INTRODUCTION

General information

Important

Warning, Important and Note

The headings "Warning", "Important" and "Note" occur from time to time in this Do-It-Yourself Manual. They are used to draw your attention to information of special interest and seriousness. The importance of the information is indicated by the three different headings and the difference between them is explained below.

⚠ WARNING

Text under the heading WARNING indicates that there is a risk of personal injury if the instructions of the warning are not followed.

Important

Text under the heading IMPORTANT indicates that there is a risk of damage to the vehicle if the recommendations in the text are not followed.

Note

Hints and tips on how the work can be performed in such a way as to save both time and unnecessary effort.

This information is not provided for safety reasons.

Foreword

This manual has been produced to facilitate the repair work you wish to carry out on your vehicle.

The manual is dependent on the use of Saab Original spare parts, which will guarantee the best results and a high level of safety.

Legislation prescribes that whenever ignition or fuel systems are serviced, the CO content shall be checked. This check can be carried out at you nearest Saab workshop. In the capacity of owner of the vehicle it is your responsibility to comply with the regulations in force.

Before doing the job yourself, consult your local Saab workshop - they might have an all-in price for just that job. The most common jobs are offered at all-in prices.

By carrying out regular you can be sure that the vehicle is always kept in good condition. In this way unpleasant surprises can be avoided and worn out parts identified in time so that you or your Saab workshop can change them.

You must decide yourself whether or not you can complete a job by looking at the methods described in this manual. Certain work requires special tools or extensive technical experience. For example, you should avoid working on the brake system and carburettor settings.

If you are the least bit uncertain take your car to your Saab workshop. This guarantees professional workmanship.

Areas that have been completely omitted from this manual include work on the ABS system and work on airbags, which are both crucial safety components.

If you have considerable knowledge of vehicle repairs and feel that the information in this manual is too meagre, you can buy the full service manuals that are used at Saab workshops.

Note

The engine variants of M1979-80 cars have not been described in depth as these are relatively rare.

How to use this manual

This manual is divided into different sections as shown in the table of contents at the front of the manual. A section usually begins with a work schedule, a technical description and some technical data applicable to the part of the vehicle covered by that section. There then follows a detailed description of the work.

Differences between variants

A work method may provide descriptions for different variants. Any differences are highlighted with bold text.

E.g. **Cars with turbocharger:**

Follow the description that applies to your car. Unless specified, the description applies to all variants.

References

Many work descriptions include references to other sections to save space.

E.g. See To remove/To fit under ... on page ...

Tightening torque

Tightening torques are shown in bold.

E.g. **Tightening torque: 115 Nm (85 lbf ft)**

Considerations before starting work

One of the prerequisites for you to be able to carry out the work is that you have access to suitable tools. Before you begin, check that you have the necessary tools.

A list of things that should be considered before starting work is given below.

- Always wash the vehicle before beginning work to avoid dust and dirt damaging the paintwork.
- Protect the wings with suitable covers when working in the engine compartment.
- Make provision for good ventilation when the engine is run in the garage.
- Never use electrical equipment that is not grounded, or a light bulb without safety glass.

  Both can be a source of personal injury as well as a fire hazard.
- A normal household vacuum cleaner should only be used in a dry garage.
- Disconnect the negative (-) battery lead to avoid the possibility of a short circuit when working in the engine compartment.

Important

If the car is fitted with a security coded radio, ensure that that the radio code is at hand before disconnecting the battery.

⚠ WARNING

Tools placed on top of the battery can cause a short circuit and result in a fire or explosion.

- Never put tools down in the engine compartment. They can fall into confined spaces and be difficult to retrieve or cause damage as they fall.

⚠ WARNING

- Bear in mind that the battery can give off an explosive gas that can be ignited by a naked flame.
- Battery acid is very corrosive and can cause serious damage.
- Smoking is absolutely forbidden.

Important

Brake discs, brake pads and brake calipers, as well as dampers, coil springs, torque rods and rubber bushes, should be changed on both sides of the car for the same axle to avoid uneven braking and similar problems.

⚠ WARNING

ARCING MAY CAUSE BURN INJURIES

Although the system voltage is only 12 Volts, there is a risk of personal burns and fire damaging the car due to the large energy capacity of the battery. A short circuit can result in very high currents!

- Seal any fuel leaks immediately and switch off the ignition.
- When topping up the brake fluid ensure that no fluid does comes into contact with the paintwork. Brake fluid damages paintwork after only a short period of contact.
- Do not open the pressure cap on the coolant expansion tank rapidly when the engine is hot. The escaping steam can cause serious scalding.

⚠ WARNING

Always use support stands when working under the vehicle.

⚠ WARNING

HIGH TENSION

The electronic ignition system generates a voltage of more than 48 000 Volts. This can be lethal. Switch off the ignition before touching any part of the ignition system.

⚠ WARNING

Important considerations when working on the fuel system.

- Ensure proper ventilation! If approved extraction equipment for fuel vapours is available, use it.
- Wear suitable gloves. Prolonged contact with fuel can cause skin irritations.
- Keep a BE class fire extinguisher at hand!
- Beware of the danger of arcing such as when breaking a circuit or in the event of a short circuit.
- Smoking is absolutely forbidden!

Safety measures

⚠ WARNING

Observe of the following points

You should not work on components that directly affect the vehicle's road safety or the emission control system. Incorrect settings or faulty assembly work can have very serious consequences.

Special tools and advanced measuring equipment are required for several jobs.

Brake system hydraulics

A fault can cause complete or partial brake failure.

Adjusting the handbrake

The handbrake of certain models is self-adjusting and must therefore not be adjusted as this could cause operational problems.

Brake hoses and brake pipes

If not fitted correctly, hoses can wear or chafe through. If pipe couplings are overtightened or not tightened sufficiently leaks may arise.

Changing pistons and valves in the master brake cylinder

There is a risk of assembling the valves or piston components in the wrong sequence, or dirt being left inside the cylinder, resulting in complete or partial brake failure.

Changing the brake fluid

If the brake system is not bled correctly after changing the brake fluid, the braking force may be limited.

Adjusting steering gear play

If incorrectly adjusted, the steering gear can bind and wear out prematurely.

Changing track rods and ball joints in the steering assembly

Special tools are required for removing and fitting. After parts have been changed, the front wheels can be out of alignment. Wheel alignment must be checked with special equipment.

Changing suspension ball joints and other parts

Special tools are required for removing and fitting. Wheel alignment must be checked with special equipment.

Changing springs

Changing front springs: Special tools are required to compress the spring when removing and fitting. (Rear springs can be changed without the use of special tools.)

⚠ WARNING

Attempts to remove the front springs without the special tools carry a high risk of personal injury.

Coolant

⚠ WARNING

- Take care when opening the bonnet if the engine is overheated.
- Never completely undo the expansion tank cap when the engine is hot.
- The pressure in the cooling system is high and can cause coolant and steam to be discharged.

Air conditioning (A/C)

All repairs and adjustments to the A/C system must be carried out at a Saab workshop that is authorized to do this type of work.

⚠ WARNING

- The pressure of the A/C system is high. Do not loosen or undo any couplings in the A/C system.
- Gas discharge can cause blindness or other personal injury.

Adjusting wheel bearing play

Risk of incorrect adjustment. The bearings can bind if overtightened, preventing the desired course from being held. If tightened too loosely, the excess play in the wheel bearings can cause the car to weave and also damage the bearings.

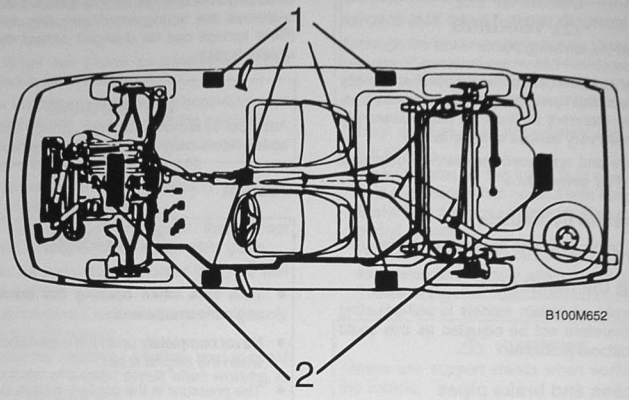
Changing wheel bearings

Special tools are required for removing and fitting. Strict cleanliness is of the utmost importance and bearing play must be correctly adjusted.

Adjusting the carburettor, fuel injection and exhaust emission control system

Special measurement equipment is required to ensure that legal limits for exhaust emissions are not exceeded.

Jacking points



Jacking points

1 Jacking points for support stands/vehicle lift
2 Jacking points for jack

Jacking points

For work under the car to be performed safely requires you to use a jack or vehicle lift. Before starting work, check to ensure that the car is raised in the correct manner.

⚠ WARNING

- **Never** work under the vehicle when it is jacked up and supported only by the jack.
- **Always** use support stands or equivalent safety equipment when working near or under the vehicle.

MAINTENANCE

Work schedule

Explanation

Items included in the Saab Original Service Programme are shown in the table below.

These maintenance operations must be carried out at the different mileages or after certain time intervals.

You will find the appropriate service intervals for your own vehicle in the service booklet that was supplied with it.

System/ Component	Maintenance operations	Tools required	Items needed to carry out the work
Bulbs	Checking the lights Headlight alignment		
Lubrication system	Checking for oil leaks Changing the engine oil and filter	Oil filter wrench 78 62 014 or 83 93 332	
Manual gearbox	Checking the oil level Checking clutch wear Clutch plate clearance		
Automatic transmission	Checking the oil level Checking the oil level, final drive		
Cooling system	Checking the coolant level and freezing temperature Inspecting the cooling system Pressure testing	Cooling system tester 30 05 758 Pressure tester 30 05 477	
Brake system	Inspecting brake linings and discs Checking the handbrake actuating lever Inspecting brake hoses and lines Checking the fluid level - brake and clutch	Torque wrench Feeler gauge	
Tyres	Checking tyre pressure Checking tread depth and wear pattern		
Suspension, front assembly and springs	Checking track rods and protective gaiters Checking ball joints Inspecting the gaiters Checking toe-in Checking the dampers Power steering fluid level (B201) Power steering fluid level (B201 with hydraulic engine mountings and B202)	Toe-in gauge 88 19 013	Texaco Power Steering fluid 4636, part no. 30 09 800
Fuel system	Changing the fuel filter Oil level, carburettor		Gaskets ATF
Drive belts	Checking drive belt tension	Belt tension gauge 83 93 985	
Induction system	Cleaning the throttle body Changing the air filter Inspecting the vacuum hoses		Rag moistened with solvent
Ignition system	Changing spark plugs Checking the delay valve	Spark plug socket 83 95 485	
Exhaust system	Checking the suspension and for leaks and damage		
Battery	Cleaning and greasing Checking the electrolyte level		Acid-free petroleum jelly Distilled water

System/ Component	Maintenance operations	Tools required	Items needed to carry out the work
Windscreen wiper and washer system	Checking wiper blade condition Checking the washer fluid level Adjusting washer nozzles		
Climate control	Changing the cabin air filter		
Body	Checking the operation of locks Lubricating locks and hinges		Gleitmo 880 part no. 30 06 582 Petroleum jelly Engine oil
Safety equipment	Checking the seatbelts Airbag system	Contact your local Saab workshop for assistance with this work.	
Exhaust emission control system	Checking the throttle damper Checking the EGR valve Cleaning the EGR valve Ignition timing Checking crankcase ventilation and crankcase hoses Adjusting the idle speed Adjusting the CO content Adjusting the fast idle speed Full load enrichment	 Stroboscope Contact your local Saab workshop for assistance with this work. Contact your local Saab workshop for assistance with this work.	 Gasket
Final check	Test driving		

Service Programme

General

This section contains recommendations for the maintenance of the Saab 900 M1979-93 and Convertible -M1994.

These recommendations are based on logical premises, government requirements and practical considerations.

Due to the relationship between time and distance, certain operating conditions make it most suitable to carry out servicing annually or at a maximum interval of 12 000 miles (20 000 km).

For more exact intervals refer to the service booklet in your car.

Maintenance programme

The maintenance programme consists of measures required to prevent interruptions in operation and to ensure a continued high level of safety

At the same time, servicing contains measures to satisfy the current exhaust emission regulations, maintain a high level of road safety and give low running costs.

⚠ WARNING

Prolonged and repeated contact with mineral oil removes the skin's natural oils causing dryness and irritation.

If the oil is ingested do not induce vomiting. Seek medical help.

Waste oil can contain dangerous pollutants that can cause skin cancer.

Always take suitable precautions and wash the skin carefully.

Observe the following:

- Avoid prolonged and repeated contact with oils, especially waste oil.
- Use safety clothing, and impervious protective gloves where possible.
- Do not put oily rags in your pocket.
- Do not use clothes, particularly underclothes, which are contaminated with oil.
- Do not use oily shoes.
- Immediately clean open wounds and bandage.
- Apply a barrier cream to your skin before starting work to make it easier to wash off any oil.

  Use barrier cream 30 04 397.
- Wash thoroughly with soap and water to remove all traces of oil (special skin cleaner and a nail-brush can make this easier).

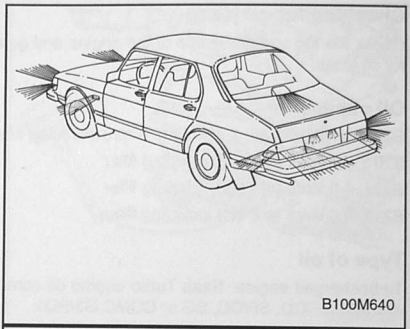
  A preparation containing lanolin will replace the skin's natural oils.
- Do not use petrol, paraffin, diesel, thinners or other solvents to clean your skin.
- If changes to the skin occur, contact a doctor immediately.
- If possible, clean parts before beginning work.
- Use safety glasses or a face-mask if there is any risk of being splashed in the eyes.
- Also, use safety glasses or a facemask when grinding, for example.
- Use ear defenders for noisy work such as grinding.

Bulbs

Checking the lights

Check the following items:

1 Headlight main and dipped beam, parking lights
2 Fog lights, front and rear
3 Direction indicators, hazard flashers
4 Brake lights
5 High-level brake lights
6 Reversing lights
7 numberplate lighting
8 Luggage compartment lighting
9 Interior lighting



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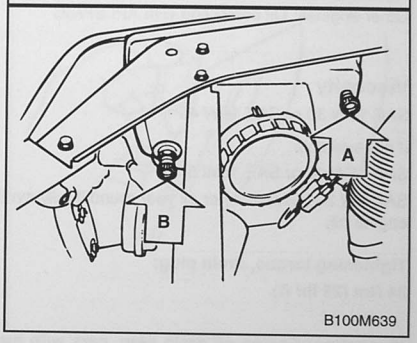
Headlights

Check and if necessary adjust the alignment of the headlights.

See "Headlight alignment" on page 228.

A Lateral adjustment
B Vertical adjustment



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Lubrication system

Checking for oil leaks

Check the top and underside of the engine and gearbox for oil leaks.

Oil capacity

B-engine M1979-80: 3.5 litres (3.8 qts) including filter

B201: 3.8 litres (4.0 qts) including filter

B202: 4.0 litres (4.2 qts) including filter

B212: 4.0 litres (4.2 qts) including filter

Type of oil

Turbocharged engine: Saab Turbo engine oil complying with API SF/CD, SF/CC, SG or CCMC G3/PD1

Other engines: Oil complying with API SF/CC

Viscosity

SAE 10W 30 or SAE 10W 40

If not available:

SAE 15W 40 or SAE 15W 50

SAE 5W 30 (wintertime or all year round if fully-synthetic engine oil)

Tightening torque, drain plug:

34 Nm (25 lbf ft).

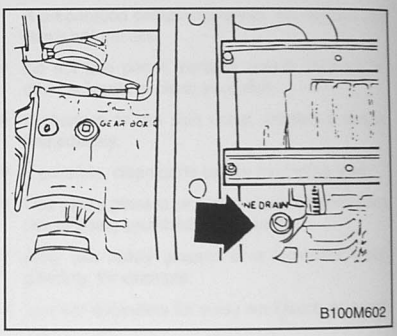

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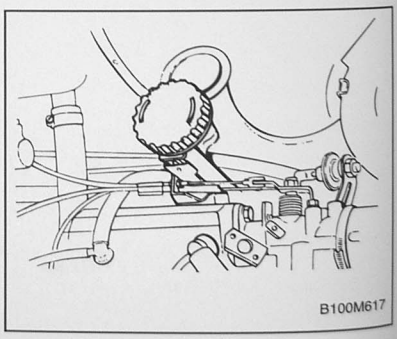
Illustration: Engine oil drain plug, cars with manual gearbox

Changing the engine oil and filter

The engine oil should be changed at least once a year. Change the oil filter at the same time as the oil.

See "Engine oil" on page 79. and "Oil filter" on page 80.



B100M617

Manual gearbox

Checking the oil level

Check the oil level using the dipstick. Top up if necessary.

Type of oil

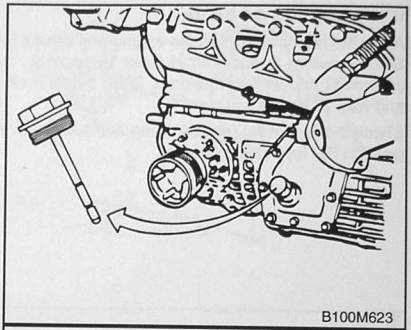
Engine oil (mineral oil) complying with API SF/CD, SF/CC, SG

Viscosity

Engine oil 10W 30 or 10W 40

Important

Do not use synthetic engine oil.

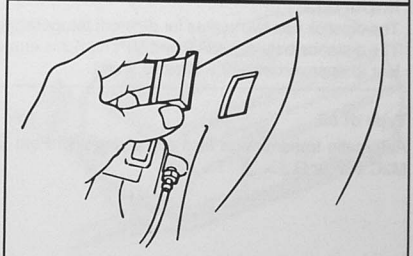


B100M623

Checking clutch wear

Remove the inspection plate and check clutch wear through the inspection hole in the clutch housing.

See *"Clutch plate clearance"* on page 13.

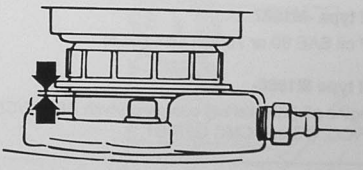


B100M649

Clutch plate clearance

Check that the distance between the leading edge of the plastic sleeve and the turned surface is greater than 2 mm (0.08 in). If less, the clutch plate should be changed.

See To Remove under *"Clutch"* on page 283 or *"Clutch, slave cylinder with sprung rubber gaiter"* on page 288.



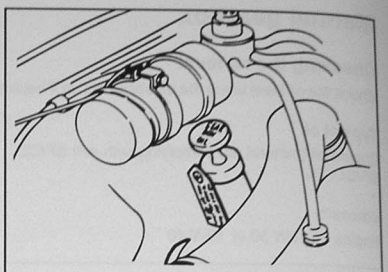
B100M650

Automatic transmission

Checking the oil level

Apply the handbrake. Start the engine and allow it to idle. Select position D and wait at least 15 seconds. Select position R and wait 15 seconds. Then select position P and wait 15 seconds.

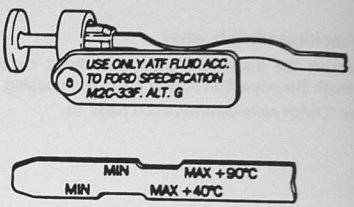
Check the fluid level (engine idling and selector lever in position P). Top up if necessary.



B100M624

Important

The dipstick has two scales for different temperatures. The distance between MAX and MIN marks is equivalent to approximately 0.5 litres (0.5 qts).



B100M625

Type of oil

Automatic transmission fluid complying with Ford Spec. M2C 33F or G.

Checking the oil level, final drive

Check that the fluid is level with the level plug.

Top up as necessary.

Oil type -M1987

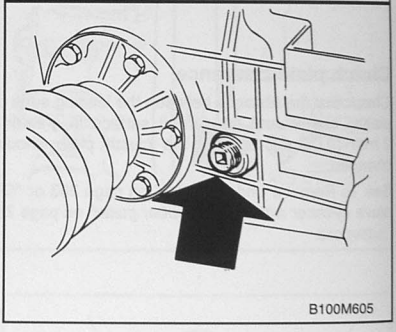
EP oil SAE 80 or 75 API GL4 (GL5)

Oil type M1988-

Engine oil (mineral oil) complying with API SF/CD, SF/CC, SG or CCMC G3/PD1

Important

Do not use synthetic engine oil.



B100M605

Viscosity

SAE 10W 30 or 10W 40

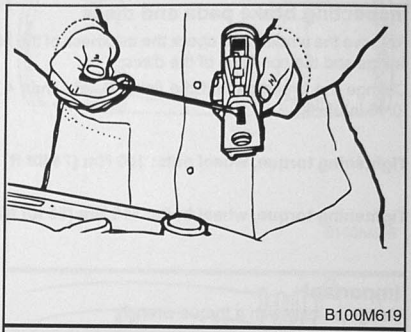
Cooling system

Checking the coolant level and freezing temperature

Check the freezing point of the coolant. The reading should lie between -30°C and -35°C (-22°F and -31°F). Check the coolant level and top up if necessary with 50% Saab Original Antifreeze and 50% water.

Avoid mixing different types of coolant.

If there is insufficient coolant, investigate the reason.



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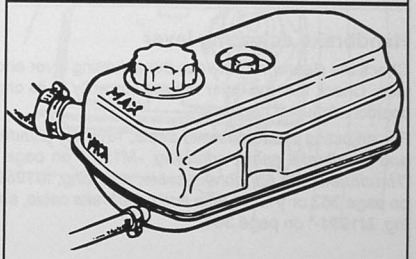
Inspecting the cooling system

Check the condition of the hoses and pressure cap.



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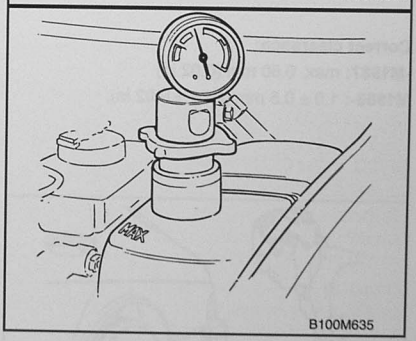
Pressure testing

It is often hard to find leaks in the cooling system as full pressure is only reached while driving. One useful method is to pressurize the system using a pressure tester and then check the radiator, hoses and seals.

The maximum permitted pressure is 1.2 bar (17.5 psi).

The opening pressure of the pressure cap can also be checked using a pressure tester.

Opening pressure: 0.9-1.2 bar (13.0-17.5 psi).



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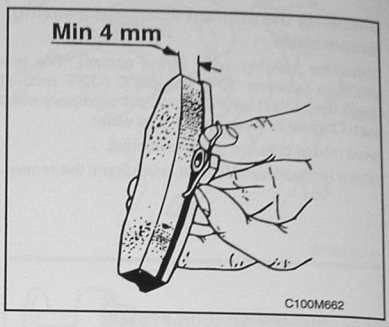
Brake system

Inspecting brake pads and discs

Remove the wheels and check the thickness of the brake linings and the condition of the discs.

Change the brake pads if the lining is less than 4 mm (0.16 in) thick.



Tightening torque, wheel nuts: 100 Nm (74 lbf ft)

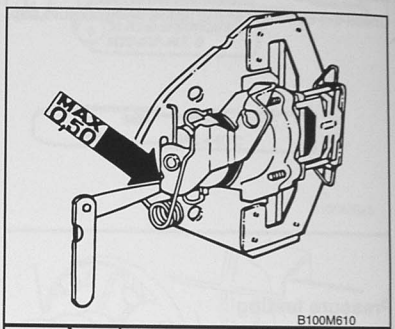
Tightening torque, wheel bolts: 115 Nm (85 lbf ft)

Important
Retighten only with a torque wrench.

Handbrake actuating lever

Check the clearance between the actuating lever and the stop. Check that the lever returns correctly to its original position. Adjust if necessary.

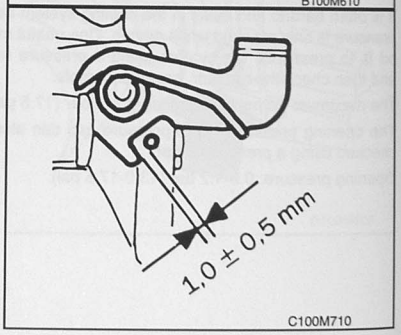
For adjusting the handbrake cable, refer to *"Handbrake and handbrake cable, adjusting, -M1987"* on page 362, *"Handbrake and handbrake cable, adjusting, M1988-90"* on page 363 or *"Handbrake and handbrake cable, adjusting, M1991-"* on page 364.



Correct clearance:

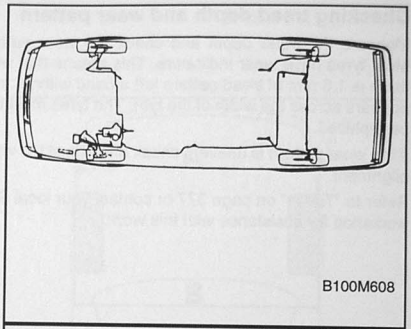
-M1987: max. 0.50 mm (0.02 in)

M1988-: 1.0 ± 0.5 mm (0.04 ± 0.02 in).



Brake hoses and brake lines

Inspect for leakage, fixing and general condition.



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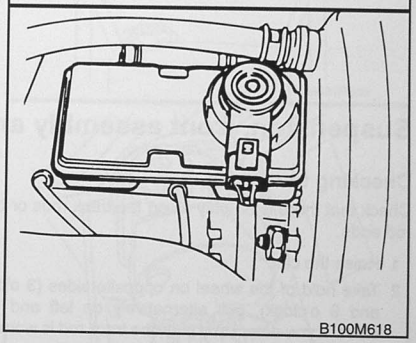
Checking the fluid level - brake and clutch

Check the level and top up as necessary.

Grade

Complying with DOT 4



B100M618

Changing the brake and clutch fluid

Every 25 000 miles/40 000 km

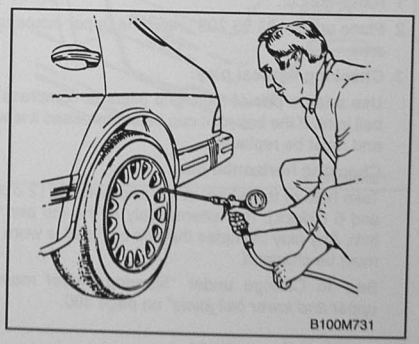
Change as called for in the service schedule, or else every second year.

Contact your local Saab workshop for assistance with this work.

Tyres

Checking tyre pressure

Check the tyre pressure of all tyres, including the spare wheel. A table of recommended pressures is provided in the Owner's Manual.



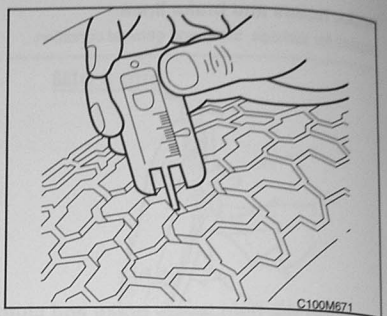
B100M731

Checking tread depth and wear pattern

Measure the tread depth and check the wear pattern. Most tyres have wear indicators. This means that when there is 1.6 mm of tread pattern left a band without tread appears across the width of the tyre. The tyres must then be replaced.

If the wear pattern is uneven, check and adjust the wheel alignment.

Refer to *"Toe-in"* on page 377 or contact your local Saab workshop for assistance with this work.


C100M671

Suspension, front assembly and springs

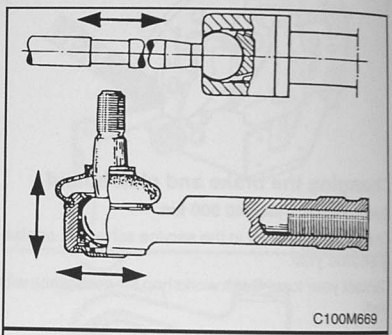
Checking track rods

Check that there is no play along the track rods or track rod ends.

1 Raise the car.

2 Take hold of the wheel on opposite sides (3 o'clock and 9 o'clock), pull alternatively on left and right sides. If you detect any play, the track rod is worn and must be changed.

See To Change under *"Track rod ends"* on page 404.


C100M669

Checking ball joints

Checking ball joint wear

1 Raise the car.

2 Place spacer 83 93 209 under the upper suspension arm.

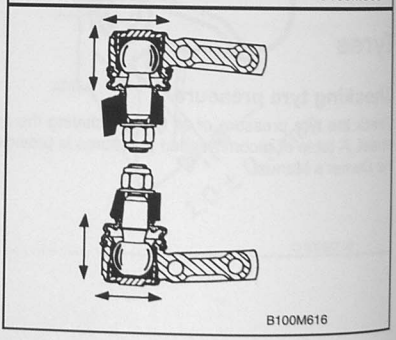
3 **Checking vertical play:**

Use a large pair of multi-grip pliers to compress the ball joint. If the ball joint can be compressed it is worn and must be replaced.

Checking horizontal play:

Take hold of the wheel at top and bottom (12 o'clock and 6 o'clock). Pull alternatively at the top and bottom. Any play indicates that the ball joint is worn and must be changed.

See To Change under *"Steering swivel member, upper and lower ball joints"* on page 380.


B100M616

Inspecting the gaiters

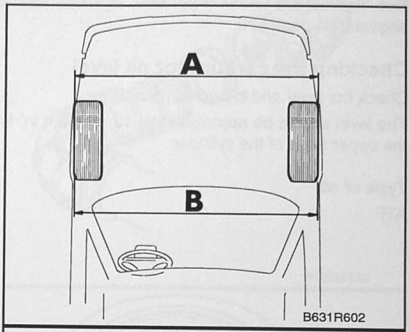
Inspect the universal joint and ball joint gaiters for wear, integrity and secureness.

Checking the dampers

Check the rubber bushes and function of the dampers with regard to noise and leakage.

Checking toe-in

For wheel alignment see *"Toe-in"* on page 377, or contact your local Saab workshop for assistance with this work.



B631R602

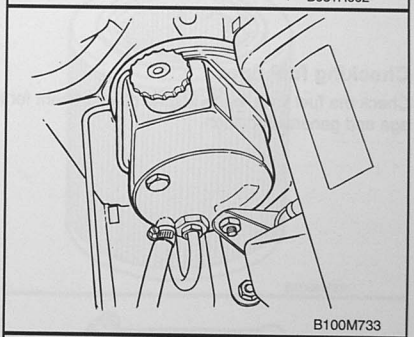
Power steering fluid level (B201)

The engine should be switched off.

Check the level and top up as necessary.

Type of oil

Texaco Power Steering fluid 4634, part no. 30 09 800.


B100M733

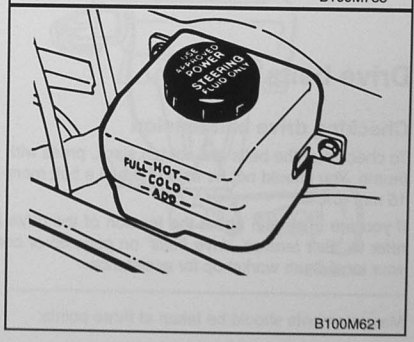
Power steering fluid level (B201 with hydraulic engine mountings and B202)

The engine should be switched off.

Check the level and top up as necessary.

Type of oil:

Texaco Power Steering fluid 4634, part no. 30 09 800.



B100M621

Fuel system

Changing the fuel filter, cars with injection or turbocharged engines

See To Remove under *"Fuel filter, injection and Turbo engines"* on page 120.

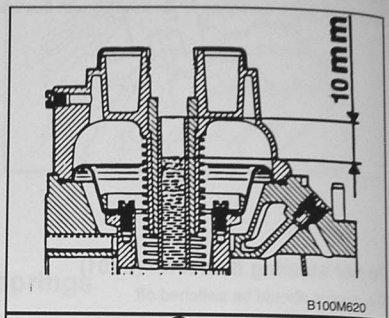
Checking the carburettor oil level

Check the level and top up as necessary.

The level should be approximately 10 mm (0.4 in) below the upper edge of the cylinder.

Type of oil

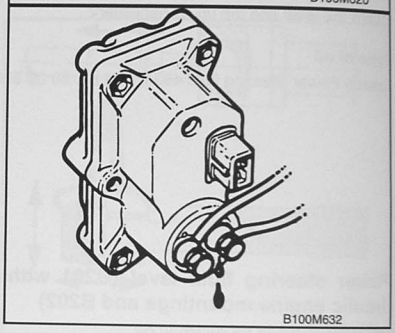
ATF



B100M620

Checking fuel lines

Check the fuel lines in the engine compartment for leakage and general condition.



B100M632

Drive belts

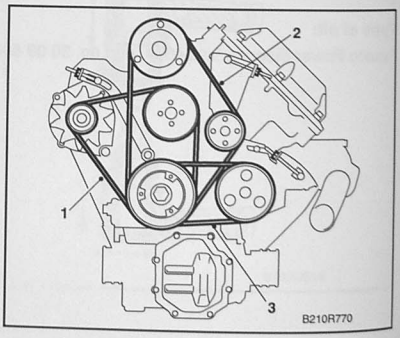
Checking drive belt tension

To check that the belts are not too slack, press with your thumb. You should not be able to press a belt more than 15 mm (0.6 in).

If you are uncertain about the tension of the drive belts refer to *"Belt tension, drive belts"* on page 85 or contact your local Saab workshop for assistance.

Measurements should be taken at three points:

1 Between the alternator and coolant pump
2 Between the A/C compressor and idler pulley
3 Between the crankshaft pulley and power steering servo pump



B210R770

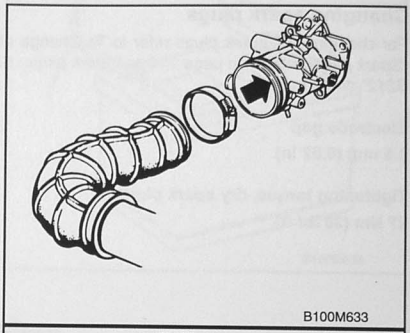
For changing drive belts refer to *"Drive belt for A/C compressor"* on page 83, *"Drive belt for servo pump"* on page 83 or *"Drive belt for alternator"* on page 84.

Induction system

Cleaning the throttle body

Clean if the engine idle speed fluctuates or if the engine does not idle.

Remove the intake hose from the throttle body. Open the throttle and wipe it out with a rag dampened with solvent.

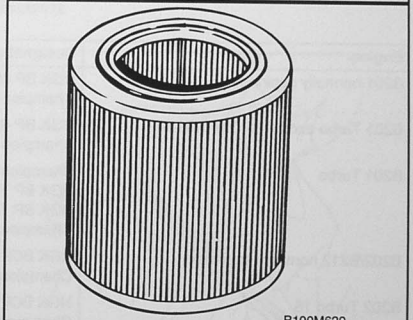


B100M633

Changing the air filter

Change the filter element. It is recommended that the filter element be changed more frequently when driving in very dusty conditions.

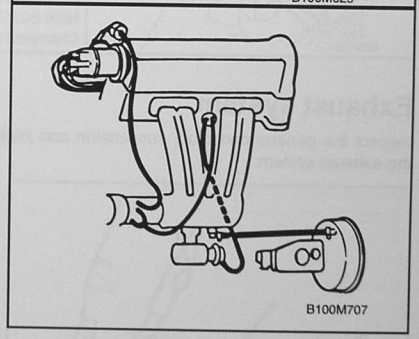
See To Change under *"Air filter element"* on page 94.



B100M629

Inspecting the vacuum hoses

Inspect the hoses and connections for leaks.



B100M707

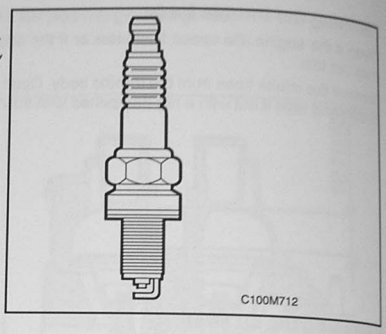
Ignition system

Changing spark plugs

For changing the spark plugs refer to To Change under *"Spark plugs, B201"* on page 214 or *"Spark plugs, B202/B212"* on page 215.

Electrode gap
0.6 mm (0.02 in)

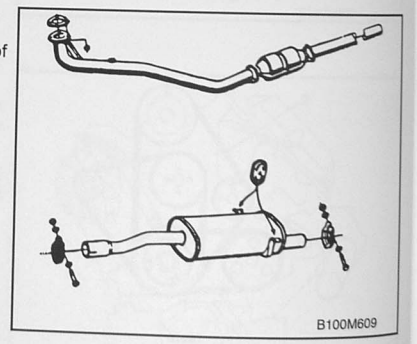
Tightening torque, dry spark plugs:
27 Nm (20 lbf ft)


C100M712

Engine	Designation	Comment
B201 normally aspirated	NGK BP 6ES Champion N9YC	
B201 Turbo except APC M1981-82	NGK BP 6ES Champion BP 7ES	
B201 Turbo	Champion N7GY NGK BP 7ES NGK BP 7EV Champion N7YC	
B202/B212 normally aspirated	NGK BCP 5ES Champion RC12YC	M1992- BCP 5EV
B202 Turbo 16	NGK BCP 7EV Champion C7GY NGK BCP 7ES Champion C7YC	Precious metal Precious metal

Exhaust system

Inspect the general condition, suspension and joints of the exhaust system.

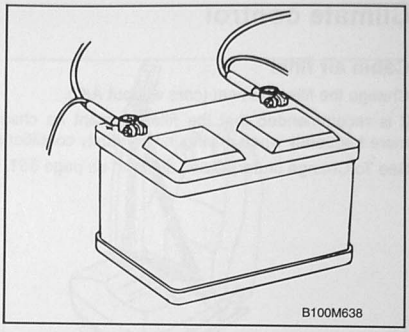

B100M609

Battery

Clean the battery terminals and check that the cables are properly tightened.

Grease the terminals with acid-free petroleum jelly, part no. 30 06 665.

Check the electrolyte level and top up if necessary with distilled water.



Windscreen wiper and washer system

Checking wiper blade condition

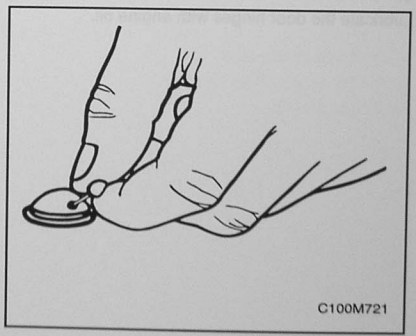
Check the condition of the wiper blades of the windscreen and headlight wipers.

Checking the washer fluid level

Check and top up the washer fluid reservoir with washer fluid and water (according to the manufacture's directions).

Adjusting washer nozzles

Clean and adjust the washer nozzles with a pin.



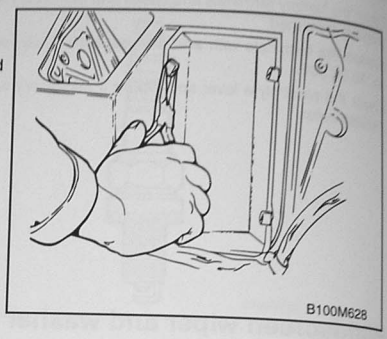
Climate control

Cabin air filter

Change the filter element (cars without A/C).

It is recommended that the filter element be changed more frequently when driving in very dusty conditions.

See To Change under *"Cabin air filter"* on page 561.

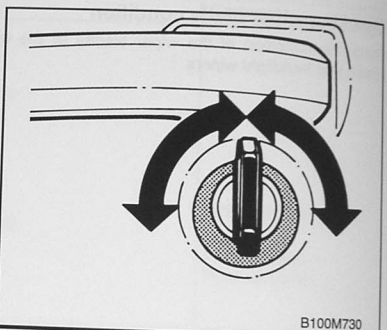


B100M628

Body

Checking the operation of locks

Check the function of all door and tailgate locks. Check that the child safety locks in the rear doors function correctly.



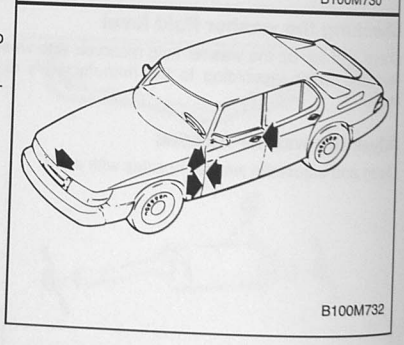
B100M730

Lubricating locks and hinges

Grease the door check arms and door locks with Gleitmo 805, part no. 30 06 442.

Grease the bonnet lock and striker pin with petroleum jelly, 30 06 665.

Lubricate the door hinges with engine oil.

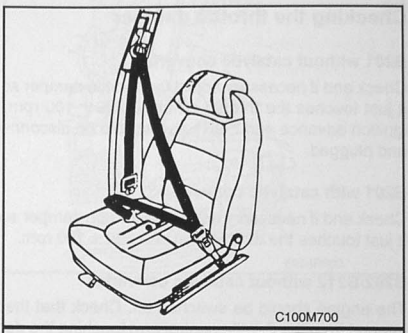


B100M732

Safety equipment

Checking the seatbelts

Check the function of the seatbelts and for damage.

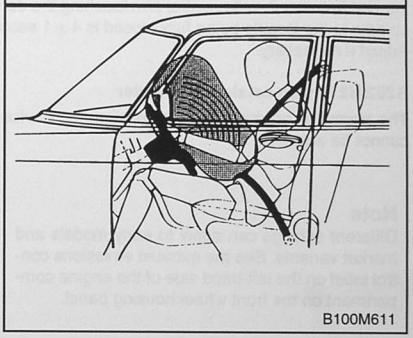


C100M700

Airbag system

The airbag system should be checked at a Saab workshop once every 10 years.

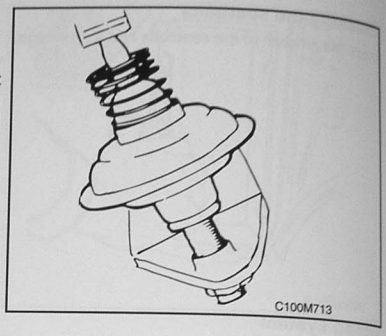
> **⚠ WARNING**
> Checking the airbag system requires specialist equipment and is therefore not described in this manual.



B100M611

Exhaust emission control system

Checking the throttle damper


C100M713

B201 without catalytic converter

Check and if necessary adjust the throttle damper so that it just touches the throttle arm at 2 000 ± 100 rpm. The ignition advance and EGR valve should be disconnected and plugged.

B201 with catalytic converter

Check and if necessary adjust the throttle damper so that it just touches the throttle arm at 2 500 ± 100 rpm.

B202/B212 without catalytic converter

The engine should be switched off. Check that the time interval from the throttle control arm touching the damper spindle to the throttle being fully closed is 4 ± 1 seconds. Adjust if necessary.

B202/B212 with catalytic converter

The engine is equipped with a deceleration device that cannot be adjusted.

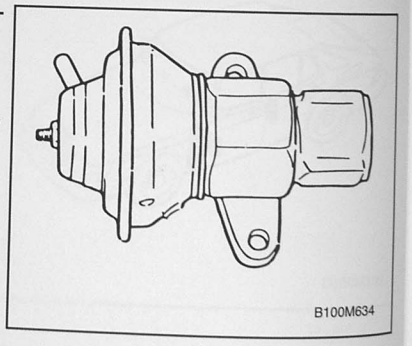
Note

Different settings can apply to early models and market variants. See the exhaust emissions control label on the left-hand side of the engine compartment on the front wheel housing panel.

Checking the EGR system in situ

See *"EGR system, B202/B212"* on page 143.

Cleaning the EGR valve (cars without catalytic converter)


B100M634

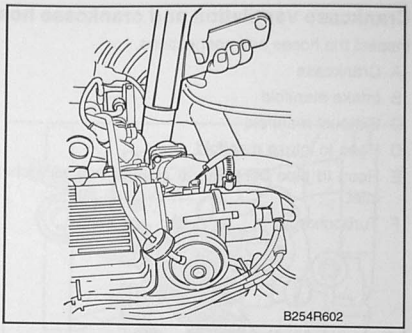
1 Remove the EGR pipe and EGR valve.
2 Clean the inlet and outlet ports of the EGR valve.
3 Clean the hole in the intake manifold and wipe away any carbon deposits.
4 Fit the parts using a new seal.
5 Check it works.

Checking/adjusting ignition timing

Connect a stroboscope and start the engine.

Note

Cars having a knock-sensor-controlled ignition system (EZK) do not require checking or adjustment, only basic setting in conjunction with repair.


B254R602

Cars without catalytic converter

Engine	Variant	Degrees BTDC at rpm	Comment
B201	Carburettor	18°/2000±50	1,3
B201	Injection engine -88	18°/2000±50	1
B201	Injection engine 89-	20°/2000±50	1
B201	Turbo	20°/2000±50	1
B202	Injection engine	14°/850±50	2
B202	Turbo	16°/850±50	1

Cars with catalytic converter

Engine	Variant	Degrees BTDC at rpm	Comment
B201	Injection engine	20°/2000±50	1
B201	Turbo	20°/2000±50	1
B202	Injection engine	14°/850±50	2
B202	Turbo	16°/850±50	1
B212	Injection engine	14°/850±50	2

1 Remove and plug the hose to the vacuum control.

2 Not adjustable M1989-, only basic setting in conjunction with repair.

3 **Breaker-triggered ignition system:**

Dwell angle should be 50°.

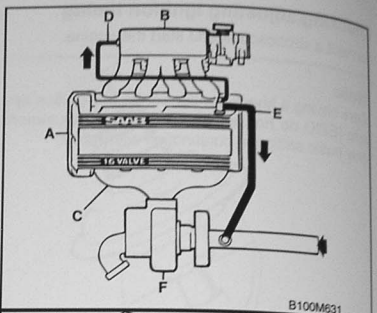
Note

Different settings can apply to early models and market variants. See the exhaust emissions control label on the left-hand side of the engine compartment on the front wheel housing panel.

Crankcase ventilation and crankcase hoses

Inspect the hoses and connections.

A Crankcase
B Intake manifold
C Exhaust manifold
D Hose to intake manifold
E Hose to pipe between air cleaner and turbocharger inlet
F Turbocharger



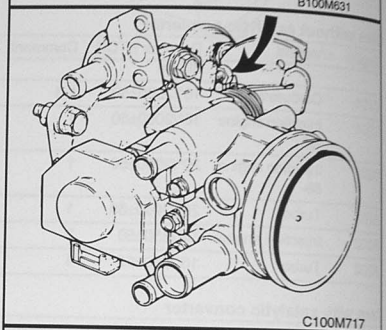
B100M631

Idle speed adjustment

The idle speed is adjusted with the adjusting screw on the throttle body bypass duct.

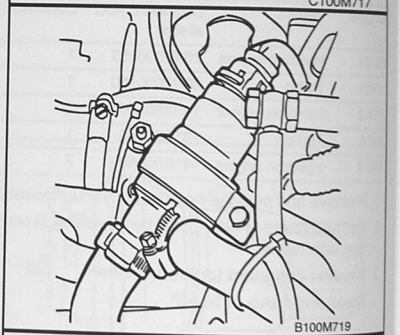
Idle speed should be 850 ± 75 rpm

Important
Other settings may apply. See the exhaust emissions control label in the engine compartment on the left-hand wheel housing panel.


C100M717

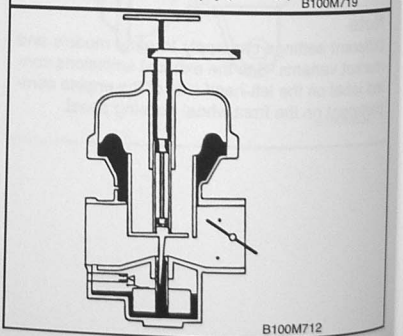
Automatic idle air control, IAC valve

Contact your local Saab workshop for assistance with this work.


B100M719

Adjusting the CO content

Contact your local Saab workshop for assistance with this work.


B100M712

Adjusting the fast idle speed

Fast idle is the idle speed adjusted by the choke.

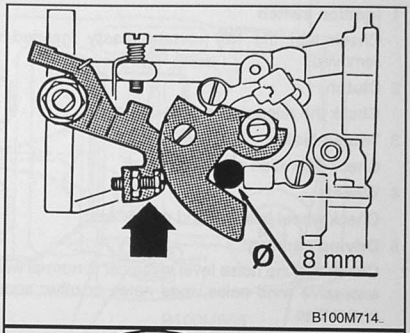
The engine should be at normal working temperature before any adjustments are made.

Stromberg carburettor

Important
The vacuum hose to the distributor should be plugged.

Place an Ø 8 mm (0.315 in) gauge (drill bit) between the recess in the cam disk and the stop pin on the choke housing.

Adjust the engine speed with the fast idle screw to 1350 ± 50 rpm.



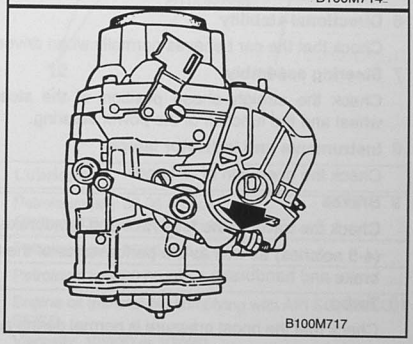
B100M714

Pierburg carburettor

Important
The vacuum hoses to the distributor and EGR valve should be detached and plugged. The engine should be at normal operating temperature.

Pull out the choke so that the line on the lever aligns with the fast idle screw.

Adjust the engine speed with the fast idle screw to 1350 ± 50 rpm.



B100M717

Full load enrichment

Contact your local Saab workshop for assistance with this work.

Test driving

Test driving is an important part of the service programme.

Check the functions described below.

1 **Ignition switch**

Check that the key can be easily inserted and removed.

2 **Clutch**

Check the release and take-up points.

3 **Transmission**

Check operation and sound level.

4 **Wheels**

Check wheel balance and roundness.

5 **Driving comfort**

Check that the noise level in the car is normal without excessive wind noise, road noise or other squeaks and rattles.

6 **Directional stability**

Check that the car behaves normally when driven.

7 **Steering assembly**

Check the straight-ahead position of the steering wheel and the function of the power steering.

8 **Instruments and indicator lamps**

Check the operation of all lamps.

9 **Brakes**

Check the travel of the footbrake and handbrake lever (4-5 notches) as well as the performance of the footbrake and handbrake.

10 **Turbo**

Check that the boost pressure is normal during acceleration

(needle goes up to but does not enter the red zone).

11 **Cruise control**

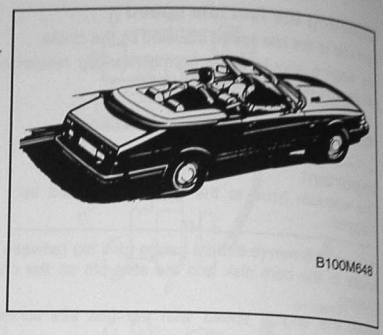
Check it works.

12 **Air conditioning**

Check that cold air comes out of the panel vents.

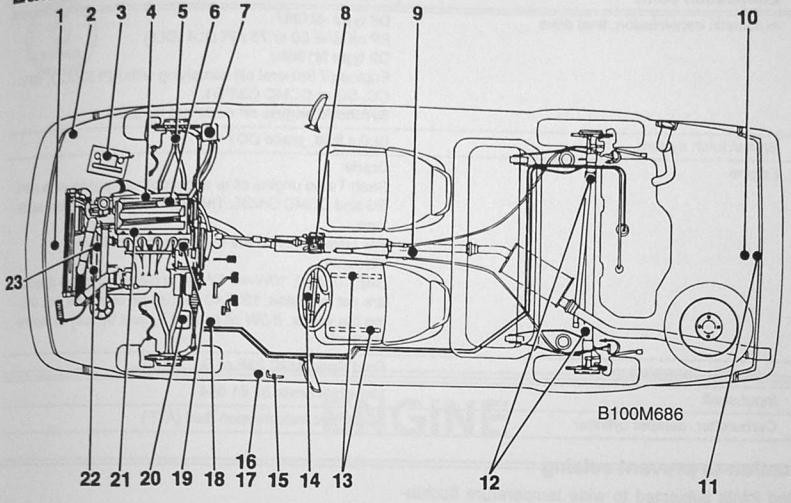
13 **Wiper and washer function**

Check the washer spray pattern and the operation of the wipers on the windscreen, the headlights and, where appropriate, the rear window.



B100M648

Lubrication chart, lubricants



Pos	Lubrication point	Lubricant
1	Locking pins, safety latch and bonnet lock	Petroleum jelly 30 06 665 or Gleitmo 805 part no. 30 06 442
2	Bonnet hinges	Petroleum jelly 30 06 665
3	Battery	Petroleum jelly 30 06 665
4	Manual gearbox	Engine oil (mineral oil) complying with API SG, SF/CC, SF/CD Viscosity: 10W30 or 10W40 **Synthetic engine oil must not be used**
5	Outboard CV joint	Special grease 87 81 676
6	Inboard universal joint	Special grease 87 92 624
7	Power steering	Texaco Power Steering fluid 4634, part no. 30 09 800
8	Gear lever housing	Gleitmo 980 spray 30 06 954, then Gleitmo 750 silicon paste, part no. 30 07 309
9	Handbrake cable	Special grease 87 81 676
10	Luggage compartment lock mechanism	Light penetrating oil
11	Switch, luggage compartment lighting	Petroleum jelly 30 06 665
12	Hinges, tailgate/bootlid	Petroleum jelly 30 06 665
13	Seat rails	Chassis grease (sparingly)
14	Horn mechanism, slip ring and brushes	Molycote PG 21 part no. 87 81 718
15	Door check arms	Gleitmo 805 part no. 30 06 442
16	Door hinges	Engine oil
17	Door switch, interior lighting	Petroleum jelly 30 06 665
18	Brake light switch	Petroleum jelly 30 06 665

Pos	Lubrication point	Lubricant
19	Automatic transmission, final drive	**Oil type -M1987:** EP oil SAE 80 or 75 API GL4 (GL5) **Oil type M1988-:** Engine oil (mineral oil) complying with API SF/CD, SF/CC, SG or CCMC G3/PD1 **Synthetic engine oil must not be used**
20	Brake/clutch system	Brake fluid, grade DOT 4
21	Engine	Grade: Saab Turbo engine oil or engine oil complying with API SG and CCMC G4/G5. These oils contain suitable additives. We advise against the use of further additives. Viscosity: SAE 10W-30, 10W-40, 5W-30 or 5W-40. If these grades are not available, 15W-40 oil may be used but not during the winter. If 5W oil is used it must by fully or semi-synthetic.
22	Automatic transmission	Ford Spec. M2C 33F or G
23	Input shaft	Universal paste 87 81 684
	Carburettor, damper cylinder	Automatic transmission fluid (ATF)

Lubrication to prevent seizing

Threaded joints subjected to wide temperature fluctuations may tend to bind and will then be difficult to unscrew during servicing.

Typical threaded joints of this type:

- EGR valve connection
- Oxygen sensor threads
- Retaining nuts securing the exhaust manifold and turbocharger

Recommended lubricant: MOLYCOTE 1000, part no. 30 20 971.

ENGINE

Work schedule

Explanation

The following table contains an outline of topics. The table makes it easy to see which jobs are described in each section as well as the parts and tools that are required to complete the work.

Remember to read carefully through the job description as well as General Information (pages 2-6) before you begin work.

Section	Applicable to the following work	Tools required	Parts required to carry out the work
Cylinder head, B201	Removing/Fitting Cylinder head Cylinder head gasket	Torque wrench TORX socket Guide pin 83 92 128	Cylinder head gasket Cylinder head gasket Camshaft cover gasket Intake manifold gasket Manifold gasket Cable ties Coolant
Cylinder head, B202/B212	Removing/Fitting Cylinder head Cylinder head gasket	Guide pin 83 92 128 Torque wrench TORX socket Bracket 83 93 795	Cylinder head gasket Cylinder head gasket Camshaft cover gasket Intake manifold gasket Manifold gasket Cable ties Coolant
Chain tensioner	Removing/Fitting	Blunt tool	
Cylinder head, tightening torque		Torque wrench	
Cylinder head, retightening		Torque wrench	
Camshaft cover	Removing/Fitting		
Camshaft cover B202/ B212 - Sealing			Silicon flange sealant 87 81 841
Camshaft cover B202/ B212 - Tightening sequence		Torque wrench	
Oil pump	Removing/Fitting	Flywheel locking attachment 83 92 978	Sealing ring Oil filter Engine oil
Engine oil	Draining/Filling	Wrench 13 mm	Copper washer Drain plug
Oil filter	Changing	Oil filter wrench 78 62 014 or 83 93 332	
Oil pressure sensor	Removing/Fitting	Torque wrench	
Drive belt for A/C compressor	Removing/Fitting		
Drive belt for servo pump	Removing/Fitting		
Drive belt for alternator	Removing/Fitting		
Belt tension, drive belts	Checking	Belt tension gauge 83 93 985	
Crankshaft seal, front	Removing/Fitting	Tool 83 92 540	Sealing ring

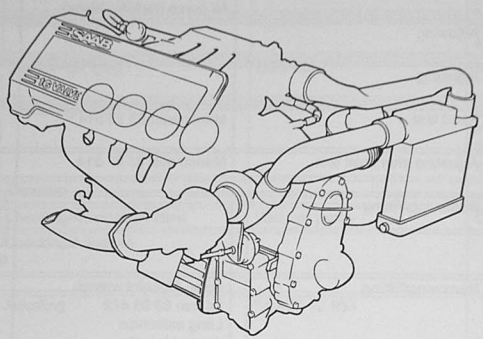
Section	Applicable to the following work	Tools required	Parts required to carry out the work
Crankshaft seal, rear	Removing/Fitting	Tool 83 92 987 Sleeve 83 93 349 Wrench 83 92 961 Torque wrench Tool 83 93 639	Sealing ring Acid-free petroleum jelly Grease
Air preheating -M1985	Checking operation		
Air preheating M1986-	Checking operation		
Bimetal valve	Removing/Fitting		Clip
Mass air flow sensor	Removing/Fitting		
Air filter element	Removing/Fitting		
Carburettor diaphragm	Removing/Fitting		
Fuel pump, carburettor engine M1979-80	Removing/Fitting		Gasket
Fuel pump, carburettor engine M1981-	Removing/Fitting		Sealant Gasket
Fuel strainer	Cleaning		
Fuel pump, without feed pump, B202 -M1988 and B201 without catalytic converter	Removing/Fitting	Wrench 83 94 330 for LH Flexible socket screwdriver	
Fuel pump, with feed pump, B202 - M1988 and B201 without catalytic converter	Removing/Fitting	Wrench 83 94 330 for LH	
Fuel pump, B202 normally aspirated M1989-90/B202 Turbo M1990	Removing/Fitting	Wrench 83 94 397 Wrench 83 94 462 (Turbo) Receptacle	Rubber gasket O-rings
Fuel pump, B202 M1990-	Removing/Fitting		O-ring O-rings
Fuel level sensor	Removing/Fitting	Tool 83 93 365	
Fuel filter, Injection and Turbo engines	Removing/Fitting		
Injectors, B201i/Turbo -M1989	Removing/Fitting		
Fuel rail with injectors, B202/B212	Removing/Fitting		Petroleum jelly O-rings Cable ties
Fuel pressure regulator	Removing/Fitting		
Idle air control valve, IAC	Removing/Fitting		
Exhaust system, -M1985	Removing/Fitting	Hacksaw	Flange gasket Rubber mountings
Exhaust system, Injection engine M1985-/Turbo M1984-	Removing/Fitting	Hacksaw Gas welding equipment Hammer	Rubber mountings
Silencer, front	Removing/Fitting		Gaskets

Section	Applicable to the following work	Tools required	Parts required to carry out the work
Catalytic converter	Removing/Fitting	Hacksaw	Sealing ring Gasket
Exhaust manifold, B201 normally aspirated	Removing/Fitting		Gasket for outer exhaust manifold
Exhaust manifold, B201 Turbo	Removing/Fitting		Gasket for exhaust manifold
Exhaust manifold, B202 injection engine	Removing/Fitting	Lock nut	Gasket
Exhaust manifold, B202 Turbo	Removing/Fitting		Gaskets for mating faces Exhaust manifold retaining nuts
EGR system, B202	Checking		
EGR valve	Checking/Removing/Fitting	Vacuum pump	Gasket
Mechanical throttle damper, mechanical (Dashpot)	Checking/Adjusting		
Vacuum-controlled deceleration valve (carburettor engine)	Adjusting	Tool 83 92 953	
Cooling system	Checking/Pressure testing	Pressure tester 30 05 477	
Cooling system	Fluid level, checking	Cooling system tester 30 05 758	Coolant
Radiator	Removing/Fitting	Receptacle	Coolant
Thermostat	Removing/Fitting		Coolant
Coolant	Draining/Filling	Receptacle	Coolant
Expansion tank	Removing/Fitting	Receptacle	Coolant
Radiator fan	Removing/Fitting		Coolant
Coolant pump, M1979-80		Contact your local Saab workshop for assistance with this work	
Coolant pump, M1981-	Removing/Fitting	Receptacle Torque wrench	Gasket O-ring Coolant
Temperature sensor, coolant	Removing/Fitting	Receptacle	Coolant
Engine oil cooler, air-cooled all Turbo B201 -M1985	Removing/Fitting		
Engine oil cooler, air-cooled Turbo B202 M1984- and Turbo B201 M1986-	Removing/Fitting		
Intercooler, Turbo B202 M1984- and Turbo B201 M1986-	Removing/Fitting		
Throttle cable	Removing/Fitting		
Basic/Maximum charging pressure	Table	Manometer 83 93 514	

Section	Applicable to the following work	Tools required	Parts required to carry out the work
APC system	Checking	Pressure gauge 83 93 514 Nipple and hose (included with pressure gauge 83 93 514) Air pump (radiator tester)	
Pressure regulator, -M1982 (without APC)	Adjusting		
Pressure regulator, M1982 (APC)	Adjusting		
Boost pressure, checking	Road test	Manometer 83 93 514	
Boost pressure, adjusting	Adjusting after road test	Manometer 83 93 514	
Turbocharger	Removing/Fitting		Engine oil Gaskets for turbocharger, mating face and oil delivery pipe
Knock sensor, M1982	Removing/Fitting	Open 12-point wrench 24 mm 83 93 472 Long extension Jointed handle	
Knock sensor, M1983-	Removing/Fitting	Long extension Jointed handle Torque wrench	
Boost pressure control valve	Checking the restriction Removing/Fitting		

Technical data

Technical description



B210R600

Engine

The engine is a water-cooled, four-cylinder, in-line engine with single overhead camshaft. The crankcase ventilation is totally sealed. The cylinder block is inclined at an angle of 45° to the right and the cylinder head is of the cross-flow type, i.e. with the intake and exhaust ports on opposite sides. The engine is mounted with the clutch towards the front of the car and with the timing gear and cylinder no. 1 towards the rear. Carburettor, injection and turbocharged variants of the engine exist.

General data

Engine type	B201		4-cylinder, 4-stroke engine with overhead camshaft and two valves per cylinder
	B202, B212		4-cylinder, 4-stroke engine with double overhead camshafts and four valves per cylinder
Bore	B201, B202	mm (in)	90 (3.54)
	B212	mm (in)	93 (3.66)
Stroke		mm (in)	78 (3.07)
Sweptvolume	B201, B202	cm^3 (in^3)	1985 (120.8)
	B212	cm^3 (in^3)	2118 (129.1)
Firing order			1-3-4-2
Weight	B201	kg (lb)	approx. 140 (309)
	B202, B212	kg (lb)	approx. 150 (331)

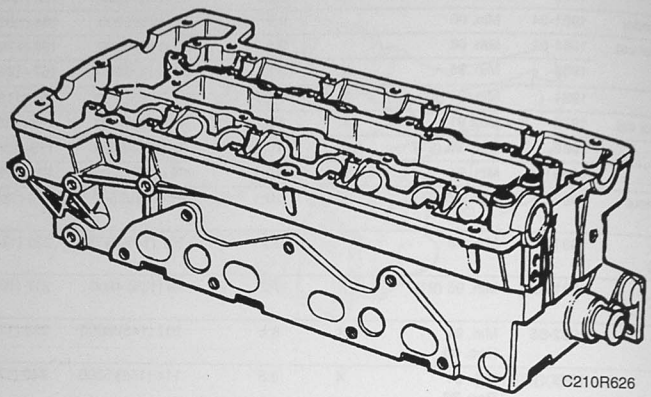
Performance, compression ratio, octane rating

Engine	Model year	Octane requirement RON (AKI)*	Suitable for unleaded petrol	Compression ratio	Rating DIN kW (hp)/ rpm	Torque DIN Nm (lbf ft)/rpm
Single carburettor	1981-84	Min. 96		9:5	73 (100)/5200	162 (120)/3000
	1985-	Min. 95	X	9:5	73 (100)/5200	162 (120)/3000
Twin carburettor	1981-84	Min. 96		9:5	79 (108)/5200	164 (120)/3300
B201i without cat.	1981-84	Min. 96		9:5	87 (118)/5500	167 (124)/3000
	1985-	Min. 95	X	9:5	87 (118)/5500	167 (124)/3000
B201i cat.	1981-	Min. 91 (87)	X	9:25	81 (110)/5250	161 (119)/3300
B202i without cat.	1986-	Min. 91	X	10:1	98 (133)/6000	173 (128)/3000
B202i cat.	1986-	Rec. 95 (91)	X	10:1	92 (125)/5500	170 (125)/3000
B202i/S cat.	1989-	Min. 91	X	10:1	94 (128)/6000	173 (128)/3000
B202i/S without cat.	1989-	Rec. 95 (91)	X	10:1	98 (133)/5500	173 (128)/3000
B201 Turbo, without APC	1981-82	Min. 98		7:2	107 (145)/5000	235 (174)/3000
B201 Turbo, without APC, cat.	1981-82	Min. 95 (91)	X	7:2	99 (135)/4800	217 (160)/3500
B201 Turbo APC	1982-85	Min. 91 Rec. 98	X	8:5	107 (145)/5000	235 (174)/3000
B201 Turbo	1986	Min. 91 Rec. 98	X	8:5	114 (155)/5000	240 (178)/3000
B201 Turbo, APC, without cat.	1982-86	Min. 91 (87) Rec. 95 (91)	X	8:5	99 (135)/4800	217 (160)/3500
cat.	1987	Min. 91 (87) Rec. 98 (91)	X	8:5	103 (140)/5000	235 (174)/2500
B202 Turbo	1984-89	Min. 91 Rec. 98	X	9:0	129 (175)/5300	273 (200)/3000
	1990-	Min. 91 Rec. 98	X	9:0	129 (175)/5500	273 (200)/2800
B202 Turbo cat.	1985-	Min. 91 (87) Rec. 95 (91)	X	9:0	118 (160)/5500	255 (188)/2800
B202 Turbo S cat.	1989-	Min. 91	X	9:0	129 (175)/5700	277 (205)/2900
B202 LTT	1990	Min. 95 (91)	X	9:0	107 (145)/5500	200 (155)/3000
	1991-	Min. 95 (91)	X	9:0	107 (145)/5600	205 (159)/3800
B212i	1991-	Min. 91 (87) Rec. 95 (91)	X	10:1	103 (140)/6000	180 (140)/2900

The specified octane ratings are minimum values and may deviate from those specified in the Owner's Manual, as the ratings specified in the latter are based on the fuel available in the country in question.

Cylinder head

Technical description



C210R626

Cylinder head

The cylinder head is a precision, light-alloy casting with press-fitted steel valve seats.

The valves are made of steel and have chromium-plated stems.

The heads on the intake valves are induction hardened and those on the exhaust valves stellited.

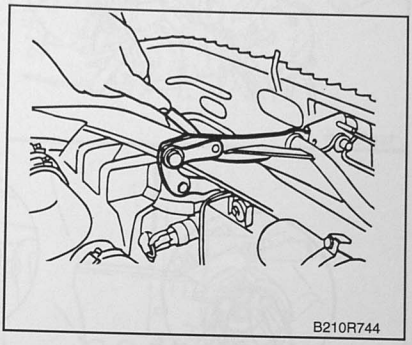
Injection and turbocharged engines have sodium-filled exhaust valves.

Cylinder head, B201

Important
A new gasket should be fitted each time the cylinder head is removed and refitted in situ.

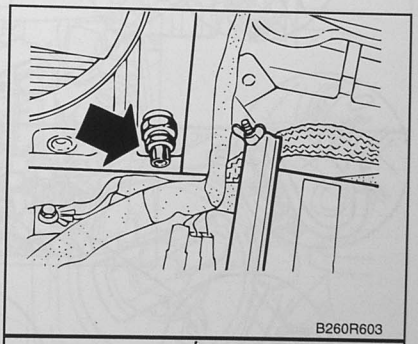
To remove

1 Remove the bonnet.
See To Remove under *"Bonnet"* on page 469.

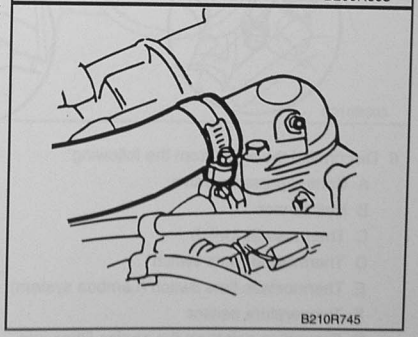

B210R744

⚠ WARNING
A large number of cables, hoses, leads, etc. are held in place with hard plastic cable ties.
Once a tie is tightened the excess is cut off, which can leave a sharp end. Beware of cutting yourself on the ends of cable ties.

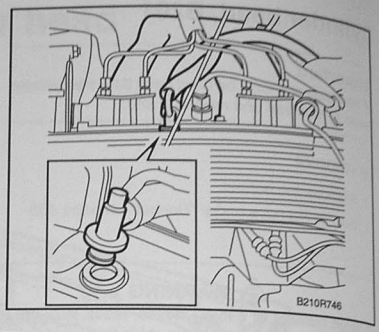
2 Disconnect the battery leads are remove the battery.
3 Drain the coolant through the drain cock on the radiator and drain plug in the engine block.
See To Drain under *"Coolant"* on page 154.

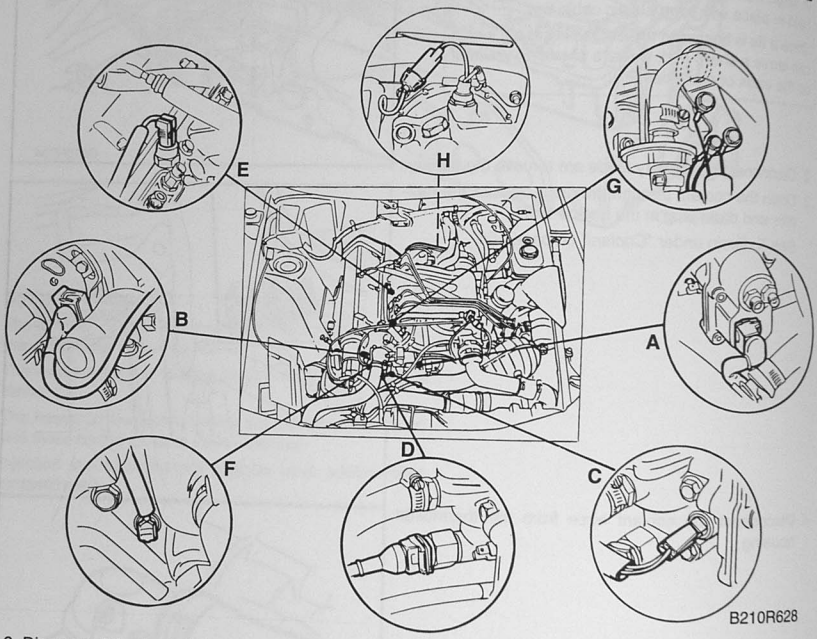

B260R603

4 Disconnect the coolant hose from the thermostat housing.


B210R745

5 Detach the crankcase ventilation hoses.

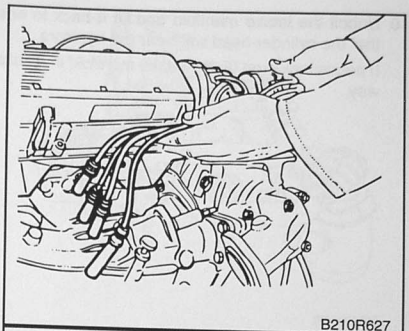




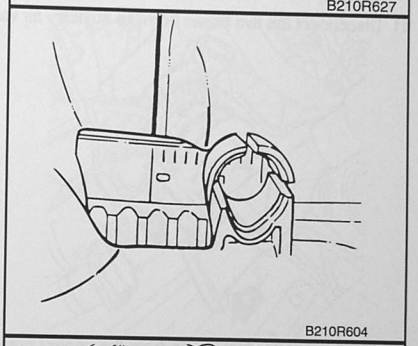
6 Disconnect the leads from the following:

A Control pressure valve
B Hall sensor
C Thermostatic switch
D Thermostatic time switch
E Thermostatic time switch (Lambda system)
F Temperature sensor
G Grounding points on the engine lifting eye
H **Cars with A/C:**
Unplug the A/C compressor connector

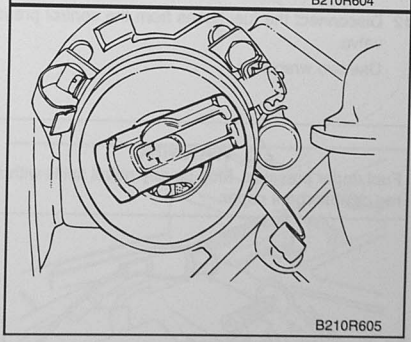
7 Disconnect the ignition cables and vacuum hose. Remove the distributor cap complete with cables.


B210R627

8 Turn the crankshaft in the direction of rotation of the engine to bring the 0° mark on the flywheel in line with the mark on the camshaft cover, and the mark on the rotor in line with the mark on the distributor housing.


B210R604

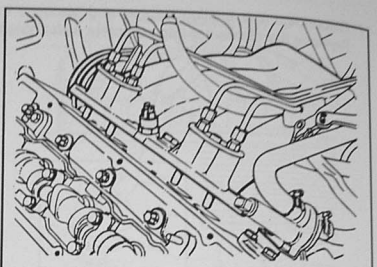
Important
Due to the design of the slot for the distributor dog, cylinder 1 must be at top dead centre for the cylinder head to be removed.


B210R605

9 Remove the camshaft cover.
See *"Camshaft cover - Seal"* on page 72.

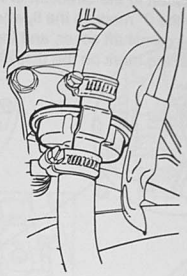
10 Unbolt the intake manifold and lift it back to ensure that the cylinder head will clear the injectors.

