)

A grease nipple is fitted to the universal joint at each end of the shaft (see fig. B1-22).

Using a suitable grease gun, lubricate each joint with an approved grease.

On cars fitted with a rubber jointed propeller shaft, lubrication is not required.

Final drive unit

1 Check the final drive oil level

Position the car on a ramp or over a pit.

Remove the level plug located in the rear face of the final drive casing. The oil in the casing should be up to the level plug orifice. If necessary, top-up with an approved oil.

Fit the level plug complete with a new joint washer.

2 Renew the final drive oil

It is advisable to carry out this operation when the oil is warm, e.g. immediately after the car has completed a run.

Position the car on a ramp or over a pit and clean the area around the drain and level plugs (see fig. B1-23).

Place a container beneath the drain plug, then remove both the drain and level plugs.

When the oil has drained, fit the drain plug complete with a new joint washer.

Using a syringe, fill the casing to the level plug orifice with an approved oil (see Chapter A); approximately 2,3 litres (4.0 Imp pt, 4.8 US pt) of oil will be required.

Fit the level plug complete with a new joint washer and check for leaks.

3 Lubricate the drive-shaft universal joints (if applicable)

On cars with a grease nipple fitted to the universal joint at the outer end of each drive-shaft (see fig. B1-24), using a suitable grease gun, lubricate each universal joint with approved grease.

4 Check the condition of the drive-shaft joint covers

The drive-shaft joints enclosed by convoluted seals are filled with lubricant on initial assembly. If upon inspection a seal is found to be leaking or damaged the joint should be inspected and a new seal fitted as described in Chapter J of the appropriate Workshop Manual.

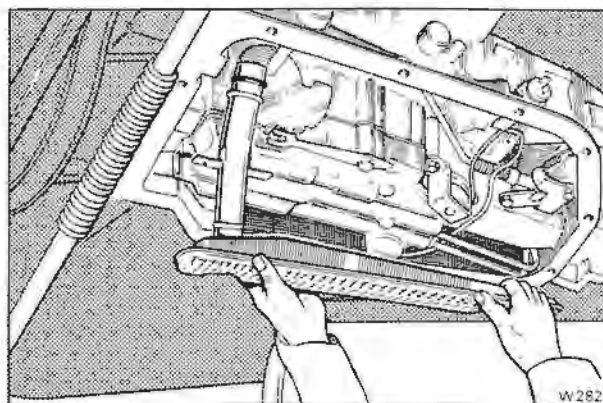


Fig. B1-21 Transmission intake strainer removal



Fig. B1-22 Propeller-shaft grease point

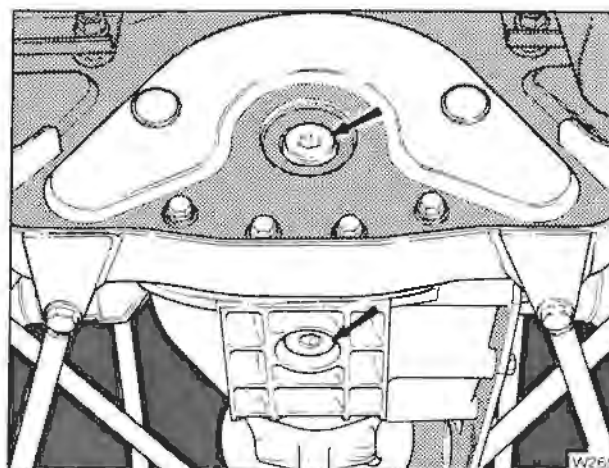


Fig. B1-23 Final drive drain and filler/level points

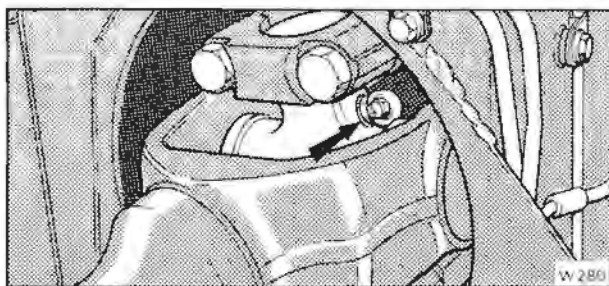


Fig. B1-24 Drive-shaft universal joint grease point

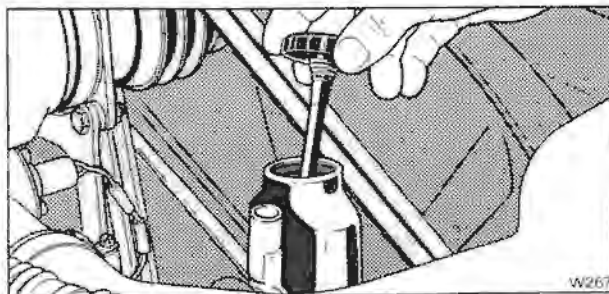


Fig. B1-25 Steering pump filler/dipstick

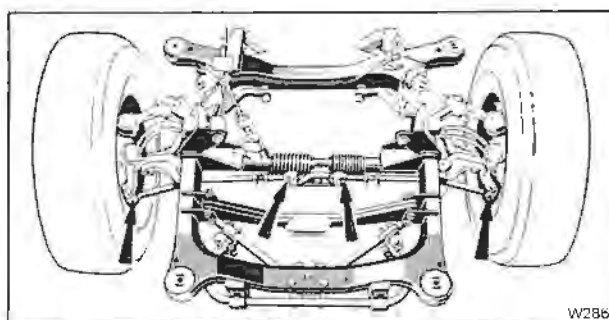


Fig. B1-26 Track rod ball joints

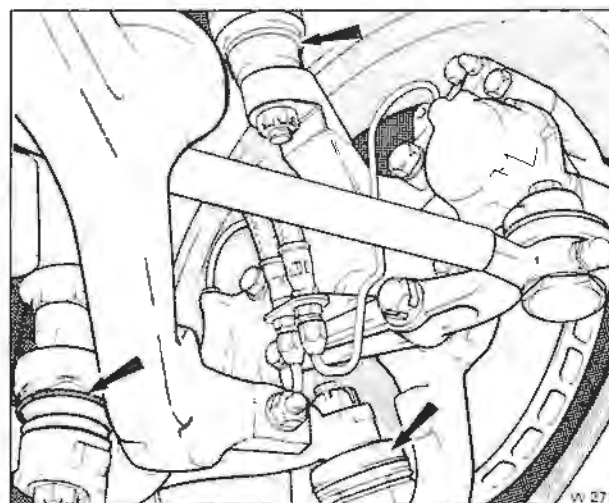


Fig. B1-27 Front suspension ball joints

Steering system

1 Check the steering pump fluid level

Remove the filler cap from the steering pump reservoir and check that the fluid level is at least up to the FULL COLD mark on the integral dipstick. If necessary, top-up to this level with approved fluid (see fig. B1-25).

Start and run the engine until it reaches normal operating temperature, approximately 77°C, then stop the engine.

Remove the filler cap and check the fluid level in the reservoir. If necessary, add an approved fluid to raise the level to the FULL HOT mark on the dipstick; do not overfill.

Ensure that the filler cap is securely replaced.

2 Lubricate the steering linkage ball joints (if applicable)

If grease nipples are fitted to the ball joints at the ends of the track rods (see fig. B1-26), they should be lubricated until a slight swelling of the joint seal is evident. Take care not to damage or displace the seals.

3 Check the condition of the steering ball joint covers

Examine the condition of the rubber cover seals on the ball joints (see fig. B1-26).

If the seals are found to be damaged or in poor condition, new parts should be fitted as necessary. For full information refer to Chapter N of the Workshop Manual.

4 Check the condition of the steering rack convoluted seals

Examine the condition of the convoluted seals on the rack and pinion unit and check the tightness of the seal clips.

If the seals are satisfactory, tighten the clips as necessary.

If the convoluted seals are found to be damaged or in poor condition, the rack and pinion unit should be removed from the car and new seals fitted. For full information refer to Chapter N of the Workshop Manual.

Suspension

1 Check the condition of the front ball joint covers

The front suspension ball joints (see fig. B1-27) are packed with grease on initial assembly and should not normally require attention between service overhauls unless the rubber seal covers are damaged.

If on inspection the covers are found to be damaged or in poor condition, the ball joints should be removed and new joints and seals fitted as necessary. For full information refer to Chapter H of the Workshop Manual.

2 Check the condition of the rear strut convoluted seals

Examine the condition of the convoluted seals on the rear suspension struts (see fig. B1-28).

If the seals are found to be damaged or in poor condition, the struts should be removed, as described in Chapter G of the Workshop Manual, and new seals fitted.

3 Lubricate the height control valve ball joints

Position the car on a ramp or over a pit then disconnect the actuation links from the height control valves and rear suspension trailing arms at the ball joints (see fig. B1-29). Note from which side each link is taken.

Clean the ball joints then lubricate with an approved grease.

Do not alter the length of the actuation link.

Connect the actuation link to the height control valve and the trailing arm. Adjust the joints to obtain complete movement without free play.

Brake and hydraulic systems



WARNING

Use only **Hydraulic System Mineral Oil (LHM)** to replenish the braking and levelling systems.

Do not use Brake Fluids (Castrol RR363, Universal, or any other type). The use of any type of brake fluid, even in very small amounts, will cause component failure necessitating extensive rectification to the braking and levelling systems of the car.

Always ensure before fitting any seals, hoses, pipes, etc. that they are suitable for a mineral oil system. For details of correct component identification reference should be made to Chapter G of the Workshop Manual.

Always ensure that a sealed container of **Hydraulic System Mineral Oil (LHM)** is fitted adjacent to the battery.

Always ensure that no foreign matter enters the systems when work is being carried out.

In order to protect against claims of liability for hydraulic system contamination, it is recommended that the hydraulic system mineral oil is tested for contamination prior to work being undertaken, preferably in the presence of the owner or his/her representative.

It is important that the test is carried out even when the hydraulic system mineral oil is to be renewed as this will not prevent the deterioration of components which have been in contact with contaminated mineral oil.

Brake fluids and mineral oil are immiscible and with large amounts of contamination separation of the fluids will occur on standing, due to the greater density of the conventional fluids. A further indication of the mixing of conventional brake fluid and mineral oil is its cloudy appearance.

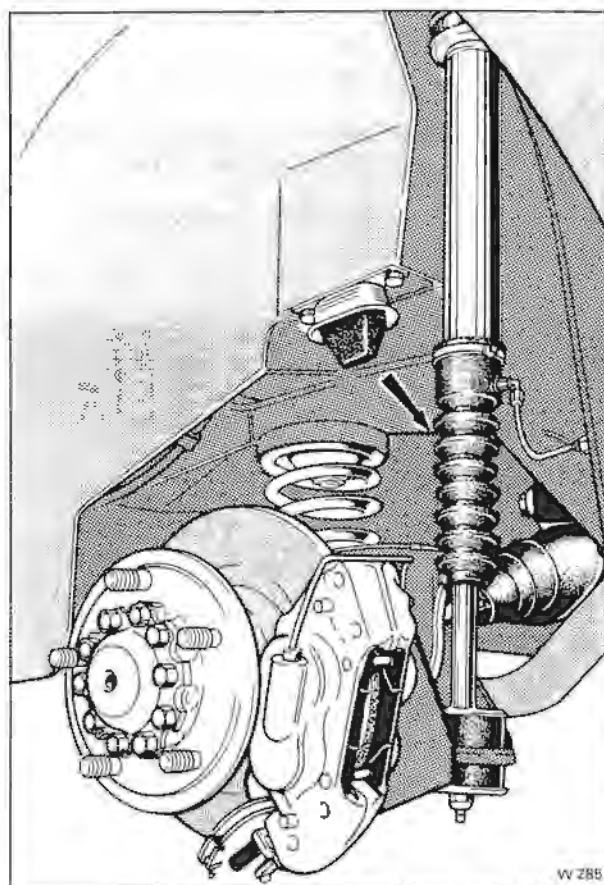


Fig. B1-28 Rear suspension strut

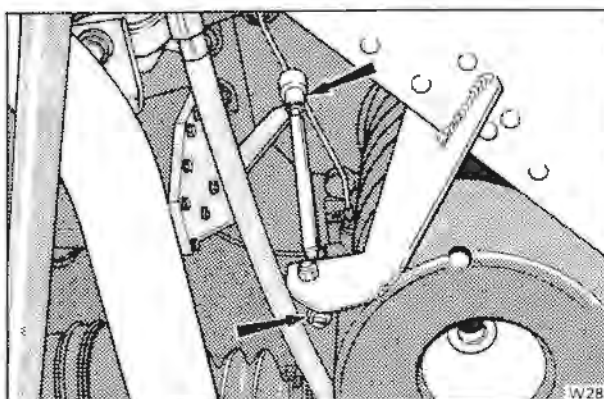


Fig. B1-29 Height control valve actuation link joints

To carry out contamination tests, a kit is available from Rolls-Royce Motors Limited part number RH 2841 and should be used as follows.

Switch on the ignition and depressurize the hydraulic systems by pumping the brake pedal until both low pressure warning panels illuminate. Continue to pump the pedal for at least a further 20 applications to ensure that all the accumulator mineral oil is returned to the reservoir.

Clean the area around each hydraulic reservoir filler cap and then remove the cap.

Ensure that the components in the test kit are clean and dry.

Using the sampling tube provided, extract 50 ml of mineral oil from the top and bottom of each reservoir.

Place the samples into individual clean dry containers.

Shake each sample taken to ensure it is well mixed. Pour 10 ml of each sample into clean test tubes (do not mix the samples together).

Using the dispenser, add two drops of the red dye solution contained in the kit into each 10 ml sample.

Cork the test tubes and shake them thoroughly.

Leave the samples to settle for at least 30 minutes.

Examine each sample.

Sample diagnosis

On adding the red dye solution and the subsequent mixing, the green colour of the mineral oil will change to a reddish brown. **This does not indicate contamination of the hydraulic system mineral oil.**

Contamination can only be confirmed by the formation of a cloudy red mass which will begin to settle towards the bottom of the tube, if left to stand for at least 30 minutes.

If the sample in the test tube, on addition of the dye turns red but remains clear it indicates that the sample is not contaminated.

The volume of red mass which will eventually settle to the bottom of the test tube indicates the amount of contamination within the hydraulic system mineral oil.

Complete separation of the two liquids may take a considerable amount of time, for example a very small percentage of contamination may take more than seven days to completely separate.

If contamination is suspected, a more thorough test should be undertaken, details of which are given in Chapter G of the Workshop Manual.

If contamination is suspected, but difficult to diagnose, due to the small amount of contamination that may be present, or any doubt exists, confirmation should be obtained by sending a sample to Rolls-Royce Motors (if in the United Kingdom) or to a chemical analysis laboratory.

Before attempting any work on the hydraulic system personnel must be fully conversant with the precautions required to ensure adequate safety and correct system operation.

Refer to Chapter G of the Workshop Manual.

Important

Always seal each reservoir cap after it has been confirmed that the systems **are not** contaminated and all work on the systems has been completed.

1 Check the reservoir mineral oil level

The mineral oil reservoirs for the hydraulic systems are located in the engine compartment (see fig. B1-30).

To check the oil level, first depressurize the hydraulic systems by pumping the brake pedal until the two warning panels illuminate. Start and run the engine for approximately four minutes with the car unladen to charge the systems and then stop the engine. The mineral oil in both reservoirs should be up to the FULL marks on the level indicator plate.

If the reservoirs require topping-up, ensure that the tops of the reservoirs and the filler caps are clean,

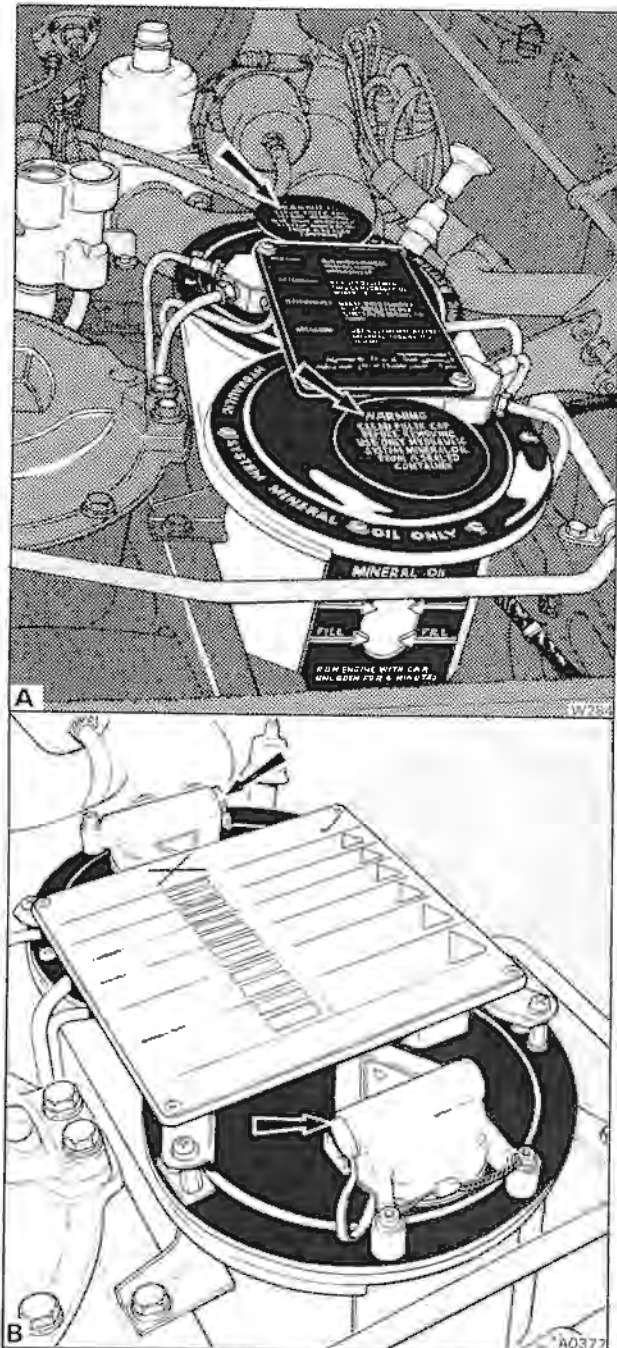


Fig. B1-30 Access to the hydraulic systems reservoirs

- A Original filler cap
- B Specialized filler cap

then add an approved hydraulic system mineral oil (see Chapter A) as necessary.

It is important that only an approved hydraulic system mineral oil is used and that exceptional cleanliness is observed when topping-up the hydraulic systems.

Under no circumstances should a conventional (i.e. RR363 or Universal type) brake fluid be used.

After topping-up, ensure that the filler caps are clean then fit them securely to the reservoirs, or insert the blanking plug dependent on the type of filler cap fitted.

Ensure that the containers of new Hydraulic System Mineral Oil, for system replenishment, are fitted adjacent to the car battery.

2 Renew the hydraulic system mineral oil

Depressurize the hydraulic systems as described in Chapter G of the appropriate Workshop Manual and proceed as follows.

Completely drain the fluid from the hydraulic systems by attaching a tube to each bleed point then opening the bleed screws and allowing the mineral oil to drain from the circuits. The bleed screws are located on each accumulator, on each pair of brake calipers, on the deceleration conscious pressure limiting valve and on each inner rear wing from the rear suspension strut. A drain tube is not required at the accumulator bleed screws as these are an integral part of the accumulators and when opened allow the mineral oil to flow from the accumulator spheres back to the reservoirs.

Drain the mineral oil from the reservoirs and clean the reservoirs as described in Chapter G of the Workshop Manual.

After the system has completely drained, close all the bleed screws and ensure that any disturbed pipes are connected and correctly torque tightened.

Fill the reservoirs with fresh hydraulic system mineral oil (see fig. B1-30 and Chapter A) until the levels in the reservoirs are slightly above the topping-up marks on the indicator plate.

Run the engine for four minutes, with the car unladen, then top-up to the FULL level mark; never allow the mineral oil levels to fall below the minimum level marks.

Check for leaks, especially around the unions of any pipes which have been disturbed.

Finally, bleed the hydraulic systems as described in Chapter G of the Workshop Manual.

Ensure that the containers of new Hydraulic System Mineral Oil, for system replenishment, are fitted adjacent to the battery.

3 Check the condition of all brake pipes and hoses

Position the car on a ramp or over a pit and check the condition of the hydraulic system pipes and hoses.

Examine the metal pipes for signs of corrosion, particularly those in an exposed position.

Examine the hoses for chafing or surface cracking. Faulty pipes and hoses should be replaced as

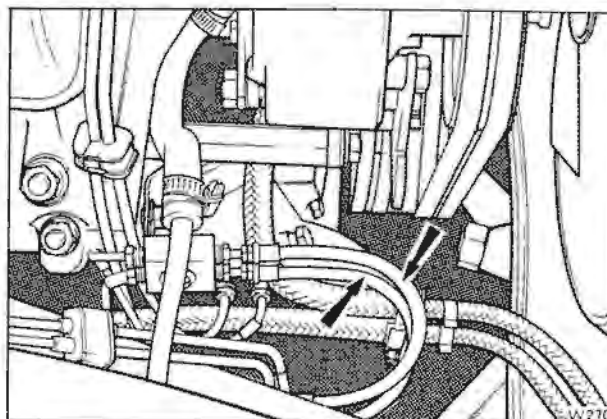


Fig. B1-31 Hydraulic accumulator to body hoses

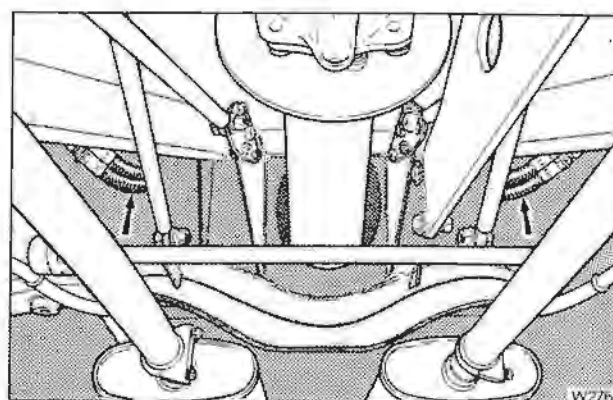


Fig. B1-32 Trailing arm to body hydraulic hoses

described in Chapter G of the appropriate Workshop Manual.

4 Renew the accumulator to body and trailing arms to body hoses.

Depressurize the hydraulic systems as described in Chapter G of the Workshop Manual and proceed as follows.

Fit a hose clamp to each of the intermediate hoses of the accumulator return pipes to prevent the flow of mineral oil from the reservoirs.

Thoroughly clean the areas around the connections of the two accumulator to body and trailing arms to body hoses (see figs. B1-31 and B1-32).

Remove the respective hoses noting the following points.

To avoid contamination fit the new hose immediately after removing the old one; alternatively fit approved blanks to the open ports until the new hoses are fitted.

Before fitting a new hose ensure that it is thoroughly clean and conforms with the hydraulic systems mineral oil requirements.

When fitting the new hoses, ensure that they are routed to clear other components and that clearance is maintained during full suspension movement.

Tighten the pipe nuts to the torque settings given in Chapter G of the Workshop Manual.

After fitting the new hoses, check for leaks and bleed the hydraulic systems as described in Chapter G of the Workshop Manual.

5 Renew all hydraulic system hoses

To renew the hydraulic system hoses follow the same basic procedure described under the heading Renew the accumulator to body and trailing arms to body hoses.

6 Check the brake disc pads for wear

Remove the wheel discs and slacken the wheel nuts approximately half a turn.

Jack up the car and support with stands and sill blocks.

Remove the road wheels and examine all the disc brake pad linings.

The brake pads must be renewed when the brake pad linings are worn to within 3,18 mm (0.125 in) of the steel backing plates. The pads should also be renewed if this minimum thickness is likely to be achieved before the next service check. To renew the brake pads, refer to Chapter G of the Workshop Manual.

If new brake pads are to be fitted which have different recommended linings from those on the old pads, the disc faces should be cleaned prior to fitting the new pads. All traces of the old pad lining material should be removed by hand rotating the disc whilst applying coarse grade emery cloth to the disc faces. Do not emery the disc faces radially.

Always ensure that the pads fitted to all six brake calipers have the same type and grade of pad lining.

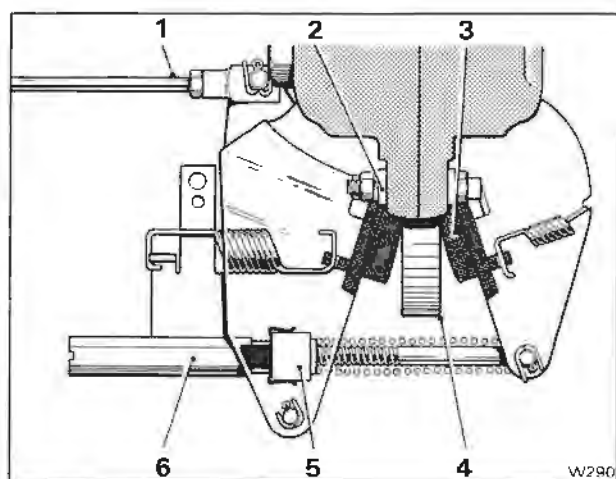


Fig. B1-33 Parking brake mechanism

- 1 Actuator rod
- 2 Centralizing straps
- 3 Parking brake pads
- 4 Brake disc
- 5 Adjuster clicker block
- 6 Adjuster

Fit the road wheels and lower the car.

If new brake pads have been fitted, an initial running-in period of between 1100 kilometres and 1300 kilometres (700 miles and 800 miles) should be observed. During this running-in period the brakes should not be applied harshly or for prolonged periods from high speeds except in an emergency. Towards the end of the running-in period, the force with which the brakes are applied may be progressively increased.

7 Check the condition of the brake caliper dust excluders (when changing brake pads)

The condition of the caliper dust seals should be checked whenever the brake pads are removed.

Inspect the seals for signs of damage, heat hardening or general deterioration and renew if necessary.

When fitting new seals, ensure that the seal retaining clips are correctly located.

8 Renew the brake caliper seals

To renew the caliper piston seals it is necessary to remove the brake calipers from the car.

For full instructions, refer to Chapter G of the Workshop Manual.

9 Check the parking brake pads for wear

Securely chock the front wheels then raise the rear of the car. Place sill blocks under the rear body sills and also support the rear trailing arms. Do not allow the suspension struts to support the full suspension load.

Remove the rear wheels and release the parking brake to the off position.

Disconnect the caliper actuation rod from the caliper lever (see fig. B1-33).

Unscrew and remove the caliper adjuster and collect the adjuster clicker plate.

Unhook the pad retention springs from each pad, noting the larger spring is fitted to the inner pad. Remove the pads from the caliper.

Check the thickness of the lining material on each pad. Pads which are worn to within 1,6 mm (0.062 in) or less of the steel backing plate should be renewed.

To fit the pads, attach the retention springs then locate the pads into position and hook the springs onto the caliper.

Complete the assembly by reversing the removal procedure, then adjust the calipers as described under the heading Adjust the parking brake.

Note

If new parking brake pads have been fitted, the following bedding-in procedure should be carried out after adjusting the parking brake.

Drive the car at approximately 48 km/h (30 mile/h) and apply the parking brake to bring the car to rest; it is important that this is done gently and progressively. The parking brake must not be applied fully and no attempt should be made to lock the wheels. This operation should be carried out nine times, allowing at least one minute to elapse between stops to prevent the discs overheating.

Finally adjust the caliper as described under the heading Adjust the parking brake.

10 Adjust the parking brake

Ensure that the parking brake is in the off position.

Adjust the rear cables at the adjusters (see fig. B1-34) so that the caliper operating levers return to their off-stops under the influence of their return springs with no appreciable slackness in the cables.

Note

The cables must be adjusted so that the equaliser link on the intermediate linkage (see fig. B1-34) lies at right angles with the centre line of the car with the parking brake in the off position.

To check the cable adjustment, adjust both rear cables at the equaliser link until the caliper off-stops are just clear of the calipers. Measure the gap produced at each off-stop and lengthen the cables by this amount.

With the cables correctly adjusted, check that the centralizing straps (see fig. B1-33) are pushing the pads away from the discs when the parking brake is in the off position. If not, remove the nut and bolt securing the straps, bend the straps outwards (i.e. away from the disc) then refit them. Ensure that the straps are pushed downwards towards the adjusting nut whilst tightening the nut and bolt securing them to the caliper.

Check that the distance between the pad and the disc are the same on each side of the caliper; if not, reset the centralizing straps.

Raise each rear wheel in turn so that it is free to rotate and adjust each caliper as follows.

Turn the caliper adjuster (see fig. B1-33) clockwise until the pads just grip the disc; at this point it should only just be possible to rotate the road wheel by hand. Turn the adjuster anti-clockwise a quarter turn (i.e. three clicks on the nut) to obtain the minimum clearance between the pads and disc.

11 Lubricate the parking brake linkage

Position the car on a ramp or over a pit. Lubricate the parking brake linkage clevis pins, fulcrum pins and the rear cable adjusters with approved grease.

Fuel system

Safety precautions

It is important that before a fuel line is opened or the fuel tank drained or siphoned, that the workshop safety precautions given in Chapter A of the Workshop Manual are strictly observed.

1 Renew the main filter element

The main fuel filter, situated on the car body underframe, contains a disposable element.

Dependent on the type of filter fitted (see fig. B1-35) the following procedure should be carried out to renew the filter element.

Type A

Disconnect the inlet and outlet pipes from the filter top cover.

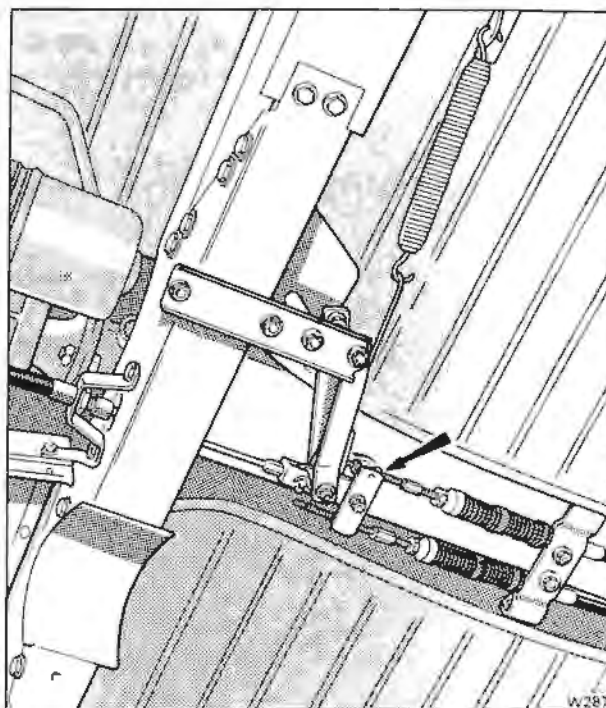


Fig. B1-34 Parking brake rear cable adjustment point

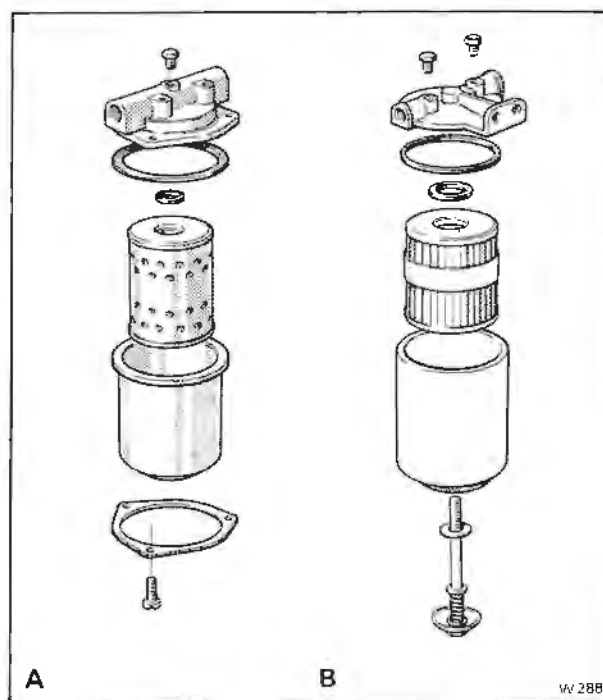


Fig. B1-35 Main fuel filter

Blank off the pipe connections to prevent loss of fuel.

Remove the setscrew securing the filter mounting bracket to the body crossmember; lower the filter from the car.

Remove the three screws securing the filter bowl clamping ring. Separate the bowl from the filter head.

Drain any fuel from the bowl and withdraw the element.

Type B

Place a clean container beneath the filter to collect any fuel spillage.

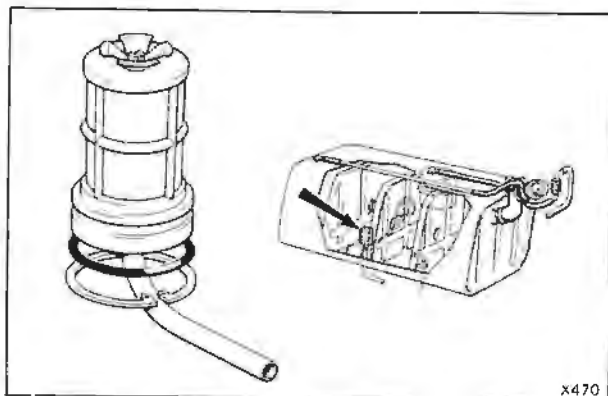


Fig. B1-36 Intank fuel filter

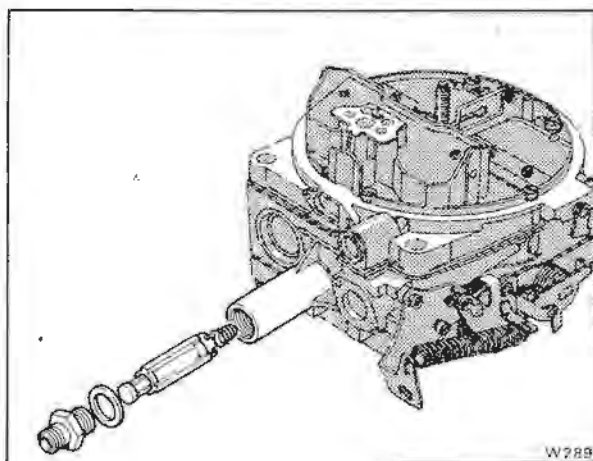


Fig. B1-37 Fuel inlet filter (Solex carburettor)

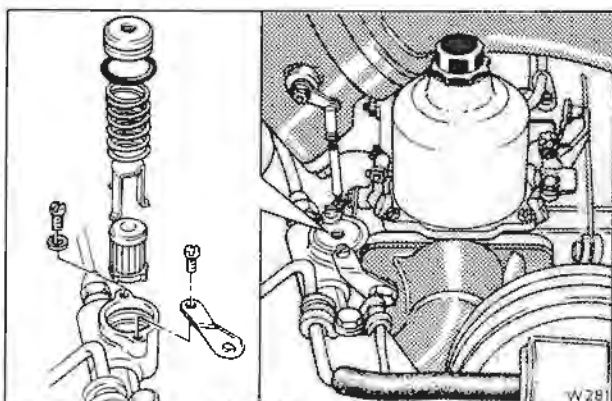


Fig. B1-38 Fuel inlet filter (SU carburetters)

Remove the retaining bolt from the centre of the filter bowl.

Separate the bowl from the filter head.

Type A and B

Clean the filter bowl using clean fuel.

Fit a new element and sealing rings by reversing the respective removal procedure noting the following.

Do not overtighten the bowl securing bolt or clamp retaining screws. Tighten the screws evenly.

After fitting the filter to the car, examine the fuel system for leakage and rectify as necessary.

When carrying out the above operation at the 80 000 kilometres (48 000 miles) or four years and subsequent periods, the intank fuel filter situated on the underside of the fuel tank, (see fig. B1-36) should also be removed and cleaned as follows.

Disconnect the battery.

Drain or siphon the fuel tank.

Place a container beneath the fuel intank filter to collect the residue of fuel from the tank when the filter is removed.

Disconnect the hose from the intank filter outlet pipe.

Remove the circlip retaining the filter and carefully withdraw the filter from the tank.

Clean the filter mesh by washing in clean fuel.

Examine the filter for serviceability and renew if necessary.

Fit the filter by reversing the removal procedure. Always use a new seal on the filter body.

Ensure that the fuel drained from the fuel tank is free from foreign matter, then return it to the fuel tank.

Check the fuel filter and any pipe connections that have been disconnected for leaks.

2 Clean the carburettor fuel inlet filter (Solex carburettor)

Carry out this operation when the engine is cold.

Unscrew the fuel inlet pipe at the fuel inlet adapter (see fig. B1-37).

Remove the fuel inlet adapter from the carburettor, discard the sealing washer.

Withdraw the fuel filter, taking care not to lose the small spring situated at the inner end.

Clean the filter by washing it in clean fuel.

Fit the filter by reversing the removal procedure noting the following.

Ensure that the spring is located correctly on the inner end of the filter with the larger diameter of the spring seated on the filter.

Always fit a new sealing washer to the inlet adapter.

On completion check for any fuel leaks and rectify as necessary.

3 Fit new paper filter elements to the carburettor fuel inlet (SU carburetters)

Carry out this operation when the engine is cold.

A paper filter element is fitted into the fuel intake filter housing on each carburettor. To renew a filter element proceed as follows.

Remove the two screws from the top of the filter housing (see fig. B1-38).

Using a ¼ in UNF bolt screwed into the threaded hole in the plug, lift the plug from the housing.

Withdraw the spring, retainer and filter element from the housing; discard the filter element.

Fit the new filter element by reversing the removal procedure noting the following.

Ensure that the new filter element is fitted with its open end towards the seating face in the housing.

Fit a new sealing ring to the sealing plug.

On completion check for any fuel leaks and rectify as necessary.

4 Renew the fuel mixture weakening device filter (SU carburettors)

The filter is situated on the left-hand valance of the engine compartment (see fig. B1-39).

To remove the filter, disconnect the outlet hose and then remove the two setscrews retaining the filter assembly to the valance; discard the filter assembly.

Fit a new filter assembly by reversing the removal procedure.

5 Fit a new filler head to fuel tank hose

To enable the filler head to fuel tank hose to be renewed, it is necessary to remove the rear suspension gas spring. For details of the procedure required reference should be made to Chapter K of the appropriate Workshop Manual.

6 Examine all flexible fuel pipes

Carefully examine all the flexible fuel pipes throughout the fuel system. Renew any pipes which have become damaged or deteriorated to an unserviceable condition.

Check the complete fuel system for leaks and rectify as necessary.

7 Test fuel pump for efficiency

To carry out this operation, it is necessary to remove the fuel pump from the car. For details of the removal and test procedure reference should be made to Chapter K of the appropriate Workshop Manual.

Electrical system

1 Check the state of charge of the battery

Silver Spirit, Silver Spur, Bentley Eight, late Corniche, Continental, and Mulsanne cars.

The battery is situated in the luggage compartment stowage well. To gain access to the battery, turn back the carpet from the right-hand side of the luggage compartment. Lift out the stowage well lid and the cover from around the battery.

Early Corniche and Camargue cars

The battery is mounted on the right-hand side of the luggage compartment. To gain access to the battery turn back the carpet and remove the trim from around the battery, the trim is secured by contact strip on the Corniche and two turn fasteners on Camargue. Unclip the battery cover retaining strap and lift off the cover.

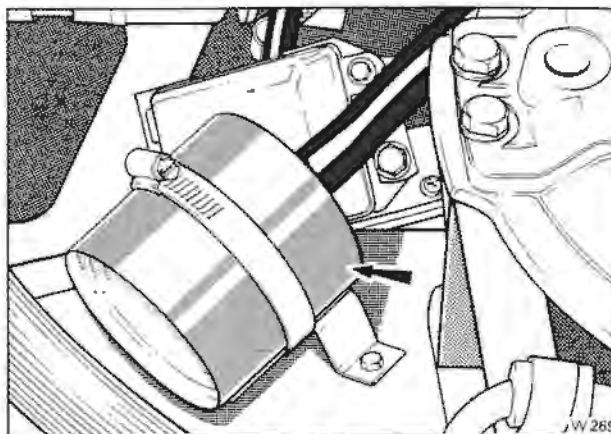


Fig. B1-39 Fuel mixture weakening device filter

To check the specific gravity of the battery electrolyte on these models, it is necessary to remove the battery from the car as follows. Ensure the ignition is switched off, then disconnect the battery leads. Remove the battery clamp and lift the battery from its cradle.

Battery electrolyte specific gravity check

(applicable to batteries with removeable cell vent covers) Remove the vent covers from the top of the battery.

Using a hydrometer check the specific gravity of the electrolyte in each cell and compare the readings obtained with the following tables.

Caution

The electrolyte in the battery is a corrosive acid. Do not allow the electrolyte to come into contact with the eyes, skin, fabric or paintwork. Flush any contacted areas immediately and thoroughly with water. If the eyes are affected, flush for at least 15 minutes and obtain prompt medical attention.

Chloride battery

Air temperature below 32°C (90°F)

Specific Gravity	Condition of Battery
1.270 to 1.290	Fully charged
1.180 to 1.200	Half discharged
1.090 to 1.110	Fully discharged

Air temperature above 32°C (90°F)

Specific Gravity	Condition of Battery
1.220 to 1.240	Fully charged
1.150 to 1.170	Half discharged
1.070 to 1.090	Fully discharged

Lucas or Varta battery

Air temperature below 27°C (80°F)

Specific Gravity	Condition of Battery
1.270 to 1.290	Fully charged
1.180 to 1.200	Half discharged
1.090 to 1.110	Fully discharged

Air temperature above 27°C (80°F)

Specific Gravity	Condition of Battery
1.220 to 1.240	Fully charged
1.130 to 1.150	Half discharged
1.050 to 1.070	Fully discharged

If the specific gravity reading of all the cells are uniform and within the range 1.240 to 1.270 the battery is in an acceptable state of charge. If the readings are uniform but below 1.220 the battery should be recharged. Always remove the battery from the car for recharging.

If the specific gravity of the electrolyte in one cell differs markedly from the others (i.e. the reading is 0.040 or more, lower than the remainder), then a defect must be suspected and rectified as necessary.

Battery electrolyte level check

Ensure that the battery is in a high state of charge (see battery electrolyte specific gravity check).

The level of the battery electrolyte in each cell should be approximately 5 mm (0.250 in) above the tops of the separators (Lucas or Varta battery) or contacting the blue bar situated above the separators (Chloride battery).

If the electrolyte level is low top-up using distilled water until the level is attained. **Do not overfill.**

Always ensure the top of the battery is clean prior to removal of the vent covers.

Battery voltage check

Sealed for life (maintenance free) batteries

The state of charge on this type of battery can only be checked by taking a voltage reading across the battery terminals using a digital voltmeter or multimeter. The instrument must be accurate to within 0.1 volts.

Before a reading is taken on batteries that have recently received a charge, the residual effect of the surface charge on the battery plates must be removed to avoid a false reading.

The surface charge can be removed by applying an electrical load to the battery e.g. by connecting a high rate discharge tester for 15 seconds or, if the battery is connected to the car by switching on the headlamps for one minute, before a reading is taken.

To ascertain the state of charge of the battery, compare the reading with the following table.

Voltage	State of charge
12.8 volts	100%
12.6 volts	82%
12.5 volts	75%
12.4 volts	60%

A minimum reading of 12.5 volts (75% charge) is acceptable. Below this reading the battery should be recharged.

2 Clean and check the battery terminals

The top of the battery should always be kept clean and dry.

If corrosion of the battery leads or terminals has occurred it should be removed as follows.

Disconnect the battery leads and using hot water or a dilute solution of ammonia carbonate, wash them thoroughly until all corrosive has been removed. Finally wash with clean water to remove the ammonia carbonate solution.

Remove any corrosive deposit from the terminal posts using a cloth moistened with ammonia carbonate solution then wash with clean water.

Dry the battery leads and terminal posts. Connect the battery leads to the terminal posts. Liberally coat the terminals with **petroleum jelly**.

3 Check all exterior lamps for operation

Actuate the respective switches and check for lamp illumination and function i.e. hazard warning and turn flashers, headlamp dip/main beam, headlamp flash.

When checking the fog lamps the main lighting switch must be on.

Cars with front fog lamps fitted

In the Park position the front lamps must be switched on before the rear fog lamps will illuminate.

On cars other than those conforming to a Swiss specification when only the rear fog lamps are switched on with the main lighting switch in the Head position, these lamps should extinguish when the headlamps are switched to main beam. If both front and rear fog lamps are in use the rear fog lamps should remain illuminated.

On cars conforming to a Swiss specification, the front and rear fog lamps should only illuminate together when the main lighting switch is in the Park position. If the switch is turned to the Head position, the front fog lamps should extinguish when the headlamps are on dipped beam. When main headlamp beam is selected both front and rear fog lamps should extinguish.

Cars without front fog lamps

The rear fog lamps will only illuminate when the main lighting switch is in the Head position and the headlamps are on dipped beam. When main beam is selected the rear fog lamps should extinguish.

The respective facia tell-tales should also be checked for illumination during these operations.

With the lighting in the Park and Head positions, switch on the ignition. Check the facia instruments for illumination; the panel illumination dimming switch should also be checked for correct operation.

4 Check all facia warning lamps for operation

Before carrying out the following checks firmly apply the parking brake; ensure the gear range selector is in the Park position and remove the gear range selector cut-out from the fuseboard.

Ignition and oil warning lamps

Turn the ignition key to the RUN position, the ignition and oil pressure warning lamps should illuminate. Start the engine, both lamps should extinguish; switch off the ignition.

When the ignition key is turned to the ACC position the ignition warning lamp only should illuminate.

Warning panel cluster lamps

Move the gear range selector lever to the D position (do not insert the gear range selector cut-out).

Apply the footbrake then turn the ignition key to the start position. All the warning panel cluster lamps should illuminate. With the ignition held in the start position, turn the main lighting switch to the Park and Head positions; the intensity of illumination of the ice and low fuel warning panels should reduce. Switch off the ignition and lighting switch.

The two hydraulic system pressure warning lamps should also be checked as follows.

Turn the ignition key to the RUN position.

Depressurize the hydraulic systems by actuating the brake pedal between 50 and 60 times. The two brake pressure warning panels should illuminate.

When the lamps have illuminated start and run the engine. Both lamps should extinguish after approximately two minutes indicating that the hydraulic systems are pressurized. Switch off the ignition.

Fasten seat belt warning lamp

To check the seat belt warning lamp, open and close each door in turn; observe the lamp operation.

The seat belt warning panel should illuminate whenever a door is opened and extinguish approximately seven seconds after the door is closed.

Note

All doors must be fully closed for the lamp to extinguish (i.e. not on first catch)

Hazard warning indicator

Depress the hazard warning switch, check that all the turn indicators and the facia warning lamp are flashing.

5 Check all interior lamps for operation

Cars other than Corniche/Continental

Ensure all the doors are fully closed and the interior lights are extinguished. Open the driver's door; the rear section of the central roof lamps should illuminate. Fully close the door; the roof lamps should remain illuminated for approximately seven seconds.

From 1985 model year cars the rear roof lamps and footwell lamps should also illuminate when the door is opened. If the gear selector lever is moved from the Park position on these cars, with the ignition key in the RUN position, the lamps will extinguish immediately all the doors are closed.

When carrying out these operations also check that the door open warning lamp and step lamp are illuminated with the door in the open position; these lamps should extinguish immediately the door is fully closed.

Repeat the check on the remaining doors.

Note

If the doors are only closed to the first catch position the lamps should remain illuminated.

Check the operation of the front compartment personal lamps as follows.

Withdraw the main lighting switch; the front section of the driver's roof lamp should illuminate.

Operate the map lamp switch; the front section of the front passengers roof lamp should illuminate.

On cars fitted with vanity mirror illumination move the switch to the mirror position. Lower the passengers sun visor; the lamp situated above the visor should illuminate.

Withdraw the visor from its retaining clip; the lamp should extinguish. The lamp should also extinguish when the visor is moved to its raised position, even when the switch is on.

The operation of the rear roof lamps should be checked by operating the switches situated on the rear compartment vanity mirror surrounds, or rear quarter panel (Bentley Eight cars) or situated on the arm rest (Camargue cars).

On cars other than Camargue, press the upper portion or front portion (Bentley Eight) of the three position switch. The front section of the respective roof lamp should illuminate. Pressing the lower portion or rear portion (Bentley Eight) should illuminate the rear section of both rear lamps. With the switch in the central position both lamps should be off. Repeat the operation on the opposite side of the car.

On Camargue cars press the outer of the two switches situated in the arm rest; this should illuminate the rear section of both rear roof lamps. Pressing the inner switch should illuminate the front section of the respective roof lamps. Repeat the operation on the opposite side of the car.

Corniche Saloon cars

Ensure the doors are fully closed and the interior lamps are extinguished. Open the driver's door; the rear section of the four roof lamps should illuminate. Fully close the door; the roof lamps should remain illuminated for approximately seven seconds then extinguish. Repeat the check with the passenger door. When carrying out these checks also ensure that the door open warning lamp and step lamp are illuminated when the door is open.

Check the operation of the rear compartment roof lamps by operating the three position switch situated in each arm rest, ensuring that the car doors are closed.

Press the outer section of the switch, the front section of the respective roof lamp should illuminate. Press the inner section of the switch, the rear section of both rear roof lamps should illuminate. With the switch in the central position both roof lamps should be off. Repeat the check on the opposite switch.

Check the front compartment roof lamps as described in the section for cars, other than Corniche. Corniche Convertible and Continental cars
Seven interior lamps are provided, one in each door, two in the hood above the rear window, one in the front face of each rear seat outer arm rest and one above the facia stowage compartment.

Open the driver's door; both roof lamps, the lamp in each rear seat arm rest and the lamp in each door should illuminate. Fully close the door, the lamps should all extinguish, except the rear roof lamps which should remain illuminated for approximately seven seconds. Repeat this procedure with the passenger door.

Withdraw the main lighting switch; both rear roof lamps should illuminate.

Operate the facia switch marked MAP; the lamp situated above the facia stowage compartment should illuminate.

With the doors closed, operate the switches situated in the end of the arm rest. The rear roof lamp rear compartment arm rest lamp situated on the same side of the car as the switch should illuminate.

6 Check the horns for operation

Examine the electrical connections to each horn to ensure they are in good condition. Clean the horns and remove any foreign matter that may have collected in the horn trumpets.

Switch on the ignition; press the horn button several times to ensure the horn button is making a good contact and that both horns are functioning correctly each time it is pressed.

7 Replenish the windscreen and headlamp washer reservoir

Dependent on the time of manufacture, the windscreen and headlamp wash systems will utilize either a single reservoir for both functions or two independent reservoirs.

The combined (single) reservoir and the windscreen wash reservoir of the independent systems should be topped-up to their maximum levels using the correct mixture of washer fluid and water.

The independent headlamp wash reservoir should be topped-up to its maximum level with clean water.

During winter conditions, a solution of 30% isopropyl alcohol and 70% water should be used. This mixture will provide frost protection down to a temperature of approximately -10°C (14°F).

Topping-up levels

Combined reservoir.

Bottom of filler neck

Independent reservoirs

Bottom of filler neck on both reservoirs.

8 Check the condition of the windscreen wiper blades and headlamp wash brushes (if fitted).

Lift the wiper arms from the windscreen and inspect them for wear or damage. Renew the blades if necessary.

To renew a wiper blade one of the following methods should be carried out dependent on the type of blade to wiper arm attachment.

On early cars lift the wiper arm away from the windscreen then press the small tab situated in the end of the arm to release the blade retaining catch. Pull the blade from the arm and fit the new blade. Check that the new blade is secured by the retaining catch then return the blade to the windscreen.

To renew a wiper blade on later cars proceed as follows.

Drivers side of the windscreen. Lift the wiper arm from the windscreen. Press the top half of the blade forward until the blade is released from its location clip on the wiper arm. To fit the new blade, position it on

the wiper arm and press it firmly into the location clip.

On the passenger side of the windscreen, lift the wiper arm from the windscreen and pivot the blade backwards through 90° . Press the small release tag, situated on the underside of the blade pivot block and push the blade out of the crooked end of the wiper arm. Withdraw the wiper blade from the arm. Fit the new blade by reversing the removal procedure.

Note

Care must be taken during these operations.

Ensure that the wiper arm is not allowed to spring back onto the windscreen when the blade has been removed or damage to the windscreen could occur.

On cars fitted with headlamp wash/wipe brushes, examine the brushes for wear or damage and renew if necessary.

To renew a brush, carefully remove the retaining nut from the spindle. Note the position of the brush then withdraw it from the splined spindle. Fit the new brush by reversing the removal procedure ensuring that the brush is in the correct park position.

9 Check the windscreen and headlamp wash/wipe for correct operation

Before carrying out the following check ensure that the windscreen is clean.

Switch on the ignition and press the windscreen wash/wipe switch. The windscreen wipers should operate and the fluid from the washer jets should impinge on the windscreen approximately 419 mm (16.5 in) from the centre line of the windscreen and 190 mm (7.5 in) below the windscreen top finisher. The wash/wipe function should continue until the switch is released.

On release of the push button switch the washer should cease while the wipers should continue for approximately four strokes before returning to the park position.

Turn the main lighting switch to the HEAD position. The headlamps cleaning function will only operate when the headlamps are illuminated. Press the wash/wipe switch. The headlamp brushes and washer jets should operate until the switch is released, the brush giving one full wipe cycle after the jet flow has ceased.

On cars fitted with power wash jets (no brushes) the jets should only operate for half a second when the wash/wipe switch is depressed. To repeat the wash it will be necessary to release then depress the switch again. However, the windscreen wash/wipe function will continue to operate as described previously while the switch is held depressed.

10 Check the alternator for correct operation

For details of the alternator test procedure and brush renewal, reference should be made to Chapter M of the Workshop Manual.

11 Check the condition of the starter motor brushes and pinion

For details of the procedure required to carry out the inspection of the starter motor brushes and pinion,

reference should be made to Chapter M of the Workshop Manual.

Automatic air conditioning system

1 Check the scuttle intake grille is free from obstruction

Check the air intake grilles and foam filters, situated behind the car bonnet, for obstruction (i.e. leaves, dirt, etc.). If necessary carefully remove the grille retaining screws, lift the grilles from the body and clean out the air intake ducts; also ensure the air intake duct drain tubes are free from obstruction.

2 Check the refrigeration system for correct operation

For details of the procedure required to carry out this operation reference should be made to Chapter C of the Workshop Manual.

Body

1 Check the condition and operation of the seat belts

The following checks should be carried out on the retractable seat belts.

Fully withdraw the seat belt from the reel; examine the webbing for any signs of wear or damage. Allow the belt to return to the stowed position.

To check the operation of the retractable belt, fit the belt and then give the webbing of the diagonal belt a sharp pull. Ensure that the belt locks and then returns to the normal roller action immediately the belt is released.

With the fastening tongue of the belt locked in the retaining clasp; ensure the tongue is securely held and is released immediately the red release button is operated.

The alternative method of checking the seat belts is to select an open stretch of road, then, when the road is free from any potential danger, accelerate the car to 24 km/h (15 mile/h) and brake sharply from this speed; ensure that the belt locks and then subsequently releases. If this method of test is used, it will be necessary to carry a passenger to enable the passenger seat belts to be tested. Check the rear seat lap belt (if fitted) for condition and correct locking and release.

Report any defects to the owner.

When seat belt replacement is necessary only belts approved by Rolls-Royce Motors Limited should be fitted.

2 Check that all body drains are free from obstruction

Examine the body drain holes; remove any foreign matter that may be obstructing the holes. Take care not to damage the paintwork.

3 Lubricate the spare wheel carrier lowering bolt

Turn back the carpet on the luggage compartment floor to expose the spare wheel inflation trap and spare

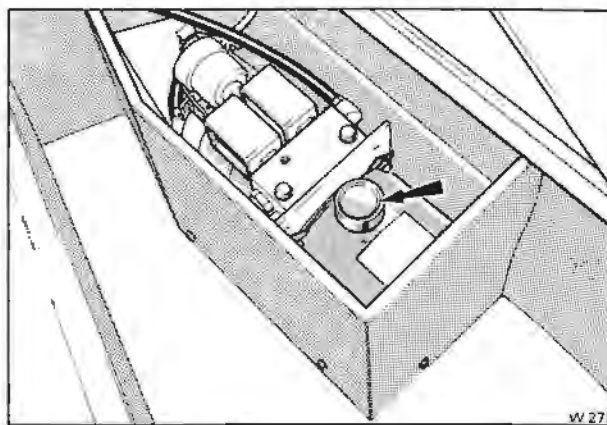


Fig. B1-40 Power operated hood reservoir

wheel carrier lowering bolt head. Remove the inflation trap cover; if a spare wheel retainer is fitted, it should be released.

Rotate the spare wheel bolt anti-clockwise until the carrier is fully lowered. Remove the spare wheel from the carrier.

Lubricate the carrier lowering bolt using a recommended lubricant. Raise and lower the carrier to distribute the lubricant over the full length of the carrier bolt.

Check the condition of the spare wheel as described under the heading Wheels.

Fit the spare wheel onto the carrier. Ensure that the inflation valve is in line with the inflation trap in the luggage compartment floor, then fully raise the carrier.

Fasten the spare wheel retainer (if fitted), and fit the tyre inflation trap rubber and carpet.

4 Check the fluid level in the power operated hood reservoir

Convertible cars

The level of the fluid in the hydraulic pump reservoir must be checked with the hood in the fully open (down) position.

The fluid reservoir is situated adjacent to the stowage recess below the luggage compartment floor similar to that shown in figure B1-40.

To gain access to the reservoir, turn back the carpet on the right-hand side of the luggage compartment to expose the recess covers; remove the covers.

Unscrew the reservoir filler cap and check the fluid level. The correct level is 25 mm (1.0 in) below the filler neck.

If necessary top-up the reservoir with an approved fluid. **Under no circumstances must a castor oil based fluid be used.**

Wheels

1 Check all tyre pressures

Check the tyre pressures including the spare when the tyres are cold; adjust if necessary. The inflation

pressure of the spare tyre should be adjusted to the highest tyre pressure (i.e. rear wheel).

Do not check pressures when the tyres are warm (e.g. after the vehicle has been driven).

Always ensure that the valve caps are fitted after checking.

On wheels fitted with aluminium tyre inflation valves, always ensure that an aluminium valve cap is fitted. The fitting of a differing metal cap will result in corrosion and prevent cap removal.

2 Check the condition and tread depth of the tyres

Examine the tyres, including the spare, for any signs of damage or tyre wall cracking etc.

Carefully remove any stones or other objects that may be lodged in the tyre treads.

Check the depth of tread at several points around each wheel using a tread depth gauge.

To enable a visual check to be made, tread depth indicators are incorporated into the tyre construction. These indicators are integral moulded ribs, spaced at intervals around the circumference of the tyre and extend across the full width of the tread in all primary grooves. When one or more of these indicators are flush with the tread, only 1,6 mm (0.062 in) or less of tread depth remains, and a new tyre is required.

If the condition of the tyres is not satisfactory or the tread depths do not conform to the legal requirements of the country in which the car is operating, the owner should be notified and asked to authorize the fitting of new tyres.

For full information on tyre fitting, balancing, etc. reference should be made to Chapter R of the appropriate Workshop Manual.

Test

1 Road test the car for satisfactory performance

On completion of the respective service schedule operations, carefully road test the car for satisfactory performance.

If new brake pads have been fitted, the running-in and bedding procedures should be carried out as described under, Check the brake disc pads for wear and Check the parking brake pads for wear.

When the road test has been completed, the car should be fully inspected for any leaks, fouls, etc., and rectified as necessary.

The transmission fluid level, should be finally checked immediately after the test, while the fluid is at normal running temperature and topped-up if necessary (see Check the transmission fluid level).

Ensure that all controls, door handles, steering wheel, etc. are clean and that any dirt which may be attributed to the service schedule is completely removed.

Service schedule procedures

Contents	Pages					
	Silver Spirit Mulsanne Silver Spur	Mulsanne Turbo	Bentley Eight	Bentley Turbo R	Corniche/ Continental	Camargue
Bentley Mulsanne Turbo cars from vehicle identification number * SCBZS0T05CCH04233 *	—	B1/1-3	—	—	—	—
Bentley Turbo R cars from vehicle identification number *SCBZS0T0XFCH12834*	—	—	—	B1/1-3	—	—



WARNING

Use only Hydraulic System Mineral Oil (LHM) to replenish the braking and levelling systems.

Do not use Brake Fluids (Castrol RR363, Universal, or any other type). The use of any type of brake fluid, even in very small amounts, will cause component failure necessitating extensive rectification to the braking and levelling systems of the car.

Always ensure before fitting any seals, hoses, pipes, etc. that they are suitable for a mineral oil system. For details of correct component identification reference should be made to Chapter G of the Workshop Manual.

Always ensure that a sealed container of **Hydraulic System Mineral Oil (LHM)** is fitted adjacent to the battery.

Always ensure that no foreign matter enters the systems when work is being carried out.

General information

The information contained in this chapter should be used in conjunction with the Service Schedule Chart (see Chapter C) and Workshop Manual publication number TSD 4400.

Car protection

Prior to commencing a service schedule, the car should be suitably protected. For this purpose car protection kit RH 2662, wing covers RH 2684, and wing cover liners RH 2685 should be used.

Regular maintenance

In addition to the service schedules listed, the following maintenance should be carried out.

Engine

Weekly or every 800 kilometres (500 miles) whichever is the earlier; check the engine oil by means of the dipstick; top-up if necessary.

Lamp units

Weekly; check the lamp units for operation; rectify any faults.

Tyre pressures

Weekly; check the tyre pressures including the spare; adjust if necessary.

Service schedule procedures Bentley Mulsanne Turbo and Bentley Turbo R

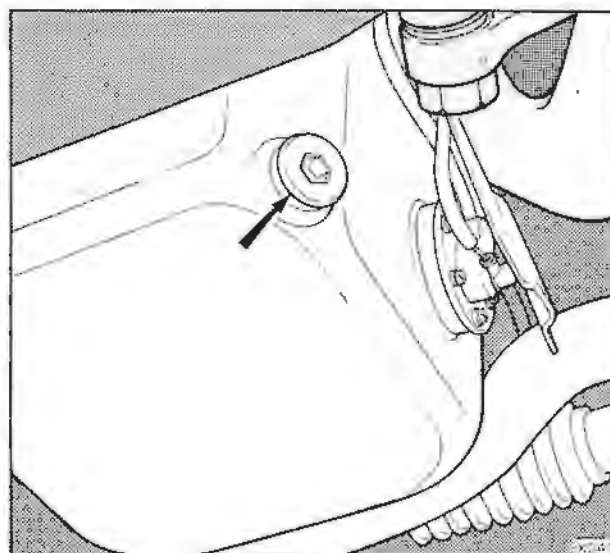


Fig. B1/1-1 Engine sump drain plug

Windscreen and headlamp washer reservoirs

Weekly; check the washer fluid level; top-up if necessary.

Hydraulic reservoirs

Monthly; check the level of hydraulic mineral oil in the reservoirs.

Depressurize the hydraulic systems by pumping the brake pedal until the low brake pressure warning panels on the facia illuminate. Continue to pump the pedal for at least a further 20 applications to ensure complete depressurization. Start and run the engine for four minutes with the car unladen, prior to checking the level. Top-up if necessary to the indicated maximum level. **Use only Hydraulic System Mineral Oil (LHM)**. Refer to page B1/1-15 for further information before carrying out this operation.

Engine cooling system

Every three months; check the coolant level. If necessary top-up with the correct anti-freeze/water mixture (see page B1/1-7).

Engine

1 Change the engine oil

The sump should be drained when the engine is warm, preferably after the car has completed a run.

To drain the oil, position the car over a pit or on a ramp.

Place a container in position beneath the drain

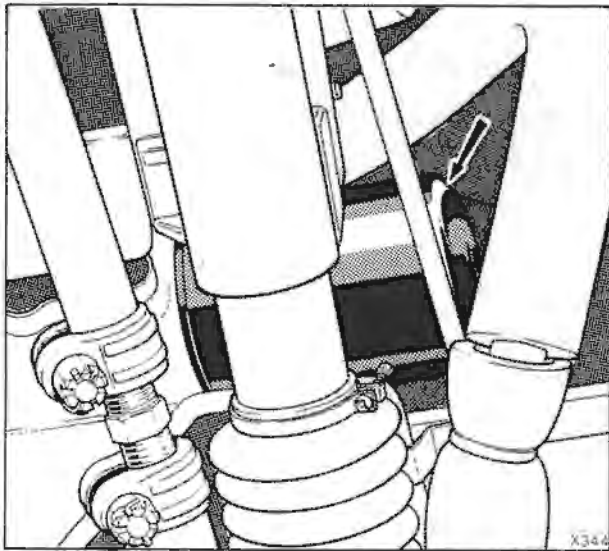


Fig. B1/1-2 Engine oil filter location

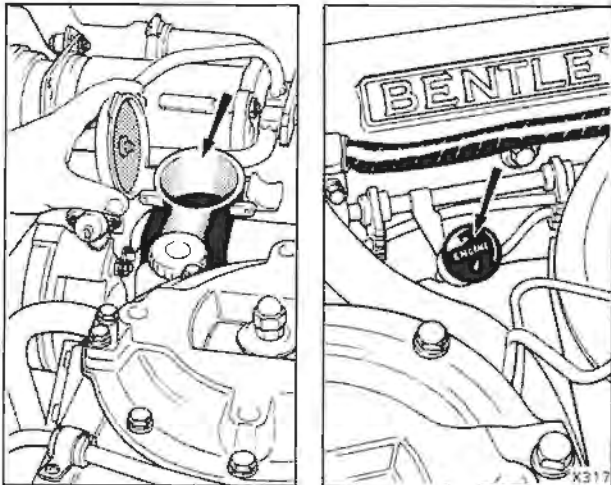


Fig. B1/1-3 Engine oil filler and dipstick

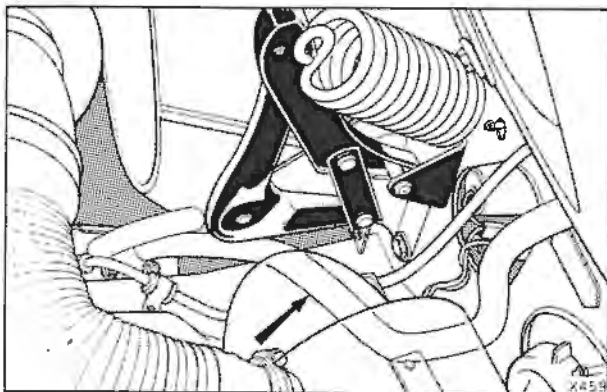


Fig. B1/1-4 Engine oil cooler return pipe

plug situated on the right-hand side of the sump (see fig. B1/1-1). Remove the drain plug and allow the oil to drain from the sump.

Do not flush the sump with paraffin or petrol.

Fit the drain plug ensuring that the washer is correctly positioned and in good condition.

Fill the engine sump with recommended lubricant until the MAX level is reached on the dipstick.

Carry out the full oil level check procedure as described under Check the engine oil level.

2 Renew the engine oil filter

Drain the engine oil as described under Change the engine oil.

Place a container under the filter to collect any oil that may be spilled.

Remove the filter by unscrewing it from the engine in an anti-clockwise direction (see fig. B1/1-2).

Thoroughly clean the filter seating face on the engine.

Lightly smear the rubber sealing ring on the new filter with clean engine oil. Screw the filter onto the pedestal until the rubber seal contacts the sealing face, then tighten the filter a further half turn; **do not over-tighten**.

Fill the engine with clean engine oil until the MAX level is reached on the dipstick. Run the engine and check the filter joint for leakage.

Stop the engine and allow sufficient time for the oil to drain into the sump, again check the oil level; top-up to the MAX mark on the dipstick if necessary.

Finally carry out the full oil level check procedure as described under Check the engine oil level.

3 Check the engine oil level

In order to obtain an accurate indication of the oil level, ensure that the car is standing on level ground. Check the engine oil by means of the dipstick marked ENGINE (see fig. B1/1-3).

It is recommended that the oil level is checked when the engine is cold. If the engine has been running, sufficient time should elapse after it has stopped to allow the oil to drain into the sump. Do not check the oil level with the engine running.

To replenish the sump with oil, open the filler cap marked ENGINE (see fig. B1/1-3). Add clean oil to the engine and after allowing sufficient time for the oil to reach the sump, check that the oil is up to the MAX mark on the dipstick. **Do not overfill.**

Important

The engine lubrication system incorporates a thermostatically controlled oil cooler, therefore if the oil has been drained from the engine the following additional procedure must be carried out to ensure the correct oil level is obtained.

Carry out the normal topping-up procedure as described previously to obtain the maximum oil level reading on the dipstick.

Drive the car allowing the turbocharger to come into operation, thus enabling the engine oil to attain the temperature required to actuate the oil cooler thermostat.

To ascertain that the thermostat has actuated, a rise in the temperature of the oil cooler return pipe (see fig. B1/1-4) can be felt. This temperature rise occurs as hot oil begins to flow from the oil filter housing, where the thermostat is situated, to the oil cooler mounted in front of the coolant radiator matrix.

Do not attempt to attain the required engine oil temperature rise with the car stationary.

When it has been ascertained that the engine oil has been passing through the cooler, thus filling this part of the lubrication system, check the oil level in the normal manner as described previously.

4 Check the drive belts

Before commencing to adjust the drive belts inspect them for signs of wear or cracking. Any belts found unsatisfactory should be renewed.

If after adjustment, a matched pair of belts have a marked variation in tension, a new pair should be fitted. Always renew both belts in a matched pair, even if only one belt is faulty.

Two belt tension loads are specified; a new belt load for replacement (new) belts and a retensioning load for belts which are satisfactory for further service.

The belt tension must be checked at a point midway between two pulleys by use of a belt tension meter.

Belt dressing must not be applied to prevent belt slip.

Crankshaft to coolant pump/steering pump

The belt tension meter reading should be as follows,
New belt 36,3 kgf to 40,8 kgf (80 lbf to 90 lbf),
Retensioned belt 31,7 kgf to 36,3 kgf
(70 lbf to 80 lbf).

The tension of this matched pair of belts is adjusted by altering the position of the steering pump.

Slacken the setscrew securing the steering pump mounting bracket pivot and the clamping setscrew on the belt tensioner situated below the steering pump (see fig. B1/1-5).

Carefully adjust the tensioner until the correct belt tension is attained.

When the belt tension is correct, tighten the tensioner clamp and mounting bracket pivot setscrews.

If the alternator belt is to be adjusted the mounting bracket pivot setscrew can remain slack until adjustment has been carried out.

Ensure the belt tension is still correct when the steering pump is fully secured.

Crankshaft to coolant pump/alternator

The belt tension meter reading should be as follows,
New belt 36,3 kgf to 40,8 kgf (80 lbf to 90 lbf).
Retensioned belt 31,7 kgf to 36,3 kgf
(70 lbf to 80 lbf).

The belt tension is adjusted by altering the position of the alternator.

Slacken the alternator mounting setscrew and the

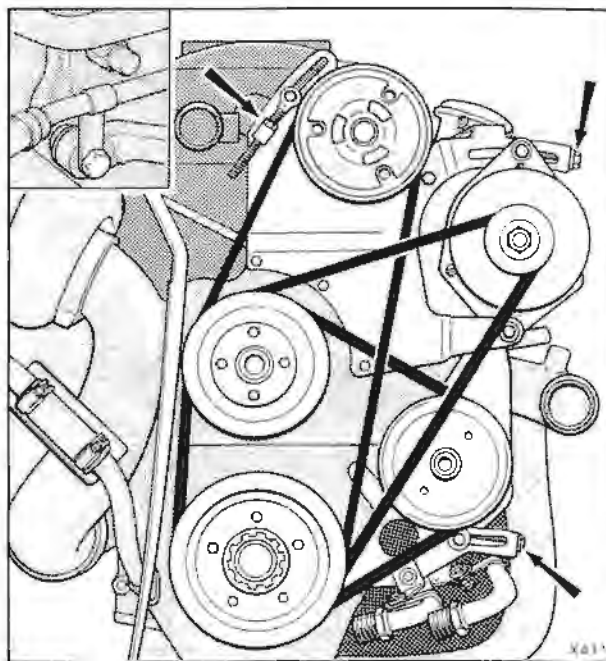


Fig. B1/1-5 Engine drive belt adjustment points
Inset - Refrigeration compressor rear pivot

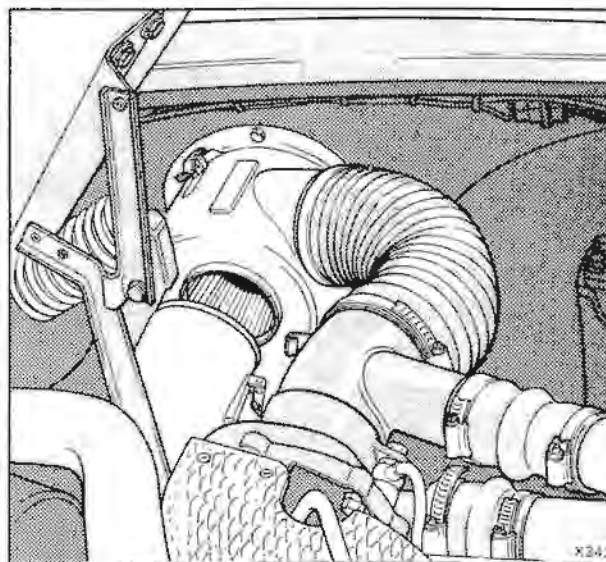


Fig. B1/1-6 Engine air intake filter
(Air intake trunk disconnected)

clamping setscrew on the belt tensioner situated above the alternator (see fig. B1/1-5).

Carefully adjust the tensioner until the correct belt tension is attained.

When the belt tension is correct, tighten the belt tensioner clamping setscrew and alternator mounting setscrew.

Ensure the belt tension is still correct when the alternator is fully secured.

Crankshaft to refrigeration compressor

The belt tension meter reading should be as follows.
New belt 36,3 kgf to 40,8 kgf (80 lbf to 90 lbf).
Retensioned belt 31,7 kgf to 36,3 kgf (70 lbf to 80 lbf).

The belt tension is adjusted by altering the position of the refrigeration compressor.

Slacken the compressor pivot bolts at the front and rear of the compressor and the belt tensioner clamping setscrew (see fig. B1/1-5).

Carefully adjust the tensioner until the correct belt tension is attained.

When the belt tension is correct, tighten the belt tensioner clamping setscrew and the compressor pivot bolts.

Ensure the belt tension is still correct when the compressor is fully secured.

5 Renew the air filter element

The air filter element is situated in the air intake housing at the front right-hand side of the engine compartment (see fig. B1/1-6).

To gain access to the element, release the two toggle clips retaining the air intake trunk to the housing.

Carefully free the joint and move the trunk away from the housing.

Unscrew the worm drive clip securing the turbocharger intake trunk to the air intake housing. Detach the trunk.

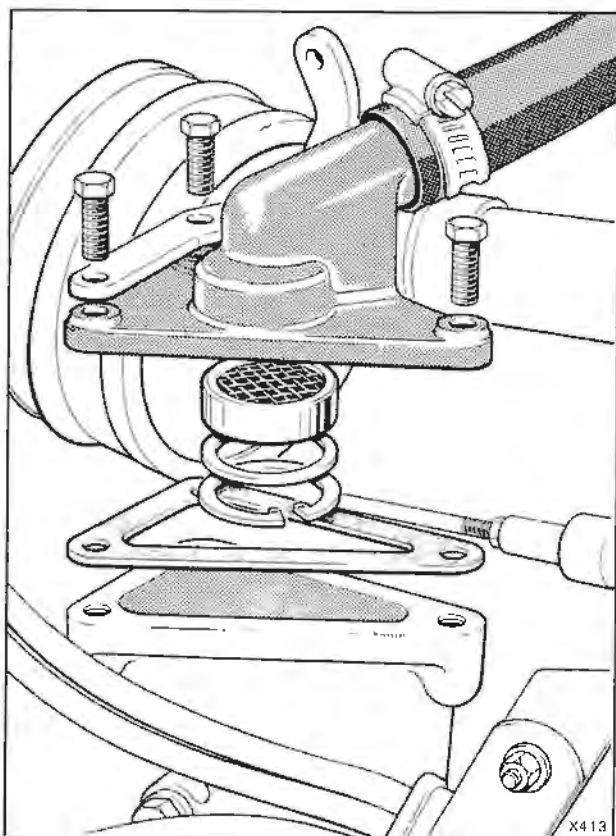


Fig. B1/1-7 Crankcase breather tube flame trap

Support the air intake housing and release the three toggle clips securing the housing to the valance.

Carefully free the joint, then move the housing towards the engine and withdraw the housing filter element from the car.

Remove the filter element from the housing.

It should be noted that the design of the air intake filter is such that dirt and foreign matter will be collected on the inside of the filter element.

Ensure that the inside of the air cleaner housing (both the section removed and the fixed section in the valance) is clean.

Inspect the joint seals for serviceability. Renew if necessary.

Fit the new filter element as follows.

Locate the large end of the new filter element onto the locating spigot on the inside of the removable half of the housing.

Carefully position the housing and filter onto the valance allowing the filter to pass into the valance mounted section of the housing. Locate the small (blank) end of the filter into the spigot in the valance housing. Align the three housing toggle clips with their respective securing points. Special care should be taken during these operations to ensure that the paper element is not damaged during insertion.

Ensure that the filter is correctly positioned on the location spigots, then secure the three toggle clips. It is essential that the filter is correctly located on the spigots before the toggle clips are fastened down, otherwise there is a serious risk of crushing the filter element.

Fit the remaining components by reversing the removal procedure.

6 Clean the crankcase breather flame trap

The engine crankcase is ventilated through a breather tube connected to the air dump (recirculation) pipe.

A flame trap in the form of a filter gauze is fitted into the system at the rear of 'A' bank cylinder (see fig. B1/1-7) and should be cleaned as follows.

Remove the windscreen wiper mechanism cover and the wiper motor relay (see fig. B1/1-14).

Disconnect the breather hose from the connection on the air dump pipe.

Remove the setscrews securing the speed control bellows or actuator mounting bracket, dependent on the type fitted, to the crankcase breather/flame trap housing. Move the bellows or actuator away from the housing.

Remove the remaining setscrew from the housing cover. This setscrew also secures the ignition harness clamp. Carefully remove the housing cover and hose.

Remove the circlip retaining the filter gauze situated on the underside of the housing cover. Remove the filter gauze and washer.

Thoroughly clean the gauze with a suitable cleaning solvent and blow dry with compressed air.

Ensure that the breather pipe, housing, and cover are also clean.

Fit the filter gauze, housing cover, and speed

control bellows or actuator by reversing the removal procedure.

7 Renew the sparking plugs

Sparking plug type NGK BPR 5 ES or Champion RN 11 YC.

Plug gap setting 0,76 mm (0.030 in). Before removing the sparking plugs the surrounding area should be thoroughly cleaned to prevent the ingress of foreign matter when the plugs are removed.

Fit the new plugs ensuring that the plug gaps are correctly set and that each plug is fitted with a sealing washer. Torque tighten each plug to between 18 Nm and 23 Nm (1,8 kgf m and 2,3 kgf m, 13 lbf ft and 17 lbf ft).

8 Lubricate the distributor

Lubrication of the distributor is carried out during initial assembly and further lubrication is not required.

9 Lubricate the accelerator and carburettor linkage

Lubricate all the accelerator and carburettor linkage ball joints, pivots, and clevis pins.

Examine the ball joints for wear and adjust if necessary. Renew any worn clevis pins.

Examine the linkage for correct operation. For details of linkage setting procedures reference should be made to Chapter K of the Workshop Manual.

10 Check the ignition timing

For details of the ignition timing settings and procedures reference should be made to Chapter K of the Workshop Manual.

11 Check the engine idle speed

For full details of carburettor settings reference should be made to Chapter K of the Workshop Manual.

12 Check the choke idle speed

For full details of choke fast-idle settings reference should be made to Chapter K of the Workshop Manual.

Engine cooling system

1 Check the coolant anti-freeze concentration

The cooling system is filled initially with a coolant solution comprising equal parts of UT184 (BP - Hythe Chemicals) or Prestone II and water. This mixture gives frost protection down to a temperature of -37°C (-35°F). The coolant should contain fifty percent of an approved anti-freeze at all times, as this not only provides frost protection, but also prevents corrosion of the coolant passages, and raises the boiling temperature of the coolant.

The anti-freeze concentration should be checked in both the expansion bottle and the radiator.

If the strength of the coolant requires increasing, sufficient coolant should be drained from the radiator and replaced with undiluted anti-freeze (see fig. B1/1-8). Afterwards run the engine until normal

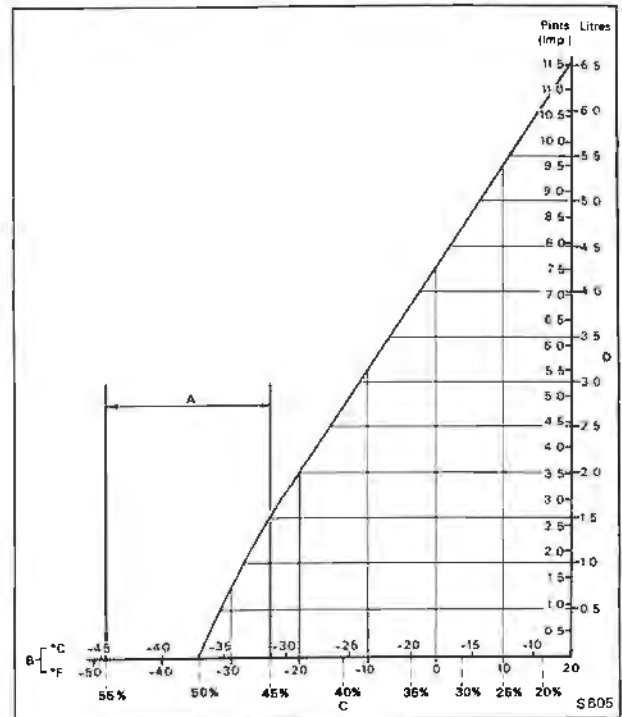


Fig. B1/1-8 Anti-freeze correction chart to give a 50% solution

- A Acceptable service range of concentration
- B Freezing point of coolant
- C Percentage concentration
- D Volume of 100% anti-freeze to be added to maintain a 50% solution after removal of the same volume of old coolant

operating temperature is attained and the anti-freeze has become thoroughly mixed with the coolant. Stop the engine and again check the concentration in the radiator.

An acceptable level of anti-freeze concentration is between 45% and 50%. Therefore, as a hydrometer may be inaccurate where readings above 40% are expected, it is recommended that a refractometer is used.

For details refer to Chapter L of the Workshop Manual.

If a refractometer is not available, and a hydrometer has to be used a scale reading of between 1,06 and 1,07 should be obtained, with the coolant at room temperature for the mixture to be correct.

2 Check the coolant level

Warning

The cooling system becomes pressurized during engine running, therefore, extreme care should be taken when removing the radiator cap from a warm or hot radiator.

Routine check

To check the level outside a normal service schedule (e.g. Regular maintenance) and when no cooling/

heating system fault is reported or suspected, proceed as follows.

If the **engine is hot** ensure that the coolant level in the translucent expansion bottle is at the **MAX** mark. Top-up if necessary and replace the expansion bottle cap.

If the **engine is cold** ensure that the coolant level in the translucent expansion bottle is half-way between the **MIN** and **MAX** marks. Top-up if necessary and replace the expansion bottle cap.

If the coolant level in the expansion bottle is either below the **MIN** mark or there is no coolant in the expansion bottle, carry out the following Full check procedure.

Full check

Ensure the gear range selector is in the Park position and apply the parking brake.

Remove the gear range selector cut-out from the fuseboard.

Check the coolant level in the translucent expansion bottle (see fig. B1/1-9). If the level is low or the bottle is empty, add coolant to bring the level up to the **MIN** mark.

Ensure that the engine is not hot (to allow safe removal of the radiator cap).

Remove the radiator cap in three stages as follows.

Turn the cap slowly, anti-clockwise until a check position is reached. Wait until any pressure in the system has been released. Press down on the cap and continue to turn it anti-clockwise until the cap is released.

Check the coolant level in the radiator. This should be halfway up the filler neck.

If the coolant level in the radiator is correct, fit the

radiator cap by pressing it firmly down and turning it fully clockwise.

Top-up the coolant level in the expansion bottle in accordance with the Routine check procedure.

If the coolant level in the radiator is low but visible and no cooling/heating system fault is reported or suspected top-up the system using the following procedure. If however the coolant is not visible or a coolant/heating system leak is reported or suspected, the system should have any faults rectified and then be pressure tested prior to carrying out the topping-up procedure.

Top-up the radiator until the coolant is half-way up the filler neck.

Start and run the engine.

Turn the air conditioning system function control fully clockwise to the defrost position.

Set the air conditioning system override switch to the **AUTO** position.

Allow at least one minute for the air conditioning system to stabilize, then check to ensure that all air is being directed towards the windscreen (i.e. no air is delivered from the lower system and the facia outlets). This procedure opens the heater system water tap.

Run the engine, without the pressure cap fitted, until normal operating temperature is attained. Top-up the coolant level in the radiator during this time.

Switch off the engine.

Fit the radiator pressure cap by pressing it firmly down and turning it fully clockwise.

Top-up the coolant level in the expansion bottle in accordance with the Routine check procedure.

3 Check all coolant hose clips for tightness

Examine all the coolant hose connections for signs of leakage and check the worm drive clips for tightness. Never overtighten a clip in an attempt to seal a leaking connection.

In the event of a hose connection leaking when the worm drive clips have been tightened, drain the cooling system to a level below the leaking hose. Remove and inspect the hose and its connecting component for signs of damage. If necessary renew the faulty component and refill the system with coolant as described in Renew the coolant.

4 Examine the condition of all coolant hoses

Inspect all coolant hoses for signs of deterioration, cracking, weak spots, etc. Any faulty hose should be removed and a new hose fitted. When renewing a hose always ensure that it does not foul other components and that it is not kinked so as to cause complete or partial restriction of the coolant flow.

5 Fit a new heater tap feed hose

Drain the coolant system as described in Renew the coolant, but do not remove the engine crankcase drain plugs.

Disconnect the heater tap feed hose (see fig. B1/1-10) from the engine and heater tap; remove the hose.

Fit the new hose; ensure that the hose is free

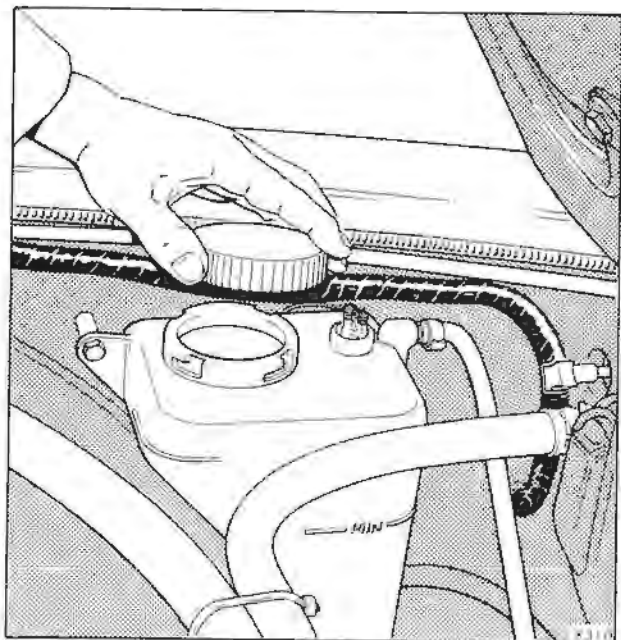


Fig. B1/1-9 Coolant expansion bottle

from any sharp bends that may restrict coolant flow.

Fill the engine coolant system as described in Renew the coolant.

Ensure that the parking brake is applied and the gear range selector lever is in the Park position.

Remove the gear range selector cut-out from the fuseboard.

Start and run the engine; check the coolant hose for leaks.

Switch off the ignition and fit the gear range selector cut-out.

6 Renew the coolant

Drive the car onto a ramp; move the gear range selector to the Park position and apply the parking brake. Remove the gear range selector cut-out from the fuseboard.

Disconnect the Lucar connections from the oil pressure switch situated adjacent to the engine oil filter (see fig. B1/1-11).

Switch on the ignition and rotate the air conditioning function switch to the windscreen defrost position, also set the upper system mode override switch to the AUTO position.

Wait approximately one minute for the system to attain the required setting and observe that all the air is being directed to the windscreen. This procedure opens the heater water tap and ensures the system can be completely drained.

Switch off the ignition.

Place a container beneath the radiator drain tap to collect the coolant. Connect a length of hose onto the drain tap to direct the coolant into the container.

Carefully unscrew and remove the radiator pressure cap.

Open the radiator drain tap and allow the coolant to drain from the radiator.

When the radiator has completely drained, place a container beneath the crankcase drain plugs. Remove the drain plugs from the crankcase (see fig. B1/1-12) and allow the residue of coolant to drain from the crankcase.

Renew the washers on the drain plugs and fit the plugs into the crankcase.

To drain the coolant remaining in the expansion bottle disconnect the connection hose from the radiator filler neck and allow the coolant to drain from the expansion bottle into the container. When the coolant has drained connect the hose to the radiator filler neck.

Check all hoses for serviceability and renew as necessary.

Fill the system with fresh coolant of the specified concentration as follows.

Ensure the radiator drain tap is closed.

Slowly fill the radiator with coolant, thus reducing the possibility of air locks in the system.

Start and run the engine for a minimum of 10 minutes with the radiator pressure cap removed. After running for five minutes ensure that warm air is passing up the windscreen from the demister ducts. Top-up the radiator as necessary to ensure there is

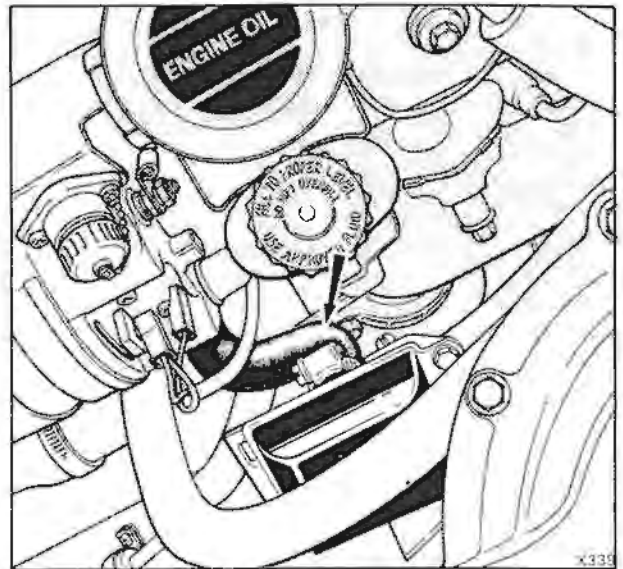


Fig. B1/1-10 Heater tap feed hose

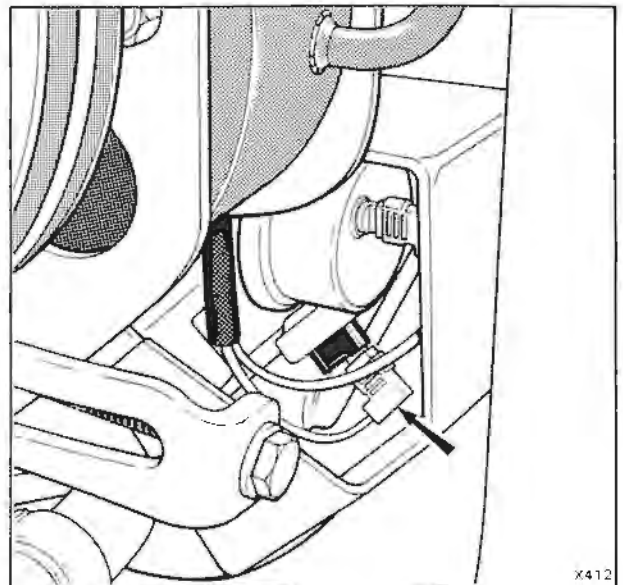


Fig. B1/1-11 Oil pressure switch and transmitter

always coolant in the top tank of the radiator. Ensure that the thermostat has opened; indicated by a rapid warming of the top radiator hose.

Switch off the engine and top-up the radiator to half-way up the filler neck. Fit the pressure cap.

Fill the expansion bottle to a level midway between the maximum and minimum levels indicated on the bottle.

Start and run the engine until normal engine running temperature is attained; switch off the engine and top-up the expansion bottle to the maximum level.

Allow the engine to cool. Carefully remove the radiator pressure cap and ensure the radiator is completely full of coolant. Top-up to half-way up the

radiator filler neck if necessary. Fit the radiator pressure cap.

Connect the Lucar connection previously disconnected from the pressure switch adjacent to the oil filter (see fig. B1/1-11).

Note

For the coolant system to operate correctly, i.e. for coolant to pass into the expansion bottle when hot and be drawn back into the radiator during cooling, the top of the radiator must not contain an air pocket.

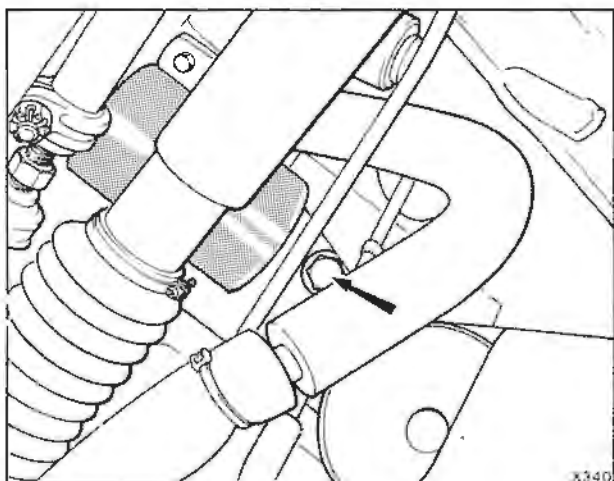


Fig. B1/1-12 Crankcase drain plug (B bank shown)

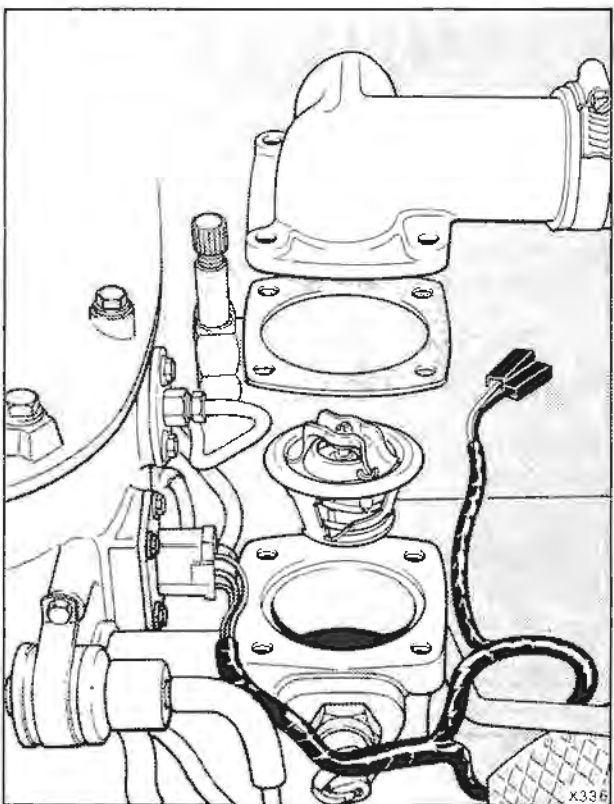


Fig. B1/1-13 Thermostat housing assembly

7 Reverse flush the coolant system

Drain the engine coolant system as described in Renew the coolant.

Remove the top and bottom hoses from the radiator matrix.

Fit a waste pipe to the upper (inlet) connection of the radiator.

Apply mains water under pressure through the lower (outlet) connection of the radiator. This should remove all loose sediment in approximately 30 minutes.

Do not under any circumstances use an alkaline compound or detergent to clean the system.

Such compounds have a detrimental chemical action on aluminium alloys.

Remove the engine coolant drain plugs from the crankcase.

Remove the thermostat as described in Renew the thermostat, then replace the cover. Fit a waste pipe to the cover outlet.

Fit a suitable pipe to the drain plug aperture and apply mains water pressure to each aperture in turn.

Flush for approximately 30 minutes, or until the water runs clear of foreign matter.

Fit the drain plugs and a new thermostat by reversing the procedure for removal.

To flush the heater systems, detach the heater at the water tap and disconnect the return hose at the coolant pump.

Fit a waste pipe to the disconnected heater feed hose.

Flush the matrix for approximately 30 minutes.

Examine the coolant hoses for deterioration or damage and renew as necessary.

Connect all hoses and fill the system with the recommended coolant mixture as described under Renew the coolant.

8 Remove foreign matter from the radiator, oil cooler, and refrigeration condenser

Using a pressure hose pipe, flush the radiator, oil cooler, and condenser matrices.

Hold the nose of the hose pipe close to the back of the radiator matrix and allow the water to pass between the veins of the matrix. Slowly move the hose over the whole matrix area until all foreign matter (insects etc.) have been flushed clear. Care must be taken to ensure that the end of the hose does not damage the matrix face during this operation.

9 Renew the thermostat

Disconnect the battery.

Place a container beneath the radiator. Attach a length of hose to the radiator drain tap to direct the coolant into the container.

Carefully unscrew and remove the radiator pressure cap.

Open the radiator drain tap and allow sufficient coolant to drain from the system for the coolant level to fall below that of the thermostat housing. Close the drain tap and remove the hose previously attached.

Disconnect the electrical connector from the thermostat housing cover.

Remove the setscrews securing the thermostat housing cover. Remove the cover. The cover can be moved away from the housing without detaching the outlet hose.

Lift the thermostat from the housing (see fig. B1/1-13).

Remove the old gasket material from the thermostat housing and cover. Ensure that no material enters the thermostat housing.

Check that the two faces are clean and dry.

Insert a new thermostat into the housing.

Place a new gasket in position on the housing and fit the cover.

Connect the electrical connection removed from the housing cover.

Top-up the cooling system with the correct coolant mixture as described under Renew the coolant.

Torque converter transmission

It is absolutely essential when adding fluid to, or working on the torque converter transmission that great attention is paid to cleanliness. The smallest particle of dirt in the transmission fluid could interfere with the correct operation of the unit. It is also important that only an approved fluid is used (see Chapter A).

1 Check the transmission fluid level

The fluid level can only be checked accurately when the car is standing on a level surface, the engine is running at idle speed, and transmission fluid is at normal operating temperature approximately 77°C (170°F).

The dipstick and filler tube are situated on the right-hand side of the engine compartment.

Remove the protective cover from the windscreen wiper mechanism to gain access to the dipstick. Ensure that the following safety procedure is undertaken to isolate the mechanism prior to removing the cover.

Ensure that the windscreen wiper control switch situated on the fascia is in the off position. Remove a windscreen wiper relay, preferably number three, situated adjacent to the windscreen washer reservoir (see fig. B1/1-14). To remove the relay pull it vertically from its mounting.

Always clean the top of the dipstick before removing it from the filler tube.

As an initial check, the fluid level may be checked after starting from cold as follows.

Apply the parking brake.

Start and run the engine for three to four minutes at fast-idle speed, with the gear range selector in the Park position. Reduce the engine speed to slow idle.

Whilst sitting in the driving seat, **firmly apply the footbrake** and move the gear range selector through the full range of gear positions pausing briefly in each range. Return the selector to the Park position.

Immediately check the fluid level with the engine

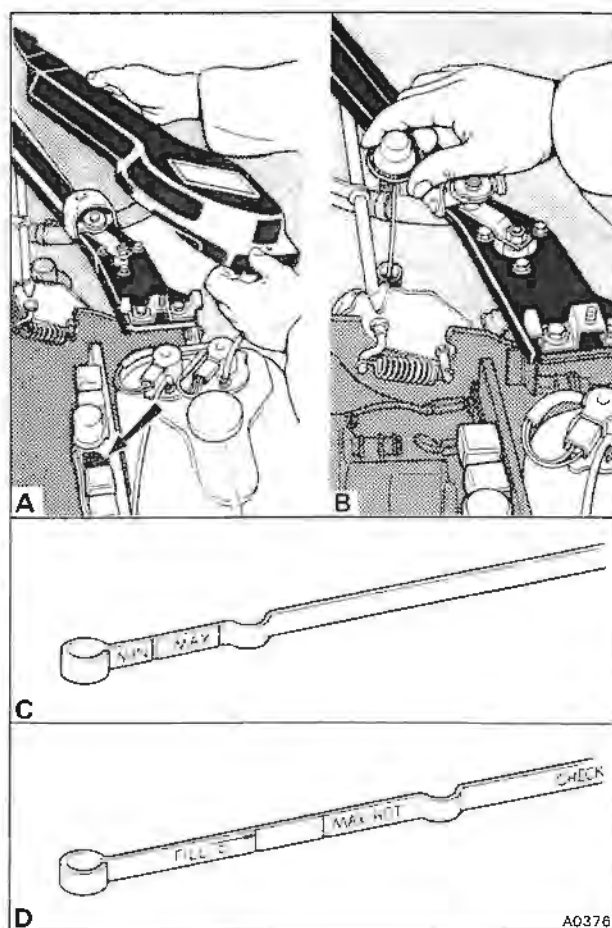


Fig. B1/1-14 Transmission filler tube and dipstick

- A Removing the windscreen wiper mechanism cover. The arrow indicates the wiper motor relay removed
- B Withdrawing the dipstick from the filler tube
- C Original dipstick markings
- D Revised dipstick markings

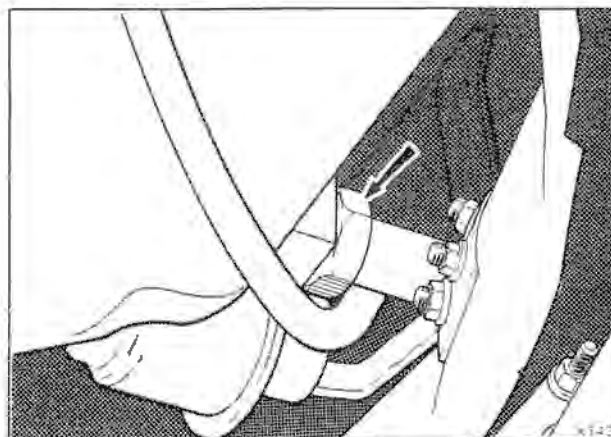


Fig. B1/1-15 Transmission drain point

running at idle speed.

The level should be up to the circular dimple situated below the FILL mark on the dipstick or 10 mm (0.375 in) **below** the MIN mark, dependent on the type of dipstick fitted (see fig. B1/1-14).

Top-up to this level if necessary.

After this initial check a further check should be carried out as follows.

Drive the car for approximately 24 kilometres (15 miles) of highway/motorway driving or 16 kilometres (10 miles) of city driving. This should ensure the transmission has reached normal operating temperature.

It is essential that this temperature is attained. Do not top-up the fluid level to the MAX mark on the dipstick when the fluid is only warm, as this will result in an overfill situation when the normal operating temperature is attained. Overfilling will result in fluid being discharged from the transmission breather pipe.

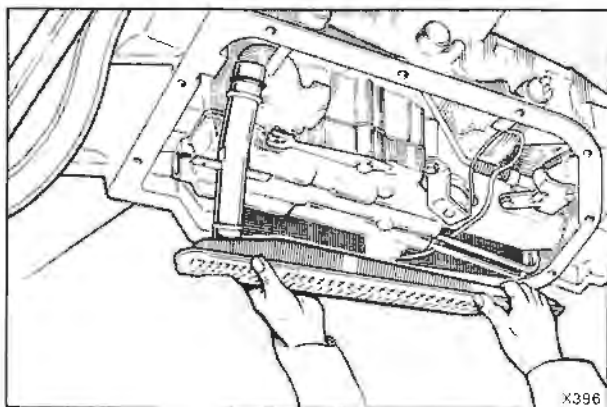


Fig. B1/1-16 Transmission intake strainer removal



Fig. B1/1-17 Propeller-shaft grease point

Position the car on a level surface, firmly apply the parking brake and select Park with the gear selector lever.

Carry out the procedure described for the initial check.

With the transmission fluid at normal operating temperature the level of the fluid should be between the FILL and MAX HOT marks or the MIN and MAX marks (see fig. B1/1-14) dependent on the type of dipstick fitted.

If necessary add fluid by pouring it down the filler tube, with the engine still running, until the fluid is to the MAX mark on the dipstick.

Do not overfill

When the fluid level is correct, switch off the engine and fit the windscreen wiper relay and mechanism cover.

2 Renew the transmission fluid

Position the car on a ramp or over a pit.

Place a clean container having a minimum capacity of 3 litres (5 Imp pt, 6 US pt) under the nut which secures the transmission fluid filler tube to the sump (see fig. B1/1-15).

From within the engine compartment, remove the transmission dipstick as described under Check the transmission fluid level.

Slacken the setscrew securing the filler tube to the engine.

Unscrew the nut securing the filler tube to the side of the transmission sump (see fig. B1/1-15). Withdraw the filler tube from the sump and move it to one side to allow the fluid to drain into the container.

After draining the sump, ensure that the filler tube is clean then fit it to the sump and tighten the drain nut.

Tighten the setscrew securing the filler tube clip to the engine.

Add 2,8 litres (5 Imp pt, 6 US pt) of an approved fluid to the sump, pouring the fluid down the filler tube.

Check the fluid level as described under Check the transmission fluid level.

3 Fit a new intake strainer

Drain the transmission sump as described under the heading, Renew the transmission fluid, then proceed as follows.

Remove the setscrews securing the transmission sump and lower the sump.

Drain any fluid from the sump and discard the gasket.

Unscrew the setscrew securing the intake strainer and pipe assembly to the transmission; remove the strainer assembly (see fig. B1/1-16).

Remove the intake pipe from the strainer and discard the strainer.

Clean the transmission sump and the intake pipe with paraffin and dry with compressed air.

Fit a new 'O' ring to the intake pipe and lubricate the 'O' ring with clean transmission fluid.

Ensure that a new rubber seal is fitted to the pipe bore in the new intake strainer, then fit the intake pipe into the strainer.

Fit the intake strainer and pipe assembly to the transmission and torque/tighten the securing setscrew to 14 Nm (1.4 kgf m, 10 lbf ft).

Fit the transmission sump using a new gasket and torque/tighten the sump setscrews to 16 Nm (1.7 kgf m, 12 lbf ft).

Fit the oil filler tube into the sump and tighten the nut. Tighten the setscrew securing the filler tube clip to the engine.

Add 4.5 litres (8 Imp pt, 9.6 US pt) of an approved fluid to the sump, pouring the fluid down the filler tube, then follow the fluid level checking procedure described under Check the transmission fluid level.

4 Lubricate the gear range selector control rod

Lubricate the clevis pins in the control rod linkage at the left-hand side of the transmission, with a few drops of clean engine oil. Also lubricate the manual shaft where it enters the transmission casing.

Propeller shaft

1 Lubricate the universal joints

A grease nipple is fitted to the universal joint at each end of the shaft (see fig. B1/1-17).

Using a suitable grease gun, lubricate each joint with an approved grease.

Final drive unit

1 Check the final drive oil level

Position the car on a ramp or over a pit.

Remove the level plug located in the rear face of the final drive casing (see fig. B1/1-18). The oil in the casing should be up to the level plug orifice. If necessary top-up with an approved oil.

Fit the level plug complete with a new joint washer.

2 Renew the final drive oil

It is advisable to carry out this operation when the oil is warm, e.g. immediately after the car has completed a run.

Position the car on a ramp or over a pit and clean the area around the drain and level plugs (see fig. B1/1-18).

Place a container beneath the drain plug, then remove both the drain and level plugs.

When the oil has drained, fit the drain plug complete with a new joint washer.

Using a syringe, fill the casing to the level plug orifice with an approved oil (see Chapter A), approximately 2.3 litres (4.0 Imp pt, 4.8 US pt) of oil will be required.

Fit the level plug complete with a new joint washer and check for leaks.

3 Check the condition of the drive-shaft joint covers

The drive-shaft constant velocity joints are enclosed by

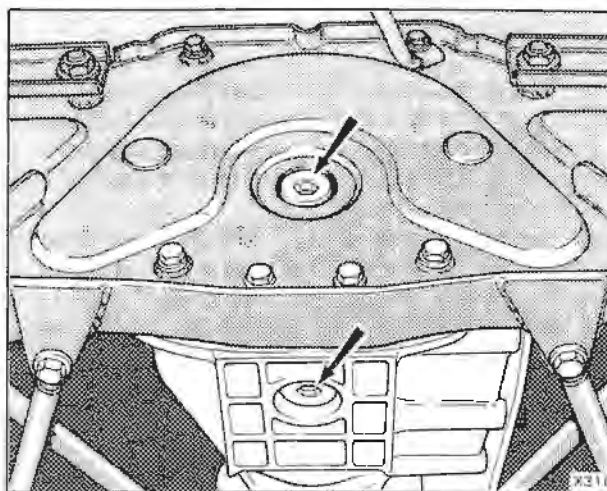


Fig. B1/1-18 Final drive drain and filler/level points

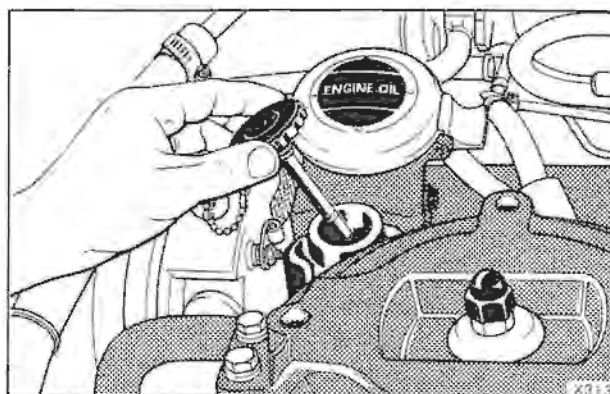


Fig. B1/1-19 Steering pump filler/dipstick

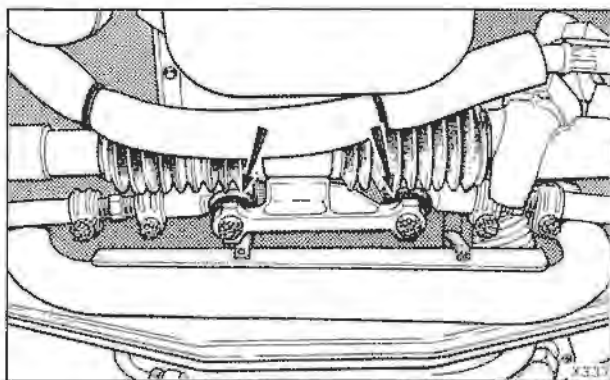


Fig. B1/1-20 Track rod ball joints

convoluted seals which retain the joint lubricant.

If upon inspection a seal is found to be leaking or damaged the joint should be inspected and a new seal fitted as described in Chapter J of the Workshop Manual.

Steering system

1 Check the steering pump fluid level

Remove the filler cap from the steering pump reservoir (see fig. B1/1-19) and check that the fluid level is at least up to the FULL COLD mark on the integral dipstick. If necessary, top-up to this level with approved fluid.

Start and run the engine until it reaches normal operating temperature, approximately 77°C, (170°F) then stop the engine.

Remove the filler cap and check the fluid level in the reservoir. If necessary, add an approved fluid to raise the level to the FULL HOT mark on the dipstick; do not overfill.

Ensure that the filler cap is securely replaced.

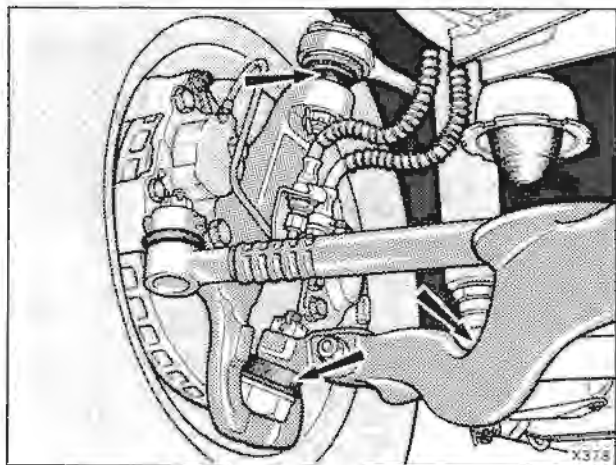


Fig. B1/1-21 Front suspension ball joints

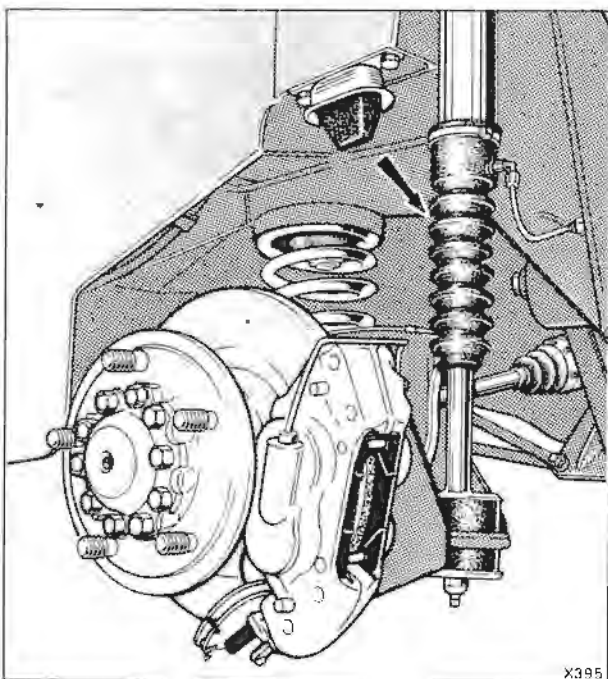


Fig. B1/1-22 Rear suspension strut

2 Check the condition of the steering ball joint covers

Examine the condition of the rubber cover seals on the steering ball joints (see fig. B1/1-20).

If the seals are found to be damaged or in poor condition they should be removed and the ball joint examined for wear and damage. Fit new parts as necessary.

For full information refer to Chapter N of the Workshop Manual.

3 Check the condition of the steering rack convoluted seals

Examine the condition of the convoluted seals on the rack and pinion unit and check the tightness of the seal clips.

If the seals are satisfactory, tighten the clips as necessary.

If the convoluted seals are found to be damaged or in poor condition, the rack and pinion unit should be removed from the car and new seals fitted. For full information refer to Chapter N of the Workshop Manual.

Suspension

1 Check the condition of the front ball joint covers

The front suspension ball joints (see fig. B1/1-21) are packed with grease on initial assembly and should not normally require attention between service overhauls unless the rubber seal covers are damaged.

If on inspection the covers are found to be damaged or in poor condition, the ball joints should be removed and new joints and seals fitted as necessary. For full information refer to Chapter H of the Workshop Manual.

2 Check the condition of the rear strut convoluted seals

Examine the condition of the convoluted seals on the rear suspension struts (see fig. B1/1-22).

If the seals are found to be damaged or in poor condition, the struts should be removed as described in Chapter G of the Workshop Manual, and new seals fitted.

3 Lubricate the height control valve ball joints

Position the car on a ramp or over a pit then disconnect the actuation links from the height control valves and the rear trailing arms at the ball joints (see fig. B1/1-23). Note from which side each link is taken.

Clean the ball joints then lubricate with an approved grease.

Do not alter the length of the actuating links

Connect each actuating link to the height control valve and the trailing arm from which it was removed.

Adjust the joints to obtain complete movement without free play.

Brake and hydraulic systems



WARNING

Use only **Hydraulic System Mineral Oil (LHM)** to replenish the braking and levelling systems.

Do not use Brake Fluids (Castrol RR363, Universal, or any other type). The use of any type of brake fluid, even in very small amounts, will cause component failure necessitating extensive rectification to the braking and levelling systems of the car.

Always ensure before fitting any seals, hoses, pipes, etc. that they are suitable for a mineral oil system. For details of correct component identification reference should be made to Chapter G of the Workshop Manual.

Always ensure that a sealed container of **Hydraulic System Mineral Oil (LHM)** is fitted adjacent to the battery.

Always ensure that no foreign matter enters the systems when work is being carried out.

In order to protect against claims of liability for hydraulic system contamination, it is recommended that the hydraulic system mineral oil is tested for contamination prior to work being undertaken, preferably in the presence of the owner or his/her representative.

It is important that the test is carried out even when the hydraulic system mineral oil is to be renewed as this will not prevent the deterioration of components which have been in contact with contaminated mineral oil.

Brake fluids and mineral oil are immiscible and with large amounts of contamination separation of the fluids will occur on standing, due to the greater density of the conventional fluids. A further indication of the mixing of conventional brake fluid and mineral oil is its cloudy appearance.

To carry out contamination tests, a kit is available from Rolls-Royce Motors Limited part number RH 2841 and should be used as follows.

Switch on the ignition and depressurize the hydraulic systems by pumping the brake pedal until both low pressure warning panels illuminate. Continue to pump the pedal for at least a further 20 applications to ensure that all the accumulator mineral oil is returned to the reservoir.

Clean the area around each hydraulic reservoir filler cap and then remove the cap.

Ensure that the components in the test kit are clean and dry.

Using the sampling tube provided, extract 50 ml of mineral oil from the top and bottom of each reservoir.

Place the samples into individual clean dry containers.

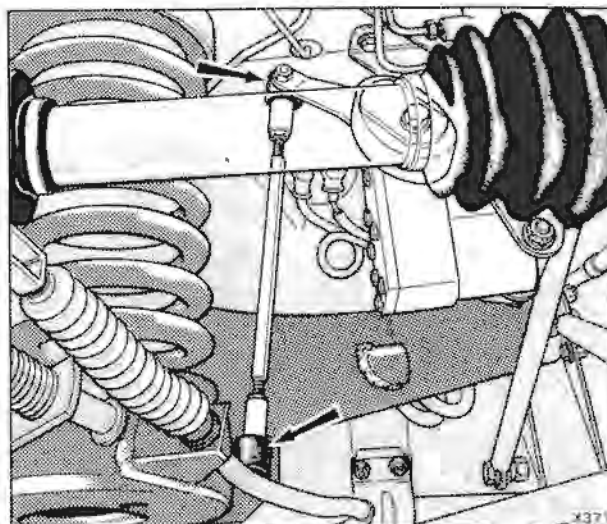


Fig. B1/1-23 Height control valve ball joints

Shake each sample taken to ensure it is well mixed. Pour 10 ml of each sample into clean test tubes (do not mix the samples together).

Using the dispenser, add two drops of the red dye solution contained in the kit into each 10 ml sample. Cork the test tubes and shake them thoroughly.

Leave the samples to settle for at least 30 minutes.

Examine each sample.

Sample diagnosis

On adding the red dye solution and the subsequent mixing, the green colour of the mineral oil will change to a reddish brown. **This does not indicate contamination of the hydraulic system mineral oil.**

Contamination can only be confirmed by the formation of a cloudy red mass which will begin to settle towards the bottom of the tube, if left to stand for at least 30 minutes.

If the sample in the test tube, on addition of the dye turns red but remains clear it indicates that the sample is not contaminated.

The volume of red mass which will eventually settle to the bottom of the test tube indicates the amount of contamination within the hydraulic system mineral oil.

Complete separation of the two liquids may take a considerable amount of time, for example a very small percentage of contamination may take more than seven days to completely separate.

If contamination is suspected, a more thorough test should be undertaken, details of which are given in Chapter G of the Workshop Manual.

If contamination is suspected, but difficult to diagnose, due to the small amount of contamination that may be present, or any doubt exists, confirmation should be obtained by sending a sample to Rolls-Royce Motors (if in the United Kingdom) or to a chemical analysis laboratory.

Before attempting any work on the hydraulic system personnel must be fully conversant with the

precautions required to ensure adequate safety and correct system operation.

Refer to Chapter G of the Workshop Manual.

Important

Always seal each reservoir cap after it has been confirmed that the systems are **not** contaminated and all work on the systems has been completed.

1 Check the reservoir mineral oil level

The mineral oil reservoirs for the hydraulic systems are located in the engine compartment (see fig. B1/1-24).

To check the oil level, first depressurize the

hydraulic systems by pumping the brake pedal until the two warning panels illuminate. Start and run the engine for approximately four minutes with the car unladen to charge the systems and then stop the engine. The mineral oil in both reservoirs should be up to the FULL marks on the level indicator plate.

If the reservoirs require topping-up, ensure that the tops of the reservoirs and the filler caps are clean, then add an approved hydraulic system mineral oil (see Chapter A), as necessary.

It is important that only an approved hydraulic system mineral oil is used and that exceptional cleanliness is observed when topping-up the hydraulic systems.

Under no circumstances should a conventional (i.e. RR 363 or Universal) type brake fluid be used.

After topping-up, ensure that the filler caps are clean then fit and seal them securely to the reservoirs, or insert the blanking plug dependent on the type of filler cap fitted.

Ensure that the containers of new Hydraulic System Mineral Oil, for system replenishment, are fitted adjacent to the car battery.

2 Renew the hydraulic system mineral oil

Depressurize the hydraulic systems as described in Chapter G of the Workshop Manual and proceed as follows.

Completely drain the fluid from the hydraulic systems by attaching a tube to each bleed point then opening the bleed screws and allowing the mineral oil to drain from the circuits. The bleed screws are located on each accumulator, on each pair of brake calipers, on the deceleration conscious pressure limiting valve and on each inner rear wing from the rear suspension strut. A drain tube is not required at the accumulator bleed screws as these are an integral part of the accumulators and when opened allow the mineral oil to flow from the accumulator spheres back to the reservoirs.

Drain the mineral oil from the reservoirs and clean the reservoirs as described in Chapter G of the Workshop Manual.

After the system has completely drained, close all the bleed screws and ensure that any disturbed pipes are connected and correctly torque tightened.

Fill the reservoirs with fresh hydraulic system mineral oil (see B1/1-24 and Chapter A) until the levels of the reservoirs are slightly above the topping-up marks on the indicator plate.

Run the engine for four minutes, with the car unladen, then top-up to the FULL level mark; never allow the mineral oil levels to fall below the minimum level marks.

Check for leaks, especially around the unions of any pipes which have been disturbed.

Finally, bleed the hydraulic systems as described in Chapter G of the Workshop Manual.

Ensure that the containers of new Hydraulic System Mineral Oil, for system replenishment, are fitted adjacent to the battery.

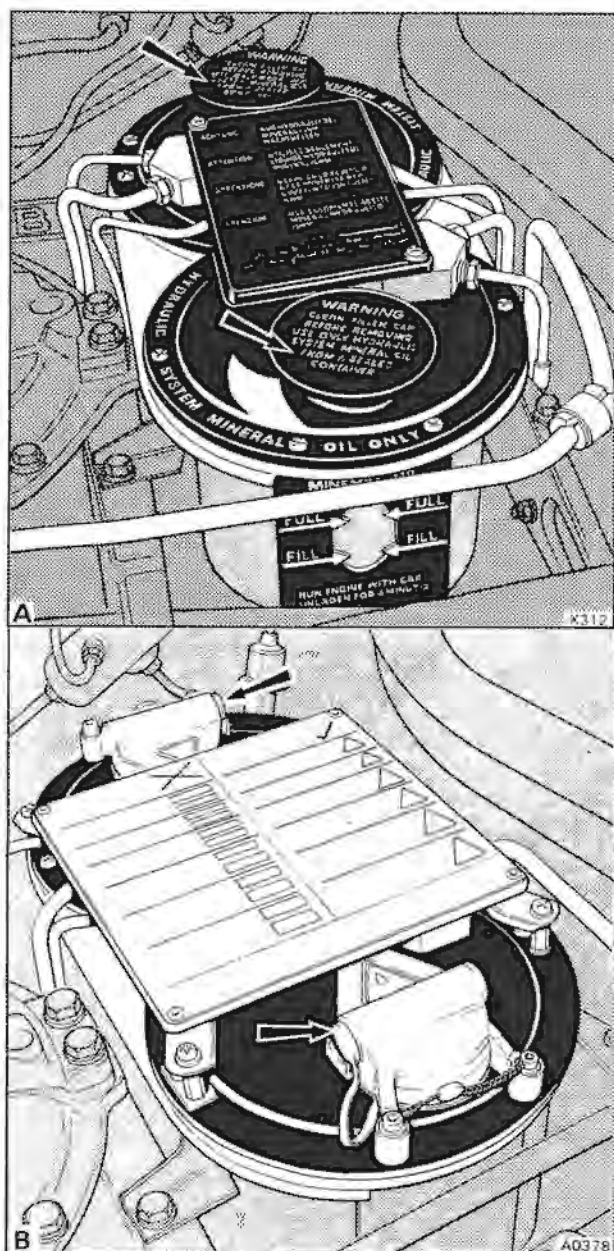


Fig. B1/1-24 Access to the hydraulic system reservoirs

- A Original filler cap
- B Specialized filler cap

3 Check the condition of all brake pipes and hoses

Position the car on a ramp or over a pit and check the condition of the hydraulic system pipes and hoses.

Examine the metal pipes for signs of corrosion, particularly those in an exposed position.

Examine the hoses for chafing or surface cracking.

Faulty pipes and hoses should be replaced as described in Chapter G of the Workshop Manual.

4 Renew the accumulator to body and trailing arms to body hoses

Depressurize the hydraulic systems as described in Chapter G of the Workshop Manual and proceed as follows.

Fit a hose clamp to each of the intermediate hoses of the accumulator return pipes to prevent the flow of mineral oil from the reservoirs.

Thoroughly clean the areas around the connections of the two accumulator to body and trailing arms to body hoses (see figs. B1/1-25 and B1/1-26).

Remove the respective hoses noting the following points.

To avoid contamination fit the new hose immediately after removing the old one; alternatively fit approved blanks to the open ports until the new hoses are fitted.

Before fitting a new hose ensure that it is thoroughly clean and conforms with the hydraulic systems mineral oil requirements.

When fitting the new hoses, ensure that they are routed to clear other components and that clearance is maintained during full suspension movement.

Tighten the pipe nuts to the torque settings given in Chapter G of the Workshop Manual.

After fitting the new hoses, check for leaks and bleed the hydraulic systems as described in Chapter G of the Workshop Manual.

5 Renew all hydraulic system hoses

To renew the hydraulic system hoses follow the same basic procedure described under the heading Renew the accumulator to body and trailing arms to body hoses.

6 Check the brake disc pads for wear

Remove the wheel discs and slacken the wheel nuts approximately half a turn.

Jack up the car and support with stands and sill blocks.

Remove the road wheels and examine all the disc brake pad linings.

The brake pads must be renewed when the brake pad linings are worn to within 3,18 mm (0.125 in) of the steel backing plates. The pads should also be renewed if this minimum thickness is likely to be achieved before the next service check. To renew the brake pads, refer to Chapter G of the Workshop Manual.

If new brake pads are to be fitted which have different recommended linings from those on the old

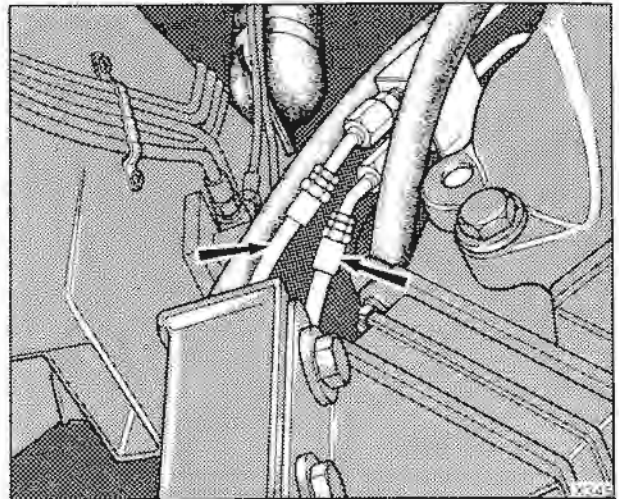


Fig. B1/1-25 Accumulator to body hoses

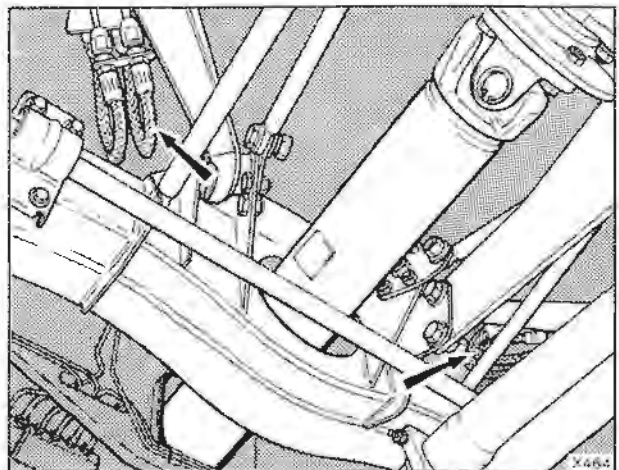


Fig. B1/1-26 Trailing arm to body hoses

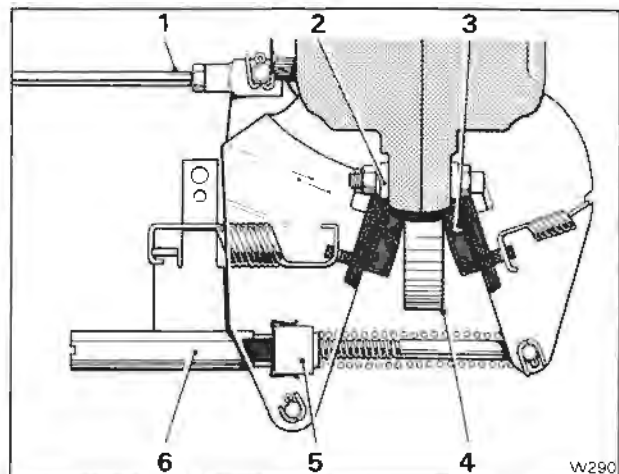


Fig. B1/1-27 Parking brake mechanism

- 1 Actuation rod
- 2 Centralized straps
- 3 Parking brake pads
- 4 Brake disc
- 5 Adjuster clicker block
- 6 Adjuster

pads, the disc faces should be cleaned prior to fitting the new pads. All traces of the old pad lining material should be removed by hand rotating the disc whilst applying coarse grade emery cloth to the disc faces. Do not emery the disc faces radially.

Always ensure that the pads fitted to all six brake calipers have the same type and grade of pad lining.

Fit the road wheels and lower the car.

If new brake pads have been fitted, an initial running-in period of between 1100 kilometres and 1300 kilometres (700 miles and 800 miles) should be observed. During this running-in period the brakes should not be applied harshly or for prolonged periods from high speeds except in an emergency. Towards the end of the running-in period, the force with which the brakes are applied may be progressively increased.

7 Check the condition of the brake caliper dust excluders (when changing brake pads)

The condition of the caliper dust seals should be checked whenever the brake pads are removed.

Inspect the seals for signs of damage, heat hardening, or general deterioration and renew if necessary.

When fitting new seals, ensure that the seal retaining clips are correctly located.

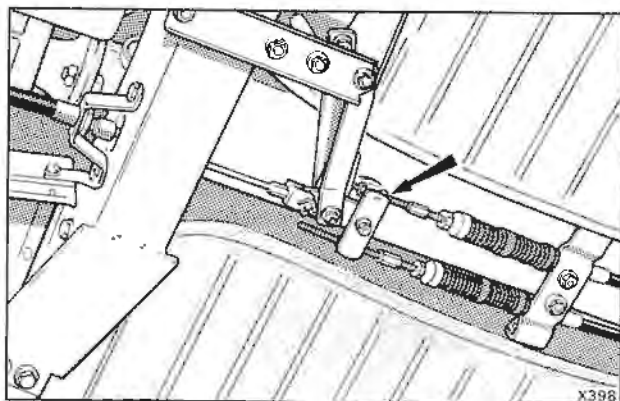


Fig. B1/1-28 Parking brake rear cable adjustment point

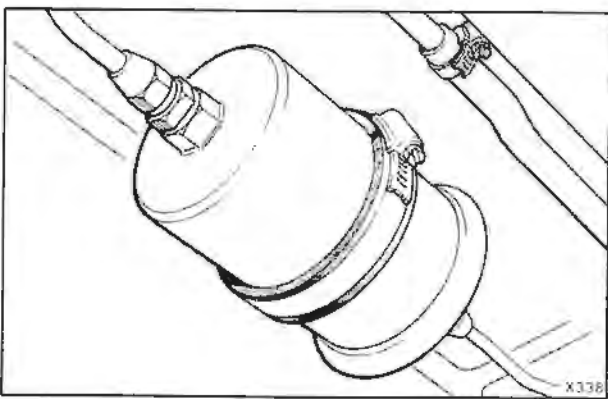


Fig. B1/1-29 Main fuel filter

8 Renew the brake caliper seals

To renew the caliper piston seals it is necessary to remove the brake calipers from the car.

For full instructions, refer to Chapter G of the Workshop Manual.

9 Check the parking brake pads for wear

Securely chock the front wheels then raise the rear of the car. Place sill blocks under the rear body sills and also support the rear trailing arms. Do not allow the suspension struts to support the full suspension load.

Remove the rear wheels and release the parking brake to the off position.

Disconnect the caliper actuation rod from the caliper lever (see fig. B1/1-27).

Unscrew and remove the caliper adjuster and collect the adjuster clicker plate.

Unhook the pad retention springs from each pad, noting the larger spring is fitted to the inner pad. Remove the pads from the caliper.

Check the thickness of the lining material on each pad. Pads which are worn to within 1,6 mm (0.062 in) or less of the steel backing plate should be renewed.

To fit the pads attach the retention springs then locate the pads into position and hook the springs onto the caliper.

Complete the assembly by reversing the removal procedure then adjust the calipers as described under the heading Adjust the parking brake.

Note

If new parking brake pads have been fitted, the following bedding-in procedure should be carried out after adjusting the parking brake.

Drive the car at approximately 48 km/h (30 mile/h) and apply the parking brake to bring the car to rest; it is important that this is done gently and progressively. The parking brake must not be applied fully and no attempt should be made to lock the wheels. This operation should be carried out nine times, allowing at least one minute to elapse between stops to prevent the discs overheating.

Finally adjust the caliper as described under the heading Adjust the parking brake.

10 Adjust the parking brake

Ensure that the parking brake is in the off position.

Adjust the rear cables at the adjusters (see fig. B1/1-28) so that the caliper operating levers return to their off-stops under the influence of their return springs with no appreciable slackness in the cables.

Note

The cables must be adjusted so that the equalizer link on the intermediate linkage (see fig. B1/1-28) lies at right angles with the centre line of the car with the parking brake in the off position.

To check the cable adjustment, adjust both rear cables at the equalizer link until the caliper off-stops are just clear of the calipers. Measure the gap produced at each off-stop and lengthen the cables by this amount.

With the cables correctly adjusted, check that the

centralizing straps (see fig. B1/1-27) are pushing the pads away from the discs when the parking brake is in the off position. If not, remove the nut and bolt securing the straps, bend the straps outward (i.e. away from the disc) then refit them. Ensure that the straps are pushed downward towards the adjusting nut whilst tightening the nut and bolt securing them to the caliper.

Check that the distance between the pad and the disc are the same on each side of the caliper; if not, reset the centralizing straps.

Raise each rear wheel in turn so that it is free to rotate and adjust each caliper as follows.

Turn the caliper adjuster (see fig. B1/1-27) clockwise until the pads just grip the disc; at this point it should only just be possible to rotate the road wheel by hand.

Turn the adjuster anti-clockwise a quarter turn (i.e. three clicks on the nut) to obtain the minimum clearance between the pads and disc.

11 Lubricate the parking brake linkage

Position the car on a ramp or over a pit. Lubricate the parking brake linkage clevis pins, fulcrum pins, and the rear cable adjusters with approved grease.

Fuel system

Safety precautions

It is important that before a fuel line is opened or the fuel tank drained or siphoned, that the workshop safety precautions given in Chapter A of the Workshop Manual are strictly observed.

1 Renew the main filter element

The main fuel filter is situated on the car underframe (see fig. B1/1-29). The element is housed in a sealed container and no attempt should be made to clean it; always fit a new unit.

Place a container beneath the filter to collect any petrol that drains from the filter.

Carefully remove the inlet and outlet pipe connections from the filter.

Slacken the worm drive clip retaining the filter to the mounting bracket and withdraw the filter.

Remove the unions fitted into both ends of the filter and discard the filter.

Clean and fit the unions together with new sealing washers into the new filter.

Fit the new filter by reversing the removal procedure noting the direction of flow arrow marked on the outside of the filter casing.

When carrying out the above operation at the 80 000 kilometres (48 000 miles) or four years and subsequent periods, the intank fuel filter, situated on the underside of the fuel tank, (see fig. B1/1-30) should also be removed and cleaned as follows.

Disconnect the battery.

Drain or siphon the fuel tank.

Place a container beneath the fuel intank filter to collect the residue of fuel from the tank when the filter is removed.

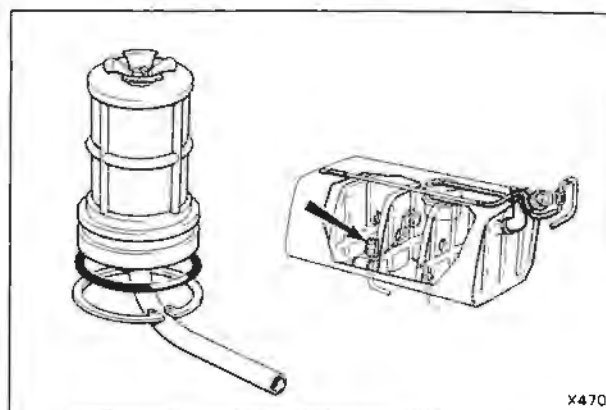


Fig. B1/1-30 Intank fuel filter

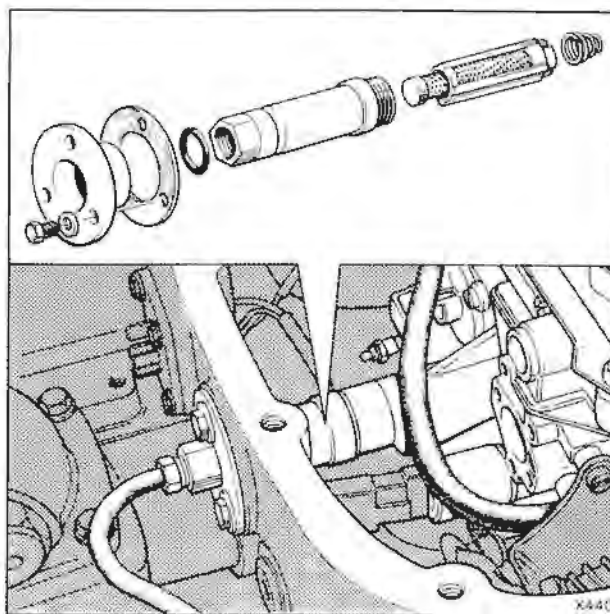


Fig. B1/1-31 Carburettor inlet filter

Disconnect the hose from the intank filter outlet pipe.

Remove the circlip retaining the filter and carefully withdraw the filter from the tank.

Clean the filter mesh by washing in clean fuel.

Examine the filter for serviceability and renew if necessary.

Fit the filter by reversing the removal procedure. Always use a new seal on the filter body.

Ensure that the fuel drained from the fuel tank is free from foreign matter, then return it to the fuel tank.

Check the fuel filter and any pipe connections that have been disconnected for leaks.

2 Clean the carburettor fuel inlet filter

Carry out this operation when the engine is cold.

Remove the setscrews securing the air chest cover.

Lift off the cover and gasket.

Unscrew the fuel inlet pipe from the adapter on the front of the air chest (see fig. B1/1-31).

Remove the three setscrews securing the aperture plate and withdraw the plate off the fuel inlet adapter.

Carefully remove the inlet adapter from the carburettor; discard the sealing washer.

Withdraw the fuel filter, taking care not to lose the small spring situated at the inner end.

Clean the filter by washing in clean fuel.

Fit the filter and components removed by reversing the removal procedure noting the following.

Ensure that the spring is located correctly in the inner end of the filter with the larger diameter of the spring seated on the filter.

Fit a new sealing washer and ring onto the inlet adapter and a new gasket to the aperture plate.

Prior to fitting the air chest cover, start the engine and check the fuel inlet pipe and adapter for leaks; rectify as necessary.

Fit the cover using a new sealing gasket. Always ensure that the air chest is free of foreign matter prior to fitting the cover.

3 Fit a new filler head to fuel tank hose

To enable the filler head to fuel tank hose to be renewed it is necessary to remove the rear suspension gas spring. For details of the procedure required, reference should be made to Chapter K of the Workshop Manual.

4 Examine all flexible fuel pipes

Carefully examine all flexible fuel pipes throughout the fuel system. Renew any pipes which have become damaged or deteriorated to an unserviceable condition.

Check the complete fuel system for leaks and rectify as necessary.

5 Test fuel pump for efficiency

To carry out this operation, it is necessary to remove the fuel pump from the car. For details of the removal and test procedure reference should be made to Chapter K of the Workshop Manual.

Electrical system

1 Check the state of charge of the battery

The battery is situated on the right-hand side of the luggage compartment. To gain access to the battery turn back the carpet and remove the trim from around the battery. Unclip the battery cover retaining strap and lift off the cover.

Battery electrolyte specific gravity check (applicable to batteries with removable cell vent covers)

Remove the vent covers from the top of the battery.

Using a hydrometer check the specific gravity of the electrolyte in each cell and compare the readings obtained with the following tables.

Caution

The electrolyte in the battery is a corrosive acid. Do not allow the electrolyte to come into contact with the eyes, skin, fabric, or paintwork. Flush any contacted

areas immediately and thoroughly with water. If the eyes are affected, flush for at least 15 minutes and obtain prompt medical attention.

Chloride battery

Air temperature below 32°C (90°F)

Specific Gravity	Condition of battery
1.270 to 1.290	Fully charged
1.180 to 1.200	Half discharged
1.090 to 1.110	Fully discharged

Air temperature above 32°C (90°F)

Specific Gravity	Condition of Battery
1.220 to 1.240	Fully charged
1.150 to 1.170	Half discharged
1.070 to 1.090	Fully discharged

Lucas or Varta battery

Air temperature below 27°C (80°F)

Specific Gravity	Condition of Battery
1.270 to 1.290	Fully charged
1.180 to 1.200	Half discharged
1.090 to 1.110	Fully discharged

Air temperature above 27°C (80°F)

Specific Gravity	Condition of Battery
1.220 to 1.240	Fully charged
1.130 to 1.150	Half discharged
1.050 to 1.070	Fully discharged

If the specific gravity readings of all the cells are uniform and within the range 1.240 to 1.270 the battery is in an acceptable state of charge. If the readings are uniform but below 1.220 the battery should be recharged. Always remove the battery from the car for recharging.

If the specific gravity of the electrolyte in one cell differs markedly from the others (i.e. the reading is 0.040 or more, lower than the remainder), then a defect must be suspected and rectified as necessary.

Battery electrolyte level check

Before correcting the electrolyte level ensure that the battery is in a high state of charge (see battery electrolyte specific gravity check).

The level of the battery electrolyte in each cell should be approximately 5 mm (0.250 in) above the tops of the separators (Lucas or Varta battery) or contacting the blue bar situated above the separators (Chloride battery).

If the electrolyte level is low top-up using distilled water until the level is attained. **Do not overfill.**

Always ensure the top of the battery is clean prior to removal of the vent covers.

Battery voltage check

Sealed for life (maintenance free) batteries

The state of charge on this type of battery can only be checked by taking a voltage reading across the battery terminals using a digital voltmeter or multimeter. The instrument must be accurate to within 0.1 volts.

Before a reading is taken on batteries that have recently received a charge, the residual effect of the surface charge on the battery plates must be removed to avoid a false reading.

The surface charge can be removed by applying an electrical load to the battery e.g. by connecting a high rate discharge tester for 15 seconds or, if the battery is connected to the car by switching on the headlamps for one minute, before a reading is taken.

To ascertain the state of charge of the battery, compare the reading with the following table.

Voltage	State of charge
12.8 volts	100%
12.6 volts	82%
12.5 volts	75%
12.4 volts	60%

A minimum reading of 12.5 volts (75% charge) is acceptable. Below this reading the battery should be recharged.

2 Clean and check the battery terminals

The top of the battery should always be kept clean and dry.

If corrosion of the battery leads or terminals has occurred it should be removed as follows.

Disconnect the battery leads and using hot water or a dilute solution of ammonia carbonate, wash them thoroughly until all corrosive has been removed. Finally wash with clean water to remove the ammonia carbonate solution.

Remove any corrosive deposit from the terminal posts using a cloth moistened with ammonia carbonate solution then wash with clean water.

Dry the battery leads and terminal posts. Connect the battery leads to the terminal posts. Liberally coat the terminals with **petroleum jelly**.

3 Check all exterior lamps for operation

Actuate the respective switches and check for lamp illumination and function i.e. hazard warning and turn flashers, headlamp dip/main beam, headlamp flash.

When checking the fog lamps the main lighting switch must be on.

Cars with front fog lamps fitted

In the Park position the front lamps must be switched on before the rear fog lamps will illuminate.

On cars other than those conforming to a Swiss specification when only the rear fog lamps are switched on with the main lighting switch in the Head position, these lamps should extinguish when the headlamps are switched to main beam. If both front and rear fog lamps are in use the rear fog lamps should remain illuminated.

On cars conforming to a Swiss specification, the front and rear fog lamps should only illuminate together when the main lighting switch is in the Park position. If the switch is turned to the Head position, the front fog lamps should extinguish when the headlamps are on dipped beam. When main headlamp beam is selected both front and rear fog lamps should extinguish.

Cars without front fog lamps

The rear fog lamps will only illuminate when the main lighting switch is in the Head position and the headlamps are on dipped beam. When main beam is selected the rear fog lamps should extinguish.

The respective facia tell-tales should also be checked for illumination during these operations.

With the lighting in the Park and Head positions, switch on the ignition. Check the facia instruments for illumination; the panel illumination dimming switch should also be checked for correct operation.

4 Check all facia warning lamps for operation

Before carrying out the following checks firmly apply the parking brake; ensure the gear range selector is in the Park position and remove the gear range selector isolator from the fuseboard.

Ignition and oil warning lamps

Turn the ignition key to the RUN position, the ignition and oil pressure warning lamps should illuminate. Start the engine, both lamps should extinguish; switch off the ignition.

When the ignition key is turned to the ACC position the ignition warning lamp only should illuminate.

Warning panel cluster lamps

Move the gear range selector lever to the D position (do not insert the gear range selector isolator).

Apply the footbrake then turn the ignition key to the start position. All the warning panel cluster lamps should illuminate. With the ignition key held in the start position, turn the main lighting switch to the park and main beam positions; the intensity of illumination of the ice and low fuel warning panels should reduce. Switch off the ignition and lighting switch.

The two hydraulic system pressure warning lamps should also be checked as follows.

Turn the ignition key to the RUN position.

Depressurize the hydraulic systems by actuating the brake pedal between 50 and 60 times. The two brake pressure warning panels should illuminate.

When the panels have illuminated start and run the engine. Both panels should extinguish after approximately two minutes indicating that the hydraulic systems are pressurized. Switch off the ignition.

Fasten seat belt warning lamp

To check the seat belt warning lamp, open and close each door in turn; observe the lamp operation.

The seat belt warning panel should illuminate whenever a door is opened and extinguish

approximately seven seconds after the door is closed.

Note

All doors must be fully closed for the lamp to extinguish (i.e. not on first catch)

Hazard warning indicator

Depress the hazard warning switch, check that all the turn indicators and the facia warning lamp are flashing.

5 Check all interior lamps for operation

Ensure all the doors are fully closed and the interior lights are extinguished. Open the driver's door; the rear section of the central roof lamps should illuminate. Fully close the door; the roof lamps should remain illuminated for approximately seven seconds.

From 1985 model year cars the rear roof lamps and footwell lamps should also illuminate when the door is opened. If the gear selector lever is moved from the Park position on these cars, with the ignition key in the RUN position, the lamps will extinguish immediately all the doors are closed.

When carrying out these operations also check that the door open warning lamp and step lamp are illuminated with the door in the open position; these lamps should extinguish immediately the door is fully closed.

Repeat the check on the remaining doors.

Note

If the doors are only closed to the first catch position the lamps should remain illuminated.

Check the operation of the front compartment personal lamps as follows.

Withdraw the main lighting switch; the front section of the driver's roof lamp should illuminate.

Operate the map lamp switch; the front section of the front passengers roof lamp should illuminate.

On cars fitted with vanity mirror illumination, move the switch to the mirror position.

Lower the passengers sun visor; the lamp situated above the visor should illuminate.

Withdraw the visor from its retaining clip; the lamp should extinguish. The lamp should also extinguish when the visor is moved to its raised position, even when the switch is on.

The operation of the rear roof lamps should be checked by operating the switches situated on the rear compartment vanity mirror surrounds.

Press the upper portion of the three position switch. The front section of the respective roof lamp should illuminate. Pressing the lower portion should illuminate the rear section of both rear lamps. With the switch in the central position both lamps should be off. Repeat the operation on the opposite side of the car.

6 Check the horns for operation

Examine the electrical connections to each horn to ensure they are in good condition. Clean the horns and remove any foreign matter that may have collected in the horn trumpets.

Switch on the ignition; press the horn button several times to ensure the horn button is making a

good contact and that both horns are functioning correctly each time it is pressed.

On Bentley Turbo R cars move the horn selection switch to the air horn position and repeat the checking procedure.

7 Replenish the windscreen and headlamp washer reservoir

Dependent on the time of manufacture, the windscreen and headlamp wash systems will utilize either a single reservoir for both functions or two independent reservoirs.

The combined (single) reservoir and the windscreen wash reservoir of the independent systems should be topped-up to their maximum levels using the correct mixture of washer fluid and water.

The independent headlamp wash reservoir should be topped-up to its maximum level with clean water.

During winter conditions, a solution of 30% isopropyl alcohol and 70% water should be used. This mixture will provide frost protection down to a temperature of approximately -10°C (14°F).

Topping-up levels

Bottom of filler neck on both reservoirs.

8 Check the condition of the windscreen wiper blades and headlamp wash brushes (if fitted).

Lift the wipers from the windscreen and inspect them for wear or damage. Renew the blades if necessary.

To renew a wiper blade one of the following methods should be carried out dependent on the type of blade to wiper arm attachment.

On early cars lift the wiper arm away from the windscreen then press the small tab situated in the end of the arm to release the blade retaining catch. Pull the blade from the arm and fit the new blade. Check that the new blade is secured by the retaining catch then return the blade to the windscreen.

To renew a wiper blade on later cars proceed as follows.

Drivers side of the windscreen. Lift the wiper arm from the windscreen. Press the top half of the blade forward until the blade is released from its location clip on the wiper arm. To fit the new blade, position it on the wiper arm and press it firmly into the location clip.

On the passenger side of the windscreen, lift the wiper arm from the windscreen and pivot the blade backwards through 90° . Press the small release tag, situated on the underside of the blade pivot block and push the blade out of the crooked end of the wiper arm. Withdraw the wiper blade from the arm. Fit the new blade by reversing the removal procedure.

Note

Care must be taken during these operations.

Ensure that the wiper arm is not allowed to spring back onto the windscreen when the blade has been removed or damage to the windscreen could occur.

On cars fitted with headlamp wash/wipe brushes, examine the brushes for wear or damage and renew if necessary.

To renew a brush, carefully remove the retaining nut from the spindle. Note the position of the brush

then withdraw it from the splined spindle. Fit the new brush by reversing the removal procedure ensuring that the brush is in the correct park position.

9 Check the windscreen and headlamp wash/wipe for correct operation

Before carrying out the following check ensure that the windscreen is clean.

Switch on the ignition and press the windscreen wash/wipe switch. The windscreen wipers should operate and the fluid from the washer jets should impinge on the windscreen approximately 419 mm (16.5 in) from the centre line of the windscreen and 190 mm (7.5 in) below the windscreen top finisher. The wash/wipe function should continue until the switch is released.

On release of the switch the washer should cease while the wipers should continue for approximately four strokes before returning to the park position.

Turn the main lighting switch to the HEAD position. The headlamps cleaning function will only operate when the headlamps are illuminated. Press the wash/wipe switch. The headlamp brushes and washer jets should operate until the switch is released, the brush giving one full wipe cycle after the jet flow has ceased.

On cars fitted with power wash jets (no brushes) the jets should only operate for half a second when the wash/wipe switch is depressed. To repeat the wash it will be necessary to release then depress the switch again. However, the windscreen wash/wipe function will continue to operate as described previously while the switch is held depressed.

10 Check the alternator for correct operation

For details of the alternator test procedure and brush renewal, reference should be made to Chapter M of the Workshop Manual.

11 Check the condition of the starter motor brushes and pinion

For details of the procedure required to carry out the inspection of the starter motor brushes and pinion, reference should be made to Chapter M of the Workshop Manual.

Automatic air conditioning system

1 Check the scuttle intake grille is free from obstruction

Check the air intake grilles and foam filters, situated behind the car bonnet, for obstruction (i.e. leaves, dirt, etc.). If necessary carefully remove the grille retaining screws, lift the grilles from the body and clean out the air intake ducts; also ensure the air intake duct drain tubes are free from obstruction.

2 Check the refrigeration system for correct operation

For details of the procedure required to carry out this operation reference should be made to Chapter C of the Workshop Manual.

Body

1 Check the condition and operation of the seat belts

The following checks should be carried out on the retractable seat belts.

Fully withdraw the seat belt from the reel; examine the webbing for any signs of wear or damage. Allow the belt to return to the stowed position.

To check the operation of the retractable belt, fit the belt and then give the webbing of the diagonal belt a sharp pull. Ensure that the belt locks and then returns to the normal roller action immediately the belt is released.

With the fastening tongue of the belt locked in the retaining clasp; ensure the tongue is securely held and is released immediately the release button marked PRESS is operated.

The alternative method of checking the seat belts is to select an open stretch of road, then, when the road is free from any potential danger, accelerate the car to 24 km/h (15 mile/h) and brake sharply from this speed; ensure that the belt locks and then subsequently releases. If this method of test is used, it will be necessary to carry a passenger to enable the passenger seat belts to be tested.

Check the rear seat lap belt (if fitted) for condition and correct locking and release.

Report any defects to the owner.

When seat belt replacement is necessary only belts approved by Rolls-Royce Motors Limited should be fitted.

2 Check that all body drains are free from obstruction

Examine the body drain holes; remove any foreign matter that may be obstructing the holes. Take care not to damage the paintwork.

3 Lubricate the spare wheel carrier lowering bolt

Turn back the carpet on the luggage compartment floor to expose the spare wheel inflation trap and spare wheel carrier lowering bolt head. Remove the inflation trap cover; if a spare wheel retainer is fitted, it should be released.

Rotate the spare wheel carrier lowering bolt anti-clockwise until the carrier is fully lowered. Remove the spare wheel from the carrier.

Lubricate the carrier lowering bolt using a recommended lubricant. Raise and lower the carrier to distribute the lubricant over the full length of the carrier bolt.

Check the condition of the spare wheel as described under the heading Wheels.

Fit the spare wheel onto the carrier. Ensure that the inflation valve is in line with the inflation trap in the luggage compartment floor, then fully raise the carrier.

Fasten the spare wheel retainer (if fitted), and fit the tyre inflation trap rubber and carpet.

Wheels**1 Check all tyre pressures**

Check the tyre pressures including the spare when the tyres are cold; adjust if necessary. The inflation pressure of the spare tyre should be adjusted to the highest tyre pressure (i.e. rear wheel).

Do not check pressures immediately after or during a run when the tyres are warm.

Always ensure that the valve caps are fitted after checking.

On wheels fitted with aluminium tyre inflation valves, always ensure that an aluminium valve cap is fitted. The fitting of a differing metal cap will result in corrosion and prevent cap removal.

2 Check the condition and tread depth of the tyres

Examine the tyres, including the spare, for any signs of damage or tyre wall cracking etc.

Carefully remove any stones or other objects that may be lodged in the tyre treads.

Check the depth of tread at several points around each wheel using a tread depth gauge.

To enable a visual check to be made, tread depth indicators are incorporated into the tyre construction. These indicators are integral moulded ribs, spaced at intervals around the circumference of the tyre and extend across the full width of the tread in all primary grooves. When one or more of these indicators are flush with the tread, only 1,6 mm ($\frac{1}{16}$ in) or less of tread depth remains, and a new tyre is required.

If the condition of the tyres is not satisfactory or the tread depths do not conform to the legal requirements of the country in which the car is operating, the owner should be notified and asked to authorize the fitting of new tyres.

For full information on tyre fitting, balancing, etc. reference should be made to Chapter R of the Workshop Manual.

Test**1 Road test the car for satisfactory performance**

On completion of the respective service schedule operation, carefully road test the car for satisfactory performance.

If new brake pads have been fitted, the running-in and bedding procedures should be carried out as described under, Check the brake disc pads for wear and Check the parking brake pads for wear.

When the road test has been completed, the car should be fully inspected for any leaks, fouls, etc., and rectified as necessary.

The transmission fluid level and engine oil level should be finally checked after the test, (see Check the transmission fluid level and Check the engine oil level).

After the ignition has been switched off, the electrically operated fan situated behind the radiator shell may continue to operate. This operation is dependent on engine coolant temperature and will continue whenever the coolant is above the fans predetermined temperature setting.

Important

When stopping after a sustained period of high speed driving, it is advisable to let the engine idle for a few seconds before switching off, to allow the turbocharger to cool. Normal parking manoeuvres will provide this time period.

Ensure that all controls, door handles, steering wheels, etc., are clean and that any dirt which may be attributed to the service schedule is completely removed.

Service schedule procedures*Cars conforming to Australian specifications*

Contents	Pages					
	Silver Spirit Mulsanne Silver Spur	Mulsanne Turbo	Bentley Eight	Bentley Turbo R	Corniche/ Continental	Camargue
1981/85 (inclusive) model year cars	B2-3	—	—	—	B2-3	B2-3



WARNING

Use only **Hydraulic System Mineral Oil (LHM)** to replenish the braking and levelling systems.

Do not use Brake Fluids (Castrol RR363, Universal, or any other type). The use of any type of brake fluid, even in very small amounts, will cause component failure necessitating extensive rectification to the braking and levelling systems of the car.

Always ensure before fitting any seals, hoses, pipes, etc., that they are suitable for a mineral oil system. For details of correct component identification reference should be made to Chapter G of the Workshop Manual.

Always ensure that a sealed container of **Hydraulic System Mineral Oil (LHM)** is fitted adjacent to the battery.

Always ensure that no foreign matter enters the systems when work is being carried out.

General information

The information contained in this chapter should be used in conjunction with the service schedule charts and Workshop Manuals.

The following are the Workshop Manual publications to which reference should be made.

Silver Spirit, Silver Spur, and Mulsanne from vehicle identification number (VIN)

SCAZ0000ACH01001 and Corniche/Continental from (VIN) *SCAZ00006CCH05037*, publication number TSD 4400.

Corniche prior to vehicle identification number (VIN)*SCAZD0006CCH05037* and Camargue, publication number TSD 4200.

Car protection

Prior to commencing a service schedule, the car should be suitably protected. For this purpose car protection kit RH 2662, wing covers RH 2684, and wing cover liners RH 2685 should be used.

Regular maintenance

In addition to the service schedules listed, the following maintenance should be carried out.

Engine

Weekly or every 800 kilometres (500 miles) whichever is the earlier; check the engine oil by means of the dipstick; top-up if necessary.

Service schedule procedures

1981/85 (inclusive) model year cars

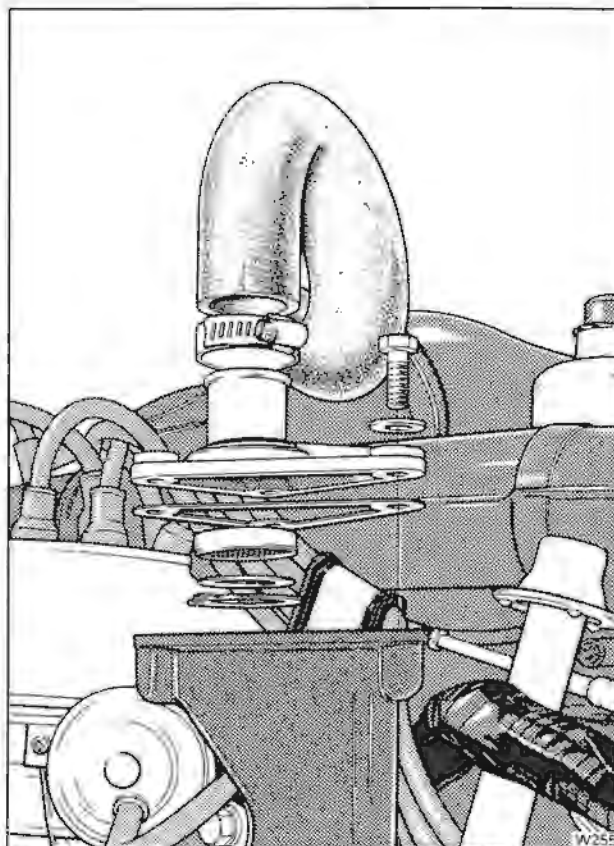


Fig. B2-1 Crankcase breather tube flame trap

Lamp units

Weekly; check the lamp units for operation; rectify any faults.

Tyre pressures

Weekly; check the tyre pressures including the spare; adjust if necessary.

Windscreen and headlamp washer reservoirs

Weekly; check the washer fluid level; top-up if necessary.

Hydraulic reservoirs

Monthly; check the level of hydraulic mineral oil in the reservoirs.

Depressurize the hydraulic systems by pumping the brake pedal until the low brake pressure warning panels on the facia illuminate. Continue to pump the pedal for at least a further 20 applications to ensure complete depressurization. Start and run the engine

for four minutes with the car unladen, prior to checking the level. Top-up if necessary to the indicated maximum level. **Use only Hydraulic System Mineral Oil (LHM).** Refer to page B2-20 for further information before carrying out this operation.

Engine cooling system

Every three months; check the coolant level. If necessary top-up with the correct anti-freeze/water mixture (see page B2-12).

Crankcase emission control system

1 Clean the crankcase breather tube flame trap

The engine crankcase is ventilated through a breather tube connected to the carburettor air induction system. A flame trap in the form of filter gauze is fitted into the system at the rear of 'A' bank cylinder head (see fig. B2-1) and should be cleaned as follows.

Withdraw the windscreen wiper motor relay (wiper 3) (see fig. B2-23, item A) situated on a bracket adjacent to the windscreen washer reservoir.

Remove the cover from the windscreen wiper drive mechanism to gain access to the crankcase breather connection.

Disconnect the breather hose from the flame trap housing.

Remove the three setscrews from the housing cover and remove the cover.

Remove the circlip retaining the gauze filter situated on the underside of the housing cover.

Thoroughly clean the gauze with a suitable cleaning solvent and dry with compressed air.

Ensure that the breather pipe and housing are also clean.

Fit the filter gauze and housing cover by reversing the removal procedure.

2 Clean the choke butterfly housing adapter

The adapter is situated on the choke butterfly housing and is part of the crankcase breather system (see fig. B2-2).

To clean the adapter remove the retaining setscrew and detach the adapter from the breather pipe.

Clean the adapter using a recommended cleaning

solvent and ensure that the holes are free of obstruction; dry with compressed air.

Ensuring that the 'O' ring is in good condition, fit the adapter by reversing the removal procedure.

Exhaust emission control system

1 Remove and clean the E.G.R. valves and feed pipes

Remove the valves and heatshield as described in the Workshop Manual.

Using a scraper, remove all carbon film from the valve and mounting flange faces; complete the operation with a wire brush.

Clean the carbon from the valves using a wire brush fitted into a portable drill. Take care not to damage the valve seating area.

Thoroughly blow out the valves with compressed air to ensure that all loose carbon particles are removed.

Remove the feed pipe from the balance pipe and clean as much carbon deposit as possible from the inside of the pipe and joint faces.

Use a wire brush to complete the cleaning operations.

Thoroughly blow out the pipe with compressed air to ensure that all loose carbon particles are removed.

Fit the E.G.R. valves and feed pipe after completing the cleaning operations as described in Operation 2.

2 Clean the orifices in carburettor 'Tee' piece

Remove the E.G.R. distribution pipes.

With a pointed scraper clean as much carbon deposit as possible from inside the distribution pipes and the joint faces. Particular attention should be given to the carburettor end of the pipes, because the majority of the carbon deposit will be found in this area.

Using wire brushes complete the cleaning operation on the distribution pipes.

With a pointed scraper remove the carbon deposits from the carburettor 'Tee' piece connection orifices.

Before fitting the distribution pipes thoroughly blow out the pipes and carburettor 'Tee' piece connections with compressed air.

Fit all components in the E.G.R. system as described in the Workshop Manual.

3 Check the E.G.R. valves for correct operation

The E.G.R. system is automatically controlled by exhaust back pressure to maintain a constant E.G.R. proportion over normal road load conditions. Checks to ensure the correct operation of the valves are only required under no load conditions as follows.

Connect an electric impulse tachometer to the engine in accordance with the manufacturer's instructions.

Ensure that the parking brake is firmly applied and that the gear range selector is in the Park position.

Ensure that the pressure tapping cap fitted to the weakening device is correctly tightened.

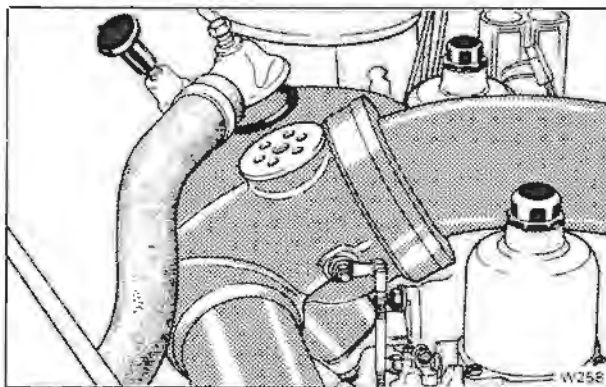


Fig. B2-2 Choke butterfly housing adapter

Start and run the engine until normal operating temperature is attained.

Ensure that the engine has run for at least 25 minutes after the engine coolant thermostat has opened.

Increase the engine speed slowly noting the operation of the E.G.R. valves.

The E.G.R. valves should commence to open between 800 rev/min and 1000 rev/min.

If the valves either fail to open or open late check for the following possible causes.

- Failed E.G.R. cut-out switch.
- Failed E.G.R. cut-out solenoid.
- Failed E.G.R. full throttle cut-out micro-switch.
- Leak or blockage in the carburettor signal pipe to weakening device cut-off solenoid.
- Leak or blockage in the E.G.R. valve signal pipe or hose from the E.G.R. cut-out solenoid to the E.G.R. valves.
- Advanced ignition timing.

If the valves begin to open early check for the following possible cause.

- Retarded ignition timing.

If the E.G.R. valves do not function correctly after carrying out these tests, replace the offending valve(s) with new units.

4 Check the condition and tension of the drive belt; adjust or renew as necessary

Before commencing to adjust the drive belt inspect it for signs of wear or cracking. If the belt is found unsatisfactory, it should be renewed.

The belt tension must be checked at a point midway between the two pulleys (see fig. B2-3) by use of a belt tension meter or by applying a spring balance to give a 9,5 mm (0.375 in) belt tension at a specified load.

Belt dressing must not be applied to prevent belt slip.

Coolant pump to air pump

Load may be applied on either side of the belt run.

New belt and retensioning load

Belt tension meter	18,1 kgf to 22,7 kgf (40 lbf to 50 lbf)
Spring balance	3,6 kgf to 5,9 kgf (8 lbf to 13 lbf)

The tension of the belt is adjusted by altering the position of the air pump.

Slacken the air pump pivot setscrew.

Slacken the setscrew securing the air pump to the adjustment strut.

Slacken the adjustment strut pivot setscrew.

Turn the air pump around its pivot point to adjust the belt tension and tighten the setscrew in the adjustment strut slot. Check the belt tension and repeat the adjustment operation if necessary.

When the belt tension is correct, tighten the remaining two setscrews.

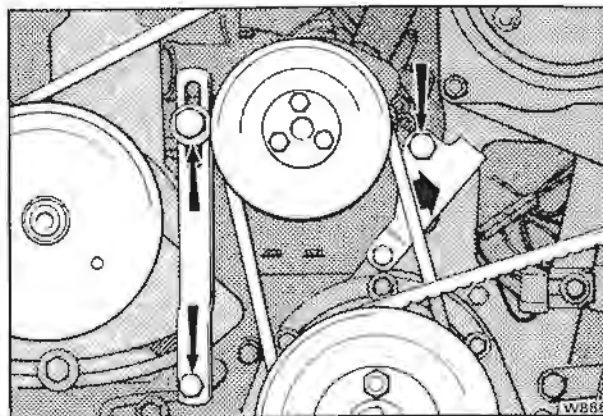


Fig. B2-3 Air pump drive belt adjustment and tension check point

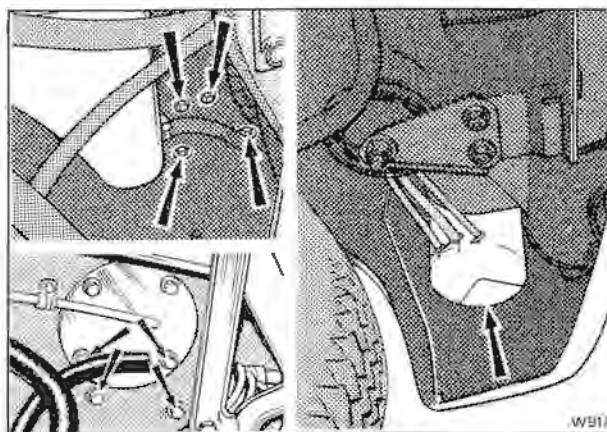


Fig. B2-4 Fuel evaporative emission control canister and mounting bracket setscrews

5 Check the air injection system for leaks and correct operation

Carry out the usual workshop safety precautions.

Check the air injection system for air leaks as follows.

Ensure that the ignition is switched off.

Visually inspect the condition of all hoses, pipes, and joints associated with the air injection system.

Ensure that all worm drive clips are tight.

Start the engine and listen carefully for any evidence of an air leak from the system.

If an air leak is suspected it is permissible to coat the component or hose with a soap solution; soap bubbles will confirm an air leak.

To check the air diverter valve the following test should be carried out.

Run the engine at 2000 rev/min.

Ensure that **air does not escape** from the air diverter valve exhaust ports situated around the body of the air diverter valve.

If air does escape from the air diverter valve exhaust ports, check the pressure relief valve within the assembly as follows.

Blank off the two connections to the check valves. Apply air pressure to the air diverter valve via the air pump connection.

Ensure that the pressure relief valve works within the acceptable limits quoted, 0,5 kgf/cm² to 0,6 kgf/cm² (7.4 lbf/in² to 8.4 lbf/in²).

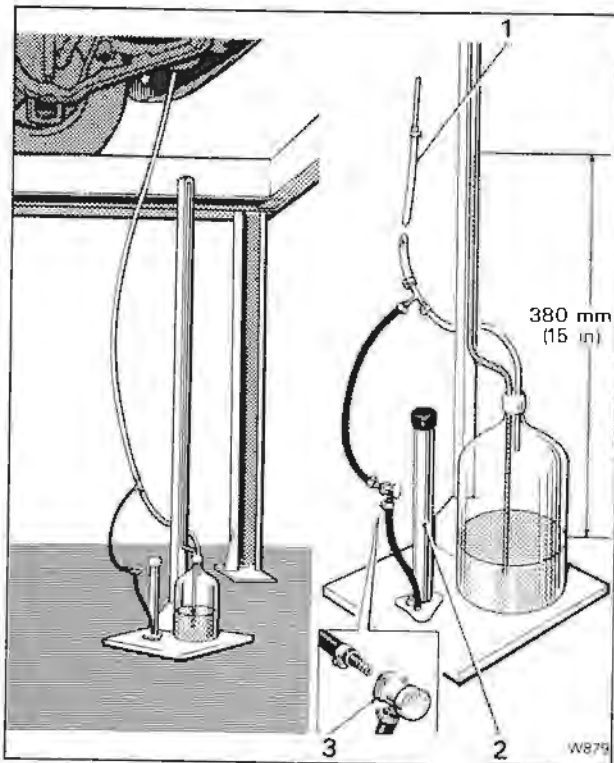


Fig. B2-5 Leak check test equipment

- 1 Connection to fuel tank/canister hose
- 2 Pump
- 3 One-way pressure valve

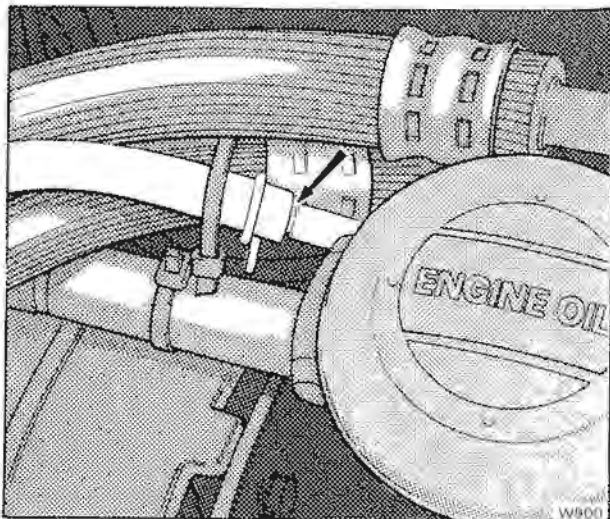


Fig. B2-6 Purge line restrictor

Fuel evaporative emission control system

1 Renew the evaporative control canister

Carry out the usual workshop safety precautions.

Locate the control canister under the left-hand front wing (see fig. B2-4). Using the special pliers RH 8090 remove the securing clip from the canister end of the fuel tank to canister flexible hose.

Withdraw both hoses fitted to the control canister. Label each one to facilitate assembly.

Unscrew the four setscrews retaining the control canister in position (see fig. B2-4). Support the weight of the canister before the last setscrew is removed. Collect the washer fitted under the head of each setscrew.

Withdraw the control canister from under the wing. Note the position of the control canister in relation to the mounting bracket and unscrew the retaining worm drive clip.

Fit the new canister to the mounting bracket and tighten the retaining worm drive clip.

Ensure that the canister is in the correct position relative to the mounting bracket.

Fit the assembly to the vehicle by reversing the procedure given for removal, noting that new hose securing clips should be used.

2 Check the condition of all pipes, hoses, and connections

Carry out the usual workshop safety precautions.

Locate the fuel evaporative control canister.

Withdraw the fuel tank evaporative hose from the canister and connect it to the test equipment shown in figure B2-5.

Apply air pressure to the fuel tank hose via the test equipment until a reading of 380 mm (15 in) H₂O is attained and close the pressure supply.

After five minutes again check the pressure reading, this should not have fallen by more than 12,7 mm (0.5 in).

If the pressure drop is more than 12,7 mm (0.5 in), progressively treat all joints in the system with soap solution to detect air leaks.

Rectify any air leaks and again leak check the system.

During the five minutes leak down, visually inspect the hoses, pipes, and connections of the system that are routed under the car. Commence where the hose exits from the body adjacent to the left-hand rear road spring and follow the system to the control canister.

Ensure that the hoses are secure in the mounting clips.

When the system is satisfactory, detach the test equipment and connect the hose to the control canister. Secure the hose with a new clip.

3 Check the purge flow rate

Carry out the usual workshop safety precautions.

Remove the retaining clip from the purge line restrictor hose (see fig. B2-6).

Disconnect the hose at the purge line restrictor. Leave the restrictor in the hose to the engine.

Connect a rotameter assembly RH 8725 into the line, between the restrictor and the open pipe to the valance connection.

Connect an impulse tachometer to the engine in accordance with the manufacturer's instructions.

Start and run the engine at 650 rev/min; the reading on the flowmeter should be between 50 ft³/h and 70 ft³/h.

If the purge flow rate is outside the limits specified, refer to the Workshop Manual TSD 4400, Chapter U.

Should investigation reveal the control canister to be faulty, proceed to change it as described under the heading Renew the evaporative control canister.

Engine

1 Change the engine oil

The sump should be drained when the engine is warm, preferably after the car has completed a run.

To drain the oil, position the car over a pit or on a ramp.

Place a container in position beneath the drain plug situated on the right-hand side of the sump (see fig. B2-7). Remove the drain plug and allow the oil to drain from the sump.

Do not flush the sump with paraffin or petrol.

Fit the drain plug ensuring that the washer is correctly positioned and in good condition.

Fill the engine sump with recommended lubricant until the MAX level is reached on the dipstick.

Carry out the full oil level check procedure as described under Check the engine oil level.

2 Renew the engine oil filter

Drain the engine oil as described under Change the engine oil.

Place a container under the filter to collect any oil that may be spilt.

Remove the filter by unscrewing it from the engine in an anti-clockwise direction (see fig. B2-8).

Thoroughly clean the filter seating face on the engine.

Lightly smear the rubber sealing ring on the new filter with clean engine oil.

Screw the filter onto the pedestal until the rubber seal contacts the sealing face then tighten the filter a further half turn; **do not overtighten**.

Fill the engine with clean engine oil until the MAX level is reached on the dipstick. Run the engine and check the filter joint for leakage.

Carry out the full oil level check procedure as described under Check the engine oil level.

Check the engine oil level

In order to obtain an accurate indication of the oil level, ensure that the car is standing on level ground. Check the oil level by means of the dipstick marked ENGINE (see fig. B2-9).

It is recommended that the oil level is checked when the engine is cold. If the engine has been running, sufficient time should elapse after it has stopped to allow the oil to drain into the sump. Do not

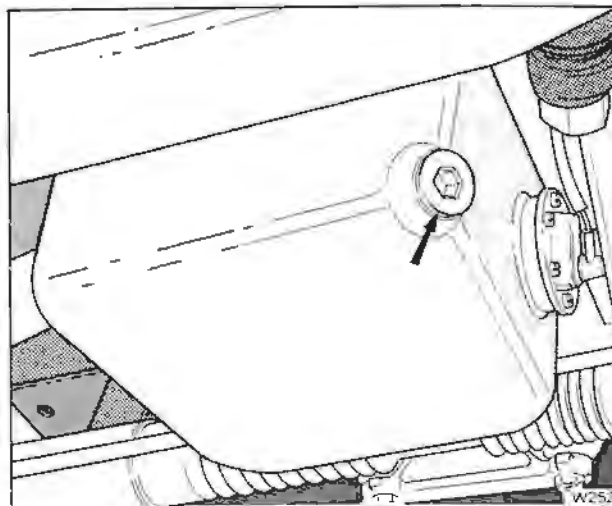


Fig. B2-7 Engine sump drain plug

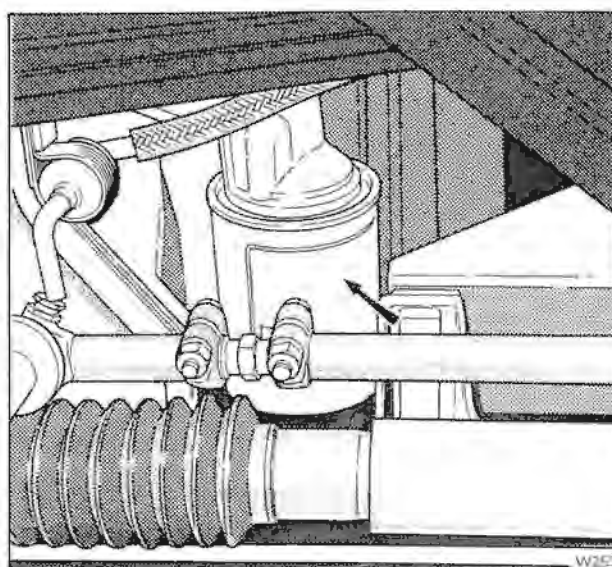


Fig. B2-8 Engine oil filter location

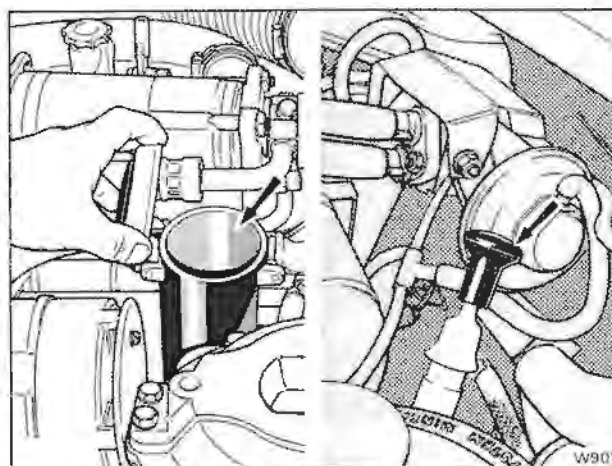


Fig. B2-9 Engine oil filler and dipstick

check the oil level with the engine running.

To replenish the sump with oil, open the filler cap marked **ENGINE** (see fig. B2-9). Add clean oil to the engine and after allowing sufficient time for the oil to reach the sump check that the oil is up to the **MAX** mark on the dipstick. **Do not overfill.**

3 Check the drive belts

Before commencing to adjust the drive belts inspect them for signs of wear or cracking. Any belts found unsatisfactory should be renewed.

If after adjustment, a matched pair of belts have a marked variation in tension, a new pair should be fitted. Always renew both belts in a matched pair even if only one belt is faulty.

Two belt tension loads are specified; a new belt load for replacement (new) belts and a retensioning load for belts which are satisfactory for further service.

The belt tension must be checked at a point midway between two pulleys (see fig. B2-10) by use of a belt tension meter or by applying a spring balance to give a 9,50 mm (0.375 in) belt deflection at a specified load.

The variation in the spring balance loads for similar belt tension meter loads is due to the varying lengths of belt between individual belt centres.

Belt dressing must not be applied to prevent belt slip.

Crankshaft to coolant pump

Load may be applied on either side of the belt run.

New belt load

Belt tension meter 27,2 kgf to 31,7 kgf
(60 lbf to 70 lbf)

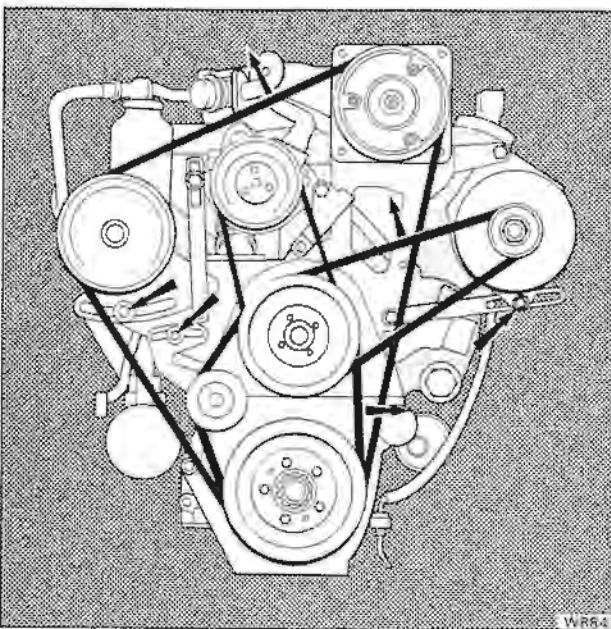


Fig. B2-10 Engine drive belt adjustment and tension check points

Spring balance 7,5 kgf to 8,2 kgf
(16.5 lbf to 18 lbf)

Retensioning load
Belt tension meter 22,7 kgf to 27,2 kgf
(50 lbf to 60 lbf)

Spring balance 6,8 kgf to 7,5 kgf
(15 lbf to 16.5 lbf)

The tension of this matched pair of belts is adjusted by altering the position of the jockey pulley (see fig. B2-10).

Slacken the nut and setscrew securing the jockey pulley arm. Pivot the jockey pulley to adjust the belt tension then tighten the nut and setscrew. Check the belt tension and repeat the adjustment procedure if necessary.

Coolant pump to alternator

Load may be applied on either side of the belt run.

New belt load

Belt tension meter 36,3 kgf to 40,8 kgf
(80 lbf to 90 lbf)

Spring balance 5,0 kgf to 5,9 kgf
(11 lbf to 13 lbf)

Retensioning load

Belt tension meter 31,7 kgf to 36,3 kgf
(70 lbf to 80 lbf)

Spring balance 4,1 kgf to 5,0 kgf
(9 lbf to 11 lbf)

The tension of the belt is adjusted by altering the position of the alternator (see fig. B2-10).

Slacken the setscrew securing the alternator at the upper mounting point.

Slacken the setscrew securing the adjustment strut to the front mounting plate, also the nut and bolt in the adjustment slot. Pivot the alternator to adjust the belt tension then tighten the nut and bolt in the adjustment slot. Check the belt tension and repeat adjustment if necessary.

When the tension is correct finally tighten the remaining setscrews and check the tension again.

Crankshaft to steering pump/refrigeration compressor

Load must be applied on the top run of the belts. Each belt to be checked individually.

New belt load

Belt tension meter 40,8 kgf to 45,5 kgf
(90 lbf to 100 lbf)

Spring balance 6,3 kgf to 7,7 kgf
(14 lbf to 17 lbf)

Retensioning load

Belt tension meter 36,3 kgf to 40,8 kgf
(80 lbf to 90 lbf)

Spring balance 4,1 kgf to 6,3 kgf
(9 lbf to 14 lbf)

The tension of this matched pair of belts is adjusted by altering the position of the steering pump (see fig. B2-10). Slacken the setscrew in the steering pump mounting bracket slot situated below the pump pulley.

Slacken the pump pivot setscrew and the union on the supply hose at the rear of the pump.

Pivot the pump to adjust the belt tension then tighten the setscrew in the adjustment slot. Check the belt tension and adjust again if necessary. When the tension is correct tighten the pivot setscrew and again check the belt tension. Finally tighten the supply hose connection; ensuring that the soft rubber protective sleeve has clearance or minimal contact with the coolant pump to manifold elbow.

4 Renew the air filter element

Silver Spirit, Silver Spur, Mulsanne, and Convertible cars

The air filter element is situated in the air intake housing at the front right-hand side of the engine compartment (see fig. B2-11).

To gain access to the element release the two toggle clips retaining the air blending valve housing to the air cleaner housing. Carefully free the joint and move the housing away from the air cleaner.

Unscrew the worm drive clip securing the carburettor intake hose to the air cleaner housing. Detach the hose.

Support the air cleaner housing and release the three toggle clips securing the housing to the valance.

Carefully free the joint, then move the housing towards the engine and withdraw the housing and air filter element from the car.

Remove the filter element from the housing.

Ensure that the inside of the air cleaner housing (both the sections removed and the fixed sections in the valance) is clean.

Inspect the joint seals for serviceability. Renew if necessary.

Two types of filter element have been fitted, a tubular type, open at both ends or a conical type with the small end of the cone closed.

Dependent on the type of filter element to be fitted proceed as follows.

Tubular type

Enter the new element into the wing valance.

Fit the air cleaner housing to the valance. Ensure that it is located inside the valance retaining clamp ring. Hold the rubber seal in position over the housing spigot by placing the fingers of one hand through the air intake aperture and onto the seal.

To allow the housing to pass over the end of the filter, it will be necessary to slightly withdraw the element during this operation.

Whilst ensuring that both the air filter element and sealing ring are correctly positioned on the housing spigot fit the assembly to the wing valance.

Align the three housing toggle clips with their respective securing points. Fasten the toggle clips.

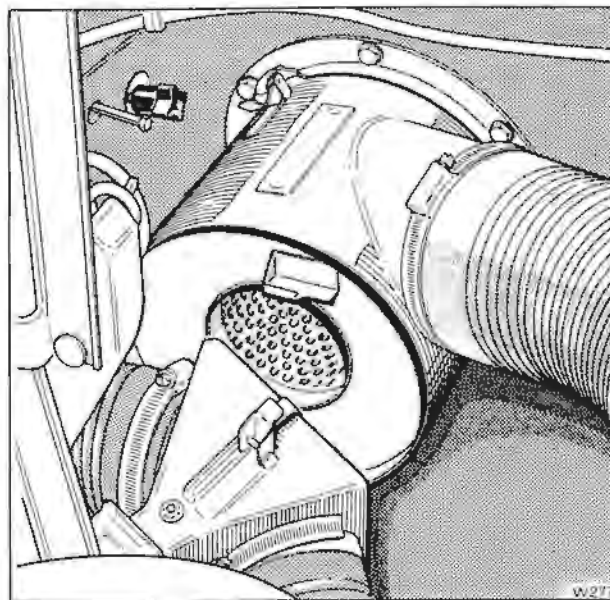


Fig. B2-11 Air filter (Silver Spirit, Silver Spur, Mulsanne, and Convertible cars)

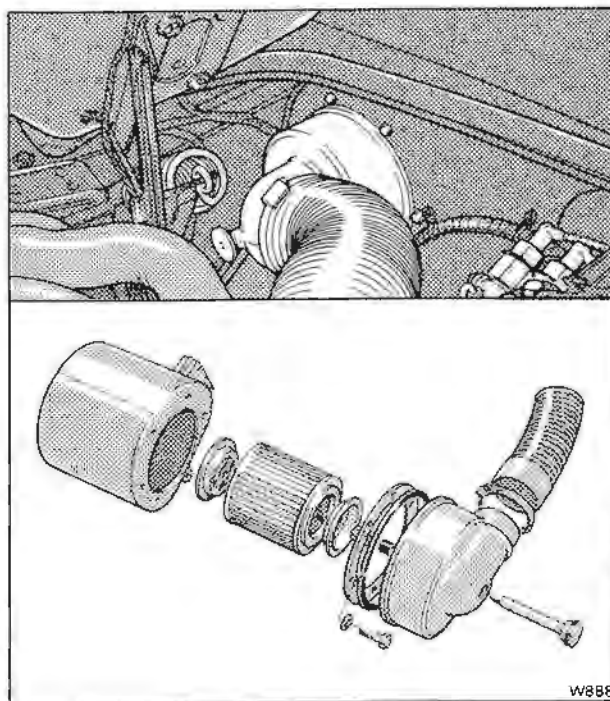


Fig. B2-12 Air filter (Corniche Saloon and Camargue)

Fit the remaining components by reversing the removal procedure.

Conical type

Locate the large end of the new filter element onto the locating spigot on the inside of the removable half of the housing.

Carefully position the housing and filter onto the valance allowing the filter to pass into the valance mounted section of the housing. Locate the small (blank) end of the filter into the spigot in the valance housing. Align the three housing toggle clips with their respective securing points. Special care should be taken during these operations to ensure that the paper element is not damaged during insertion.

Ensure that the filter is correctly positioned on the location spigots, then secure the three toggle clips. It is essential that the filter is correctly located on the spigots before the toggle clips are fastened down, otherwise there is a serious risk of crushing the filter element.

Fit the remaining components by reversing the removal procedure.

Corniche Saloon and Camargue

The air filter element is situated in the air intake housing at the front right-hand side of the engine compartment (see fig. B2-12).

To gain access to the element, unscrew the worm drive clip securing the intake hose to the carburetters inlet duct. Withdraw the hose.

Unscrew the knurled securing setscrew situated on the side of the assembly.

Withdraw the cover.

Unscrew the hexagonal nut from the centre stud. Withdraw the end plate, filter, and second end plate.

Fit the new element to the assembly by reversing the removal procedure. Refer to figure B2-12 for the correct assembly sequence.

5 Check the carburettor damper oil level

The upper portion of the guide spindle, attached to the air valve piston in each carburettor is hollow and should contain the same type of oil as used in the engine.

To check the oil level, unscrew the cap and withdraw the damper from the air valve piston (see fig. B2-13). Top-up the damper reservoir with clean

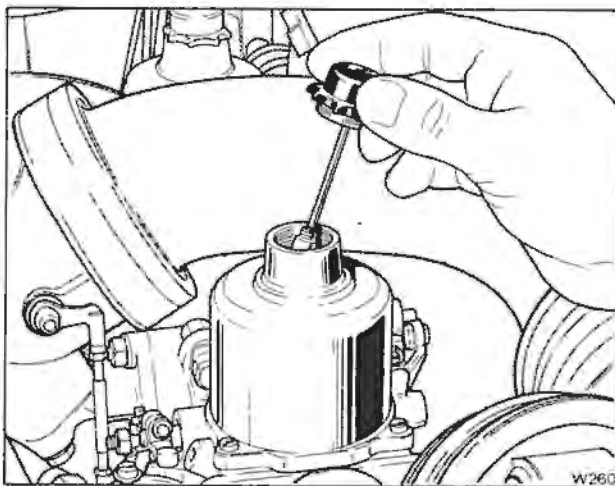


Fig. B2-13 SU Carburettor damper

engine oil to approximately 13 mm (0.50 in) from the top of the tube. Fit the damper into the tube and screw the cap firmly into position.

6 Clean the carburettor air valve pistons

Remove the upper half (suction chamber, etc.) of each carburettor as described in Chapter U of the Workshop Manual.

Dismantle each upper half but ensure that the parts are retained with their respective carburettor.

Clean the inside of the suction chamber, the piston and piston rod guide with fuel or methylated spirit (denatured alcohol) and wipe dry. **Abrasives must not be used.**

Examine the suction chamber and piston for damage and signs of scoring.

Check that all the balls are in the piston ball race (2 rows, 6 per row). Fit the piston into the suction chamber, without the damper and spring, hold the assembly in a horizontal position and spin the piston. The piston should spin freely in the suction chamber without any tendency to stick.

Assemble the parts as described in the Workshop Manual (Carburettors - To assemble).

7 Check the float chamber depression; adjust if necessary

For details of the procedure necessary to carry out this operation reference should be made to Chapter U of the Workshop Manual.

8 Check the choke operation and choke stove pipe flow; rectify if necessary

Apply the parking brake and ensure that the gear range selector lever is in the Park position. Remove the gear range thermal cut-out from the fuseboard.

Start and run the engine until normal operating temperature is attained. Stop the engine.

Connect an impulse tachometer to the engine in accordance with the manufacturer's instructions.

Disconnect the stove pipe union at the intake elbow and connect a flowmeter to the pipe using connector RH 8945. The flowmeter must be a rotameter type capable of measuring 2,9 m³/h (100 ft³/h).

Start and run the engine at idle speed (650 rev/min); observe the flowmeter, a correct reading is between 1,41 m³/h and 1,51 m³/h (50 ft³/h and 55 ft³/h).

If the reading is outside the prescribed limits, reference should be made to Chapter U of the Workshop Manual.

9 Check the choke fast-idle speed; adjust if necessary

For full details of choke fast-idle settings reference should be made to Chapter U of the Workshop Manual.

10 Renew the sparking plugs

Sparking plug type Champion RN 12 YC or RN 12 Y. Plug gap setting 0,89 mm (0.035 in).

Before removing the sparking plugs the surrounding area should be thoroughly cleaned to prevent the ingress of foreign matter when the plugs are removed.

Fit the new plugs ensuring that the gaps are correctly set and that each plug is fitted with a sealing washer.

Torque tighten each plug to between 18 Nm and 23 Nm (1,8 kgf m and 2,3 kgf m, 13 lbf ft and 17 lbf ft).

11 Lubricate the distributor (1981/82 model year cars only)

Lubrication of the spindle is the only routine maintenance required.

To carry out this operation remove the moulded top cover of the distributor and the rotor arm. Do not remove the cover from the distributor baseplate (see fig. B2-15).

Lubricate the spindle shaft bearings by applying two drops of engine oil to the felt pad situated beneath the rotor arm. Clean and fit the rotor arm.

Clean the terminal posts and cover, then fit the cover ensuring that it is correctly located on the distributor base.

12 Lubricate the accelerator linkage

Lubricate all the accelerator linkage ball joint pivots and clevis pins.

Examine the ball knuckle joints for wear and adjust if necessary. Renew any worn clevis pins.

Examine the linkage for correct operation. For details of linkage setting procedures refer to Chapter U of the Workshop Manual TSD 4400.

13 Check the torque tightness of the exhaust manifold setscrews

Ensure that all setscrews retaining the exhaust manifold in position are torque tightened to between 32 Nm and 33 Nm (3,2 kgf m and 3,4 kgf m, 23 lbf ft and 25 lbf ft).

14 Check the ignition timing; adjust if necessary

The ignition is timed on A1 cylinder which is located at the front left-hand side of the engine (viewed from the front of the car).

Important

If the ignition timing is to be set, ensure that the sparking plugs are in good condition before running the engine; if they require cleaning or renewal, ensure that the gaps are correctly set (see Operation 10, Renew the sparking plugs).

To check the ignition timing commence by running the engine until normal operating temperature is attained and the choke fast-idle is in the off position. Switch off the engine.

Connect a stroboscope and a tachometer to the engine as described in the instructions supplied with the respective equipment.

Start the engine and adjust the throttle stop screw

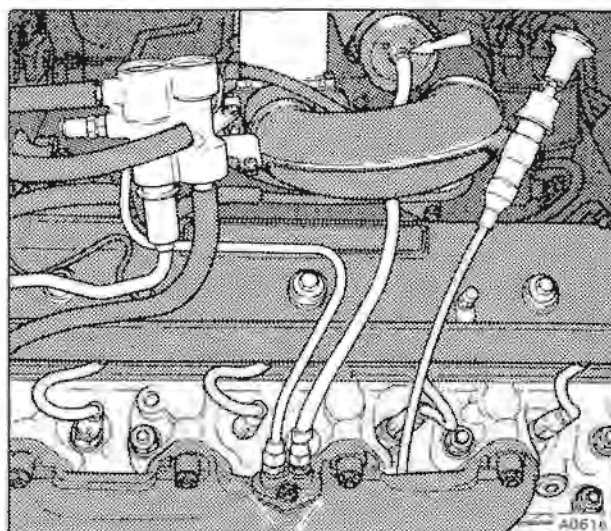


Fig. B2-14 Choke stove pipe restrictor union

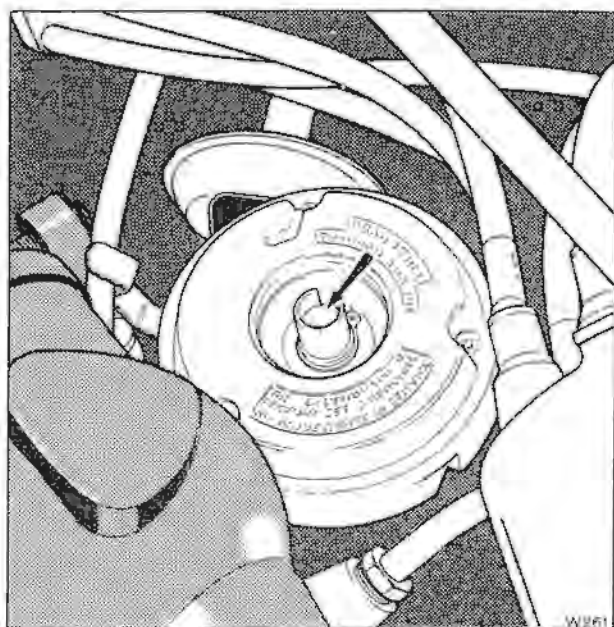


Fig. B2-15 Distributor lubrication point (1981/82 model year cars only)

to give an idle speed of 2000 rev/min. When setting the engine idle speed reduce from a higher speed to 2000 rev/min.

Direct the flashing light of the stroboscope onto the crankshaft damper timing marks and timing pointer; the pointer is positioned on the right-hand side of the crankshaft damper when viewed from the front of the engine.

If the timing pointer does not coincide with the 25° btdc mark on the crankshaft damper adjust the ignition timing as follows.

Release the clamp screw on the distributor and

rotate the head of the distributor in the appropriate direction until the correct timing is obtained. Clockwise rotation of the distributor head advances the ignition and conversely anti-clockwise rotation retards the ignition. After adjustment has been carried out tighten

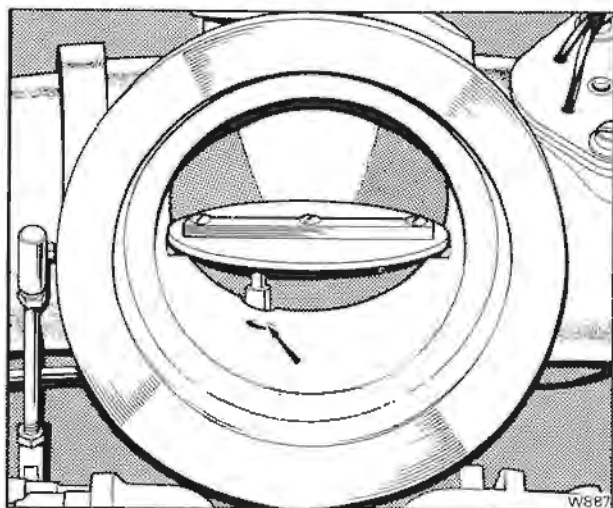


Fig. B2-16 Hot idle mixture compensator feed

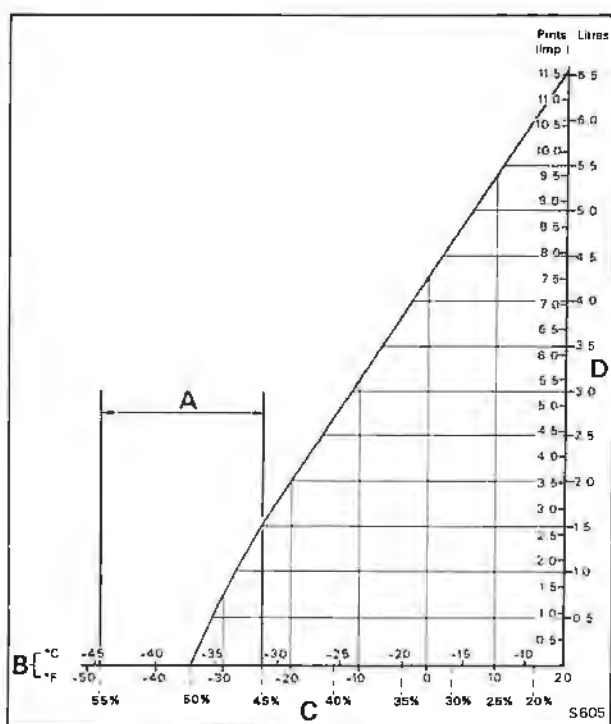


Fig. B2-17 Anti-freeze correction chart to give a 50% solution

- A Acceptable service range of concentration
- B Freezing point of coolant
- C Percentage concentration
- D Volume of 100% anti-freeze to be added to maintain a 50% solution after removal of the same volume of old coolant

the clamp screw and again check to ensure that the timing has not altered whilst tightening the clamp screw.

Set the engine idle speed to 650 rev/min.

Direct the flashing light of the stroboscope onto the crankshaft damper timing marks and timing pointer. Check that the ignition timing is between 5° and 11° btdc.

Stop the engine and remove all the test equipment.

15 Check the engine idle speed; adjust if necessary
Ensure that the engine is at normal operating temperature and that the choke fast-idle is in the off position.

The air conditioning system must be switched off and a tachometer connected to the engine in accordance with the manufacturer's instructions.

Stop the engine, remove the air intake and blank off the hot idle compensator feed drilling (see fig. B2-16); replace the air intake.

Start the engine and, if necessary, adjust the engine idle speed to 650 rev/min, using the throttle stop screw.

Stop the engine and remove the air intake. Remove the blank from the hot idle compensator feed drilling and fit the air intake. Detach the test equipment.

Engine cooling system

1 Check the coolant anti-freeze concentration

The cooling system is filled initially with a coolant solution comprising equal parts of UT 184 (BP - Hythe Chemicals) or Prestone II and water. This mixture gives frost protection down to a temperature of -37°C (-35°F).

The coolant should contain fifty percent of an approved anti-freeze at all times. This not only provides frost protection but also prevents corrosion of the coolant passages and raises the boiling temperature of the coolant.

The anti-freeze concentration should be checked in both the expansion bottle (where fitted) and the radiator.

If the strength of the coolant requires increasing, sufficient coolant should be drained from the radiator and replaced with undiluted anti-freeze (see fig. B2-17). Afterwards run the engine until normal operating temperature is attained and the anti-freeze has become thoroughly mixed with the coolant. Stop the engine and again check the concentration in the radiator.

An acceptable level of anti-freeze concentration is between 45% and 50%. Therefore, as a hydrometer may be inaccurate where readings above 40% are expected, it is recommended that a refractometer is used.

For details refer to Chapter L of the Workshop Manual.

If a refractometer is not available and a hydrometer has to be used, a scale reading of between 1.06 and 1.07 should be obtained with the coolant at room temperature for the mixture to be correct.

2 Check the coolant level

Warning

Both types of cooling system become pressurized during engine running, therefore, extreme care should be taken when removing the radiator cap from a warm or hot radiator.

Silver Spirit, Silver Spur, Mulsanne, and Convertible cars

Routine check

To check the level outside a normal service schedule (e.g. Regular maintenance) and when no cooling/heating system fault is reported or suspected, proceed as follows.

If the **engine is hot** ensure that the coolant level in the translucent expansion bottle is at the MAX mark. Top-up if necessary and replace the expansion bottle cap.

If the **engine is cold** ensure that the coolant level in the translucent expansion bottle is half-way between the MIN and MAX marks. Top-up if necessary and replace the expansion bottle cap.

If the coolant level in the expansion bottle is either below the MIN mark or there is no coolant in the expansion bottle, carry out the following Full check procedure.

Full check

Ensure the gear range selector is in the Park position and apply the parking brake.

Remove the gear range selector cut-out from the fuseboard.

Check the coolant level in the translucent expansion bottle (see fig. B2-19). If the level is low or the bottle is empty, add coolant to bring the level up to the MIN mark.

Ensure that the engine is not hot (to allow safe removal of the radiator cap).

Remove the radiator cap in three stages as follows.

Turn the cap slowly anti-clockwise until a check position is reached. Wait until any pressure in the system has been released. Press down on the cap and continue to turn it anti-clockwise until the cap is released.

Check the coolant level in the radiator. This should be half-way up the filler neck.

If the coolant level in the radiator is correct, fit the radiator cap by pressing it firmly down and turning it fully clockwise.

Top-up the coolant level in the expansion bottle in accordance with the Routine check procedure.

If the coolant level in the radiator is low but visible and no cooling/heating system fault is reported or suspected top-up the system using the following procedure. If however the coolant is not visible or a coolant/heating system leak is reported or suspected, the system should have any faults rectified and then be pressure tested prior to carrying out the topping-up procedure.

Top-up the radiator until the coolant is half-way up the filler neck.

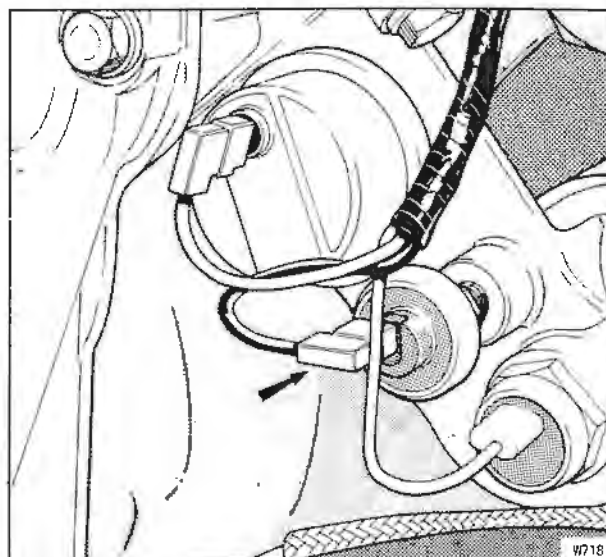


Fig. B2-18 Oil pressure switches and transmitter

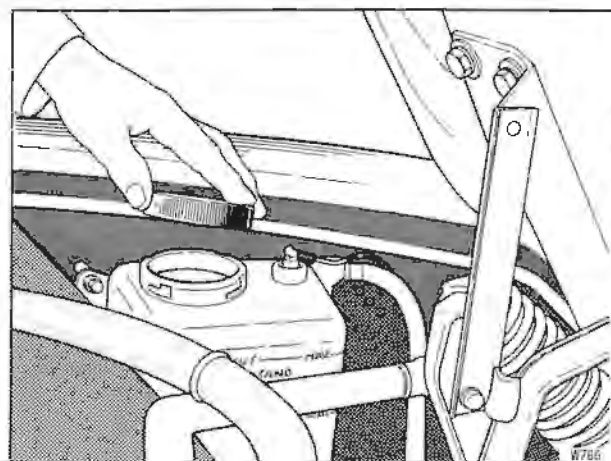


Fig. B2-19 Coolant expansion bottle (Silver Spirit, Silver Spur, Mulsanne, and Convertible cars)

Start and run the engine.

Turn the air conditioning system function control fully clockwise to the defrost position.

Set the air conditioning system override switch to the AUTO position.

Allow at least one minute for the air conditioning system to stabilize, then check to ensure that all air is being directed towards the windscreen (i.e. no air is delivered from the lower system and the facia outlets). This procedure opens the heater system water tap.

Run the engine, without the radiator pressure cap fitted, until normal operating temperature is attained. Top-up the coolant level in the radiator during this time.

Switch off the engine.

Fit the radiator pressure cap by pressing it firmly down and turning it fully clockwise.

Top-up the coolant level in the expansion bottle in accordance with the Routine check procedure.

Corniche Saloon and all Camargue

Ensure the gear range selector is in the Park position and apply the parking brake.

Remove the gear range selector cut-out from the fuseboard.

Start the engine and turn the air conditioning function control clockwise to the defrost position and set the upper system mode override switch to the AUTO position.

Allow approximately one minute for the system to attain the required setting, then check that all air is being directed towards the windscreen (i.e. no air is delivered from the lower system and the facia outlets). This procedure opens the heater water tap and ensures that the cooling system can be correctly checked.

Switch off the ignition.

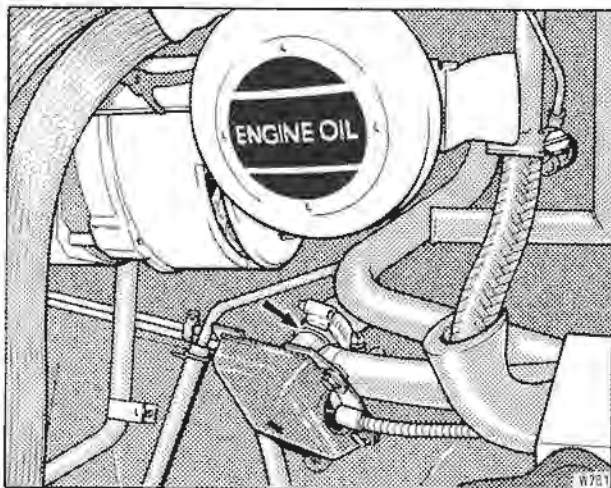


Fig. B2-20 Heater tap feed hose

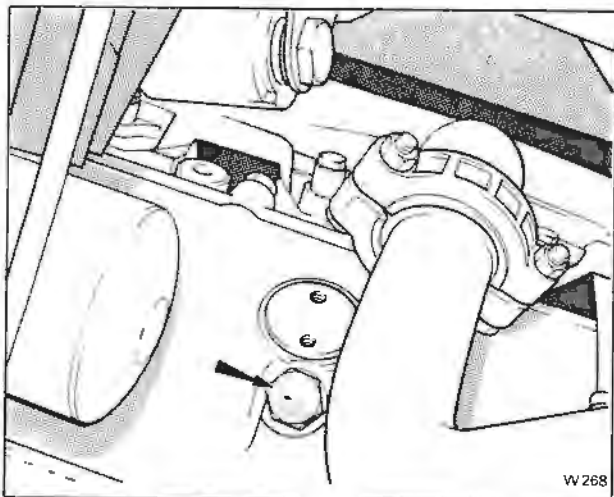


Fig. B2-21 Crankcase drain plug ('B' bank shown)

Remove the radiator cap. If the engine is hot, muffle the cap with a thick cloth and gradually turn the cap anti-clockwise until the pressure is reduced, then remove the cap.

If the coolant level is low, top-up the radiator header tank with the correct anti-freeze/water mixture. The correct level is when the coolant reaches the rubber seal in the filler neck. Fit the filler cap.

3 Check all coolant hose clips for tightness

Examine all the coolant hose connections for leakage, check the worm drive clips for tightness. Never over tighten a clip in an attempt to seal a leaking connection.

In the event of a hose connection leaking when the worm drive clips have been tightened, drain the cooling system to a level below the leaking hose. Remove and inspect the hose and its connecting component for signs of damage. If necessary renew the faulty component and refill the system with coolant as described in Renew the coolant.

4 Examine the condition of all coolant hoses

Inspect all coolant hoses for signs of deterioration, cracking, weak spots, etc. Any faulty hose should be removed and a new hose fitted. When renewing a hose always ensure that it does not foul other components and that it is not kinked so as to cause complete or partial restriction of coolant flow.

5 Fit a new heater tap feed hose

Drain the cooling system as described in Renew the coolant, but do not remove the engine crankcase drain plugs.

Disconnect the heater tap feed hose from the engine and heater tap (see fig. B2-20); remove the hose.

Fit the new hose; ensure that the hose is free from any sharp bends that may restrict coolant flow.

Fill the engine cooling system as described in Renew the coolant.

Ensure that the parking brake is applied and the gear range selector lever is in the Park position.

Remove the gear range selector cut-out from the fuseboard.

Start and run the engine; check the coolant hose for leaks.

Switch off the ignition and fit the gear range selector cut-out.

6 Renew the coolant

Drive the car onto a ramp; move the gear range selector to the Park position and apply the parking brake.

Remove the gear range selector cut-out from the fuseboard.

Disconnect the Lucar connection from the centre pressure switch situated on the oil filter mounting (see fig. B2-18). This will allow the air conditioning system to be operated without running the engine.

Switch on the ignition and rotate the air conditioning function switch to the windscreen defrost

position, also set the upper system mode override switch to the AUTO position.

Wait approximately one minute for the system to attain the required setting and observe that all the air is being directed to the windscreen. This procedure opens the heater water tap and ensures the system can be completely drained.

Switch off the ignition.

Place a container beneath the radiator drain tap to collect the coolant. Connect a length of hose onto the drain tap to direct the coolant into the container.

Carefully unscrew and remove the radiator pressure cap.

Open the radiator drain tap and allow the coolant to drain from the radiator.

When the radiator has completely drained place a container beneath the crankcase drain plugs. Remove the drain plugs from the crankcase (see fig. B2-21) and allow the residue of coolant to drain from the crankcase.

Renew the washers on the drain plugs and fit the plugs into the crankcase.

To drain the coolant remaining in the expansion bottle (Silver Spirit, Silver Spur, Mulsanne, and Convertible cars) disconnect the connection hose from the radiator filler neck and allow the coolant to drain from the expansion bottle into the container. When the coolant has drained connect the hose to the radiator filler neck.

Check all hoses for serviceability and renew as necessary.

Fill the system with fresh coolant of the specified concentration as follows.

Ensure the radiator drain tap is closed.

Slowly fill the radiator with coolant, thus reducing the possibility of air locks in the system.

Start and run the engine for a minimum of 10 minutes with the radiator pressure cap removed. After running for five minutes ensure that warm air is passing up the windscreen from the demister ducts. Top-up the radiator as necessary to ensure there is always coolant in the top tank of the radiator.

Ensure that the thermostat has opened; indicated by a rapid warming of the top radiator hose.

Switch off the engine and top-up the radiator to half-way up the filler neck. Fit the pressure cap.

Applicable to Silver Spirit, Silver Spur, Mulsanne, and Convertible cars.

Fill the expansion bottle upto a level midway between the maximum and minimum levels indicated on the bottle.

Start and run the engine until normal engine running temperature is attained; switch off the engine and top-up the expansion bottle to the maximum level.

Allow the engine to cool down. Carefully remove the radiator pressure cap and ensure the radiator is completely full of coolant. Top-up to half-way up the radiator filler neck if necessary. Fit the radiator pressure cap.

Connect the Lucar connection previously disconnected from the pressure switch adjacent to the oil filter (see fig. B2-18).

Note

For the coolant system to operate correctly, i.e. for coolant to pass into the expansion bottle when hot and be drawn back into the radiator during cooling, the top of the radiator must not contain an air pocket.

7 Reverse flush the coolant system

Drain the engine coolant system as described in Renew the coolant.

Remove the top and bottom hoses from the radiator matrix.

Fit a waste pipe to the upper (inlet) connection of the radiator.

Apply mains water under pressure through the lower (outlet) connection of the radiator. This should remove all loose sediment in approximately 30 minutes.

Do not under any circumstances use an alkaline compound or detergent to clean the system. Such compounds have a detrimental chemical action on aluminium alloys.

Remove the engine coolant drain plugs from the crankcase.

Remove the thermostat as described in Renew the thermostat, then replace the cover.

Fit a suitable pipe to the drain plug aperture and apply mains water pressure to each aperture in turn.

Flush for approximately 30 minutes, or until the water runs clear of foreign matter.

Fit the drain plugs and a new thermostat by reversing the procedure for removal.

To flush the heater system, detach the heater at the water tap and disconnect the return hose at the coolant pump.

Fit a waste pipe to the disconnected heater feed hose.

Flush the matrix for approximately 30 minutes.

Examine the coolant hoses for deterioration or damage and renew as necessary.

Connect all hoses and fill the system with the recommended coolant mixture as described under Renew the coolant.

8 Remove foreign matter from the radiator and refrigeration condenser

Using a pressure hose pipe, flush the radiator matrix and condenser matrix.

Hold the nose of the hose pipe close to the back of the radiator matrix and allow the water to pass between the veins of the matrix. Slowly move the hose over the whole matrix area until all foreign matter (insects, etc.) have been flushed clear. Care must be taken to ensure that the end of the hose does not damage the matrix face during this operation.

9 Renew the thermostat

Disconnect the battery.

Place a container beneath the radiator. Attach a length of hose to the radiator drain tap to direct the coolant into the container.

Carefully unscrew and remove the radiator pressure cap.

Open the radiator drain tap and allow sufficient coolant to drain from the system for the coolant level to fall below that of the thermostat housing. Close the drain tap and remove the hose previously attached.

Disconnect the electrical connector from the thermostat housing cover.

Remove the bolt from the air intake elbow and the four setscrews from the thermostat housing cover. Collect the bracket.

Remove the thermostat housing cover. The cover can be moved away from the housing without detaching the outlet hose.

Lift the thermostat from the housing (see fig. B2-22).

Remove the old gasket material from the thermostat housing and cover. Ensure that no material enters the thermostat housing.

Check that the two faces are clean and dry.

Insert a new thermostat into the housing.

Place a new gasket in position on the housing and fit the cover and air intake elbow bracket. Connect the elbow to the bracket.

Connect the electrical connection removed from the thermostat housing.

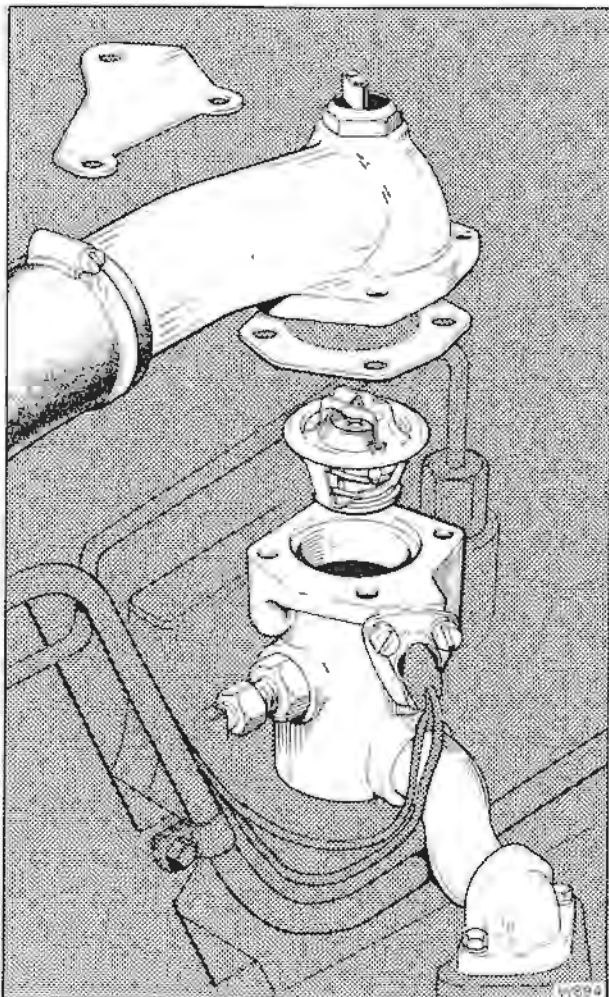


Fig. B2-22 Thermostat housing assembly

Top-up the cooling system with the correct coolant mixture as described under Renew the coolant.

Torque converter transmission

It is absolutely essential when adding fluid to, or working on the torque converter transmission that great attention is paid to cleanliness. The smallest particle of dirt in the transmission fluid could interfere with the correct operation of the unit.

It is important for the efficient operation of the torque converter transmission that only an approved fluid is used (see Chapter A).

1 Check the transmission fluid level

The fluid level can only be checked accurately when the car is standing on a level surface, the engine is running at idle speed, and transmission fluid is at normal operating temperature, approximately 77°C (170°F).

The dipstick and filler tube are situated on the right-hand side of the engine compartment.

On Silver Spirit, Silver Spur, and Mulsanne cars, remove the protective cover (if fitted) from the windscreen wiper mechanism to gain access to the dipstick. Ensure that the following safety procedure is undertaken to isolate the mechanism prior to removing the cover.

Ensure that the windscreen wiper control switch situated on the facia is in the off position. Remove a windscreen wiper relay, preferably number three, situated adjacent to the windscreen washer reservoir (see fig. B2-23). To remove the relay pull it vertically from its mounting.

Always clean the top of the dipstick before removing it from the filler tube.

As an initial check, the fluid level may be checked after starting from cold as follows.

Apply the parking brake.

Start and run the engine for three to four minutes at fast-idle speed, with the gear range selector in the Park position. Reduce the engine speed to slow idle.

Whilst sitting in the driving seat, **firmlly apply the footbrake** and move the gear range selector through the full range of gear positions pausing briefly in each range. Return the selector to the Park position.

Immediately check the fluid level with the engine running at idle speed.

The level should be up to the circular dimple situated below the FILL mark on the dipstick or 10 mm (0.375 in) **below** the MIN mark, dependent on the type of dipstick fitted (see fig. B2-23).

Top-up to this level if necessary.

After this initial check a further check should be carried out as follows.

Drive the car for approximately 24 kilometres (15 miles) of highway/motorway driving or 16 kilometres (10 miles) of city driving. This should ensure the transmission has reached normal operating temperature.

It is essential that this temperature is attained. Do not top-up the fluid level to the MAX mark of the dipstick when the fluid is only warm, as

this will result in an overfill situation when the normal operating temperature is attained. Overfilling will result in fluid being discharged from the transmission breather pipe.

Position the car on a level surface, firmly apply the parking brake and select Park using the gear selector lever.

Carry out the procedure described for the initial check.

With the transmission fluid at normal operating temperature the level of the fluid should be between the FILL and MAX HOT marks or the MIN and MAX marks (see fig. B2-23) dependent on the type of dipstick fitted.

If necessary add fluid by pouring it down the filler tube, with the engine still running, until the fluid is to the MAX mark on the dipstick. **Do not overfill.**

When the fluid level is correct, switch off the engine and fit the windscreen wiper mechanism cover and relay.

2 Renew the transmission fluid

Position the car on a ramp or over a pit.

Place a clean container having a minimum capacity of 3 litres (5 Imp pt, 6 US pt) under the nut which secures the transmission fluid filler tube to the sump (see fig. B2-24).

From within the engine compartment, remove the transmission dipstick as described under Check the transmission fluid level.

Slacken the setscrew securing the filler tube to the engine.

Unscrew the nut securing the filler tube to the side of the transmission sump (see fig. B2-24). Withdraw the filler tube from the sump and move it to one side to allow the fluid to drain into the container.

After draining the sump, ensure that the filler tube is clean then fit it to the sump and tighten the drain nut.

Tighten the setscrew securing the filler tube clip to the engine.

Add 2.8 litres (5 Imp pt, 6 US pt) of an approved fluid to the sump, pouring the fluid down the filler tube.

Check the fluid level as described under Check the transmission fluid level.

3 Fit a new intake strainer

Drain the transmission sump as described under the heading, Renew the transmission fluid, then proceed as follows.

Remove the setscrews securing the transmission sump and lower the sump.

Drain any oil from the sump and discard the gasket.

Unscrew the setscrew securing the intake strainer and pipe assembly to the transmission; remove the strainer assembly (see fig. B2-25).

Remove the intake pipe from the strainer and discard the strainer.

Clean the transmission sump and the intake pipe with paraffin and dry with compressed air.

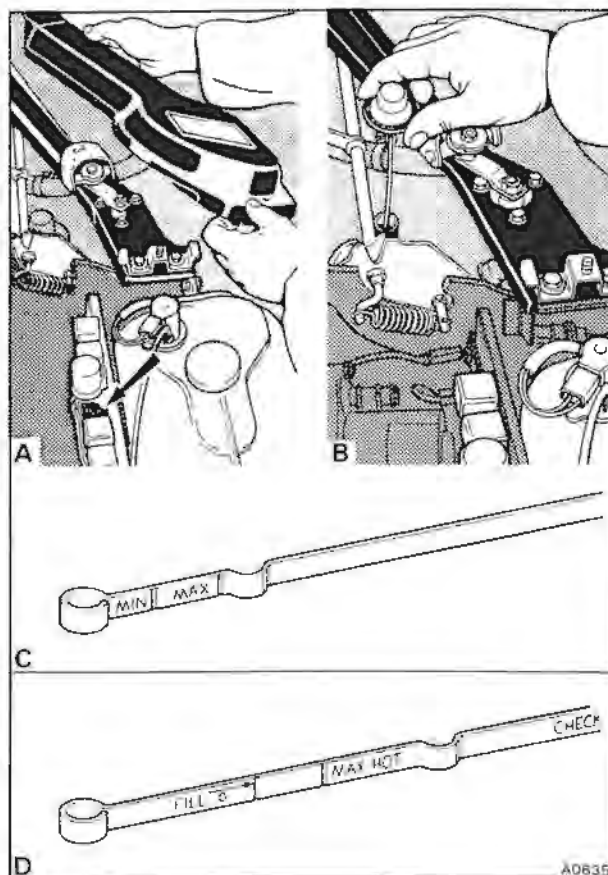


Fig. B2-23 Transmission filler tube and dipstick

- A Removing the windscreen wiper mechanism cover. The arrow indicates the wiper motor relay to be removed
- B Withdrawing the dipstick from the filler tube
- C Original dipstick markings
- D Revised dipstick markings

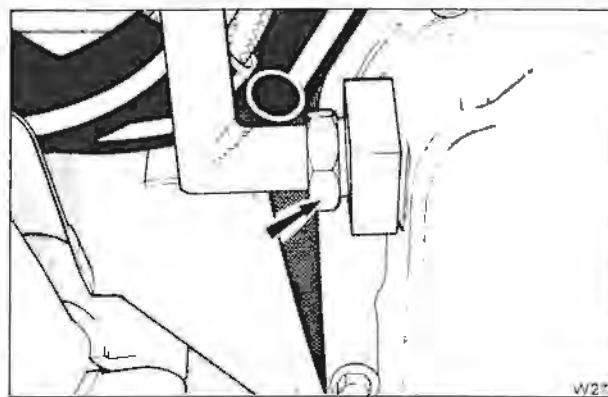


Fig. B2-24 Transmission drain point

Fit a new rubber 'O' ring to the intake pipe and lubricate the 'O' ring with clean transmission fluid. Ensure that a new rubber seal is fitted to the pipe

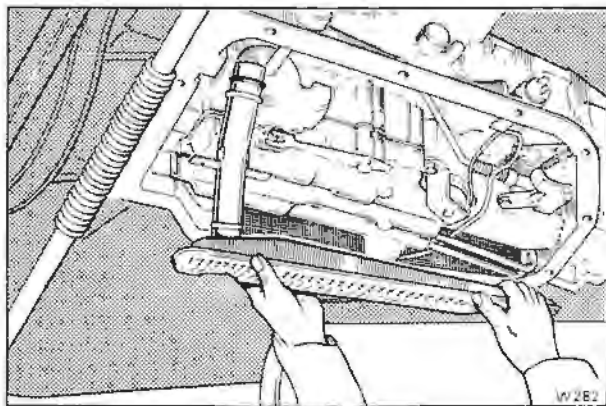


Fig. B2-25 Transmission intake strainer removal



Fig. B2-26 Propeller shaft grease point

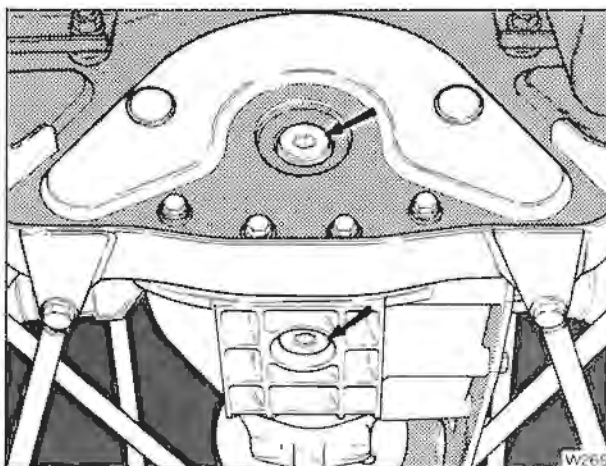


Fig. B2-27 Final drive drain and filler/level points

bore in the new intake strainer, then fit the intake pipe to the strainer.

Fit the intake strainer and pipe assembly to the transmission and torque tighten the securing setscrew to 14 Nm (1,4 kgf m, 10 lbf ft).

Fit the transmission sump using a new gasket and torque tighten the sump setscrews to 16 Nm (1,7 kgf m, 12 lbf ft).

Fit the oil filler tube into the sump and tighten the nut. Tighten the setscrew securing the filler tube clip to the engine.

Add 4,5 litres (8 Imp pt, 9.6 US pt) of an approved fluid to the sump, pouring the fluid down the filler tube, then follow the fluid level checking procedure described under Check the transmission fluid level.

4 Lubricate the gear range selector control rod

Lubricate the clevis pins in the control rod linkage at the left-hand side of the transmission, with a few drops of clean engine oil. Also lubricate the manual shaft where it enters the transmission casing.

Propeller shaft

1 Lubricate the universal joints (if applicable)

A grease nipple is fitted to the universal joint at each end of the shaft (see fig. B2-26).

Using a suitable grease gun lubricate each joint with an approved grease.

On cars fitted with a rubber jointed propeller shaft lubrication is not required.

Final drive unit

1 Check the final drive oil level

Position the car on a ramp or over a pit.

Remove the level plug located in the rear face of the final drive casing. The oil in the casing should be up to the level plug orifice. If necessary, top-up with an approved oil.

Fit the level plug complete with a new joint washer.

2 Renew the final drive oil

It is advisable to carry out this operation when the oil is warm, e.g. immediately after the car has completed a run.

Position the car on a ramp or over a pit and clean the area around the drain and level plugs (see fig. B2-27).

Place a container beneath the drain plug, then remove both the drain and level plugs.

When the oil has drained, fit the drain plug complete with a new joint washer.

Using a syringe, fill the casing to the level plug orifice with an approved oil; approximately 2,3 litres (4.0 Imp pt, 4.8 US pt) of oil will be required.

Fit the level plug complete with a new joint washer and check for leaks.

3 Check the condition of the drive-shaft joint covers

The drive-shaft joints, enclosed by convoluted seals,

are filled with lubricant on initial assembly. If upon inspection a seal is found to be leaking or damaged the joint should be inspected and a new seal should be fitted as described in Chapter J of the Workshop Manual.

Steering system

1 Check the steering pump fluid level

Remove the filler cap from the steering pump reservoir, and check that the fluid level is at least up to the FULL COLD mark on the integral dipstick. If necessary, top-up to this level with approved fluid (see fig. B2-28).

Start and run the engine until it reaches normal operating temperature, approximately 77°C (170°F) then stop the engine.

Remove the filler cap and check the fluid level in the reservoir. If necessary, add an approved fluid to raise the level to the FULL HOT mark on the dipstick; do not overfill.

Ensure that the filler cap is securely replaced.

2 Lubricate the steering linkage ball joints (if applicable)

If grease nipples are fitted to the ball joints at the ends of the track rods, they should be lubricated until a slight swelling of the joint seal is evident. Take care not to damage or displace the seals.

3 Check the condition of the steering ball joint covers

Examine the condition of the rubber cover seals on the ball joints (see fig. B2-29).

If the seals are found to be damaged or in poor condition new parts should be fitted as necessary. For full information refer to Chapter N of the Workshop Manual.

4 Check the condition of the steering rack convoluted seals

Examine the condition of the convoluted seals on the rack and pinion unit and check the tightness of the seal clips.

If the seals are satisfactory, tighten the clips as necessary.

If the convoluted seals are found to be damaged or in poor condition, the rack and pinion unit should be removed from the car and new seals fitted. For full information refer to Chapter N of the Workshop Manual.

Suspension

1 Check the condition of the front ball joint covers

The front suspension ball joints (see fig. B2-30) are packed with grease on initial assembly and should not normally require attention between service overhauls unless the rubber seal covers are damaged.

If on inspection the covers are found to be damaged or in poor condition, the ball joints should be removed and new joints and seals fitted as necessary.

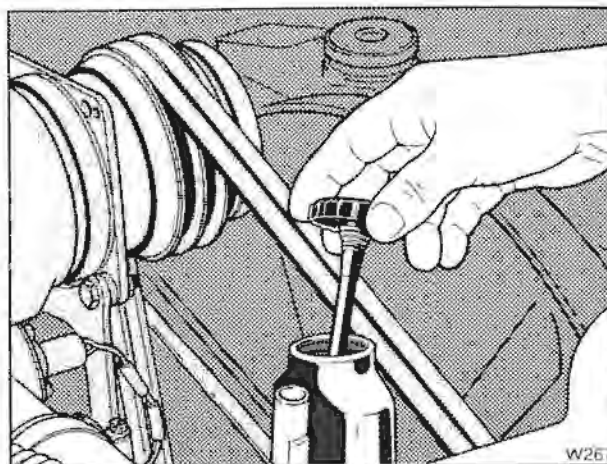


Fig. B2-28 Steering pump filler/dipstick

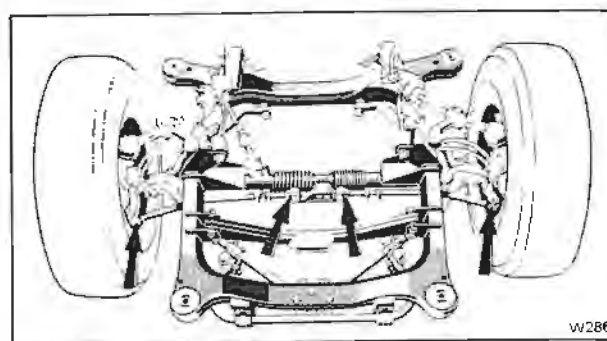


Fig. B2-29 Track rod ball joints

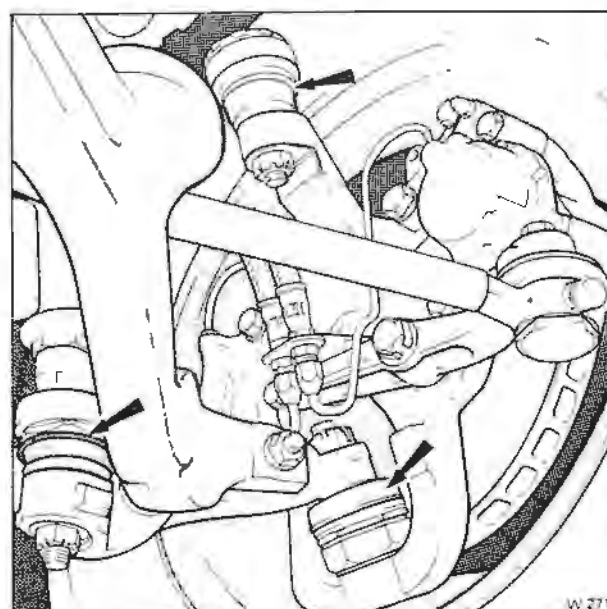


Fig. B2-30 Front suspension ball joints

For full information refer to Chapter H of the Workshop Manual.

2 Check the condition of the rear strut convoluted seals

Examine the condition of the convoluted seals on the rear suspension struts (see fig. B2-31).

If the seals are found to be damaged, or in poor condition, the struts should be removed, as described in Chapter G of the Workshop manual, and new seals fitted.

3 Lubricate the height control valve ball joints

Position the car on a ramp or over a pit. Disconnect the actuation links from the height control valves and rear suspension trailing arms at the ball joints (see fig. B2-32). Note from which side each link is taken.

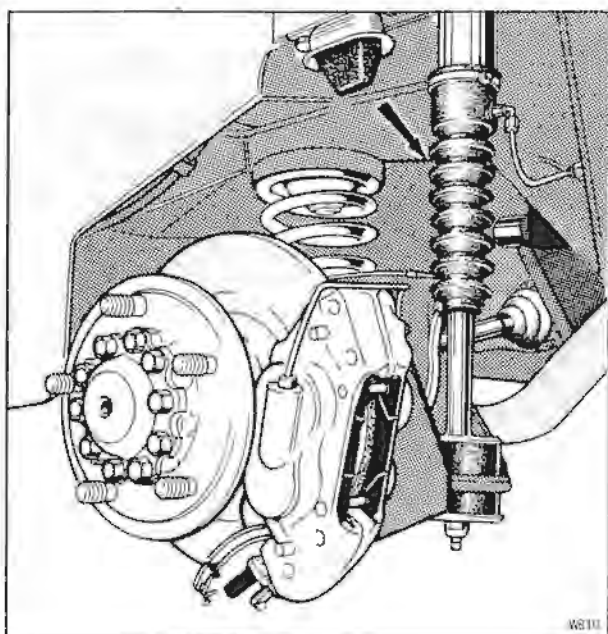


Fig. B2-31 Rear suspension strut

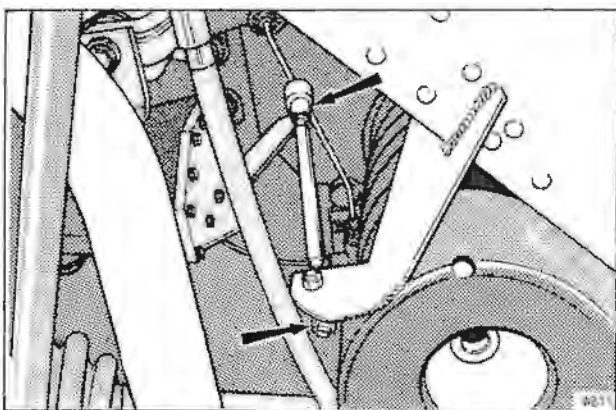


Fig. B2-32 Height control valve actuation link joints

Clean the ball joints then lubricate with an approved grease.

Do not alter the length of the actuation link.

Connect the actuation link to the height control valve and the trailing arm from which it was removed.

Adjust the joint to obtain complete movement without free play.

Brake and hydraulic systems



WARNING

Use only Hydraulic System Mineral Oil (LHM) to replenish the braking and levelling systems.

Do not use Brake Fluids (Castrol RR363, Universal, or any other type). The use of any type of brake fluid, even in very small amounts, will cause component failure necessitating extensive rectification to the braking and levelling systems of the car.

Always ensure before fitting any seals, hoses, pipes, etc., that they are suitable for a mineral oil system. For details of correct component identification reference should be made to Chapter G of the Workshop Manual.

Always ensure that a sealed container of **Hydraulic System Mineral Oil (LHM)** is fitted adjacent to the battery.

Always ensure that no foreign matter enters the systems when work is being carried out.

In order to protect against claims of liability for hydraulic system contamination, it is recommended that the hydraulic system mineral oil is tested for contamination prior to work being undertaken, preferably in the presence of the owner or his/her representative.

It is important that the test is carried out even when the hydraulic system mineral oil is to be renewed as this will not prevent the deterioration of components which have been in contact with contaminated mineral oil.

Brake fluids and mineral oil are immiscible and with large amounts of contamination separation of the fluids will occur on standing, due to the greater density of the conventional fluids. A further indication of the mixing of conventional brake fluid and mineral oil is its cloudy appearance.

To carry out contamination tests a kit is available from Rolls-Royce Motors Limited part number RH 2841 and should be used as follows.

Switch on the ignition and depressurize the hydraulic systems by pumping the brake pedal until both low pressure warning panels illuminate. Continue to pump the pedal for at least a further 20 applications to ensure that all the accumulator mineral oil is returned to the reservoir.

Clean the area around each hydraulic reservoir filler cap and then remove the cap.

Ensure that the components in the test kit are clean and dry.

Using the sampling tube provided, extract 50 ml of mineral oil from the top and bottom of each reservoir.

Place the samples into the individual clean dry containers.

Shake each sample taken to ensure it is well mixed.

Pour 10 ml of each sample into clean test tubes (do not mix the samples together).

Using the dispenser, add two drops of the red dye solution contained in the kit into each 10 ml sample.

Cork the test tubes and shake them thoroughly.

Leave the samples to settle for at least 30 minutes.

Examine each sample.

Sample diagnosis

On adding the red dye solution and the subsequent mixing, the green colour of the mineral oil will change to a reddish brown. **This does not indicate contamination of the hydraulic system mineral oil.**

Contamination can only be confirmed by the formation of a cloudy red mass which will begin to settle towards the bottom of the tube if left to stand for at least 30 minutes.

If the sample in the test tube on addition of the dye turns red but remains clear it indicates that the sample is not contaminated.

The volume of red mass which will eventually settle to the bottom of the test tube indicates the amount of contamination within the hydraulic system mineral oil.

Complete separation of the two liquids may take a considerable amount of time, for example a very small percentage of contamination may take more than seven days to completely separate.

If contamination is suspected, a more thorough test can be undertaken, details of which are given in Chapter G of the Workshop Manual.

If contamination is suspected, but difficult to diagnose, due to the small amount of contaminant that may be present, or any doubt exists, confirmation should be obtained by sending a sample to Rolls-Royce Motors (if in the United Kingdom) or to a chemical analysis laboratory.

Before attempting any work on a hydraulic system personnel must be fully conversant with the precautions required to ensure adequate safety and correct system operation.

Refer to Chapter G of the Workshop Manual.

Important

Always seal each reservoir cap after it has been confirmed that the systems **are not** contaminated and all work on the systems has been completed.

1 Check the mineral oil level in the reservoirs

The mineral oil reservoirs for the hydraulic systems are located in the engine compartment (see fig. B2-33).

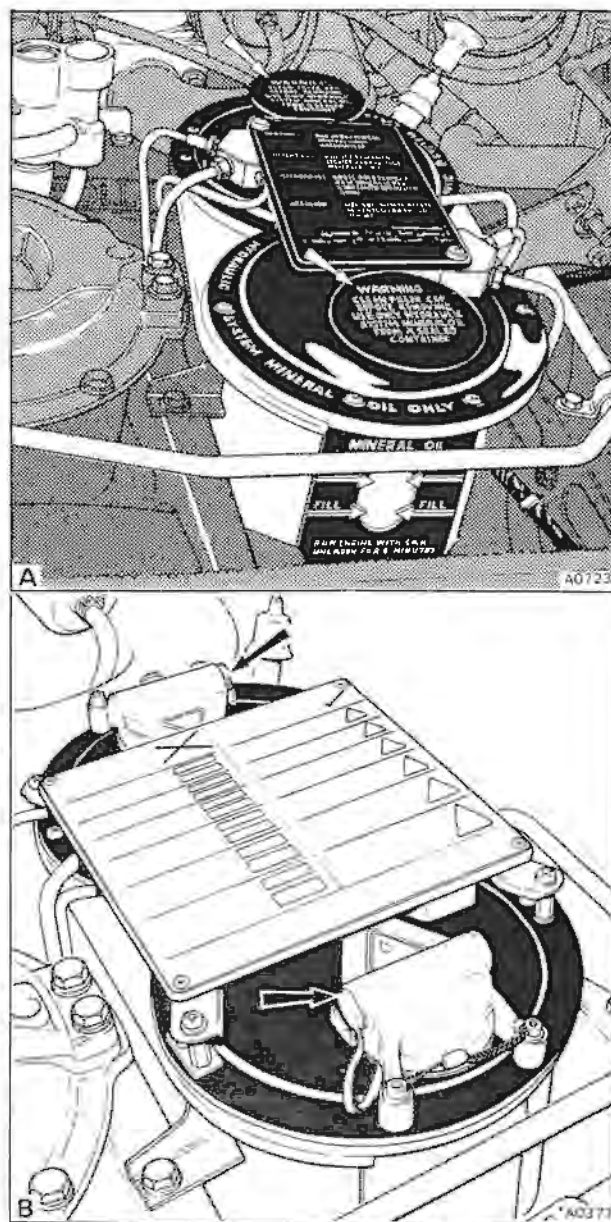


Fig. B2-33 Access to the hydraulic systems reservoirs

- A Original filler cap
B Specialized filler cap

To check the oil level, first depressurize the hydraulic systems by pumping the brake pedal until the two warning panels illuminate. Start and run the engine for approximately four minutes to charge the systems and then stop the engine. The mineral oil in both reservoirs should be up to the FULL marks on the level indicator plate.