If necessary, prop up the intake manifold in a suitable way.



B210R629

11 Disconnect the two hoses from the auxiliary air valve.

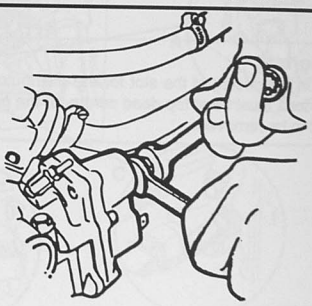


B210R747

12 Disconnect the fuel hoses from the control pressure valve.

Use two wrenches.

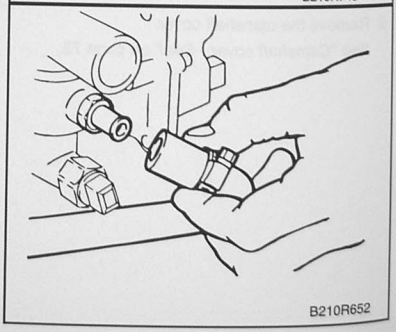
> **⚠ WARNING**
> Fuel under pressure. Mop up any petrol spills with a rag or absorbent paper.



B210R748

13 **Cars with turbocharger:**

Disconnect the coolant hose for the turbocharger from the thermostat housing.

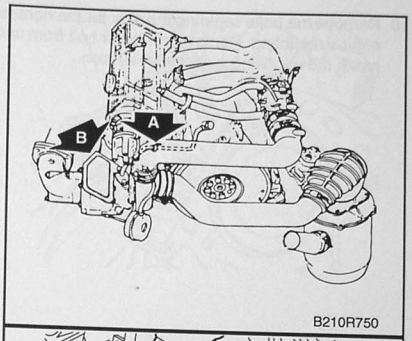


B210R652

14 **Cars with turbocharger:**

A Remove the fitting for the turbocharger oil delivery pipe from the thermostat housing.

B Remove the heat shield from the turbocharger.

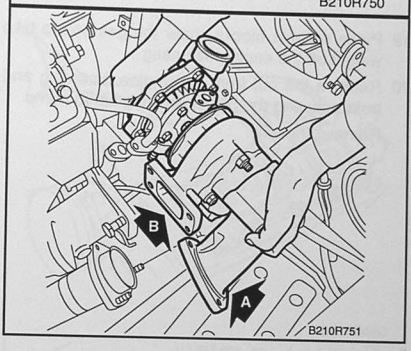


B210R750

15 **Cars with turbocharger:**

A Remove the flange pipe from between the turbocharger and exhaust pipe.

B Unbolt the turbocharger from the exhaust manifold.



B210R751

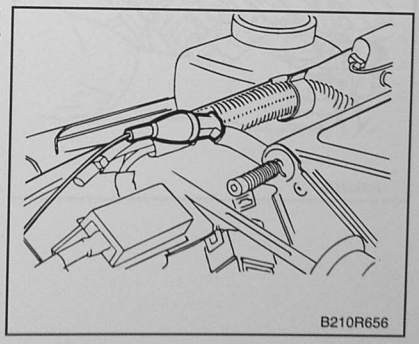
16 **M1979-90:**

Undo the M6 bolt and remove the gearbox dipstick pipe.

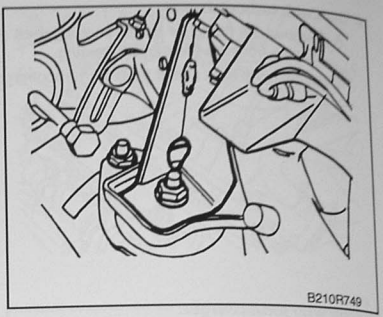
(The gearbox dipstick is mounted differently on M1991- and does not need to be removed.)

17 Unplug the connector in the oxygen sensor lead on the right-hand wheel housing and remove the clip from the body.

Place the lead on the engine.


B210R656

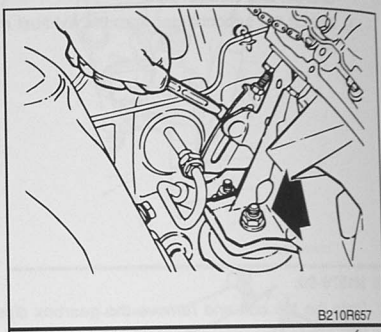
18 Remove the bolts securing the stay for the right-hand engine mounting. Remove the lower bolt from underneath the car using a socket extension.


B210R749

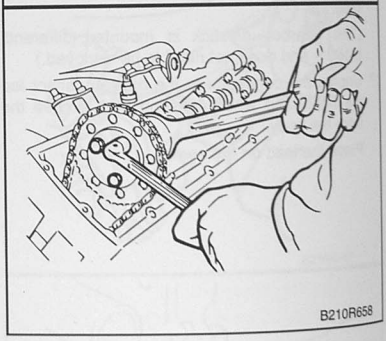
19 Place suitable blocks under the gearbox to take the weight off the engine mounting.

20 Remove the nut from the engine mounting and the bolts securing the power steering servo pump.

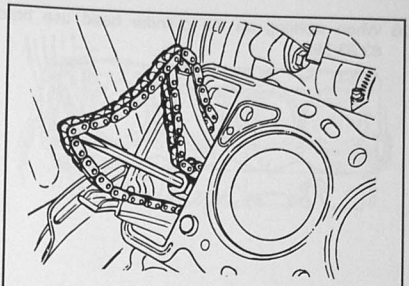
Remove the stay.


B210R657

21 Remove the three camshaft sprocket bolts.

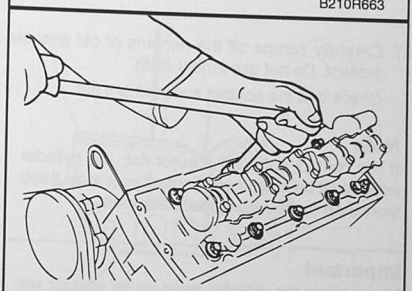

B210R658

22 Remove the camshaft sprocket from the camshaft, insert a screwdriver between the chain guide and the chain tensioner and lower the chain.



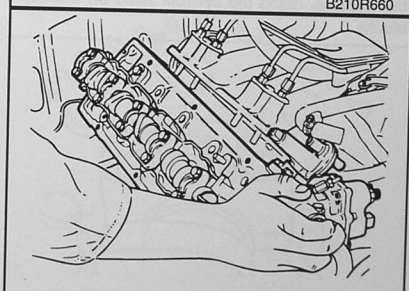
B210R663

23 Remove the two cylinder head bolts in the timing cover and all the bolts (ten) from the top of the cylinder head.



B210R660

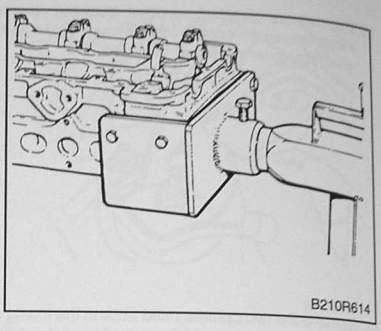
24 Fit two guide pins 83 92 128 in the boltholes and lift off the cylinder head.



B210R661

25 Clean all contact surfaces on the cylinder head, engine block, intake manifold and exhaust manifold.

26 When working on the cylinder head use bracket 83 93 795.

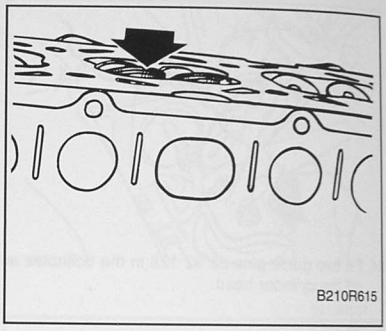

B210R614

27 Carefully scrape off the remains of old gaskets and sealant. Do not use emery cloth.

Check that the contact surfaces are flat.

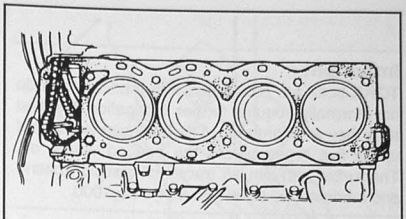
Note
If the contact surfaces are not flat, the cylinder head must be machined. Contact your local Saab workshop for assistance with this work.

Important
Never place the cylinder head on its contact surface when removed. Open valves protrude from this surface. Stand the cylinder head on wooden blocks.


B210R615

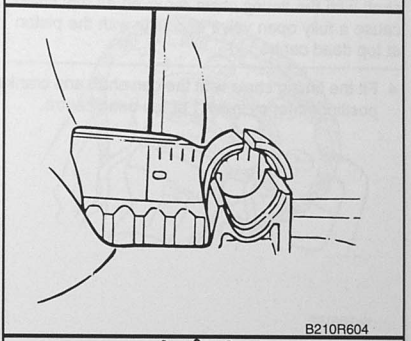
To fit

1 Fit a new cylinder head gasket to the engine block.



B210R662

2 Make sure that the flywheel is aligned with the 0 mark.

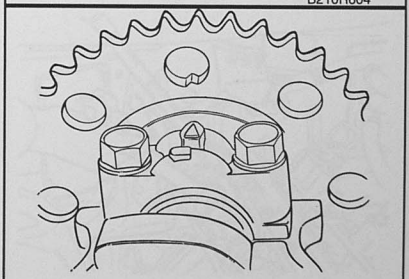


B210R604

Refit the camshaft sprocket temporarily and rotate the camshaft to bring cylinder 1 to top dead centre.

Important

Never alter the position of the camshaft or crankshaft with the timing chain removed as this could cause a fully open valve to collide with the piston at top dead centre.



B210R713

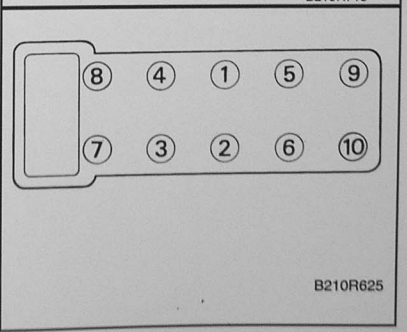
3 Fit the cylinder head and tighten the cylinder head bolts on the top side using a torque wrench.

See *"Cylinder head - Tightening torque"* on page 71.

Tighten in the sequence illustrated.

Remember to fit the two bolts on the timing cover.

For retightening the cylinder head bolts refer to *"Cylinder head - Retightening"* on page 71.

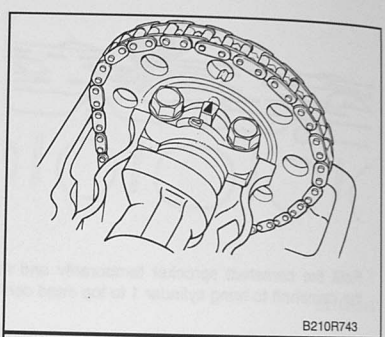


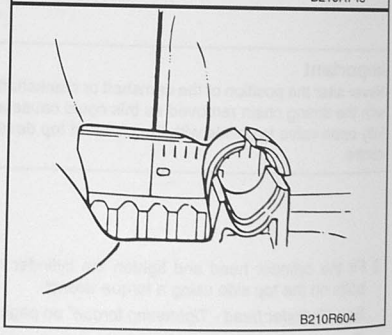
B210R625

Important
TORX bolts are pre-coated with lubricant and do not normally require further lubrication the first time they are tightened. The bolts can be refitted up to five times before the coating wears off. Thereafter, remove all traces of the old coating and lubricate the bolts with Molycote 1000.

Important
Never alter the position of the camshaft or crankshaft with the timing chain removed as this could cause a fully open valve to collide with the piston at top dead centre.

4 Fit the timing chain with the camshaft and crankshaft positioned for cylinder 1 at top dead centre.

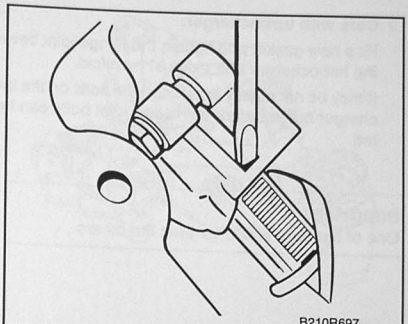

B210R743


B210R604

5 Re-tension the chain tensioner.

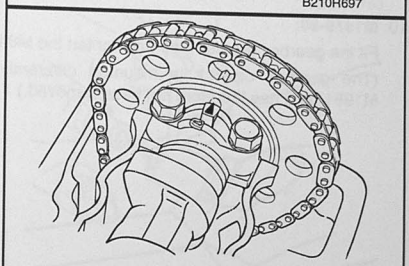
Press the outside of the pawl to release the catch. Push in the chain tensioner by pressing the chain guide.

Hold the chain guide in this position, refit the sprocket and chain and then release the chain guide.



B210R697

Fit the camshaft sprocket to the camshaft. Move the chain on the sprocket teeth until the marks on the sprocket and bearing cap coincide.

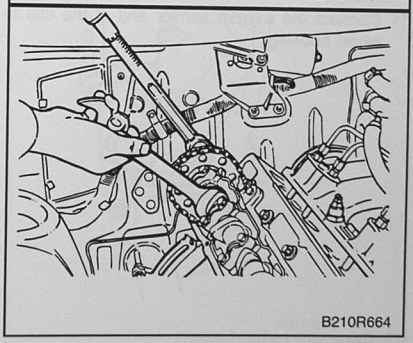


B210R743

6 Fit the camshaft sprocket bolts complete with plain washers. Place the washers between the bolt head and the sprocket.

Tightening torque: 20 Nm (14.8 lbf ft)

> **⚠ WARNING**
> If the washers are omitted, the bolts will foul the camshaft bearing.



B210R664

7 Position the right-hand engine mounting stay and thread the nut on the engine mounting.

Fit the three bolts securing the stay and remove the blocks from under the gearbox.

Important

Remember to fit the bolt at the bottom of the stay.

Tighten the nut on the engine mounting last.

8 Thread the bolts for the power steering servo pump.

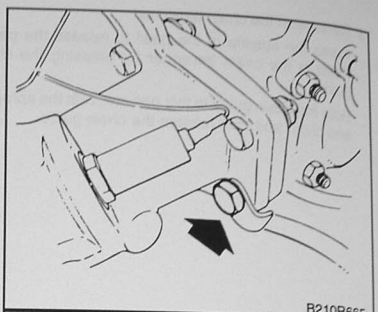
Tension the drive belt and tighten the bolts.

See To Fit under *"Drive belt for servo pump"* on page 83.

9 **Cars with turbocharger:**

Fit a new gasket and tighten the flange joint between the turbocharger and exhaust manifold.

It may be necessary to slacken the bolts on the turbocharger brace before the flange joint bolts can be fitted.



B210R665

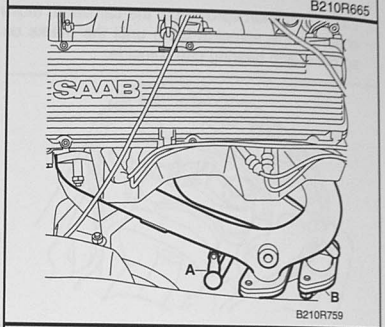
Important

One of the bolts is shorter than the others.

10 **M1979-90:**

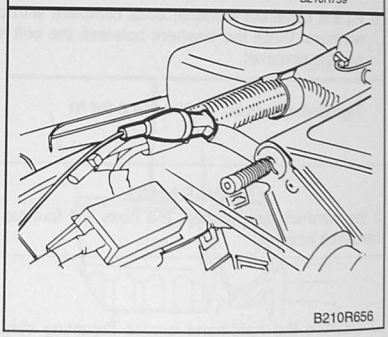
Fit the gearbox dipstick pipe and tighten the M6 bolt.

(The gearbox dipstick is mounted differently on M1991- and has therefore not been removed.)



B210R759

11 Connect the oxygen sensor and fit the clip to the wheel housing.



B210R656

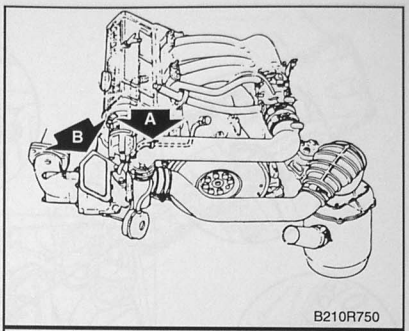
12 **Cars with turbocharger:**

Fit the flange pipe between the turbocharger and exhaust pipe.

13 **Cars with turbocharger:**

A Fit the fitting for the turbocharger oil delivery pipe to the thermostat housing.

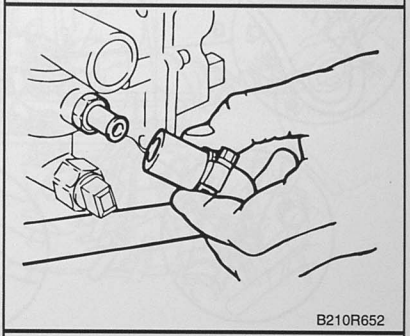
B Fit the heat shield to the turbocharger.



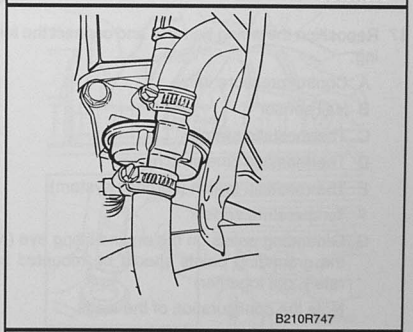
B210R750

14 **Cars with turbocharger:**

Connect the coolant hose for the turbocharger to the thermostat housing.

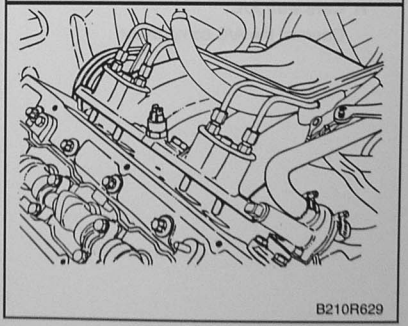

B210R652

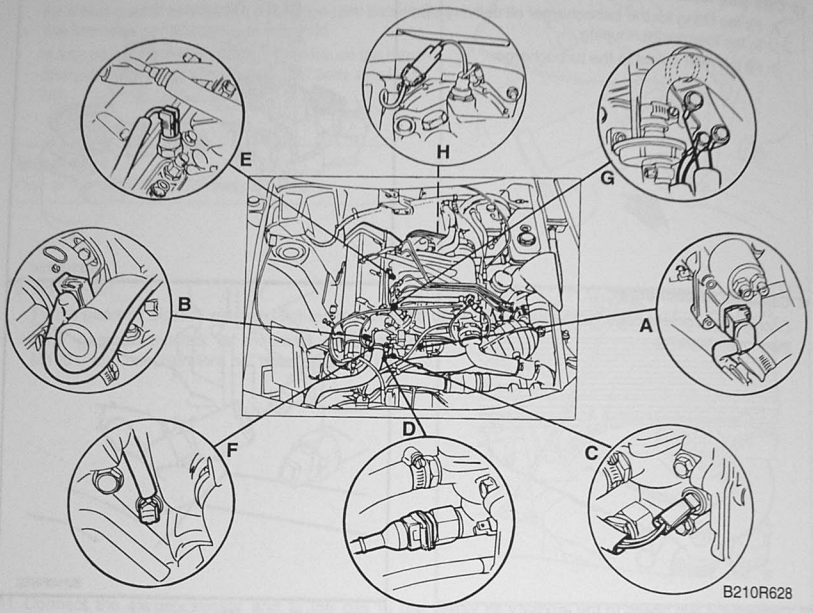
15 Connect the two hoses to the auxiliary air valve.


B210R747

16 Fit the intake manifold complete with new gasket.

Tightening torque: 18 Nm (13.3 lbf ft)


B210R629



17 Reposition the wiring harness and connect the following:

A Control pressure valve

B Hall sensor

C Thermostatic switch

D Thermostatic time switch

E Thermostatic switch (Lambda system)

F Temperature sensor

G Grounding points on the engine lifting eye (Note: the grounding points should be mounted separately, not together)

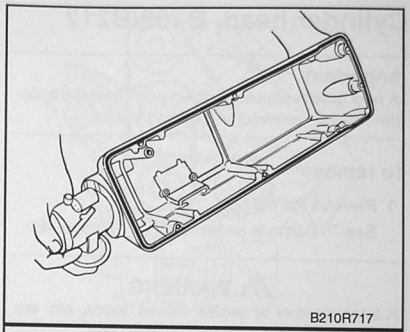
Note the configuration of the leads.

H **Cars with A/C:**

Connect the A/C compressor

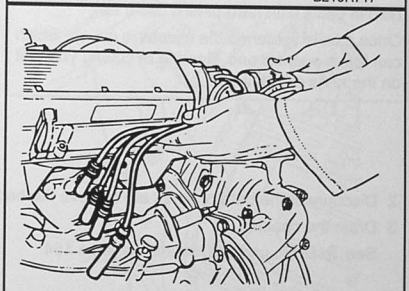
18 Makes sure that the seal in the groove in the camshaft cover is correctly seated and that the distributor is correctly positioned, and refit the cover.

Tightening torque: 5 Nm (3.7 lbf ft)



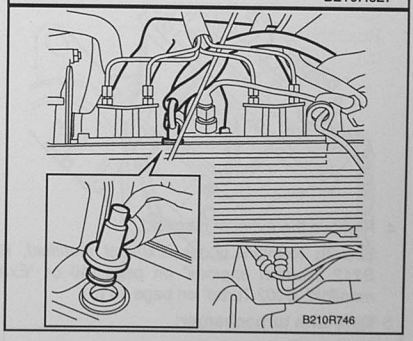
B210R717

19 Fit the distributor cap and ignition cables. Connect the vacuum hose, the lead from the coil and the Hall sensor.



B210R627

20 Connect the crankcase ventilation to the camshaft cover.



B210R746

21 Close the drain cock on the radiator, fit the drain plug in the engine block and fill the system with coolant.
See To Fill under *"Coolant"* on page 154.

22 Fit and connect the battery.

23 Start the engine. Check that all functions are working properly and that no connections are leaking.

24 Fit the bonnet and connect windscreen washer hose.
See To Fit under *"Bonnet"* on page 469.

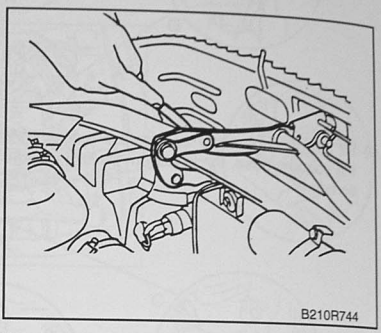
Cylinder head, B202/B212

Important
A new gasket should be fitted each time the cylinder head is removed and refitted in situ.

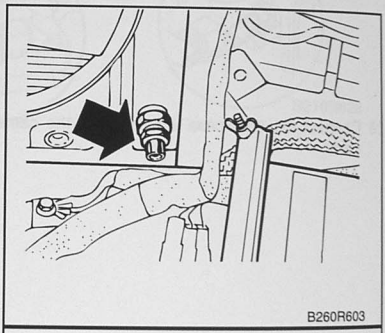
To remove

1 Remove the bonnet.
See To Remove under *"Bonnet"* on page 469.

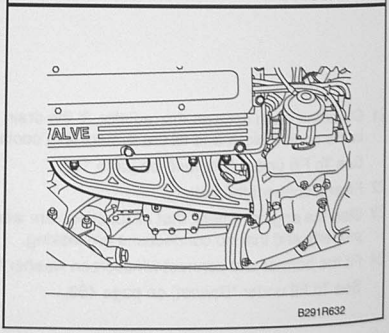
⚠ WARNING
A large number of cables, hoses, leads, etc. are held in place with hard plastic cable ties.
Once a tie is tightened the excess is cut off, which can leave a sharp end. Beware of cutting yourself on the ends of cable ties.


B210R744

2 Disconnect the battery leads are remove the battery.
3 Drain the coolant.
See To Drain under *"Coolant"* on page 154.

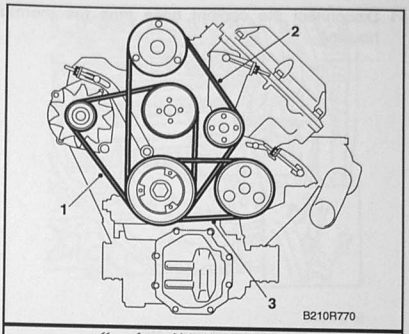

B260R603

4 Remove the exhaust manifold.
See To Remove under *"Exhaust manifold, B202/B212 injection engines"* on page 140 or *"Exhaust manifold, B202 Turbo"* on page 141.
5 **Cars with turbocharger:**
Remove the turbocharger.
See To Remove under *"Turbocharger"* on page 178.


B291R632

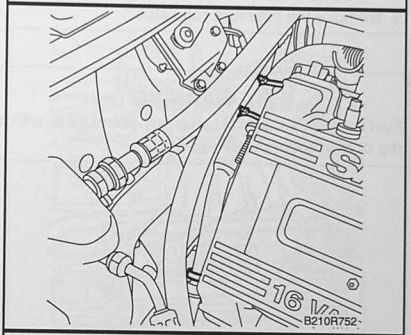
6 Remove the A/C compressor tensioning pulley and drive belt (**2**).

7 Remove the bolts securing the top of the steering servo pump bracket, remove the drive belt (**3**) and move the pump to one side.

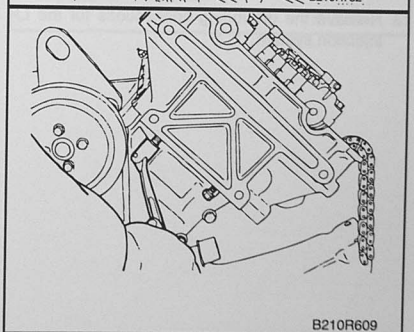


B210R770

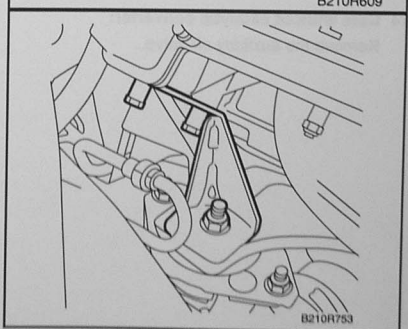
8 Release the clips holding the wiring harness to the cylinder head. If the cylinder head is to be mounted in bracket 83 93 795, remove the clips.


B210R752

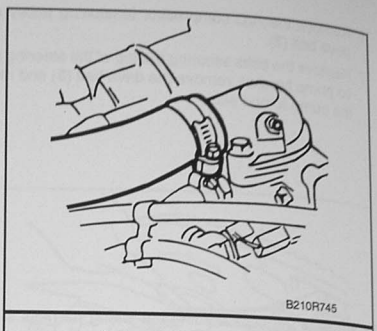
9 Remove the two bolts in the timing cover, which are screwed into the cylinder head from underneath.


B210R609

10 Remove the bolts securing the cylinder head to the right-hand engine mounting and the spacer sleeves.

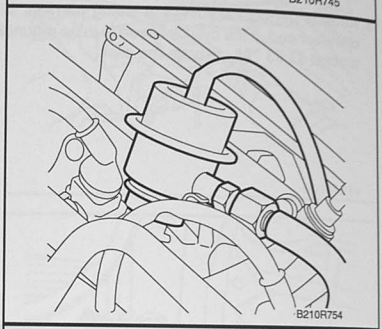

B210R753

11 Disconnect the coolant hose from the thermostat housing.

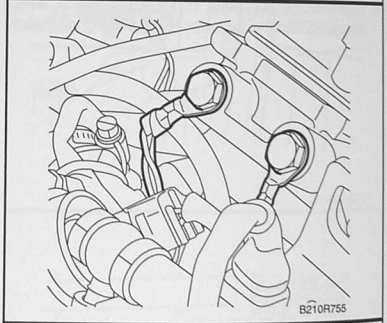

B210R745

12 Remove the pressure regulator.

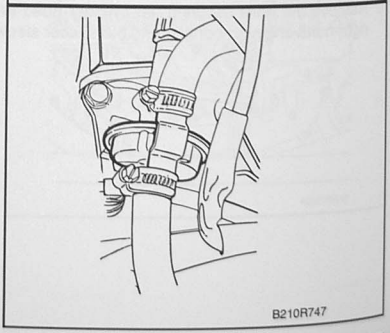
> **⚠ WARNING**
> Fuel under pressure. Mop up any petrol spills with a rag or absorbent paper.


B210R754

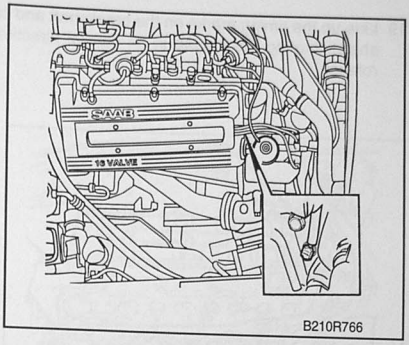
13 Remove the grounding connections for the LH fuel injection system.


B210R755

14 **Cars without catalytic converter:**
Remove the auxiliary air valve.


B210R747

15 Unplug the lead from the temperature sensor.

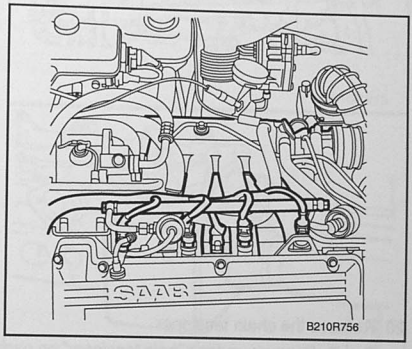


B210R766

16 Unbolt the A/C bracket from the cylinder head.

17 Remove the intake manifold complete with injectors and fuel rail.

Remove the vacuum hose from the distributor.

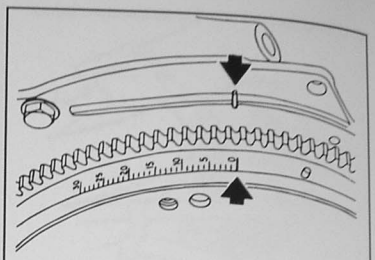


B210R756

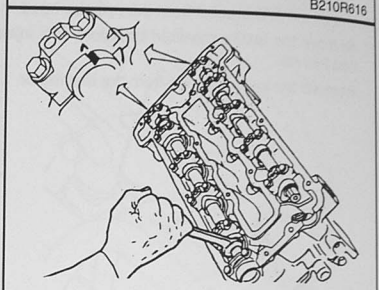
18 Remove the camshaft cover.

See To Remove under *"Camshaft cover - Seal"* on page 72.

19 Line up the timing marks on the crankshaft and camshafts, turning the engine in its normal direction of rotation.



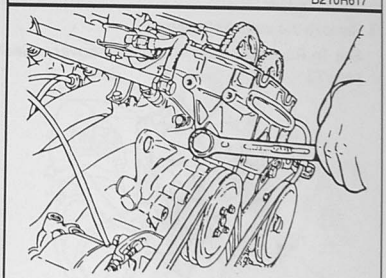
B210R616



B210R617

20 Remove the chain tensioner.

See To Remove under "*Chain tensioner*" on page 68.



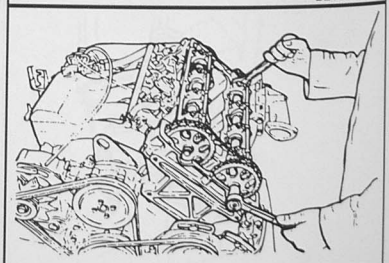
B210R707

21 Remove the camshaft sprockets.

Important

Keep the camshafts aligned with the timing marks when removing the sprockets.

Do not alter the position of the camshafts or crankshaft after the sprockets have been removed, as the independent rotation of one of the shafts could lead to valve damage.



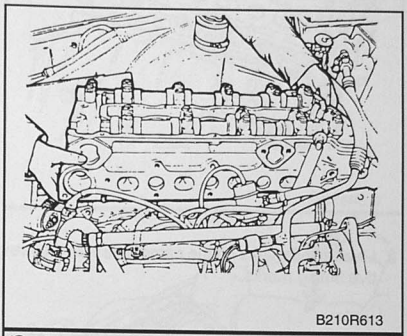
B210R611

22 Block up the engine to lift the cylinder head off the engine stay. Remove the cylinder head bolts. Remove any oil from the cylinder head.

23 Fit guide pin 83 92 128 in one of the boltholes.

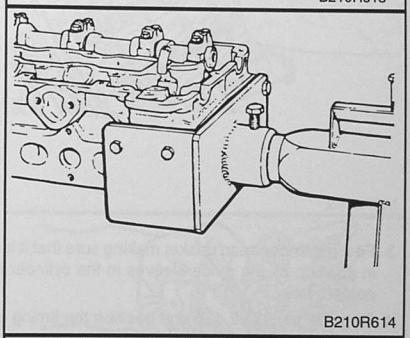
24 Carefully lift off the cylinder head, taking care not to damage the timing chain guides.

Fit the drain plug to the engine block and close the radiator drain cock.



B210R613

25 When working on the cylinder head use bracket 83 93 795.



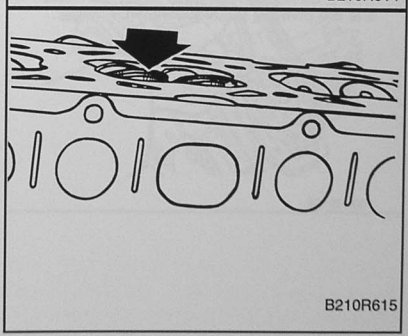
B210R614

Note

If the contact surfaces are not flat, the cylinder head must be machined. Contact your local Saab workshop for assistance with this work.

Important

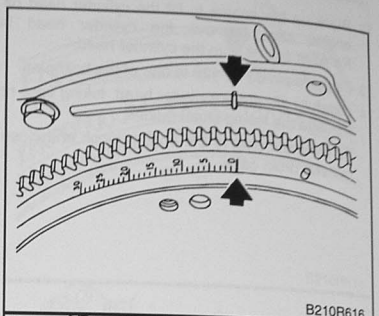
Never place the cylinder head on its contact surface when removed. Open valves protrude from this surface. Stand the cylinder head on wooden blocks.



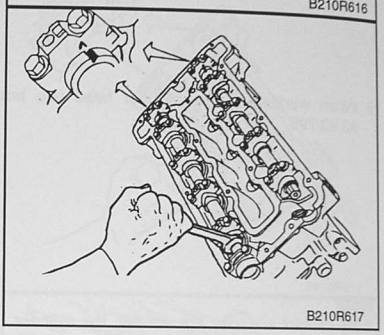
B210R615

To fit

1 Align the "0" mark on the crankshaft with the timing mark on the end plate.

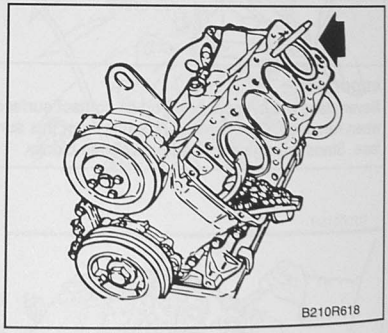

B210R616

2 Line up the marks on the camshafts with their respective timing marks.

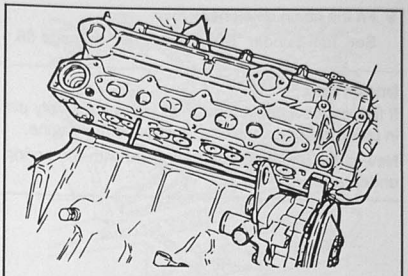

B210R617

3 Fit the cylinder head gasket making sure that it is held in position by the guide sleeves in the cylinder head contact face.

4 Fit guide pin 83 92 128 and position the timing chain and the pivoting guide as shown.


B210R618

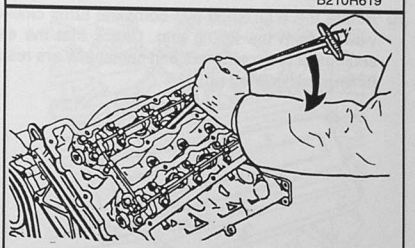
5 Fit the cylinder head. Use the guide pin 83 92 128 as a pivot for the cylinder head, which must be twisted slightly to enable it to pass the pivoting guide. Thereafter, the head will be guided by the sleeves.



B210R619

6 Fit the cylinder head bolts and tighten them to torque. Remember to fit the two M8 bolts in the cylinder head from beneath.

For tightening sequence and torque refer to *"Cylinder head - Tightening torque"* on page 71.

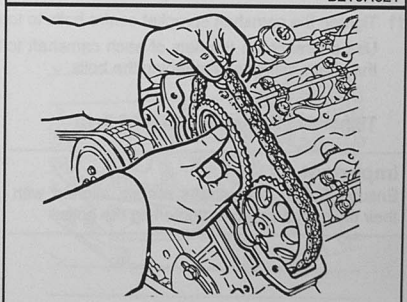


B210R621

7 Fit the camshaft sprockets.

Fit the sprocket on exhaust side first. Make sure that the chain between the crankshaft sprocket and camshaft sprocket is kept tight.

Next, fit the sprocket on the intake side. Keep the chain tight between the sprockets.

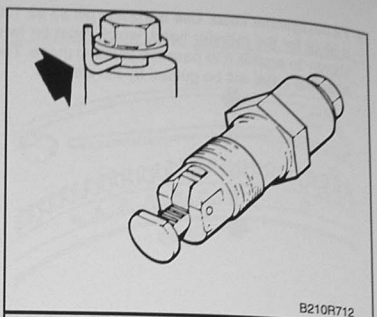


B210R706

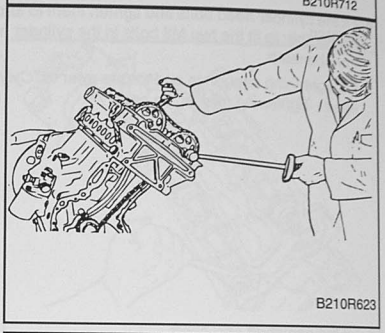
8 Lightly tighten the centre bolts securing the camshaft sprockets.

9 Fit the chain tensioner.
See To Fit under *"Chain tensioner"* on page 68.

Important
If fitting a new chain tensioner, leave the safety pin in place until the tensioner is fitted to the engine.
New chain tensioners are supplied with the spring under tension.


B210R712

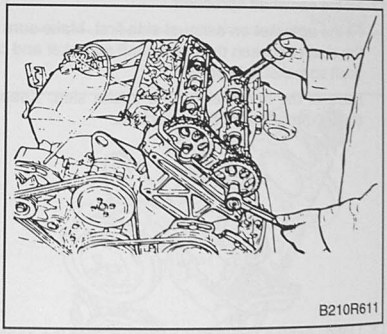
10 Rotate the crankshaft two complete turns clockwise viewed from the timing end. Check that the earlier settings of the crankshaft and camshafts are retained (timing marks lined up).


B210R623

11 Tighten the camshaft sprocket centre bolts to torque.
Use a wrench on the flats of each camshaft to hold the shafts still when tightening the bolts.

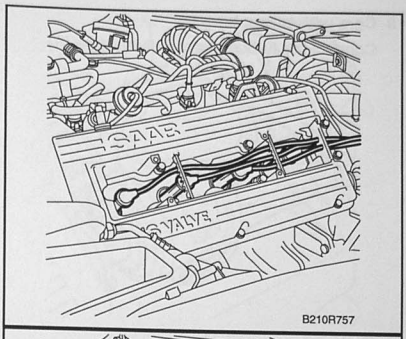
Tightening torque: 63 Nm (46.6 lb ft)

Important
Ensure that the camshafts remain aligned with their timing marks when tightening the bolts.


B210R611

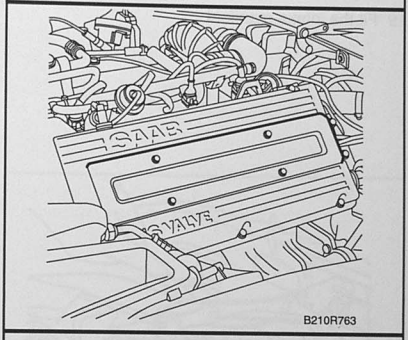
12 Fit the camshaft cover.
See To Fit under *"Camshaft cover - Seal"* on page 72.
Make sure that the seals and rubber plugs (half-moons) are properly seated in their grooves.
See *"Camshaft cover B202/B212 - Sealing"* on page 75 and *"Camshaft cover B202/B212 - Tightening sequence"* on page 75.

13 Fit the distributor cap, ignition cables and vacuum hose.



B210R757

14 Fit the inspection plate to the valve cover and tighten the four bolts.



B210R763

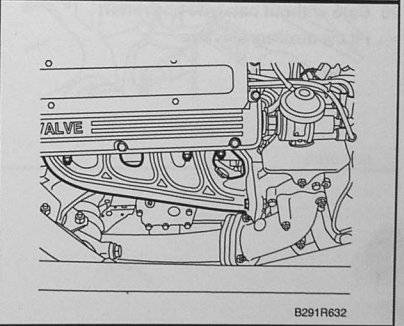
15 Fit the exhaust manifold.

See To Fit under *"Exhaust manifold, B202/B212 injection engines"* on page 140 or *"Exhaust manifold, B202 Turbo"* on page 141.

16 **Cars with turbocharger:**

Fit the turbocharger.

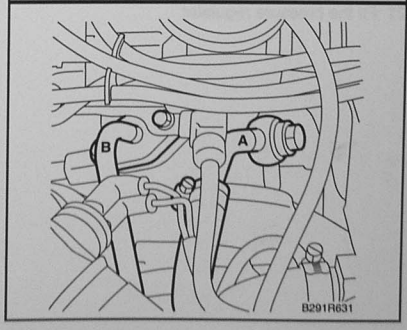
See To Fit under *"Turbocharger"* on page 178.



B291R632

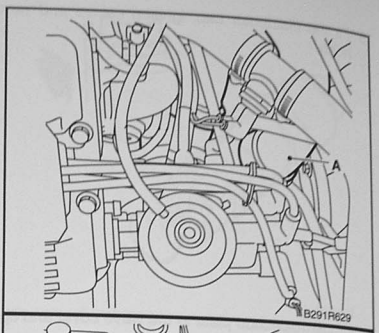
17 **Cars with turbocharger:**

Connect the oil delivery pipe (**B**), oil return pipe and coolant pipe (**A**) using new seals.

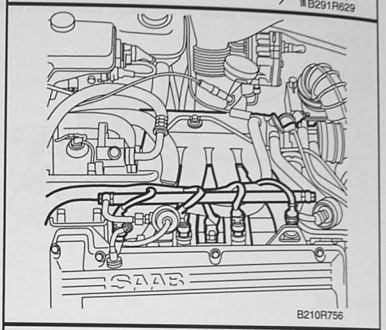


B291R631

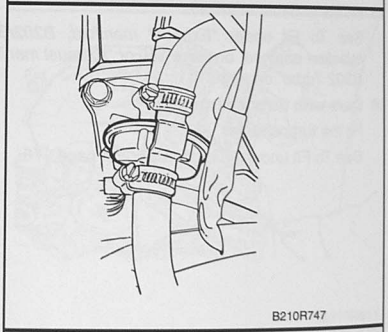
18 **Cars with turbocharger:**
Connect the turbocharger delivery pipe (A).



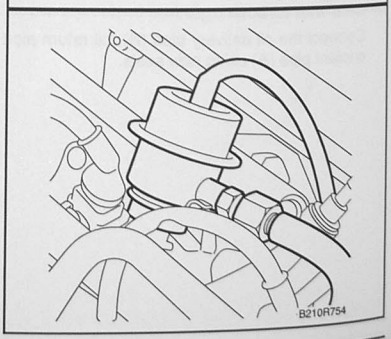
19 Fit the intake manifold.



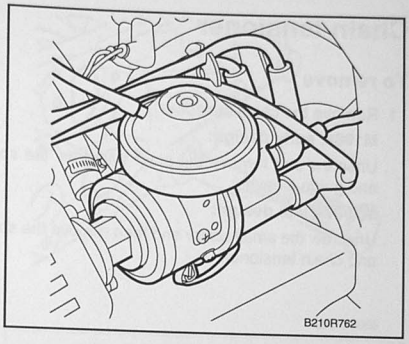
20 **Cars without catalytic converter:**
Fit the auxiliary air valve.



21 Fit the pressure regulator.



22 Connect the vacuum hose to the distributor.


B210R762

23 Make sure that the drain cock on the radiator and the drain plug on the engine block are shut and fill the system with coolant.

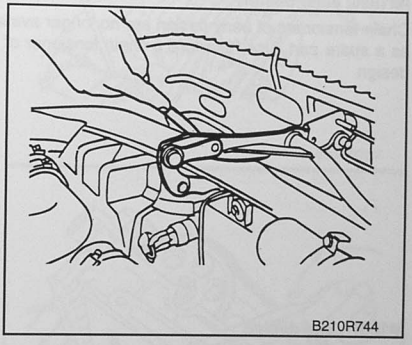
See To Fill under "*Coolant*" on page 154.

24 Fit and connect the battery.

25 Start the engine. Check that all functions are working properly and that no connections are leaking.

26 Fit the bonnet and connect windscreen washer hose.

See To Fit under "*Bonnet*" on page 469.


B210R744

Chain tensioner

To remove

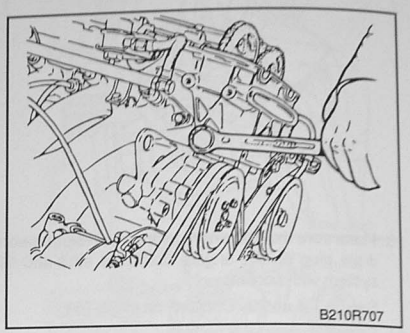
1 Remove the chain tensioner.

M1986, early design:

Unscrew and remove the plug. Withdraw the spring and guide sleeve.

M1987-, late design:

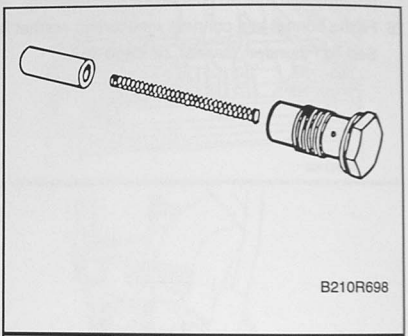
Unscrew the small screw and then remove the spring and chain tensioner.


B210R707

To fit

-M1986, early design

Chain tensioners of early design are no longer available as a spare part. Use therefore a chain tensioner of late design.

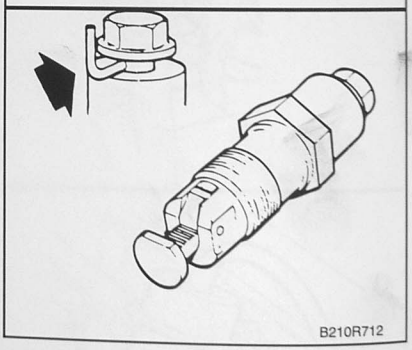

B210R698

M1987-, late design

Important

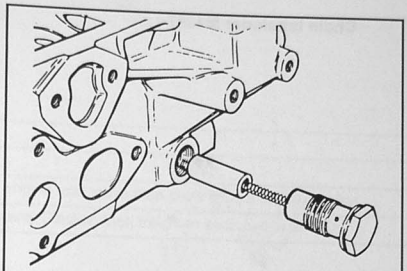
If fitting a new chain tensioner, leave the safety pin in place until the tensioner is fitted to the engine.

New chain tensioners are supplied with the spring under tension.


B210R712

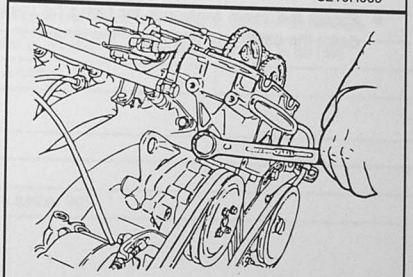
Chain tensioner -M1986:

- Cock the chain tensioner by fully depressing the piston and turning it until locked.



C210R669

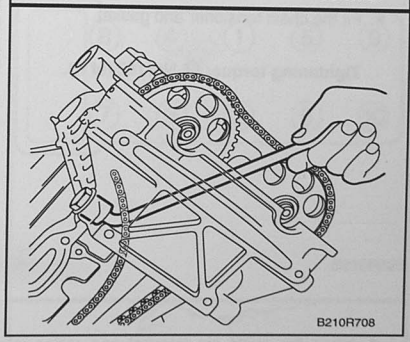
- Fit the chain tensioner with the piston under tension. Make sure that the gasket is in good condition and that the sealing surface is clean and free from burrs.



B210R707

- Release the chain tensioner by pressing the jointed chain guide towards the tensioner. Then press the jointed chain guide towards the chain to remove the slack.

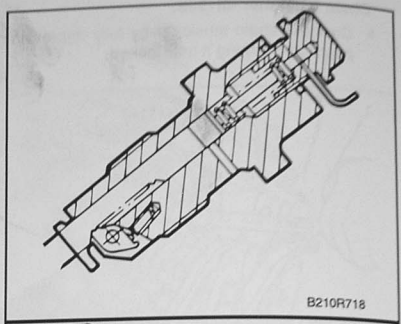
Important
Use a blunt instrument such as the handle of a small hammer. Never use a sharp instrument such as a screwdriver.



B210R708

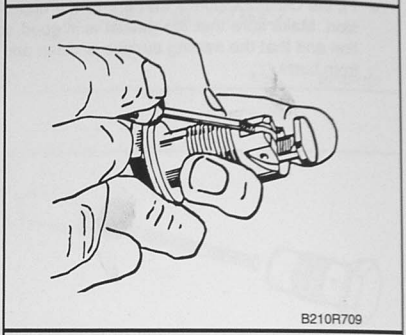
- Check that the chain tensioner maintains tension on the chain when the pressure on the chain guide is released and that the ratchet holds the guide tight against the chain. A limited amount of play will be present until the hydraulic pressure takes over once the engine is running.

Chain tensioner M1987-:



B210R718

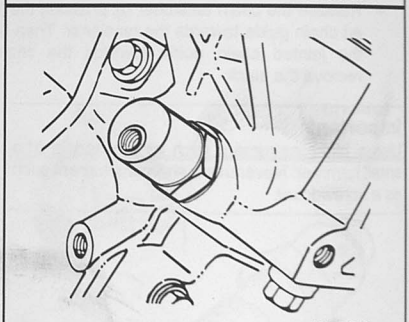
- Preset the chain tensioner for fitting by pressing down the catch and pushing in the tensioner.



B210R709

- Fit the chain tensioner and gasket.

  Tightening torque: 65 Nm (52 lbf ft).



B210R710

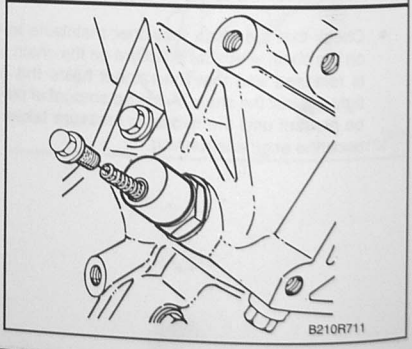
- Insert the guide pin (plastic) and spring into the hole in the chain tensioner.

  Fit the plug.

  Make sure that the O-ring is correctly seated.

  Tightening torque, plug: 22 Nm (16 lbf ft).

  As the plug is screwed in, the spring pushes out the tensioning arm and so tautens the chain.



B210R711

Cylinder head - Tightening torque

The specified tightening torques apply to oiled bolts and washers when changing the cylinder head gasket.

Tightening torque, 17 mm wrench

Stage I	Nm (lbf ft)	60 (44)
II	Nm (lbf ft)	95 (70)
III		Run the engine until warm then allow to cool for 30 minutes.
IV	Nm (lbf ft)	Retightening: Slacken then retighten each bolt to 95 (70)

Tightening torque, 15 mm wrench or TORX (-M1987)

Stage I	Nm (lbf ft)	60 (44)
II	Nm (lbf ft)	80 (59)
III		Run the engine until warm then allow to cool for 30 minutes.
IV	Nm (lbf ft)	Retightening: Slacken then retighten each bolt to 80 (59)
V		Tighten a further 90°

Tightening torque, 15 mm wrench or TORX (M1988-)

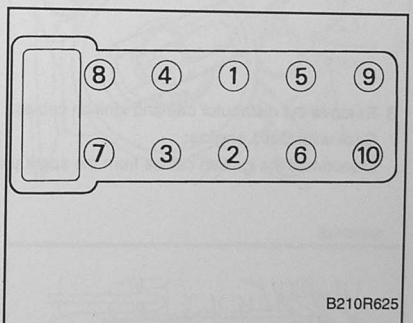
Stage I	Nm (lbf ft)	60 (44)
II	Nm (lbf ft)	80 (59)
III		Tighten a further 90°

Cylinder head - Retightening

(Applies to bolts with 15 mm and TORX M12 heads)

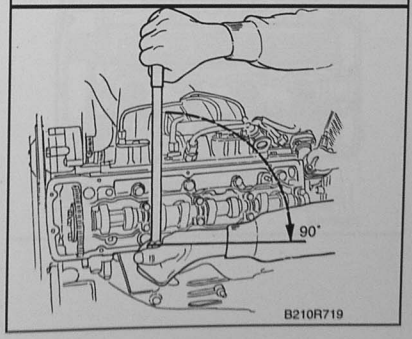
The cylinder head bolts must be retightened after refitting the cylinder head in conjunction with engine repairs (not applicable if a special cylinder head gasket eliminating the need for retightening is used). Run the engine until warm, allow to cool for 30 minutes then retighten.

1 In the sequence illustrated, slacken and then retighten each bolt to 80 Nm (59 lbf ft).



B210R625

2 In the same sequence, tighten the bolts a further 90° (1/4 turn) (applies also to special gaskets).



B210R719

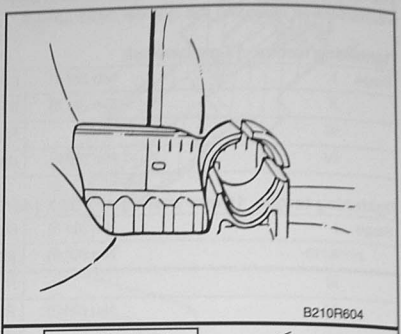
Stage 1: Tightening torque 80 Nm (59 lbf ft)

Stage 2: Tighten a further 90° (1/4 turn)

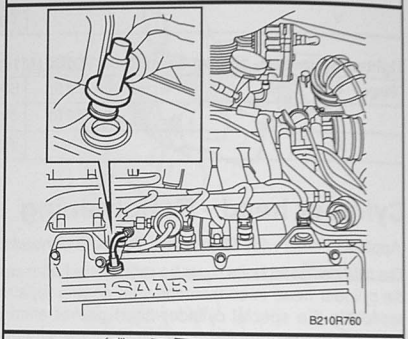
Camshaft cover - Seal

To remove

1 Turn the crankshaft in the engine's direction of rotation until the "0" mark on the flywheel is aligned with the timing mark.


B210R604

2 Detach the crankcase ventilation hoses.

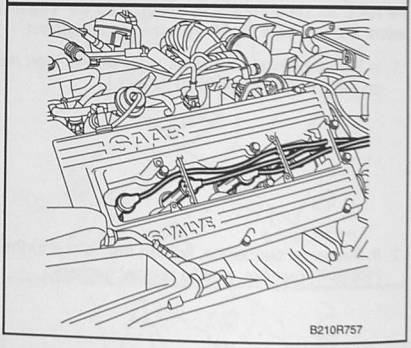


B210R760

3 Remove the distributor cap and ignition cables.

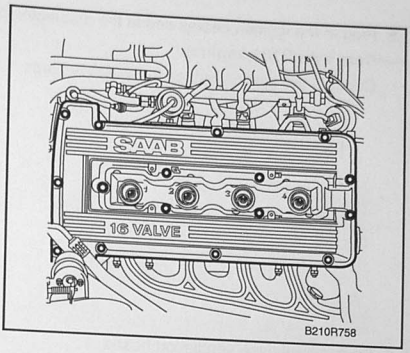
Cars with B201 engine:

Disconnect the ignition cables from the spark plugs.



B210R757

4 Remove the bolts and lift off the cover.



B210R758

5 Remove the seal from the camshaft cover.

To fit

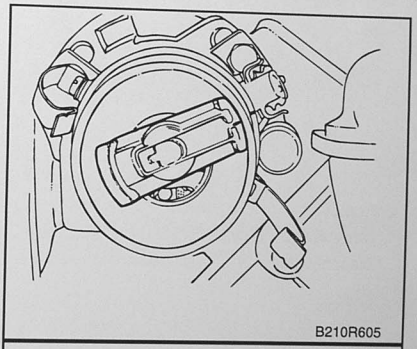
1 Make sure that the camshaft and crankshaft are positioned so that cylinder 1 is at top dead centre.

2 Fit the seal into the groove in the camshaft cover.

See *"Camshaft cover B202/B212 - Sealing"* on page 75.

3 **Cars with B201 engine:**

Turn the distributor arm until aligned with the mark on the distributor housing.


B210R605

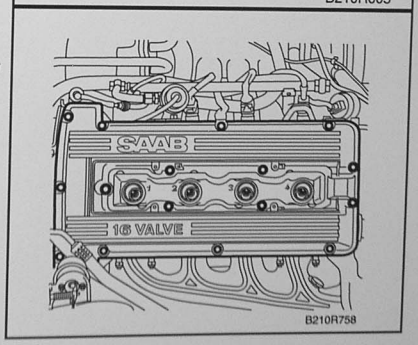
4 Fit the camshaft cover.

Cars with B202/B212 engine:

See *"Camshaft cover B202/B212 - Tightening sequence"* on page 75.

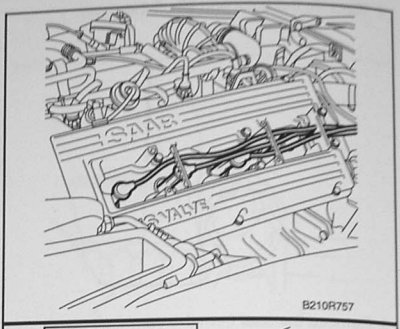
Cars with B201 engine:

Tightening torque: 5 Nm (3.7 lbf ft)

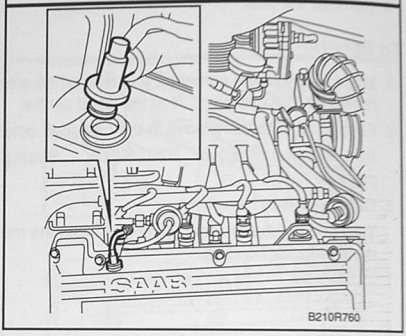


B210R758

5 Plug in the ignition cables and fit the distributor cap.
Cars with B201 engine:
Connect the ignition cables to the spark plugs.



6 Fit the crankcase ventilation hoses.

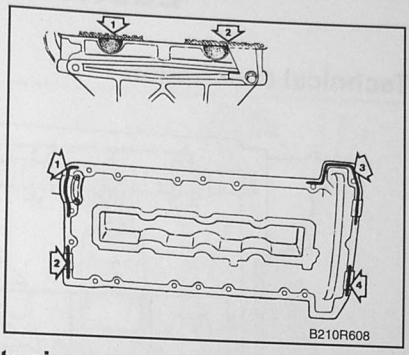


Camshaft cover B202/B212 - Sealing

The sealing plugs (3 plugs) and distributor grommet are susceptible to oil leakage. As well as the camshaft cover gasket, silicon sealant should be applied to these areas.

In case of oil leaks or if the camshaft cover has been removed, seal the surfaces adjacent to the sealing plugs and distributor with silicon flange sealant 87 81 841.

Apply a bead of silicon sealant that is about 4.5 mm wide to the sealing surface of the cylinder head against the camshaft cover. Remove any traces of old silicon sealant before apply the new sealant.

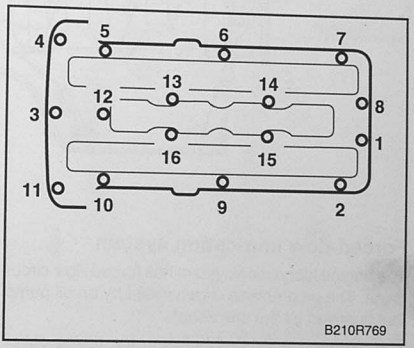


B210R608

Camshaft cover B202/B212 - Tightening sequence

Tighten the camshaft cover bolts as illustrated to avoid dislodging the seal, which could lead to oil leaks.

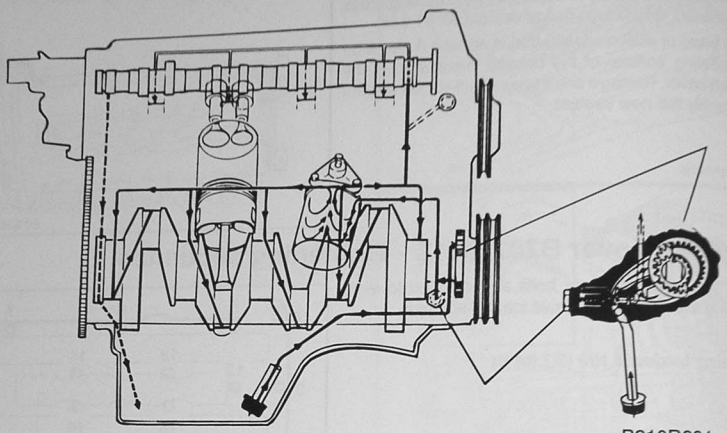
Tightening torque: 5 Nm (3.7 lbf ft)



B210R769

Lubrication system

Technical description



B210R601

Forced-flow lubrication system

The engine lubrication system has forced-flow circulation. The oil pressure is generated by an oil pump that is driven by the crankshaft.

The oil pump is located between the timing cover and the crankshaft pulley and is driven by the crankshaft.

Engine oil is fed to all lubrication points in the engine. A pressure-limiting valve keeps the oil pressure constant and directs excess oil back to the inlet side of the pump. All oil is passed through an oil filter that removes unwanted particles.

Checking the engine oil level

Always run the engine until warm and then leave the car to stand for a short while before checking the engine oil level. This ensures correct measurement. Remove the dipstick. The oil level should lie between the markings on the dipstick. The distance between the upper and lower marking is equivalent to 1 litre of oil.

Engine	lower	upper	max.
B201	2.7 l	3.7 l	3.8 l
B202/B212	2.9 l	3.9 l	4.0 l

Important

It is not necessary to keep the oil level topped up to the upper marking. Do not top up the oil unless the level is lower than midway between the two markings.

If the engine oil is dark in colour it does not necessarily mean that it must be changed. The engine oil contains "detergents" that dissolve deposits and keep these suspended in the oil where they are harmless.

Oil pressure sensor

An engine oil pressure sensor monitors oil pressure in the engine in case the pressure drops too low. The sensor is located on the oil filter adapter.

The sensor is connected to an indicator light on the instrument display panel, which lights up if there is insufficient engine oil pressure.

Important

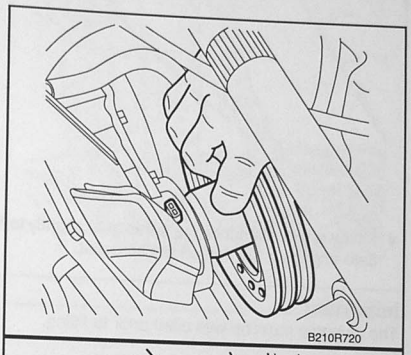
Apply thread sealant to the thread of the new sensor before fitting it.

Oil pump

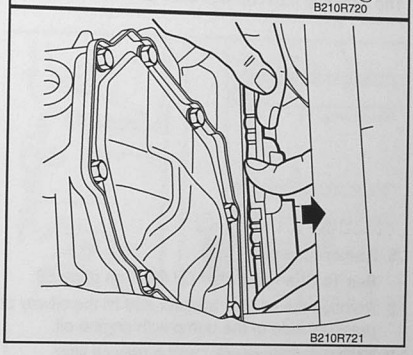
To remove

1 Clean the area around the oil pump.

2 Immobilize the crankshaft by attaching flywheel locking attachment 83 92 987 to the flywheel ring gear. Remove the retaining bolts from the belt pulley and remove the pulley from the crankshaft.


B210R720

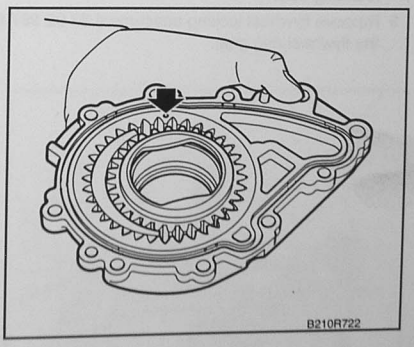
3 Undo the oil pump retaining bolts and remove the pump.


B210R721

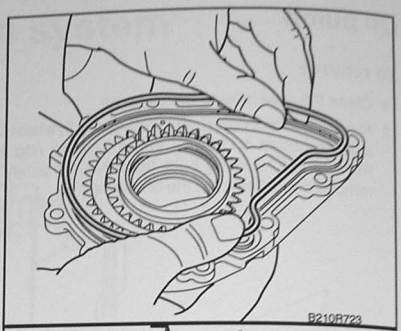
To fit

1 Oil the pump gears.

2 Fit the gears with the mark on the ring gear visible.

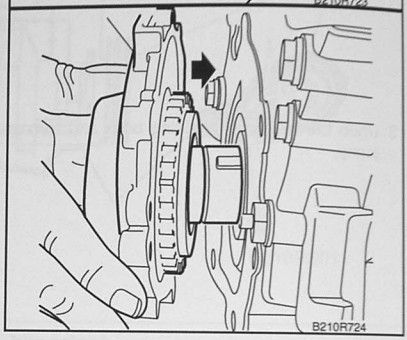

B210R722

3 Fit a new seal in the groove in the pump housing and make sure that the locating pin is fitted.


B210R723

4 Fit the pump. Withdraw the pump gear slightly to facilitate engaging the dog on the sprocket.

Important
The oil pump must be well oiled prior to fitting.


B210R724

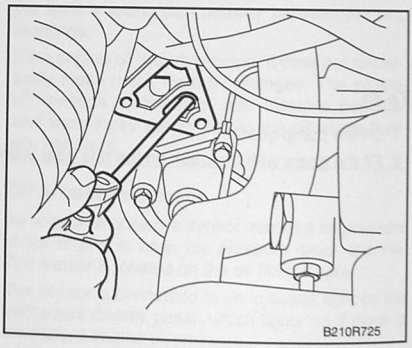
5 Remove the oil filter.
See To Change under *"Oil filter"* on page 80.

6 Remove the oil filter adapter and fill the oilway on the pressure side of the pump with engine oil.

7 Fit the oil filter adapter and a new oil filter.
See To Change under *"Oil filter"* on page 80.

8 Refit the belt pulley to the crankshaft and fit the pulley retaining bolts.

9 Remove flywheel locking attachment 83 92 987 from the flywheel ring gear.


B210R725

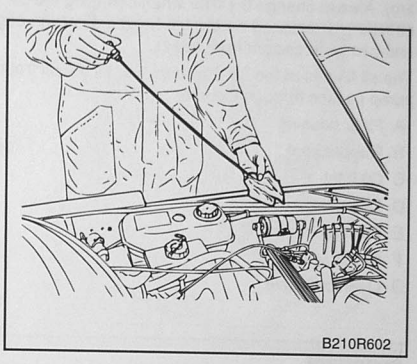
Engine oil

Change the engine oil every 6 000 miles (10 000 km) or once a year.

Change the oil filter when you change the engine oil.

See To Change under *"Oil filter"* on page 80.

If the engine is warm the oil is easier to drain.


B210R602

Important
ENVIRONMENTALLY HAZARDOUS

Never pour spent oil out onto the ground or down the drain. Collect the oil and dispose of it in a suitable way (disposal unit).

Important
Do not mistake the gearbox drain plug for the engine oil drain plug.

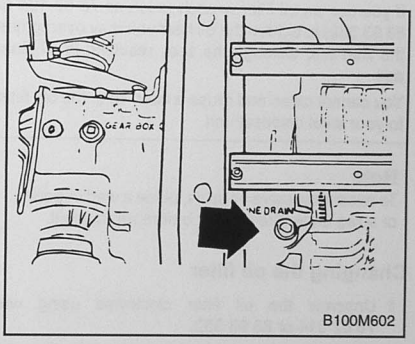
To drain

1 The engine oil drain plug is located at the front of the engine on the underside. It can be accessed through a hole in the base plate.

2 Place a suitable receptacle under the drain plug before unscrewing it.

If the drain plug is damaged, use multi-grip pliers or a chisel to facilitate removal

If the oil is approximately level with the upper mark on the dipstick, about 3 litres of oil will drain from the engine. If level with the lower mark, 2 litres of oil will drain out.



B100M602

To fill

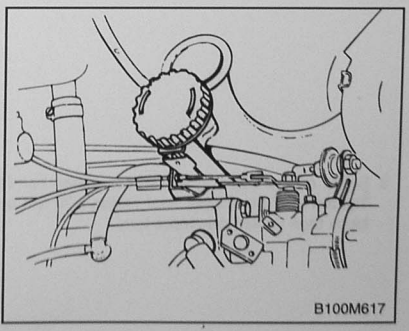
1 Change the copper washer if it is scratched or damaged.

2 Wipe away dirt from the drain plug and the surrounding area and tighten the plug properly. Change the drain plug if it is deformed.

3 Top up with new oil.

-M1982: The oil filler orifice is located on the camshaft cover.

M1983-: Refer to the illustration.


B100M617

Engine	lower	upper	max.
B201	2.7 l	3.7 l	3.8 l
B202/B212	2.9 l	3.9 l	4.0 l

For correct oil grades and viscosities, refer to *"Lubrication chart, lubricants"* on page 31.

4 Start the engine so that the oil circulates through the new oil filter and then turn the engine off.

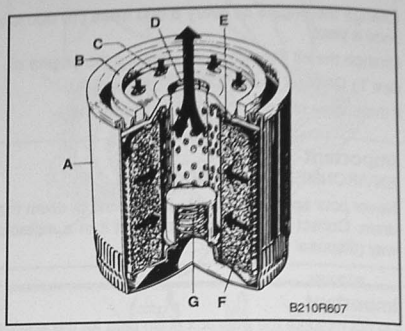
5 Check the oil level on the engine oil dipstick and top up as necessary.

Oil filter

The oil filter should be changed every 6 000 miles (10 000 km). Always change the filter when changing the oil. The oil filter is positioned on the left-hand side of the engine and can be accessed from above.

The oil filter is of the full-flow type, i.e. all the oil from the pump passes through the filter.

A Filter housing
B Rubber seal
C Oil inlet
D Oil outlet
E Filter element
F Check valve
G Overflow valve



Important

Tighten the oil filter by hand.

If you use an oil filter wrench (such as 78 62 104 or 83 93 332) to tighten the oil filter you may overtighten the filter and dislodge the seal, resulting in oil leakage.

You cannot clean and reuse a filter. Take the old filter to your local disposal unit.

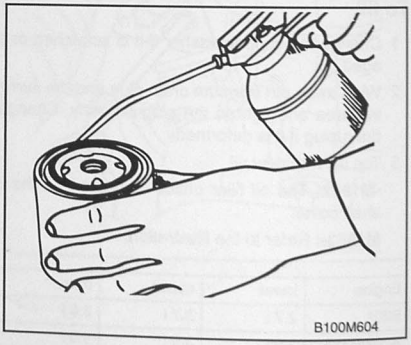
Note

To avoid excessive oil spills, place a wad of paper or a rag under the oil filter before removing it.

Changing the oil filter

1 Unscrew the oil filter clockwise using wrench 78 62 014 or 83 93 332.

2 Wipe the area around the hole in the engine block. Apply engine oil to the rubber seal for new oil filter.



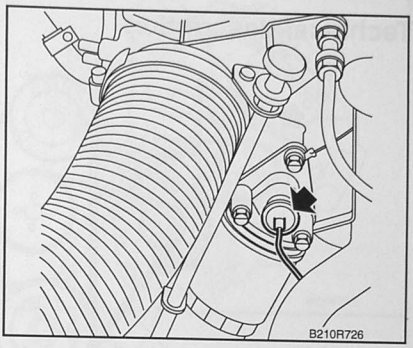
3 Screw on the filter. Tighten no more than hand tight. Tighten until the rubber seal mates with the engine block then tighten one more turn.

Oil pressure sensor

The oil pressure sensor is located on the oil filter adapter.

To remove

1 Unplug the sensor connector.



2 Unscrew the oil pressure sensor.

To fit

Important
Apply thread sealant to the thread prior to fitting.

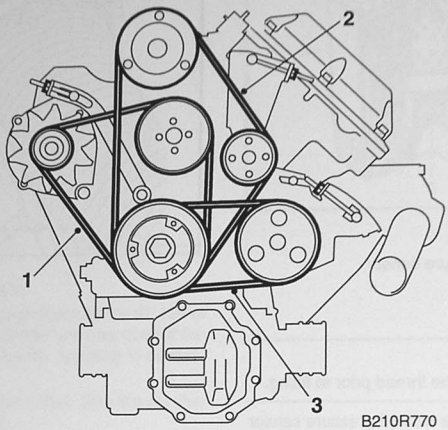
1 Thread and tighten the new oil pressure sensor.

Tightening torque: 13.5 Nm (10 lbf ft)

2 Plug in the sensor connector.

Drive belts

Technical description



B210R770

The coolant pump and alternator are driven by the crankshaft via one or a pair of V-belts (**1**).

The power steering servo pump (**3**) and A/C compressor (**2**) are driven by V-belts powered by pulleys on the crankshaft.

Drive belt for A/C compressor

To remove

1 **Cars with B201 engine:**

Slacken the adjustment and tensioning screws.

Cars with B202/B212 engine:

Slacken the tensioner screw (**B**).

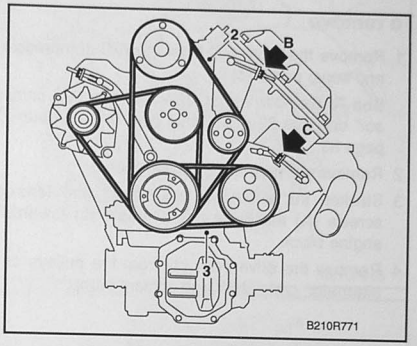
2 **Cars with B201 engine:**

Move aside the compressor to release the drive belt tension.

Cars with B202/B212 engine:

Turn tensioner to release the drive belt tension.

3 Remove the drive belt (**2**) from the belt pulleys on the crankshaft and compressor (**B201**) and tensioner (**B202/B212**).



To fit

1 Fit the drive belt over the pulleys.

2 Adjust the compressor or tensioner until you can press the drive belt about 15 mm with your thumb on the length between the crankshaft and compressor pulleys.

3 Tighten the adjustment and tensioning screws (**B**).

For the correct belt tension refer to *"Belt tension, drive belts"* on page 85.

Drive belt for servo pump

To remove

1 Remove the A/C compressor drive belt (**2**).

See To Remove under *"Drive belt for A/C compressor"* on page 83.

2 Slacken the adjustment and tensioning screws (**C**) for the servo pump to release the tension in the drive belt.

3 Remove the drive belt (**3**) from the pulleys on the crankshaft and servo pump.

To fit

1 Fit the drive belt (**3**) over the pulleys.

2 Adjust the servo pump or tensioner until you can press the drive belt about 15 mm with your thumb on the length between the crankshaft and pump pulleys.

3 Fit and tension the A/C compressor drive belt.

See To Fit under *"Drive belt for A/C compressor"* on page 83.

For the correct belt tension refer to *"Belt tension, drive belts"* on page 85.

Drive belt for alternator

To remove

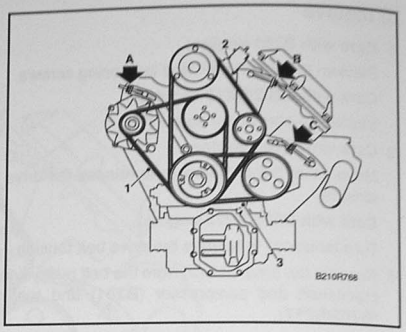
1 Remove the drive belt from the A/C compressor (**2**) and servo pump (**3**).

See To Remove under *"Drive belt for A/C compressor"* on page 83 and *"Drive belt for servo pump"* on page 83.

2 Remove the negative (-) battery lead.

3 Slacken the alternator adjustment and tensioning screws (**A**) and twist the alternator in towards the engine block.

4 Remove the drive belts (**1**) from the pulleys on the alternator, crankshaft and coolant pump.



To fit

1 Fit the drive belt(s) (**1**) over the pulleys.

2 Angle the alternator out from the engine block using a lever to tension the belt until you can press the drive belts about 15 mm with your thumb midway between pulleys on the longest length.

3 Rotate the alternator on the alternator bracket to avoid loading the mountings.

It is easier if you tighten the adjustment link screw slightly so that the drive belt is tensioned.

4 Tighten the alternator adjustment and tensioning screws (**A**).

5 Connect the negative (-) battery lead.

6 Fit and tension the drive belts for the servo pump (**3**) and compressor (**2**).

See To Fit under *"Drive belt for servo pump"* on page 83 and *"Drive belt for A/C compressor"* on page 83.

For the correct belt tension refer to *"Belt tension, drive belts"* on page 85.

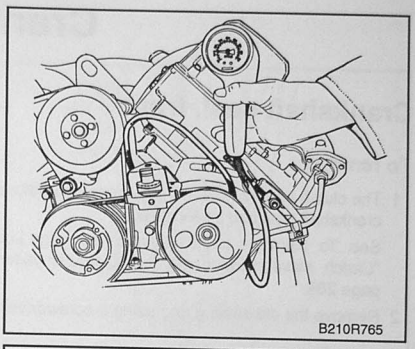
Belt tension, drive belts

A drive belt quickly looses its tension during operation. If drive belt tension drops below a certain limit the belt will begin to slip. It will then wear very quickly and soon break.

To prevent the tension of the drive belts from dropping to this limit, risking operational problems, it is vital that the drive belts, whether new or refitted, are tensioned correctly.

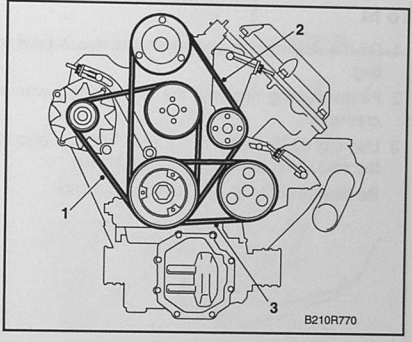
Use belt tension gauge 83 93 985 or equivalent.

Measure the tension of the belts when they are cold since their tension is then lower.


B210R765

To measure

- Fix the gauge so that the legs are astride the belt.
- Pump to increase the pressure and read the value when the red light starts to shine.



B210R770

Drive belt, coolant pump - alternator (1)

		Single belt	Double belt	
			Measurement of one belt	Measurement of both belts
Lower limit	N (lbf)	265 (60)	200 (45)	420 (95)
Adjustment	N (lbf)	355 ± 20 (80 ± 5)	310 ± 20 (70 ± 5)	645 ± 20 (145 ± 5)
New belt	N (lbf)	535 ± 45 (120 ± 10)	535 ± 45 (120 ± 10)	

Drive belt, A/C compressor (2)

Lower limit	N (lbf)	245 (55)
Adjustment	N (lbf)	355 ± 20 (80 ± 5)
New belt	N (lbf)	535 ± 45 (120 ± 10)

Drive belt, steering servo pump (3)

Lower limit	N (lbf)	220 (50)
Adjustment	N (lbf)	310 ± 20 (70 ± 5)
New belt	N (lbf)	445 ± 45 (100 ± 10)

Crankshaft

Crankshaft seal, front

To remove

1 The clutch and flywheel must be removed before the crankshaft seal can be removed.

See To Remove under *"Clutch"* on page 283 or *"Clutch, slave cylinder with sprung rubber gaiter"* on page 288.

2 Remove the old sealing ring using a screwdriver.

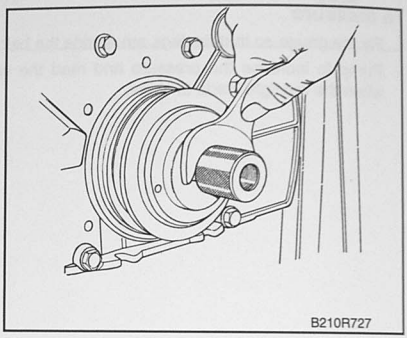
To fit

1 Oil the sealing ring and sealing surfaces prior to fitting.

2 Fit the sealing ring with the spring ring towards the crankshaft.

3 Use tool 83 92 540 to fit the seal. You can also tap in the seal using a rubber mallet or similar.

Be careful not to tip and damage the seal.

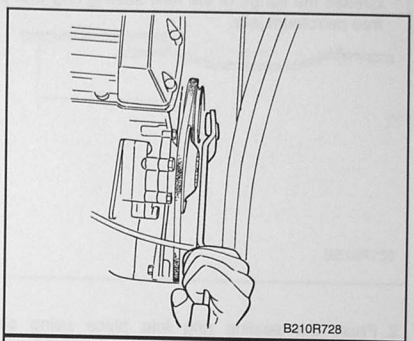


Crankshaft seal, rear

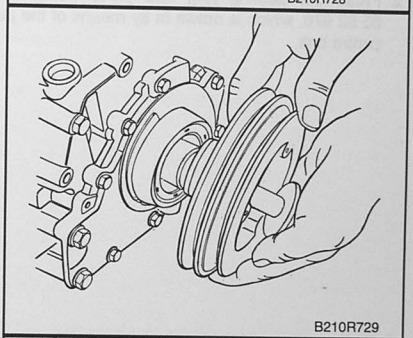
To remove

1 Remove the drive belt(s).

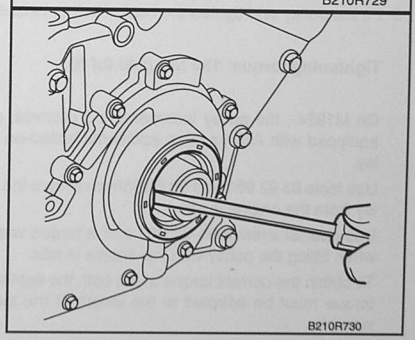
See To Remove under *"Drive belt for A/C compressor"* on page 83, *"Drive belt for servo pump"* on page 83 and *"Drive belt for alternator"* on page 84.


B210R728

2 Remove the belt pulley retaining bolts (immobilize the crankshaft with flywheel locking attachment 83 92 987) and remove the belt pulley.

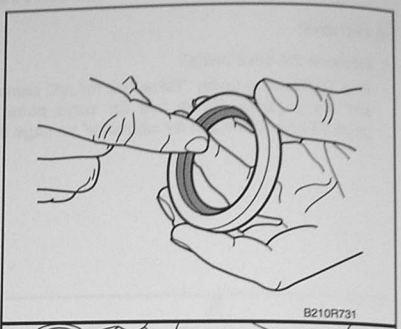

B210R729

3 Remove the sealing ring using a screwdriver.

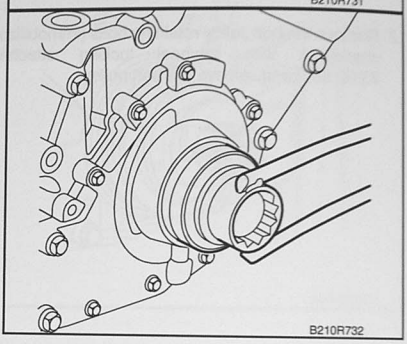

B210R730

To fit

1 Grease the flange of the new sealing ring with acid-free petroleum jelly.


B210R731

2 Press the sealing ring into place using sleeve 83 92 979, which is drawn in by means of the pulley centre bolt.


B210R732

3 Fit the pulley and tighten the centre bolt to torque.

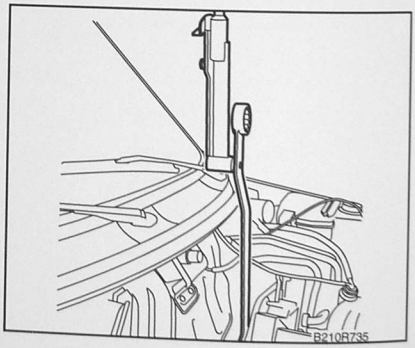
Tightening torque: 190 Nm (140 lbf ft)

On M1984-, the pulley incorporates 3 grooves; cars equipped with A/C have an additional bolted-on pulley.

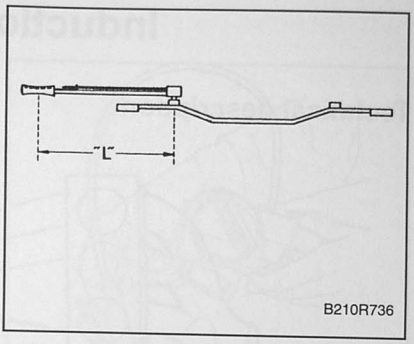
Use tools 83 92 961 and 83 93 639 to remove the pulley from the engine in situ.

Use special wrench 83 92 961 and a torque wrench when fitting the pulley with the engine in situ.

To obtain the correct torque at the bolt, the tightening torque must be adapted to the length of the torque wrench.


B210R735

Torque wrench length	Tightening torque
"L" = 300 mm (11.81 in)	55 Nm (40 lbf ft)
"L" = 400 mm (15.75 in)	70 Nm (52 lbf ft)
"L" = 500 mm (19.69 in)	80 Nm (59 lbf ft)

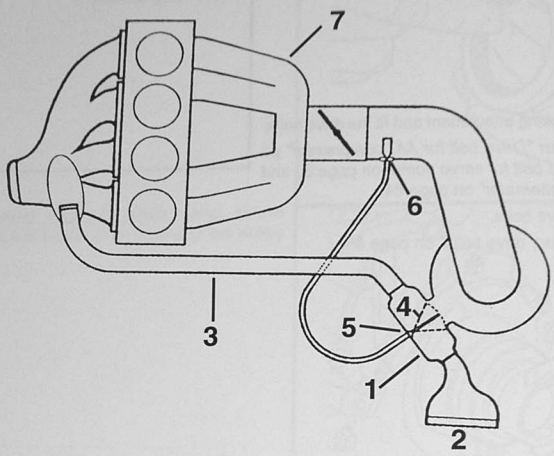


4 Remove the locking attachment and fit the drive belts.
See To Fit under "*Drive belt for A/C compressor*" på sidan 83, "*Drive belt for servo pump*" on page 83 and "*Drive belt for alternator*" on page 84.

5 Tension the drive belts.
See "*Belt tension, drive belts*" on page 85.

Induction system

Technical description



B232R601

Induction system -M1985

1 Intake air damper
2 Cold air inlet
3 Preheated air inlet
4 Damper
5 Thermostat body
6 Bimetal element
7 Intake manifold

Air cleaner

The air cleaner, mounted on the left-hand wheel housing, has two functions: in addition to cleaning the induction air it also dampens the noise made by the air being drawn in. The filter element, made of a special grade of paper, must not be washed or moistened. The only servicing the filter element requires is cleaning with compressed air or changing.

In cars with carburettor engines, a hose connects the air cleaner and the carburettor.

Cars with injection engines have an air mass meter mounted on top of the air cleaner and a hose to the throttle body.

Preheating (certain cars only)

Inside the air cleaner intake is a thermostatically controlled damper which regulates preheating in relation to the outside temperature.

The damper housing has two inlets: one for cold air and one for preheated air. The preheated air is led via a hose from a cowl on the exhaust manifold.

The damper is actuated by a thermostat in the cold air inlet. This thermostat measures the temperature of the outside air.

Mass air flow sensor

The mass air flow sensor is located between the air filter element and the intake manifold.

The mass air flow sensor consists of an aluminium housing (M1989- plastic housing) and a metering duct. The duct houses a centred tube containing a platinum filament, a so-called hot wire. This filament is protected on inlet and outlet sides by a wire mesh.

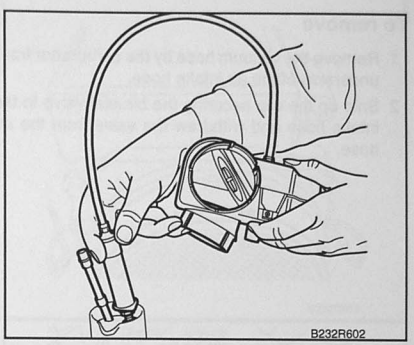
Air preheating -M1985

Checking operation

A rough check of the function of the damper can be made by noting its position in relation to the air temperature.

- At temperatures below +8°C (Turbo -5°C), the engine is supplied with preheated air only.
- At temperatures between +8°C and +18°C (Turbo -5°C and +5°C) the damper moves between preheated and cold air positions.
- At temperatures above +18°C (Turbo +5°C) the engine is supplied with cold air only.

For a more accurate check, remove the damper housing complete with cable and thermostat. Immerse the thermostat in water at the appropriate temperature and check the position of the damper.

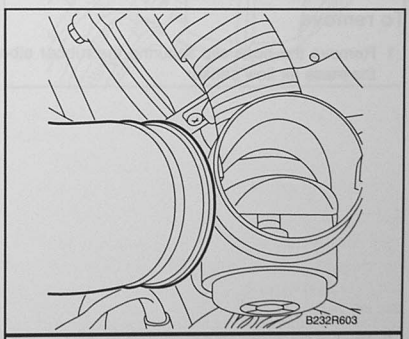


Important
When performing this check, bend the cable so that it adopts roughly the same position as in the car.

Air preheating M1986-

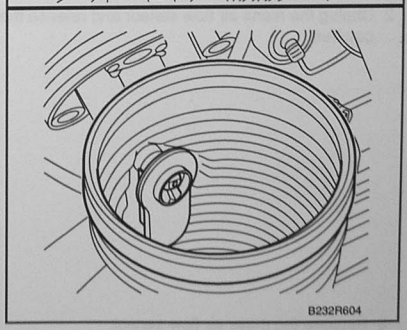
Checking operation

1 Remove the damper housing from the air cleaner so that you can see the valve damper.



2 Remove the fitting between the intake hose and the carburettor so that you can see the bimetal valve.

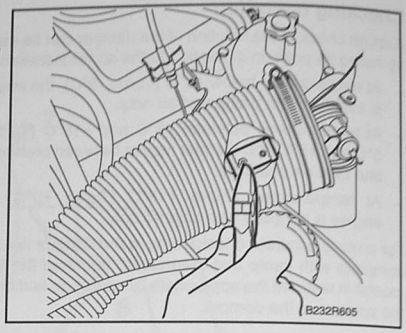
3 Start the engine and pass air warmer than + 30°C (86°F) over the bimetal valve using an electric fan heater, for example. Check that the valve damper assumes its "cold air" position. Then, allow the bimetal valve to draw in air below +20°C (68°C) and check that the valve damper assumes its "preheated air" position.



Bimetal valve

To remove

1 Remove the vacuum hose by the carburettor from the underside of the air intake hose.
2 Snip up the clip securing the bimetal valve to the air intake hose and withdraw the valve from the intake hose.



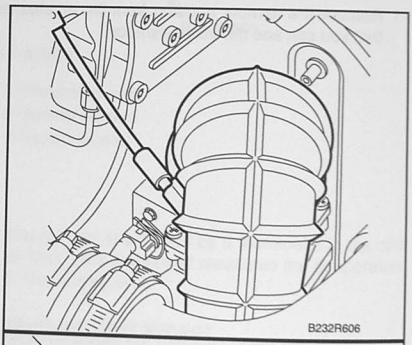
To fit

1 Insert the valve into the intake hose.
2 Fit a new clip to secure the bimetal valve to the intake hose.
3 Fit the vacuum hose.

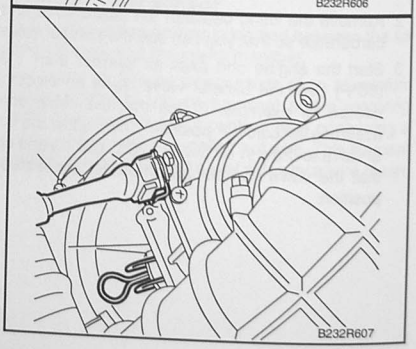
Mass air flow sensor

To remove

1 Remove the hose clip securing the rubber elbow to the mass air flow sensor.



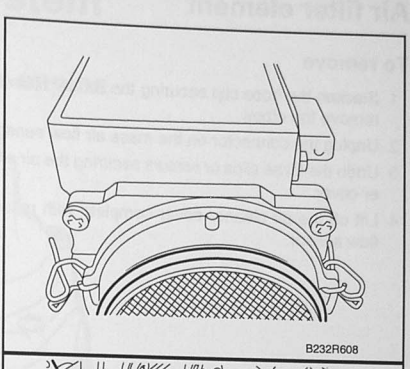
2 Unplug the mass air flow sensor and release the two catches.



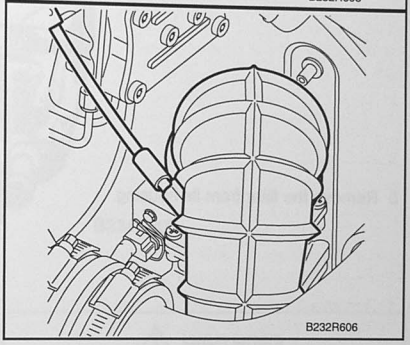
3 Remove the mass air flow sensor.

To fit

1 Fit the mass air flow sensor so that the guide lug on the sensor and the recess in the air cleaner cover are aligned.
Take note of the position of the O-ring.


B232R608

2 Tighten the hose clip securing the rubber elbow.

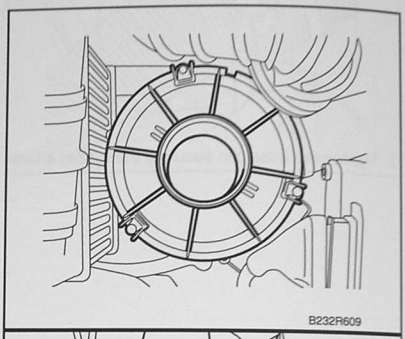

B232R606

3 Plug in the connector.

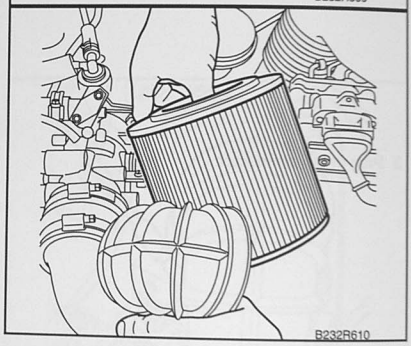
Air filter element

To remove

1 Slacken the hose clip securing the rubber elbow and remove the elbow.
2 Unplug the connector on the mass air flow sensor.
3 Undo the three clips or screws securing the air cleaner cover.
4 Lift off the air cleaner cover complete with mass air flow sensor.


B232R609

5 Remove the filter from its housing.

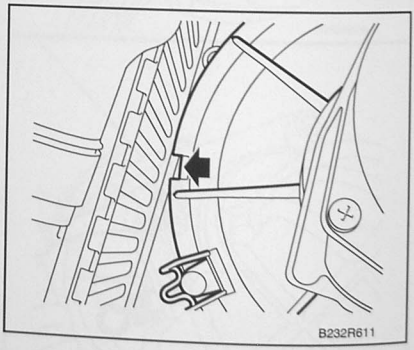

B232R610

6 Clean the filter housing.

To fit

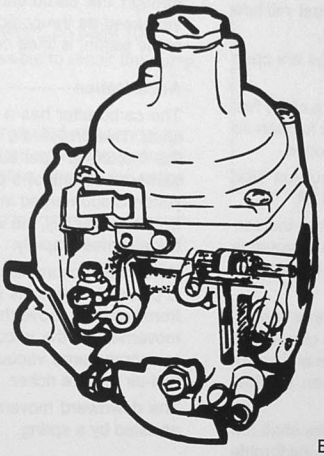
When fitting the cover, ensure that the recess in the cover is aligned with the lug on the air cleaner housing.

Refit the parts in the reverse order.


B232R611

Fuel system

Technical description, carburettor engine



B234R603

The fuel pump draws fuel from the tank via fuel lines and then pumps this to the carburettor. The carburettor adjusts the amount of air and fuel in relation to the engine load providing each cylinder with the optimal fuel-air mixture.

The carburettor is made of alloy metal and has three main sections: **vacuum chamber, carburettor body** and **float chamber**.

The **vacuum chamber** is the upper part of the carburettor. At the bottom of the vacuum chamber is a **diaphragm** to which a piston is attached. The vacuum chamber is connected to the carburettor's intake duct via two ducts in the piston.

The **carburettor body**, the middle part of the carburettor, contains the fuel jet. The size of the jet orifice is varied by a conical needle that is attached to the piston. The pressure in the carburettor body determines the position of the needle. The piston also regulates the provision of air.

The engine is thus always provided with the correct amount of fuel and air.

The lower section of the carburettor is the **float chamber**. Here, a float opens and closes the float valve by means of a lug on the float arm.

⚠ WARNING

Important considerations when working on the fuel system.

- Ensure proper ventilation! If approved extraction equipment for fuel vapours is available, use it.
- Wear suitable gloves. Prolonged contact with fuel can cause skin irritations.
- Keep a BE class fire extinguisher at hand!
- Beware of the danger of arcing such as when breaking a circuit or in the event of a short circuit.
- Smoking is absolutely forbidden!

Choke and fast idle

The carburettor has a choke to facilitate starting when the engine is cold.

The choke consists of a disc that, when the choke shaft is rotated, successively opens four fuel holes of different sizes as well as an emulsion tube. In addition, a duct permitting the choke fuel mixture into the carburettor body is opened.

Chock pulled out fully: All four fuel holes are open and the emulsion tube is fully open.

Choke pulled out part way: One or more of the fuel holes is blanked off. The emulsion tube is open so long as one or more of the fuel holes is open.

Chock pushed in: The fuel holes, emulsion tube and choke fuel mixture duct are blocked off.

Emulsion air is drawn in via an orifice from the carburettor body. The purpose of this air is to improve the distribution of the choke fuel mixture to the cylinders.

The carburettor has a special float chamber ventilation valve. When the throttle butterfly is closed, the chamber is vented directly through a hole and spigot in the carburettor. When the throttle is open, the float chamber is vented via the air cleaner.

A cam is mounted on the end of the choke shaft (on twin carburettors, the cam is mounted on the throttle arm). This increases the idling speed when the engine is started and warmed up.

The choke cable in cars with a single carburettor is attached to the cam. On cars with twin carburettors, the cam on the rear carburettor is linked to the front carburettor by a rod to which the cable is attached.

Idling

The carburettor does not have a special **idling system**. When the engine is idling, the vacuum in the vacuum chamber is weak and the distance between the piston and the bridge small. The thickest part of the needle is thus inserted into the jet and only a small amount of fuel, that required for idling, is drawn in by the engine. The fuel-air mixture can be regulated with the fuel needle by adjusting its vertical position. Idling speed is adjusted with a screw that acts as a stop for the throttle shaft. On twin carburettors there is an adjusting screw with which to synchronise the carburettors.

The carburettor has a temperature compensation device to maintain a constant fuel-air mixture, irrespective of engine temperature. This device consists of an air valve that is regulated by a bimetal spring. The valve starts to open when the temperature of the carburettor is approximately +10 °C. This additional air is led via a duct that exits ahead of the pistons.

Normal driving

When the throttle is opened, the negative pressure in the vacuum chamber is equal to that in the intake manifold. Since the pressure on the bottom of the diaphragm is equal to atmospheric pressure, the piston is lifted increasing the amount of air passing through the carburettor. The fuel quantity is also increased as the conical needle, which is attached to the piston, is lifted out of the jet.

Acceleration

The carburettor has a damper device in the piston shaft. This provides a temporary rich mixture when the throttle is opened rapidly (acceleration). The damper consists of a piston attached to a rod. The piston is submerged in an oil well. Since the throttle is opened rapidly, the vacuum in the vacuum chamber also rises rapidly.

When the vacuum piston is lifted, the damper piston is pressed against its seat hindering the oil flowing from below to above the piston and thus braking the movement of the vacuum piston. This produces a temporary large vacuum above the jet making the fuel-air mixture richer.

The downward movement of the vacuum piston is assisted by a spring.

Engine braking

To reduce emissions, above all of hydrocarbons, the car has a deceleration system.

On early models, the carburettor has an electronically controlled deceleration device. The device consists of an electromagnet (solenoid) that acts on an arm on the throttle shaft.

When vehicle speed exceeds 20 mph (35 km/h) the solenoid is activated by a sensor in the speedometer, whereby idling speed is increased.

Later models have a mechanical dashpot which delays the closing of the throttle when the accelerator is released.

From M1985- a deceleration valve is incorporated in the throttle butterfly.

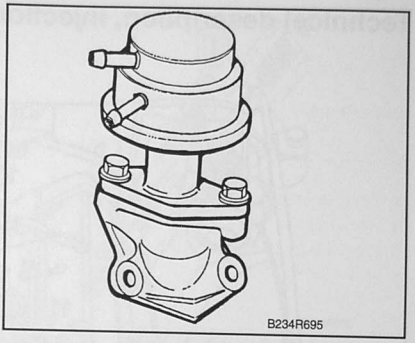
Fuel pump, carburettor engines

The fuel pump on carburettor engines is located on the intake side of the engine and is of the diaphragm type. The pump is driven by a rod that is attached to a cam on the camshaft.

The pump strainer can be removed for cleaning up to engine number D 052 892.

See To Clean under "*Fuel strainer*" on page 103.

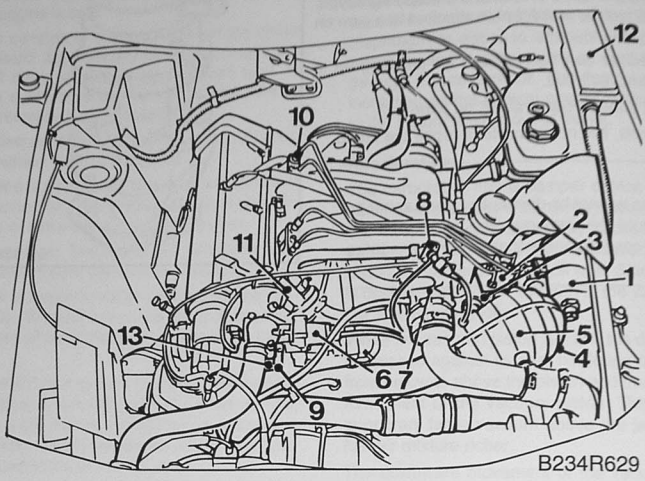
In other respects, it is not possible to repair the pump.


B234R695

Important

The fuel pump cannot be dismantled and cannot be repaired should the diaphragm or valves become damaged. In case of malfunction, change the entire pump.

Technical description, injection engine



Fuel injection engine, B201

1 Fuel filter
2 Fuel distributor
3 Air flow sensor
4 Air cleaner
5 Rubber elbow
6 Control pressure valve
7 Throttle body
8 Cold start valve
9 Thermostatic switch
10 Injector
11 Auxiliary air valve
12 Electrical distribution box
13 Thermostatic time switch

There are two types of injection systems: the mechanical Bosch CI and the electrical Bosch LH and Lucas CU14.

Mechanical system

B201i and B201 Turbo engines have a Bosch CI fuel injection system. CI is the abbreviation for Constant Injection.

An electric fuel pump mounted inside the tank provides fuel at a constant pressure to the fuel distributor. An air flow sensor measures the flow of air to the engine and acts mechanically on the fuel distributor and the four injectors ensuring the correct amount of fuel is provided. Fuel is injected constantly into the intake manifold directly ahead of the intake valves.

Electronic system

The B202 Turbo and B202i/B212i engines have either a Bosch LH (Luftmassenmesser Hitzdraht) or Lucas CU14 fuel injection system.

The use of a hot wire mass air flow sensor combines the best properties of different fuel injection systems and mass air flow measurement, that is to say a system that allows for the density of the air, not previously done in fuel injection systems.

The system measures the mass of air consumed by the engine. The air flows through the mass air flow meter on the way to the engine's combustion chamber.

This means that air density can be taken into account.

⚠ WARNING

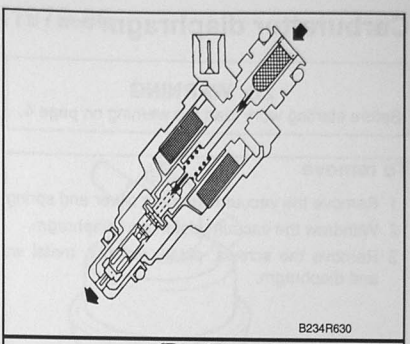
Important considerations when working on the fuel system.

- Ensure proper ventilation! If approved extraction equipment for fuel vapours is available, use it.
- Wear suitable gloves. Prolonged contact with fuel can cause skin irritations.
- Keep a BE class fire extinguisher at hand!
- Beware of the danger of arcing such as when breaking a circuit or in the event of a short circuit.
- Smoking is absolutely forbidden!

Injectors B202

The injectors are of the solenoid valve type. The amount of fuel injected, that is to say the injection period, is controlled by the control module. All the injectors open and close at the same time.

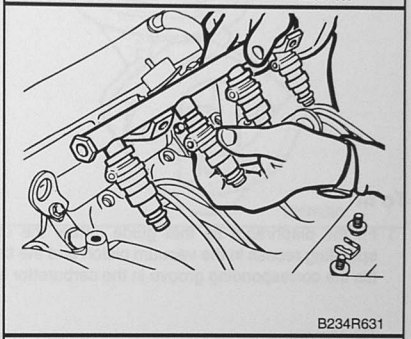
The injectors are mounted on the intake manifold, one for each cylinder, and inject fuel just ahead of the mating face of the intake manifold and cylinder head.



B234R630

Fuel rail B202

The fuel rail is connected directly to the injectors. The fuel line and pressure regulator are also connected to the fuel rail.



B234R631

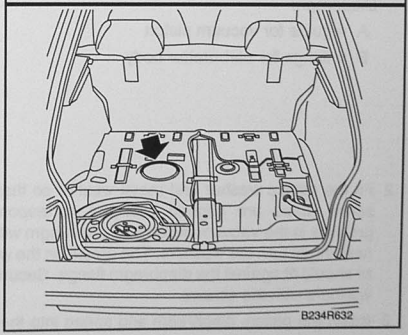
Fuel pump, injection engine

The fuel pump is an electric rotary pump and is mounted inside the tank. The pump and motor are totally enclosed and cannot be dismantled for repair. A relief valve is fitted to the fuel pump and is actuated if the pressure becomes too high. A check valve in the fuel pump outlet ensures that the supply pressure in the fuel circuit will not fall to zero immediately after the pump stops.

Fuel filter

Up to M1986 the fuel filter is located in the engine compartment on the left-hand wheel housing on the deliver line between the fuel pump and fuel rail. On M1987 cars the fuel filter is located under the car on the right-hand side of the fuel tank. From M1988 the filter is mounted under the carpeting in the luggage compartment.

The filter consists of an aluminium canister, nylon strainer and paper filter element. The fuel filter cannot be dismantled!



B234R632

Fuel level sensor

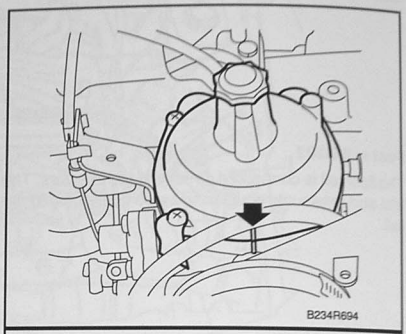
There are two types of fuel level sensor: one for M1981-82 and one for M1983-. The sensors cannot be interchanged between model years. The sensors do not have the same resistance and fitting the wrong sensor will give incorrect readings.

Carburettor diaphragm

> **⚠ WARNING**
> Before starting work read the warning on page 4.

To remove

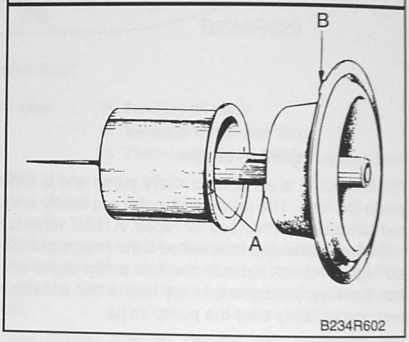
1 Remove the vacuum chamber cover and spring.
2 Withdraw the vacuum piston and diaphragm.
3 Remove the screws, plastic washer, metal washer and diaphragm.


B234R694

To fit

1 Fit the diaphragm so that guide enters the corresponding recess in the vacuum piston and the flange fits the corresponding groove in the carburettor body.

Diaphragm
A = guide for vacuum piston
B = flange for carburettor body



B234R602

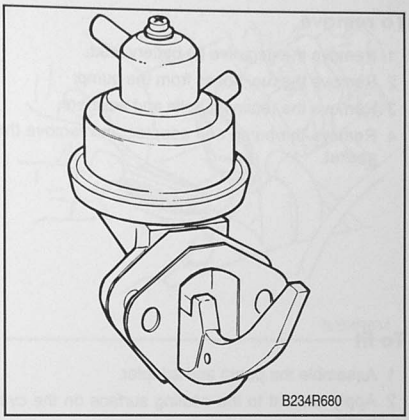
2 Fit the plastic washer and metal washer so that the screw holes are aligned with the corresponding grooves in the vacuum piston and diaphragm without needing to turn the washers. The groove in the washer should fit against the diaphragm flange. Secure the washers with the screws.
3 Insert the piston, diaphragm and spring into the carburettor body. Make sure that the diaphragm flange enters the groove in the carburettor body. Carefully fit the vacuum chamber cover as marked and tighten the retaining screws.

Fuel pump, carburettor engines M1979-80

> ⚠ **WARNING**
> Before starting work read the warning on page 4.

To remove

1 Remove the negative (-) battery lead.
2 Remove the fuel hoses from the pump.
3 Remove the retaining bolts and washers.
4 Remove the pump and the old gasket.


B234R680

To fit

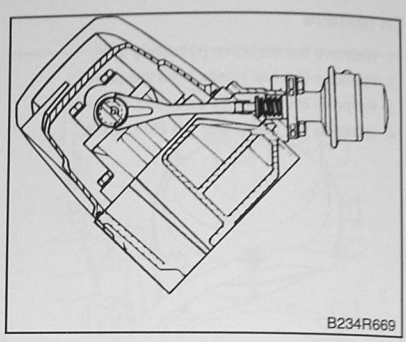
Fit in the reverse order.

Fuel pump, carburettor engines M1981-

> ⚠ **WARNING**
> Before starting work read the warning on page 4.

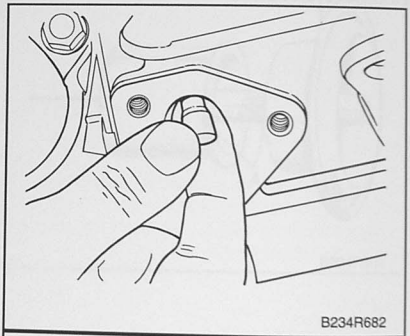
To remove

1 Remove the negative (-) battery lead.
2 Remove the fuel hoses from the pump.
3 Remove the retaining bolts and washers.
4 Remove the pump and adapter, and remove the old gasket.

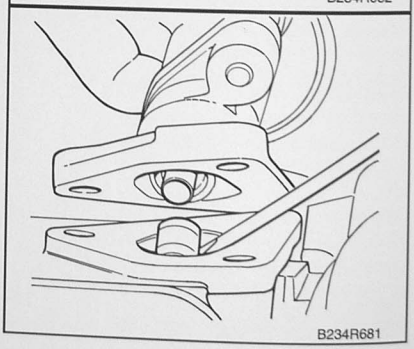

B234R669

To fit

1 Assemble the pump and adapter.
2 Apply sealant to the sealing surface on the cylinder head.
3 Guide the rod into the groove on the camshaft. Feel (twist) to make sure that the rod has entered the groove.


B234R682

4 Hold the rod in position with a small screwdriver and guide the pump pushrod into the rod linkage.
5 Press the pump against the mating face and hold it there while fitting and tightening the retaining bolts.


B234R681

6 Fit the fuel hoses.
7 Connect the negative (-) battery lead.

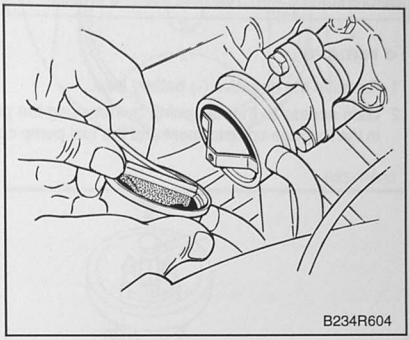
Fuel strainer

> ⚠ **WARNING**
> Before starting work read the warning on page 4.

To clean

1 Remove the centre bolt from the fuel pump cover.
2 Lift off the cover and remove the strainer and rubber seal.
3 Clean the strainer and cover. Refit the parts.

Note
As of engine number D 052 893, the fuel pump has an enclosed filter housing, which means that the filter cannot be cleaned.


B234R604

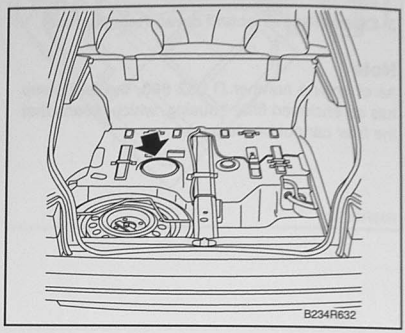
Fuel pump without feed pump, B202 -M1988 and B201 without catalytic converter

> ⚠ **WARNING**
> Before starting work read the warning on page 4.

To remove

1 Remove the negative (-) battery lead.

2 Gain access to the fuel pump by removing the panel in the luggage compartment and the fuel pump cover.

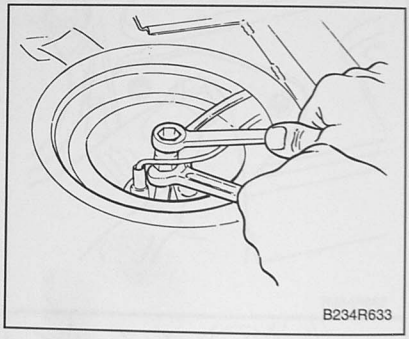

B234R632

3 Disconnect the electrical leads from the fuel pump.

4 Remove the acorn nut. Use an open-ended wrench to hold the pump steady.

Cars with LH system:

Use wrench 83 94 330.


B234R633

Note

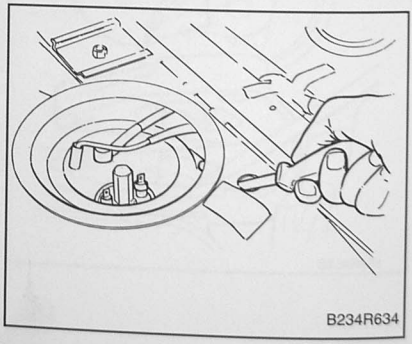
Have a rag or similar at hand to mop up any petrol spills.

5 Lift off the fuel line banjo nipple.

6 Use a flexible screwdriver to undo the pump mounting clamp.

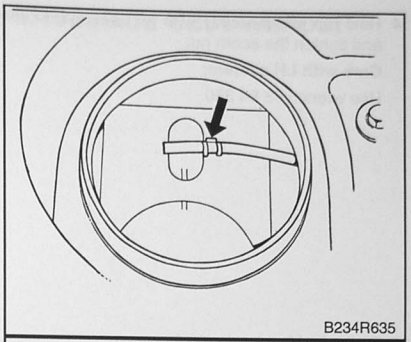
7 Lift out the fuel pump.

If the pump has a feed pump, continue on page 107.


B234R634

To fit

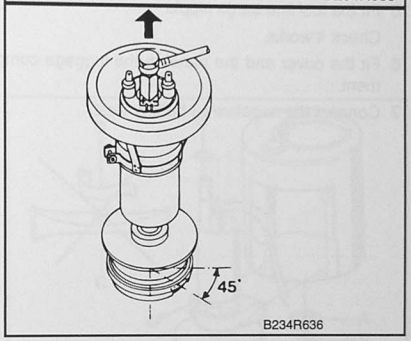
1 Check that the fuel return line is connected to the baffle container in the bottom of the fuel tank.



B234R635

2 Install the pump unit in the tank as follows:

- Point the positive (+) electrical connection to the left (as seen from the rear of the car).
- Point the suction strainer inlet 45° backwards and to the right (as seen from the rear of the car).



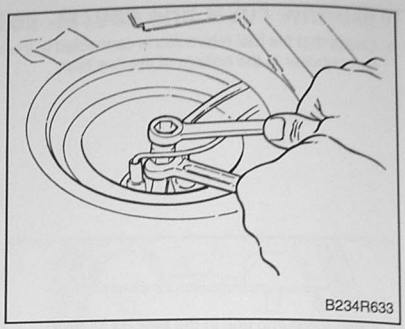
B234R636

3 Connect the electrical leads and attach the fuel lines.

4 Hold the pump steady with an open-ended wrench and tighten the acorn nut.

Cars with LH system:

Use wrench 83 94 330.



5 Fit the fuel line banjo nipple.

Check it works.

6 Fit the cover and the panel in the luggage compartment.

7 Connect the negative (-) battery lead.

Fuel pump with feed pump, B202 -M1988 and B201 without catalytic converter

⚠ WARNING

Before starting work read the warning on page 4.

First, follow all the steps under To Remove under *"Fuel pump without feed pump, B202 -M1988 and B201 without catalytic converter"* on page 104.

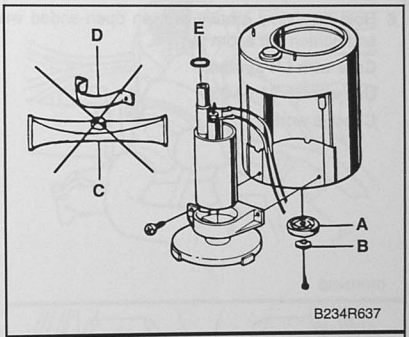
Then follow the steps below.

To remove

1 Unplug the leads from the tank.
2 Disconnect the return hose from the container.
3 Withdraw the main pump and remove the screws securing the feed pump.
4 Disconnect the leads.

Important

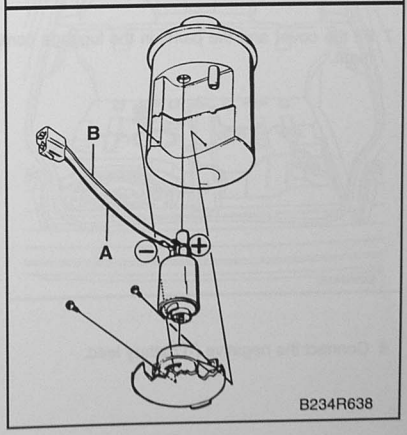
If the pump is an early variant, the existing strainer must be replaced with the latest variant. Accordingly, the plug (**A**), washer (**B**), strainer (**C**), clamp (**D**) and O-ring (**E**) will become redundant.



B234R637

To fit

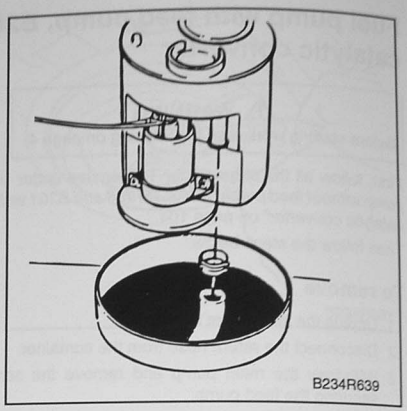
1 Connect the electrical leads to the feed pump: white to the positive (+) terminal and black to the negative (-) terminal.
2 Fit the feed pump and press it home to the stop.
A Black
B White



B234R638

3 Fit the pump into the container. Turn the pump so that the positive (+) terminal points towards the front of the car.

4 Connect the return line and electrical leads. Lower the container into the tank with the feed pump towards the rear.


B234R639

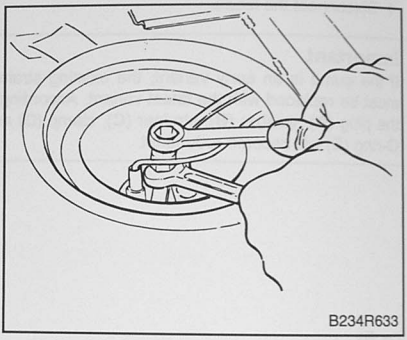
5 Connect the electrical leads and attach the fuel lines.

6 Hold the pump steady with an open-ended wrench and tighten the acorn nut.

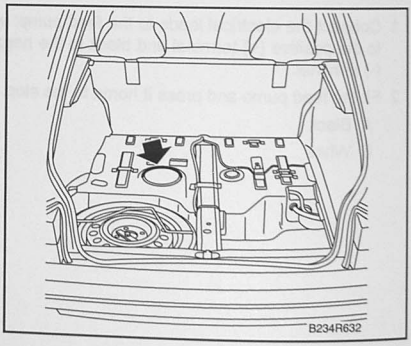
Cars with LH system:

Use wrench 83 94 330.

Check it works.


B234R633

7 Fit the cover and the panel in the luggage compartment.


B234R632

8 Connect the negative (-) battery lead.

Fuel pump, B202 normally aspirated engines M1989-90 / B202 Turbo M1990

⚠ WARNING

Before starting work read the warning on page 4.

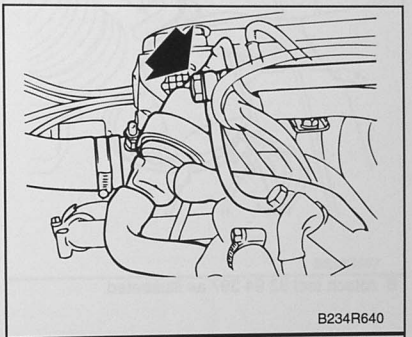
Important

The fuel pump cannot be dismantled and cannot be repaired should the diaphragm or valves become damaged. In case of malfunction, change the entire pump.

To remove

1 Remove the negative (-) battery lead.

2 Release the pressure in the fuel system by slackening the nipple on the fuel rail.



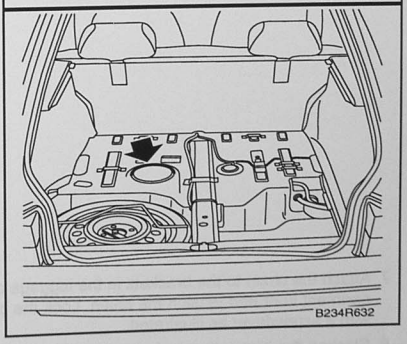
B234R640

Note

Have a rag or similar at hand to mop up any petrol spills.

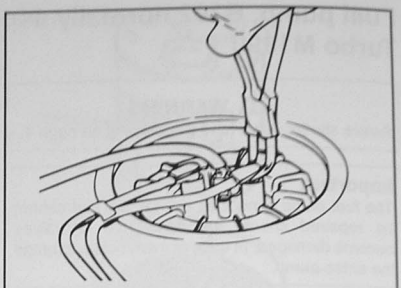
Retighten the nipple.

3 Gain access to the fuel pump by removing the panel in the luggage compartment and the fuel pump cover.

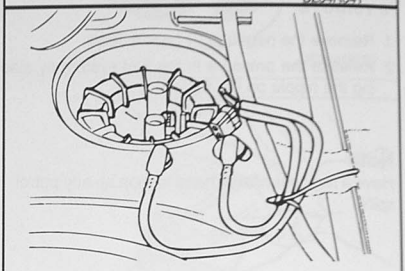


B234R632

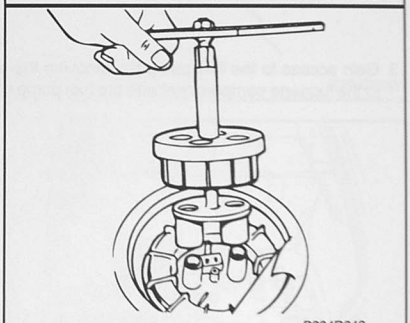
4 Remove the clamp and disconnect the electrical leads and the fuel lines.


B234R641

5 Bend aside and secure the fuel lines to the main line with a cable tie.

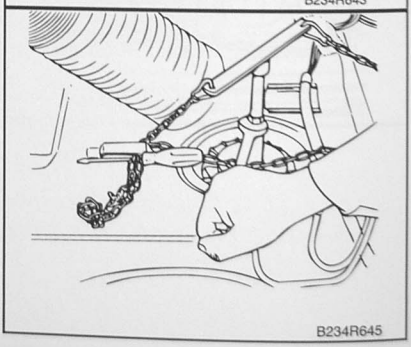

B234R642

6 Attach tool 83 94 397 as illustrated.

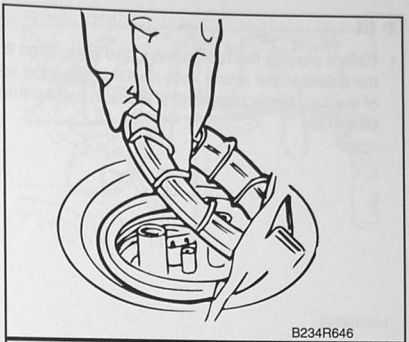

B234R643

7 Attach the chain to the brackets in the luggage compartment floor and tension the chain. Lock the chain with a screwdriver as illustrated.

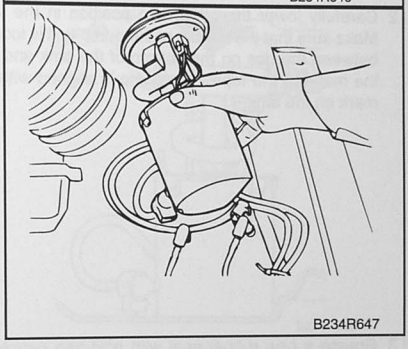
8 Slacken the screw ring and place tool 83 94 397 to one side.


B234R645

9 Unscrew and remove the screw ring by hand. Remove the rubber seal and withdraw the pump by tipping the top forwards and to the left. Allow as much fuel as possible to drain from the pump before removing it.

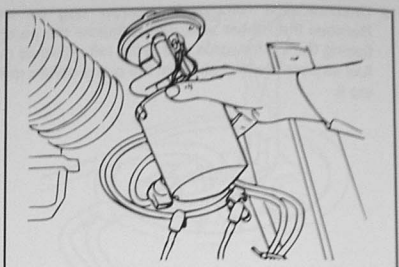

B234R646

10 Lift the pump out of the tank and place it in a receptacle to collect the remaining fuel.


B234R647

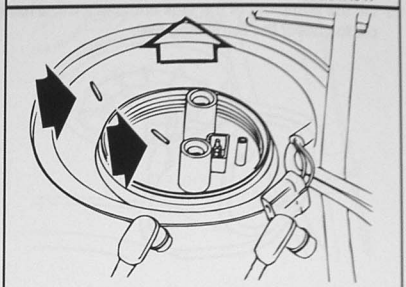
To fit

1 Before placing the fuel pump in the tank, align it with the delivery and return lines pointing along the length of the car. Angle the pump and insert ejector into the tank first.



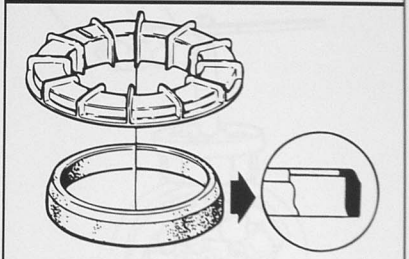
B234R647

2 Carefully lower the pump into position in the tank. Make sure that the bottom of the pump unit is located between the ribs on the bottom of the tank and that the mark on the top of the pump is aligned with the mark on the tank.



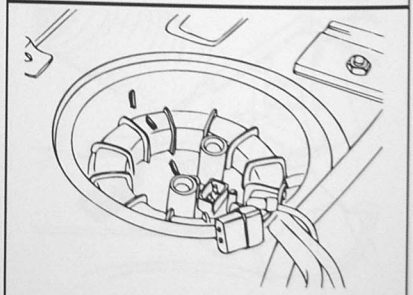
B234R648

3 Grease a new rubber seal with acid-free petroleum jelly and fit it inside the screw ring as illustrated. If you exercise extreme care, you can also place the seal on the fuel pump.



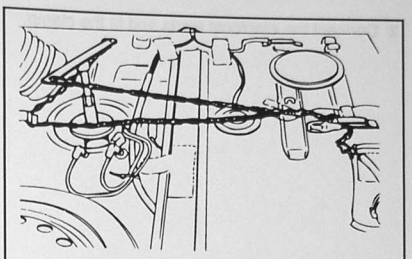
B234R649

4 Place the ring with the marks aligned. Press the ring firmly down and turn it half a turn.

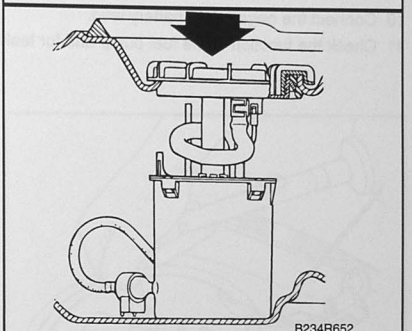


B234R650

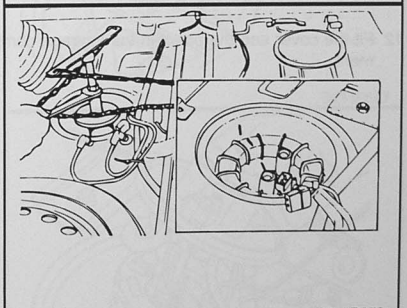
5 Adjust the chain so that it will provide the desired force for tightening.


B234R651

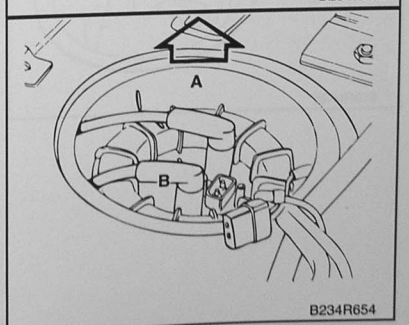
6 Attach the tool pressing down so that the ring is in contact with the flange of the tank orifice. Tighten the ring.


B234R652

7 The position of the fuel pump must not deviate more than ±30° from the markings.

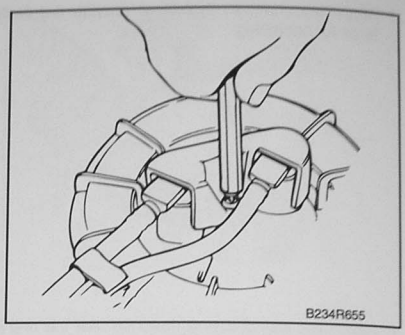

B234R653

8 Connect the fuel lines using new O-rings for the nipples. Connect the return line (**A**), with a check valve incorporated in the nipple, to the connection towards the front of the car, and the pump line (**B**) to the connection towards the rear of the car.



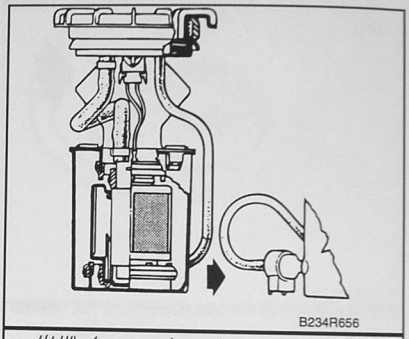
B234R654

9 Connect the electrical leads and fit the clamp.

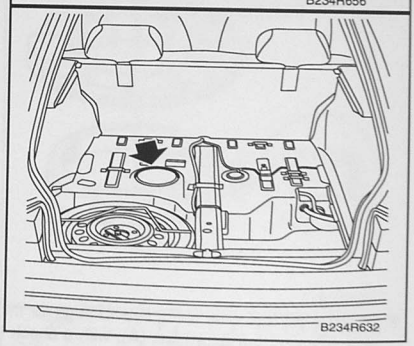

B234R655

10 Connect the negative (-) battery lead.

11 Check the function of the fuel pump and for leaks.


B234R656

12 Fit the cover and the panel in the luggage compartment.


B234R632

Fuel pump, B202/B212 M1990-93

⚠ WARNING

Before starting work read the warning on page 4.

Important

The fuel pump cannot be dismantled and cannot be repaired should the diaphragm or valves become damaged. In case of malfunction, change the entire pump.

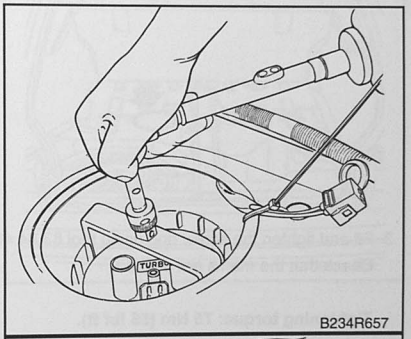
Follow steps 1-5 under

To Remove under "*Fuel pump, B202 normally aspirated engines M1989-90 / B202 Turbo M1990*" on page 109.

Then follow the steps below.

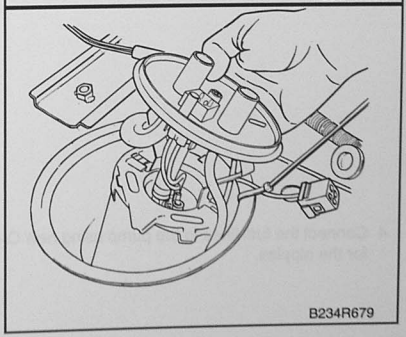
To remove

1 Remove the screw ring. Apply tool 83 94 462 as illustrated.



B234R657

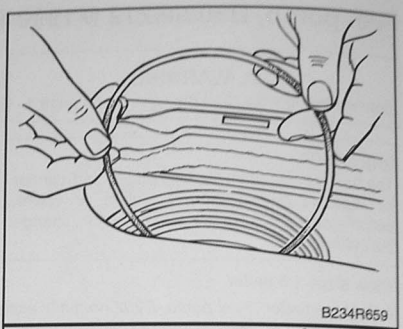
2 Lift the pump out of the tank and place it in a receptacle to collect the remaining fuel.



B234R679

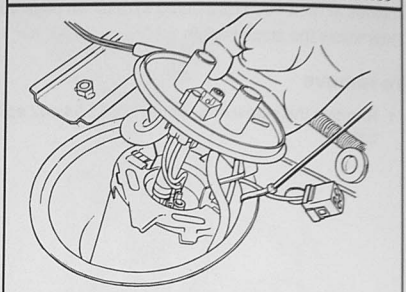
To fit

1 Fit a new O-ring seal to the fuel pump.



B234R659

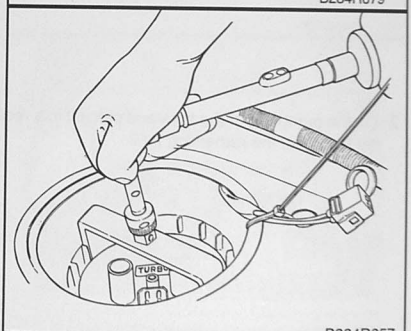
2 Insert the fuel pump into the tank with the marks aligned.



B234R679

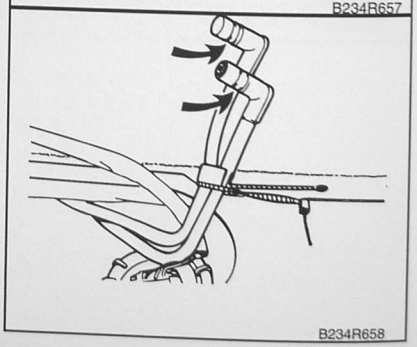
3 Fit and tighten the screw ring using tool 83 94 462. Check that the marks are aligned.

Tightening torque: 75 Nm (55 lbf ft).



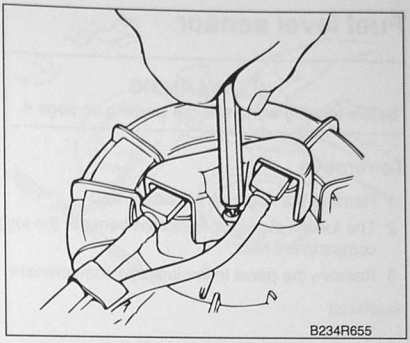
B234R657

4 Connect the fuel lines to the pump using new O-rings for the nipples.



B234R658

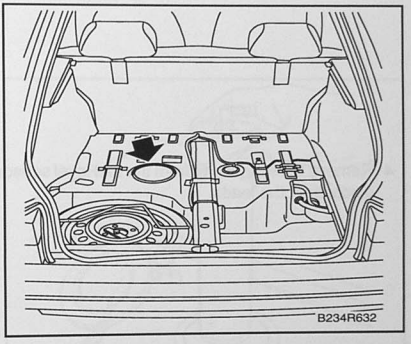
5 Connect the electrical leads and fit the clamp.


B234R655

6 Connect the negative (-) battery lead.

7 Check the function of the fuel pump and for leaks.

8 Fit the cover and the panel in the luggage compartment.

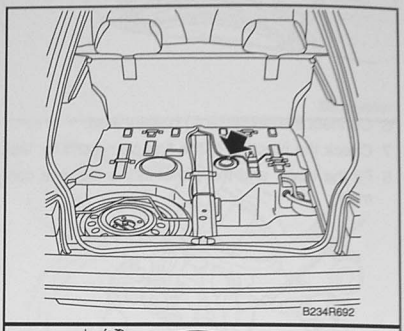

B234R632

Fuel level sensor

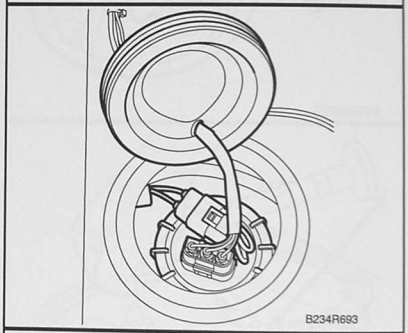
⚠ WARNING
Before starting work read the warning on page 4.

To remove

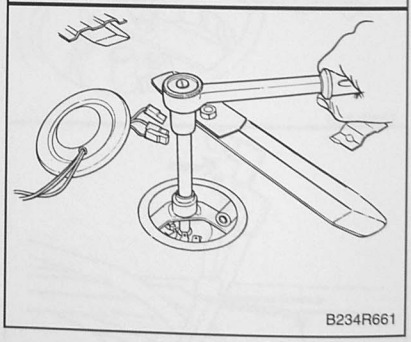
1 Remove the negative (-) battery lead.
2 The fuel level sensor is located beneath the luggage compartment floor.
3 Remove the panel in the luggage compartment.


B234R692

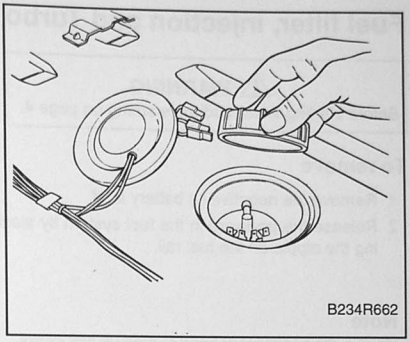
4 Remove the rubber cap from the fuel level sensor and disconnect the leads.


B234R693

5 Remove the cap with tool 83 93 365.


B234R661

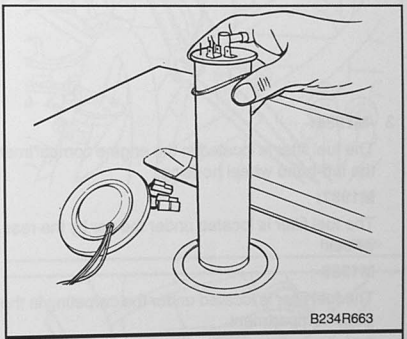
6 Unscrew the cap and withdraw the fuel level sensor.


B234R662

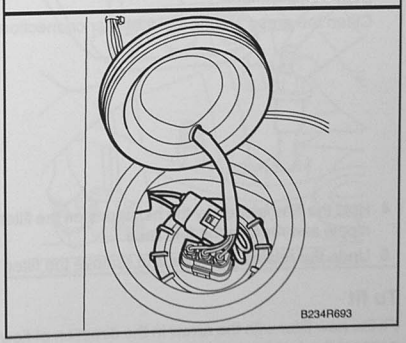
Important
The fuel level sensor for M1981-82 cannot be used on cars from M1983- and vice versa.

To fit

1 **M1983-:**
Remove the transit stay from the new fuel level sensor.
2 Inspect the rubber seal.
3 Fit the fuel level sensor and tighten the cap.


B234R663

4 Connect the electrical leads.


B234R693

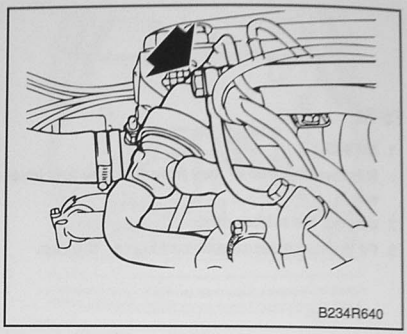
5 Fit the rubber cap and the luggage compartment flooring.
6 Connect the negative (-) battery lead.

Fuel filter, injection and Turbo engines

> ⚠ **WARNING**
> Before starting work read the warning on page 4.

To remove

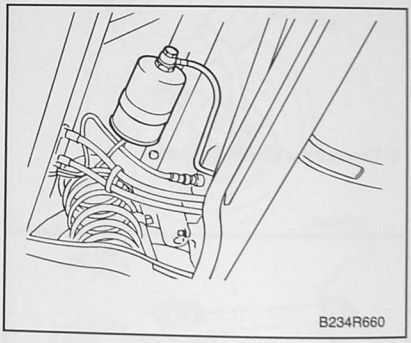
1 Remove the negative (-) battery lead.
2 Release the pressure in the fuel system by slackening the nipple on the fuel rail.


B234R640

Note
Have a rag or similar at hand to mop up any petrol spills.

Retighten the nipple.

3 **-M1986:**
The fuel filter is located in the engine compartment on the left-hand wheel housing.
M1987:
The fuel filter is located under the car by the rear right wheel.
M1988-:
The fuel filter is located under the carpeting in the luggage compartment.
Clean the areas around the fuel filter connections.


B234R660

4 Hold the filter steady by the hexagons on the filter and nipple and remove the fuel lines.
5 Undo the retaining screws and remove the filter.

To fit

Fit the new filter with the arrow in the direction of flow and connect the fuel lines.
Connect the negative (-) battery lead.

Injectors, B201i/Turbo -M1989

⚠ WARNING

Before starting work read the warning on page 4.

Important

Scrupulous cleanliness is of the utmost importance when working on the fuel rail and injectors.

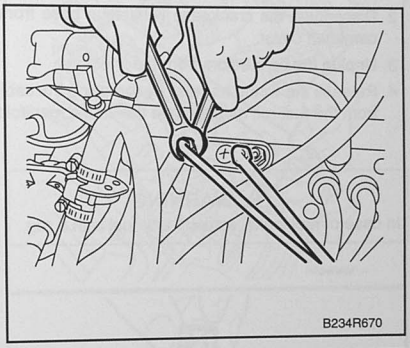
Thoroughly clean the injectors, fuel rail, intake manifold and immediately surrounding areas. Blow dry with compressed air.

To remove

1 Remove the negative (-) battery lead.

2 Remove the fuel line from the injector.

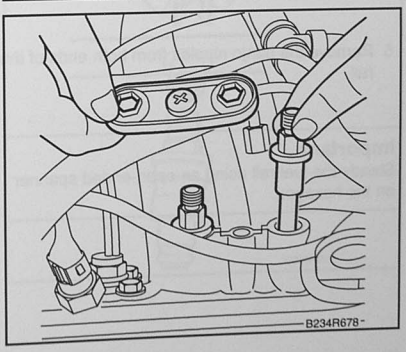
To prevent the valve from turning, hold the hexagon with a wrench.



B234R670

3 Remove the retaining plate.

4 Withdraw the injector and remove the rubber seal.



B234R678

To fit

Fit in the reverse order.

Fuel rail with injectors, B202/B212

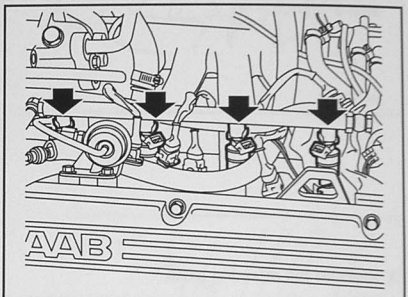
> ⚠ **WARNING**
> Before starting work read the warning on page 4.

Important
Scrupulous cleanliness is of the utmost importance when working on the fuel rail and injectors.

Thoroughly clean the injectors, fuel rail, intake manifold and immediately surrounding areas. Blow dry with compressed air.

To remove

1 Remove the negative (-) battery lead.
2 Disconnect the crankcase ventilation hose from the camshaft cover.
3 Unplug the connectors from the injectors.
4 Release the wiring harness by removing the cable tie from the fuel rail mounting on the intake manifold.

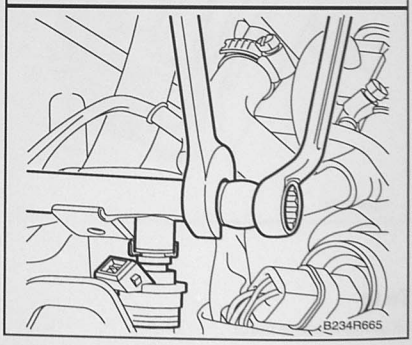


B234R664

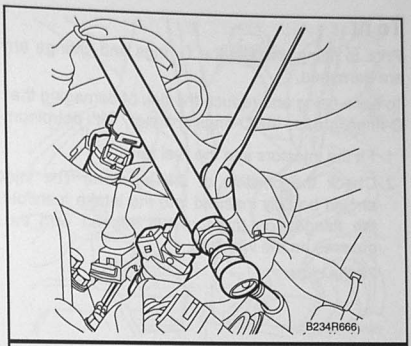
> ⚠ **WARNING**
> In case of fuel leaks, soak up any fuel with a rag.

5 Remove the banjo nipples from both ends of the fuel rail.

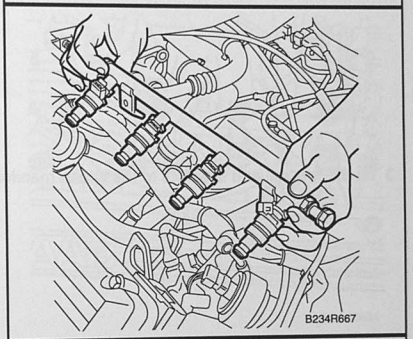
Important
Steady the fuel rail using an open-ended spanner on the hexagon.


B234R665

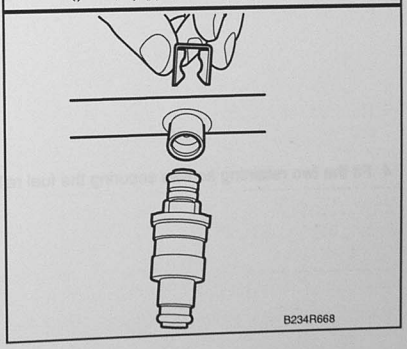
6 Undo the two retaining bolts and remove the fuel rail from the intake manifold.



7 Remove the fuel rail complete with injectors.



8 Remove the retaining clips securing the injectors to the fuel rail.



9 Remove the injectors from the fuel rail by twisting and pulling them out.

10 Connect the negative (-) battery lead.

To fit

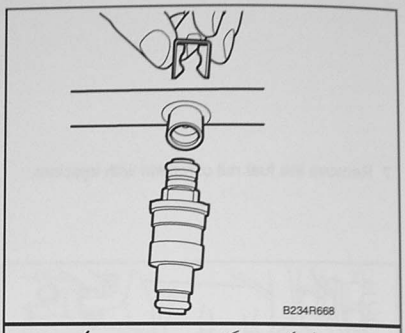
Prior to fitting, inspect the O-rings and change any that are damaged.

To ease fitting and reduce the risk of damaging the O-rings, grease the O-rings sparingly with petroleum jelly.

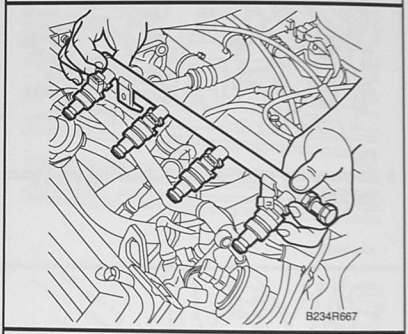
1 Fit the injectors into the fuel rail.

2 Check the position of the injectors. The injectors should be fully inserted into the intake manifold and the flanges on the fuel rail aligned with the clip grooves on the injectors.

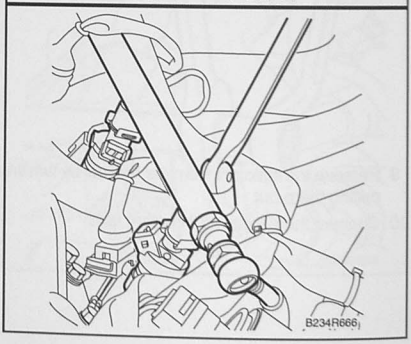
Fit the clips.