If the reservoirs require topping-up, ensure that the tops of the reservoirs and the filler caps are clean, then add an approved hydraulic system mineral oil (see Chapter A) as necessary.

It is important that only approved hydraulic system mineral oil is used and that exceptional

cleanliness is observed when topping-up the hydraulic systems.

Under no circumstances should a conventional (i.e. RR363 or Universal) type brake fluid be used.

After topping-up ensure that the filler caps are clean, then fit them securely to the reservoirs or insert the blanking plug dependent upon the type of filler cap fitted.

Ensure that the containers of new Hydraulic System Mineral Oil for system replenishment, are fitted adjacent to the battery.

2 Renew the hydraulic system mineral oil

Depressurize the hydraulic systems as described in Chapter G of the Workshop Manual and proceed as follows.

Completely drain the fluid from the hydraulic systems by attaching a tube to each bleed point, then opening the bleed screws and allowing the mineral oil to drain from the circuits. The bleed screws are located on each accumulator, on each pair of brake calipers, on the deceleration conscious pressure limiting valve and on each rear suspension strut or each inner rear wing from the suspension strut. A drain tube is not required

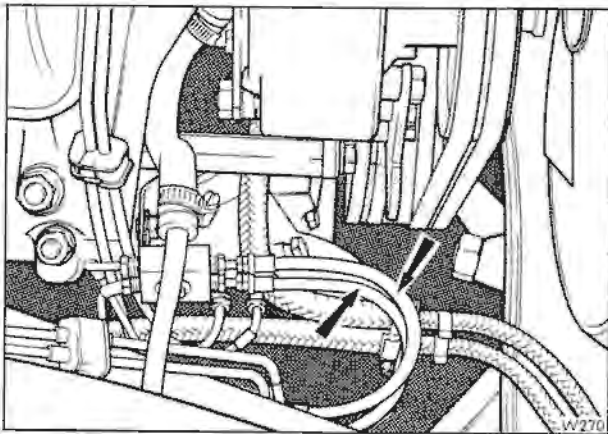


Fig. B2-34 Hydraulic accumulator to body hoses

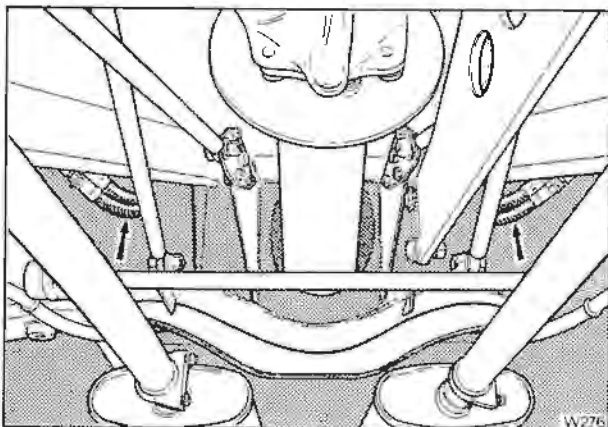


Fig. B2-35 Trailing arm to body hoses

at the accumulator bleed screws as these are an integral part of the accumulators and when opened allow the mineral oil to flow from the accumulator spheres back to the reservoirs.

Drain the mineral oil from the reservoirs and clean the reservoirs as described in Chapter G of the Workshop Manual.

After the system has completely drained, close all the bleed screws and ensure that any disturbed pipes are connected and correctly torque tightened.

Fill the reservoirs with fresh hydraulic system mineral oil (see fig. B2-33 and Chapter A) until the levels in the reservoirs are slightly above the topping-up marks on the indicator plate.

Run the engine for four minutes, then top-up to the FULL level mark; never allow the mineral oil levels to fall below the minimum level marks.

Check for leaks, especially around the unions of any pipes which have been disturbed.

Finally, bleed the hydraulic systems as described in Chapter G of the Workshop Manual.

Ensure that the containers of new Hydraulic System Mineral Oil for system replenishment, are fitted adjacent to the battery.

3 Check the condition of all brake pipes and hoses

Position the car on a ramp or over a pit and check the condition of the hydraulic system pipes and hoses.

Examine the metal pipes for signs of corrosion, particularly those in an exposed position.

Examine the hoses for chafing or surface cracking.

Faulty pipes and hoses should be replaced as described in Chapter G of the Workshop Manual.

4 Renew the accumulator to body, trailing arms to body, and sub-frame to body hoses (if fitted)

Depressurize the hydraulic systems as described in Chapter G of the Workshop Manual and proceed as follows.

Fit a hose clamp to each of the intermediate hoses of the accumulator return pipes to prevent the flow of mineral oil from the reservoirs.

Thoroughly clean the areas around the connections of the two accumulator to body, trailing arms to body, and sub-frame to body hoses (see figs. B2-34, B2-35, and B2-36).

Remove the respective hoses noting the following points.

To avoid contamination fit the new hose immediately after removing the old one; alternatively fit approved blanks to the open ports until the new hoses are fitted.

Before fitting a new hose ensure that it is thoroughly clean and conforms with the hydraulic systems mineral oil requirements.

When fitting the new hoses, ensure that they are routed to clear other components and that clearance is maintained during full suspension movement.

Tighten the pipe nuts to the torque settings given in Chapter G of the Workshop Manual.

After fitting the new hoses, check for leaks and

bleed the hydraulic systems as described in Chapter G of the Workshop Manual.

5 Renew all hydraulic system hoses

To renew the hydraulic system hoses follow the same basic procedure described under the heading Renew the accumulator to body, trailing arms to body, and sub-frame to body hoses.

6 Check the brake disc pads for wear

Remove the wheel discs and slacken the wheel nuts approximately half a turn.

Jack up the car and support with stands and sill blocks.

Remove the road wheels and examine all the disc brake pad linings.

The brake pads must be renewed when the brake pad linings are worn to within 3,18 mm (0.125 in) of the steel backing plates. The pads should also be renewed if this minimum thickness is likely to be achieved before the next service check. To renew the brake pads, refer to Chapter G of the Workshop Manual.

If new brake pads are to be fitted which have different recommended linings from those on the old pads, the disc faces should be cleaned prior to fitting the new pads. All traces of the old pad lining material should be removed by hand rotating the disc whilst applying coarse grade emery cloth to the disc faces. Do not emery the disc faces radially.

Always ensure that the pads fitted to all six brake calipers have the same type and grade of pad lining.

Fit the road wheels and lower the car.

If new brake pads have been fitted, an initial running-in period of between 1100 kilometres and 1300 kilometres (700 miles and 800 miles) should be observed. During this running-in period the brakes should not be applied harshly or for prolonged periods from high speeds except in an emergency. Towards the end of the running-in period, the force with which the brakes are applied may be progressively increased.

7 Check the condition of the brake caliper dust excluders (when changing brake pads)

The condition of the caliper dust seals should be checked whenever the brake pads are removed.

Inspect the seals for signs of damage, heat hardening, or general deterioration and renew if necessary.

When fitting new seals, ensure that the seal retaining clips are correctly located.

8 Renew the brake caliper seals

To renew the caliper piston seals it is necessary to remove the brake calipers from the car.

For full instructions, refer to Chapter G of the Workshop Manual.

9 Check the parking brake pads for wear

Securely chock the front wheels then raise the rear of the car. Place sill blocks under the rear body sills and

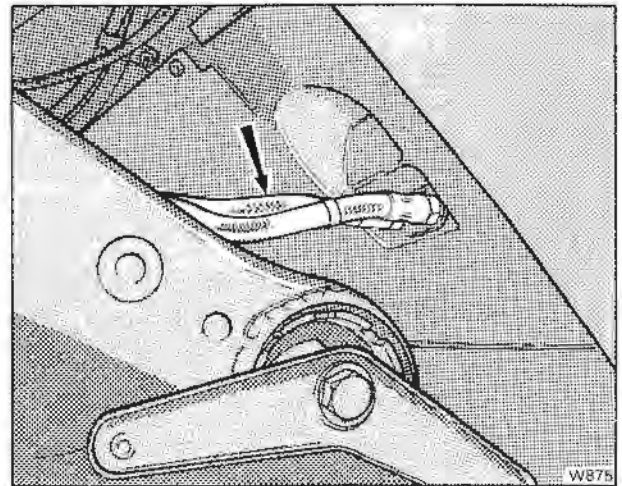


Fig. B2-36 Sub-frame to body hydraulic hoses

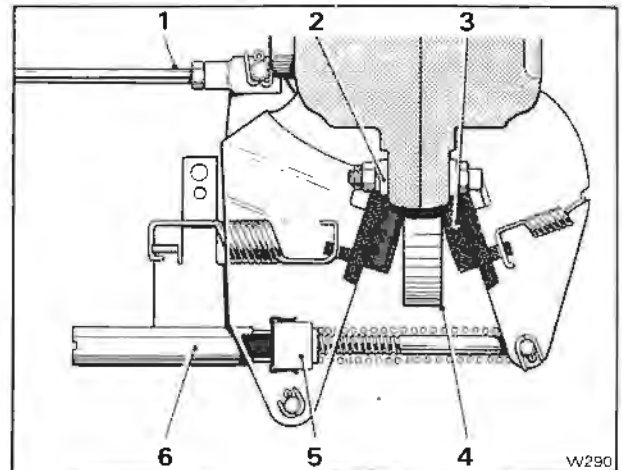


Fig. B2-37 Parking brake mechanism

- 1 Actuation rod
- 2 Centralizing straps
- 3 Parking brake pads
- 4 Brake disc
- 5 Adjuster clicker block
- 6 Adjuster

also support the rear trailing arms. Do not allow the suspension struts to support the full suspension load.

Remove the rear wheels and release the parking brake to the off position.

Disconnect the caliper actuation rod from the caliper lever (see fig. B2-37).

Unscrew and remove the caliper adjuster and collect the adjuster clicker plate.

Unhook the pad retention springs from each pad, noting the larger spring is fitted to the inner pad.

Remove the pads from the caliper.

Check the thickness of the lining material on each pad. Pads which are worn to within 1,6 mm (0.062 in) or less of the steel backing plate should be renewed.

To fit the pads, attach the retention springs then

locate the pads into position and hook the springs onto the caliper.

Complete the assembly by reversing the removal procedure, then adjust the calipers as described under the heading Adjust the parking brake.

Note

If new parking brake pads have been fitted, the following bedding-in procedure should be carried out after adjusting the parking brake.

Drive the car at approximately 48 km/h (30 mile/h) and apply the parking brake to bring the car to rest; it is important that this is done gently and progressively. The parking brake must not be applied fully and no attempt should be made to lock the wheels. This operation should be carried out nine times, allowing at least one minute to elapse between stops to prevent the discs overheating.

Finally adjust the caliper as described under the heading Adjust the parking brake.

10 Adjust the parking brake

Ensure that the parking brake is in the off position.

Adjust the rear cables at the adjusters (see fig. B2-38) so that the caliper operating levers return to their off-stops under the influence of their return springs with no appreciable slackness in the cables.

Note

The cables must be adjusted so that the equalizer link on the intermediate linkage (see fig. B2-38) lies at right-angles with the centre line of the car with the parking brake in the off position.

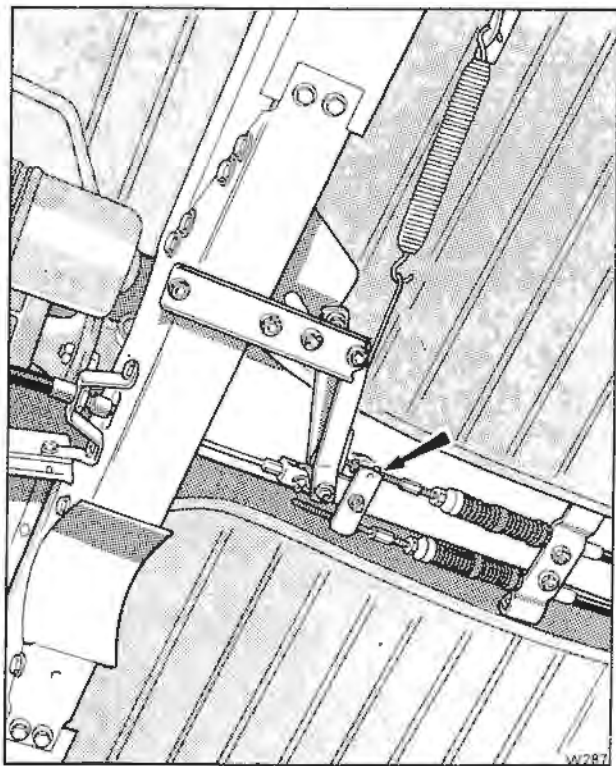


Fig. B2-38 Parking brake rear cable adjustment point

To check the cable adjustment, adjust both rear cables at the equalizer link until the caliper off-stops are just clear of the calipers. Measure the gap produced at each off-stop and lengthen the cables by this amount.

With the cables correctly adjusted, check that the centralizing straps (see fig. B2-37) are pushing the pads away from the discs when the parking brake is in the off position. If not, remove the nut and bolt securing the straps, bend the straps outward (i.e. away from the disc) then refit them. Ensure that the straps are pushed downward towards the adjusting nut whilst tightening the nut and bolt securing them to the caliper.

Check that the distance between the pad and the disc are the same on each side of the caliper; if not, reset the centralizing straps.

Raise each rear wheel in turn so that it is free to rotate and adjust each caliper as follows.

Turn the caliper adjuster (see fig. B2-37) clockwise until the pads just grip the disc; at this point it should only just be possible to rotate the road wheel by hand. Turn the adjuster anti-clockwise a quarter turn (i.e. three clicks on the nut) to obtain the minimum clearance between the pads and disc.

11 Lubricate the parking brake linkage

Position the car on a ramp or over a pit. Lubricate the parking brake linkage clevis pins, fulcrum pins, and the rear cable adjusters with approved grease.

Fuel system

Safety precautions

It is important that whenever a fuel line is opened or the fuel tank drained, that the workshop safety precautions given in Chapter A of the Workshop Manual are strictly observed.

1 Renew the main filter element

The main fuel filter; situated on the car body underframe, contains a disposable element.

Dependent on the type of filter fitted (see fig. B2-39) the following procedure should be carried out to renew the filter element.

Type A

Disconnect the inlet and outlet pipes from the filter top cover.

Blank off the pipe connections to prevent loss of fuel.

Remove the setscrews securing the filter mounting bracket to the body crossmember; lower the filter from the car.

Remove the three screws securing the filter bowl clamping ring. Separate the bowl from the filter head.

Drain any fuel from the bowl and withdraw the element.

Type B

Place a clean container beneath the filter to collect any fuel spillage.

Remove the retaining bolt from the centre of the filter bowl.

Separate the bowl from the filter head.

Type A and B

Clean the filter bowl using clean fuel.

Fit a new element and sealing rings by reversing the respective removal procedure noting the following.

Do not overtighten the bowl securing bolt or clamp retaining screws. Tighten the three screws evenly.

After fitting the filter to the car, examine the fuel system for leakage and rectify as necessary.

When carrying out the above operation at the 80 000 kilometres (48 000 miles) or four years and subsequent periods, the intank fuel filter situated on the underside of the fuel tank (see fig. B2-40) should also be removed and cleaned as follows.

Disconnect the battery.

Drain or siphon the fuel tank.

Place a container beneath the fuel intank filter to collect the residue of fuel from the tank when the filter is removed.

Disconnect the hose from the intank filter outlet pipe.

Remove the circlip retaining the filter and carefully withdraw the filter from the tank.

Clean the filter mesh by washing it in clean fuel.

Examine the filter for serviceability and renew if necessary.

Fit the filter by reversing the removal procedure.

Always use a new seal on the filter body.

Ensure that the fuel drained from the fuel tank is free from foreign matter, then return it to the fuel tank.

Check the fuel filter and the pipe connections that have been disconnected, for leaks.

2 Fit new paper filter elements to the carburettor fuel inlets

Carry out this operation when the engine is cold.

A paper filter element is fitted into the fuel intake filter housing on each carburettor. To renew a filter element proceed as follows.

Remove the two screws from the top of the filter housing (see fig. B2-41).

Using a $\frac{1}{4}$ in UNF bolt screwed into the threaded hole in the plug, lift the plug from the housing.

Withdraw the spring, retainer, and filter element from the housing; discard the filter element.

Fit the new filter element by reversing the removal procedure noting the following.

Ensure that the new filter element is fitted with its open end towards the seating face in the housing.

Fit a new sealing ring to the sealing plug.

On completion check for any fuel leaks and rectify as necessary.

3 Renew the fuel mixture weakening device filter

The filter is situated on the left-hand valance of the engine compartment (see fig. B2-42).

To remove the filter, disconnect the outlet hose

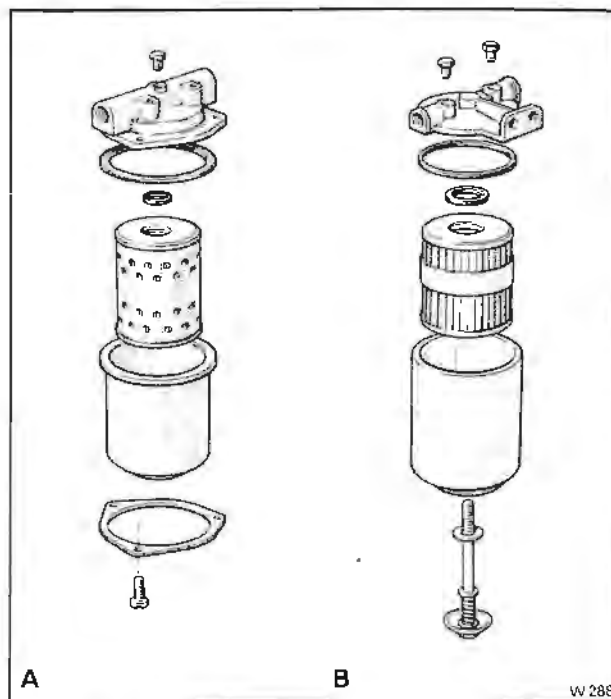


Fig. B2-39 Main fuel filter

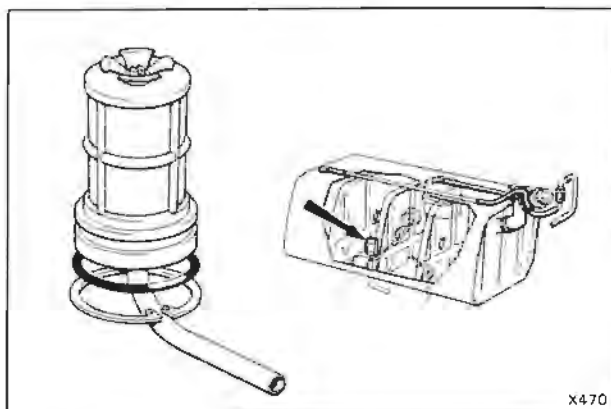


Fig. B2-40 Intank fuel filter

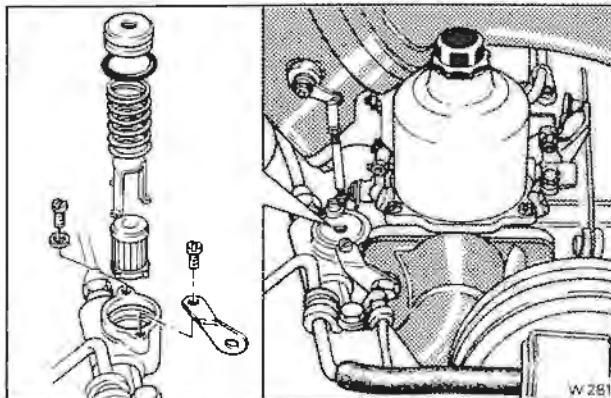


Fig. B2-41 Fuel inlet filter

and then remove the two setscrews retaining the filter assembly to the valance; discard the filter assembly.

Fit a new filter assembly by reversing the removal procedure.

4 Check the condition of the filler head to fuel tank hose; renew as necessary

To enable the filler head to fuel tank hose to be examined, it is necessary to remove the rear suspension gas spring. For details of the procedure required reference should be made to Chapter U of the Workshop Manual.

5 Check the condition of all flexible fuel pipes

Carefully examine all the flexible fuel pipes throughout the fuel system. Renew any pipes which have become damaged or deteriorated to an unserviceable condition.

Check the complete fuel system for leaks and rectify as necessary.

Electrical system

1 Check the battery electrolyte level and condition

Silver Spirit, Silver Spur, Mulsanne, and Convertible cars.

The battery is situated in the luggage compartment stowage well. To gain access to the battery, turn back the carpet from the right-hand side of the luggage compartment. Lift out the stowage well lid and the cover from around the battery.

Corniche Saloon and all Camargue cars.

The battery is mounted on the right-hand side of the luggage compartment. To gain access to the battery turn back the carpet and remove the trim from around the battery, the trim is secured by contact strip on Corniche and two turn fasteners on Camargue. Unclip the battery cover retaining strap and lift off the cover.

To check the specific gravity of the battery electrolyte on these models, it is necessary to remove the battery from the car as follows. Ensure the ignition is switched off, then disconnect the battery leads. Remove the battery clamp and lift the battery from its cradle.

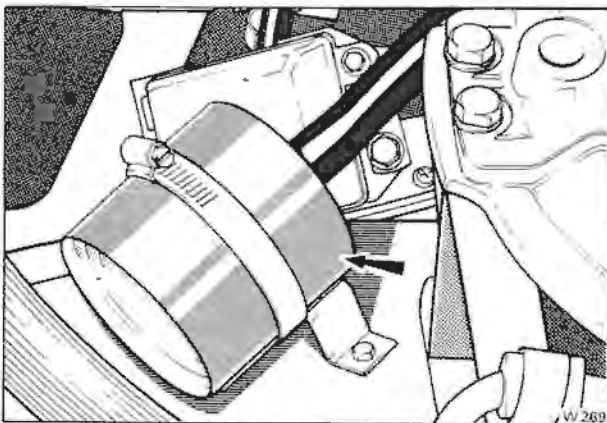


Fig. B2-42 Fuel mixture weakening device filter

Battery electrolyte check

Applicable to batteries with removable cell vent cover(s)

a. Electrolyte specific gravity check.

Remove the vent cover(s) from the top of the battery.

Using a hydrometer check the specific gravity of the electrolyte in each cell and compare the readings obtained with the following tables.

Caution

The electrolyte in the battery is a corrosive acid. Do not allow the electrolyte to come into contact with the eyes, skin, fabric, or paintwork. Flush any contacted areas immediately and thoroughly with water. If the eyes are effected, flush for at least 15 minutes and obtain prompt medical attention.

Chloride battery

Air temperature below 32°C (90°F)

Specific Gravity	Condition of Battery
1.270 to 1.290	Fully charged
1.180 to 1.200	Half discharged
1.090 to 1.110	Fully discharged

Air temperature above 32°C (90°F)

Specific Gravity	Condition of Battery
1.220 to 1.240	Fully charged
1.150 to 1.170	Half discharged
1.070 to 1.090	Fully discharged

Lucas or Varta battery

Air temperature below 27°C (80°F)

Specific Gravity	Condition of Battery
1.270 to 1.290	Fully charged
1.180 to 1.200	Half discharged
1.090 to 1.110	Fully discharged

Air temperature above 27°C (80°F)

Specific Gravity	Condition of Battery
1.220 to 1.240	Fully charged
1.130 to 1.150	Half discharged
1.050 to 1.070	Fully discharged

If the specific gravity reading of all the cells is uniform and within the range 1.240 to 1.270 the battery is in an acceptable state of charge. If the readings are uniform but below 1.220 the battery should be recharged. Always remove the battery from the car for recharging.

If the specific gravity of the electrolyte in one cell differs markedly from the others (i.e. the reading is 0.040 or more, lower than the remainder), then a defect must be suspected and rectified as necessary.

b. Electrolyte level check

Ensure that the battery is in a high state of charge (see Electrolyte specific gravity check).

The level of the battery electrolyte in each cell should be approximately 5 mm (0.250 in) above the tops of the separators (Lucas or Varta battery) or contacting the blue bar situated above the separators (Chloride battery).

If the electrolyte level is low top-up using distilled water until the level is attained. Do not overfill.

Always ensure the top of the battery is clean prior to removal of the vent cover(s).

Battery voltage check

Applicable to sealed for life (maintenance free) batteries

The state of charge of a sealed for life battery can only be checked by taking a voltage reading at the battery terminals, using either a digital voltmeter or multimeter. The instrument used must be accurate to within 0.1 volts.

Before a voltage reading is taken on batteries that have recently received a charge, the residual effects of the surface charge on the battery plates must be removed to avoid a false reading. This surface charge can be removed by applying an electrical load to the battery (e.g. by either connecting a high rate discharge tester for 15 seconds or if the battery is fitted to a car, switching on the headlamps for one minute). Afterwards, allow the battery to stand for a further one minute before a voltage reading is taken.

Compare the reading obtained with the following table to ascertain the state of charge.

Voltage	State of charge
12.8	100%
12.6	82%
12.5	75%
12.4	60%

A minimum reading of 12.5 volts (corresponding to 75% charge) is acceptable. Below this reading the battery should be recharged. Instructions for charging are provided on the battery label.

2 Clean and check the battery terminals

The top of the battery should always be kept clean and dry.

If corrosion of the battery leads or terminals has occurred it should be removed as follows.

Disconnect the battery leads and using hot water or a dilute solution of ammonia carbonate, wash them thoroughly until all corrosion has been removed. Finally wash with clean water to remove the ammonia carbonate solution.

Remove any corrosive deposit from the terminal posts using a cloth moistened with ammonia carbonate solution then wash with clean water.

Dry the battery leads and terminal posts. Connect the battery leads to the terminal posts. Liberally coat the terminals with petroleum jelly.

3 Check all exterior lamps for operation

Actuate the respective switches and check for lamp illumination and function [i.e. turn flashers, headlamp

dip/main beam, headlamp flash (if fitted)]. When checking the fog lamps the main lighting switch must be on. In the Park position the front fog lamps must be switched on before the rear fog lamps will illuminate.

When only the rear fog lamps are switched on with the main lighting switch in the Head position, these lamps will be extinguished when the headlamps are switched to main beam. If both front and rear fog lamps are in use the rear fog lamps will remain illuminated.

The respective facia tell-tales should also be checked for illumination during these operations.

With the lighting switch in the Park and Head position, switch on the ignition. Check the facia instruments for illumination; the panel illumination dimming switch should also be checked for correct operation.

4 Check all facia warning lamps for operation

Before carrying out the following checks firmly apply the parking brake; ensure the gear range selector is in the Park position and remove the gear range selector cut-out from the fuseboard.

Ignition and oil warning lamps

Turn the ignition key to the RUN position, the ignition and oil pressure warning lamps should illuminate. Start the engine, both lamps should extinguish; switch off the ignition.

When the ignition key is turned to the ACC position the ignition warning lamp only should illuminate.

Warning panel cluster lamps

Move the gear range selector lever to the D position (do not insert the gear range selector cut-out).

Apply the footbrake then turn the ignition key to the start position. All the warning panel cluster lamps should illuminate. With the ignition held in the start position, turn the main lighting switch to the Park and Head positions; the intensity of illumination of the ice and low fuel warning panels should reduce. Switch off the ignition and lighting switch.

The hydraulic system warning panel situated at the top of the warning panel cluster should also be checked as follows.

Turn the ignition key to the RUN position.

Depressurize the hydraulic system by actuating the brake pedal between 50 and 60 times. The two brake pressure warning panels should illuminate.

When the panels have illuminated start and run the engine. Both panels should extinguish after approximately two minutes indicating that the hydraulic systems are pressurized. Switch off the ignition.

Fasten seat belt warning lamp

To check the seat belt warning lamp, open and close each door in turn; observe the lamp operation.

The seat belt warning panel should illuminate whenever a door is opened and extinguish approximately seven seconds after the door is closed.

Note

All doors must be fully closed for the lamp to extinguish (i.e. not on first catch).

Hazard warning indicator

Depress the hazard warning switch, check that all the turn indicators and the facia warning lamp are flashing.

5 Check all interior lamps for operation

Ensure all the doors are fully closed and the interior lamps are extinguished. Open the driver's door; the rear section of the central roof lamps should illuminate. Fully close the door; the roof lamps should remain illuminated for approximately seven seconds.

On 1985 model year cars the rear roof lamps and footwell lamps should also illuminate when the door is opened. If the gear selector lever is moved from the Park position on these cars, with the ignition key in the RUN position, the lamps will extinguish immediately all the doors are closed. When carrying out this operation also check that the door open warning lamp and step lamp are illuminated with the door in the open position. These lamps should extinguish immediately the door is fully closed.

Repeat the check on the remaining door(s).

Note

If the doors are only closed to the first catch position the lamps should remain illuminated.

Check the operation of the front compartment personal lamps as follows.

Withdraw the main lighting switch; the front section of the driver's roof lamp should illuminate.

Operate the map lamp switch, the front section of the front passenger's roof lamp should illuminate.

On 1985 model year cars fitted with vanity mirror illumination, move the switch to the mirror position. Lower the passengers sun visor; the lamp situated above the visor should illuminate.

Withdraw the visor from its retaining clip; the lamp should extinguish. The lamp should also extinguish when the visor is moved to its raised position, even when the switch is on.

The operation of the rear roof lamps should be checked by operating the switches situated on the rear compartment vanity mirror surrounds.

Press the upper portion of the three position switch; the front section of the respective roof lamp should illuminate. Press the lower portion of the switch and the rear section of both rear roof lamps should illuminate. With the switch in the central position both lamps should be off. Repeat the operation on the opposite side of the car.

On Camargue cars press the outer of the two switches situated in the arm rest; this should illuminate the rear section of both rear roof lamps. Pressing the inner switch should illuminate the front section of the respective roof lamps. Repeat the operation on the opposite side of the car.

Corniche Saloon cars

Ensure the doors are fully closed and the interior

lamps are extinguished. Open the driver's door; the rear section of the four roof lamps should illuminate. Fully close the door; the roof lamps should remain illuminated for approximately seven seconds then extinguish. Repeat the check with the passenger door. When carrying out these checks also ensure that the door open warning lamp and step lamp are illuminated when the door is open.

Check the operation of the rear compartment roof lamps by operating the three position switch situated in each arm rest, ensuring that the car doors are closed.

Press the outer section of the switch, the front section of the respective roof lamp should illuminate. Press the inner section of the switch, the rear section of both rear roof lamps should illuminate. With the switch in the central position both roof lamps should be off.

Repeat the check on the opposite switch.

Check the front compartment roof lamps as described in the section for cars, other than Corniche.

Convertible cars

Seven interior lamps are provided, one in each door, two in the hood above the rear window, one in the front face of each rear seat outer arm rest and one above the facia stowage compartment.

Open the driver's door; both roof lamps, the lamp in each rear arm rest and the lamp in each door should illuminate. Fully close the door, the lamps should all extinguish, except the rear roof lamps which should remain illuminated for approximately seven seconds. Repeat this procedure with the passenger door.

Withdraw the main lighting switch; both rear roof lamps should illuminate.

Operate the facia switch marked MAP; the lamp situated above the facia stowage compartment should illuminate.

With the doors closed, operate the switches situated in the end of the arm rest. The rear roof lamp and rear compartment arm rest lamp situated on the same side of the car as the switch should illuminate.

6 Check the horns for operation

Examine the electrical connections to each horn to ensure they are in good condition. Clean the horns and remove any foreign matter that may have collected in the horn trumpets.

Switch on the ignition; press the horn button several times to ensure the horn button is making a good contact and that both horns are functioning correctly each time it is pressed.

7 Replenish the windscreen and headlamp washer reservoirs**a. Windscreen washer reservoir.**

The filler is located in the engine compartment. Remove the filler cap and add the correct mixture of windscreen washer fluid and distilled water to the reservoir until the maximum level is attained.

Topping-up level.

Cars with the reservoir situated in the engine

compartment – bottom of filler neck.

Cars with the reservoir situated beneath the wing - 44,0 mm (1.750 in) below the filler neck.

b. Headlamp washer reservoir.

On 1985 Silver Spirit, Silver Spur, and Mulsanne model year cars a headlamp washer system is fitted. The reservoir is housed under the front right-hand wing and the filler is located in the engine compartment towards the front of the car.

The reservoir should be topped-up with clean water until the fluid level is at the bottom of the filler neck.

During winter conditions, a solution of 30% isopropyl alcohol and 70% water should be used. This mixture will provide frost protection down to a temperature of approximately -10°C (14°F).

8 Check the condition of the windscreen wiper blades and headlamp wash brushes

Lift the wiper arms from the windscreen and inspect them for wear or damage. Renew the blades if necessary.

To remove a blade, lift the wiper arm away from the windscreen then press the small tab situated in the end of the arm to release the blade. Check that the new blade is secured by the retaining catch then return the blade to the windscreen.

On late Silver Spirit, Silver Spur, and Mulsanne cars the wiper blade removal procedure is as follows.

a. Driver's side of the windscreen. Lift the wiper arm from the windscreen. Push half of the blade away from the arm, until the blade is released from its location clip. To fit the new blade, position it on the wiper arm and press it firmly into the location clip.

b. On the passenger's side of the windscreen, lift the wiper arm from the windscreen and pivot the blade through 180°. Press the small release tag, situated on the underside of the blade pivot block and push the blade out of the crooked end of the wiper arm. Withdraw the wiper blade from the arm. Fit the new blade by reversing the removal procedure.

Note

Care must be taken during these operations to ensure that the wiper arm is not allowed to spring back onto the windscreen when the blade has been removed, otherwise damage to the windscreen could occur.

On Corniche, Continental, and Camargue cars fitted with headlamp wash/wipe brushes, examine the brushes for wear or damage and renew if necessary.

To renew a brush, carefully remove the retaining nut from the spindle. Note the position of the brush then withdraw it from the splined spindle. Fit the new brush by reversing the removal procedure ensuring that the brush is in the correct park position.

9 Check the windscreen wash/wipe and headlamps power wash/wipe for correct operation

Before carrying out the following check ensure that the windscreen is clean.

Switch on the ignition and press the windscreen wash/wipe switch. The windscreen wipers should operate and the fluid from the washer jets should

impinge on the windscreen approximately 419 mm (16.5 in) from the centre line of the windscreen and 190 mm (7.5 in) below the windscreen top finisher. The wash/wipe function should continue until the switch is released.

On release of the push button switch the washer should cease while the wipers should continue for approximately four strokes before returning to the park position.

Turn the main lighting switch to the HEAD position. The headlamps cleaning function will only operate when the headlamps are illuminated. Press the wash/wipe switch, the power wash jets should only operate for half a second when the wash/wipe switch is depressed. To repeat the wash it will be necessary to release and then depress the switch again.

The headlamp brushes and washer jets should operated until the switch is released, the brush giving one full wipe cycle after the jet flow has ceased.

10 Check the alternator for correct operation

For details of the alternator test procedure and brush renewal, reference should be made to Chapter M of the Workshop Manual.

Automatic air conditioning system

1 Check the scuttle intake grille is free from obstruction

Check the air intake grilles and foam filter, situated behind the bonnet, for obstruction (leaves, dirt, etc.). Carefully remove the grille retaining screws, lift the grilles and filters from the body and clean all parts including the air intake ducts; also ensure the air intake duct drain tubes are free from obstruction.

2 Check the refrigeration system for correct operation

For details of the procedure required to carry out this operation reference should be made to Chapter C of the Workshop Manual.

Body

1 Check the condition and operation of the seat belts

The following checks should be carried out on the front and rear retractable seat belts.

Fully withdraw the seat belt from the reel; examine the webbing for any signs of wear or damage. Allow the belt to return to the stowed position.

To check the operation of the retractable belt, fit the belt and then give the webbing of the diagonal belt a sharp pull. Ensure that the belt locks and then returns to the normal roller action immediately the belt is released.

With the fastening tongue of the belt locked in the retaining clasp; ensure the tongue is securely held and is released immediately the release button marked PRESS is operated.

The alternative method of checking the seat belts is to select an open stretch of road, then when the road is free from any potential danger, accelerate the car to 24 km/h (15 mile/h) and brake sharply from

this speed; ensure that the belt locks and then subsequently releases. If this method of test is used, it will be necessary to carry a passenger(s) to enable the passenger seat belts to be tested.

Check the rear seat lap belt for condition and correct locking and release.

Report any defects to the owner.

When seat belt replacement is necessary only belts approved by Rolls-Royce Motors Limited should be fitted.

2 Check that all body drains are free from obstruction

Examine the body drain holes; remove any foreign matter that may be obstructing the holes. Take care not to damage the paintwork.

3 Lubricate the spare wheel carrier lowering bolt

Turn back the carpet on the luggage compartment floor to expose the spare wheel inflation trap and spare wheel carrier lowering bolt head. Remove the inflation trap cover; if a spare wheel retainer is fitted, it should be removed.

Rotate the spare wheel bolt anti-clockwise until the carrier is fully lowered. Remove the spare wheel from the carrier.

Lubricate the carrier lowering bolt using a recommended lubricant. Raise and lower the carrier to distribute the lubricant over the full length of the carrier bolt.

Check the condition of the spare wheel as described under the heading Wheels.

Fit the spare wheel onto the carrier. Ensure that the inflation valve is in line with the inflation trap in the luggage compartment floor, then fully raise the carrier.

Fasten the spare wheel retainer (if fitted), and fit the tyre inflation trap rubber and carpet.

4 Check the fluid level in the power operated hood reservoir

Convertible cars

The level of the fluid in the hydraulic pump reservoir

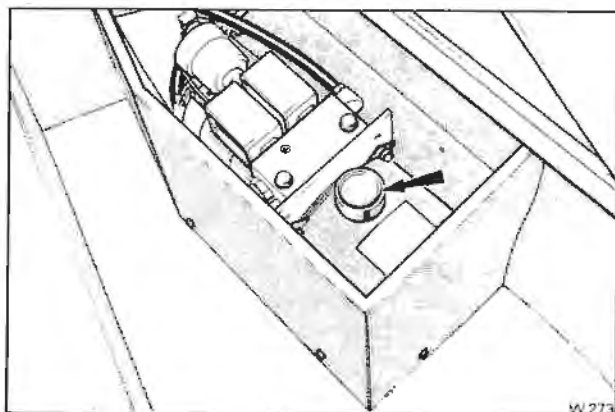


Fig. B2-43 Power operated hood reservoir

must be checked with the hood in the fully open (down) position.

The fluid reservoir is situated adjacent to the stowage recess below the luggage compartment floor similar to that shown in figure B2-43.

To gain access to the reservoir, turn back the carpet on the right-hand side of the luggage compartment to expose the recess covers; remove the covers.

Unscrew the reservoir filler cap and check the fluid level. The correct level is 25 mm (1.0 in) below the filler neck.

If necessary top-up the reservoir with an approved fluid. **Under no circumstances must a castor oil based fluid be used.**

Wheels

1 Check all tyre pressures

Check the tyre pressures including the spare when the tyres are cold; adjust if necessary. The inflation pressure of the spare tyre should be adjusted to the highest tyre pressure (i.e. rear wheel).

Do not check the pressures when the tyres are warm (e.g. after the vehicle has run).

Always ensure that the valve caps are fitted after checking.

2 Check the condition and tread depth of the tyres

Examine the tyres, including the spare, for any signs of damage or tyre wall cracking, etc.

Carefully remove any stones or other objects that may be lodged in the tyre treads.

Check the depth of tread at several points around each wheel using a tread depth gauge.

To enable a visual check to be made, tread depth indicators are incorporated into the tyre construction. These indicators are integral moulded ribs, spaced at intervals around the circumference of the tyre, and extend across the full width of the tread in all primary grooves. When one or more of these indicators are flush with the tread, only 1.6 mm ($\frac{1}{16}$ in) or less of tread depth remains, and a new tyre is required.

If the condition of the tyres is not satisfactory or the tread depths do not conform to the legal requirements of the country in which the car is operating, the owner should be notified and asked to authorize the fitting of new tyres.

For full information on tyre fitting, balancing, etc., reference should be made to Chapter R of the Workshop Manual.

Test

1 Road test the car for satisfactory performance

On completion of the respective service schedule operations, carefully road test the car for satisfactory performance.

If new brake pads have been fitted, the running-in and bedding procedures should be carried out as described under, Check the brake disc pads for wear and Check the parking brake pads for wear.

When the road test has been completed, the car

should be fully inspected for any leaks, fouls, etc., and rectified as necessary.

The transmission fluid level, should be finally checked immediately after the test, while the fluid is at normal running temperature and topped-up if necessary (see Check the transmission fluid level).

Ensure that all controls, door handles, steering wheel, etc., are clean and that any dirt which may be attributed to the service schedule is completely removed.

Service schedule procedures*Cars conforming to Australian specifications*

Contents	Pages					
	Silver Spirit Mulsanne Silver Spur	Mulsanne Turbo	Bentley Eight	Bentley Turbo R	Corniche/ Continental	Camargue
1986 model year cars	B2/1-3	—	—	—	—	—



WARNING

Use only **Hydraulic System Mineral Oil (LHM)** to replenish the braking and levelling systems.

Do not use Brake Fluids (Castrol RR363, Universal, or any other type). The use of any type of brake fluid, even in very small amounts, will cause component failure necessitating extensive rectification to the braking and levelling systems of the car.

Always ensure before fitting any seals, hoses, pipes, etc., that they are suitable for a mineral oil system. For details of correct component identification reference should be made to Chapter G of the Workshop Manual.

Always ensure that a sealed container of **Hydraulic System Mineral Oil (LHM)** is fitted adjacent to the battery.

Always ensure that no foreign matter enters the systems when work is being carried out.

General information

The information contained in this chapter should be used in conjunction with the appropriate service schedule charts and Workshop Manual.

Car protection

Prior to commencing a service schedule the car should be suitably protected. For this purpose car protection kit RH 2662, wing covers RH 2684, and wing cover liners RH 2685 should be used.

Regular maintenance

In addition to the service schedules listed, the following maintenance should be carried out.

Engine

Weekly or every 800 kilometres (500 miles) whichever is the earlier; check the engine oil by means of the dipstick; top-up if necessary.

Lamp units

Weekly; check the lamp units for operation; rectify any faults.

Tyre pressures

Weekly; check the tyre pressures including the spare; adjust if necessary.

Windscreen washers reservoir

Weekly; check the washer fluid level; top-up if necessary.

Service schedule procedures

1986 model year cars

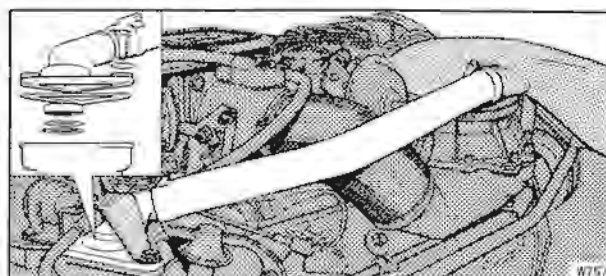


Fig. B2/1-1 Crankcase breather – 'A' bank

Headlamp washers reservoir

Weekly; check the washer fluid level; top-up if necessary.

Hydraulic reservoirs

Monthly; check the level of hydraulic mineral oil in the reservoirs.

Depressurize the hydraulic systems by pumping the brake pedal until the low brake pressure warning panels on the facia illuminate. Continue to pump the pedal for at least a further 20 applications to ensure complete depressurization. Start and run the engine for four minutes with the car unladen, prior to checking the level. Top-up if necessary to the indicated maximum level. **Use only Hydraulic System Mineral Oil (LHM)**. Refer to page B2/1-20 for further information before carrying out this operation.

Engine cooling system

Every three months; check the coolant level. If necessary top-up with the correct anti-freeze/water mixture (see page B2/1-13).

Crankcase emission control system

1 Clean the crankcase breather tube flame trap

Crankcase emissions are controlled by two separate breather pipes.

From the rear of 'A' bank cylinder head a moulded rubber hose connects the crankcase to the air intake housing, immediately upstream of the air meter but downstream of the air cleaner/silencer assembly.

From the front of 'B' bank cylinder head a second moulded rubber tube connects the crankcase via the oil filler (which has a sealed cap) to a pipe leading to the plenum chamber. This pipe assembly incorporates a restrictor to control the flow.

When fitting the flame trap assemblies, the longer assembly should be fitted to the 'B' bank oil filler connection.

Crankcase breather 'A' bank - To service

Withdraw the windscreen wiper motor relay (wiper 3) (see fig. B2/1-27, item A) situated on a bracket adjacent to the windscreen washer reservoir.

Remove the cover from the windscreen wiper drive mechanism to gain access to 'A' bank crankcase breather connection.

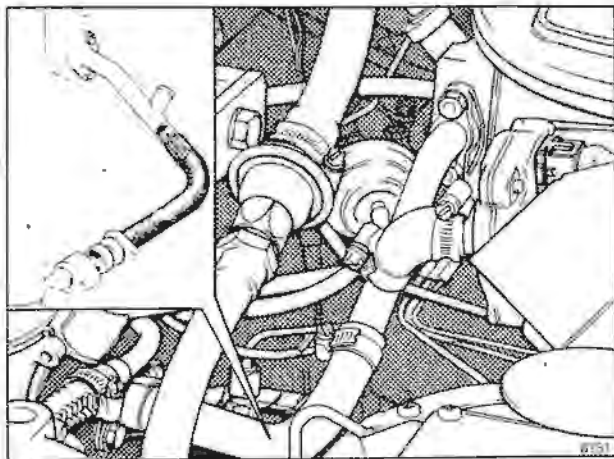


Fig. B2/1-2 Crankcase breather - 'B' bank

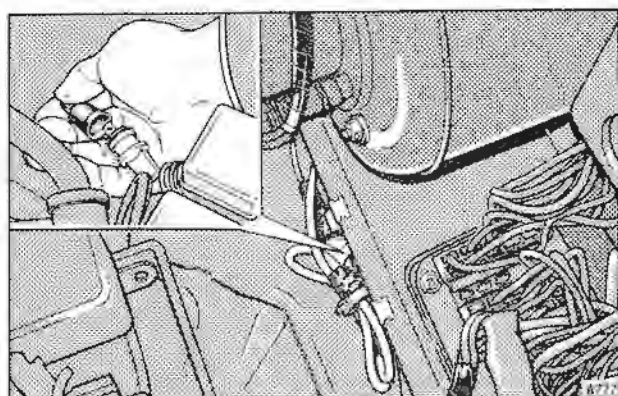


Fig. B2/1-3 Oxygen sensor connection

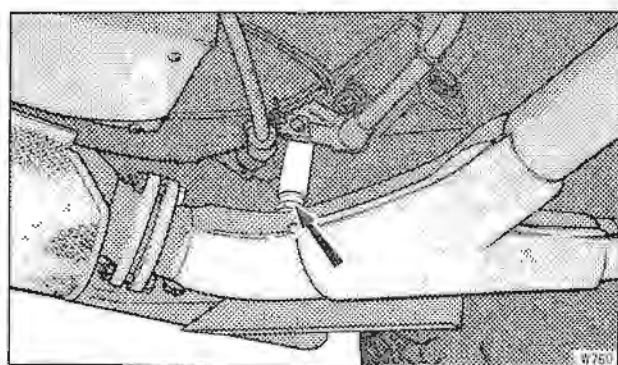


Fig. B2/1-4 Oxygen sensor

Locate the crankcase breather connection at the rear of 'A' bank cylinder head.

Slacken the worm drive clips securing the ends of the breather hose, free the joints and withdraw the hose.

Unscrew the three setscrews securing the breather take-off flange to the crankcase connections.

Withdraw the three setscrews and collect the washer fitted under the head of each one.

Lift the solenoid bracket from the vicinity of the connection.

Free the joint and lift the elbow casting from the engine. Discard the gasket.

Invert the casting and remove the circlip. Collect the retaining washer and withdraw the flame trap assembly.

Wash the flame trap in clean fuel and dry with compressed air.

Clean any deposits from inside the breather hose.

Fit the 'A' bank breather by reversing the procedure given for removal, noting that a new gasket should be fitted between the breather elbow casting and the engine.

Crankcase breather 'B' bank - To service

Slacken the worm drive clip securing the hose from the auxiliary air valve to the metal breather pipe. Withdraw the hose.

Slacken the worm drive clip securing each end of the rubber breather hose and free both hose joints.

Unscrew the two setscrews securing the metal breather pipe to the plenum chamber. Collect the washers, withdraw the pipe and discard the gasket.

Withdraw both the metal breather pipe and the rubber breather hose.

Unscrew the setscrew securing the adapter housing to the oil filler and collect the washer. Withdraw the housing (slight resistance may be felt due to the rubber sealing ring).

Remove the flame trap assembly.

Wash the flame trap assembly in clean fuel and dry with compressed air.

Clean any deposit from inside the breather pipe and hose.

Inspect the inside of the metal pipe to ensure that the restrictor is not blocked.

Assemble the 'B' bank breather by reversing the removal procedure noting that a new gasket should be fitted between the metal pipe and the plenum chamber. Ensure that the rubber 'O' ring on the oil filler connection is in good condition

Exhaust emission control system**1 Renew the oxygen sensor and reset the elapsed mileage indicator****Oxygen sensor**

From inside the engine compartment locate the blue oxygen sensor cable where it exits from the loom adjacent to the left-hand blower motor (see fig. B2/1-3).

Unclip the blue cable and carefully ease it upwards until the white moulded junction piece, connecting the blue cable to the black cable is visible.

Note the run of both cables and disconnect them at the white junction block.

From beneath the car, clean the area around the oxygen sensor before it is unscrewed and discarded.

Before fitting the new oxygen sensor, carefully smear 'Never-seez' assembly compound onto the threads.

Important

Do not allow the assembly compound to contact the exhaust gas slots (the slotted shield below the threaded portion), otherwise damage to the oxygen sensor and catalytic converter may result.

Screw the oxygen sensor into the exhaust pipe and tighten to between 50 Nm and 60 Nm (5,1 kgf m and 6,1 kgf m, 37 lbf ft and 44 lbf ft).

Feed the oxygen sensor cable upwards into the engine compartment, adjacent to the left-hand blower motor. Connect the black cable to the blue cable and suitably clip the cables to the loom.

Important

Always ensure that any free cable is clipped in the engine compartment. The cable should be reasonably taut under the car, otherwise loose cable could foul the hot exhaust pipe and become damaged.

Elapsed mileage indicator

Open the luggage compartment.

Release the Tenax clip situated adjacent to the right-hand rear lamps access point.

Unscrew the Pozidriv screws securing the side panel carpet in position. Unscrew sufficient screws to allow the rear of the carpet panel to be moved inwards to reveal the elapsed mileage indicator (see fig. B2/1-5).

Firmly depress the reset button.

Switch on the ignition.

Start and run the engine, noting that as the oxygen sensor reaches its normal operating temperature the warning lamp on the fascia is extinguished.

Stop the engine and fit the carpet panel.

2 Remove and clean the E.G.R. valve and feed pipes (see fig. B2/1-6)

Unscrew the setscrew retaining the heatshield to the plenum chamber cover, collect the washer.

Unscrew the setscrew securing the heatshield to the top of the plenum chamber, collect the large diameter washer.

Unscrew the long setscrew that forms the lower mounting for the auxiliary air valve. Withdraw the setscrew and collect the washer and distance pieces.

Unscrew the nut from the E.G.R. valve top mount, collect the washer.

Withdraw the heatshield.

Detach the vacuum signal hose from the E.G.R. valve.

Unscrew the lower retaining nut and collect the washer.

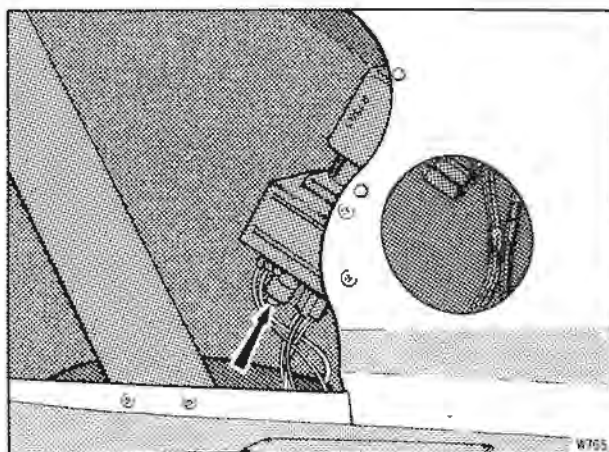


Fig. B2/1-5 Elapsed mileage indicator

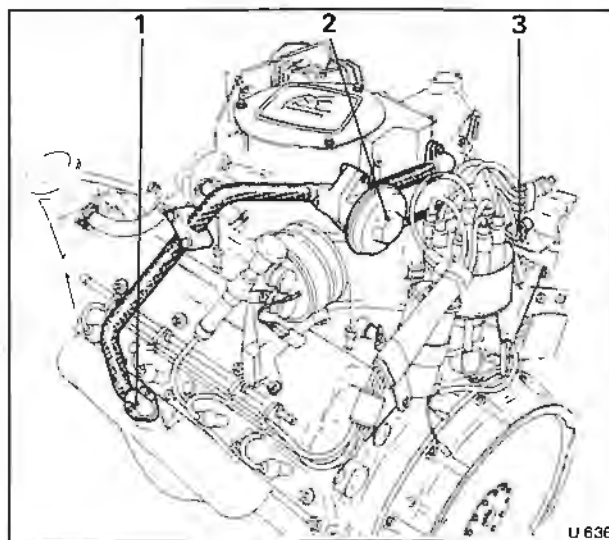


Fig. B2/1-6 Exhaust gas recirculation system

- 1 'B' bank exhaust manifold take-off point
- 2 Exhaust gas recirculation (E.G.R.) valve
- 3 E.G.R. cut-off solenoid

Note

The valve upper securing nut is unscrewed to remove the heatshield.

Withdraw the valve and discard the gasket.

There are two E.G.R. pipes joined together adjacent to the auxiliary air valve by a sealing ring and split clamp.

Lower pipe

Locate the joint adjacent to the auxiliary air valve, unscrew the two nuts and collect the washers. Free the clamp and withdraw the bolts together with both halves of the clamp bracket. Collect the sealing ring.

Unscrew the two nuts from the exhaust manifold joint. Free the joint, withdraw the pipe and discard the gasket.

Upper pipe

Unscrew the two setscrews securing the pipe flange to the plenum chamber; collect the washers from the setscrews.

Withdraw the pipe and discard the gasket.

With a suitable scraper, remove all carbon from the valve, mounting flange faces, plenum chamber connection, distribution pipes, and joint faces.

Using a wire brush fitted into a portable drill complete the cleaning operations.

Before fitting the components to the engine, thoroughly blow out the components with compressed air to remove all carbon particles.

Fit the components by reversing the procedure given for removal, noting the following points.

Ensure that the valve pintle is secure on the valve stem.

Always use new gaskets.

3 Check the E.G.R. valve for correct operation

The operation of the E.G.R. valve only requires checking under no load conditions, as follows.

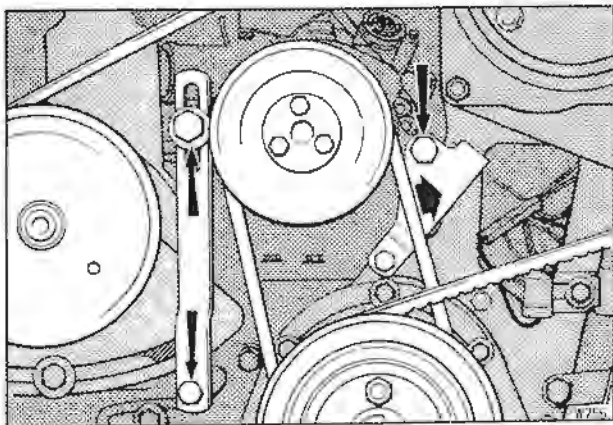


Fig. B2/1-7 Air pump drive belt adjustment and tension check point

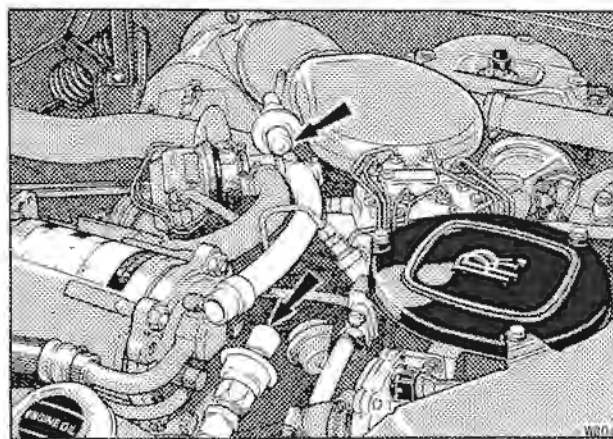


Fig. B2/1-8 Air injection system manifolds disconnected and blanked

Connect an electric impulse tachometer to the engine in accordance with the manufacturer's instructions.

Ensure that the parking brake is firmly applied and that the gear range selector is in the Park position.

Start and run the engine until normal operating temperature is attained.

Ensure that the engine has run at least 15 minutes after the engine coolant thermostat has opened.

Allow the engine to return to the idle speed.

Increase the engine speed slowly noting the operation of the E.G.R. valve.

The E.G.R. valve should commence to open at between 1550 rev/min and 1850 rev/min.

4 Check the condition and tension of the air pump drive belt

Before commencing to adjust the drive belt inspect it for signs of wear or cracking. If the belt is found unsatisfactory it should be renewed.

The belt tension must be checked at a point midway between the two pulleys (see fig. B2/1-7) by use of a belt tension meter or by applying a spring balance to give a 9,50 mm (0.375 in) belt deflection at a specified load.

Belt dressing must not be applied to prevent belt slip.

Coolant pump to air pump

Load may be applied on either side of the belt run.

New belt and retensioning load

Belt tension meter 18,1 kgf to 22,7 kgf
(40 lbf to 50 lbf)

Spring balance 3,6 kgf to 5,9 kgf
(8 lbf to 13 lbf)

The tension of the belt is adjusted by altering the position of the air pump.

Slacken the air pump pivot setscrew.

Slacken the setscrew securing the air pump to the adjustment strut.

Slacken the adjustment strut pivot setscrew.

Turn the air pump around its pivot point to adjust the belt tension and tighten the setscrew in the adjustment strut slot. Check the belt tension and repeat the adjustment operation if necessary.

When the belt tension is correct tighten the remaining two setscrews.

5 Check the air injection system for leaks and correct operation**System operation**

Carry out the usual workshop safety precautions.

Disconnect the hoses from the air injection manifolds (see fig. B2/1-8) and suitably blank the manifold connections. It may be necessary to slacken the setscrew securing the air switching valve mounting bracket, so that the valve assembly can be swivelled to gain access to the connections.

If preferred, it is permissible to remove the short hose to 'A' bank manifold.

Locate the blue oxygen sensor cable where it exits from the loom adjacent to the left-hand blower motor (see fig. B2/1-3).

Ease the cable upwards until the white moulded junction piece, connecting the blue cable to the black cable is visible. Disconnect the oxygen sensor at this junction, ensuring that the black cable remains taut beneath the car.

Start the engine and measure the time taken from the end of the engine cranking to the switching of the air delivery from the air injection hoses. This should be between 90 seconds and 150 seconds.

Check both the air switching valve solenoid and the engine running sensor/electronic timer assembly if the switching of the air is outside the specified times.

If no air is delivered towards the air manifolds, refer to the Workshop Manual TSD 4400, Chapter U.

Connect both the blue and the black oxygen sensor cables.

Continue to run the engine until normal operating temperature is attained.

Stop the engine.

Start and run the engine, ensure that the oxygen sensor warning lamp is extinguished within a few seconds and at exactly the same time the injected air is switched from the air manifolds to the air cleaner (this can be detected by a change in the sound of the air discharge).

If the engine is not at normal operating temperature and the oxygen sensor warning lamp takes more than 90 seconds to extinguish, the air may be switched to the air cleaner before the warning lamp is extinguished. If this happens ensure that the engine is fully warmed-up and repeat the operation.

If at any time the oxygen sensor warning lamp is extinguished and the air is not switched from the manifolds to the air cleaner, there is a fault and serious damage to the catalytic converter could result if the engine is run in this condition. Refer to the Workshop Manual TSD 4400, Chapter U for details of the rectification procedure.

System leak check

Carry out the usual workshop safety precautions.

Visually inspect the condition of all hoses, pipes, and joints associated with the air injection system.

Locate the blue oxygen sensor cable where it exits from the loom adjacent to the left-hand blower motor (see fig. B2/1-3).

Ease the cable upwards until the white moulded junction piece, connecting the blue cable to the black cable is visible. Disconnect the oxygen sensor at this junction, ensuring that the black cable remains taut beneath the car.

Disconnect the hose from the air switching valve to the air cleaner, at the valve (see fig. B2/1-9).

Start and run the engine.

Listen carefully for any evidence of an air leak from the system. After 1½ minutes to 2½ minutes the air will be switched from the air manifolds towards the

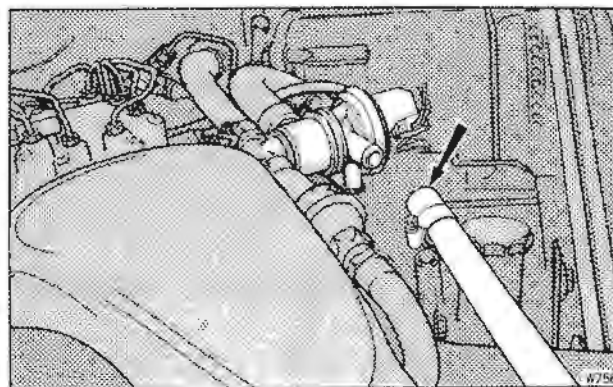


Fig. B2/1-9 Air injection system switching valve to air cleaner hose disconnected for leak check

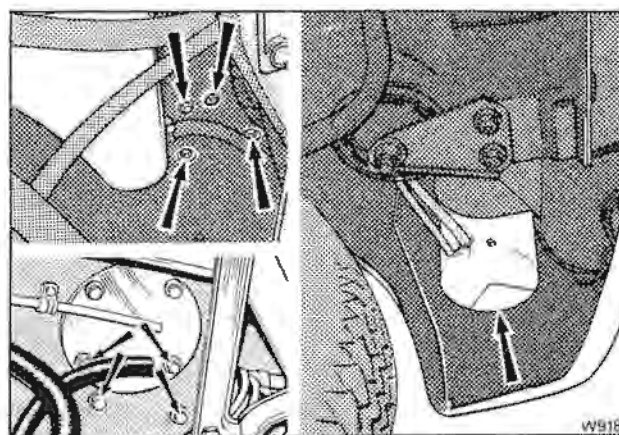


Fig. B2/1-10 Fuel evaporative emission control canister and mounting bracket setscrews

air cleaner. This change can be detected by the noise the air will make as it leaves the open connection of the air switching valve.

When the air is switched towards the air cleaner, stop the engine. Wait a few seconds, start the engine and continue the examination. Repeat this procedure until the inspection of the system is complete.

If an air leak is suspected it is permissible to coat the suspect component with a soap solution, soap bubbles will confirm an air leak.

Fit the disconnected hose to the air switching valve and secure by tightening the worm drive clip.

Fuel evaporative emission control system

1 Renew the evaporative emission control canister
Carry out the usual workshop safety precautions.

Locate the control canister under the left-hand front wing (see fig. B2/1-10). Using the special pliers RH 8090 remove the securing clip from the canister end of the fuel tank to canister flexible hose.

Withdraw both hoses fitted to the control canister. Label each one to facilitate assembly.

Unscrew the four setscrews retaining the control canister in position (see fig. B2/1-10). Support the weight of the canister before the last setscrew is removed. Collect the washer fitted under the head of each setscrew.

Withdraw the control canister from under the wing.

Note the position of the control canister in relation to the mounting bracket and unscrew the retaining worm drive clip.

Fit the new canister to the mounting bracket and

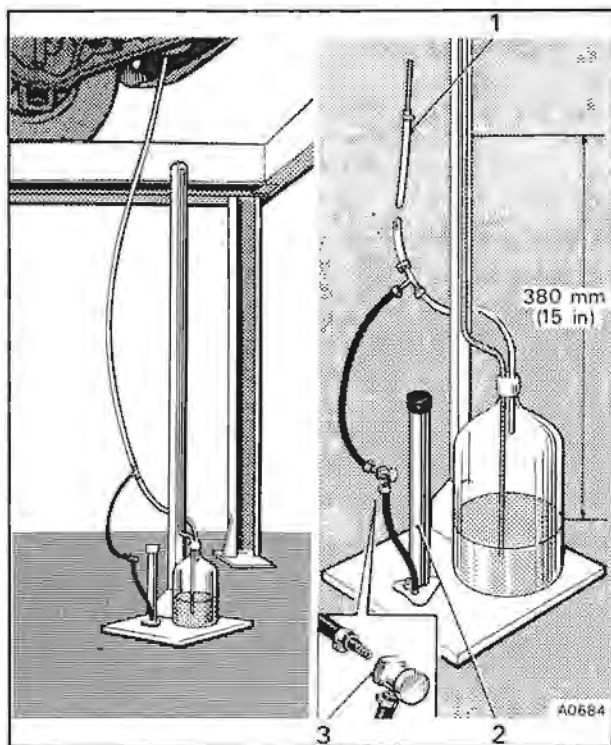


Fig. B2/1-11 Leak check test equipment

- 1 Connection to fuel tank/canister hose
- 2 Pump
- 3 One-way pressure valve

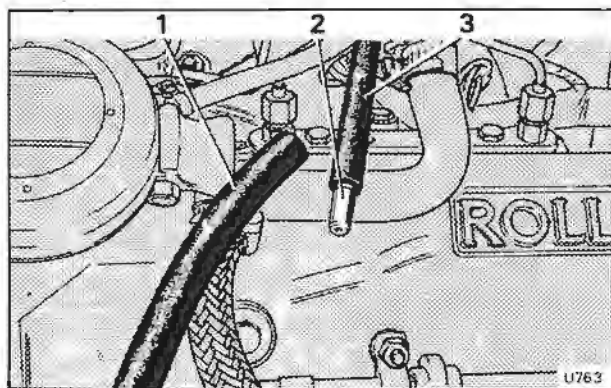


Fig. B2/1-12 Disconnecting the purge line

- 1 Hose from canister
- 2 Restrictor
- 3 Hose to throttle body

tighten the retaining worm drive clip.

Ensure that the canister is in the correct position relative to the mounting bracket.

Fit the assembly to the vehicle by reversing the procedure given for removal, noting that a new hose securing clip should be used.

2 Check the condition of all pipes, hoses, and connections

Carry out the usual workshop safety precautions.

Locate the fuel evaporative emission control canister.

Withdraw the fuel tank evaporative hose from the canister and connect it to the test equipment shown in figure B2/1-11.

Apply air pressure to the fuel tank hose via the test equipment until a reading of 380 mm (15 in) H₂O is attained and close the pressure supply.

After five minutes again check the pressure reading, this should not have fallen by more than 12,7 mm (0.5 in).

If the pressure drop is more than 12,7 mm (0.5 in), progressively treat all joints in the system with soap solution to detect air leaks.

Rectify any air leaks and again leak check the system.

During the five minutes leak down, visually inspect the hoses, pipes, and connections of the system that are routed under the car. Commence where the hose exits from the body adjacent to the left-hand rear road spring and follow the system to the control canister.

Ensure that the hoses are secure in the mounting clips.

When the system is satisfactory, detach the test equipment and connect the hose to the control canister. Secure the hose with a new clip.

3 Check the purge flow rate

Carry out the usual workshop safety precautions.

Remove the retaining clip from the purge line restrictor hose.

Disconnect the hose at the purge line restrictor. Leave the restrictor in the hose to the engine (see fig. B2/1-12).

Connect a rotameter assembly RH 8725 into the line, between the restrictor and the open pipe to the valve connection.

Connect an impulse tachometer to the engine in accordance with the manufacturer's instructions.

Start the engine. Raise the engine speed to 2500 rev/min and note the flow reading on the rotameter, this should be between 35 ft³/h and 55 ft³/h.

If the purge flow rate is outside the limits specified, refer to the Workshop Manual TSD 4400, Chapter U.

Engine

1 Change the engine oil

The sump should be drained when the engine is warm, preferably after the car has completed a run.

To drain the oil, position the car over a pit or on a ramp.

Place a container in position beneath the drain plug situated on the right-hand side of the sump (see fig. B2/1-13). Remove the drain plug and allow the oil to drain from the sump.

Do not flush the sump with paraffin or petrol.

Fit the drain plug ensuring that the washer is correctly positioned and in good condition.

Fill the engine sump with recommended lubricant until the **MAX** level is reached on the dipstick.

Carry out the full oil level check procedure as described under Check the engine oil level.

2 Renew the engine oil filter

Drain the engine oil as described under Change the engine oil.

Place a container under the filter to collect any oil that may be spilt.

Remove the filter by unscrewing it from the engine in an anti-clockwise direction (see fig. B2/1-14).

Thoroughly clean the filter seating face on the engine.

Lightly smear the rubber sealing ring on the new filter with clean engine oil.

Screw the filter onto the pedestal until the rubber seal contacts the sealing face then tighten the filter a further half turn; **do not overtighten**.

Fill the engine with clean engine oil until the **MAX** level is reached on the dipstick. Run the engine and check the filter joint for leakage.

Carry out the full oil level check procedure as described under Check the engine oil level.

Check the engine oil level

In order to obtain an accurate indication of the oil level, ensure that the car is standing on level ground. Check the oil level by means of the dipstick marked **ENGINE** (see fig. B2/1-15).

It is recommended that the oil level is checked when the engine is cold. If the engine has been running, sufficient time should elapse after it has stopped to allow the oil to drain into the sump. Do not check the oil level with the engine running.

To replenish the sump with oil, open the filler cap marked **ENGINE** (see fig. B2/1-15). Add clean oil to the engine and after allowing sufficient time for the oil to reach the sump check that the oil is up to the **MAX** mark on the dipstick. **Do not overfill**.

Important

The engine lubrication system incorporates a thermostatically controlled oil cooler, therefore if the oil has been drained from the engine the following additional procedure must be carried out to ensure the correct oil level is obtained.

Carry out the normal topping-up procedure as described previously to obtain the maximum oil level reading on the dipstick.

Drive the car to enable the engine oil to attain the temperature required to actuate the oil cooler thermostat.

To ascertain that the thermostat has actuated, a rise in the temperature of the oil cooler return pipe

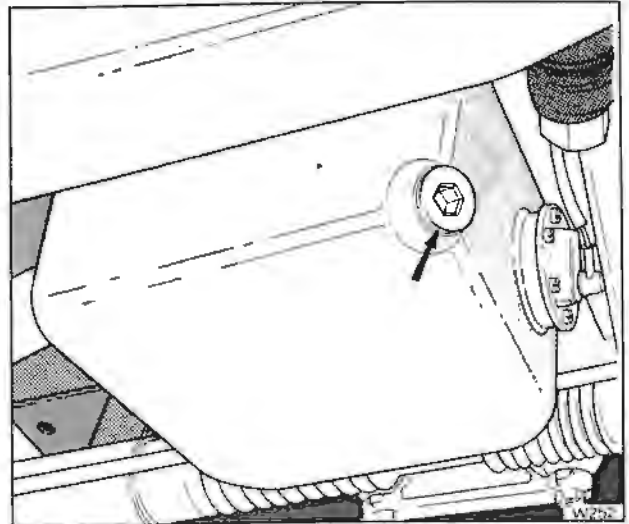


Fig. B2/1-13 Engine sump drain plug

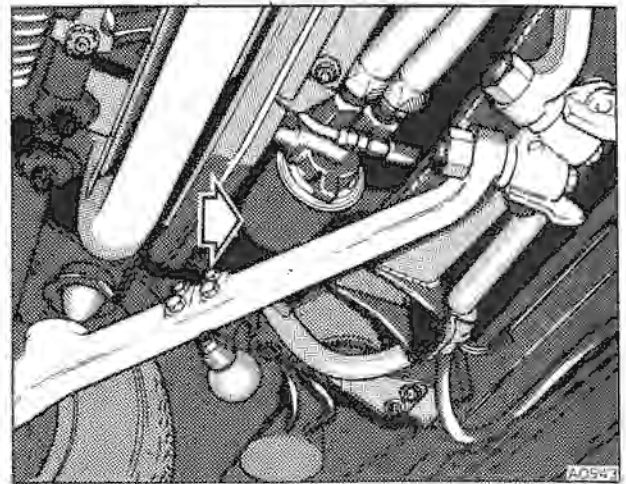


Fig. B2/1-14 Engine oil filter location

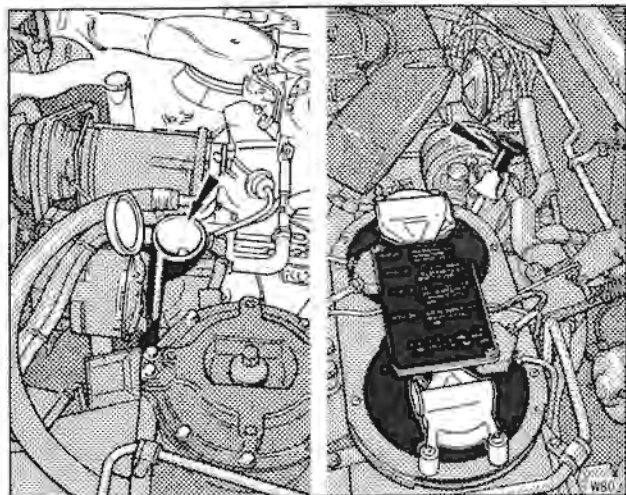


Fig. B2/1-15 Engine oil filler and dipstick

(see fig. B2/1-16) can be felt. This temperature rise occurs as hot oil begins to flow from the oil filter housing, where the thermostat is situated, to the oil cooler mounted in front of the coolant radiator matrix.

Do not attempt to attain the required engine oil temperature rise with the car stationary.

When it has been ascertained that the engine oil has been passing through the cooler, thus filling this part of the lubrication system, check the oil level in the normal manner as described previously.

3 Check the drive belts

Before commencing to adjust the drive belts inspect them for signs of wear or cracking. Any belts found unsatisfactory should be renewed.

If after adjustment, a matched pair of belts have a marked variation in tension, a new pair should be

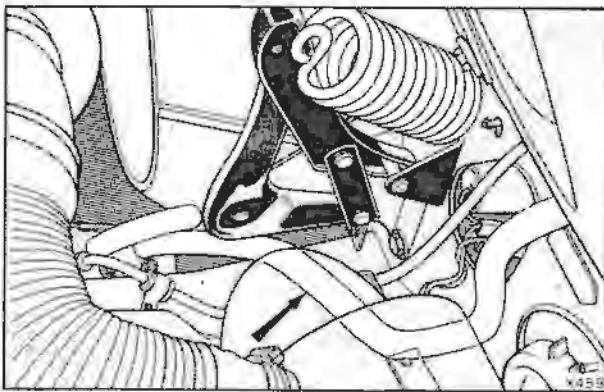


Fig. B2/1-16 Engine oil cooler return pipe

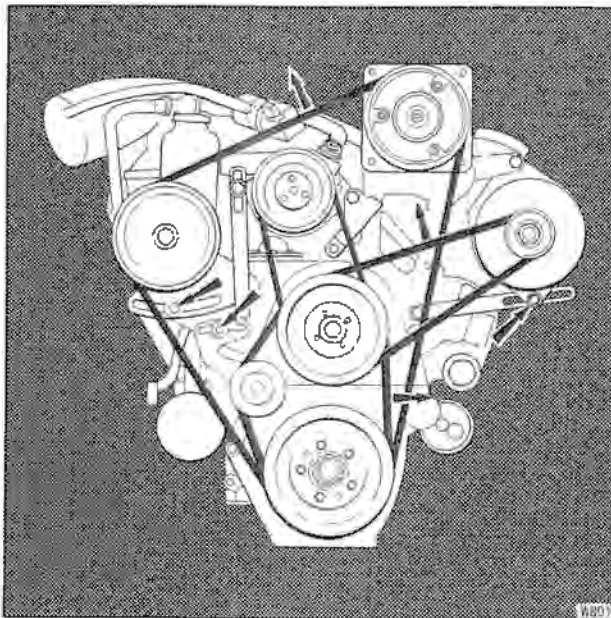


Fig. B2/1-17 Engine drive belt adjustment and tension check points

fitted. Always renew both belts in a matched pair even if only one belt is faulty.

Two belt tension loads are specified; a new belt load for replacement (new) belts and a retensioning load for belts which are satisfactory for further service.

The belt tensions must be checked at a point midway between two pulleys (see fig. B2/1-16) by use of a belt tension meter or by applying a spring balance to give a 9,50 mm (0.375 in) belt deflection at a specified load.

The variation in the spring balance loads for similar belt tension meter loads is due to the varying length of belt between individual belt centres.

Belt dressing must not be applied to prevent belt slip.

Crankshaft to coolant pump

Load may be applied on either side of the belt run.

New belt load

Belt tension meter 27,2 kgf to 31,7 kgf
(60 lbf to 70 lbf)

Spring balance 7,5 kgf to 8,2 kgf
(16.5 lbf to 18 lbf)

Retensioning load

Belt tension meter 22,7 kgf to 27,2 kgf
(50 lbf to 60 lbf)

Spring balance 6,8 kgf to 7,5 kgf
(15 lbf to 16.5 lbf)

The tension of this matched pair of belts is adjusted by altering the position of the jockey pulley (see fig. B2/1-17).

Slacken the nut and setscrew securing the jockey pulley arm. Pivot the jockey pulley to adjust the belt tension then tighten the nut and setscrew. Check the belt tension and repeat the adjustment procedure if necessary.

Coolant pump to alternator

Load may be applied on either side of the belt run.

New belt load

Belt tension meter 36,3 kgf to 40,8 kgf
(80 lbf to 90 lbf)

Spring balance 5,0 kgf to 5,9 kgf
(11 lbf to 13 lbf)

Retensioning load

Belt tension meter 31,7 kgf to 36,3 kgf
(70 lbf to 80 lbf)

Spring balance 4,1 kgf to 5,0 kgf
(9 lbf to 11 lbf)

The tension of the belt is adjusted by altering the position of the alternator (see fig. B2/1-17).

Slacken the setscrew securing the alternator at the upper mounting point.

Slacken the setscrew securing the adjustment strut to the front mounting plate, also the nut and bolt in the adjustment slot. Pivot the alternator to adjust the belt tension then tighten the nut and bolt in the adjustment slot. Check the belt tension and repeat the adjustment if necessary.

When the tension is correct finally tighten the remaining setscrews and check the tension again.

Crankshaft to steering pump/refrigeration compressor

Load must be applied on the top of the belts. Each belt to be checked individually.

New belt load

Belt tension meter 40,8 kgf to 45,5 kgf
(90 lbf to 100 lbf)

Spring balance 6,3 kgf to 7,7 kgf
(14 lbf to 17 lbf)

Retensioning load

Belt tension meter 36,3 kgf to 40,8 kgf
(80 lbf to 90 lbf)

Spring balance 4,1 kgf to 6,3 kgf
(9 lbf to 14 lbf)

The tension of this matched pair of belts is adjusted by altering the position of the steering pump (see fig. B2/1-17). Slacken the setscrew in the steering pump mounting bracket slot situated below the pump pulley.

Slacken the pump pivot setscrew and the union on the supply hose at the rear of the pump.

Pivot the pump to adjust the belt tension then tighten the setscrew in the adjustment slot. Check the belt tension and adjust again if necessary. When the tension is correct tighten the pivot setscrew and again check the belt tension. Finally tighten the supply hose connection; ensuring that the soft rubber protective sleeve has clearance or minimal contact with the coolant pump to manifold elbow.

4 Renew the air filter element

Silver Spirit, Silver Spur, and Mulsanne

The air filter element is situated in the air intake housing at the front right-hand side of the engine compartment (see fig. B2/1-19).

To gain access to the element unfasten the two toggle clips retaining the air blending valve housing to the air cleaner housing. Carefully free the joint and move the housing away from the air cleaner.

Unscrew the worm drive clip securing the engine intake hose to the air cleaner. Detach the hose.

Support the air cleaner housing and unfasten the three toggle clips securing the housing to the valance.

Carefully free the joint, then move the housing towards the engine and withdraw the housing and air filter element from the car.

Remove the filter element from the housing.

Ensure that the inside of the air cleaner housing (both the sections removed and fixed section in the valance) is clean.

Inspect the joint seals for serviceability. Renew if necessary.

To fit the filter element proceed as follows.

Locate the large end of the new filter element onto the locating spigot on the inside of the removable half of the housing.

Carefully position the housing and filter onto the valance allowing the filter to pass into the valance mounted section of the housing. Locate the small (blank) end of the filter into the spigot in the valance housing. Align the three housing toggle clips with their respective securing points. Special care should be taken during these operations to ensure that the paper element is not damaged during insertion.

Ensure that the filter is correctly positioned on the location spigots, then secure the three toggle clips. It is essential that the filter is correctly located on the spigots before the toggle clips are fastened down, otherwise there is a serious risk of crushing the filter element.

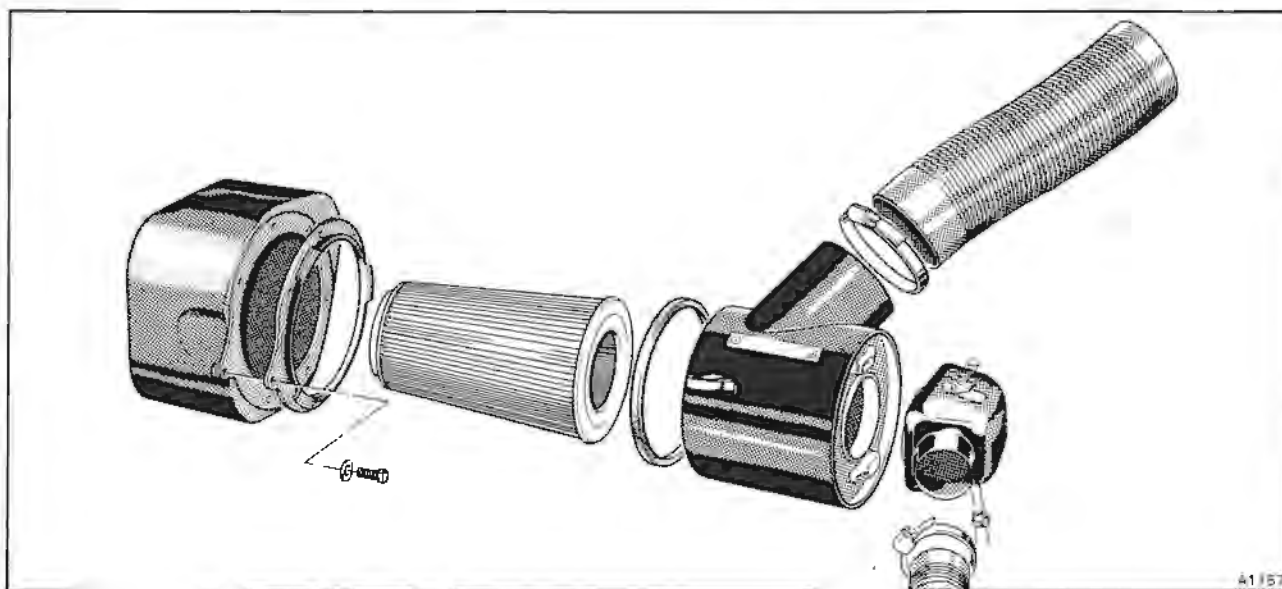


Fig. B2/1-18 Air filter assembly (exploded)

Fit the remaining components by reversing the removal procedure (see fig. B2/1-18).

5 Renew the sparking plugs

Sparking plug type Champion RN 12 YC or RN 12 Y
Plug gap setting 0,89 mm (0.035 in).

Before removing the sparking plugs the surrounding area should be thoroughly cleaned to prevent the ingress of foreign matter when the plugs are removed.

Fit the new plugs ensuring that the gaps are correctly set and that each plug is fitted with a sealing washer.

Torque tighten each plug to between 18 Nm and 23 Nm (1,8 kgf m and 2,3 kgf m, 13 lbf ft and 17 lbf ft).

6 Lubricate the accelerator linkage

Lubricate all the accelerator linkage ball joint pivots and clevis pins.

Examine the ball knuckle joints for wear and adjust if necessary. Renew any worn clevis pins.

Examine the linkage for correct operation. For details of linkage setting procedure reference should be made to the Workshop Manual TSD 4400, Chapter U.

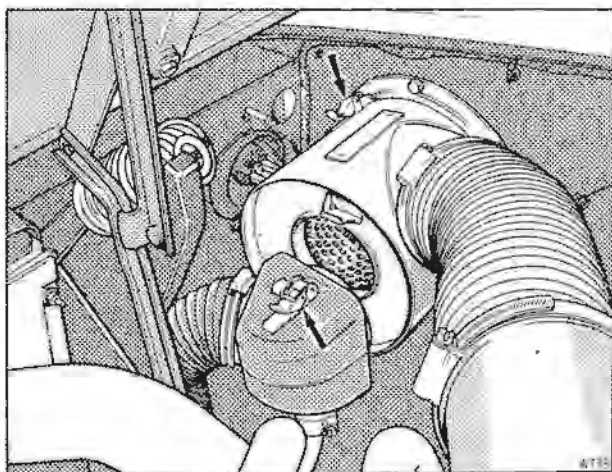


Fig. B2/1-19 Air filter (Silver Spirit, Silver Spur, and Mulsanne)

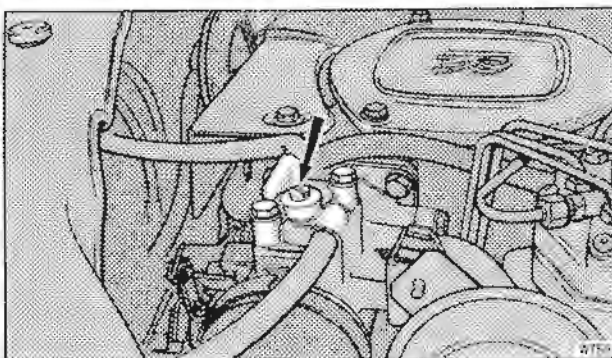


Fig. B2/1-20 Idle speed adjustment

7 Check the ignition timing

Ignition timing is carried out on A1 cylinder and should be 15° btdc at 1450 rev/min; A1 cylinder is the front cylinder on the right-hand side of the engine when viewed from the driver's seat.

Important

If the ignition timing is to be set, ensure that the sparking plugs are in a good condition before running the engine; if they require cleaning or renewal, ensure that the gaps are set correctly (see Operation 5, Renew the sparking plugs).

To check the ignition timing commence by running the engine until normal operating temperature is attained. Switch off the engine.

Connect a stroboscope and a tachometer to the engine as described in the instructions supplied with the respective equipment.

On no account must the stroboscope timing lamp positive feed be connected to the ignition coil. The positive feed should be taken from a known 12 volt connection.

Disconnect the vacuum advance hose from on top of the throttle housing connection and blank off the throttle housing connection.

Start and run the engine at a speed of 1450 rev/min. When setting the engine speed reduce from a higher speed to 1450 rev/min.

Direct the flashing light of the stroboscope onto the crankshaft damper timing marks and timing pointer; the pointer is positioned on the left-hand side of the crankshaft damper when viewed from the driver's seat.

If the timing pointer does not coincide with the 15° btdc mark on the crankshaft damper adjust the ignition timing as follows.

Release the clamp screw on the distributor and rotate the head of the distributor in the appropriate direction until the correct timing is obtained. Clockwise rotation of the distributor head advances the ignition and conversely anti-clockwise rotation retards the ignition.

Tighten the clamp screw and check that the ignition timing is between 14° and 16° btdc at 1450 rev/min (again reduce from a higher speed to 1450 rev/min).

8 Check the operation of the ignition distributor vacuum advance mechanism

After completing Operation 8 continue as follows.

Vacuum advance mechanism

Allow the engine to return to the idle speed and set this to 650 rev/min using the idle speed adjustment screw on top of the throttle body. Ensure that the engine speed does not dip below 650 rev/min.

Direct the timing light onto the timing marks on the crankshaft damper. The timing should now be between tdc and 8° btdc.

Connect a vacuum pump to the distributor vacuum advance side of the capsule. Apply an initial

vacuum of 635 mm Hg (25 in Hg) and then reduce the vacuum to 508 mm Hg (20 in Hg) and maintain it. Adjust the idle speed to 650 rev/min.

Check that the ignition timing has advanced by between 10° and 14° from the setting noted previously (timing between tdc and 8° btdc).

Stop the engine, remove the test equipment and reconnect all hoses in their correct positions.

9 Check the engine idle speed

Ensure that the usual workshop safety precautions are carried out and that an impulse tachometer is fitted to the engine in accordance with the manufacturer's instructions.

To set the idle speed, ensure that the engine has stabilized at its normal operating temperature. This can be achieved by allowing the engine to run at idle speed for at least 15 minutes after the thermostat has opened. The opening of the thermostat can be detected by a sudden rise in the temperature of the thermostat elbow pipe.

Disconnect the purge line at the restrictor. Leave the restrictor fitted into the hose to the engine (see fig. B2/1-12).

Disconnect the oxygen sensor cable situated in the rear left-hand corner of the engine compartment (see fig. B2/1-3).

Ensure that the automatic air conditioning system is off.

Set the engine idle speed to 650 rev/min by turning the adjustment screw situated on top of the throttle body (see fig. B2/1-20).

Connect the purge line hose and the oxygen sensor cable to their respective connections.

Note

Connecting the purge line may increase the idle speed and connecting the oxygen sensor cable will tend to restore normal idle speed. Do not attempt to correct these small variations in idle speed.

Engine cooling system

1 Check the coolant anti-freeze concentration

The cooling system is filled initially with a coolant solution comprising equal parts of UT 184 (BP - Hythe Chemicals) or Prestone II and water. This mixture gives frost protection down to a temperature of -37°C (35°F).

The coolant should contain fifty percent of an approved anti-freeze at all times. This not only provides frost protection but also prevents corrosion of the coolant passages and raises the boiling temperature of the coolant.

The anti-freeze concentration should be checked in both the expansion bottle (where fitted) and the radiator.

If the strength of the coolant requires increasing, sufficient coolant should be drained from the radiator and replaced with undiluted anti-freeze. Afterwards run the engine until normal operating temperature is attained and the anti-freeze has become thoroughly mixed with the coolant. Stop the engine and again check the concentration in the radiator.

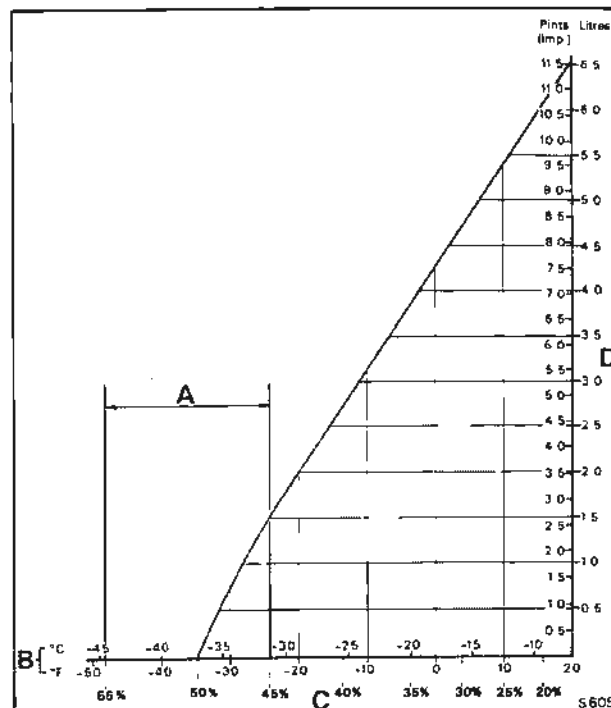


Fig. B2/1-21 Anti-freeze correction chart to give a 50% solution

- A Acceptable service range of concentration
- B Freezing point of coolant
- C Percentage concentration
- D Volume of 100% anti-freeze to be added to maintain a 50% solution after removal of the same volume of old coolant first

An acceptable level of anti-freeze concentration is between 45% and 50%. Therefore, as a hydrometer may be inaccurate where readings above 40% are expected, it is recommended that a refractometer is used.

For details refer to Chapter L of the appropriate 'Workshop Manual'.

If a refractometer is not available and a hydrometer has to be used, a scale reading of between 1.06 and 1.07 should be obtained with the coolant at room temperature for the mixture to be correct.

2 Check the coolant level

Warning

Both types of cooling system become pressurized during engine running, therefore, extreme care should be taken when removing the radiator cap from a warm or hot radiator.

Silver Spirit, Silver Spur, and Mulsanne

Routine check

To check the level outside a normal service schedule (e.g. Regular maintenance) and when no cooling/heating system fault is reported or suspected, proceed as follows.

If the **engine is hot** ensure that the coolant level in the translucent expansion bottle is at the **MAX** mark. Top-up if necessary and replace the expansion bottle cap.

If the **engine is cold** ensure that the coolant level in the translucent expansion bottle is half-way between the **MIN** and **MAX** marks. Top-up if necessary and replace the expansion bottle cap.

If the coolant level in the expansion bottle is either below the **MIN** mark or there is no coolant in the expansion bottle, carry out the following Full check procedure.

Full check

Ensure the gear range selector is in the Park position and apply the parking brake.

Remove the gear range selector cut-out from the fuseboard.

Check the coolant level in the translucent expansion bottle (see fig. B2/1-22). If the level is low or the bottle is empty, add coolant to bring the level up to the **MIN** mark.

Ensure that the engine is not hot (to allow safe removal of the radiator cap).

Remove the radiator cap in three stages as follows.

Turn the cap slowly anti-clockwise until a check position is reached. Wait until any pressure in the system has been released. Press down on the cap and continue to turn it anti-clockwise until the cap is released.

Check the coolant level in the radiator. This should be half-way up the filler neck.

If the coolant level in the radiator is correct, fit the radiator cap by pressing it firmly down and turning it fully clockwise.

Top-up the coolant level in the expansion bottle in accordance with the Routine check procedure.

If the coolant level in the radiator is low but visible and no cooling/heating system fault is reported or suspected top-up the system using the following procedure. If however the coolant is not visible or a coolant/heating system leak is reported or suspected,

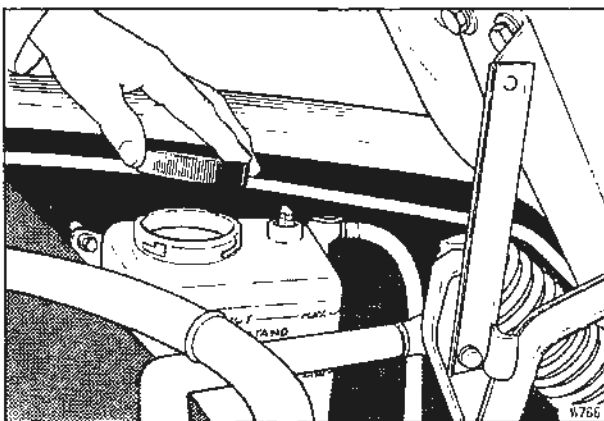


Fig. B2/1-22 Coolant expansion bottle (Silver Spirit, Silver Spur, and Mulsanne)

the system should have any faults rectified and then be pressure tested prior to carrying out the topping-up procedure.

Top-up the radiator until the coolant is half-way up the filler neck.

Start and run the engine.

Turn the air conditioning system function control fully clockwise to the defrost position.

Set the air conditioning system override switch to the **AUTO** position.

Allow at least one minute for the air conditioning system to stabilize, then check to ensure that all air is being directed towards the windscreen (i.e. no air is delivered from the lower system and the facia outlets). This procedure opens the heater system water tap.

Run the engine, without the radiator pressure cap fitted, until normal operating temperature is attained. Top-up the coolant level in the radiator during this time.

Switch off the engine.

Fit the radiator pressure cap by pressing it firmly down and turning it fully clockwise.

Top-up the coolant level in the expansion bottle in accordance with the Routine check procedure.

Camargue

Ensure the gear range selector is in the Park position and apply the parking brake.

Remove the gear range selector cut-out from the fuseboard.

Start the engine and turn the air conditioning function control clockwise to the defrost position and set the upper system mode override switch to the **AUTO** position.

Allow approximately one minute for the system to attain the required setting, then check that all air is being directed towards the windscreen (i.e. no air is delivered from the lower system and the facia outlets). This procedure opens the heater water tap and ensures that the cooling system can be correctly checked.

Switch off the ignition.

Remove the radiator cap. If the engine is hot, muffle the cap with a thick cloth and gradually turn the cap anti-clockwise until the pressure is reduced, then remove the cap.

If the coolant level is low, top-up the radiator header tank with the correct anti-freeze/water mixture. The correct level is when the coolant reaches the rubber seal in the filler neck. Fit the filler cap.

3 Check all coolant hose clips for tightness

Examine all the coolant hose connections for signs of leakage and check the worm drive clips for tightness. Never overtighten a clip in an attempt to seal a leaking connection.

In the event of a hose connection leaking when the worm drive clips have been tightened, drain the cooling system to a level below the leaking hose.

Remove and inspect the hose and its connecting component for signs of damage. If necessary renew

the faulty component and refill the system with coolant as described in Renew the coolant.

4 Examine the condition of all coolant hoses

Inspect all coolant hoses for signs of deterioration, cracking, weak spots, etc. Any faulty hose should be removed and a new hose fitted. When renewing a hose always ensure that it does not foul other components and that it is not kinked so as to cause complete or partial restriction of coolant flow.

5 Fit a new heater tap feed hose

Drain the coolant system as described in Renew the coolant, but do not remove the engine crankcase drain plugs.

Disconnect the heater tap feed hose from the engine and heater tap (see fig. B2/1-23); remove the hose.

Fit the new hose; ensure that the hose is free from any sharp bends that may restrict coolant flow.

Fill the engine coolant system as described in Renew the coolant.

Ensure that the parking brake is applied and the gear range selector lever is in the Park position.

Remove the gear range selector cut-out from the fuseboard.

Start and run the engine; check the coolant hose for leaks.

Switch off the ignition and fit the gear range selector cut-out.

6 Renew the coolant

Drive the car onto a ramp; move the gear range selector to the Park position and apply the parking brake.

Remove the gear range selector cut-out from the fuseboard.

Disconnect the Lucar connection from the pressure switch situated on the oil filter take-off flange (see fig. B2/1-24). This will allow the air conditioning system to be operated without running the engine.

Switch on the ignition and rotate the air conditioning function switch to the windscreen defrost position, also set the upper system mode override switch to the AUTO position.

Wait approximately one minute for the system to attain the required setting and observe that all the air is being directed to the windscreen. This procedure opens the heater water tap and ensures the system can be completely drained.

Switch off the ignition.

Place a container beneath the radiator drain tap to collect the coolant. Connect a length of hose onto the drain tap to direct the coolant into the container.

Carefully unscrew and remove the radiator pressure cap.

Open the radiator drain tap and allow the coolant to drain from the radiator.

When the radiator has completely drained place a container beneath the crankcase drain plugs. Remove the drain plugs from the crankcase (see fig. B2/1-25) and allow the residue of coolant to drain from the crankcase.

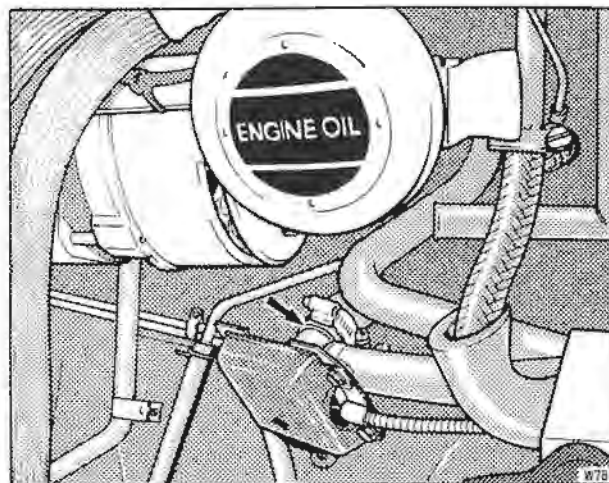


Fig. B2/1-23 Heater tap feed hose

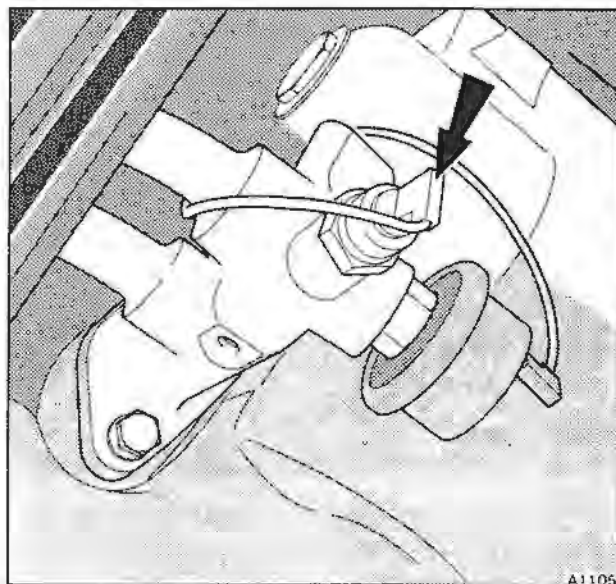


Fig. B2/1-24 Oil pressure switch and transmitter

Renew the washers on the drain plugs and fit the plugs into the crankcase.

To drain the coolant remaining in the expansion bottle (Silver Spirit, Silver Spur, and Mulsanne) disconnect the connection hose from the radiator filler neck and allow the coolant to drain from the expansion bottle into the container. When the coolant has drained connect the hose to the radiator filler neck.

Check all hoses for serviceability and renew as necessary.

Fill the system with fresh coolant of the specified concentration as follows.

Ensure the radiator drain tap is closed.

Slowly fill the radiator with coolant, thus reducing the possibility of air locks in the system.

Start and run the engine for a minimum of 10 minutes with the radiator pressure cap removed.

After running for five minutes ensure that warm air is passing up the windscreen from the demister ducts. Top-up the radiator as necessary to ensure there is always coolant in the top tank of the radiator.

Ensure that the thermostat has opened; indicated by a rapid warming of the top radiator hose.

Switch off the engine and top-up the radiator to half-way up the filler neck. Fit the pressure cap.

Applicable to Silver Spirit, Silver Spur, and Mulsanne

Fill the expansion bottle to a level midway between the maximum and minimum levels indicated on the bottle.

Start and run the engine until normal running temperature is attained; switch off the engine and top-up the expansion bottle to the maximum level.

Allow the engine to cool down. Carefully remove the radiator pressure cap and ensure the radiator is completely full of coolant. Top-up to half-way up the radiator filler neck if necessary. Fit the radiator pressure cap.

Connect the Lucar connection previously disconnected from the pressure switch adjacent to the oil filter take-off flange (see fig. B2/1-24).

Note

For the coolant system to operate correctly, i.e. for coolant to pass into the expansion bottle when hot and be drawn back into the radiator during cooling, the top of the radiator must not contain an air pocket.

7 Reverse flush the coolant system

Drain the engine coolant system as described in Renew the coolant.

Remove the top and bottom hoses from the radiator matrix.

Fit a waste pipe to the upper (inlet) connection of the radiator.

Apply mains water under pressure through the lower (outlet) connection of the radiator. This should remove all loose sediment in approximately 30 minutes.

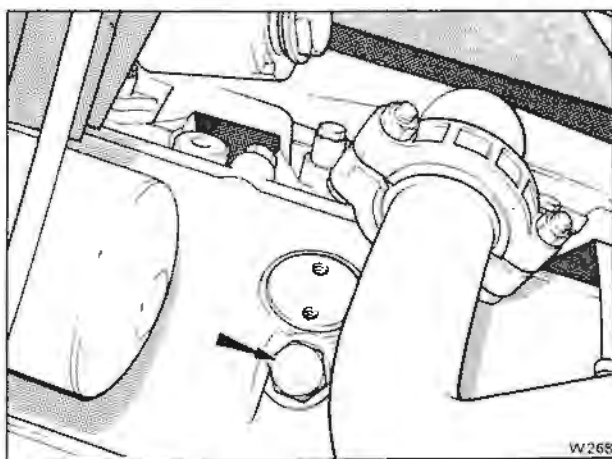


Fig. B2/1-25 Crankcase drain plug ('B' bank shown)

Do not under any circumstances use an alkaline compound or detergent to clean the system. Such compounds have a detrimental chemical action on aluminium alloys.

Remove the engine coolant drain plugs from the crankcase.

Remove the thermostat as described in Renew the thermostat, then replace the cover.

Fit a suitable pipe to the drain plug aperture and apply mains water pressure to each aperture in turn.

Flush for approximately 30 minutes, or until the water runs clear of foreign matter.

Fit the drain plugs and a new thermostat by reversing the procedure for removal.

To flush the heater system, detach the heater at the water tap and disconnect the return hose at the coolant pump.

Fit a waste pipe to the disconnected heater feed hose.

Flush the matrix for approximately 30 minutes.

Examine the coolant hoses for deterioration or damage and renew as necessary.

Connect all hoses and fill the system with the recommended coolant mixture as described under Renew the coolant.

8 Remove foreign matter from the radiator, oil cooler, and refrigeration condenser

Using a pressure hose pipe, flush the radiator matrix, oil cooler matrix, and condenser matrix.

Hold the nose of the hose pipe close to the back of the radiator matrix and allow the water to pass between the veins of the matrix. Slowly move the hose over the whole matrix area until all foreign matter (insects, etc.) have been flushed clear. Care must be taken to ensure that the end of the hose does not damage the matrix face during this operation.

9 Renew the thermostat

Disconnect the battery.

Place a container beneath the radiator. Attach a length of hose to the radiator drain tap to direct the coolant into the container.

Carefully unscrew and remove the radiator pressure cap.

Open the radiator drain tap and allow sufficient coolant to drain from the system for the coolant level to fall below that of the thermostat housing. Close the drain tap and remove the hose previously attached.

Disconnect the electrical connector from the thermostat housing cover.

Remove the bolt from the air switching valve bracket and the four setscrews from the thermostat housing cover. Collect the bracket.

Remove the thermostat housing cover. The cover can be moved away from the housing without detaching the outlet hose.

Lift the thermostat from the housing (see fig. B2/1-26).

Remove the old gasket material from the thermostat housing and cover. Ensure that no material enters the thermostat housing.

Check that the two faces are clean and dry.

Insert a new thermostat into the housing.

Place a new gasket in position on the housing and fit the cover. Connect the air switching valve bracket.

Connect the electrical connection removed from the thermostat housing.

Top-up the cooling system with the correct coolant mixture as described under Renew the coolant.

Torque converter transmission

It is absolutely essential when adding fluid to, or working on the torque converter transmission that great attention is paid to cleanliness. The smallest particle of dirt in the transmission fluid could interfere with the correct operation of the unit.

It is important for efficient operation of the torque converter transmission that only an approved fluid is used (see Chapter A).

1 Check the transmission fluid level

The fluid level can be checked accurately when the car is standing on a level surface, the engine is running at idle speed, and transmission fluid is at normal operating temperature, approximately 77°C (170°F).

The dipstick and filler tube are situated on the right-hand side of the engine compartment.

On Silver Spirit, Silver Spur, and Mulsanne cars remove the protective cover from the windscreen wiper mechanism to gain access to the dipstick. Ensure that the following safety procedure is undertaken to isolate the mechanism prior to removing the cover.

Ensure that the windscreen wiper control switch situated on the facia is in the off position. Remove a windscreen wiper relay, preferably number three, situated adjacent to the windscreen washer reservoir (see fig. B2/1-27). To remove the relay pull it vertically from its mounting.

On all cars, always clean the top of the dipstick before removing it from the filler tube.

As an initial check, the fluid level may be checked after starting from cold as follows.

Apply the parking brake.

Start and run the engine for three to four minutes at fast-idle speed, with the gear range selector in the Park position. Reduce the engine speed to slow idle.

Whilst sitting in the driving seat, firmly apply the footbrake and move the gear range selector through the full range of gear positions pausing briefly in each range. Return the selector to the Park position.

Immediately check the fluid level with the engine running at idle speed.

The level should be up to the circular dimple situated below the FILL mark on the dipstick (see fig. B2/1-27).

Top-up to this level if necessary.

After this initial check a further check should be carried out as follows.

Drive the car for approximately 24 kilometres (15 miles) of highway/motorway driving or 16 kilometres (10 miles) of city driving. This should ensure the

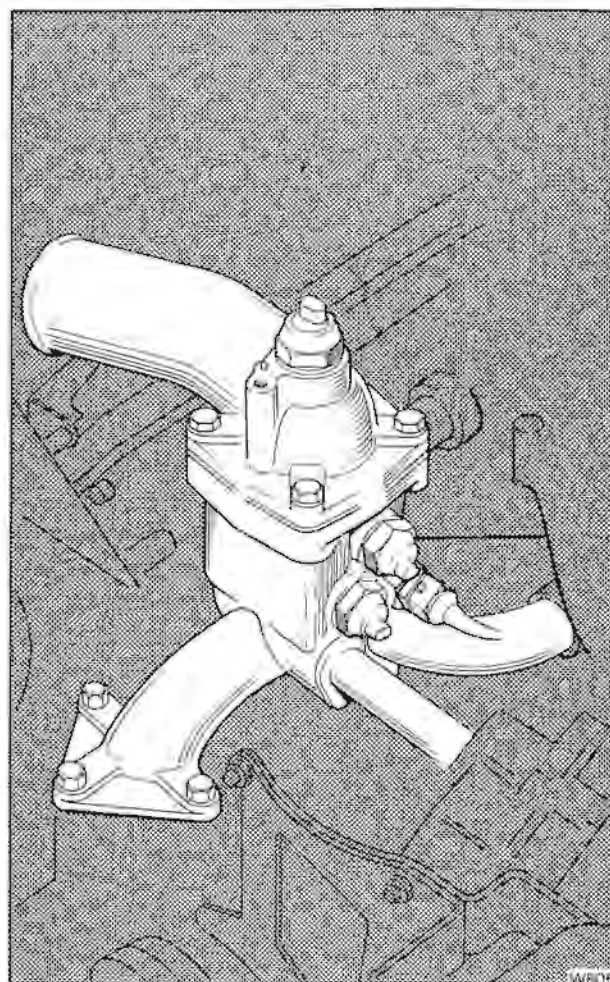


Fig. B2/1-26 Thermostat housing assembly

transmission has reached normal operating temperature.

It is essential that this temperature is attained. Do not top-up the fluid level to the MAX mark on the dipstick when the fluid is only warm, as this will result in an over-fill situation when the normal operating temperature is attained. Overfilling will result in fluid being discharged from the transmission breather pipe.

Position the car on a level surface, firmly apply the parking brake and select Park position with the gear selector lever.

Carry out the procedure described for the initial check.

With the transmission fluid at normal operating temperature the level of the fluid should be between the FILL and MAX HOT marks (see fig. B2/1-27).

If necessary add fluid by pouring it down the filler tube, with the engine still running, until the fluid is to the MAX mark on the dipstick. **Do not overfill.**

When the fluid level is correct, switch off the engine and fit the windscreen wiper mechanism cover and relay.

2 Renew the transmission fluid

Position the car on a ramp or over a pit.

Place a clean container having a minimum capacity of 3 litres (5 Imp pt, 6 US pt) under the nut which secures the transmission fluid filler tube to the sump (see fig. B2/1-28).

From within the engine compartment, remove the transmission dipstick as described under Check the transmission fluid level.

Slacken the setscrew securing the filler tube to the engine.

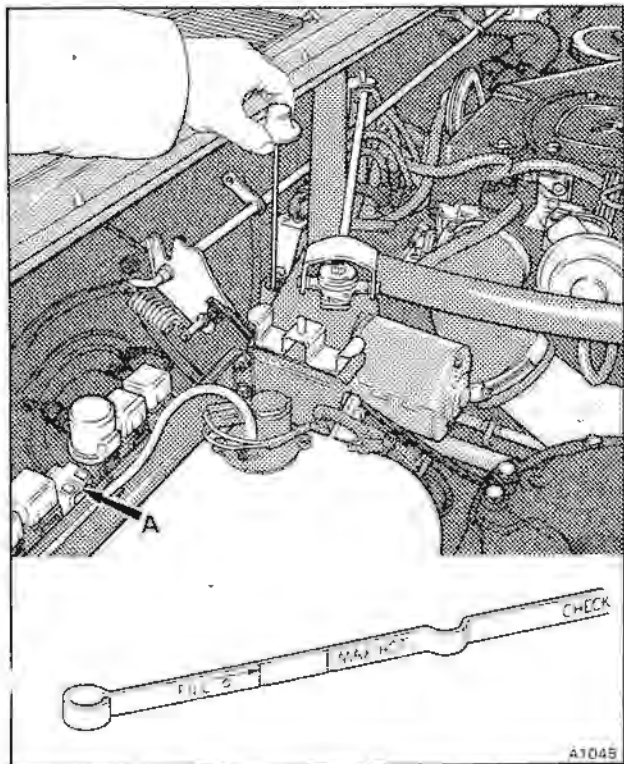


Fig. B2/1-27 Transmission filler tube and dipstick

A Windscreen wiper motor relay

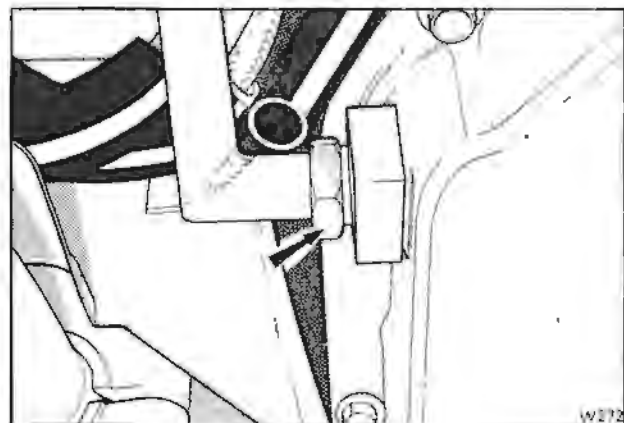


Fig. B2/1-28 Transmission drain point

Unscrew the nut securing the filler tube to the side of the transmission sump (see fig. B2/1-28). Withdraw the filler tube from the sump and move it to one side to allow the fluid to drain into the container.

After draining the sump, ensure that the filler tube is clean then fit it to the sump and tighten the drain nut.

Tighten the setscrew securing the filler tube clip to the engine.

Add 2,8 litres (5 Imp pt, 6 US pt) of an approved fluid to the sump, pouring the fluid down the filler tube.

Check the fluid level as described under Check the transmission fluid level.

3 Fit a new intake strainer

Drain the transmission sump as described under the heading Renew the transmission fluid, then proceed as follows.

Remove the setscrews securing the transmission sump and lower the sump.

Drain any fluid from the sump and discard the gasket.

Unscrew the setscrew securing the intake strainer and pipe assembly to the transmission; remove the strainer assembly (see fig. B2/1-29).

Remove the intake pipe from the strainer and discard the strainer.

Clean the transmission sump and the intake pipe with paraffin and dry with compressed air.

Fit a new rubber 'O' ring to the intake pipe and lubricate the 'O' ring with clean transmission fluid.

Ensure that a new rubber seal is fitted to the pipe bore in the new intake strainer, then fit the intake pipe to the strainer.

Fit the intake strainer and pipe assembly to the transmission and torque tighten the securing setscrew to 14 Nm (1,4 kgf m, 10 lbf ft).

Fit the transmission sump using a new gasket and torque tighten the sump setscrews to 18 Nm (1,7 kgf m, 12 lbf ft).

Fit the oil filler tube into the sump and tighten the nut. Tighten the setscrew securing the filler tube clip to the engine.

Add 4,5 litres (8 Imp pt, 9,6 US pt) of an approved fluid to the sump, pouring the fluid down the filler tube, then follow the fluid level checking procedure described under Check the transmission fluid level.

4 Lubricate the gear range selector control rod

Lubricate the clevis pins in the control rod linkage at the left-hand side of the transmission, with a few drops of clean engine oil. Also lubricate the manual shaft where it enters the transmission casing.

Final drive unit

1 Check the final drive oil level

Position the car on a ramp or over a pit.

Remove the level plug located in the rear face of the final drive casing (see fig. B2/1-30). The oil in the

casing should be up to the level plug orifice. If necessary, top-up with an approved oil.

Fit the level plug complete with a new joint washer.

2 Renew the final drive oil

It is advisable to carry out this operation when the oil is warm, e.g. immediately after the car has completed a run.

Position the car on a ramp or over a pit and clean the area around the drain and level plugs (see fig. B2/1-30).

Place a container beneath the drain plug, then remove both the drain and level plugs.

When the oil has drained, fit the drain plug complete with a new joint washer.

Using a syringe, fill the casing to the level plug orifice with an approved oil (see Chapter A); approximately 2.3 litres (4.0 Imp pt, 4.8 US pt) of oil will be required.

Fit the level plug complete with a new joint washer and check for leaks.

3 Check the condition of the drive-shaft joint covers

The drive-shaft constant velocity joints are enclosed by convoluted seals which retain the joint lubricant.

If upon inspection a seal is found to be leaking or damaged the joint should be inspected and a new seal fitted as described in Chapter J of the Workshop Manual.

Steering system

1 Check the steering pump fluid level

Remove the filler cap from the steering pump reservoir and check that the fluid level is at least up to the FULL COLD mark on the integral dipstick. If necessary, top-up to this level with approved fluid (see fig. B2/1-31).

Start and run the engine until it reaches normal operating temperature, approximately 77°C (170°F) then stop the engine.

Remove the filler cap and check the fluid level in the reservoir. If necessary, add an approved fluid to raise the level to the FULL HOT mark on the dipstick; do not overfill.

Ensure that the filler cap is securely replaced.

2 Lubricate the steering linkage ball joints (if applicable)

If grease nipples are fitted to the ball joints at the ends of the track rods, they should be lubricated until a slight swelling of the joint seal is evident. Take care not to damage or displace the seals.

3 Check the condition of the steering ball joint covers

Examine the condition of the rubber cover seals on the ball joints (see fig. B2/1-32).

If the seals are found to be damaged or in poor condition new parts should be fitted as necessary. For full information refer to Chapter N of the Workshop Manual.

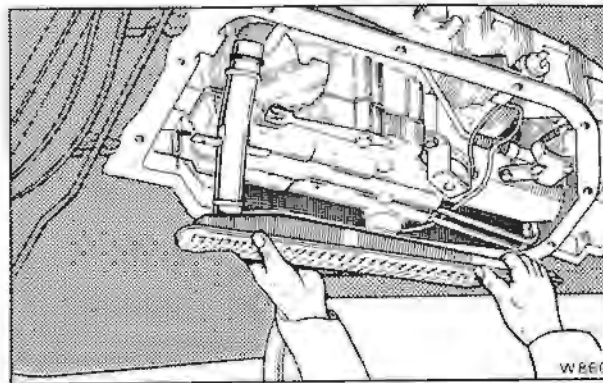


Fig. B2/1-29 Transmission intake strainer removal

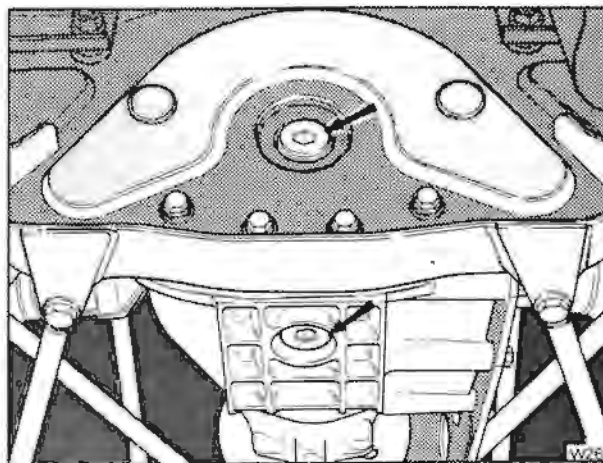


Fig. B2/1-30 Final drive drain and filler/level points

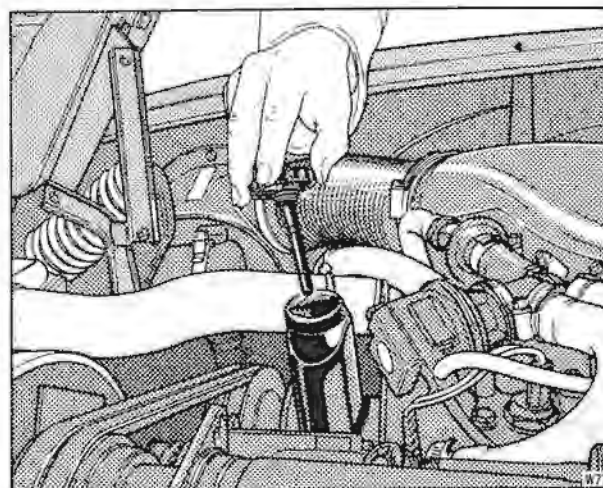


Fig. B2/1-31 Steering pump filler/dipstick

4 Check the condition of the steering rack convoluted seals

Examine the condition of the convoluted seals on the rack and pinion unit and check the tightness of the seal clips.

If the seals are satisfactory, tighten the clips as necessary.

If the convoluted seals are found to be damaged or in poor condition, the rack and pinion unit should be removed from the car and new seals fitted. For full information refer to Chapter N of the Workshop Manual.

Suspension

1 Check the condition of the front ball joint covers

The front suspension ball joints (see fig. B2/1-33) are packed with grease on initial assembly and should not normally require attention between service overhauls unless the rubber seal covers are damaged.