3 Fit the fuel rail and injectors to the intake manifold.

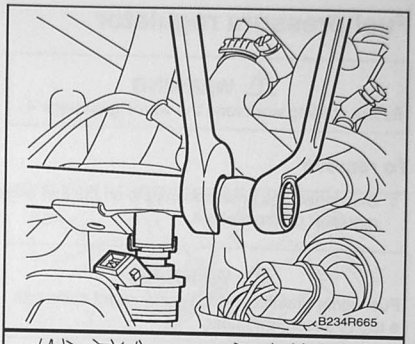


4 Fit the two retaining screws securing the fuel rail.

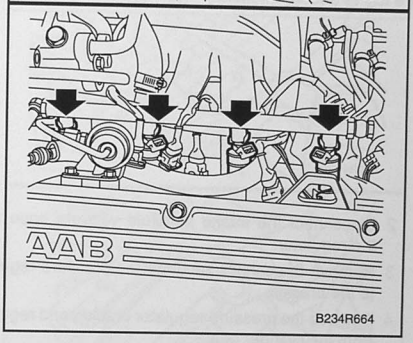


5 Fit the banjo nipples to both ends of the fuel rail.

Important
Steady the fuel rail using an open-ended spanner on the hexagon.



6 Plug in the connectors to the injectors.



7 Secure the wiring harness with a cable tie to the fuel rail mounting on the intake manifold.

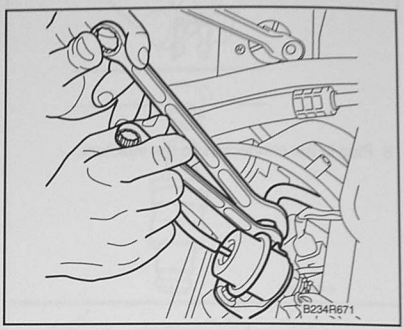
8 Connect the crankcase ventilation to the camshaft cover.

Fuel pressure regulator

> **⚠ WARNING**
> Before starting work read the warning on page 4.

To remove

1 Disconnect the hose from nipple on the fuel pressure regulator on the fuel rail.

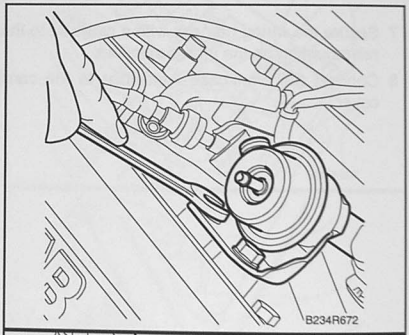


> **⚠ WARNING**
> Fuel under pressure. Mop up any petrol spills with a rag or absorbent paper.

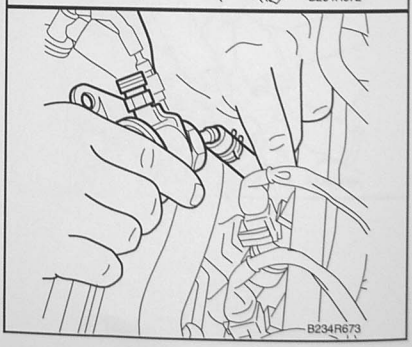
2 Disconnect the intake manifold vacuum hose from the regulator.

3 Remove the screws securing the pressure regulator to the bracket.

4 Remove the pressure regulator bracket and regulator from the cylinder head.



5 Disconnect the pressure regulator from the fuel return line.



Important
Remember to reconnect the ground lead for the LH system by the pressure regulator bracket on the cylinder head.

To fit

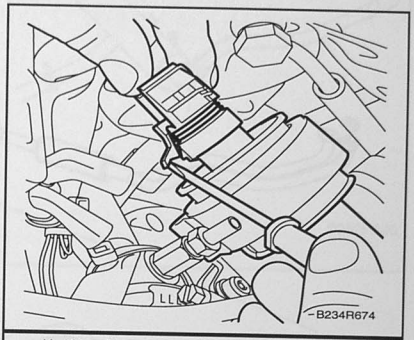
Fit in the reverse order.

Idle air control valve, IAC

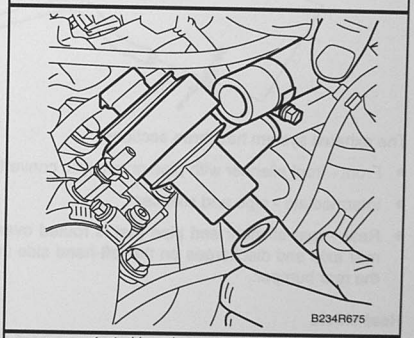
> ⚠ **WARNING**
> Before starting work read the warning on page 4.

To remove

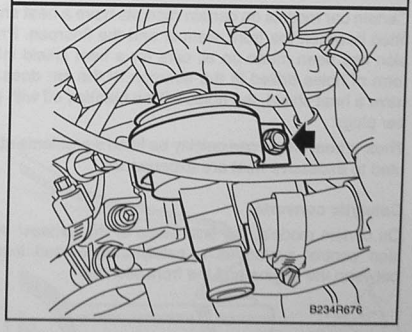
1 Unplug the connector from the idle air control valve.



2 Slacken the hose clips and disconnect the hoses.



3 Undo the retaining screw securing the valve and lower the valve out of its bracket.

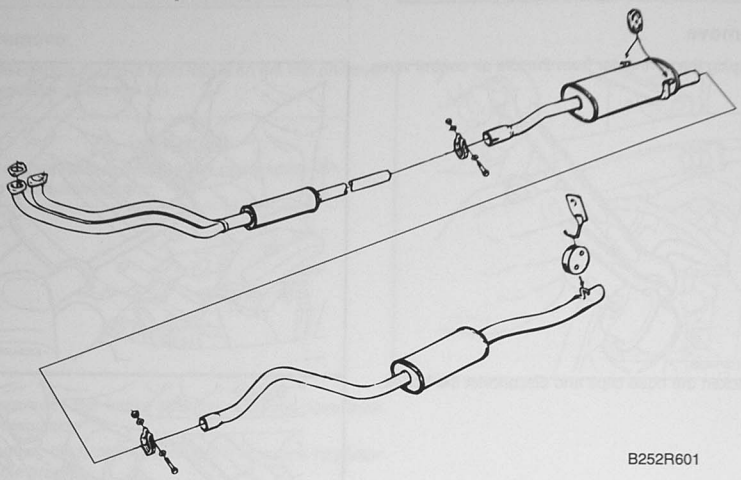


To fit

Fit in the reverse order.

Exhaust system

Technical description



B252R601

The exhaust system has three sections:

- Front - front silencer with pipe or catalytic converter.
- Intermediate - pipe and silencer.
- Rear - rear silencer and pipe that is routed over the rear axle and discharges on the left-hand side under the rear bumper.

Heat shield

Certain car models on certain markets have a heat shield fitted between the front silencer and the floorpan. Provision has been made on all cars for a heat shield in the form of holes drilled in the floorpan. If the car does not have a heat shield, the holes will be blanked off with rubber plugs.

Thus, a heat shield can quickly be fitted if problems attributed to excessive heat are experienced.

Catalytic converter

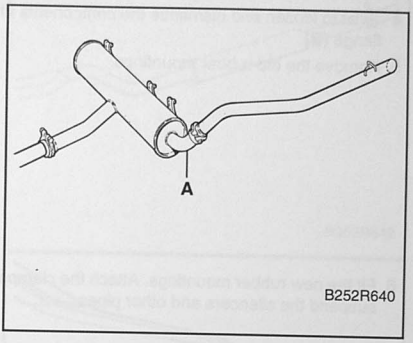
On certain models, the final stage of the exhaust emission control system is a catalytic converted located between the engine and the front silencer.

Exhaust system, -M1985

Changing the entire exhaust system

1 Raise the car.

2 Cut through the old exhaust system with a hacksaw at (**A**).



3 Slacken the nuts by the front silencer.

4 Remove the old rubber mountings.

5 Remove the old exhaust system.

6 Using a new flange gasket fit the front exhaust pipe.

Note
Do not tighten the nuts.

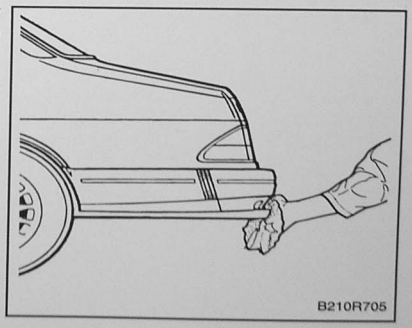
7 Fit the new rubber mountings. Attach the clamps and suspend the silencers and other pipes.

Note
Do not tighten the clamps.

8 Starting from the front, tighten the nuts.
Check that the exhaust system is hanging freely and not under tension. Check also that the system does not foul the body or any other parts.

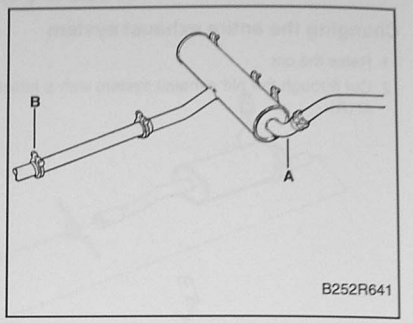
9 Lower the car.

10 Once fitted, check that the system does not leak by starting the engine and blocking the tail pipe with a rag.



Changing the intermediate pipe and rear section

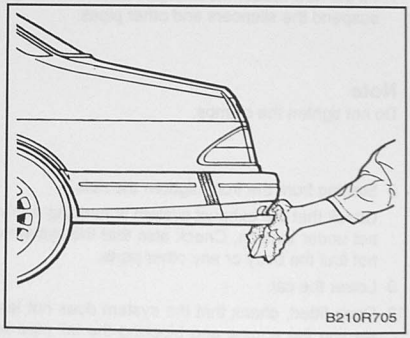
1 Cut the old pipe at (**A**).
2 Remove the rear pipe.
3 Remove the clamp at (**B**).
4 Twist to loosen and dismantle the components at the flange (**B**).
5 Remove the old rubber mountings.



6 Fit the new rubber mountings. Attach the clamps and suspend the silencers and other pipes.

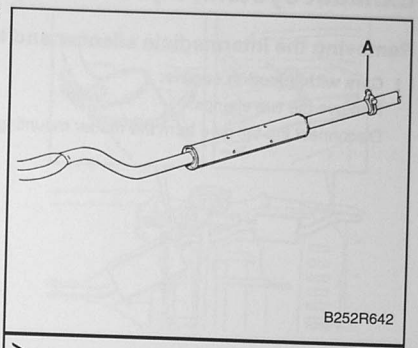
Note
Do not tighten the clamps.

7 Starting from the front, tighten all the bolts.
Check that the exhaust system is hanging freely and not under tension. Check also that the system does not foul the body or any other parts.
8 Once fitted, check that the system does not leak by starting the engine and blocking the tail pipe with a rag.

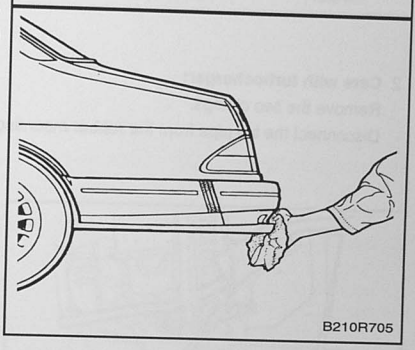


Changing the front pipe with silencer

1 Remove the clamp and twist apart the components at the flange (**A**).
2 Slacken the nuts by the front silencer.
3 Remove the front pipe and silencer.
4 Attach the clamp at (**A**).
Using a new flange gasket, fit the pipe and silencer.
5 Tighten the exhaust manifold flange and the clamp.
Check that the exhaust system is hanging freely and not under tension. Check also that the system does not foul the body or any other parts.



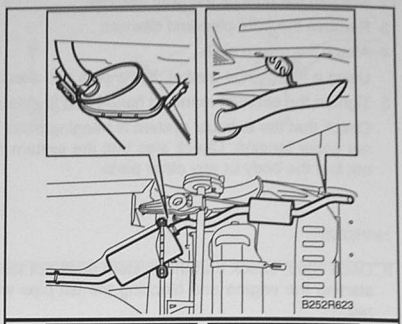
6 Once fitted, check that the system does not leak by starting the engine and blocking the tail pipe with a rag.



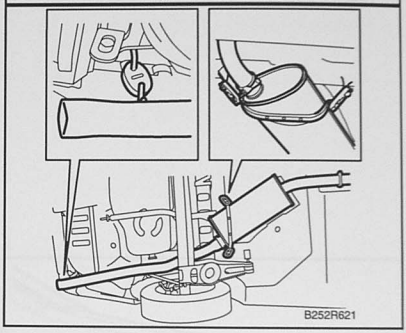
Exhaust system, injection engines M1985- / Turbo M1984-

Removing the intermediate silencer and tail pipe

1 **Cars with injection engine:**
Remove the two clamps.
Disconnect the tail pipe from the rubber mounting.



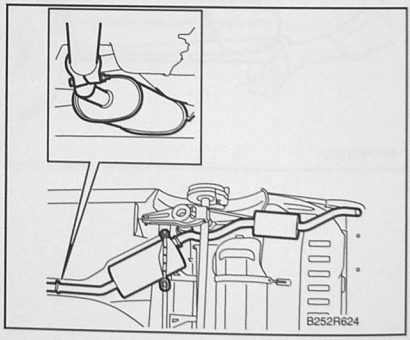
2 **Cars with turbocharger:**
Remove the two clamps.
Disconnect the tail pipe from the rubber mounting.



3 Remove the tail pipe by carefully waggling it while pulling backwards.
The pipe flange may have rusted and become stuck. In this case, cut the pipe with a hacksaw.

4 Remove the rubber mountings suspending the intermediate silencer.

5 Remove the silencer by carefully waggling it while pulling backwards.
If the silencer is firmly stuck, heat the rusted flange with gas welding equipment or similar, then tap the rear end of the silencer with a hammer.

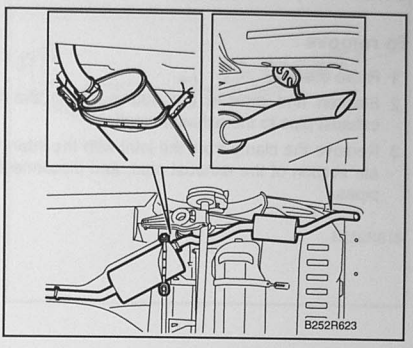


Fitting the intermediate silencer and tail pipe

1 Fit the clamps to the slip joints on the silencer and tail pipe.

2 Fit the new rubber mountings to the hooks on the underside of the body.

3 Suspend the silencer and the tail pipe. Do not tighten the clamps.



4 Slide the pipes as far as they will go onto the adjoining pipes.

5 Push the intermediate silencer forwards so that the rubber mounting is hanging slightly forwards (it will assume a vertical position when the system becomes warm).

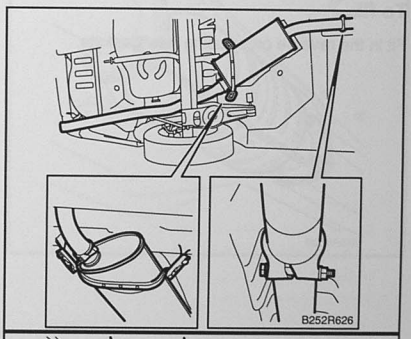
The pipes expand approximately 15-20 mm when hot.

6 Tighten the clamp slightly but still allowing the pipe to be turned.

Note

The clamp bolt on the front clamp should be positioned under the pipe, while that on the rear clamp should be above the pipe.

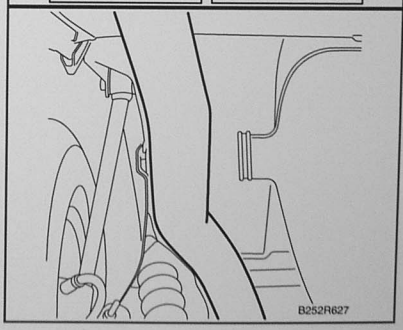
The clamps should be positioned 9 mm (0.35 in) from the leading edge of the slip joints.



7 Check that the system does not foul the body, crossmember or rear spring link.

8 Tighten the clamps and check that the system is hanging freely and not under tension.

If necessary, adjust by undoing the clamps and twisting the pipes.



9 Once fitted, check that the system does not leak by starting the engine and blocking the tail pipe with a rag.

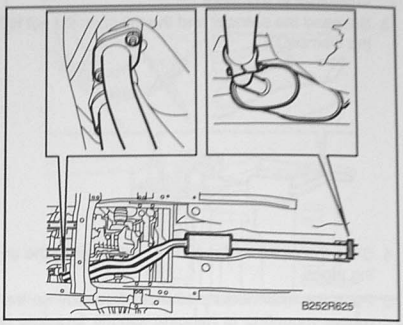
Silencer, front

To remove

1 Raise the car.

2 Slacken and remove the nuts securing the front exhaust pipe to the exhaust manifold.

3 Remove the clamp from the joint with the intermediate section of the exhaust pipe, and disconnect the pipes.



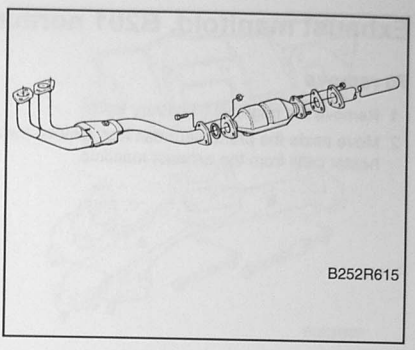
4 **Cars with turbocharger:**

Remove the clamp attached to the gearbox.

To fit

Fit in the reverse order using new gaskets.

Catalytic converter

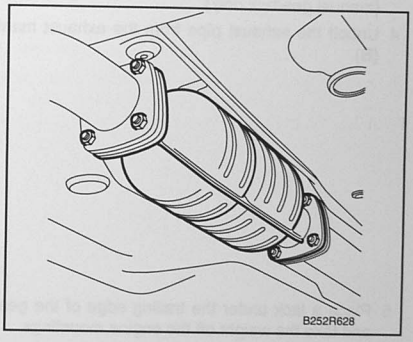


To remove

1 Raise the car.
2 Undo the flange joints.
The pipe flanges may have rusted and become stuck. In this case, cut the bolts with a hacksaw.
3 Remove the catalytic converter.

To fit

1 Clean the flanges prior to fitting the new catalytic converter.
2 Fit the new catalytic converter using new a new sealing ring and gasket, and tighten the flange joints.
Four bolts at each end.
3 Lower the car.

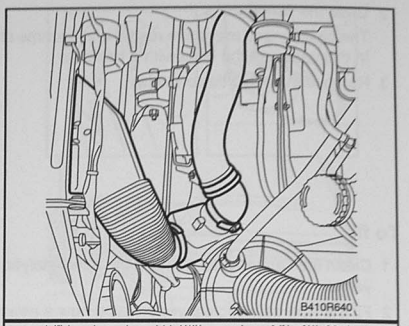


Exhaust manifold, B201 normally aspirated engines

To remove

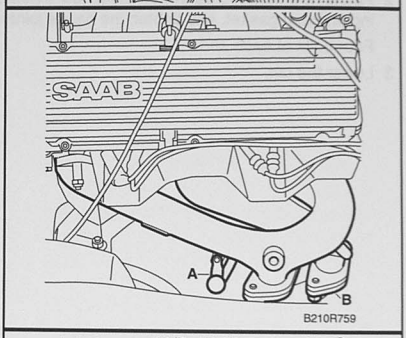
1 Remove the negative (-) battery lead.

2 Move aside the preheater hose and remove the pre-heater cowl from the exhaust manifold.



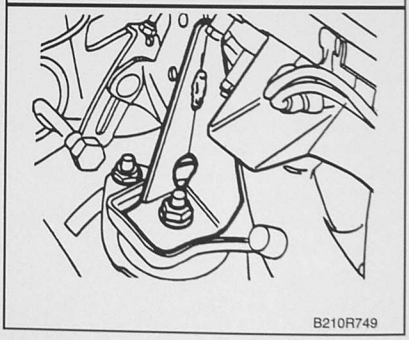
3 Remove the gearbox oil filler tube (**A**). Plug the hole (manual gearbox only).

4 Unbolt the exhaust pipe from the exhaust manifold (**B**).



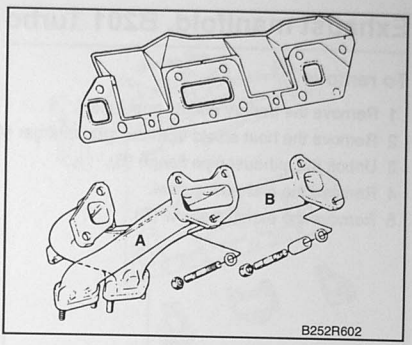
5 Place a jack under the trailing edge of the gearbox and take the weight off the engine mountings.

Remove the engine bracket from the cylinder head and engine mounting.



6 Remove the centre exhaust manifold (**A**) (N/A to sheet steel manifolds as these are of integral construction).

7 Remove the outer exhaust manifold (**B**) and the gasket.



To fit

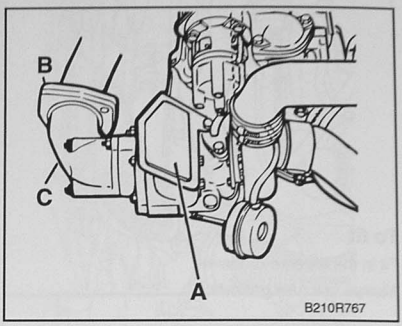
Fit in the reverse order.

Always use new gaskets.

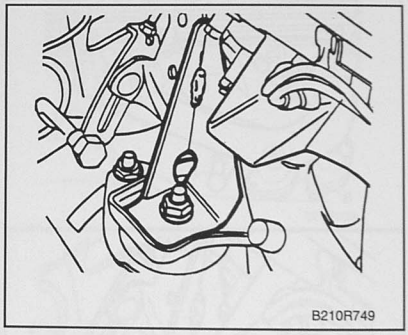
Exhaust manifold, B201 Turbo

To remove

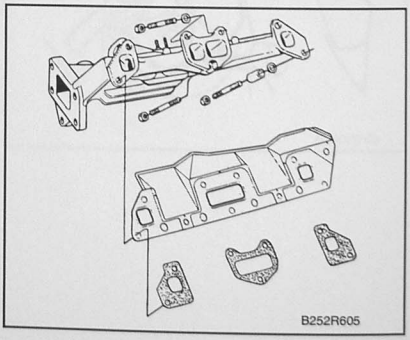
1 Remove the battery and its heat shield.
2 Remove the heat shield from the turbocharger (**A**).
3 Unbolt the exhaust pipe flange (**B**).
4 Remove the preheating cowl.
5 Remove the exhaust elbow (**C**).



6 Remove the bolts securing the turbocharger and brace to the exhaust manifold.
7 Remove the bolts securing the stay to the gearbox.
8 Place a jack under the trailing edge of the gearbox and take the weight off the engine mountings.
Remove the engine bracket from the cylinder head and engine mounting.

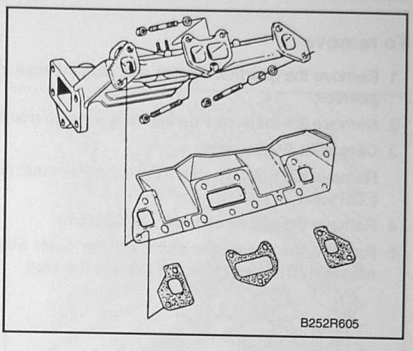


9 Remove the bolt securing the gearbox dipstick to the exhaust manifold. Withdraw the dipstick from the gearbox and plug the hole.
10 Undo the manifold nuts and remove the manifold and gasket from the engine.

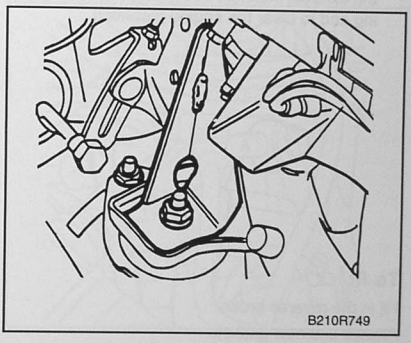


To fit

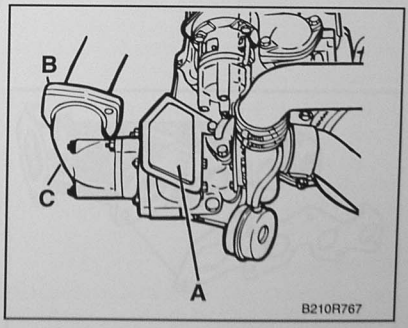
1 Lift the exhaust manifold and a new gasket into position and fit the nuts.



2 Fit a new gasket between the turbocharger and exhaust manifold and fit the bolts.
3 Fit the brace and retaining bolts.
4 Remove the jack from under the gearbox.
5 Tighten the exhaust manifold.
6 Fit the gearbox dipstick.
7 Fit the stay between the cylinder head and the gearbox.



8 Tighten the turbocharger to the exhaust manifold.
9 Fit the elbow (**C**) and tighten the exhaust pipe flange (**B**).
10 Fit the preheating cowl.
11 Fit the heat shield over the turbocharger (**A**).

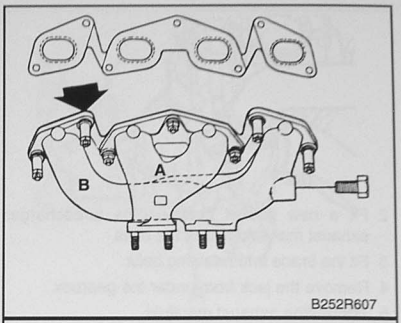


12 Fit the battery and its heat shield.

Exhaust manifold, B202/B212 injection engines

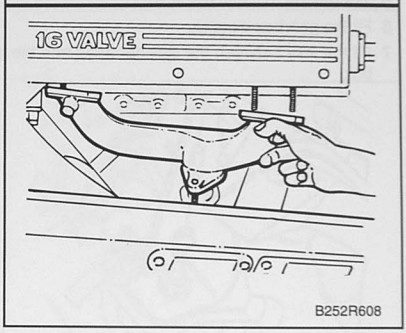
To remove

1 Remove the gearbox dipstick and plug the hole in the gearbox.
2 Remove the exhaust pipe from the exhaust manifold.
3 **Cars with EGR valve:**
Remove the EGR pipe from the exhaust manifold and EGR valve.
4 Remove the centre exhaust manifold (**A**).
5 Remove the upper rear stud from the outer exhaust manifold (**B**). Use a lock nut to undo the stud.



B252R607

6 Remove the remaining nuts and spacers sleeves. Lift the exhaust manifold off the studs by raising the leading end to clear the engine mounting.



B252R608

To fit

Fit in the reverse order.
Always use new gaskets.

Exhaust manifold, B202 Turbo

To remove

1 Remove the battery and its heat shield.

2 Remove the distributor (**A**).

See To Remove under *"Distributor, M1979-80"* on page 203 or *"Distributor, M1981-"* on page 205.

3 Remove the heat shield from under the distributor (**B**).

4 Remove the suction pipe and delivery pipe from the turbocharger (**C**).

5 Disconnect the boost pressure control valve hoses from the turbocharger and boost pressure regulator (wastegate).

6 **Cars with EGR valve:**

Remove the EGR pipe from the exhaust manifold and EGR valve.

7 Remove the turbocharger brace from the gearbox.

8 Remove the dipstick tube, if necessary, and plug the hole in the gearbox.

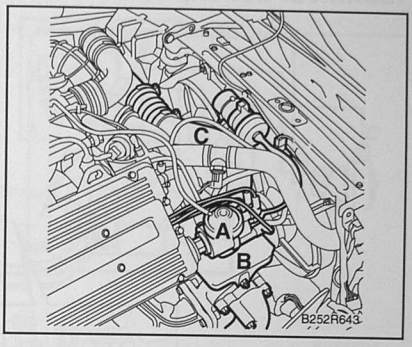
9 **M1988-:**

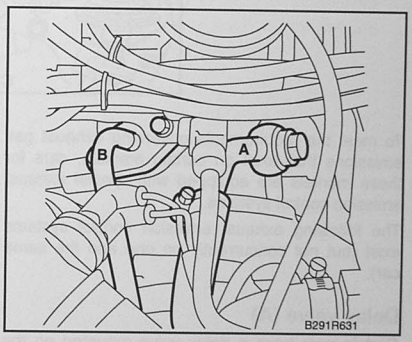
Drain the coolant into a suitable receptacle.

See To Drain under *"Coolant"* on page 154.

10 **M1988-:**

Disconnect the coolant pipes (**A**) from the turbocharger and the oil delivery pipe (**B**) (disconnect also from the engine block).





11 Disconnect the oil return pipe from the turbocharger.

12 Part the exhaust pipe and the turbocharger.

13 Remove the nuts, spacer sleeves and washers from the exhaust manifold.

14 Lower the exhaust manifold until it clears the studs. Remove the manifold together with the turbocharger.

15 Part the exhaust manifold and the turbocharger.

To fit

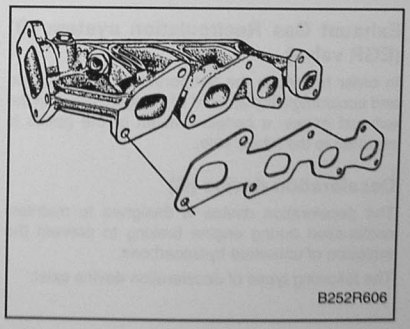
Fit the exhaust manifold in the reverse order.

Fit new gaskets to the mating faces and use new nuts to secure the exhaust manifold.

M1988-:

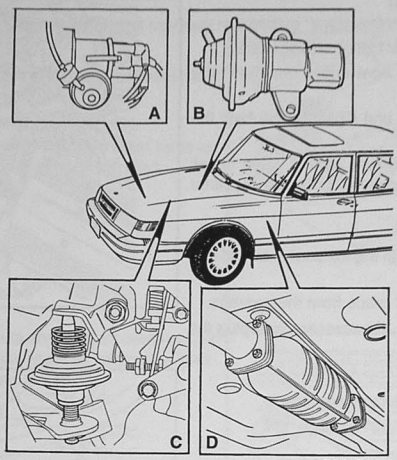
Fill the system with coolant.

See To Fill under *"Coolant"* on page 154.



Exhaust emission control system

Technical description



B254R610

To meet the requirements governing exhaust gas emissions that exist on certain markets, cars for these markets are equipped with special exhaust emission control systems.

The following exhaust emission control systems exist (but not concurrently on one and the same car):

Delay valve (A)

Certain cars have a delay valve mounted on the vacuum hose between the carburettor (throttle body) and the vacuum control unit of the distributor. The valve delays the formation of a vacuum. The ignition advance is therefore delayed during acceleration, reducing the emission of nitrogen oxides.

Exhaust Gas Recirculation system (B) (EGR valve)

In order to reduce the temperature of combustion and accordingly the amount of nitrogen oxides in the exhaust gases, a certain amount of the gases is returned to the intake side.

Deceleration device (C)

The deceleration device is designed to maintain combustion during engine braking to prevent the emission of unburned hydrocarbons.

The following types of deceleration device exist:

- Vacuum-controlled device for carburettor engines
- Mechanical throttle damper (Dashpot)
- Deceleration valve in throttle butterfly

Catalytic converter (D)

The exhaust gasses are purified by a catalytic converter located between the engine and the front silencer. The catalytic converter contains a ceramic honeycomb that is coated with catalysts such as platinum and rhodium.

The catalytic converter is a reliable, simple device that is maintenance-free.

Cars having a catalytic converter must only be run on unleaded petrol. Lead will destroy the catalysts.

Oxygen sensor controlled injection system (Lambda)

Oxygen sensor controlled injection is used to accurately control the fuel-air mixture.

The system has an oxygen sensor on the exhaust manifold. This sensor measures the amount of oxygen in the exhaust gases.

The control module then adjusts the fuel-air mixture accordingly to minimise emissions.

The system also has a catalytic converter.

EGR system, B202/B212

To check

1 Start the engine and run until warm. Allow the engine to idle.

2 Disconnect the signal converter hose **A** from the branch after the throttle body (ignition vacuum hose).

3 Disconnect the hose from the signal converter **C**. (Hold a finger over the hole or seal the hose so that no air from the outside is drawn into the intake manifold.)

4 Create negative pressure in the hose that has been removed using a vacuum pump.

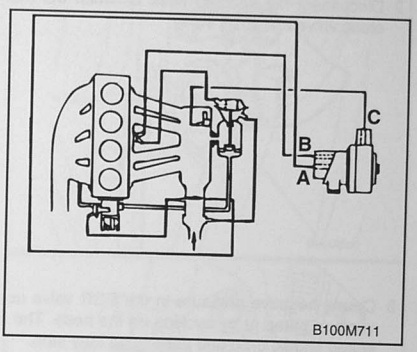
If working correctly, the idling speed should decrease and the engine may stop.

5 Refit the hose to the signal converter connection **C**.

6 Create negative pressure in the hose that has been disconnected.

Connect the hose to **A**.

If operating correctly the engine idling speed should not be affected.

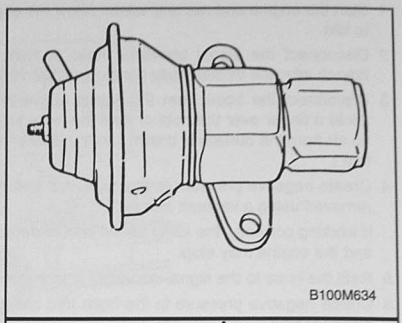


B100M711

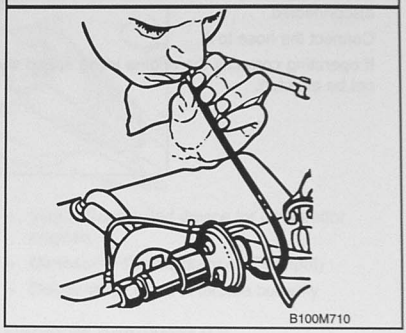
EGR valve

To check

1 Start and warm up the engine, allow it to idle.
2 Disconnect the vacuum hose between the thermostatic valve and EGR valve.


B100M634

3 Create negative pressure in the EGR valve using a vacuum pump or by sucking on the hose. The idling speed should drop and the engine may stop.
4 Refit the hose.
5 Disconnect the hose between the EGR valve and throttle body from the throttle body.
6 Pressurise the EGR valve using a radiator tester or by blowing into the hose.
If working correctly, the engine idling speed should drop and the engine may stop.
7 Refit the hose.


B100M710

To remove

1 Disconnect the vacuum hose and EGR pipe.
2 Remove the two bolts securing the EGR valve.
3 Remove the EGR valve.

To fit

Fit in the reverse order.
Always use new gaskets.

Mechanical throttle damper (Dash pot)

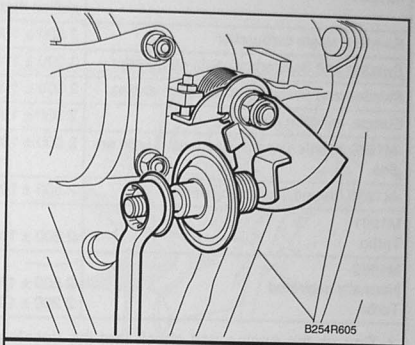
To check

1 Start the engine and run until fully warm.

2 Connect a tachometer and adjust the idling speed to the specified value.

3 Increase the engine speed to 3000 rpm, release the throttle and using a stopwatch record the time taken for the engine to return to the idling speed set under step 2.

The deceleration period should be 3-6 seconds.



To adjust

To adjust the deceleration period, slacken the lock nut on the dashpot and screw it away from the throttle lever (shorter deceleration period) or towards the stop (longer deceleration period).

Twin carburettor engines:

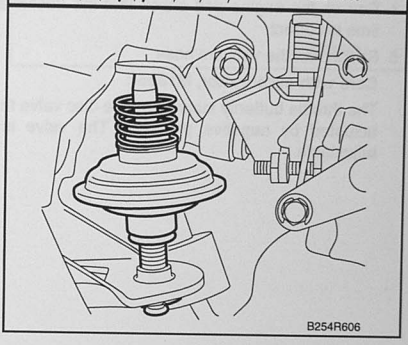
- Remove the dashpot lock nut.
- Set the dashpot to approximately the correct position.
- Tighten the lock nut.

Refer to the table on page 146.

- Finely adjust the dashpot position by loosening both the mounting bracket bolts on the inlet manifold and moving the bracket along its elongated holes to the correct position.

Refer to the table on page 146.

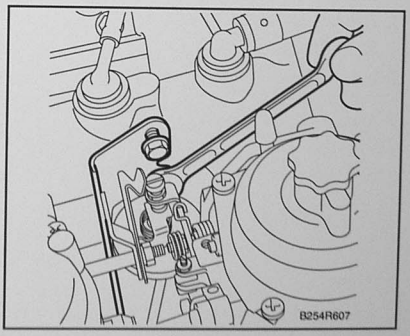
- Tighten the bolts.



1 Run the engine until fully warm and check that the CO value and ignition timing are correct.

2 Disconnect the vacuum hose from the distributor and plug the hose. If necessary, disconnect and plug the EGR hoses.

3 Rotate the throttle lever and check that the dashpot rod strikes the stop at the engine speed specified in the table below (check with a tachometer).



-M1981	Speed at which dashpot rod strikes throttle lever stop (rpm)
Sweden, single carburettor	2 600 ± 100
Sweden and Switzerland, twin carburettor	3 000 ± 100
Sweden and Switzerland, injection engine	2 000 ± 100
Europe, injection engine	2 500 ± 100
-M1980 Sweden and Switzerland, Turbo engine	2 000 ± 100
-M1980 Europe, Turbo engine	2 500 ± 100
M1981 Turbo	 2 200 ± 100
M1982- Normally aspirated Turbo	 2 500 ± 100 2 200 ± 100

4 Rev up the engine and check that the deceleration time is correct.

5 Reconnect the vacuum hose.

Cars with carburettor, M1985-:

The throttle butterfly incorporates a disc valve that is actuated by negative pressure. The valve is not adjustable.

Vacuum-controlled deceleration valve (carburettor engine)

To adjust

1 Start the engine and run until fully warm.

2 Allow the engine to idle and check that the deceleration valve is closed. If in doubt, turn the deceleration valve adjusting screw a few turns anticlockwise using tool 83 92 953.

3 Adjust the engine speed to the specified value.

See *"Idle speed adjustment"* on page 28.

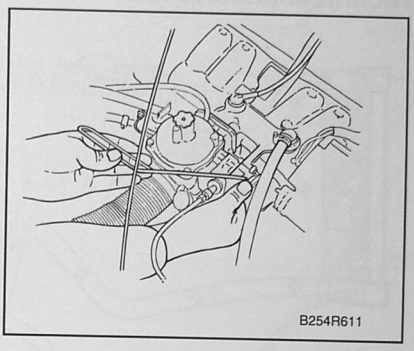
(If in doubt, also check the ignition timing.)

See *"Checking/adjusting ignition timing"* on page 27.

4 Fully open the deceleration valve by turning the adjusting screw clockwise until the engine speed no longer increases (approx. 1500-1800 rpm).

5 Carefully close the deceleration valve by turning the adjusting screw anticlockwise until the valve just closes (the engine will now be running at normal idling speed). Then turn the deceleration adjusting screw 1/2-3/4 turn anticlockwise.

6 Check the adjustment by revving up the engine to about 3 000 rpm and then releasing the throttle to return to idling position. Despite a slight delay, the engine should unfailingly return to the normal idling speed. If not, the deceleration valve adjusting screw should be turned slightly further anticlockwise.

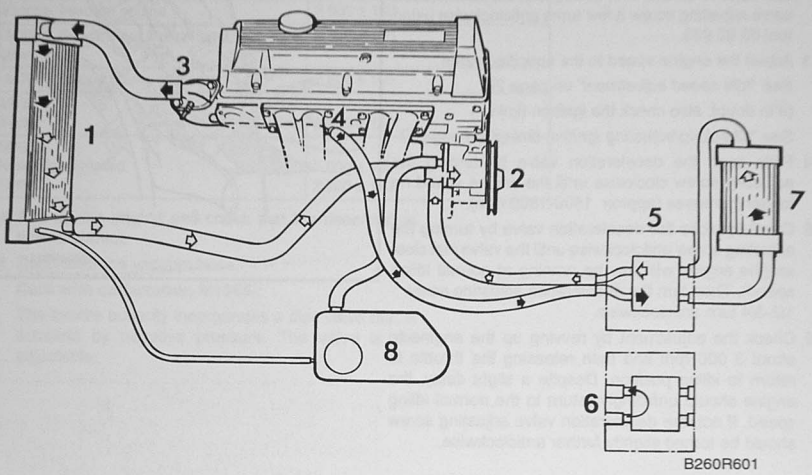


Note

Different settings can apply to early models and market variants. See the exhaust emissions control label on the left-hand side of the engine compartment on the front wheel housing panel.

Cooling system

Technical description



Cooling system

1 Radiator
2 Coolant pump
3 Thermostat housing
4 Outlet, inlet manifold
5 Water valve, open
6 Water valve, closed
7 Heat exchanger
8 Expansion tank

Black arrow: Hot coolant
White arrow: Cold coolant

Cooling system

The cooling system is a pressurized unit with a cross-flow radiator and expansion tank.

- The cooling system includes a **coolant pump** which is located on the timing cover and is driven by the crankshaft via a V-belt. The pump circulates coolant around the system.
- A **thermostat** is located in the housing bolted to the front end of the cylinder head. This thermostat determines whether or not the coolant is fed through the radiator for cooling. This accordingly controls the temperature.
- A **radiator fan** mounted behind the radiator assists cooling when required. The fan is electrically operated and is connected over a thermostatic switch that monitors the temperature of the coolant and starts the fan when the coolant temperature is too high.

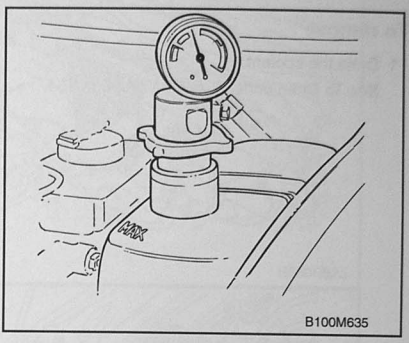
  The fan most often cuts in during the summer in warm weather.
- The liquid in the **expansion tank** (coolant reservoir) does not circulate in the cooling system. The purpose of the tank is to regulate the coolant level in the system. The coolant is topped up through the expansion tank.
- When the cabin heating control is turned up, the coolant passes through a heat exchanger to heat up the ventilation air.

Oil cooler (Turbo and automatic transmission)

An air-cooled engine oil cooler is fitted to all cars with a turbocharger or automatic transmission. The cooler is located under the left-hand headlight.

On these models, the cooler hoses are connected to an adapter by the oil filter. The adapter contains a thermostat that opens (allows circulation through the cooler) when the oil temperature is in excess of +75°C (167°F).

Checking and pressure testing



B100M635

Checking the radiator

To check whether the radiator is blocked, run the engine until the thermostat opens . Thereafter, check the temperature of the radiator using your hand. If distinct hot and cold zones are apparent, the radiator is blocked and must either be cleared or replaced.

Pressure testing the cooling system

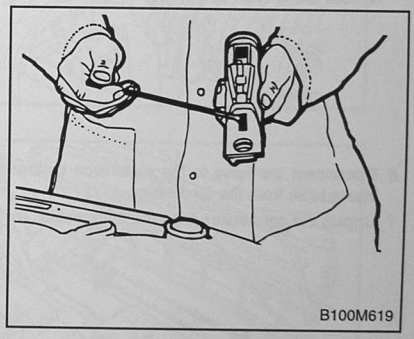
It is often hard to find leaks in the cooling system as full pressure is only reached while driving. One useful method is to pressurize the system using a pressure tester and then check the radiator, hoses and seals.

See *"Pressure testing"* on page 15.

If you suspect that there are leaks in the cooling system without detecting any obvious damage, have the system pressure tested at a Saab workshop.

Fluid level, checking

- Check the level of coolant in the expansion tank. Top up with coolant if the level is below the lower marking. Always mix the coolant before topping up.
- It is a good idea to check the freezing point of the coolant before the onset of winter. Unscrew the expansion tank cap and draw up some coolant using a hydrometer. Check the freezing point of the coolant. If the freezing point is too high the glycol content of the coolant is too low. Top up with glycol mixture having drained the equivalent amount of coolant, or change the coolant.


B100M619

⚠ WARNING

Always unscrew the expansion tank cap carefully to gradually release the pressure and any steam before removing the cap.

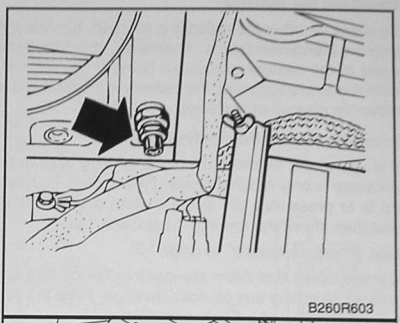
Important

Never add large quantities of coolant when the engine is hot as this could crack the cylinder head.

Radiator

To remove

1 Drain the coolant.
See To Drain under *"Coolant"* on page 154.

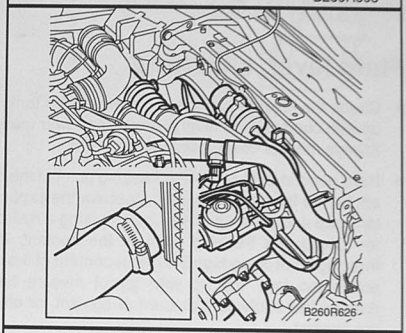

B260R603

2 Remove the distributor cap.

3 Detach the upper coolant hose and disconnect the lower coolant hose.

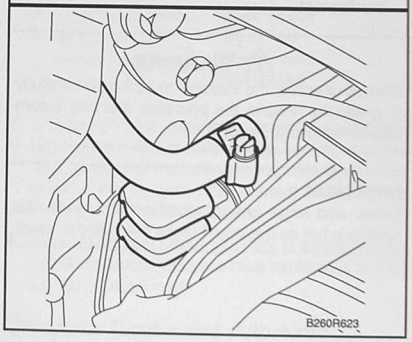
4 **Cars with turbocharger:**
Remove the APC valve and boost pressure pipe.

5 Unplug the connectors from the radiator fan and remove the ignition coil.

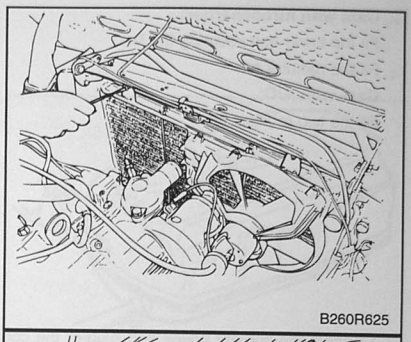

B260R626

6 Disconnect the hose to the expansion tank and air intake hose from the air cleaner.

7 Unplug the connectors from the thermostatic switch.


B260R623

8 Remove the two retaining bolts in the upper radiator member and then lift out the radiator by first tipping the top edge slightly backwards.

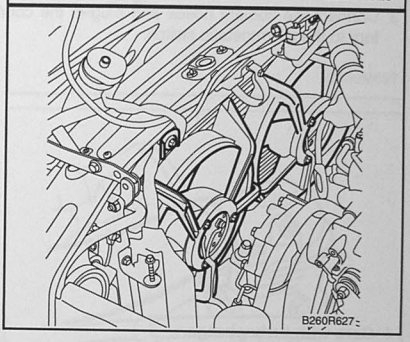

B260R625

9 **Cars with turbocharger:**
Remove the radiator fan.
Cars with A/C:
Remove the two radiator fans.

10 **Cars with turbocharger:**
Remove the radiator.

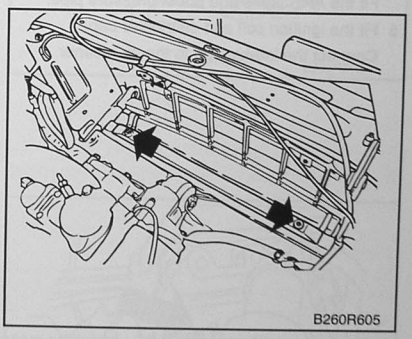
11 Remove the rubber seal from the radiator.

12 Remove the lower bolt securing the radiator fan.

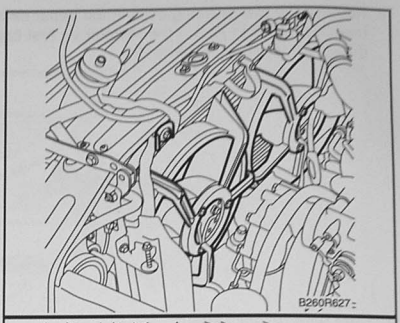

B260R627

To fit

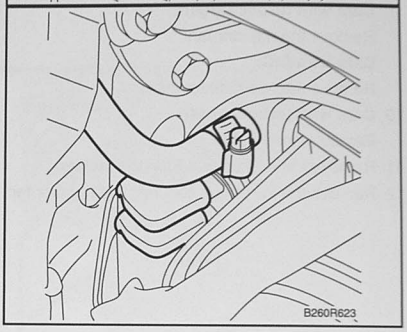
1 Guide the lugs on the radiator into the holes in the radiator member. Fit the retaining bolts.


B260R605

2 **Cars with turbocharger:**
Fit the lower bolt securing the fan.
Fit the radiator fan.
Cars with A/C:
Fit the two radiator fans.

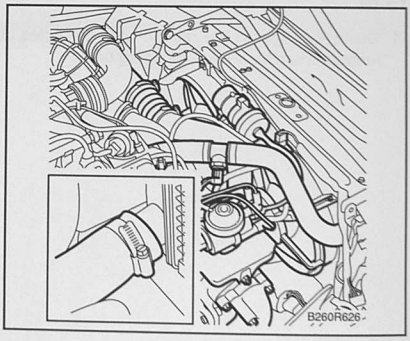


3 Connect the coolant hoses and plug in the connectors to the thermostatic switch.



4 **Cars with turbocharger:**
Fit the APC valve and boost pressure pipe.

5 Fit the ignition coil and distributor cap.
Connect the intake pipe to the air cleaner.



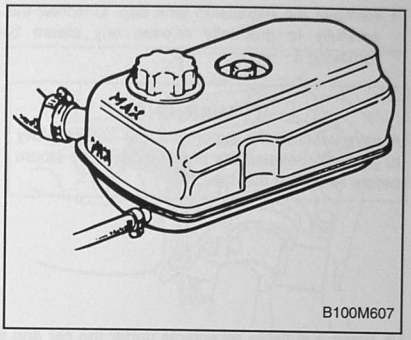
6 Fill the system with coolant then bleed the system.
See To Fill under *"Coolant"* on page 154.

Thermostat

To remove

1 Remove the expansion tank cap. Unscrew the cap carefully to gradually release any steam before removing it.

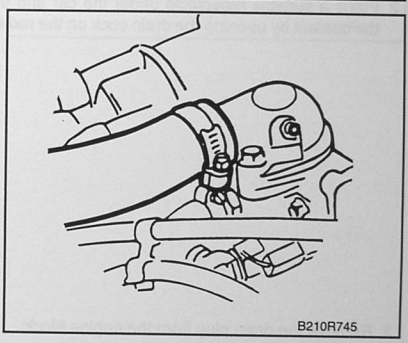
> **⚠ WARNING**
> Always unscrew the expansion tank cap carefully to gradually release the pressure and any steam before removing the cap.



B100M607

2 Refit the cap.

3 Remove the bolts securing the thermostat housing cover and lift out the thermostat.


B210R745

To fit

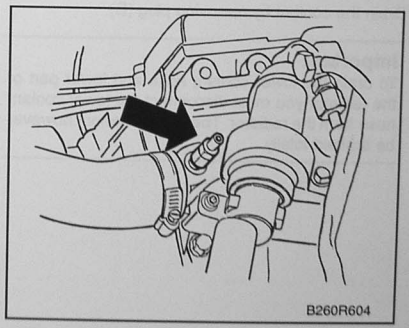
1 Fit a new thermostat and gasket.

2 Fit the thermostat housing cover.

3 Open the bleed nipple on the thermostat housing until coolant flows out through the nipple.

4 Run the engine to normal operating temperature and top up the coolant as necessary.

See To Fill under *"Coolant"* on page 154.

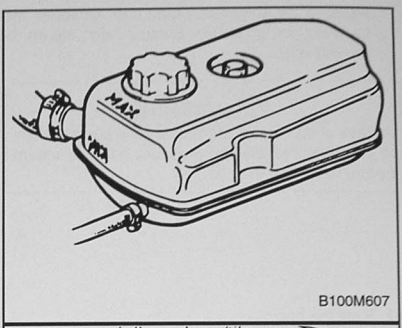

B260R604

Coolant

To drain

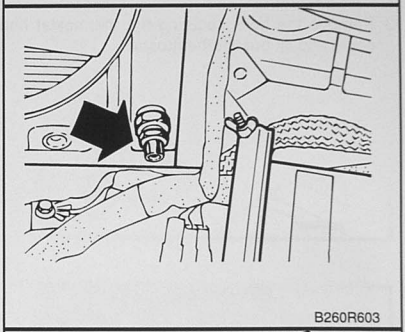
1 Remove the expansion tank cap. Unscrew the cap carefully to gradually release any steam before removing it.

> **⚠ WARNING**
> Always unscrew the expansion tank cap carefully to gradually release the pressure and any steam before removing the cap.



B100M607

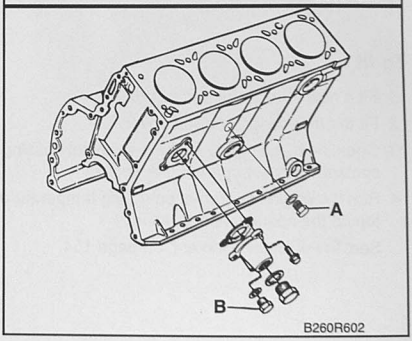
2 Place a suitable receptacle under the car and drain the coolant by opening the drain cock on the radiator.


B260R603

3 Remove the drain plug from the engine block:

Cars with B201 cylinder block -M1984:
Drain the coolant by removing plug (**A**).
Cars with B201 engine block M1985- and B202/B212:
Drain the coolant by removing plug (**B**).

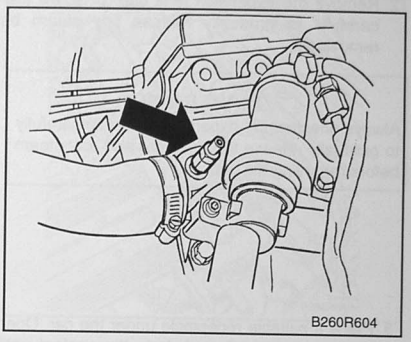
Important
To drain the lower coolant hose and lower part of the radiator you must disconnect the lower coolant hose from the radiator. The system cannot however be drained totally.



B260R602

To fill

1 Close the drain clock on the radiator and tighten the drain plug in the engine block. Refit the coolant hose, if removed.
2 Set the cabin heating to max.
3 Open the bleed nipple on the thermostat housing.


B260R604

4 Fill the system with coolant mixture (50% Saab Original Coolant and 50% clean water).
Total volume: approx. 10 litres.
5 Close the nipple when coolant starts to flow out through the nipple.
6 Start the engine and run to normal operating temperature. Run the engine at moderate speed with the heating at maximum. Top up the system as the air is expelled.
See *"Fluid level, checking"* on page 149.

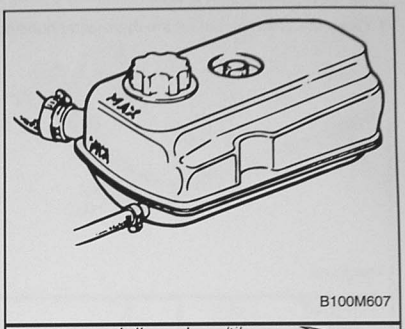
Expansion tank

To remove

1 Raise the car.

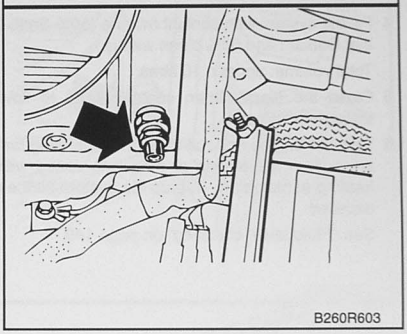
2 Remove the expansion tank cap. Unscrew the cap carefully to gradually release any steam before removing it.

> **⚠ WARNING**
> Always unscrew the expansion tank cap carefully to gradually release the pressure and any steam before removing the cap.



B100M607

3 Place a suitable receptacle under the car. Open the radiator drain cock and drain the coolant until the expansion tank is empty.

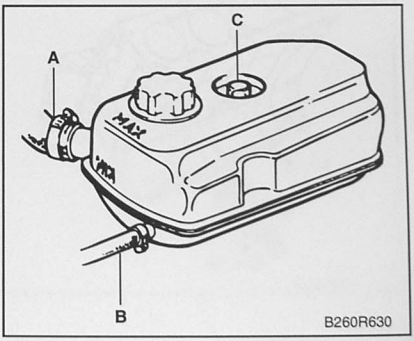

B260R603

4 Close the radiator drain cock.

5 Remove the coolant hoses (**A**) and (**B**).

6 Remove the bolt securing the expansion tank (**C**).

7 Remove the expansion tank.



B260R630

To fit

Fit in the reverse order.

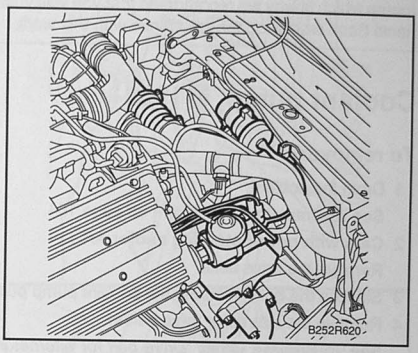
Fill the system with coolant.

See To Fill under *"Coolant"* on page 154.

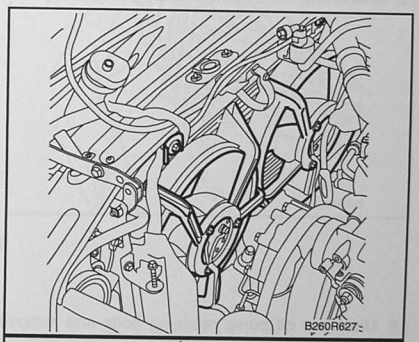
Radiator fan

To remove

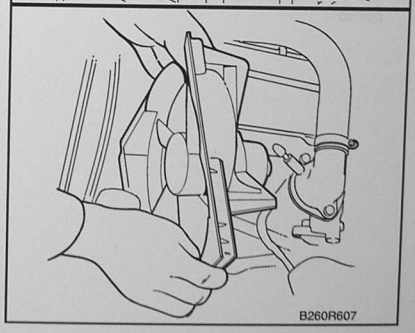
1 Disconnect the negative (-) lead from the battery.
2 Unplug the connectors from the radiator fan.
3 Unplug and remove the HT cable between the distributor cap and ignition coil and remove the ignition coil.



4 **Cars with turbocharger:**
Remove the APC valve and turbocharger delivery pipe.
5 Undo the bolts and remove the radiator fan and cowl from the radiator. Lift the radiator fan out of the engine compartment and place it on a workbench.



6 Unbolt the radiator ran motor and remove the motor from the cowl.



7 Undo the centre nut, release the clamp and remove the fan from the shaft.

To fit

Fit in the reverse order.

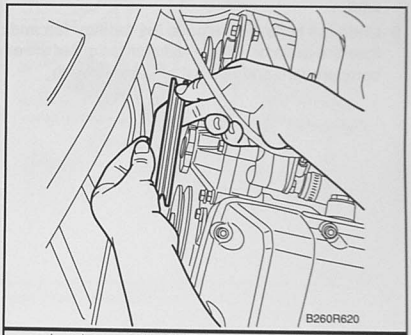
Coolant pump, M1979-80

Important
Special tools are required to change the coolant pump which is why we recommend that you visit your local Saab workshop for assistance with this work.

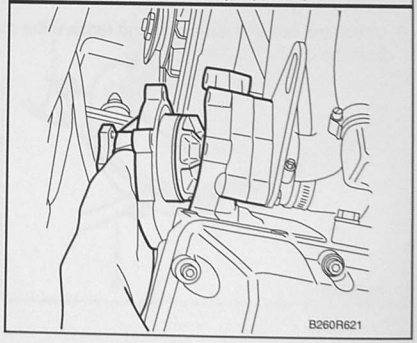
Coolant pump, M1981-

To remove

1 Drain the coolant.
See To Drain under *"Coolant"* on page 154.
2 **Cars with power steering and/or A/C:**
Remove the drive belts.
3 Slacken the bolts securing the coolant pump pulley.
4 Remove the alternator drive belt(s).
See To Remove under *"Drive belt for alternator"* on page 84.
5 Unbolt and remove the coolant pump pulley.


B260R620

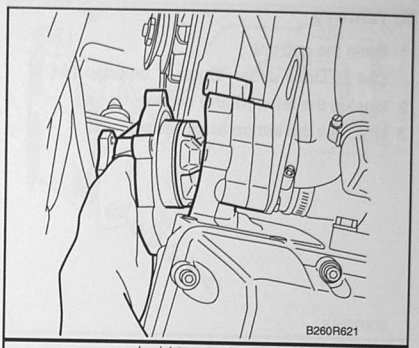
6 Undo the oil pump retaining bolts and remove the pump.


B260R621

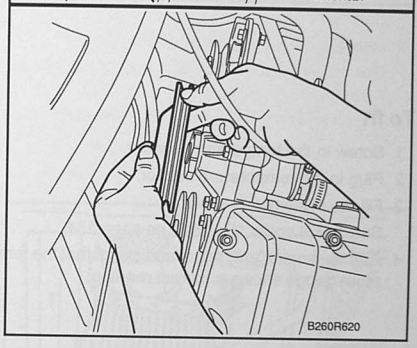
To fit

1 Clean the sealing surface and fit a new gasket.

2 Fit the coolant pump.



3 Fit the pulley.



4 Fit the alternator drive belt(s).

See To Fit under *"Drive belt for alternator"* on page 84.

5 Tighten the pulley bolts.

6 **Cars with power steering and/or A/C:**

Fit the drive belts.

See To Fit under *"Drive belt for servo pump"* on page 83 and *"Drive belt for A/C compressor"* on page 83.

7 Tension the drive belts.

See *"Belt tension, drive belts"* on page 85.

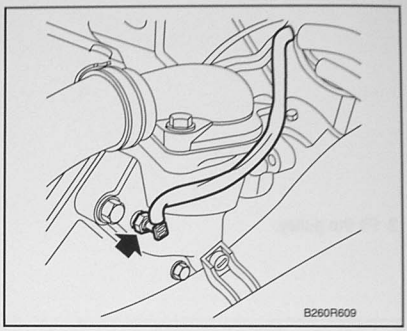
8 Fill the system with coolant.

See To Fill under *"Coolant"* on page 154.

Coolant temperature sensor

To remove

1 Drain the coolant.
See To Drain under "*Coolant*" on page 154.
2 Unplug the temperature sensor.
3 Unscrew the temperature sensor.



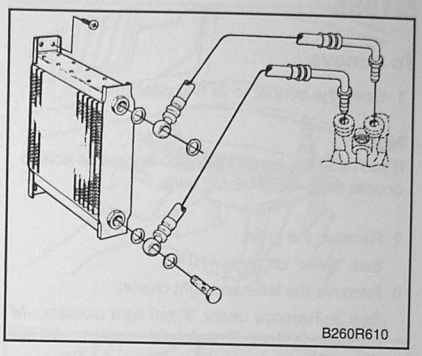
To fit

1 Screw in the temperature sensor.
2 Plug in the temperature sensor.
3 Fill the system with coolant.
See To Fill under "*Coolant*" on page 154.
4 Run the engine until warm and check that the temperature gauge shows a correct reading.

Oil cooler, air-cooled, all B201 Turbo -M1985

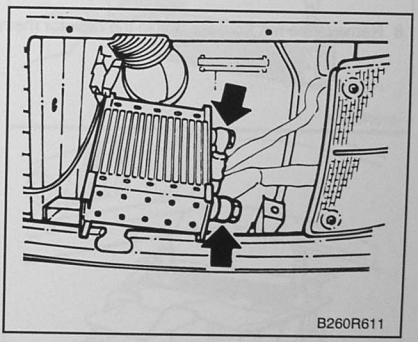
To remove

1 Open the bonnet to its first position.


B260R610

Note
If you open the bonnet fully you will not be able to access the grille retaining bolts.

2 Remove the grille.
See *"Grille"* on page 470.
3 Remove the left-hand headlight.
See steps 1-3 of To Change under *"Headlight lenses"* on page 222.
4 Remove the wiper motor.
See To Remove under *"Headlight wipers"* on page 248.
5 Undo the 4 screws securing the oil cooler to the radiator and remove the cooler
(2 at top and 2 at bottom).
6 Place a suitable receptacle for oil under the cooler before removing the hydraulic hoses.
7 Detach the hydraulic hoses from the cooler.


B260R611

To fit

Fit in the reverse order.
Check the engine oil level and top up as necessary.
Start the engine and let it run for a while.
Switch off the engine.
Check the level after 3-5 minutes.
Top up as necessary.

Oil cooler, air-cooled, Turbo B202 M1984- and Turbo B201 M1986-

To remove

1 Open the bonnet to its first position.

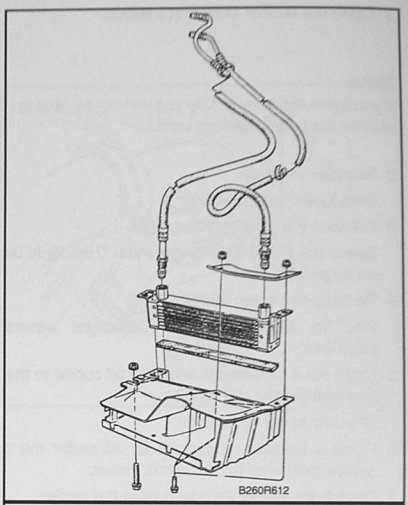
Note
If you open the bonnet fully you will not be able to access the grille retaining bolts.

2 Remove the grille.
See *"Grille"* on page 470.

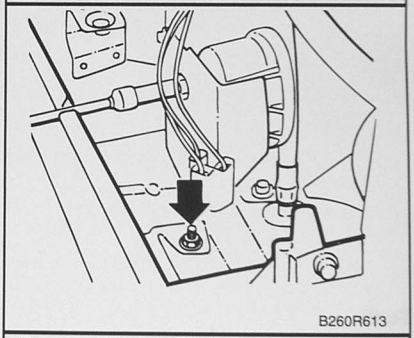
3 Remove the left-hand light cluster.
See To Remove under *"Front light clusters, -M1986"* on page 229 or *"Front light clusters, M1987-"* on page 230.

4 Remove the left-hand headlight.
See steps 1-3 of To Change under *"Headlight lenses"* on page 222.

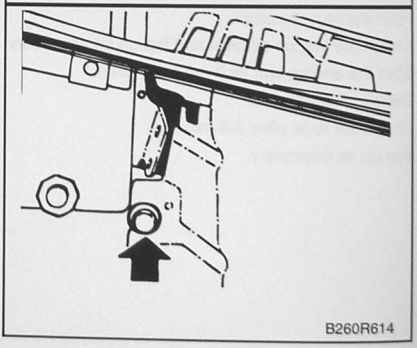
5 Remove the spoiler grille from in front of the oil cooler.


B260R612

6 Remove the nut from the bolt in the radiator member.

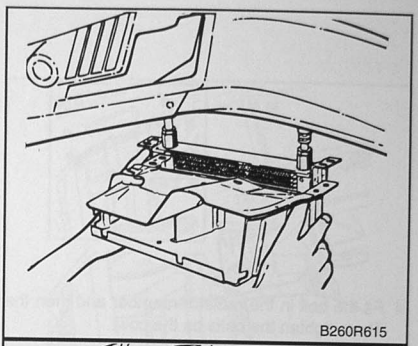

B260R613

7 Remove the bolt from underneath.


B260R614

8 Remove the bolts securing the protective cowl and cooler to the body.

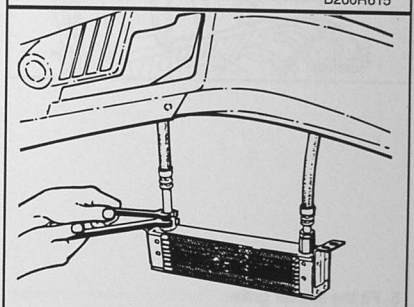
9 Lower the cowl and remove it from the oil cooler.



B260R615

Note
Place a suitable receptacle for oil under the cooler before removing the hydraulic hoses.

10 Detach the hydraulic hoses from the cooler.

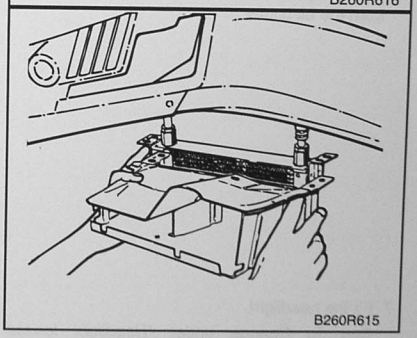


B260R616

To fit

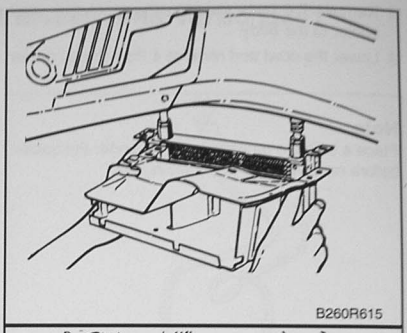
1 Connect the hydraulic hoses to the oil cooler.

2 Insert the cooler into the cowl.

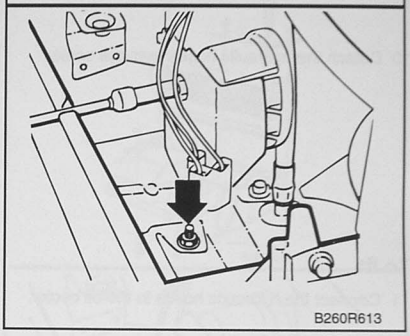


B260R615

3 Fit the cowl but do not tighten the bolts.

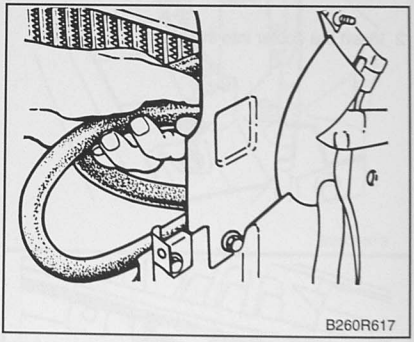

B260R615

4 Fit the bolt in the radiator member and then the nut. Then, tighten the bolts on the cowl.


B260R613

5 Fit the spoiler grille.

6 Pull the hydraulic hoses such that they run straight up from the oil cooler.


B260R617

7 Fit the headlight.

See To Change under *"Headlight lenses"* on page 222.

8 Fit the grille.

See *"Grille"* on page 470.

9 Close the bonnet.

10 Check the engine oil level and top up as necessary.

Start the engine and let it run for a while.

Switch off the engine.

Check the level after 3-5 minutes.

Top up as necessary.

Intercooler, B202 Turbo M1984- and B201 Turbo M1986-

To remove

1 Open the bonnet to its first position.

2 Remove the mounting plate between the radiator member and the intercooler.

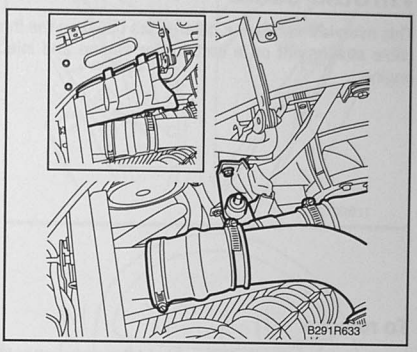
M1986-:

Remove the plastic cover from between the radiator member and the cooler.

Remove the bolt securing the radiator to the radiator member.

3 Disconnect both turbocharger delivery pipes.

4 Lift out the intercooler.



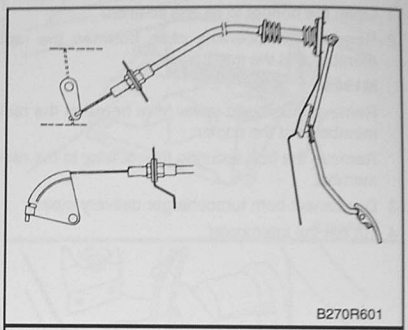
To fit

Fit in the reverse order.

Accelerator linkage

Throttle cable

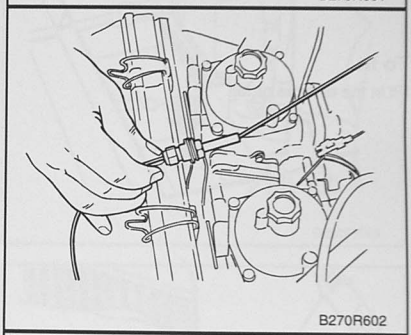
This overview shows the differences between the throttle cable attachment on a carburettor engine and injection engine.



B270R601

To remove

1 Disconnect the throttle cable at the carburettor (throttle housing) and remove the sheath from the bracket.

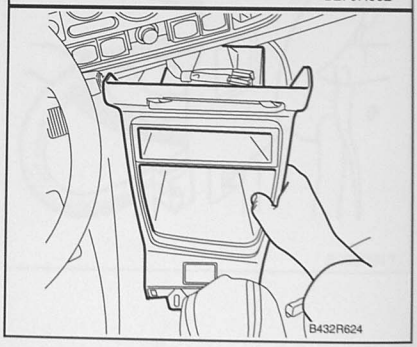


B270R602

2 **Cars with front centre console:**

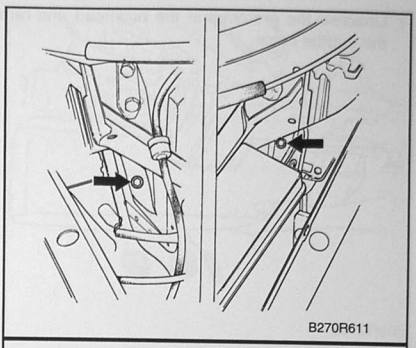
Remove the front centre console.

See To Remove under *"Centre console, front"* on page 551.

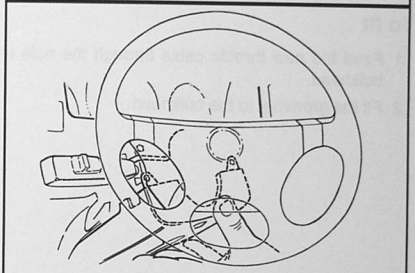


B432R624

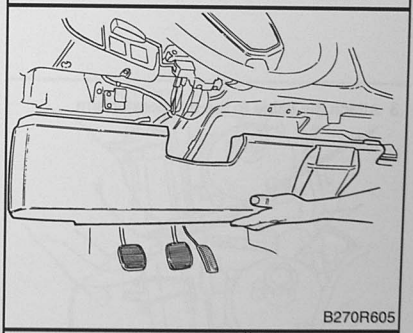
3 Remove the retaining bolts from the knee protector.
The bolts are located on opposite sides of the engine compartment closest to the bulkhead as well as behind the ashtray.


B270R611

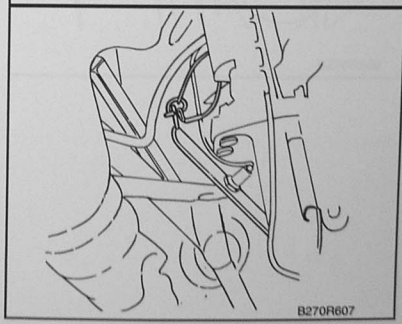
4 Remove the two screws securing the cowl under the steering column. Remove the cowl.


B351R652

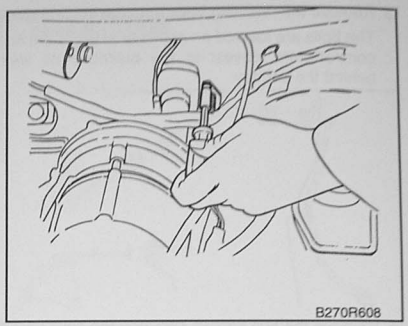
5 Lift out the knee protector.


B270R605

6 Unhook the throttle cable from the accelerator arm.


B270R607

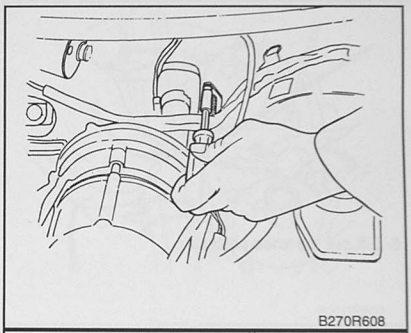
7 Unscrew the grommet in the bulkhead and remove the throttle cable.


B270R608

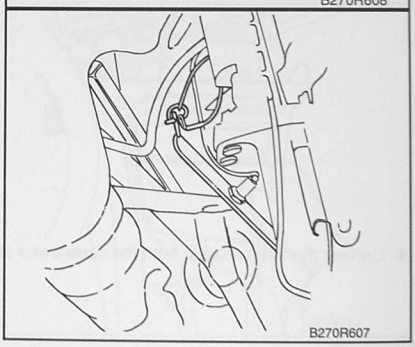
To fit

1 Feed the new throttle cable through the hole in the bulkhead.

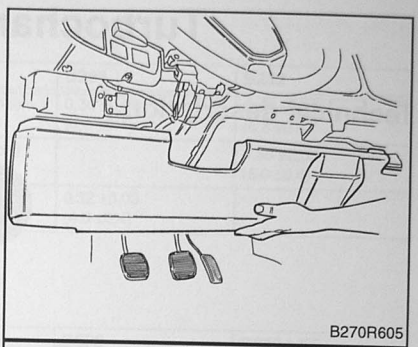
2 Fit the grommet to the bulkhead.


B270R608

3 Attach the cable to the accelerator arm.

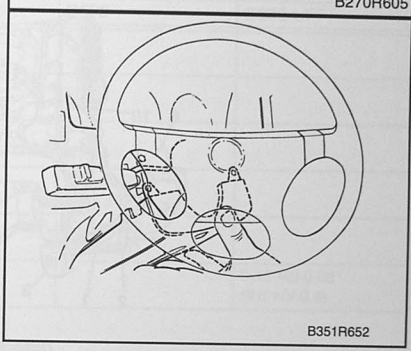

B270R607

4 Fit the knee protector under the dashboard.



B270R605

5 Fit the two screws securing the cowl under the steering column.



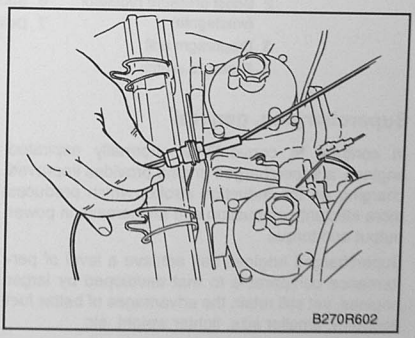
B351R652

6 **Cars with front centre console:**

Fit the front centre console.

See To Fit under *"Centre console, front"* on page 551.

7 Attach the throttle cable to the carburettor (throttle body).



B270R602

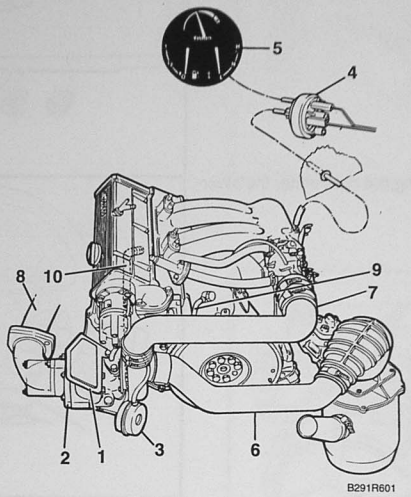
8 Fit the sheath to the bracket and adjust the tension of the cable to eliminate play in the accelerator.

9 Press the accelerator to the floor and check that the throttle valve is wide open.

Adjust as necessary.

Turbocharger system

Technical description



Turbocharged engine

1 Turbocharger
2 Boost pressure regulator (wastegate)
3 Diaphragm unit
4 Pressure switch
5 Turbo gauge
6 Suction pipe
7 Delivery pipe
8 Exhaust pipe
9 Oil delivery line
10 Oil return line

Supercharging, general

In contrast to conventional, normally aspirated engines, a supercharged engine provides improved charging on the induction stroke, which produces more efficient combustion and an increase in power output and torque.

Supercharged engines can achieve a level of performance comparable to that developed by larger engines, yet still retain the advantages of better fuel economy, smaller size, lighter weight, etc.

Turbocharging

Supercharging is achieved using a turbocharger, which means that the engine's exhaust gases are employed to drive a turbine.

Boost pressure regulation

The boost pressure regulator (wastegate) is located on the exhaust side of the engine and regulates the flow of exhaust gases by deploying a bypass duct beside the turbine.

Pressure switch

If the boost pressure should become too high, the pressure switch cuts off the electrical supply to the fuel pump. The pressure switch is either located in front of the left-hand wheel housing in the engine compartment or under the dashboard on the same bracket as the direction indicator relay.

APC system

The APC system enables optimum use to be made of the properties of a given fuel in order to achieve maximum engine output and good fuel economy. The APC system regulates the boost pressure by means of an electric pressure sensor.

Basic charging pressure

Basic charging pressure, APC		B201	B202
-M1985 (without cat.)	bar (psi)	0,30 ±0,03 (4.4 ±0.4)	0,40 ±0,03 (5.8 ±0.4)
M1985- (with cat.)	bar (psi)		0,35 ±0,03 (5.0 ±0.4)
M1986-	bar (psi)	0,32 ±0,03 (4.6 ±0.4)	

Maximum charging pressure

Max. charging pressure		B201	B202	B202 LTT
M1981-85	bar (psi)	0,70 ±0,05 (10.1 ±0.7)		
M1986 M1987- (without cat.)	bar (psi)	0,75 ±0,05 (10.8 ±0.7)		
M1987- (with cat.)	bar (psi)	0,67 ±0,05 (9.7 ±0.7)		
M1984- (without cat.)	bar (psi)		0,85 ±0,05 (12.3 ±0.7)	
M1984- (with cat.)	bar (psi)		0,75 ±0,05 (10.8 ±0.7)	
M1990-	bar (psi)			0,45 +0/-0,03 (6.5 +0/-0.4)

APC system

Important

The basic charging pressure is the reference point for the APC system and directly affects the boost pressure level. It must therefore be adjusted correctly.

Increasing the basic charging pressure over the specified value will excessively increase the boost pressure which will damage the engine.

The maximum charging pressure, which optimises engine output, is controlled by the APC system. Increasing the basic charging pressure will therefore not increase engine output.

To check

The operation of the boost pressure control valve is an indication that the components of the APC system - knock sensor, pressure sensor, control module and solenoid valve - are working.

1 Remove the pressure sensor hose from the intake manifold.

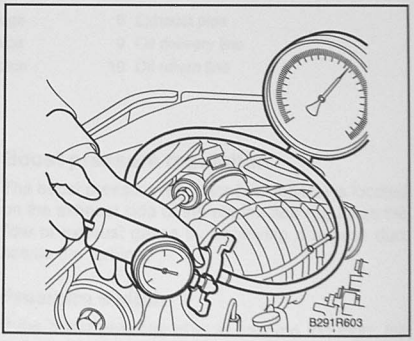
Seal the nipple on the intake manifold.

2 Connect pressure gauge 83 93 514 to the hose from the pressure sensor. Stand the pressure gauge vertically to avoid incorrect readings.

M1983-:

Connect pressure gauge 83 93 514 to the hose from the pressure monitor.

3 Connect the air pump using a nipple and hose to the hose from the pressure sensor.



4 Start the engine and increase the speed to at least 2100 rpm (to ensure that the APC system is in operation).

5 Increase the pressure to 0.50 bar (6.6 psi).

6 Check that the boost pressure control valve starts to operate (chattering sound).

If the boost pressure control valve does not start to work, contact your local Saab workshop.

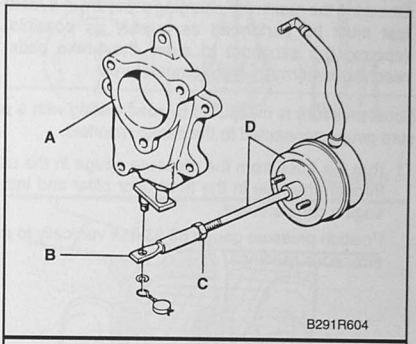
Pressure regulator

To adjust

(Diaphragm unit and boost pressure regulator mounted on turbocharger.)

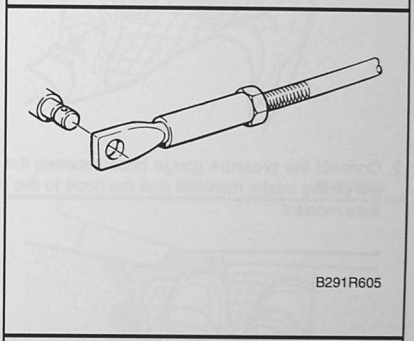
1 Hold the control arm on the regulator in the "shut" position. Adjust the end piece on the pushrod so that it can be easily fitted to the control arm stud.

A Boost pressure regulator housing
B End piece
C Lock nut
D Diaphragm unit with pushrod

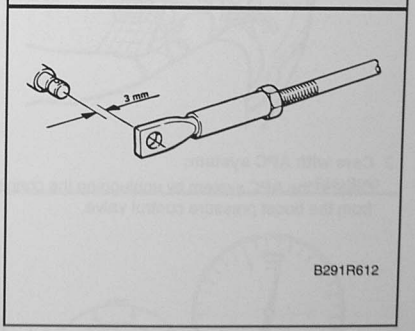


B291R604

2 **-M1982 (without APC):**
Screw the end piece in 6 turns on the pushrod.
Tighten the lock nut.


B291R605

3 **M1982 with APC and M1983-:**
Screw the end piece in 3.5 turns on the pushrod (= 3 mm pre-load).
Tighten the lock nut.



B291R612

4 Pull out the pushrod and hook the end piece onto the control arm stud.
Fit the circlip.

5 Check the boost pressure by road testing the car.
See *"Boost pressure, checking"* on page 174.
Adjust as necessary until the boost pressure is within the specified limits.

Boost pressure, checking

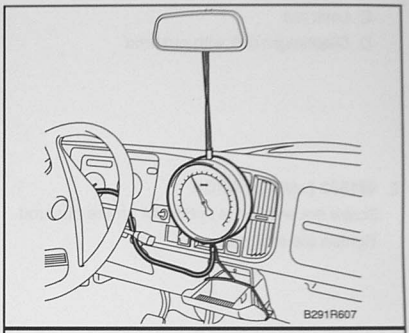
Checking on the road

Important
Checking the maximum charging pressure in a road test must be performed as quickly as possible (approx. 3-5 seconds) to avoid the brake pads reaching abnormally high temperatures.

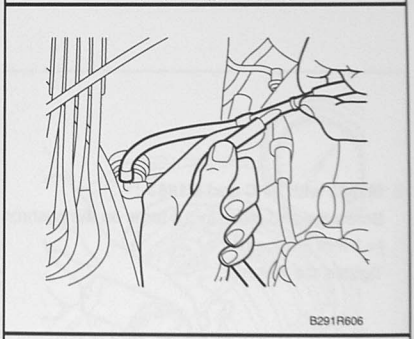
Boost pressure is measured by road testing with a pressure gauge connected to the intake manifold.

1 Run the hose from the pressure gauge in the cabin, through the hole in the front door pillar and into the engine compartment.

Position pressure gauge 83 93 514 vertically to avoid erroneous readings.

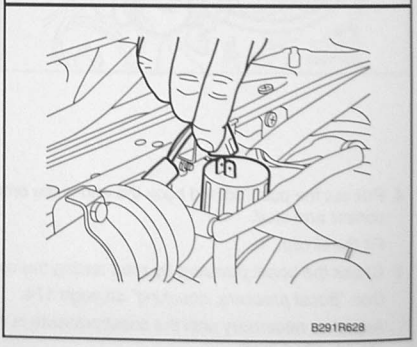

B291R607

2 Connect the pressure gauge hose between the nipple on the intake manifold and the hose to the pressure monitor.


B291R606

3 **Cars with APC system:**

Disable the APC system by unplugging the connector from the boost pressure control valve.

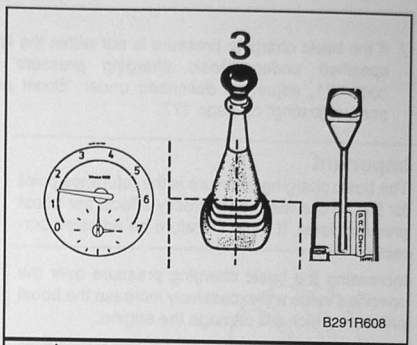

B291R628

4 **Manual gearbox**

The test should be started in 3rd gear with the engine running under 1500 rpm.

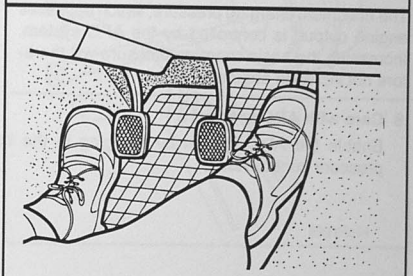
Automatic transmission:

The test should be started with the gear selector in position 1 with the engine running under 1500 rpm.



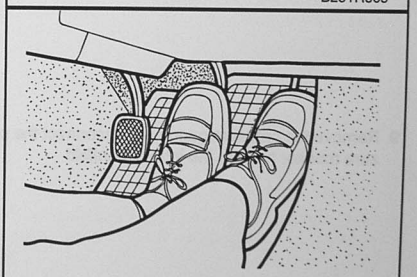
B291R608

5 Depress the accelerator to the floor.



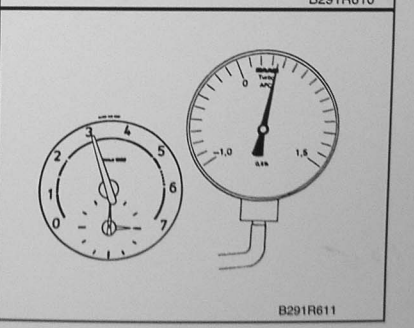
B291R609

6 When the engine approaches 3 000 rpm apply the brakes (keeping the accelerator pressed to the floor) so that the engine is put under full load at 3 000 rpm.



B291R610

Read off the basic charging pressure from the pressure gauge.



B291R611

7 If the basic charging pressure is not within the limits specified under *"Basic charging pressure"* on page 171, adjust as described under *"Boost pressure, adjusting"* on page 177.

Important

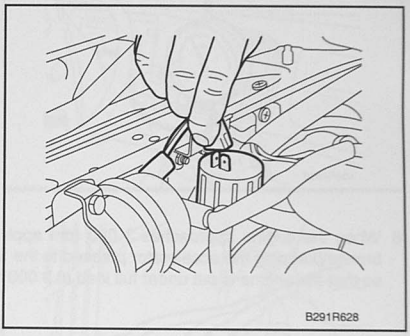
The basic charging pressure is the reference point for the APC system and directly affects the boost pressure level. It must therefore be adjusted correctly.

Increasing the basic charging pressure over the specified value will excessively increase the boost pressure which will damage the engine.

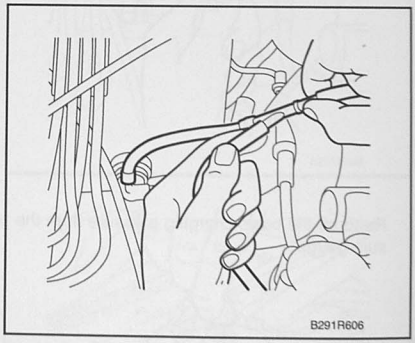
The maximum charging pressure, which optimises engine output, is controlled by the APC system. Increasing the basic charging pressure will therefore not increase engine output.

8 **Cars with APC system:**

Enable the APC system by plugging in the boost pressure control valve.



9 Remove the pressure gauge and reconnect the pressure monitor hose to the intake manifold.

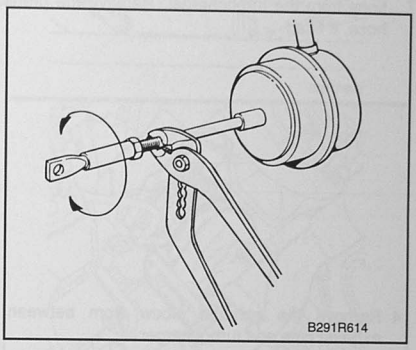


Boost pressure, adjusting

After road test

Working on the basis of the boost pressure reading obtained, adjust as follows:

1 Remove the anti-tamper seal and circlip from the control lever stud on the boost pressure regulator to which the end piece is attached.
2 Slacken the end piece nut.
3 Unhook the pushrod from the boost pressure regulator.



Important
If you do not hold the pushrod steady to prevent it rotating while adjusting the end piece you may damage the diaphragm. Hold the rod as close to the thread as possible to avoid burrs that could bind in the diaphragm unit bush and disrupt boost pressure regulation.

- **Insufficient boost pressure:** rotate the end piece clockwise (shorten the pushrod).
  1 turn=0.04 bar (0.58 psi)
- **Excessive boost pressure:** rotate the end piece anticlockwise (lengthen the pushrod).
  1 turn=0.04 bar (0.58 psi)

For the correct value refer to *"Basic charging pressure"* on page 171 or *"Maximum charging pressure"* on page 171.

Important
The basic charging pressure is the reference point for the APC system and directly affects the boost pressure level. It must therefore be adjusted correctly.

Increasing the basic charging pressure over the specified value will excessively increase the boost pressure which will damage the engine.

The maximum charging pressure, which optimises engine output, is controlled by the APC system. Increasing the basic charging pressure will therefore not increase engine output.

4 Attach the pushrod to the boost pressure regulator.
5 Fit the circlip behind the locknut.
6 Check the basic charging pressure on the road.
See *"Boost pressure, checking"* on page 174.

Turbocharger

To remove

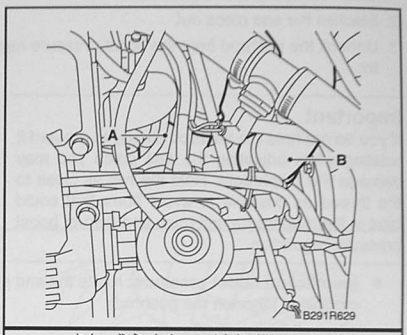
1 Remove the battery.

2 **M1988-:**

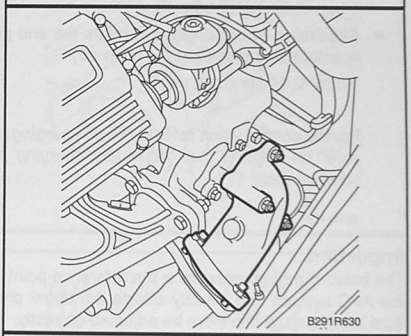
Drain the coolant into a suitable receptacle.

See To Drain under *"Coolant"* on page 154.

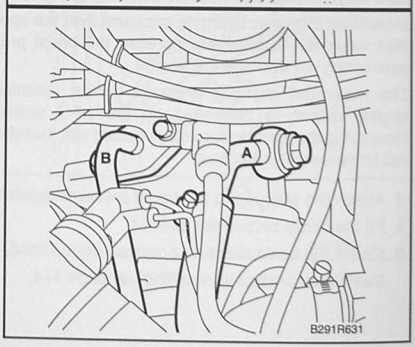
3 Disconnect the suction (**A**) and pressure (**B**) connections from the turbocharger. Remove the preheater hose, if fitted.



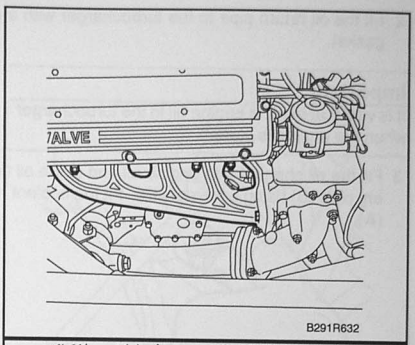
4 Remove the exhaust elbow from between the exhaust pipe and turbocharger.



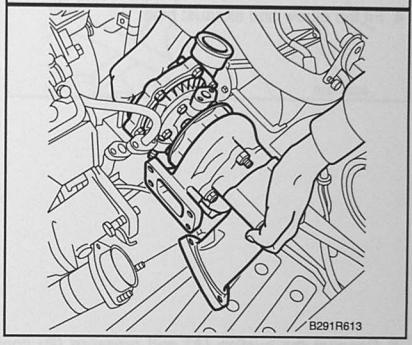
5 Disconnect the oil delivery pipe (**B**) and oil return pipe from the turbocharger. Disconnect the coolant hose (**A**).



6 Remove the bolts securing the turbocharger to the exhaust manifold.

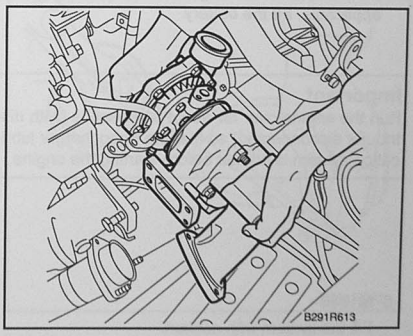


7 Remove the turbocharger. Remove all remains of the old gasket.



To fit

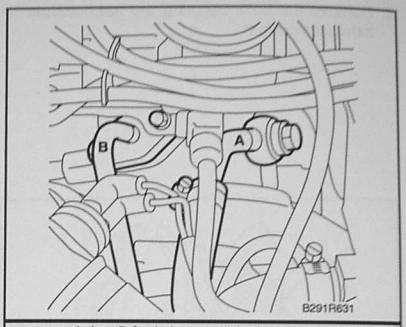
1 Fit the turbocharger to the exhaust manifold with a new gasket.



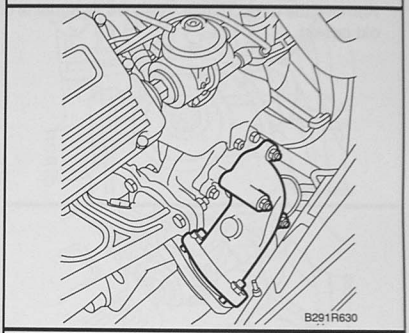
2 Fit the oil return pipe to the turbocharger with a new gasket.

Important
It is vital that there is engine oil in the turbocharger when the engine is started.

3 Fill the oil channel with engine oil and fit the oil delivery pipe (**B**) using a new gasket. Fit the coolant hose (**A**).

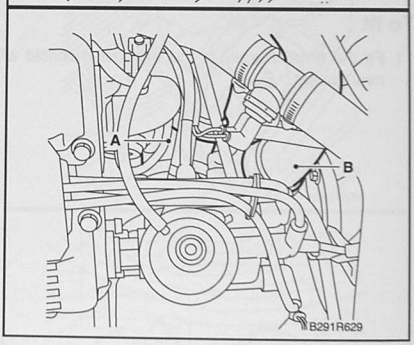


4 Fit the elbow and exhaust pipe.



5 Connect the suction (**A**) and pressure (**B**) connections to the turbocharger. Fit the preheater hose, if applicable. Fit the battery.

Important
Run the engine over for about 30 seconds (with distributor disconnected) so that the turbocharger lubrication system is primed before starting the engine.



6 **M1988-:**

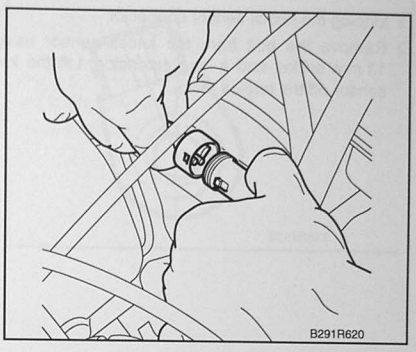
Fill the system with coolant.

See To Fill under *"Coolant"* on page 154.

Knock sensor, M1982

To remove

1 Disconnect the knock sensor wiring from the car's wiring harness.

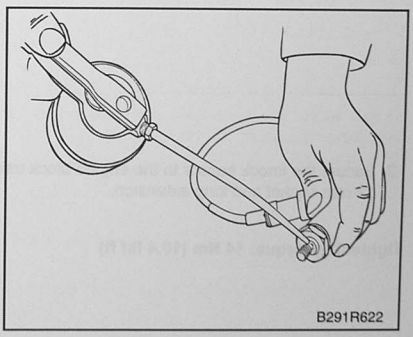


2 Remove the knock sensor from the engine block using an open-ended, 12-point, 24 mm wrench, part no. 83 93 472, fitted with a long extension.

Important
Never use the knock sensor sheath to loosen or tighten the sensor. Always use the recommended tool.

To fit

1 Wipe the thread and mating face clean.
2 Oil the thread and mating face.



3 Screw the knock sensor into the engine block using an open-ended, 12-point, 24 mm wrench, part no. 83 93 472, fitted with a long extension.

Tightening torque: 8 Nm (6 lbf ft)

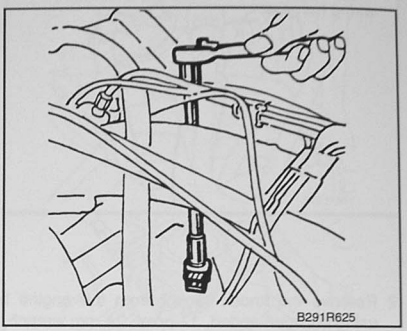
4 Plug in the knock sensor wiring to the car's wiring harness.

Knock sensor, M1983-

To remove

1 Unplug the knock sensor connector.

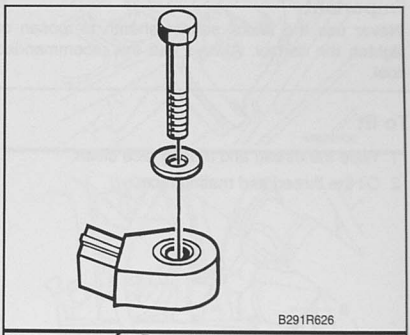
2 Remove the bolt from the knock sensor using a 13 mm socket and a long extension. Lift the knock sensor off the engine block.



To fit

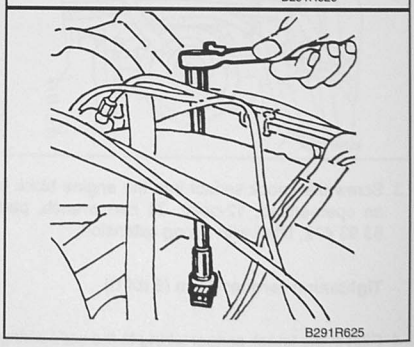
1 Wipe the thread and mating face clean.

2 Oil the thread and mating face.

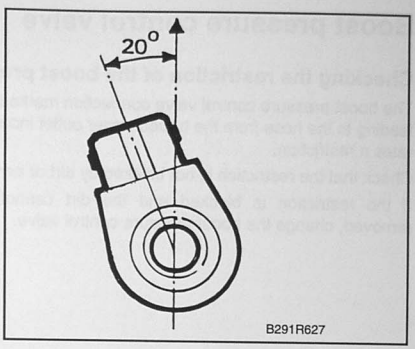


3 Secure the knock sensor to the engine block using a 13 mm socket and long extension.

Tightening torque: 14 Nm (10.4 lbf ft)



Important
Fit the knock sensor so that the connector faces forward, angled 20° to the left.



4 Plug in the knock sensor.

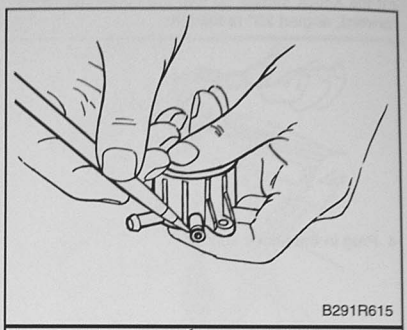
Boost pressure control valve

Checking the restriction of the boost pressure control valve

The boost pressure control valve connection marked "C" leading to the hose from the turbocharger outlet incorporates a restriction.

Check that the restriction is not blocked by dirt or similar.

If the restriction is blocked and the dirt cannot be removed, change the boost pressure control valve.



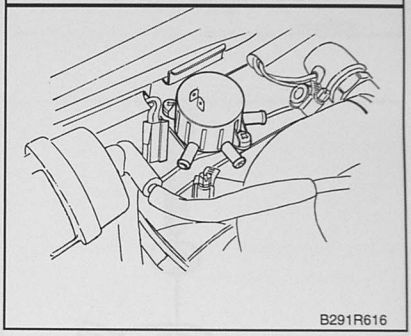
B291R615

To remove

1 Unplug the connector from the boost pressure control valve.

2 Slacken the hose clips and disconnect the rubber hoses from the boost pressure control valve.

3 Remove the self-tapping screws (2 screws) securing the boost pressure control valve to the bracket.



B291R616

To fit

1 Position the boost pressure control valve on the bracket.

2 Secure the boost pressure control valve with the self-tapping screws (2 screws).

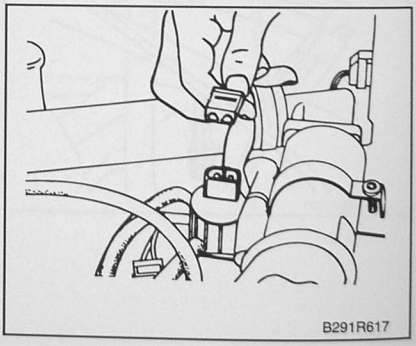
3 Connect the hoses to their respective spigots and tighten the hose clips.

C = turbocharger

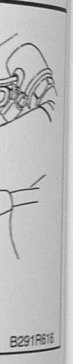
W = diaphragm unit of boost pressure regulator

R = turbocharger suction pipe

4 Plug in the boost pressure control valve connector.



B291R617



ELECTRICAL SYSTEM

Work schedule

Explanation

The following table contains an outline of topics. The table makes it easy to see which jobs are described in each section as well as the parts and tools that are required to complete the work.

Remember to read carefully through the job description as well as General Information (pages 2-6) before you begin work.

Section	Applicable to the following work	Tools required	Parts required to carry out the work
Battery	Battery maintenance Checking the electrolyte level Boost starting with donor battery Changing the battery	Battery charger Hydrometer Start cables	Acid-free petroleum jelly Distilled water
Alternator, -M1983	Removing/Fitting		
Alternator, M1983-	Removing/Fitting		
Starter motor, -M1984 normally aspirated	Removing/Fitting		
Starter motor, -M1984 Turbo	Removing/Fitting		Gasket for oil return pipe flange
Starter motor, M1985-	Removing/Fitting		
Ignition switch cylinder	Removing/Fitting	Socket 87 90 370 Skeleton key Drill Punch, 2 mm	5 mm screw/rivet
Ignition system	Testing/Checking components	Ohmmeter	
Distributor, M1979-80	Changing		
Distributor, M1981-	Changing		
Distributor rotor	Changing	Multi-grip pliers	Loctite 638
Contact breakers	Changing	Stroboscope Feeler gauge	Electrical contact grease
Vacuum control unit, M1979-80	Changing		
Vacuum control unit, M1981-	Changing		
Condenser, M1979-80	Removing/Fitting	Stroboscope	
Condenser, M1981-83	Removing/Fitting		
Pulse sensor, M1979-81	Removing/Fitting	Circlip pliers	
Ignition coil	Removing/Fitting		
Spark plugs, B201	Removing/Checking/Fitting		
Spark plugs, B202	Removing/Checking/Fitting	Spark plug socket 83 94 785	
Ignition timing		Stroboscope	

Section	Applicable to the following work	Tools required	Parts required to carry out the work
Lighting	Changing bulbs, reflectors, lenses, front/rear light clusters Changing brake lights, side direction indicators Changing interior lighting Changing ignition switch/gear position indicator illumination Changing luggage compartment/ashtray/glovebox lighting Instrument display panel lighting		
Headlight alignment			
Horn	Changing the horn switch		
Wiper/washer system	Removing/Fitting Windscreen wiper system Headlight wipers Washer fluid reservoir/pump		Gasket
Controls and switches	Changing the direction indicator and wash/wipe stalk switch. Changing switches		
Cruise control	Description of operation		
Wiring, fuses, relays	Changing fuses and relays		
Instruments	Removing/Fitting Instrument display panel Speedometer cable		

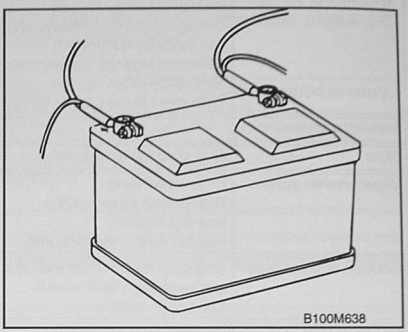
Charging system

Technical description

Battery

The battery is a 12 V lead-acid accumulator with 6 cells, each producing a voltage of approximately 2 V. The battery electrolyte is diluted sulphuric acid. The battery has a capacity of 60 Ah, which means that it can provide a current of 3 A for 20 hours at +20°C.

The positive (+) terminal of the battery is connected to the starter motor and other power consumers. The negative (-) terminal is connected to the body.


B100M638

Note

If the car is fitted with a security coded radio, ensure that that the radio code is at hand before disconnecting the battery.

⚠ WARNING

Never connect the battery incorrectly (switch positive and negative connections). Even the briefest switch of polarity can damage the rectifier in the alternator. Connect the positive (+) cable (red) to the positive (+) terminal and the negative (-) cable (black) to the negative (-) terminal.

If an external battery is connected temporarily to the car's battery, connect the positive (+) terminal to the positive (+) terminal and the negative (-) terminal to the chassis. Never connect an external battery to the electrical system when the engine is running. If quick charging the battery, disconnect both battery cables.

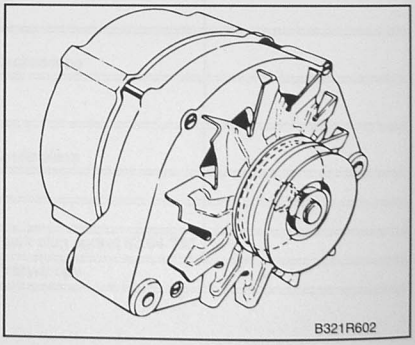
Alternator

When the engine is running, the alternator provides sufficient current for all the electrical devices and for charging the battery.

The alternator is mounted on the side of the engine block and is driven by a V-belt running over the crankshaft pulley (twin V-belts from M1984-).

The type of alternator fitted depends on the model variant. There are five alternator types: Bosch 55 A, 65 A, 70 A and 80 A, and Motorola 70 A.

The alternator is connected to a charging warning lamp that informs the driver of whether or not the alternator is charging. When the alternator does not rotate or for some reason is not charging, the charging warning lamp circuit is grounded via the alternator and the lamp lights up.

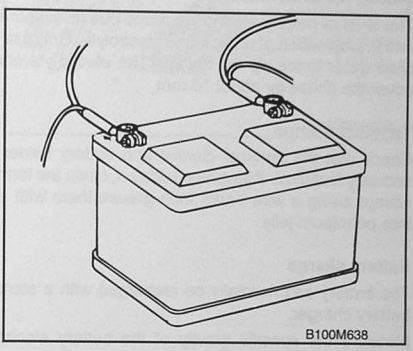

B321R602

Battery

Note
If the car is fitted with a security coded radio, ensure that that the radio code is at hand before disconnecting the battery.

To change

If the battery capacity is so low that it runs flat, change the battery.


B100M638

Important
The engine must be switched off before you remove the battery cables. This avoids damaging the alternator.

1 First, disconnect the negative (-) cable (black) from the negative (-) terminal to prevent shorting.
2 Disconnect the positive (+) cable (red).
3 Undo the two wing nuts on the battery holder and remove the battery from the car.
4 Prior to fitting, check that the outside of the battery is clean.
5 Check that the battery terminals and terminal clamps are clean so that good contact is provided.

If necessary, use a wire brush to clean the connections.

Important
Make sure that the wire brush does not touch both terminals at the same time as this will cause a short circuit.

6 Secure the battery by tightening the wing nuts on the holder.
7 Connect the battery cables to their respective terminals.

Important
Never connect the battery incorrectly. Even the briefest switch of polarity can damage the rectifier in the alternator. Connect the positive (+) cable (red) to the positive (+) terminal and the negative (-) cable (black) to the negative (-) terminal.

8 Grease the terminals and terminal clamps with acid-free petroleum jelly.

Battery maintenance

It is important to check and look after the battery regularly, since its ability to start the engine depends on its state of charge. This is particularly important in winter when the load on the starter motor is greater and the battery capacity is reduced. A poorly charged battery can freeze and be damaged.

Battery electrolyte level

The level of battery electrolyte drops due to evaporation and the ionisation of water in the electrolyte. Only use distilled water to top up the battery. The electrolyte should cover the plates by about 10 mm.

Terminal clamps

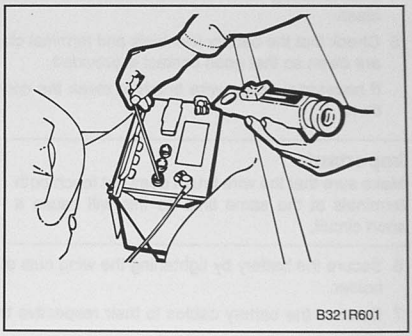
Check that the terminal clamps and battery holder are securely fastened. If severely oxidized, clean the terminal clamps using a wire brush then grease them with acid-free petroleum jelly.

Battery charge

The battery can normally be recharged with a standard battery charger.

Measure the specific gravity of the battery electrolyte using a hydrometer. This provides an indication of the battery charge.

Charging	Electrolyte
Fully charged	approx. 1.28
Half charged	approx. 1.21
Flat	approx. 1.12


B321R601

Charging

The method used to charge the battery must be suited to the capacity of the battery. The battery is fully charge when the total voltage is 12.5 - 12.7 V when unloaded, and has remained stable for the last three hours of charging.

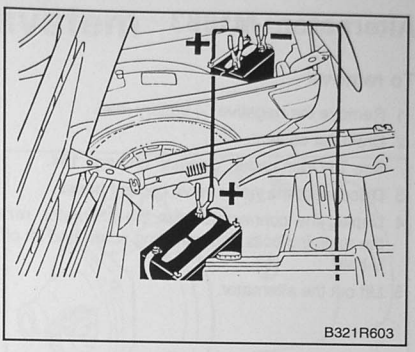
⚠ WARNING

Due to the ionisation of water, the electrolyte "boils" during charging, requiring the battery caps to be removed. The oxyhydrogen gas that is formed is highly explosive.

Boost starting with donor battery

Important
If an external battery is connected temporarily to the car's battery, such as for boost starting, connect this correctly to avoid sparking.

- Turn off the ignition and all electrical devices (lighting, radio, etc.).
- Switch off the engine of the other car.
- First, connect the positive (+) terminal of the donor battery to the positive (+) terminal of the flat battery. Then, connect the negative (-) terminal of the donor battery to the engine mounting in the car with the flat battery, as far from the battery as possible.
- Start the engine of the car having the donor battery.
- Then start the engine of the car with the flat battery and allow it to run for a while.
- Disconnect the donor battery in the reverse order.

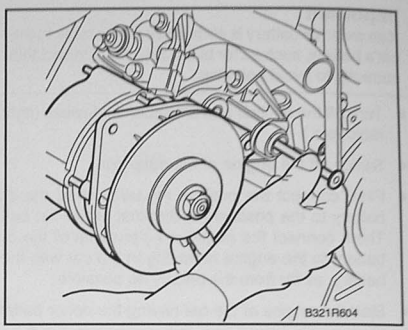


B321R603

Alternator, -M1983

To remove

1 Remove the negative (-) battery lead.
2 Drain the coolant.
See To Drain under *"Coolant"* on page 154.
3 Disconnect the water valve coolant hoses.
4 Unplug the connectors from the alternator, remove the retaining bolts and adjusting screw and lift off the V-belt.
5 Lift out the alternator.



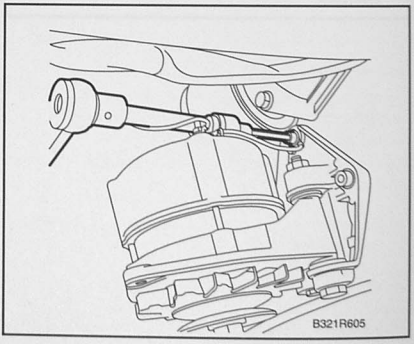
To fit

Fit in the reverse order.
Fill the system with coolant.
See To Fill under *"Coolant"* on page 154.
Adjust the tension of the V-belt.
See *"Belt tension, drive belts"* on page 85.

Alternator, M1983-

To remove

1 Remove the negative (-) battery lead.
2 Drain the coolant.
See To Drain under *"Coolant"* on page 154.
3 Disconnect the water valve coolant hoses.
4 Remove the V-belts.
5 Unbolt the alternator bracket from the engine block.
6 Remove the through bolt from the alternator bracket.
7 Disconnect the alternator connectors and remove the alternator bracket.
8 Lift out the alternator.



To fit

Fit in the reverse order.
Fill the system with coolant.
See To Fill under *"Coolant"* on page 154.
Adjust the tension of the V-belt.
See *"Belt tension, drive belts"* on page 85.

Starting system

Technical description

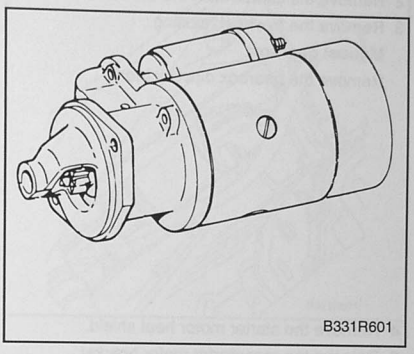
Starter motor

The starter motor sets the engine's flywheel in motion by means of a pinion and starter ring gear.

Up to M1984 the starter motor is located behind the intake manifold.

From M1985 the starter motor is located under the intake manifold.

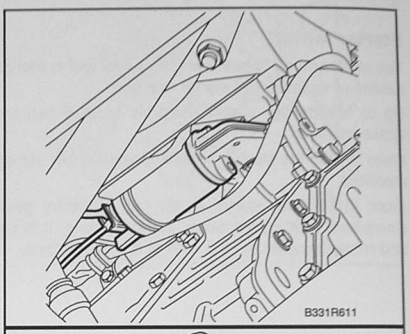
From M1985 the starter motor has planetary gearing. Compared with conventional starter motors, it is lighter and more compact. It also runs at a higher speed.


B331R601

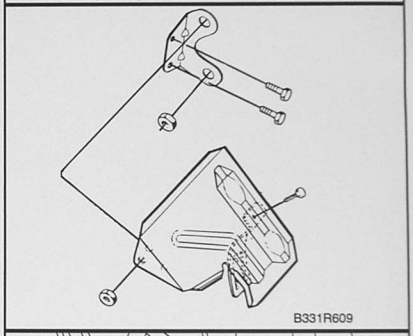
Starter motor, -M1984 normally aspirated engine

To remove

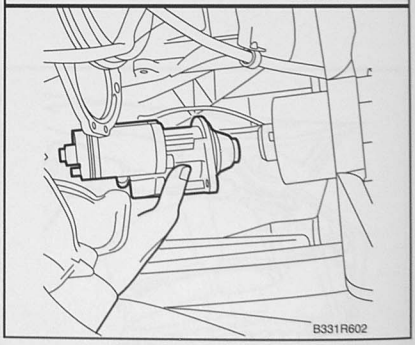
1 Remove the negative (-) battery lead.
2 Remove the cables from the starter motor.
3 Remove the flywheel housing.
Manual gearbox:
Remove the gearbox dipstick tube.


B331R611

4 Remove the starter motor heat shield.
5 Remove the rear starter motor bracket.
6 Remove the front retaining bolts securing the starter motor.


B331R609

7 Withdraw the starter motor through the hole in the end plate.
8 Lift out the starter motor.


B331R602

To fit

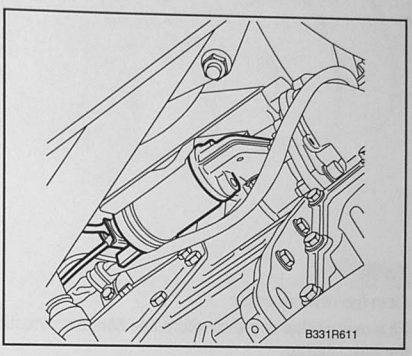
Fit in the reverse order.

Starter motor, -M1984 Turbo

To remove

1 Remove the negative (-) battery lead.

2 Remove the cables from the starter motor.



3 Disconnect the turbocharger suction pipe and remove the flywheel housing.

4 **Manual gearbox:**

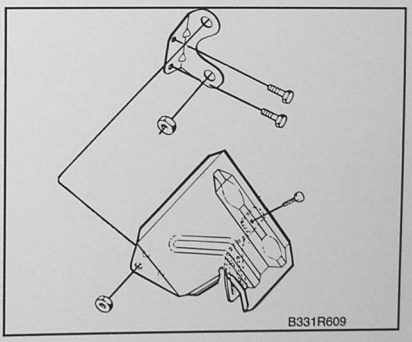
Remove the gearbox dipstick tube.

5 Remove the brace between the turbocharger and gearbox.

6 Detach the oil return line from the turbocharger so that it can be moved slightly.

7 Remove the starter motor heat shield.

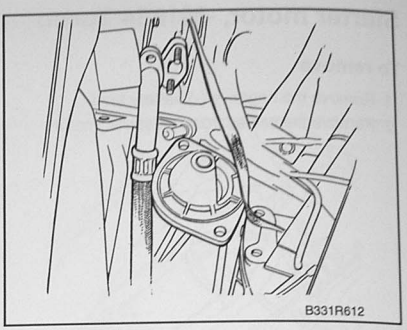
8 Remove the rear starter motor bracket.



9 Remove the front retaining bolts securing the starter motor.

10 Move the starter motor forwards and downwards at the same time you carefully move aside the oil return line.

11 Lift out the starter motor.



To fit

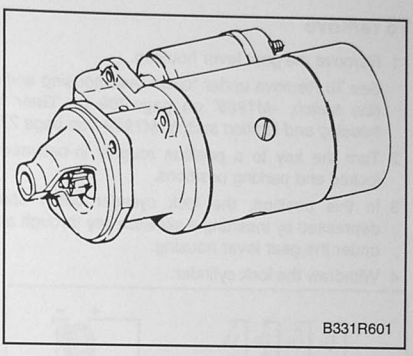
Fit in the reverse order.

Fit a new gasket to the oil return line flange connecting to the turbocharger.

Starter motor, M1985-

To remove

1 Remove the negative (-) battery lead.
2 Remove the cables from the starter motor.
3 Remove the two retaining bolts securing the starter motor.
4 Withdraw the starter motor rearwards until free.
5 Lift out the starter motor.


B331R601

To fit

Fit in the reverse order.

Ignition switch cylinder

To remove

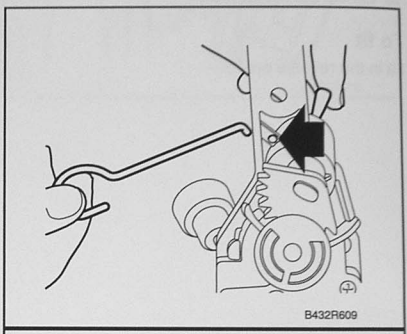
1 Remove the gear lever housing.

See To Remove under *"Gear lever housing and ignition switch, -M1988"* on page 269 or *"Gear lever housing and ignition switch, M1989-"* on page 271.

2 Turn the key to a position roughly in-between the locked and parking positions.

3 In this position, the lock cylinder catch can be depressed by inserting a skeleton key through a hole under the gear lever housing.

4 Withdraw the lock cylinder.



B432R609

To remove, key missing

If you do not have the key, remove the lock cylinder from the gearbox housing as follows (this will destroy the lock cylinder):

1 Remove the left-hand seat.

See To Remove under *"Driver's seat, M1979-80"* on page 533, *"Driver's seat, M1981-90"* on page 533 or *"Front seats, M1991-"* on page 535.

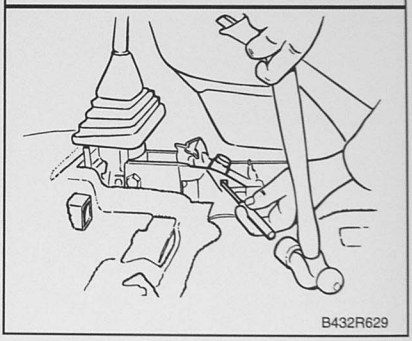
2 Remove the rear centre console.

See To Remove under *"Centre console, rear"* on page 553.

3 Drill out the plug in the gear lever housing covering the hole for the lock cylinder catch.

4 Force in the catch with a punch, approx. 2 mm (0.08 in) and remove the lock cylinder.

Plug the hole in the gear lever housing before fitting the new lock cylinder. A plug can be made from a suitable screw or rivet cut to 5 mm (0.20 in) in length.



B432R629

To fit

1 Turn the key to a position roughly in-between the locked and parking positions.

2 Depress the lock cylinder catch. Check that the ratchet pins are correctly positioned in relation to the lock cylinder groove.

Press in the lock cylinder and check that it engages the ratchet.

3 Fit the gear lever housing.

See To Fit under *"Gear lever housing and ignition switch, -M1988"* on page 269 or *"Gear lever housing and ignition switch, M1989-"* on page 271.

Ignition system

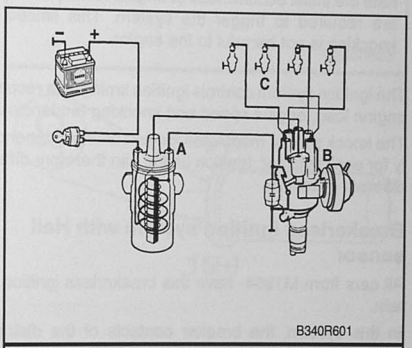
Technical description

> **⚠ WARNING**
>
> **HIGH TENSION**
>
> The electronic ignition system generates a voltage of more than 48 000 Volts. This can be lethal. Switch off the ignition before touching any part of the ignition system.

Breaker-triggered ignition system

All cars up to M1983 have a breaker-triggered ignition system.

This conventional ignition system has a pair of contact points that make and break the primary circuit between the coil and distributor, controlling sparking.



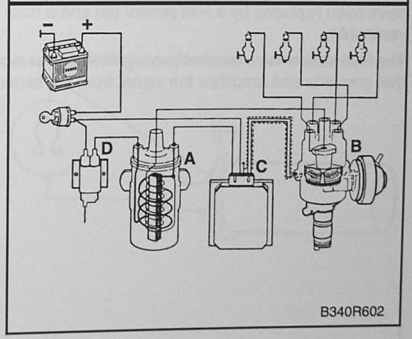
B340R601

A Ignition coil
B Distributor
C Spark plugs

Breakerless ignition system with inductive pick-up

Cars with turbocharged engines from M1979-81 have this type of ignition system.

One of the advantages of this system is that the pulse generator does not have any mechanical parts that can wear and alter ignition timing.



B340R602

A Ignition coil
B Distributor
C Ignition power module
D Ballast resistor

Breakerless ignition system with knock sensor (EZK)

This ignition system, controlled by the knock sensor, enables optimum use to be made of the properties of a given fuel in order to achieve maximum engine output and good fuel economy.

Engine knock can arise when the engine load is high but the octane rating of the fuel is low.

Engine knock is caused by the fuel igniting spontaneously and can severely damage the engine if allowed to continue.

Note
A system based on a knock sensor will not eliminate the initial occurrences of engine knock, which are required to trigger the system. This limited knocking is not harmful to the engine.

The ignition system controls ignition timing with respect to engine load, engine speed and knocking tendencies.

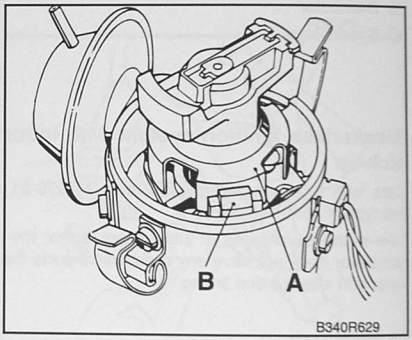
The knock sensor modulates ignition timing independently for each cylinder. Ignition timing can therefore differ for different cylinders.

Breakerless ignition system with Hall sensor

All cars from M1984- have this breakerless ignition system.

In this system, the breaker contacts of the distributor have been replaced by a Hall sensor (**B**) and a rotor with vanes (**A**).

The Hall sensor is connected to an ignition power module that converts and amplifies the signal from the sensor.

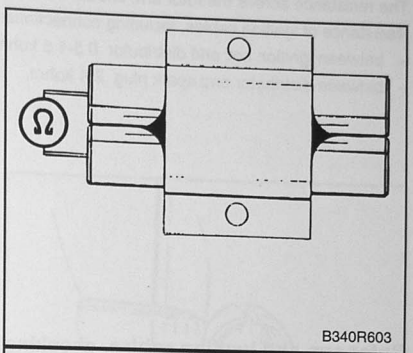


Ignition system, testing and checking components

Ballast resistor, checking M1979-81

Cars with breakerless ignition system only

1 Remove the wiring.
2 Measure the resistance across the ballast resistor. The resistance should be 1 ohm.

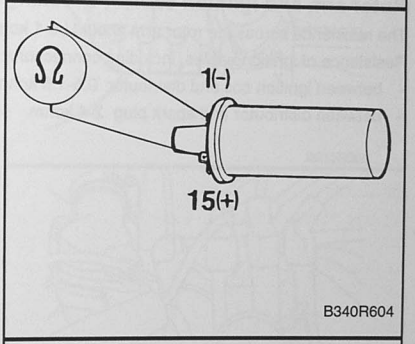


B340R603

Ignition coil, checking

1 Remove the wiring.
2 Measure the resistance of the primary coil across connectors 1 (-) and 15 (+).

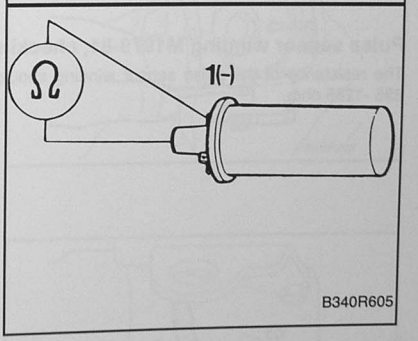
Correct values:	
Turbo M1979-81	5.5-8.5 ohm
Turbo M1982-	2.4-3.5 ohm
Other M1984-	2.4-3.5 ohm
Other -M1983	2.6-3.1 ohm



B340R604

3 Measure the resistance of the secondary coil across connector 1 (-) and the HT output.

Correct values:	
Turbo M1979-81	5.5-8.5 kohm
Turbo M1982-	2.4-3.5 kohm
Other M1984-	2.4-3.5 kohm
Other -M1983	8-11 kohm



B340R605

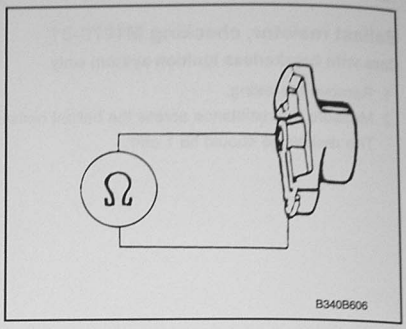
Note
Faults often occur when the ignition coil is hot. In doubtful cases, leave the coil switched on for half an hour. The coil should still work perfectly at the end of this time.

Rotor arm and ignition cables, checking breaker-triggered ignition system M1979-83

The resistance across the rotor arm should be 5 kohm.

Resistance of ignition cables, including connections:

- between ignition coil and distributor 0.5-1.5 kohm
- between distributor and spark plug 2-4 kohm.

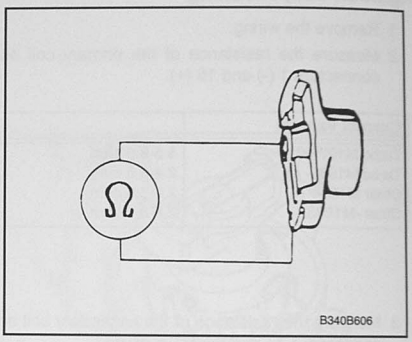


Rotor arm and ignition cables, checking breakerless ignition system M1982-

The resistance across the rotor arm should be 1 kohm.

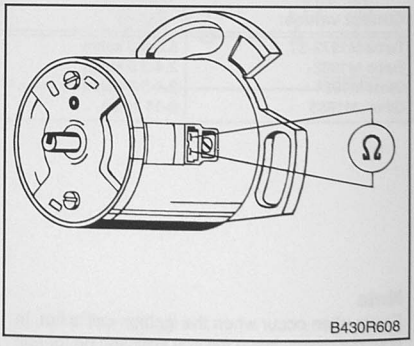
Resistance of ignition cables, including connections:

- between ignition coil and distributor 0.5-1.5 kohm
- between distributor and spark plug 2-4 kohm.



Pulse sensor winding M1979-81, checking

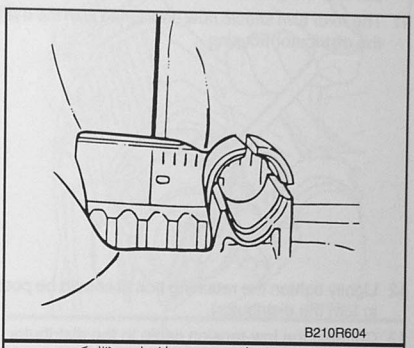
The resistance of the pulse sensor winding should be 895 -1285 ohm.



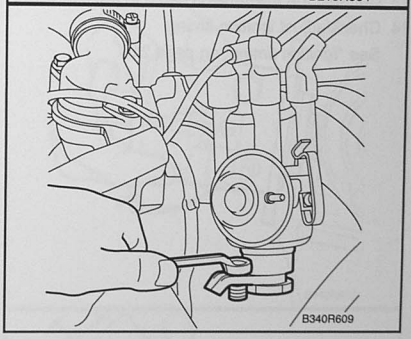
Distributor, M1979-80

To change

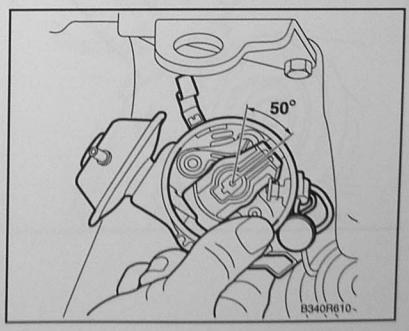
1 Remove the distributor cap. (The distributor is mounted on the left-hand side of the engine block.)
2 Unplug the low-tension cable from connection 1 (-) on the distributor.
3 Disconnect the vacuum hose.
4 Turn the crankshaft until the "0" mark on the flywheel is aligned with the timing mark on the cover.


B210R604

5 Remove the bolt securing the distributor.


B340R609

6 Lift up the distributor.
7 Make sure that the "0" mark on the flywheel is aligned with the timing mark on the cover.
8 Turn the distributor shaft so that the rotor arm is positioned 50° clockwise from the mark on the edge of the distributor housing, which marks the position for cylinder 1 at top dead centre.



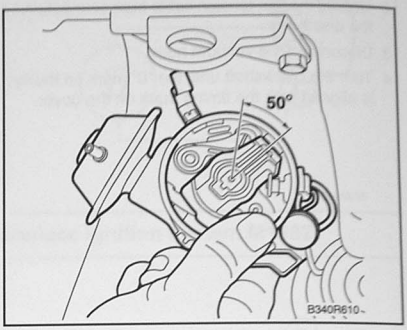
B340R610

9 Lower the distributor into the engine with the mark on the distributor housing facing towards the cylinder head.

10 Engage the gears and rock the engine back and forth until the distributor shaft engages the oil pump.

When fitting the distributor, the rotor arm should be advanced 50° anticlockwise to compensate for the bevel of the gears.

11 The rotor arm should now be aligned with the mark on the distributor housing.



12 Lightly tighten the retaining bolt (it should be possible to turn the distributor).

13 Connect the low-tension cable to the distributor.

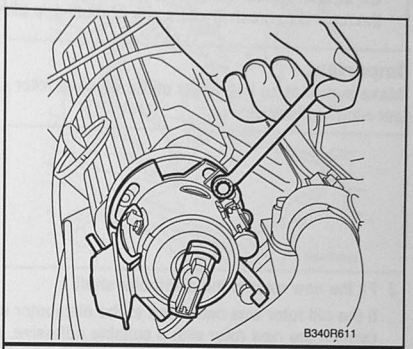
14 Check/adjust ignition timing.

See *"Ignition timing"* on page 216.

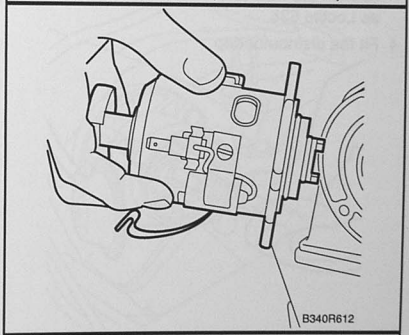
Distributor, M1981-

To change

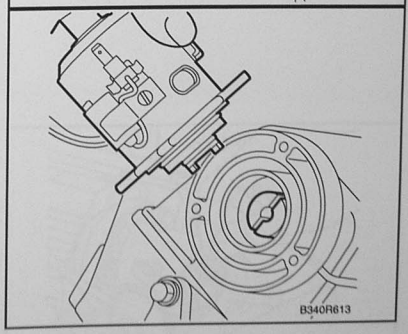
1 Remove the distributor cap. (The distributor is mounted on the camshaft cover.)
2 Remove the low-tension cable from the distributor.
3 Disconnect the vacuum hose.
4 Remove the three bolts securing the distributor.



5 Withdraw the distributor from the camshaft cover.
Inspect the O-ring and change if necessary.



6 When fitting the distributor, rotate the distributor shaft until the driver dog engages the slot in the camshaft (the slot is offset).
7 Press in the distributor and fit the retaining bolts.



8 Connect the low-tension cable and fit the distributor cap.
9 Adjust the ignition timing.
See *"Ignition timing"* on page 216.

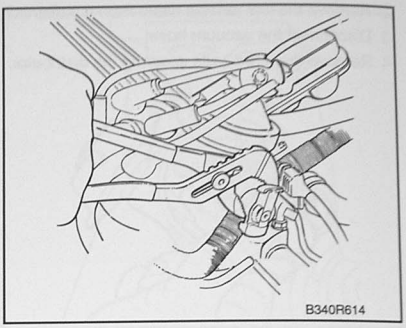
Distributor rotor

To change

1 Remove the distributor cap and place some form of protection under the distributor.

2 Remove the rotor.

On certain model variants, the only way to remove the rotor is to crush it with a pair of multi-grip pliers.



Important
Make sure that no fragments of the crushed rotor get into the distributor.

3 Fit the new rotor to the distributor shaft.

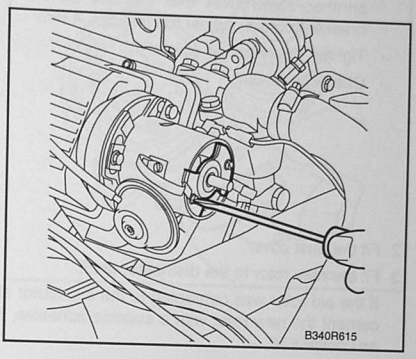
If the old rotor was cemented to the distributor shaft, cement the new rotor with a suitable adhesive, such as Loctite 638.

4 Fit the distributor cap.

Contact breaker

To change

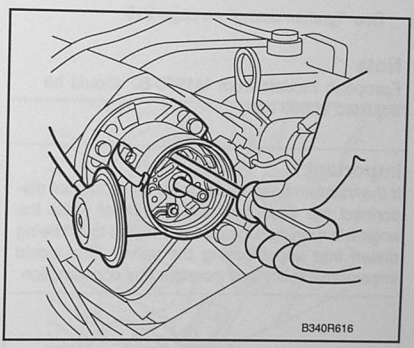
1 Remove the distributor cap.
2 Remove the rotor.
On certain model variants, the only way to remove the rotor is to crush it with a pair of multi-grip pliers.



Important
Make sure that no fragments of the crushed rotor get into the distributor.

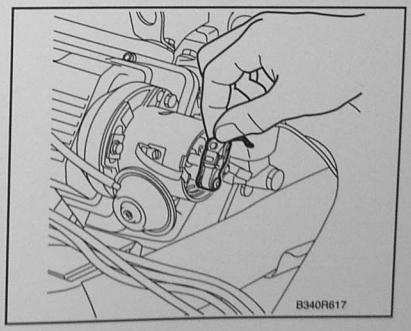
3 Remove the dust cover.
4 **M1981-:**
Remove the bearing carrier.

5 Unplug the connector.
6 Remove the screw securing the contact breaker and remove the breaker.

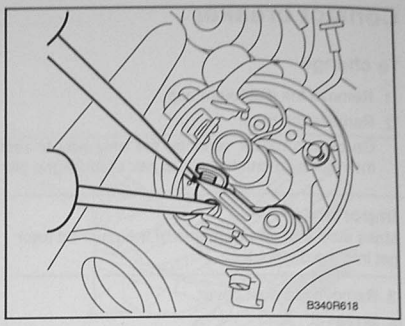


Important
The contact breaker points must not come into contact with oil or grease as they could then oxidize.

7 Insert the contact breaker and thread the screw.
8 Lubricate the distributor cam with a touch of electrical contact grease.
9 Plug in the connector.
10 **M1981-:**
Fit the bearing carrier.



11 Adjust the contact gap using a feeler gauge.
- Turn the crankshaft until the breaker arm is lifted fully from the fixed contact.
- Insert a screwdriver between the two points and another screwdriver into the slot on the fixed breaker contact. Adjust the gap to 0.4 mm.
- Tighten the retaining screw.
- Check the setting.



12 Fit the dust cover.

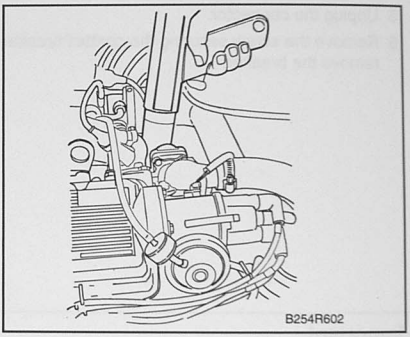
13 Fit the new rotor to the distributor shaft.

If the old rotor was cemented to the distributor shaft, cement the new rotor with a suitable adhesive, such as Loctite 638.

14 Fit the distributor cap.

15 Check the ignition timing and adjust if necessary.

See *"Ignition timing"* on page 216.



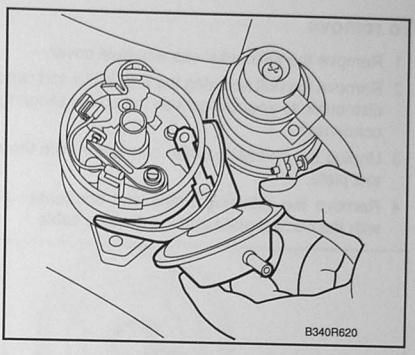
Note
European models from M1979-80 should be adjusted at 800 rpm.

Important
If the vacuum hose has a delay valve, do not disconnect the hose from the distributor while the engine is running. Doing so could lead to dirt being drawn into and blocking the valve. This would impair driveability and increase fuel consumption.

Vacuum control unit, M1979-80

To change

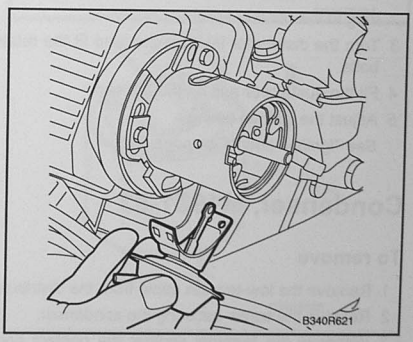
1 Remove the distributor cap and vacuum hose.
2 Remove the rotor.
See To Remove under *"Distributor rotor"* on page 206.
3 Remove the dust cover.
4 Remove the two screws securing the vacuum control unit.
5 Remove the circlip securing the vacuum control unit arm and remove the unit.
6 Fit the new vacuum control unit.
7 Fit the circlip and retaining screws.
8 Fit the dust cover.
9 Fit the new rotor to the distributor shaft.
If the old rotor was cemented to the distributor shaft, cement the new rotor with a suitable adhesive, such as Loctite 638.
10 Fit the distributor cap and vacuum hose.



Vacuum control unit, M1981-

To change

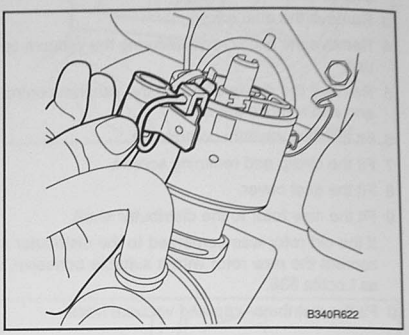
1 Remove the distributor cap.
2 Remove the rotor.
See To Remove under *"Distributor rotor"* on page 206.
3 Remove the dust cover.
4 Remove the bearing carrier.
5 Disconnect the vacuum hose.
6 Remove the screws securing the vacuum control unit.
7 Unhook the vacuum control unit.
8 **Cars with breakerless ignition system:**
Press the pulse sensor plate clockwise until it reaches a stop.
9 Hook the vacuum regulator onto the pin.
10 Tighten the retaining screws.
11 Fit the bearing carrier.
12 Fit the dust cover.
13 Fit the new rotor to the distributor shaft.
If the old rotor was cemented to the distributor shaft, cement the new rotor with a suitable adhesive, such as Loctite 638.
14 Fit the distributor cap and vacuum hose.



Condenser, M1979-80

To remove

1 Remove the distributor cap and dust cover.
2 Remove the bolt securing the distributor and twist the distributor so you can access the screw securing the condenser.
3 Unplug the contact breaker connector from the contact plate.
4 Remove the retaining screw and condenser along with the contact plate and low-tension cable.



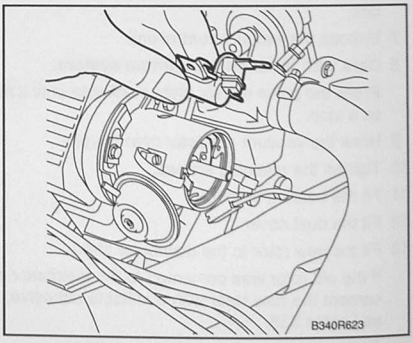
To fit

1 Fit condenser along with the contact plate and low-tension cable.
2 Plug in the contact breaker connector.
3 Turn the distributor into position and fit the retaining bolts.
4 Fit the dust cover and distributor cap.
5 Adjust the ignition timing.
See *"Ignition timing"* on page 216.

Condenser, M1981-83

To remove

1 Remove the low-tension cable from the distributor.
2 Remove the screw securing the condenser.
3 Withdraw the terminal so that the contact breaker connection is visible outside the distributor.
Unplug the contact breaker connector.



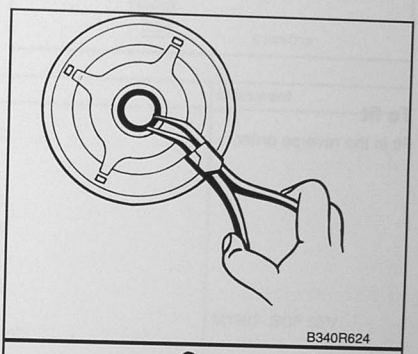
To fit

Fit in the reverse order.
Adjust the ignition timing.
See *"Ignition timing"* on page 216.

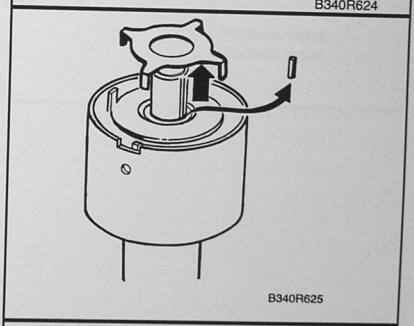
Pulse sensor, M1979-81

To remove

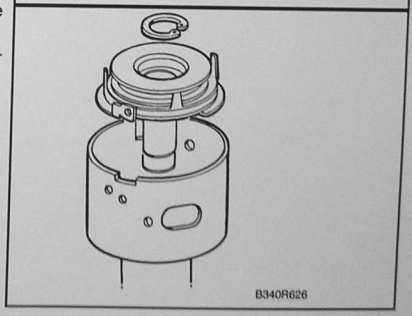
1 Remove the distributor.
Refer to *"Distributor, M1979-80"* on page 203 or *"Distributor, M1981-"* on page 205.
2 Remove the rotor arm and dust cover.
3 Undo the mounting and withdraw the cable terminal.
4 Remove the vacuum control unit, tension spring mountings and the three screws securing the sensor plate.
5 Remove the rotor circlip.


B340R624

6 Lift off the rotor and recover the lock pin and shim.


B340R625

7 Remove the pulse sensor circlip and lift off the pulse sensor.
8 Remove the three screws securing the pulse sensor winding to the plate.