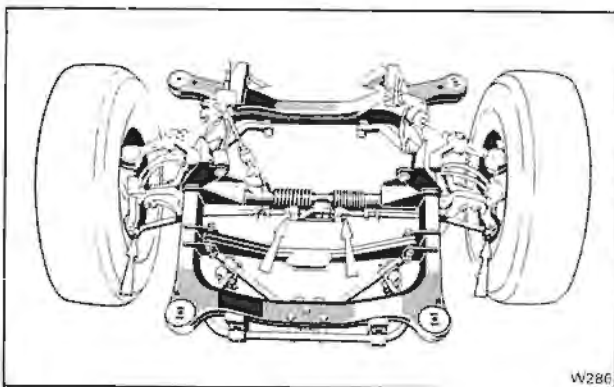


Fig. B2/1-32 Track rod ball joints

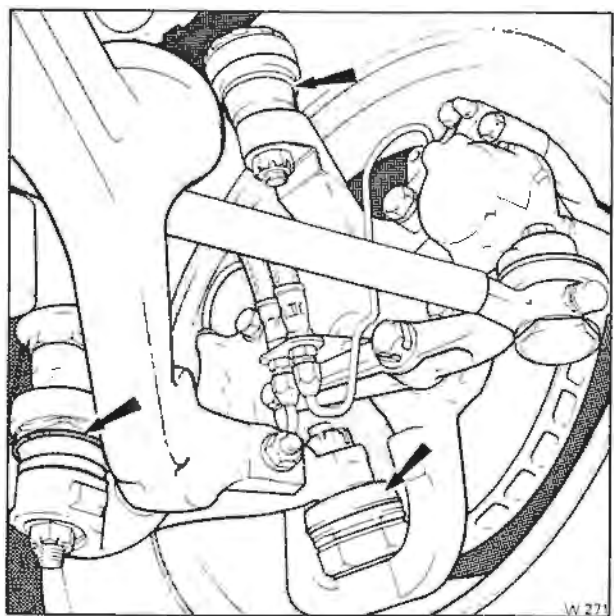


Fig. B2/1-33 Front suspension ball joints

If on inspection the covers are found to be damaged or in poor condition, the ball joints should be removed and new joints and seals fitted as necessary.

For full information refer to Chapter H of the Workshop Manual.

2 Check the condition of the rear strut convoluted seals

Examine the condition of the convoluted seals on the rear suspension struts (see fig. B2/1-34).

If the seals are found to be damaged or in poor condition, the struts should be removed, as described in Chapter G of the Workshop Manual, and new seals fitted.

3 Lubricate the height control valve ball joints

Position the car on a ramp or over a pit. Disconnect the actuation links from the height control valves and the rear suspension trailing arms at the ball joints (see fig. B2/1-35). Note from which side each link is taken.

Clean the ball joints then lubricate with an approved grease.

Do not alter the length of the actuation link.

Connect the actuation link to the height control valve and the trailing arm from which it was removed.

Adjust the joint to obtain complete movement without free play.

Brake and hydraulic systems



WARNING

Use only Hydraulic System Mineral Oil (LHM) to replenish the braking and levelling systems.

Do not use Brake Fluids (Castrol RR363, Universal, or any other type). The use of any type of brake fluid, even in very small amounts, will cause component failure necessitating extensive rectification to the braking and levelling systems of the car.

Always ensure before fitting any seals, hoses, pipes, etc, that they are suitable for a mineral oil system. For details of correct component identification reference should be made to Chapter G of the Workshop Manual.

Always ensure that a sealed container of **Hydraulic System Mineral Oil (LHM)** is fitted adjacent to the battery.

Always ensure that no foreign matter enters the systems when work is being carried out.

In order to protect against claims of liability for hydraulic system contamination, it is recommended that the hydraulic system mineral oil is tested for contamination prior to work being undertaken, preferably in the presence of the owner or his/her representative.

It is important that the test is carried out even when the hydraulic system mineral oil is to be renewed as this will not prevent the deterioration of components which have been in contact with contaminated mineral oil.

Brake fluids and mineral oil are immiscible and with large amounts of contamination separation of the fluids will occur on standing, due to the greater density of the conventional fluids. A further indication of the mixing of conventional brake fluid and mineral oil is its cloudy appearance.

To carry out contamination tests a kit is available from Rolls-Royce Motors Limited, part number RH 2841 and should be used as follows.

Switch on the ignition and depressurize the hydraulic systems by pumping the brake pedal until both low pressure warning panels illuminate. Continue to pump the pedal for at least a further 20 applications to ensure that all the accumulator mineral oil is returned to the reservoir.

Clean the area around each hydraulic reservoir filler cap and then remove the cap.

Ensure that the components in the test kit are clean and dry.

Using the sampling tube provided, extract 50 ml of mineral oil from the top and bottom of each reservoir.

Place the samples into the individual clean dry containers.

Shake each sample taken to ensure it is well mixed.

Pour 10 ml of each sample into clean test tubes (do not mix the samples together).

Using the dispenser, add two drops of the red dye solution contained in the kit into each 10 ml sample.

Cork the test tubes and shake them thoroughly.

Leave the samples to settle for at least 30 minutes.

Examine each sample.

Sample diagnosis

On adding the red dye solution and the subsequent mixing, the green colour of the mineral oil **will** change to a reddish brown. **This does not indicate contamination of the hydraulic system mineral oil.**

Contamination can only be confirmed by the formation of a cloudy red mass which will begin to settle towards the bottom of the tube if left to stand for at least 30 minutes.

If the sample in the test tube on addition of the dye turns red but remains clear it indicates that the sample is not contaminated.

The volume of red mass which will eventually settle to the bottom of the test tube indicates the amount of contamination within the hydraulic system mineral oil.

Complete separation of the two liquids may take a considerable amount of time, for example a very small percentage of contamination may take more than seven days to completely separate.

If contamination is suspected, a more thorough test can be undertaken, details of which are given in

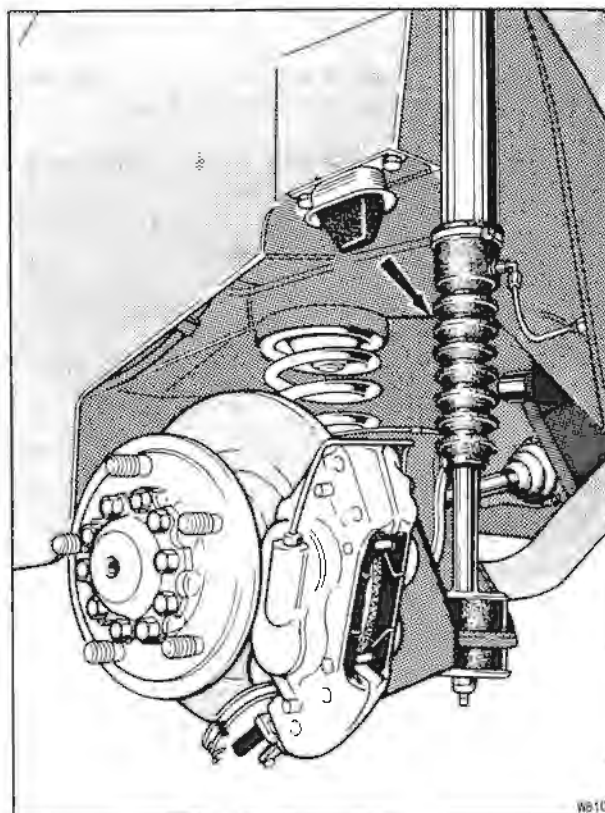


Fig. B2/1-34 Rear suspension strut

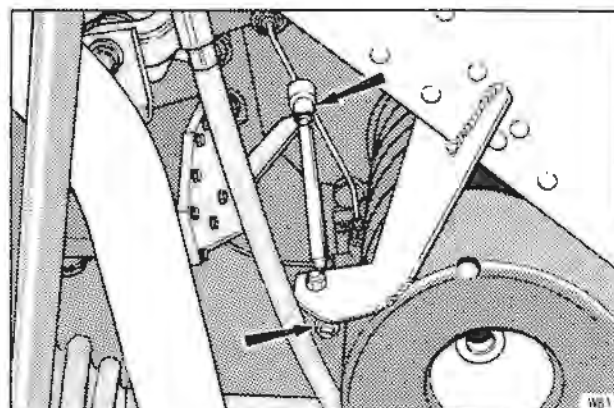


Fig. B2/1-35 Height control valve actuation link joints

Chapter G of the Workshop Manual.

If contamination is suspected, but difficult to diagnose, due to the small amount of contaminant that may be present, or any doubt exists, confirmation should be obtained by sending a sample to Rolls-Royce Motors (if in the United Kingdom) or to a chemical analysis laboratory.

Before attempting any work on a hydraulic system personnel must be fully conversant with the precautions required to ensure adequate safety and correct system operation.

Refer to Chapter G of the Workshop Manual.

Important

Always seal each reservoir cap after it has been confirmed that the systems **are not** contaminated and all work on the systems has been completed.

1 Check the mineral oil level in the reservoirs

The mineral oil reservoirs for the hydraulic systems are located in the engine compartment (see fig. B2/1-36).

To check the oil level, first depressurize the hydraulic systems by pumping the brake pedal until the two warning panels illuminate. Start and run the engine for approximately four minutes to charge the systems and then stop the engine. The mineral oil in both reservoirs should be up to the FULL marks on the level indicator plate.

If the reservoirs require topping-up, ensure that the tops of the reservoirs and the filler caps are clean, then add an approved hydraulic system mineral oil (see Chapter A) as necessary.

It is important that only approved hydraulic system mineral oil is used and that exceptional cleanliness is observed when topping-up the hydraulic systems.

Under no circumstances should a conventional (i.e. RR363 or Universal) type brake fluid be used.

After topping up, ensure that the blanking plugs are clean and fit them into the filler caps.

Ensure that the containers of new Hydraulic System Mineral Oil for system replenishment, are fitted adjacent to the battery.

2 Renew the hydraulic system mineral oil

Depressurize the hydraulic systems as described in Chapter G of the appropriate Workshop Manual and proceed as follows.

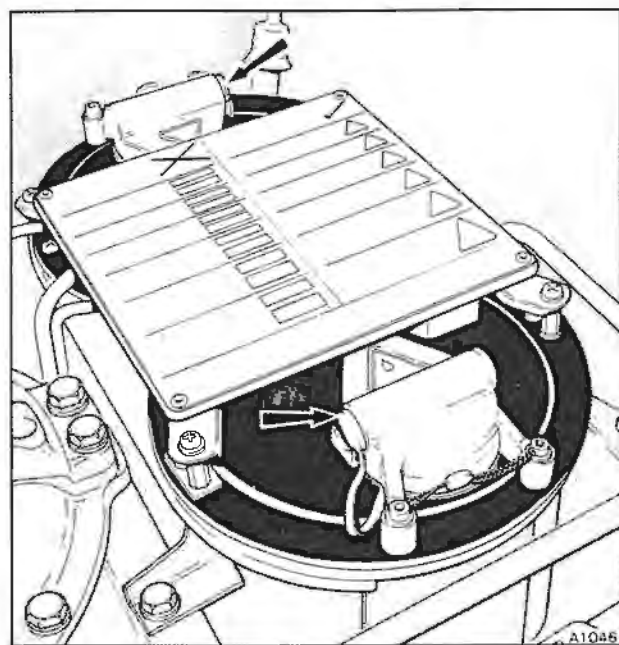


Fig. B2/1-36 Access to the hydraulic system reservoirs

Completely drain the fluid from the hydraulic systems by attaching a tube to each bleed point then opening the bleed screws and allowing the mineral oil to drain from the circuits. The bleed screws are located on each accumulator, on each pair of brake calipers, on the deceleration conscious pressure limiting valve and on each rear suspension strut (or each inner rear wing from the suspension strut). A drain tube is not required at the accumulator bleed screws as these are an integral part of the accumulators and when opened allow the mineral oil to flow from the accumulator spheres back to the reservoirs.

Drain the mineral oil from the reservoirs and clean the reservoirs as described in Chapter G of the Workshop Manual.

After the system has completely drained, close all the bleed screws and ensure that any disturbed pipes are connected and correctly torque tightened.

Fill the reservoirs with fresh hydraulic system mineral oil (see fig. B2/1-36 and Chapter A) until the levels in the reservoirs are slightly above the topping-up marks on the indicator plate.

Run the engine for four minutes, with the car unladen, then top-up to the FULL level mark; never allow the mineral oil levels to fall below the minimum level marks.

Check for leaks, especially around the unions of any pipes which have been disturbed.

Finally, bleed the hydraulic systems as described in Chapter G of the Workshop Manual.

Ensure that the containers of new Hydraulic System Mineral Oil, for system replenishment, are fitted adjacent to the battery.

3 Check the condition of all brake pipes and hoses

Position the car on a ramp or over a pit and check the condition of the hydraulic system pipes and hoses.

Examine the metal pipes for signs of corrosion, particularly those in an exposed position.

Examine the hoses for chafing or surface cracking.

Faulty pipes and hoses should be replaced as described in Chapter G of the appropriate Workshop Manual.

4 Renew the accumulator to body and trailing arms to body hoses

Depressurize the hydraulic systems as described in Chapter G of the appropriate Workshop Manual and proceed as follows.

Fit a hose clamp to each of the intermediate hoses of the accumulator return pipes to prevent the flow of mineral oil from the reservoirs.

Thoroughly clean the areas around the connections of the two accumulator to body and trailing arms to body hoses (see figs. B2/1-37 and B2/1-38).

Remove the respective hoses noting the following.

To avoid contamination fit the new hose immediately after removing the old one; alternatively fit approved blanks to the open ports until the new hoses are fitted.

Before fitting a new hose ensure that it is thoroughly clean and conforms with the hydraulic systems mineral oil requirements.

When fitting the new hoses, ensure that they are routed to clear other components and that clearance is maintained during full suspension movement.

Tighten the pipe nuts to the torque settings given in Chapter G of the Workshop Manual.

After fitting the new hoses, check for leaks and bleed the hydraulic systems as described in Chapter G of the Workshop Manual.

5 Renew all hydraulic system hoses

To renew the hydraulic system hoses follow the same basic procedure described under the heading Renew the accumulator to body and trailing arms to body hoses.

6 Check the brake disc pads for wear

Remove the wheel discs and slacken the wheel nuts approximately half a turn.

Jack up the car and support with stands and sill blocks.

Remove the road wheels and examine all the disc brake pad linings.

The brake pads must be renewed when the brake pad linings are worn to within 3,18 mm (0.125 in) of the steel backing plates. The pads should also be renewed if this minimum thickness is likely to be achieved before the next service check. To renew the brake pads, refer to Chapter G of the Workshop Manual.

If new brake pads are to be fitted which have different recommended linings from those on the old pads, the disc faces should be cleaned prior to fitting the new pads. All traces of the old pad lining material should be removed by hand rotating the disc whilst applying coarse grade emery cloth to the disc faces. Do not emery the disc faces radially.

Always ensure that the pads fitted to all six brake calipers have the same type and grade of pad lining.

Fit the road wheels and lower the car.

If new brake pads have been fitted, an initial running-in period of between 1100 kilometres and 1300 kilometres (700 miles and 800 miles) should be observed. During this running-in period the brakes should not be applied harshly or for prolonged periods from high speeds except in an emergency. Towards the end of the running-in period, the force with which the brakes are applied may be progressively increased.

7 Check the condition of the brake caliper dust excluders (when changing brake pads)

The condition of the caliper dust seals should be checked whenever the brake pads are removed.

Inspect the seals for signs of damage, heat hardening, or general deterioration and renew if necessary.

When fitting new seals, ensure that the seal retaining clips are correctly located.

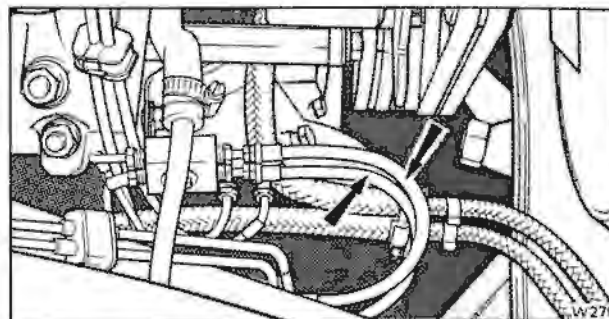


Fig. B2/1-37 Hydraulic accumulator to body hoses

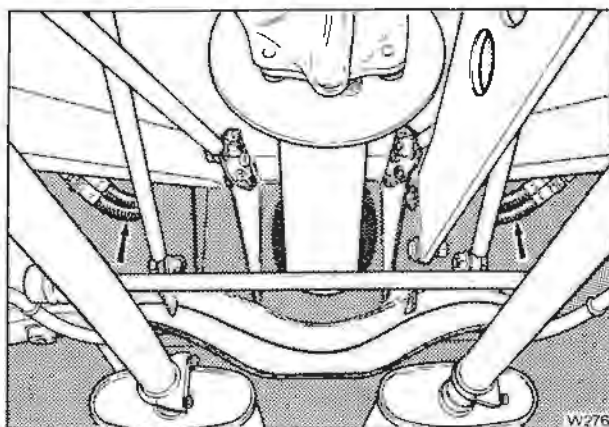


Fig. B2/1-38 Trailing arm to body hydraulic hoses

8 Renew the brake caliper seals

To renew the caliper piston seals it is necessary to remove the brake calipers from the car.

For full instructions, refer to Chapter G of the Workshop Manual.

9 Check the parking brake pads for wear

Securely chock the front wheels then raise the rear of the car. Place sill blocks under the rear body sills and also support the rear trailing arms. Do not allow the suspension struts to support the full suspension load.

Remove the rear wheels and release the parking brake to the off position.

Disconnect the caliper actuation rod from the caliper lever (see fig. B2/1-39).

Unscrew and remove the caliper adjuster and collect the adjuster clicker plate.

Unhook the pad retention springs from each pad, noting the larger spring is fitted to the inner pad.

Remove the pads from the caliper.

Check the thickness of the lining material on each pad. Pads which are worn to within 1,5 mm (0.062 in) or less of the steel backing plate should be renewed.

To fit the pads, attach the retention springs then locate the pads into position and hook the springs onto the caliper.

Complete the assembly by reversing the removal procedure, then adjust the calipers as described under the heading Adjust the parking brake.

Note

If new parking brake pads have been fitted, the following bedding-in procedure should be carried out after adjusting the parking brake.

Drive the car at approximately 48 km/h (30 mile/h) and apply the parking brake to bring the car to rest; it is important that this is done gently and progressively. The parking brake must not be applied fully and no attempt should be made to lock the wheels. This operation should be carried out nine times, allowing at least one minute to elapse between stops to prevent the discs overheating.

Finally adjust the caliper as described under the heading Adjust the parking brake.

10 Adjust the parking brake

Ensure that the parking brake is in the off position.

Adjust the rear cables at the adjusters (see fig. B2/1-40) so that the caliper operating levers return to their off-stops under the influence of their return springs with no appreciable slackness in the cables.

Note

The cables must be adjusted so that the equalizer link on the intermediate linkage (see fig. B2/1-40) lies at right-angles with the centre line of the car with the parking brake in the off position.

To check the cable adjustment, adjust both rear cables at the equalizer link until the caliper off-stops are just clear of the calipers. Measure the gap produced at each off-stop and lengthen the cables by this amount.

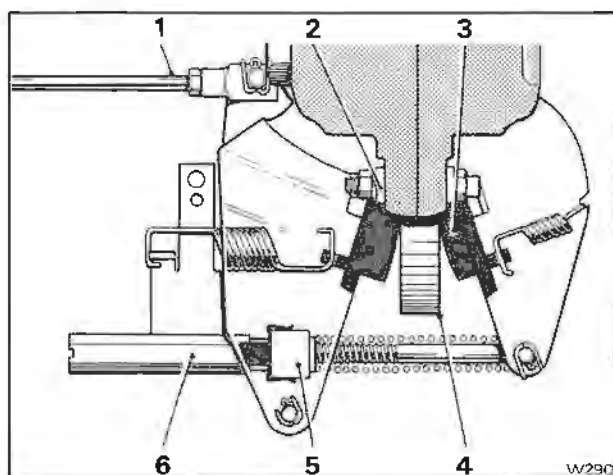


Fig. B2/1-39 Parking brake mechanism

- 1 Actuation rod
- 2 Centralizing straps
- 3 Parking brake pads
- 4 Brake disc
- 5 Adjuster clicker block
- 6 Adjuster

With the cables correctly adjusted, check that the centralizing straps (see fig. B2/1-39) are pushing the pads away from the discs when the parking brake is in the off position. If not, remove the nut and bolt securing the straps, bend the straps outward (i.e. away from the disc) then refit them. Ensure that the straps are pushed downward towards the adjusting nut whilst tightening the nut and bolt securing them to the caliper.

Check that the distance between the pad and the disc are the same on each side of the caliper; if not, reset the centralizing straps.

Raise each rear wheel in turn so that it is free to rotate and adjust each caliper as follows.

Turn the caliper adjuster (see fig. B2/1-39) clockwise until the pads just grip the disc; at this point it should only just be possible to rotate the road wheel by hand. Turn the adjuster anti-clockwise a quarter turn (i.e. three clicks on the nut) to obtain the minimum clearance between the pads and disc.

11 Lubricate the parking brake linkage

Position the car on a ramp or over a pit. Lubricate the parking brake linkage clevis pins, fulcrum pins, and the rear cable adjusters with approved grease.

Fuel system

Safety precautions

It is important that before a fuel line is opened or the fuel tank is drained or siphoned, the workshop safety precautions given in Chapter A and Chapter U of the Workshop Manual are strictly observed.

1 Renew the main fuel filter

The main fuel filter is situated on the car body frame (see fig. B2/1-41). It is a sealed unit and no attempt should be made to clean the element.

At the appropriate service interval change the main fuel filter.

Depressurize the system (see Chapter U) and unscrew the inlet and outlet pipe connections.

Slacken the worm drive clip retaining the assembly to the mounting bracket and withdraw the filter assembly.

Unscrew the unions fitted into both ends of the filter and discard the assembly.

Fit the new filter assembly by reversing the removal procedure, noting the direction of flow arrow marked on the outside of the casing.

When carrying out the above operation at 96 000 kilometres (60 000 miles) or six years and subsequent periods, the intank fuel filter situated on the underside of the fuel tank (see fig. B2/1-42) should also be removed and cleaned as follows.

Disconnect the battery.

Drain or siphon the fuel tank.

Place a container beneath the fuel intank filter to collect the residue of fuel from the tank when the filter is removed.

Disconnect the hose from the intank filter outlet pipe.

Remove the circlip retaining the filter and carefully withdraw the filter from the tank.

Clean the filter mesh by washing it in clean fuel.

Examine the filter for serviceability and renew if necessary.

Fit the filter by reversing the removal procedure. Always use a new seal on the filter body.

Ensure that the fuel drained from the fuel tank is free from foreign matter, then return it to the fuel tank.

Check the fuel filter and the pipe connections that have been disconnected, for leaks.

2 Check the condition of the filler head to fuel tank hose; renew as necessary

To enable the filler head to fuel tank hose to be examined, it is necessary to remove the rear suspension gas spring.

For details of the procedure required reference should be made to Chapter U of the Workshop Manual.

3 Check the condition of all flexible fuel pipes

Carefully examine all the flexible fuel pipes throughout the fuel system. Renew any pipes which have become damaged or deteriorated to an unserviceable condition.

Before renewing any pipes depressurize the system (see Chapter U).

Check the complete fuel system for leaks and rectify as necessary.

Electrical system

1 Check the state of charge of the battery

Silver Spirit, Silver Spur, and Mulsanne

The battery is situated in the luggage compartment stowage well. To gain access to the battery, turn back the carpet from the right-hand side of the luggage compartment. Lift out the stowage well lid and the cover from around the battery.

Camargue

The battery is mounted on the right-hand side of the luggage compartment. To gain access to the battery turn back the carpet and remove the trim from around the battery, the trim is secured by two turn fasteners. Unclip the battery cover retaining strap and lift off the cover.

To check the specific gravity of the battery electrolyte on these models, it is necessary to remove the battery from the car as follows. Ensure the ignition is switched off, then disconnect the battery leads. Remove the battery clamp and lift the battery from its cradle.

Battery electrolyte check

Applicable to batteries with removable cell vent covers.

a. Electrolyte specific gravity check.

Remove the vent covers from the top of the battery.

Using a hydrometer check the specific gravity of the electrolyte in each cell and compare the readings obtained with the following tables.

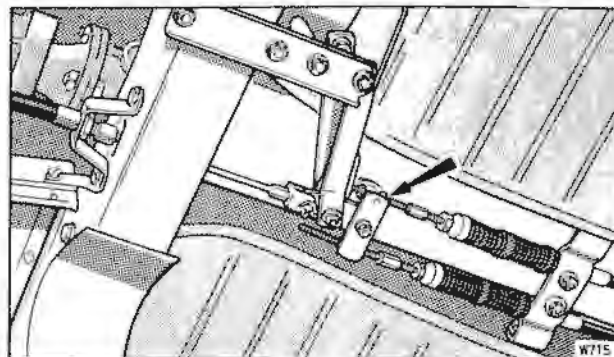


Fig. B2/1-40 Parking brake rear cable adjustment point

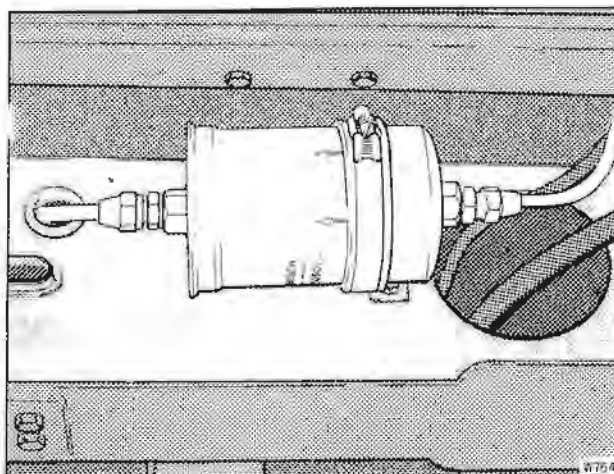


Fig. B2/1-41 Main fuel filter

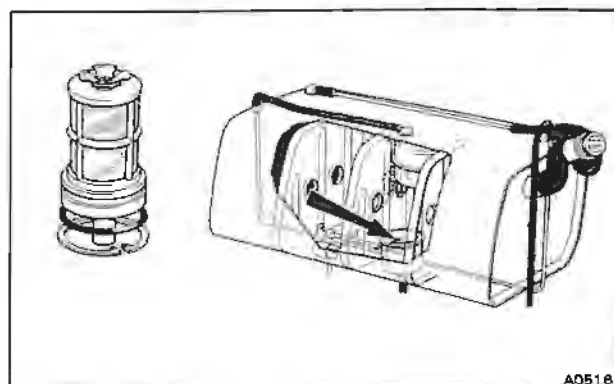


Fig. B2/1-42 Intank fuel filter

Caution

The electrolyte in the battery is a corrosive acid. Do not allow the electrolyte to come into contact with the eyes, skin, fabric, or paintwork. Flush any contacted areas immediately and thoroughly with water. If the eyes are affected, flush for at least 15 minutes and obtain prompt medical attention.

Chloride battery

Air temperature below 32°C (90°F)

Specific Gravity	Condition of Battery
1.270 to 1.290	Fully charged
1.180 to 1.200	Half discharged
1.090 to 1.110	Fully discharged

Air temperature above 32°C (90°F)

Specific Gravity	Condition of Battery
1.220 to 1.240	Fully charged
1.150 to 1.170	Half discharged
1.070 to 1.090	Fully discharged

Lucas or Varta battery

Air temperature below 27°C (80°F)

Specific Gravity	Condition of Battery
1.270 to 1.290	Fully charged
1.180 to 1.200	Half discharged
1.090 to 1.110	Fully discharged

Air temperature above 27°C (80°F)

Specific Gravity	Condition of Battery
1.220 to 1.240	Fully charged
1.130 to 1.150	Half discharged
1.050 to 1.070	Fully discharged

If the specific gravity reading of all the cells is uniform and within the range 1.240 to 1.270 the battery is in an acceptable state of charge. If the readings are uniform but below 1.220 the battery should be recharged. Always remove the battery from the car for recharging.

If the specific gravity of the electrolyte in one cell differs markedly from the others (i.e. the reading is 0.040 or more, lower than the remainder), then a defect must be suspected and rectified as necessary.

b. Electrolyte level check

Ensure that the battery is in a high state of charge (see Electrolyte specific gravity check).

The level of the battery electrolyte in each cell should be approximately 5 mm (0.250 in) above the tops of the separators (Lucas or Varta battery) or contacting the blue bar situated above the separators (Chloride battery).

If the electrolyte level is low top-up using distilled water until the level is attained. Do not overfill.

Always ensure the top of the battery is clean prior to removal of the vent covers.

Battery voltage check

Applicable to sealed for life (maintenance free) batteries

The state of charge of a sealed for life battery can only be checked by taking a voltage reading at the battery terminals, using either a digital voltmeter or multimeter. The instrument used must be accurate to within 0.1 volts.

Before a voltage reading is taken on batteries that have recently received a charge, the residual effects of the surface charge on the battery plates must be removed to avoid a false reading. This surface charge can be removed by applying an electrical load to the battery (e.g. by either connecting a high rate discharge tester for 15 seconds or if the battery is fitted to a car, switching on the headlamps for one minute). Afterwards, allow the battery to stand for a further one minute before a voltage reading is taken.

Compare the reading obtained with the following table to ascertain the state of charge.

Voltage	State of charge
12.8	100%
12.6	82%
12.5	75%
12.4	60%

A minimum reading of 12.5 volts (corresponding to 75% charge) is acceptable. Below this reading the battery should be recharged. Instructions for charging are provided on the battery label.

2 Clean and check the battery terminals

The top of the battery should always be kept clean and dry.

If corrosion of the battery leads or terminals has occurred it should be removed as follows.

Disconnect the battery leads and using hot water or a dilute solution of ammonia carbonate, wash them thoroughly until all corrosion has been removed. Finally wash with clean water to remove the ammonia carbonate solution.

Remove any corrosive deposit from the terminal posts using a cloth moistened with ammonia carbonate solution then wash with clean water.

Dry the battery leads and terminal posts. Connect the battery leads to the terminal posts. Liberally coat the terminals with petroleum jelly.

3 Check all exterior lamps for operation

Actuate the respective switches and check for lamp illumination and function (i.e. turn flashers, headlamp dip/main beam, etc.).

The respective facia tell-tales should also be checked for illumination during these operations.

With the lighting switch in the Park and Head position, switch on the ignition. Check the facia instruments for illumination; the panel illumination dimming switch should also be checked for correct operation.

4 Check all facia warning lamps for operation

Before carrying out the following checks firmly apply the parking brake; ensure the gear range selector is in the Park position and remove the gear range selector cut-out from the fuseboard.

Ignition and oil warning lamps

Turn the ignition key to the RUN position, the ignition and oil pressure warning lamps should illuminate.

Start the engine, both lamps should extinguish; switch off the ignition.

When the ignition key is turned to the ACC position the ignition warning lamp only should illuminate.

Warning panel cluster lamps

Move the gear range selector lever to the D position (do not insert the gear range selector cut-out).

Apply the footbrake then turn the ignition key to the start position. All the warning panel cluster lamps should illuminate. With the ignition held in the start position, turn the main lighting switch to the Park and Head positions; the intensity of illumination of the ice and low fuel warning panels should reduce. Switch off the ignition and lighting switch.

The hydraulic system warning panel situated at the top of the warning panel cluster should also be checked as follows.

Turn the ignition key to the RUN position.

Depressurize the hydraulic system by actuating the brake pedal between 50 and 60 times. The two brake pressure warning panels should illuminate.

When the panels have illuminated start and run the engine. Both panels should extinguish after approximately two minutes indicating that the hydraulic systems are pressurized. Switch off the ignition.

Fasten seat belt warning lamp

To check the seat belt warning lamp, open and close each door in turn; observe the lamp operation.

The seat belt warning panel should illuminate whenever a door is opened and extinguish approximately seven seconds after the door is closed.

Note

All doors must be fully closed for the lamp to extinguish (i.e. not on first catch).

Hazard warning indicator

Depress the hazard warning switch, check that all the turn indicators and the facia warning lamp are flashing.

5 Check all interior lamps for operation

Ensure all the doors are fully closed and the interior lamps are extinguished. Open the driver's door; the rear section of the central roof lamps should illuminate. Fully close the door; the roof lamps should remain illuminated for approximately seven seconds.

The rear roof lamps and footwell lamps should also illuminate when the door is opened. If the gear selector lever is moved from the Park position with the ignition key in the RUN position, the lamps will extinguish immediately all the doors are closed. When carrying out this operation also check that the door open warning lamp and step lamp are illuminated with the door in the open position. These lamps should extinguish immediately the door is fully closed.

Repeat the check on the remaining door(s).

Note

If the doors are only closed to the first catch position the lamps should remain illuminated.

Check the operation of the front compartment personal lamps as follows.

Withdraw the main lighting switch; the front section of the driver's roof lamp should illuminate.

Operate the map lamp switch, the front section of the front passenger's roof lamp should illuminate. Move the switch to the mirror position. Lower the passenger's sun visor; the lamp situated above the visor should illuminate.

Withdraw the visor from its retaining clip; the lamp should extinguish. The lamp should also extinguish when the visor is moved to its raised position, even when the switch is on.

The operation of the rear roof lamps should be checked by operating the switches situated on the rear compartment vanity mirror surrounds.

Press the upper portion of the three position switch; the front section of the respective roof lamp should illuminate. Press the lower portion of the switch and the rear section of both rear roof lamps should illuminate. With the switch in the central position both lamps should be off. Repeat the operation on the opposite side of the car.

On Camargue cars press the outer of the two switches situated in the arm rest; this should illuminate the rear section of both rear roof lamps. Pressing the inner switch should illuminate the front section of the respective roof lamps. Repeat the operation on the opposite side of the car.

6 Check the horns for operation

Examine the electrical connections to each horn to ensure they are in good condition. Clean the horns and remove any foreign matter that may have collected in the horn trumpets.

Switch on the ignition; press the horn button several times to ensure the horn button is making a good contact and that both horns are functioning correctly each time it is pressed.

7 Replenish the windscreen and headlamp washer reservoirs

Windscreen washer reservoir.

The reservoir is located in the engine compartment. Remove the filler cap and add the correct mixture of windscreen washer fluid and distilled water to the reservoir until the maximum level is attained.

Topping-up level – bottom of filler neck.

Headlamp washer reservoir.

On Silver Spirit, Silver Spur, and Mulsanne cars a headlamp washer system is fitted. The reservoir is housed under the front right-hand wing and the filler is located in the engine compartment towards the front of the car.

The reservoir should be topped-up with clean water until the fluid level is at the bottom of the filler neck.

During winter conditions, a solution of 30% isopropyl alcohol and 70% water should be used. This mixture will provide frost protection down to a temperature of approximately -10°C (14°F).

8 Check the condition of the windscreen wiper blades

Lift the wiper arms from the windscreen and inspect them for wear or damage. Renew the blades if necessary.

On Silver Spirit, Silver Spur, and Mulsanne cars the wiper blade removal procedure is as follows.

- a. Driver's side of the windscreen. Lift the wiper arm from the windscreen. Push half of the blade away from the arm, until the blade is released from its location clip. To fit the new blade, position it on the wiper arm and press it firmly into the location clip.
- b. On the passenger side of the windscreen, lift the wiper arm from the windscreen and pivot the blade through 180°. Press the small release tag, situated on the underside of the blade pivot block and push the blade out of the crooked end of the wiper arm. Withdraw the wiper blade from the arm. Fit the new blade by reversing the removal procedure.

To remove a blade on Camargue cars, lift the wiper arm away from the windscreen then press the small tab situated in the end of the arm to release the blade. Check that the new blade is secured by the retaining catch then return the blade to the windscreen.

Note

Care must be taken during these operations to ensure that the wiper arm is not allowed to spring back onto the windscreen when the blade has been removed, otherwise damage to the windscreen could occur.

9 Check the windscreen wash/wipe and headlamps power wash for correct operation

Before carrying out the following check ensure that the windscreen is clean.

Switch on the ignition and press the windscreen wash/wipe switch. The windscreen wipers should operate and the fluid from the washer jets should impinge on the windscreen approximately 419 mm (16.5 in) from the centre line of the windscreen and 190 mm (7.5 in) below the windscreen top finisher. The wash/wipe function should continue until the switch is released.

On release of the push button switch the washer should cease while the wipers should continue for approximately four strokes before returning to the park position.

Turn the main lighting switch to the HEAD position. The headlamps cleaning function (if fitted) will only operate when the headlamps are illuminated. Press the wash/wipe switch, the power wash jets should operate for half a second when the wash/wipe switch is depressed. To repeat the wash it will be necessary to release and then depress the switch again.

10 Check the alternator for correct operation

For details of the alternator test procedure and brush renewal, reference should be made to Chapter M of the Workshop Manual.

Automatic air conditioning system

1 Check the scuttle intake grille is free from obstruction

Check the air intake grilles and foam filters situated behind the bonnet, for obstruction (i.e. leaves, dirt, etc.). Carefully remove the grille retaining screws, lift the grilles and filters from the body and clean all parts including the air intake ducts; also ensure the duct drain tubes are free from obstruction.

2 Check the refrigeration system for correct operation

For details of the procedure required to carry out this operation reference should be made to Chapter C of the Workshop Manual.

Body

1 Check the condition and operation of the seat belts

The following checks should be carried out on the front and rear retractable seat belts.

Fully withdraw the seat belt from the reel; examine the webbing for any signs of wear or damage. Allow the belt to return to the stowed position.

To check the operation of the retractable belt, fit the belt and then give the webbing of the diagonal belt a sharp pull. Ensure that the belt locks and then returns to the normal roller action immediately the belt is released.

With the fastening tongue of the belt locked in the retaining clasp; ensure the tongue is securely held and is released immediately the release button marked PRESS is operated.

The alternative method of checking the seat belts is to select an open stretch of road, then, when the road is free from any potential danger, accelerate the car to 24 km/h (15 mile/h) and brake sharply from this speed; ensure that the belt locks and then subsequently releases. If this method of test is used, it will be necessary to carry a passenger(s) to enable the passenger seat belts to be tested.

Check the rear seat lap belt for condition and correct locking and release.

Report any defects to the owner.

When seat belt replacement is necessary only belts approved by Rolls-Royce Motors Limited should be fitted.

2 Check that all body drains are free from obstruction

Examine the body drain holes; remove any foreign matter that may be obstructing the holes. Take care not to damage the paintwork.

3 Lubricate the spare wheel carrier lowering bolt

Turn back the carpet on the luggage compartment

floor to expose the spare wheel inflation trap and spare wheel carrier lowering bolt head. Remove the inflation trap cover; if a spare wheel retainer is fitted, it should be released.

Rotate the spare wheel bolt anti-clockwise until the carrier is fully lowered. Remove the spare wheel from the carrier.

Lubricate the carrier lowering bolt using a recommended lubricant. Raise and lower the carrier to distribute the lubricant over the full length of the carrier bolt.

Check the condition of the spare wheel as described under the heading **Wheels**.

Fit the spare wheel onto the carrier. Ensure that the inflation valve is in line with the inflation trap in the luggage compartment floor, then fully raise the carrier.

Fasten the spare wheel retainer (if fitted), and fit the tyre inflation trap rubber and carpet.

operations, carefully road test the car for satisfactory performance.

If new brake pads have been fitted, the running-in and bedding procedures should be carried out as described under, Check the brake disc pads for wear and Check the parking brake pads for wear.

When the road test has been completed, the car should be fully inspected for any leaks, fouls, etc., and rectified as necessary.

The transmission fluid level, should be finally checked immediately after the test, while the fluid is at normal running temperature and topped-up if necessary (see Check the transmission fluid level).

Ensure that all controls, door handles, steering wheel, etc., are clean and that any dirt which may be attributed to the service schedule is completely removed.

Wheels

1 Check all tyre pressures

Check the tyre pressures including the spare when the tyres are cold; adjust if necessary. The inflation pressure of the spare tyre should be adjusted to the highest tyre pressure (i.e. rear wheel).

Do not check the pressures when the tyres are warm (e.g. after the vehicle has run).

Always ensure that the valve caps are fitted after checking.

2 Check the condition and tread depth of the tyres

Examine the tyres, including the spare, for any signs of damage or tyre wall cracking, etc.

Carefully remove any stones or other objects that may be lodged in the tyre treads.

Check the depth of tread at several points around each wheel using a tread depth gauge.

To enable a visual check to be made, tread depth indicators are incorporated into the tyre construction. These indicators are integral moulded ribs, spaced at intervals around the circumference of the tyre and extend across the full width of the tread in all primary grooves. When one or more of these indicators are flush with the tread, only 1.6 mm ($\frac{1}{16}$ in) or less of tread depth remains.

If the condition of the tyres is not satisfactory or the tread depths do not conform to the legal requirements of the country in which the car is operating, the owner should be notified and asked to authorize the fitting of new tyres.

For full information on tyre fitting, balancing, etc., reference should be made to Chapter R of the Workshop Manual.

Test

1 Road test the car for satisfactory performance

On completion of the respective service schedule

Service schedule procedures

Cars conforming to Japanese specifications

Contents	Pages					
	Silver Spirit Mulsanne Silver Spur	Mulsanne Turbo	Bentley Eight	Bentley Turbo R	Corniche/ Continental	Camargue
1981/1985 (inclusive) model year cars	B3-3	—	—	—	B3-3	B3-3
1986 model year cars	B3-3	—	—	—	—	B3-3



WARNING

Use only **Hydraulic System Mineral Oil (LHM)** to replenish the braking and levelling systems.

Do not use Brake Fluids (Castrol RR363, Universal, or any other type). The use of any type of brake fluid, even in very small amounts, will cause component failure necessitating extensive rectification to the braking and levelling systems of the car.

Always ensure before fitting any seals, hoses, pipes, etc., that they are suitable for a mineral oil system. For details of correct component identification reference should be made to Chapter G of the Workshop Manual.

Always ensure that a sealed container of **Hydraulic System Mineral Oil (LHM)** is fitted adjacent to the battery.

Always ensure that no foreign matter enters the systems when work is being carried out.

General information

The information contained in this Chapter should be used in conjunction with the service schedule charts and Workshop Manuals.

The following are the Workshop Manual publications to which reference should be made.

Silver Spirit, Silver Spur, and Mulsanne from vehicle identification number (VIN)*SCAZS000ACH01001* and Corniche/Continental from (VIN)*SCAZD0006CCH05037*, publication number TSD 44D0.

Corniche prior to vehicle identification number (VIN)*SCAZD0006CCH05037* and Camargue, publication number TSD 4200.

Car protection

Prior to commencing a service schedule the car should be suitably protected. For this purpose car protection kit RH 2662, wing covers RH 2684, and wing cover liners RH 2685 should be used.

Regular maintenance

In addition to the service schedules listed, the following maintenance should be carried out.

Engine

Weekly or every 800 kilometres (500 miles) whichever is the earlier; check the engine oil by means of the dipstick; top-up if necessary.

Service schedule procedures

1981/1986 (inclusive) model year cars

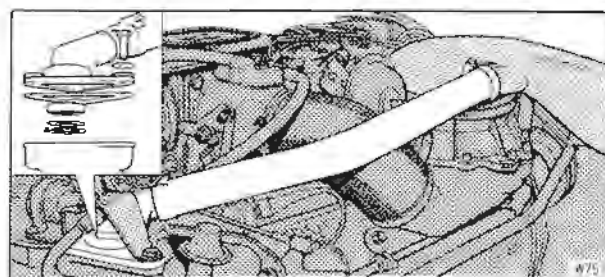


Fig. B3-1 Crankcase breather - 'A' bank

Lamp units

Weekly; check the lamp units for operation; rectify any faults.

Tyre pressures

Weekly; check the tyre pressures including the spare; adjust if necessary.

Windscreen and headlamp washer reservoir(s)

Weekly; check the washer fluid level; top-up if necessary.

Hydraulic reservoirs

Monthly; check the level of hydraulic mineral oil in the reservoirs.

Depressurize the hydraulic systems by pumping the brake pedal until the low brake pressure warning panels on the facia illuminate. Continue to pump the pedal for at least a further 20 applications to ensure complete depressurization. Start and run the engine for four minutes with the car unladen, prior to checking the level. Top-up if necessary to the indicated maximum level. **Use only Hydraulic System Mineral Oil (LHM)**. Refer to page B3-20 for further information before carrying out this operation.

Engine cooling system

Every three months; check the coolant level. If necessary top-up with the correct anti-freeze/water mixture (see page B3-12).

Crankcase emission control system

1 Clean the crankcase breather tube flame traps

Crankcase emissions are controlled by two separate breather pipes.

From the rear of 'A' bank cylinder head a moulded rubber hose connects the crankcase to the air intake housing, immediately upstream of the air meter but downstream of the air cleaner/silencer assembly.

From the front of 'B' bank cylinder head a second moulded rubber tube connects the crankcase via the oil filler (which has a sealed cap) to a pipe leading to the plenum chamber. This pipe assembly incorporates a restrictor to control the flow.

When fitting the flame trap assemblies, the longer assembly should be fitted to the 'B' bank oil filler connection.

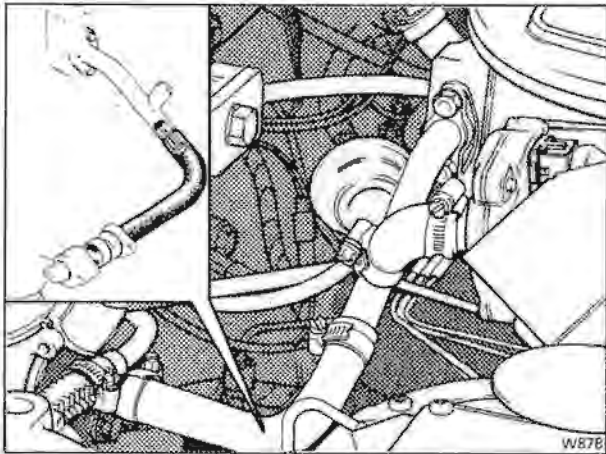


Fig. B3-2 Crankcase breather - 'B' bank

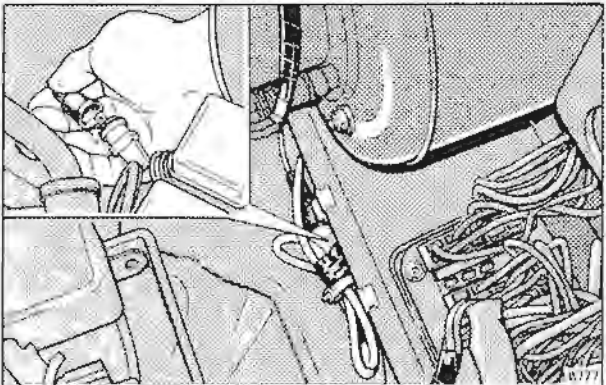


Fig. B3-3 Oxygen sensor connection

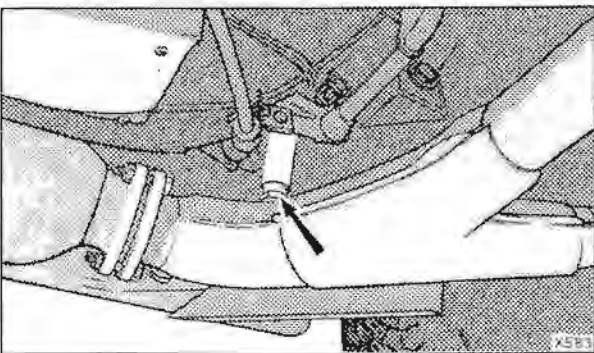


Fig. B3-4 Oxygen sensor (grass-fire shields removed)

Crankcase breather 'A' bank - To service

Withdraw the windscreen wiper motor relay (wiper 3) (see fig. B3-25) item A) situated on a bracket adjacent to the windscreen washer reservoir.

Remove the cover from the windscreen wiper drive mechanism to gain access to 'A' bank crankcase breather connection.

Locate the crankcase breather connection at the rear of 'A' bank cylinder head.

Slacken the worm drive clips securing the ends of the breather hose, free the joints and withdraw the hose.

Unscrew the three setscrews securing the breather take-off flange to the crankcase connection.

Withdraw the three setscrews and collect the washer fitted under the head of each one.

Lift the solenoid bracket from the vicinity of the connection.

Free the joint and lift the elbow casting from the engine. Discard the gasket.

Invert the casting and remove the circlip. Collect the retaining washer and withdraw the flame trap assembly.

Wash the flame trap in clean fuel and dry with compressed air.

Clean any deposits from inside the breather hose.

Fit the 'A' bank breather by reversing the procedure given for removal, noting that a new gasket should be fitted between the breather elbow casting and the engine.

Crankcase breather 'B' bank - To service

Slacken the worm drive clip securing the hose from the auxiliary air valve to the metal breather pipe. Withdraw the hose.

Slacken the worm drive clip securing each end of the rubber breather hose and free both hose joints.

Unscrew the two setscrews securing the metal breather pipe to the plenum chamber. Collect the washers, withdraw the pipe and discard the gasket.

Withdraw both the metal breather pipe and the rubber breather hose.

Unscrew the setscrew securing the adapter housing to the oil filler. Collect the washer and earth braid (if fitted). Withdraw the housing (slight resistance may be felt due to the rubber sealing ring).

Remove the flame trap assembly.

Wash the flame trap assembly in clean fuel and dry with compressed air.

Clean any deposit from inside the breather pipe and hose.

Inspect the inside of the metal pipe to ensure that the restrictor is not blocked.

Assemble the 'B' bank breather by reversing the removal procedure noting that a new gasket should be fitted between the metal pipe and the plenum chamber. Ensure that the rubber 'O' ring on the oil filler connection is in good condition and that the earth braid (if fitted) is fitted to the retaining setscrew.

Exhaust emission control system

1 Renew the oxygen sensor

From inside the engine compartment locate the blue

oxygen sensor cable where it exits from the loom adjacent to the left-hand blower motor (see fig. B3-3).

Unclip the blue cable and carefully ease it upwards until the white moulded junction piece, connecting the blue cable to the black cable is visible.

Note the run of both cables and disconnect them at the white junction block.

From beneath the car, clean the area around the oxygen sensor before it is unscrewed and discarded.

Before fitting the new oxygen sensor, carefully smear Never-seez assembly compound onto the threads.

Important

Do not allow the assembly compound to contact the exhaust gas slots (the slotted shield below the threaded portion), otherwise damage to the oxygen sensor and catalytic converter may result.

Screw the oxygen sensor into the exhaust pipe and tighten to between 50 Nm and 60 Nm (5,1 kgf m and 6,1 kgf m, 37 lbf ft and 44 lbf ft).

Feed the oxygen sensor cable upwards into the engine compartment, adjacent to the left-hand blower motor. Connect the black cable to the blue cable and suitably clip the cables to the loom.

Important

Always ensure that any free cable is clipped in the engine compartment. The cable should be reasonably taut under the car, otherwise loose cable could foul the hot exhaust pipe and become damaged.

2 Fit a new catalytic converter

Remove the necessary grass-fire heatshield(s) from within the vicinity of the catalytic converter.

Note

Take care when removing the shield as the sharp edges could cause injury to the operator's hands.

Unscrew the thermocouple retaining cap nut (see fig. B3-5) and withdraw the probe from the converter assembly.

Locate the exhaust pipe joint situated in front of the catalytic converter. This joint will be either a three bolt flange type or a hynamic clamp.

Remove the nut(s) from the joint clamp.

Locate the exhaust pipe joint situated to the rear of the catalytic converter.

Slacken the two nuts retaining the clamp bracket.

Support the weight of the catalytic converter.

Unscrew and remove the nuts from both the front and rear joints, collect the washers and withdraw the bolts and the front clamp (if applicable).

Withdraw the catalytic converter assembly and collect the sealing ring from each joint. The sealing rings are not interchangeable, therefore, they should be labelled for identification.

Fit the catalytic converter by reversing the removal procedure, noting the following.

(a) The sealing rings and pipe flares must be thoroughly clean and free from scale. They may be lightly dressed with fine emery cloth if required.

(b) Apply Never-seez assembly compound to the clamp bolt threads before assembly.

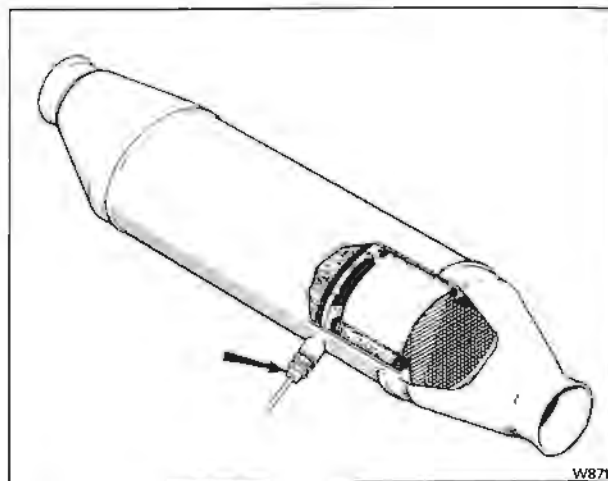


Fig. B3-5 Overheat thermocouple sensor

(c) The sealing rings, pipe flares, and grooves in the spherical joint clamp bracket should be lightly smeared with either graphite lubricant or Never-seez compound. This will assist alignment of the parts upon assembly.

(d) The parts should be loosely assembled and then manoeuvred to give the best alignment, before the joints are tightened.

Do not allow the assembly compound to enter the exhaust system, particularly up stream (in front) of the catalytic converter, otherwise damage to the converter assembly will result.

3 Inspect the catalytic converter overhear thermocouple and wiring

Unscrew the thermocouple retaining cap nut (see fig. B3-5) and withdraw the probe from the converter assembly.

Visually inspect the probe for signs of damage. If damage is suspected fit a new probe assembly, if not, again fit the existing probe.

Check the external condition of the wiring, etc.

4 Inspect the grass-fire shields

Visually inspect the shields for damage.

Rectify or renew any damaged shields.

It is essential that a minimum clearance of 5 mm (0.20 in) is maintained between the heatshields and the exhaust pipes.

5 Remove and clean the E.G.R. valve and feed pipes (see fig. B3-6)

Unscrew the setscrew retaining the heatshield to the plenum chamber cover, collect the washer.

Unscrew the setscrew securing the heatshield to the top of the plenum chamber, collect the large diameter washer.

Unscrew the long setscrew that forms the lower mounting for the auxiliary air valve. Withdraw the setscrew and collect the washer and distance pieces.

Unscrew the nut from the E.G.R. valve top mount, collect the washer.

Withdraw the heatshield.

Detach the vacuum signal hose from the E.G.R. valve.

Unscrew the lower retaining nut and collect the washer.

Note

The valve upper securing nut is unscrewed to remove the heatshield.

Withdraw the valve and discard the gasket.

There are two E.G.R. pipes joined together adjacent to the auxiliary air valve by a sealing ring and split clamp.

Lower pipe

Locate the joint adjacent to the auxiliary air valve, unscrew the two nuts and collect the washers. Free

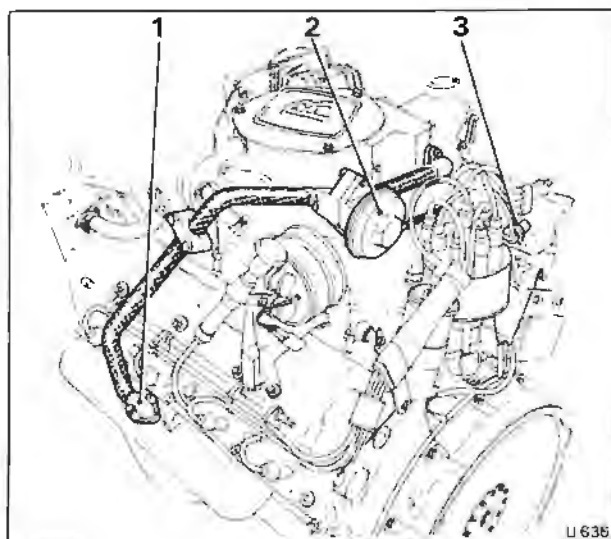


Fig. B3-6 Exhaust gas recirculation system

- 1 'B' bank exhaust manifold take-off point
- 2 Exhaust gas recirculation (E.G.R.) valve
- 3 E.G.R. cut-off solenoid

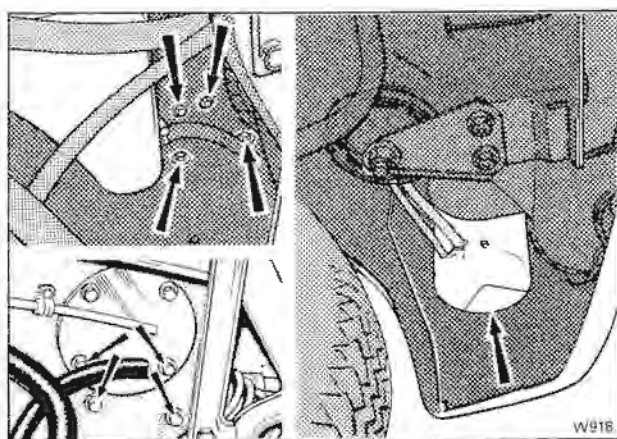


Fig. B3-7 Fuel evaporative control canister and mounting bracket setscrews

the clamp and withdraw the bolts together with both halves of the clamp bracket. Collect the sealing ring.

Unscrew the two nuts from the exhaust manifold joint. Free the joint, withdraw the pipe and discard the gasket.

Upper pipe

Unscrew the two setscrews securing the pipe flange to the plenum chamber; collect the washers from the setscrews.

Withdraw the pipe and discard the gasket.

With a suitable scraper, remove all carbon from the valve, mounting flange faces, plenum chamber connection, distribution pipes, and joint faces.

Using a wire brush fitted into a portable drill complete the cleaning operation.

Before fitting the components to the engine, thoroughly blow out the components with compressed air to remove all carbon particles.

Fit the components by reversing the procedure given for removal, noting the following.

Ensure that the valve pintle is secure on the valve stem.

Always use new gaskets.

6 Check the E.G.R. valve for correct operation

The operation of the E.G.R. valve only requires checking under no load conditions, as follows.

Connect an electric impulse tachometer to the engine in accordance with the manufacturer's instructions.

Ensure that the parking brake is firmly applied and that the gear range selector is in the Park position.

Start and run the engine until normal operating temperature is attained.

Ensure that the engine has run at least 15 minutes after the engine coolant thermostat has opened.

Allow the engine to return to the idle speed.

Increase the engine speed slowly noting the operation of the E.G.R. valve.

The E.G.R. valve should commence to open between 1550 rev/min and 1850 rev/min.

Fuel evaporative emission control system

1 Renew the evaporative emission control canister

Carry out the usual workshop safety precautions. Locate the control canister under the left-hand front wing (see fig. B3-7). Using the special pliers RH 8090 remove the securing clip from the canister end of the fuel tank to canister flexible hose.

Withdraw both hoses fitted to the control canister. Label each one to facilitate assembly.

Unscrew the four setscrews retaining the control canister (see fig. B3-7) in position. Support the weight of the canister before the last setscrew is removed. Collect the washer fitted under the head of each setscrew.

Withdraw the control canister from under the wing.

Note the position of the control canister in relation to the mounting bracket and unscrew the retaining worm drive clip.

Fit the new canister to the mounting bracket and tighten the retaining worm drive clip.

Ensure that the canister is in the correct position relative to the mounting bracket.

Fit the assembly to the vehicle by reversing the procedure given for removal, noting that a new hose securing clip should be used.

2 Check the condition of all pipes, hoses, and connections; renew if necessary

Carry out the usual workshop safety precautions.

Locate the fuel evaporative control canister.

Withdraw the fuel tank evaporative hose from the canister and connect it to the test equipment shown in figure B3-8.

Apply air pressure to the fuel tank hose via the test equipment until a reading of 380 mm (15 in) H₂O is attained and close the pressure supply.

After 5 minutes again check the pressure reading, this should not have fallen by more than 12.7 mm (0.5 in).

If the pressure drop is more than 12.7 mm (0.5 in), progressively treat all joints in the system with soap solution to detect air leaks.

Rectify any air leaks and again leak check the system.

During the 5 minutes leak down, visually inspect the hoses, pipes, and connections of the system that are routed under the car. Commence where the hose exits from the body adjacent to the left-hand rear road spring and follow the system to the control canister.

Ensure that the hoses are secure in the mounting clips.

When the system is satisfactory, detach the test equipment and connect the hose to the control canister. Secure the hose with a new clip.

3 Check the purge flow rate

Carry out the usual workshop safety precautions.

Remove the retaining clip from the purge line restrictor hose.

Disconnect the hose at the purge line restrictor. Leave the restrictor in the hose to the engine (see fig. B3-9).

Connect a rotameter assembly RH 8725 into the line, between the restrictor and the open pipe to the valve connection.

Connect an impulse tachometer to the engine in accordance with the manufacturer's instructions.

Start the engine. Raise the engine speed to 2500 rev/min and note the flow reading on the rotameter, this should be between 35 ft³/h and 55 ft³/h.

If the purge flow rate is outside the limits specified, refer to the Workshop Manual TSD 4400, Chapter U.

Engine

1 Change the engine oil

The sump should be drained when the engine is warm, preferably after the car has completed a run.

To drain the oil, position the car over a pit or on a ramp. Place a container in position beneath the drain plug situated on the right-hand side of the sump (see fig. B3-10). Remove the drain plug and allow the oil to drain from the sump.

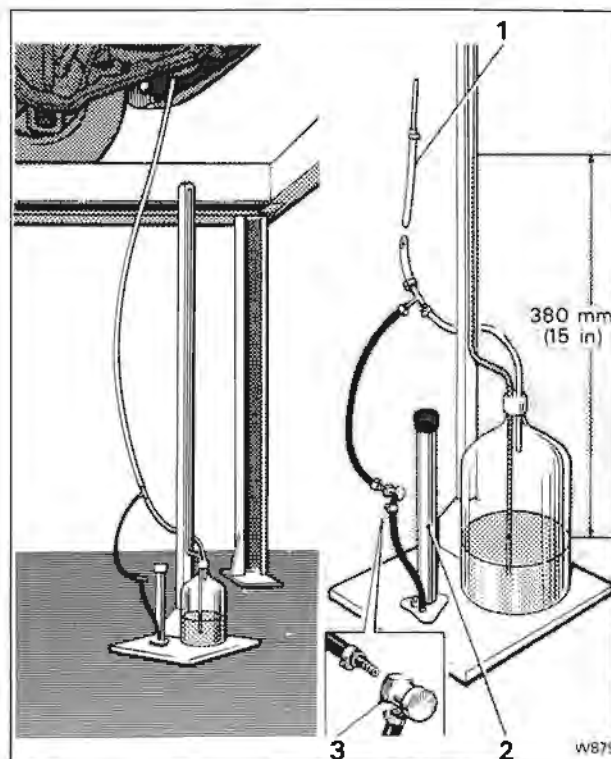


Fig. B3-8 Leak check test equipment

- 1 Connection to fuel tank/canister hose
- 2 Pump
- 3 One-way pressure valve

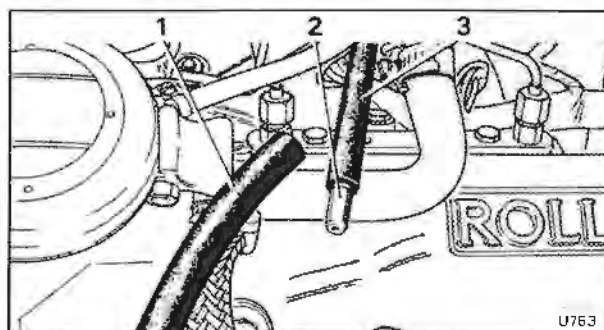


Fig. B3-9 Disconnecting the purge line

- 1 Hose from canister
- 2 Restrictor
- 3 Hose to throttle body

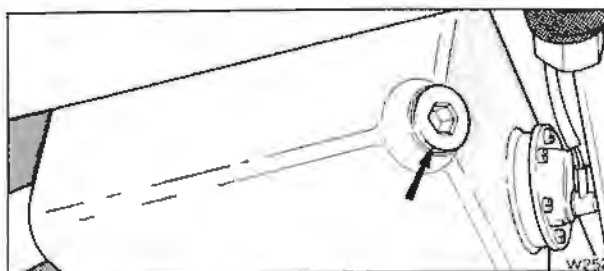


Fig. B3-10 Engine sump drain plug

Do not flush the sump with paraffin or petrol.

Fit the drain plug ensuring that the washer is correctly positioned and in good condition.

Fill the engine sump with recommended lubricant until the MAX level is reached on the dipstick.

Carry out the full oil level check procedure as described under Check the engine oil level.

2 Renew the engine oil filter

Drain the engine oil as described under Change the engine oil.

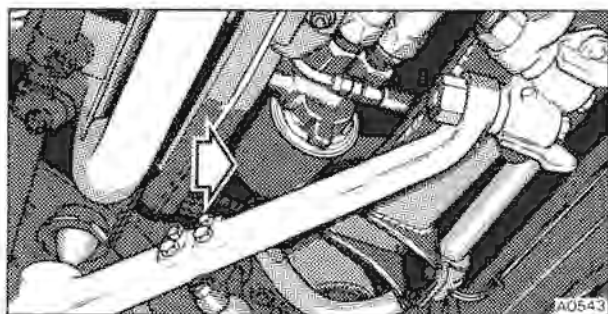


Fig. B3-11 Engine oil filter location

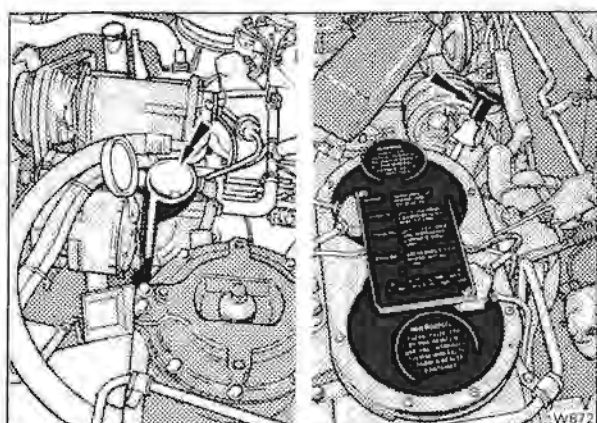


Fig. B3-12 Engine oil filler and dipstick

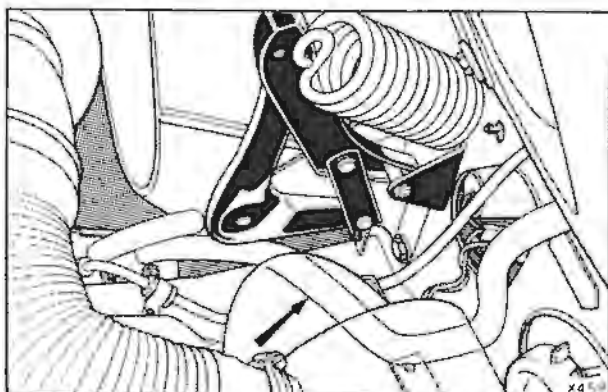


Fig. B3-13 Engine oil cooler return pipe

Place a container under the filter to collect any oil that may be spilt.

Remove the filter by unscrewing it in an anti-clockwise direction (see fig. B3-11).

Thoroughly clean the filter seating face on the engine.

Lightly smear the rubber sealing ring on the new filter with clean engine oil.

Screw the filter onto the pedestal until the rubber seal contacts the sealing face then tighten the filter a further half turn; **do not overtighten**.

Fill the engine with clean engine oil until the MAX level is reached on the dipstick. Run the engine and check the filter joint for leakage.

Carry out the full oil level check procedure as described under Check the engine oil level.

Check the engine oil level

In order to obtain an accurate indication of the oil level, ensure that the car is standing on level ground. Check the oil level by means of the dipstick marked ENGINE (see fig. B3-12).

It is recommended that the oil level is checked when the engine is cold. If the engine has been running, sufficient time should elapse after it has stopped to allow the oil to drain into the sump. Do not check the oil level with the engine running.

To replenish the sump with oil, open the filler cap marked ENGINE (see fig. B3-12). Add clean oil to the engine and after allowing sufficient time for the oil to reach the sump check that the oil is up to the MAX mark on the dipstick. **Do not overfill.**

Important

The engine lubrication system incorporates a thermostatically controlled oil cooler, therefore if the oil has been drained from the engine the following additional procedure must be carried out to ensure the correct oil level is obtained.

Carry out the normal topping-up procedure as described previously to obtain the maximum oil level reading on the dipstick.

Drive the car to enable the engine oil to attain the temperature required to actuate the oil cooler thermostat.

To ascertain that the thermostat has actuated, a rise in the temperature of the oil cooler return pipe (see fig. B3-13), can be felt. This temperature rise occurs as hot oil begins to flow from the oil filter housing, where the thermostat is situated, to the oil cooler mounted in front of the coolant radiator matrix.

Do not attempt to attain the required engine oil temperature rise with the car stationary.

When it has been ascertained that the engine oil has been passing through the cooler, thus filling this part of the lubrication system, check the oil level in the normal manner as described previously.

3 Check the drive belts

Before commencing to adjust the drive belts inspect them for signs of wear or cracking. Any belts found unsatisfactory should be renewed.

If after adjustment, a matched pair of belts have a marked variation in tension, a new pair should be fitted. Always renew both belts in a matched pair even if only one belt is faulty.

Two belt tension loads are specified; a new belt load for replacement (new) belts and a retensioning load for belts which are satisfactory for further service.

The belt tensions must be checked at a point midway between two pulleys (see fig. B3-14) by use of a belt tension meter or by applying a spring balance to give a 9,50 mm (0.375 in) belt deflection at a specified load.

The variation in the spring balance loads for similar belt tension meter loads is due to the varying lengths of belt between individual belt centres.

Belt dressing must not be applied to prevent belt slip.

Crankshaft to coolant pump

Load may be applied on either side of the belt run.

New belt load

Belt tension meter 27,2 kgf to 31,7 kgf
(60 lbf to 70 lbf)
Spring balance 7,5 kgf to 8,2 kgf
(16.5 lbf to 18 lbf)

Retensioning load

Belt tension meter 22,7 kgf to 27,2 kgf
(50 lbf to 60 lbf)
Spring balance 6,8 kgf 7,5 kgf
(15 lbf to 16.5 lbf)

The tension of this matched pair of belts is adjusted by altering the position of the jockey pulley (see fig. B3-14).

Slacken the nut and setscrew securing the jockey pulley arm. Pivot the jockey pulley to adjust the belt tension then tighten the nut and setscrew. Check the belt tension and repeat the adjustment procedure if necessary.

Coolant pump to alternator

Load may be applied on either side of the belt run.

New belt load

Belt tension meter 36,3 kgf to 40,8 kgf
(80 lbf to 90 lbf)
Spring balance 5,0 kgf to 5,9 kgf
(11 lbf to 13 lbf)

Retensioning load

Belt tension meter 31,7 kgf to 36,3 kgf
(70 lbf to 80 lbf)
Spring balance 4,1 kgf to 5,0 kgf
(9 lbf to 11 lbf)

The tension of the belt is adjusted by altering the position of the alternator (see fig. B3-14).

Slacken the setscrew securing the alternator at the upper mounting point.

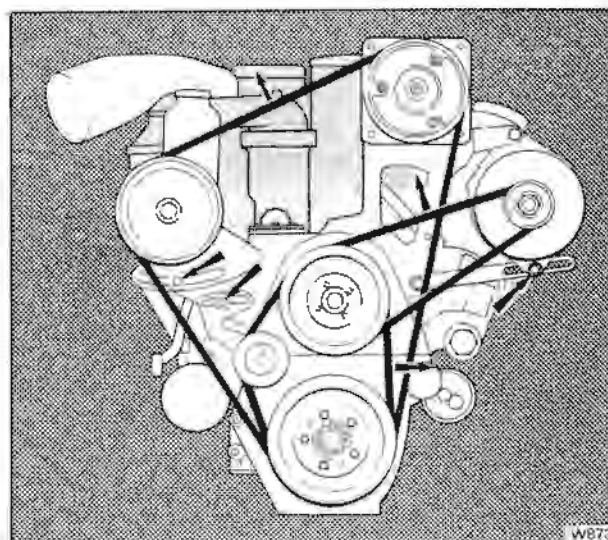


Fig. B3-14 Engine drive belt adjustment and tension check points

Slacken the setscrew securing the adjustment strut to the front mounting plate, also the nut and bolt in the adjustment slot. Pivot the alternator to adjust the belt tension then tighten the nut and bolt in the adjustment slot. Check the belt tension and repeat adjustment if necessary.

When the tension is correct finally tighten the remaining setscrews and check the tension again.

Crankshaft to steering pump/refrigeration compressor

Load must be applied on the top run of the belts. Each belt to be checked individually.

New belt load

Belt tension meter 40,8 kgf to 45,4 kgf
(90 lbf to 100 lbf)
Spring balance 6,3 kgf to 7,7 kgf
(14 lbf to 17 lbf)

Retensioning load

Belt tension meter 36,3 kgf to 40,8 kgf
(80 lbf to 90 lbf)
Spring balance 4,1 kgf to 6,3 kgf
(9 lbf to 14 lbf)

The tension of this matched pair of belts is adjusted by altering the position of the steering pump (see fig. B3-14). Slacken the setscrew in the steering pump mounting bracket slot situated below the pump pulley.

Slacken the pump pivot setscrew and the union on the supply hose at the rear of the pump.

Pivot the pump to adjust the belt tension then tighten the setscrew in the adjustment slot. Check the belt tension and adjust again if necessary. When the tension is correct tighten the pivot setscrew and again check the belt tension. Finally tighten the supply hose

connection; ensuring that the soft rubber protective sleeve has clearance or minimal contact with the coolant pump to manifold elbow.

4 Renew the air filter element

Silver Spirit, Silver Spur, Mulsanne, late Corniche, and all Continental

The air filter element is situated in the air intake housing at the front right-hand side of the engine compartment (see fig. B3-15).

To gain access to the element, unfasten the two toggle clips retaining the air blending valve housing to the air cleaner housing. Carefully free the joint and move the housing away from the air cleaner.

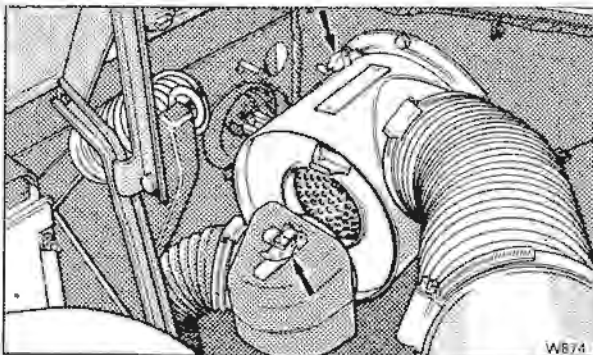


Fig. B3-15 Air filter (Silver Spirit, Silver Spur, Mulsanne, late Corniche, and all Continental)

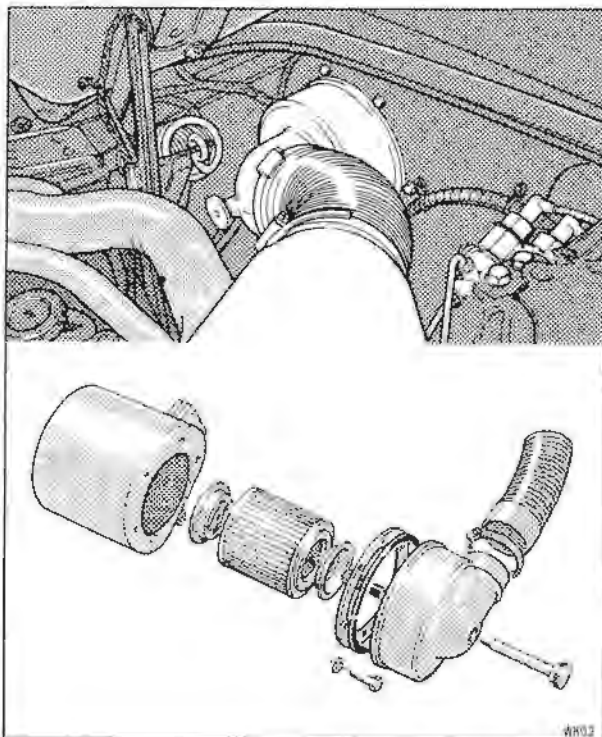


Fig. B3-16 Air filter (early Corniche and Camargue)

Unscrew the worm drive clip securing the engine intake hose to the air cleaner. Detach the hose.

Support the air cleaner housing and release the three toggle clips securing the housing to the valance.

Carefully free the joint, then move the housing towards the engine and withdraw the housing and air filter element from the car.

Remove the filter element from the housing.

Ensure that the inside of the air cleaner housing (both the sections removed and the fixed sections in the valance) is clean.

Inspect the joint seals for serviceability. Renew if necessary.

Two types of filter element have been fitted, a tubular type, open at both ends or a conical type with the small end of the cone closed.

Dependent on the type of filter element to be fitted proceed as follows.

Tubular type

Enter the new element into the wing valance.

Fit the air cleaner housing to the wing valance.

Ensure that it is located inside the valance retaining clamp ring. Hold the rubber seal in position over the housing spigot by placing the fingers of one hand through the air intake aperture and onto the seal.

To allow the housing to pass over the end of the filter, it will be necessary to slightly withdraw the element during this operation.

Whilst ensuring that both the air filter element and sealing ring are correctly positioned on the housing spigot, fit the assembly to the wing valance.

Align the three housing toggle clips with their respective securing points. Fasten the toggle clips.

Fit the remaining components by reversing the removal procedure.

Conical type

Locate the large end of the new filter element onto the locating spigot on the inside of the removable half of the housing.

Carefully position the housing and filter onto the valance allowing the filter to pass into the valance mounted section of the housing. Locate the small (blank) end of the filter into the spigot in the valance housing. Align the three housing toggle clips with their respective securing points. Special care should be taken during these operations to ensure that the paper element is not damaged during insertion.

Ensure that the filter is correctly positioned on the location spigots, then secure the three toggle clips. It is essential that the filter is correctly located on the spigots before the toggle clips are fastened down, otherwise there is a serious risk of crushing the filter element.

Fit the remaining components by reversing the removal procedure.

Early Corniche and all Camargue

The air filter element is situated in the air intake housing at the front right-hand side of the engine compartment (see fig. B3-16).

To gain access to the element, unscrew the worm drive clip securing the intake hose to the air meter inlet duct. Withdraw the hose.

Unscrew the knurled securing setscrew situated on the side of the assembly.

Withdraw the cover.

Unscrew the hexagonal nut from the centre stud. Withdraw the end plate, filter element and second end plate.

Fit the new element to the assembly by reversing the removal procedure. Refer to figure B3-16 for the correct assembly sequence.

5 Renew the sparking plugs

Sparking plug type Champion RN 12YC or RN 12Y
Plug gap setting 0,89 mm (0.035 in)

Before removing the sparking plugs the surrounding area should be thoroughly cleaned to prevent the ingress of foreign matter when the plugs are removed.

Fit the new plugs ensuring that the gaps are correctly set and that each plug is fitted with a sealing washer.

Torque tighten each plug to between 18 Nm and 23 Nm (1,8 kgf m and 2,3 kgf m, 13 lbf ft and 17 lbf ft).

6 Lubricate the distributor (1981/82 model year cars only)

Lubrication of the spindle is the only routine maintenance required.

To carry out this operation remove the moulded top cover of the distributor and the rotor arm. Do not remove the cover from the distributor baseplate (see fig. B3-17).

Lubricate the spindle shaft bearings by applying two drops of engine oil to the felt pad situated beneath the rotor arm.

Clean and fit the rotor arm.

Clean the terminal posts and cover. Fit the cover ensuring that it is correctly located on the distributor base.

7 Lubricate the accelerator linkage

Lubricate all the accelerator linkage ball joint pivots and clevis pins.

Examine the ball knuckle joints for wear and adjust if necessary. Renew any worn clevis pins.

Examine the linkage for correct operation. For details of linkage setting procedures refer to the Workshop Manual TSD 4400, Chapter U.

8 Check the torque tightness of the exhaust manifold setscrews

Ensure that all setscrews retaining the exhaust manifold in position are torque tightened to between 32 Nm and 33 Nm (3,2 kgf m and 3,4 kgf m, 23 lbf ft and 25 lbf ft).

9 Check the ignition timing

Ignition timing is carried out on A1 cylinder and should be 15° btdc at 1450 rev/min; A1 cylinder is

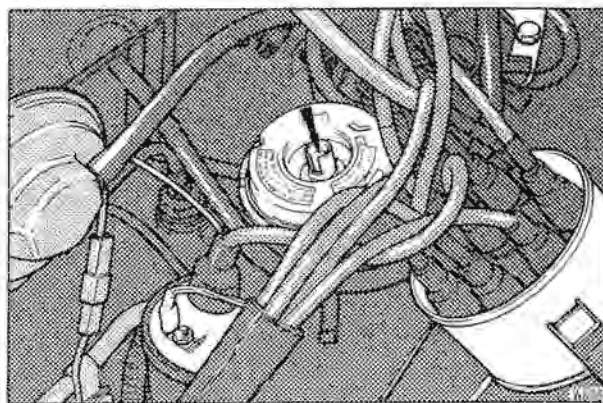


Fig. B3-17 Distributor lubrication point

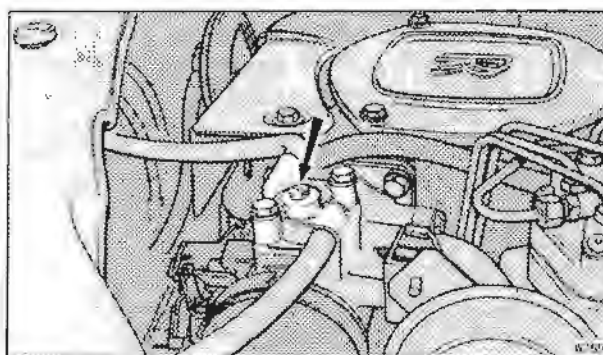


Fig. B3-18 Idle speed adjustment

the front cylinder on the right-hand side of the engine when viewed from the driver's seat.

Important

If the ignition timing is to be set, ensure that the sparking plugs are in good condition before running the engine; if they require cleaning or renewal, ensure that the gaps are set correctly (see Operation 5, Renew the sparking plugs).

To check the ignition timing commence by running the engine until normal operating temperature is attained. Switch off the engine.

Connect a stroboscope and a tachometer to the engine as described in the instructions supplied with the respective equipment.

On no account must the stroboscope timing lamp positive feed be connected to the ignition coil. The positive feed should be taken from a known 12 volt connection.

Disconnect the vacuum hose from the distributor side of the vacuum retard solenoid and fit a blank to the solenoid valve connection.

Disconnect the vacuum advance hose from on top of the throttle housing connection and blank off the throttle housing connection.

Start and run the engine at a speed of 1450 rev/min. When setting the engine speed reduce from a higher speed to 1450 rev/min.

Direct the flashing light of the stroboscope onto the crankshaft damper timing marks and timing pointer; the pointer is positioned on the left-hand side of the crankshaft damper when viewed from the driver's seat.

If the timing pointer does not coincide with the 15° btdc mark on the crankshaft damper adjust the ignition timing as follows.

Release the clamp screw on the distributor and rotate the head of the distributor in the appropriate direction until the correct timing is obtained. Clockwise rotation of the distributor head advances the ignition and conversely anti-clockwise rotation retards the ignition.

Tighten the clamp screw and check that the ignition timing is between 14° and 16° btdc at 1450 rev/min (again reduce from a higher speed to 1450 rev/min).

10 Check the operation of the ignition distributor vacuum advance/retard mechanism

After completing Operation 9 continue as follows.

Connect a vacuum pump to the vacuum retard side of the capsule; ensuring that the hose normally connected to the capsule remains blanked off.

Start the engine, ensure that normal operating temperature is attained and apply a vacuum of 355,60 mm Hg (14 in Hg) to the capsule.

Set the engine speed to 1450 rev/min (reduce from a higher speed to 1450 rev/min).

Check that the ignition timing has retarded between 10° and 14° from the setting noted upon completion of Operation 9. Disconnect the vacuum pump.

Allow the engine to return to the idle speed and set this to 650 rev/min using the idle speed adjustment screw on top of the throttle body.

Direct the timing light onto the timing marks on the crankshaft damper. The timing should now be between tdc and 8° btdc.

Connect a vacuum pump to the distributor vacuum advance hose. Apply an initial vacuum of 635 mm Hg (25 in Hg) and then reduce the vacuum to 508 mm Hg (20 in Hg) and maintain it. Adjust the idle speed to 650 rev/min.

Check that the ignition timing has advanced by between 10° and 14° from the setting noted previously (timing between tdc and 8° btdc).

Stop the engine, remove the test equipment and reconnect all hoses in their correct positions.

11 Check the engine idle speed; adjust if necessary

Ensure that the usual workshop safety precautions are carried out and that an impulse tachometer is fitted to the engine in accordance with the manufacturer's instructions.

To set the idle speed, ensure that the engine has stabilized at its normal operating temperature. This can be achieved by allowing the engine to run at idle speed for at least 15 minutes after the thermostat has opened. The opening of the thermostat can be detected by a sudden rise in the temperature of the thermostat elbow pipe.

Disconnect the purge line at the restrictor. Leave the restrictor fitted into the hose to the engine (see fig. B3-9).

Disconnect the oxygen sensor cable situated in the rear left-hand corner of the engine compartment (see fig. B3-3).

Ensure that the automatic air conditioning system is off.

Set the engine idle speed to 650 rev/min by turning the adjustment screw situated on top of the throttle body (see fig. B3-18).

Connect the purge line hose and the oxygen sensor cable to their respective connections.

Note

Connecting the purge line may increase the idle speed and connecting the oxygen sensor cable will tend to restore normal idle speed. Do not attempt to correct these small variations in idle speed.

Engine cooling system

1 Check the coolant anti-freeze concentration

The cooling system is filled initially with a coolant solution comprising equal parts of UT 184 (BP - Hythe

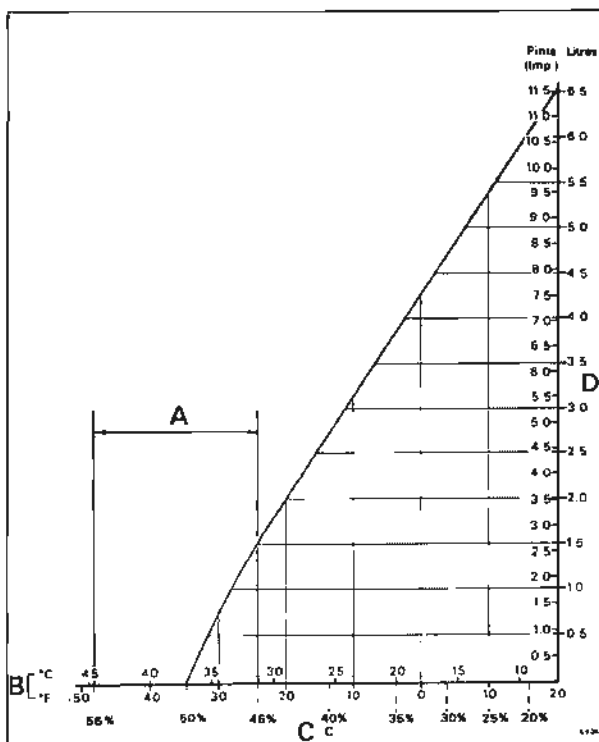


Fig. B3-19 Anti-freeze connection chart to give a 50% solution

- A Acceptable service range of concentration
- B Freezing point of coolant
- C Percentage concentration
- D Volume of 100% anti-freeze to be added to maintain a 50% solution after removal of the same volume of old coolant

Chemicals) or Prestone II and water. This mixture gives frost protection down to a temperature of -37°C (-35°F).

The coolant should contain fifty percent of an approved anti-freeze at all times. This not only provides frost protection but also prevents corrosion of the coolant passages and raises the boiling temperature of the coolant.

The anti-freeze concentration should be checked in both the expansion bottle (where fitted) and the radiator.

If the strength of the coolant requires increasing, sufficient coolant should be drained from the radiator and replaced with undiluted anti-freeze (see fig. B3-19). Afterwards run the engine until normal operating temperature is attained and the anti-freeze has become thoroughly mixed with the coolant. Stop the engine and again check the concentration in the radiator.

An acceptable level of anti-freeze concentration is between 45% and 50%. Therefore, as a hydrometer may be inaccurate where readings above 40% are expected, it is recommended that a refractometer is used.

For details refer to Chapter L of the Workshop Manual.

If a refractometer is not available and a hydrometer has to be used, a scale reading of between 1.06 and 1.07 should be obtained with the coolant at room temperature for the mixture to be correct.

2 Check the coolant level

Warning

Both types of cooling system become pressurized during engine running, therefore, extreme care should be taken when removing the radiator cap from a warm or hot radiator.

Silver Spirit, Silver Spur, Mulsanne, late Corniche, and all Continental

Routine check

To check the level outside a normal service schedule (e.g. Regular maintenance) and when no cooling/heating system fault is reported or suspected, proceed as follows.

If the **engine is hot** ensure that the coolant level in the translucent expansion bottle is at the MAX mark. Top-up if necessary and replace the expansion bottle cap.

If the **engine is cold** ensure that the coolant level in the translucent expansion bottle is half-way between the MIN and MAX marks. Top-up if necessary and replace the expansion bottle cap.

If the coolant level in the expansion bottle is either below the MIN mark or there is no coolant in the expansion bottle, carry out the following Full check procedure.

Full check

Ensure the gear range selector is in the Park position and apply the parking brake.

Remove the gear range selector cut-out from the fuseboard.

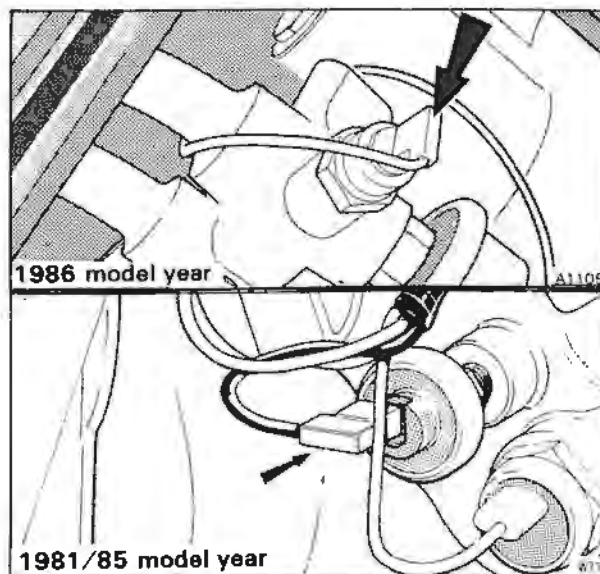


Fig. B3-20 Oil pressure switches and transmitter arrangements

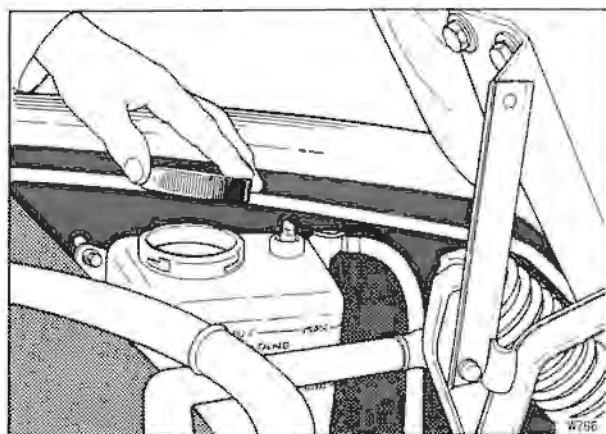


Fig. B3-21 Coolant expansion bottle (Silver Spirit, Silver Spur, Mulsanne, late Corniche, and all Continental)

Check the coolant level in the translucent expansion bottle (see fig. B3-21). If the level is low or the bottle is empty, add coolant to bring the level up to the MIN mark.

Ensure that the engine is not hot (to allow safe removal of the radiator cap).

Remove the radiator cap in three stages as follows.

Turn the cap slowly anti-clockwise until a check position is reached. Wait until any pressure in the system has been released. Press down on the cap and continue to turn it anti-clockwise until the cap is released.

Check the coolant level in the radiator. This should be half-way up the filler neck.

If the coolant level in the radiator is correct, fit the radiator cap by pressing it firmly down and turning it fully clockwise.

Top-up the coolant level in the expansion bottle in accordance with the Routine check procedure.

If the coolant level in the radiator is low but visible and no cooling/heating system fault is reported or suspected top-up the system using the following procedure. If however the coolant is not visible or a cooling/heating system leak is reported or suspected, the system should have any faults rectified and then be pressure tested prior to carrying out the topping-up procedure.

Top-up the radiator until the coolant is half-way up the filler neck.

Start and run the engine.

Turn the air conditioning system function control fully clockwise to the defrost position.

Set the air conditioning system override switch to the AUTO position.

Allow at least one minute for the air conditioning system to stabilize, then check to ensure that all air is being directed towards the windscreen (i.e. no air is delivered from the lower system and the facia outlets). This procedure opens the heater system water tap.

Run the engine, without the radiator pressure cap fitted, until normal operating temperature is attained.

Top-up the coolant level in the radiator during this time.

Switch off the engine.

Fit the radiator pressure cap by pressing it firmly down and turning it fully clockwise.

Top-up the coolant level in the expansion bottle in accordance with the Routine check procedure.

Early Corniche and all Camargue

Ensure the gear range selector is in the Park position and apply the parking brake.

Remove the gear range selector cut-out from the fuseboard.

Start the engine and turn the air conditioning function control clockwise to the defrost position and set the upper system mode override switch to the AUTO position.

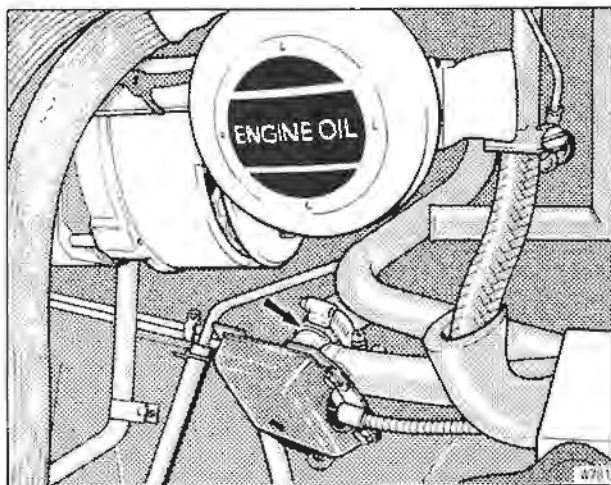


Fig. B3-22 Heater tap feed hose

Allow approximately one minute for the system to attain the required setting, then check that all air is being directed towards the windscreen (i.e. no air is delivered from the lower system and the facia outlets). This procedure opens the heater water tap and ensures that the cooling system can be correctly checked.

Switch off the ignition.

Remove the radiator cap. If the engine is hot, muffle the cap with a thick cloth and gradually turn the cap anti-clockwise until the pressure is released, then remove the cap.

If the coolant level is low, top-up the radiator header tank with the correct anti-freeze/water mixture. The correct level is when the coolant reaches the rubber seal in the filler neck. Fit the filler cap.

3 Check all coolant hose clips for tightness

Examine all the coolant hose connections for signs of leakage and check the worm drive clips for tightness. Never overtighten a clip in an attempt to seal a leaking connection.

In the event of a hose connection leaking when the worm drive clips have been tightened, drain the cooling system to a level below the leaking hose. Remove and inspect the hose and its connecting component for signs of damage. If necessary renew the faulty component and refill the system with coolant as described in Renew the coolant.

4 Examine the condition of all coolant hoses

Inspect all coolant hoses for signs of deterioration, cracking, weak spots, etc. Any faulty hose should be removed and a new hose fitted. When renewing a hose always ensure that it does not foul other components and that it is not kinked so as to cause complete or partial restriction of coolant flow.

5 Fit a new heater tap feed hose

Drain the coolant system as described in Renew the coolant, but do not remove the engine crankcase drain plugs.

Disconnect the heater tap feed hose from the engine and heater tap (see fig. B3-22); remove the hose.

Fit the new hose; ensure that the hose is free from any sharp bends that may restrict coolant flow.

Fill the engine coolant system as described in Renew the coolant.

Ensure that the parking brake is applied and the gear range selector lever is in the Park position.

Remove the gear range selector cut-out from the fuseboard.

Start and run the engine; check the coolant hose for leaks.

Switch off the ignition and fit the gear range selector cut-out.

6 Renew the coolant

Drive the car onto a ramp; move the gear range selector to the Park position and apply the parking brake.

Remove the gear range selector cut-out from the fuseboard.

Disconnect the Lucar connection from the pressure switch situated on the oil filter mounting/take-off flange (see fig. B3-20). This will allow the air conditioning system to be operated without running the engine.

Switch on the ignition and rotate the air conditioning function switch to the windscreen defrost position, also set the upper system mode override switch to the AUTO position.

Wait approximately one minute for the system to attain the required setting and observe that all the air is being directed to the windscreen. This procedure opens the heater water tap and ensures the system can be completely drained.

Switch off the ignition.

Place a container beneath the radiator drain tap to collect the coolant. Connect a length of hose onto the drain tap to direct the coolant into the container.

Carefully unscrew and remove the radiator pressure cap.

Open the radiator drain tap and allow the coolant to drain from the radiator.

When the radiator has completely drained place a container beneath the crankcase drain plugs. Remove the drain plugs from the crankcase (see fig. B3-23) and allow the residue of coolant to drain from the crankcase.

Renew the washers on the drain plugs and fit the plugs into the crankcase.

Renew the washers on the drain plugs and fit the plugs into the crankcase.

To drain the coolant remaining in the expansion bottle (Silver Spirit, Silver Spur, Mulsanne, late Corniche, and all Continental) disconnect the connection hose from the radiator filler neck and allow the coolant to drain from the expansion bottle into the container. When the coolant has drained connect the hose to the radiator filler neck.

Check all hoses for serviceability and renew as necessary.

Fill the system with fresh coolant of the specified concentration as follows.

Ensure the radiator drain tap is closed.

Slowly fill the radiator with coolant, thus reducing the possibility of air locks in the system.

Start and run the engine for a minimum of 10 minutes with the radiator pressure cap removed. After running for five minutes ensure that warm air is passing up the windscreen from the demister ducts. Top-up the radiator as necessary to ensure there is always coolant in the top tank of the radiator.

Ensure that the thermostat has opened; indicated by a rapid warming of the top radiator hose.

Switch off the engine and top-up the radiator to half-way up the filler neck. Fit the pressure cap.

Applicable to Silver Spirit, Silver Spur, Mulsanne, late Corniche, and all Continental.

Fill the expansion bottle to a level midway between the maximum and minimum levels indicated on the bottle.

Start and run the engine until normal running

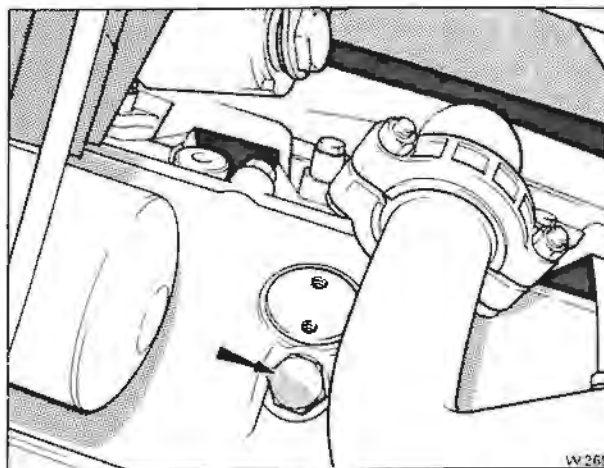


Fig. B3-23 Crankcase drain plug ('B bank shown)

temperature is attained; switch off the engine and top-up the expansion bottle to the maximum level.

Allow the engine to cool down. Carefully remove the radiator pressure cap and ensure the radiator is completely full of coolant. Top-up to half-way up the radiator filler neck if necessary. Fit the radiator pressure cap.

Connect the Lucar connection previously disconnected from the pressure switch adjacent to the oil filter mounting/take-off flange (see fig. B3-20).

Note

For the coolant system to operate correctly, i.e. for coolant to pass into the expansion bottle when hot and be drawn back into the radiator during cooling, the top of the radiator must not contain an air pocket.

7 Reverse flush the coolant system

Drain the engine coolant system as described in Renew the coolant.

Remove the top and bottom hoses from the radiator matrix.

Fit a waste pipe to the upper (inlet) connection of the radiator.

Apply mains water under pressure through the lower (outlet) connection of the radiator. This should remove all loose sediment in approximately 30 minutes.

Do not under any circumstances use an alkaline compound or detergent to clean the system. Such compounds have a detrimental chemical action on aluminium alloys.

Remove the engine coolant drain plugs from the crankcase.

Remove the thermostat as described in Renew the thermostat, then replace the cover.

Fit a suitable pipe to the drain plug aperture and apply mains water pressure to each aperture in turn.

Flush for approximately 30 minutes, or until the water runs clear of foreign matter.

Fit the drain plugs and a new thermostat by reversing the procedure for removal.

To flush the heater system, detach the heater at

the water tap and disconnect the return hose at the coolant pump.

Fit a waste pipe to the disconnected heater feed hose.

Flush the matrix for approximately 30 minutes.

Examine the coolant hoses for deterioration or damage and renew as necessary.

Connect all hoses and fill the system with the recommended coolant mixture as described under Renew the coolant.

8 Remove foreign matter from the radiator and refrigeration condenser

Using a pressure hose pipe, flush the radiator and condenser matrices.

Hold the nose of the hose pipe close to the back of the radiator matrix and allow the water to pass between the veins of the matrix. Slowly move the hose over the whole matrix area until all foreign matter (insects, etc.) have been flushed clear. Care must be taken to ensure that the end of the hose does not damage the matrix face during this operation.

9 Renew the thermostat

Disconnect the battery

Place a container beneath the radiator. Attach a length of hose to the radiator drain tap to direct the coolant into the container.

Carefully unscrew and remove the radiator pressure cap.

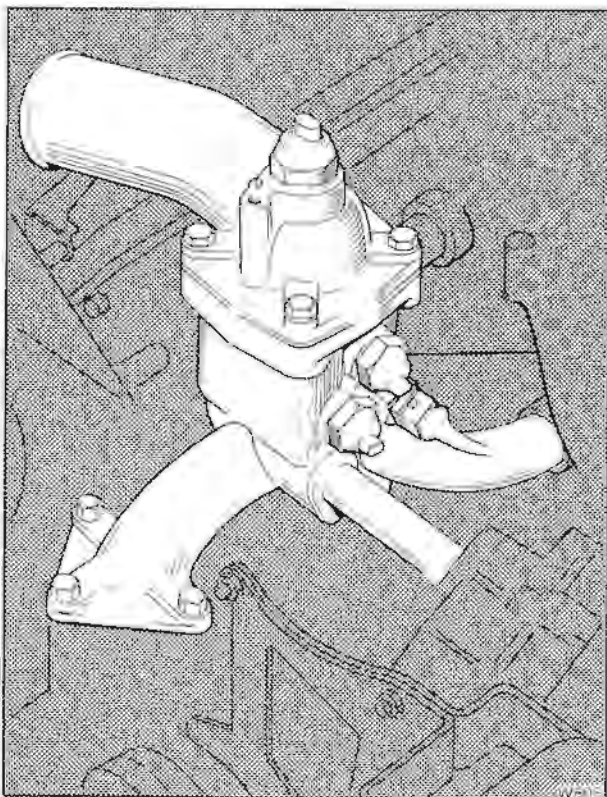


Fig. B3-24 Thermostat housing assembly

Open the radiator drain tap and allow sufficient coolant to drain from the system for the coolant level to fall below that of the thermostat housing. Close the drain tap and remove the hose previously attached.

Disconnect the electrical connector from the thermostat housing cover.

Unscrew the four setscrews from the thermostat housing cover.

Remove the thermostat housing cover. The cover can be moved away from the housing without detaching the outlet hose.

Lift the thermostat from the housing (see fig. B3-24).

Remove the old gasket material from the thermostat housing and cover. Ensure that no material enters the thermostat housing.

Check that the two faces are clean and dry.

Insert a new thermostat into the housing.

Place a new gasket in position on the housing and fit the cover. Secure the cover using the four setscrews.

Connect the electrical connection removed from the thermostat housing.

Top-up the cooling system with the correct coolant mixture as described under Renew the coolant.

Torque converter transmission

It is absolutely essential when adding fluid to, or working on the torque converter transmission that great attention is paid to cleanliness. The smallest particle of dirt in the transmission fluid could interfere with the correct operation of the unit.

It is important for efficient operation of the torque converter transmission that only an approved fluid is used (see Chapter A).

1 Check the transmission fluid level

The fluid level can only be checked accurately when the car is standing on a level surface, the engine is running at idle speed, and transmission fluid is at normal operating temperature, approximately 77°C (170°F).

The dipstick and filler tube are situated on the right-hand side of the engine compartment.

On Silver Spirit, Silver Spur, and Mulanne cars, remove the protective cover (if fitted) from the windscreen wiper mechanism to gain access to the dipstick. Ensure that the following safety procedure is undertaken to isolate the mechanism prior to removing the cover.

Ensure that the windscreen wiper switch situated on the fascia is in the off position. Remove a windscreen wiper relay, preferably number three, situated adjacent to the windscreen washer reservoir (see fig. B3-25). To remove the relay, pull it vertically from its mounting.

On all cars, always clean the top of the dipstick before removing it from the filler tube.

As an initial check, the fluid level may be checked after starting from cold as follows.

Apply the parking brake.

Start and run the engine for three to four minutes

at fast-idle speed, with the gear range selector in the Park position. Reduce the engine speed to slow idle.

Whilst sitting in the driving seat, **firmly apply the footbrake** and move the gear range selector through the full range of gear positions pausing briefly in each range. Return the selector to the Park position.

Immediately check the fluid level with the engine running at idle speed.

The level should be up to the circular dimple situated below the FILL mark on the dipstick or 10 mm (0.375 in) **below** the MIN mark, dependent on the type of dipstick fitted (see fig. B3-25).

Top-up to this level if necessary.

After this initial check a further check should be carried out as follows.

Drive the car for approximately 24 kilometres (15 miles) of highway/motorway driving or 16 kilometres (10 miles) of city driving. This should ensure the transmission has reached normal operating temperature.

It is essential that this temperature is attained. Do not top-up the fluid level to the MAX mark on the dipstick when the fluid is only warm, as this will result in an overfill situation when the normal operating temperature is attained. Overfilling will result in fluid being discharged from the transmission breather pipe.

Position the car on a level surface, firmly apply the parking brake and select Park with the gear selector lever.

Carry out the procedure described for the initial check.

With the transmission fluid at normal operating temperature the level of the fluid should be between the FILL and MAX HOT marks or the MIN and MAX marks (see fig. B3-25) dependent on the type of dipstick fitted.

If necessary add fluid by pouring it down the filler tube, with the engine still running, until the fluid is to the MAX mark on the dipstick. **Do not overfill**

When the fluid level is correct switch off the engine and fit the windscreen wiper mechanism cover and relay.

2 Renew the transmission fluid

Position the car on a ramp or over a pit.

Place a clean container having a minimum capacity of 3 litres (5 Imp pt, 6 US pt) under the nut which secures the transmission fluid filler tube to the sump (see fig. B3-26).

From within the engine compartment, remove the transmission dipstick as described under Check the transmission fluid level.

Slacken the setscrew securing the filler tube to the engine.

Unscrew the nut securing the filler tube to the side of the transmission sump (see fig. B3-26). Withdraw the filler tube from the sump and move it to one side to allow the fluid to drain into the container.

After draining the sump, ensure that the filler tube is clean then fit it to the sump and tighten the drain nut.

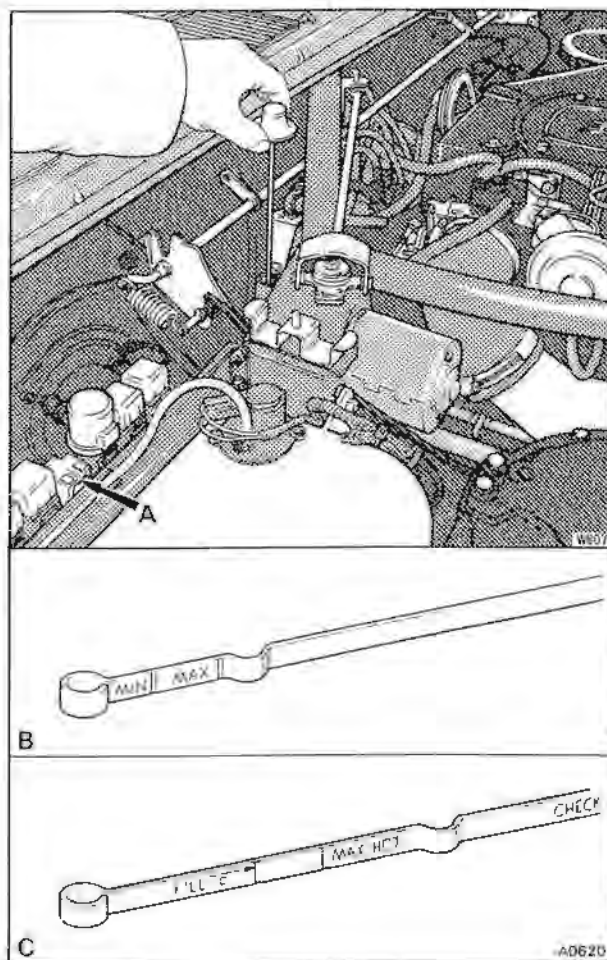


Fig. B3-25 Transmission filler tube and dipstick

- A Windscreen wiper motor relay
- B Original dipstick markings
- C Revised dipstick markings

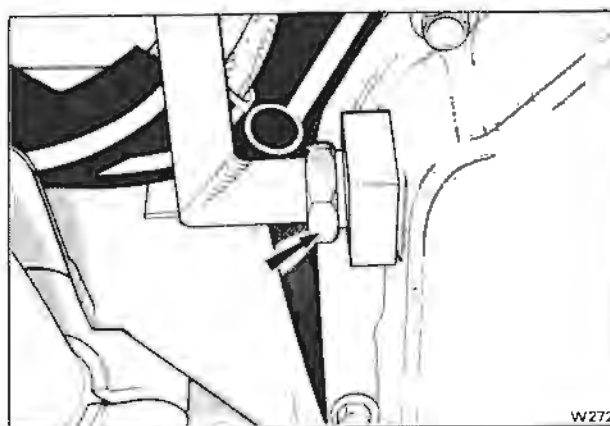


Fig. B3-26 Transmission drain point

Tighten the setscrew securing the filler tube clip to the engine.

Add 2,8 litres (5 Imp pt, 6 US pt) of an approved fluid to the sump, pouring the fluid down the filler tube.

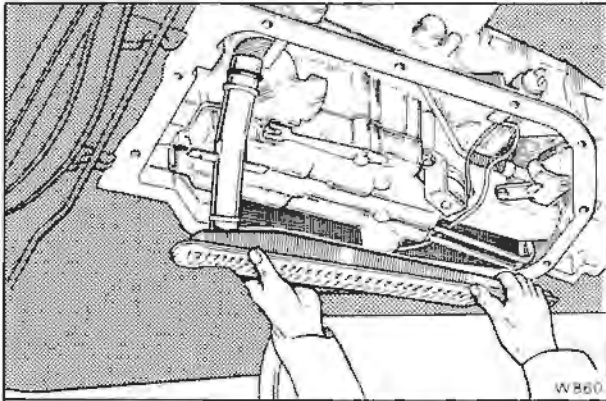


Fig. B3-27 Transmission intake strainer removal

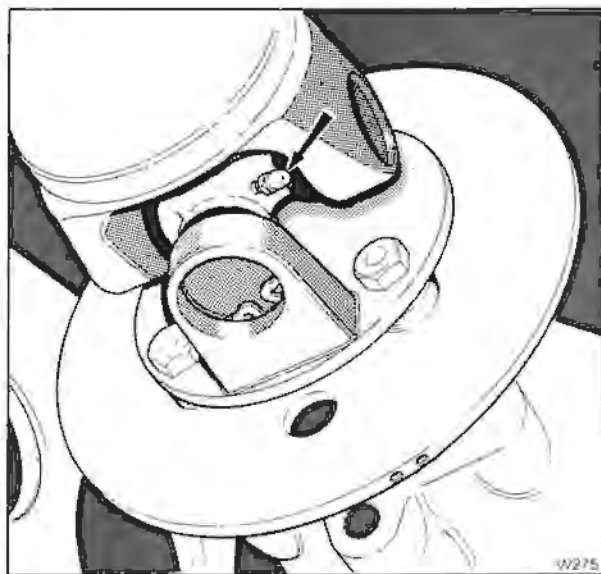


Fig. B3-28 Propeller shaft grease point

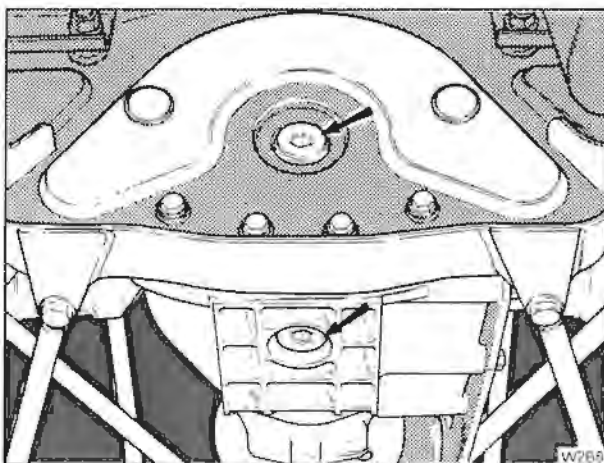


Fig. B3-29 Final drive drain and filler/level points

Check the fluid level as described under Check the transmission fluid level.

3 Fit a new intake strainer

Drain the transmission sump as described under the heading Renew the transmission fluid, then proceed as follows.

Remove the setscrews securing the transmission sump and lower the sump.

Drain any oil from the sump and discard the gasket.

Unscrew the setscrew securing the intake strainer and pipe assembly to the transmission; remove the strainer assembly (see fig. B3-27).

Remove the intake pipe from the strainer and discard the strainer.

Clean the transmission sump and the intake pipe with paraffin and dry with compressed air.

Fit a new rubber 'O' ring to the intake pipe and lubricate the 'O' ring with clean transmission fluid.

Ensure that a new rubber seal is fitted to the pipe bore in the new intake strainer, then fit the intake pipe to the strainer.

Fit the intake strainer and pipe assembly to the transmission and torque tighten the securing setscrew to 14 Nm (1,4 kgf m, 10 lbf ft).

Fit the transmission sump using a new gasket and torque tighten the sump setscrews to 16 Nm (1,7 kgf m, 12 lbf ft).

Fit the oil filler tube into the sump and tighten the nut. Tighten the setscrew securing the filler tube clip to the engine.

Add 4,5 litres (8 Imp pt, 9,6 US pt) of an approved fluid to the sump, pouring the fluid down the filler tube, then follow the fluid level checking procedure described under Check the transmission fluid level.

4 Lubricate the gear range selector control rod

Lubricate the clevis pins in the control rod linkage at the left-hand side of the transmission, with a few drops of clean engine oil. Also lubricate the manual shaft where it enters the transmission casing.

Propeller shaft

1 Lubricate the universal joints (if applicable)

A grease nipple is fitted to the universal joint at each end of the shaft (see fig. B3-28).

Using a suitable grease gun lubricate each joint with an approved grease.

On cars fitted with a rubber jointed propeller shaft lubrication is not required.

Final drive unit

1 Check the final drive oil level

Position the car on a ramp or over a pit.

Remove the level plug located in the rear face of the final drive casing (see fig. B3-29). The oil in the casing should be up to the level plug orifice. If necessary, top-up with an approved oil.

Fit the level plug complete with a new joint washer.

2 Renew the final drive oil

It is advisable to carry out this operation when the oil is warm, e.g. immediately after the car has completed a run.

Position the car on a ramp or over a pit and clean the area around the drain and level plugs (see fig. B3-29).

Place a container beneath the drain plug, then remove both the drain and level plugs.

When the oil has drained, fit the drain plug complete with a new joint washer.

Using a syringe, fill the casing to the level plug orifice with an approved oil (see Chapter A); approximately 2.3 litres (4.0 Imp pt, 4.8 US pt) of oil will be required.

Fit the level plug complete with a new joint washer and check for leaks.

3 Check the condition of the drive-shaft joint covers

The drive-shaft constant velocity joints are enclosed by convoluted seals which retain the joint lubricant.

If upon inspection a seal is found to be leaking or damaged the joint should be inspected and a new seal fitted as described in Chapter J of the Workshop Manual.

Steering system**1 Check the steering pump fluid level**

Remove the filler cap from the steering pump reservoir and check that the fluid level is at least up to the FULL COLD mark on the integral dipstick. If necessary, top-up to this level with approved fluid (see fig. B3-30).

Start and run the engine until it reaches normal operating temperature, approximately 77°C (170°F), then stop the engine.

Remove the filler cap and check the fluid level in the reservoir. If necessary, add an approved fluid to raise the level to the FULL HOT mark on the dipstick; do not overfill.

Ensure that the filler cap is securely replaced.

2 Lubricate the steering linkage ball joints (if applicable)

If grease nipples are fitted to the ball joints at the ends of the track rods, they should be lubricated until a slight swelling of the joint seal is evident. Take care not to damage or displace the seals.

3 Check the condition of the steering ball joint covers

Examine the condition of the rubber cover seals on the ball joints (see fig. B3-31).

If the seals are found to be damaged or in poor condition new parts should be fitted as necessary. For full information refer to Chapter N of the Workshop Manual.

4 Check the condition of the steering rack convoluted seals

Examine the condition of the convoluted seals on the

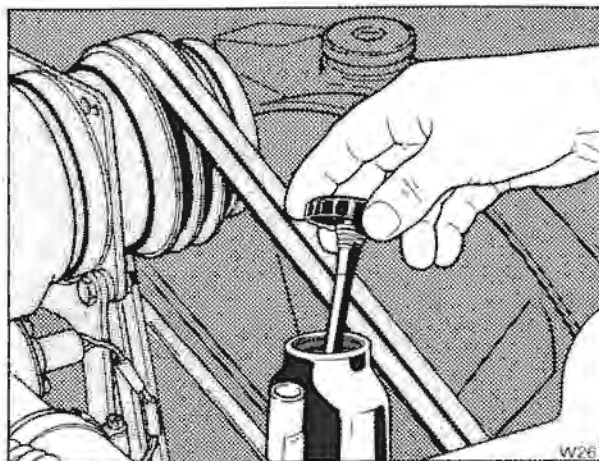


Fig. B3-30 Steering pump filler/dipstick

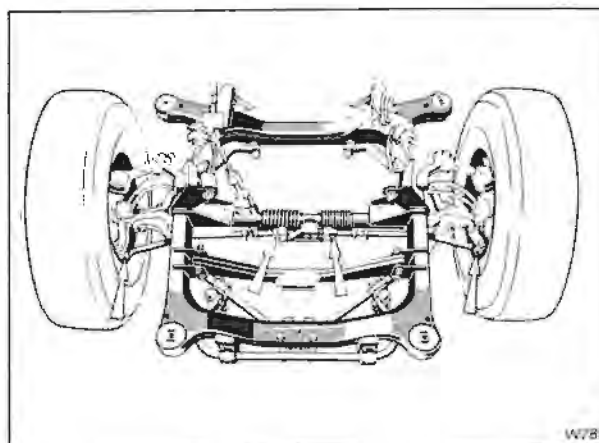


Fig. B3-31 Track rod ball joints

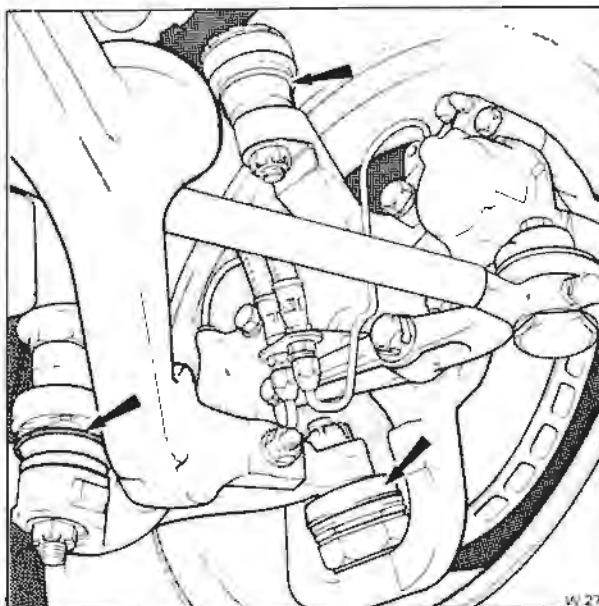


Fig. B3-32 Front suspension ball joints

rack and pinion unit and check the tightness of the seal clips.

If the seals are satisfactory, tighten the clips as necessary.

If the convoluted seals are found to be damaged or in poor condition, the rack and pinion unit should be removed from the car and new seals fitted. For full information refer to Chapter N of the Workshop Manual.

Suspension

1 Check the condition of the front ball joint covers

The front suspension ball joints (see fig. B3-32) are packed with grease on initial assembly and should not normally require attention between service overhauls

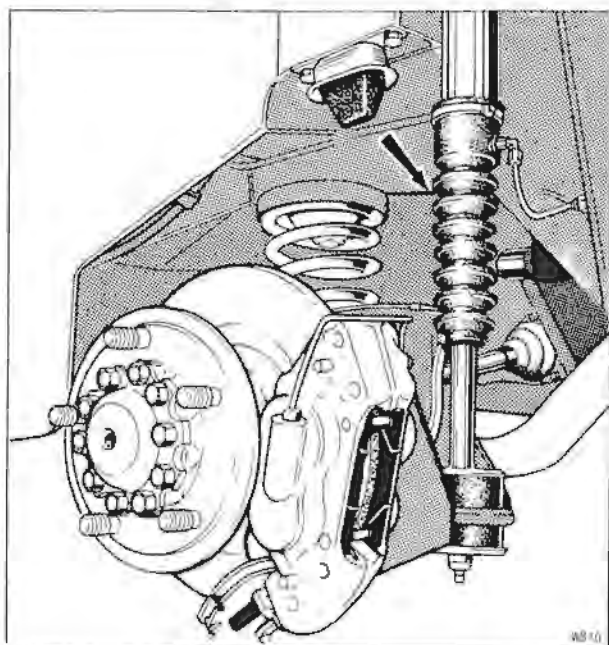


Fig. B3-33 Rear suspension strut

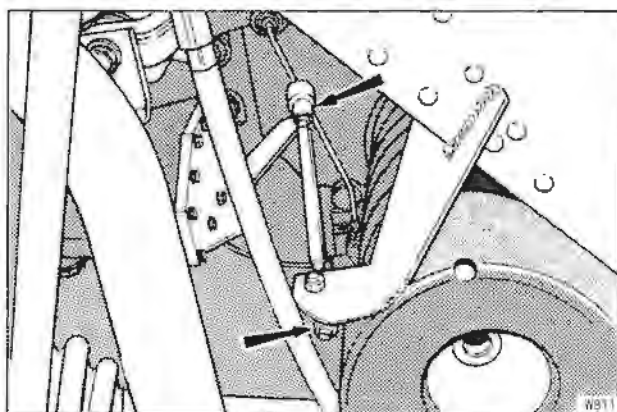


Fig. B3-34 Height control valve actuation link joints

unless the rubber seal covers are damaged.

If on inspection the covers are found to be damaged or in poor condition, the ball joints should be removed and new joints and seals fitted as necessary.

For full information refer to Chapter H of the Workshop Manual.

2 Check the condition of the rear strut convoluted seals

Examine the condition of the convoluted seals on the rear suspension struts (see fig. B3-33).

If the seals are found to be damaged or in poor condition, the struts should be removed, as described in Chapter G of the Workshop Manual, and new seals fitted.

3 Lubricate the height control valve ball joints

Position the car on a ramp or over a pit. Disconnect the actuation links from the height control valves and the rear suspension trailing arms at the ball joints (see fig. B3-34). Note from which side each link is taken.

Clean the ball joints then lubricate with an approved grease.

Do not alter the length of the actuation link.

Connect the actuation link to the height control valve and the trailing arm from which it was removed.

Adjust the joint to obtain complete movement without free play.

Brake and hydraulic systems



WARNING

Use only **Hydraulic System Mineral Oil (LHM)** to replenish the braking and levelling systems.

Do not use Brake Fluids (Castrol RR363, Universal, or any other type). The use of any type of brake fluid, even in very small amounts, will cause component failure necessitating extensive rectification to the braking and levelling systems of the car.

Always ensure before fitting any seals, hoses, pipes, etc., that they are suitable for a mineral oil system. For details of correct component identification reference should be made to Chapter G of the Workshop Manual.

Always ensure that a sealed container of **Hydraulic System Mineral Oil (LHM)** is fitted adjacent to the battery.

Always ensure that no foreign matter enters the systems when work is being carried out.

In order to protect against claims of liability for hydraulic system contamination, it is recommended that the hydraulic system mineral oil is tested for contamination prior to work being undertaken, preferably in the presence of the owner or his/her representative.

It is important that the test is carried out even when the hydraulic system mineral oil is to be renewed as this will not prevent the deterioration of

components which have been in contact with contaminated mineral oil.

Brake fluids and mineral oil are immiscible and with large amounts of contamination separation of the fluids will occur on standing, due to the greater density of the conventional fluids. A further indication of the mixing of conventional brake fluid and mineral oil is its cloudy appearance.

To carry out contamination tests a kit is available from Rolls-Royce Motors Limited, part number RH 2841 and should be used as follows.

Switch on the ignition and depressurize the hydraulic systems by pumping the brake pedal until both low pressure warning panels illuminate. Continue to pump the pedal for at least a further 20 applications to ensure that all the accumulator mineral oil is returned to the reservoir.

Clean the area around each hydraulic reservoir filler cap and then remove the cap.

Ensure that the components in the test kit are clean and dry.

Using the sampling tube provided, extract 50 ml of mineral oil from the top and bottom of each reservoir.

Place the samples into the individual clean dry containers.

Shake each sample taken to ensure it is well mixed.

Pour 10 ml of each sample into clean test tubes (do not mix the samples together).

Using the dispenser, add two drops of the red dye solution contained in the kit into each 10 ml sample.

Cork the test tubes and shake them thoroughly.

Leave the samples to settle for at least 30 minutes.

Examine each sample.

Sample diagnosis

On adding the red dye solution and the subsequent mixing, the green colour of the mineral oil will change to a reddish brown. **This does not indicate contamination of the hydraulic system mineral oil.**

Contamination can only be confirmed by the formation of a cloudy red mass which will begin to settle towards the bottom of the tube if left to stand for at least 30 minutes.

If the sample in the test tube on addition of the dye turns red but remains clear it indicates that the sample is not contaminated.

The volume of red mass which will eventually settle to the bottom of the test tube indicates the amount of contamination within the hydraulic system mineral oil.

Complete separation of the two liquids may take a considerable amount of time, for example a very small percentage of contamination may take more than seven days to completely separate.

If contamination is suspected, a more thorough test can be undertaken, details of which are given in Chapter G of the Workshop Manual.

If contamination is suspected, but difficult to diagnose, due to the small amount of contaminant that may be present, or any doubt exists, confirmation

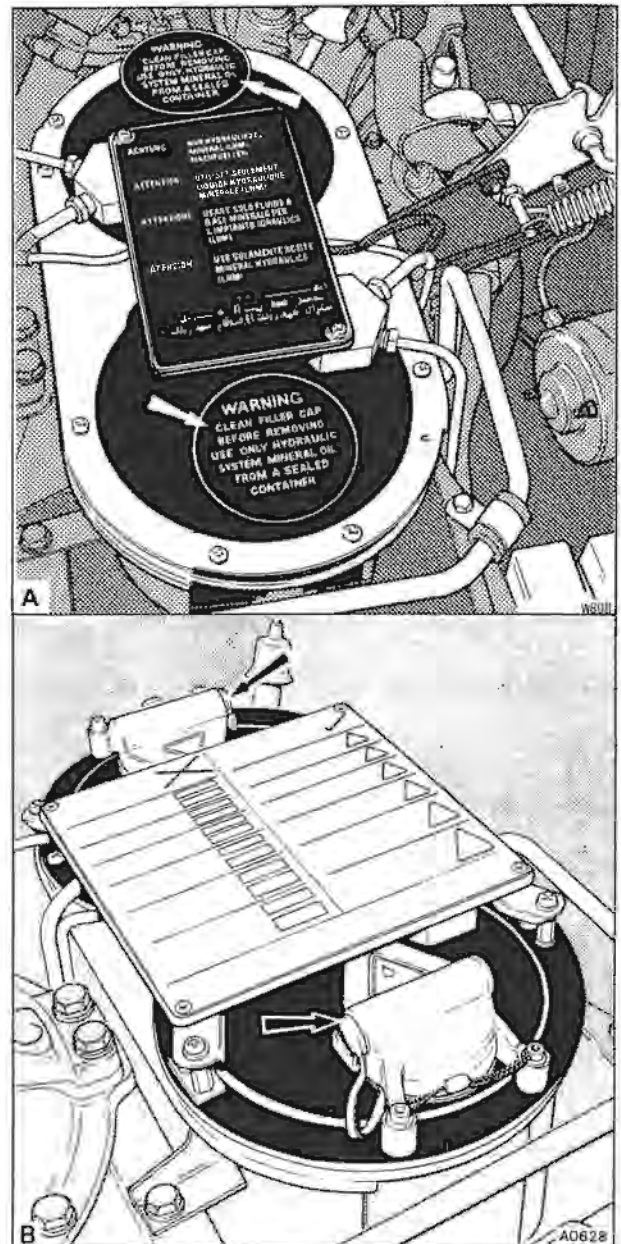


Fig. B3-35 Access to the hydraulic system reservoirs

- A Original filler cap
- B Specialized filler cap

should be obtained by sending a sample to Rolls-Royce Motors (if in the United Kingdom) or to a chemical analysis laboratory.

Before attempting any work on a hydraulic system personnel must be fully conversant with the precautions required to ensure adequate safety and correct system operation.

Refer to Chapter G of the Workshop Manual.

Important

Always seal each reservoir cap after it has been confirmed that the systems are **not** contaminated and all work on the systems has been completed.

1 Check the mineral oil level in the reservoirs

The mineral oil reservoirs for hydraulic systems are located in the engine compartment (see fig. B3-35).

To check the oil level, first depressurize the hydraulic systems by pumping the brake pedal until the two warning panels illuminate. Run the engine for approximately four minutes to charge the systems and then stop the engine. The mineral oil in both reservoirs should be up to the FULL marks on the level indicator plate.

If the reservoirs require topping-up, ensure that the tops of the reservoirs and the filler caps are clean, then add an approved hydraulic system mineral oil (see Chapter A) as necessary.

It is important that only approved hydraulic system mineral oil is used and that exceptional cleanliness is observed when topping-up the hydraulic systems.

Under no circumstances should a conventional (i.e. RR363 or Universal) type brake fluid be used.

After topping-up ensure that the filler caps are clean, then fit them securely to the reservoirs or insert the blanking plug dependent upon the type of filler cap fitted.

Ensure that the containers of new Hydraulic System Mineral Oil for system replenishment, are fitted adjacent to the battery.

2 Renew the hydraulic system mineral oil

Depressurize the hydraulic systems as described in Chapter G of the Workshop Manual and proceed as follows.

Completely drain the fluid from the hydraulic systems by attaching a tube to each bleed point, then opening the bleed screws and allowing the mineral oil to drain from the circuits. The bleed screws are located on each accumulator, on each pair of brake calipers, on the deceleration conscious pressure limiting valve and on each rear suspension strut or each inner rear wing from the suspension strut. A drain tube is not required at the accumulator bleed screws as these are an integral part of the accumulators and when opened

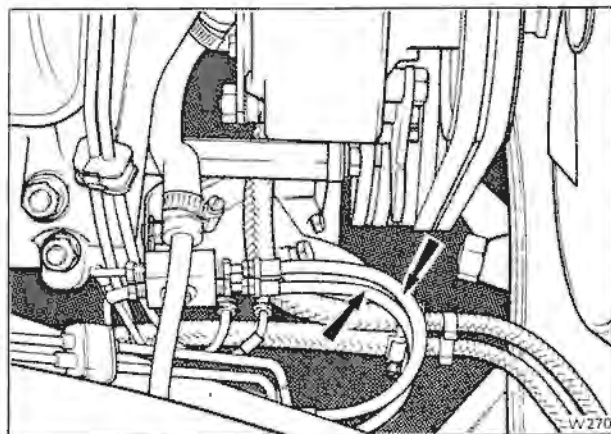


Fig. B3-36 Hydraulic accumulator to body hoses

allow the mineral oil to flow from the accumulator spheres back to the reservoirs.

Drain the mineral oil from the reservoirs and clean the reservoirs as described in Chapter G of the Workshop Manual.

After the system has completely drained, close all the bleed screws and ensure that any disturbed pipes are connected and correctly torque tightened.

Fill the reservoirs with fresh hydraulic system mineral oil (see fig. B3-35 and Chapter A) until the levels in the reservoirs are slightly above the topping-up marks on the indicator plate.

Run the engine for four minutes, with the car unladen, then top-up to the FULL level mark; never allow the mineral oil levels to fall below the minimum level marks.

Check for leaks, especially around the unions of any pipes which have been disturbed.

Finally, bleed the hydraulic systems as described in Chapter G of the Workshop Manual.

Ensure that the containers of new Hydraulic System Mineral Oil for system replenishment, are fitted adjacent to the battery.

3 Check the condition of all brake pipes and hoses

Position the car on a ramp or over a pit and check the condition of the hydraulic system pipes and hoses.

Examine the metal pipes for signs of corrosion, particularly those in an exposed position.

Examine the hoses for chafing or surface cracking.

Faulty pipes and hoses should be replaced as described in Chapter G of the Workshop Manual.

4 Renew the accumulator to body, trailing arms to body, and sub-frame to body hoses (if fitted)

Depressurize the hydraulic systems as described in Chapter G of the Workshop Manual and proceed as follows.

Fit a hose clamp to each of the intermediate hoses of the accumulator return pipes to prevent the flow of mineral oil from the reservoirs.

Thoroughly clean the areas around the connections of the two accumulator to body, trailing arms to body, and sub-frame to body hoses (see figs. B3-36, B3-37, and B3-38).

Remove the respective hoses noting the following.

To avoid contamination fit the new hose immediately after removing the old one; alternatively fit approved blanks to the open ports until the new hoses are fitted.

Before fitting a new hose ensure that it is thoroughly clean and conforms with the hydraulic systems mineral oil requirements.

When fitting the new hoses, ensure that they are routed to clear other components and that clearance is maintained during full suspension movement.

Tighten the pipe nuts to the torque settings given in Chapter G of the Workshop Manual.

After fitting the new hoses, check for leaks and bleed the hydraulic systems as described in Chapter G of the Workshop Manual.

5 Renew all hydraulic system hoses

To renew the hydraulic system hoses follow the same basic procedure described under the heading Renew the accumulator to body, trailing arms to body, and sub-frame to body hoses.

6 Check the brake disc pads for wear

Remove the wheel discs and slacken the wheel nuts approximately half a turn.

Jack up the car and support with stands and sill blocks.

Remove the road wheels and examine all the disc brake pad linings.

The brake pads must be renewed when the brake pad linings are worn to within 3,18 mm (0.125 in) of the steel backing plates. The pads should also be renewed if this minimum thickness is likely to be achieved before the next service check. To renew the brake pads, refer to Chapter G of the Workshop Manual.

If new brake pads are to be fitted which have different recommended linings from those on the old pads, the disc faces should be cleaned prior to fitting the new pads. All traces of the old pad lining material should be removed by hand rotating the disc whilst applying coarse grade emery cloth to the disc faces. Do not emery the disc faces radially.

Always ensure that the pads fitted to all six brake calipers have the same type and grade of pad lining.

Fit the road wheels and lower the car.

If new brake pads have been fitted, an initial running-in period of between 1100 kilometres and 1300 kilometres (700 miles and 800 miles) should be observed. During this running-in period the brakes should not be applied harshly or for prolonged periods from high speeds except in an emergency. Towards the end of the running-in period, the force with which the brakes are applied may be progressively increased.

7 Check the condition of the brake caliper dust excluders (when changing brake pads)

The condition of the caliper dust seals should be checked whenever the brake pads are removed.

Inspect the seals for signs of damage, heat hardening, or general deterioration and renew if necessary.

When fitting new seals, ensure that the seal retaining clips are correctly located.

8 Renew the brake caliper seals

To renew the caliper piston seals it is necessary to remove the brake calipers from the car.

For full instructions, refer to Chapter G of the Workshop Manual.

9 Check the parking brake pads for wear

Securely chock the front wheels then raise the rear of the car. Place sill blocks under the rear body sills and also support the rear trailing arms. Do not allow the suspension struts to support the full suspension load.

Remove the rear wheels and release the parking brake to the off position.

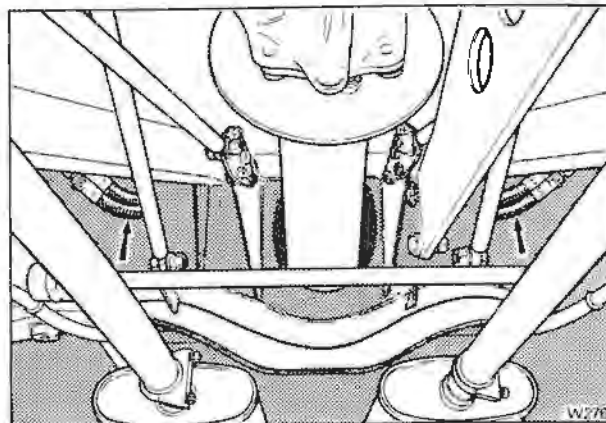


Fig. B3-37 Trailing arm to body hydraulic hoses

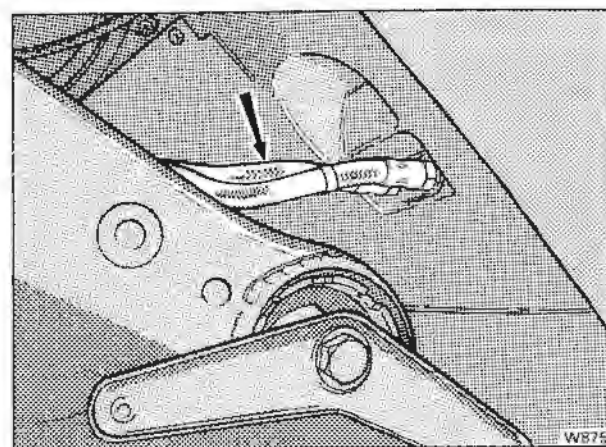


Fig. B3-38 Sub-frame to body hydraulic hoses

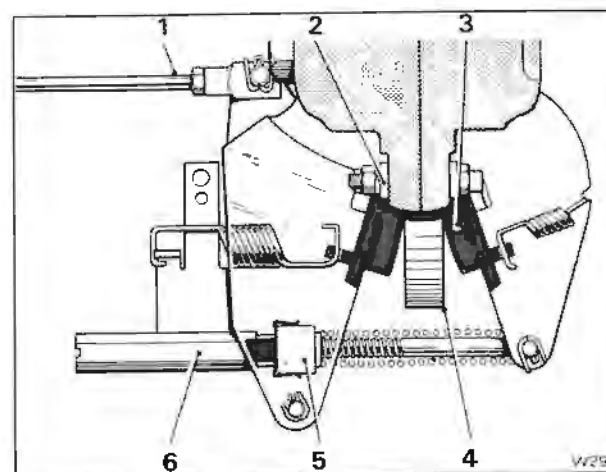


Fig. B3-39 Parking brake mechanism

- 1 Actuation rod
- 2 Centralizing straps
- 3 Parking brake pads
- 4 Brake disc
- 5 Adjuster clicker block
- 6 Adjuster

Disconnect the caliper actuation rod from the caliper lever (see fig. B3-39).

Unscrew and remove the caliper adjuster and collect the adjuster clicker plate.

Unhook the pad retention springs from each pad, noting the larger spring is fitted to the inner pad.

Remove the pads from the caliper.

Check the thickness of the lining material on each pad. Pads which are worn to within 1,6 mm (0.062 in) or less of the steel backing plate should be renewed.

To fit the pads, attach the retention springs then

locate the pads into position and hook the springs onto the caliper.

Complete the assembly by reversing the removal procedure, then adjust the calipers as described under the heading Adjust the parking brake.

Note

If new parking brake pads have been fitted, the following bedding-in procedure should be carried out after adjusting the parking brake.

Drive the car at approximately 48 km/h (30 mile/h) and apply the parking brake to bring the car to rest; it is important that this is done gently and progressively. The parking brake must not be applied fully and no attempt should be made to lock the wheels. This operation should be carried out nine times, allowing at least one minute to elapse between stops to prevent the discs overheating.

Finally adjust the caliper as described under the heading Adjust the parking brake.

10 Adjust the parking brake

Ensure that the parking brake is in the off position.

Adjust the rear cables at the adjusters (see fig. B3-40) so that the caliper operating levers return to their off-stops under the influence of their return springs with no appreciable slackness in the cables.

Note

The cables must be adjusted so that the equalizer link on the intermediate linkage (see fig. B3-40) lies at right-angles with the centre line of the car with the parking brake in the off position.

To check the cable adjustment, adjust both rear cables at the equalizer link until the caliper off-stops are just clear of the calipers. Measure the gap produced at each off-stop and lengthen the cables by this amount.

With the cables correctly adjusted, check that the centralizing straps (see fig. B3-39) are pushing the pads away from the discs when the parking brake is in the off position. If not, remove the nut and bolt securing the straps, bend the straps outward (i.e. away from the disc) then refit them. Ensure that the straps are pushed downward towards the adjusting nut whilst tightening the nut and bolt securing them to the caliper.

Check that the distance between the pad and the disc is the same on each side of the caliper; if not, reset the centralizing straps.

Raise each rear wheel in turn so that it is free to rotate and adjust each caliper as follows.

Turn the caliper adjuster (see fig. B3-39) clockwise until the pads just grip the disc; at this point it should only just be possible to rotate the road wheel by hand. Turn the adjuster anti-clockwise a quarter turn (i.e. three clicks on the nut) to obtain the minimum clearance between the pads and disc.

11 Lubricate the parking brake linkage

Position the car on a ramp or over a pit. Lubricate the parking brake linkage clevis pins, fulcrum pins, and the rear cable adjusters with approved grease.

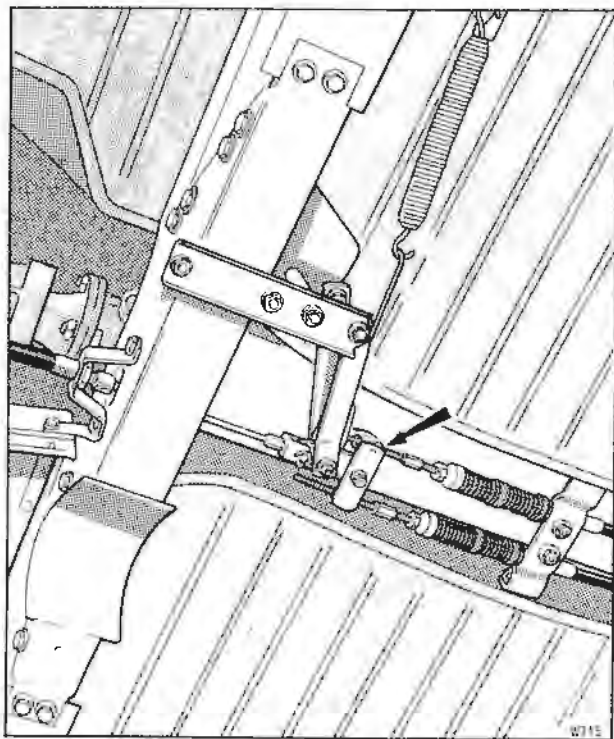


Fig. B3-40 Parking brake rear cable adjustment point

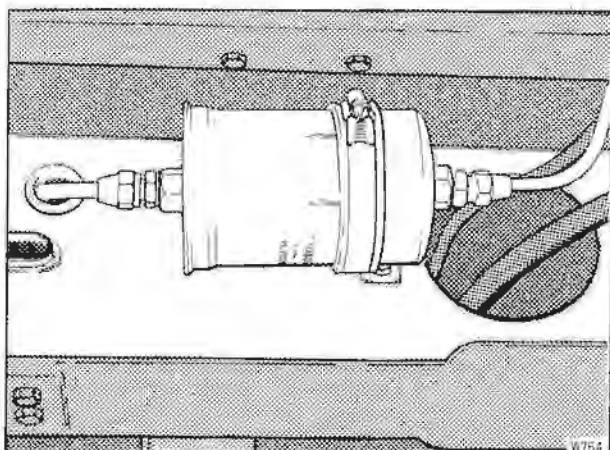


Fig. B3-41 Main fuel filter

Fuel system**Safety precautions**

It is important that before a fuel line is opened or the fuel tank is drained or siphoned, the workshop safety precautions given in Chapter A and Chapter U of the Workshop Manual are strictly observed.

1 Renew the main fuel filter

The main fuel filter is situated on the car body frame (see fig. B3-41). It is a sealed unit and no attempt should be made to clean the element.

At the appropriate service interval change the main fuel filter.

Depressurize the system (see Chapter U) and unscrew the inlet and outlet pipe connections.

Slacken the worm drive clip retaining the assembly to the mounting bracket and withdraw the filter assembly.

Unscrew the unions fitted into both ends of the filter and discard the assembly.

Fit the new filter assembly by reversing the removal procedure, noting the direction of flow arrow marked on the outside of the casing.

When carrying out the above operation at 80 000 kilometres (48 000 miles) or four years and subsequent periods, the intank fuel filter situated on the underside of the fuel tank (see fig. B3-42) should also be removed and cleaned as follows.

Disconnect the battery.

Drain or siphon the fuel tank.

Place a container beneath the fuel intank filter to collect the residue of fuel from the tank when the filter is removed.

Disconnect the hose from the intank filter outlet pipe.

Remove the circlip retaining the filter and carefully withdraw the filter from the tank.

Clean the filter mesh by washing in clean fuel.

Examine the filter for serviceability and renew if necessary.

Fit the filter by reversing the removal procedure. Always use a new seal on the filter body.

Ensure that the fuel drained from the fuel tank is free from foreign matter, then return it to the fuel tank.

Check the fuel filter and the pipe connections that have been disconnected, for leaks.

2 Check the condition of the filler head to fuel tank hose; renew as necessary

To enable the filler head to fuel tank hose to be examined, it is necessary to remove the rear suspension gas spring.

For details of the procedure required reference should be made to Chapter U of the Workshop Manual.

3 Check the condition of all flexible fuel pipes

Carefully examine all the flexible fuel pipes throughout the fuel system. Renew any pipes which have become damaged or deteriorated to an unserviceable condition.

Before renewing any pipes depressurize the system (see Chapter U).

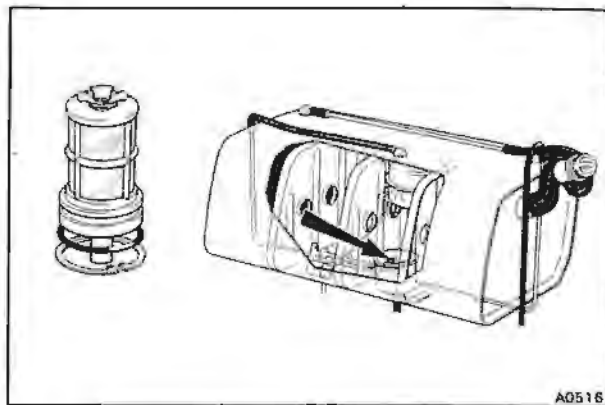


Fig. B3-42 Intank fuel filter

Check the complete fuel system for leaks and rectify as necessary.

Electrical system**1 Check the state of charge of the battery**

Silver Spirit, Silver Spur, Mulsanne, late Corniche, and all Continental cars.

The battery is situated in the luggage compartment stowage well. To gain access to the battery, turn back the carpet from the right-hand side of the luggage compartment. Lift out the stowage well lid and the cover from around the battery.

Early Corniche and all Camargue

The battery is mounted on the right-hand side of the luggage compartment. To gain access to the battery turn back the carpet and remove the trim from around the battery, the trim is secured by contact strip on Corniche and two turn fasteners on Camargue. Unclip the battery cover retaining strap and lift off the cover.

To check the specific gravity of the battery electrolyte on these models, it is necessary to remove the battery from the car as follows. Ensure the ignition is switched off, then disconnect the battery leads. Remove the battery clamp and lift the battery from its cradle.

Battery electrolyte check

Applicable to batteries with removable cell vent cover(s).

a. Electrolyte specific gravity check.

Remove the vent cover(s) from the top of the battery.

Using a hydrometer check the specific gravity of the electrolyte in each cell and compare the readings obtained with the following tables.

Caution

The electrolyte in the battery is a corrosive acid. Do not allow the electrolyte to come into contact with the eyes, skin, fabric, or paintwork. Flush any contacted areas immediately and thoroughly with water. If the eyes are effected, flush for at least 15 minutes and obtain prompt medical attention.

Chloride battery

Air temperature below 32°C (90°F)

Specific Gravity	Condition of Battery
1.270 to 1.290	Fully charged
1.180 to 1.200	Half discharged
1.090 to 1.110	Fully discharged

Air temperature above 32°C (90°F)

Specific Gravity	Condition of Battery
1.220 to 1.240	Fully charged
1.150 to 1.170	Half discharged
1.070 to 1.090	Fully discharged

Lucas or Varta battery

Air temperature below 27°C (80°F)

Specific Gravity	Condition of Battery
1.270 to 1.290	Fully charged
1.180 to 1.200	Half discharged
1.090 to 1.110	Fully discharged

Air temperature above 27°C (80°F)

Specific Gravity	Condition of Battery
1.220 to 1.240	Fully charged
1.130 to 1.150	Half discharged
1.050 to 1.070	Fully discharged

If the specific gravity reading of all the cells is uniform and within the range 1.240 to 1.270 the battery is in an acceptable state of charge. If the readings are uniform but below 1.220 the battery should be recharged. Always remove the battery from the car for recharging.

If the specific gravity of the electrolyte in one cell differs markedly from the others (i.e. the reading is 0.040 or more, lower than the remainder), then a defect must be suspected and rectified as necessary.

b. Electrolyte level check

Ensure that the battery is in a high state of charge (see Electrolyte specific gravity check).

The level of the battery electrolyte on each cell should be approximately 5 mm (0.250 in) above the tops of the separators (Lucas or Varta battery) or contacting the blue bar situated above the separators (Chloride battery).

If the electrolyte level is low top-up using distilled water until the level is attained. Do not overfill.

Always ensure the top of the battery is clean prior to removal of the vent cover.

Battery voltage check

Applicable to sealed for life (maintenance free) batteries

The state of charge of a 'sealed for life' battery can only be checked by taking a voltage reading at the battery terminals, using either a digital voltmeter or multimeter. The instrument used must be accurate to within 0.1 volts.

Before a voltage reading is taken on batteries that have recently received a charge, the residual effects of the surface charge on the battery plates must be removed to avoid a false reading. This surface charge can be removed by applying an electrical load to the battery (e.g. by either connecting a high rate discharge tester for 15 seconds or if the battery is fitted to a car, switching on the headlamps for one minute). Afterwards, allow the battery to stand for a further one minute before a voltage reading is taken.

Compare the reading obtained with the following table to ascertain the state of charge.

Voltage	State of charge
12.8	100%
12.6	82%
12.5	75%
12.4	60%

A minimum reading of 12.5 volts (corresponding to 75% charge) is acceptable. Below this reading the battery should be recharged. Instructions for charging are provided on the battery label.

2 Clean and check the battery terminals

The top of the battery should always be kept clean and dry.

If corrosion of the battery leads or terminals has occurred it should be removed as follows.

Disconnect the battery leads and using hot water or a dilute solution of ammonia carbonate, wash them thoroughly until all corrosion has been removed. Finally wash with clean water to remove the ammonia carbonate solution.

Remove any corrosive deposit from the terminal posts using a cloth moistened with ammonia carbonate solution then wash with clean water.

Dry the battery leads and terminal posts. Connect the battery leads to the terminal posts. Liberally coat the terminals with **petroleum jelly**.

3 Check all exterior lamps for operation

Actuate the respective switches and check for lamp illumination and function (i.e. turn flashers, headlamp dip/main beam, etc.).

The respective facia tell-tales should also be checked for illumination during these operations.

With the lighting switch in the Park and Head position, switch on the ignition. Check the facia instruments for illumination; the panel illumination dimming switch should also be checked for correct operation.

4 Check all facia warning lamps for operation

Before carrying out the following checks firmly apply the parking brake; ensure the gear range selector is in the Park position and remove the gear range selector isolator from the fuseboard.

Ignition and oil warning lamps

Turn the ignition key to the RUN position, the ignition and oil pressure warning lamps should illuminate.

Start the engine, both lamps should extinguish; switch off the ignition.

When the ignition key is turned to the ACC position the ignition warning lamp only should illuminate.

Warning panel cluster lamps

Move the gear range selector lever to the D position (do not insert the gear range selector isolator).

Apply the footbrake then turn the ignition key to the start position. All the warning panel cluster lamps should illuminate. With the ignition held in the start position, turn the main lighting switch to the Park and Head positions; the intensity of illumination of the ice and low fuel warning panels should reduce. Switch off the ignition and lighting switch.

The hydraulic system warning panel situated at the top of the warning panel cluster should also be checked as follows.

Turn the ignition key to the RUN position.

Depressurize the hydraulic system by actuating the brake pedal between 50 and 60 times. The two brake pressure warning panels should illuminate.

When the panels have illuminated start and run the engine. Both panels should extinguish after approximately two minutes indicating that the hydraulic systems are pressurized. Switch off the ignition.

Fasten seat belt warning lamp

To check the seat belt warning lamp, open and close each door in turn; observe the lamp operation.

The seat belt warning panel should illuminate whenever a door is opened and extinguish approximately seven seconds after the door is closed.

Note

All doors must be fully closed for the lamp to extinguish (i.e. not on first catch).

Hazard warning indicator

Depress the hazard warning switch, check that all the turn indicators and the facia warning lamp are flashing.

5 Check all interior lamps for operation

Ensure all the doors are fully closed and the interior lamps are extinguished. Open the driver's door; the rear section of the central roof lamps should illuminate. Fully close the door; the roof lamps should remain illuminated for approximately seven seconds.

On 1985/86 model year cars the rear roof lamps and footwell lamps should also illuminate when the door is opened. If the gear selector lever is moved from the Park position on these cars, with the ignition key in the RUN position, the lamps will extinguish immediately all the doors are closed. When carrying out this operation also check that the door open warning lamp and step lamp are illuminated with the door in the open position. These lamps should extinguish immediately the door is fully closed.

Repeat the check on the remaining door(s).

Note

If the doors are only closed to the first catch position the lamps should remain illuminated.

Check the operation of the front compartment personal lamps as follows.

Withdraw the main lighting switch; the front section of the driver's roof lamp should illuminate.

Operate the map lamp switch, the front section of the front passenger's roof lamp should illuminate.

On 1985/86 model year cars fitted with vanity mirror illumination, move the switch to the mirror position. Lower the passenger's sun visor; the lamp situated above the visor should illuminate.

Withdraw the visor from its retaining clip; the lamp should extinguish. The lamp should also extinguish when the visor is moved to its raised position, even when the switch is on.

The operation of the rear roof lamps should be checked by operating the switches situated on the rear compartment vanity mirror surrounds.

Press the upper portion of the three position switch; the front section of the respective roof lamp should illuminate. Press the lower portion of the switch and the rear section of both rear roof lamps should illuminate. With the switch in the central position both lamps should be off. Repeat the operation on the opposite side of the car.

On Camargue cars press the outer of the two switches situated in the arm rest; this should illuminate the rear section of both rear roof lamps. Pressing the inner switch should illuminate the front section of the respective roof lamps. Repeat the operation on the opposite side of the car.

Corniche Saloon cars

Ensure the doors are fully closed and the interior lamps are extinguished. Open the driver's door; the rear section of the four roof lamps should illuminate. Fully close the door; the roof lamps should remain illuminated for approximately seven seconds then extinguish. Repeat the check with the passenger door. When carrying out these checks also ensure that the door open warning lamp and step lamp are illuminated when the door is open.

Check the operation of the rear compartment roof lamps by operating the three position switch situated in each arm rest, ensuring that the car doors are closed.

Press the outer section of the switch, the front section of the respective roof lamp should illuminate. Press the inner section of the switch, the rear section of both rear roof lamps should illuminate. With the switch in the central position both roof lamps should be off.

Repeat the check on the opposite switch.

Check the front compartment roof lamps as described in the section for cars, other than Corniche.

Convertible cars

Seven interior lamps are provided, one in each door, two in the hood above the rear window, one in the front face of each rear seat outer arm rest and one above the facia stowage compartment.

Open the driver's door; both roof lamps, the lamp in each rear arm rest and the lamp in each door should

illuminate. Fully close the door, the lamps should all extinguish, except the rear roof lamps which should remain illuminated for approximately seven seconds. Repeat this procedure with the passenger door.

Withdraw the main lighting switch; both rear roof lamps should illuminate.

Operate the facia switch marked MAP; the lamp situated above the facia stowage compartment should illuminate.

With the doors closed, operate the switches situated in the end of the arm rest. The rear roof lamp and rear compartment arm rest lamp situated on the same side of the car as the switch should illuminate.

6 Check the horns for operation

Examine the electrical connections to each horn to ensure they are in good condition. Clean the horns and remove any foreign matter that may have collected in the horn trumpets.

Switch on the ignition; press the horn button several times to ensure the horn button is making a good contact and that both horns are functioning correctly each time it is pressed.

7 Replenish the windscreen and headlamp washer reservoirs

Windscreen washer reservoir.

The filler is located in the engine compartment. Remove the filler cap and add the correct mixture of windscreen washer fluid and distilled water to the reservoir until the maximum level is attained.

Topping-up level

Cars with the reservoir situated in the engine compartment - bottom of filler neck.

Cars with the reservoir situated beneath the wing - 44,0 mm (1.750 in) below the filler neck.

Headlamp washer reservoir.

On 1985/86 model year Silver Spirit, Silver Spur, and Mulsanne cars a headlamp washer system is fitted. The reservoir is housed under the front right-hand wing and the filler is located in the engine compartment towards the front of the car.

The reservoir should be topped-up with clean water until the fluid level is at the bottom of the filler neck.

During winter conditions, a solution of 30% isopropyl alcohol and 70% water should be used. This mixture will provide frost protection down to a temperature of approximately -10°C (14°F).

8 Check the condition of the windscreen wiper blades

Lift the wiper arms and blades from the windscreen and inspect them for wear or damage. Renew the blades if necessary.

To remove a blade, lift the wiper arm away from the windscreen then press the small tab situated in the end of the arm to release the blade. Check that the new blade is secured by the retaining catch then return the blade to the windscreen.

On late Silver Spirit, Silver Spur, and Mulsanne cars the wiper blade removal procedure is as follows.

a. Driver's side of the windscreen. Lift the wiper arm from the windscreen. Push half of the blade away from the arm, until the blade is released from its location clip. To fit the new blade, position it on the wiper arm and press it firmly into the location clip.

b. On the passenger's side of the windscreen, lift the wiper arm from the windscreen and pivot the blade through 180° . Press the small release tag, situated on the underside of the blade pivot block and push the blade out of the crooked end of the wiper arm. Withdraw the wiper blade from the arm. Fit the new blade by reversing the removal procedure.

Note

Care must be taken during these operations to ensure that the wiper arm is not allowed to spring back onto the windscreen when the blade has been removed, otherwise damage to the windscreen could occur.

9 Check the windscreen wash/wipe and headlamps power wash for correct operation

Before carrying out the following check ensure that the windscreen is clean.

Switch on the ignition and press the windscreen wash/wipe switch. The windscreen wipers should operate and the fluid from the washer jets should impinge on the windscreen approximately 419 mm (16.5 in) from the centre line of the windscreen and 190 mm (7.5 in) below the windscreen top finisher. The wash/wipe function should continue until the switch is released.

On release of the push button switch the washer should cease while the wipers should continue for approximately four strokes before returning to the park position.

Turn the main lighting switch to the HEAD position. The headlamps cleaning function (if fitted) will only operate when the headlamps are illuminated. Press the wash/wipe switch. The headlamp brushes and washer jets should operate until the switch is released, the brush giving one full wipe cycle after the jet flow has ceased.

On cars fitted with power wash the jets should only operate for half a second when the wash/wipe switch is depressed. To repeat the wash it will be necessary to release then depress the switch again. However, the windscreen wash/wipe function will continue to operate as described previously while the switch is held depressed.

10 Check the alternator for correct operation

For details of the alternator test procedure and brush renewal, reference should be made to Chapter M of the Workshop Manual.

Automatic air conditioning system

1 Check the scuttle intake grille is free from obstruction

Check the air intake grilles and foam filters situated behind the bonnet, for obstruction (i.e. leaves, dirt, etc.). Carefully remove the grille retaining screws, lift the grilles and filters from the body and clean all parts

including the air intake ducts; also ensure the duct drain tubes are free from obstruction.

2 Check the refrigeration system for correct operation

For details of the procedure required to carry out this operation reference should be made to Chapter C of the Workshop Manual.

Body

1 Check the condition and operation of the seat belts

The following checks should be carried out on the front and rear retractable seat belts.

Fully withdraw the seat belt from the reel; examine the webbing for any signs of wear or damage. Allow the belt to return to the stowed position.

To check the operation of the retractable belt, fit the belt and then give the webbing of the diagonal belt a sharp pull. Ensure that the belt locks and then returns to the normal roller action immediately the belt is released.

With the fastening tongue of the belt locked in the retaining clasp; ensure the tongue is securely held and is released immediately the release button marked PRESS is operated.

The alternative method of checking the seat belts is to select an open stretch of road, then, when the road is free from any potential danger, accelerate the car to 15 mile/h (24 km/h) and brake sharply from this speed; ensure that the belt locks and then subsequently releases. If this method of test is used, it will be necessary to carry a passenger(s) to enable the passenger seat belts to be tested.

Check the rear seat lap belt for condition and correct locking and release.

Report any defects to the owner.

When seat belt replacement is necessary only belts approved by Rolls-Royce Motors Limited should be fitted.

2 Check that all body drains are free from obstruction

Examine the body drain holes; remove any foreign matter that may be obstructing the holes. Take care not to damage the paintwork.

3 Lubricate the spare wheel carrier lowering bolt

Turn back the carpet on the luggage compartment floor to expose the spare wheel inflation trap and spare wheel carrier lowering bolt head. Remove the inflation trap cover; if a spare wheel retainer is fitted, it should be released.

Rotate the spare wheel bolt anti-clockwise until the carrier is fully lowered. Remove the spare wheel from the carrier.

Lubricate the carrier lowering bolt using a recommended lubricant. Raise and lower the carrier to distribute the lubricant over the full length of the carrier bolt.

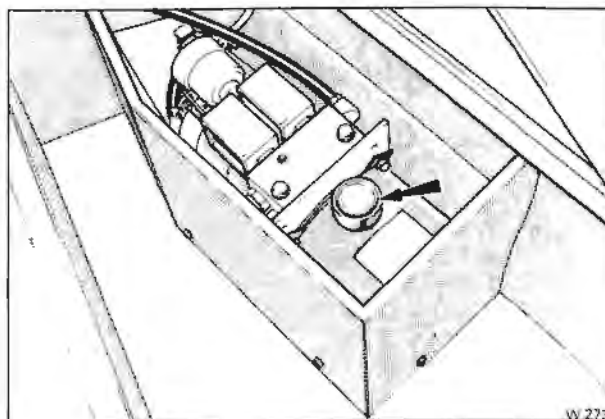


Fig. B3-43 Power operated hood reservoir

Check the condition of the spare wheel as described under the heading Wheels.

Fit the spare wheel onto the carrier. Ensure that the inflation valve is in line with the inflation trap in the luggage compartment floor, then fully raise the carrier.

Fasten the spare wheel retainer (if fitted), and fit the tyre inflation trap rubber and carpet.

3 Check the fluid level in the power operated hood reservoir

Convertible cars

The level of the fluid in the hydraulic pump reservoir must be checked with the hood in the fully open (down) position.

The fluid reservoir is situated adjacent to the stowage recess below the luggage compartment floor similar to that shown in figure B4-43.

To gain access to the reservoir, turn back the carpet on the right-hand side of the luggage compartment to expose the recess covers; remove the covers.

Unscrew the reservoir filler cap and check the fluid level. The correct level is 25 mm (1.0 in) below the filler neck.

If necessary top-up the reservoir with an approved fluid. **Under no circumstances must a castor oil based fluid be used.**

Wheels

1 Check all tyre pressures

Check the tyre pressures including the spare when the tyres are cold; adjust if necessary. The inflation pressure of the spare tyre should be adjusted to the highest tyre pressure (i.e. rear wheel).

Do not check the pressures when the tyres are warm (e.g. after the vehicle has completed a journey).

Always ensure that the valve caps are fitted after checking.

2 Check the condition and tread depth of the tyres

Examine the tyres, including the spare, for any signs of damage or tyre wall cracking, etc.

Carefully remove any stones or other objects that may be lodged in the tyre treads.

Check the depth of tread at several points around each wheel using a tread depth gauge.

To enable a visual check to be made, tread depth indicators are incorporated into the tyre construction. These indicators are integral moulded ribs, spaced at intervals around the circumference of the tyre and extend across the full width of the tread in all primary grooves. When one or more of these indicators are flush with the tread, only 1,6 mm ($\frac{1}{16}$ in) or less of tread depth remains.

If the condition of the tyres is not satisfactory or the tread depths do not conform to the legal requirements of the country in which the car is operating, the owner should be notified and asked to authorize the fitting of new tyres.

For full information on tyre fitting, balancing, etc., reference should be made to Chapter R of the Workshop Manual.

Test

1 Road test the car for satisfactory performance

On completion of the respective service schedule operations, carefully road test the car for satisfactory performance.

If new brake pads have been fitted, the running-in and bedding procedures should be carried out as described under, Check the brake disc pads for wear and Check the parking brake pads for wear.

When the road test has been completed, the car should be fully inspected for any leaks, fouls, etc., and rectified as necessary.

The transmission fluid level, should be finally checked immediately after the test, while the fluid is at normal running temperature and topped-up if necessary (see Check the transmission fluid level).

Ensure that all controls, door handles, steering wheel, etc., are clean and that any dirt which may be attributed to the service schedule is completely removed.

Service schedule procedures

Cars conforming to North American specifications

Contents	Pages					
	Silver Spirit Mulsanne Silver Spur	Mulsanne Turbo	Bentley Eight	Bentley Turbo R	Corniche/ Continental	Camargue
1981/1987 (inclusive) model year cars The model year of these cars can be identified by the tenth letter of the vehicle identification number (VIN), as follows. 1981=8 (*SCAZS42A3BCX01011*) 1982=C (*SCAZS42A7CCX05001*) 1983=D (*SCAZS42A0DCX07805*) 1984=E (*SCAZS42A0ECX08597*) 1985=F (*SCAZS42A3FCX12001*) 1986=G (*SCAZS42A4GCX13871*) 1987=H (*SCAZS42A5HCX16348*)	B4-3	—	—	—	B4-3	B4-3



WARNING

Use only Hydraulic System Mineral Oil (LHM) to replenish the braking and levelling systems.

Do not use Brake Fluids (Castrol RR363, Universal, or any other type). The use of any type of brake fluid, even in very small amounts, will cause component failure necessitating extensive rectification to the braking and levelling systems of the car.

Always ensure before fitting any seals, hoses, pipes, etc., that they are suitable for a mineral oil system. For details of correct component identification reference should be made to Chapter G of the Workshop Manual.

Always ensure that a sealed container of **Hydraulic System Mineral Oil (LHM)** is fitted adjacent to the battery.

Always ensure that no foreign matter enters the systems when work is being carried out.

General information

The information contained in this chapter should be used in conjunction with the service schedule charts and Workshop Manuals.

The following are the Workshop Manual publications to which reference should be made.

Silver Spirit, Silver Spur, and Mulsanne from vehicle identification number (VIN) *SCAZS0000ACH01001* and Corniche/Continental from (VIN) *SCAZD0006CCH05037*, publication number TSD 4400.

Corniche prior to vehicle identification number (VIN) *SCAZD0006CCH05037* and Camargue, publication number TSD 4200.

Car protection

Prior to commencing a service schedule the car should be suitably protected. For this purpose car protection kit RH 2662, wing covers RH 2684, and wing cover liners RH 2685 should be used.

Regular maintenance

In addition to the service schedules listed, the following maintenance should be carried out.

Engine

Weekly or every 500 miles (800 kilometres) whichever is the earlier; check the engine oil by means of the dipstick; top-up if necessary.

Service schedule procedures

1981/1987 (inclusive) model year cars

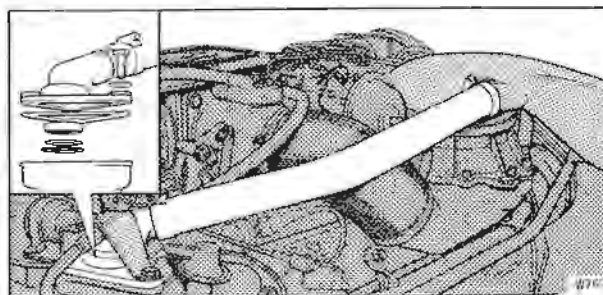


Fig. B4-1 Crankcase breather – 'A' bank

Lamp units

Weekly; check the lamp units for operation; rectify any faults.

Tyre pressures

Weekly; check the tyre pressures including the spare; adjust if necessary.

Windscreen and headlamp washer reservoir(s)

Weekly; check the washer fluid level; top-up if necessary.

Hydraulic reservoirs

Monthly; check the level of hydraulic mineral oil in the reservoirs.

Depressurize the hydraulic systems by pumping the brake pedal until the low brake pressure warning panels on the fascia illuminate. Continue to pump the pedal for at least a further 20 applications to ensure complete depressurization. Start and run the engine for four minutes with the car unladen, prior to checking the level. Top-up if necessary to the indicated maximum level. **Use only Hydraulic System Mineral Oil (LHM)**. Refer to page B4-22 for further information before carrying out this operation.

Engine cooling system

Every three months; check the coolant level. If necessary top-up with the correct anti-freeze/water mixture (see page B4-14).

Crankcase emission control system

1 Clean the crankcase breather tube flame traps

Crankcase emissions are controlled by two separate breather pipes.

From the rear of 'A' bank cylinder head a moulded rubber hose connects the crankcase to the air intake housing, immediately upstream of the air meter but downstream of the air cleaner/silencer assembly.

From the front of 'B' bank cylinder head a second moulded rubber tube connects the crankcase via the oil filler (which has a sealed cap) to a pipe leading to the plenum chamber. This pipe assembly incorporates a restrictor to control the flow.

When fitting the flame trap assemblies, the longer assembly should be fitted to the 'B' bank oil filler connection.

Crankcase breather 'A' bank - To service

Withdraw the windscreen wiper motor relay (wiper 3) (see fig. B4-28, item A) situated on a bracket adjacent to the windscreen washer reservoir.

Remove the cover from the windscreen wiper drive mechanism to gain access to 'A' bank crankcase breather connection.

Locate the crankcase breather connection at the rear of 'A' bank cylinder head.

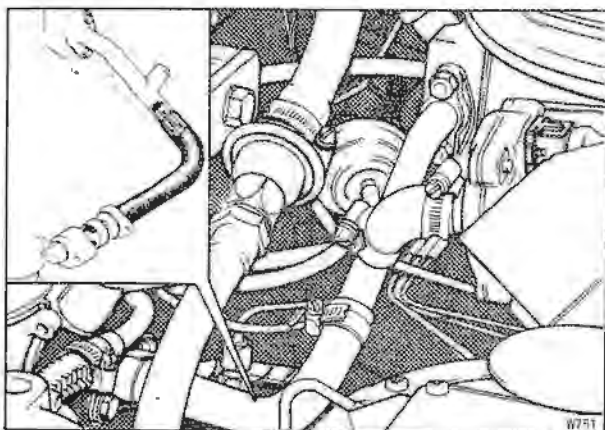


Fig. B4-2 Crankcase breather - 'B' bank

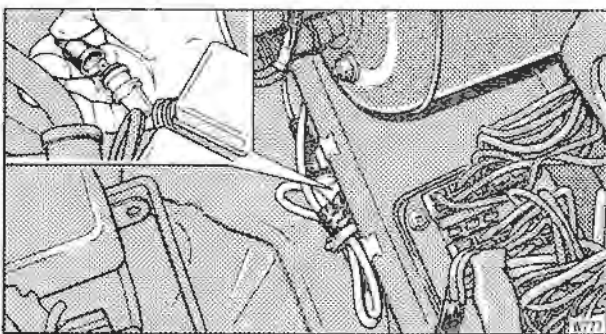


Fig. B4-3 Oxygen sensor connection

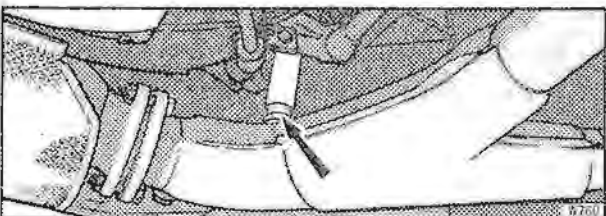


Fig. B4-4 Oxygen sensor

Slacken the worm drive clips securing the ends of the breather hose, free the joints and withdraw the hose.

Unscrew the three setscrews securing the breather take-off flange to the crankcase connection.

Withdraw the three setscrews and collect the washer fitted under the head of each one.

Lift the solenoid bracket from the vicinity of the connection.

Free the joint and lift the elbow casting from the engine. Discard the gasket.

Invert the casting and remove the circlip. Collect the retaining washer and withdraw the flame trap assembly.

Wash the flame trap in clean fuel and dry with compressed air.

Clean any deposits from inside the breather hose.

Fit the 'A' bank breather by reversing the procedure given for removal, noting that a new gasket should be fitted between the breather elbow casting and the engine.

Crankcase breather 'B' bank - To service

Slacken the worm drive clip securing the hose from the auxiliary air valve to the metal breather pipe. Withdraw the hose.

Slacken the worm drive clip securing each end of the rubber breather hose and free both hose joints.

Unscrew the two setscrews securing the metal breather pipe to the plenum chamber. Collect the washers, withdraw the pipe and discard the gasket.

Withdraw both the metal breather pipe and the rubber breather hose.

Unscrew the setscrew securing the adapter housing to the oil filler. Collect the washer and earth braid (if fitted). Withdraw the housing (slight resistance may be felt due to the rubber sealing ring).

Remove the flame trap assembly.

Wash the flame trap assembly in clean fuel and dry with compressed air.

Clean any deposit from inside the breather pipe and hose.

Inspect the inside of the metal pipe to ensure that the restrictor is not blocked.

Assemble the 'B' bank breather by reversing the removal procedure noting that a new gasket should be fitted between the metal pipe and the plenum chamber. Ensure that the rubber 'O' ring on the oil filler connection is in good condition and that the earth braid (if fitted) is fitted to the retaining setscrew.

Exhaust emission control system

1 Renew the oxygen sensor and reset the elapsed mileage indicator (1981/86 model year cars only)

Renew the oxygen sensor (1987 model year cars only)

Oxygen sensor

On 1981/86 model year cars the oxygen sensor has a single cable connector. The cable from the electronic control unit to the connector block is blue.

On 1987 model year cars the oxygen sensor has a 3-pin connector. The sensor cable from the electronic control unit to the connector block is light green.

From inside the engine compartment locate the oxygen sensor cable(s) where it exits from the loom adjacent to the left-hand blower motor (see fig. B4-3).

Unclip the cable(s) and carefully ease it upwards until the moulded junction piece, connecting the cables is visible.

Note the run of the cables and disconnect them at the junction block.

From beneath the car, clean the area around the oxygen sensor before it is unscrewed and discarded.

Before fitting the new oxygen sensor, carefully smear Never-seez assembly compound onto the threads.

Important

Do not allow the assembly compound to contact the exhaust gas slots (the slotted shield below the threaded portion), otherwise damage to the oxygen sensor and catalytic converter may result.

Screw the oxygen sensor into the exhaust pipe and tighten to between 50 Nm and 60 Nm (5,1 kgf m and 6,1 kgf m, 37 lbf ft and 44 lbf ft).

Feed the oxygen sensor cable upwards into the engine compartment, adjacent to the left-hand blower motor. Connect the cables at the junction block and suitably clip the cables to the loom.

Ensure that any free cable is clipped in the engine compartment. The cable should be reasonably taut under the car, otherwise loose cable could foul the hot exhaust pipe and become damaged.

Important

Always ensure that the correct design of oxygen sensor is fitted.

1981/86 model year cars – single cable type.

1987 model year cars – triple cable type.

Elapsed mileage indicator (1981/86 model year cars only)

Open the luggage compartment.

Release the Tenax clip situated adjacent to the right-hand rear access point.

Unscrew the Pozidriv screws securing the side panel carpet in position. Unscrew sufficient screws to allow the rear of the carpet panel to be moved inwards to reveal the elapsed mileage indicator (see fig. B4-5).

Firmly depress the reset button.

Switch on the ignition.

Start and run the engine, noting that as the oxygen sensor reaches its normal operating temperature the warning lamp on the facia is extinguished.

Stop the engine and fit the carpet panel.

2 Remove and clean the E.G.R. valve and feed pipes (see fig. B4-6)

Unscrew the setscrew retaining the heatshield to the plenum chamber cover, collect the washer.

Unscrew the setscrew securing the heatshield to the top of the plenum chamber, collect the large diameter washer.

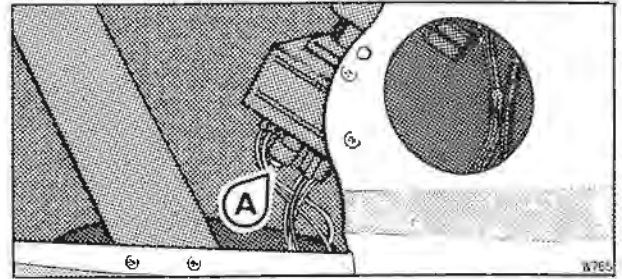


Fig. B4-5 Elapsed mileage indicator

A Reset button

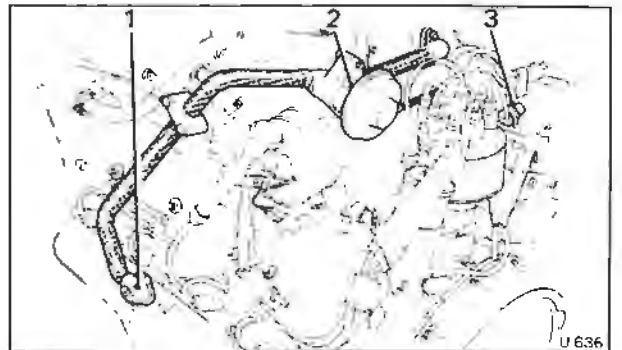


Fig. B4-6 Exhaust gas recirculation system

- 1 'B' bank exhaust manifold take-off point
- 2 Exhaust gas recirculation (E.G.R.) valve
- 3 E.G.R. cut-off solenoid

Unscrew the long setscrew that forms the lower mounting for the auxiliary air valve. Withdraw the setscrew and collect the washer and distance pieces.

Unscrew the nut from the E.G.R. valve top mount, collect the washer.

Withdraw the heatshield.

Detach the vacuum signal hose from the E.G.R. valve.

Unscrew the lower retaining nut and collect the washer.

Note

The valve upper securing nut is unscrewed to remove the heatshield.

Withdraw the valve and discard the gasket.

There are two E.G.R. pipes joined together adjacent to the auxiliary air valve by a sealing ring and split clamp.

Lower pipe

Locate the joint adjacent to the auxiliary air valve, unscrew the two nuts and collect the washers. Free the clamp and withdraw the bolts together with both halves of the clamp bracket. Collect the sealing ring.

Unscrew the two nuts from the exhaust manifold joint. Free the joint, withdraw the pipe and discard the gasket.

Upper pipe

Unscrew the two setscrews securing the pipe flange to the plenum chamber; collect the washers from the setscrews.

Withdraw the pipe and discard the gasket.

With a suitable scraper, remove all carbon from the valve, mounting flange faces, plenum chamber connection, distribution pipes, and joint faces.

Using a wire brush fitted into a portable drill complete the cleaning operations.

Before fitting the components to the engine, thoroughly blow out the components with compressed air to remove all carbon particles.

Fit the components by reversing the procedure given for removal, noting the following points.

Ensure that the valve pintle is secure on the valve stem.

Always use new gaskets.

3 Check the E.G.R. valve for correct operation

The operation of the E.G.R. valve only requires checking under no load conditions, as follows.

Connect an electric impulse tachometer to the engine in accordance with the manufacturer's instructions.

Ensure that the parking brake is firmly applied and that the gear range selector is in the Park position.

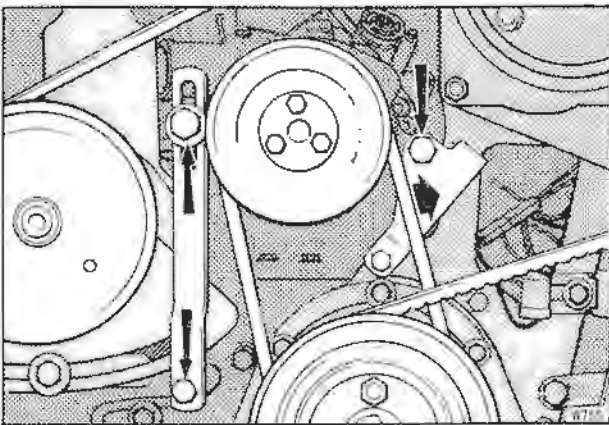


Fig. B4-7 Air pump drive belt adjustment and tension check point

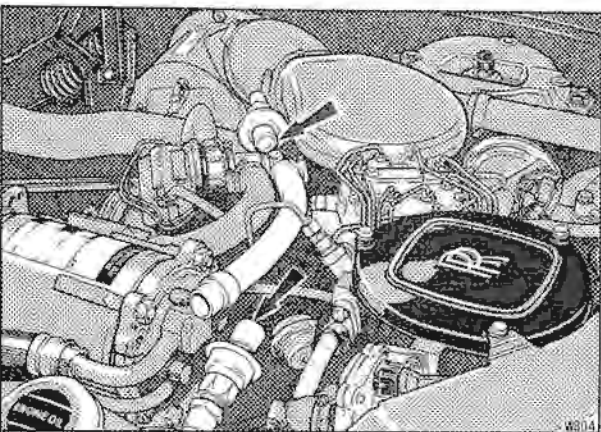


Fig. B4-8 Air injection system manifolds disconnected and blanked

Start and run the engine until normal operating temperature is attained.

Ensure that the engine has run at least 15 minutes after the engine coolant thermostat has opened.

Allow the engine to return to the idle speed.

Increase the engine speed slowly noting the operation of the E.G.R. valve.

The E.G.R. valve should commence to open at between 1550 rev/min and 1850 rev/min.

4. Check the condition and tension of the air pump drive belt

Before commencing to adjust the drive belt inspect it for signs of wear or cracking. If the belt is found unsatisfactory it should be renewed.

The belt tension must be checked at a point midway between the two pulleys (see fig. B4-7) by use of a belt tension meter or by applying a spring balance to give a 9,50 mm (0.375 in) belt deflection at a specified load.

Belt dressing must not be applied to prevent belt slip.

Coolant pump to air pump

Load may be applied on either side of the belt run.

New belt and retensioning load

Belt tension meter 18,1 kgf to 22,7 kgf
(40 lbf to 50 lbf)

Spring balance 3,6 kgf to 5,9 kgf
(8 lbf to 13 lbf)

The tension of the belt is adjusted by altering the position of the air pump.

Slacken the air pump pivot setscrew.

Slacken the setscrew securing the air pump to the adjustment strut.

Slacken the adjustment strut pivot setscrew.

Turn the air pump around its pivot point to adjust the belt tension and tighten the setscrew in the adjustment strut slot. Check the belt tension and repeat the adjustment operation if necessary.

When the belt tension is correct tighten the remaining two setscrews.

5 Check the air injection system for leaks and correct operation

System operation

Carry out the usual workshop safety precautions.

Disconnect the hoses from the air injection manifolds (see fig. B4-8) and suitably blank the manifold connections. It may be necessary to slacken the setscrew securing the air switching valve mounting bracket, so that the valve assembly can be swivelled to gain access to the connections.

If preferred, it is permissible to remove the short hose to 'A' bank manifold.

Locate the blue oxygen sensor cable where it exits from the loom adjacent to the left-hand blower motor (see fig. B4-3).

Ease the cable upwards until the white moulded junction piece, connecting the blue cable to the black cable is visible. Disconnect the oxygen sensor at this junction, ensuring that the black cable remains taut beneath the car.

Start the engine and measure the time taken from the end of the engine cranking to the switching of the air delivery from the air injection hoses. This should be between 90 seconds and 150 seconds.

Check both the air switching valve solenoid and the engine running sensor/electronic timer assembly if the switching of the air is outside the specified times.

If no air is delivered towards the air manifolds, refer to the Workshop Manual TSD 4400, Chapter U.

Connect both the blue and the black oxygen sensor cables.

Continue to run the engine until normal operating temperature is attained.

Stop the engine.

Start and run the engine, ensure that the oxygen sensor warning lamp is extinguished within a few seconds and at exactly the same time the injected air is switched from the air manifolds to the air cleaner (this can be detected by a change in the sound of the air discharge).

If the engine is not at normal operating temperature and the oxygen sensor warning lamp takes more than 90 seconds to extinguish, the air may be switched to the air cleaner before the warning lamp is extinguished. If this happens ensure that the engine is fully warmed-up and repeat the operation.

If at any time the oxygen sensor warning lamp is extinguished and the air is not switched from the manifolds to the air cleaner, there is a fault and serious damage to the catalytic converter could result if the engine is run in this condition. Refer to the Workshop Manual TSD 4400, Chapter U for details of the rectification procedure.

System leak check

Carry out the usual workshop safety precautions.

Visually inspect the condition of all hoses, pipes, and joints associated with the air injection system.

Locate the blue oxygen sensor cable where it exits from the loom adjacent to the left-hand blower motor (see fig. B4-3).

Ease the cable upwards until the white moulded junction piece, connecting the blue cable to the black cable is visible. Disconnect the oxygen sensor at this junction, ensuring that the black cable remains taut beneath the car.

Disconnect the hose from the air switching valve to the air cleaner, at the valve (see fig. B4-9).

Start and run the engine.

Listen carefully for any evidence of an air leak from the system. After 1½ minutes to 2½ minutes the air will be switched from the air manifolds towards the air cleaner. This change can be detected by the noise the air will make as it leaves the open connection of the air switching valve.

When the air is switched towards the air cleaner, stop the engine. Wait a few seconds, start the engine

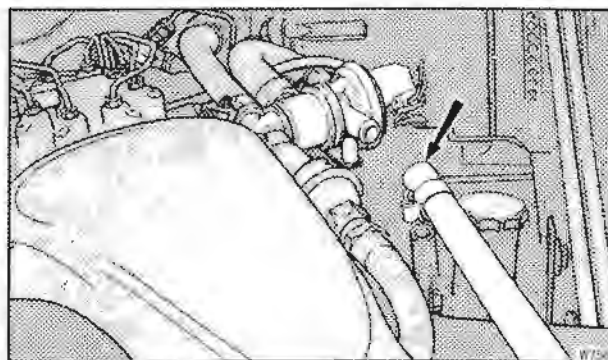


Fig. B4-9 Air injection system switching valve to air cleaner hose disconnected for leak check

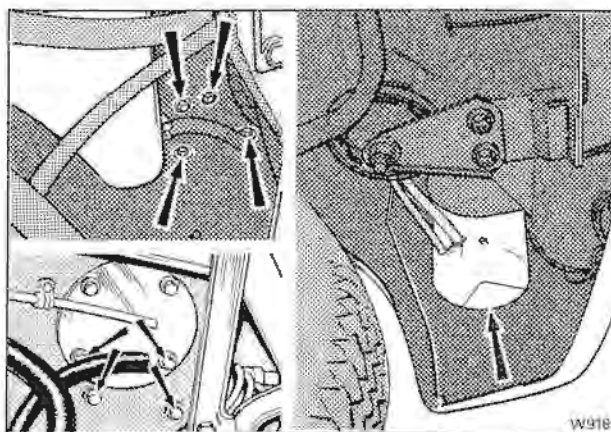


Fig. B4-10 Fuel evaporative emission control canister and mounting bracket setscrews

and continue the examination. Repeat this procedure until the inspection of the system is complete.

If an air leak is suspected it is permissible to coat the suspect component with a soap solution, soap bubbles will confirm an air leak.

Fit the disconnected hose to the air switching valve and secure by tightening the worm drive clip.

Fuel evaporative emission control system 1 Renew the evaporative emission control canister

Carry out the usual workshop safety precautions.

Locate the control canister under the left-hand front wing (see fig. B4-10). Using the special pliers RH 8090 remove the securing clip from the canister end of the fuel tank to canister flexible hose.

Withdraw both hoses fitted to the control canister. Label each one to facilitate assembly.

Unscrew the four setscrews retaining the control canister in position (see fig. B4-10). Support the weight of the canister before the last setscrew is removed. Collect the washer fitted under the head of each setscrew.

Withdraw the control canister from under the wing.

Note the position of the control canister in relation to the mounting bracket and unscrew the retaining worm drive clip.

Fit the new canister to the mounting bracket and tighten the retaining worm drive clip.

Ensure that the canister is in the correct position relative to the mounting bracket.

Fit the assembly to the vehicle by reversing the procedure given for removal, noting that a new hose securing clip should be used.

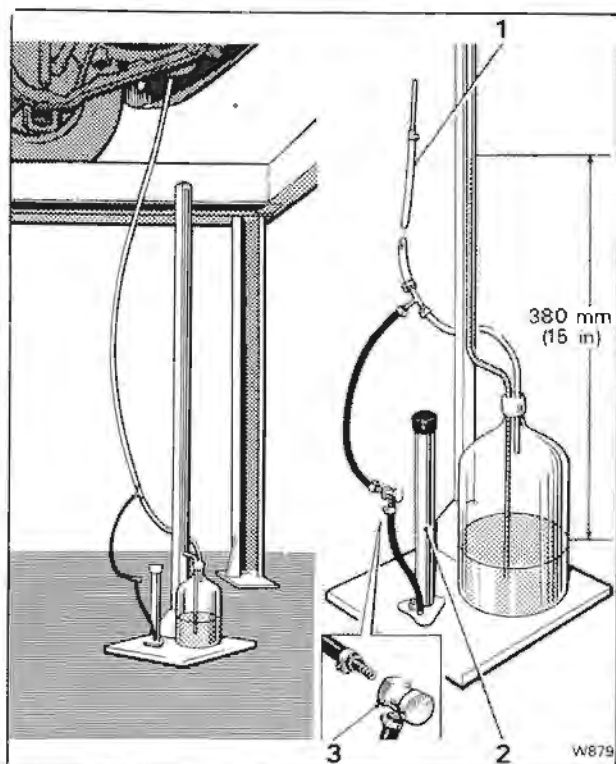


Fig. B4-11 Leak check test equipment

- 1 Connection to fuel tank/cannister hose
- 2 Pump
- 3 One-way pressure valve

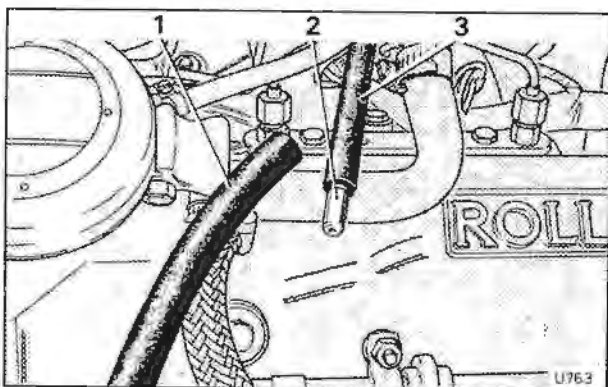


Fig. B4-12 Disconnecting the purge line

- 1 Hose from canister
- 2 Restrictor
- 3 Hose to throttle body

2 Check the condition of all pipes, hoses, and connections

Carry out the usual workshop safety precautions.

Locate the fuel evaporative emission control canister.

Withdraw the fuel tank evaporative hose from the canister and connect it to the test equipment shown in figure B4-11.

Apply air pressure to the fuel tank hose via the test equipment until a reading of 380 mm (15 in) H₂O is attained and close the pressure supply.

After five minutes again check the pressure reading, this should not have fallen by more than 12,7 mm (0,5 in).

If the pressure drop is more than 12,7 mm (0,5 in), progressively treat all joints in the system with soap solution to detect air leaks.

Rectify any air leaks and again leak check the system.

During the five minutes leak down, visually inspect the hoses, pipes, and connections of the system that are routed under the car. Commence where the hose exits from the body adjacent to the left-hand rear road spring and follow the system to the control canister.

Ensure that the hoses are secure in the mounting clips.

When the system is satisfactory, detach the test equipment and connect the hose to the control canister. Secure the hose with a new clip.

3 Check the purge flow rate

Carry out the usual workshop safety precautions.

Remove the retaining clip from the purge line restrictor hose.

Disconnect the hose at the purge line restrictor. Leave the restrictor in the hose to the engine (see fig. B4-12).

Connect a rotameter assembly RH 8725 into the line, between the restrictor and the open pipe to the valve connection.

Connect an impulse tachometer to the engine in accordance with the manufacturer's instructions.

Start the engine. Raise the engine speed to 2500 rev/min and note the flow reading on the rotameter, this should be between 35 ft³/h and 55 ft³/h.

If the purge flow rate is outside the limits specified, refer to the Workshop Manual TSD 4400, Chapter U.

Engine

1 Change the engine oil

The sump should be drained when the engine is warm, preferably after the car has completed a run.

To drain the oil, position the car over a pit or on a ramp.

Place a container in position beneath the drain plug situated on the right-hand side of the sump (see fig. B4-13). Remove the drain plug and allow the oil to drain from the sump.

Do not flush the sump with kerosene or fuel.

Fit the drain plug ensuring that the washer is correctly positioned and in good condition.

Fill the engine sump with recommended lubricant until the MAX level is reached on the dipstick.

Carry out the full oil level check procedure as described under Check the engine oil level.

2 Renew the engine oil filter

Drain the engine oil as described under Change the engine oil.

Place a container under the filter to collect any oil that may be spilt.

Remove the filter by unscrewing it from the engine in an anti-clockwise direction (see fig. B4-14).

Thoroughly clean the filter seating face on the engine.

Lightly smear the rubber sealing ring on the new filter with clean engine oil.

Screw the filter onto the pedestal until the rubber seal contacts the sealing face then tighten the filter a further half turn; **do not overtighten**.

Fill the engine with clean engine oil until the MAX level is reached on the dipstick. Run the engine and check the filter joint for leakage.

Carry out the full oil level check procedure as described under Check the engine oil level.

Check the engine oil level

In order to obtain an accurate indication of the oil level, ensure that the car is standing on level ground. Check the oil level by means of the dipstick marked ENGINE (see fig. B4-15).

It is recommended that the oil level is checked when the engine is cold. If the engine has been running, sufficient time should elapse after it has stopped to allow the oil to drain into the sump. Do not check the oil level with the engine running.

To replenish the sump with oil, open the filler cap marked ENGINE (see fig. B4-15). Add clean oil to the engine and after allowing sufficient time for the oil to reach the sump check that the oil is up to the MAX mark on the dipstick. **Do not overfill.**

Important

The engine lubrication system incorporates a thermostatically controlled oil cooler, therefore if the oil has been drained from the engine the following additional procedure must be carried out to ensure the correct oil level is obtained.

Carry out the normal topping-up procedure as described previously to obtain the maximum oil level reading on the dipstick.

Drive the car to enable the engine oil to attain the temperature required to actuate the oil cooler thermostat.

To ascertain that the thermostat has actuated, a rise in the temperature of the oil cooler return pipe (see fig. B4-16) should be felt. This temperature rise occurs as hot oil begins to flow from the oil filter housing, where the thermostat is situated, to the oil cooler mounted in front of the coolant radiator matrix.

Do not attempt to attain the required engine oil temperature rise with the car stationary.

When it has been ascertained that the engine oil has been passing through the cooler, thus filling this

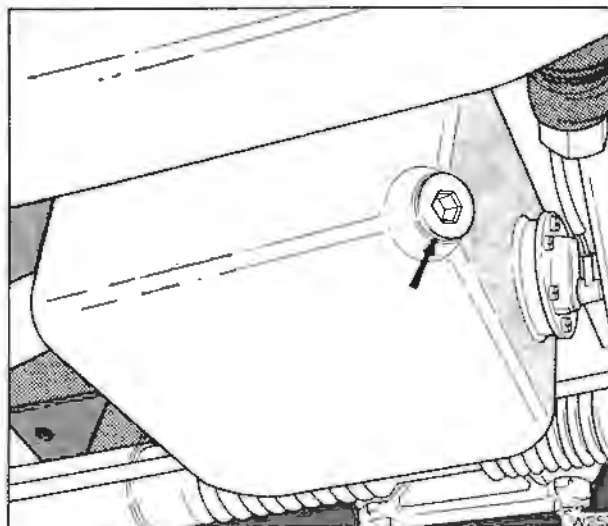


Fig. B4-13 Engine sump drain plug

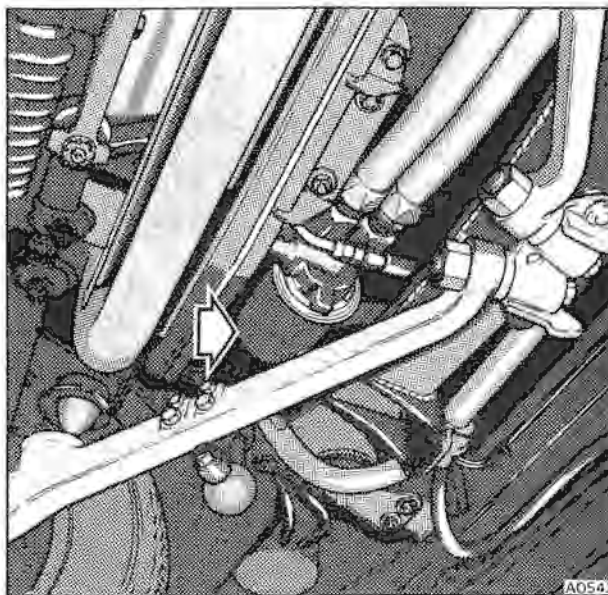


Fig. B4-14 Engine oil filter location

part of the lubrication system, check the oil level in the normal manner as described previously.

3 Check the drive belts

Before commencing to adjust the drive belts inspect them for signs of wear or cracking. Any belts found unsatisfactory should be renewed.

If after adjustment, a matched pair of belts have a marked variation in tension, a new pair should be fitted. Always renew both belts in a matched pair even if only one belt is faulty.

Two belt tension loads are specified; a new belt load for replacement (new) belts and a retensioning load for belts which are satisfactory for further service.

The belt tensions must be checked at a point midway between two pulleys (see fig. B4-17) by use

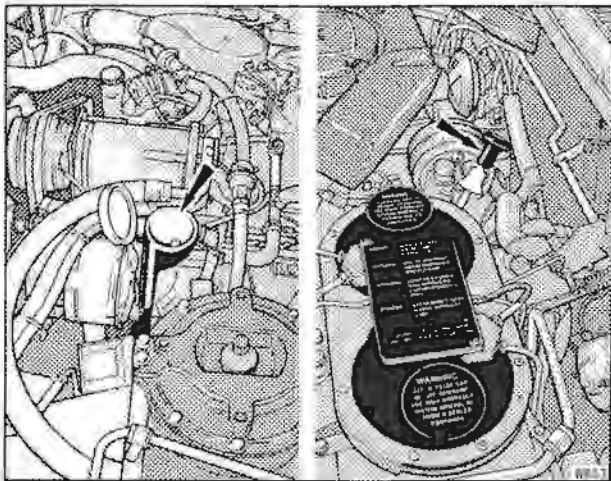


Fig. B4-15 Engine oil filler and dipstick

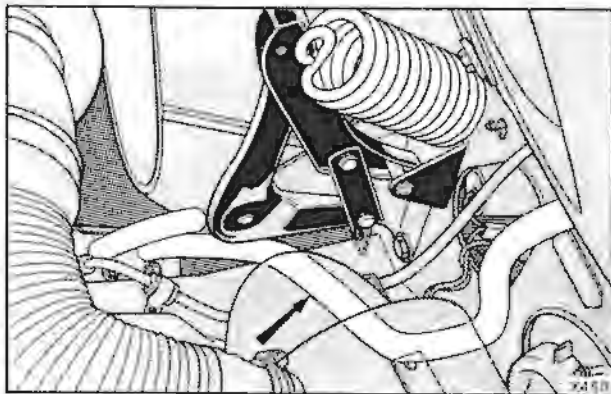


Fig. B4-16 Engine oil cooler return pipe

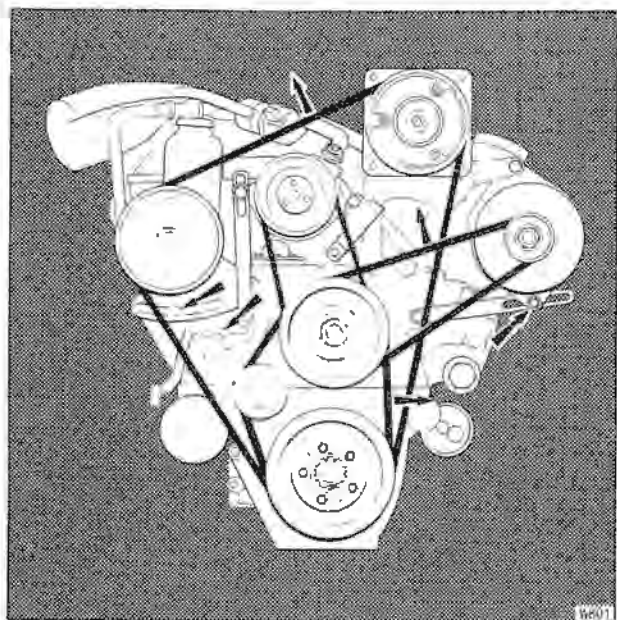


Fig. B4-17 Engine drive belt adjustment and tension check points

of a belt tension meter or by applying a spring balance to give a 9,50 mm (0.375 in) belt deflection at a specified load.

The variation in the spring balance loads for similar belt tension meter loads is due to the varying length of belt between individual belt centres.

Belt dressing must not be applied to prevent belt slip.

Crankshaft to coolant pump

Load may be applied on either side of the belt run.

New belt load

Belt tension meter 27,2 kgf to 31,7 kgf
(60 lbf to 70 lbf)

Spring balance 7,5 kgf to 8,2 kgf
(16.5 lbf to 18 lbf)

Retensioning load

Belt tension meter 22,7 kgf to 27,2 kgf
(50 lbf to 60 lbf)

Spring balance 6,8 kgf to 7,5 kgf
(15 lbf to 16.5 lbf)

The tension of this matched pair of belts is adjusted by altering the position of the jockey pulley (see fig. B4-17).

Slacken the nut and setscrew securing the jockey pulley arm. Pivot the jockey pulley to adjust the belt tension then tighten the nut and setscrew. Check the belt tension and repeat the adjustment procedure if necessary.

Coolant pump to alternator

Load may be applied on either side of the belt run.

New belt load

Belt tension meter 36,3 kgf to 40,8 kgf
(80 lbf to 90 lbf)

Spring balance 5,0 kgf to 5,9 kgf
(11 lbf to 13 lbf)

Retensioning load

Belt tension meter 31,7 kgf to 36,3 kgf
(70 lbf to 80 lbf)

Spring balance 4,1 kgf to 5,0 kgf
(9 lbf to 11 lbf)

The tension of the belt is adjusted by altering the position of the alternator (see fig. B4-17).

Slacken the setscrew securing the alternator at the upper mounting point.

Slacken the setscrew securing the adjustment strut to the front mounting plate, also the nut and bolt in the adjustment slot. Pivot the alternator to adjust the belt tension then tighten the nut and bolt in the adjustment slot. Check the belt tension and repeat the adjustment if necessary.

When the tension is correct finally tighten the remaining setscrews and check the tension again.

Crankshaft to steering pump/refrigeration compressor

Load must be applied on the top of the belts.
Each belt to be checked individually.

New belt load

Belt tension meter 40,8 kgf to 45,5 kgf
(90 lbf to 100 lbf)
Spring balance 6,3 kgf to 7,7 kgf
(14 lbf to 17 lbf)

Retensioning load

Belt tension meter 36,3 kgf to 40,8 kgf
(80 lbf to 90 lbf)
Spring balance 4,1 kgf to 6,3 kgf
(9 lbf to 14 lbf)

The tension of this matched pair of belts is adjusted by altering the position of the steering pump (see fig. B4-17). Slacken the setscrew in the steering pump mounting bracket slot situated below the pump pulley.

Slacken the pump pivot setscrew and the union on the supply hose at the rear of the pump.

Pivot the pump to adjust the belt tension then tighten the setscrew in the adjustment slot. Check the belt tension and adjust again if necessary. When the tension is correct tighten the pivot setscrew and again check the belt tension. Finally tighten the supply hose connection; ensuring that the soft rubber protective sleeve has clearance or minimal contact with the coolant pump to manifold elbow.

4 Renew the air filter element

Silver Spirit, Silver Spur, Mulsanne, late Corniche, and all Continental.

The air filter element is situated in the air intake housing at the front right-hand side of the engine compartment (see fig. B4-18).

To gain access to the element unfasten the two toggle clips retaining the air blending valve housing to the air cleaner housing. Carefully free the joint and move the housing away from the air cleaner.

Unscrew the worm drive clip securing the engine intake hose to the air cleaner. Detach the hose.

Support the air cleaner housing and unfasten the three toggle clips securing the housing to the valance.

Carefully free the joint, then move the housing towards the engine and withdraw the housing and air filter element from the car.

Remove the filter element from the housing.

Ensure that the inside of the air cleaner housing (both the sections removed and fixed section in the valance) is clean.

Inspect the joint seals for serviceability. Renew if necessary.

Two types of filter element have been fitted, a tubular type, open at both ends or a conical type with the small end of the cone closed.

Dependent on the type of filter element to be fitted proceed as follows.

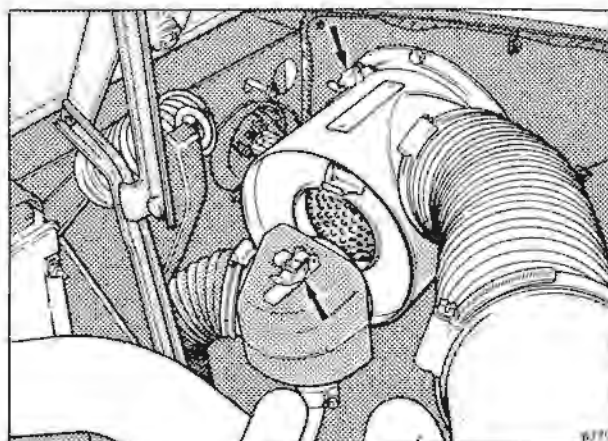


Fig. B4-18 Air filter (Silver Spirit, Silver Spur, Mulsanne, late Corniche, and all Continental)

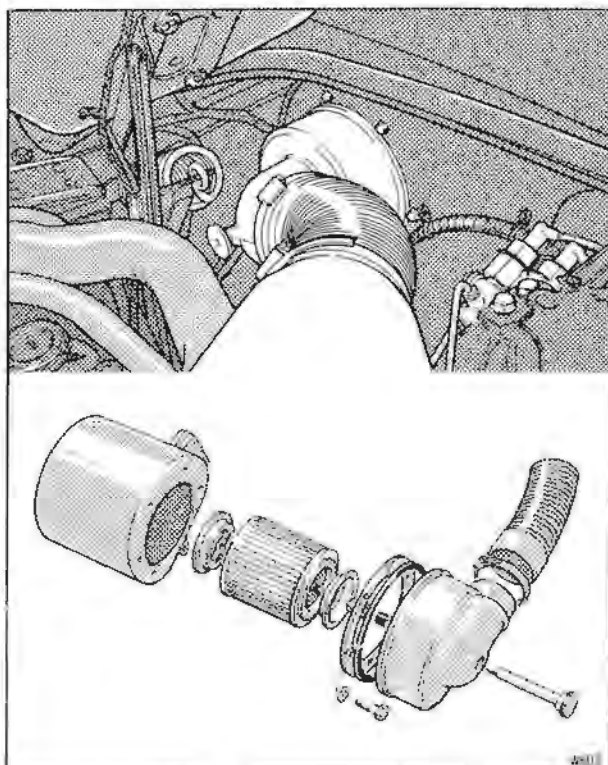


Fig. B4-19 Air filter (Early Corniche and all Camargue)

Tubular type

Enter the new element into the wing valance.

Fit the air cleaner housing to the wing valance. Ensure that it is located inside the valance retaining clamp ring. Hold the rubber seal in position over the housing spigot by placing the fingers of one hand through the air intake aperture and onto the seal.

To allow the housing to pass over the end of the filter, it will be necessary to slightly withdraw the element during this operation.

Whilst ensuring that both the air filter element and sealing ring are correctly positioned on the housing spigot, fit the assembly to the wing valance.

Align the three housing toggle clips with their respective securing points. Fasten the toggle clips.

Fit the remaining components by reversing the removal procedure.

Conical type

Locate the large end of the new filter element onto the locating spigot on the inside of the removable half of the housing.

Carefully position the housing and filter onto the valance allowing the filter to pass into the valance mounted section of the housing. Locate the small (blank) end of the filter into the spigot in the valance housing. Align the three housing toggle clips with their respective securing points. Special care should be taken during these operations to ensure that the paper element is not damaged during insertion.

Ensure that the filter is correctly positioned on the location spigots, then secure the three toggle clips. It is essential that the filter is correctly located on the spigots before the toggle clips are fastened down, otherwise there is a serious risk of crushing the filter element.

Fit the remaining components by reversing the removal procedure.

Early Corniche and all Camargue

The air filter element is situated in the air intake housing at the front right-hand side of the engine compartment (see fig. B4-19).

To gain access to the element, unscrew the worm drive clip securing the intake hose to the air meter inlet duct. Withdraw the hose.

Unscrew the knurled securing setscrew situated on the side of the assembly.

Withdraw the cover.

Unscrew the hexagonal nut from the centre stud. Withdraw the end plate, filter element, and second end plate.

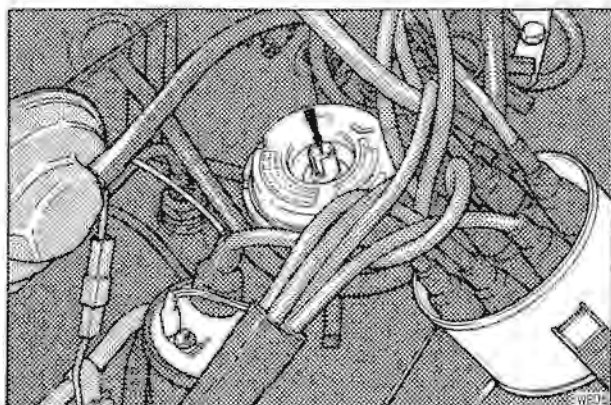


Fig. B4-20 Distributor lubrication point
(1981/82 model year cars only)

Fit the new element to the assembly by reversing the removal procedure. Refer to figure B4-19 for the correct assembly sequence.

5 Renew the sparking plugs

Sparking plug type Champion RN 12 YC or RN 12 Y
Plug gap setting 0,89 mm (0.035 in).

Before removing the sparking plugs the surrounding area should be thoroughly cleaned to prevent the ingress of foreign matter when the plugs are removed.

Fit the new plugs ensuring that the gaps are correctly set and that each plug is fitted with a sealing washer.

Torque tighten each plug to between 18 Nm and 23 Nm (1,8 kgf m and 2,3 kgf m, 13 lbf ft and 17 lbf ft).

6 Lubricate the distributor (1981/82 model year cars only)

Lubrication of the spindle is the only routine maintenance required.

To carry out this operation remove the moulded top cover of the distributor and the rotor arm. Do not remove the cover from the distributor baseplate (see fig. B4-20).

Lubricate the spindle shaft bearings by applying two drops of engine oil to the felt pad situated beneath the rotor arm.

Clean and fit the rotor arm.

Clean the terminal posts and cover. Fit the cover ensuring that it is correctly located on the distributor base.

7 Lubricate the accelerator linkage

Lubricate all the accelerator linkage ball joint pivots and clevis pins.

Examine the ball knuckle joints for wear and adjust if necessary. Renew any worn clevis pins.

Examine the linkage for correct operation. For details of linkage setting procedure reference should be made to the Workshop Manual TSD 4400, Chapter U.

8 Check the ignition timing

Ignition timing is carried out on A1 cylinder and should be 15°btdc at 1450 rev/min; A1 cylinder is the front cylinder on the right-hand side of the engine when viewed from the driver's seat.

Important

If the ignition timing is to be set, ensure that the sparking plugs are in a good condition before running the engine; if they require cleaning or renewal, ensure that the gaps are set correctly (see Operation 5, Renew the sparking plugs).

To check the ignition timing commence by running the engine until normal operating temperature is attained. Switch off the engine.

Connect a stroboscope and a tachometer to the engine as described in the instructions supplied with the respective equipment.

On no account must the stroboscope timing lamp positive feed be connected to the ignition coil. The positive feed should be taken from a known 12 volt connection.

If the ignition vacuum retard system is in operation (1981/82 model year cars only), disconnect the vacuum hose from the distributor side of the vacuum retard solenoid and fit a blank to the solenoid valve connection.

All cars, disconnect the vacuum advance hose from on top of the throttle housing connection and blank off the throttle housing connection.

Start and run the engine at a speed of 1450 rev/min. When setting the engine speed reduce from a higher speed to 1450 rev/min.

Direct the flashing light of the stroboscope onto the crankshaft damper timing marks and timing pointer; the pointer is positioned on the left-hand side of the crankshaft damper when viewed from the driver's seat.

If the timing pointer does not coincide with the 15° btdc mark on the crankshaft damper adjust the ignition timing as follows.

Release the clamp screw on the distributor and rotate the head of the distributor in the appropriate direction until the correct timing is obtained. Clockwise rotation of the distributor head advances the ignition and conversely anti-clockwise rotation retards the ignition.

Tighten the clamp screw and check that the ignition timing is between 14° and 16° btdc at 1450 rev/min (again reduce from a higher speed to 1450 rev/min).

9 Check the operation of the ignition distributor vacuum advance mechanism. Also check the retard mechanism if it is connected
After completing Operation 8 continue as follows.

Vacuum retard mechanism 1981/82 model year cars only

If the ignition vacuum retard system is in operation, connect a vacuum pump to the vacuum retard side of the capsule, ensuring that the hose normally connected to the capsule remains blanked off.

Start the engine, ensure that normal operating temperature is attained, apply a vacuum of 355,60 mm Hg (14 in Hg) to the capsule.

Set the engine speed to 1450 rev/min (reduce from a higher speed to 1450 rev/min).

Check that the ignition timing has retarded between 10° and 14° from the setting noted upon completion of Operation 8. Disconnect the vacuum pump and connect the hose.

Vacuum advance mechanism (All cars)

Allow the engine to return to the idle speed and set this to 650 rev/min using the idle speed adjustment screw on top of the throttle body. Ensure that the engine speed does not dip below 650 rev/min.

Direct the timing light onto the timing marks on the crankshaft damper. The timing should now be between tdc and 8° btdc.

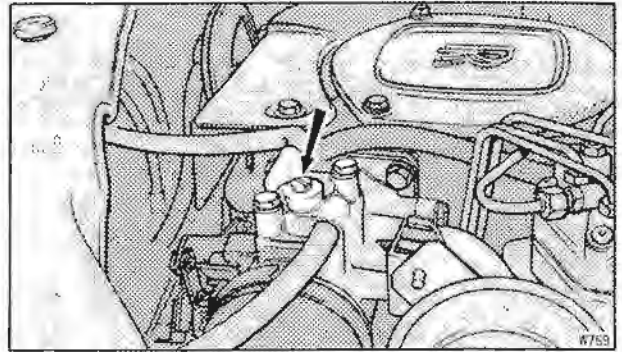


Fig. B4-21 Idle speed adjustment

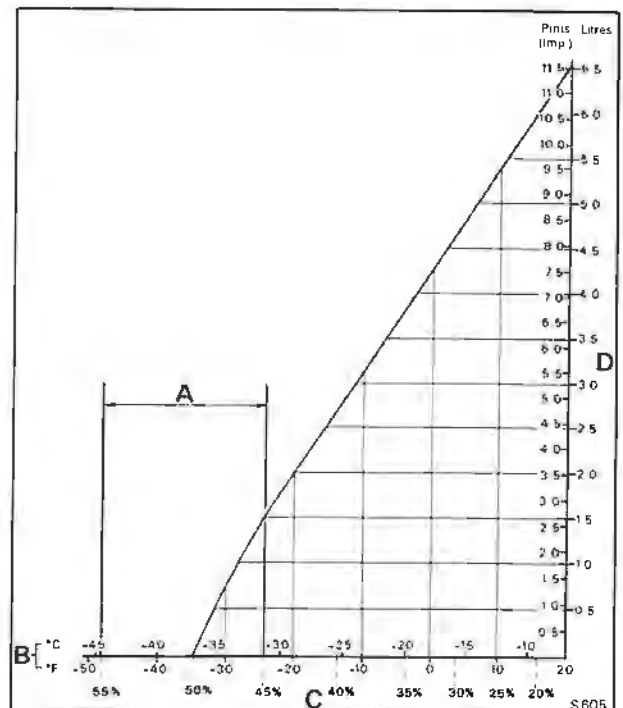


Fig. B4-22 Anti-freeze correction chart to give a 50% solution

- A Acceptable service range of concentration
- B Freezing point of coolant
- C Percentage concentration
- D Volume of 100% anti-freeze to be added to maintain a 50% solution after removal of the same volume of old coolant first

Connect a vacuum pump to the distributor vacuum advance side of the capsule. Apply an initial vacuum of 635 mm Hg (25 in Hg) and then reduce the vacuum to 508 mm Hg (20 in Hg) and maintain it. Adjust the idle speed to 650 rev/min.

Check that the ignition timing has advanced by between 10° and 14° from the setting noted previously (timing between tdc and 8° btdc).

Stop the engine, remove the test equipment and reconnect all hoses in their correct positions.

10 Check the engine idle speed

Ensure that the usual workshop safety precautions are carried out and that an impulse tachometer is fitted to the engine in accordance with the manufacturer's instructions.

To set the idle speed, ensure that the engine has stabilized at its normal operating temperature. This can be achieved by allowing the engine to run at idle speed for at least 15 minutes after the thermostat has opened. The opening of the thermostat can be detected by a sudden rise in the temperature of the thermostat elbow pipe.

Disconnect the purge line at the restrictor. Leave the restrictor fitted into the hose to the engine (see fig. B4-12).

Disconnect the oxygen sensor cable situated in the rear left-hand corner of the engine compartment (see fig. B4-3).

Ensure that the automatic air conditioning system is off.

Set the engine idle speed to 650 rev/min by turning the adjustment screw situated on top of the throttle body (see fig. B4-21).

Connect the purge line hose and the oxygen sensor cable to their respective connections.

Note

Connecting the purge line may increase the idle speed and connecting the oxygen sensor cable will tend to restore normal idle speed. Do not attempt to correct these small variations in idle speed.

Engine cooling system

1 Check the coolant anti-freeze concentration

The cooling system is filled initially with a coolant solution comprising equal parts of UT 184 (BP - Hythe Chemicals) or Prestone II and water. This mixture gives frost protection down to a temperature of -37°C (-35°F).

The coolant should contain fifty percent of an approved anti-freeze at all times. This not only provides frost protection but also prevents corrosion of the coolant passages and raises the boiling temperature of the coolant.

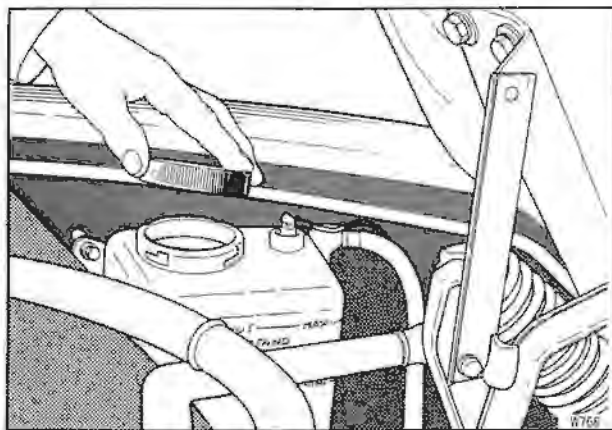


Fig. B4-23 Coolant expansion bottle (Silver Spirit, Silver Spur, Mulsanne, late Corniche, and all Continental)

The anti-freeze concentration should be checked in both the expansion bottle (where fitted) and the radiator.

If the strength of the coolant requires increasing, sufficient coolant should be drained from the radiator and replaced with undiluted anti-freeze (see fig. B4-22). Afterwards run the engine until normal operating temperature is attained and the anti-freeze has become thoroughly mixed with the coolant. Stop the engine and again check the concentration in the radiator.

An acceptable level of anti-freeze concentration is between 45% and 50%. Therefore, as a hydrometer may be inaccurate where readings above 40% are expected, it is recommended that a refractometer is used.

For details refer to Chapter L of the appropriate Workshop Manual.

If a refractometer is not available and a hydrometer has to be used, a scale reading of between 1.06 and 1.07 should be obtained with the coolant at room temperature for the mixture to be correct.

2 Check the coolant level

Warning

Both types of cooling system become pressurized during engine running, therefore, extreme care should be taken when removing the radiator cap from a warm or hot radiator.

Silver Spirit, Silver Spur, Mulsanne, late Corniche, and all Continental

Routine check

To check the level outside a normal service schedule (e.g. Regular maintenance) and when no cooling/heating system fault is reported or suspected, proceed as follows.

If the **engine is hot** ensure that the coolant level in the translucent expansion bottle is at the MAX mark. Top-up if necessary and replace the expansion bottle cap.

If the **engine is cold** ensure that the coolant level in the translucent expansion bottle is half-way between the MIN and MAX marks. Top-up if necessary and replace the expansion bottle cap.

If the coolant level in the expansion bottle is either below the MIN mark or there is no coolant in the expansion bottle, carry out the following Full check procedure.

Full check

Ensure the gear range selector is in the Park position and apply the parking brake.

Remove the gear range selector cut-out from the fuseboard.

Check the coolant level in the translucent expansion bottle (see fig. B4-23). If the level is low or the bottle is empty, add coolant to bring the level up to the MIN mark.

Ensure that the engine is not hot (to allow safe removal of the radiator cap).

Remove the radiator cap in three stages as follows.

Turn the cap slowly anti-clockwise until a check position is reached. Wait until any pressure in the system has been released. Press down on the cap and continue to turn it anti-clockwise until the cap is released.

Check the coolant level in the radiator. This should be half-way up the filler neck.

If the coolant level in the radiator is correct, fit the radiator cap by pressing it firmly down and turning it fully clockwise.

Top-up the coolant level in the expansion bottle in accordance with the Routine check procedure.

If the coolant level in the radiator is low but visible and no cooling/heating system fault is reported or suspected top-up the system using the following procedure. If however the coolant is not visible or a coolant/heating system leak is reported or suspected, the system should have any faults rectified and then be pressure tested prior to carrying out the topping-up procedure.

Top-up the radiator until the coolant is half-way up the filler neck.

Start and run the engine.

Turn the air conditioning system function control fully clockwise to the defrost position.

Set the air conditioning system override switch to the AUTO position.

Allow at least one minute for the air conditioning system to stabilize, then check to ensure that all air is being directed towards the windscreen (i.e. no air is delivered from the lower system and the facia outlets). This procedure opens the heater system water tap.

Run the engine, without the radiator pressure cap fitted, until normal operating temperature is attained. Top-up the coolant level in the radiator during this time.

Switch off the engine.

Fit the radiator pressure cap by pressing it firmly down and turning it fully clockwise.

Top-up the coolant level in the expansion bottle in accordance with the Routine check procedure.

Early Corniche and all Camargue

Ensure the gear range selector is in the Park position and apply the parking brake.

Remove the gear range selector cut-out from the fuseboard.

Start the engine and turn the air conditioning function control clockwise to the defrost position and set the upper system mode override switch to the AUTO position.

Allow approximately one minute for the system to attain the required setting, then check that all air is being directed towards the windscreen (i.e. no air is delivered from the lower system and the facia outlets). This procedure opens the heater water tap and ensures that the cooling system can be correctly checked.

Switch off the ignition.

Remove the radiator cap. If the engine is hot, muffle the cap with a thick cloth and gradually turn the cap anti-clockwise until the pressure is reduced, then

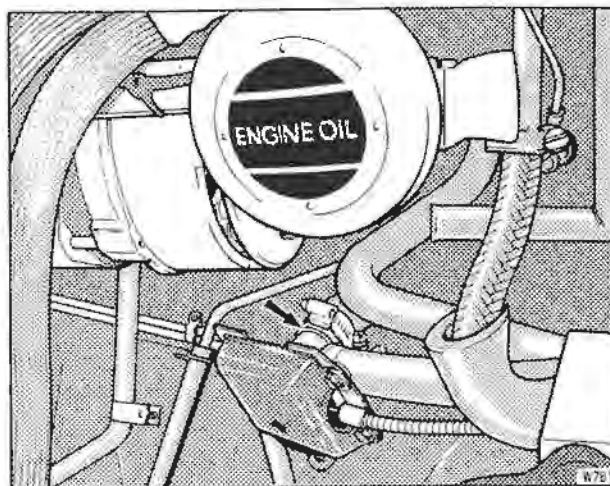


Fig. B4-24 Heater tap feed hose

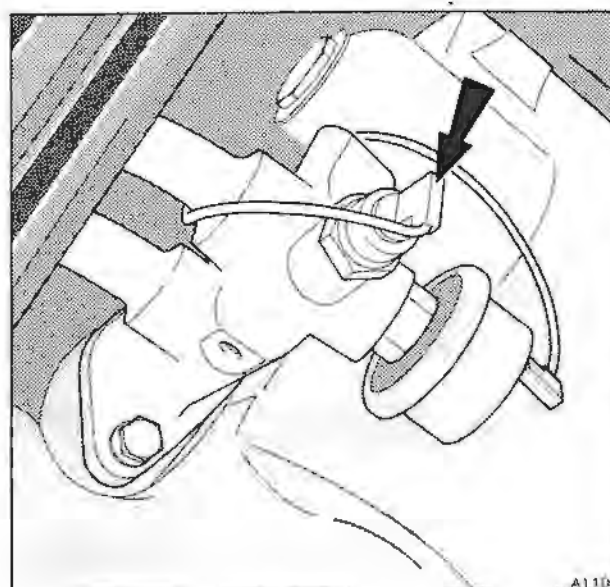


Fig. B4-25 Oil pressure switch and transmitter

remove the cap.

If the coolant level is low, top-up the radiator header tank with the correct anti-freeze/water mixture. The correct level is when the coolant reaches the rubber seal in the filler neck. Fit the filler cap.

3 Check all coolant hose clips for tightness

Examine all the coolant hose connections for signs of leakage and check the worm drive clips for tightness. Never overtighten a clip in an attempt to seal a leaking connection.

In the event of a hose connection leaking when the worm drive clips have been tightened, drain the cooling system to a level below the leaking hose. Remove and inspect the hose and its connecting component for signs of damage. If necessary renew the faulty component and refill the system with coolant as described in Renew the coolant.

4 Examine the condition of all coolant hoses

Inspect all coolant hoses for signs of deterioration, cracking, weak spots, etc. Any faulty hose should be removed and a new hose fitted. When renewing a hose always ensure that it does not foul other components and that it is not kinked so as to cause complete or partial restriction of coolant flow.

5 Fit a new heater tap feed hose

Drain the coolant system as described in Renew the coolant, but do not remove the engine crankcase drain plugs.

Disconnect the heater tap feed hose from the engine and heater tap (see fig. B4-24); remove the hose.

Fit the new hose; ensure that the hose is free from any sharp bends that may restrict coolant flow.

Fill the engine coolant system as described in Renew the coolant.

Ensure that the parking brake is applied and the gear range selector lever is in the Park position.

Remove the gear range selector cut-out from the fuseboard.

Start and run the engine; check the coolant hose for leaks.

Switch off the ignition and fit the gear range selector cut-out.

6 Renew the coolant

Drive the car onto a ramp; move the gear range selector to the Park position and apply the parking brake.

Remove the gear range selector cut-out from the fuseboard.

Disconnect the Lucar connection from the pressure switch situated on the oil filter take-off flange (see fig. B4-25). This will allow the air conditioning system to be operated without running the engine.

Switch on the ignition and rotate the air conditioning function switch to the windscreen defrost position, also set the upper system mode override switch to the AUTO position.

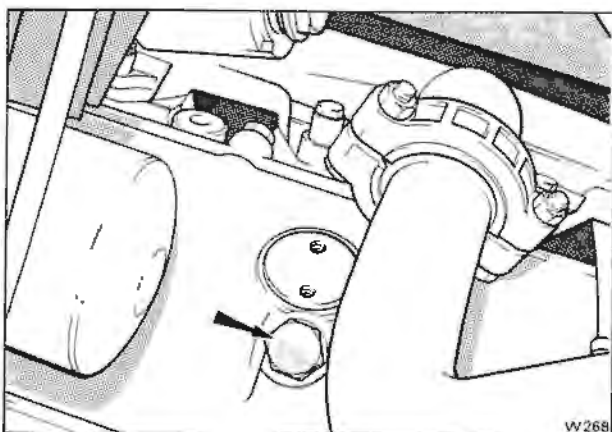


Fig. B4-26 Crankcase drain plug ('B' bank shown)

Wait approximately one minute for the system to attain the required setting and observe that all the air is being directed to the windscreen. This procedure opens the heater water tap and ensures the system can be completely drained.

Switch off the ignition.

Place a container beneath the radiator drain tap to collect the coolant. Connect a length of hose onto the drain tap to direct the coolant into the container.

Carefully unscrew and remove the radiator pressure cap.

Open the radiator drain tap and allow the coolant to drain from the radiator.

When the radiator has completely drained place a container beneath the crankcase drain plugs. Remove the drain plugs from the crankcase (see fig. B4-26) and allow the residue of coolant to drain from the crankcase.

Renew the washers on the drain plugs and fit the plugs into the crankcase.

To drain the coolant remaining in the expansion bottle (Silver Spirit, Silver Spur, Mulsanne, late Corniche, and all Continental) disconnect the connection hose from the radiator filler neck and allow the coolant to drain from the expansion bottle into the container. When the coolant has drained connect the hose to the radiator filler neck.

Check all hoses for serviceability and renew as necessary.

Fill the system with fresh coolant of the specified concentration as follows.

Ensure the radiator drain tap is closed.

Slowly fill the radiator with coolant, thus reducing the possibility of air locks in the system.

Start and run the engine for a minimum of 10 minutes with the radiator pressure cap removed. After running for five minutes ensure that warm air is passing up the windscreen from the demister ducts. Top-up the radiator as necessary to ensure there is always coolant in the top tank of the radiator.

Ensure that the thermostat has opened; indicated by a rapid warming of the top radiator hose.

Switch off the engine and top-up the radiator to half-way up the filler neck. Fit the pressure cap.

Applicable to Silver Spirit, Silver Spur, Mulsanne, late Corniche, and all Continental.

Fill the expansion bottle to a level midway between the maximum and minimum levels indicated on the bottle.

Start and run the engine until normal running temperature is attained; switch off the engine and top-up the expansion bottle to the maximum level.

Allow the engine to cool down. Carefully remove the radiator pressure cap and ensure the radiator is completely full of coolant. Top-up to half-way up the radiator filler neck if necessary. Fit the radiator pressure cap.

Connect the Lucar connection previously disconnected from the pressure switch adjacent to the oil filter take-off flange (see fig. B4-25).

Note

For the coolant system to operate correctly, i.e. for

coolant to pass into the expansion bottle when hot and be drawn back into the radiator during cooling, the top of the radiator must not contain an air pocket.

7 Reverse flush the coolant system

Drain the engine coolant system as described in **Renew the coolant**.

Remove the top and bottom hoses from the radiator matrix.

Fit a waste pipe to the upper (inlet) connection of the radiator.

Apply mains water under pressure through the lower (outlet) connection of the radiator. This should remove all loose sediment in approximately 30 minutes.

Do not under any circumstances use an alkaline compound or detergent to clean the system. Such compounds have a detrimental chemical action on aluminium alloys.

Remove the engine coolant drain plugs from the crankcase.

Remove the thermostat as described in **Renew the thermostat**, then replace the cover.

Fit a suitable pipe to the drain plug aperture and apply mains water pressure to each aperture in turn.

Flush for approximately 30 minutes, or until the water runs clear of foreign matter.

Fit the drain plugs and a new thermostat by reversing the procedure for removal.

To flush the heater system, detach the heater at the water tap and disconnect the return hose at the coolant pump.

Fit a waste pipe to the disconnected heater feed hose.

Flush the matrix for approximately 30 minutes.

Examine the coolant hoses for deterioration or damage and renew as necessary.

Connect all hoses and fill the system with the recommended coolant mixture as described under **Renew the coolant**.

8 Remove foreign matter from the radiator and refrigeration condenser

Using a pressure hose pipe, flush the radiator matrix and condenser matrix.

Hold the nose of the hose pipe close to the back of the radiator matrix and allow the water to pass between the veins of the matrix. Slowly move the hose over the whole matrix area until all foreign matter (insects, etc.) have been flushed clear. Care must be taken to ensure that the end of the hose does not damage the matrix face during this operation.

9 Renew the thermostat

Disconnect the battery.

Place a container beneath the radiator. Attach a length of hose to the radiator drain tap to direct the coolant into the container.

Carefully unscrew and remove the radiator pressure cap.

Open the radiator drain tap and allow sufficient coolant to drain from the system for the coolant level

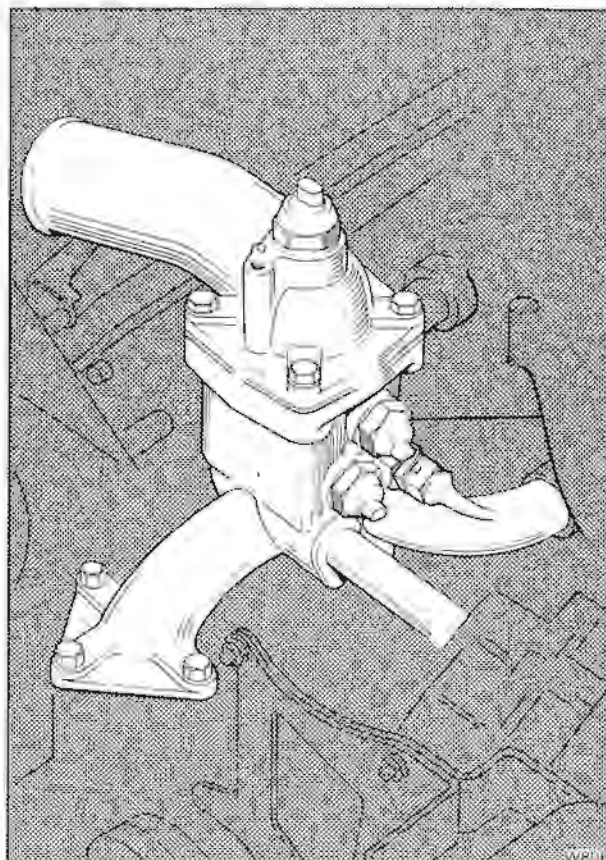


Fig. B4-27 Thermostat housing assembly

to fall below that of the thermostat housing. Close the drain tap and remove the hose previously attached.

Disconnect the electrical connector from the thermostat housing cover.

Remove the bolt from the air switching valve bracket and the four setscrews from the thermostat housing cover. Collect the bracket.

Remove the thermostat housing cover. The cover can be moved away from the housing without detaching the outlet hose.

Lift the thermostat from the housing (see fig. B4-27).

Remove the old gasket material from the thermostat housing and cover. Ensure that no material enters the thermostat housing.

Check that the two faces are clean and dry.

Insert a new thermostat into the housing.

Place a new gasket in position on the housing and fit the cover. Connect the air switching valve bracket.

Connect the electrical connection removed from the thermostat housing.

Top-up the cooling system with the correct coolant mixture as described under **Renew the coolant**.

Torque converter transmission

It is absolutely essential when adding fluid to, or working on the torque converter transmission that great attention is paid to cleanliness. The smallest particle of dirt in the transmission fluid could interfere

with the correct operation of the unit.

It is important for efficient operation of the torque converter transmission that only an approved fluid is used (see Chapter A).

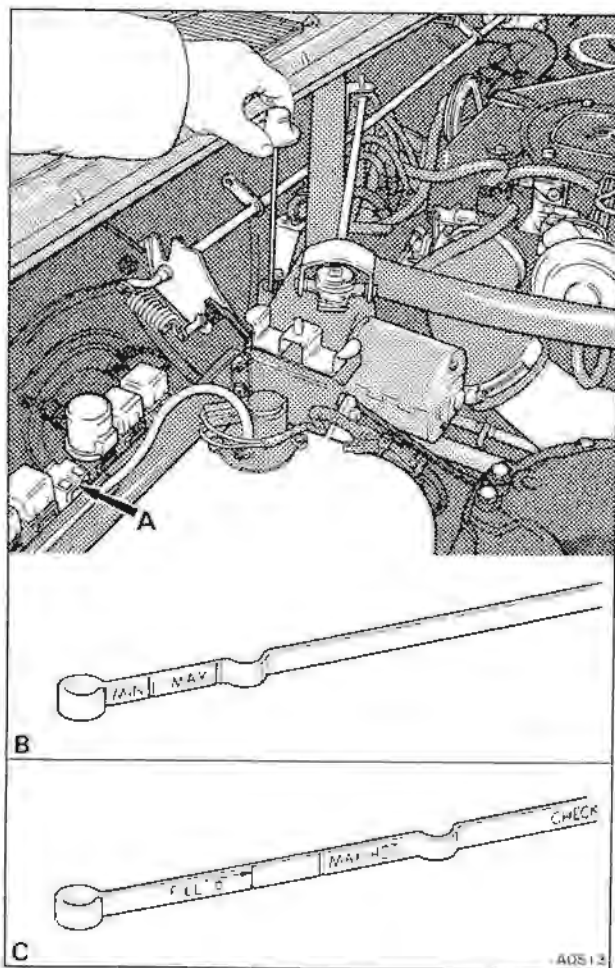


Fig. B4-28 Transmission filler tube and dipstick

- A Windscreen wiper motor relay
- B Original dipstick markings
- C Revised dipstick markings

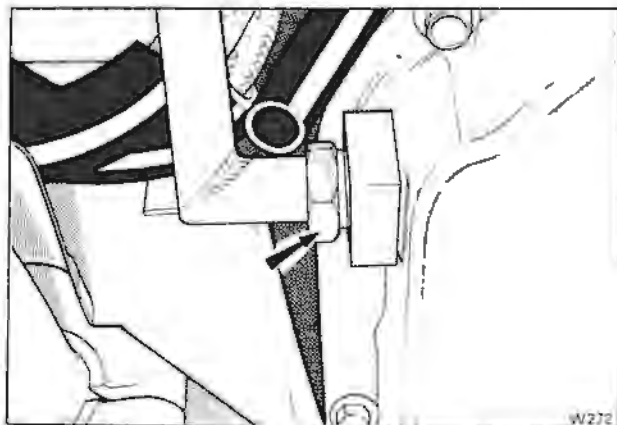


Fig. B4-29 Transmission drain point

1 Check the transmission fluid level

The fluid level can be checked accurately when the car is standing on a level surface, the engine is running at idle speed, and the transmission fluid is at normal operating temperature, approximately 77°C (170°F).

The dipstick and filler tube are situated on the right-hand side of the engine compartment.

On Silver Spirit, Silver Spur, and Mulsanne cars remove the protective cover (if fitted) from the windscreen wiper mechanism to gain access to the dipstick. Ensure that the following safety procedure is undertaken to isolate the mechanism prior to removing the cover.

Ensure that the windscreen wiper control switch situated on the fascia is in the off position. Remove a windscreen wiper relay, preferably number three, situated adjacent to the windscreen washer reservoir (see fig. B4-28). To remove the relay pull it vertically from its mounting.

On all cars, always clean the top of the dipstick before removing it from the filler tube.

As an initial check, the fluid level may be checked after starting from cold as follows.

Apply the parking brake.

Start and run the engine for three to four minutes at fast-idle speed, with the gear range selector in the Park position. Reduce the engine speed to slow idle.

Whilst sitting in the driving seat, **firmly apply the footbrake** and move the gear range selector through the full range of gear positions pausing briefly in each range. Return the selector to the Park position.

Immediately check the fluid level with the engine running at idle speed.

The level should be up to the circular dimple situated below the FILL mark on the dipstick or 10 mm (0.375 in) **below** the MIN mark, dependent on the type of dipstick fitted (see fig. B4-28).

Top-up to this level if necessary.

After this initial check a further check should be carried out as follows.

Drive the car for approximately 24 kilometres (15 miles) of highway/motorway driving or 16 kilometres (10 miles) of city driving. This should ensure the transmission has reached normal operating temperature.

It is essential that this temperature is attained. Do not top-up the fluid level to the MAX mark on the dipstick when the fluid is only warm, as this will result in an over-fill situation when the normal operating temperature is attained. Overfilling will result in fluid being discharged from the transmission breather pipe.

Position the car on a level surface, firmly apply the parking brake and select Park position with the gear selector lever.

Carry out the procedure described for the initial check.

With the transmission fluid at normal operating temperature the level of the fluid should be between the FILL and MAX HOT marks or the MIN and MAX marks (see fig. B4-28) dependent on the type of dipstick fitted.

If necessary add fluid by pouring it down the filler tube, with the engine still running, until the fluid is to the MAX mark on the dipstick. **Do not overfill.**

When the fluid level is correct, switch off the engine and fit the windscreen wiper mechanism cover and relay.

2 Renew the transmission fluid

Position the car on a ramp or over a pit.

Place a clean container having a minimum capacity of 3 litres (5 Imp pt, 6 US pt) under the nut which secures the transmission fluid filler tube to the sump (see fig. B4-29).

From within the engine compartment, remove the transmission dipstick as described under Check the transmission fluid level.

Slacken the setscrew securing the filler tube to the engine.

Unscrew the nut securing the filler tube to the side of the transmission sump (see fig. B4-29). Withdraw the filler tube from the sump and move it to one side to allow the fluid to drain into the container.

After draining the sump, ensure that the filler tube is clean then fit it to the sump and tighten the drain nut.

Tighten the setscrew securing the filler tube clip to the engine.

Add 2,8 litres (5 Imp pt, 6 US pt) of an approved fluid to the sump, pouring the fluid down the filler tube.

Check the fluid level as described under Check the transmission fluid level.

3 Fit a new intake strainer

Drain the transmission sump as described under the heading Renew the transmission fluid, then proceed as follows.

Remove the setscrews securing the transmission sump and lower the sump.

Drain any fluid from the sump and discard the gasket.

Unscrew the setscrew securing the intake strainer and pipe assembly to the transmission; remove the strainer assembly (see fig. B4-30).

Remove the intake pipe from the strainer and discard the strainer.

Clean the transmission sump and the intake pipe with kerosene and dry with compressed air.

Fit a new rubber 'O' ring to the intake pipe and lubricate the 'O' ring with clean transmission fluid.

Ensure that a new rubber seal is fitted to the pipe bore in the new intake strainer, then fit the intake pipe to the strainer.

Fit the intake strainer and pipe assembly to the transmission and torque tighten the securing setscrew to 14 Nm (1,4 kgf m, 10 lbf ft).

Fit the transmission sump using a new gasket and torque tighten the sump setscrews to 16 Nm (1,7 kgf m, 12 lbf ft).

Fit the oil filler tube into the sump and tighten the nut. Tighten the setscrew securing the filler tube clip to the engine.