B340R626

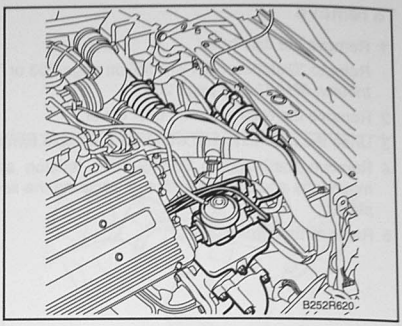
To fit

Fit in the reverse order.
Adjust the ignition timing.
See *"Ignition timing"* on page 216.

Ignition coil

To remove

1 Prise rubber cover off the ignition coil.
2 Unplug the cables from the ignition coil.
3 Unbolt the ignition coil.



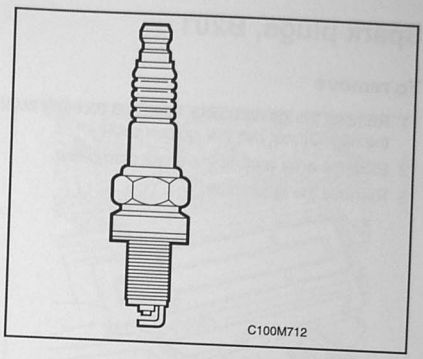
To fit

Fit in the reverse order.

Spark plugs

Electrode gap:
0.6 mm (0.02 in)

Tightening torque, dry spark plugs:
27 Nm (20 lbf ft)

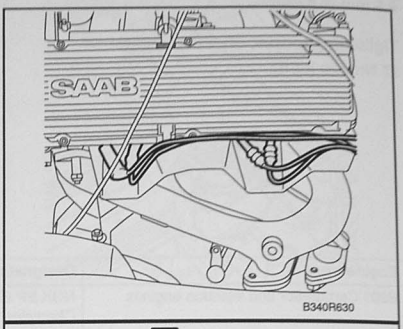

C100M712

Engine	Designation	Comment
B201 Carburettor and injection engines	NGK BP 6ES Champion N9YC	
B201 Turbo except APC M1981-82	NGK BP 6ES NGK BP 7ES Champion N7YC	
B201 Turbo	Champion N7GY NGK BP 7ES NGK BP 7EV Champion N7YC	
B202, B212 Injection engine	NGK BCP 5ES Champion RC12YC	M1992- BCP 5EV
B202 Turbo 16	NGK BCP 7EV Champion C7GY NGK BCP 7ES Champion C7YC	Precious metal Precious metal

Spark plugs, B201

To remove

1 Remove the ignition cable. Hold and carefully twist off the cap. Do not pull the ignition cable.
2 Blow the area around the spark plug clean.
3 Remove the spark plug.

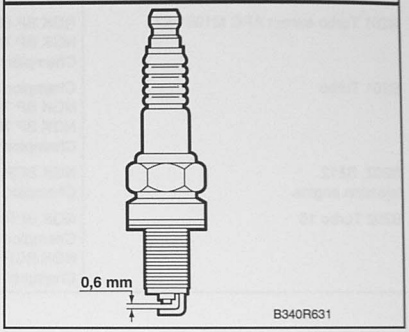


B340R630

To check

(Spark plug removed)

1 Check the electrode gap. This should be 0.6 mm (0.02 in).
2 If necessary, adjust the gap by carefully bending the side electrode.



B340R631

To fit

1 Fit the spark plug and tighten by hand.
2 Tighten the spark plug.

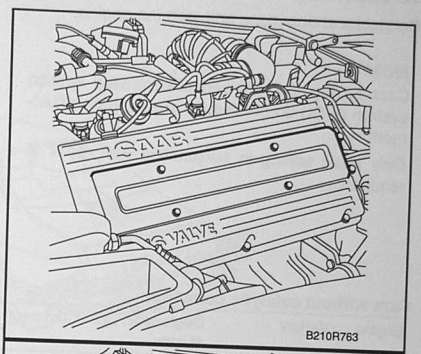
Tightening torque: 27 Nm (20 lbf ft)

3 Fit the ignition cable to the spark plug.

Spark plugs, B202/B212

To remove

1 Remove the cover from over the spark plugs.



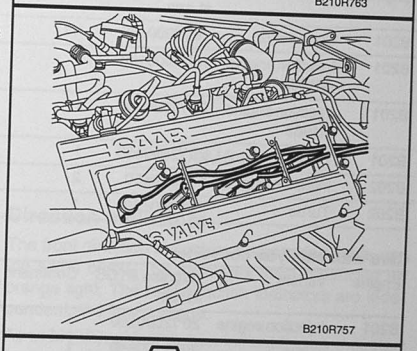
B210R763

2 Remove the ignition cables from the spark plugs. Hold and carefully twist off the caps. Do not pull the cables.

3 Blow the area around the spark plugs clean.

4 Remove the spark plugs.

Use spark plug socket 83 94 785.



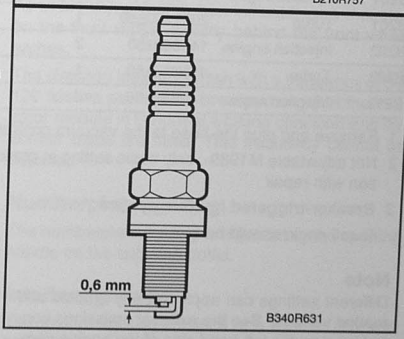
B210R757

To check

(Spark plug removed)

1 Check the electrode gap. This should be 0.6 mm (0.02 in).

2 If necessary, adjust the gap by carefully bending the side electrode.



B340R631

To fit

1 Fit and tighten the spark plugs by hand.

2 Tighten the spark plugs.

Tightening torque: 27 Nm (20 lbf ft)

3 Attach the ignition cables to the spark plugs.

4 Fit the cover over the spark plugs.

Ignition timing

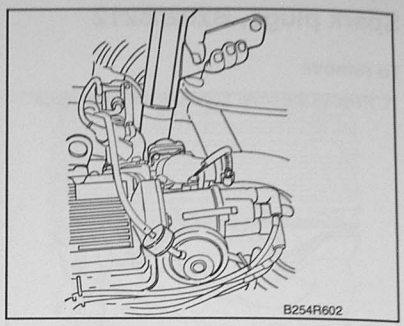
To check/adjust

Connect a stroboscope and start the engine.

Note

Cars having a knock-sensor-controlled ignition system (EZK) do not require checking or adjustment.

Only basic setting in conjunction with repair is required.



Cars without catalytic converter

Engine	Variant	Degrees BTDC at rpm	Comment
B201	Carburettor	18°/2000±50	1,3
B201	Injection engine -M1988	18°/2000±50	1
B201	Injection engine M1989-	20°/2000±50	1
B201	Turbo	20°/2000±50	1
B202	Injection engine	14°/850±50	2
B202	Turbo	16°/850±50	1

Cars with catalytic converter

Engine	Variant	Degrees BTDC at rpm	Comment
B201	Injection engine	20°/2000±50	1
B201	Turbo	20°/2000±50	1
B202	Injection engine	14°/850±50	2
B202	Turbo	16°/850±50	1
B212	Injection engine	14°/850±50	2

1 Remove and plug the hose to the vacuum control.

2 Not adjustable M1989-, only basic setting in conjunction with repair.

3 **Breaker-triggered ignition system:**

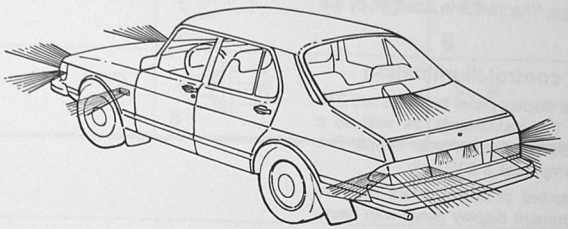
Dwell angle should be 50°.

Note

Different settings can apply to early models and market variants. See the exhaust emissions control label on the left-hand side of the engine compartment on the front wheel housing panel.

Lighting

Technical description



B100M640

The exterior lighting comprises headlights, direction indicators, side direction indicators and parking lights at the front, and numberplate lighting, tail lights, direction indicators, brake lights and reversing lights (turned on automatically when reverse is engaged) at the rear. Certain model variants can also have a rear fog light, corner lights, side marker lights, side reversing lights, position lights and a high-mounted brake light.

Headlights

The headlights, integrated in the nose of the car, can be dismantled. This allows the lens and reflector to be changed separately. The headlights can be adjusted vertically and horizontally.

Front and rear light clusters

The front light clusters contain a direction indicator, parking light, side light and, on some variants, a side reversing light.

The rear light clusters contain a tail light, direction indicator, brake light and reversing light, and from M1983 can incorporate a rear fog light.

High-level brake lights

The high-mounted brake light is located in the centre of the lower edge of the rear window.

On the Convertible, the high-mounted brake light is incorporated in the spoiler.

Direction indicators

The front direction indicators and parking lights use the same bulbs. The indicators flash producing an orange light. The rear direction indicators are independent and flash orange.

As of M1986, side direction indicators are mounted on the front wings, directly behind the front wheel arches.

The direction indicators flash with a frequency of 60-120 flashes per minute, presupposing that the indicator module is in normal working condition and the correct bulbs are fitted. This frequency cannot be adjusted.

Numberplate lighting

The numberplate lighting is adjacent to the opening handle on the tailgate/bootlid.

Interior lighting

The interior lighting consists of a light on the left-hand side or in the centre of the roof, a front reading light mounted on the rearview mirror, and a light by the ignition switch. The lighting is switched on/off by the door switches and can also be switched on/off with switches by roof light or gear lever housing.

On the Turbo M1984- and various other variants, a delay relay is fitted to the circuit.

The relay means that the interior lighting stays on for about 15 seconds (or until the ignition key is turned) once the doors have been shut.

Luggage compartment lighting

The light in the luggage compartment on 3 and 5-door models is located on the left-hand side. The light is controlled by a switch adjacent to the tailgate striker plate. The switch is acted on by the lock.

The light in the luggage compartment on 2 and 4-door models is located on the left-hand side. The light is controlled by a switch located in front of the left-hand bootlid hinge. The switch is acted on by the hinge.

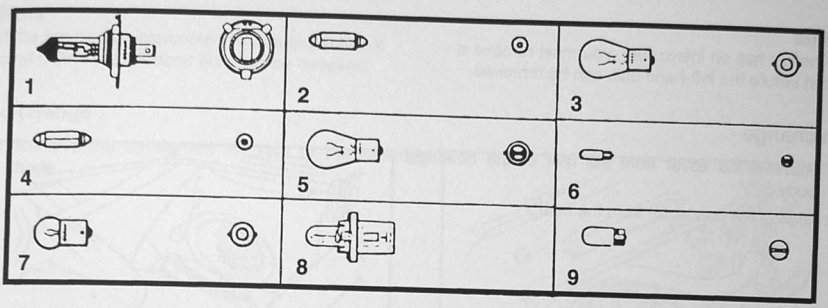
Instrument and control illumination

The main instrument display panel contains two 3 W bulbs to illuminate the instruments, as well as a number of 1.2 W bulbs for the indicator lamps. The charging warning lamp uses a 2 W bulb.

The bulbs are mounted in bulb holders that are secured to the instrument display panel with bayonet fittings.

The other controls are illuminated by 1.2 W bulbs that are fitted in conventional bulb holders with connection terminals.

Bulbs



B351R661

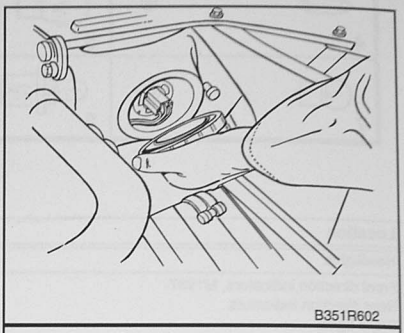
Location	Rating (W)	Cap	Pos
Headlights	60/55	H4 cap P43t-38	1
Front direction indicators, M1987- Rear direction indicators Brake lights Reversing lights Side reversing lights (certain models/markets only) Rear fog light (certain models/markets only) High-mounted brake light (certain models/markets only)	21	BA 15s	3
Front direction indicators, -M1986 Side lights/Driving lights, -M1986 Brake lights Tail lights	21/5	BAY 15d	5
Tail lights Parking lights (certain models/markets only)	5	BA 15s	7
Numberplate lighting Rearview mirror Glovebox	5	SV 8.5-8	2
Roof light Luggage compartment lighting	10	SV 8.5-8	4
Ignition switch lighting Light switch Cigarette lighter Heating and ventilation controls Ashtray	1.2	W 2x4.6d	6
Warning and indicator lamps: oil pressure, footbrake, direction indicators, choke, heated rear window, main beam, handbrake, fuel level, gear selector position (certain models/markets only), check engine (certain models/markets only), seatbelt reminder (certain models/markets only)	1.2	Bulb with bulb holder	8
Charging warning lamp	2	Bulb with bulb holder	8
Seatbelt reminder	2	W 2x4.6d	6
Instrument lighting	3	W 2.1x9.5d	9
Side direction indicators	5	W 2.1x9.5d	9
Convertible: Reading lights and high-mounted brake light	5	W 10/5 H5 37R	-

Headlight bulbs -M1986

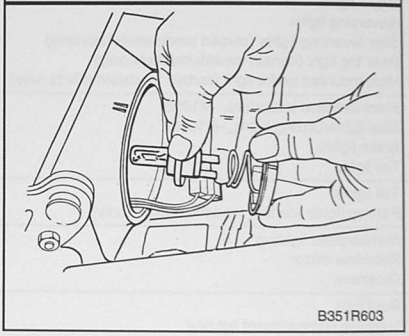
Note
If the car has an intercooler, you must remove a cowl before the left-hand bulb can be removed.

To change

1 Remove the cover from the rear of the headlight body.
2 Unplug the connector from the bulb.


B351R602

3 Press in the bulb holder and turn it anticlockwise. The bulb can then be removed.
4 Fit the new bulb.


B351R603

Important
Do not touch the glass of the new bulb with your fingers. Make sure that the three locating lugs on the bulb cap are correctly positioned.

For the correct bulb, refer to *"Bulbs"* on page 219.

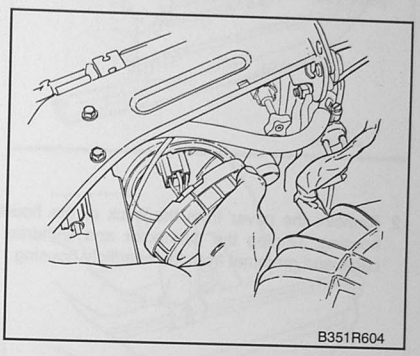
5 Fit the bulb holder.
6 Plug in the connector and fit the protective cover to the headlight housing.

Headlight bulbs M1987-

Note
If the car has an intercooler, you must remove a cowl before the left-hand bulb can be removed.

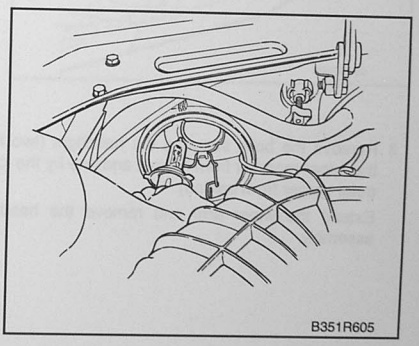
To change

1 Remove the cover from the rear of the headlight body.


B351R604

2 Unplug the connector from the bulb.
3 Squeeze and lower the spring clip and remove the bulb.
4 Fit the new bulb.
For the correct bulb, refer to *"Bulbs"* on page 219.

Important
Do not touch the glass of the new bulb with your fingers. Make sure that the three locating lugs on the bulb cap are correctly positioned.


B351R605

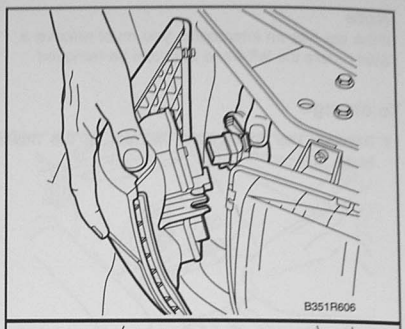
5 Press the spring clip into place.
6 Plug in the connector and fit the protective cover to the headlight housing.

Headlight lenses

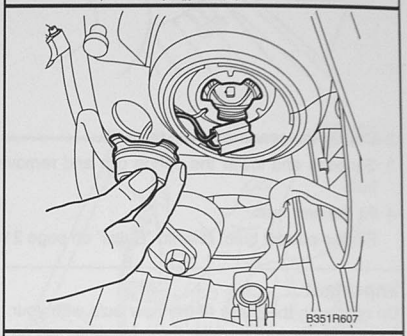
To change

1 Remove the light cluster.

See To Remove under *"Front light clusters, -M1986"* on page 229 or *"Front light clusters, M1987-"* on page 230.

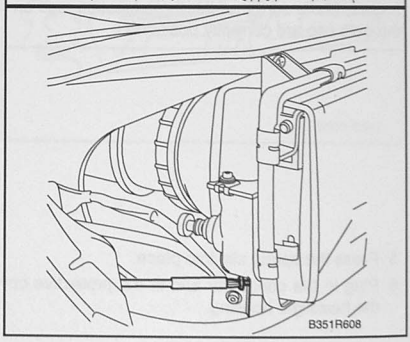


2 Remove the cover from the back of the headlight housing. Unplug the connector and withdraw the cable and grommet from the headlight housing.

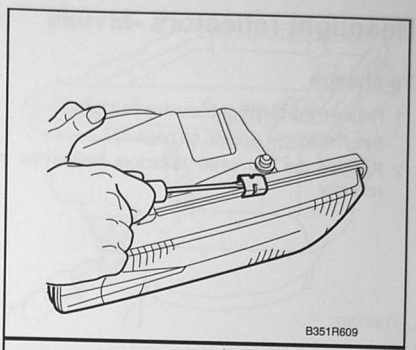


3 Remove the bolts securing the headlight (two from the upper member from in front and one by the lower outer corner from behind).

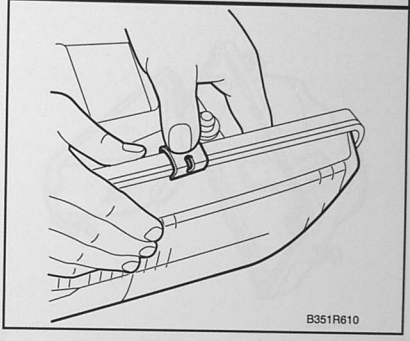
Extend the wiper arm and remove the headlight assembly.



4 Remove the clips holding the lens using a screwdriver.
Remove the lens from the housing.


B351R609

5 Make sure that the seal is correctly seated in the groove.
Position the new lens and fit the clips.


B351R610

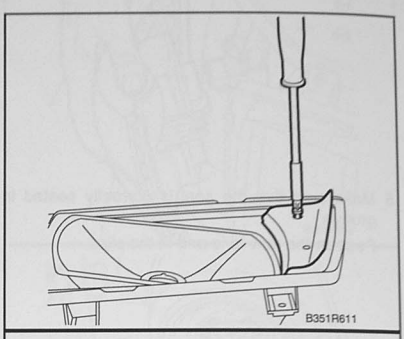
6 Fit in the reverse order.
7 Check and adjust headlight alignment.
See *"Headlight alignment"* on page 228.

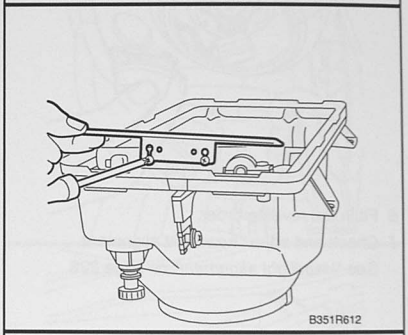
Headlight reflectors -M1986

To change

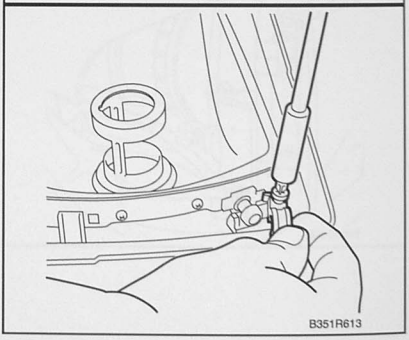
1 Remove the headlight housing and lens.
See *"Headlight lenses"* on page 222.

2 Remove the two small reflectors beside the main reflector.

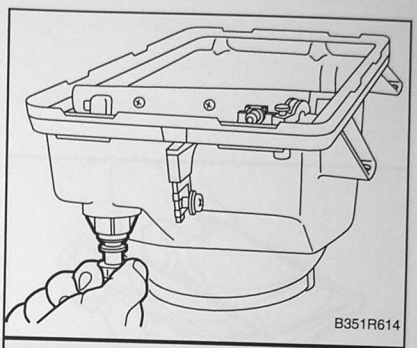


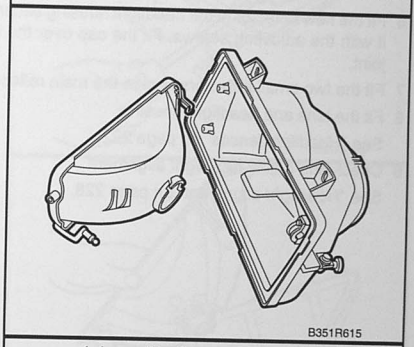


3 Remove the cap from the reflector ball joint.



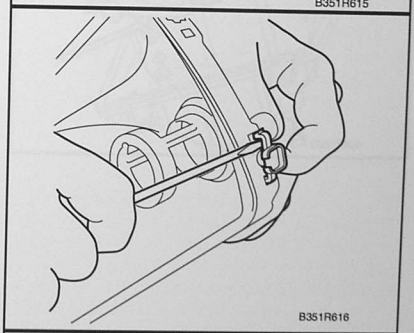
4 Unscrew the reflector from the adjusting screws in the headlight housing.

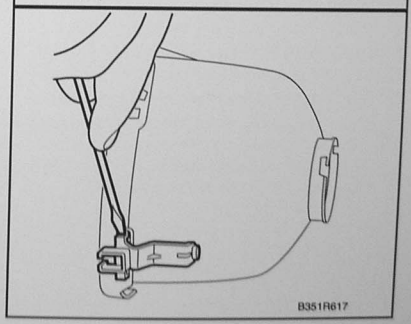

B351R614

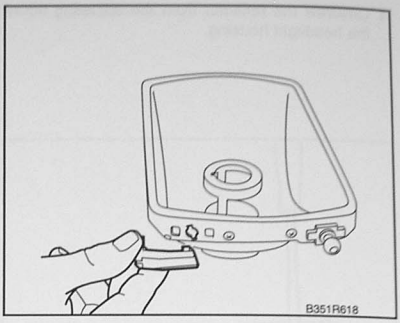

B351R615

5 Transfer the clips to the new reflector.

Note
Do not touch the inside of the reflector.


B351R616


B351R617



6 Fit the new reflector to the headlight housing securing it with the adjusting screws. Fit the cap over the ball joint.

7 Fit the two small reflectors beside the main reflector.

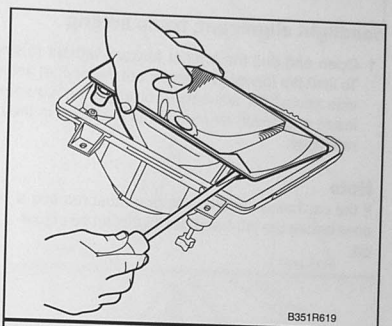
8 Fit the lens and headlight housing.
See *"Headlight lenses"* on page 222.

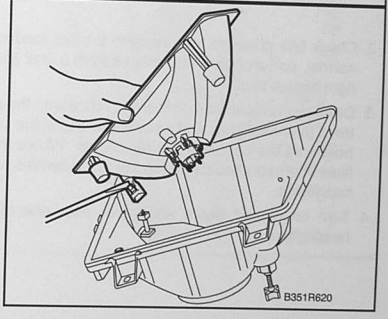
9 Check and adjust headlight alignment.
See *"Headlight alignment"* on page 228.

Headlight reflectors M1987-

To change

1 Remove the headlight housing and lens.
See *"Headlight lenses"* on page 222.
2 Remove the reflector by carefully prising it out.


B351R619


B351R620

3 Fit a new reflector.

Note
Do not touch the inside of the reflector.

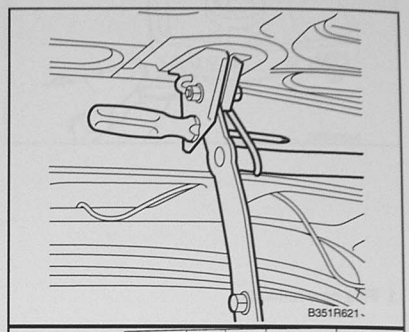
4 Fit the lens and headlight housing.
Refer to *"Headlight lenses"* on page 222.
5 Check and adjust headlight alignment.
See *"Headlight alignment"* on page 228.

Headlight alignment

Headlight alignment is normally adjusted with the aid of alignment equipment, as used at your local Saab workshop. Basic alignment can also be adjusted by shining the headlights at a wall.

Headlight alignment, basic setting

1 Open and pull the bonnet forward without raising it. To limit the forward movement of the bonnet and provide access for adjustment or alignment equipment, insert a screwdriver into one of the holes in the bonnet hinge.

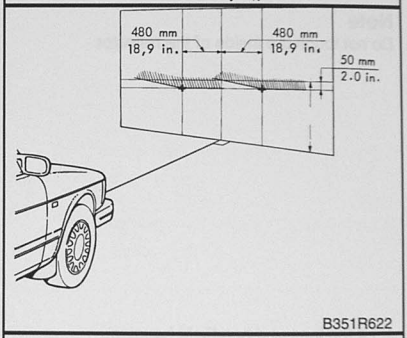


Note
If the car has an intercooler, you must remove a cowl before the left-hand headlight can be adjusted.

2 Check tyre pressure then position the car, loaded as normal, on level ground 5 metres from a wall and at right angles to it.

3 Draw two vertical lines on the wall in line with the centre of the headlights, and a horizontal line at the same height as the centre of the headlights. Where these lines intersect should correspond to the centres of the headlights.

4 Turn on dipped beam and cover over one of the headlights.



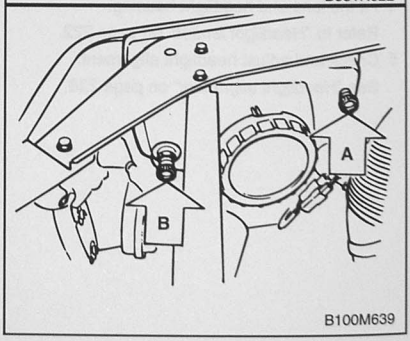
5 Adjust the alignment of the headlight with the adjusting screws on its rear: (**A**) for horizontal adjustment and (**B**) for vertical adjustment. Reach in through the gap between the bonnet and the front wing.

6 Check and adjust the light beam so that the horizontal boundary between light and dark is 50 mm below the horizontal line and to the left of the corresponding vertical line on the wall (see illustration).

The inclined boundary should be to the right of and meet the horizontal boundary at the centre line.

7 Check the other headlight in the same way.

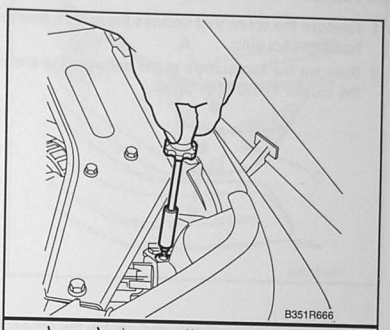
8 Check that full beam provides an even spread of light. If the light pattern is uneven or if you have trouble aligning dipped beam, check that the bulb is correctly fitted, and if possible change the bulb.



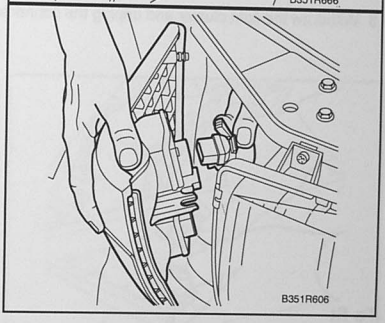
Front light clusters, -M1986

To remove

1 Remove the screw that secures the light cluster to the headlight housing.
2 Remove the two screws at the trailing edge securing the cluster to the body panel.


B351R666

3 Unplug the connectors and remove the light cluster.


B351R606

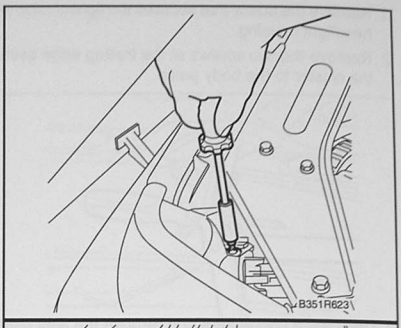
To fit

Fit in the reverse order.

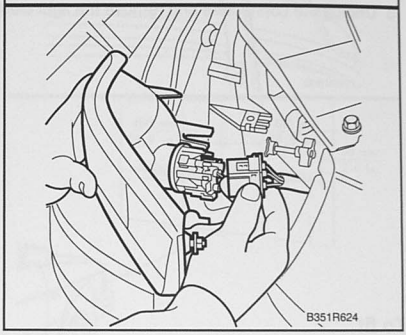
Front light clusters, M1987-

To remove

1 Remove the screw that secures the light cluster to the headlight housing.
2 Remove the two screws at the trailing edge securing the cluster to the body panel.



3 Withdraw the light cluster and unplug the connectors.

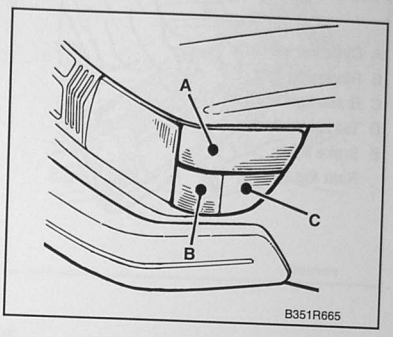


To fit

Fit in the reverse order.

Front light clusters, bulbs

A Direction indicator
B Side light/parking light
C Side reversing light

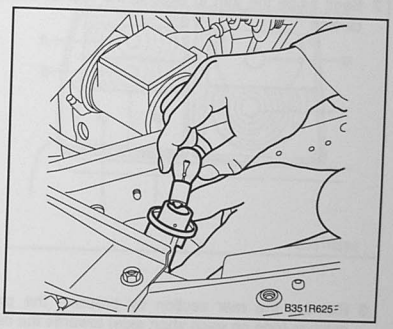


To change, M1979-86

1 Undo the screws and remove the lens.
2 Press in and twist the bulb to remove it.

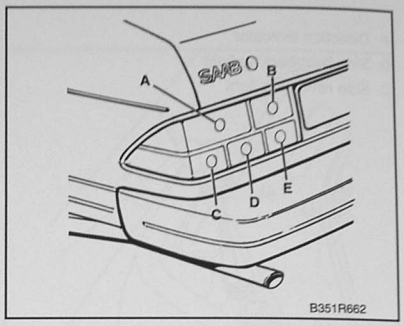
To change, M1987-

Twist and release the bulb holder. Change the bulb.
For the correct bulb, refer to *"Bulbs" on page 219*.



Rear light clusters, bulbs, 2/4-door

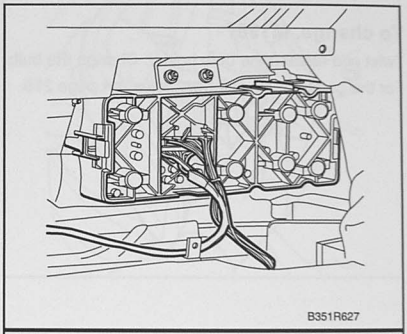
A Direction indicator
B Reversing light
C Brake light/tail light
D Tail light/reflector
E Brake lights
Rear fog light, M1983-



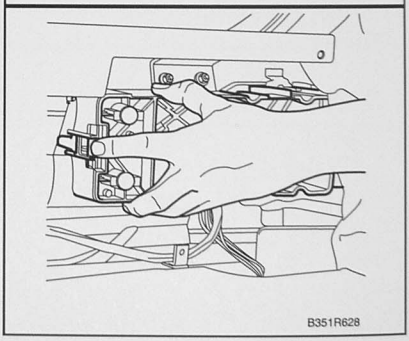
To change

1 Remove the board from in front of the rear light clusters.

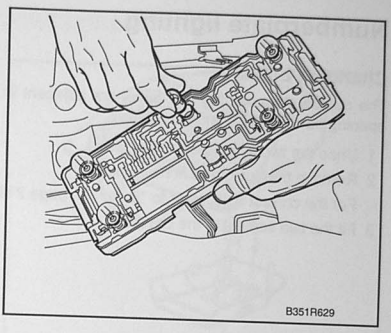
2 Bend aside the trim to expose the rear of the light cluster.



3 Remove the rear section by pressing the plastic catches (one on each short side) towards the centre of the cluster.



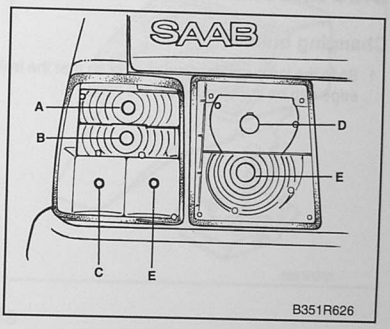
4 Press and twist the faulty bulb to remove it.


B351R629

5 Fit in the reverse order.
For the correct bulb, refer to *"Bulbs"* on page 219.

Rear light clusters, bulbs, 3/5-door

A Direction indicator
B Reversing light
C Tail light/brake light
D Rear fog light or brake light
E Tail light



B351R626

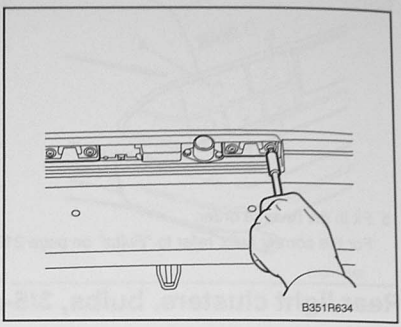
To change

1 Undo the screws and remove the lens.
2 Press in and twist the bulb to remove it.
3 Fit the new bulb.
For the correct bulb, refer to *"Bulbs"* on page 219.
4 Check that the seal is correctly seated and fit the lens.

Numberplate lighting

Changing bulbs

The numberplate lighting and bulbs are adjacent to the opening handle on the tailgate/bootlid.

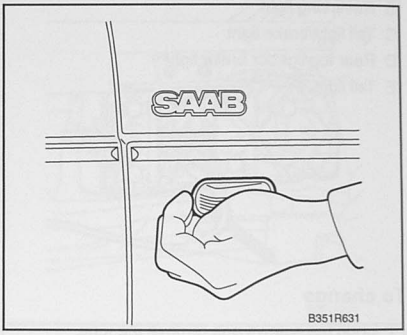


1 Undo the two screws from the covers.
2 Remove the bulbs and fit new ones.
For the correct bulb, refer to *"Bulbs"* on page 219.
3 Fit the two screws to the covers.

Side direction indicators

Changing bulbs

1 Slide the lamp unit forward slightly so that the trailing edge can be pulled out from the wing.

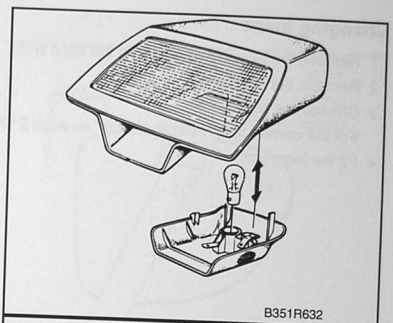


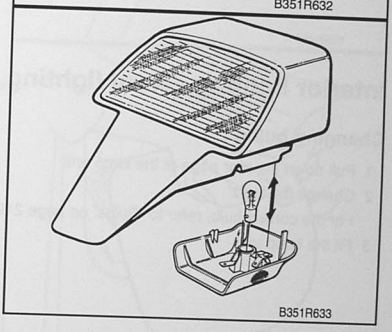
2 Remove the bulb holder and change the bulb.
For the correct bulb, refer to *"Bulbs"* on page 219.
3 Fit the lamp unit to the wing. Make sure that the unit engages the edge of the metal.

High-level brake light

Changing bulbs

1 Pull down the bulb holder.
2 Change the bulb.
For the correct bulb, refer to *"Bulbs"* on page 219.


B351R632


B351R633

High-level brake light - Convertible

Changing bulbs

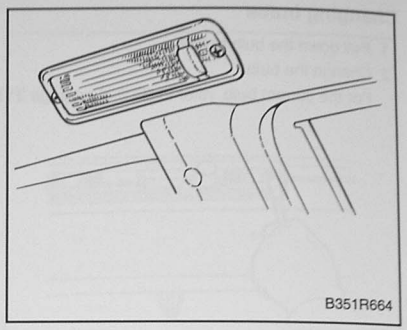
The high-mounted brake light is incorporated in the spoiler.

1 Remove the two screws securing the lens.
2 Change the bulb.
For the correct bulb, refer to *"Bulbs"* on page 219.
3 Fit the lens.

Interior lighting - Roof lighting, side

Changing bulbs

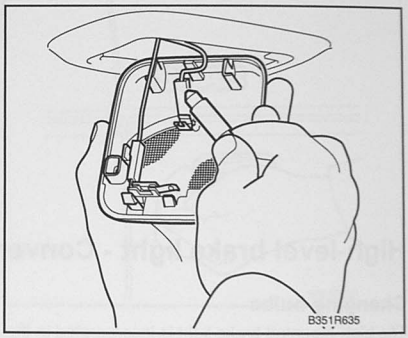
1 Remove the two screws securing the lamp unit.
2 Remove the lamp unit.
3 Change the bulb.
For the correct bulb, refer to *"Bulbs"* on page 219.
4 Fit the lamp unit.



Interior lighting - Roof lighting, centre

Changing bulbs

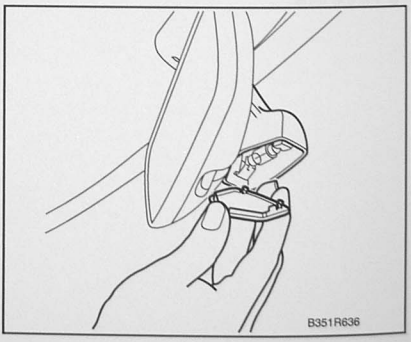
1 Pull down the rear edge of the lamp unit.
2 Change the bulb.
For the correct bulb, refer to *"Bulbs"* on page 219.
3 Fit the lamp unit.



Interior lighting - Roof lighting, front

Changing bulbs

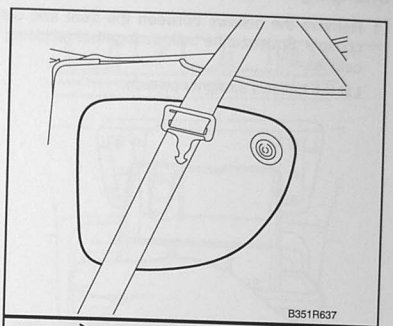
1 Remove the lens.
2 Change the bulb.
For the correct bulb, refer to *"Bulbs"* on page 219.
3 Fit the lens.



Reading lamps - Convertible

Changing bulbs

1 Remove the loudspeaker cover.



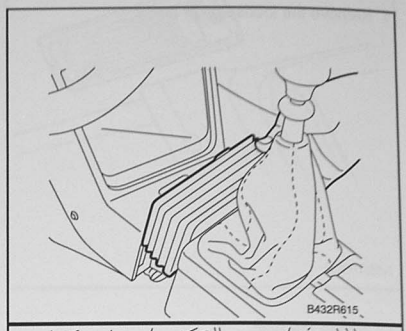
2 Change the bulb.
For the correct bulb, refer to *"Bulbs"* on page 219.

3 Fit the loudspeaker cover.

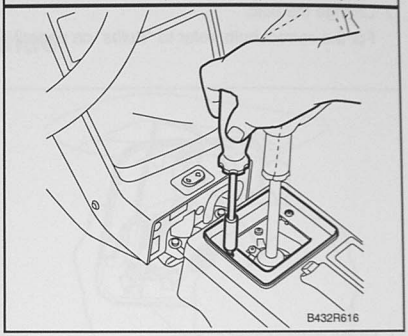
Lighting, ignition switch and gear position indicator

Changing the ignition switch bulb

1 Remove the bellows between the front and centre console. Squeeze the bellows together releasing the catches.
Lift the bellows straight upwards.



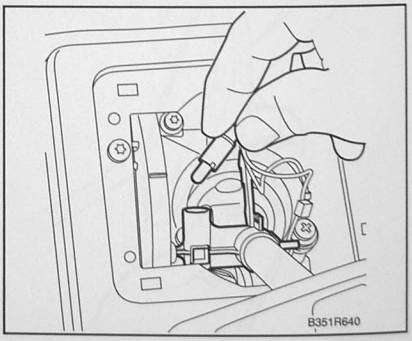
2 Remove the two screws securing the gear lever cowl.



3 Lift up the cowl as far as it will go and remove the bulb holder from under the cowl.
4 Withdraw the bulb holder and change the bulb.
For the correct bulb, refer to *"Bulbs"* on page 219.
5 Fit the holder to its bracket under the cowl.
6 Secure the gear lever cowl with the screws.
7 Fit the bellows between the centre and front console.

Changing the gear position indicator bulb

1 Remove the gear position indicator cover.
2 Change the bulb.
For the correct bulb, refer to *"Bulbs"* on page 219.
3 Fit the gear position indicator cover.

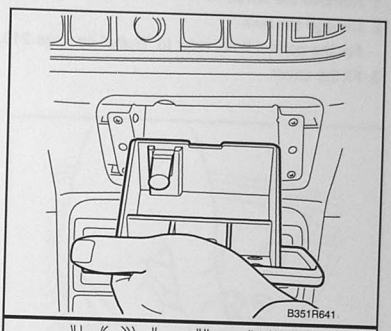


Lighting, ashtray

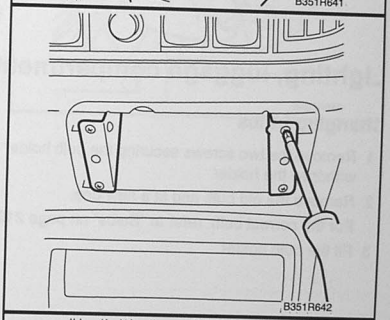
This method applies to cars with a front centre console.

Changing bulbs

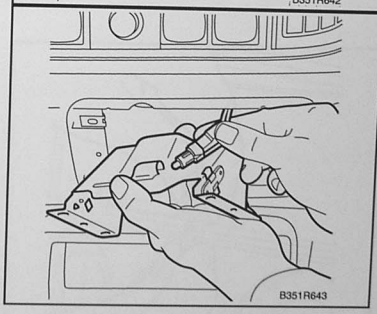
1 Remove the ashtray.



2 Remove the screws securing the ashtray housing.



3 Withdraw the housing and change the bulb.
For the correct bulb, refer to *"Bulbs"* on page 219.

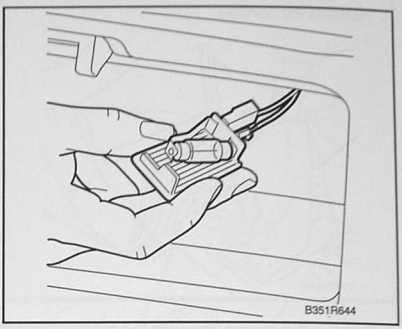


4 Fit the screws to the ashtray housing.
5 Refit the ashtray.

Lighting, glovebox

Changing bulbs

1 Remove the cover.
2 Change the bulb.
For the correct bulb, refer to *"Bulbs"* on page 219.
3 Fit the cover.



Lighting, luggage compartment

Changing bulbs

1 Remove the two screws securing the bulb holder and withdraw the holder.
2 Remove the old bulb and fit a new one.
For the correct bulb, refer to *"Bulbs"* on page 219.
3 Fit the bulb holder.

Lighting, instrument display panel

The main instrument display panel contains two 3 W bulbs to illuminate the instruments, one 2 W bulb for the charging warning lamp, as well as a number of 1.2 W bulbs for the indicator lamps.

Changing bulbs

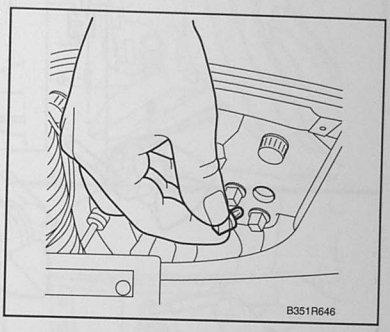
1 Remove the loudspeaker and defroster grille from the top of the dashboard.
2 Remove the bulb holders or bulbs. (The bulb for the fuel-low warning lamp can only be accessed when the entire instrument display panel has been removed.)

See To Remove under *"Instrument display panel"* on page 262.

3 Change the bulbs.

For the correct bulb, refer to *"Bulbs"* on page 219.

4 Fit the bulb holders.
5 Fit the loudspeaker and defroster grille to the top of the dashboard.



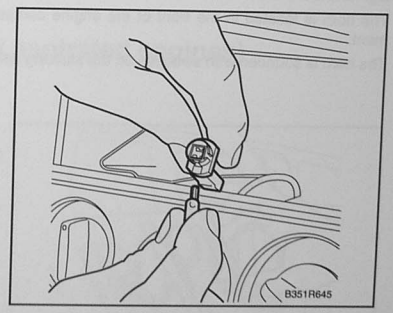
Lighting, heater controls

Changing bulbs

1 Remove the top storage compartment or radio.
2 Withdraw the bulbs and change them.

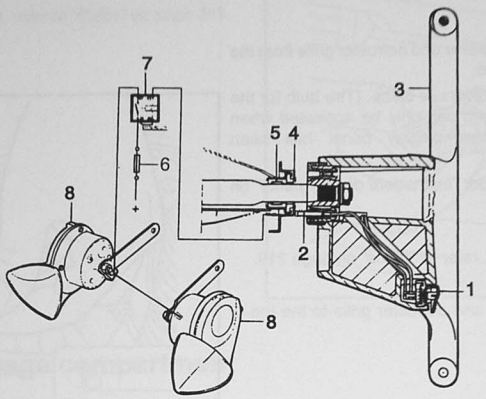
For the correct bulb, refer to *"Bulbs"* on page 219.

3 Fit the top storage compartment or radio.



Horn

Technical description



B351R653

Horn M1981-

1 Horn switch	4 Slip ring	7 Relay
2 Brushes	5 Bearing	8 Horn
3 Steering wheel	6 Fuse, 25 A	

The horn is of the supertone type and produces both a high and a low tone.

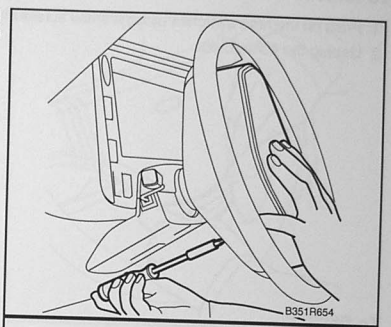
The horn is located in the front of the engine compartment.

The horn is sounded with switches on the steering wheel.

Horn switch, M1979-80

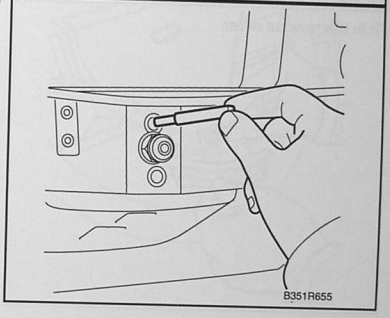
To remove

1 Remove the pad with horn switch from the steering wheel. The four screws securing the pad can be accessed from below the steering wheel.



2 Remove the brush from between the pad and slip ring.

The slip ring is mounted to the upper end of the steering column bearing bracket and is electrically insulated from the rest of the steering column. The slip ring is connected to the horn wiring harness via a blade connector.



To fit

Fit in the reverse order.

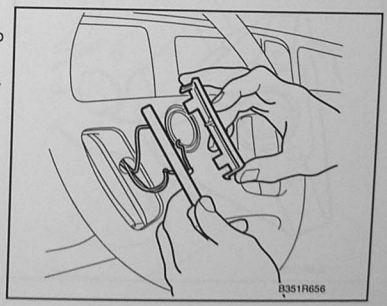
Horn switch, M1981-84 (normally aspirated engines)

To remove

1 Remove the horn button by pressing it outwards.

2 Remove the steering wheel so that the brush and slip ring are accessible.

See To Remove under *"Steering wheel"* on page 398.



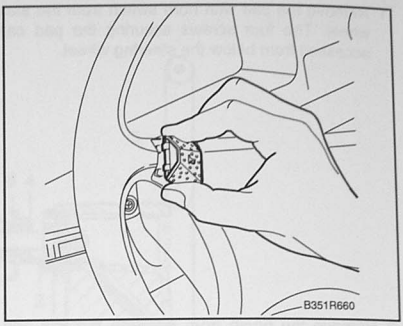
To fit

Fit in the reverse order.

Horn switch, M1985-

To remove

1 Prise off the horn switches using a small screwdriver.
2 Unplug the connectors.



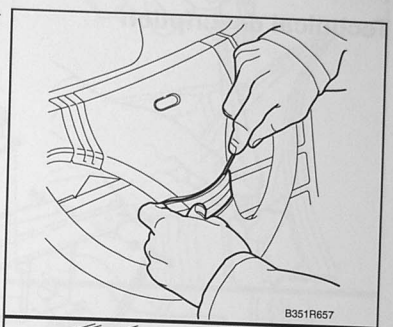
To fit

Fit in the reverse order.

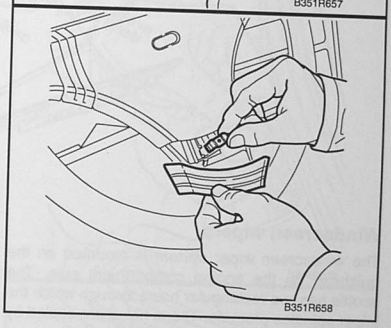
Horn switch, Turbo M1983-

To remove

1 Remove the three horn buttons using a small screwdriver.


B351R657

2 Withdraw the horn switches.


B351R658

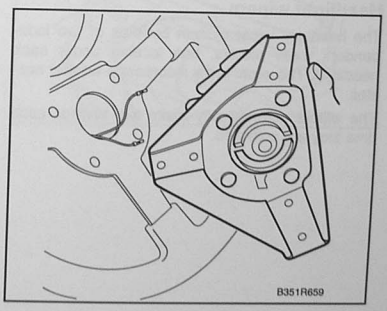
To fit

Fit in the reverse order.

Horn switch, sports wheel

To remove

1 Disengage the pad containing the horn switch.
2 Disconnect the two wires.

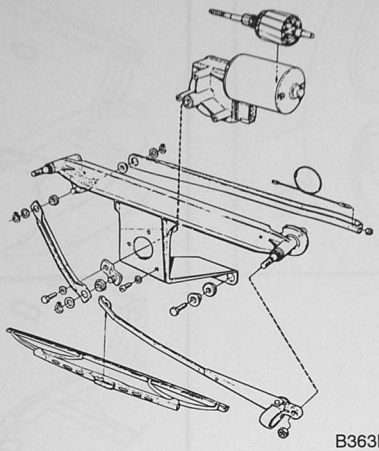

B351R659

To fit

Fit in the reverse order.

Wiper/washer system

Technical description



B363R601

Windscreen wipers

The windscreen wiper system is mounted on the bulkhead on the engine compartment side. The scuttle has two rectangular holes through which the wiper spindles protrude. These holes are sealed by rubber covers.

The rotational movement of the electric wiper motor is transferred to the spindles via links and wires.

The wiper arms are attached to the spindles by splines and nuts.

Headlight wipers

The headlight wiper system consists of two independent wiper motors, one located under each headlight. The wiper arms incorporate washer nozzles.

The wipers automatically make five sweeps each time they are activated.

Washers

The washer fluid reservoir is mounted in front of the right-hand wheel housing. The washer fluid pump is integrated in the bottom of the fluid reservoir.

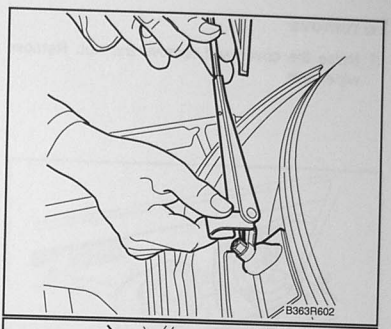
The windscreen washer nozzles are mounted on the bonnet. The nozzle on the driver's side has two jets while that on the passenger side has a single jet.

The headlight washer nozzles are fitted on the wiper arms.

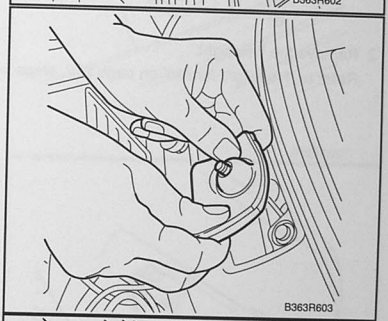
Windscreen wiper system

To remove

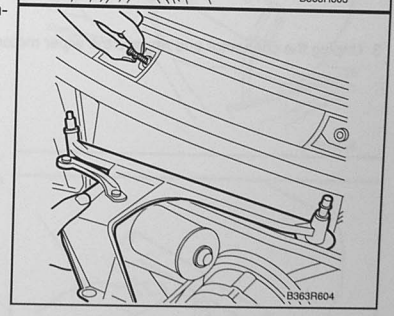
1 Lift the wiper arms off the windscreen. Remove both the arms:
- lift the cover
- remove the nut
- pull off the wiper arm



2 Remove the rubber covers.



3 Remove the four retaining bolts and unplug the connector.



4 Remove the wiper mechanism.

To fit

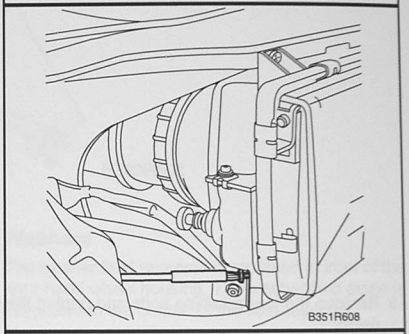
Fit in the reverse order.

Headlight wipers

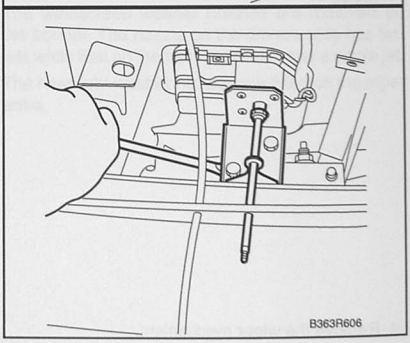
To remove

1 Raise the cover and remove the nut. Remove the wiper arm.

2 Remove the headlight.
Refer to *"Headlight lenses"* on page 222, steps 1-3.



3 Unplug the connector and remove the wiper motor.



To fit

Fit in the reverse order.

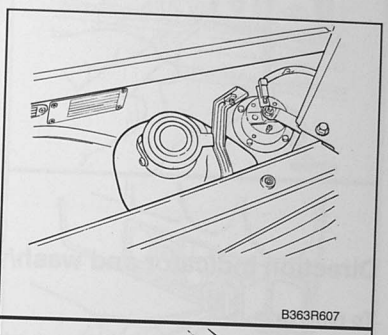
Before fitting the wiper arm, turn the ignition key to ON. Activate the headlight wipers and wait for them to stop to ensure that they are in the parked position.

Washer fluid reservoir, washer fluid pump

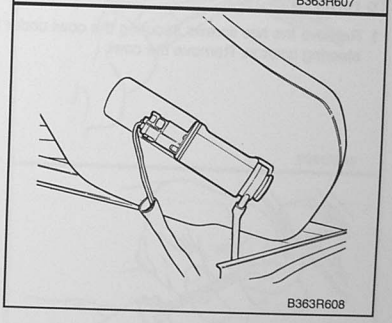
To remove

Important
The washer fluid reservoir must not contain more than 0.5 litres (0.5 qts) of fluid when the pump is removed as the excess fluid will spill out.

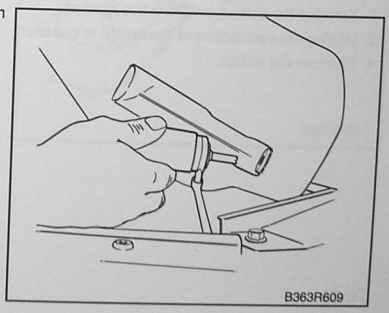
1 Remove the clamp from over the washer fluid reservoir.


B363R607

2 Lift up the washer fluid reservoir.


B363R608

3 Disconnect the connector and the washer fluid hose.
4 Angle out and withdraw the washer fluid pump from the reservoir.


B363R609

To fit

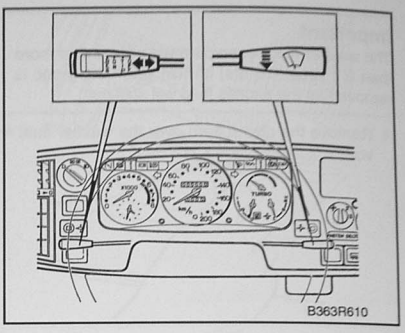
Fit in the reverse order.

When changing the washer fluid pump, check the seal and, if necessary, change it.

Controls and switches

Steering column switches

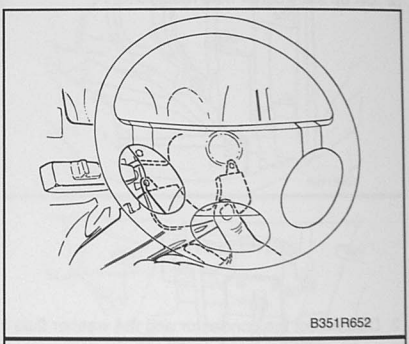
The stalk switches on the steering column are used to control main/dipped beam, direction indicators, cruise control and wipers and washers.



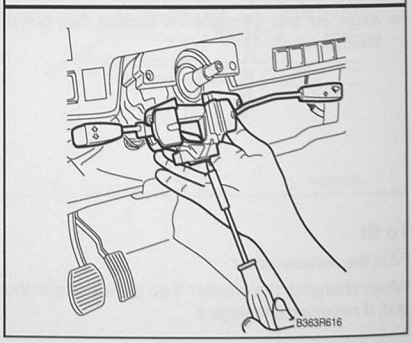
Direction indicator and wash/wipe switches

To remove

1 Remove the two screws securing the cowl under the steering column. Remove the cowl.



2 Remove the screws securing the bracket.
3 Unplug the connectors of the switch in question.
4 Remove the switch.



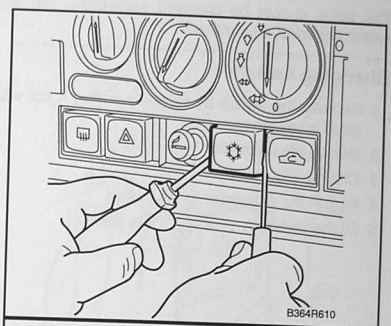
To fit

Fit in the reverse order.

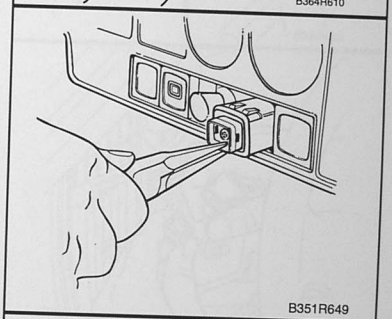
Switches, -M1985

Changing bulbs

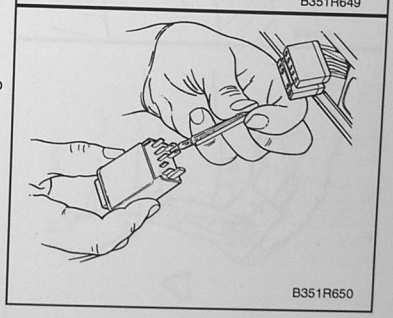
1 Remove the pushbutton.


B364R610

2 Withdraw the switch.


B351R649

3 Remove the bulb holder from the switch.
4 Change the bulb.
For the correct bulb, refer to *"Bulbs"* on page 219.
5 Fit the switch and pushbutton by pressing them into place.

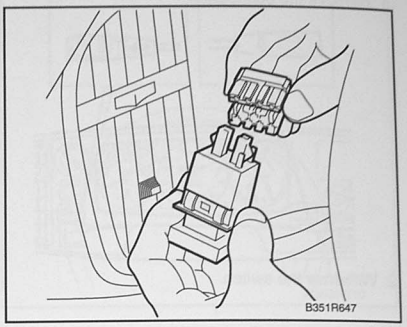

B351R650

Switches, M1986-

The bulbs cannot be changed separately. The entire switch unit must be changed.

Changing switches

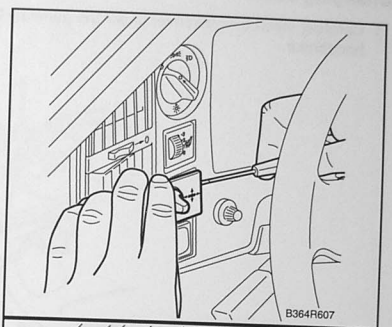
1 Remove the switch by carefully prising it out with a small screwdriver.
2 Unplug the connector.
3 Change the switch.
4 Plug in the connector to the switch.
5 Fit the switch by pressing it into place.



Switch, electric door mirrors

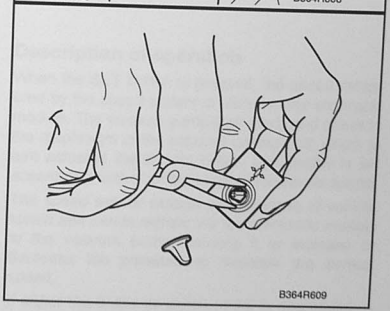
To remove

1 Withdraw the switch.



2 Unplug the connector.

3 Transfer the cover plate.



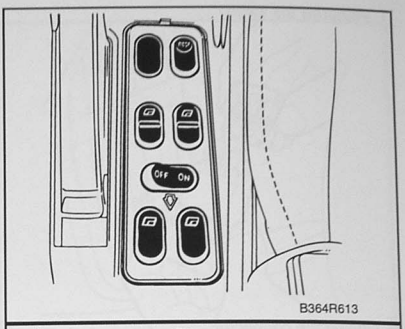
To fit

Fit the switch.

Switches, electric windows

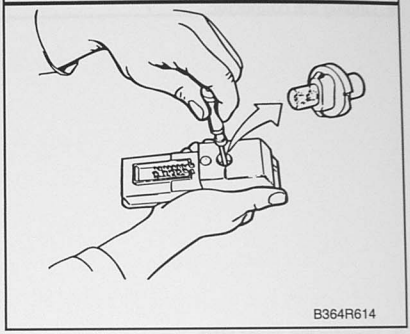
Changing bulbs

1 Carefully insert a screwdriver under the panel by the handbrake.



B364R613

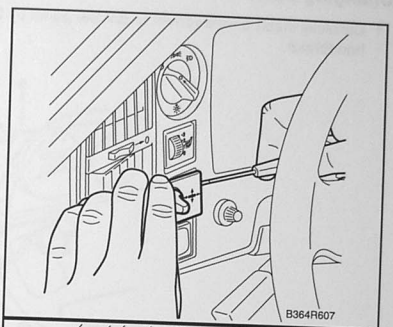
2 Lift up the panel and change the bulb.
For the correct bulb, refer to *"Bulbs"* on page 219.


B364R614

Switch, electric door mirrors

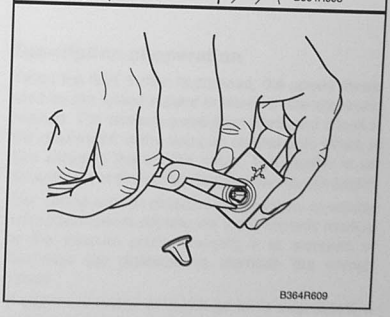
To remove

1 Withdraw the switch.



2 Unplug the connector.

3 Transfer the cover plate.



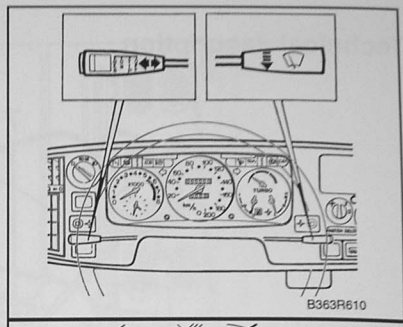
To fit

Fit the switch.

Components

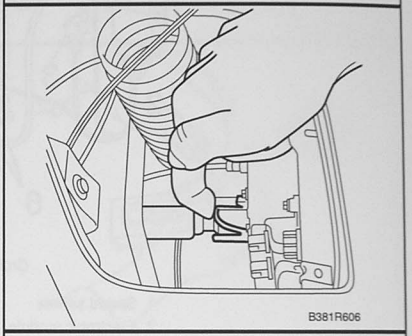
Switches

The cruise control switches are incorporated in the direction indicator stalk switch. (Left-hand stalk switch.)



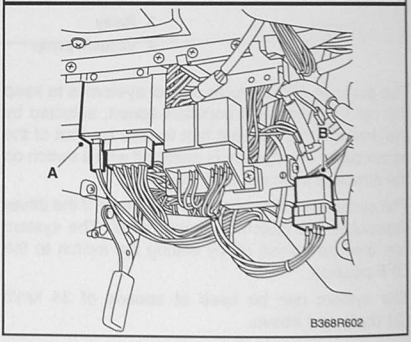
Speed sensor

The speed sensor is located on the back of the speedometer. Remove the loudspeaker grille to access the sensor.



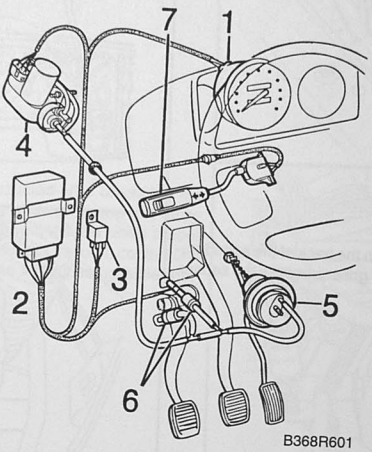
Electronic module

The electronic module (**A**) and a relay (**B**) are located on the relay bracket on the left-hand side under the dashboard.



Cruise control

Technical description



Cruise control

1 Speed sensor
2 Electronic module
3 Relay
4 Vacuum pump
5 Vacuum control unit
6 Pedal switches
7 Switches

The purpose of the cruise control system is to keep the car travelling at a constant speed, selected by the driver, while allowing him to take his foot of the accelerator. The system is engaged with a switch on the direction indicator stalk switch.

The system is automatically disengaged if the driver depresses the clutch or brake pedal. The system can also be turned off by sliding the switch to the OFF position.

The system can be used at speeds of 34 km/h (21 mph) and above.

Description of operation

When the SET button is pressed, the speed measured by the speed sensor is stored in the electronic module. The vacuum pump then starts and draws in the diaphragm in the vacuum control unit, which in turn actuates the throttle cable. The throttle is set accordingly to the correct position for the set speed.

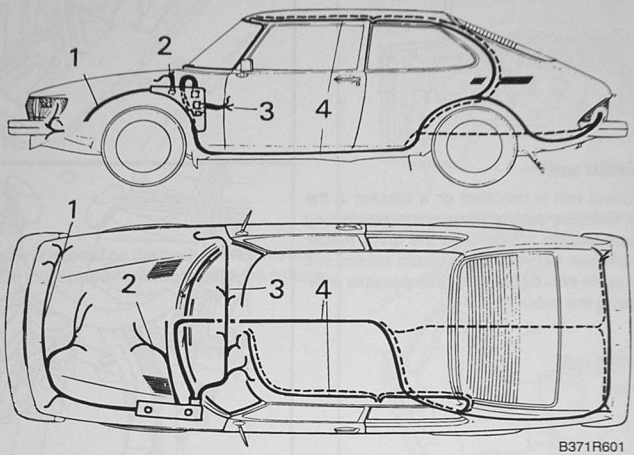
The speed sensor detects any changes of vehicle speed and sends signals via the electronic module to the vacuum pump, causing it to increase or decrease the pressure to maintain the correct speed.

If either the brake or clutch pedal is depressed, a pedal switch is opened and the vacuum collapses. The throttle rapidly returns to the idle position. The vacuum pump is also switched off electrically (double safety).

The system has a memory function that enables it to return to the selected speed if either the clutch or brake pedal has been depressed (opening the pedal switches). To do this, the driver simply presses the RESUME button. The memory is erased when the ignition switch is turned to the OFF position.

Wiring, fuses, relays

Wiring harnesses



Wiring harness

1 Engine compartment, front wiring harness
2 Engine compartment, rear wiring harness
3 Instrument wiring harness
4 Rear wiring harness
--- Exception M1981-

The car's wiring harnesses are all connected to the electrical distribution box in the engine compartment, which is behind the left-hand wheel housing.

This distribution box contains fuses, relays and a timing service connection (TSI).

The electrical distribution box is enclosed by a transparent, sealed cover. There is a drain plug in the bottom to allow any moisture to be removed.

The cabin wiring harnesses are connected to the electrical distribution box by means of three multi-pin connectors that are mounted on the bulkhead.

The wires are collected into stems that have plastic sheaths. These stems have branches to the various components.

The following main wiring harness are connected to the electrical distribution box:

- Engine compartment, front wiring harness (e.g. lights, radiator fan, horn and front engine components).
- Engine compartment, rear wiring harness (e.g. alternator, wiper motor).
- Instrument wiring harness (to instruments and control panel), connected to the distribution box via the two lower multi-pin connectors on the bulkhead, and connected to the rear wiring harness via a multi-pin connector by the relay bracket under the dashboard.
- Rear wiring harness (to electrical components in cabin and rear of vehicle), connected to the distribution box via the upper multi-pin connector on the bulkhead, and to the instrument wiring harness via a multi-pin connector by the relay bracket under the dashboard.

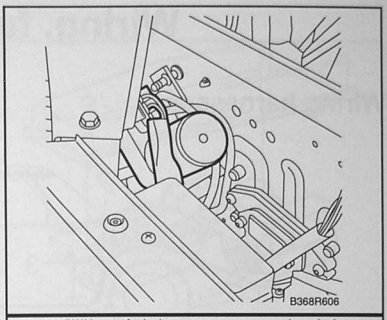
The cables are colour-coded. Refer to the table below.

Colour code table

	Early wiring harnesses	Late wiring harnesses
Blue	BL	BU
Brown	BR	BN
Yellow	GL	YE
Green	GN	GN
Grey	GR	GY
Orange	OR	OG
Red	RD	RD
Black	SV	BK
Violet	VL	VT
White	VT	WH
Pink		PK

Vacuum pump

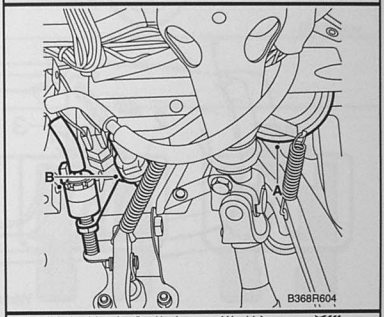
The vacuum pump is positioned in front of the left-hand wheel housing in the engine compartment.



Vacuum control unit

The vacuum control unit is mounted on a bracket in the heater housing. Exercise care when removing and fitting the unit to ensure you do not damage the unit's rubber bellows. The ball chain between the vacuum control unit and the throttle cable should be as taut as possible without actually moving the cable.

A Vacuum control unit
B Pedal switches

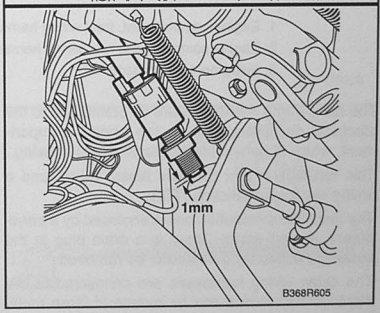


Pedal switches

The pedal switches are mounted on the same bracket as the brake light switch. The pedal switches should be adjusted so that there is clearance of 1 mm (0.04 in) between the threaded part of the switch and the button.

Adjustments should be made when the pedals are in their home positions.

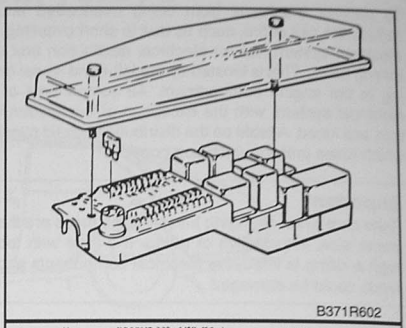
Important
The pedal switches should never be adjusted so that they act as pedal stops.



Relays

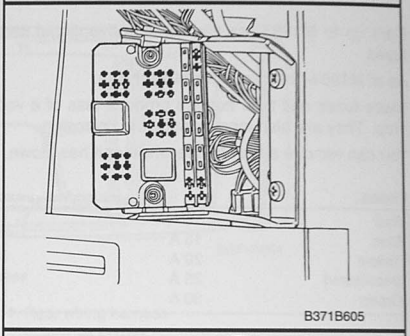
The majority of relays are collected in the distribution box, though some are located under the dashboard or rear seat.

Refer to the Owner's Manual for your car or the lid of the distribution box to ensure the correct placement of relays.



B371R602

On convertible models there is a distribution box located under the rear seat on the left-hand side.

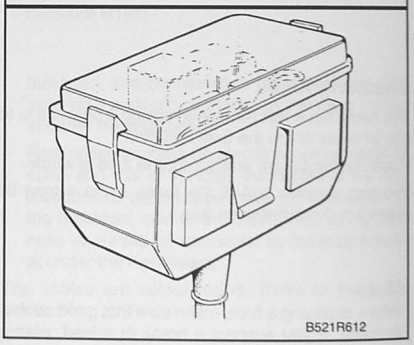


B371B605

ABS fuses and relays

The ABS fuses and relays are located in a separate holder beside the electronic control module.

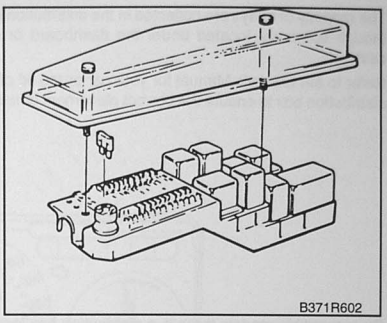
This holder contains a main relay and fuse for the electronic control module, a relay and fuse for the electric motor of the high-pressure hydraulic pump, and an additional fuse for the control module.



B521R612

Fuses

To prevent the leads from being overloaded and to reduce the risk of fire, such as due to short circuiting, the electrical system has an electrical distribution box containing fuses. This is located by the left-hand wheel housing in the engine compartment. All components of the electrical system, with the exception of the ignition system, are fused. A table on the distribution box lid specifies which fuses protect which components.