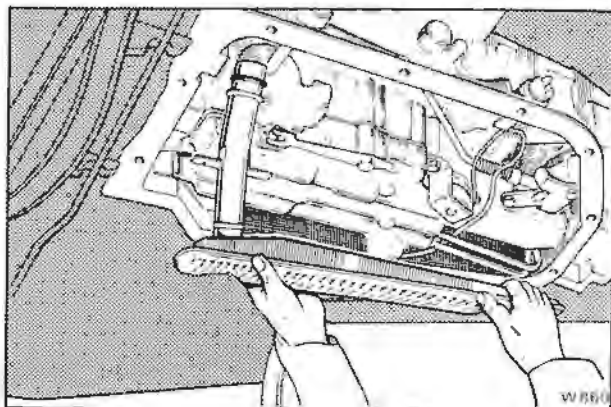


Fig. B4-30 Transmission intake strainer removal



Fig. B4-31 Propeller shaft grease point

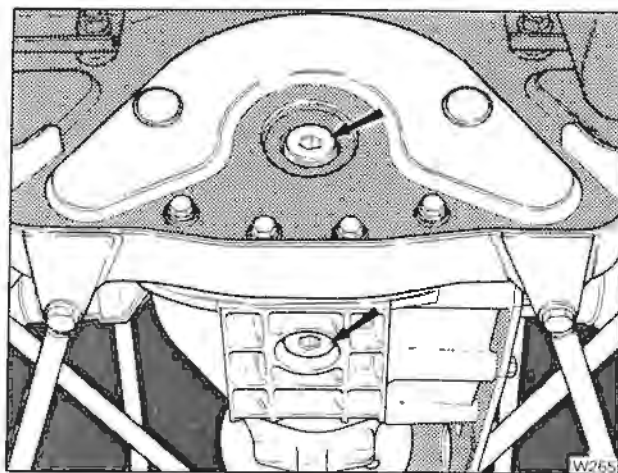


Fig. B4-32 Final drive drain and filler/level points

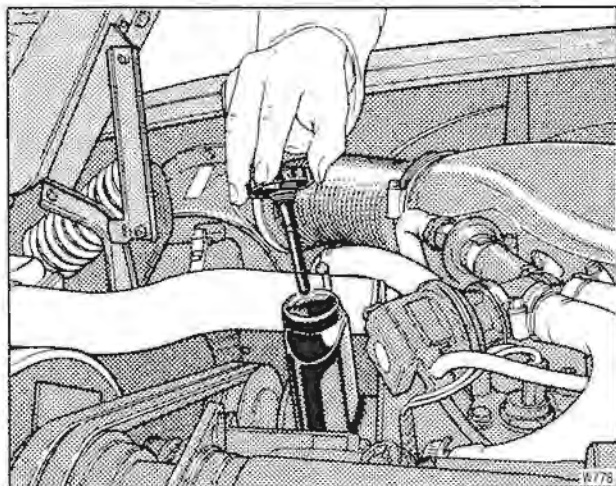


Fig. B4-33 Steering pump filler/dipstick

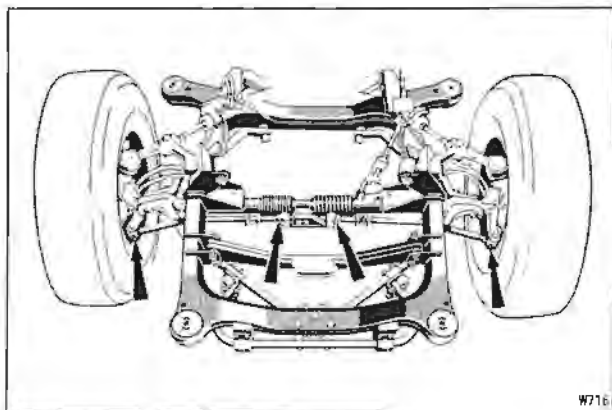


Fig. B4-34 Track rod ball joints

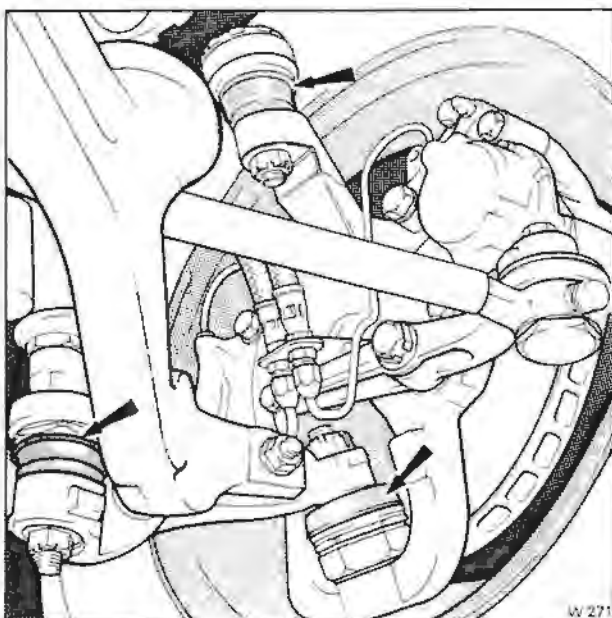


Fig. B4-35 Front suspension ball joints

Add 4,5 litres (8 Imp pt, 9.6 US pt) of an approved fluid to the sump, pouring the fluid down the filler tube, then follow the fluid level checking procedure described under Check the transmission fluid level.

4 Lubricate the gear range selector control rod

Lubricate the clevis pins in the control rod linkage at the left-hand side of the transmission, with a few drops of clean engine oil. Also lubricate the manual shaft where it enters the transmission casing.

Propeller shaft

1 Lubricate the universal joints (if applicable)

A grease nipple is fitted to the universal joint at each end of the shaft (see fig. B4-31).

Using a suitable grease gun lubricate each joint with an approved grease.

On cars fitted with a rubber jointed propeller shaft lubrication is not required.

Final drive unit

1 Check the final drive oil level

Position the car on a ramp or over a pit.

Remove the level plug located in the rear face of the final drive casing (see fig. B4-32). The oil in the casing should be up to the level plug orifice. If necessary, top-up with an approved oil.

Fit the level plug complete with a new joint washer.

2 Renew the final drive oil

It is advisable to carry out this operation when the oil is warm, e.g. immediately after the car has completed a run.

Position the car on a ramp or over a pit and clean the area around the drain and level plugs (see fig. B4-32).

Place a container beneath the drain plug, then remove both the drain and level plugs.

When the oil has drained, fit the drain plug complete with a new joint washer.

Using a syringe, fill the casing to the level plug orifice with an approved oil (see Chapter A); approximately 2,3 litres (4.0 Imp pt, 4.8 US pt) of oil will be required.

Fit the level plug complete with a new joint washer and check for leaks.

3 Check the condition of the drive-shaft joint covers

The drive-shaft constant velocity joints are enclosed by convoluted seals which retain the joint lubricant.

If upon inspection a seal is found to be leaking or damaged the joint should be inspected and a new seal fitted as described in Chapter J of the Workshop Manual.

Steering system

1 Check the steering pump fluid level

Remove the filler cap from the steering pump reservoir and check that the fluid level is at least up to the FULL

COLD mark on the integral dipstick. If necessary, top-up to this level with approved fluid (see fig. B4-33).

Start and run the engine until it reaches normal operating temperature, approximately 77°C (170°F) then stop the engine.

Remove the filler cap and check the fluid level in the reservoir. If necessary, add an approved fluid to raise the level to the FULL HOT mark on the dipstick; do not overfill.

Ensure that the filler cap is securely replaced.

2 Lubricate the steering linkage ball joints (if applicable)

If grease nipples are fitted to the ball joints at the ends of the track rods, they should be lubricated until a slight swelling of the joint seal is evident. Take care not to damage or displace the seals.

3 Check the condition of the steering ball joint covers

Examine the condition of the rubber cover seals on the ball joints (see fig. B4-34).

If the seals are found to be damaged or in poor condition new parts should be fitted as necessary. For full information refer to Chapter N of the Workshop Manual.

4 Check the condition of the steering rack convoluted seals

Examine the condition of the convoluted seals on the rack and pinion unit and check the tightness of the seal clips.

If the seals are satisfactory, tighten the clips as necessary.

If the convoluted seals are found to be damaged or in poor condition, the rack and pinion unit should be removed from the car and new seals fitted. For full information refer to Chapter N of the Workshop Manual.

Suspension

1 Check the condition of the front ball joint covers

The front suspension ball joints (see fig. B4-35) are packed with grease on initial assembly and should not normally require attention between service overhauls unless the rubber seal covers are damaged.

If on inspection the covers are found to be damaged or in poor condition, the ball joints should be removed and new joints and seals fitted as necessary.

For full information refer to Chapter H of the Workshop Manual.

2 Check the condition of the rear strut convoluted seals

Examine the condition of the convoluted seals on the rear suspension struts (see fig. B4-36).

If the seals are found to be damaged or in poor condition, the struts should be removed, as described in Chapter G of the Workshop Manual, and new seals fitted.

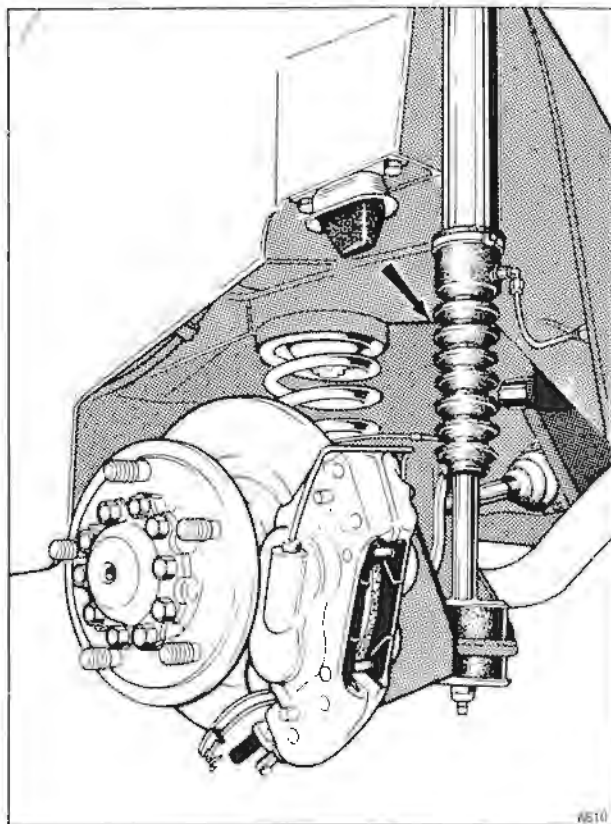


Fig. B4-36 Rear suspension strut

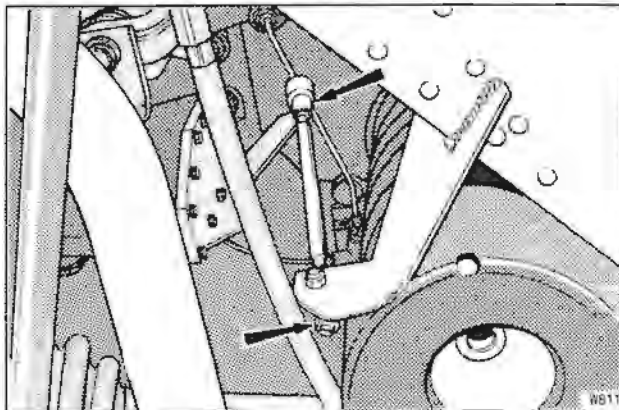


Fig. B4-37 Height control valve actuation link joints

3 Lubricate the height control valve ball joints

Position the car on a ramp or over a pit. Disconnect the actuation links from the height control valves and the rear suspension trailing arms at the ball joints (see fig. B4-37). Note from which side each link is taken.

Clean the ball joints then lubricate with an approved grease.

Do not alter the length of the actuation link.

Connect the actuation link to the height control valve and the trailing arm which was removed.

Adjust the joint to obtain complete movement without free play.

Brake and hydraulic systems



WARNING

Use only Hydraulic System Mineral Oil (LHM) to replenish the braking and levelling systems.

Do not use Brake Fluids (Castrol RR363, Universal, or any other type). The use of any type of brake fluid, even in very small amounts, will cause component failure necessitating extensive rectification to the braking and levelling systems of the car.

Always ensure before fitting any seals, hoses, pipes, etc., that they are suitable for a mineral oil system. For details of correct component identification reference should be made to Chapter G of the Workshop Manual.

Always ensure that a sealed container of Hydraulic System Mineral Oil (LHM) is fitted adjacent to the battery.

Always ensure that no foreign matter enters the systems when work is being carried out.

In order to protect against claims of liability for hydraulic system contamination, it is recommended that the hydraulic system mineral oil is tested for contamination prior to work being undertaken, preferably in the presence of the owner or his/her representative.

It is important that the test is carried out even when the hydraulic system mineral oil is to be renewed as this will not prevent the deterioration of components which have been in contact with contaminated mineral oil.

Brake fluids and mineral oil are immiscible and with large amounts of contamination separation of the fluids will occur on standing, due to the greater density of the conventional fluids. A further indication of the mixing of conventional brake fluid and mineral oil is its cloudy appearance.

To carry out contamination tests a kit is available from Rolls-Royce Motors Limited, part number RH 2841 and should be used as follows.

Switch on the ignition and depressurize the hydraulic systems by pumping the brake pedal until both low pressure warning panels illuminate. Continue to pump the pedal for at least a further 20 applications to ensure that all the accumulator mineral oil is returned to the reservoir.

Clean the area around each hydraulic reservoir filler cap and then remove the cap.

Ensure that the components in the test kit are clean and dry.

Using the sampling tube provided, extract 50 ml of mineral oil from the top and bottom of each reservoir.

Place the samples into the individual clean dry containers.

Shake each sample taken to ensure it is well mixed.

Pour 10 ml of each sample into clean test tubes (do not mix the samples together).

Using the dispenser, add two drops of the red dye solution contained in the kit into each 10 ml sample.

Cork the test tubes and shake them thoroughly.

Leave the samples to settle for at least 30 minutes.

Examine each sample.

Sample diagnosis

On adding the red dye solution and the subsequent mixing, the green colour of the mineral oil will change to a reddish brown. **This does not indicate contamination of the hydraulic system mineral oil.**

Contamination can only be confirmed by the formation of a cloudy red mass which will begin to settle towards the bottom of the tube if left to stand for at least 30 minutes.

If the sample in the test tube on addition of the dye turns red but remains clear it indicates that the sample is not contaminated.

The volume of red mass which will eventually settle to the bottom of the test tube indicates the amount of contamination within the hydraulic system mineral oil.

Complete separation of the two liquids may take a considerable amount of time, for example a very small percentage of contamination may take more than seven days to completely separate.

If contamination is suspected, a more thorough test can be undertaken, details of which are given in Chapter G of the Workshop Manual.

If contamination is suspected, but difficult to diagnose, due to the small amount of contaminant that may be present, or any doubt exists, confirmation should be obtained by sending a sample to Rolls-Royce Motors (if in the United Kingdom) or to a chemical analysis laboratory.

Before attempting any work on a hydraulic system personnel must be fully conversant with the precautions required to ensure adequate safety and correct system operation.

Refer to Chapter G of the Workshop Manual.

Important

Always seal each reservoir cap after it has been confirmed that the systems are **not** contaminated and all work on the systems has been completed.

1 Check the mineral oil level in the reservoirs

The mineral oil reservoirs for the hydraulic systems are located in the engine compartment (see fig. B4-38).

To check the oil level, first depressurize the hydraulic systems by pumping the brake pedal until the two warning panels illuminate. Start and run the engine for approximately four minutes to charge the systems and then stop the engine. The mineral oil in both reservoirs should be up to the FULL marks on the level indicator plate.

If the reservoirs require topping-up, ensure that the tops of the reservoirs and the filler caps are clean, then add an approved hydraulic system mineral oil (see Chapter A) as necessary.

It is important that only approved hydraulic system mineral oil is used and that exceptional cleanliness is observed when topping-up the hydraulic systems.

Under no circumstances should a conventional (i.e. RR363 or Universal) type brake fluid be used.

After topping-up, ensure that the filler caps are clean, then fit them securely to the reservoirs or insert the blanking plug dependent upon the type of filler cap fitted.

Ensure that the containers of new Hydraulic System Mineral Oil for system replenishment, are fitted adjacent to the battery.

2 Renew the hydraulic system mineral oil

Depressurize the hydraulic systems as described in Chapter G of the Workshop Manual and proceed as follows.

Completely drain the fluid from the hydraulic systems by attaching a tube to each bleed point then opening the bleed screws and allowing the mineral oil to drain from the circuits. The bleed screws are located on each accumulator, on each pair of brake calipers, on the deceleration conscious pressure limiting valve and on each rear suspension strut (or each inner rear wing from the suspension strut). A drain tube is not required at the accumulator bleed screws as these are an integral part of the accumulators and when opened allow the mineral oil to flow from the accumulator spheres back to the reservoirs.

Drain the mineral oil from the reservoirs and clean the reservoirs as described in Chapter G of the Workshop Manual.

After the system has completely drained, close all the bleed screws and ensure that any disturbed pipes are connected and correctly torque tightened.

Fill the reservoirs with fresh hydraulic system mineral oil (see fig. B4-38 and Chapter A) until the levels in the reservoirs are slightly above the topping-up marks on the indicator plate.

Run the engine for four minutes with the car unladen, then top-up to the FULL level mark; never allow the mineral oil levels to fall below the minimum level marks.

Check for leaks, especially around the unions of any pipes which have been disturbed.

Finally, bleed the hydraulic systems as described in Chapter G of the Workshop Manual.

Ensure that the containers of new Hydraulic System Mineral Oil, for system replenishment, are fitted adjacent to the battery.

3 Check the condition of all brake pipes and hoses

Position the car on a ramp or over a pit and check the condition of the hydraulic system pipes and hoses.

Examine the metal pipes for signs of corrosion, particularly those in an exposed position.

Examine the hoses for chafing or surface cracking.

Faulty pipes and hoses should be replaced as described in Chapter G of the Workshop Manual.

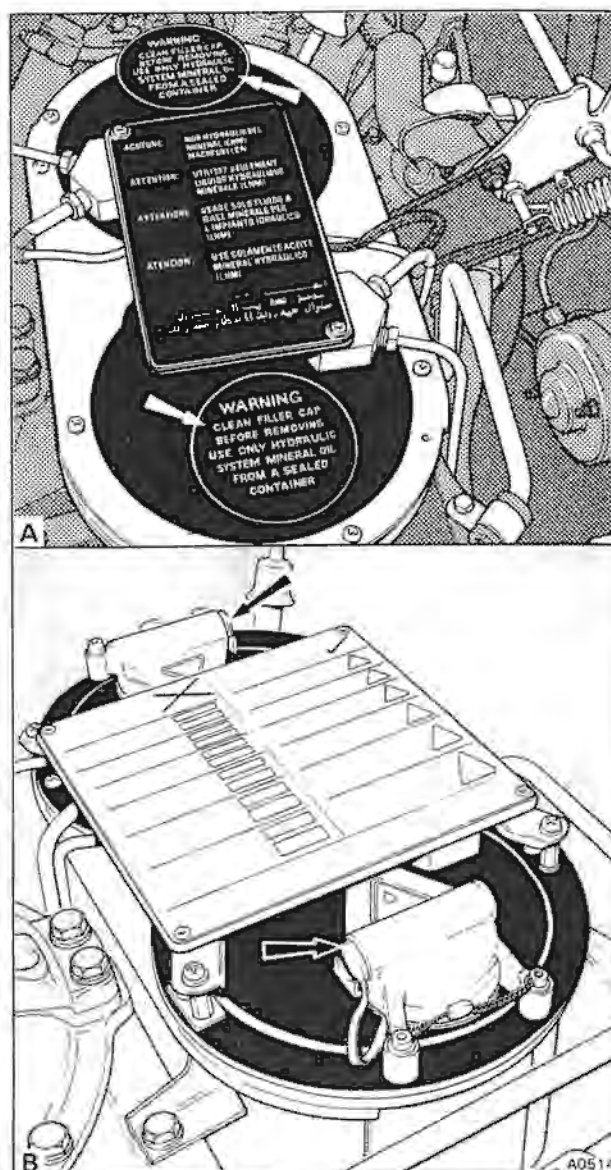


Fig. B4-38 Access to the hydraulic system reservoirs

- A Original filler cap
- B Specialized filler cap

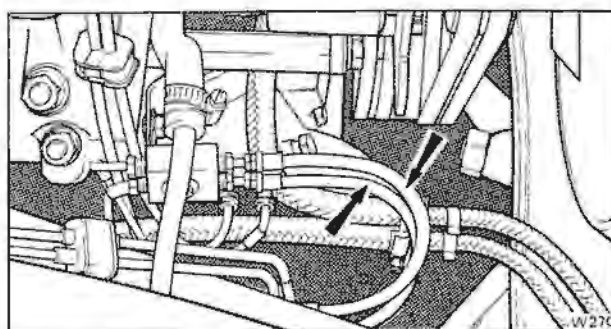


Fig. B4-39 Hydraulic accumulator to body hoses

4 Renew the accumulator to body, trailing arms to body, and sub-frame to body hoses (if fitted)

Depressurize the hydraulic systems as described in Chapter G of the Workshop Manual and proceed as follows.

Fit a hose clamp to each of the intermediate hoses of the accumulator return pipes to prevent the flow of mineral oil from the reservoirs.

Thoroughly clean the areas around the connections of the two accumulator to body, trailing arms to body, and sub-frame to body hoses (see figs. B4-39, B4-40, and B4-41).

Remove the respective hoses noting the following.

To avoid contamination fit the new hose immediately after removing the old one; alternatively fit approved blanks to the open ports until the new hoses are fitted.

Before fitting a new hose ensure that it is thoroughly clean and conforms with the hydraulic systems mineral oil requirements.

When fitting the new hoses, ensure that they are routed to clear other components and that clearance is maintained during full suspension movement.

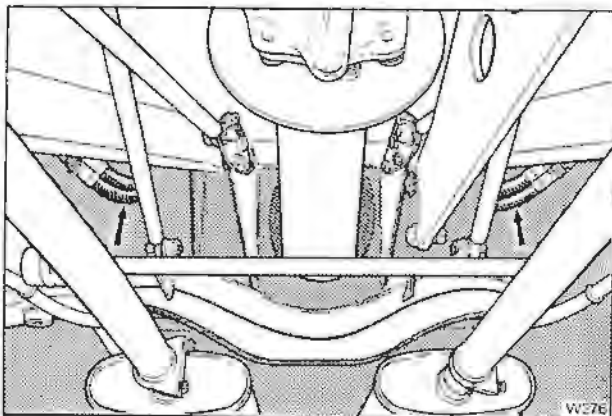
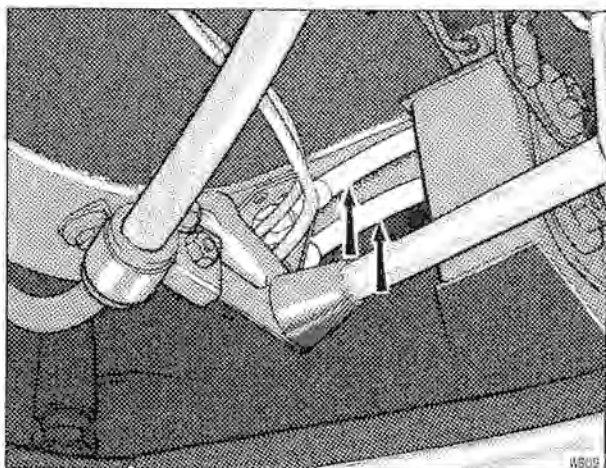


Fig. B4-40 Trailing arm to body hydraulic hoses



B4-41 Sub-frame to body hydraulic hoses

Tighten the pipe nuts to the torque settings given in Chapter G of the Workshop Manual.

After fitting the new hoses, check for leaks and bleed the hydraulic systems as described in Chapter G of the Workshop Manual.

5 Renew all hydraulic system hoses

To renew the hydraulic system hoses follow the same basic procedure described under the heading Renew the accumulator to body, trailing arms to body, and sub-frame to body hoses.

6 Check the brake disc pads for wear

Remove the wheel discs and slacken the wheel nuts approximately half a turn.

Jack up the car and support with stands and sill blocks.

Remove the road wheels and examine all the disc brake pad linings.

The brake pads must be renewed when the brake pad linings are worn to within 3,18 mm (0.125 in) of the steel backing plates. The pads should also be renewed if this minimum thickness is likely to be achieved before the next service check. To renew the brake pads, refer to Chapter G of the Workshop Manual.

If new brake pads are to be fitted which have different recommended linings from those on the old pads, the disc faces should be cleaned prior to fitting the new pads. All traces of the old pad lining material should be removed by hand rotating the disc whilst applying coarse grade emery cloth to the disc faces. Do not emery the disc faces radially.

Always ensure that the pads fitted to all six brake calipers have the same type and grade of pad lining.

Fit the road wheels and lower the car.

If new brake pads have been fitted, an initial running-in period of between 700 miles and 800 miles (1100 kilometres and 1300 kilometres) should be observed. During this running-in period the brakes should not be applied harshly or for prolonged periods from high speeds except in an emergency. Towards the end of the running-in period, the force with which the brakes are applied may be progressively increased.

7 Check the condition of the brake caliper dust excluders (when changing brake pads)

The condition of the caliper dust seals should be checked whenever the brake pads are removed.

Inspect the seals for signs of damage, heat hardening, or general deterioration and renew if necessary.

When fitting new seals, ensure that the seal retaining clips are correctly located.

8 Renew the brake caliper seals

To renew the caliper piston seals it is necessary to remove the brake calipers from the car.

For full instructions, refer to Chapter G of the Workshop Manual.

9 Check the parking brake pads for wear

Securely chock the front wheels then raise the rear of the car. Place sill blocks under the rear body sills and also support the rear trailing arms. Do not allow the suspension struts to support the full suspension load.

Remove the rear wheels and release the parking brake to the off position.

Disconnect the caliper actuation rod from the caliper lever (see fig. B4-42).

Unscrew and remove the caliper adjuster and collect the adjuster clicker plate.

Unhook the pad retention springs from each pad, noting the larger spring is fitted to the inner pad.

Remove the pads from the caliper.

Check the thickness of the lining material on each pad. Pads which are worn to within 1,5 mm (0.062 in) or less of the steel backing plate should be renewed.

To fit the pads, attach the retention springs then locate the pads into position and hook the springs onto the caliper.

Complete the assembly by reversing the removal procedure, then adjust the calipers as described under the heading Adjust the parking brake.

Note

If new parking brake pads have been fitted, the following bedding-in procedure should be carried out after adjusting the parking brake.

Drive the car at approximately 30 mile/h (48 km/h) and apply the parking brake to bring the car to rest; it is important that this is done gently and progressively. The parking brake must not be applied fully and no attempt should be made to lock the wheels. This operation should be carried out nine times, allowing at least one minute to elapse between stops to prevent the discs overheating.

Finally adjust the caliper as described under the heading Adjust the parking brake.

10 Adjust the parking brake

Ensure that the parking brake is in the off position.

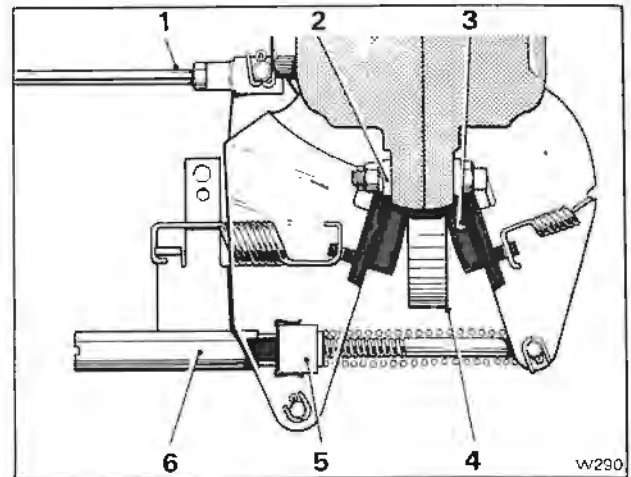
Adjust the rear cables at the adjusters (see fig. B4-43) so that the caliper operating levers return to their off-stops under the influence of their return springs with no appreciable slackness in the cables.

Note

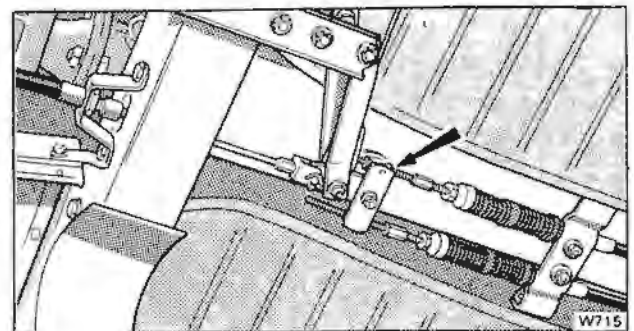
The cables must be adjusted so that the equalizer link on the intermediate linkage (see fig. B4-43) lies at right-angles with the centre line of the car with the parking brake in the off position.

To check the cable adjustment, adjust both rear cables at the equalizer link until the caliper off-stops are just clear of the calipers. Measure the gap produced at each off-stop and lengthen the cables by this amount.

With the cables correctly adjusted, check that the centralizing straps (see fig. B4-42) are pushing the pads away from the discs when the parking brake is in the off position. If not, remove the nut and bolt securing the straps, bend the straps outward (i.e. away

**Fig. B4-42 Parking brake mechanism**

- 1 Actuation rod
- 2 Centralizing straps
- 3 Parking brake pads
- 4 Brake disc
- 5 Adjuster clicker block
- 6 Adjuster

**Fig. B4-43 Parking brake rear cable adjustment point**

from the disc) then refit them. Ensure that the straps are pushed downward towards the adjusting nut whilst tightening the nut and bolt securing them to the caliper.

Check that the distance between the pad and the disc are the same on each side of the caliper; if not, reset the centralizing straps.

Raise each rear wheel in turn so that it is free to rotate and adjust each caliper as follows.

Turn the caliper adjuster (see fig. B4-42) clockwise until the pads just grip the disc; at this point it should only just be possible to rotate the road wheel by hand. Turn the adjuster anti-clockwise a quarter turn (i.e. three clicks on the nut) to obtain the minimum clearance between the pads and disc.

11 Lubricate the parking brake linkage

Position the car on a ramp or over a pit. Lubricate the parking brake linkage clevis pins, fulcrum pins, and the rear cable adjusters with approved grease.

Fuel system

Safety precautions

It is important that before a fuel line is opened or the fuel tank is drained or siphoned, the workshop safety precautions given in Chapter A and Chapter U of the Workshop Manual are strictly observed.

1 Renew the main fuel filter

The main fuel filter is situated on the car body frame (see fig. B4-44). It is a sealed unit and no attempt should be made to clean the element.

At the appropriate service interval change the main fuel filter.

Depressurize the system (see Chapter U) and unscrew the inlet and outlet pipe connections.

Slacken the worm drive clip retaining the assembly to the mounting bracket and withdraw the filter assembly.

Unscrew the unions fitted into both ends of the filter and discard the assembly.

Fit the new filter assembly by reversing the removal procedure, noting the direction of flow arrow marked on the outside of the casing.

When carrying out the above operation at 60 000 miles (96 000 kilometres) or six years and subsequent periods, the intank fuel filter situated on

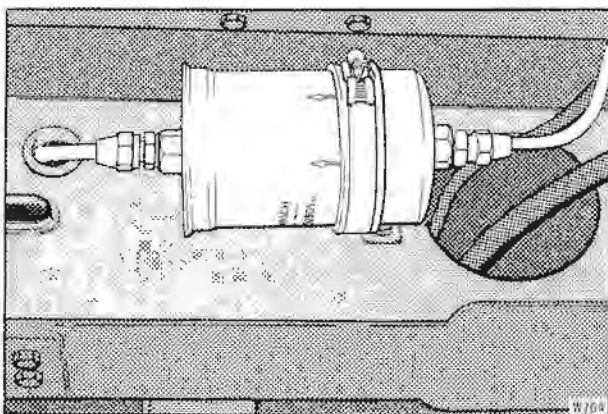


Fig. B4-44 Main fuel filter

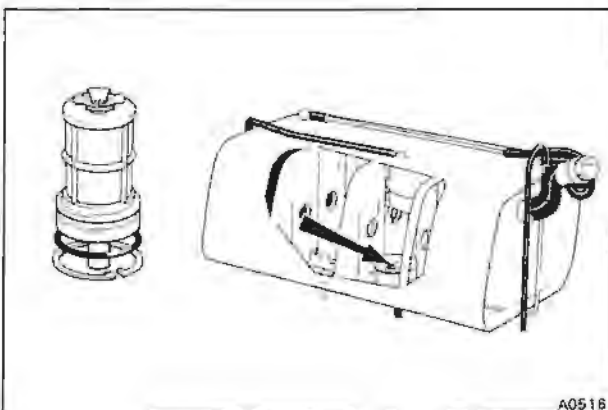


Fig. B4-45 Intank fuel filter

the underside of the fuel tank (see Fig. B4-45) should also be removed and cleaned as follows.

Disconnect the battery.

Drain or siphon the fuel tank.

Place a container beneath the fuel intank filter to collect the residue of fuel from the tank when the filter is removed.

Disconnect the hose from the intank filter outlet pipe.

Remove the circlip retaining the filter and carefully withdraw the filter from the tank.

Clean the filter mesh by washing it in clean fuel.

Examine the filter for serviceability and renew if necessary.

Fit the filter by reversing the removal procedure.

Always use a new seal on the filter body.

Ensure that the fuel drained from the fuel tank is free from foreign matter, then return it to the fuel tank.

Check the fuel filter and the pipe connections that have been disconnected, for leaks.

2 Check the condition of the filler head to fuel tank hose; renew as necessary

To enable the filler head to fuel tank hose to be examined, it is necessary to remove the rear suspension gas spring.

For details of the procedure required reference should be made to Chapter U of the Workshop Manual.

3 Check the condition of all flexible fuel pipes

Carefully examine all the flexible fuel pipes throughout the fuel system. Renew any pipes which have become damaged or deteriorated to an unserviceable condition.

Before renewing any pipes depressurize the system (see Chapter U).

Check the complete fuel system for leaks and rectify as necessary.

Electrical system

1 Check the state of charge of the battery

Silver Spirit, Silver Spur, Mulsanne, late Corniche, and all Continental.

The battery is situated in the luggage compartment stowage well. To gain access to the battery, turn back the carpet from the right-hand side of the luggage compartment. Lift out the stowage well lid and the cover from around the battery.

Early Corniche and all Camargue

The battery is mounted on the right-hand side of the luggage compartment. To gain access to the battery turn back the carpet and remove the trim from around the battery, the trim is secured by contact strip on Corniche and two turn fasteners on Camargue. Unclip the battery cover retaining strap and lift off the cover.

To check the specific gravity of the battery electrolyte on these models, it is necessary to remove the battery from the car as follows. Ensure the ignition is switched off, then disconnect the battery leads. Remove the battery clamp and lift the battery from its cradle.

Battery electrolyte check

Applicable to batteries with removable cell vent cover(s).

a. **Electrolyte specific gravity check.**

Remove the vent covers from the top of the battery.

Using a hydrometer check the specific gravity of the electrolyte in each cell and compare the readings obtained with the following tables.

Caution

The electrolyte in the battery is a corrosive acid. Do not allow the electrolyte to come into contact with the eyes, skin, fabric, or paintwork. Flush any contacted areas immediately and thoroughly with water. If the eyes are affected, flush for at least 15 minutes and obtain prompt medical attention.

Chloride battery

Air temperature below 32°C (90°F)

Specific Gravity	Condition of Battery
1.270 to 1.290	Fully charged
1.180 to 1.200	Half discharged
1.090 to 1.110	Fully discharged

Air temperature above 32°C (90°F)

Specific Gravity	Condition of Battery
1.220 to 1.240	Fully charged
1.150 to 1.170	Half discharged
1.070 to 1.090	Fully discharged

Lucas or Varta battery

Air temperature below 27°C (80°F)

Specific Gravity	Condition of Battery
1.270 to 1.290	Fully charged
1.180 to 1.200	Half discharged
1.090 to 1.110	Fully discharged

Air temperature above 27°C (80°F)

Specific Gravity	Condition of Battery
1.220 to 1.240	Fully charged
1.130 to 1.150	Half discharged
1.050 to 1.070	Fully discharged

If the specific gravity reading of all the cells is uniform and within the range 1.240 to 1.270 the battery is in an acceptable state of charge. If the readings are uniform but below 1.220 the battery should be recharged. Always remove the battery from the car for recharging.

If the specific gravity of the electrolyte in one cell differs markedly from the others (i.e. the reading is 0.040 or more, lower than the remainder), then a defect must be suspected and rectified as necessary.

b. **Electrolyte level check**

Ensure that the battery is in a high state of charge (see Electrolyte specific gravity check).

The level of the battery electrolyte in each cell should be approximately 5 mm (0.250 in) above the tops of the separators (Lucas or Varta battery) or contacting the blue bar situated above the separators (Chloride battery).

If the electrolyte level is low top-up using distilled water until the level is attained. Do not overfill.

Always ensure the top of the battery is clean prior to removal of the vent cover.

Battery voltage check

Applicable to sealed for life (maintenance free) batteries.

The state of charge of a sealed for life battery can only be checked by taking a voltage reading at the battery terminals, using either a digital voltmeter or multimeter. The instrument used must be accurate to within 0.1 volts.

Before a voltage reading is taken on batteries that have recently received a charge, the residual effects of the surface charge on the battery plates must be removed to avoid a false reading. This surface charge can be removed by applying an electrical load to the battery (e.g. by either connecting a high rate discharge tester for 15 seconds or if the battery is fitted to a car, switching on the headlamps for one minute). Afterwards, allow the battery to stand for a further one minute before a voltage reading is taken.

Compare the reading obtained with the following table to ascertain the state of charge.

Voltage	State of charge
12.8	100%
12.6	82%
12.5	75%
12.4	60%

A minimum reading of 12.5 volts (corresponding to 75% charge) is acceptable. Below this reading the battery should be recharged. Instructions for charging are provided on the battery label.

2 Clean and check the battery terminals

The top of the battery should always be kept clean and dry.

If corrosion of the battery leads or terminals has occurred it should be removed as follows.

Disconnect the battery leads and using hot water or a dilute solution of ammonia carbonate, wash them thoroughly until all corrosion has been removed. Finally wash with clean water to remove the ammonia carbonate solution.

Remove any corrosive deposit from the terminal posts using a cloth moistened with ammonia carbonate solution then wash with clean water.

Dry the battery leads and terminal posts. Connect the battery leads to the terminal posts. Liberally coat the terminals with **petroleum jelly**.

3 Check all exterior lamps for operation

Actuate the respective switches and check for lamp illumination and function (i.e. turn flashers, headlamp dip/main beam, etc.).

The respective facia tell-tales should also be checked for illumination during these operations.

With the lighting switch in the Park and Head position, switch on the ignition. Check the facia instruments for illumination; the panel illumination dimming switch should also be checked for correct operation.

4 Check all facia warning lamps for operation

Before carrying out the following checks firmly apply the parking brake; ensure the gear range selector is in the Park position and remove the gear range selector isolator from the fuseboard.

Ignition and oil warning lamps

Turn the ignition key to the RUN position, the ignition and oil pressure warning lamps should illuminate. Start the engine, both lamps should extinguish; switch off the ignition.

When the ignition key is turned to the ACC position the ignition warning lamp only should illuminate.

Warning panel cluster lamps

Move the gear range selector lever to the D position (do not insert the gear range selector isolator).

Apply the footbrake then turn the ignition key to the start position. All the warning panel cluster lamps should illuminate. With the ignition held in the start position, turn the main lighting switch to the Park and Head positions; the intensity of illumination of the ice and low fuel warning panels should reduce. Switch off the ignition and lighting switch.

The hydraulic system warning panel situated at the top of the warning panel cluster should also be checked as follows.

Turn the ignition key to the RUN position.

Depressurize the hydraulic system by actuating the brake pedal between 50 and 60 times. The two brake pressure warning panels should illuminate.

When the panels have illuminated start and run the engine. Both panels should extinguish after approximately two minutes indicating that the hydraulic systems are pressurized. Switch off the ignition.

Fasten seat belt warning lamp

To check the seat belt warning lamp, open and close each door in turn; observe the lamp operation.

The seat belt warning panel should illuminate whenever a door is opened and extinguish approximately seven seconds after the door is closed.

Note

All doors must be fully closed for the lamp to extinguish (i.e. not on first catch).

Hazard warning indicator

Depress the hazard warning switch, check that all the turn indicators and the facia warning lamp are flashing.

Key warning buzzer

In addition to the facia warning lamps, ensure that the ignition key warning buzzer is operating correctly.

The buzzer should operate if the driver's door is opened when the ignition key is in the switchbox.

5 Check all interior lamps for operation

Ensure all the doors are fully closed and the interior lamps are extinguished. Open the driver's door; the rear section of the central roof lamps should illuminate. Fully close the door; the roof lamps should remain illuminated for approximately seven seconds.

On 1985/86 model year cars the rear roof lamps and footwell lamps should also illuminate when the door is opened. If the gear selector lever is moved from the Park position on these cars, with the ignition key in the RUN position, the lamps will extinguish immediately all the doors are closed. When carrying out this operation also check that the door open warning lamp and step lamp are illuminated with the door in the open position. These lamps should extinguish immediately the door is fully closed.

Repeat the check on the remaining door(s).

Note

If the doors are only closed to the first catch position the lamps should remain illuminated.

Check the operation of the front compartment personal lamps as follows.

Withdraw the main lighting switch; the front section of the driver's roof lamp should illuminate.

Operate the map lamp switch, the front section of the front passenger's roof lamp should illuminate.

On 1985/86 model year cars fitted with vanity mirror illumination, move the switch to the mirror position. Lower the passenger's sun visor; the lamp situated above the visor should illuminate.

Withdraw the visor from its retaining clip; the lamp should extinguish. The lamp should also extinguish when the visor is moved to its raised position, even when the switch is on.

The operation of the rear roof lamps should be checked by operating the switches situated on the rear compartment vanity mirror surrounds.

Press the upper portion of the three position switch; the front section of the respective roof lamp should illuminate. Press the lower portion of the switch and the rear section of both rear roof lamps should illuminate. With the switch in the central position both lamps should be off. Repeat the operation on the opposite side of the car.

On Camargue cars press the outer of the two switches situated in the arm rest; this should illuminate the rear section of both rear roof lamps. Pressing the inner switch should illuminate the front section of the respective roof lamps. Repeat the operation on the opposite side of the car.

Corniche Saloon cars

Ensure the doors are fully closed and the interior lamps are extinguished. Open the driver's door; the rear section of the four roof lamps should illuminate. Fully close the door; the roof lamps should remain illuminated for approximately seven seconds then extinguish. Repeat the check with the passenger door.

When carrying out these checks also ensure that the door open warning lamp and step lamp are illuminated when the door is open.

Check the operation of the rear compartment roof lamps by operating the three position switch situated in each arm rest, ensuring that the car doors are closed.

Press the outer section of the switch, the front section of the respective roof lamp should illuminate. Press the inner section of the switch, the rear section of both rear roof lamps should illuminate. With the switch in the central position both roof lamps should be off.

Repeat the check on the opposite switch.

Check the front compartment roof lamps as described in the section for cars, other than Corniche.

Convertible cars

Seven interior lamps are provided, one in each door, two in the hood above the rear window, one in the front face of each rear seat outer arm rest and one above the fascia stowage compartment.

Open the driver's door; both roof lamps, the lamp in each rear arm rest and the lamp in each door should illuminate. Fully close the door, the lamps should all extinguish, except the rear roof lamps which should remain illuminated for approximately seven seconds. Repeat this procedure with the passenger door.

Withdraw the main lighting switch; both rear roof lamps should illuminate.

Operate the fascia switch marked MAP; the lamp situated above the fascia stowage compartment should illuminate.

With the doors closed, operate the switches situated in the end of the arm rest. The rear roof lamp and rear compartment arm rest lamp situated on the same side of the car as the switch should illuminate.

6 Check the horns for operation

Examine the electrical connections to each horn to ensure they are in good condition. Clean the horns and remove any foreign matter that may have collected in the horn trumpets.

Switch on the ignition; press the horn button several times to ensure the horn button is making a good contact and that both horns are functioning correctly each time it is pressed.

7 Replenish the windscreen and headlamp washer reservoirs

Windscreen washer reservoir.

The filler is located in the engine compartment. Remove the filler cap and add the correct mixture of windscreen washer fluid and distilled water to the reservoir until the maximum level is attained.

Topping-up level

Cars with the reservoir situated in the engine compartment - bottom of filler neck.

Cars with the reservoir situated beneath the wing - 44.0 mm (1.750 in) below the filler neck.

Headlamp washer reservoir.

On 1985/86 model year Silver Spirit, Silver Spur, and

Mulsanne cars a headlamp washer system is fitted. The reservoir is housed under the front right-hand wing and the filler is located in the engine compartment towards the front of the car.

The reservoir should be topped-up with clean water until the fluid level is at the bottom of the filler neck.

During winter conditions, a solution of 30% isopropyl alcohol and 70% water should be used. This mixture will provide frost protection down to a temperature of approximately -10°C (14°F).

8 Check the condition of the windscreen wiper blades

Lift the wiper arms from the windscreen and inspect them for wear or damage. Renew the blades if necessary.

To remove a blade, lift the wiper arm away from the windscreen then press the small tab situated in the end of the arm to release the blade. Check that the new blade is secured by the retaining catch then return the blade to the windscreen.

On late Silver Spirit, Silver Spur, and Mulsanne cars the wiper blade removal procedure is as follows.

a. Driver's side of the windscreen. Lift the wiper arm from the windscreen. Push half of the blade away from the arm, until the blade is released from its location clip. To fit the new blade, position it on the wiper arm and press it firmly into the location clip.

b. On the passenger side of the windscreen, lift the wiper arm from the windscreen and pivot the blade through 180° . Press the small release tag, situated on the underside of the blade pivot block and push the blade out of the crooked end of the wiper arm.

Withdraw the wiper blade from the arm. Fit the new blade by reversing the removal procedure.

Note

Care must be taken during these operations to ensure that the wiper arm is not allowed to spring back onto the windscreen when the blade has been removed, otherwise damage to the windscreen could occur.

9 Check the windscreen wash/wipe and headlamps power wash for correct operation

Before carrying out the following check ensure that the windscreen is clean.

Switch on the ignition and press the windscreen wash/wipe switch. The windscreen wipers should operate and the fluid from the washer jets should impinge on the windscreen approximately 419 mm (16.5 in) from the centre line of the windscreen and 190 mm (7.5 in) below the windscreen top finisher. The wash/wipe function should continue until the switch is released.

On release of the push button switch the washer should cease while the wipers should continue for approximately four strokes before returning to the park position.

Turn the main lighting switch to the HEAD position. The headlamps cleaning function (if fitted) will only operate when the headlamps are illuminated. Press the wash/wipe switch, the power wash jets should

operate for half a second when the wash/wipe switch is depressed. To repeat the wash it will be necessary to release and then depress the switch again.

10 Check the alternator for correct operation

For details of the alternator test procedure and brush renewal, reference should be made to Chapter M of the Workshop Manual.

Automatic air conditioning system

1 Check the scuttle intake grille is free from obstruction

Check the air intake grilles and foam filters situated behind the bonnet, for obstruction (i.e. leaves, dirt, etc.). Carefully remove the grille retaining screws, lift the grilles and filters from the body and clean all parts including the air intake ducts; also ensure the duct drain tubes are free from obstruction.

2 Check the refrigeration system for correct operation

For details of the procedure required to carry out this operation reference should be made to Chapter C of the Workshop Manual.

Body

1 Check the condition and operation of the seat belts

The following checks should be carried out on the front and rear retractable seat belts.

Fully withdraw the seat belt from the reel; examine the webbing for any signs of wear or damage. Allow the belt to return to the stowed position.

To check the operation of the retractable belt, fit the belt and then give the webbing of the diagonal belt a sharp pull. Ensure that the belt locks and then returns to the normal roller action immediately the belt is released.

With the fastening tongue of the belt locked in the retaining clasp; ensure the tongue is securely held and is released immediately the release button marked PRESS is operated.

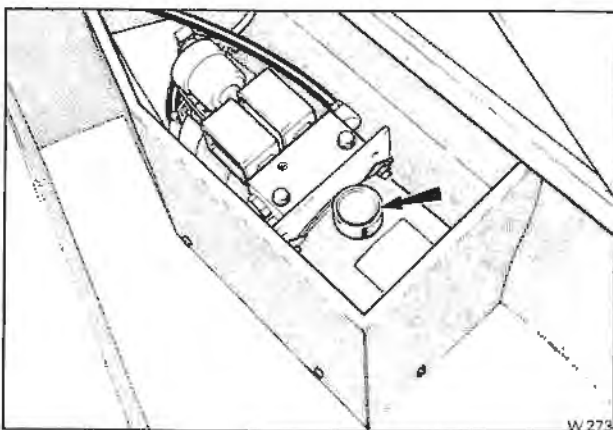


Fig. B4-46 Power operated hood reservoir

The alternative method of checking the seat belts is to select an open stretch of road, then, when the road is free from any potential danger, accelerate the car to 15 mile/h (24 km/h) and brake sharply from this speed; ensure that the belt locks and then subsequently releases. If this method of test is used, it will be necessary to carry a passenger(s) to enable the passenger seat belts to be tested.

Check the rear seat lap belt for condition and correct locking and release.

Report any defects to the owner.

When seat belt replacement is necessary only belts approved by Rolls-Royce Motors Limited should be fitted.

2 Check that all body drains are free from obstruction

Examine the body drain holes; remove any foreign matter that may be obstructing the holes. Take care not to damage the paintwork.

3 Lubricate the spare wheel carrier lowering bolt

Turn back the carpet on the luggage compartment floor to expose the spare wheel inflation trap and spare wheel carrier lowering bolt head. Remove the inflation trap cover; if a spare wheel retainer is fitted, it should be released.

Rotate the spare wheel bolt anti-clockwise until the carrier is fully lowered. Remove the spare wheel from the carrier.

Lubricate the carrier lowering bolt using a recommended lubricant. Raise and lower the carrier to distribute the lubricant over the full length of the carrier bolt.

Check the condition of the spare wheel as described under the heading Wheels.

Fit the spare wheel onto the carrier. Ensure that the inflation valve is in line with the inflation trap in the luggage compartment floor, then fully raise the carrier.

Fasten the spare wheel retainer (if fitted), and fit the tyre inflation trap rubber and carpet.

4 Check the fluid level in the power operated hood reservoir

Convertible cars

The level of the fluid in the hydraulic pump reservoir must be checked with the hood in the fully open (down) position.

The fluid reservoir is situated adjacent to the stowage recess below the luggage compartment floor similar to that shown in figure B4-46.

To gain access to the reservoir, turn back the carpet on the right-hand side of the luggage compartment to expose the recess covers; remove the covers. Unscrew the reservoir filler cap and check the fluid level. The correct level is 25 mm (1.0 in) below the filler neck.

If necessary top-up the reservoir with an approved fluid. **Under no circumstances must a castor oil based fluid be used.**

Wheels**1 Check all tyre pressures**

Check the tyre pressures including the spare when the tyres are cold; adjust if necessary. The inflation pressure of the spare tyre should be adjusted to the highest tyre pressure (i.e. rear wheel).

Do not check the pressures when the tyres are warm (e.g. after the vehicle has run).

Always ensure that the valve caps are fitted after checking.

2 Check the condition and tread depth of the tyres

Examine the tyres, including the spare, for any signs of damage or tyre wall cracking, etc.

Carefully remove any stones or other objects that may be lodged in the tyre treads.

Check the depth of tread at several points around each wheel using a tread depth gauge.

To enable a visual check to be made, tread depth indicators are incorporated into the tyre construction. These indicators are integral moulded ribs, spaced at intervals around the circumference of the tyre and extend across the full width of the tread in all primary grooves. When one or more of these indicators are flush with the tread, only 1,6 mm ($\frac{1}{16}$ in) or less of tread depth remains.

If the condition of the tyres is not satisfactory or the tread depths do not conform to the legal requirements of the country in which the car is operating, the owner should be notified and asked to authorize the fitting of new tyres.

For full information on tyre fitting, balancing, etc. reference should be made to Chapter R of the Workshop Manual.

Test**1 Road test the car for satisfactory performance**

On completion of the respective service schedule operations, carefully road test the car for satisfactory performance.

If new brake pads have been fitted, the running-in and bedding procedures should be carried out as described under, Check the brake disc pads for wear and Check the parking brake pads for wear.

When the road test has been completed, the car should be fully inspected for any leaks, fouls, etc., and rectified as necessary.

The transmission fluid level, should be finally checked immediately after the test, while the fluid is at normal running temperature and topped-up if necessary (see Check the transmission fluid level).

Ensure that all controls, door handles, steering wheel, etc., are clean and that any dirt which may be attributed to the service schedule is completely removed.

Service schedule procedures*Cars conforming to Middle East Countries specifications*

Contents	Pages					
	Silver Spirit Mulsanne Silver Spur	Mulsanne Turbo	Bentley Eight	Bentley Turbo R	Corniche/ Continental	Camargue
1984 model year cars.	B5-3	—	—	—	—	—
1985/B6 model year cars	B5-3	—	B5-3	—	B5-3	B5-3



WARNING

Use only Hydraulic System Mineral Oil (LHM) to replenish the braking and levelling systems.

Do not use Brake Fluids (Castrol RR363, Universal, or any other type). The use of any type of brake fluid, even in very small amounts, will cause component failure necessitating extensive rectification to the braking and levelling systems of the car.

Always ensure before fitting any seals, hoses, pipes, etc., that they are suitable for a mineral oil system. For details of correct component identification reference should be made to Chapter G of the Workshop Manual.

Always ensure that a sealed container of **Hydraulic System Mineral Oil (LHM)** is fitted adjacent to the battery.

Always ensure that no foreign matter enters the systems when work is being carried out.

General information

These service schedule procedures are applicable to the following cars.

1984 model year Silver Spirit, Silver Spur, and Mulsanne (except Turbo) cars.

1985/86 model year Silver Spirit, Silver Spur, Mulsanne (except Turbo), Corniche, Continental, and Camargue cars.

The information contained within this chapter should be used in conjunction with the service schedule charts and Workshop Manual TSD 4400.

For Camargue cars, also refer to Workshop Manual TSD 4200.

Car protection

Prior to commencing a service schedule the car should be suitably protected. For this purpose car protection kit RH 2662, wing covers RH 2684, and wing cover liners RH 2685 should be used.

Regular maintenance

In addition to the service schedules listed, the following maintenance should be carried out.

Engine

Weekly or every 800 kilometres (500 miles) whichever is the earlier; check the engine oil by means of the dipstick; top-up if necessary.

Service schedule procedures

1984/86 model year cars

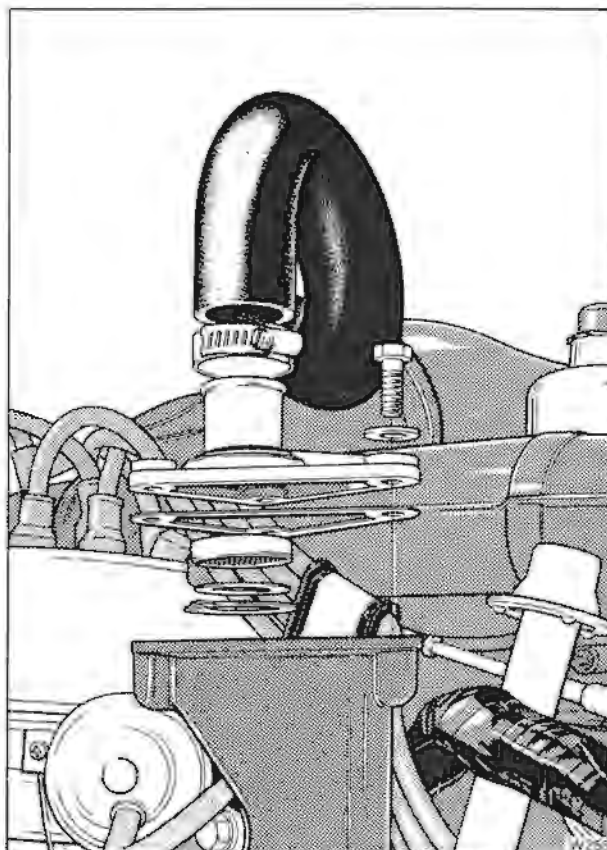


Fig. B5-1 Crankcase breather tube flame trap

Lamp units

Weekly; check the lamp units for operation; rectify any faults.

Tyre pressures

Weekly; check the tyre pressures including the spare; adjust if necessary.

Windscreen and headlamp washer reservoir(s)

Weekly; check the washer fluid level; top-up if necessary.

Hydraulic reservoirs

Monthly; check the level of hydraulic mineral oil in the reservoirs.

Depressurize the hydraulic systems by pumping the brake pedal until the low brake pressure warning panels on the fascia illuminate. Continue to pump the pedal for at least a further 20 applications to ensure complete depressurization. Start and run the engine for four minutes with the car unladen, prior to

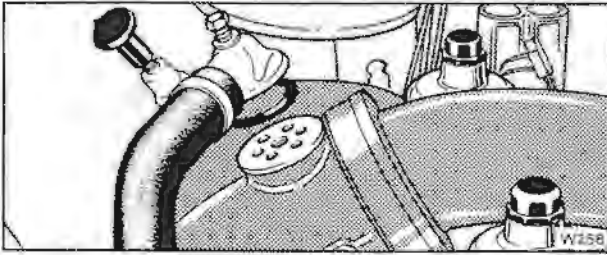


Fig. B5-2 Choke butterfly housing adapter

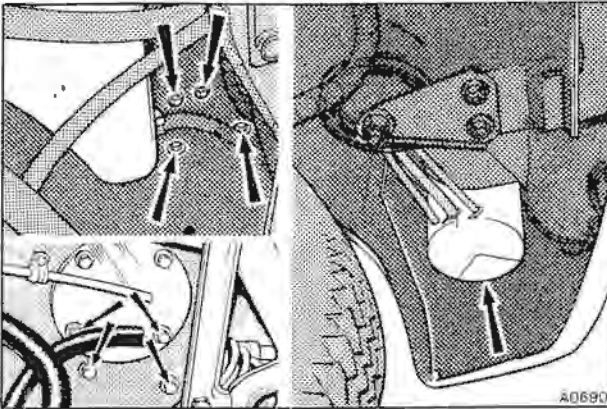


Fig. B5-3 Fuel evaporative emission control canister and mounting bracket setscrews

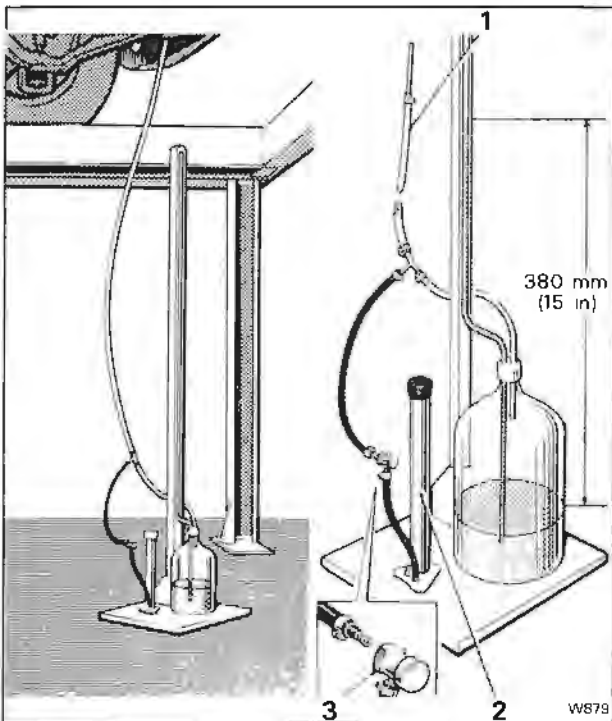


Fig. B5-4 Leak check test equipment

- 1 Connection to fuel tank/canister hose
- 2 Pump
- 3 One-way pressure valve

checking the level. Top-up if necessary to the indicated maximum level. **Use only Hydraulic System Mineral Oil (LHM).** Refer to page B5-18 for further information before carrying out this operation.

Engine cooling system

Every three months; check the coolant level. If necessary top-up with the correct anti-freeze/water mixture (see page B5-10).

Crankcase emission control system

1 Clean the crankcase breather tube flame trap

The engine crankcase is ventilated through a breather tube connected to the carburettor air induction system. A flame trap in the form of filter gauze is fitted into the system at the rear of 'A' bank cylinder head (see fig. B5-1) and should be cleaned as follows.

Withdraw the windscreen wiper motor relay (wiper 3) (see fig. B5-22, item A) situated on a bracket adjacent to the windscreen washer reservoir.

Remove the cover from the windscreen wiper drive mechanism to gain access to the crankcase breather connection.

Disconnect the breather hose from the flame trap housing.

Remove the three setscrews from the housing cover and remove the cover.

Remove the circlip retaining the gauze filter situated on the underside of the housing cover.

Thoroughly clean the gauze with a suitable cleaning solvent and dry using compressed air.

Ensure that the breather pipe and housing are also clean.

Fit the filter gauze and housing cover by reversing the removal procedure.

2 Clean the choke butterfly housing adapter

The adapter is situated on the choke butterfly housing and is part of the crankcase breather system (see fig. B5-2).

To clean the adapter remove the retaining setscrew and detach the adapter from the breather pipe.

Clean the adapter using a recommended cleaning solvent and ensure that the holes are free of obstruction; dry using compressed air.

Ensuring that the 'O' ring is in good condition, fit the adapter by reversing the removal procedure.

Fuel evaporative emission control system

1 Renew the evaporative emission control canister

Carry out the usual workshop safety precautions.

Locate the control canister under the left-hand front wing (see fig. B5-3). Using the special pliers RH 8090 remove the securing clips from the canister end of the flexible hoses.

Withdraw the hoses fitted to the control canister. Label each one to facilitate assembly.

Unscrew the four setscrews retaining the control canister in position (see fig. B5-3). Support the weight of the canister before the last setscrew is removed.

Collect the washer fitted under the head of each setscrew.

Withdraw the control canister from under the wing.

Note the position of the control canister in relation to the mounting bracket and unscrew the retaining worm drive clip.

Fit the new canister to the mounting bracket and tighten the retaining worm drive clip.

Ensure that the canister is in the correct position relative to the mounting bracket.

Fit the assembly to the vehicle by reversing the procedure given for removal, noting that new hose securing clips should be used.

2 Check the condition of all pipes, hoses, and connections

Carry out the usual workshop safety precautions.

Locate the fuel evaporative control canister.

Withdraw the fuel tank evaporative hose from the canister and connect it to the test equipment shown in figure B5-4.

Apply air pressure to the fuel tank hose via the test equipment until a reading of 380 mm (15 in) H₂O is attained and close the pressure supply.

After five minutes again check the pressure reading, this should not have fallen by more than 12,7 mm (0.5 in).

If the pressure drop is more than 12,7 mm (0.5 in), progressively treat all joints in the system with soap solution to detect air leaks.

Rectify any air leaks and again leak check the system.

During the five minutes leak down, visually inspect the hoses, pipes, and connections of the system that are routed under the car. Commence where the hose exits from the body adjacent to the left-hand rear road spring and follow the system to the control canister.

Ensure that the hoses are secure in the mounting clips.

When the system check is satisfactory, detach the test equipment and connect the hose to the control canister. Secure the hose with a new clip.

3 Check the purge flow rate

Carry out the usual workshop safety precautions.

Remove the retaining clip from the purge line restrictor hose.

Disconnect the hose at the purge line restrictor. Leave the restrictor in the hose to the engine (see fig. B5-5).

Connect a rotameter assembly RH 8725 into the line, between the restrictor and the open pipe to the valve connection.

Connect an impulse tachometer to the engine in accordance with the manufacturer's instructions.

Start and run the engine at 650 rev/min; the reading on the flowmeter should be between (50 ft³/h and 70 ft³/h).

If the purge flow rate is outside the limits specified, refer to the Workshop Manual TSD 4400, Chapter U.

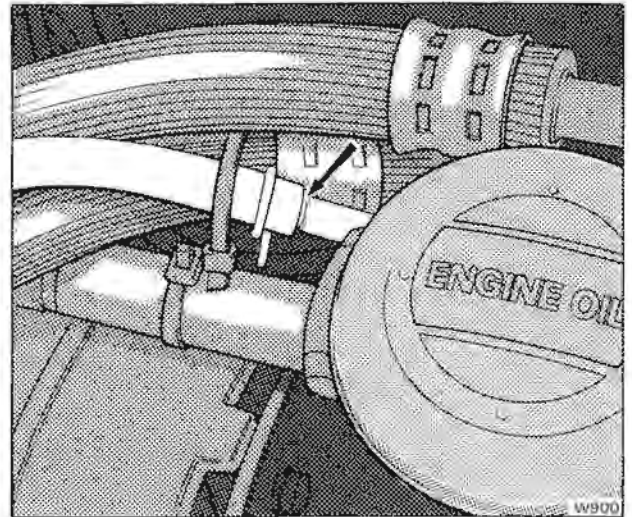


Fig. B5-5 Purge line restrictor

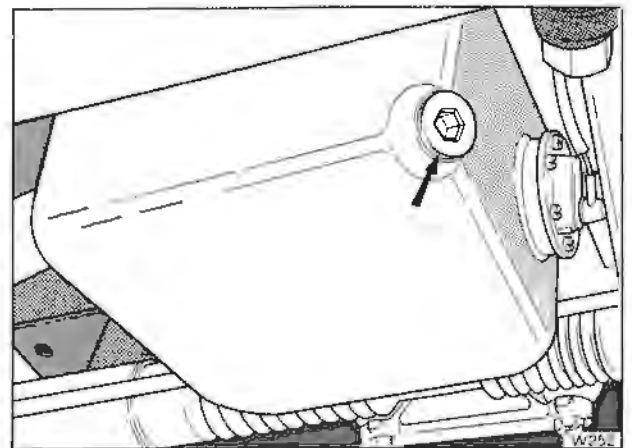


Fig. B5-6 Engine sump drain plug

Engine

1 Change the engine oil

The sump should be drained when the engine is warm, preferably after the car has completed a run.

To drain the oil, position the car over a pit or on a ramp.

Place a container in position beneath the drain plug situated on the right-hand side of the sump (see fig. B5-6). Remove the drain plug and allow the oil to drain from the sump.

Do not flush the sump with paraffin or petrol.

Fit the drain plug ensuring that the washer is correctly positioned and in good condition.

Fill the engine sump with recommended lubricant until the MAX level is reached on the dipstick.

Carry out the full oil level check procedure as described under, Check the engine oil level.

2 Renew the engine oil filter

Drain the engine oil as described under Change the engine oil.

Place a container under the filter to collect any oil that may be spilt.

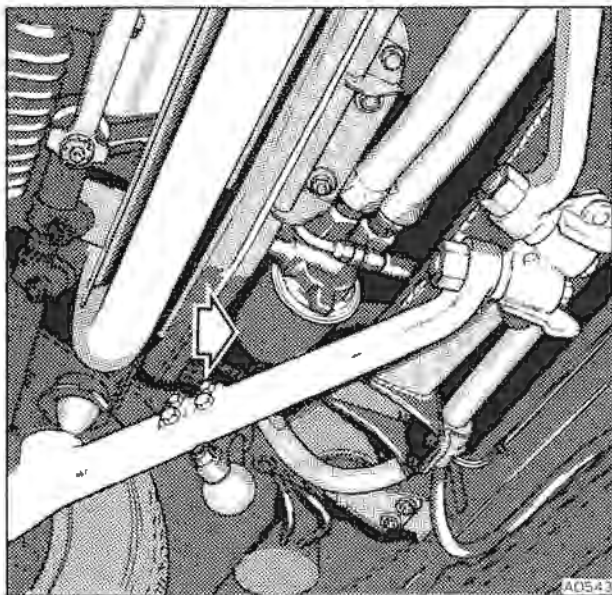


Fig. B5-7 Engine oil filter location

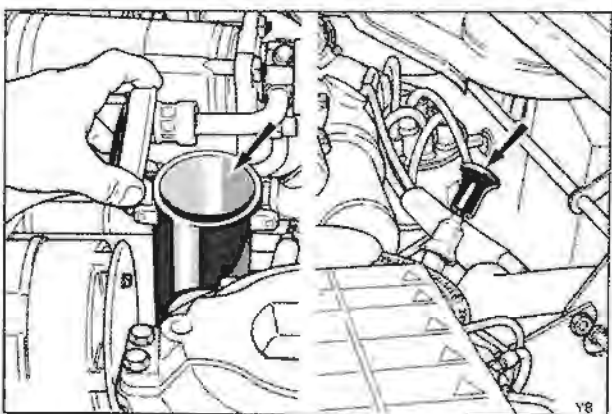


Fig. B5-8 Engine oil filler and dipstick

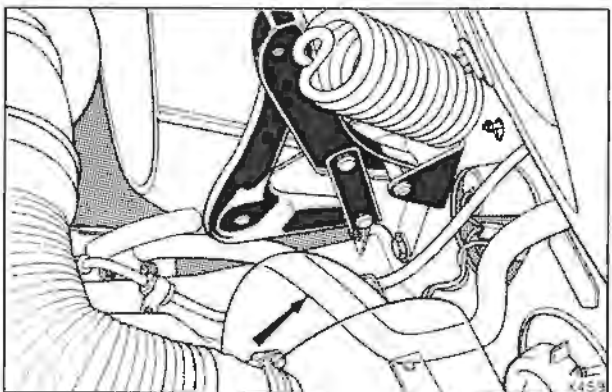


Fig. B5-9 Engine oil cooler return pipe

Remove the filter by unscrewing it from the engine in an anti-clockwise direction (see fig. B5-7). Thoroughly clean the filter seating face on the engine.

Lightly smear the rubber sealing ring on the new filter with clean engine oil.

Screw the filter onto the pedestal until the rubber seal contacts the sealing face then tighten the filter a further half turn; **do not overtighten**.

Fill the engine with clean engine oil until the MAX level is reached on the dipstick. Run the engine and check the filter joint for leakage.

Carry out the full oil level check procedure as described under Check the engine oil level.

Check the engine oil level

In order to obtain an accurate indication of the oil level, ensure that the car is standing on level ground. Check the oil level by means of the dipstick marked **ENGINE** (see fig. B5-8).

It is recommended that the oil level is checked when the engine is cold. If the engine has been running, sufficient time should elapse after it has stopped to allow the oil to drain into the sump. Do not check the oil level with the engine running.

To replenish the sump with oil, open the filler cap marked **ENGINE** (see fig. B5-8). Add clean oil to the engine and after allowing sufficient time for the oil to reach the sump check that the oil is up to the **MAX** mark on the dipstick. **Do not overfill**.

Important

The engine lubrication system incorporates a thermostatically controlled oil cooler, therefore if the oil has been drained from the engine the following additional procedure must be carried out to ensure the correct oil level is obtained.

Carry out the normal topping-up procedure as described previously to obtain the maximum oil level reading on the dipstick.

Drive the car to enable the engine oil to attain the temperature required to actuate the oil cooler thermostat.

To ascertain that the thermostat has actuated, a rise in the temperature of the oil cooler return pipe (see fig. B5-9) can be felt. This temperature rise occurs as hot oil begins to flow from the oil filter housing, where the thermostat is situated, to the oil cooler mounted in front of the coolant radiator matrix.

Do not attempt to attain the required engine oil temperature rise with the car stationary.

When it has been ascertained that the engine oil has been passing through the cooler, thus filling this part of the lubrication system, check the oil level in the normal manner as described previously.

3 Check the drive belts

Before commencing to adjust the drive belts inspect them for signs of wear or cracking. Any belts found unsatisfactory should be renewed.

If after adjustment, a matched pair of belts have a marked variation in tension, a new pair should be

fitted. Always renew both belts in a matched pair even if only one belt is faulty.

Two belt tension loads are specified; a new belt load for replacement (new) belts and a retensioning load for belts which are satisfactory for further service.

The belt tension must be checked at a point midway between two pulleys (see fig. B5-10) by use of a belt tension meter or by applying a spring balance to give a 9,50 mm (0.375 in) belt deflection at a specified load.

The variation in the spring balance loads for similar belt tension meter loads is due to the varying lengths of belt between individual belt centres.

Belt dressing must not be applied to prevent belt slip.

Crankshaft to coolant pump

Load may be applied on either side of the belt run.

New belt load

Belt tension meter	27,2 kgf to 31,7 kgf (60 lbf to 70 lbf)
Spring balance	7,5 kgf to 8,2 kgf (16.5 lbf to 18 lbf)

Retensioning load

Belt tension meter	22,7 kgf to 27,2 kgf (50 lbf to 60 lbf)
Spring balance	6,8 kgf to 7,5 kgf (15 lbf to 16.5 lbf)

The tension of this matched pair of belts is adjusted by altering the position of the jockey pulley (see fig. B5-10).

Slacken the nut and setscrew securing the jockey pulley arm. Pivot the jockey pulley to adjust the belt tension then tighten the nut and setscrew. Check the belt tension and repeat the adjustment procedure if necessary.

Coolant pump to alternator

Load may be applied on either side of the belt run.

New belt load

Belt tension meter	36,3 kgf to 40,8 kgf (80 lbf to 90 lbf)
Spring balance	5,0 kgf to 5,9 kgf (11 lbf to 13 lbf)

Retensioning load

Belt tension meter	31,7 kgf to 36,3 kgf (70 lbf to 80 lbf)
Spring balance	4,1 kgf to 5,0 kgf (9 lbf to 11 lbf)

The tension of the belt is adjusted by altering the position of the alternator (see fig. B5-10).

Slacken the setscrew securing the alternator at the upper mounting point.

Slacken the setscrew securing the adjustment strut to the front mounting plate, also the nut and bolt in the adjustment slot. Pivot the alternator to adjust

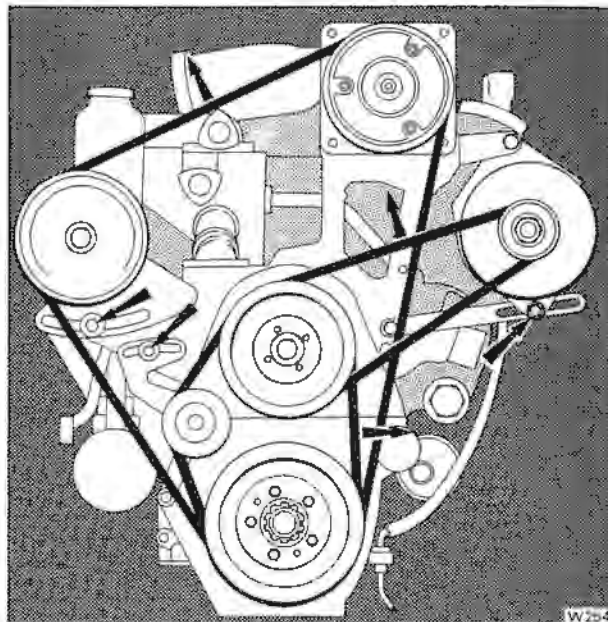


Fig. B5-10 Engine drive belt adjustment and tension check joints

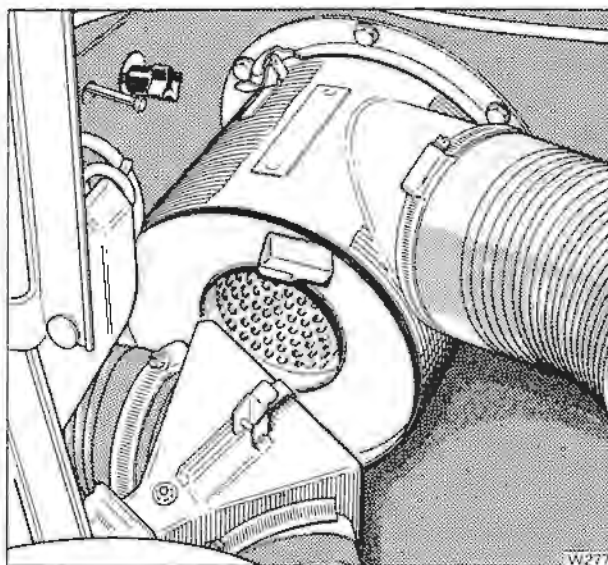


Fig. B5-11 Air filter (Silver Spirit, Silver Spur, Mulsanne, Bentley Eight, Corniche, and Continental)

the belt tension then tighten the nut and bolt in the adjustment slot. Check the belt tension and repeat the adjustment if necessary.

When the tension is correct finally tighten the remaining setscrews and check the tension again.

Crankshaft to steering pump/refrigeration compressor

Load must be applied on the top run of the belts. Each belt to be checked individually.

New belt load	
Belt tension meter	40,8 kgf to 45,5 kgf (90 lbf to 100 lbf)
Spring balance	6,3 kgf to 7,7 kgf (14 lbf to 17 lbf)
Retensioning load	
Belt tension meter	36,3 kgf to 40,8 kgf (80 lbf to 90 lbf)
Spring balance	4,1 kgf to 6,3 kgf (9 lbf to 14 lbf)

The tension of this matched pair of belts is adjusted by altering the position of the steering pump

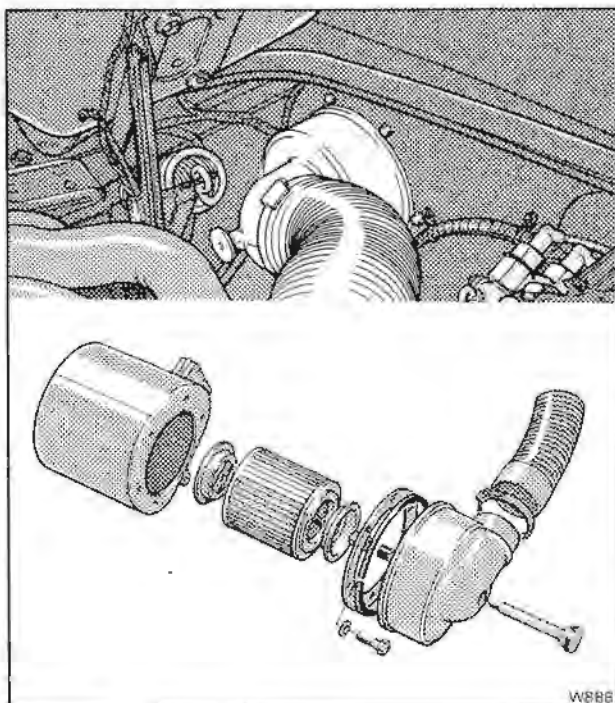


Fig. B5-12 Air filter (Camargue)

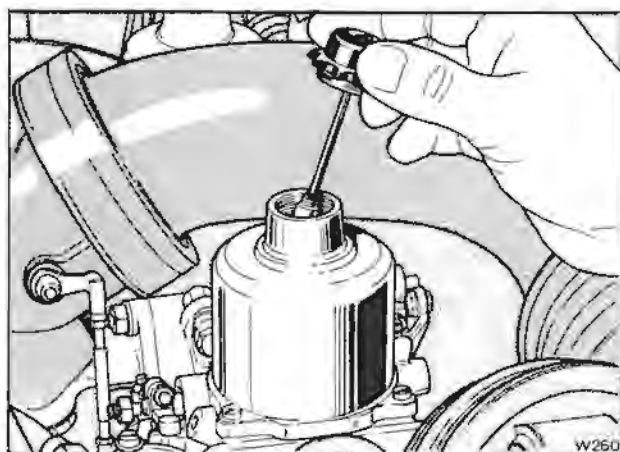


Fig. B5-13 SU Carburettor damper

(see fig. B5-10). Slacken the setscrew in the steering pump mounting bracket slot situated below the pump pulley.

Slacken the pump pivot setscrew and the union on the supply hose at the rear of the pump.

Pivot the pump to adjust the belt tension then tighten the setscrew in the adjustment slot. Check the belt tension and adjust again if necessary. When the tension is correct tighten the pivot setscrew and again check the belt tension. Finally tighten the supply hose connection; ensuring that the soft rubber protective sleeve has clearance or minimal contact with the coolant pump to manifold elbow.

4 Renew the air filter element

Silver Spirit, Silver Spur, Mulsanne, Bentley Eight, Corniche, and Continental

The air filter element is situated in the air intake housing at the front right-hand side of the engine compartment (see fig. B5-11).

To gain access to the element unfasten the two toggle clips retaining the air blending valve housing to the air cleaner housing. Carefully free the joint and move the housing away from the air cleaner.

Unscrew the worm drive clip securing the engine intake hose to the air cleaner. Detach the hose.

Support the air cleaner housing and unfasten the three toggle clips securing the housing to the valance.

Carefully free the joint, then move the housing towards the engine and withdraw the housing and air filter element from the car.

Remove the filter element from the housing.

Ensure that the inside of the air cleaner housing (both the section removed and the fixed section in the wing valance) is clean.

Inspect the joint seals for serviceability. Renew if necessary.

Fit the new filter element as follows.

Locate the large end of the new filter element onto the locating spigot on the inside of the removable half of the housing.

Carefully position the housing and filter onto the valance allowing the filter to pass into the valance mounting section of the housing. Locate the small (blank) end of the filter into the spigot in the valance housing. Align the three housing toggle clips with their respective securing points. Special care should be taken during these operations to ensure that the paper element is not damaged during insertion.

Ensure that the filter is correctly positioned on the location spigots, then secure the three toggle clips. It is essential that the filter is correctly located on the spigots before the toggle clips are fastened down, otherwise there is a serious risk of crushing the filter element.

Fit the remaining components by reversing the removal procedure.

Camargue

The air filter element is situated in the air intake housing at the front right-hand side of the engine compartment (see fig. B5-12).

To gain access to the element, unscrew the worm drive clip securing the intake hose to the carburetters inlet duct. Withdraw the hose.

Unscrew the knurled securing setscrew situated on the side of the assembly.

Withdraw the cover.

Unscrew the hexagonal nut from the centre stud. Withdraw the end plate, filter element, and second end plate.

Fit the new element to the assembly by reversing the removal procedure. Refer to figure B5-12 for the correct assembly sequence.

5 Check the carburettor damper oil level

The upper portion of the guide spindle, attached to the air valve piston in each carburettor is hollow and should contain the same type of oil as used in the engine.

To check the oil level, unscrew the cap and withdraw the damper from the air valve piston (see fig. B5-13). Top-up the damper reservoir with clean engine oil to approximately 13 mm (0.50 in) from the top of the tube. Fit the damper into the tube and screw the cap firmly into position.

6 Check the float chamber depression; adjust if necessary

For details of the procedure necessary to carry out this operation reference should be made to Chapter U of the Workshop Manual.

7 Check for correct choke operation and choke stove pipe flow; rectify if necessary

Apply the parking brake and ensure that the gear range selector lever is in the Park position. Remove the gear range thermal cut-out from the fuseboard.

Start and run the engine until normal operating temperature is attained. Stop the engine.

Connect an impulse tachometer to the engine in accordance with the manufacturer's instructions.

Disconnect the stove pipe union at the intake elbow and connect a flowmeter to the pipe using connector RH 8945. The flowmeter must be a rotameter type capable of measuring 2,9 m³/h (100 ft³/h).

Start and run the engine at idle speed (650 rev/min); observe the flowmeter, a correct reading is between 0,79 m³/h and 0,89 m³/h (28 ft³/h and 32 ft³/h).

If the reading is outside the prescribed limits, reference should be made to Chapter U of the Workshop Manual.

8 Check the choke fast-idle speed; adjust if necessary

For full details of choke fast-idle settings reference should be made to Chapter U of the Workshop Manual.

9 Renew the sparking plugs

Sparking plug type Champion RN 12 YC or RN 12 Y Plug gap setting 0,76 mm (0.030 in)

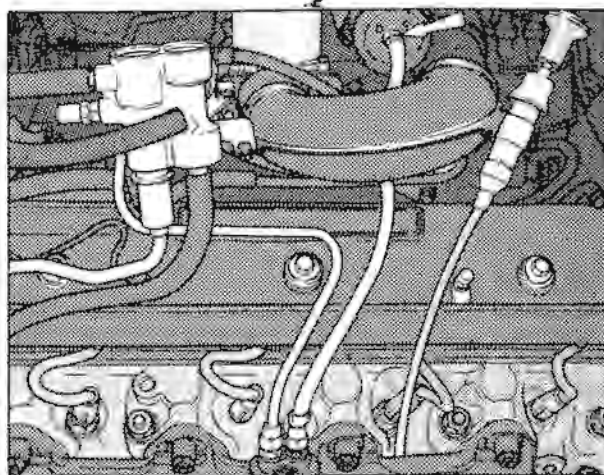


Fig. B5-14 Choke stove pipe restrictor union

Before removing the sparking plugs the surrounding area should be thoroughly cleaned to prevent the ingress of foreign matter when the plugs are removed.

Fit the new plugs ensuring that the gaps are correctly set and that each plug is fitted with a sealing washer.

Torque tighten each plug to between 18 Nm and 23 Nm (1,8 kgf m and 2,3 kgf m, 13 lbf ft and 17 lbf ft).

10 Lubricate the accelerator and carburettor linkage

Lubricate all the accelerator linkage and carburettor ball joints, pivots, and clevis pins.

Examine the ball knuckle joints for wear and adjust if necessary. Renew any worn clevis pins.

Examine the linkage for correct operation. For details of linkage setting procedures refer to Chapter U of the Workshop Manual TSD 4400.

11 Check the ignition timing; adjust if necessary

The ignition is timed on A1 cylinder which is located at the front left-hand side of the engine (viewed from the front of the car).

Note

If the ignition timing is to be set, ensure that the sparking plugs are in good condition before running the engine; if they require cleaning or renewal, ensure that the gaps are correctly set (see Operation 9, Renew the sparking plugs).

To check the ignition timing commence by running the engine until normal operating temperature is attained and the choke fast-idle is in the off position. Switch off the engine.

Connect a stroboscope and a tachometer to the engine as described in the instructions supplied with the respective equipment.

Disconnect the hose from the vacuum advance capsule and blank the hose.

Start the engine and adjust the throttle stop screw to give an idle speed of 2100 rev/min. When setting the engine idle speed reduce from a higher speed to 2100 rev/min.

Direct the flashing light of the stroboscope onto the crankshaft damper timing marks and timing

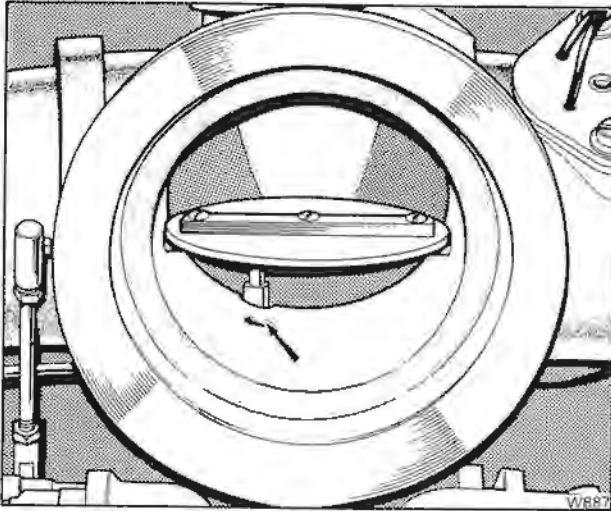


Fig. B5-15 Hot idle mixture compensator feed

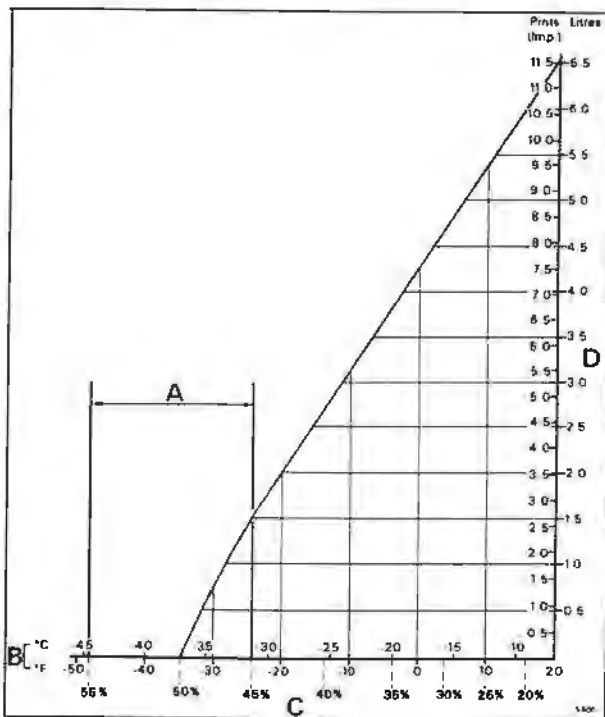


Fig. B5-16 Anti-freeze correction chart to give a 50% solution

- A Acceptable service range of concentration
- B Freezing point of coolant
- C Percentage concentration
- D Volume of 100% anti-freeze to be added to maintain a 50% solution after removal of the same volume of old coolant

pointer; the pointer is positioned on the right-hand side of the crankshaft damper when viewed from the front of the engine.

If the timing pointer does not coincide with the 20° btdc mark on the crankshaft damper adjust the ignition timing as follows.

Release the clamp screw on the distributor and rotate the head of the distributor in the appropriate direction until the correct timing is obtained. Clockwise rotation of the distributor head advances the ignition and conversely anti-clockwise rotation retards the ignition. After adjustment has been carried out tighten the clamp screw and again check to ensure that the timing has not altered whilst tightening the clamp screw.

Set the engine idle speed to 650 rev/min.

Direct the flashing light of the stroboscope onto the crankshaft damper timing marks and timing pointer. Check that the ignition timing is approximately 2° - 6° btdc.

Stop the engine and remove all the test equipment.

Ensure that all hoses are fitted to their respective connections.

Disconnect the hose from the vacuum manifold to the intake sensor and connect a suitable length of hose between this hose and the distributor vacuum capsule.

Start and run the engine at 650 rev/min, check that the ignition timing has advanced to between 18° btdc and 26° btdc.

15 Check the engine idle speed; adjust if necessary
Ensure that the engine is at normal operating temperature and that the choke fast-idle is in the off position.

The air conditioning system must be switched off and a tachometer connected to the engine in accordance with the manufacturer's instructions.

Stop the engine, remove the air intake and blank off the hot idle compensator feed drilling (see fig. B5-15); replace the air intake.

Start the engine and, if necessary, adjust the engine idle speed to 650 rev/min, using the throttle stop screw.

Stop the engine and remove the air intake. Remove the blank from the hot idle compensator feed drilling and fit the air intake. Detach the test equipment.

Engine cooling system

1 Check the coolant anti-freeze concentration

The cooling system is filled initially with a coolant solution comprising equal parts of UT 184 (BP - Hythe Chemicals) or Prestone II and water. This mixture gives frost protection down to a temperature of -37°C (-35°F).

The coolant should contain fifty percent of an approved anti-freeze at all times. This not only provides frost protection but also prevents corrosion of the coolant passages and raises the boiling temperature of the coolant.

The anti-freeze concentration should be checked in both the expansion bottle (where fitted) and the radiator.

If the strength of the coolant requires increasing, sufficient coolant should be drained from the radiator and replaced with undiluted anti-freeze (see fig. B5-16). Afterwards run the engine until normal operating temperature is attained and the anti-freeze has become thoroughly mixed with the coolant. Stop the engine and again check the concentration in the radiator.

An acceptable level of anti-freeze concentration is between 45% and 50%. Therefore, as a hydrometer may be inaccurate where readings above 40% are expected, it is recommended that a refractometer is used.

For details refer to Chapter L of the Workshop Manual.

If a refractometer is not available and a hydrometer has to be used, a scale reading of between 1.06 and 1.07 should be obtained with the coolant at room temperature for the mixture to be correct.

2 Check the coolant level

Warning

The cooling system becomes pressurized during engine running, therefore, extreme care should be taken when removing the radiator cap from a warm or hot radiator.

Silver Spirit, Silver Spur, Mulsanne, Bentley Eight, Corniche, and Continental

Routine check

To check the level outside a normal service schedule (e.g. Regular maintenance) and when no cooling/heating system fault is reported or suspected, proceed as follows.

If the **engine is hot** ensure that the coolant level in the translucent expansion bottle is at the MAX mark. Top-up if necessary and replace the expansion bottle cap.

If the **engine is cold** ensure that the coolant level in the translucent expansion bottle is half-way between the MIN and MAX marks. Top-up if necessary and replace the expansion bottle cap.

If the coolant level in the expansion bottle is either below the MIN mark or there is no coolant in the expansion bottle, carry out the following Full check procedure.

Full check

Ensure the gear range selector is in the Park position and apply the parking brake.

Remove the gear range selector cut-out from the fuseboard.

Check the coolant level in the translucent expansion bottle (see fig. B5-17). If the level is low or the bottle is empty, add coolant to bring the level up to the MIN mark.

Ensure that the engine is not hot (to allow safe removal of the radiator cap).

Remove the radiator cap in three stages as follows.

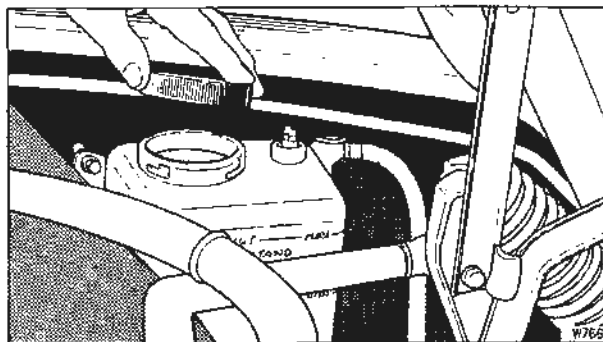


Fig. B5-17 Coolant expansion bottle (Silver Spirit, Silver Spur, Mulsanne, Corniche, and Continental)

Turn the cap slowly anti-clockwise until a check position is reached. Wait until any pressure in the system has been released. Press down on the cap and continue to turn it anti-clockwise until the cap is released.

Check the coolant level in the radiator. This should be half-way up the filler neck.

If the coolant level in the radiator is correct, fit the radiator cap by pressing it firmly down and turning it fully clockwise.

Top-up the coolant level in the expansion bottle in accordance with the Routine check procedure.

If the coolant level in the radiator is low but visible and no cooling/heating system fault is reported or suspected top-up the system using the following procedure. If however the coolant is not visible or a coolant/heating system leak is reported or suspected, the system should have any faults rectified and then be pressure tested prior to carrying out the topping-up procedure.

Top-up the radiator until the coolant is half-way up the filler neck.

Start and run the engine.

Turn the air conditioning system function control fully clockwise to the defrost position.

Set the air conditioning system override switch to the AUTO position.

Allow at least one minute for the air conditioning system to stabilize, then check to ensure that all air is being directed towards the windscreen (i.e. no air is delivered from the lower system and the facia outlets). This procedure opens the heater system water tap.

Run the engine, without the radiator pressure cap fitted, until normal operating temperature is attained. Top-up the coolant level in the radiator during this time.

Switch off the engine.

Fit the radiator pressure cap by pressing it firmly down and turning it fully clockwise.

Top-up the coolant level in the expansion bottle in accordance with the Routine check procedure.

Camargue

Ensure the gear range selector is in the Park position and apply the parking brake.

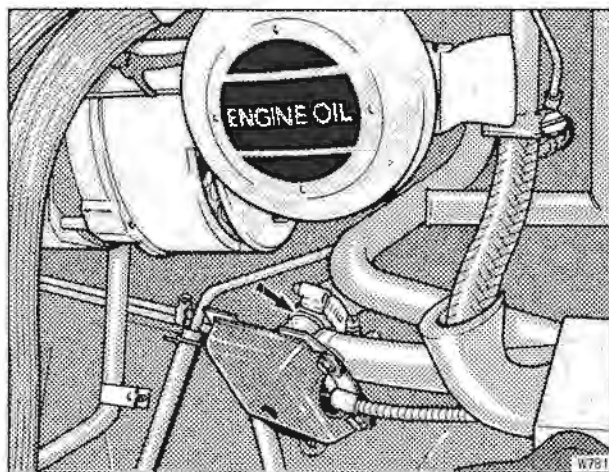


Fig. B5-18 Heater tap feed hose

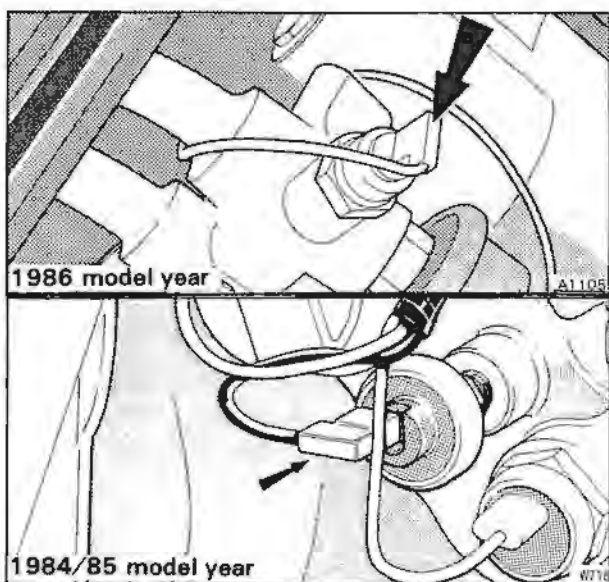


Fig. B5-19 Oil pressure switches and transmitter arrangements

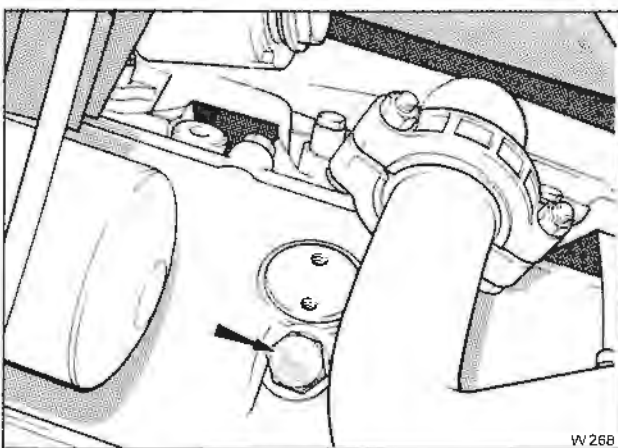


Fig. B5-20 Crankcase drain plug ('B' bank shown)

Remove the gear range selector cut-out from the fuseboard.

Start the engine and turn the air conditioning function control clockwise to the defrost position and set the upper system mode override switch to the AUTO position.

Allow approximately one minute for the system to attain the required setting, then check that all air is being directed towards the windscreen (i.e. no air is delivered from the lower system and facia outlets). This procedure opens the heater water tap and ensures that the cooling system can be correctly checked.

Switch off the ignition.

Remove the radiator cap. If the engine is hot, muffle the cap with a thick cloth and gradually turn the cap anti-clockwise until the pressure is reduced, then remove the cap.

If the coolant level is low, top-up the radiator header tank with the correct anti-freeze/water mixture. The correct level is when the coolant reaches the rubber seal in the filler neck. Fit the filler cap.

3 Check all coolant hose clips for tightness

Examine all the coolant hose connections for signs of leakage and check the worm drive clips for tightness. Never over tighten a clip in an attempt to seal a leaking connection.

In the event of a hose connection leaking when the worm drive clips have been tightened, drain the cooling system to a level below the leaking hose. Remove and inspect the hose and its connecting component for signs of damage. If necessary renew the faulty component and refill the system with coolant as described in Renew the coolant.

4 Examine the condition of all coolant hoses

Inspect all coolant hoses for signs of deterioration, cracking, weak spots, etc. Any faulty hose should be removed and a new hose fitted. When renewing a hose always ensure that it does not foul other components and that it is not kinked so as to cause complete or partial restriction of coolant flow.

5 Fit a new heater tap feed hose

Drain the coolant system as described in Renew the coolant, but do not remove the engine crankcase drain plugs.

Disconnect the heater tap feed hose from the engine and heater tap (see fig. B5-18); remove the hose.

Fit the new hose; ensure that the hose is free from any sharp bends that may restrict coolant flow.

Fill the engine coolant system as described in Renew the coolant.

Ensure that the parking brake is applied and the gear range selector lever is in the Park position.

Remove the gear range selector cut-out from the fuseboard.

Start and run the engine; check the coolant hose for leaks.

Switch off the ignition and fit the gear range selector cut-out.

6 Renew the coolant

Drive the car onto a ramp; move the gear range selector to the Park position and apply the parking brake.

Remove the gear range selector cut-out from the fuseboard.

Disconnect the Lucar connection from the pressure switch situated on the oil filter mounting/take-off flange (see fig. B5-19). This will allow the air conditioning system to be operated without running the engine.

Switch on the ignition and rotate the air conditioning function switch to the windscreen defrost position, also set the upper system mode override switch to the AUTO position.

Wait approximately one minute for the system to attain the required setting and observe that all the air is being directed to the windscreen. This procedure opens the heater water tap and ensures the system can be completely drained.

Switch off the ignition.

Place a container beneath the radiator drain tap to collect the coolant. Connect a length of hose onto the drain tap to direct the coolant into the container.

Carefully unscrew and remove the radiator pressure cap.

Open the radiator drain tap and allow the coolant to drain from the radiator.

When the radiator has completely drained place a container beneath the crankcase drain plugs. Remove the drain plugs from the crankcase (see fig. B5-20) and allow the residue of coolant to drain from the crankcase.

Renew the washers on the drain plugs and fit the plugs into the crankcase.

To drain the coolant remaining in the expansion bottle (except Camargue) disconnect the connection hose from the radiator filler neck and allow the coolant to drain from the expansion bottle into the container. When the coolant has drained connect the hose to the radiator filler neck.

Check all hoses for serviceability and renew as necessary.

Fill the system with fresh coolant of the specified concentration as follows.

Ensure the radiator drain tap is closed.

Slowly fill the radiator with coolant, thus reducing the possibility of air locks in the system.

Start and run the engine for a minimum of 10 minutes with the radiator pressure cap removed. After running for five minutes ensure that warm air is passing up the windscreen from the demister ducts. Top-up the radiator as necessary to ensure there is always coolant in the top tank of the radiator.

Ensure that the thermostat has opened; indicated by a rapid warming of the top radiator hose.

Switch off the engine and top-up the radiator to

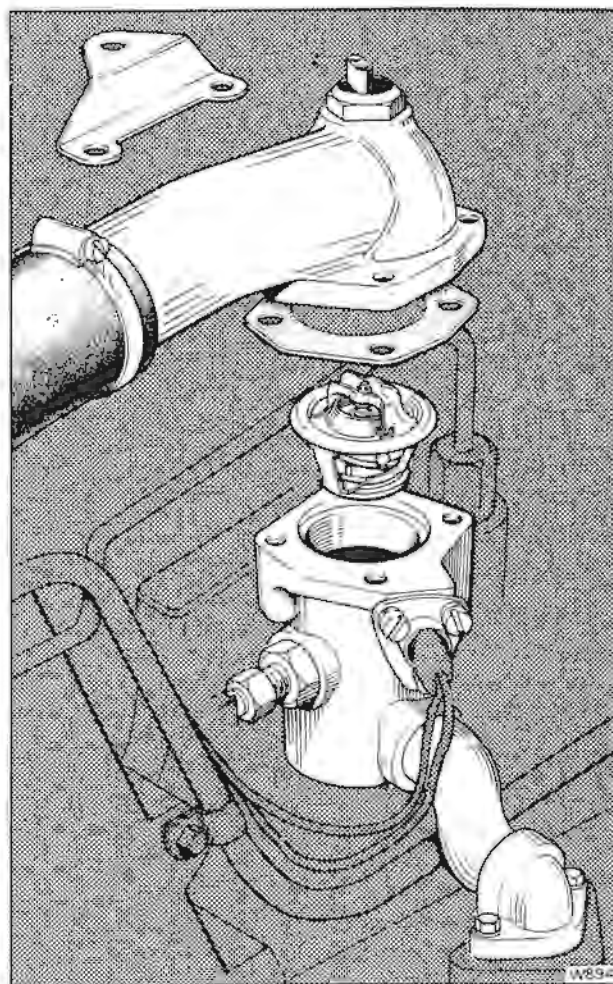


Fig. B5-21 Thermostat housing assembly

half-way up the filler neck. Fit the pressure cap.

Fill the expansion bottle (except Camargue) to a level midway between the maximum and minimum levels indicated on the bottle.

Start and run the engine until normal engine running temperature is attained; switch off the engine and top-up the expansion bottle to the maximum level.

Allow the engine to cool down. Carefully remove the radiator pressure cap and ensure the radiator is completely full of coolant. Top-up to half-way up the radiator filler neck if necessary. Fit the radiator pressure cap.

Connect the Lucar connection previously disconnected from the pressure switch adjacent to the oil filter take-off flange (see fig. B5-19).

Note

For the coolant system to operate correctly, i.e. for coolant to pass into the expansion bottle when hot and be drawn back into the radiator during cooling, the top of the radiator must not contain an air pocket.

7 Reverse flush the coolant system

Drain the engine coolant system as described in Renew the coolant.

Remove the top and bottom hoses from the radiator matrix.

Fit a waste pipe to the upper (inlet) connection of the radiator.

Apply mains water under pressure through the lower (outlet) connection of the radiator. This should remove all loose sediment in approximately 30 minutes.

Do not under any circumstances use an alkaline compound or detergent to clean the system. Such compounds have a detrimental chemical action on aluminium alloys.

Remove the engine coolant drain plugs from the crankcase.

Remove the thermostat as described in Renew the thermostat, then replace the cover.

Fit a suitable pipe to the drain plug aperture and apply mains water pressure to each aperture in turn.

Flush for approximately 30 minutes, or until the water runs clear of foreign matter.

Fit the drain plugs and a new thermostat by reversing the procedure for removal.

To flush the heater system, detach the heater at the water tap and disconnect the return hose at the coolant pump.

Fit a waste pipe to the disconnected heater feed hose.

Flush the matrix for approximately 30 minutes.

Examine the coolant hoses for deterioration or damage and renew as necessary.

Connect all hoses and fill the system with the recommended coolant mixture as described under Renew the coolant.

8 Remove foreign matter from the radiator and refrigeration condenser

Using a pressure hose pipe, flush the radiator matrix and condenser matrix.

Hold the nose of the hose pipe close to the back of the radiator matrix and allow the water to pass between the veins of the matrix. Slowly move the hose over the whole matrix area until all foreign matter (insects, etc.) have been flushed clear. Care must be taken to ensure that the end of the hose does not damage the matrix face during this operation.

9 Renew the thermostat

Disconnect the battery.

Place a container beneath the radiator. Attach a length of hose to the radiator drain tap to direct the coolant into the container.

Carefully unscrew and remove the radiator pressure cap.

Open the radiator drain tap and allow sufficient coolant to drain from the system for the coolant level to fall below that of the thermostat housing. Close the drain tap and remove the hose previously attached.

Disconnect the electrical connector from the thermostat housing cover.

Remove the bolt from the air intake elbow and the four setscrews from the thermostat housing cover. Collect the bracket.

Remove the thermostat housing cover. The cover can be moved away from the housing without detaching the outlet hose.

Lift the thermostat from the housing (see fig. B5-21).

Remove the old gasket material from the thermostat housing and cover. Ensure that no material enters the thermostat housing.

Check that the two faces are clean and dry.

Insert a new thermostat into the housing.

Place a new gasket in position on the housing and fit the cover and air intake elbow bracket. Connect the elbow to the bracket.

Connect the electrical connection removed from the thermostat housing.

Top-up the cooling system with the correct coolant mixture as described under Renew the coolant.

Torque converter transmission

It is absolutely essential when adding fluid to, or working on the torque converter transmission that great attention is paid to cleanliness. The smallest

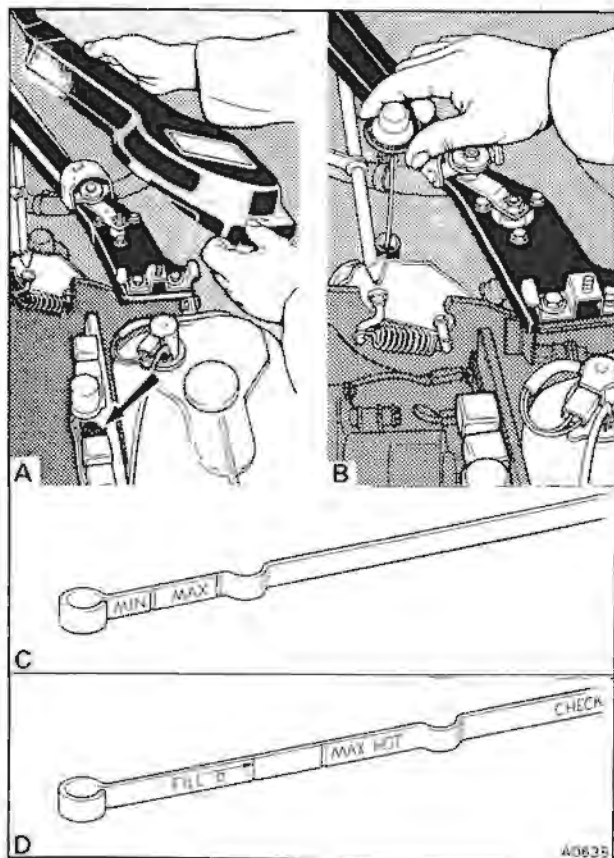


Fig. B5-22 Transmission filler tube and dipstick

- A Removing the windscreen wiper mechanism cover. The arrow indicates the wiper relay removed
- B Withdrawing the dipstick from the filler tube
- C Original dipstick markings
- D Revised dipstick markings

particle of dirt in the transmission fluid could interfere with the correct operation of the unit.

It is important for the efficient operation of the torque converter transmission that only an approved fluid is used (see Chapter A).

1 Check the transmission fluid level

The fluid level can only be checked accurately when the car is standing on a level surface, the engine is running at idle speed and the transmission fluid is at normal operating temperature, approximately 77°C (170°F).

The dipstick and filler tube are situated on the right-hand side of the engine compartment.

On Silver Spirit, Silver Spur, and Mulanne, and Bentley Eight cars, remove the protective cover from the windscreen wiper mechanism to gain access to the dipstick. Ensure that the following safety procedure is undertaken to isolate the mechanism prior to removing the cover.

Ensure that the windscreen wiper control switch situated on the facia is in the off position. Remove a windscreen wiper relay, preferably number three, situated adjacent to the windscreen washer reservoir (see fig. B5-22). To remove the relay, pull it vertically from its mounting.

Always clean the top of the dipstick before removing it from the filler tube.

As an initial check, the fluid level may be checked after starting from cold as follows.

Apply the parking brake.

Start and run the engine for three to four minutes at fast-idle speed, with the gear range selector in the Park position. Reduce the engine speed to slow idle.

Whilst sitting in the driving seat **firmly apply the footbrake** and move the gear range selector through the full range of gear positions pausing briefly in each range. Return the selector to the Park position.

Immediately check the fluid level with the engine running at idle speed.

The level should be up to the circular dimple situated below the FILL mark on the dipstick or 10 mm (0.375 in) **below** the MIN mark, dependent on the type of dipstick fitted (see fig. B5-22).

Top-up to this level if necessary.

After this initial check a further check should be carried out as follows.

Drive the car for approximately 24 kilometres (15 miles) of highway/motorway driving or 16 kilometres (10 miles) of city driving. This should ensure the transmission has reached normal operating temperature.

It is essential that this temperature is attained. Do not top-up the fluid level to the MAX mark on the dipstick when the fluid is only warm, as this will result in an over-fill situation when the normal operating temperature is attained. Overfilling will result in fluid being discharged from the transmission breather pipe.

Position the car on a level surface, firmly apply the parking brake and select Park position with the gear selector lever.

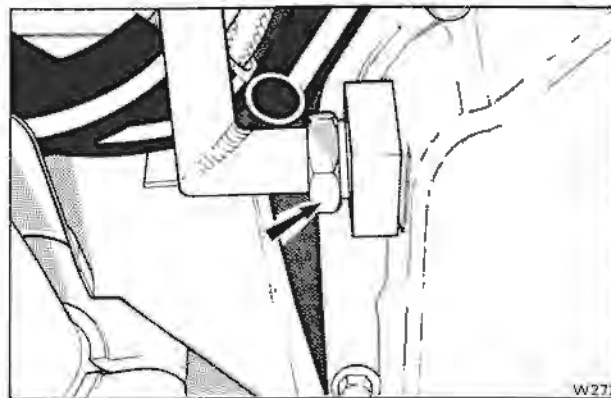


Fig. B5-23 Transmission drain point

Carry out the procedure described for the initial check.

With the transmission fluid at normal operating temperature the level of the fluid should be between the FILL and MAX HOT marks or the MIN and MAX marks (see fig. B5-22) dependent on the type of dipstick fitted.

If necessary add fluid by pouring it down the filler tube, with the engine still running, until the fluid is to the MAX mark on the dipstick. **Do not overfill**

When the fluid level is correct, switch off the engine and fit the windscreen wiper mechanism cover and relay.

2 Renew the transmission fluid

Position the car on a ramp or over a pit.

Place a clean container having a minimum capacity of 3 litres (5 Imp pt, 6 US pt) under the nut which secures the transmission fluid filler tube to the sump (see fig. B5-23).

From within the engine compartment, remove the transmission dipstick as described under Check the transmission fluid level.

Slacken the setscrew securing the filler tube to the engine.

Unscrew the nut securing the filler tube to the side of the transmission sump (see fig. B5-23). Withdraw the filler tube from the sump and move it to one side to allow the fluid to drain into the container.

After draining the sump, ensure that the filler tube is clean then fit it to the sump and tighten the drain nut.

Tighten the setscrew securing the filler tube clip to the engine.

Add 2.8 litres (5 Imp pt, 6 US pt) of an approved fluid to the sump, pouring the fluid down the filler tube.

Check the fluid level as described under Check the transmission fluid level.

3 Fit a new intake strainer

Drain the transmission sump as described under the heading Renew the transmission fluid, then proceed as follows.

Remove the setscrews securing the transmission sump and lower the sump.

Drain any oil from the sump and discard the gasket.

Unscrew the setscrew securing the intake strainer and pipe assembly to the transmission; remove the strainer assembly (see fig. B5-24).

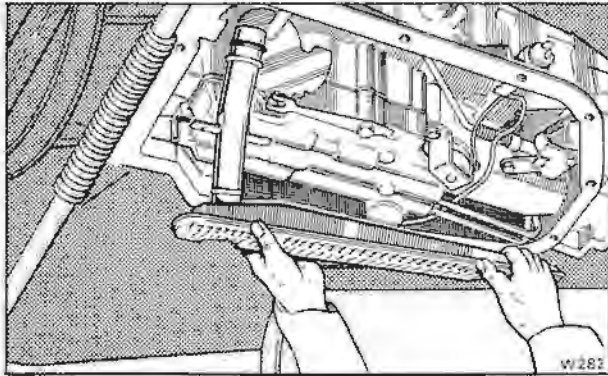


Fig. B5-24 Transmission intake strainer removal

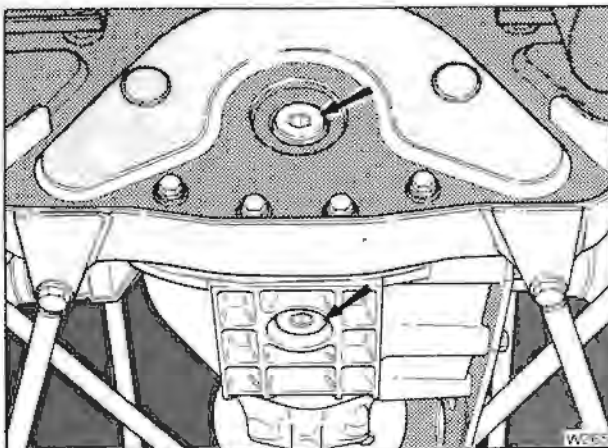


Fig. B5-25 Final drive drain and filler/level points

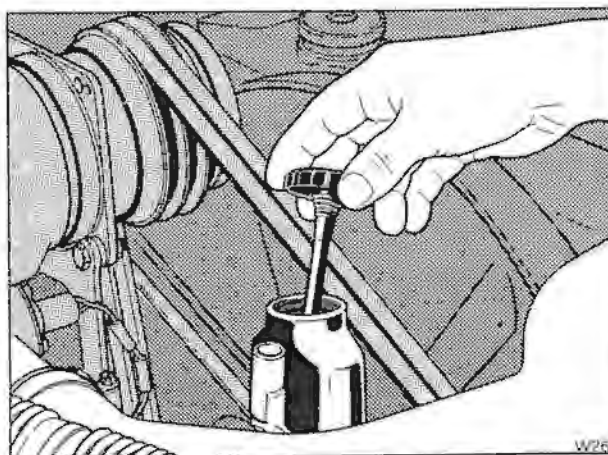


Fig. B5-26 Steering pump filler/dipstick

Remove the intake pipe from the strainer and discard the strainer.

Clean the transmission sump and the intake pipe with paraffin and dry with compressed air.

Fit a new rubber 'O' ring to the intake pipe and lubricate the 'O' ring with clean transmission fluid.

Ensure that a new rubber seal is fitted to the pipe bore in the new intake strainer, then fit the intake pipe to the strainer.

Fit the intake strainer and pipe assembly to the transmission and torque tighten the securing setscrew to 14 Nm (1.4 kgf m, 10 lbf ft).

Fit the transmission sump using a new gasket and torque tighten the sump setscrews to 16 Nm (1.7 kgf m, 12 lbf ft).

Fit the oil filler tube into the sump and tighten the nut. Tighten the setscrew securing the filler tube clip to the engine.

Add 4.5 litres (8 Imp pt, 9.6 US pt) of an approved fluid to the sump, pouring the fluid down the filler tube, then follow the fluid level checking procedure described under Check the transmission fluid level.

4 Lubricate the gear range selector control rod

Lubricate the clevis pins in the control rod linkage at the left-hand side of the transmission, with a few drops of clean engine oil. Also lubricate the manual shaft where it enters the transmission casing.

Final drive unit

1 Check the final drive oil level

Position the car on a ramp or over a pit.

Remove the level plug located in the rear face of the final drive casing. The oil in the casing should be up to the level plug orifice. If necessary, top-up with an approved oil.

Fit the level plug complete with a new joint washer.

2 Renew the final drive oil

It is advisable to carry out this operation when the oil is warm, e.g. immediately after the car has completed a run.

Position the car on a ramp or over a pit and clean the area around the drain and level plugs (see fig. B5-25).

Place a container beneath the drain plug, then remove both the drain and level plugs.

When the oil has drained, fit the drain plug complete with a new joint washer.

Using a syringe, fill the casing to the level plug orifice with an approved oil; approximately 2.3 litres (4.0 Imp pt, 4.8 US pt) of oil will be required.

Fit the level plug complete with a new joint washer and check for leaks.

3 Check the condition of the drive-shaft joint covers

The drive-shaft constant velocity joints are enclosed by convoluted seals which retain the joint lubricant. If

upon inspection a seal is found to be leaking or damaged the joint should be inspected and a new seal should be fitted as described in Chapter J of the Workshop Manual.

Steering system

1 Check the steering pump fluid level

Remove the filler cap from the steering pump reservoir and check that the fluid level is at least up to the FULL COLD mark on the integral dipstick. If necessary, top-up to this level with approved fluid (see fig. B5-26).

Start and run the engine until it reaches normal operating temperature, approximately 77°C (170°F), then stop the engine.

Remove the filler cap and check the fluid level in the reservoir. If necessary, add an approved fluid to raise the level to the FULL HOT mark on the dipstick; do not overfill.

Ensure that the filler cap is securely replaced.

2 Lubricate the steering linkage ball joints (if applicable)

If grease nipples are fitted to the ball joints at the ends of the track rods, they should be lubricated until a slight swelling of the joint seal is evident. Take care not to damage or displace the seals.

3 Check the condition of the steering ball joint covers

Examine the condition of the rubber cover seals on the ball joints.

If the seals are found to be damaged or in poor condition new parts should be fitted as necessary. For full information refer to Chapter N of the Workshop Manual.

4 Check the condition of the steering rack convoluted seals

Examine the condition of the convoluted seals on the rack and pinion unit and check the tightness of the seal clips.

If the seals are satisfactory, tighten the clips as necessary.

If the convoluted seals are found to be damaged or in poor condition, the rack and pinion unit should be removed from the car and new seals fitted. For full information refer to Chapter N of the Workshop Manual.

Suspension

1 Check the condition of the front ball joint covers

The front suspension ball joints (see fig. B5-27) are packed with grease on initial assembly and should not normally require attention between service overhauls unless the rubber seal covers are damaged.

If on inspection the covers are found to be damaged or in poor condition, the ball joints should be removed and new joints and seals fitted as necessary.

For full information refer to Chapter H of the Workshop Manual.

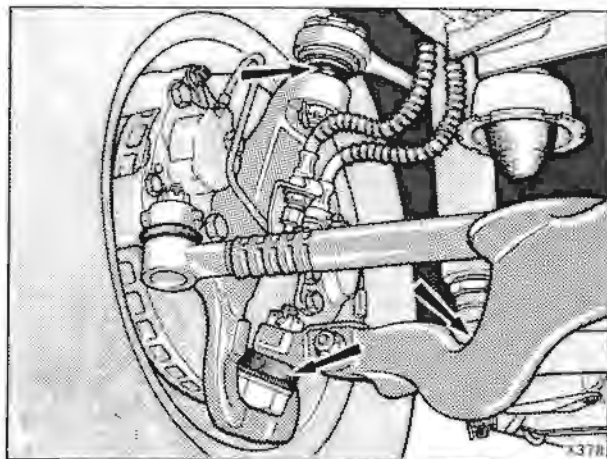


Fig. B5-27 Front suspension ball joints

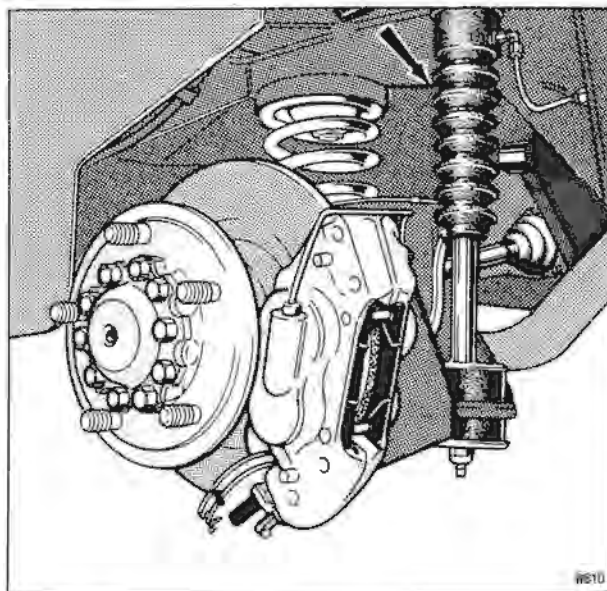


Fig. B5-28 Rear suspension strut

2 Check the condition of the rear strut convoluted seals

Examine the condition of the convoluted seals on the rear suspension struts (see fig. B5-28).