B371R602

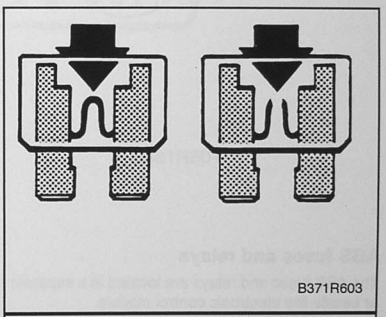
Important
Take care when changing fuses. All the fuses are the same size, irrespective of rating. If a fuse with too high a rating is fitted, the electrical components and leads could be damaged.

Cars up to M1983 are fitted with conventional ceramic fuses.

As of M1984- the cars have blade fuses.

Blade fuses and their holders produce less of a voltage drop. They are also more resistant to corrosion.

You can remove a fuse to see whether it has blown.


B371R603

Fuses:

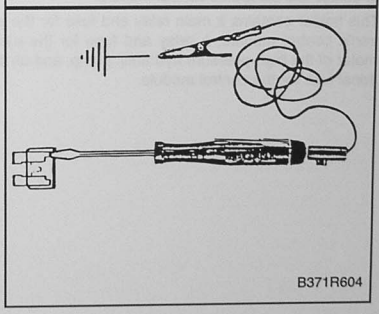
Red	10 A
Blue	15 A
Yellow	20 A
Uncoloured	25 A
Green	30 A

Checking fuses

The fuses have test terminals making it possible to test in situ whether or not the fuse has blow.

If both terminals are energized, the fuse is whole.

You can remove and fit the fuses using a tong that is stowed in the distribution box.


B371R604

Note
When changing a fuse, make sure that good contact is made. If you suspect a break in a lead, always check that the fuse first.

If measurements are taken with a voltmeter a maximum voltage drop of 0.1 V is permissible.

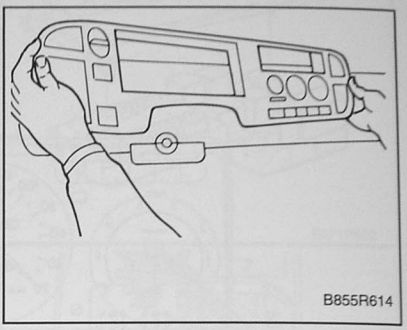
Instrument display panel

To remove

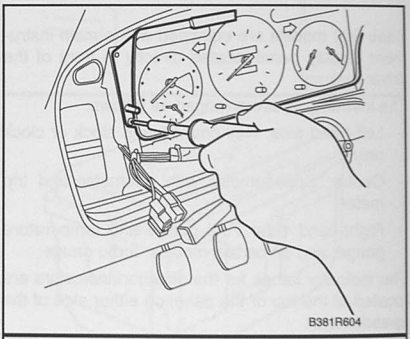
1 Remove the switch panel.
See To Remove under "*Switch panel*" on page 549.

Important
The four screws are of different lengths and must not be mixed up. Incorrect fitting will damage the top of the dashboard. Somewhat longer screws have been used on some early models. These should be ground down to the specified lengths.

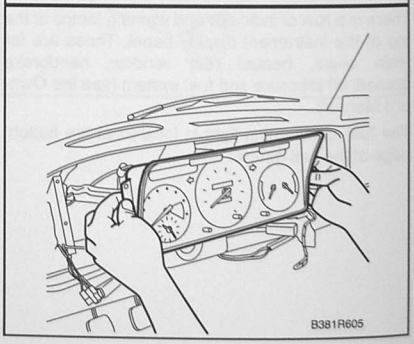
⚠ WARNING
Use protective goggles, ear defenders and protective gloves for grinding and similar work.


B855R614

2 Remove the left-hand loudspeaker/defroster grille.
3 Unplug the instrument display panel connectors.
4 Detach the speedometer cable from the instrument display panel.
See To Remove under "*Speedometer cable*" on page 263.
5 Remove the screws securing the instrument display panel.


B381R604

6 Withdraw the instrument display panel.

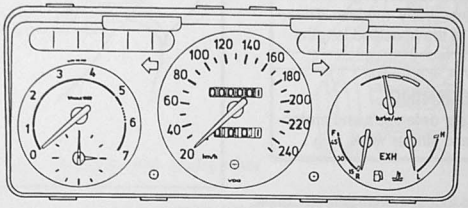

B381R605

To fit

Fit in the reverse order.

Instruments

Technical description



B381R601

Saab 900 models are equipped with a main instrument display panel located directly in front of the driver.

The instruments are arranged as follows:

- Left-hand side: Rev counter and clock or clock only.
- Centre: Speedometer with odometer and trip meter.
- Right-hand side: Fuel gauge and temperature gauge, and on certain models, turbo gauge.

The indicator lamps for the direction indicators are located at the top of the panel on either side of the speedometer.

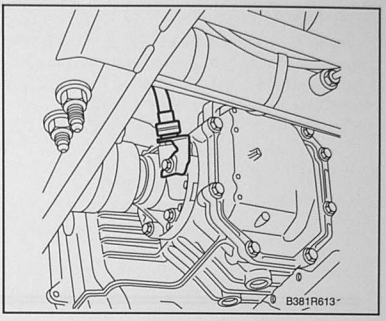
There is a row of indicator and warning lamps at the top of the instrument display panel. These are for main beam, heated rear window, handbrake applied, oil pressure and fuel system (see the Owner's Manual).

The fuel-low warning light is located at the bottom edge of the fuel gauge.

Speedometer cable

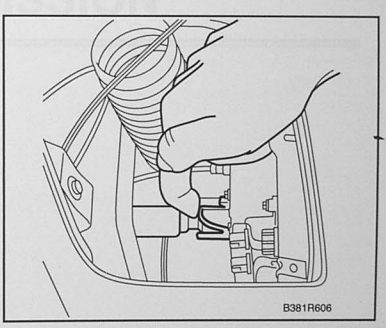
To remove

1 Detach the speedometer cable from the gearbox.



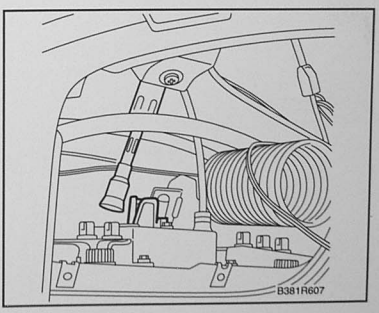
2 Remove the left-hand defroster and loudspeaker grille from the dashboard.

3 Bend aside the clamp on the speedometer cable attachment and hook it onto the designated catch.



4 Disconnect the cable from the speedometer.

5 Feed the speedometer cable through the bulkhead and remove it.



To fit

Fit in the reverse order.

Work schedule

Explanation

The following table contains an outline of topics. The table makes it easy to see which jobs are described in each section as well as the parts and tools that are required to complete the work.

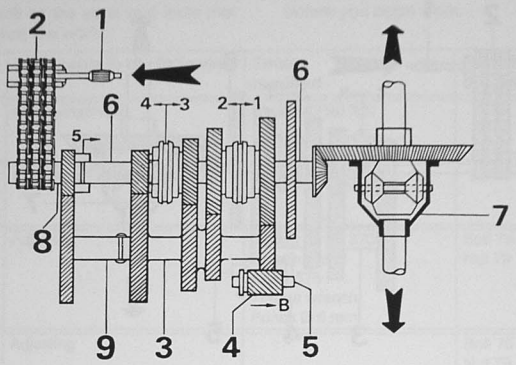
Remember to read carefully through the job description as well as General Information (pages 2-6) before you begin work.

Section	Applicable to the following work	Tools required	Parts required to carry out the work
Gear lever housing and ignition switch, -M1988	Removing/Fitting	Socket 87 90 370	
Gear lever housing and ignition switch, M1989-	Removing/Fitting	Socket 87 90 370	
Gear position	Adjusting	Socket 87 90 370 Locating tool 87 91 576 Torque wrench Punch Ø 6 mm	Bolt 75 41 907 Nut 79 75 502
Gear lever spring tension	Adjusting		Bolt 75 41 907 Nut 79 75 502
Clutch	Removing/Fitting	Spacer ring 83 90 023 or 87 91 618 Tool 83 94 033 M8 bolt	Molybdenum disulphide paste type Molycote Rapid G
Clutch, slave cylinder with sprung rubber gaiter	Removing/Fitting	Tool kit 87 92 186 Tool 87 92 038 Tool 87 92 020 Spacer ring 83 90 023 or 87 91 618 M8 bolt Torque wrench	Molybdenum disulphide paste type Molycote Rapid G
Clutch plates	Checking		
Bleeding the master and slave cylinder		Transparent hose with Ø 6 mm inner diameter Cooling system tester 30 05 758	

TRANSMISSION

Manual gearbox, 5-speed

Technical description



B471R602

5-speed manual gearbox, schematic diagram

1 Input shaft
2 Primary drive
3 Rear layshaft pinion set
4 Reverse gear
5 Reverse gear shaft
6 Output shaft
7 Differential housing
8 Input shaft
9 Front layshaft pinion set

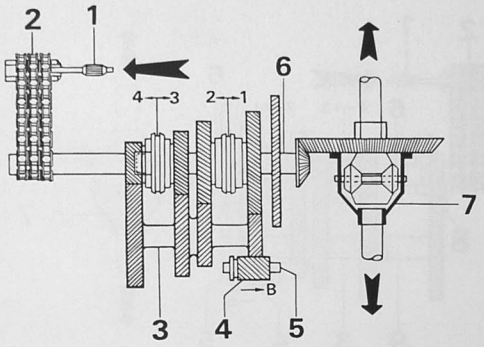
The gearbox is designed specifically for front-wheel drive cars, with all the shafts, gearwheels, the differential and inboard universal joints forming an integral unit.

All forward gears are synchromesh, while reverse gear is engaged by means of a sliding gear.

The front part of the gearbox consists of a primary drive, driven by the engine through the clutch and a transmitting the engine output to the gearbox itself. The gearbox is located under the engine and part of the gearcase serves as the engine oil sump.

Manual gearbox, 4-speed

Technical description



B471R601

4-speed manual gearbox, schematic diagram

1 Input shaft
2 Primary drive
3 Layshaft pinion set
4 Reverse gear
5 Reverse gear shaft
6 Output shaft
7 Differential housing

The gearbox is designed specifically for front-wheel drive cars, with all the shafts, gearwheels, the differential and inboard universal joints forming an integral unit.

All forward gears are synchromesh, while reverse gear is engaged by means of a sliding gear.

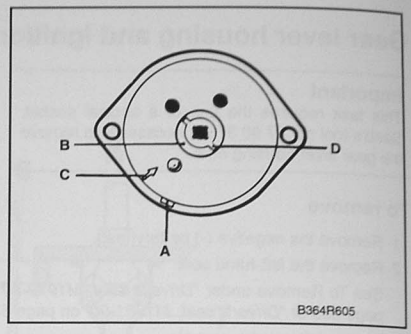
The front part of the gearbox consists of a primary drive, driven by the engine through the clutch and a transmitting the engine output to the gearbox itself. The gearbox is located under the engine and part of the gearcase serves as the engine oil sump.

9 Undo the two screws securing the ignition switch and remove the ignition switch.

To fit

1 Insert a screwdriver into the slot (**D**) and turn the switch so that the mark (**B**) is in line with the arrow (**C**).

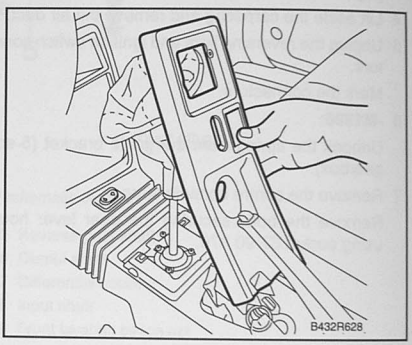
2 Turn the ignition key to position "L" (locked). Fit the switch to the housing and check that the locating pin engages the recess (**A**).



3 Secure the switch with the retaining screws then turn the ignition key back and forth to check that it does not bind.

4 Fit the gear lever cowl.

5 Plug in the reversing light and ignition switch connectors.



6 Fit the air duct and refit the carpeting.

7 Fit the rear section of the centre console.

See To Fit under *"Centre console, rear"* on page 553.

8 Fit the seat.

See To Fit under *"Driver's seat, M1979-80"* on page 533 or *"Driver's seat, M1981-90"* on page 533.

9 Connect the negative (-) battery lead.

10 Check that the ignition switch works properly.

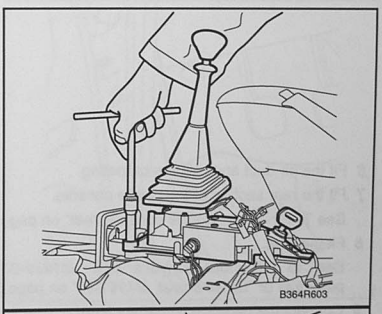
Gearchange mechanism

Gear lever housing and ignition switch, -M1988

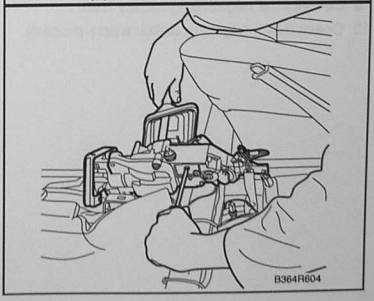
Important
This task requires the use of a special socket. Saab's tool no. 87 90 370 is necessary to remove the gear lever housing nuts.

To remove

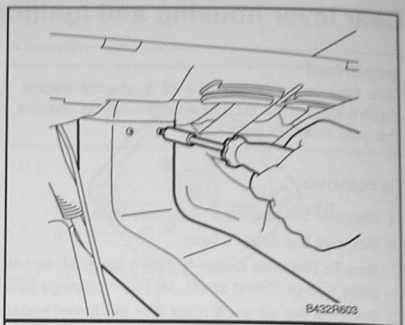
1 Remove the negative (-) battery lead.
2 Remove the left-hand seat.
See To Remove under *"Driver's seat, M1979-80"* on page 533 or *"Driver's seat, M1981-90"* on page 533.
3 Remove the centre console.
See To Remove under *"Centre console, rear"* on page 553.
4 Lift aside the carpeting and remove the air duct.
5 Unplug the reversing light and ignition switch connectors.
Mark the connectors.
6 **-M1986:**
Unhook the spring from the guide bracket (5-speed gearbox).
7 Remove the centre console support.
Remove the bolts securing the gear lever housing using socket 87 90 370.


B364R603

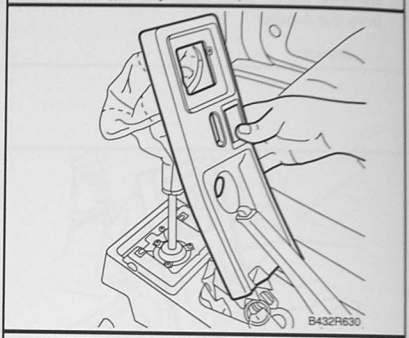
8 Tilt the gear lever housing to the side to access the screws securing the upper metal plate.
Remove the screws then lift up the pate.


B364R604

5 Lift aside the carpeting and remove the air duct.

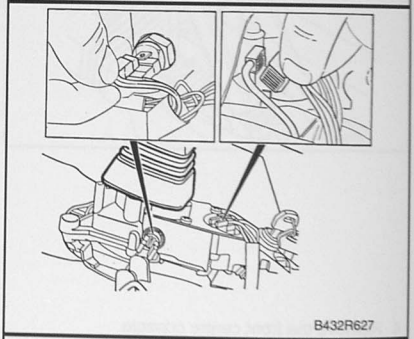


6 Remove the gear lever cowl.

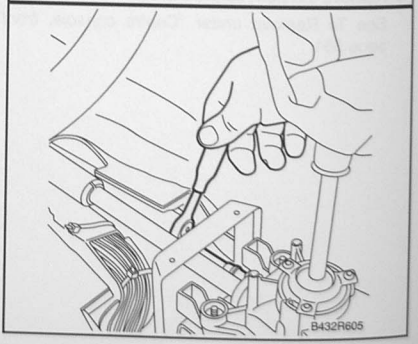


7 Unplug the reversing light and ignition switch connectors.

Mark the connectors.



8 Remove the two screws from the bracket.



Gear lever housing and ignition switch, M1989-

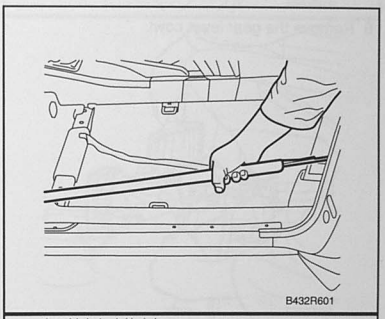
Important
This task requires the use of a special socket. Saab's tool no. 87 90 370 is necessary to remove the gear lever housing nuts.

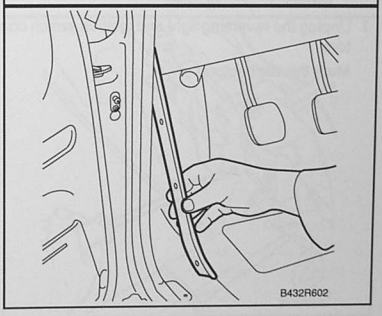
To remove

1 Remove the negative (-) battery lead.

2 Remove the driver's seat.
See To Remove under *"Driver's seat, M1981-90"* on page 533 or *"Front seats, M1991-"* on page 535.

3 Remove the sill scuff plate and the sheet metal strip from the A-pillar.


B432R601

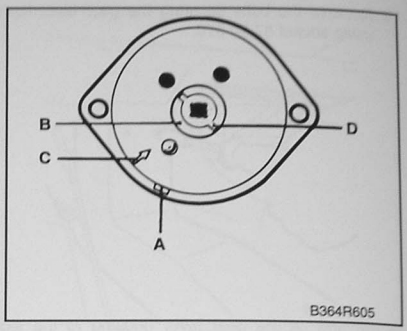

B432R602

4 Remove the front centre console.
See To Remove under *"Centre console, front"* on page 551.

To fit

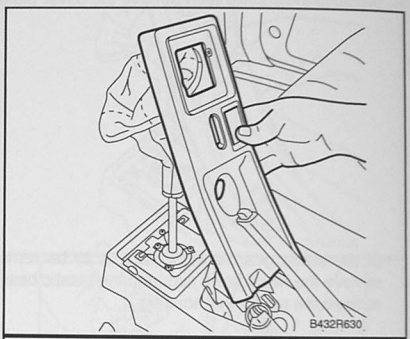
1 Insert a screwdriver into the slot (**D**) and turn the switch so that the mark (**B**) is in line with the arrow (**C**).

2 Turn the ignition key to position "L" (locked). Fit the switch to the housing and check that the locating pin engages the recess (**A**).

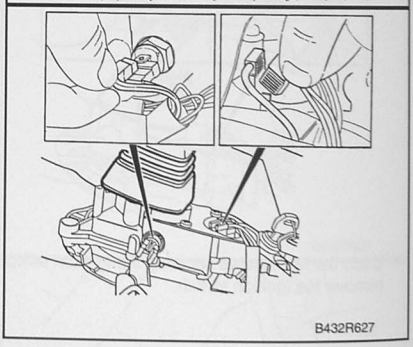


3 Secure the switch with the retaining screws then turn the ignition key back and forth to check that it does not bind.

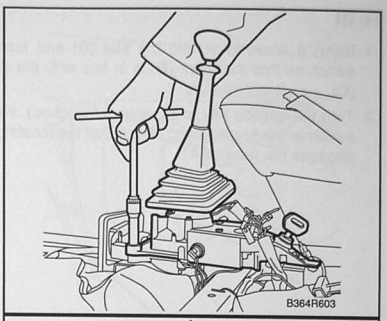
4 Fit the gear lever cowl.



5 Plug in the reversing light and ignition switch connectors.

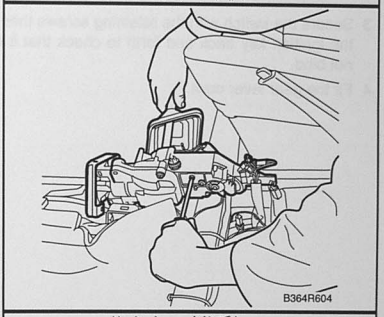


9 Remove the bolts securing the gear lever housing using socket 87 90 370.

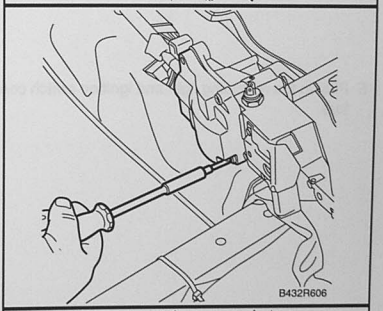

B364R603

10 Lift and tilt the gear lever housing to the side to access the screws securing the upper metal plate (cover plate).

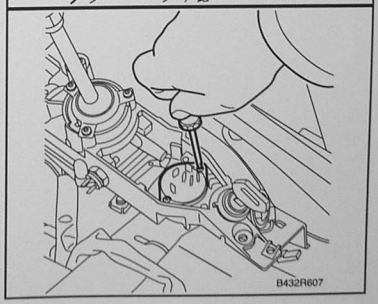
Remove the screws then remove the cover plate.


B364R604

(If the entire gear lever housing is to be removed, remove the two screws securing the plastic base and remove the gear lever housing.)


B432R606

11 Undo the two screws securing the ignition switch and remove the ignition switch.


B432R607

Gear position

To adjust

Adjustment applies to all 4 and 5-speed gearboxes in cars up to and including the following chassis numbers:

AC1019985

AC2007011

AC3006958, 4-speed

AC3007495, 5-speed, carburettor engine

AC3007758, 5-speed, injection engine

AC6001775

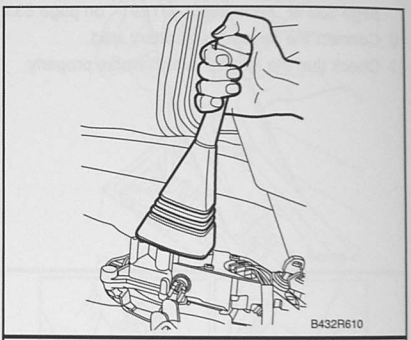
BC6008944

1 Remove the rear centre console.

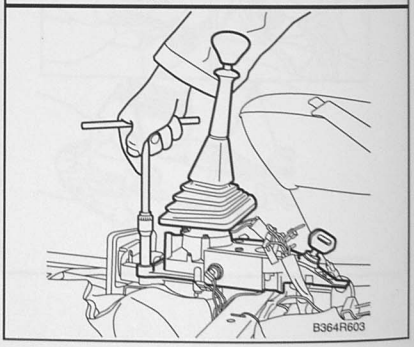
See To Remove under *"Centre console, rear"* on page 553.

2 Engage reverse and turn the ignition key to the locked position (L).

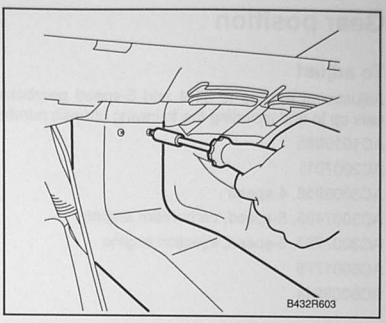
3 Move the gear lever back and forth. The selector rod should then move 3.5 0.5 mm (0.14 0.02 in). Adjust by moving the housing longitudinally.


B432R610

Use special socket 87 90 370 to remove the gear lever housing nuts.


B364R603

6 Fit the air duct and refit the carpeting.



7 Fit the centre console.

See To Fit under *"Centre console, front"* on page 551.

8 Fit the sill scuff plate and the sheet metal strip to the A-pillar.

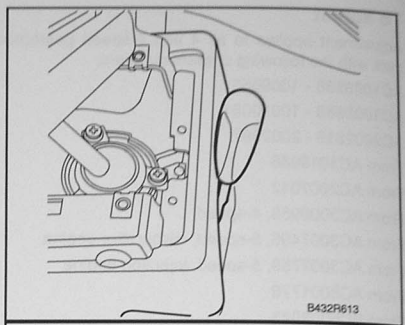
9 Fit the seat.

See To Fit under *"Driver's seat, M1981-90"* on page 533 or *"Front seats, M1991-"* on page 535.

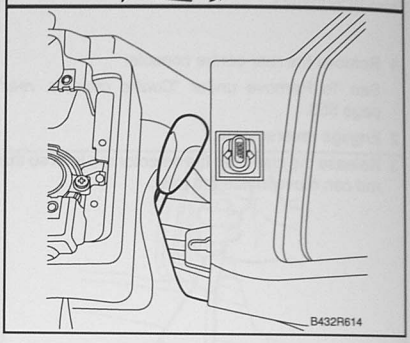
10 Connect the negative (-) battery lead.

11 Check that the ignition switch works properly.

Cars not having centre console:
Drift/screwdriver position in locating hole.



Cars with centre console:
Drift/screwdriver position in locating hole.



5 Check that reverse gear is fully engaged in the gearbox.

6 Tighten the clamp on the selector rod joint.

Tightening torque: 35 Nm (25 lbf ft)

Use bolt 75 41 907 and nut 79 75 502.

Important

5-speed gearbox: After completing presetting and adjustment, check that, when the gear lever is in neutral, it is in line with the 3rd/4th gate.

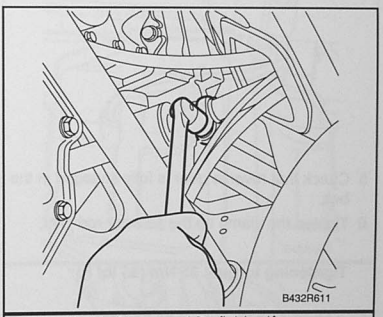
If the position of the gear lever is displaced to the side, adjust the spring tension. Refer to To Adjust under *"Gear lever, spring tension"* on page 281.

To adjust

Adjustment applies to all 4 and 5-speed gearboxes in cars with the following chassis numbers:

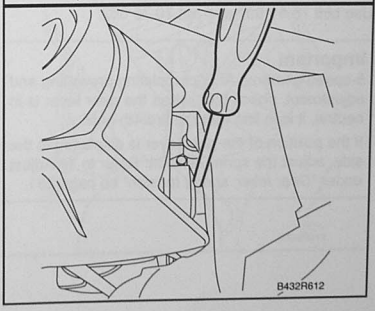
AC1009986 - 1009555
AC1009688 - 10010081
AC2002819 - 2002997
From AC1019986
From AC2007012
From AC3006959, 4-speed
From AC3007496, 5-speed, carburettor engine
From AC3007759, 5-speed, injection engine
From AC6001776
From BC6008945

1 Remove the rear centre console.
See To Remove under *"Centre console, rear"* on page 553.
2 Engage reverse gear.
3 Release the clamp on the selector rod joint so that the rod can move inside the joint.

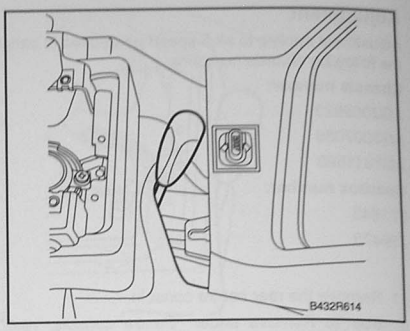


4 Lock the gear lever in the reverse position by inserting a Ø 6 mm (0.24 in) screwdriver or drift into the locating holes in the gear lever housing and gear lever. The locating holes can be accessed when the gear lever cowl has been removed.

-M1982:
Drift/screwdriver position in locating hole.



6 Insert a Ø 6 mm (0.24 in) drift or screwdriver into the locating hole in the gear lever housing.

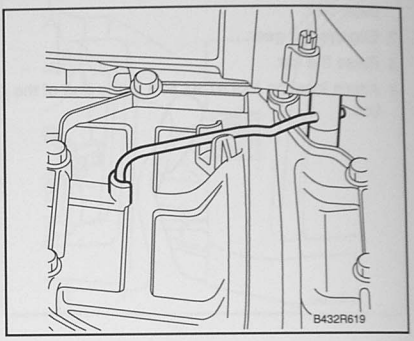


7 Raise the car again.

8 Tighten the pinch bolt in the clamp.

Tightening torque: 35 Nm (25 lbf ft)

Remove the locating tool 87 91 576.

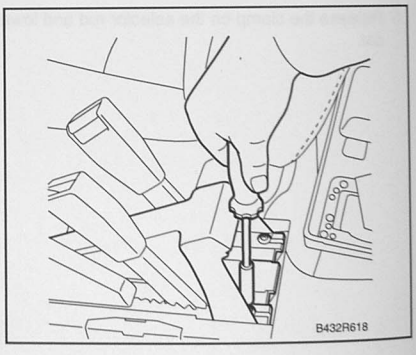


9 Lower the car.

10 Remove the drift or screwdriver from the locating hole.

11 Fit the centre console.

See To Fit under "*Centre console, rear*" on page 553.



Adjustment

Adjustment applies to all 5-speed gearboxes in cars with the following chassis numbers:

Chassis number:

AG2009923

AG3007066

AG7011598

Gearbox number:

671842

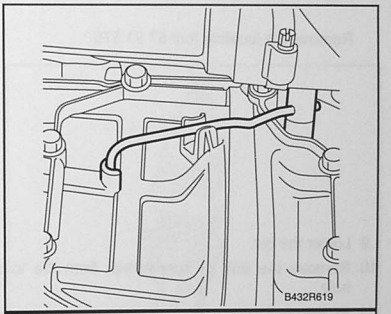
759478

1 Remove the rear centre console.
See To Remove under *"Centre console, rear"* on page 553.

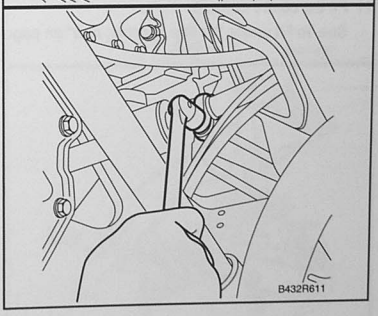
2 Engage 3rd gear.

3 Raise the car.

4 Attach locating tool 87 91 576 to the end of the gearbox.

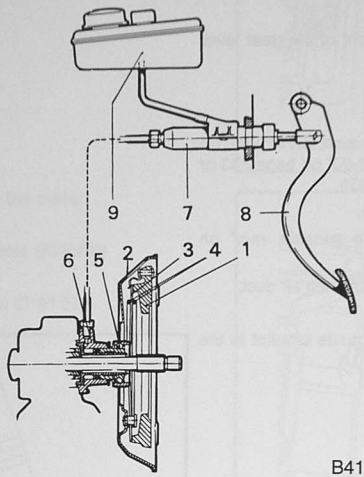


5 Release the clamp on the selector rod and lower the car.



Clutch

Technical description



B410R601

Clutch operation

1 Pressure plate
2 Cover
3 Diaphragm spring
4 Pivot ring
5 Release bearing
6 Slave cylinder
7 Master cylinder
8 Clutch pedal
9 Clutch fluid reservoir

The single dry-plate clutch is of diaphragm spring type. The main components of the clutch are the clutch plate, pressure plate unit and release bearing.

The clutch plate consists of a spring-loaded steel plate secured to a hub which slides along splines on the clutch shaft. On cars with 5-speed gearbox, the hub has a damper mechanism. The friction lining is riveted to both sides of the clutch plate.

Gear lever, spring tension

To adjust

Adjustment applies to all 5-speed gearboxes in cars with the following chassis numbers:

671841

759477

Adjust with the guide bracket in front of the gear lever housing.

1 Remove the driver's seat.

See To Remove under *"Driver's seat, M1979-80"* on page 533, *"Driver's seat, M1981-90"* on page 533 or *"Front seats, M1991-"* on page 535.

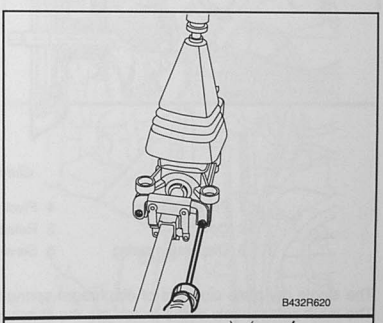
2 Remove the rear centre console.

See To Remove under *"Centre console, rear"* on page 553.

3 Lift aside the carpeting and remove the air duct.

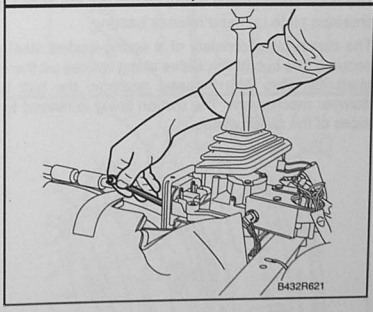
4 Engage 3rd gear.

5 Remove the bolts securing the guide bracket to the gear lever housing.


B432R620

6 Adjust the guide bracket so that the pulleys engage the lug groove and so that the tension spring is slackened and as short as possible. Tighten the bolts securing the bracket.

7 Engage neutral and make sure that the tension of the spring returns the gear lever to in line with the 3rd/4th gate.


B432R621

8 Fit the air duct and carpeting.

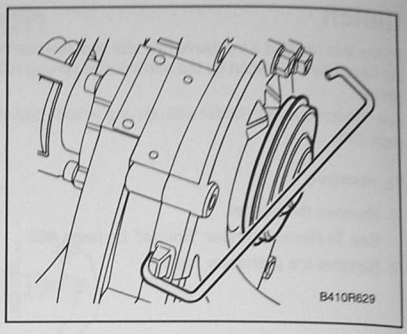
9 Fit the rear section of the centre console.

See To Fit under *"Centre console, rear"* on page 553.

10 Fit the left-hand seat.

See To Fit under *"Driver's seat, M1979-80"* on page 533, *"Driver's seat, M1981-90"* on page 533 or *"Front seats, M1991-"* on page 535.

5 Unhook the wire clip and remove the cap from the clutch shaft.

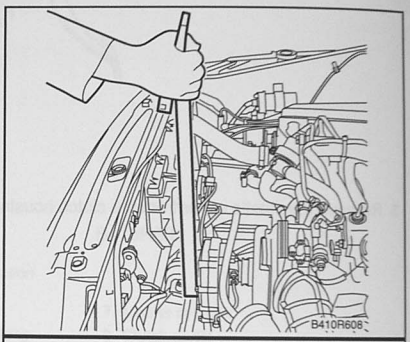


6 Remove the plastic propeller from the front of the clutch shaft.

Protect the radiator with a metal plate or similar.

7 Screw an M8 bolt into the end of the clutch shaft and use tool 83 94 033 to withdraw the clutch shaft.

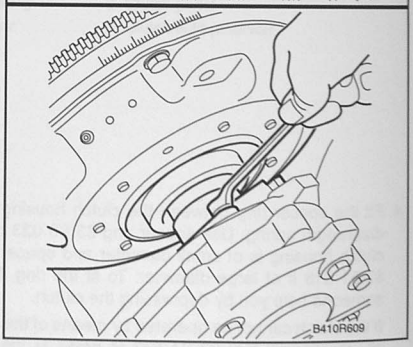
Withdraw the shaft as far as possible.



8 Remove the bolts securing the slave cylinder.

Important

Take care not to damage the slave cylinder components during removal.



Clutch

Follow this method if the slave cylinder and release bearing have been replaced by the variant with sprung rubber gaiter.

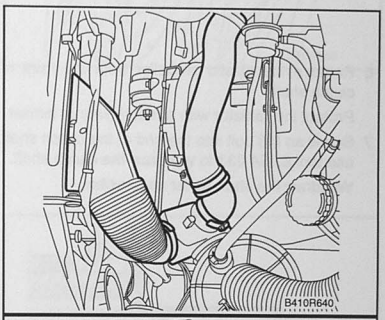
See *"Clutch, slave cylinder with sprung rubber gaiter"* on page 288.

To remove

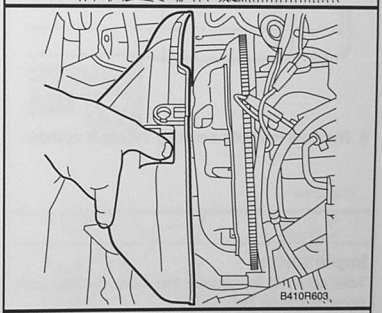
1 Remove the bonnet.

See To Remove under *"Bonnet"* on page 469.

2 Remove the preheater hose.

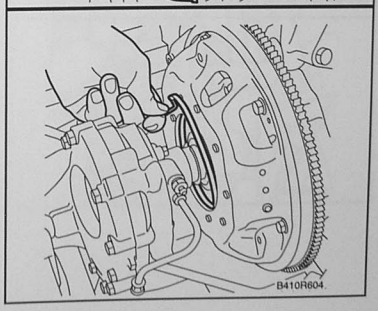


3 Remove the plastic cover from the clutch housing.

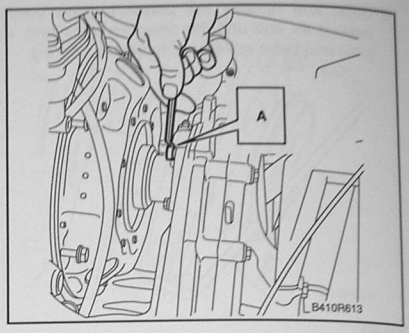


4 Fit the spacer ring between the clutch housing and diaphragm spring. Use spacer ring 83 90 023 if the clutch housing is of small diameter and spacer ring 87 91 618 if of large diameter. To fit the ring, have someone help you by depressing the clutch.

If the clutch cannot be operated by means of the pedal, use special tool 83 94 033 to press in the diaphragm spring before fitting the spacer ring.

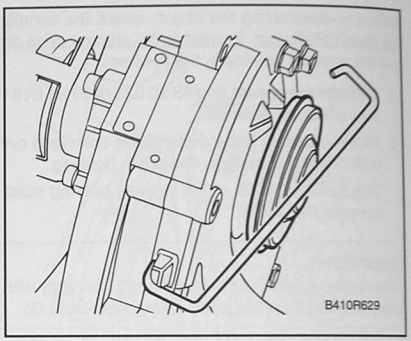


4 Bolt the slave cylinder to the primary drive casing. Apply thread sealant to the bolts (**A**).



5 Fit the plastic propeller to the end of the clutch shaft.

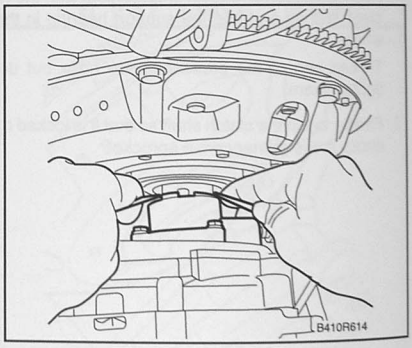
6 Fit the seal, cap and wire clip in front of the clutch shaft.



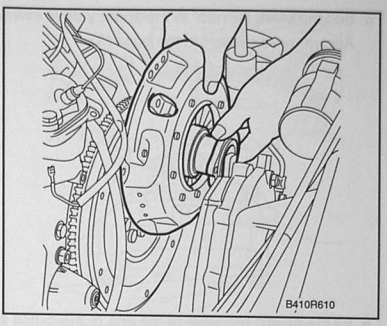
7 Bolt the pressure plate unit to the flywheel.

8 Get someone to help you to press down the clutch pedal while you remove the spacer ring 83 90 023 or 87 91 618.

Important
Do not depress the clutch pedal further than necessary to remove the spacer. The lip of the seal may otherwise be pressed out too far damaging the seal and hydraulic fluid will then leak out.



9 Undo and remove the pressure plate bolts and remove as one unit the pressure plate unit, clutch plate and slave cylinder with release bearing.



To fit

Before re-assembling the clutch, check the condition of the clutch shaft seal, located in the primary drive casing, and the support bearing in the flywheel.

1 Transfer the spacer ring 83 90 023 or 87 91 618 to the new pressure plate unit.

2 Fit the pressure plate, clutch plate and slave cylinder with release bearing to the clutch housing.

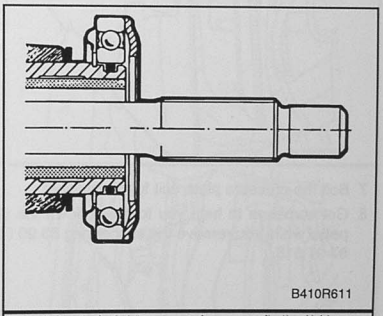
The hardened side of the release bearing must face towards the clutch.

Important

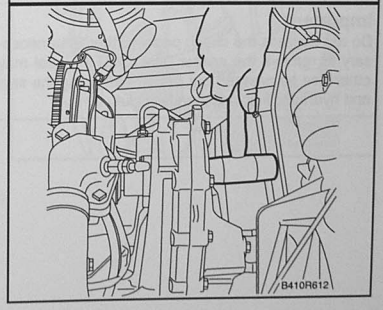
Grease the splines of the clutch shaft sparingly with molybdenum disulfide paste (Molycote Rapid G).

Push the clutch shaft into engagement with the clutch plate splines and into the support bearing in the flywheel.

Thread two of the pressure plate bolts but do not tighten them.



3 Finally, tap in the clutch shaft so that it is locked by the circlip in the primary drive sprocket.



Clutch, slave cylinder with sprung rubber gaiter

This procedure should be followed for all cars in which the slave cylinder and release bearing have previously been replaced by the variant with sprung rubber gaiter.

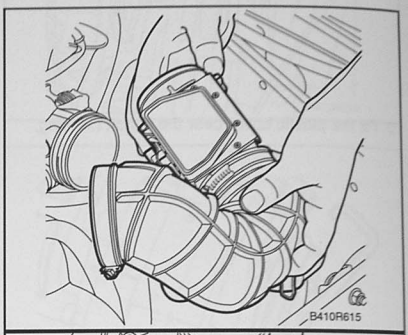
To remove

1 Remove the bonnet.

See To Remove under *"Bonnet"* on page 469.

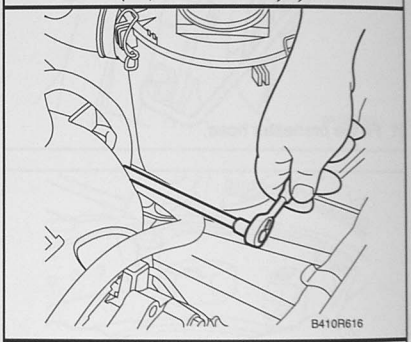
2 **Cars with normally aspirated engine:**

Detach the rubber elbow from the air cleaner and throttle body and place it to one side. You do not need to unplug the connector. Plug the hole in the throttle body with a clean rag.



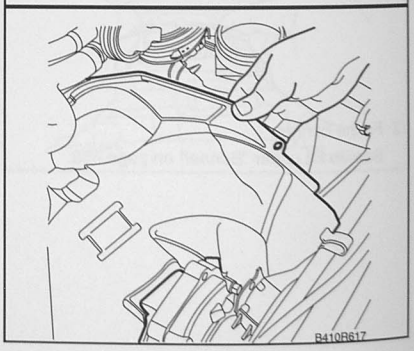
3 **Cars with normally aspirated engine:**

Remove any cable ties and the bolts from the clutch housing cover. Remove the mounting for the positive battery lead on the top of the primary drive casing. Remove the cover, angling out the left-hand side first.

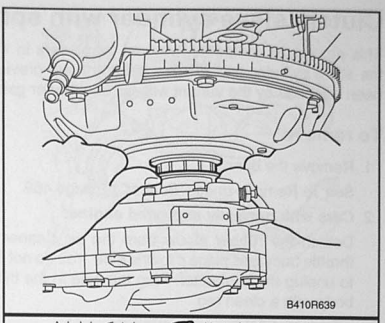


Cars with normally aspirated engine:

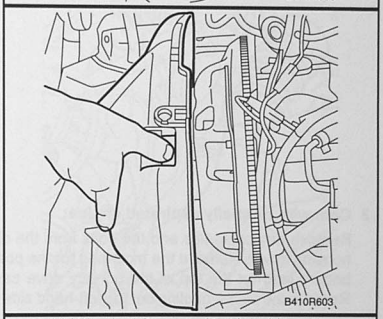
Lift out the cover.



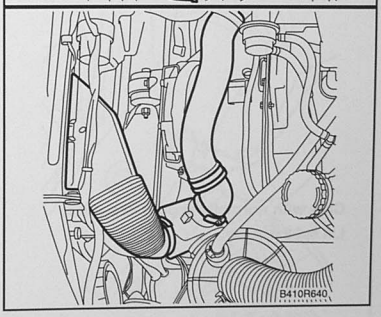
9 **Late design of slave cylinder:**
When the clutch has been fitted, push the plastic sleeve against the release bearing.


B410R639

10 Fit the plastic cover over the clutch housing.


B410R603

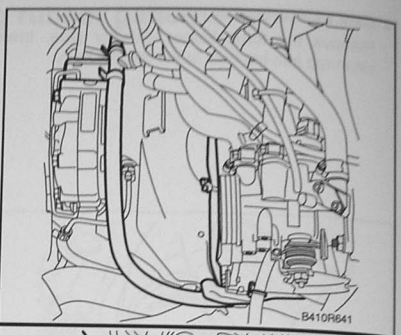
11 Fit the preheater hose.


B410R640

12 Fit the bonnet.
See To Fit under *"Bonnet"* on page 469.

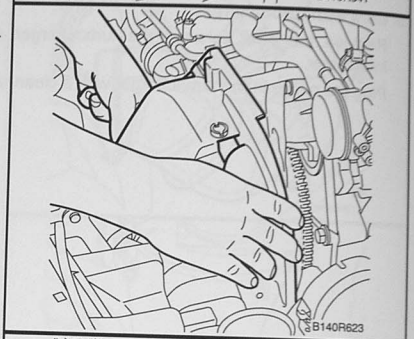
8 **Cars with turbocharger:**

Cut the cable ties securing the cable harness and press this backwards. Remove the negative battery cable from the clutch housing cover.



9 **Cars with turbocharger:**

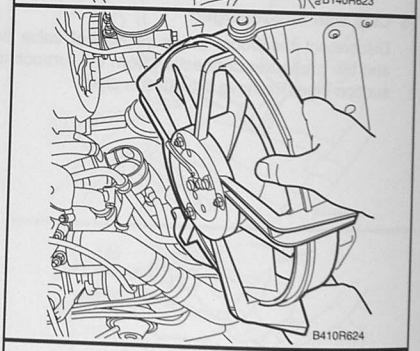
Undo and remove the bolts securing the clutch housing cover and remove the cover.



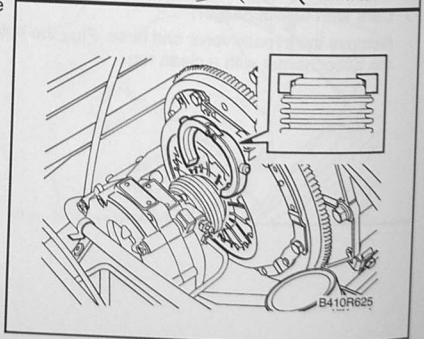
10 **Cars with air conditioning (A/C):**

Remove the left-hand radiator fan.

See To Remove under *"Radiator fan"* on page 157.

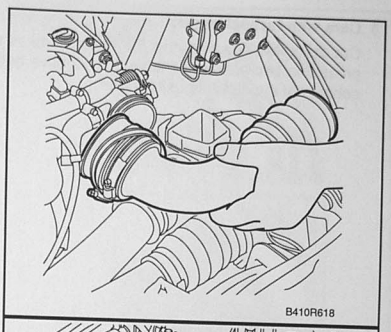


11 Attach tool 87 92 038 to the slave cylinder, with the broader side of the tool facing the diaphragm spring.



4 **Cars with turbocharger:**

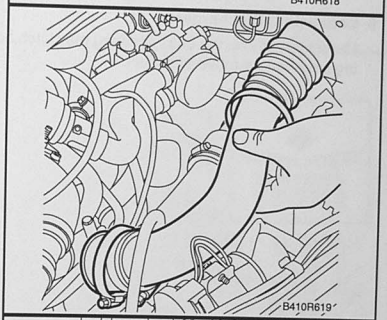
Remove the turbocharger delivery pipe. Insert a clean rag into the hole in the throttle body.


B410R618

5 **Cars with turbocharger:**

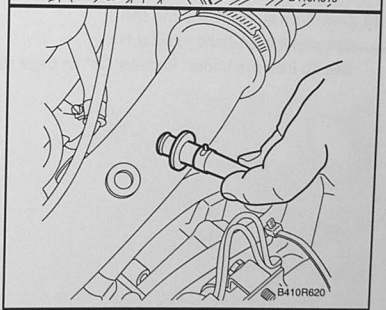
Remove the pipe between the turbocharger and intercooler.

Plug the orifice in the turbocharger with a clean rag.


B410R619

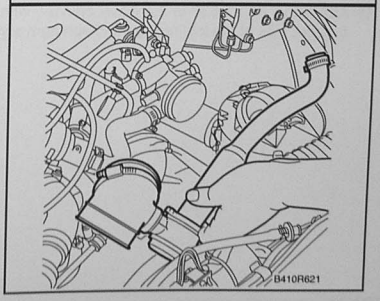
6 **Cars with turbocharger:**

Disconnect the boost pressure control valve hose and the preheater connection from the turbocharger suction pipe. Remove the suction pipe.

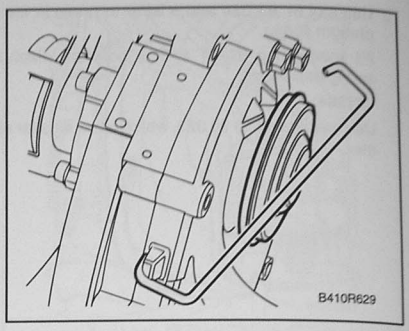

B410R620

7 **Cars with turbocharger:**

Remove the bypass valve and hose. Plug the hole in the turbocharger with a clean rag.

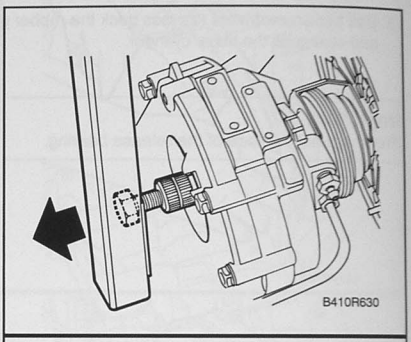

B410R621

15 Remove the wire clip, sealing ring and cap from in front of the clutch shaft in the primary drive casing.



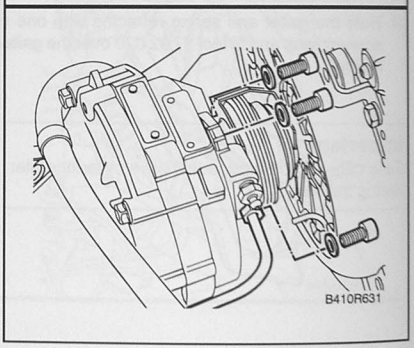
16 Unscrew and remove the plastic propeller on the clutch shaft.

17 Screw an M8 bolt into the end of the clutch shaft. Using the reverse end of the lever tool, lever out the clutch shaft. Allow the shaft to remain in the primary drive casing and remove the bolt from the end of the clutch shaft.



18 Press tool 87 92 020, and the rubber gaiter and spring, towards the pressure plate (rear of the car). This will make it easier to access the Allen bolts holding the slave cylinder. Rotate the tool as necessary and slacken and remove the three Allen bolts.

Important
Take care not to damage the slave cylinder gaiter during this work.

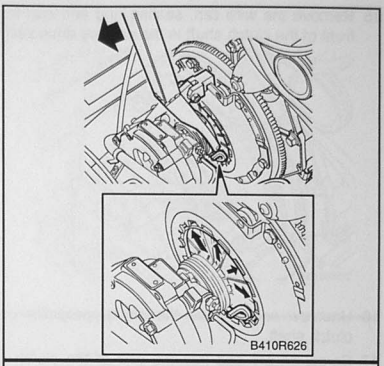


12 Use tool 87 92 038 and a lever to press in the diaphragm spring.

Fit spacer ring 87 91 618 to hold the diaphragm spring depressed.

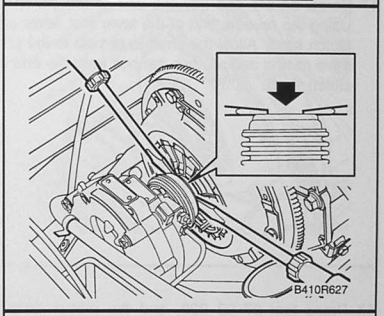
-M1984:

Use spacer ring 83 90 023, which has a smaller diameter.



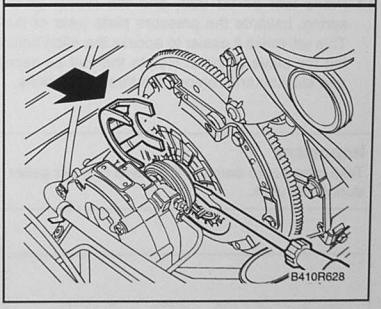
13 Use two screwdrivers to press back the rubber gaiter and spring on the slave cylinder.

Important
Press against the face of the release bearing.

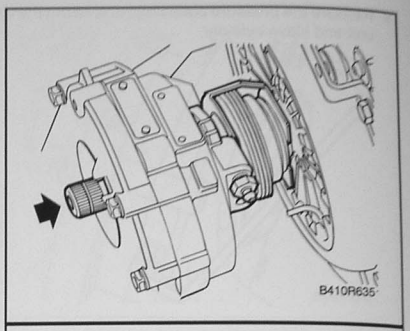


14 Hold the gaiter and spring retracted with one of the screwdrivers and fit tool 87 92 020 over the gaiter and spring.

Important
Take care not to damage the slave cylinder gaiter during this work.

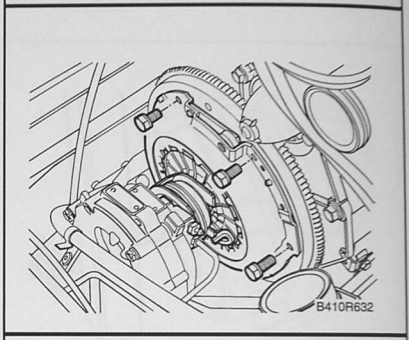


2 Push the clutch shaft into engagement with the clutch plate splines and into the support bearing in the flywheel. Finally, tap in the clutch shaft so that it is locked by the circlip in the primary drive sprocket.

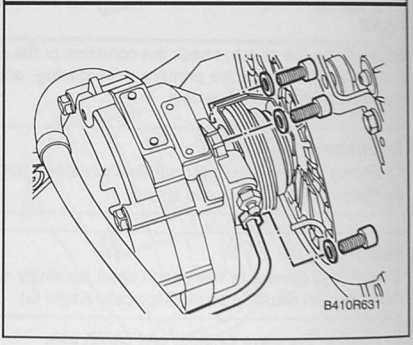


3 Thread the 6 pressure plate bolts and tighten the pressure plate unit to the flywheel.

Tightening torque: 25 Nm (19 lbf ft).

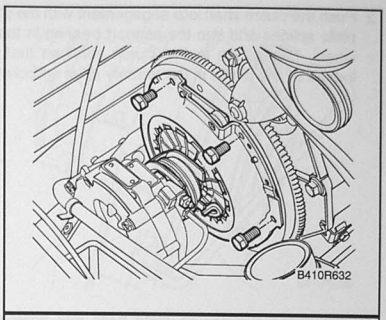


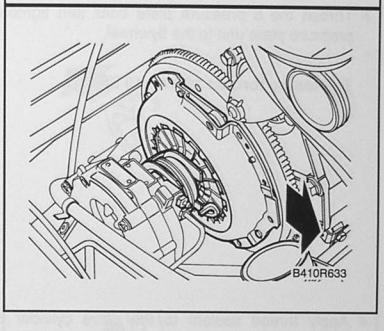
4 Apply thread sealant to the slave cylinder bolts. Rotate tool 87 92 020 as required to fit the bolts. (Press the tool towards the pressure plate to facilitate fitting the Allen bolts.) Secure the slave cylinder.



5 Screw the plastic propeller onto the end of the clutch shaft.

19 Remove the pressure plate bolts and lift out the clutch unit and slave cylinder.





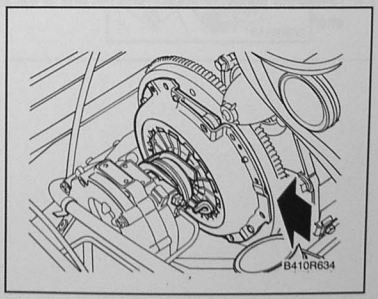
To fit

Before fitting the clutch, check the condition of the clutch shaft seal, located in the primary drive casing, and the support bearing in the flywheel.

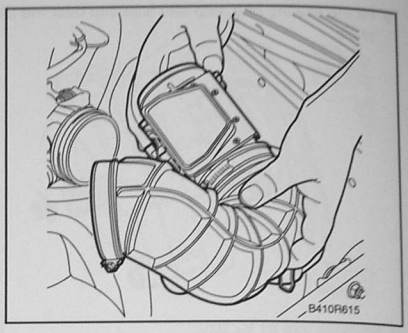
Important
Changing the slave cylinder requires tool 87 92 020 to be fitted over the gaiter and spring.

Important
Grease the splines of the clutch shaft sparingly with molybdenum disulfide paste (Molycote Rapid G).

1 Position the slave cylinder and clutch unit.

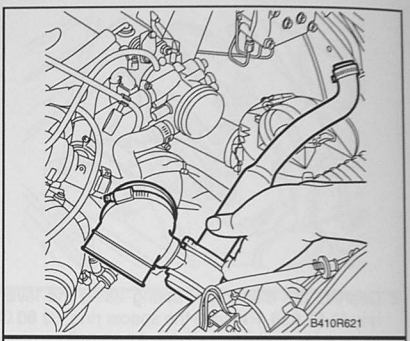


11 **Cars with normally aspirated engine:**
Remove the rag and fit the rubber elbow between the air cleaner and throttle body.

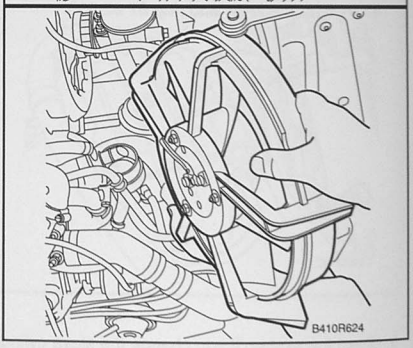


12 **Cars with normally aspirated engine:**
Refit the clips for the positive cable.

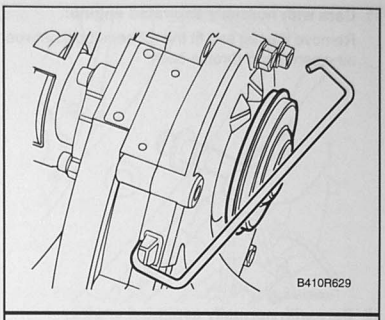
13 **Cars with turbocharger:**
Remove the rag and fit the bypass valve hose.



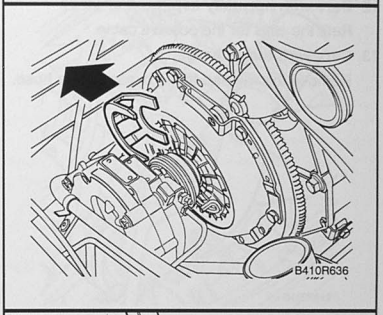
14 **Cars with air conditioning (A/C):**
Fit the left-hand radiator fan.
See To Fit under *"Radiator fan"* on page 157.



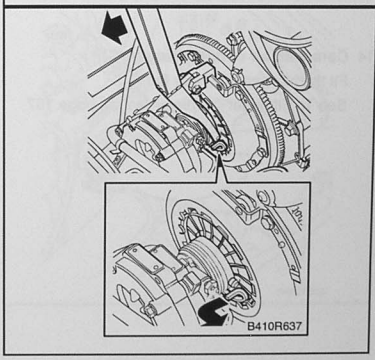
6 Fit the sealing ring, cap and wire clip over the clutch shaft.



7 Remove tool 87 92 020.



8 Depress the diaphragm spring using the lever and ring 87 92 038. Remove the spacer ring, 83 90 023 or 87 91 618, the lever and ring 87 92 038.



9 Bleed the system if you change the slave cylinder.
See *"Master and slave cylinders, bleeding"* on page 299.

10 Fit the plastic cover over the clutch housing.

Clutch plates

Inspecting the clutch when removed and changing the clutch lining

1 Check the flywheel surface that is in contact with the clutch plate. It is normal for the surface to be blued and have hairline cracks.

If however the surface is deeply scored, change or turn the flywheel.

2 Inspect the pressure plate in the pressure plate unit for scoring and warping. Check the diaphragm spring for wear at the contact surface with the release bearing.

If such irregularities are found, change the pressure plate.

3 Check the release bearing for noise, wear or other defects.

4 Inspect the wear of the clutch plate and change if required.

Important

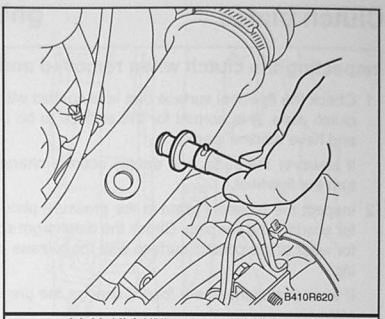
If the clutch plate on a car with 4-speed gearbox is replaced with a clutch with damper mechanism, the flywheel bolts must be replaced by bolts with a lower head.

On cars with 5-speed gearbox, bolts with a low head are used to secure the flywheel, providing room for the damper mechanism. If new bolts are fitted, ensure that they are of the correct type.

15 **Cars with turbocharger:**

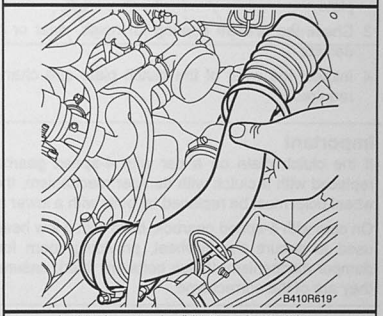
Remove the rag and fit the turbocharger suction pipe. Fit the preheater hose connection first, then the preheater sensor and finally the air cleaner clip.

Refit the boost pressure control valve hose and the mass air flow sensor connection.



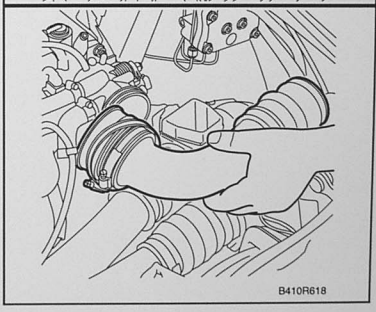
16 **Cars with turbocharger:**

Remove the rag and fit the delivery pipe between the turbocharger and intercooler.



17 **Cars with turbocharger:**

Remove the rag and fit the pipe between the intercooler and throttle body.

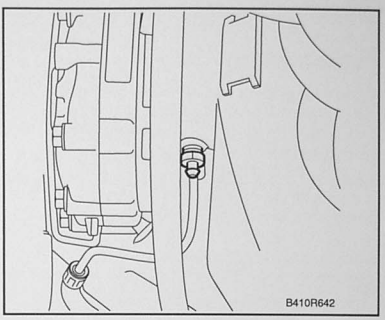


18 Fit the bonnet.

See To Fit under *"Bonnet"* on page 469.

Master and slave cylinders, bleeding

1 Connect a clear hose (with internal diameter of approx. 6 mm or 1/4 in) to the bleed nipple on the slave cylinder. Place the free end of the hose in a container that is partially filled with brake fluid (preventing air from entering the system).



⚠ WARNING

If brake fluid splashes into your eyes, flush thoroughly with water.

Brake fluid is very aggressive. Make sure that brake fluid does not come into contact with the car's paintwork. In case of contact, rinse the area with water and dry thoroughly.

2 Fill the brake fluid reservoir with brake fluid.

3 Open the bleed nipple on the slave cylinder half a turn.

4 Fit cooling system tester 30 05 758 to the filler orifice on the master cylinder.

5 Pump once or twice until all air has been expelled from the system.

6 Close the bleed nipple on the slave cylinder.

7 Get a helper to depress the clutch pedal. Check that no air remains in the system. There must be no bubbles in the hose.

Work schedule

Explanation

The following table contains an outline of topics. The table makes it easy to see which jobs are described in each section as well as the parts and tools that are required to complete the work.

Remember to read carefully through the job description as well as General Information (pages 2-6) before you begin work.

Important

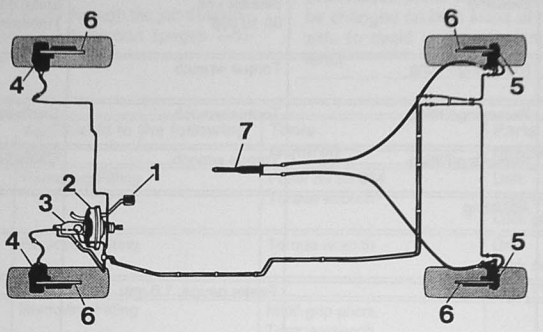
Brake discs, brake pads and brake calipers should be changed on both sides of the car for the same axle to avoid uneven braking and similar problems.

Section	Applicable to the following work	Tools required	Parts required to carry out the work
Brake discs, front -M1980	Removing/Fitting	Puller 89 96 084 Torque wrench	Drift Lock nut Lock plate
Brake discs, front M1981-87	Removing/Fitting	Torque wrench	Drift Lock nut Lock plate
Brake discs, front M1988-	Removing/Fitting	Multi-grip pliers Torque wrench	
Brake discs, rear -M1987	Removing/Fitting	Torque wrench	Lock nut Lock plate
Brake discs, rear M1988-	Removing/Fitting	4 mm Allen key Torque wrench	
Brake pads	Checking		
Brake pads, front -M1987	Removing/Fitting	Sliding hammer 83 90 270 Tool 89 96 175 Puller 89 95 771 Wrench 89 96 043	Lubricant, Gleitmo 540 part no. 30 08 612
Brake pads, front M1988-	Removing/Fitting	Multi-grip pliers Wire brush Torque wrench	
Brake pads, rear -M1987	Removing/Fitting	Drift, 2.5 mm Puller 89 95 771 Wrench 89 96 043	
Brake pads, rear M1988-	Removing/Fitting	Allen key, 4 mm Allen key, 7 mm Torque wrench	
Brake caliper, front -M1987	Removing/Fitting	Sliding hammer 83 90 270 Pinch-off pliers 30 07 739 Tool 89 96 175 Puller 89 95 771 Wrench 89 96 043	Lubricant, Gleitmo 540 part no. 30 08 612 Brake cylinder paste Plastic plug Lock nut Lock plate
Brake caliper, front M1988-	Removing/Fitting	Multi-grip pliers Pinch-off pliers 30 07 739 Wire brush Torque wrench	Dust cap Brake cylinder paste
Brake caliper, rear -M1987	Removing/Fitting	Drift, 2.5 mm Puller 89 95 771 Wrench 89 96 043	Plastic plug Lock plate

BRAKES

Brake system

Technical description



B522R601

Hydraulic brake system M1988-

1 Brake pedal
2 Brake servo unit
3 Master cylinder
4 Front brake caliper
5 Rear brake caliper
6 Brake disc
7 Handbrake

The car is equipped with two mutually independent brake systems:

- Footbrake system
- Handbrake system

The brake pedal actuates the footbrake system that acts hydraulically on all four wheels.

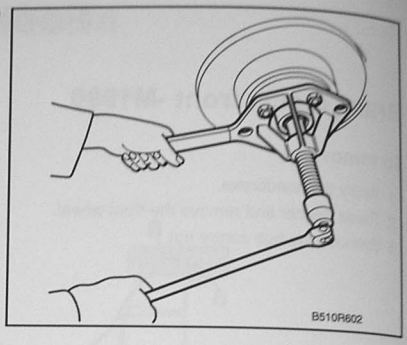
The handbrake system is actuated by the handbrake lever. The action of the handbrake lever is transmitted mechanically to the front brakes on cars up to M1987 and to the rear brakes on cars from M1988 and onwards.

Note

Brake pads and/or brake discs should be changed on both sides of the car for the same axle.

Section	Applicable to the following work	Tools required	Parts required to carry out the work
Brake caliper, rear M1988-	Removing/Fitting	Allen key, 4 mm Pinch-off pliers 30 07 739 Allen key, 7 mm Wire brush Torque wrench	Dust cap
Brake servo unit	Removing/Fitting	Pinch-off pliers 30 07 739	Hose Receptacle
Bleeding the brake system	Bleeding	Bleeder unit 88 19 096	Brake fluid DOT 4 Transparent hose Bottle
Handbrake cable, -M1987	Removing/Fitting	Torque wrench	
Handbrake cable, M1988-90	Removing/Fitting	Torque wrench	Cable ties
Handbrake cable, M1991-	Removing/Fitting	Torque wrench	Cable ties
Adjusting the hand-brake/handbrake cable, -M1987	Adjusting		
Adjusting the hand-brake/handbrake cable, M1988-90	Adjusting	Feeler gauge, 1.0 mm	
Adjusting the hand-brake/handbrake cable, M1991-	Adjusting	Feeler gauge, 2.0 mm	
Wheel sensors, front	Removing/Fitting	Wire brush Torque wrench	Paper spacer 0.65 mm thick
Wheel sensors, rear	Removing/Fitting	Wire brush Torque wrench	Paper spacer 0.65 mm thick

8 Remove the brake disc and hub from the stub axle using puller 89 96 084.



9 Remove the four bolts holding the brake disc to the hub.

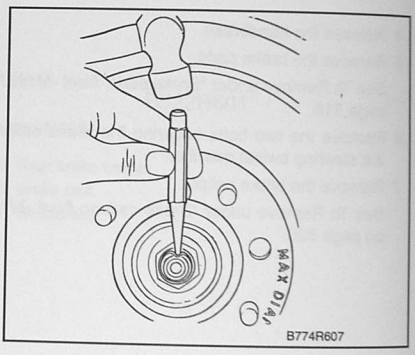
To fit

Fit in the reverse order.

Before fitting:

Check that the contact surface of the brake disc against the hub is free from rust, burrs and the like.

Always use a new hub centre nut. The nut is locked by peening its collar into the groove in the shaft using a round-head drift. Always use new lock plates for the bolts in the brake caliper. Tighten the hub centre nut to the correct torque to avoid damaging the threads.



Tightening torque, hub centre nut: 350 Nm (257 lbf ft)

Tightening torque, wheel nuts: 100 Nm (74 lbf ft)

Important

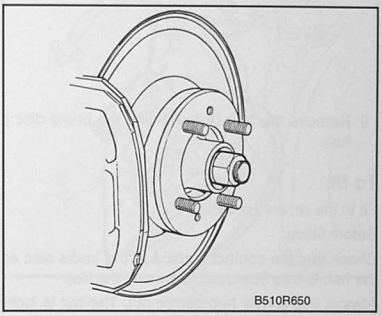
Depress the pedal before driving off to press the brake pads onto the brake discs.

Footbrake

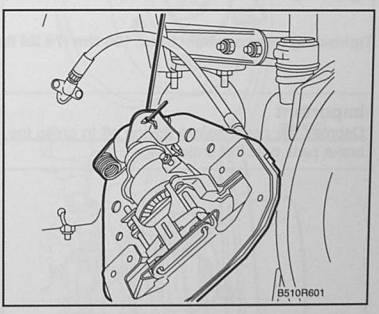
Brake discs, front -M1980

To remove

1 Apply the handbrake.
2 Raise the car and remove the front wheel.
3 Remove the hub centre nut.



4 Release the handbrake.
5 Remove the brake pads.
See To Remove under *"Brake pads, front -M1987"* on page 315.
6 Remove the two bolts securing the brake caliper to the steering swivel member.
7 Remove the brake caliper.
See To Remove under *"Brake caliper, front -M1987"* on page 326.

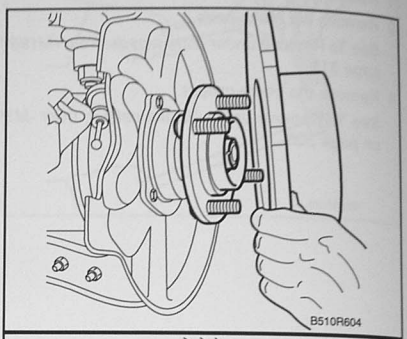


To fit

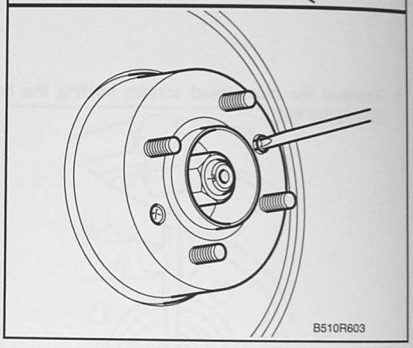
Before fitting:

Check that the contact surface of the brake disc against the hub is free from rust, burrs and the like.

1 Fit the brake disc to the hub.



2 Fit the cross-head screws securing the brake disc to the hub.



3 Fit the brake caliper to the steering swivel member.

4 Fit the brake pads.

See To Fit under *"Brake pads, front -M1987"* on page 315.

5 Fit the front wheel and lower the car.

Tighten the wheel nuts to torque.

Tightening torque: 100 Nm (74 lbf ft)

Important

Depress the pedal before driving off to press the brake pads onto the brake discs.

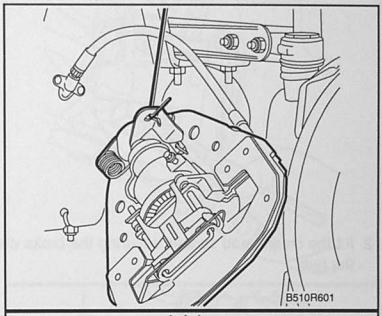
Brake discs, front M1981-87

To remove

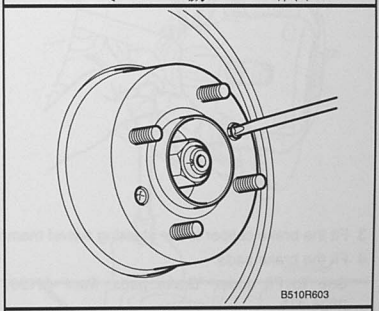
1 Raise the car and remove the front wheel.

2 Remove the brake pads.
See To Remove under *"Brake pads, front -M1987"* on page 315.

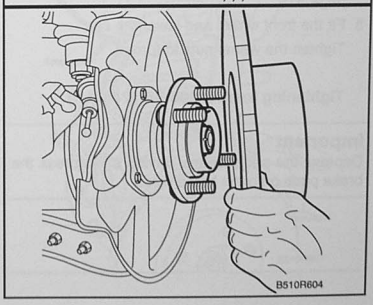
3 Remove the brake caliper.
See To Remove under *"Brake caliper, front -M1987"* on page 326.