If the seals are found to be damaged, or in poor condition, the struts should be removed, as described in Chapter G of the Workshop Manual, and new seals fitted.

3 Lubricate the height control valve ball joints

Position the car on a ramp or over a pit. Disconnect the actuation links from the height control valves and rear suspension trailing arms at the ball joints (see fig. B5-29). Note from which side each link is taken.

Clean the ball joints then lubricate with an approved grease.

Do not alter the length of the actuation link. Connect the actuation link to the height control

valve and the trailing arm from which it was removed.

Adjust the joint to obtain complete movement without free play.

Brake and hydraulic systems



WARNING

Use only Hydraulic System Mineral Oil (LHM) to replenish the braking and levelling systems.

Do not use Brake Fluids (Castrol RR363, Universal, or any other type). The use of any type of brake fluid, even in very small amounts, will cause component failure necessitating extensive rectification to the braking and levelling systems of the car.

Always ensure before fitting any seals, hoses, pipes, etc., that they are suitable for a mineral oil system. For details of correct component identification reference should be made to Chapter G of the Workshop Manual.

Always ensure that a sealed container of **Hydraulic System Mineral Oil (LHM)** is fitted adjacent to the battery.

Always ensure that no foreign matter enters the systems when work is being carried out.

In order to protect against claims of liability for hydraulic system contamination, it is recommended that the hydraulic system mineral oil is tested for contamination prior to work being undertaken, preferably in the presence of the owner or his/her representative.

It is important that the test is carried out even when the hydraulic system mineral oil is to be renewed as this will not prevent the deterioration of components which have been in contact with contaminated mineral oil.

Brake fluids and mineral oil are immiscible and with large amounts of contamination separation of the

fluids will occur on standing, due to the greater density of the conventional fluids. A further indication of the mixing of conventional brake fluid and mineral oil is its cloudy appearance.

To carry out contamination tests a kit is available from Rolls-Royce Motors Limited, part number RH 2841 and should be used as follows.

Switch on the ignition and depressurize the hydraulic systems by pumping the brake pedal until both low pressure warning panels illuminate. Continue to pump the pedal for at least a further 20 applications to ensure that all the accumulator mineral oil is returned to the reservoir.

Clean the area around each hydraulic reservoir filler cap and then remove the cap.

Ensure that the components in the test kit are clean and dry.

Using the sampling tube provided, extract 50 ml of mineral oil from the top and bottom of each reservoir.

Place the samples into the individual clean dry containers.

Shake each sample taken to ensure it is well mixed.

Pour 10 ml of each sample into clean test tubes (do not mix the samples together).

Using the dispenser, add two drops of the red dye solution contained in the kit into each 10 ml sample.

Cork the test tubes and shake them thoroughly.

Leave the samples to settle for at least 30 minutes.

Examine each sample.

Sample diagnosis

On adding the red dye solution and the subsequent mixing, the green colour of the mineral oil will change to a reddish brown. **This does not indicate contamination of the hydraulic system mineral oil.**

Contamination can only be confirmed by the formation of a cloudy red mass which will begin to settle towards the bottom of the tube if left to stand for at least 30 minutes.

If the sample in the test tube on addition of the dye turns red but remains clear it indicates that the sample is not contaminated.

The volume of red mass which will eventually settle to the bottom of the test tube indicates the amount of contamination within the hydraulic system mineral oil.

Complete separation of the two liquids may take a considerable amount of time, for example a very small percentage of contamination may take more than seven days to completely separate.

If contamination is suspected, a more thorough test can be undertaken, details of which are given in Chapter G of the Workshop Manual.

If contamination is suspected, but difficult to diagnose, due to the small amount of contaminant that may be present, or any doubt exists, confirmation should be obtained by sending a sample to Rolls-Royce Motors (if in the United Kingdom) or to a chemical analysis laboratory.

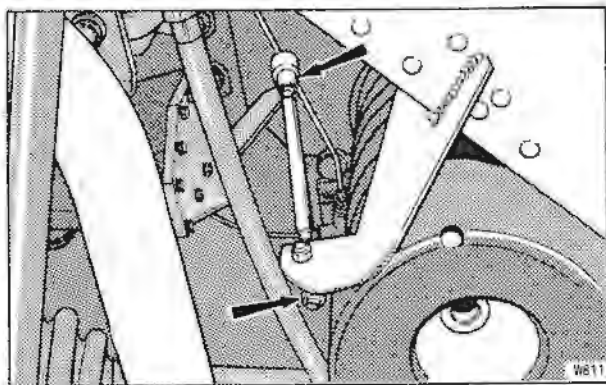


Fig. B5-29 Height control valve actuation link joints

Before attempting any work on a hydraulic system personnel must be fully conversant with the precautions required to ensure adequate safety and correct system operation.

Refer to Chapter G of the Workshop Manual.

Important

Always seal each reservoir cap after it has been confirmed that the systems are not contaminated and all work on the systems has been completed.

1 Check the mineral oil level in the reservoirs

The mineral oil reservoirs for the hydraulic systems are located in the engine compartment (see fig. B5-30).

To check the oil level, first depressurize the hydraulic systems by pumping the brake pedal until the two warning panels illuminate. Start and run the engine for approximately four minutes to charge the systems and then stop the engine. The mineral oil in both reservoirs should be up to the FULL marks on the level indicator plate.

If the reservoirs require topping-up, ensure that the tops of the reservoirs and the filler caps are clean, then add an approved hydraulic system mineral oil (see Chapter A) as necessary.

It is important that only approved hydraulic system mineral oil is used and that exceptional cleanliness is observed when topping-up the hydraulic systems.

Under no circumstances should a conventional (i.e. RR363 or Universal) type brake fluid be used.

After topping-up ensure that the filler caps are clean, then fit them securely to the reservoirs or insert the blanking plug dependent upon the type of filler cap fitted.

Ensure that the containers of new Hydraulic System Mineral Oil for system replenishment, are fitted adjacent to the battery.

2 Renew the hydraulic system mineral oil

Depressurize the hydraulic systems as described in Chapter G of the Workshop Manual and proceed as follows.

Completely drain the fluid from the hydraulic systems by attaching a tube to each bleed point then opening the bleed screws and allowing the mineral oil to drain from the circuits. The bleed screws are located on each accumulator, on each pair of brake calipers, on the deceleration conscious pressure limiting valve and on each rear suspension strut or each inner wing from the suspension strut. A drain tube is not required at the accumulator bleed screws as these are an integral part of the accumulators and when opened allow the mineral oil to flow from the accumulator spheres back to the reservoirs.

Drain the mineral oil from the reservoirs and clean the reservoirs as described in Chapter G of the Workshop Manual.

After the system has completely drained, close all the bleed screws and ensure that any disturbed pipes are connected and correctly torque tightened.

Fill the reservoirs with fresh hydraulic system mineral oil (see fig. B5-30 and Chapter A) until the

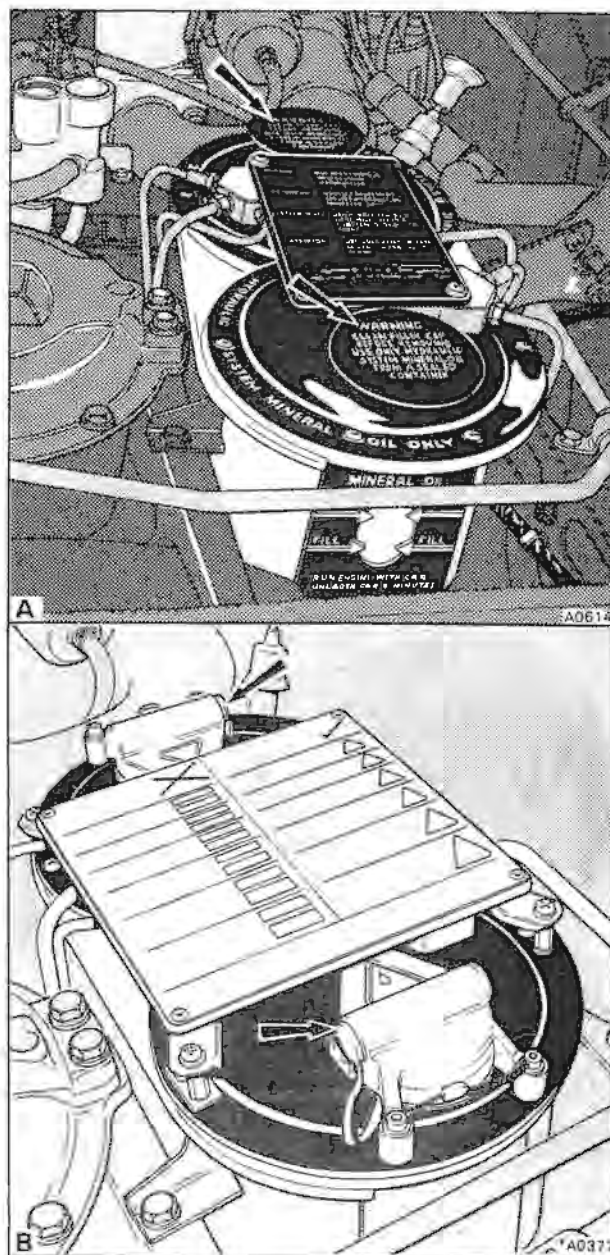


Fig. B5-30 Access to the hydraulic systems reservoirs

- A Original filler cap
- B Specialized filler cap

levels in the reservoirs are slightly above the topping-up mark on the indicator plate.

Run the engine for four minutes, then top-up to the FULL level mark; never allow the mineral oil levels to fall below the minimum level marks.

Check for leaks, especially around the unions of any pipes which have been disturbed.

Finally, bleed the hydraulic systems as described in Chapter G of the Workshop Manual.

Ensure that the containers of new Hydraulic System Mineral Oil for system replenishment, are fitted adjacent to the battery.

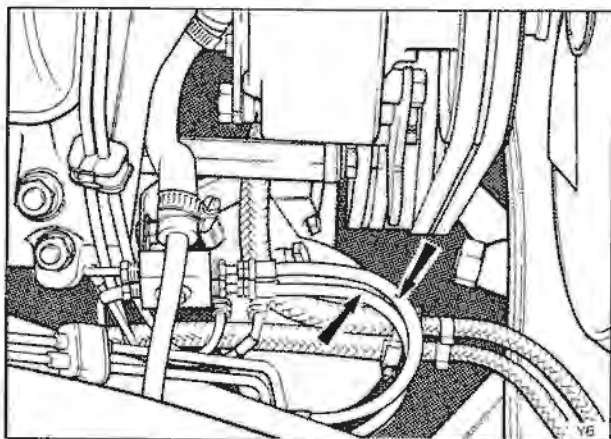


Fig. B5-31 Hydraulic accumulator to body hoses

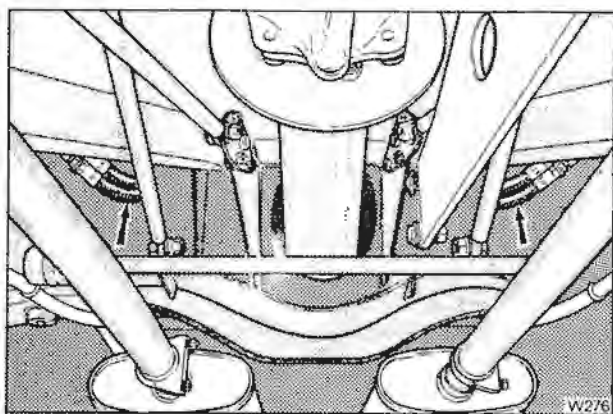


Fig. B5-32 Trailing arm to body hydraulic hoses

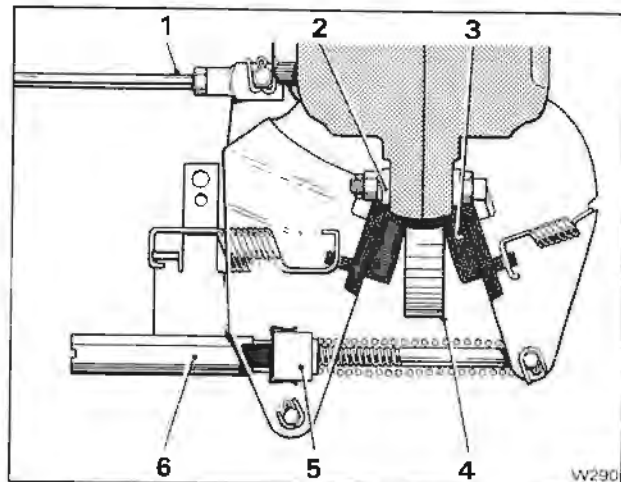


Fig. B5-33 Parking brake mechanism

- 1 Actuation rod
- 2 Centralizing straps
- 3 Parking brake pads
- 4 Brake disc
- 5 Adjuster clicker block
- 6 Adjuster

3 Check the condition of all brake pipes and hoses

Position the car on a ramp or over a pit and check the condition of the hydraulic system pipes and hoses.

Examine the metal pipes for signs of corrosion, particularly those in an exposed position.

Examine the hoses for chafing or surface cracking.

Faulty pipes and hoses should be replaced as described in Chapter G of the Workshop Manual.

4 Renew the accumulator to body, and trailing arms to body hoses

Depressurize the hydraulic systems as described in Chapter G of the Workshop Manual and proceed as follows.

Fit a hose clamp to each of the intermediate hoses of the accumulator return pipes to prevent the flow of mineral oil from the reservoirs.

Thoroughly clean the areas around the connections of the two accumulator to body and trailing arms to body hoses (see figs. B5-31, and B5-32).

Remove the respective hoses noting the following.

To avoid contamination fit the new hose immediately after removing the old one; alternatively fit approved blanks to the open ports until the new hoses are fitted.

Before fitting a new hose ensure that it is thoroughly clean and conforms with the hydraulic systems mineral oil requirements.

When fitting the new hoses, ensure that they are routed to clear other components and that clearance is maintained during full suspension movement.

Tighten the pipe nuts to the torque settings given in Chapter G of the Workshop Manual.

After fitting the new hoses, check for leaks and bleed the hydraulic systems as described in Chapter G of the Workshop Manual.

5 Renew all hydraulic system hoses

To renew the hydraulic system hoses follow the same basic procedure described under the heading Renew the accumulator to body and trailing arms to body hoses.

6 Check the brake disc pads for wear

Remove the wheel discs and slacken the wheel nuts approximately half a turn.

Jack up the car and support with stands and sill blocks.

Remove the road wheels and examine all the disc brake pad linings.

The brake pads must be renewed when the brake pad linings are worn to within 3,18 mm (0.125 in) of the steel backing plates. The pads should also be renewed if this minimum thickness is likely to be achieved before the next service check. To renew the brake pads, refer to Chapter G of the Workshop Manual.

If new brake pads are to be fitted which have different recommended linings from those on the old

pads, the disc faces should be cleaned prior to fitting the new pads. All traces of the old pad lining material should be removed by hand rotating the disc whilst applying coarse grade emery cloth to the disc faces. Do not emery the disc faces radially.

Always ensure that the pads fitted to all six brake calipers have the same type and grade of pad lining.

Fit the road wheels and lower the car.

If new brake pads have been fitted, an initial running-in period of between 1100 kilometres and 1300 kilometres (700 miles and 800 miles) should be observed. During this running-in period the brakes should not be applied harshly or for prolonged periods from high speeds except in an emergency. Towards the end of the running-in period, the force with which the brakes are applied may be progressively increased.

7 Check the condition of the brake caliper dust excluders (when changing brake pads)

The condition of the caliper dust seals should be checked whenever the brake pads are removed.

Inspect the seals for signs of damage, heat hardening, or general deterioration and renew if necessary.

When fitting new seals, ensure that the seal retaining clips are correctly located.

8 Renew the brake caliper seals

To renew the caliper piston seals it is necessary to remove the brake calipers from the car.

For full instructions, refer to Chapter G of the Workshop Manual.

9 Check the parking brake pads for wear

Securely chock the front wheels then raise the rear of the car. Place sill blocks under the rear body sills and also support the rear trailing arms. Do not allow the suspension struts to support the full suspension load.

Remove the rear wheels and release the parking brake to the off position.

Disconnect the caliper actuation rod from the caliper lever (see fig. B5-33).

Unscrew and remove the caliper adjuster and collect the adjuster clicker plate.

Unhook the pad retention springs from each pad, noting the larger spring is fitted to the inner pad. Remove the pads from the caliper.

Check the thickness of the lining material on each pad. Pads which are worn to within 1.6 mm (0.062 in) or less of the steel backing plate should be renewed.

To fit the pads, attach the retention springs then locate the pads into position and hook the springs onto the caliper.

Complete the assembly by reversing the removal procedure, then adjust the calipers as described under the heading Adjust the parking brake.

Note

If new parking brake pads have been fitted, the following bedding-in procedure should be carried out after adjusting the parking brake.

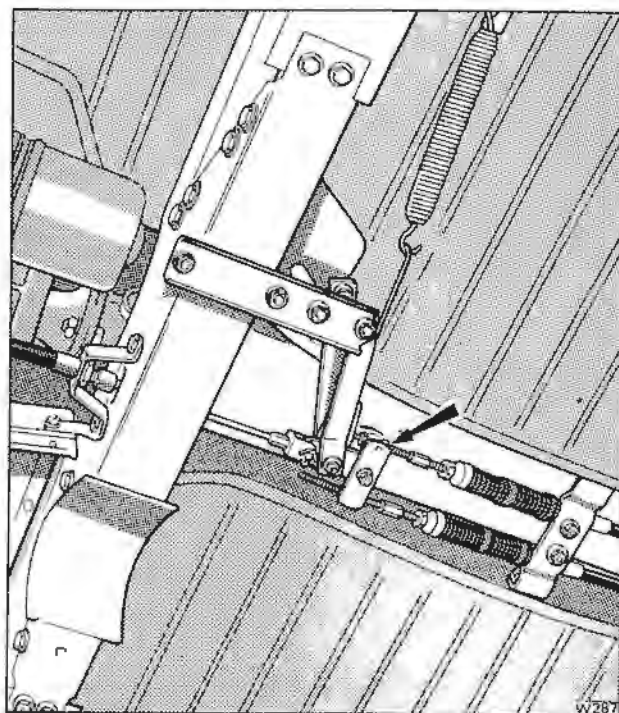


Fig. B5-34 Parking brake rear cable adjustment point

Drive the car at approximately 48 km/h (30 mile/h) and apply the parking brake to bring the car to rest; it is important that this is done gently and progressively. The parking brake must not be applied fully and no attempt should be made to lock the wheels. This operation should be carried out nine times, allowing at least one minute to elapse between stops to prevent the discs overheating.

Finally adjust the caliper as described under the heading Adjust the parking brake.

10 Adjust the parking brake

Ensure that the parking brake is in the off position.

Adjust the rear cables at the adjusters (see fig. B5-34) so that the caliper operating levers return to their off-stops under the influence of their return springs with no appreciable slackness in the cables.

Note

The cables must be adjusted so that the equalizer link on the intermediate linkage (see fig. B5-34) lies at right angles with the centre line of the car with the parking brake in the off position.

To check the cable adjustment, adjust both rear cables at the equalizer link until the caliper off-stops are just clear of the calipers. Measure the gap produced at each off-stop and lengthen the cables by this amount.

With the cables correctly adjusted, check that the centralizing straps (see fig. B5-33) are pushing the pads away from the discs when the parking brake is in the off position. If not, remove the nut and bolt

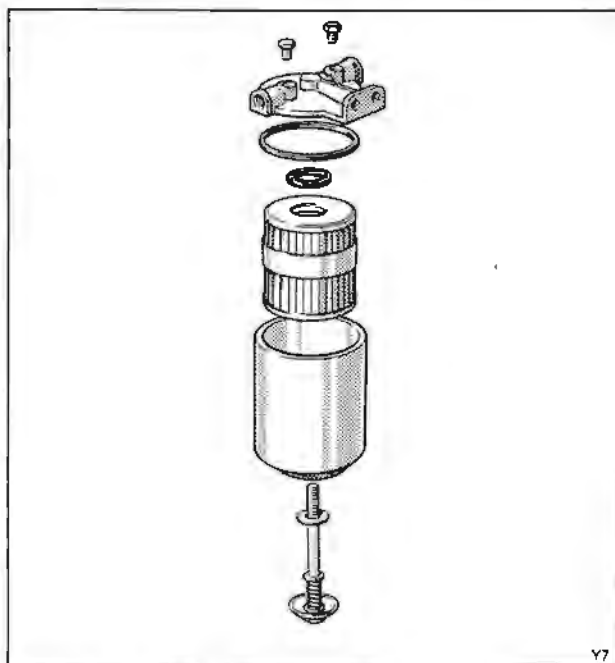


Fig. B5-35 Main fuel filter

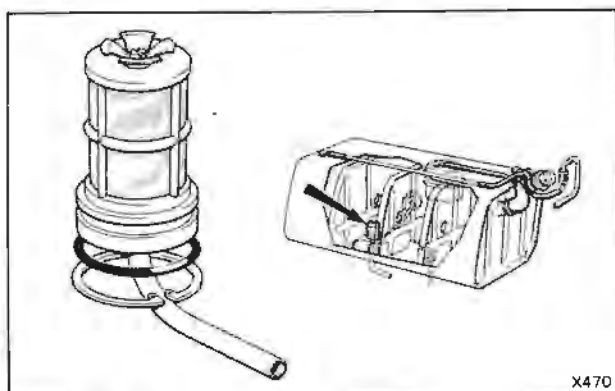


Fig. B5-36 Intank fuel filter

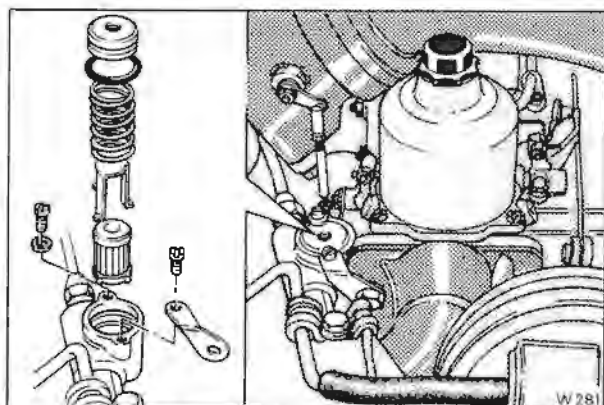


Fig. B5-37 Fuel inlet filter

securing the straps, bend the straps outward (i.e. away from the disc) then refit them. Ensure that the straps are pushed downward towards the adjusting nut whilst tightening the nut and bolt securing them to the caliper.

Check that the distance between the pad and the disc are the same on each side of the caliper; if not, reset the centralizing straps.

Raise each rear wheel in turn so that it is free to rotate and adjust each caliper as follows.

Turn the caliper adjuster (see fig. B5-33) clockwise until the pads just grip the disc; at this point it should only just be possible to rotate the road wheel by hand. Turn the adjuster anti-clockwise a quarter turn (i.e. three clicks on the nut) to obtain the minimum clearance between the pads and disc.

11 Lubricate the parking brake linkage

Position the car on a ramp or over a pit. Lubricate the parking brake linkage clevis pins, fulcrum pins, and the rear cable adjusters with approved grease.

Fuel system

Safety precautions

It is important that whenever a fuel line is opened or the fuel tank drained, that the workshop safety precautions given in Chapter A of the Workshop Manual are strictly observed.

1 Renew the main filter element

The main fuel filter, situated on the car body underframe, contains a disposable element.

The following procedure should be carried out to renew the filter element (see fig. B5-35).

Place a clean container beneath the filter to collect any fuel spillage.

Remove the retaining bolt from the centre of the filter bowl.

Separate the bowl from the filter head.

Clean the filter bowl using clean fuel.

Fit a new element and sealing rings by reversing the removal procedure noting the following.

Do not overtighten the bowl securing bolt.

After fitting the filter to the car, examine the fuel system for leakage and rectify as necessary.

When carrying out the above operation at 80 000 kilometres (48 000 miles) or four years and subsequent periods, the intank fuel filter situated on the underside of the fuel tank (see fig. B5-36) should also be removed and cleaned as follows.

Disconnect the battery.

Drain or siphon the fuel tank.

Place a container beneath the intank filter to collect the residue of fuel from the tank when the filter is removed.

Disconnect the hose from the intank filter outlet pipe.

Remove the circlip retaining the filter and carefully withdraw the filter from the tank.

Clean the filter mesh by washing it in clean fuel.

Examine the filter for serviceability and renew if necessary.

Fit the filter by reversing the removal procedure. Always use a new seal on the filter body. Ensure that the fuel drained from the fuel tank is free from foreign matter, then return it to the fuel tank. Check the fuel filter and the pipe connections that have been disconnected, for leaks.

2 Fit new paper filter elements to the carburettor fuel inlets

Carry out this operation when the engine is cold.

A paper filter element is fitted into the fuel intake filter housing on each carburettor. To renew a filter element proceed as follows.

Remove the two screws from the top of the filter housing (see fig. B5-37).

Using a ¼ in UNF bolt screwed into the threaded hole in the plug, lift the plug from the housing.

Withdraw the spring, retainer, and filter element from the housing; discard the filter element.

Fit the new filter element by reversing the removal procedure noting the following.

Ensure that the new filter element is fitted with its open end towards the seating face in the housing.

Fit a new sealing ring to the sealing plug.

On completion check for any fuel leaks and rectify as necessary.

3 Renew the fuel mixture weakening device filter

The filter is situated on the left-hand valance of the engine compartment (see fig. B5-38).

To remove the filter, disconnect the outlet hose and then remove the two setscrews retaining the filter assembly to the valance; discard the filter assembly.

Fit a new filter assembly by reversing the removal procedure.

4 Check the condition of the filler head to fuel tank hose; renew as necessary

To enable the filler head to fuel tank hose to be examined, it is necessary to remove the rear suspension gas spring. For details of the procedure required reference should be made to Chapter U of the Workshop Manual.

5 Check the condition of all flexible fuel pipes

Carefully examine all the flexible fuel pipes throughout the fuel system. Renew any pipes which have become damaged or deteriorated to an unserviceable condition.

Check the complete fuel system for leaks and rectify as necessary.

Electrical system

1 Check the state of charge of the battery

Silver Spirit, Silver Spur, Mulsanne, Corniche, and Continental.

The battery is situated in the luggage compartment stowage well. To gain access to the battery, turn back the carpet from the right-hand side of the luggage compartment. Lift out the stowage well lid and the cover from around the battery.

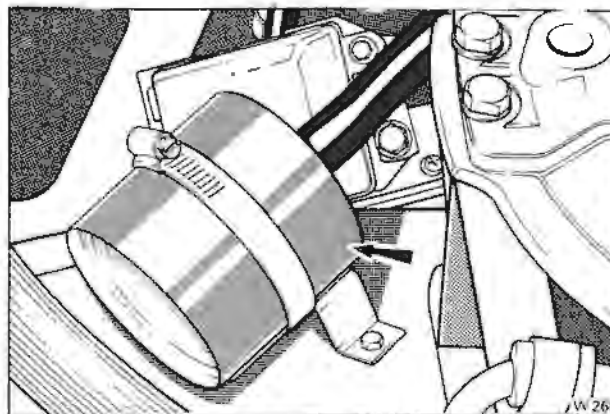


Fig. B5-38 Fuel mixture weakening device filter

Camargue

The battery is mounted on the right-hand side of the luggage compartment. To gain access to the battery turn back the carpet and remove the trim from around the battery, the trim is secured by two fasteners. Unclip the battery cover retaining strap and lift off the cover.

To check the specific gravity of the battery electrolyte on these models, it is necessary to remove the battery from the car as follows. Ensure the ignition is switched off, then disconnect the battery leads. Remove the battery clamp and lift the battery from its cradle.

Battery electrolyte check

Applicable to batteries with removable cell vent cover(s)

a. Electrolyte specific gravity check.

Remove the vent covers from the top of the battery.

Using a hydrometer check the specific gravity of the electrolyte in each cell and compare the readings obtained with the following tables.

Caution

The electrolyte in the battery is a corrosive acid. Do not allow the electrolyte to come into contact with the eyes, skin, fabric, or paintwork. Flush any contacted areas immediately and thoroughly with water. If the eyes are effected, flush for at least 15 minutes and obtain prompt medical attention.

Chloride battery

Air temperature below 32°C (90°F)

Specific Gravity	Condition of Battery
1.270 to 1.290	Fully charged
1.180 to 1.200	Half discharged
1.090 to 1.110	Fully discharged

Air temperature above 32°C (90°F)

Specific Gravity	Condition of Battery
1.220 to 1.240	Fully charged
1.150 to 1.170	Half discharged
1.070 to 1.090	Fully discharged

Lucas or Varta battery
Air temperature below 27°C (80°F)

Specific Gravity	Condition of Battery
1.270 to 1.290	Fully charged
1.180 to 1.200	Half discharged
1.090 to 1.110	Fully discharged

Air temperature above 27°C (80°F)

Specific Gravity	Condition of Battery
1.220 to 1.240	Fully charged
1.130 to 1.150	Half discharged
1.050 to 1.070	Fully discharged

If the specific gravity reading of all the cells is uniform and within the range 1.240 to 1.270 the battery is in an acceptable state of charge. If the readings are uniform but below 1.220 the battery should be recharged. Always remove the battery from the car for recharging.

If the specific gravity of the electrolyte in one cell differs markedly from the others (i.e. the reading is 0.040 or more, lower than the remainder), then a defect must be suspected and rectified as necessary.

b. Electrolyte level check

Ensure that the battery is in a high state of charge (see Electrolyte specific gravity check).

The level of the battery electrolyte on each cell should be approximately 5 mm (0.250 in) above the tops of the separators (Lucas or Varta battery) or contacting the blue bar situated above the separators (Chloride battery).

If the electrolyte level is low top-up using distilled water until the level is attained. Do not overfill.

Always ensure the top of the battery is clean prior to removal of the vent cover.

Battery voltage check

Applicable to sealed for life (maintenance free) batteries

The state of charge of a 'sealed for life' battery can only be checked by taking a voltage reading at the battery terminals, using either a digital voltmeter or multimeter. The instrument used must be accurate to within 0.1 volts.

Before a voltage reading is taken on batteries that have recently received a charge, the residual effects of the surface charge on the battery plates must be removed to avoid a false reading. This surface charge can be removed by applying an electrical load to the battery (e.g. by either connecting a high rate discharge tester for 15 seconds or if the battery is fitted to a car, switching on the headlamps for one minute). Afterwards, allow the battery to stand for a further one minute before a voltage reading is taken.

A minimum reading of 12.5 volts (corresponding to 75% charge) is acceptable. Below this reading the battery should be recharged. Instructions for charging are provided on the battery label.

Compare the reading obtained with the following table to ascertain the state of charge

Voltage	State of charge
12.8	100%
12.6	82%
12.5	75%
12.4	60%

2 Clean and check the battery terminals

The top of the battery should always be kept clean and dry.

If corrosion of the battery leads or terminals has occurred it should be removed as follows.

Disconnect the battery leads and using hot water or a dilute solution of ammonia carbonate, wash them thoroughly until all corrosion has been removed. Finally wash with clean water to remove the ammonia carbonate solution.

Remove any corrosive deposit from the terminal posts using a cloth moistened with ammonia carbonate solution then wash with clean water.

Dry the battery leads and terminal posts. Connect the battery leads to the terminal posts. Liberally coat the terminals with petroleum jelly.

3 Check all exterior lamps for operation

Actuate the respective switches and check for lamp illumination and function i.e. turn flashers, headlamp dip/main beam, headlamp flash. When checking the fog lamps the main lighting switch must be on. In the Park position the front fog lamps (if fitted) must be switched on before the rear fog lamps will illuminate.

When only the rear fog lamps are switched on with the main lighting switch in the Head position, these lamps will be extinguished when the headlamps are switched to main beam. If both front and rear fog lamps are in use the rear fog lamps will remain illuminated.

The respective facia tell-tales should also be checked for illumination during these operations.

With the lighting switch in the Park and Head positions, switch on the ignition. Check the facia instruments for illumination; the panel illumination dimming switch should also be checked for correct operation.

4 Check all facia warning lamps for operation

Before carrying out the following checks firmly apply the parking brake; ensure the gear range selector is in the Park position and remove the gear range selector isolator from the fuseboard.

Ignition and oil warning lamps

Turn the ignition key to the RUN position, the ignition and oil pressure warning lamps should illuminate. Start the engine, both lamps should extinguish; switch off the ignition.

When the ignition key is turned to the ACC position the ignition warning lamp only should illuminate.

Warning panel cluster lamps

Move the gear range selector lever to the D position (do not insert the gear range selector isolator).

Apply the footbrake then turn the ignition key to the start position. All warning panel cluster lamps should illuminate. With the ignition held in the start position, turn the main lighting switch to the Park and Head positions; the intensity of illumination of the ice and low fuel warning panels should reduce. Switch off the ignition and lighting switch.

The hydraulic system warning lamps situated at the top of the warning panel cluster should also be checked as follows.

Turn the ignition key to the RUN position.

Depressurize the hydraulic systems by actuating the brake pedal between 50 and 60 times. The two brake pressure warning panels should illuminate.

When the lamps have illuminated start and run the engine. Both lamps should extinguish after approximately two minutes indicating that the hydraulic systems are pressurized. Switch off the ignition.

Fasten seat belt warning lamp

To check the seat belt warning lamp, open and close each door in turn; observe the lamp operation.

The seat belt warning panel should illuminate whenever a door is opened and extinguish approximately seven seconds after the door is closed.

Note

All doors must be fully closed for the lamp to extinguish (i.e. not on first catch).

Hazard warning indicator

Depress the hazard warning switch, check that all the turn indicators and the facia warning lamp are flashing.

5 Check all interior lamps for operation

Ensure all the doors are fully closed and the interior lamps are extinguished. Open the driver's door; the rear section of the central roof lamps should illuminate. Fully close the door; the roof lamps should remain illuminated for approximately seven seconds.

On 1985/86 model year cars the rear roof lamps and footwell lamps should also illuminate when the door is opened. If the gear selector lever is moved from the Park position on these cars, with the ignition key in the RUN position, the lamps will extinguish immediately all the doors are closed. When carrying out this operation also check that the door open warning lamp and step lamp are illuminated with the door in the open position. These lamps should extinguish immediately the door is fully closed.

Repeat the check on the remaining door(s).

Note

If the doors are only closed to the first catch position the lamps should remain illuminated.

Check the operation of the front compartment personal lamps as follows.

Withdraw the main lighting switch; the front section of the driver's roof lamp should illuminate.

Operate the map lamp switch, the front section of the front passenger's roof lamp should illuminate.

On 1985/86 model year cars fitted with vanity

mirror illumination, move the switch to the mirror position. Lower the passenger's sun visor; the lamp situated above the visor should illuminate.

Withdraw the visor from its retaining clip; the lamp should extinguish. The lamp should also extinguish when the visor is moved to its raised position, even when the switch is on.

The operation of the rear roof lamps should be checked by operating the switches situated on the rear compartment vanity mirror surrounds.

Press the upper portion of the three position switch; the front section of the respective roof lamp should illuminate. Press the lower portion of the switch and the rear section of both rear roof lamps should illuminate. With the switch in the central position both lamps should be off. Repeat the operation on the opposite side of the car.

On Camargue cars press the outer of the two switches situated in the arm rest; this should illuminate the rear section of both rear roof lamps. Pressing the inner switch should illuminate the front section of the respective roof lamps. Repeat the operation on the opposite side of the car.

Convertible cars

Seven interior lamps are provided, one in each door, two in the hood above the rear window, one in the front face of each rear seat outer arm rest, and one above the facia stowage compartment.

Open the driver's door; both roof lamps, the lamp in each rear arm rest and the lamp in each door should illuminate. Fully close the door, the lamps should all extinguish, except the rear roof lamps which should remain illuminated for approximately seven seconds. Repeat this procedure with the passenger door.

Withdraw the main lighting switch; both rear roof lamps should illuminate.

Operate the facia switch marked MAP; the lamp situated above the facia stowage compartment should illuminate.

With the doors closed, operate the switches situated in the end of the arm rest. The rear roof lamp and rear compartment arm rest lamp situated on the same side of the car as the switch should illuminate.

6 Check the horns for operation

Examine the electrical connections to each horn to ensure they are in good condition. Clean the horns and remove any foreign matter that may have collected in the horn trumpets.

Switch on the ignition; press the horn button several times to ensure the horn button is making a good contact and that both horns are functioning correctly each time it is pressed.

7 Replenish the windscreen and headlamp washers reservoirs

Windscreen washer reservoir

The filler is located in the engine compartment.

Remove the filler cap and add the correct mixture of windscreen washer fluid and distilled water to the reservoir until the maximum level is attained.

Topping-up level – bottom of the filler neck.

Headlamp washer reservoir

On 1985 model year Silver Spirit, Silver Spur, Mulsanne, and Bentley Eight cars a headlamp washer system is fitted. The reservoir is housed under the front right-hand wing and the filler is located in the engine compartment towards the front of the car.

The reservoir should be topped-up with clean water until the fluid level is at the bottom of the filler neck.

During winter conditions, a solution of 30% isopropyl alcohol and 70% water should be used. This mixture will provide frost protection down to a temperature of approximately -10°C (14°F).

8 Check the condition of the windscreen wiper blades and headlamp wash brushes (if fitted)

Lift the wiper arms from the windscreen and inspect them for wear or damage. Renew the blades if necessary.

To remove a blade, lift the wiper arm away from the windscreen then press the small tab situated in the end of the arm to release the blade retaining catch. Pull the blade from the arm and fit the new blade. Check that the new blade is secured by the retaining catch then return the blade to the windscreen.

On late Silver Spirit, Silver Spur, Mulsanne, and Bentley Eight cars the wiper blade removal procedure is as follows.

- Driver's side of the windscreen. Lift the wiper arm from the windscreen. Push half of the blade away from the arm, until the blade is released from its location clip. To fit the new blade, position it on the wiper arm and press it firmly into the location clip.
- On the passenger's side of the windscreen, lift the wiper arm from the windscreen and pivot the blade backwards through 180° . Press the small release tag, situated on the underside of the blade pivot block and push the blade out of the crooked end of the wiper arm. Withdraw the wiper blade from the arm. Fit the new blade by reversing the removal procedure.

Note

Care must be taken during these operations to ensure that the wiper arm is not allowed to spring back onto the windscreen when the blade has been removed, otherwise damage to the windscreen could occur.

On Corniche, Continental, and Camargue cars fitted with headlamp wash/wipe brushes, examine the brushes for wear or damage and renew if necessary.

To renew a brush, carefully remove the retaining nut from the spindle. Note the position of the brush then withdraw it from the splined spindle. Fit the new brush by reversing the removal procedure ensuring that the brush is in the correct park position.

9 Check the windscreen wash/wipe and headlamps power wash/wipe for correct operation

Before carrying out the following check ensure that the windscreen is clean.

Switch on the ignition and press the windscreen wash/wipe switch. The windscreen wipers should

operate and the fluid from the washer jet should impinge on the windscreen approximately 419 mm (16.5 in) from the centre line of the windscreen and 190 mm (7.5 in) below the windscreen top finisher. The wash/wipe function should continue until the switch is released.

On release of the push button switch the washer should cease while the wipers should continue for approximately four strokes before returning to the park position.

Turn the main lighting switch to the HEAD position. The headlamps cleaning function will only operate when the headlamps are illuminated. Press the wash/wipe switch, the power wash jets should only operate for half a second when the wash/wipe switch is depressed. To repeat the wash it will be necessary to release and then depress the switch again.

The headlamp brushes and washer jets should operate until the switch is released, the brush giving one full wipe cycle after the jet flow has ceased.

10 Check the alternator for correct operation

For details of the alternator test procedure and brush renewal, reference should be made to Chapter M of the Workshop Manual.

11 Check the condition of the starter motor brushes and pinion

For details of the procedure required to carry out the inspection of the starter motor brushes and pinion, reference should be made to Chapter M of the Workshop Manual.

Automatic air conditioning system

1 Check the scuttle intake grille is free from obstruction.

Check the air intake grilles and foam filter, situated behind the bonnet, for obstruction (leaves, dirt, etc.). Carefully remove the grille retaining screws, lift the grilles and filters from the body and clean all parts including the air intake ducts; also ensure the air intake duct drain tubes are free from obstruction.

2 Check the refrigeration system for correct operation

For details of the procedure required to carry out this operation reference should be made to Chapter C of the Workshop Manual.

Body

1 Check the condition and operation of the seat belts

The following checks should be carried out on the front and rear retractable seat belts.

Fully withdraw the seat belt from the reel; examine the webbing for any signs of wear or damage. Allow the belt to return to the stowed position.

To check the operation of the retractable belt, fit the belt and then give the webbing of the diagonal belt a sharp pull. Ensure that the belt locks and then returns to the normal roller action immediately the belt is released.

With the fastening tongue of the belt locked in the retaining clasp; ensure the tongue is securely held and is released immediately the release button marked **PRESS** is operated.

The alternative method of checking the seat belts is to select an open stretch of road, then, when the road is free from any potential danger, accelerate the car to 24 km/h (15 mile/h) and brake sharply from this speed; ensure that the belt locks and then subsequently releases. If this method of test is used, it will be necessary to carry a passenger(s) to enable the passenger seat belts to be tested.

Check the rear seat lap belt for condition and correct locking and release.

Report any defects to the Owner.

When seat belt replacement is necessary only belts approved by Rolls-Royce Motors Limited should be fitted.

2 Check that all body drains are free from obstruction

Examine the body drain holes; remove any foreign matter that may be obstructing the holes. Take care not to damage the paintwork.

3 Lubricate the spare wheel carrier lowering bolt

Turn back the carpet on the luggage compartment floor to expose the spare wheel inflation trap and spare wheel carrier lowering bolt head. Remove the inflation trap cover; if a spare wheel retainer is fitted, it should be released.

Rotate the spare wheel bolt anti-clockwise until the carrier is fully lowered. Remove the spare wheel from the carrier.

Lubricate the carrier lowering bolt using a recommended lubricant. Raise and lower the carrier to distribute the lubricant over the full length of the carrier bolt.

Check the condition of the spare wheel as described under the heading **Wheels**.

Fit the spare wheel onto the carrier. Ensure that the inflation valve is in line with the inflation trap in the luggage compartment floor, then fully raise the carrier.

Fasten the spare wheel retainer(if fitted), and fit the tyre inflation trap rubber and carpet.

4 Check the fluid level in the power operated hood reservoir

Convertible cars

The level of the fluid in the hydraulic pump reservoir must be checked with the hood in the fully open (down) position.

The fluid reservoir is situated adjacent to the stowage recess below the luggage compartment floor similar to that shown in figure B5-39.

To gain access to the reservoir, turn back the carpet on the right-hand side of the luggage compartment to expose the recess covers; remove the covers.

Unscrew the reservoir filler cap and check the fluid level. The correct level is 25 mm (1.0 in) below the filler neck.

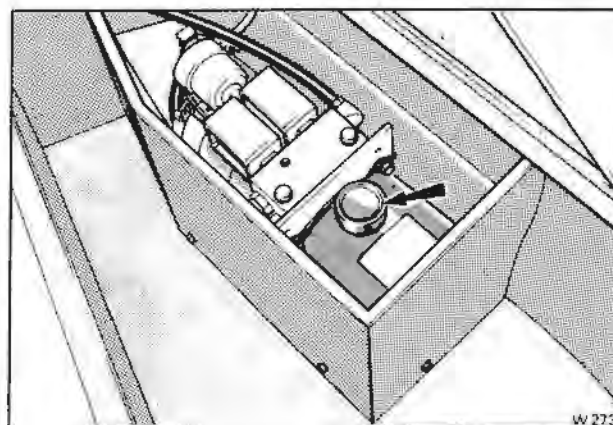


Fig. B5-39 Power operated hood reservoir

If necessary top-up the reservoir with an approved fluid. **Under no circumstances must a castor oil based fluid be used.**

Wheels

1 Check all tyre pressures

Check the tyre pressures including the spare when the tyres are cold; adjust if necessary. The inflation pressure of the spare tyre should be adjusted to the highest tyre pressure (i.e. rear wheel).

Do not check the pressures when the tyres are warm (e.g. after the vehicle has run).

Always ensure that the valve caps are fitted after checking.

2 Check the condition and tread depth of the tyres

Examine the tyres, including the spare, for any signs of damage or tyre wall cracking, etc.

Carefully remove any stones or other objects that may be lodged in the tyre treads.

Check the depth of tread at several points around each wheel using a tread depth gauge.

To enable a visual check to be made, tread depth indicators are incorporated into the tyre construction. These indicators are integral moulded ribs, spaced at intervals around the circumference of the tyre, and extend across the full width of the tread in all primary grooves. When one or more of these indicators are flush with the tread, only 1.6 mm ($\frac{1}{16}$ in) or less of tread depth remains, and a new tyre is required.

If the condition of the tyres is not satisfactory or tread depths do not conform to the legal requirements of the country in which the car is operating, the owner should be notified and asked to authorize the fitting of new tyres.

For full information on tyre fitting, balancing, etc., reference should be made to Chapter R of the Workshop Manual.

Test

1 Road test the car for satisfactory performance

On completion of the respective service schedule

operations, carefully road test the car for satisfactory performance.

If new brake pads have been fitted, the running-in and bedding procedures should be carried out as described under, Check the brake disc pads for wear and Check the parking brake pads for wear.

When the road test has been completed, the car should be fully inspected for any leaks, fouls, etc., and rectified as necessary.

The transmission fluid level, should be finally checked immediately after the test, while the fluid is at normal running temperature and topped-up if necessary (see Check the transmission fluid level).

Ensure that all controls, door handles, steering wheel, etc., are clean and that any dirt which may be attributed to the service schedule is completely removed.

Service schedule procedures*Cars conforming to Middle East Countries specifications*

Contents	Pages					
	Silver Spirit Mulsanne Silver Spur	Mulsanne Turbo	Bentley Eight	Bentley Turbo R	Corniche/ Continental	Camargue
1985 model year cars.	—	B5/1-3	—	—	—	—
1986 model year cars	—	—	—	B5/1-3	—	—

Service schedule procedures

1985 model year cars



WARNING

Use only Hydraulic System Mineral Oil (LHM) to replenish the braking and levelling systems.

Do not use Brake Fluids (Castrol RR363, Universal, or any other type). The use of any type of brake fluid, even in very small amounts, will cause component failure necessitating extensive rectification to the braking and levelling systems of the car.

Always ensure before fitting any seals, hoses, pipes, etc., that they are suitable for a mineral oil system. For details of correct component identification reference should be made to Chapter G of the Workshop Manual.

Always ensure that a sealed container of **Hydraulic System Mineral Oil (LHM)** is fitted adjacent to the battery.

Always ensure that no foreign matter enters the systems when work is being carried out.

General information

The information contained in this chapter should be used in conjunction with the service schedule chart (see Chapter G) and Workshop Manual publication number TSD 4400.

Car protection

Prior to commencing a service schedule the car should be suitably protected. For this purpose car protection kit RH 2662, wing covers RH 2684, and wing cover liners RH 2685 should be used.

Regular maintenance

In addition to the service schedules listed, the following maintenance should be carried out.

Engine

Weekly or every 800 kilometres (500 miles) whichever is the earlier; check the engine oil by means of the dipstick; top-up if necessary.

Lamp units

Weekly; check the lamp units for operation; rectify any faults.

Tyre pressures

Weekly; check the tyre pressures including the spare; adjust if necessary.

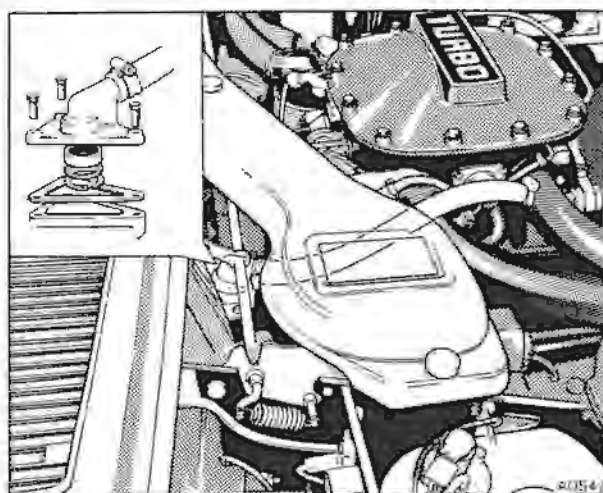


Fig. B5/1-1 Crankcase breather tube flame trap

Windscreen and headlamp washer reservoirs

Weekly; check the washer fluid level; top-up if necessary.

Hydraulic reservoirs

Monthly; check the level of hydraulic mineral oil in the reservoirs.

Depressurize the hydraulic systems by pumping the brake pedal until the low brake pressure warning panels on the fascia illuminate. Continue to pump the pedal for at least a further 20 applications to ensure complete depressurization. Start and run the engine for four minutes with the car unladen, prior to checking the level. Top-up if necessary to the indicated maximum level. **Use only Hydraulic System Mineral Oil (LHM)**. Refer to page B1/1-16 for further information before carrying out this operation.

Engine cooling system

Every three months; check the coolant level. If necessary top-up with the correct anti-freeze/water mixture (see page B5/1-8).

Crankcase emission control system

1 Clean the crankcase breather tube flame trap
The engine crankcase is ventilated through a breather tube connected to the air dump (recirculation) pipe.

A flame trap in the form of filter gauze is fitted into the system at the rear of 'A' bank cylinder head (see fig. B5/1-1) and should be cleaned as follows.

Withdraw the windscreen wiper motor relay (wiper 3) (see fig. B5/1-17, item A) situated on a

bracket adjacent to the windscreen washer reservoir.

Remove the cover from the windscreen wiper drive mechanism to gain access to the crankcase breather connection.

Disconnect the breather hose from the connection on the air dump pipe.

Remove the setscrews securing the speed control bellows or actuator mounting bracket, dependent on the type fitted, to the crankcase breather/flame trap housing. Move the bellows or actuator away from the housing.

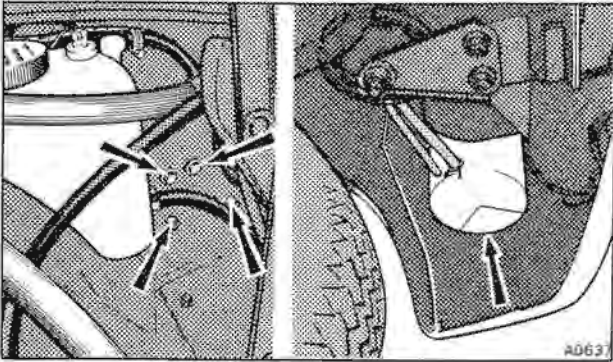


Fig. B5/1-2 Fuel evaporative emission control canister and mounting bracket setscrews

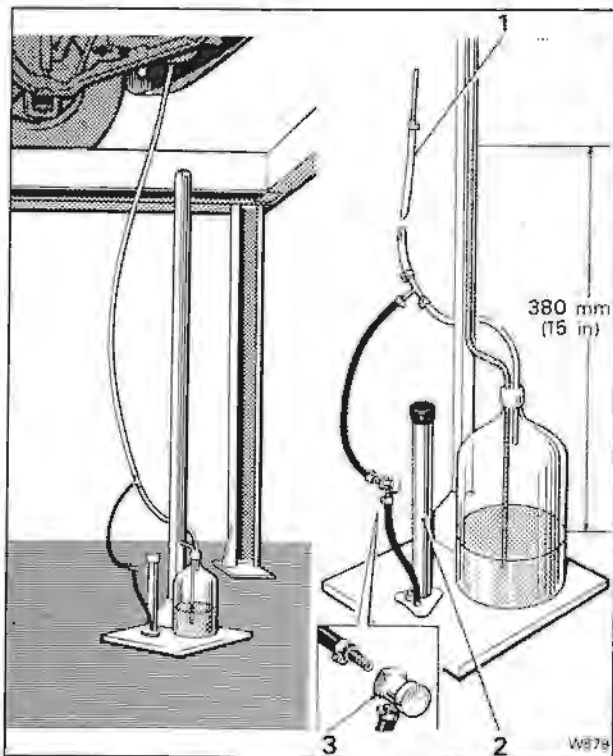


Fig. B5/1-3 Leak check test equipment
 1 Connection to fuel tank/canister hose
 2 Pump
 3 One-way pressure valve

Remove the remaining setscrew from the housing cover. This setscrew also secures the ignition harness clamp. Carefully remove the housing cover and hose.

Remove the circlip retaining the filter gauze situated on the underside of the housing cover. Remove the filter gauze and washer.

Thoroughly clean the gauze with a suitable cleaning solvent and dry using compressed air.

Ensure that the breather pipe, housing, and cover are also clean.

Fit the filter gauze, housing cover, and speed control bellows or actuator by reversing the removal procedure.

Fuel evaporative emission control system

1 Renew the evaporative emission control canister

Carry out the usual workshop safety precautions.

Locate the control canister under the left-hand front wing (see fig. B5/1-2). Using the special pliers RH 8090 remove the securing clip from the canister end of the fuel tank to canister flexible hose.

Withdraw the hoses fitted to the control canister. Label each one to facilitate assembly.

Unscrew the four setscrews retaining the control canister in position (see fig. B5/1-2). Support the weight of the canister before the last setscrew is removed. Collect the washer fitted under the head of each setscrew.

Withdraw the control canister from under the wing.

Note the position of the control canister in relation to the mounting bracket and unscrew the retaining worm drive clip.

Fit the new canister to the mounting bracket and tighten the retaining worm drive clip.

Ensure that the canister is in the correct position relative to the mounting bracket.

Fit the assembly to the vehicle by reversing the procedure given for removal, noting that new hose securing clips should be used.

2 Check the condition of all pipes, hoses, and connections

Carry out the usual workshop safety precautions.

Locate the fuel evaporative control canister.

Withdraw the fuel tank evaporative hose from the canister and connect it to the test equipment shown in figure B5/1-3.

Apply air pressure to the fuel tank hose via the test equipment until a reading of 380 mm (15 in) H₂O is attained and close the pressure supply.

After five minutes again check the pressure reading, this should not have fallen by more than 12,7 mm (0.5 in).

If the pressure drop is more than 12,7 mm (0.5 in), progressively treat all joints in the system with soap solution to detect air leaks.

Rectify any air leaks and again leak check the system.

During the 5 minutes leak down, visually inspect the hoses, pipes, and connections of the system that are routed under the car. Commence where the hose

exits from the body adjacent to the left-hand rear road spring and follow the system to the control canister.

Ensure that the hoses are secure in the mounting clips.

When the system is satisfactory, detach the test equipment and connect the hose to the control canister. Secure the hose with a new clip.

3 Check the purge flow rate

Carry out the usual workshop safety precautions.

Remove the retaining clip from the purge line restrictor hose.

Disconnect the hose at the purge line restrictor. Leave the restrictor in the hose to the engine (see fig. B5/1-4).

Connect a rotameter assembly RH B725 into the line, between the restrictor and the open pipe to the valance connection.

Connect an impulse tachometer to the engine in accordance with the manufacturer's instructions.

Start and run the engine at 650 rev/min; there should be negligible purge flow shown on the meter. Raise the engine speed to 1000 rev/min and note the flow reading on the rotameter, this should be between 50 ft³/h and 70 ft³/h.

If the purge flow rate is outside the limits specified, refer to the Workshop Manual TSD 4400, Chapter U.

Engine

1 Change the engine oil

The sump should be drained when the engine is warm, preferably after the car has completed a run.

To drain the oil, position the car over a pit or on a ramp.

Place a container in position beneath the drain plug situated on the right-hand side of the sump (see fig. B5/1-5). Remove the drain plug and allow the oil to drain from the sump.

Do not flush the sump with paraffin or petrol.

Fit the drain plug ensuring that the washer is correctly positioned and in good condition.

Fill the engine sump with recommended lubricant until the MAX level is reached on the dipstick.

Carry out the full oil level check procedure as described under Check the engine oil level.

2 Renew the engine oil filter

Drain the engine oil as described under Change the engine oil.

Place a container under the filter to collect any oil that may be spilt.

Remove the filter by unscrewing it from the engine in an anti-clockwise direction (see fig. B5/1-6).

Thoroughly clean the filter seating face on the engine.

Lightly smear the rubber sealing ring on the new filter with clean engine oil.

Screw the filter onto the pedestal until the rubber seal contacts the sealing face, then tighten the filter a further half turn; **do not overtighten**.

Fill the engine with clean engine oil until the MAX

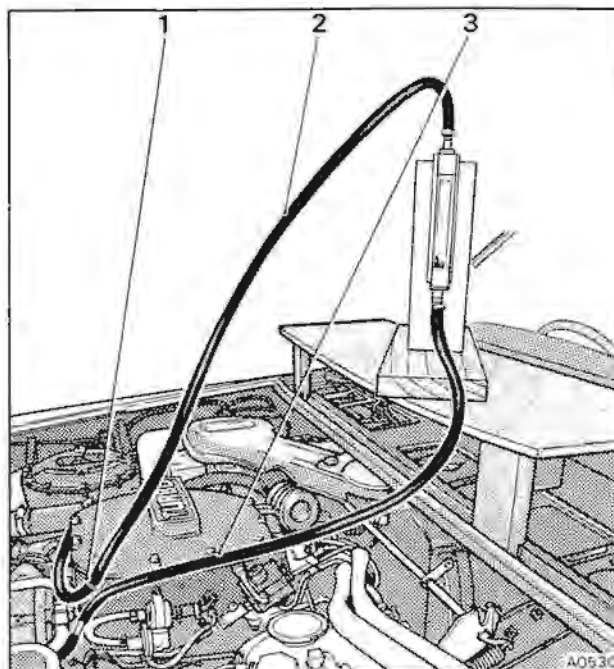


Fig. B5/1-4 Checking the purge flow rate

- 1 Purge line restrictor
- 2 Hose to engine
- 3 Hose from canister

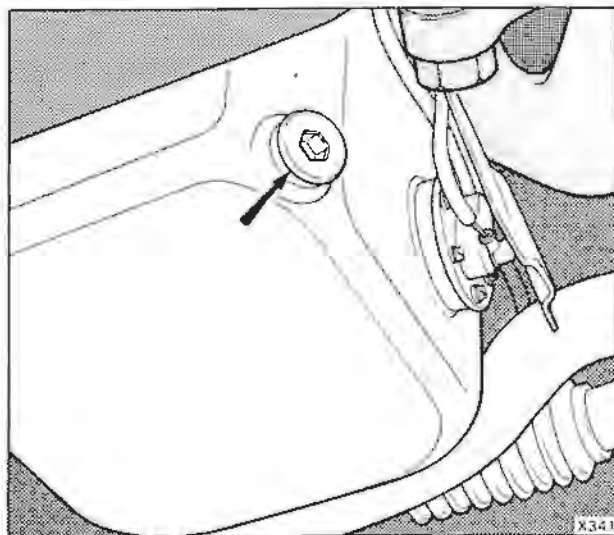


Fig. B5/1-5 Engine sump drain plug

level is reached on the dipstick. Run the engine and check the filter joint for leakage.

Carry out the full oil level check procedure as described under Check the engine oil level.

Check the engine oil level

In order to obtain an accurate indication of the oil level, ensure that the car is standing on level ground. Check the oil level by means of the dipstick marked ENGINE (see fig. B5/1-7).

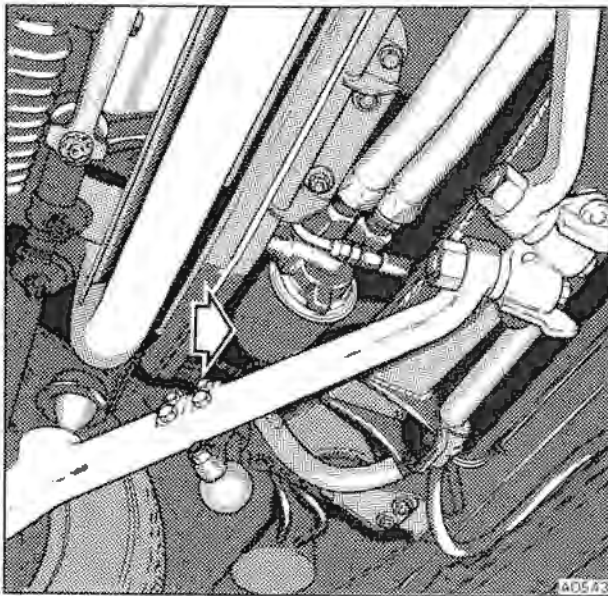


Fig. B5/1-6 Engine oil filter location

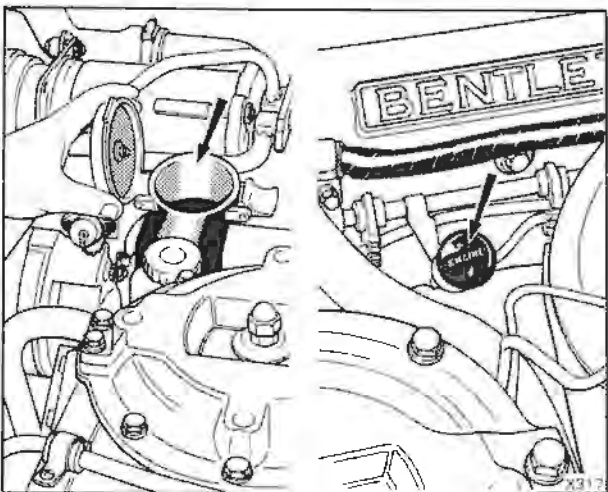


Fig. B5/1-7 Engine oil filler and dipstick

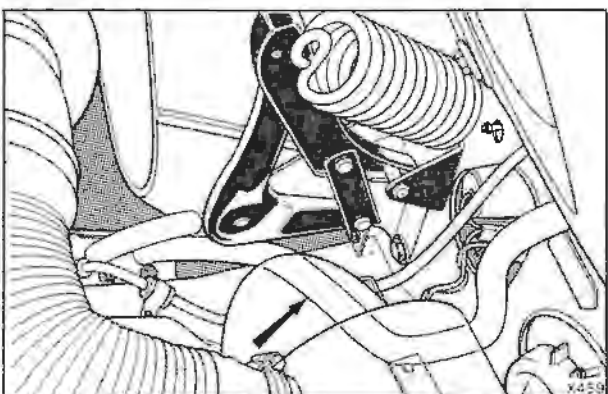


Fig. B5/1-8 Engine oil cooler return pipe

It is recommended that the oil level is checked when the engine is cold. If the engine has been running, sufficient time should elapse after it has stopped to allow the oil to drain into the sump. Do not check the oil level with the engine running.

To replenish the sump with oil, open the filler cap marked ENGINE (see fig. B5/1-7). Add clean oil to the engine and after allowing sufficient time for the oil to reach the sump, check that the oil is up to the MAX mark on the dipstick. **Do not overfill.**

Important

The engine lubrication system incorporates a thermostatically controlled oil cooler, therefore if the oil has been drained from the engine the following additional procedure must be carried out to ensure the correct oil level is obtained.

Carry out the normal topping-up procedure as described previously to obtain the maximum oil level reading on the dipstick.

Drive the car allowing the turbocharger to come into operation, thus enabling the engine oil to attain the temperature required to actuate the oil cooler thermostat.

To ascertain that the thermostat has actuated, a rise in the temperature of the oil cooler return pipe (see fig. B5/1-8) can be felt. This temperature rise occurs as hot oil begins to flow from the oil filter housing, where the thermostat is situated, to the oil cooler mounted in front of the coolant radiator matrix.

Do not attempt to attain the required engine oil temperature rise with the car stationary.

When it has been ascertained that the engine oil has been passing through the cooler, thus filling this part of the lubrication system, check the oil level in the normal manner as described previously.

3 Check the drive belts

Before commencing to adjust the drive belts inspect them for signs of wear or cracking. Any belts found unsatisfactory should be renewed.

If after adjustment, a matched pair of belts have a marked variation in tension, a new pair should be fitted. Always renew both belts in a matched pair, even if only one belt is faulty.

Two belt tension loads are specified; a new belt load for replacement (new) belts and a retensioning load for belts which are satisfactory for further service.

The belt tension must be checked at a point midway between two pulleys by use of a belt tension meter.

Belt dressing must not be applied to prevent belt slip.

Crankshaft to coolant pump/steering pump

The belt tension meter reading should be as follows.
New belt 36,3 kgf to 40,8 kgf (80 lbf to 90 lbf),
Retensioned belt 31,7 kgf to 36,3 kgf (70 lbf to 80 lbf).

The tension of this matched pair of belts is adjusted by altering the position of the steering pump.

Slacken the setscrew securing the steering pump mounting bracket pivot and the clamping setscrew on

the belt tensioner situated below the steering pump (see fig. B5/1-9).

Carefully adjust the tensioner until the correct belt tension is attained.

When the belt tension is correct, tighten the tensioner clamp and mounting bracket pivot setscrews.

If the alternator belt is to be adjusted the mounting bracket pivot setscrew can remain slack until adjustment has been carried out.

Ensure the belt tension is still correct when the steering pump is fully secured.

Crankshaft to coolant pump/alternator

The belt tension meter reading should be as follows.
New belt 36,3 kgf to 40,8 kgf (80 lbf to 90 lbf).
Retensioned belt 31,7 kgf to 36,3 kgf (70 lbf to 80 lbf).

The belt tension is adjusted by altering the position of alternator.

Slacken the alternator mounting setscrew and the clamping setscrew on the belt tensioner situated above the alternator (see fig. B5/1-9).

Carefully adjust the tensioner until the correct belt tension is attained.

When the belt tension is correct, tighten the belt tensioner clamping setscrew and alternator mounting setscrew.

Ensure the belt tension is still correct when the alternator is fully secured.

Crankshaft to refrigeration compressor

The belt tension meter reading should be as follows.
New belt 36,3 kgf to 40,8 kgf (80 lbf to 90 lbf).
Retensioned belt 31,7 kgf to 36,3 kgf (70 lbf to 80 lbf).

The belt tension is adjusted by altering the position of the refrigeration compressor.

Slacken the compressor pivot bolts at the front and rear of the compressor and the belt tensioner clamping setscrew (see fig. B5/1-9).

Carefully adjust the tensioner until the correct belt tension is attained.

When the belt tension is correct, tighten the belt tensioner clamping setscrew and the compressor pivot bolts.

Ensure the belt tension is still correct when the compressor is fully secured.

4 Renew the air filter element

The air filter element is situated in the air intake housing at the front right-hand side of the engine compartment (see fig. B5/1-10).

To gain access to the element, unfasten the two toggle clips retaining the air intake trunk to the housing.

Carefully free the joint and move the trunk away from the housing.

Unscrew the worm drive clip securing the turbocharger intake trunk to the air intake housing. Detach the trunk.

Support the air intake housing and release the

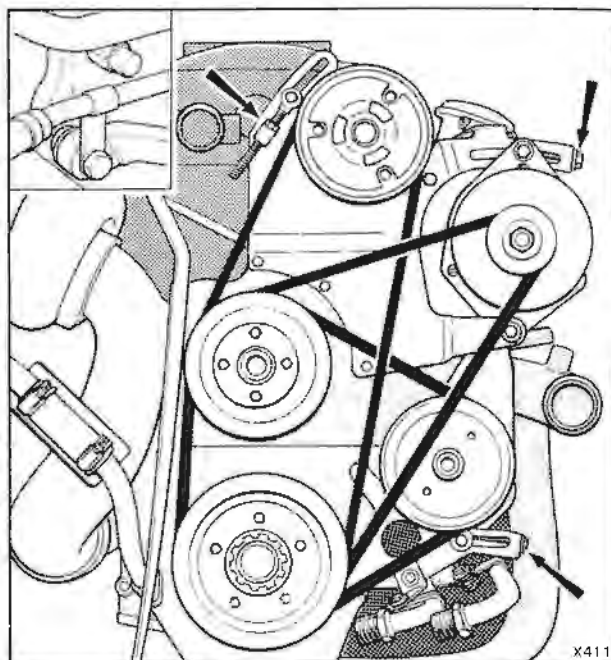


Fig. B5/1-9 Engine drive belt adjustment points
Inset - Refrigeration compressor rear pivot

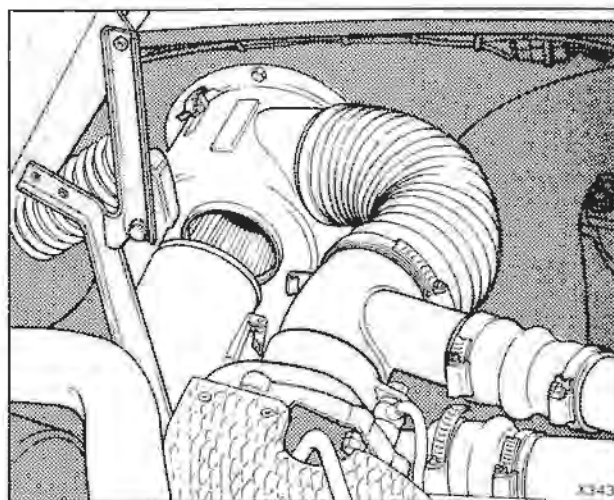


Fig. B5/1-10 Engine air intake filter
(Air intake trunk disconnected)

three toggle clips securing the housing to the valance.

Carefully free the joint, then move the housing towards the engine and withdraw the housing filter element from the car.

Remove the filter element from the housing.

It should be noted that the design of the air intake filter is such that dirt and foreign matter will be collected on the inside of the filter element.

Ensure that the inside of the air cleaner housing (both the section removed and the fixed section in the valance) is clean.

Inspect the joint seals for serviceability. Renew if necessary.

Fit the new filter element as follows.

Locate the large end of the new filter element onto the locating spigot on the inside of the removable half of the housing.

Carefully position the housing and filter onto the valance allowing the filter to pass into the valance mounting section of the housing. Locate the small (blank) end of the filter into the spigot in the valance housing. Align the three housing toggle clips with their respective securing points. Special care should be taken during these operations to ensure that the paper element is not damaged during insertion.

Ensure that the filter is correctly positioned on the location spigots, then secure the three toggle clips. It is essential that the filter is correctly located on the spigots before the toggle clips are fastened down, otherwise there is a serious risk of crushing the filter element.

Fit the remaining components by reversing the removal procedure.

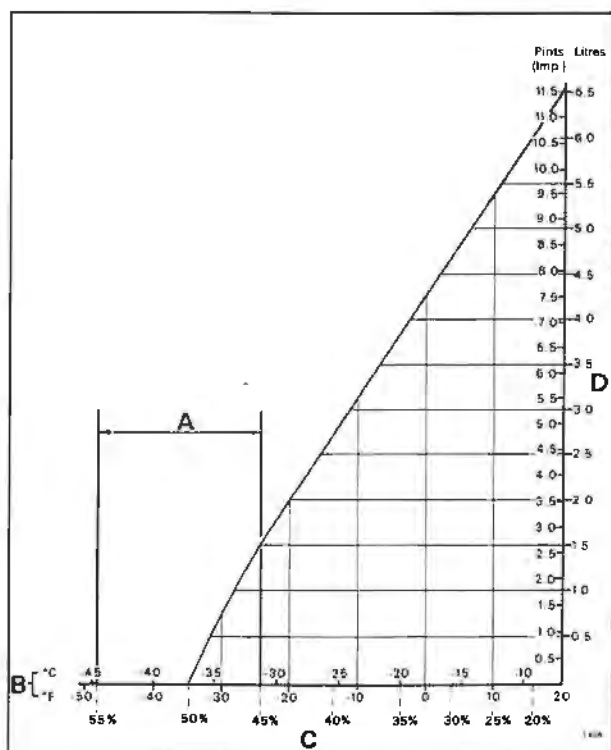


Fig. B5/1-11 Anti-freeze correction chart to give a 50% solution

- A Acceptable service range of concentration
- B Freezing point of coolant
- C Percentage concentration
- D Volume of 100% anti-freeze to be added to maintain a 50% solution after removal of the same volume of old coolant

5 Check the choke idle speed

For full details of choke fast-idle settings reference should be made to Chapter K of the Workshop Manual.

6 Renew the sparking plugs

Sparking plug type NGK BPR 5 ES or Champion RN 11 YC

Plug gap setting 0,76 mm (0.030 in)

Before removing the sparking plugs the surrounding area should be thoroughly cleaned to prevent the ingress of foreign matter when the plugs are removed.

Fit the new plugs ensuring that the gaps are correctly set and that each plug is fitted with a sealing washer. Torque tighten each plug to between 18 Nm and 23 Nm (1,8 kgf m and 2,3 kgf m, 13 lbf ft and 17 lbf ft).

7 Lubricate the accelerator and carburettor linkage

Lubricate all the accelerator and carburettor linkage ball joints, pivots, and clevis pins.

Examine the ball joints for wear and adjust if necessary. Renew any worn clevis pins.

Examine the linkage for correct operation. For details of linkage setting procedures reference should be made to Chapter K of the Workshop Manual.

8 Check the ignition timing

For details of the ignition timing settings and procedures reference should be made to Chapter K of the Workshop Manual.

9 Check the engine idle speed

For full details of carburettor settings reference should be made to Chapter K of the Workshop Manual.

Engine cooling system

1 Check the coolant anti-freeze concentration

The cooling system is filled initially with a coolant solution comprising equal parts of UT184 (BP - Hythe Chemicals) or Prestone II and water. This mixture gives frost protection down to a temperature of -37°C (-35°F).

The coolant should contain fifty percent of an approved anti-freeze at all times. This not only provides frost protection but also prevents corrosion of the coolant passages and raises the boiling temperature of the coolant.

The anti-freeze concentration should be checked in both the expansion bottle and the radiator.

If the strength of the coolant requires increasing, sufficient coolant should be drained from the radiator and replaced with undiluted anti-freeze (see fig. B5/1-11). Afterwards run the engine until normal operating temperature is attained and the anti-freeze has become thoroughly mixed with the coolant. Stop the engine and again check the concentration in the radiator.

An acceptable level of anti-freeze concentration is between 45% and 50%. Therefore, as a hydrometer may be inaccurate where readings above 40% are

expected, it is recommended that a refractometer is used.

For details refer to Chapter L of the Workshop Manual.

If a refractometer is not available, and a hydrometer has to be used, a scale reading of between 1,06 and 1,07 should be obtained, with the coolant at room temperature for the mixture to be correct.

2 Check the coolant level

Warning

The cooling system becomes pressurized during engine running, therefore, extreme care should be taken when removing the radiator cap from a warm or hot radiator.

Routine check

To check the level outside a normal service schedule (e.g. Regular maintenance) and when no cooling/heating system fault is reported or suspected, proceed as follows.

If the **engine is hot** ensure that the coolant level in the translucent expansion bottle is at the MAX mark. Top-up if necessary and replace the expansion bottle cap.

If the **engine is cold** ensure that the coolant level in the translucent expansion bottle is half-way between the MIN and MAX marks. Top-up if necessary and replace the expansion bottle cap.

If the coolant level in the expansion bottle is either below the MIN mark or there is no coolant in the expansion bottle, carry out the following Full check procedure.

Full check

Ensure the gear range selector is in the Park position and apply the parking brake.

Remove the gear range selector cut-out from the fuseboard.

Check the coolant level in the translucent expansion bottle (see fig. B5/1-12). If the level is low or the bottle is empty, add coolant to bring the level up to the MIN mark.

Ensure that the engine is not hot (to allow safe removal of the radiator cap).

Remove the radiator cap in three stages as follows.

Turn the cap slowly anti-clockwise until a check position is reached. Wait until any pressure in the system has been released. Press down on the cap and continue to turn it anti-clockwise until the cap is released.

Check the coolant level in the radiator. This should be half-way up the filler neck.

If the coolant level in the radiator is correct, fit the radiator cap by pressing it firmly down and turning it fully clockwise.

Top-up the coolant level in the expansion bottle in accordance with the Routine check procedure.

If the coolant level in the radiator is low but visible and no cooling/heating system fault is reported or suspected top-up the system using the following

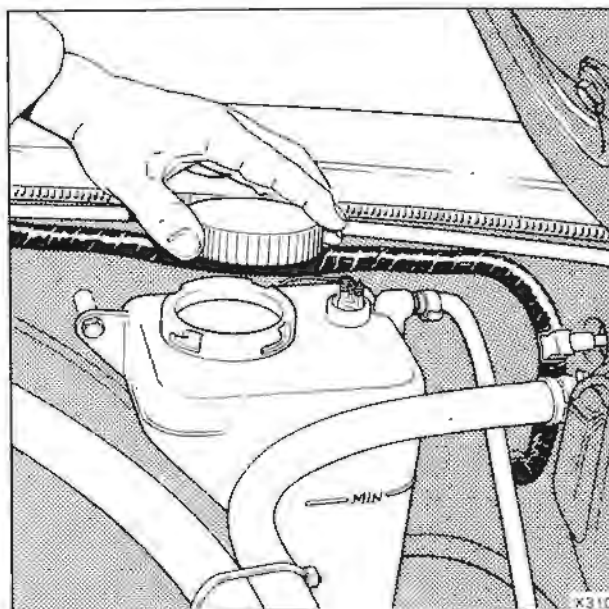


Fig. B5/1-12 Coolant expansion bottle

procedure. If however the coolant is not visible or a coolant/heating system leak is reported or suspected, the system should have any faults rectified and then be pressure tested prior to carrying out the topping-up procedure.

Top-up the radiator until the coolant is half-way up the filler neck.

Start and run the engine.

Turn the air conditioning system function control fully clockwise to the defrost position.

Set the air conditioning system override switch to the AUTO position.

Allow at least one minute for the air conditioning system to stabilize, then check to ensure that all air is being directed towards the windscreen (i.e. no air is delivered from the lower system and the facia outlets). This procedure opens the heater system water tap.

Run the engine, without the radiator pressure cap fitted, until normal operating temperature is attained. Top-up the coolant level in the radiator during this time.

Switch off the engine.

Fit the radiator pressure cap by pressing it firmly down and turning it fully clockwise.

Top-up the coolant level in the expansion bottle in accordance with the Routine check procedure.

3 Check all coolant hose clips for tightness

Examine all the coolant hose connections for signs of leakage, and check the worm drive clips for tightness. Never overtighten a clip in an attempt to seal a leaking connection.

In the event of a hose connection leaking when the worm drive clips have been tightened, drain the cooling system to a level below the leaking hose. Remove and inspect the hose and its connecting component for signs of damage. If necessary renew

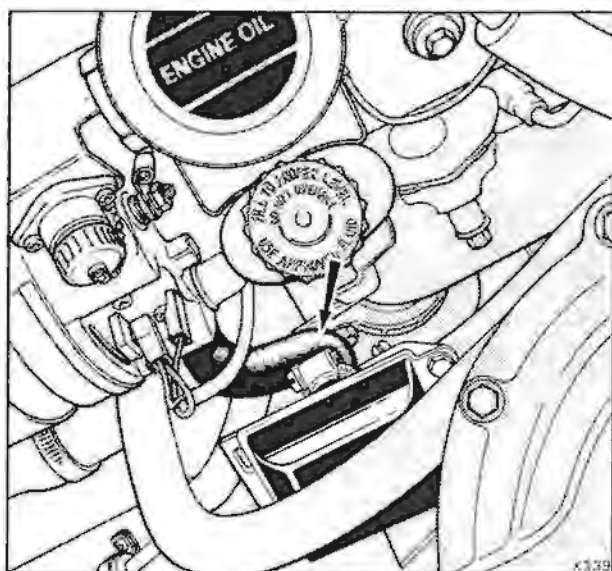


Fig. B5/1-13 Heater tap feed hose

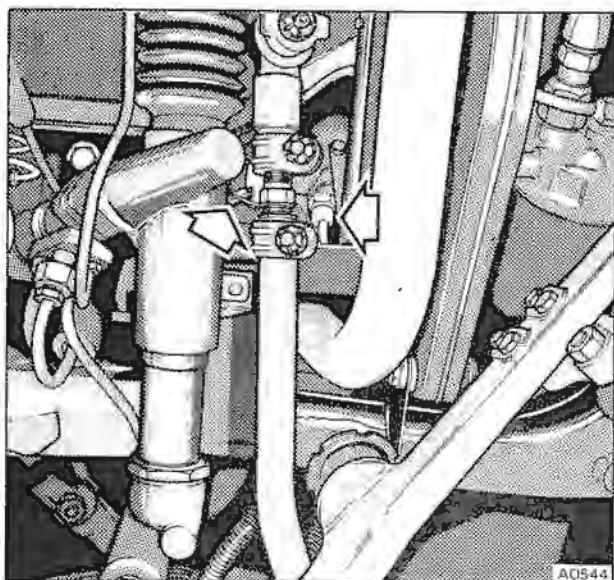


Fig. B5/1-14 Oil pressure switch and transmitter

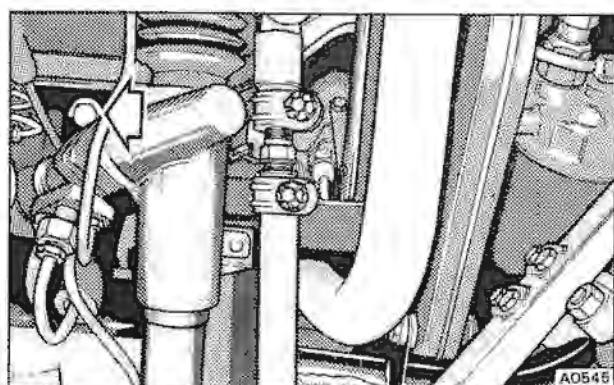


Fig. B5/1-15 Crankcase drain plug (B bank shown)

the faulty component and refill the system with coolant as described in Renew the coolant.

4 Examine the condition of all coolant hoses

Inspect all coolant hoses for signs of deterioration, cracking, weak spots, etc. Any faulty hose should be removed and a new hose fitted. When renewing a hose always ensure that it does not foul other components and that it is not kinked so as to cause complete or partial restriction of the coolant flow.

5 Fit a new heater tap feed hose

Drain the coolant system as described in Renew the coolant, but do not remove the engine crankcase drain plugs.

Disconnect the heater tap feed hose from the engine and heater tap (see fig. B5/1-13); remove the hose.

Fit the new hose; ensure that the hose is free from any sharp bends that may restrict coolant flow.

Fill the engine coolant system as described in Renew the coolant.

Ensure that the parking brake is applied and the gear range selector lever is in the Park position.

Remove the gear range selector cut-out from the fuseboard.

Start and run the engine; check the coolant hose for leaks.

Switch off the ignition and fit the gear range selector cut-out.

6 Renew the coolant

Drive the car onto a ramp; move the gear range selector to the Park position and apply the parking brake.

Remove the gear range selector cut-out from the fuseboard.

Disconnect the Lucar connection from the oil pressure switch situated adjacent to the oil filter take-off flange (see fig. B5/1-14). This will allow the air conditioning system to be operated without running the engine.

Switch on the ignition and rotate the air conditioning function switch to the windscreen defrost position, also set the upper system mode override switch to the AUTO position.

Wait approximately one minute for the system to attain the required setting and observe that all the air is being directed to the windscreen. This procedure opens the heater water tap and ensures the system can be completely drained.

Switch off the ignition.

Place a container beneath the radiator drain tap to collect the coolant. Connect a length of hose onto the drain tap to direct the coolant into the container.

Carefully unscrew and remove the radiator pressure cap.

Open the radiator drain tap and allow the coolant to drain from the radiator.

When the radiator has completely drained place a container beneath the crankcase drain plugs. Remove the drain plugs from the crankcase (see fig. B5/1-15)

and allow the residue of coolant to drain from the crankcase.

Renew the washers on the drain plugs and fit the plugs into the crankcase.

To drain the coolant remaining in the expansion bottle disconnect the connection hose from the radiator filler neck and allow the coolant to drain from the expansion bottle into the container. When the coolant has drained connect the hose to the radiator filler neck.

Check all hoses for serviceability and renew as necessary.

Fill the system with fresh coolant of the specified concentration as follows.

Ensure the radiator drain tap is closed.

Slowly fill the radiator with coolant, thus reducing the possibility of air locks in the system.

Start and run the engine for a minimum of 10 minutes with the radiator pressure cap removed. After running for five minutes ensure that warm air is passing up the windscreen from the demister ducts. Top-up the radiator as necessary to ensure there is always coolant in the top tank of the radiator.

Ensure that the thermostat has opened; indicated by a rapid warming of the top radiator hose.

Switch off the engine and top-up the radiator to half-way up the filler neck. Fit the pressure cap.

Fill the expansion bottle to a level midway between the maximum and minimum levels indicated on the bottle.

Start and run the engine until normal running temperature is attained; switch off the engine and top-up the expansion bottle to the maximum level.

Allow the engine to cool down. Carefully remove the radiator pressure cap and ensure the radiator is completely full of coolant. Top-up to half-way up the radiator filler neck if necessary. Fit the radiator pressure cap.

Connect the Lucar connection previously disconnected from the pressure switch (see fig. B5/1-14).

Note

For the coolant system to operate correctly, i.e. for coolant to pass into the expansion bottle when hot and be drawn back into the radiator during cooling, the top of the radiator must not contain an air pocket.

7 Reverse flush the coolant system

Drain the engine coolant system as described in Renew the coolant.

Remove the top and bottom hoses from the radiator matrix.

Fit a waste pipe to the upper (inlet) connection of the radiator.

Apply mains water under pressure through the lower (outlet) connection of the radiator. This should remove all loose sediment in approximately 30 minutes.

Do not under any circumstances use an alkaline compound or detergent to clean the system. Such compounds have a detrimental chemical action on aluminium alloys.

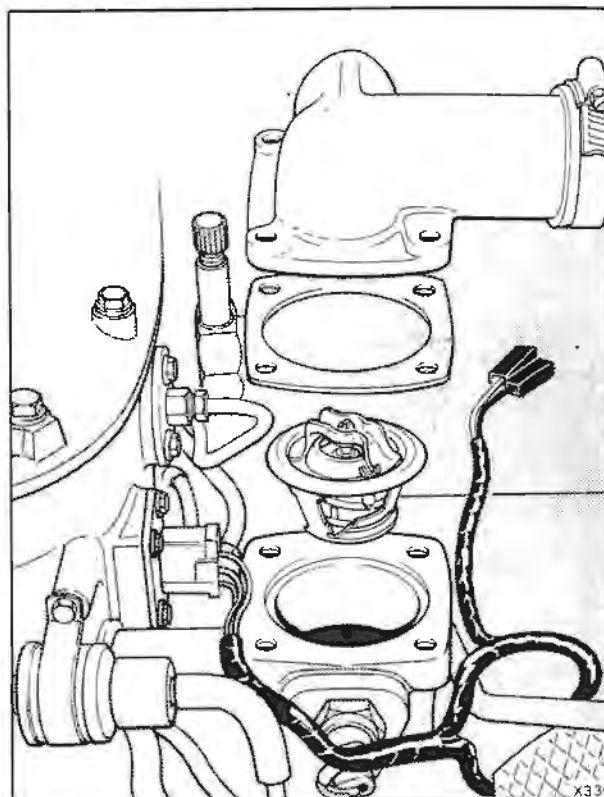


Fig. B5/1-16 Thermostat housing assembly

Remove the engine coolant drain plugs from the crankcase.

Remove the thermostat as described in Renew the thermostat, then replace the cover. Fit a waste pipe to the cover outlet.

Fit a suitable pipe to the drain plug aperture and apply mains water pressure to each aperture in turn.

Flush for approximately 30 minutes, or until the water runs clear of foreign matter.

Fit the drain plugs and a new thermostat by reversing the procedure for removal.

To flush the heater system, detach the heater at the water tap and disconnect the return hose at the coolant pump.

Fit a waste pipe to the disconnected heater feed hose.

Flush the matrix for approximately 30 minutes.

Examine the coolant hoses for deterioration or damage and renew as necessary.

Connect all hoses and fill the system with the recommended coolant mixture as described under Renew the coolant.

8 Remove foreign matter from the radiator, oil cooler, and refrigeration condenser

Using a pressure hose pipe, flush the radiator, oil cooler, and condenser matrices.

Hold the nose of the hose pipe close to the back of the radiator matrix and allow the water to pass between the veins of the matrix. Slowly move the hose over the whole matrix area until all foreign matter

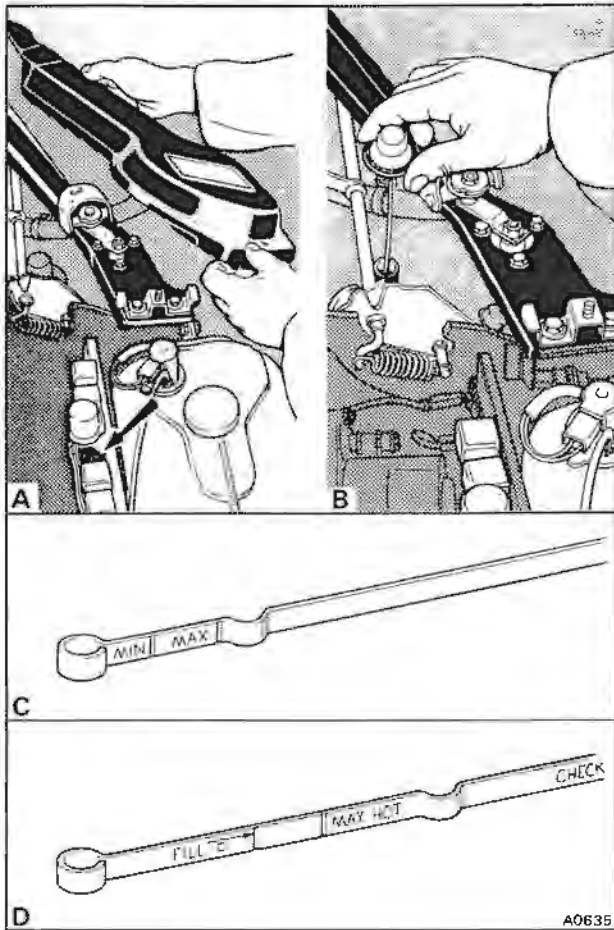


Fig. B5/1-17 Transmission filler tube and dipstick

- A Removing the windscreen wiper mechanism cover. The arrow indicates the wiper motor relay removed
- B Withdrawing the dipstick from the filler tube
- C Original dipstick markings
- D Revised dipstick markings

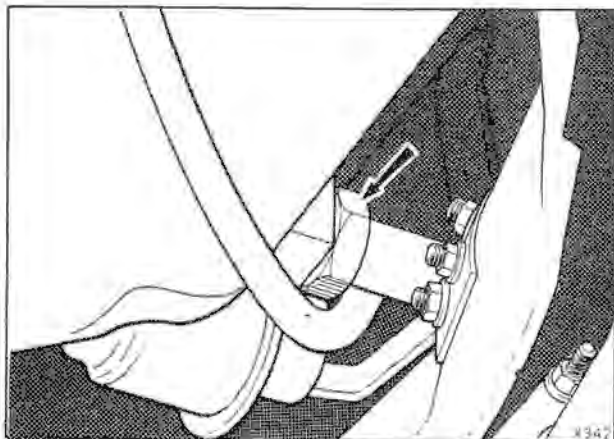


Fig. B5/1-18 Transmission drain point

(insects, etc.) have been flushed clear. Care must be taken to ensure that the end of the hose does not damage the matrix face during this operation.

9 Renew the thermostat

Disconnect the battery.

Place a container beneath the radiator. Attach a length of hose to the radiator drain tap to direct the coolant into the container.

Carefully unscrew and remove the radiator pressure cap.

Open the radiator drain tap and allow sufficient coolant to drain from the system for the coolant level to fall below that of the thermostat housing. Close the drain tap and remove the hose previously attached.

Disconnect the electrical connector from the thermostat housing cover.

Remove the setscrews securing the thermostat housing cover. Remove the cover. The cover can be moved away from the housing without detaching the outlet hose.

Lift the thermostat from the housing (see fig. B5/1-16).

Remove the old gasket material from the thermostat housing and cover. Ensure that no material enters the thermostat housing.

Check that the two faces are clean and dry.

Insert a new thermostat into the housing.

Place a new gasket in position on the housing and fit the cover.

Connect the electrical connection removed from the housing cover.

Top-up the cooling system with the correct coolant mixture as described under Renew the coolant.

Torque converter transmission

It is absolutely essential when adding fluid to, or working on the torque converter transmission that great attention is paid to cleanliness. The smallest particle of dirt in the transmission fluid could interfere with the correct operation of the unit.

It is important for the efficient operation of the torque converter transmission that only an approved fluid is used (see Chapter A).

1 Check the transmission fluid level

The fluid level can only be checked accurately when the car is standing on a level surface, the engine is running at idle speed and the transmission fluid is at normal operating temperature, approximately 77°C (170°F).

The dipstick and filler tube are situated on the right-hand side of the engine compartment.

Remove the protective cover from the windscreen wiper mechanism to gain access to the dipstick. Ensure that the following safety procedure is undertaken to isolate the mechanism prior to removing the cover.

Ensure that the windscreen wiper control switch situated on the facia is in the off position. Remove a windscreen wiper relay, preferably number three,

situated adjacent to the windscreen washer reservoir (see fig. B5/1-17). To remove the relay, pull it vertically from its mounting.

Always clean the top of the dipstick before removing it from the filler tube.

As an initial check, the fluid level may be checked after starting from cold as follows.

Apply the parking brake.

Start and run the engine for three to four minutes at fast-idle speed, with the gear range selector in the Park position. Reduce the engine speed to slow idle.

Whilst sitting in the driving seat **firmly apply the footbrake** and move the gear range selector through the full range of gear positions pausing briefly in each range. Return the selector to the Park position.

Immediately check the fluid level with the engine running at idle speed.

The level should be up to the circular dimple situated below the FILL mark on the dipstick or 10 mm (0.375 in) below the MIN mark, dependent on the type of dipstick fitted (see fig. B5/1-17).

Top-up to this level if necessary.

After this initial check a further check should be carried out as follows.

Drive the car for approximately 24 kilometres (15 miles) of highway/motorway driving or 16 kilometres (10 miles) of city driving. This should ensure the transmission has reached normal operating temperature.

It is essential that this temperature is attained. Do not top-up the fluid level to the MAX mark on the dipstick when the fluid is only warm, as this will result in an over-fill situation when the normal operating temperature is attained. Overfilling will result in fluid being discharged from the transmission breather pipe.

Position the car on a level surface, firmly apply the parking brake and select Park with the gear selector lever.

Carry out the procedure described for the initial check.

With the transmission fluid at normal operating temperature the level of the fluid should be between the FILL and MAX HOT marks or the MIN and MAX marks (see fig. B5/1-17) dependent on the type of dipstick fitted.

If necessary add fluid by pouring it down the filler tube, with the engine still running, until the fluid is to the MAX mark on the dipstick. **Do not overfill**

When the fluid level is correct, switch off the engine and fit the windscreen wiper mechanism cover and relay.

2 Renew the transmission fluid

Position the car on a ramp or over a pit.

Place a clean container having a minimum capacity of 3 litres (5 Imp pt, 6 US pt) under the nut which secures the transmission fluid filler tube to the sump (see fig. B5/1-18).

From within the engine compartment, remove the transmission dipstick as described under Check the transmission fluid level.

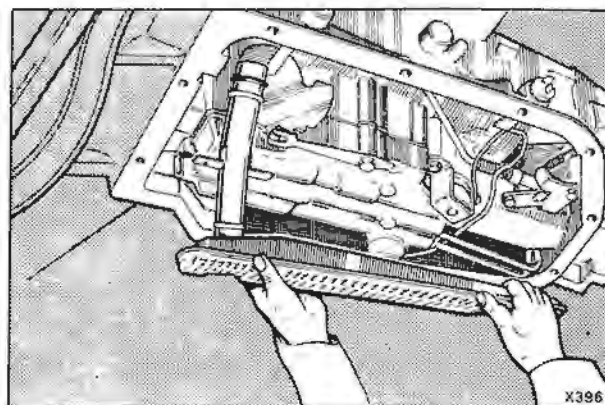


Fig. B5/1-19 Transmission intake strainer removal

Slacken the setscrew securing the filler tube to the engine.

Unscrew the nut securing the filler tube to the side of the transmission sump (see fig. B5/1-18). Withdraw the filler tube from the sump and move it to one side to allow the fluid to drain into the container.

After draining the sump, ensure that the filler tube is clean then fit it to the sump and tighten the drain nut.

Tighten the setscrew securing the filler tube clip to the engine.

Add 2.8 litres (5 Imp pt, 6 US pt) of an approved fluid to the sump, pouring the fluid down the filler tube.

Check the fluid level as described under Check the transmission fluid level.

3 Fit a new intake strainer

Drain the transmission sump as described under the heading Renew the transmission fluid, then proceed as follows.

Remove the setscrews securing the transmission sump and lower the sump.

Drain any fluid from the sump and discard the gasket.

Unscrew the setscrew securing the intake strainer and pipe assembly to the transmission; remove the strainer assembly (see fig. B5/1-19).

Remove the intake pipe from the strainer and discard the strainer.

Clean the transmission sump and the intake pipe with paraffin and dry with compressed air.

Fit a new rubber 'O' ring to the intake pipe and lubricate the 'O' ring with clean transmission fluid.

Ensure that a new rubber seal is fitted to the pipe bore in the new intake strainer, then fit the intake pipe to the strainer.

Fit the intake strainer and pipe assembly to the transmission and torque tighten the securing setscrew to 14 Nm (1.4 kgf m, 10 lbf ft).

Fit the transmission sump using a new gasket and torque tighten the sump setscrews to 16 Nm (1.7 kgf m, 12 lbf ft).

Fit the oil filler tube into the sump and tighten the nut. Tighten the setscrew securing the filler tube clip to the engine.

Add 4,5 litres (8 Imp pt, 9.6 US pt) of an

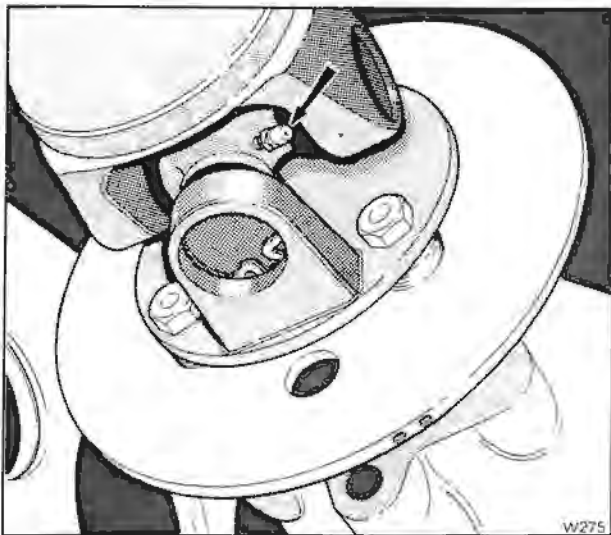


Fig. B5/1-20 Propeller shaft grease point

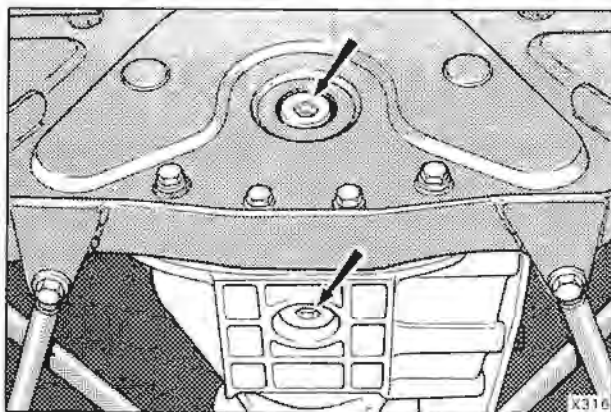


Fig. B5/1-21 Final drive drain and filler/level points

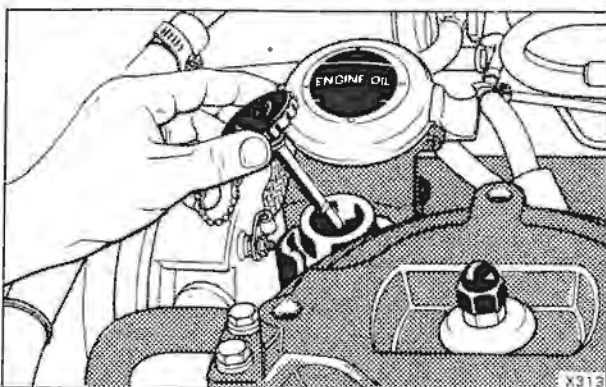


Fig. B5/1-22 Steering pump filler/dipstick

approved fluid to the sump, pouring the fluid down the filler tube, then follow the fluid level checking procedure described under Check the transmission fluid level.

4 Lubricate the gear range selector control rod

Lubricate the clevis pins in the control rod linkage at the left-hand side of the transmission, with a few drops of clean engine oil. Also lubricate the manual shaft where it enters the transmission casing.

Propeller shaft

1 Lubricate the universal joints

A grease nipple is fitted to the universal joint at each end of the shaft (see fig. B5/1-20).

Using a suitable grease gun, lubricate each joint with an approved grease.

Final drive unit

1 Check the final drive oil level

Position the car on a ramp or over a pit.

Remove the level plug located in the rear face of the final drive casing (see fig. B5/1-21). The oil in the casing should be up to the level plug orifice. If necessary, top-up with an approved oil.

Fit the level plug complete with a new joint washer.

2 Renew the final drive oil

It is advisable to carry out this operation when the oil is warm, e.g. immediately after the car has completed a run.

Position the car on a ramp or over a pit and clean the area around the drain and level plugs (see fig. B5/1-21).

Place a container beneath the drain plug, then remove both the drain and level plugs.

When the oil has drained, fit the drain plug complete with a new joint washer.

Using a syringe, fill the casing to the level plug orifice with an approved oil (see Chapter A), approximately 2,3 litres (4.0 Imp pt, 4.8 US pt) of oil will be required.

Fit the level plug complete with a new joint washer and check for leaks.

3 Check the condition of the drive-shaft joint covers

The drive-shaft constant velocity joints are enclosed by convoluted seals which retain the joint lubricant.

If upon inspection a seal is found to be leaking or damaged the joint should be inspected and a new seal fitted as described in Chapter J of the Workshop Manual.

Steering system

1 Check the steering pump fluid level

Remove the filler cap from the steering pump reservoir (see fig. B5/1-22) and check that the fluid level is at least up to the FULL COLD mark on the integral dipstick. If necessary, top-up to this level with approved fluid.

Start and run the engine until it reaches normal operating temperature, approximately 77°C (170°F), then stop the engine.

Remove the filler cap and check the fluid level in the reservoir. If necessary, add an approved fluid to raise the level to the FULL HOT mark on the dipstick; do not overfill.

Ensure that the filler cap is securely replaced.

2 Check the condition of the steering ball joint covers

Examine the condition of the rubber cover seals on the steering ball joints (see fig. B5/1-23).

If the seals are found to be damaged or in poor condition they should be removed and the ball joint examined for wear and damage. Fit new parts as necessary.

For full information refer to Chapter N of the Workshop Manual.

3 Check the condition of the steering rack convoluted seals

Examine the condition of the convoluted seals on the rack and pinion unit and check the tightness of the seal clips.

If the seals are satisfactory, tighten the clips as necessary.

If the convoluted seals are found to be damaged or in poor condition, the rack and pinion unit should be removed from the car and new seals fitted. For full information refer to Chapter N of the Workshop Manual.

Suspension

1 Check the condition of the front ball joint covers

The front suspension ball joints (see fig. B5/1-24) are packed with grease on initial assembly and should not normally require attention between service overhauls unless the rubber seal covers are damaged.

If on inspection the covers are found to be damaged or in poor condition, the ball joints should be removed and new joints and seals fitted as necessary.

For full information refer to Chapter H of the Workshop Manual.

2 Check the condition of the rear strut convoluted seals

Examine the condition of the convoluted seals on the rear suspension struts (see fig. B5/1-25).

If the seals are found to be damaged, or in poor condition, the struts should be removed, as described in Chapter G of the Workshop Manual, and new seals fitted.

3 Lubricate the height control valve ball joints

Position the car on a ramp or over a pit. Disconnect the actuation links from the height control valves and rear suspension trailing arms at the ball joints (see fig. B5/1-26). Note from which side each link is taken.

Clean the ball joints then lubricate with an approved grease.

Do not alter the length of the actuation link.

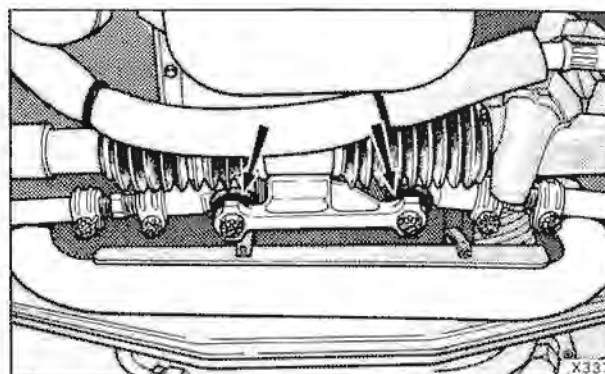


Fig. B5/1-23 Track rod ball joints

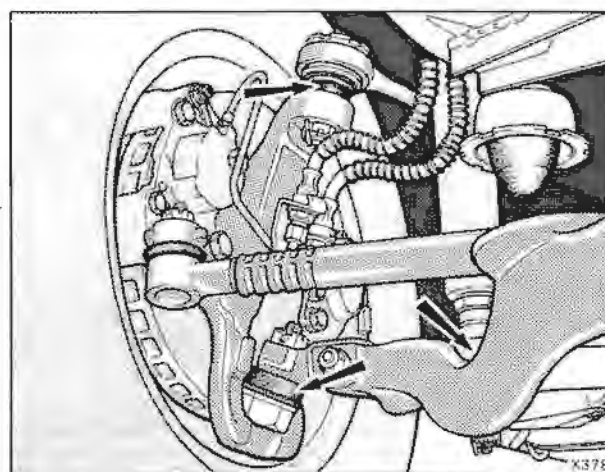


Fig. B5/1-24 Front suspension ball joints

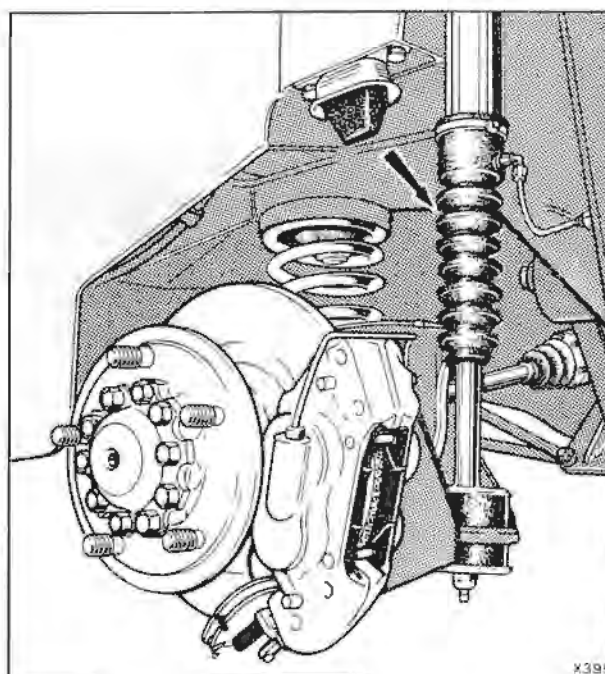


Fig. B5/1-25 Rear suspension strut

Connect the actuation link to the height control valve and the trailing arm from which it was removed.

Adjust the joints to obtain complete movement without free play.

Brake and hydraulic systems



WARNING

Use only Hydraulic System Mineral Oil (LHM) to replenish the braking and levelling systems.

Do not use Brake Fluids (Castrol RR363, Universal, or any other type). The use of any type of brake fluid, even in very small amounts, will cause component failure necessitating extensive rectification to the braking and levelling systems of the car.

Always ensure before fitting any seals, hoses, pipes, etc., that they are suitable for a mineral oil system. For details of correct component identification reference should be made to Chapter G of the Workshop Manual.

Always ensure that a sealed container of **Hydraulic System Mineral Oil (LHM)** is fitted adjacent to the battery.

Always ensure that no foreign matter enters the systems when work is being carried out.

In order to protect against claims of liability for hydraulic system contamination, it is recommended that the hydraulic system mineral oil is tested for contamination prior to work being undertaken, preferably in the presence of the owner or his/her representative.

It is important that the test is carried out even when the hydraulic system mineral oil is to be renewed as this will not prevent the deterioration of

components which have been in contact with contaminated mineral oil.

Brake fluids and mineral oil are immiscible and with large amounts of contamination separation of the fluids will occur on standing, due to the greater density of the conventional fluids. A further indication of the mixing of conventional brake fluid and mineral oil is its cloudy appearance.

To carry out contamination tests a kit is available from Rolls-Royce Motors Limited, part number RH 2841 and should be used as follows.

Switch on the ignition and depressurize the hydraulic systems by pumping the brake pedal until both low pressure warning panels illuminate. Continue to pump the pedal for at least a further 20 applications to ensure that all the accumulator mineral oil is returned to the reservoir.

Clean the area around each hydraulic reservoir filler cap and then remove the cap.

Ensure that the components in the test kit are clean and dry.

Using the sampling tube provided, extract 50 ml of mineral oil from the top and bottom of each reservoir.

Place the samples into the individual clean dry containers.

Shake each sample taken to ensure it is well mixed.

Pour 10 ml of each sample into clean test tubes (do not mix the samples together).

Using the dispenser, add two drops of the red dye solution contained in the kit into each 10 ml sample.

Cork the test tubes and shake them thoroughly.

Leave the samples to settle for at least 30 minutes.

Examine each sample.

Sample diagnosis

On adding the red dye solution and the subsequent mixing, the green colour of the mineral oil will change to a reddish brown. **This does not indicate contamination of the hydraulic system mineral oil.**

Contamination can only be confirmed by the formation of a cloudy red mass which will begin to settle towards the bottom of the tube, if left to stand for at least 30 minutes.

If the sample in the test tube on addition of the dye turns red but remains clear it indicates that the sample is not contaminated.

The volume of red mass which will eventually settle to the bottom of the test tube indicates the amount of contamination within the hydraulic system mineral oil.

Complete separation of the two liquids may take a considerable amount of time, for example a very small percentage of contamination may take more than seven days to completely separate.

If contamination is suspected, a more thorough test should be undertaken, details of which are given in Chapter G of the Workshop Manual.

If contamination is suspected, but difficult to diagnose, due to the small amount of contaminant that

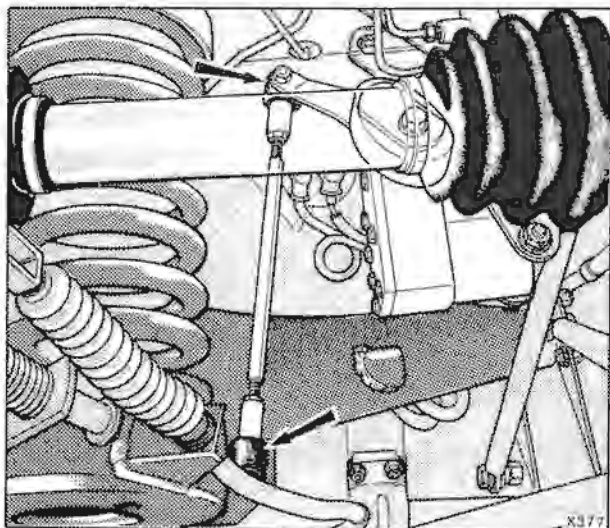


Fig. B5/1-26 Height control valve ball joints

may be present, or any doubt exists, confirmation should be obtained by sending a sample to Rolls-Royce Motors (if in the United Kingdom) or to a chemical analysis laboratory.

Before attempting any work on a hydraulic system personnel must be fully conversant with the precautions required to ensure adequate safety and correct system operation.

Refer to Chapter G of the Workshop Manual.

Important

Always seal each reservoir cap after it has been confirmed that the systems are not contaminated and all work on the systems has been completed.

1 Check the reservoir mineral oil level

The mineral oil reservoirs for the hydraulic systems are located in the engine compartment (see fig. B5/1-27).

To check the oil level, first depressurize the hydraulic systems by pumping the brake pedal until the two warning panels illuminate. Start and run the engine for approximately four minutes with the car unladen to charge the systems and then stop the engine. The mineral oil in both reservoirs should be up to the FULL marks on the level indicator plate.

If the reservoirs require topping-up, ensure that the tops of the reservoirs and the filler caps are clean, then add an approved hydraulic system mineral oil (see Chapter A) as necessary.

It is important that only approved hydraulic system mineral oil is used and that exceptional cleanliness is observed when topping-up the hydraulic systems.

Under no circumstances should a conventional (i.e. RR363 or Universal) type brake fluid be used.

After topping-up, insert the blanking plug.

Ensure that the containers of new Hydraulic System Mineral Oil, for system replenishment, are fitted adjacent to the battery.

2 Renew the hydraulic system mineral oil

Depressurize the hydraulic systems as described in Chapter G of the Workshop Manual and proceed as follows.

Completely drain the fluid from the hydraulic systems by attaching a tube to each bleed point then opening the bleed screws and allowing the mineral oil to drain from the circuits. The bleed screws are located on each accumulator, on each pair of brake calipers, on the deceleration conscious pressure limiting valve, and on each rear wing from the rear suspension strut. A drain tube is not required at the accumulator bleed screws as these are an integral part of the accumulators and when opened allow the mineral oil to flow from the accumulator spheres back to the reservoirs.

Drain the mineral oil from the reservoirs and clean the reservoirs as described in Chapter G of the Workshop Manual.

After the system has completely drained, close all the bleed screws and ensure that any disturbed pipes are connected and correctly torque tightened.

Fill the reservoirs with fresh hydraulic system

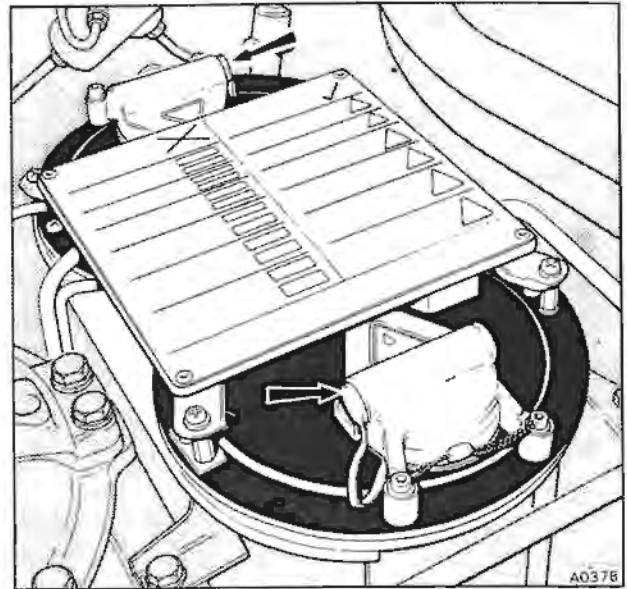


Fig. B5/1-27 Access to the hydraulic system reservoirs

mineral oil (see fig. B5/1-27 and Chapter A) until the levels of the reservoirs are slightly above the topping-up marks on the indicator plate.

Run the engine for four minutes, with the car unladen, then top-up to the FULL level mark; never allow the mineral oil levels to fall below the minimum level marks.

Check for leaks, especially around the unions of any pipes which have been disturbed.

Finally, bleed the hydraulic systems as described in Chapter G of the Workshop Manual.

Ensure that the containers of new Hydraulic System Mineral Oil for system replenishment, are fitted adjacent to the battery.

3 Check the condition of all brake pipes and hoses

Position the car on a ramp or over a pit and check the condition of the hydraulic system pipes and hoses.

Examine the metal pipes for signs of corrosion, particularly those in an exposed position.

Examine the hoses for chafing or surface cracking.

Faulty pipes and hoses should be replaced as described in Chapter G of the Workshop Manual.

4 Renew the accumulator to body, and trailing arms to body hoses

Depressurize the hydraulic systems as described in Chapter G of the Workshop Manual and proceed as follows.

Fit a hose clamp to each of the intermediate hoses of the accumulator return pipes to prevent the flow of mineral oil from the reservoirs.

Thoroughly clean the areas around the connections of the two accumulator to body and trailing arms to body hoses (see figs. B5/1-28, and B5/1-29).

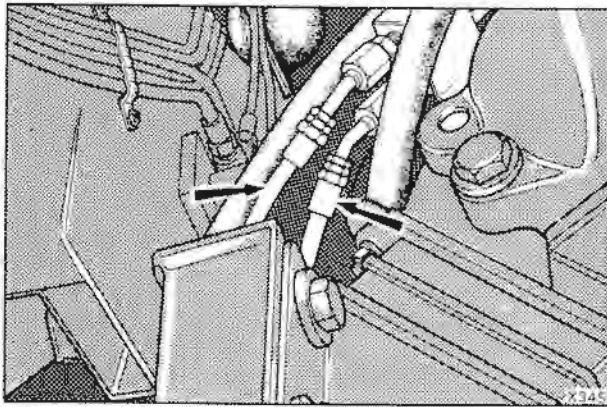


Fig. B5/1-28 Accumulator to body hoses

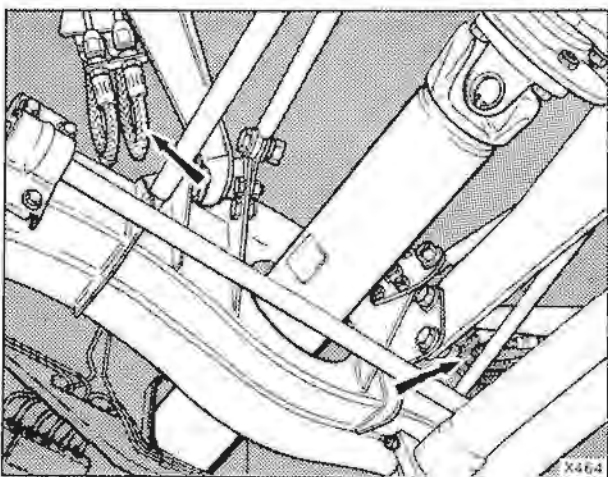


Fig. B5/1-29 Trailing arm to body hoses

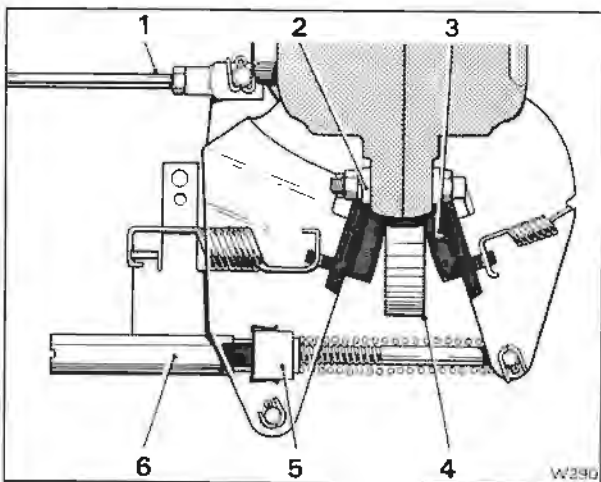


Fig. B5/1-30 Parking brake mechanism

- 1 Actuation rod
- 2 Centralizing straps
- 3 Parking brake pads
- 4 Brake disc
- 5 Adjuster clicker block
- 6 Adjuster

Remove the respective hoses noting the following.

To avoid contamination fit the new hose immediately after removing the old one; alternatively fit approved blanks to the open ports until the new hoses are fitted.

Before fitting a new hose ensure that it is thoroughly clean and conforms with the hydraulic systems mineral oil requirements.

When fitting the new hoses, ensure that they are routed to clear other components and that clearance is maintained during full suspension movement.

Tighten the pipe nuts to the torque settings given in Chapter G of the Workshop Manual.

After fitting the new hoses, check for leaks and bleed the hydraulic systems as described in Chapter G of the Workshop Manual.

5 Renew all hydraulic system hoses

To renew the hydraulic system hoses follow the same basic procedure described under the heading Renew the accumulator to body and trailing arms to body hoses.

6 Check the brake disc pads for wear

Remove the wheel discs and slacken the wheel nuts approximately half a turn.

Jack up the car and support with stands and sill blocks.

Remove the road wheels and examine all the disc brake pad linings.

The brake pads must be renewed when the brake pad linings are worn to within 3,18 mm (0.125 in) of the steel backing plates. The pads should also be renewed if this minimum thickness is likely to be achieved before the next service check. To renew the brake pads, refer to Chapter G of the Workshop Manual.

If new brake pads are to be fitted which have different recommended linings from those on the old pads, the disc faces should be cleaned prior to fitting the new pads. All traces of the old pad lining material should be removed by hand rotating the disc whilst applying coarse grade emery cloth to the disc faces. Do not emery the disc faces radially.

Always ensure that the pads fitted to all six brake calipers have the same type and grade of pad lining.

Fit the road wheels and lower the car.

If new brake pads have been fitted, an initial running-in period of between 1100 kilometres and 1300 kilometres (700 miles and 800 miles) should be observed. During this running-in period the brakes should not be applied harshly or for prolonged periods from high speeds except in an emergency. Towards the end of the running-in period, the force with which the brakes are applied may be progressively increased.

7 Check the condition of the brake caliper dust excluders (when changing brake pads)

The condition of the caliper dust seals should be checked whenever the brake pads are removed.

Inspect the seals for signs of damage, heat hardening, or general deterioration and renew if necessary.

When fitting new seals, ensure that the seal retaining clips are correctly located.

8 Renew the brake caliper seals

To renew the caliper piston seals it is necessary to remove the brake calipers from the car.

For full instructions, refer to Chapter G of the Workshop Manual.

9 Check the parking brake pads for wear

Securely chock the front wheels then raise the rear of the car. Place sill blocks under the rear body sills and also support the rear trailing arms. Do not allow the suspension struts to support the full suspension load.

Remove the rear wheels and release the parking brake to the off position.

Disconnect the caliper actuation rod from the caliper lever (see fig. B5/1-30).

Unscrew and remove the caliper adjuster and collect the adjuster clicker plate.

Unhook the pad retention springs from each pad, noting the larger spring is fitted to the inner pad.

Remove the pads from the caliper.

Check the thickness of the lining material on each pad. Pads which are worn to within 1,6 mm (0.062 in) or less of the steel backing plate should be renewed.

To fit the pads, attach the retention springs then locate the pads into position and hook the springs onto the caliper.

Complete the assembly by reversing the removal procedure, then adjust the calipers as described under the heading Adjust the parking brake.

Note

If new parking brake pads have been fitted, the following bedding-in procedure should be carried out after adjusting the parking brake.

Drive the car at approximately 48 km/h (30 mile/h) and apply the parking brake to bring the car to rest; it is important that this is done gently and progressively. The parking brake must not be applied fully and no attempt should be made to lock the wheels. This operation should be carried out nine times, allowing at least one minute to elapse between stops to prevent the discs overheating.

Finally adjust the caliper as described under the heading Adjust the parking brake.

10 Adjust the parking brake

Ensure that the parking brake is in the off position.

Adjust the rear cables at the adjusters (see fig. B5/1-31) so that the caliper operating levers return to their off-stops under the influence of their return springs with no appreciable slackness in the cables.

Note

The cables must be adjusted so that the equalizer link on the intermediate linkage (see fig. B5/1-31) lies at right angles with the centre line of the car with the parking brake in the off position.

To check the cable adjustment, adjust both rear cables at the equalizer link until the caliper off-stops

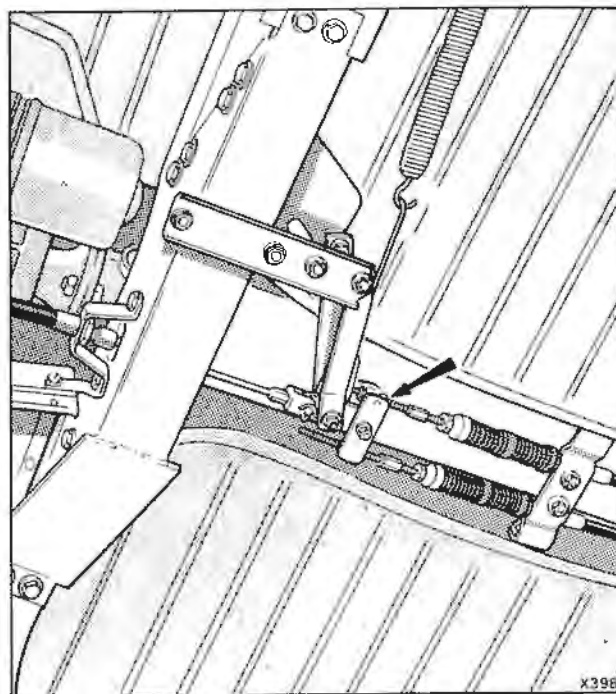


Fig. B5/1-31 Parking brake rear cable adjustment point

are just clear of the calipers. Measure the gap produced at each off-stop and lengthen the cables by this amount.

With the cables correctly adjusted, check that the centralizing straps (see fig. B5/1-30) are pushing the pads away from the discs when the parking brake is in the off position. If not, remove the nut and bolt securing the straps, bend the straps outward (i.e. away from the disc) then refit them. Ensure that the straps are pushed downward towards the adjusting nut whilst tightening the nut and bolt securing them to the caliper.

Check that the distance between the pad and the disc are the same on each side of the caliper; if not, reset the centralizing straps.

Raise each rear wheel in turn so that it is free to rotate and adjust each caliper as follows.

Turn the caliper adjuster (see fig. B5/1-30) clockwise until the pads just grip the disc; at this point it should only just be possible to rotate the road wheel by hand. Turn the adjuster anti-clockwise a quarter turn (i.e. three clicks on the nut) to obtain the minimum clearance between the pads and disc.

11 Lubricate the parking brake linkage

Position the car on a ramp or over a pit. Lubricate the parking brake linkage clevis pins, fulcrum pins, and the rear cable adjusters with approved grease.

Fuel system

Safety precautions

It is important that before a fuel line is opened or the fuel tank drained or siphoned, that the workshop

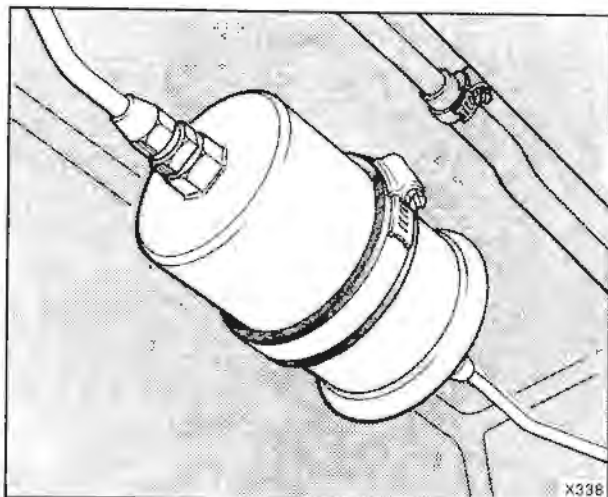


Fig. B5/1-32 Main fuel filter

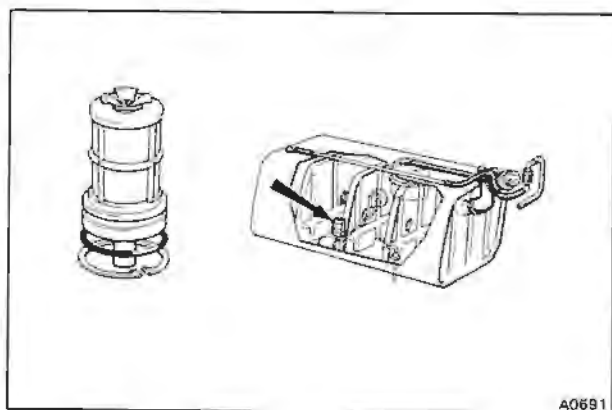


Fig. B5/1-33 Intank fuel filter

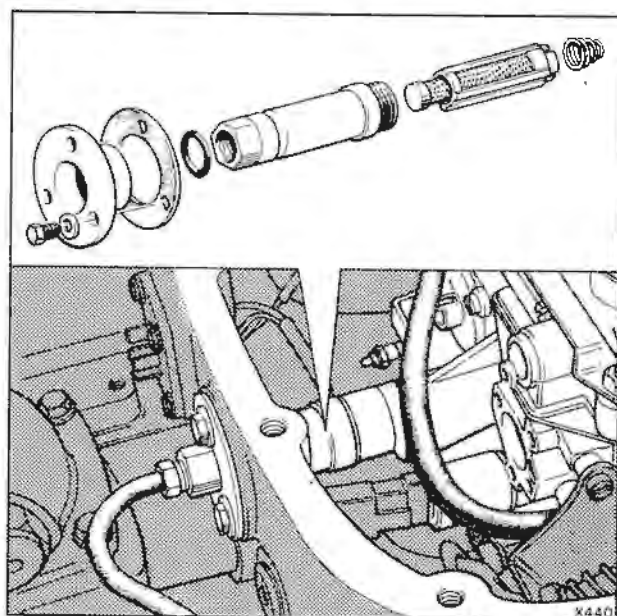


Fig. B5/1-34 Carburettor inlet filter

safety precautions given in Chapter A of the Workshop Manual are strictly observed.

1 Renew the main fuel filter

The main fuel filter is situated on the car underframe (see fig. B5/1-32). It is a sealed unit and no attempt should be made to clean the element.

At the appropriate service interval change the main fuel filter.

Place a container beneath the filter to collect any fuel that drains from the filter.

Carefully remove the inlet and outlet pipe connections from the filter.

Slacken the worm drive clip retaining the filter to the mounting bracket and withdraw the filter.

Remove the unions fitted into both ends of the filter and discard the filter.

Clean and fit the unions together with new sealing washers into the new filter.

Fit the new filter by reversing the removal procedure noting the direction of flow arrow marked on the outside of the filter casing.

When carrying out the above operation at the 80 000 kilometres (48 000 miles) or four years schedule and subsequent periods, the intank fuel filter situated on the underside of the fuel tank (see fig. B5/1-33) should also be removed and cleaned as follows.

Disconnect the battery.

Drain or siphon the fuel tank.

Place a container beneath the fuel intank filter to collect the residue of fuel from the tank when the filter is removed.

Disconnect the hose from the intank filter outlet pipe.

Remove the circlip retaining the filter and carefully withdraw the filter from the tank.

Clean the filter mesh by washing it in clean fuel.

Examine the filter for serviceability and renew if necessary.

Fit the filter by reversing the removal procedure. Always use a new seal on the filter body.

Ensure that the fuel drained from the fuel tank is free from foreign matter, then return it to the fuel tank.

Check the fuel filter and any pipe connections that have been disconnected, for leaks.

2 Clean the carburettor fuel inlet filter

Carry out this operation when the engine is cold.

Remove the setscrews securing the air chest cover.

Lift off the cover and gasket.

Unscrew the fuel inlet pipe from the adapter on the front of the air chest (see fig. B5/1-34).

Remove the three setscrews securing the aperture plate and withdraw the plate off the fuel inlet adapter.

Carefully remove the inlet adapter from the carburettor, discard the sealing washer.

Withdraw the fuel filter, taking care not to lose the small spring situated at the inner end.

Clean the filter by washing in clean fuel.

Fit the filter and components removed by reversing the removal procedure noting the following.

Ensure that the spring is located correctly in the inner end of the filter with the larger diameter of the spring seated on the filter.

Fit a new sealing washer and ring onto the inlet adapter and a new gasket to the aperture plate.

Prior to fitting the air chest cover, start the engine and check the fuel inlet pipe and adapter for leaks; rectify as necessary.

Fit the cover using a new sealing gasket. Always ensure that the air chest is free of foreign matter prior to fitting the cover.

3 Fit a new filler head to fuel tank hose

To enable the filler head to fuel tank hose to be renewed it is necessary to remove the rear suspension gas spring. For details of the procedure required, reference should be made to Chapter K of the Workshop Manual.

4 Examine all flexible fuel pipes

Carefully examine all the flexible fuel pipes throughout the fuel system. Renew any pipes which have become damaged or deteriorated to an unserviceable condition.

Check the complete fuel system for leaks and rectify as necessary.

Electrical system

1 Check the state of charge of the battery

The battery is situated on the right-hand side of the luggage compartment. To gain access to the battery turn back the carpet and remove the trim from around the battery. Unclip the battery cover retaining strap and lift off the cover.

Battery electrolyte check

Applicable to batteries with removable cell vent cover(s)

a. Electrolyte specific gravity check.

Remove the vent cover(s) from the top of the battery.

Using a hydrometer check the specific gravity of the electrolyte in each cell and compare the readings obtained with the following tables.

Caution

The electrolyte in the battery is a corrosive acid. Do not allow the electrolyte to come into contact with the eyes, skin, fabric, or paintwork. Flush any contacted areas immediately and thoroughly with water. If the eyes are effected, flush for at least 15 minutes and obtain prompt medical attention.

Chloride battery

Air temperature below 32°C (90°F)

Specific Gravity	Condition of Battery
1.270 to 1.290	Fully charged
1.180 to 1.200	Half discharged
1.090 to 1.110	Fully discharged

Air temperature above 32°C (90°F)

Specific Gravity	Condition of Battery
1.220 to 1.240	Fully charged
1.150 to 1.170	Half discharged
1.070 to 1.090	Fully discharged

Lucas or Varta battery

Air temperature below 27°C (80°F)

Specific Gravity	Condition of Battery
1.270 to 1.290	Fully charged
1.180 to 1.200	Half discharged
1.090 to 1.110	Fully discharged

Air temperature above 27°C (80°F)

Specific Gravity	Condition of Battery
1.220 to 1.240	Fully charged
1.130 to 1.150	Half discharged
1.050 to 1.070	Fully discharged

If the specific gravity reading of all the cells is uniform and within the range 1.240 to 1.270 the battery is in an acceptable state of charge. If the readings are uniform but below 1.220 the battery should be recharged. Always remove the battery from the car for recharging.

If the specific gravity of the electrolyte in one cell differs markedly from the others (i.e. the reading is 0.040 or more, lower than the remainder), then a defect must be suspected and rectified as necessary.

b. Electrolyte level check

Ensure that the battery is in a high state of charge (see Electrolyte specific gravity check).

The level of the battery electrolyte in each cell should be approximately 5 mm (0.250 in) above the tops of the separators (Lucas or Varta battery) or contacting the blue bar situated above the separators (Chloride battery).

If the electrolyte level is low top-up using distilled water until the level is attained. Do not overfill.

Always ensure the top of the battery is clean prior to removal of the vent cover.

Battery voltage check

Applicable to sealed for life (maintenance free) batteries. The state of charge of a 'sealed for life' battery can only be checked by taking a voltage reading at the battery terminals, using either a digital voltmeter or multimeter. The instrument used must be accurate to within 0.1 volts.

Before a voltage reading is taken on batteries that have recently received a charge, the residual effects of the surface charge on the battery plates must be removed to avoid a false reading. This surface charge can be removed by applying an electrical load to the battery (e.g. by either connecting a high rate discharge tester for 15 seconds or if the battery is fitted to a car, switching on the headlamps for one minute). Afterwards, allow the battery to stand for a further one minute before a voltage reading is taken.

Compare the reading obtained with the following table to ascertain the state of charge

Voltage	State of charge
12.8	100%
12.6	82%
12.5	75%
12.4	60%

A minimum reading of 12.5 volts (corresponding to 75% charge) is acceptable. Below this reading the battery should be recharged. Instructions for charging are provided on the battery label.

2 Clean and check the battery terminals

The top of the battery should always be kept clean and dry.

If corrosion of the battery leads or terminals has occurred it should be removed as follows.

Disconnect the battery leads and using hot water or a dilute solution of ammonia carbonate, wash them thoroughly until all corrosion has been removed. Finally wash with clean water to remove the ammonia carbonate solution.

Remove any corrosive deposit from the terminal posts using a cloth moistened with ammonia carbonate solution then wash with clean water.

Dry the battery leads and terminal posts. Connect the battery leads to the terminal posts. Liberally coat the terminals with **petroleum jelly**.

3 Check all exterior lamps for operation

Actuate the respective switches and check for lamp illumination and function i.e. turn flashers, headlamp dip/main beam, headlamp flash. When checking the fog lamps the main lighting switch must be on. In the Park position the front fog lamps must be switched on before the rear fog lamps will illuminate.

When only the rear fog lamps are switched on with the main lighting switch in the Head position, these lamps will be extinguished when the headlamps are switched to main beam. If both front and rear fog lamps are in use the rear fog lamps will remain illuminated.

The respective facia tell-tales should also be checked for illumination during these operations.

With the lighting switch in the Park and Head positions, switch on the ignition. Check the facia instruments for illumination; the panel illumination dimming switch should also be checked for correct operation.

4 Check all facia warning lamps for operation

Before carrying out the following checks firmly apply the parking brake; ensure the gear range selector is in the Park position and remove the gear range selector isolator from the fuseboard.

Ignition and oil warning lamps

Turn the ignition key to the RUN position, the ignition and oil pressure warning lamps should illuminate. Start the engine, both lamps should extinguish; switch off the ignition.

When the ignition key is turned to the ACC position the ignition warning lamp only should illuminate.

Warning panel cluster lamps

Move the gear range selector lever to the 'D' position (do not insert the gear range selector isolator).

Apply the footbrake then turn the ignition key to the start position. All warning panel cluster lamps

should illuminate. With the ignition held in the start position, turn the main lighting switch to the Park and Head positions; the intensity of illumination of the ice and low fuel warning panels should reduce. Switch off the ignition and lighting switch.

The hydraulic system warning lamps situated at the top of the warning panel cluster should also be checked as follows.

Turn the ignition key to the RUN position.

Depressurize the hydraulic systems by actuating the brake pedal between 50 and 60 times. The two brake pressure warning panels should illuminate.

When the lamps have illuminated start and run the engine. Both lamps should extinguish after approximately two minutes indicating that the hydraulic systems are pressurized. Switch off the ignition.

Fasten seat belt warning lamp

To check the seat belt warning lamp, open and close each door in turn; observe the lamp operation.

The seat belt warning panel should illuminate whenever a door is opened and extinguish approximately seven seconds after the door is closed.

Note

All doors must be fully closed for the lamp to extinguish (i.e. not on first catch).

Hazard warning indicator

Depress the hazard warning switch, check that all the turn indicators and the facia warning lamp are flashing.

5 Check all interior lamps for operation

Ensure all the doors are fully closed and the interior lamps are extinguished. Open the driver's door; the rear section of the central roof lamps should illuminate. Fully close the door; the roof lamps should remain illuminated for approximately seven seconds.

The rear roof lamps should also illuminate when the door is opened. If the gear selector lever is moved from the Park position with the ignition key in the RUN position, the lamps will extinguish immediately all the doors are closed. When carrying out this operation also check that the door open warning lamp and step lamp are illuminated with the door in the open position. These lamps should extinguish immediately the door is fully closed.

Repeat the check on the remaining door(s).

Note

If the doors are only closed to the first catch position the lamps should remain illuminated.

Check the operation of the front compartment personal lamps as follows.

Withdraw the main lighting switch; the front section of the driver's roof lamp should illuminate.

Operate the map lamp switch, the front section of the front passenger's roof lamp should illuminate.

To check the vanity mirror illumination, move the switch to the mirror position. Lower the passenger's sun visor; the lamp situated above the visor should illuminate.

Withdraw the visor from its retaining clip; the lamp should extinguish. The lamp should also extinguish when the visor is moved to its raised position, even when the switch is on.

The operation of the rear roof lamps should be checked by operating the switches situated on the rear compartment vanity mirror surrounds.

Press the upper portion of the three position switch; the front section of the respective roof lamp should illuminate. Press the lower portion of the switch and the rear section of both rear roof lamps should illuminate. With the switch in the central position both lamps should be off. Repeat the operation on the opposite side of the car.

6 Check the horns for operation

Examine the electrical connections to each horn to ensure they are in good condition. Clean the horns and remove any foreign matter that may have collected in the horn trumpets.

Switch on the ignition; press the horn button several times to ensure the horn button is making a good contact and that both horns are functioning correctly each time it is pressed.

7 Replenish the windscreen and headlamp washers reservoirs

Windscreen washer reservoir

The filler is located in the engine compartment. Remove the filler cap and add the correct mixture of windscreen washer fluid and distilled water to the reservoir until the maximum level is attained. Topping-up level - bottom of the filler neck. Headlamp washer reservoir

The reservoir is housed under the front right-hand wing and the filler is located in the engine compartment towards the front of the car.

The reservoir should be topped-up with clean water until the fluid level is at the bottom of the filler neck.

During winter conditions, a solution of 30% isopropyl alcohol and 70% water should be used. This mixture will provide frost protection down to a temperature of approximately -10°C (14°F).

8 Check the condition of the windscreen wiper blades

Lift the wiper arms from the windscreen and inspect them for wear or damage. Renew the blades if necessary.

To remove the wiper blades proceed as follows.

- a. Driver's side of the windscreen. Lift the wiper arm from the windscreen. Push half of the blade away from the arm, until the blade is released from its location clip. To fit the new blade, position it on the wiper arm and press it firmly into the location clip.
- b. On the passenger's side of the windscreen, lift the wiper arm from the windscreen and pivot the blade backwards through 180° . Press the small release tag, situated on the underside of the blade pivot block and push the blade out of the crooked end of the wiper arm. Withdraw the wiper blade from the arm. Fit the new blade by reversing the removal procedure.

Note

Care must be taken during these operations to ensure that the wiper arm is not allowed to spring back onto the windscreen when the blade has been removed, otherwise damage to the windscreen could occur.

9 Check the windscreen wash/wipe and headlamps power wash for correct operation

Before carrying out the following check ensure that the windscreen is clean.

Switch on the ignition and press the windscreen wash/wipe switch. The windscreen wipers should operate and the fluid from the washer jet should impinge on the windscreen approximately 419 mm (16.5 in) from the centre line of the windscreen and 190 mm (7.5 in) below the windscreen top finisher. The wash/wipe function should continue until the switch is released.

On release of the push button switch the washer should cease while the wipers should continue for approximately four strokes before returning to the park position.

Turn the main lighting switch to the HEAD position. The headlamp cleaning function will only operate when the headlamps are illuminated. Press the wash/wipe switch, the power wash jets should only operate for half a second when the wash/wipe switch is depressed. To repeat the wash it will be necessary to release and then depress the switch again.

10 Check the alternator for correct operation

For details of the alternator test procedure and brush renewal, reference should be made to Chapter M of the Workshop Manual.

11 Check the condition of the starter motor brushes and pinion

For details of the procedure required to carry out the inspection of the starter motor brushes and pinion, reference should be made to Chapter M of the Workshop Manual.

Automatic air conditioning system

1 Check the scuttle intake grille is free from obstruction.

Check the air intake grilles and foam filter, situated behind the bonnet, for obstruction (leaves, dirt, etc.). Carefully remove the grille retaining screws, lift the grilles and filters from the body and clean all parts including the air intake ducts; also ensure the air intake duct drain tubes are free from obstruction.

2 Check the refrigeration system for correct operation

For details of the procedure required to carry out this operation reference should be made to Chapter C of the Workshop Manual.

Body

1 Check the condition and operation of the seat belts

The following checks should be carried out on the

front and rear retractable seat belts.

Fully withdraw the seat belt from the reel; examine the webbing for any signs of wear or damage. Allow the belt to return to the stowed position.

To check the operation of the retractable belt, fit the belt and then give the webbing of the diagonal belt a sharp pull. Ensure that the belt locks and then returns to the normal roller action immediately the belt is released.

With the fastening tongue of the belt locked in the retaining clasp; ensure the tongue is securely held and is released immediately the release button marked PRESS is operated.

The alternative method of checking the seat belts is to select an open stretch of road, then, when the road is free from any potential danger, accelerate the car to 24 km/h (15 mile/h) and brake sharply from this speed; ensure that the belt locks and then subsequently releases. If this method of test is used, it will be necessary to carry a passenger(s) to enable the passenger seat belts to be tested.

Check the rear seat lap belt for condition and correct locking and release.

Report any defects to the Owner.

When seat belt replacement is necessary only belts approved by Rolls-Royce Motors Limited should be fitted.

2 Check that all body drains are free from obstruction

Examine the body drain holes; remove any foreign matter that may be obstructing the holes. Take care not to damage the paintwork.

3 Lubricate the spare wheel carrier lowering bolt

Turn back the carpet on the luggage compartment floor to expose the spare wheel inflation trap and spare wheel carrier lowering bolt head. Remove the inflation trap cover; if a spare wheel retainer is fitted, it should be released.

Rotate the spare wheel carrier lowering bolt anti-clockwise until the carrier is fully lowered. Remove the spare wheel from the carrier.

Lubricate the carrier lowering bolt using a recommended lubricant. Raise and lower the carrier to distribute the lubricant over the full length of the carrier bolt.

Check the condition of the spare wheel as described under the heading Wheels.

Fit the spare wheel onto the carrier. Ensure that the inflation valve is in line with the inflation trap in the luggage compartment floor, then fully raise the carrier.

Fasten the spare wheel retainer (if fitted), and fit the tyre inflation trap rubber and carpet.

pressure of the spare tyre should be adjusted to the highest tyre pressure (i.e. rear wheel).

Do not check the pressures when the tyres are warm (e.g. after the vehicle has completed a journey).

Always ensure that the valve caps are fitted after checking.

2 Check the condition and tread depth of the tyres

Examine the tyres, including the spare, for any signs of damage or tyre wall cracking, etc.

Carefully remove any stones or other objects that may be lodged in the tyre treads.

Check the depth of tread at several points around each wheel using a tread depth gauge.

To enable a visual check to be made, tread depth indicators are incorporated into the tyre construction. These indicators are integral moulded ribs, spaced at intervals around the circumference of the tyre, and extend across the full width of the tread in all primary grooves. When one or more of these indicators are flush with the tread, only 1,6 mm ($\frac{1}{16}$ in) or less of tread depth remains, and a new tyre is required.

If the condition of the tyres is not satisfactory or tread depths do not conform to the legal requirements of the country in which the car is operating, the owner should be notified and asked to authorize the fitting of new tyres.

For full information on tyre fitting, balancing, etc., reference should be made to Chapter R of the Workshop Manual.

Test

1 Road test the car for satisfactory performance

On completion of the respective service schedule operations, carefully road test the car for satisfactory performance.

If new brake pads have been fitted, the running-in and bedding procedures should be carried out as described under, Check the brake disc pads for wear and Check the parking brake pads for wear.

When the road test has been completed, the car should be fully inspected for any leaks, fouls, etc., and rectified as necessary.

The transmission fluid level, should be finally checked immediately after the test, while the fluid is at normal running temperature and topped-up if necessary (see Check the transmission fluid level).

Ensure that all controls, door handles, steering wheel, etc., are clean and that any dirt which may be attributed to the service schedule is completely removed.

Wheels

1 Check all tyre pressures

Check the tyre pressures including the spare when the tyres are cold; adjust if necessary. The inflation

Service schedules

Cars other than those conforming to an Australian, Japanese or North American specification

Contents	Sections					
	Silver Spirit Mulsanne Silver Spur	Mulsanne Turbo	Bentley Eight	Bentley Turbo R	Corniche/ Continental	Camargue
Cars from vehicle identification number *SCAZS0000ACH01001*	C1	—	C1	—	C1	C1
Cars from vehicle identification number *SCBZS0T05CCH04233*	—	C1/1	—	C1/1	—	—
<i>Cars conforming to a Middle East specification</i>						
Silver Spirit, Silver Spur, and Mulsanne (excluding Turbo) from 1984 model year refer to Chapter G.						
Corniche/Continental, Camargue, Mulsanne Turbo, and Bentley Turbo R from 1985 model year refer to Chapter G.						

Issue record sheet 1

April 1985

The dates quoted below refer to the issue date of individual pages within this chapter.

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TSD 4406

Service schedules

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Cars from vehicle identification number *SCAZS0000ACH01001-4	C1-3	—	C1-3	—	C1-3	C1-3



WARNING

Use only Hydraulic System Mineral Oil (LHM) to replenish the braking and levelling systems.

Do not use Brake Fluids (Castrol RR363, Universal, or any other type). The use of any type of brake fluid, even in very small amounts, will cause component failure necessitating extensive rectification to the braking and levelling systems of the car.

Always ensure before fitting any seals, hoses, pipes, etc. that they are suitable for a mineral oil system. For details of correct component identification reference should be made to Chapter G of the Workshop Manual.

Always ensure that a sealed container of Hydraulic System Mineral Oil (LHM) is fitted adjacent to the battery.

Always ensure that no foreign matter enters the systems when work is being carried out.

The service schedule chart in this section indicates the operations required to service the vehicle. When carrying out the schedules, reference should be made to Chapter B which describes the correct procedure to be used for each operation. In order to locate this information the operation numbers quoted in the service schedule chart correspond with those in Chapter B.

It is important that, as certain maintenance items in the service schedules are essential requirements to conform with the Rolls-Royce Motors New Car Warranty or with relevant emission control regulations, maintenance is carried out at the times specified. These items are indicated as follows.

* Operations necessary to comply with Rolls-Royce Motors New Car Warranty during the warranty period.

† Operations necessary to comply with the relevant Emission Control Regulations. These items must be carried out during the entire service life of the vehicle.

Service schedules

All service schedules should be carried out at the appropriate time interval or mileage whichever is earlier.

The service intervals and corresponding code letters used on the service schedule chart are as follows.

Service schedules

Initial 3 months or 5000 kilometres (3000 miles)	1
6 months or 10 000 kilometres (6000 miles)	A
1 year or 20 000 kilometres (12 000 miles)	B
1½ years or 30 000 kilometres (18 000 miles)	A
2 years or 40 000 kilometres (24 000 miles)	C
2½ years or 50 000 kilometres (30 000 miles)	A
3 years or 60 000 kilometres (36 000 miles)	B
3½ years or 70 000 kilometres (42 000 miles)	A
4 years or 80 000 kilometres (48 000 miles)	C&D
4½ years or 90 000 kilometres (54 000 miles)	A
5 years or 100 000 kilometres (60 000 miles)	B
5½ years or 110 000 kilometres (66 000 miles)	A
6 years or 120 000 kilometres (72 000 miles)	C
6½ years or 130 000 kilometres (78 000 miles)	A
7 years or 140 000 kilometres (84 000 miles)	B
7½ years or 150 000 kilometres (90 000 miles)	A
8 years or 160 000 kilometres (96 000 miles)	C&E

Seasonal

Every year (Spring)	F
Within the first year (Autumn) then every two years	G
Every 2 years (Autumn)	H

Regular maintenance

Operations to be carried out at weekly, monthly or three monthly intervals are specified in Chapter B.

Service recommendation

If the car is used for constant stop/start operations, the engine oil should be changed every 3 months or 5000 kilometres (3000 miles) whichever is earlier.

Time allowance

Schedule	Time in hours
1	2.0
A	8.5
B	10.0
C	12.5
D	5.5
E	17.0
F	1.5
G	1.0
H	2.5

When replacing brake pads, drive belts, ball joints or other items as a result of a service inspection, add the respective manhour schedule time.

If it is necessary to carry out the 3 months or 5000 kilometres (3000 miles) service recommendation the time allowance is 0.5 hour.

Service schedule operations**Car protection**

Before commencing to carry out a service schedule the car should be suitably protected as described in Chapter B.

Engine

- 1* Change the engine oil.
- 2* Renew the engine oil filter.
- 3 Check the engine oil level; top-up if necessary.
- 4 Check the drive belts; adjust and renew if necessary.
- 5*† Renew the air filter element.
- 6*† Clean the crankcase breather tube flame trap.
- 7*† Clean the choke butterfly housing adapter (SU carburetters).
- 8*† Clean the air cleaner breather housing connection (Solex carburetter).
- 9*† Check the carburetter damper oil level; top-up if necessary (SU carburetters).
- 10*† Renew the sparking plugs.
- 11*† Lubricate the distributor (if applicable).
- 12 Lubricate the accelerator and carburetter linkage.
- 13*† Check for correct choke operation and choke stove pipe flow; rectify if necessary (SU carburetters).
- 14*† Check the float chamber depression; adjust if necessary (SU carburetters).
- 15 † Check the ignition timing; adjust if necessary.
- 16 † Check the engine idle speed; adjust if necessary.
- 17 † Check the choke idle speed; adjust if necessary.

Engine cooling system

- 1 Check the coolant anti-freeze concentration; correct if necessary.
- 2 Check the coolant level; top-up if necessary.
- 3 Check all coolant hose clips for tightness.
- 4* Examine the condition of all coolant hoses; renew as necessary.
- 5* Fit a new heater tap feed hose (irrespective of visual appearance).
- 6 Renew the coolant.
- 7 Reverse flush the coolant system.
- 8 Remove foreign matter from the radiator, and refrigeration condenser.
- 9* Renew the thermostat.

Torque converter transmission

- 1* Check the transmission fluid level; top-up if necessary.
- 2* Renew the transmission fluid.
- 3* Fit a new intake strainer.
- 4 Lubricate the gear range selector control rod.

Propeller shaft

- 1 Lubricate the universal joints (not applicable to rubber jointed propeller shaft).

Final drive unit

- 1* Check the final drive oil level; top-up if necessary.

	I	A	B	C	D	E	F	G	H
	*	*	*	*	*	*	*	*	*
1*	*	*	*	*					
2*		*	*	*					
3		*	*	*					
4	*	*	*	*					
5*†			*	*					
6*†			*	*					
7*†			*	*					
8*†			*	*					
9*†		*	*	*					
10*†			*	*					
11*†			*	*					
12		*	*	*					
13*†				*					
14*†			*	*					
15 †		*	*	*					
16 †		*	*	*					
17 †		*	*	*					
1		*	*	*					
2		*	*	*					
3	*	*	*	*					
4*			*	*				*	*
5*				*					
6								*	*
7									*
8								*	*
9*				*					
1*	*	*	*	*					
2*			*	*					
3*				*					
4		*	*	*					
1				*					
1*			*	*					

**Caution**

The hydraulic systems of these cars are filled with Castrol hydraulic system mineral oil.

Hydraulic components within these systems are susceptible to contamination by conventional brake fluids. Before fitting any seals, hoses, pipes, etc. always ensure that they are suitable for a mineral oil hydraulic system.

The service schedule chart in this section indicates the operations required to service the vehicle. When carrying out the schedules, reference should be made to Chapter B which describes the correct procedure to be used for each operation. In order to locate this information the operation numbers quoted in the service schedule chart correspond with those in Chapter B.

It is important that, as certain maintenance items in the service schedules are essential requirements to conform with the Rolls-Royce Motors New Car Warranty or with relevant emission control regulations, maintenance is carried out at the times specified. These items are indicated as follows.

* Operations necessary to comply with Rolls-Royce Motors New Car Warranty during the warranty period.

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Service schedules

All service schedules should be carried out at the appropriate mileage or time interval whichever is earlier.

The service intervals and corresponding code letters used on the service schedule chart are as follows.

Initial 5000 kilometres (3000 miles) or 3 months	I
10 000 kilometres (6000 miles) or 6 months	A
20 000 kilometres (12 000 miles) or 1 year	B
30 000 kilometres (18 000 miles) or 1½ years	A
40 000 kilometres (24 000 miles) or 2 years	C
50 000 kilometres (30 000 miles) or 2½ years	A
60 000 kilometres (36 000 miles) or 3 years	B
70 000 kilometres (42 000 miles) or 3½ years	A
80 000 kilometres (48 000 miles) or 4 years	C&D
90 000 kilometres (54 000 miles) or 4½ years	A
100 000 kilometres (60 000 miles) or 5 years	B
110 000 kilometres (66 000 miles) or 5½ years	A
120 000 kilometres (72 000 miles) or 6 years	C
130 000 kilometres (78 000 miles) or 6½ years	A
140 000 kilometres (84 000 miles) or 7 years	B
150 000 kilometres (90 000 miles) or 7½ years	A
160 000 kilometres (96 000 miles) or 8 years	C&E

Service Schedules

From vehicle identification number

* SCAZS0000ACH01001*

Seasonal

Every year (Spring)	F
Within the first year (Autumn) then every two years	G
Every 2 years (Autumn)	H

Regular maintenance

Operations to be carried out at weekly, monthly or three monthly intervals are specified in Chapter B.

Service recommendation

If the car is used for constant stop/start operations, the engine oil should be changed every 5000 kilometres (3000 miles) or 3 months whichever is earlier.

Time allowance

Schedule	Time in hours
I	2.0
A	8.5
B	10.0
C	12.5
D	5.5
E	17.0
F	1.5
G	1.0
H	2.5

When replacing brake pads, drive belts, ball joints or other items as a result of a service inspection, add the respective manhour schedule time.

If it is necessary to carry out the 5000 kilometres (3000 miles) or 3 months service recommendation the time allowance is 0.5 hour.



WARNING

Use only Hydraulic System Mineral Oil (LHM) to replenish the braking and levelling systems.

Do not use Brake Fluids (Castrol RR363, Universal, or any other type). The use of any type of brake fluid, even in very small amounts, will cause component failure necessitating extensive rectification to the brake and levelling systems of the car.

Always ensure before fitting any seals, hoses, pipes, etc. that they are suitable for a mineral oil system. For details of correct component identification reference should be made to Chapter G of the Workshop Manual.

Always ensure that a sealed container of Hydraulic System Mineral Oil (LHM) is fitted adjacent to the battery.

Always ensure that no foreign matter enters the systems when work is being carried out.

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Service schedules

All service schedules should be carried out at the appropriate mileage or time interval whichever is earlier.

The service intervals and corresponding code letters used on the service schedule chart are as follows.

Initial 5000 kilometres (3000 miles) or 3 months	I
10 000 kilometres (6000 miles) or 6 months	A
20 000 kilometres (12 000 miles) or 1 year	B
30 000 kilometres (18 000 miles) or 1½ years	A

Service Schedules

From vehicle identification number

SCAZS0000ACH01001

40 000 kilometres (24 000 miles) or 2 years	C
50 000 kilometres (30 000 miles) or 2½ years	A
60 000 kilometres (36 000 miles) or 3 years	B
70 000 kilometres (42 000 miles) or 3½ years	A
80 000 kilometres (48 000 miles) or 4 years	C&D
90 000 kilometres (54 000 miles) or 4½ years	A
100 000 kilometres (60 000 miles) or 5 years	B
110 000 kilometres (66 000 miles) or 5½ years	A
120 000 kilometres (72 000 miles) or 6 years	C
130 000 kilometres (78 000 miles) or 6½ years	A
140 000 kilometres (84 000 miles) or 7 years	B
150 000 kilometres (90 000 miles) or 7½ years	A
160 000 kilometres (96 000 miles) or 8 years	C&E

Seasonal

Every year (Spring)	F
Within the first year (Autumn) then every two years	G
Every 2 years (Autumn)	H

Regular maintenance

Operations to be carried out at weekly, monthly or three monthly intervals are specified in Chapter B.

Service recommendation

If the car is used for constant stop/start operations, the engine oil should be changed every 5000 kilometres (3000 miles) or 3 months whichever is earlier.

Time allowance

Schedule	Time in hours
I	2.0
A	8.5
B	10.0
C	12.5
D	5.5
E	17.0
F	1.5
G	1.0
H	2.5

When replacing brake pads, drive belts, ball joints, or other items as a result of a service inspection, add the respective manhour schedule time.

If it is necessary to carry out the 5000 kilometres (3000 miles) or 3 months service recommendation the time allowance is 0.5 hour.

Service schedule operations**Car protection**

Before commencing to carry out a service schedule the car should be suitably protected as described in Chapter B.

Engine

- 1* Change the engine oil.
- 2* Renew the engine oil filter.
- 3 Check the engine oil level; top-up if necessary.
- 4 Check the drive belts; adjust and renew if necessary.
- 5*† Renew the air filter element.
- 6*† Clean the crankcase breather tube flame trap.
- 7*† Clean the choke butterfly housing adapter (SU carburetters).
- 8*† Clean the air cleaner breather housing connection (Solex carburetter).
- 9*† Check the carburetter damper oil level; top-up if necessary (SU carburetters).
- 10*† Renew the sparking plugs.
- 11*† Lubricate the distributor.
- 12 Lubricate the accelerator and carburetter linkage.
- 13*† Check for correct choke operation and choke stove pipe flow; rectify if necessary (SU carburetters).
- 14*† Check the float chamber depression; adjust if necessary (SU carburetters).
- 15 † Check the ignition timing; adjust if necessary.
- 16 † Check the engine idle speed; adjust if necessary.
- 17 † Check the choke idle speed; adjust if necessary.

Engine cooling system

- 1 Check the coolant anti-freeze concentration; correct if necessary.
- 2 Check the coolant level; top-up if necessary.
- 3 Check all coolant hose clips for tightness.
- 4* Examine the condition of all coolant hoses; renew as necessary.
- 5* Fit a new heater tap feed hose (irrespective of visual appearance).
- 6 Renew the coolant.
- 7 Reverse flush the coolant system.
- 8 Remove foreign matter from the radiator, and refrigeration condenser.
- 9* Renew the thermostat.

Torque converter transmission

- 1* Check the transmission fluid level; top-up if necessary.
- 2* Renew the transmission fluid.
- 3* Fit a new intake strainer.
- 4 Lubricate the gear range selector control rod.

Propeller shaft

- 1 Lubricate the universal joints (not applicable to rubber jointed propeller shaft).

Final drive unit

- 1* Check the final drive oil level; top-up if necessary.

	I	A	B	C	D	E	F	G	H
Before commencing to carry out a service schedule the car should be suitably protected as described in Chapter B.	*	*	*	*	*	*	*	*	*
1* Change the engine oil.	*	*	*	*					
2* Renew the engine oil filter.		*	*	*					
3 Check the engine oil level; top-up if necessary.		*	*	*					
4 Check the drive belts; adjust and renew if necessary.	*	*	*	*					
5*† Renew the air filter element.			*	*					
6*† Clean the crankcase breather tube flame trap.			*	*					
7*† Clean the choke butterfly housing adapter (SU carburetters).			*	*					
8*† Clean the air cleaner breather housing connection (Solex carburetter).			*	*					
9*† Check the carburetter damper oil level; top-up if necessary (SU carburetters).		*	*	*					
10*† Renew the sparking plugs.			*	*					
11*† Lubricate the distributor.			*	*					
12 Lubricate the accelerator and carburetter linkage.		*	*	*					
13*† Check for correct choke operation and choke stove pipe flow; rectify if necessary (SU carburetters).				*					
14*† Check the float chamber depression; adjust if necessary (SU carburetters).			*	*					
15 † Check the ignition timing; adjust if necessary.		*	*	*					
16 † Check the engine idle speed; adjust if necessary.		*	*	*					
17 † Check the choke idle speed; adjust if necessary.		*	*	*					
1 Check the coolant anti-freeze concentration; correct if necessary.		*	*	*					
2 Check the coolant level; top-up if necessary.		*	*	*					
3 Check all coolant hose clips for tightness.	*	*	*	*					
4* Examine the condition of all coolant hoses; renew as necessary.			*	*				*	*
5* Fit a new heater tap feed hose (irrespective of visual appearance).				*					
6 Renew the coolant.								*	*
7 Reverse flush the coolant system.									*
8 Remove foreign matter from the radiator, and refrigeration condenser.								*	*
9* Renew the thermostat.				*					
1* Check the transmission fluid level; top-up if necessary.	*	*	*	*					
2* Renew the transmission fluid.			*	*					
3* Fit a new intake strainer.				*					
4 Lubricate the gear range selector control rod.		*	*	*					
1 Lubricate the universal joints (not applicable to rubber jointed propeller shaft).				*					
1* Check the final drive oil level; top-up if necessary.			*	*					

	I	A	B	C	D	E	F	G	H
2* Renew the final drive oil.				*					
3 Grease the drive-shaft universal joints (if applicable).				*					
4 Check the condition of the drive-shaft joint covers; renew if necessary.		*	*	*					
Steering									
1 Check the steering pump fluid level; top-up if necessary.	*	*	*	*					
2* Lubricate the steering linkage ball joints (if applicable).			*	*					
3* Check the condition of the steering ball joint covers; renew if necessary.		*	*	*					
4* Check the condition of the steering rack convoluted seals; renew if necessary.		*	*	*					
Suspension									
1 Check the condition of the front ball joint covers; renew the ball joints if necessary.		*	*	*					
2 Check the condition of the rear strut convoluted seals; renew if necessary.		*	*	*					
3 Lubricate the height control valve ball joints.		*	*	*					
Brake and hydraulic systems (see page C1-1)									
1 Check the reservoir mineral oil level; top-up if necessary.		*	*	*					
2 Renew the hydraulic system mineral oil.					*	*			
3 Check the condition of all brake pipes and hoses; renew as necessary.		*	*	*					
4 Renew the accumulator to body and trailing arms to body hoses.					*				
5 Renew all hydraulic system hoses.						*			
6* Check the brake disc pads for wear; renew if necessary.		*	*	*					
7* Check the condition of the brake caliper dust excluders when changing brake pads; renew if necessary.		*	*	*					
8 Renew the brake caliper seals.						*			
9* Check the parking brake pads for wear; renew if necessary.		*	*	*					
10* Adjust the parking brake.		*	*	*					
11 Lubricate the parking brake linkage.		*	*	*					
Fuel system									
1 Renew the filter element.				*					
2*† Clean the carburettor fuel inlet filter (Solex carburettor).				*					
3*† Fit new paper filter elements to the carburettor fuel inlets (SU carburettors).				*					
4* Renew the fuel mixture weakening device filter (SU carburettors).				*					
5 Fit a new, filler head to fuel tank, hose.						*			
6 Examine all flexible fuel pipes; renew if necessary.						*			
7 Test fuel pump for efficiency; renew if necessary.				*					
Electrical system									
1* Check the state of charge of the battery; top-up the electrolyte level if necessary dependent on battery type.		*	*	*					

	I	A	B	C	D	E	F	G	H
2 Clean and check the battery terminals.	*	*	*						
3 Check all exterior lamps for operation; rectify if necessary.	*	*	*						
4 Check all facia warning lamps for operation; rectify if necessary.	*	*	*						
5 Check all interior lamps for operation; rectify if necessary.	*	*	*						
6 Check the horns for operation; rectify if necessary.	*	*	*						
7 Replenish the windscreen and headlamp washer reservoir.	*	*	*						
8 Check the condition of the windscreen wiper blades, and headlamp wash brushes (if fitted); renew if necessary.	*	*	*						
9 Check the windscreen and headlamp wash/wipe for correct operation; rectify if necessary.	*	*	*						
10 Check the alternator for correct operation; renew brushes if necessary.				*	*				
11 Check the condition of the starter motor brushes and pinion; renew if necessary.					*				
Automatic air conditioning system									
1 Check the scuttle intake grille is free from obstruction.							*		
2 Check the refrigeration system for correct operation; rectify if necessary.							*		
Body									
1 Check the condition and operation of the seat belts; report any defects to the Owner.	*	*	*						
2 Check that all body drains are free from obstruction.								*	*
3 Lubricate the spare wheel carrier lowering bolt.		*	*						
4 Convertible cars. Check the fluid level in the power operated hood reservoir; top-up if necessary. The hood should be in the fully down (open position).			*						
Wheels									
1 Check all tyre pressures; adjust if necessary.	*	*	*						
2 Check the condition and tread depth of the tyres; report any defects to the Owner.	*	*	*						
Test									
1 Road test the car for satisfactory performance.	*	*	*	*	*	*			
Owners Service Schedule Record									
On completion of the required service schedule complete the respective voucher contained in the Owners Service Schedule and Record book.									
	*	*	*	*	*	*	*	*	*

Service schedules

Contents	Pages					
	Silver Spirit Mulsanne Silver Spur	Mulsanne Turbo	Bentley Eight	Bentley Turbo R	Corniche/ Continental	Camargue
Cars from vehicle identification number*SCBZS0T05CCH04233	—	C1/1-3	—	C1/1-3	—	—



WARNING

Use only **Hydraulic System Mineral Oil (LHM)** to replenish the braking and levelling systems.

Do not use Brake Fluids (Castrol RR363, Universal, or any other type). The use of any type of brake fluid, even in very small amounts, will cause component failure necessitating extensive rectification to the braking and levelling systems of the car.

Always ensure before fitting any seals, hoses, pipes, etc. that they are suitable for a mineral oil system. For details of correct component identification reference should be made to Chapter G of the Workshop Manual.

Always ensure that a sealed container of **Hydraulic System Mineral Oil (LHM)** is fitted adjacent to the battery.

Always ensure that no foreign matter enters the systems when work is being carried out.

The service schedule chart in this section indicates the operations required to service the vehicle. When carrying out the schedules, reference should be made to Chapter B which describes the correct procedure to be used for each operation. In order to locate this information the operation numbers quoted in the service schedule chart correspond with those in Chapter B.

It is important that, as certain maintenance items in the service schedules are essential requirements to conform with the Rolls-Royce Motors New Car Warranty or with relevant emission control regulations, maintenance is carried out at the times specified. These items are indicated as follows.

*Operations necessary to comply with Rolls-Royce Motors New Car Warranty during the warranty period.

†Operations necessary to comply with the relevant Emission Control Regulations. These items must be carried out during the entire service life of the vehicle.

Service schedules

All service schedules should be carried out at the appropriate time interval or mileage whichever is earlier.

The service intervals and corresponding code letters used on the service schedule chart are as follows.

Service schedules

Bentley Mulsanne Turbo
and Bentley Turbo R

Initial 3 months or 5000 kilometres (3000 miles)	1
6 months or 10 000 kilometres (6000 miles)	A
1 year or 20 000 kilometres (12 000 miles)	B
1½ years or 30 000 kilometres (18 000 miles)	A
2 years or 40 000 kilometres (24 000 miles)	C
2½ years or 50 000 kilometres (30 000 miles)	A
3 years or 60 000 kilometres (36 000 miles)	B
3½ years or 70 000 kilometres (42 000 miles)	A
4 years or 80 000 kilometres (48 000 miles)	C&D
4½ years or 90 000 kilometres (54 000 miles)	A
5 years or 100 000 kilometres (60 000 miles)	B
5½ years or 110 000 kilometres (66 000 miles)	A
6 years or 120 000 kilometres (72 000 miles)	C
6½ years or 130 000 kilometres (78 000 miles)	A
7 years or 140 000 kilometres (84 000 miles)	B
7½ years or 150 000 kilometres (90 000 miles)	A
8 years or 160 000 kilometres (96 000 miles)	C&E

Seasonal

Every year (Spring)	F
Within the first year (Autumn) then every two years	G
Every 2 years (Autumn)	H

Regular maintenance

Operations to be carried out at weekly, monthly or three monthly intervals are specified in Chapter 8.

Service recommendation

If the car is used for constant stop/start operations, the engine oil should be changed every 3 months or 5000 kilometres (3000 miles) whichever is earlier.

Time allowance

Schedule	Time in hours
I	2.0
A	8.5
B	10.0
C	12.5
D	5.5
E	17.0
F	1.5
G	1.0
H	2.5

When replacing brake pads, drive belts, ball joints or other items as a result of a service inspection, add the respective manhour schedule time.

If it is necessary to carry out the 3 months or 5000 kilometres (3000 miles) service recommendation the time allowance is 0.5 hour.

Service schedule operations**Car protection**

Before commencing to carry out a service schedule the car should be suitably protected as described in Chapter B.

Engine

- 1* Change the engine oil.
- 2* Renew the engine oil filter.
- 3 Check the engine oil level; top-up if necessary.
- 4 Check the drive belts; adjust and renew if necessary.
- 5*† Renew the air filter element.
- 6*† Clean the crankcase breather flame trap.
- 7*† Renew the sparking plugs.
- 8 Lubricate the distributor (if applicable).
- 9 Lubricate the accelerator and carburettor linkage.
- 10† Check the ignition timing; adjust if necessary.
- 11† Check the engine idle speed; adjust if necessary.
- 12† Check the choke idle speed; adjust if necessary.

Engine cooling system

- 1 Check the coolant anti-freeze concentration; correct if necessary.
- 2 Check the coolant level; top-up if necessary.
- 3 Check all coolant hose clips for tightness.
- 4* Examine the condition of all coolant hoses; renew as necessary.
- 5* Fit a new heater tap feed hose (irrespective of visual appearance).
- 6 Renew the coolant.
- 7 Reverse flush the coolant system.
- 8 Remove foreign matter from the radiator, oil cooler, and refrigeration condenser.
- 9* Renew the thermostat.

Torque converter transmission

- 1* Check the transmission fluid level; top-up if necessary.
- 2* Renew the transmission fluid.
- 3* Fit a new intake strainer.
- 4 Lubricate the gear range selector control rod.

Propeller shaft

- 1 Lubricate the universal joints.

Final drive unit

- 1* Check the final drive oil level; top-up if necessary.
- 2* Renew the final drive oil.
- 3 Check the condition of the drive-shaft joint covers; renew if necessary.

Steering

- 1 Check the steering pump fluid level; top-up if necessary.
- 2* Check the condition of the steering ball joint covers; renew if necessary.
- 3* Check the condition of the steering rack convoluted seals; renew if necessary.

	I	A	B	C	D	E	F	G	H
	*	*	*	*	*	*	*	*	*
1*	*	*	*	*					
2*		*	*	*					
3		*	*	*					
4	*	*	*	*					
5*†			*	*					
6*†			*	*					
7*†			*	*					
8			*	*					
9		*	*	*					
10†		*	*	*					
11†		*	*	*					
12†		*	*	*					
1		*	*	*					
2		*	*	*					
3	*	*	*	*					
4*			*	*				*	*
5*				*					
6								*	*
7									*
8								*	*
9*				*					
1*	*	*	*	*					
2*			*	*					
3*				*					
4		*	*	*					
1				*					
1*			*	*					
2*				*					
3		*	*	*					
1	*	*	*	*					
2*		*	*	*					
3*		*	*	*					

	I	A	B	C	D	E	F	G	H
Suspension									
1 Check the condition of the front ball joint covers; renew the ball joints if necessary.		*	*	*					
2 Check the condition of the rear strut convoluted seals; renew if necessary.		*	*	*					
3 Lubricate the height control valve ball joints.		*	*	*					
Brake and hydraulic system (see page C1/1-2)									
1 Check the reservoir mineral oil level; top-up if necessary.		*	*	*					
2 Renew the hydraulic system mineral oil.					*	*			
3 Check the condition of all brake pipes and hoses; renew as necessary.		*	*	*					
4 Renew the accumulator to body and trailing arms to body hoses.					*				
5 Renew all hydraulic system hoses.						*			
6* Check the brake disc pads for wear; renew if necessary.		*	*	*					
7* Check the condition of the brake caliper dust excluders when changing brake pads; renew if necessary.		*	*	*					
8 Renew the brake caliper seals.						*			
9* Check the parking brake pads for wear; renew if necessary.		*	*	*					
10* Adjust the parking brake.		*	*	*					
11 Lubricate the parking brake linkage.		*	*	*					
Fuel system									
1 Renew the filter element.				*					
2*† Clean the carburettor fuel inlet filter				*					
3 Fit a new, filler head to fuel tank, hose.						*			
4 Examine all flexible fuel pipes; renew if necessary.						*			
5 Test fuel pump for efficiency; renew if necessary.				*					
Electrical system									
1* Check the state of charge of the battery; top-up the electrolyte level if necessary dependent on battery type.		*	*	*					
2 Clean and check the battery terminals.		*	*	*					
3 Check all exterior lamps for operation; rectify if necessary.		*	*	*					
4 Check all facia warning lamps for operation; rectify if necessary.		*	*	*					
5 Check all interior lamps for operation; rectify if necessary.		*	*	*					
6 Check the horns for operation; rectify if necessary.		*	*	*					
7 Replenish the windscreen and headlamp washer reservoir.		*	*	*					
8 Check the condition of the windscreen wiper blades, and headlamp wash brushes (if fitted); renew if necessary.		*	*	*					
9 Check the windscreen and headlamp wash/wipe for correct operation; rectify if necessary.		*	*	*					
10 Check the alternator for correct operation; renew brushes if necessary.					*	*			
11 Check the condition of the starter motor brushes and pinion; renew if necessary.						*			

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	I	A	B	C	D	E	F	G	H
Automatic air conditioning system									
1 Check the scuttle intake grill is free from obstruction.							*		
2 Check the refrigeration system for correct operation; rectify if necessary.							*		
Body									
1 Check the condition and operation of the seat belts; report any defects to the Owner.		*	*	*					
2 Check that all body drains are free from obstruction.								*	*
3 Lubricate the spare wheel carrier lowering bolt.			*	*					
Wheels									
1 Check all tyre pressures; adjust if necessary.		*	*	*					
2 Check the condition and tread depth of the tyres; report any defects to the Owner.		*	*	*					
Test									
1 Road test the car for satisfactory performance.	*	*	*	*	*	*			
Owners Service Schedule Record									
On completion of the required service schedule complete the respective voucher contained in the Owners Service Schedule and Record book.	*	*	*	*	*	*	*	*	*

Service schedules

Cars conforming to Australian specifications

Contents

Sections

	Silver Spirit Mulsanne Silver Spur	Mulsanne Turbo	Bentley Eight	Bentley Turbo R	Corniche/ Continental	Camargue
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1986 model year cars	D1/1	—	—	—	—	—

Issue record sheet 1

July 1985

The dates quoted below refer to the issue date of individual pages within this chapter.

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WARNING

Use only Hydraulic System Mineral Oil (LHM) to replenish the braking and levelling systems.

Do not use Brake Fluids (Castrol RR363, Universal, or any other type). The use of any type of brake fluid, even in very small amounts, will cause component failure necessitating extensive rectification to the brake and levelling systems of the car.

Always ensure before fitting any seals, hoses, pipes, etc. that they are suitable for a mineral oil system. For details of correct component identification reference should be made to Chapter G of the Workshop Manual.

Always ensure that a sealed container of Hydraulic System Mineral Oil (LHM) is fitted adjacent to the battery.

Always ensure that no foreign matter enters the systems when work is being carried out.

The service schedule chart in this section indicates the operations required to service the vehicle. When carrying out the schedules, reference should be made to Chapter B which describes the correct procedure to be used for each operation. In order to locate this information the operation numbers quoted in the service schedule chart correspond with those in Chapter B.

Service schedules

The service schedules contain both the **Essential** and **Preventive** service schedules for complete vehicle maintenance.

All work listed in the **Essential** maintenance service schedules should be carried out at the specified mileage intervals.

The **Essential** maintenance service schedules are divided into two categories.

- Service work listed thus(*E) covers the servicing requirements for the emission control components and is required to comply with the emission control regulations. This service work must be carried out during the entire life of the vehicle.
- Service work listed thus(E) covers the additional servicing required to comply with the Rolls-Royce Motors Warranty or is considered essential beyond the warranty period from a safety point of view.

Service schedules

1981/82/83/84 model year cars

The **Preventive** maintenance service schedules listed thus(P) contain important servicing work recommended to secure the maximum life and efficiency for the car and will only be carried out on the owner's instructions.

All service schedules should be carried out at the appropriate mileage.

The service intervals and corresponding code letters used on the service schedule chart are as follows.

Initial 5000 kilometres (3000 miles) or 3 months	I
10 000 kilometres (6000 miles) or 6 months	A
20 000 kilometres (12 000 miles) or 1 year	B
30 000 kilometres (18 000 miles) or 1½ years	A
40 000 kilometres (24 000 miles) or 2 years	C
50 000 kilometres (30 000 miles) or 2½ years	A
60 000 kilometres (36 000 miles) or 3 years	B
70 000 kilometres (42 000 miles) or 3½ years	A
80 000 kilometres (48 000 miles) or 4 years	D
90 000 kilometres (54 000 miles) or 4½ years	A
100 000 kilometres (60 000 miles) or 5 years	B
110 000 kilometres (66 000 miles) or 5½ years	A
120 000 kilometres (72 000 miles) or 6 years	C
130 000 kilometres (78 000 miles) or 6½ years	A
140 000 kilometres (84 000 miles) or 7 years	B
150 000 kilometres (90 000 miles) or 7½ years	A
160 000 kilometres (96 000 miles) or 8 years	D

The service schedules are repeated after 160 000 kilometres (96 000 miles).

Seasonal

E Service schedule

To be carried out at intervals of one year

F Service schedule

To be carried out at intervals of two years

G Service schedule

To be carried out at intervals of four years

H Service schedule

To be carried out at intervals of eight years

Adverse condition maintenance

When the car is operating continuously under adverse conditions, such as are experienced in cities and towns where constant stopping and starting is the normal rule, the engine oil should be changed every 5000 kilometres (3000 miles) or 3 months whichever is the earlier.

Regular maintenance

Operations to be carried out at weekly, monthly, or three monthly intervals are specified in Chapter B.

Time allowance

Schedule	Time in hours	
	Essential	Preventive
I	1.75	0.30
A	2.00	1.50
B	5.50	1.50
C	8.75	2.00
D	12.00	2.00
E	Nominal	1.00
F	Nominal	3.50
G	4.50	3.50
H	13.00	3.50

When replacing brake pads, drive belts, ball joints, or other items as a result of a service inspection, add the respective man-hour schedule time.

If it is necessary to carry out the 5000 kilometres (3000 miles) or 3 months service recommendation the time allowance is 0.5 hour.

Service schedule operations**Car protection**

Before commencing to carry out a service schedule the car should be suitably protected as described in Chapter B.

Crankcase emission control system

- 1 Clean the crankcase breather tube flame traps
- 2 Clean the choke butterfly housing adapter

Exhaust emission control system

Exhaust gas recirculation system

- 1 Remove and clean the E.G.R. valves and feed pipes
- 2 Clean the E.G.R. orifices in the carburetter 'Tee' piece
- 3 Check the E.G.R. valves for correct operation

Air injection system

- 4 Check the condition and tension of the drive belt; adjust or renew as necessary
- 5 Check the system for leaks and correct operation; renew any defective components

Fuel evaporative emission control system

- 1 Renew the evaporative loss control cannister
- 2 Check the condition of all pipes, hoses, and connections; renew if necessary. Pressure test the fuel tank and evaporative loss control line; rectify any leaks
- 3 Check the purge flow rate; rectify if necessary

Engine

- 1 Change the engine oil
- 2 Renew the engine oil filter
- 3 Check the condition and tension of all drive belts; adjust or renew as necessary
- 4 Renew the air filter element
- 5 Check the oil level in the damper of each carburetter; top-up if necessary
- 6 Clean the carburetter air valve pistons
- 7 Check the float chamber depression; adjust if necessary
- 8 Check for correct choke operation and choke stove pipe flow; rectify if necessary
- 9 Check the choke fast-idle speed; adjust if necessary
- 10 Renew the sparking plugs
- 11 Lubricate the distributor (1981/82 model year cars only)
- 12 Lubricate the accelerator linkage
- 13 Check the torque tightness of the exhaust manifold setscrews
- 14 Check the ignition timing; adjust if necessary
- 15 Check the engine idle speed; adjust if necessary

Engine cooling system

- 1 Check the anti-freeze concentration; correct if necessary
- 2 Check the coolant level; top-up if necessary
- 3 Check all coolant hose clips for tightness

	I	A	B	C	D	E	F	G	H
Car protection									
Before commencing to carry out a service schedule the car should be suitably protected as described in Chapter B.	E	E	E	E	E	E	E	E	E
Crankcase emission control system									
1 Clean the crankcase breather tube flame traps			*E	*E	*E				
2 Clean the choke butterfly housing adapter			*E	*E	*E				
Exhaust emission control system									
Exhaust gas recirculation system									
1 Remove and clean the E.G.R. valves and feed pipes					*E				
2 Clean the E.G.R. orifices in the carburetter 'Tee' piece					*E				
3 Check the E.G.R. valves for correct operation					*E				
Air injection system									
4 Check the condition and tension of the drive belt; adjust or renew as necessary	E		*E	*E	*E				
5 Check the system for leaks and correct operation; renew any defective components				*E	*E				
Fuel evaporative emission control system									
1 Renew the evaporative loss control cannister					*E				
2 Check the condition of all pipes, hoses, and connections; renew if necessary. Pressure test the fuel tank and evaporative loss control line; rectify any leaks	E		*E	*E	*E				
3 Check the purge flow rate; rectify if necessary	E			*E	*E				
Engine									
1 Change the engine oil	E	*E	*E	*E	*E				
2 Renew the engine oil filter		*E	*E	*E	*E				
3 Check the condition and tension of all drive belts; adjust or renew as necessary	E	E	E	E	E				
4 Renew the air filter element			*E	*E	*E				
5 Check the oil level in the damper of each carburetter; top-up if necessary	E	P	*E	*E	*E				
6 Clean the carburetter air valve pistons				*E	*E				
7 Check the float chamber depression; adjust if necessary	E		*E	*E	*E				
8 Check for correct choke operation and choke stove pipe flow; rectify if necessary	E			*E	*E				
9 Check the choke fast-idle speed; adjust if necessary	E		*E	*E	*E				
10 Renew the sparking plugs			*E	*E	*E				
11 Lubricate the distributor (1981/82 model year cars only)			*E	*E	*E				
12 Lubricate the accelerator linkage		P	P	P	P				
13 Check the torque tightness of the exhaust manifold setscrews			*E	*E	*E				
14 Check the ignition timing; adjust if necessary	E		*E	*E	*E				
15 Check the engine idle speed; adjust if necessary	E		*E	*E	*E				
Engine cooling system									
1 Check the anti-freeze concentration; correct if necessary		P	P	P	P				
2 Check the coolant level; top-up if necessary		E	E	E	E				
3 Check all coolant hose clips for tightness	E	P	P	P	P				

	I	A	B	C	D	E	F	G	H
4 Examine the condition of all coolant hoses; renew as necessary			E	E	E				
5 Fit a new heater tap feed hose (irrespective of visual appearance)				E	E				
6 Renew the coolant						P	P	P	P
7 Reverse flush the cooling system							P	P	P
8 Remove foreign matter from the radiator and refrigeration condenser						P	P	P	P
9 Renew the thermostat				*E	*E				
Torque converter transmission									
1 Check the transmission fluid level; top-up if necessary	E	E							
2 Renew the transmission fluid			E	E	E				
3 Fit a new intake strainer				E	E				
4 Lubricate the gear range selector control rod		P	P	P	P				
Propeller shaft									
1 Lubricate the universal joints (not applicable to a rubber jointed propeller shaft)				E	E				
Final drive unit									
1 Check the final drive oil level; top-up if necessary		E	E						
2 Renew the final drive oil				E	E				
3 Check the condition of the drive-shaft joint covers; renew if necessary		P	P	P	P				
Steering									
1 Check the steering pump fluid level; top-up if necessary	P	E	E	E	E				
2 Lubricate the steering linkage ball joints (if applicable)			E	E	E				
3 Check the condition of the steering ball joint covers; renew if necessary			E	E	E				
4 Check the condition of the steering rack convoluted seals; renew if necessary. Ensure that the clips are tight			E	E	E				
Suspension									
1 Check the condition of the front ball joint covers; renew the ball joints if necessary			E	E	E				
2 Check the condition of the rear strut convoluted seals; renew if necessary		P	P	P	P				
3 Lubricate the height control valve ball joints				P	P				
Brake and hydraulic systems (see page D1-1)									
1 Check the oil level in the reservoirs; if necessary top-up with hydraulic system mineral oil		E	E	E	E				
2 Renew the hydraulic system mineral oil					E				
3 Check the condition of all brake pipes and hoses; renew as necessary		E	E	E	E				
4 Renew the accumulator to body, trailing arms to body, and sub-frame to body hoses					E				
5 Renew all flexible hoses								E	E
6 Check the brake disc pads for wear; renew if necessary		E	E	E	E				
7 Check the condition of the brake caliper dust excluders when changing brake pads; renew if necessary		E	E	E	E				
8 Renew the brake caliper seals									E

	I	A	B	C	D	E	F	G	H
9 Check the parking brake pads for wear; renew if necessary		E	E	E	E				
10 Adjust the parking brake		E	E	E	E				
11 Lubricate the parking brake linkage		P	P	P	P				
Fuel system									
1 Renew the main fuel filter				P	P				
Remove, clean, and examine the intank fuel filter; renew if necessary					E				
2 Fit new paper filter elements to the carburettor fuel inlets				*E	*E				
3 Renew the fuel mixture weakening device filter				*E	*E				
4 Check the condition of the filler head to fuel tank hose; renew as necessary								E	E
5 Check the condition of all flexible fuel pipes; renew as necessary								E	E
Electrical system									
1 Check the battery electrolyte level and condition; top-up if necessary		E	E	E	E				
2 Clean and check the battery terminals		P	P	P	P				
3 Check all exterior lamps for operation; rectify if necessary		P	P	P	P				
4 Check all facia warning lamps for operation; rectify if necessary		P	P	P	P				
5 Check all interior lamps for operation; rectify if necessary		P	P	P	P				
6 Check the horns for operation; rectify if necessary		P	P	P	P				
7 Replenish the windscreen and headlamp washers reservoir		E	E	E	E				
8 Check the condition of the windscreen wiper blades and headlamp wash brushes; renew if necessary		P	P	P	P				
9 Check the windscreen and headlamp wash/wipe system for correct operation; rectify if necessary		P	P	P	P				
10 Check the alternator for correct operation; renew brushes and slip rings if necessary				P	P				
Automatic air conditioning system									
1 Check the scuttle intake grille is free from obstruction						P	P	P	P
2 Check the refrigeration system for correct operation; rectify if necessary						P	P	P	P
Body									
1 Check the condition and operation of the seat belts; report any defects to the owner		P	P	P	P				
2 Check that all body drains are free from obstruction						P	P	P	P
3 Lubricate the spare wheel carrier lowering bolt			P	P	P				
4 Convertible cars									
Check the fluid level in the power operated hood reservoir; top-up if necessary. The hood should be in the fully down (open) position				P	P				
Wheels									
1 Check all tyre pressures; adjust if necessary		P	P	P	P				
2 Check the condition and tread depth of the tyres; report any defects to the owner		P	P	P	P				

Test

1 Road test the car for satisfactory performance

I	A	B	C	D	E	F	G	H
P	P	P	P	P				

Owner Service Schedule Record

On completion of the required service schedule
complete the respective voucher contained in the
Owners Service Schedule and Record book.

E	E	E	E	E	E	E	E	E
---	---	---	---	---	---	---	---	---



WARNING

Use only Hydraulic System Mineral Oil (LHM) to replenish the braking and levelling systems.

Do not use Brake Fluids (Castrol RR363, Universal, or any other type). The use of any type of brake fluid, even in very small amounts, will cause component failure necessitating extensive rectification to the braking and levelling systems of the car.

Always ensure before fitting any seals, hoses, pipes, etc., that they are suitable for a mineral oil system. For details of correct component identification reference should be made to Chapter G of the Workshop Manual.

Always ensure that a sealed container of **Hydraulic System Mineral Oil (LHM)** is fitted adjacent to the battery.

Always ensure that no foreign matter enters the systems when work is being carried out.

The service schedule chart in this section indicates the operations required to service the vehicle. When carrying out the schedules, reference should be made to Chapter B which describes the correct procedure to be used for each operation. In order to locate this information the operation numbers quoted in the service schedule chart correspond with those in Chapter B.

Service schedules

The service schedules contain both the **Essential** and **Preventive** service schedules for complete vehicle maintenance.

All work listed in the **Essential** maintenance service schedules should be carried out at the specified mileage/time intervals.

The **Essential** maintenance service schedules are divided into two categories.

- (a) Service work listed thus (*E) covers the servicing requirements for the emission control components and is required to comply with the emission control regulations. This service work must be carried out during the entire life of the vehicle.
- (b) Service work listed thus (E) covers the additional servicing required to comply with the New Car Warranty or is considered essential beyond the warranty period from a safety point of view.

Service schedules

1986 model year cars

The **Preventive** maintenance service schedules listed thus (P) contain important servicing work recommended to secure the maximum life and efficiency for the car and will only be carried out on the owner's instructions.

All service schedules should be carried out at the appropriate mileage or time interval whichever is earlier.

The service intervals and corresponding code letters used on the service schedule chart are as follows.

Initial 5000 kilometres (3000 miles)	I
12 000 kilometres (7500 miles)	A
24 000 kilometres (15 000 miles)	B
36 000 kilometres (22 500 miles)	A
48 000 kilometres (30 000 miles)	C
60 000 kilometres (37 500 miles)	A
72 000 kilometres (45 000 miles)	B
84 000 kilometres (52 500 miles)	A
96 000 kilometres (60 000 miles)	D
108 000 kilometres (67 500 miles)	A
120 000 kilometres (75 000 miles)	B
132 000 kilometres (82 500 miles)	A
144 000 kilometres (90 000 miles)	C
156 000 kilometres (97 500 miles)	A
168 000 kilometres (105 000 miles)	B
180 000 kilometres (112 500 miles)	A
192 000 kilometres (120 000 miles)	D

The service schedules are repeated after 192 000 kilometres (120 000 miles).

Seasonal

E Service schedule

To be carried out at intervals of one year

F Service schedule

To be carried out at intervals of two years

G Service schedule

To be carried out at intervals of four years

H Service schedule

To be carried out at intervals of eight years

Adverse conditions maintenance

When the car is operating continuously under adverse conditions, such as are experienced in cities and towns where constant stopping and starting is the normal rule, the engine oil should be changed every 5000 kilometres (3000 miles) or 3 months whichever is the earlier.

Regular maintenance

Operations to be carried out at weekly, monthly, or three monthly intervals are specified in Chapter B.

Time allowance

Schedule	Time in hours	
	Essential	Preventive
I	1.0	0.5
A	2.5	2.0
B	4.0	3.5
C	6.5	5.0
D	14.0	2.5
E	Nominal	0.75
F	Nominal	3.75
G	4.50	3.50
H	13.0	3.50

When replacing brake pads, drive belts, ball joints, or other items as a result of a service inspection, add the respective man-hour schedule time.

If it is necessary to carry out the 5000 kilometres (3000 miles) or 3 months service recommendation the time allowance is 0.5 hour.

Service schedule operations

I	A	B	C	D	E	F	G	H
---	---	---	---	---	---	---	---	---

Car protection

Before commencing to carry out a service schedule the car should be suitably protected as described in Chapter B.

E	E	E	E	E	E	E	E	E
---	---	---	---	---	---	---	---	---

Crankcase emission control system

- 1 Clean the crankcase breather tube flame traps

			P	E				
--	--	--	---	---	--	--	--	--

Exhaust emission control system**Exhaust system**

- 1 Renew the oxygen sensor and reset the elapsed mileage indicator

			*E	E				
--	--	--	----	---	--	--	--	--

Exhaust gas recirculation system

- 2 Remove and clean the E.G.R. valve and feed pipes
- 3 Check the E.G.R. valve for correct operation

				E				
				E				

Air injection system

- 4 Check the condition and tension of the drive belt; adjust or renew as necessary
- 5 Check the system for leaks and correct operation; renew any defective components

			*E	E				
				E				

Fuel evaporative emission control system

- 1 Renew the evaporative emission control canister
- 2 Check the condition of all pipes, hoses, and connections; renew if necessary
- 3 Check the purge flow rate; rectify if necessary

				E				
		P	P	E				
			P	E				

Engine

- 1 Change the engine oil
- 2 Renew the engine oil filter
- 3 Check the condition and tension of the drive belts; adjust or renew as necessary
- 4 Renew the air filter element
- 5 Renew the sparking plugs
- 6 Lubricate the accelerator linkage
- 7 Check the ignition timing; adjust if necessary
- 8 Check for correct operation of the vacuum advance mechanism
- 9 Check the engine idle speed; adjust if necessary

*E	*E	*E	*E	E				
	*E	*E	*E	E				
E	E	E	E	E				
			*E	E				
			*E	E				
	P	P	P	P				
		P	P	E				
		P	P	E				
E		P	P	E				

Engine cooling system

- 1 Check the anti-freeze concentration; correct if necessary
- 2 Check the coolant level; top-up if necessary
- 3 Check all coolant hose clips for tightness
- 4 Examine the condition of all coolant hoses; renew as necessary
- 5 Fit a new heater tap feed hose
- 6 Renew the coolant
- 7 Reverse flush the cooling system
- 8 Remove foreign matter from the radiator, oil cooler, and refrigeration condenser
- 9 Renew the thermostat

	P	P	P	P				
	E	E	E	E				
E	P	P	P	P				
			P	E				
			P	E				
					P	P	P	P
					P	P	P	P
					P	P	P	P
			P	E				

Torque converter transmission

- 1 Check the transmission fluid level; top-up if necessary

E	E							
---	---	--	--	--	--	--	--	--

	I	A	B	C	D	E	F	G	H
2 Renew the transmission fluid			E	E	E				
3 Fit a new intake strainer				E	E				
4 Lubricate the gear range selector control rod		P	P	P	P				
Final drive unit									
1 Check the final drive oil level; top-up if necessary		E	E						
2 Renew the final drive oil				E	E				
3 Check the condition of the drive-shaft joint covers; renew if necessary		P	P	P	P				
Steering									
1 Check the steering pump fluid level; top-up if necessary	P	E	E	E	E				
2 Lubricate the steering linkage ball joints (if applicable)			E	E	E				
3 Check the condition of the steering ball joint covers; renew if necessary			E	E	E				
4 Check the condition of the steering rack convoluted seals; renew if necessary.			E	E	E				
Suspension									
1 Check the condition of the front ball joint covers; renew the ball joints if necessary			E	E	E				
2 Check the condition of the rear strut convoluted seals; renew if necessary		P	P	P	P				
3 Lubricate the height control valve ball joints				P	P				
Brake and hydraulic systems (see page D1/1-1)									
1 Check the oil level in the reservoirs; if necessary top-up with hydraulic system mineral oil		E	E	E					
2 Renew the hydraulic system mineral oil					E				
3 Check the condition of all brake pipes and hoses; renew as necessary		E	E	E	E				
4 Renew the accumulator to body and trailing arms to body hoses					E				
5 Renew all flexible hoses								E	E
6 Check the brake disc pads for wear; renew if necessary		E	E	E	E				
7 Check the condition of the brake caliper dust excluders when changing brake pads; renew if necessary		E	E	E	E				
8 Renew the brake caliper seals									E
9 Check the parking brake pads for wear; renew if necessary		E	E	E	E				
10 Adjust the parking brake		E	E	E	E				
11 Lubricate the parking brake linkage		P	P	P	P				
Fuel system									
1 Renew the main fuel filter					E				
Remove, clean, and examine the intank fuel filter; renew if necessary					E				
2 Check the condition of the filler head to fuel tank hose; renew as necessary								E	E
3 Check the condition of all flexible fuel pipes; renew as necessary								E	E
Electrical system									
1 Check the state of charge of the battery		E	E	E	E				
2 Clean and check the battery terminals		P	P	P	P				

	I	A	B	C	D	E	F	G	H
3 Check all exterior lamps for operation; rectify if necessary		P	P	P	P				
4 Check all facia warning lamps for operation; rectify if necessary		P	P	P	P				
5 Check all interior lamps for operation; rectify if necessary		P	P	P	P				
6 Check the horns for operation; rectify if necessary		P	P	P	P				
7 Replenish the windscreen and headlamp washer reservoirs		E	E	E	E				
8 Check the condition of the windscreen wiper blades; renew if necessary		P	P	P	P				
9 Check the windscreen and headlamp wash/wipe systems for correct operation; rectify if necessary		P	P	P	P				
10 Check the alternator for correct operation; renew brushes if necessary				P	P				
Automatic air conditioning system									
1 Check the scuttle intake grille is free from obstruction						P	P	P	P
2 Check the refrigeration system for correct operation; rectify if necessary						P	P	P	P
Body									
1 Check the condition and operation of the seat belts; report any defects to the owner		P	P	P	P				
2 Check that all body drains are free from obstruction						P	P	P	P
3 Lubricate the spare wheel carrier lowering bolt			P	P	P				
Wheels									
1 Check all tyre pressures; adjust if necessary		P	P	P	P				
2 Check the condition and tread depth of the tyres; report any defects to the owner		P	P	P	P				
Test									
1 Road test the car for satisfactory performance	P	P	P	P	P				
Owner Service Schedule Record									
On completion of the required service schedule complete the respective voucher contained in the Owner's Service Schedule and Record book.	E	E	E	E	E	E	E	E	E

Service schedules

Cars conforming to Japanese specifications

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Issue record sheet 1

July 1985

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WARNING

Use only **Hydraulic System Mineral Oil (LHM)** to replenish the braking and levelling systems.

Do not use Brake Fluids (Castrol RR363, Universal, or any other type). The use of any type of brake fluid, even in very small amounts, will cause component failure necessitating extensive rectification to the braking and levelling systems of the car.

Always ensure before fitting any seals, hoses, pipes, etc., that they are suitable for a mineral oil system. For details of correct component identification reference should be made to Chapter G of the Workshop Manual.

Always ensure that a sealed container of **Hydraulic System Mineral Oil (LHM)** is fitted adjacent to the battery.

Always ensure that no foreign matter enters the systems when work is being carried out.

The service schedule chart in this section indicates the operations required to service the vehicle. When carrying out the schedules, reference should be made to Chapter B which describes the correct procedure to be used for each operation. In order to locate this information the operation numbers quoted in the service schedule chart correspond with those in Chapter B.

Service schedules

The service schedules contain both the **Essential** and **Preventive** service schedules for complete vehicle maintenance.

All work listed in the **Essential** maintenance service schedules should be carried out at the specified mileage/time intervals.

The **Essential** maintenance service schedules are divided into two categories.

- (a) Service work listed thus(*E) covers the servicing requirements for the emission control components and is required to comply with the emission control regulations. This service work must be carried out during the entire life of the vehicle.
- (b) Service work listed thus (E) covers the additional servicing required to comply with the New Car Warranty or is considered essential beyond the warranty period from a safety point of view.

Service schedules

1981/1986 model year cars

The **Preventive** maintenance service schedules listed thus(P) contain important servicing work recommended to secure the maximum life and efficiency for the car and will only be carried out on the owner's instructions.

All service schedules should be carried out at the appropriate mileage or time interval whichever is earlier.

The service intervals and corresponding code letters used on the service schedule chart are as follows.

Initial 5000 kilometres (3000 miles) or 3 months	I
10 000 kilometres (6000 miles) or 6 months	A
20 000 kilometres (12 000 miles) or 1 year	B
30 000 kilometres (18 000 miles) or 1½ years	A
40 000 kilometres (24 000 miles) or 2 years	C
50 000 kilometres (30 000 miles) or 2½ years	A
60 000 kilometres (36 000 miles) or 3 years	B
70 000 kilometres (42 000 miles) or 3½ years	A
80 000 kilometres (48 000 miles) or 4 years	D
90 000 kilometres (54 000 miles) or 4½ years	A
100 000 kilometres (60 000 miles) or 5 years	B
110 000 kilometres (66 000 miles) or 5½ years	A
120 000 kilometres (72 000 miles) or 6 years	C
130 000 kilometres (78 000 miles) or 6½ years	A
140 000 kilometres (84 000 miles) or 7 years	B
150 000 kilometres (90 000 miles) or 7½ years	A
160 000 kilometres (96 000 miles) or 8 years	D

The service schedules are repeated after 160 000 kilometres (96 000 miles).

Seasonal

E Service schedule

To be carried out at intervals of one year

F Service schedule

To be carried out at intervals of two years

G Service schedule

To be carried out at intervals of four years

H Service schedule

To be carried out at intervals of eight years

Adverse conditions maintenance

When the car is operating continuously under adverse conditions, such as are experienced in cities and towns where constant stopping and starting is the normal rule, the engine oil should be changed every 5000 kilometres (3000 miles) or 3 months whichever is the earlier.

Regular maintenance

Operations to be carried out at weekly, monthly, or three monthly intervals are specified in Chapter B.

Time allowance

Schedule	Time in hours	
	Essential	Preventive
I	1.25	Nominal
A	2.25	1.25
B	5.00	1.25
C	9.00	2.00
D	12.50	2.00
E	Nominal	0.75
F	Nominal	3.75
G	4.50	3.75
H	13.00	3.75

When replacing brake pads, drive belts, ball joints, or other items as a result of a service inspection, add the respective man-hour schedule time.

If it is necessary to carry out the 5000 kilometres (3000 miles) or 3 months service recommendation the time allowance is 0.5 hour.

Service schedule operations

I	A	B	C	D	E	F	G	H
---	---	---	---	---	---	---	---	---

Car protection

Before commencing to carry out a service schedule the car should be suitably protected as described in Chapter 8.

E	E	E	E	E	E	E	E	E
---	---	---	---	---	---	---	---	---

Crankcase emission control system

- 1 Clean the crankcase breather tube flame traps

		*E	*E	*E				
--	--	----	----	----	--	--	--	--

Exhaust emission control system**Exhaust system**

- 1 Renew the oxygen sensor
- 2 Fit a new catalytic converter
- 3 Inspect the catalytic converter overheat thermocouple and wiring, renew if there is visual evidence of damage
- 4 Inspect the grass-fire heatshields for damage. Rectify or renew the shields to ensure that a minimum clearance of 5 mm (0.20 in) is maintained between the heatshields and the exhaust pipes

Every 50 000 kilometres (30 000 miles)

				*E				
--	--	--	--	----	--	--	--	--

				*E				
--	--	--	--	----	--	--	--	--

	*E	*E	*E	*E				
--	----	----	----	----	--	--	--	--

Exhaust gas recirculation system

- 5 Remove and clean the E.G.R. valve and feed pipes
- 6 Check the E.G.R. valve for correct operation

				*E				
--	--	--	--	----	--	--	--	--

				*E				
--	--	--	--	----	--	--	--	--

Fuel evaporative emission control system

- 1 Renew the evaporative emission control canister
- 2 Check the condition of all pipes, hoses, and connections; renew if necessary
- 3 Check the purge flow rate; rectify if necessary

				*E				
--	--	--	--	----	--	--	--	--

E		*E	*E	*E				
---	--	----	----	----	--	--	--	--

*E			*E	*E				
----	--	--	----	----	--	--	--	--

Engine

- 1 Change the engine oil
- 2 Renew the engine oil filter
- 3 Check the condition and tension of all the drive belts; adjust or renew as necessary
- 4 Renew the air filter element
- 5 Renew the sparking plugs
- 6 Lubricate the distributor (1981/82 model year cars only)
- 7 Lubricate the accelerator linkage
- 8 Check the torque tightness of the exhaust manifold setscrews
- 9 Check the ignition timing; adjust if necessary
- 10 Check for correct operation of the vacuum advance/retard mechanism
- 11 Check the engine idle speed; adjust if necessary

E	*E	*E	*E	*E				
---	----	----	----	----	--	--	--	--

	*E	*E	*E	*E				
--	----	----	----	----	--	--	--	--

	E	E	E	E				
--	---	---	---	---	--	--	--	--

		*E	*E	*E				
--	--	----	----	----	--	--	--	--

		*E	*E	*E				
--	--	----	----	----	--	--	--	--

		*E	*E	*E				
--	--	----	----	----	--	--	--	--

	P	P	P	P				
--	---	---	---	---	--	--	--	--

		*E	*E	*E				
--	--	----	----	----	--	--	--	--

E		*E	*E	*E				
---	--	----	----	----	--	--	--	--

		*E	*E	*E				
--	--	----	----	----	--	--	--	--

E		*E	*E	*E				
---	--	----	----	----	--	--	--	--

Engine cooling system

- 1 Check the anti-freeze concentration; correct if necessary
- 2 Check the coolant level; top-up if necessary
- 3 Check all coolant hose clips for tightness
- 4 Examine the condition of all coolant hoses; renew as necessary
- 5 Fit a new heater tap feed hose
- 6 Renew the coolant
- 7 Reverse flush the cooling system

	P	P	P	P				
--	---	---	---	---	--	--	--	--

	E	E	E	E				
--	---	---	---	---	--	--	--	--

E	P	P	P	P				
---	---	---	---	---	--	--	--	--

			E	E				
--	--	--	---	---	--	--	--	--

			E	E				
--	--	--	---	---	--	--	--	--

					P	P	P	P
--	--	--	--	--	---	---	---	---

						P	P	P
--	--	--	--	--	--	---	---	---

	I	A	B	C	D	E	F	G	H
8 Remove foreign matter from the radiator, oil cooler (if fitted), and refrigeration condenser						P	P	P	P
9 Renew the thermostat				*E	*E				
Torque converter transmission									
1 Check the transmission fluid level; top-up if necessary	E	E							
2 Renew the transmission fluid			E	E	E				
3 Fit a new intake strainer				E	E				
4 Lubricate the gear range selector control rod		P	P	P	P				
Propeller shaft									
1 Lubricate the universal joints (not applicable to a rubber jointed propeller shaft)				E	E				
Final drive unit									
1 Check the final drive oil level; top-up if necessary		E	E						
2 Renew the final drive oil				E	E				
3 Check the condition of the drive-shaft joint covers; renew if necessary		P	P	P	P				
Steering									
1 Check the steering pump fluid level; top-up if necessary	P	E	E	E	E				
2 Lubricate the steering linkage ball joints (if applicable)			E	E	E				
3 Check the condition of the steering ball joint covers; renew if necessary			E	E	E				
4 Check the condition of the steering rack convoluted seals; renew if necessary			E	E	E				
Suspension									
1 Check the condition of the front ball joint covers; renew the ball joints if necessary			E	E	E				
2 Check the condition of the rear strut convoluted seals; renew if necessary		P	P	P	P				
3 Lubricate the height control valve ball joints				P	P				
Brake and hydraulic systems (see page E1-1)									
1 Check the oil level in the reservoirs; if necessary top-up with hydraulic system mineral oil		E	E	E					
2 Renew the hydraulic system mineral oil					E				
3 Check the condition of all brake pipes and hoses; renew as necessary		E	E	E	E				
4 Renew the accumulator to body, trailing arms to body, and if fitted, the sub-frame to body hoses					E				
5 Renew all flexible hoses								E	E
6 Check the brake disc pads for wear; renew if necessary		E	E	E	E				
7 Check the condition of the brake caliper dust excluders when changing brake pads; renew if necessary		E	E	E	E				
8 Renew the brake caliper seals									E
9 Check the parking brake pads for wear; renew if necessary		E	E	E	E				
10 Adjust the parking brake		E	E	E	E				
11 Lubricate the parking brake linkage		P	P	P	P				

	I	A	B	C	D	E	F	G	H
Fuel system									
1 Renew the main fuel filter					E				
Remove, clean, and examine the intank fuel filter; renew if necessary					E				
2 Check the condition of the filler head to fuel tank hose; renew as necessary								E	E
3 Check the condition of all flexible fuel pipes; renew as necessary								E	E
Electrical system									
1 Check the state of charge of the battery		E	E	E	E				
2 Clean and check the battery terminals		P	P	P	P				
3 Check all exterior lamps for operation; rectify if necessary		P	P	P	P				
4 Check all facia warning lamps for operation; rectify if necessary		P	P	P	P				
5 Check all interior lamps for operation; rectify if necessary		P	P	P	P				
6 Check the horns for operation; rectify if necessary		P	P	P	P				
7 Replenish the windscreen and headlamp washer (if fitted) reservoirs		E	E	E	E				
8 Check the condition of the windscreen wiper blades renew if necessary		P	P	P	P				
9 Check the windscreen wash/wipe and headlamps wash (if fitted) systems for correct operation; rectify if necessary		P	P	P	P				
10 Check the alternator for correct operation; renew brushes if necessary				P	P				
Automatic air conditioning system									
1 Check the scuttle intake grille is free from obstruction						P	P	P	P
2 Check the refrigeration system for correct operation; rectify if necessary						P	P	P	P
Body									
1 Check the condition and operation of the seat belts; report any defects to the owner		P	P	P	P				
2 Check that all body drains are free from obstruction						P	P	P	P
3 Lubricate the spare wheel carrier lowering bolt			P	P	P				
4 Convertible cars									
Check the fluid level in the power operated hood reservoir; top-up if necessary. The hood should be in the fully down (open) position				P	P				
Wheels									
1 Check all tyre pressures; adjust if necessary		P	P	P	P				
2 Check the condition and tread depth of the tyres; report any defects to the owner		P	P	P	P				
Test									
1 Road test the car for satisfactory performance		P	P	P	P				
Owner Service Schedule Record									
On completion of the required service schedule complete the respective voucher contained in the Owner's Service Schedule and Record book		E	E	E	E	E	E	E	E

Service schedules

Cars conforming to North American specifications

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	Silver Spirit Mulsanne Silver Spur	Mulsanne Turbo	Bentley Eight	Bentley Turbo R	Corniche/ Continental	Camargue
1981/1987 (inclusive) model year cars The model year of these cars can be identified by the tenth letter of the vehicle identification number (VIN), as follows. 1981=B (*SCAZS42A3BCX01011*) 1982=C (*SCAZS42A7CCX05001*) 1983=D (*SCAZS42A0DCX07805*) 1984=E (*SCAZS42A0ECX08597*) 1985=F (*SCAZS42A3FCX12001*) 1986=G (*SCAZS42A4GCX13871*) 1987=H (*SCAZS42A5HCX16348*)	F1	—	—	—	F1	F1

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June 1986

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TSD4406



WARNING

Use only Hydraulic System Mineral Oil (LHM) to replenish the braking and levelling systems.

Do not use Brake Fluids (Castrol RR363, Universal, or any other type). The use of any type of brake fluid, even in very small amounts, will cause component failure necessitating extensive rectification to the braking and levelling systems of the car.

Always ensure before fitting any seals, hoses, pipes, etc., that they are suitable for a mineral oil system. For details of correct component identification reference should be made to Chapter G of the Workshop Manual.

Always ensure that a sealed container of **Hydraulic System Mineral Oil (LHM)** is fitted adjacent to the battery.

Always ensure that no foreign matter enters the systems when work is being carried out.

The service schedule chart in this section indicates the operations required to service the vehicle. When carrying out the schedules, reference should be made to Chapter B which describes the correct procedure to be used for each operation. In order to locate this information the operation numbers quoted in the service schedule chart correspond with those in Chapter B.

Service schedules

The service schedules contain both the **Essential** and **Preventive** service schedules for complete vehicle maintenance.

All work listed in the **Essential** maintenance service schedules should be carried out at the specified mileage/time intervals.

The **Essential** maintenance service schedules are divided into two categories.

- (a) Service work listed thus (*E) covers the servicing requirements for the emission control components and is required to comply with the emission control regulations. This service work must be carried out during the entire life of the vehicle.
- (b) Service work listed thus (E) covers the additional servicing required to comply with the New Car Warranty or is considered essential beyond the warranty period from a safety point of view.

Service schedules

1981/1987 (inclusive) model year cars

The **Preventive** maintenance service schedules listed thus(P) contain important servicing work recommended to secure the maximum life and efficiency for the car and will only be carried out on the owner's instructions.

All service schedules should be carried out at the appropriate mileage or time interval whichever is earlier.

The service intervals and corresponding code letters used on the service schedule chart are as follows.

Initial 3000 miles (5000 kilometres)	I
7500 miles (12 000 kilometres)	A
15 000 miles (24 000 kilometres)	B
22 500 miles (36 000 kilometres)	A
30 000 miles (48 000 kilometres)	C
37 500 miles (60 000 kilometres)	A
45 000 miles (72 000 kilometres)	B
52 500 miles (84 000 kilometres)	A
60 000 miles (96 000 kilometres)	D

The service schedules are repeated after 60 000 miles (96 000 kilometres).

Seasonal

E Service schedule

To be carried out at intervals of one year

F Service schedule

To be carried out at intervals of two years

G Service schedule

To be carried out at intervals of four years

H Service schedule

To be carried out at intervals of eight years

Adverse conditions maintenance

When the car is operating continuously under adverse conditions, such as are experienced in cities and towns where constant stopping and starting is the normal rule, the engine oil should be changed every 3000 miles (5000 kilometres) or 3 months whichever is the earlier.

Regular maintenance

Operations to be carried out at weekly, monthly, or three monthly intervals are specified in Chapter B.

Time allowance

Schedule	Time in hours	
	Essential	Preventive
I	1.0	0.5
A	2.5	2.0
B	4.0	3.5
C	6.5	5.0
D	14.0	2.5
E	Nominal	0.75
F	Nominal	3.75
G	4.50	3.50
H	13.0	3.50

When replacing brake pads, drive belts, ball joints, or other items as a result of a service inspection, add the respective man-hour schedule time.

If it is necessary to carry out the 3000 miles (5000 kilometres) or 3 months service recommendation the time allowance is 0.5 hour.

Service schedule operations

	I	A	B	C	D	E	F	G	H
--	---	---	---	---	---	---	---	---	---

Car protection

Before commencing to carry out a service schedule the car should be suitably protected as described in Chapter B.

	E	E	E	E	E	E	E	E	E
--	---	---	---	---	---	---	---	---	---

Crankcase emission control system

- 1 Clean the crankcase breather tube flame traps

				P	E				
--	--	--	--	---	---	--	--	--	--

Exhaust emission control system**Exhaust system**

- 1 Renew the oxygen sensor and reset the elapsed mileage indicator (1981/86 model year cars only)
Renew the oxygen sensor (1987 model year cars only)

				*E	E				
					E				

Exhaust gas recirculation system

- 2 Remove and clean the E.G.R. valve and feed pipes
3 Check the E.G.R. valve for correct operation

					E				
					E				

Air injection system

- 4 Check the condition and tension of the drive belt; adjust or renew as necessary
5 Check the system for leaks and correct operation; renew any defective components

				*E	E				
					E				

Fuel evaporative emission control system

- 1 Renew the evaporative emission control canister
2 Check the condition of all pipes, hoses, and connections; renew if necessary
3 Check the purge flow rate; rectify if necessary

					E				
			P	P	E				
				P	E				

Engine

- 1 Change the engine oil
2 Renew the engine oil filter
3 Check the condition and tension of the drive belts; adjust or renew as necessary
4 Renew the air filter element
5 Renew the sparking plugs
6 Lubricate the distributor (1981/82 model year cars only)
7 Lubricate the accelerator linkage
8 Check the ignition timing; adjust if necessary
9 Check for correct operation of the vacuum advance mechanism
10 Check the engine idle speed; adjust if necessary

	*E	*E	*E	*E	E				
		*E	*E	*E	E				
	E	E	E	E	E				
				*E	E				
				*E	E				
			P	P	E				
		P	P	P	P				
			P	P	E				
			P	P	E				
	E		P	P	E				

Engine cooling system

- 1 Check the anti-freeze concentration; correct if necessary
2 Check the coolant level; top-up if necessary
3 Check all coolant hose clips for tightness
4 Examine the condition of all coolant hoses; renew as necessary
5 Fit a new heater tap feed hose
6 Renew the coolant
7 Reverse flush the cooling system
8 Remove foreign matter from the radiator, oil cooler (if fitted), and refrigeration condenser
9 Renew the thermostat

		P	P	P	P				
		E	E	E	E				
	E	P	P	P	P				
				P	E				
				P	E				
						P	P	P	P
							P	P	P
							P	P	P
				P	E				

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	I	A	B	C	D	E	F	G	H
Torque converter transmission									
1 Check the transmission fluid level; top-up if necessary	E	E							
2 Renew the transmission fluid			E	E	E				
3 Fit a new intake strainer				E	E				
4 Lubricate the gear range selector control rod		P	P	P	P				
Propeller shaft									
1 Lubricate the universal joints (not applicable to a rubber jointed propeller shaft)				E	E				
Final drive unit									
1 Check the final drive oil level; top-up if necessary		E	E						
2 Renew the final drive oil				E	E				
3 Check the condition of the drive-shaft joint covers; renew if necessary		P	P	P	P				
Steering									
1 Check the steering pump fluid level; top-up if necessary	P	E	E	E	E				
2 Lubricate the steering linkage ball joints (if applicable)			E	E	E				
3 Check the condition of the steering ball joint covers; renew if necessary			E	E	E				
4 Check the condition of the steering rack convoluted seals; renew if necessary.			E	E	E				
Suspension									
1 Check the condition of the front ball joint covers; renew the ball joints if necessary			E	E	E				
2 Check the condition of the rear strut convoluted seals; renew if necessary		P	P	P	P				
3 Lubricate the height control valve ball joints				P	P				
Brake and hydraulic systems (see page F1-1)									
1 Check the oil level in the reservoirs; if necessary top-up with hydraulic system mineral oil		E	E	E					
2 Renew the hydraulic system mineral oil					E				
3 Check the condition of all brake pipes and hoses; renew as necessary		E	E	E	E				
4 Renew the accumulator to body, trailing arms to body, and if fitted, the sub-frame to body hoses					E				
5 Renew all flexible hoses								E	E
6 Check the brake disc pads for wear; renew if necessary		E	E	E	E				
7 Check the condition of the brake caliper dust excluders when changing brake pads; renew if necessary		E	E	E	E				
8 Renew the brake caliper seals									E
9 Check the parking brake pads for wear; renew if necessary		E	E	E	E				
10 Adjust the parking brake		E	E	E	E				
11 Lubricate the parking brake linkage		P	P	P	P				
Fuel system									
1 Renew the main fuel filter					E				
Remove, clean, and examine the intank fuel filter; renew if necessary					E				
2 Check the condition of the filler head to fuel tank hose; renew as necessary								E	E

	I	A	B	C	D	E	F	G	H
3 Check the condition of all flexible fuel pipes; renew as necessary								E	E
Electrical system									
1 Check the state of charge of the battery		E	E	E	E				
2 Clean and check the battery terminals		P	P	P	P				
3 Check all exterior lamps for operation; rectify if necessary		P	P	P	P				
4 Check all facia warning lamps for operation; rectify if necessary		P	P	P	P				
5 Check all interior lamps for operation; rectify if necessary		P	P	P	P				
6 Check the horns for operation; rectify if necessary		P	P	P	P				
7 Replenish the windscreen washer reservoir (and headlamps washer reservoir if fitted)		E	E	E	E				
8 Check the condition of the windscreen wiper blades; renew if necessary		P	P	P	P				
9 Check the windscreen wash/wipe and the headlamps wash (if fitted) systems for correct operation; rectify if necessary		P	P	P	P				
10 Check the alternator for correct operation; renew brushes if necessary				P	P				
Automatic air conditioning system									
1 Check the scuttle intake grille is free from obstruction						P	P	P	P
2 Check the refrigeration system for correct operation; rectify if necessary						P	P	P	P
Body									
1 Check the condition and operation of the seat belts; report any defects to the owner		P	P	P	P				
2 Check that all body drains are free from obstruction						P	P	P	P
3 Lubricate the spare wheel carrier lowering bolt			P	P	P				
4 Convertible cars Check the fluid level in the power operated hood reservoir; top-up if necessary. The hood should be in the fully down (open) position				P	P				
Wheels									
1 Check all tyre pressures; adjust if necessary		P	P	P	P				
2 Check the condition and tread depth of the tyres; report any defects to the owner		P	P	P	P				
Test									
1 Road test the car for satisfactory performance	P	P	P	P	P				
Owner Service Schedule Record									
On completion of the required service schedule complete the respective service record contained in the Owner's Service Schedule and Record Book.	E	E	E	E	E	E	E	E	E

Service schedules

Cars conforming to Middle East Countries specifications

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July 1985

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TSD4406



WARNING

Use only **Hydraulic System Mineral Oil (LHM)** to replenish the braking and levelling systems.

Do not use Brake Fluids (Castrol RR363, Universal, or any other type). The use of any type of brake fluid, even in very small amounts, will cause component failure necessitating extensive rectification to the braking and levelling systems of the car.

Always ensure before fitting any seals, hoses, pipes, etc., that they are suitable for a mineral oil system. For details of correct component identification reference should be made to Chapter G of the Workshop Manual.

Always ensure that a sealed container of **Hydraulic System Mineral Oil (LHM)** is fitted adjacent to the battery.

Always ensure that no foreign matter enters the systems when work is being carried out.

The service schedule chart in this section indicates the operations required to service the vehicle. When carrying out the schedules, reference should be made to Chapter B which describes the correct procedure to be used for each operation. In order to locate this information the operation numbers quoted in the service schedule chart correspond with those in Chapter B.

Service schedules

The service schedules contain both the **Essential** and **Preventive** service schedules for complete vehicle maintenance.

All work listed in the **Essential** maintenance service schedules should be carried out at the specified mileage/time intervals.

The **Essential** maintenance service schedules are divided into two categories.

- (a) Service work listed thus(*E) covers the servicing requirements for the emission control components and is required to comply with the emission control regulations. This service work must be carried out during the entire life of the vehicle.
- (b) Service work listed thus (E) covers the additional servicing required to comply with the New Car Warranty or is considered essential beyond the warranty period from a safety point of view.

Service schedules

1984/1986 model year cars

The **Preventive** maintenance service schedules listed thus(P) contain important servicing work recommended to secure the maximum life and efficiency for the car and will only be carried out on the owner's instructions.

All service schedules should be carried out at the appropriate mileage or time interval whichever is earlier.

The service intervals and corresponding code letters used on the service schedule chart are as follows.

Initial 5000 kilometres (3000 miles) or 3 months	I
10 000 kilometres (6000 miles) or 6 months	A
20 000 kilometres (12 000 miles) or 1 year	B
30 000 kilometres (18 000 miles) or 1½ years	A
40 000 kilometres (24 000 miles) or 2 years	C
50 000 kilometres (30 000 miles) or 2½ years	A
60 000 kilometres (36 000 miles) or 3 years	B
70 000 kilometres (42 000 miles) or 3½ years	A
80 000 kilometres (48 000 miles) or 4 years	D
90 000 kilometres (54 000 miles) or 4½ years	A
100 000 kilometres (60 000 miles) or 5 years	B
110 000 kilometres (66 000 miles) or 5½ years	A
120 000 kilometres (72 000 miles) or 6 years	C
130 000 kilometres (78 000 miles) or 6½ years	A
140 000 kilometres (84 000 miles) or 7 years	B
150 000 kilometres (90 000 miles) or 7½ years	A
160 000 kilometres (96 000 miles) or 8 years	D

The service schedules are repeated after 160 000 kilometres (96 000 miles).

Seasonal

E Service schedule

To be carried out at intervals of one year

F Service schedule

To be carried out at intervals of two years

G Service schedule

To be carried out at intervals of four years

H Service schedule

To be carried out at intervals of eight years

Adverse conditions maintenance

When the car is operating continuously under adverse conditions, such as are experienced in cities and towns where constant stopping and starting is the normal rule, the engine oil should be changed every 5000 kilometres (3000 miles) or 3 months whichever is the earlier.

Service schedule operations**Car protection**

Before commencing to carry out a service schedule the car should be suitably protected as described in Chapter B.

Crankcase emission control system

- 1 Clean the crankcase breather tube flame traps
- 2 Clean the choke butterfly housing adapter

Fuel evaporative emission control system

- 1 Renew the evaporative emission control canister
- 2 Check the condition of all pipes, hoses, and connections; renew if necessary. Pressure test the fuel tank and evaporative emission control line; rectify any leaks
- 3 Check the purge flow rate; rectify if necessary

Engine

- 1 Change the engine oil
- 2 Renew the engine oil filter
- 3 Check the condition and tension of all drive belts; adjust or renew as necessary
- 4 Renew the air filter element
- 5 Check the oil level in the damper of each carburetter; top-up if necessary
- 6 Check the float chamber depression; adjust if necessary
- 7 Check for correct choke operation and choke stove pipe flow; rectify if necessary
- 8 Check the choke fast-idle speed; adjust if necessary
- 9 Renew the sparking plugs
- 10 Lubricate the accelerator linkage
- 11 Check the ignition timing; adjust if necessary
- 12 Check the engine idle speed; adjust if necessary

Engine cooling system

- 1 Check the anti-freeze concentration; correct if necessary
- 2 Check the coolant level; top-up if necessary
- 3 Check all coolant hose clips for tightness
- 4 Examine the condition of all coolant hoses; renew as necessary
- 5 Fit a new heater tap feed hose
- 6 Renew the coolant
- 7 Reverse flush the cooling system
- 8 Remove foreign matter from the radiator, oil cooler (if fitted), and refrigeration condenser
- 9 Renew the thermostat

Torque converter transmission

- 1 Check the transmission fluid level; top-up if necessary
- 2 Renew the transmission fluid
- 3 Fit a new intake strainer
- 4 Lubricate the gear range selector control rod

Final drive unit

- 1 Check the final drive oil level; top-up if necessary
- 2 Renew the final drive oil

	I	A	B	C	D	E	F	G	H
Car protection									
Before commencing to carry out a service schedule the car should be suitably protected as described in Chapter B.	E	E	E	E	E	E	E	E	E
Crankcase emission control system									
1 Clean the crankcase breather tube flame traps			*E	*E	*E				
2 Clean the choke butterfly housing adapter			*E	*E	*E				
Fuel evaporative emission control system									
1 Renew the evaporative emission control canister					*E				
2 Check the condition of all pipes, hoses, and connections; renew if necessary. Pressure test the fuel tank and evaporative emission control line; rectify any leaks			*E	*E	*E				
3 Check the purge flow rate; rectify if necessary				*E	*E				
Engine									
1 Change the engine oil	E	*E	*E	*E	*E				
2 Renew the engine oil filter		*E	*E	*E	*E				
3 Check the condition and tension of all drive belts; adjust or renew as necessary	E	E	E	E	E				
4 Renew the air filter element			*E	*E	*E				
5 Check the oil level in the damper of each carburetter; top-up if necessary		*E	*E	*E	*E				
6 Check the float chamber depression; adjust if necessary			*E	*E	*E				
7 Check for correct choke operation and choke stove pipe flow; rectify if necessary				*E	*E				
8 Check the choke fast-idle speed; adjust if necessary		*E	*E	*E	*E				
9 Renew the sparking plugs			*E	*E	*E				
10 Lubricate the accelerator linkage		P	P	P	P				
11 Check the ignition timing; adjust if necessary		*E	*E	*E	*E				
12 Check the engine idle speed; adjust if necessary		*E	*E	*E	*E				
Engine cooling system									
1 Check the anti-freeze concentration; correct if necessary		P	P	P	P				
2 Check the coolant level; top-up if necessary		E	E	E	E				
3 Check all coolant hose clips for tightness	E	P	P	P	P				
4 Examine the condition of all coolant hoses; renew as necessary			E	E	E				
5 Fit a new heater tap feed hose				E	E				
6 Renew the coolant							P	P	P
7 Reverse flush the cooling system							P	P	P
8 Remove foreign matter from the radiator, oil cooler (if fitted), and refrigeration condenser							P	P	P
9 Renew the thermostat				E	E				
Torque converter transmission									
1 Check the transmission fluid level; top-up if necessary	E	E							
2 Renew the transmission fluid			E	E	E				
3 Fit a new intake strainer				E	E				
4 Lubricate the gear range selector control rod		P	P	P	P				
Final drive unit									
1 Check the final drive oil level; top-up if necessary			E						
2 Renew the final drive oil				E	E				

	I	A	B	C	D	E	F	G	H
3 Check the condition of the drive-shaft joint covers; renew if necessary		P	P	P	P				
Steering									
1 Check the steering pump fluid level; top-up if necessary	P	E	E	E	E				
2 Lubricate the steering linkage ball joints (if applicable)			E	E	E				
3 Check the condition of the steering ball joint covers; renew if necessary		E	E	E	E				
4 Check the condition of the steering rack convoluted seals; renew if necessary.		E	E	E	E				
Suspension									
1 Check the condition of the front ball joint covers; renew the ball joints if necessary		E	E	E	E				
2 Check the condition of the rear strut convoluted seals; renew if necessary		P	P	P	P				
3 Lubricate the height control valve ball joints		P	P	P	P				
Brake and hydraulic systems (see page G1-1)									
1 Check the oil level in the reservoirs; if necessary top-up with hydraulic system mineral oil		E	E	E					
2 Renew the hydraulic system mineral oil					E				
3 Check the condition of all brake pipes and hoses; renew as necessary		E	E	E	E				
4 Renew the accumulator to body and trailing arms to body hoses					E				
5 Renew all flexible hoses									E
6 Check the brake disc pads for wear; renew if necessary		E	E	E	E				
7 Check the condition of the brake caliper dust excluders when changing brake pads; renew if necessary		E	E	E	E				
8 Renew the brake caliper seals									E
9 Check the parking brake pads for wear; renew if necessary		E	E	E	E				
10 Adjust the parking brake		E	E	E	E				
11 Lubricate the parking brake linkage		P	P	P	P				
Fuel system									
1 Renew the main fuel filter element				P	P				
Remove, clean, and examine the intank fuel filter; renew if necessary					E				
2 Fit new paper filter elements to the carburettor fuel inlets				*E	*E				
3 Renew the fuel mixture weakening device filter				*E	*E				
4 Check the condition of the filler head to fuel tank hose; renew as necessary								E	E
5 Check the condition of all flexible fuel pipes; renew as necessary									E
Electrical system									
1 Check the state of charge of the battery		E	E	E	E				
2 Clean and check the battery terminals		P	P	P	P				
3 Check all exterior lamps for operation; rectify if necessary		P	P	P	P				
4 Check all facia warning lamps for operation; rectify if necessary		P	P	P	P				

	I	A	B	C	D	E	F	G	H
5 Check all interior lamps for operation; rectify if necessary		P	P	P	P				
6 Check the horns for operation; rectify if necessary		P	P	P	P				
7 Replenish the windscreen and headlamp washer reservoirs		E	E	E	E				
8 Check the condition of the windscreen wiper blades and headlamp wash brushes (if fitted); renew if necessary		P	P	P	P				
9 Check the windscreen and headlamp wash/wipe systems for correct operation; rectify if necessary		P	P	P	P				
10 Check the alternator for correct operation; renew brushes if necessary					P				
11 Check the condition of the starter motor brushes and pinion; renew if necessary									P
Automatic air conditioning system									
1 Check the scuttle intake grille is free from obstruction						P	P	P	P
2 Check the refrigeration system for correct operation; rectify if necessary						P	P	P	P
Body									
1 Check the condition and operation of the seat belts; report any defects to the owner		P	P	P	P				
2 Check that all body drains are free from obstruction							P	P	P
3 Lubricate the spare wheel carrier lowering bolt			P	P	P				
4 Convertible cars Check the fluid level in the power operated hood reservoir; top-up if necessary. The hood should be in the fully down (open) position				P	P				
Wheels									
1 Check all tyre pressures; adjust if necessary		P	P	P	P				
2 Check the condition and tread depth of the tyres; report any defects to the owner		P	P	P	P				
Test									
1 Road test the car for satisfactory performance	P	P	P	P	P				
Owner Service Schedule Record									
On completion of the required service schedule complete the respective service record contained in the Owner's Service Schedule and Record book.	E	E	E	E	E	E	E	E	E



WARNING

Use only Hydraulic System Mineral Oil (LHM) to replenish the braking and levelling systems.

Do not use Brake Fluids (Castrol RR363, Universal, or any other type). The use of any type of brake fluid, even in very small amounts, will cause component failure necessitating extensive rectification to the braking and levelling systems of the car.

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Always ensure that no foreign matter enters the systems when work is being carried out.

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- (a) Service work listed thus(*E) covers the servicing requirements for the emission control components and is required to comply with the emission control regulations. This service work must be carried out during the entire life of the vehicle.
- (b) Service work listed thus (E) covers the additional servicing required to comply with the New Car Warranty or is considered essential beyond the warranty period from a safety point of view.

Service schedules

1985/86 model year cars

The **Preventive** maintenance service schedules listed thus(P) contain important servicing work recommended to secure the maximum life and efficiency for the car and will only be carried out on the owner's instructions.

All service schedules should be carried out at the appropriate mileage or time interval whichever is earlier.

The service intervals and corresponding code letters used on the service schedule chart are as follows.

Initial 5000 kilometres (3000 miles) or 3 months	I
10 000 kilometres (6000 miles) or 6 months	A
20 000 kilometres (12 000 miles) or 1 year	B
30 000 kilometres (18 000 miles) or 1½ years	A
40 000 kilometres (24 000 miles) or 2 years	C
50 000 kilometres (30 000 miles) or 2½ years	A
60 000 kilometres (36 000 miles) or 3 years	B
70 000 kilometres (42 000 miles) or 3½ years	A
80 000 kilometres (48 000 miles) or 4 years	D
90 000 kilometres (54 000 miles) or 4½ years	A
100 000 kilometres (60 000 miles) or 5 years	B
110 000 kilometres (66 000 miles) or 5½ years	A
120 000 kilometres (72 000 miles) or 6 years	C
130 000 kilometres (78 000 miles) or 6½ years	A
140 000 kilometres (84 000 miles) or 7 years	B
150 000 kilometres (90 000 miles) or 7½ years	A
160 000 kilometres (96 000 miles) or 8 years	D

The service schedules are repeated after 160 000 kilometres (96 000 miles).

Seasonal

E Service schedule

To be carried out at intervals of one year

F Service schedule

To be carried out at intervals of two years

G Service schedule

To be carried out at intervals of four years

H Service schedule

To be carried out at intervals of eight years

Adverse conditions maintenance

When the car is operating continuously under adverse conditions, such as are experienced in cities and towns where constant stopping and starting is the normal rule, the engine oil should be changed every 5000 kilometres (3000 miles) or 3 months whichever is the earlier.

Service schedule operations**Car protection**

Before commencing to carry out a service schedule the car should be suitably protected as described in Chapter B.

Crankcase emission control system

- 1 Clean the crankcase breather tube and flame traps

Fuel evaporative emission control system

- 1 Renew the evaporative emission control canister
2 Check the condition of all pipes, hoses, and connections; renew if necessary. Pressure test the fuel tank and evaporative loss control line; rectify any leaks
3 Check the purge flow rate and operation of the system

Engine

- 1 Change the engine oil
2 Renew the engine oil filter
3 Check the condition and tension of all drive belts; adjust or renew as necessary
4 Renew the air filter element
5 Check the choke idle speed; adjust if necessary
6 Renew the sparking plugs
7 Lubricate the accelerator and carburettor linkage
8 Check the ignition timing; adjust if necessary (Always use the full method as specified in the Workshop Manual)
9 Check the engine idle speed; adjust if necessary

Engine cooling system

- 1 Check the anti-freeze concentration; correct if necessary
2 Check the coolant level; top-up if necessary
3 Check all coolant hose clips for tightness
4 Examine the condition of all coolant hoses; renew as necessary
5 Fit a new heater tap feed hose
6 Renew the coolant
7 Reverse flush the cooling system
8 Remove foreign matter from the radiator, oil cooler, and refrigeration condenser
9 Renew the thermostat

Torque converter transmission

- 1 Check the transmission fluid level; top-up if necessary
2 Renew the transmission fluid
3 Fit a new intake strainer
4 Lubricate the gear range selector control rod

Propeller shaft

- 1 Lubricate the universal joints

Final drive unit

- 1 Check the final drive oil level; top-up if necessary
2 Renew the final drive oil
3 Check the condition of the drive-shaft joint covers; renew if necessary

	I	A	B	C	D	E	F	G	H
Car protection									
Before commencing to carry out a service schedule the car should be suitably protected as described in Chapter B.	E	E	E	E	E	E	E	E	E
Crankcase emission control system									
1 Clean the crankcase breather tube and flame traps			*E	*E	*E				
Fuel evaporative emission control system									
1 Renew the evaporative emission control canister					*E				
2 Check the condition of all pipes, hoses, and connections; renew if necessary. Pressure test the fuel tank and evaporative loss control line; rectify any leaks			*E	*E	*E				
3 Check the purge flow rate and operation of the system			*E	*E	*E				
Engine									
1 Change the engine oil	E	*E	*E	*E	*E				
2 Renew the engine oil filter		*E	*E	*E	*E				
3 Check the condition and tension of all drive belts; adjust or renew as necessary	E	E	E	E	E				
4 Renew the air filter element			*E	*E	*E				
5 Check the choke idle speed; adjust if necessary		*E	*E	*E	*E				
6 Renew the sparking plugs			*E	*E	*E				
7 Lubricate the accelerator and carburettor linkage		P	P	P	P				
8 Check the ignition timing; adjust if necessary (Always use the full method as specified in the Workshop Manual)		*E	*E	*E	*E				
9 Check the engine idle speed; adjust if necessary		*E	*E	*E	*E				
Engine cooling system									
1 Check the anti-freeze concentration; correct if necessary		P	P	P	P				
2 Check the coolant level; top-up if necessary		E	E	E	E				
3 Check all coolant hose clips for tightness	E	P	P	P	P				
4 Examine the condition of all coolant hoses; renew as necessary			E	E	E				
5 Fit a new heater tap feed hose				E	E				
6 Renew the coolant						P	P	P	
7 Reverse flush the cooling system						P	P	P	
8 Remove foreign matter from the radiator, oil cooler, and refrigeration condenser						P	P	P	
9 Renew the thermostat				E	E				
Torque converter transmission									
1 Check the transmission fluid level; top-up if necessary	E	E							
2 Renew the transmission fluid			E	E	E				
3 Fit a new intake strainer				E	E				
4 Lubricate the gear range selector control rod		P	P	P	P				
Propeller shaft									
1 Lubricate the universal joints				E	E				
Final drive unit									
1 Check the final drive oil level; top-up if necessary			E						
2 Renew the final drive oil				E	E				
3 Check the condition of the drive-shaft joint covers; renew if necessary		P	P	P	P				

	I	A	B	C	D	E	F	G	H
Steering									
1 Check the steering pump fluid level; top-up if necessary	P	E	E	E	E				
2 Check the condition of the steering ball joint covers; renew if necessary		E	E	E	E				
3 Check the condition of the steering rack convoluted seals; renew if necessary.		E	E	E	E				
Suspension									
1 Check the condition of the front ball joint covers; renew the ball joints if necessary		E	E	E	E				
2 Check the condition of the rear strut convoluted seals; renew if necessary		P	P	P	P				
3 Lubricate the height control valve ball joints		P	P	P	P				
Brake and hydraulic systems (see page G1/1-1)									
1 Check the oil level in the reservoirs; if necessary top-up with hydraulic system mineral oil		E	E	E					
2 Renew the hydraulic system mineral oil					E				
3 Check the condition of all brake pipes and hoses; renew as necessary		E	E	E	E				
4 Renew the accumulator to body and trailing arms to body hoses					E				
5 Renew all hydraulic system flexible hoses									E
6 Check the brake disc pads for wear; renew if necessary		E	E	E	E				
7 Check the condition of the brake caliper dust excluders when changing brake pads; renew if necessary		E	E	E	E				
8 Renew the brake caliper seals									E
9 Check the parking brake pads for wear; renew if necessary		E	E	E	E				
10 Adjust the parking brake		E	E	E	E				
11 Lubricate the parking brake linkage		P	P	P	P				
Fuel system									
1 Renew the main fuel filter element Remove, clean, and examine the intank fuel filter; renew if necessary				P	P				
2 Clean the carburettor fuel inlet filter					E				
3 Check the condition of the filler head to fuel tank hose; renew as necessary				E	E				
4 Check the condition of all flexible fuel pipes; renew as necessary								E	E
									E
Electrical system									
1 Check the state of charge of the battery		E	E	E	E				
2 Clean and check the battery terminals		P	P	P	P				
3 Check all exterior lamps for operation; rectify if necessary		P	P	P	P				
4 Check all facia warning lamps for operation; rectify if necessary		P	P	P	P				
5 Check all interior lamps for operation; rectify if necessary		P	P	P	P				
6 Check the horns for operation; rectify if necessary		P	P	P	P				
7 Replenish the windscreen and headlamp washer reservoirs		E	E	E	E				
8 Check the condition of the windscreen wiper blades; renew if necessary		P	P	P	P				

	I	A	B	C	D	E	F	G	H
9 Check the windscreen and headlamp wash/wipe systems for correct operation; rectify if necessary		P	P	P	P				
10 Check the alternator for correct operation; renew brushes if necessary					P				
11 Check the condition of the starter motor brushes and pinion; renew if necessary									P
Automatic air conditioning system									
1 Check the scuttle intake grille is free from obstruction						P	P	P	P
2 Check the refrigeration system for correct operation; rectify if necessary						P	P	P	P
Body									
1 Check the condition and operation of the seat belts; report any defects to the owner		P	P	P	P				
2 Check that all body drains are free from obstruction							P	P	P
3 Lubricate the spare wheel carrier lowering bolt			P	P	P				
Wheels									
1 Check all tyre pressures; adjust if necessary		P	P	P	P				
2 Check the condition and tread depth of the tyres; report any defects to the owner		P	P	P	P				
Test									
1 Road test the car for satisfactory performance	P	P	P	P	P				
Owner Service Schedule Record									
On completion of the required service schedule complete the respective voucher contained in the Owner's Service Schedule and Record book.	E	E	E	E	E	E	E	E	E