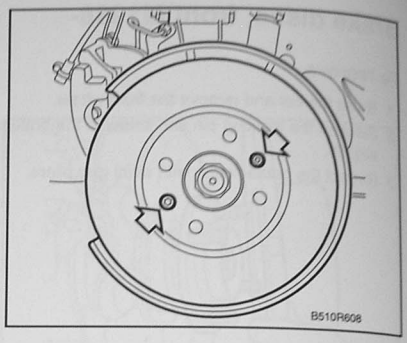
4 Remove the cross-head screws holding the brake disc to the hub.



5 Remove the brake disc from the hub.



6 Remove the locating pin and screw and remove the brake disc.

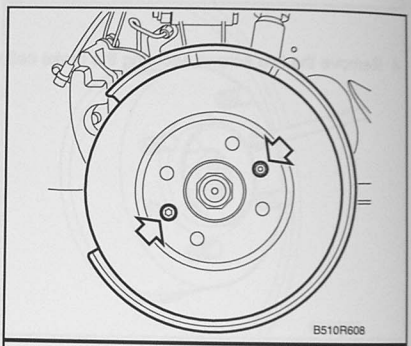


To fit

Before fitting:

Check that the contact surface of the brake disc against the hub is free from rust, burrs and the like.

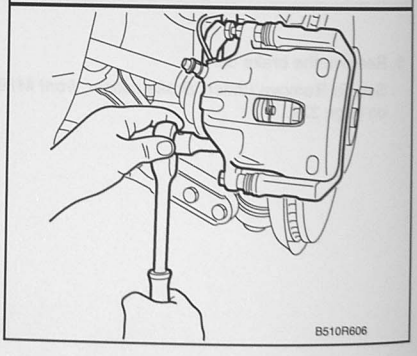
1 Fit the brake disc, locating pin and screw.



2 Fit the brake caliper.

See To Fit under *"Brake caliper, front M1988-"* on page 329.

Tightening torque: 90 Nm (68 lbf ft)



3 Fit the front wheel and lower the car.

Tightening torque, wheel bolts:
115 Nm (85 lbf ft)

Important

Depress the pedal before driving off to press the brake pads onto the brake discs.

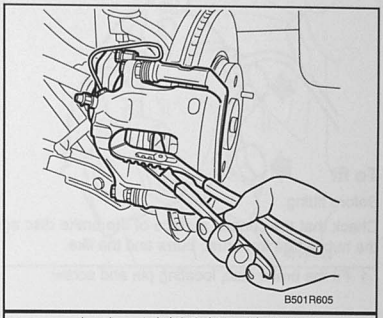
Brake discs, front M1988-

To remove

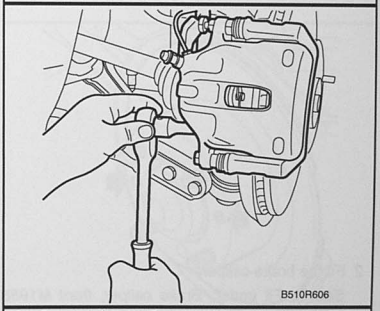
1 Raise the car and remove the front wheel.

2 Slacken the locating pin and screw in the brake disc slightly.

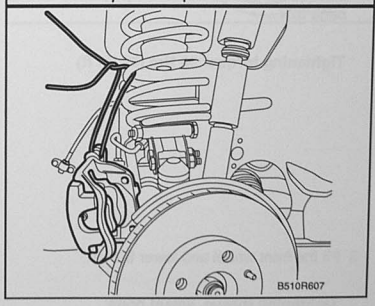
3 Retract the brake piston with multi-grip pliers.


B501R605

4 Remove the two screws securing the brake caliper.


B510R606

5 Remove the brake caliper.
See To Remove under *"Brake caliper, front M1988-"* on page 329.

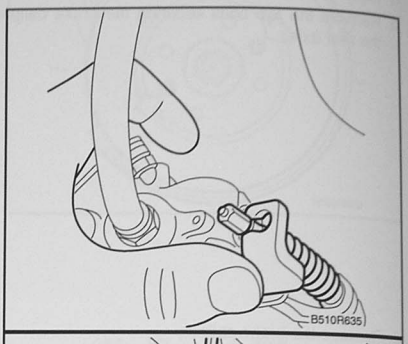

B510R607

Brake discs, rear M1988-

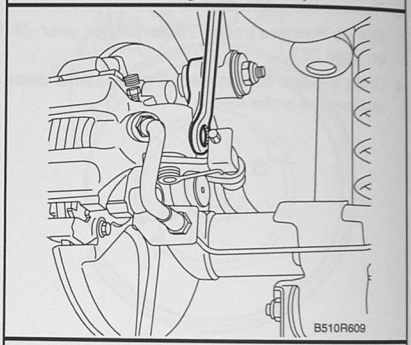
To remove

1 Raise the car and remove the rear wheel.

2 Remove the handbrake cable from the lever on the brake caliper.

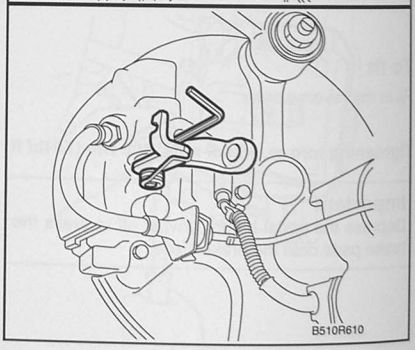


3 Remove the threaded plug from the adjusting screw.



4 Slacken the adjusting screw slightly so that the brake piston returns to its stop.

Use a 4 mm Allen key.



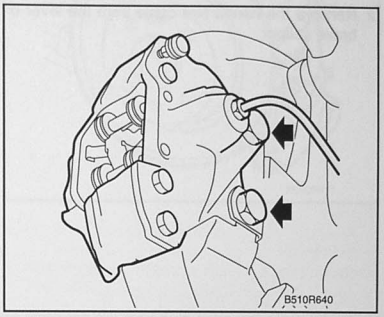
5 Remove the retaining bolts securing the disc backplate and brake caliper.

Brake discs, rear -M1987

To remove

1 Raise the car and remove the rear wheel.

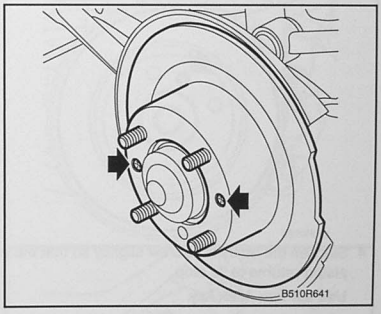
2 Remove the two bolts securing the brake caliper to the rear axle.



3 Remove the brake caliper.

See To Remove under *"Brake caliper, rear -M1987"* on page 333.

4 Undo the two screws securing the brake discs and remove the brake disc.



To fit

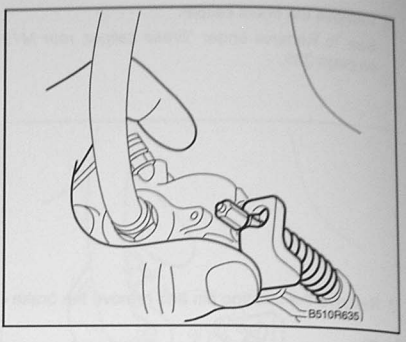
Fit in the reverse order.

Tightening torque, wheel nuts: 100 Nm (74 lbf ft)

Important

Depress the pedal before driving off to press the brake pads onto the brake discs.

3 Fit the handbrake cable to the lever.



4 Adjust the handbrake.

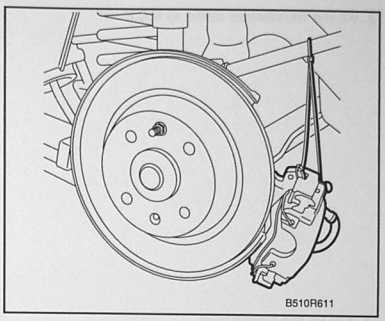
Refer to *"Handbrake and handbrake cable, adjusting, M1988-90"* on page 363 or *"Handbrake and handbrake cable, adjusting, M1991-"* on page 364.

5 Fit the rear wheel and lower the car.

Tightening torque, wheel bolts:
115 Nm (85 lbf ft)

Important
Depress the pedal before driving off to press the brake pads onto the brake discs.

6 Remove the brake caliper.
See To Remove under *"Brake caliper, rear M1988-"* on page 335.


B510R611

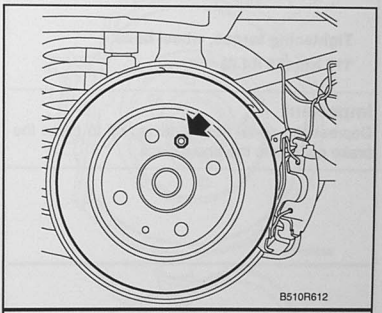
7 Remove the locating pin and remove the brake disc.

To fit

Before fitting:

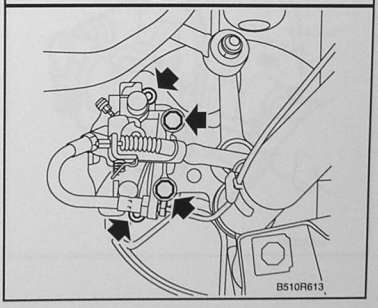
Check that the contact surface of the brake disc against the hub is free from rust, burrs and the like.

1 Fit the brake disc and locating pin.

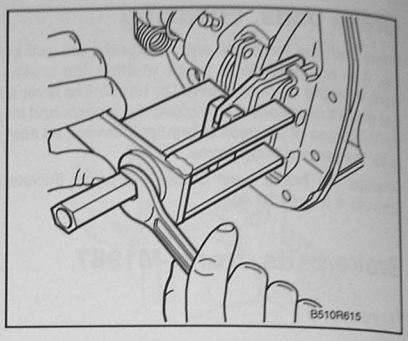

B510R612

2 Fit the disc backplate and brake caliper.
See To Fit under *"Brake caliper, rear M1988-"* on page 335.

Tightening torque, brake caliper: 47 Nm (35 lbf ft)


B510R613

5 Withdraw the brake pads.
If the pads are seated firmly, use puller 89 95 771.

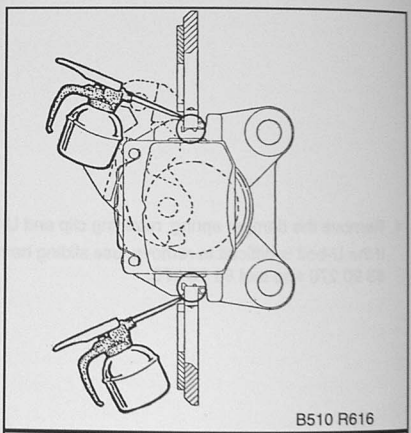


To fit

Important
When pads with semi-metallic linings are to be fitted to 1979-82 model cars, the dust covers on the direct-acting brake pistons must be replaced by dust covers with part no. 89 93 255. The brake fluid must be of DOT 4 grade.

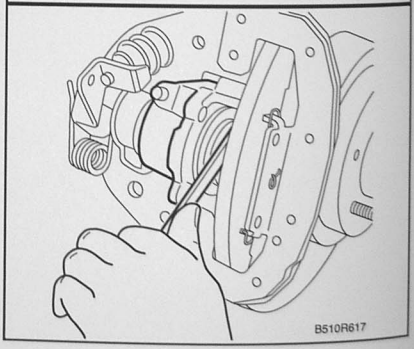
1 Lubricate the brake caliper bearings by sliding the caliper back and forth against the spring while applying the lubricant (Gleitmo 540) to the slip surfaces.

2 Check that the dust cover retainers are properly positioned and in good condition. Change the covers if they are loose, damaged or split. If there are signs of contaminants having entered the cylinders or of the pistons having corroded, fit new pistons and seals.



Important
Never polish corroded pistons. Replace the pistons with new ones.

3 Press the brake pistons into their cylinder bores. Do so by using wrench 89 96 043 to rotate the direct-acting piston at the same time as pushing the piston into the cylinder.



Important
When the brake pistons are pushed back into their cylinders, the level of brake fluid in the reservoir will rise. It the reservoir is full, some of the fluid must therefore be siphoned off before the pistons are screwed into the cylinder housing.

Brake pads, checking

Since both the footbrake and handbrake are self adjusting, it is not possible to judge whether the brakes are worn from the amount of pedal or handbrake lever travel. It is therefore essential to remove the wheels and inspect the thickness of the pads at regular intervals, as specified in by the service programme.

Change the brake pads before the lining thickness is down to 4 mm (0.16 in).

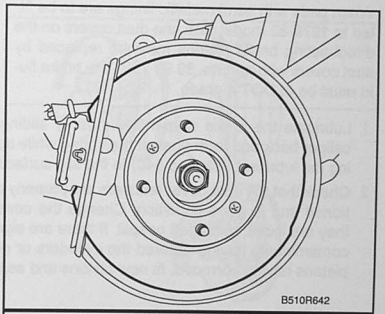
Brake pads, front -M1987

To remove

1 Raise the car and remove the front wheel.

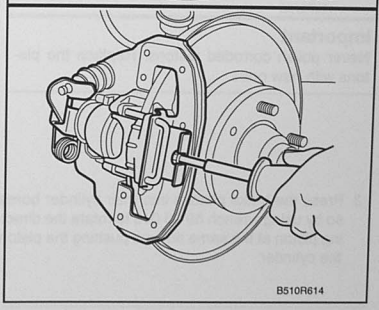
2 Clean the brake caliper.

3 Rotate the brake disc so that one of the recesses in the edge of the disc is in line with the brake pads.


B510R642

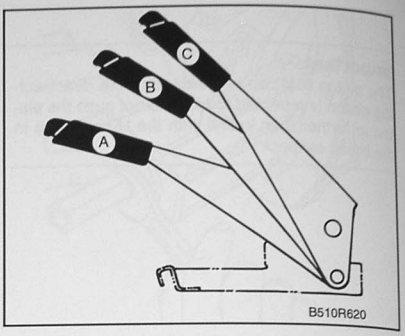
4 Remove the damper spring, retaining clip and U-bolt.

If the U-bolt is difficult to remove, use sliding hammer 83 90 270 and tool 89 96 175.


B510R614

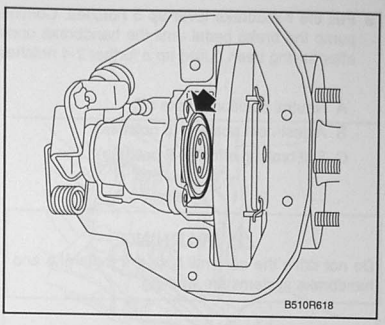
9 Pull the handbrake lever up 5 notches. Continue to pump the brake pedal until the handbrake operates after having been pulled up a further 2-4 notches.

A Neutral position (brake off)
B Adjustment position (5 notches)
C Full braking effort (7-9 notches)



⚠ WARNING
Do not drive the car until both the footbrake and handbrake systems are working.

Important
The piston seal can be damaged if the direct-acting piston is retracted too far. Do not push the piston in further than in line with the U-bolt holes in the brake caliper.

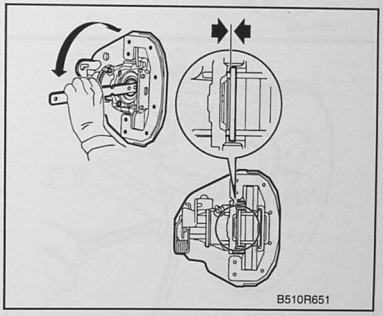

B510R618

4 Check that the position of the pistons has not displaced the dust covers. Remove any rust or burrs from the edge of the disc.

5 Fit the new brake pads together with the U-bolt, retaining clip and damper spring.

Fit the outer pad first. Adjust the piston (in or out) so that both pads just touch the brake disc.

Important
Do not extend the piston too far. You must be able to turn the brake disc by hand.


B510R651

6 Fit the front wheel and lower the car.

Tightening torque, wheel nuts:
100 Nm (74 lbf ft)

7 Check the handbrake adjustment.

See *"Handbrake and handbrake cable, adjusting, -M1987"* on page 362.

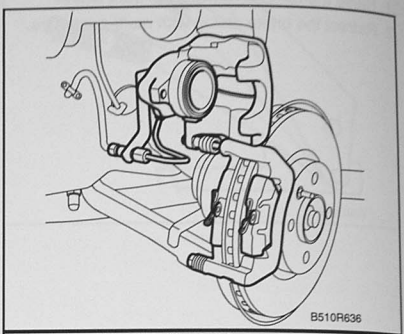
8 With the engine switched off, pump the brakes repeatedly until the footbrake starts to operate.

Important
Depress the pedal before driving off to press the brake pads onto the brake discs.

To fit

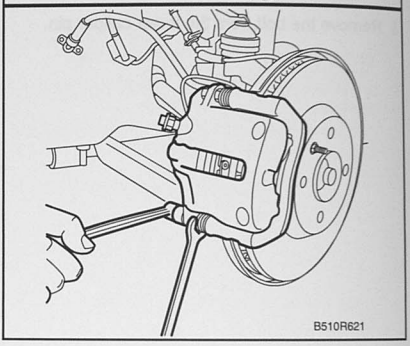
Before fitting new brake pads, thoroughly clean the sliding contact surfaces between the caliper and pads with a wire brush.

1 Position the new brake pads and lower the brake caliper.


B510R636

2 Tighten the bolt in the lower caliper pin.

Tightening torque: 33 Nm (24 lbf ft)


B510R621

3 Fit the front wheel and lower the car.

Tightening torque, wheel bolts:
115 Nm (85 lbf ft)

Important

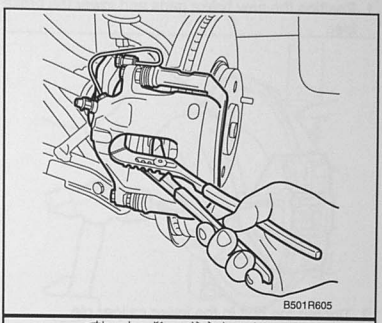
Depress the pedal before driving off to press the brake pads onto the brake discs.

Brake pads, front M1988-

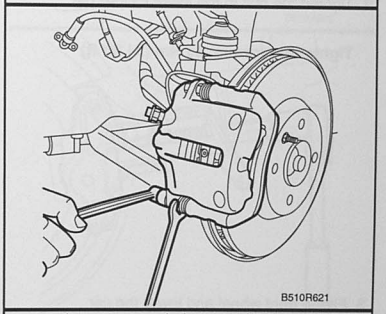
To remove

1 Raise the car and remove the front wheel.

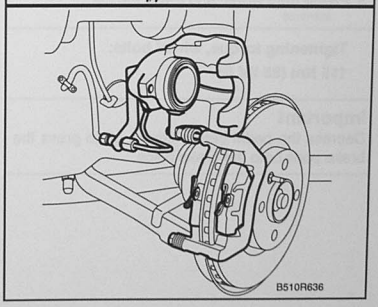
2 Retract the brake piston with multi-grip pliers.


B501R605

3 Remove the bolt from the lower caliper pin.


B510R621

4 Raise the caliper and remove the brake pads.

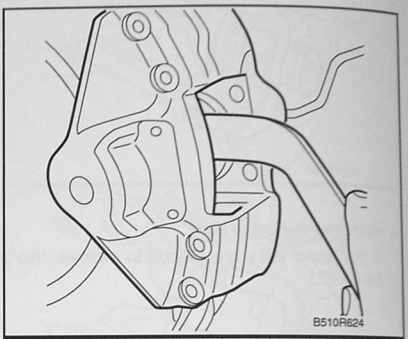

B510R636

To fit

1 Check that the dust cover retainers are properly positioned and in good condition. Change the covers if they are loose, damaged or split. If there are signs of contaminants having entered the cylinders or of the pistons having corroded, fit new pistons and seals.

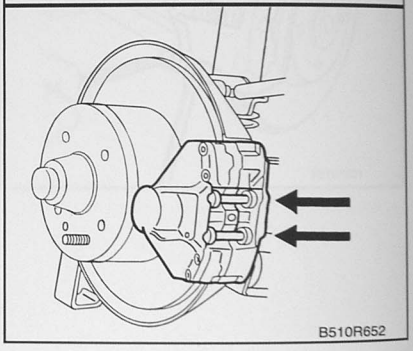
Important
Never polish corroded pistons. Replace the pistons with new ones.

2 Use the handle of wrench 89 96 043 to press in the pistons but no further than necessary to fit the new pads.


B510R624

Important
When the brake pistons are pushed back into their cylinders, the level of brake fluid in the reservoir will rise. It the reservoir is full, some of the fluid must therefore be siphoned off before the pistons are pressed into the cylinder housing.

3 Fit the retaining clip and caliper pins.


B510R652

4 Fit the rear wheel and lower the car.

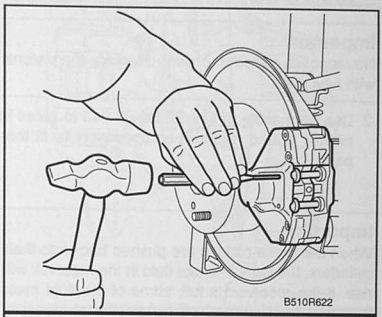
Tightening torque, wheel nuts:
100 Nm (74 lbf ft)

Important
Depress the pedal before driving off to press the brake pads onto the brake discs.

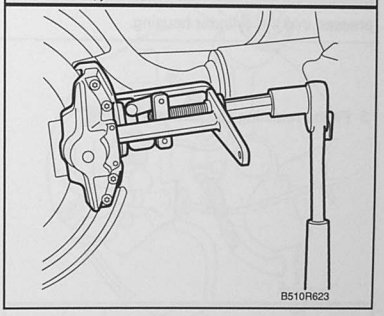
Brake pads, rear -M1987

To remove

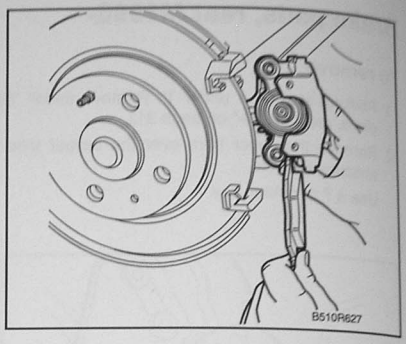
1 Raise the car and remove the rear wheel.
2 Clean the brake caliper.
3 Tap out the calliper pins using a 2.5 mm (0.11 in) drift. Save the retaining clip.


B510R622

4 Withdraw the brake pads.
If the brake pads are difficult to remove, use puller 89 95 771.


B510R623

5 Lift off the brake caliper and remove the brake pads.



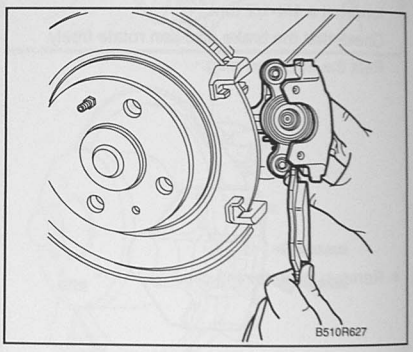
To fit

Before fitting new brake pads, thoroughly clean the sliding contact surfaces between the caliper and pads with a wire brush. Brush the caliper pins clean and lubricate sparingly with special grease.

Check that the dust covers over the caliper pins and brake piston are in good condition and that the brake piston is pressed into the cylinder.

1 Fit new brake pads.

Fit the pad with spring nearest the brake piston.

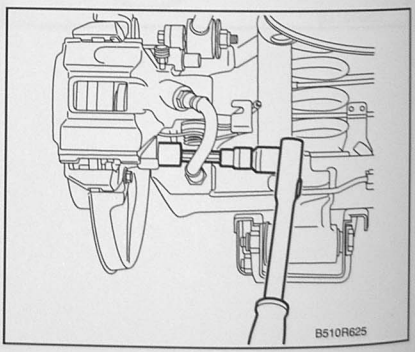


2 Position the brake caliper.

3 Fit and tighten the caliper pins.

Tightening torque: 27 Nm (20 lbf ft)

Fit the caps.



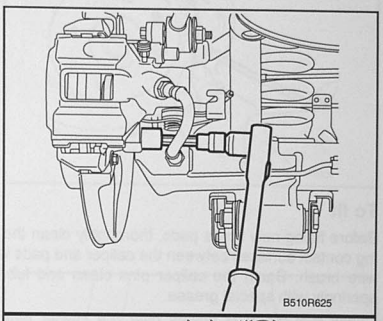
Brake pads, rear M1988-

To remove

1 Perform steps 1-4 under To Remove under *"Brake discs, rear M1988-"* on page 312.

2 Remove the cover from over the caliper pins and unscrew the pins.

Use a 7 mm Allen key.

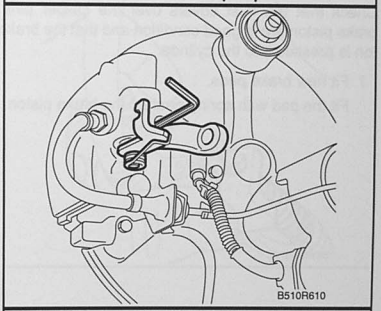


3 Remove the threaded plug covering the adjusting screw from the rear brake caliper.

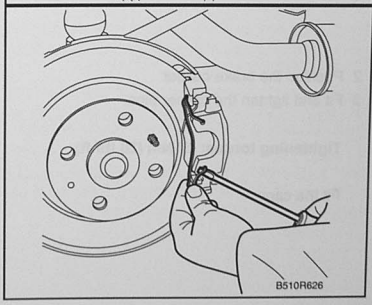
Screw the adjusting screw all the way in and then loosen it a 1/4-1/2 turn.

Check that the brake disc can rotate freely.

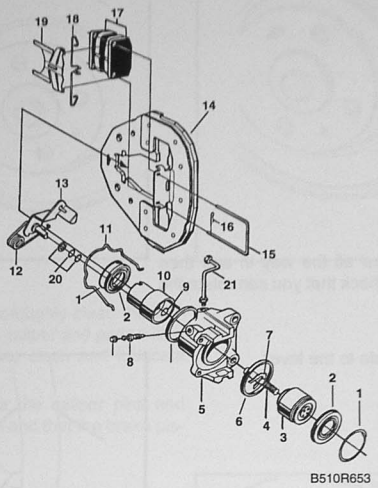
Refit the threaded plug.



4 Remove the retaining clip.



Brake caliper, front -M1987



Brake caliper, front wheel

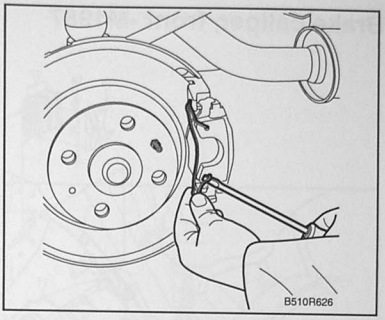
1 Dust cover retainer
2 Dust excluder
3 Piston (direct-acting)
4 Pushrod
5 Brake calipers
6 Piston seal
7 Clip
8 Bleed nipple
9 O-ring
10 Piston (indirect-acting)
11 Caliper spring
12 Spring (handbrake lever)
13 Lever (handbrake)
14 Caliper
15 U-bolt
16 Retaining clip
17 Brake pads
18 Spring
19 Damper spring
20 Retainer (two O-rings)
21 Brake pipe

Scrupulous cleanliness is of the utmost importance when removing and fitting components that are part of the hydraulic brake system.

Clean removed components in clean brake fluid or a special cleaning fluid. Wipe parts dry using clean, lint-free paper or cloth. Gaskets, retaining clips and rubber parts are available as repair kits and should be changed.

Prior to assembly, oil the components generously with clean, unused brake fluid of the recommended grade or lubricate them with brake cylinder paste.

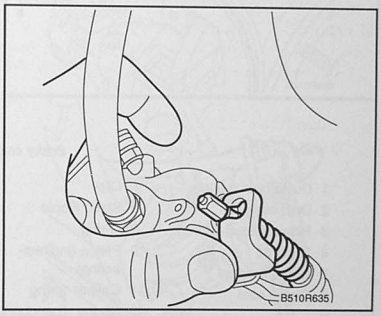
4 Fit the retaining clip.



5 Screw the adjusting screw all the way in and then loosen it a 1/4-1/2 turn. Check that you can rotate the brake disc easily.

Fit the threaded plug.

6 Attach the handbrake cable to the lever.



7 Adjust the handbrake.

Refer to *"Handbrake and handbrake cable, adjusting, M1988-90"* on page 363 or *"Handbrake and handbrake cable, adjusting, M1991-"* on page 364.

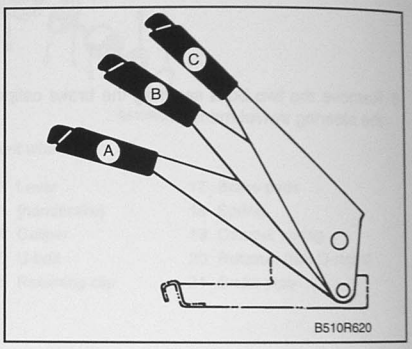
8 Fit the rear wheel and lower the car.

Tightening torque, wheel bolts:
115 Nm (85 lbf ft)

Important
Depress the pedal before driving off to press the brake pads onto the brake discs.

Fitting the front brake caliper, -M1987

1 Check that the dust cover is seated correctly. Bolt the brake caliper to the steering swivel member. Use new lock plates.
2 Connect the brake line.
3 Adjust the handbrake cable.
See *"Handbrake and handbrake cable, adjusting, -M1987"* on page 362.
4 Fit the brake pads.
See To Fit under *"Brake pads, front -M1987"* on page 315.
5 Fill the system with brake fluid.
6 Bleed the brake system.
See *"Brake system, bleeding"* on page 346.
7 Check that the brake line connection does not leak.
8 With the engine switched off, pump the brakes repeatedly until the footbrake starts to operate.
9 Pull up the handbrake lever 5 notches. Continue to pump the brake pedal until the handbrake operates after having been pulled up a further 2-4 notches.



A Neutral position (brake off)
B Adjustment position (5 notches)
C Full braking effort (7-9 notches)

⚠ WARNING
Do not drive the car until both the footbrake and handbrake systems are working.

10 Fit the front wheel and lower the car.

Tightening torque, wheel nuts:
100 Nm (74 lbf ft)

Important
Depress the pedal before driving off to press the brake pads onto the brake discs.

Removing the front brake caliper, -M1987

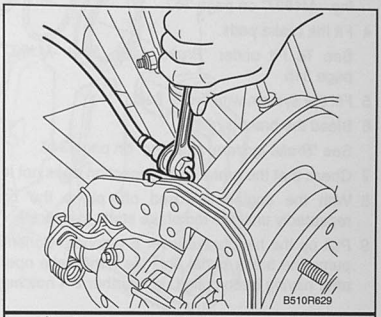
1 Raise the car and remove the front wheel.

2 Remove the brake pads.
See To Remove under "*Brake pads, front -M1987*" on page 315.

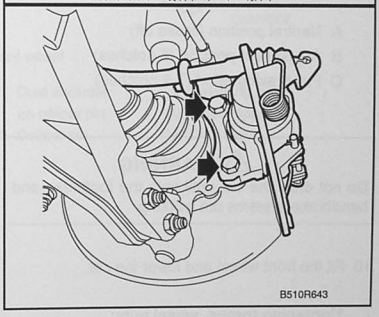
3 Detach the handbrake cable from the brake caliper.

4 Seal the brake hose using pinch-off pliers 30 07 739.

5 Unscrew the brake line from the brake caliper at the hose connection. Insert a rubber stopper in the end of the pipe to prevent dirt from entering the brake system.

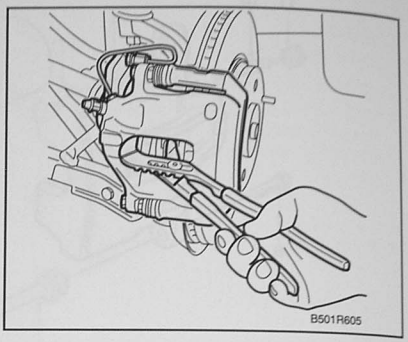


6 Remove the two bolts securing the brake caliper to the steering swivel member.

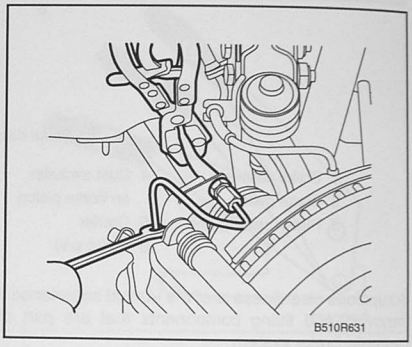


Removing the front brake caliper, M1988-

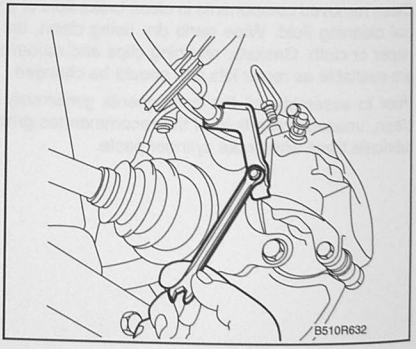
1 Raise the car and remove the front wheel.
2 Clean the brake caliper and connections thoroughly.
3 Retract the brake piston with multi-grip pliers.


B501R605

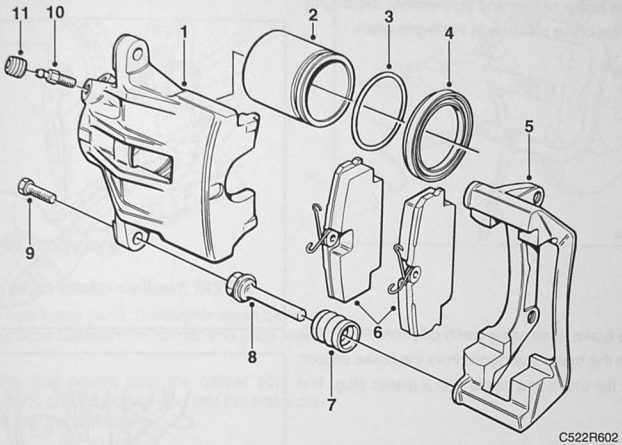
4 Seal the brake hose using pinch-off pliers 30 07 739.
5 Remove the brake line nipple from the brake caliper. Protect the brake line nipple with a plastic plug.


B510R631

6 Plug the hole in the brake caliper.
7 Remove the brake hose bracket from the brake caliper.


B510R632

Brake caliper, front M1988-



Brake caliper, front wheel

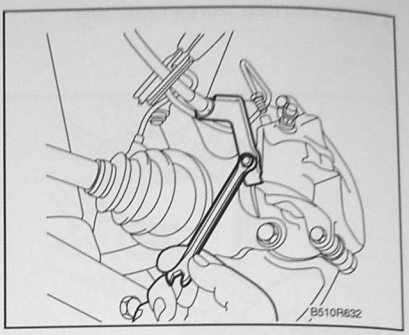
1 Brake calipers
2 Brake piston
3 Piston sealing ring
4 Dust excluder on brake piston
5 Carrier
6 Brake pad
7 Dust excluder on caliper pin
8 Caliper pin
9 Retaining bolt
10 Bleed nipple
11 Dust cap

Scrupulous cleanliness is of the utmost importance when removing and fitting components that are part of the hydraulic brake system.

Clean removed components in clean brake fluid or a special cleaning fluid. Wipe parts dry using clean, lint-free paper or cloth. Gaskets, retaining clips and rubber parts are available as repair kits and should be changed.

Prior to assembly, oil the components generously with clean, unused brake fluid of the recommended grade or lubricate them with brake cylinder paste.

4 Screw the brake hose bracket onto the brake caliper.



Important

Make sure that the locating studs engage the recesses in the brake caliper.

5 Remove the pinch-off pliers.

6 Bleed the brake system.
See *"Brake system, bleeding"* on page 346.

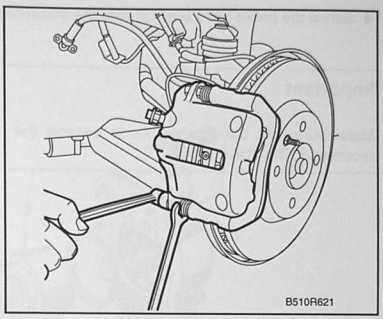
7 Fit the front wheel and lower the car.

Tightening torque, wheel bolts:
115 Nm (85 lbf ft)

Important

Depress the pedal before driving off to press the brake pads onto the brake discs.

8 Remove the bolts from the caliper pins.



9 Remove the brake caliper.

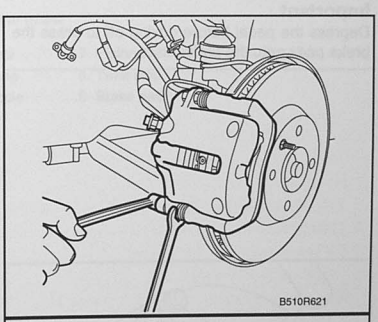
Fitting the front brake caliper, M1988-

Before fitting new brake pads, thoroughly clean the sliding contact surfaces between the caliper and pads with a wire brush.

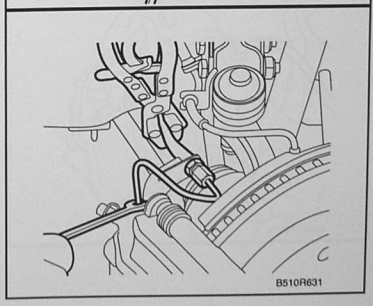
Check that the dust covers over the caliper pins and brake piston are in good condition and that the brake piston is pressed into the cylinder.

1 Fit the brake caliper.

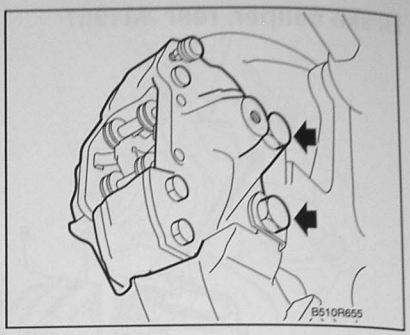
2 Tighten the bolts in the caliper pins.



3 Screw the nipple onto the brake caliper.



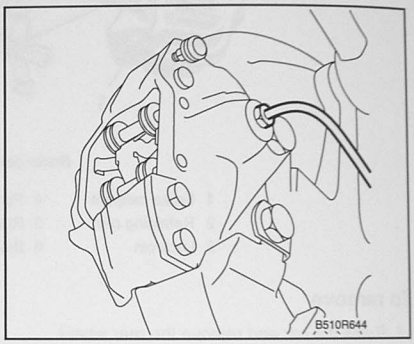
4 Remove the two bolts securing the brake caliper to the rear axle.



To fit

1 Check that the dust cover is correctly seated. Bolt the brake caliper to the rear axle. Use new lock plates.

2 Connect the brake line.



3 Fit the brake pads.

See To Fit under *"Brake pads, rear -M1987"* on page 321.

4 Fill the system with brake fluid.

5 Bleed the brake system.

See *"Brake system, bleeding"* on page 346.

6 Check that the brake line connection does not leak.

7 Pump the brakes repeatedly until the footbrake starts to operate.

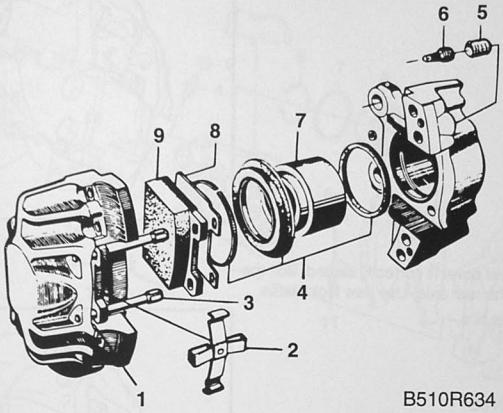
8 Fit the rear wheel and lower the car.

Tightening torque, wheel nuts:
100 Nm (74 lbf ft)

Important

Depress the pedal before driving off to press the brake pads onto the brake discs.

Brake caliper, rear -M1987



Brake caliper, rear wheel

1 Brake calipers	4 Piston seal	7 Piston
2 Retaining clip	5 Rubber cap	8 Twist stop
3 Lock pin	6 Bleed nipple	9 Brake pad

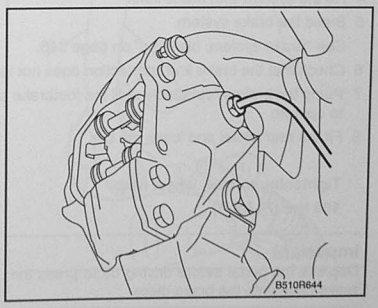
To remove

1 Raise the car and remove the rear wheel.

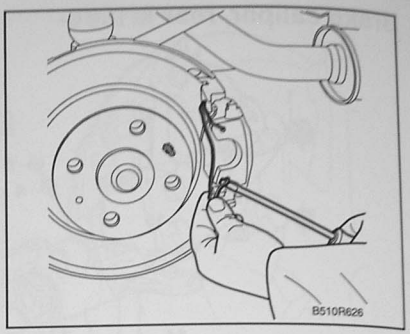
2 Remove the brake pads.

See To Remove under "*Brake pads, rear -M1987*" on page 321.

3 Disconnect the brake line from the brake caliper. Plug the end of the pipe to prevent dirt from entering the brake system.



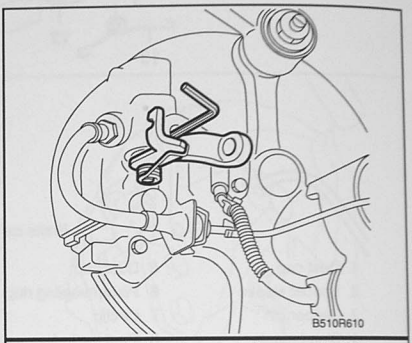
3 Remove the retaining clip.



4 Clean the entire brake caliper thoroughly.

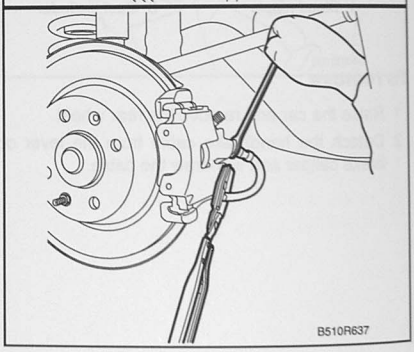
5 Remove the threaded plug covering the adjusting screw and screw out the adjusting screw.

Use a 4 mm Allen key.

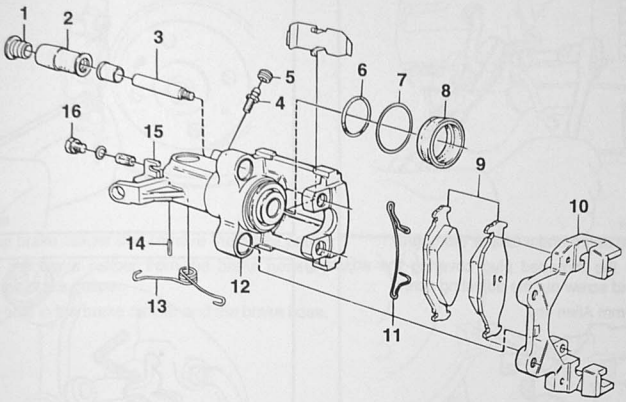


6 Attach pinch-off pliers 30 07 739 to the brake hose.

7 Slacken the brake hose connection with an open-ended wrench.



Brake caliper, rear M1988-

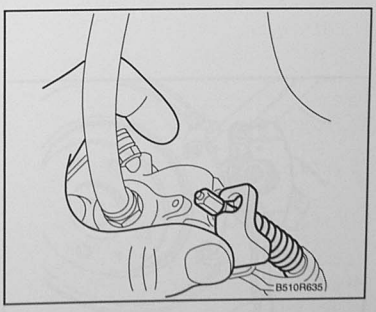


Brake caliper, rear wheel

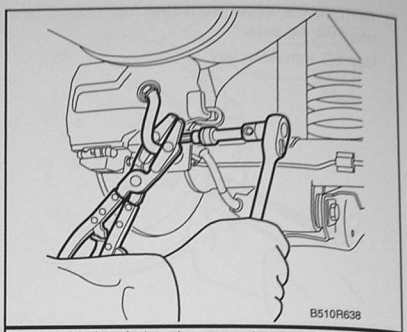
1 Dust cap
2 Spacer sleeve
3 Caliper pin
4 Bleed nipple
5 Dust cap
6 Piston sealing ring
7 Circlip
8 Dust excluder
9 Brake pad
10 Carrier
11 Retaining clip
12 Brake calipers
13 Return spring
14 Stop pin
15 Lever
16 Threaded plug (for adjusting screw)

To remove

1 Raise the car and remove the rear wheel.
2 Detach the handbrake cable from the lever on the brake caliper and withdraw the cable.

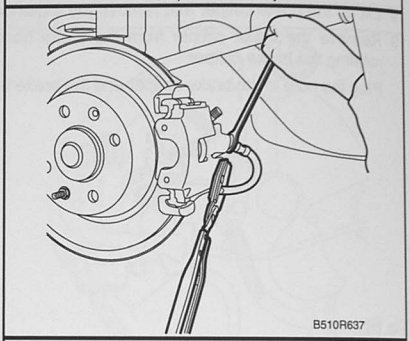


4 Fit and tighten the caliper pins. Fit the covers.

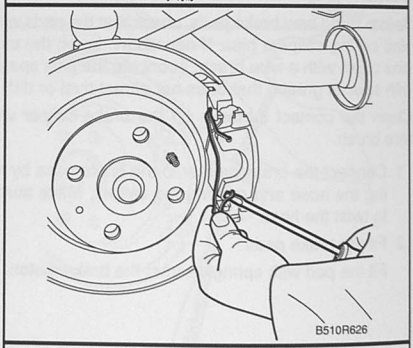


5 Tighten the brake hose to the brake caliper.

6 Remove the pinch-off pliers.



7 Fit the retaining clip.



8 Fit the handbrake cable to the lever.

9 Adjust the handbrake.

Refer to *"Handbrake and handbrake cable, adjusting, M1988-90"* on page 363 or *"Handbrake and handbrake cable, adjusting, M1991-"* on page 364.

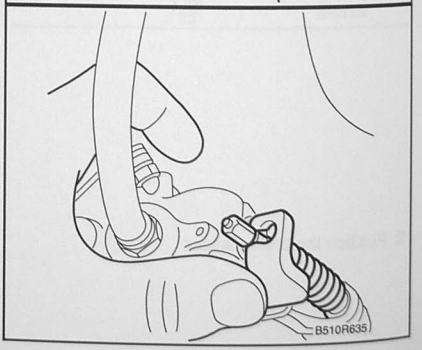
10 Bleed the brake system.

See *"Brake system, bleeding"* on page 346.

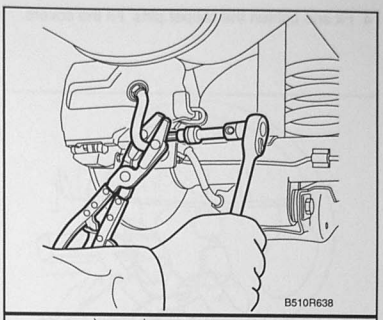
11 Check that the brake line connection does not leak.

12 Fit the rear wheel and lower the car.

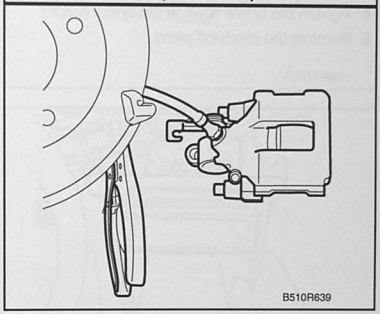
Tightening torque, wheel bolts:
115 Nm (85 lbf ft)



8 Remove the cover from over the caliper pins and unscrew the pins.
Use a 7 mm Allen key.


B510R638

9 Lift off the brake caliper and remove the brake pads.
10 Remove the brake caliper from the brake hose by rotating the brake caliper.
Plug the hole in the brake caliper and the brake hose.

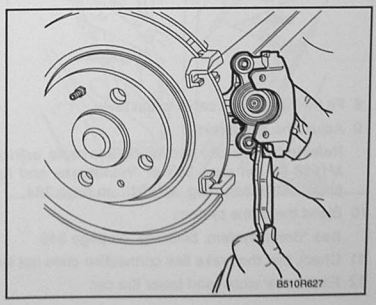

B510R639

To fit

Before fitting new brake pads, check that the pads will not bind on the calipers pins. If necessary, brush the caliper pins clean with a wire brush. Lubricate the pins sparingly with special grease that does not attract dust or dirt.

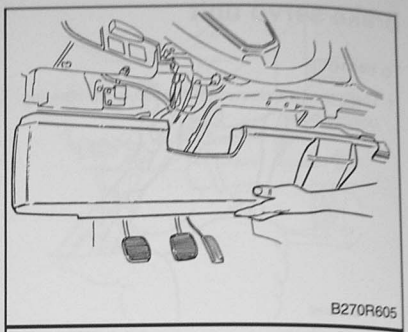
Clean the contact surfaces on the brake caliper with a wire brush.

1 Connect the brake caliper to the brake hose by holding the hose and rotating the caliper. Make sure not to twist the hose.
2 Fit the brake pads.
Fit the pad with spring nearest the brake piston.


B510R627

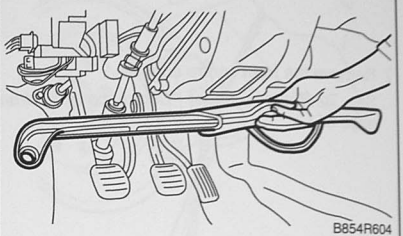
3 Position the brake caliper.

4 Lift out the knee protector.

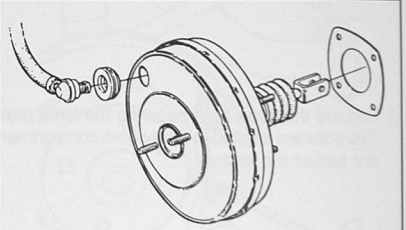

B270R605

5 Remove the lower air duct.

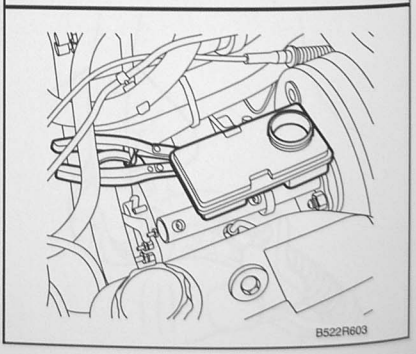
6 Unplug the connector from the brake fluid reservoir cap.


B854R604

7 Remove the vacuum hose with check valve from the servo unit.


B522R602

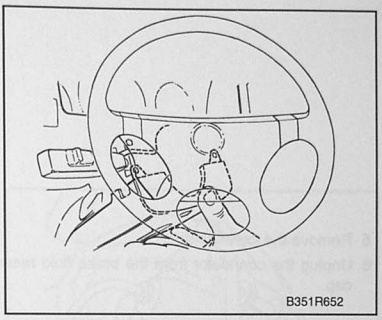
8 Place pinch-off pliers 30 07 739 on the hose leading from the brake fluid reservoir to the master clutch cylinder.


B522R603

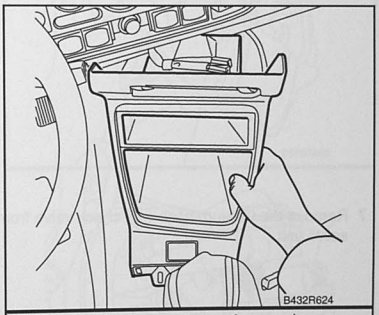
Brake servo unit

To remove

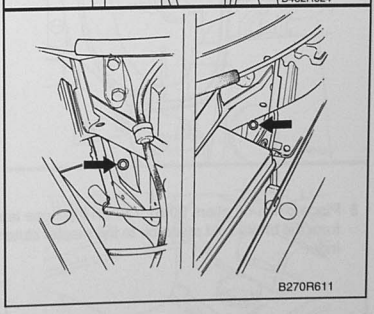
1 Undo the two screws and remove the steering column cowl.


B351R652

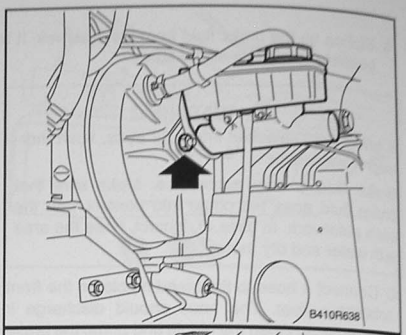
2 Remove the front centre console.
See To Remove under *"Centre console, front"* on page 551.


B432R624

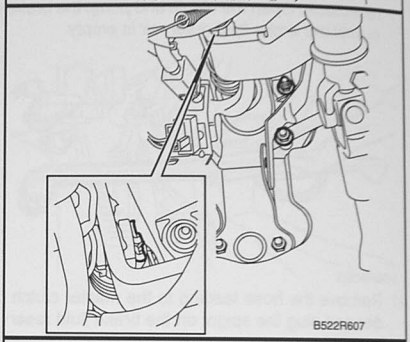
3 Remove the three bolts securing the knee protector. Two bolts are located in the engine compartment and one behind the ashtray.


B270R611

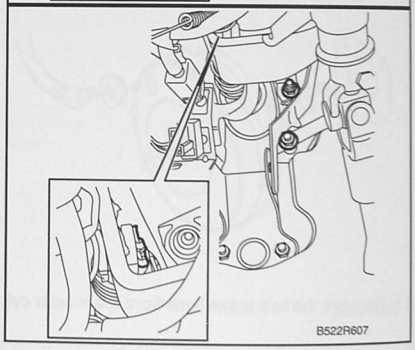
13 Remove the two nuts holding the master cylinder to the brake servo unit and remove the master cylinder.



14 Remove the clip and pin from the servo unit pushrod.



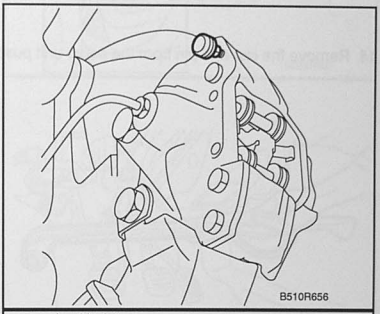
15 Remove the four nuts securing the brake servo unit to the pedal bracket and remove the unit.



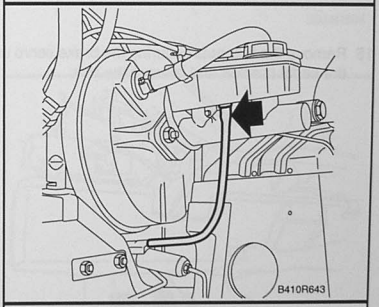
9 Siphon up the brake fluid from the reservoir. It is not possible to remove all the fluid.

> **⚠ WARNING**
>
> If brake fluid splashes into your eyes, flush thoroughly with water.
>
> Brake fluid is very aggressive. Make sure that brake fluid does not come into contact with the car's paintwork. In case of contact, rinse the area with water and dry thoroughly.

10 Connect a hose to the bleed nipple on the front right brake caliper. The hose should discharge into a receptacle. Open the nipple and pump the brake pedal until the brake fluid reservoir is empty.

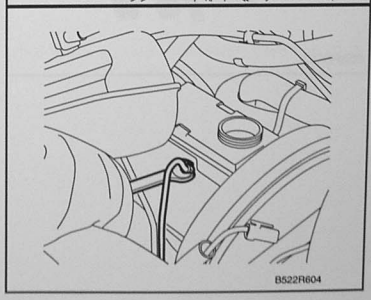

B510R656

11 Remove the hose leading to the master clutch cylinder and plug the spigot on the brake fluid reservoir.

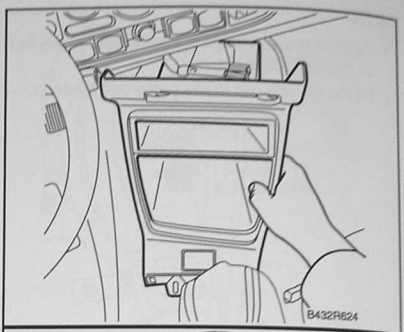

B410R643

12 Remove the two brake lines from the master cylinder.

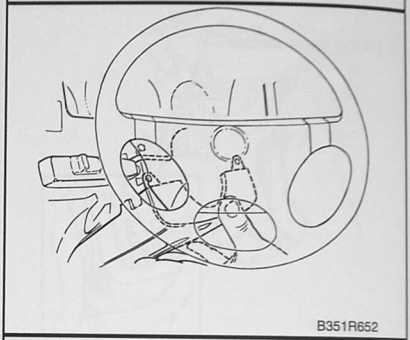
Note
To improve accessibility, you can unbolt the coolant expansion tank and move it aside.


B522R604

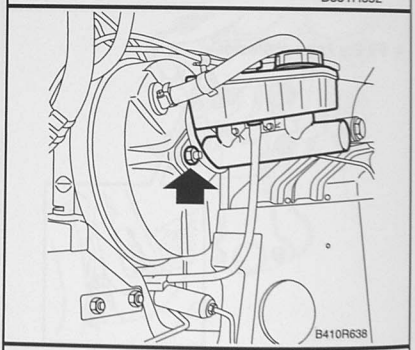
5 Fit the front centre console.
See To Fit under "*Centre console, front*" on page 551.


B432R624

6 Fit the steering column cowl and tighten the two screws.


B351R652

7 Fit the master cylinder and reservoir. Tighten the nuts securing the cylinder to the servo unit. Connect the hose to the clutch cylinder.

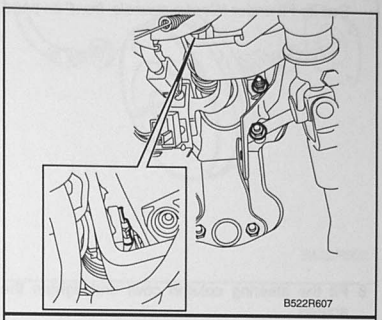

B410R638

8 Fit the brake lines to the master cylinder. Take care not to damage the nipple threads.

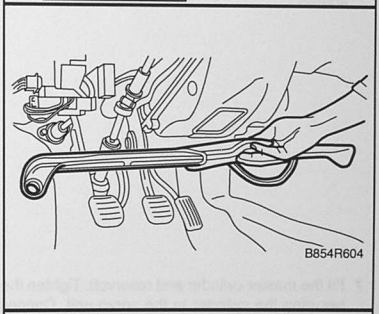

B522R604

To fit

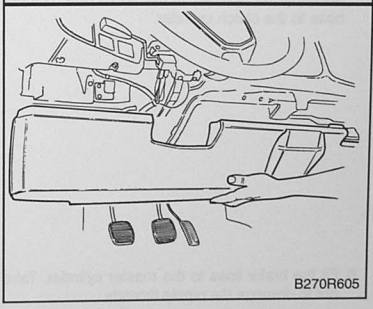
1 Position the servo unit in the car and fit the four nuts on the pedal bracket.
2 Fit the pin and clip to the servo unit pushrod.


B522R607

3 Fit the lower air duct.


B854R604

4 Fit the knee protector.

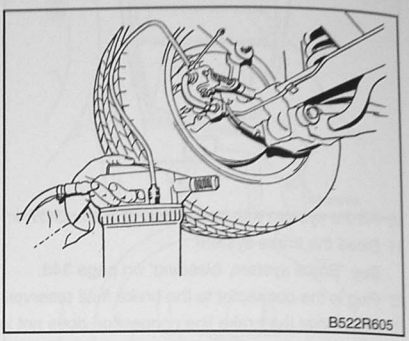

B270R605

Brake system, bleeding

Bleeding with bleeder unit

1 Top up as necessary with brake fluid, type DOT 4.

2 Connect the bleeder unit to the bleed nipple on the rear left brake caliper.



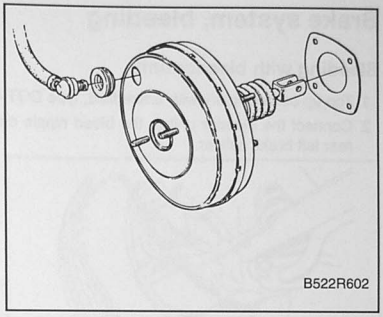
3 Open the nipple and start the bleeder unit. Stop the bleeder unit when air bubbles no longer appear in the hose.

Important
Check the level of brake fluid in the reservoir while the bleeder unit is running. Top up as necessary.

4 Repeat the procedure for the front right brake caliper, the rear right caliper and finally the front left caliper.

5 Top up with fresh brake fluid to the MAX mark on the brake fluid reservoir.

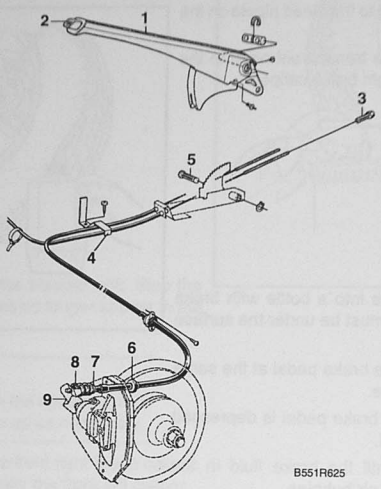
9 Fit the vacuum hose with check valve.


B522R602

10 Fill the system with brake fluid of grade DOT 4.
11 Bleed the brake system.
See *"Brake system, bleeding"* on page 346.
12 Plug in the connector to the brake fluid reservoir cap.
13 Check that the brake line connection does not leak.

Handbrake system

Handbrake cable, -M1987



Handbrake, M1979-87

1 Handbrake	4 Cable clamp	7 Circlip
2 Pawl button	5 Pivot pin	8 Gaiter
3 Adjusting nut	6 Ring	9 Lever

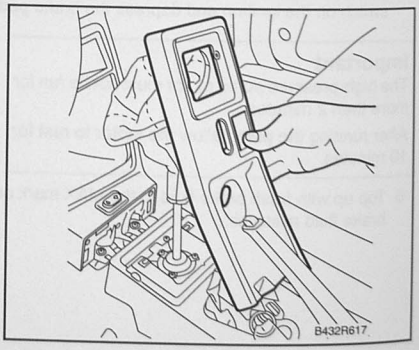
To remove

1 Remove the driver's seat.

See To Remove under *"Driver's seat, M1979-80"* on page 533 or *"Driver's seat, M1981-90"* on page 533.

2 Remove the rear centre console.

See To Remove under *"Centre console, rear"* on page 553.



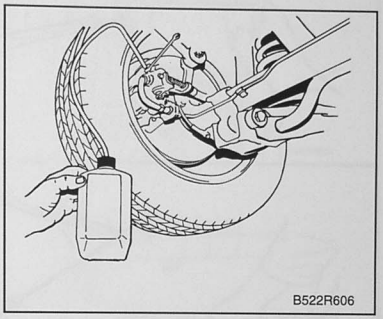
Manual bleeding

Important
On cars with ABS, both front brake calipers must be bled before the rear calipers.

1 Top up as necessary with brake fluid, type DOT 4.

2 Connect a transparent hose to the bleed nipple on the rear left brake caliper.

Cars with ABS: Connect a transparent hose to the bleed nipple on the front right brake caliper.


B522R606

3 The hose should discharge into a bottle with brake fluid. The end of the hose must be under the surface of the fluid at all times.

4 Get a helper to depress the brake pedal at the same time as you open the nipple.

Close the nipple once the brake pedal is depressed and then release the pedal.

Repeat this procedure until the brake fluid in the transparent hose is free of air bubbles.

Important
Check the level of brake fluid in the reservoir while the bleeder unit is running. Top up as necessary.

5 Repeat the procedure for the front right brake caliper, the rear right caliper and finally the front left caliper.

Cars with ABS:

Repeat this procedure for the front left brake caliper.

To bleed the rear brake calipers, get a helper to switch on the ignition and depress the brake pedal.

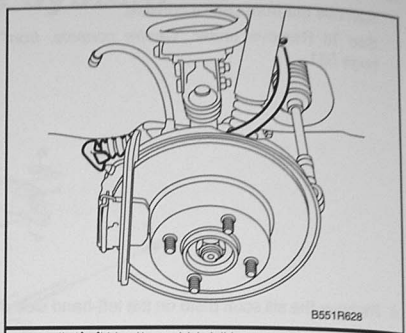
Important
The high-pressure pump motor must not be run for more than 2 minutes.

After running the pump allow the motor to rest for 10 minutes.

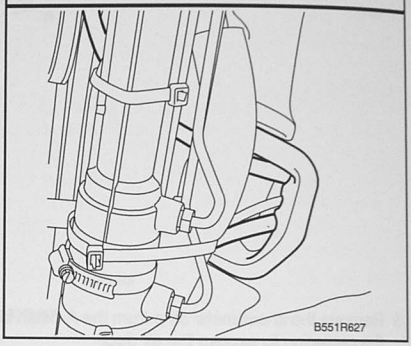
6 Top up with fresh brake fluid to the MAX mark on the brake fluid reservoir.

8 Raise the car and remove the front wheel.

9 Unscrew the grommet in the side of the wheel housing and detach the cable from the lever on the brake caliper.


B551R628

10 Pull out the cable. The simplest method is to withdraw either end of the cable from under the engine compartment.


B551R627

To fit

Fit in the reverse order.

Tightening torque, wheel nuts:
100 Nm (74 lbf ft)

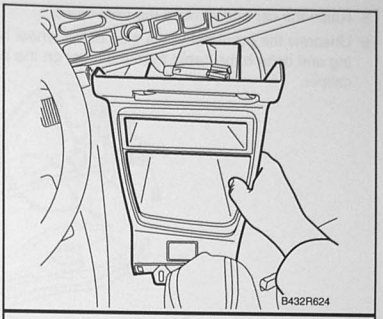
Important

Depress the pedal before driving off to press the brake pads onto the brake discs.

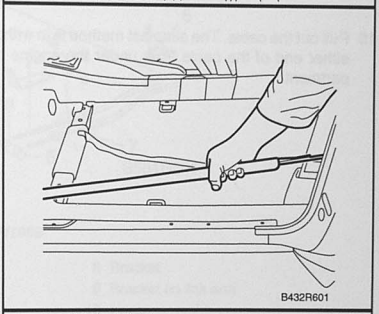
The cables should cross on the cabin floor. After the new cable has been fitted, apply and release the handbrake a few times to stretch the cable. Adjust the cable with the nuts on the handbrake lever.

See *"Handbrake and handbrake cable, adjusting, - M1987"* on page 362.

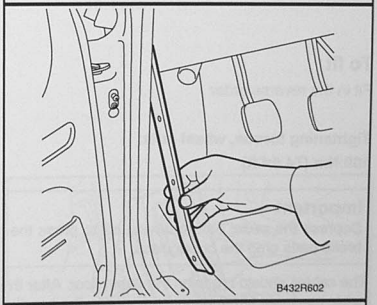
3 **Cars with front centre console:**
Remove the front centre console.
See To Remove under *"Centre console, front"* on page 551.


B432R624

4 Remove the sill scuff plate on the left-hand side of the car.


B432R601

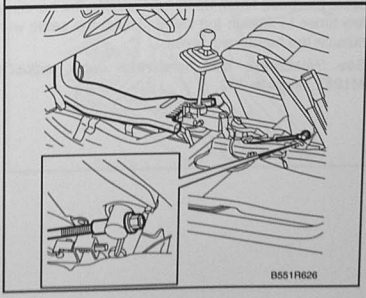
5 Remove the sheet metal strip from the A-pillar. Lift up the carpeting to expose the air duct.


B432R602

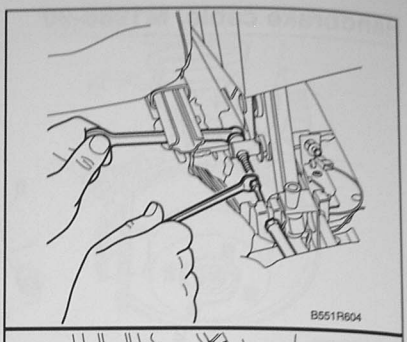
6 Remove the plate from over the duct and remove the duct.

7 Detach the cable from the adjusting nut on the hand-brake lever.

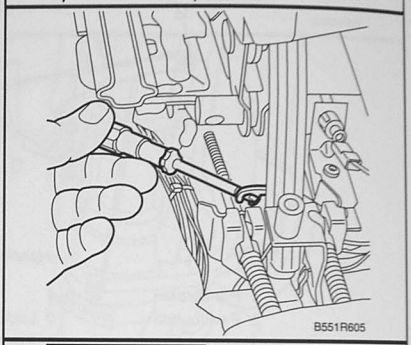
Important
The handbrake cables are crossed, which means that the right-hand nut is for the front left wheel and that the left-hand nut is for the front right wheel.


B551R626

2 Unscrew and remove the adjusting nut on the handbrake lever from the end of the cable.



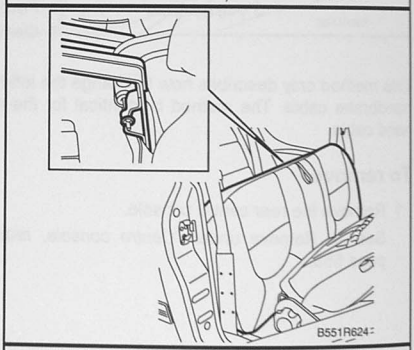
3 Lift up the lock brace and pull the cable out of the bracket.



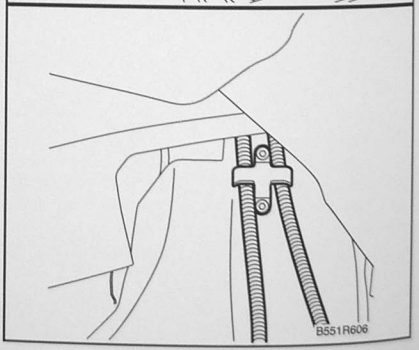
4 Raise the rear seat cushion. Remove the lock pins from the two studs in the seat cushion mountings. Remove the studs and lift out the seat cushion.

Convertible:

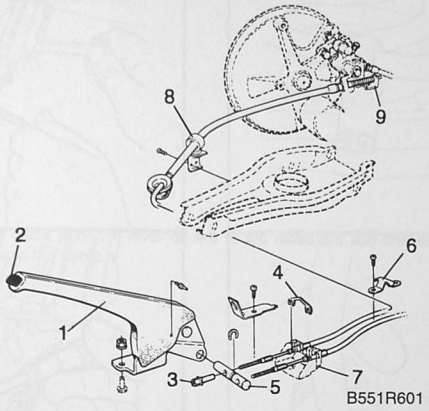
Remove the screws and the strip under the front edge of the seat cushion and remove the cushion.



5 Remove the sill scuff plate on both sides of the car and lift up the carpeting to access the clamp holding the cables to the floor.



Handbrake cable, M1988-90



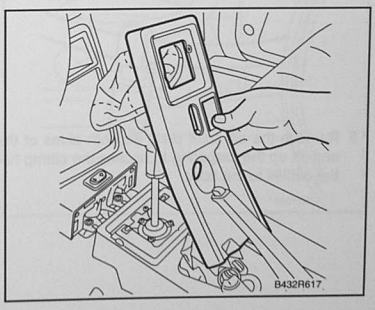
Handbrake, M1988-

1 Handbrake	4	8 Bracket
2 Pawl button	5 Lock brace	9 Bracket on link arm
3 Adjusting nut	6 Pivot pin	10 Lever
	7 Clamp	

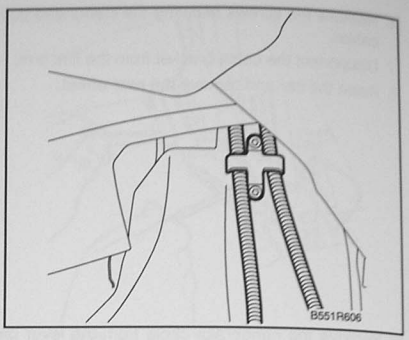
This method only describes how to change the left-hand handbrake cable. The method is identical for the right-hand cable.

To remove

1 Remove the rear centre console.
See To Remove under *"Centre console, rear"* on page 553.

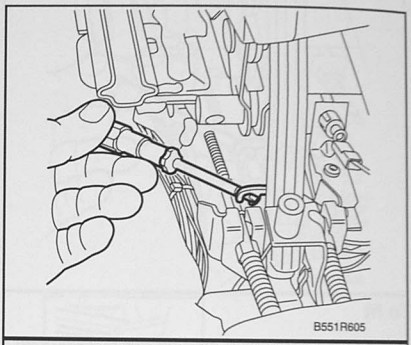


3 Fit the clamp that secures the cables to the floor.

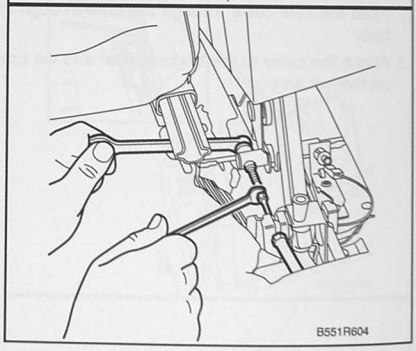


4 Pass the threaded end of the cable through the bracket between the seats.

5 Lower the lock brace over the cables.



6 Screw on the adjusting nut by the handbrake lever.



7 Adjust the handbrake.

See *"Handbrake and handbrake cable, adjusting, M1988-90"* on page 363.

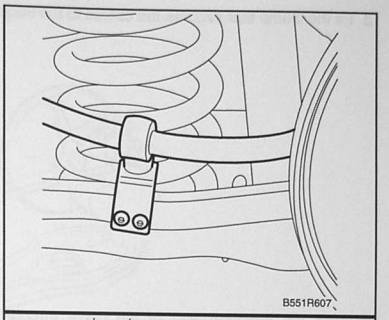
8 Fit the rear wheel and lower the car.

Tightening torque, wheel bolts:
115 Nm (85 lbf ft)

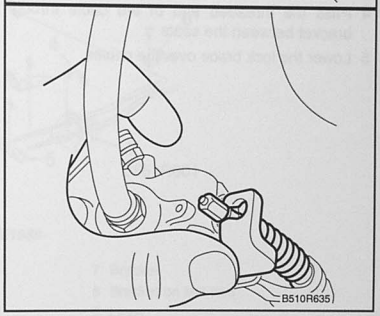
9 Fit the rear centre console and the rear seat cushion.

See To Fit under *"Centre console, rear"* on page 553.

6 Remove the screws securing the clamp and pull the cables.
7 Disconnect the cable bracket from the link arm.
8 Raise the car and remove the rear wheel.

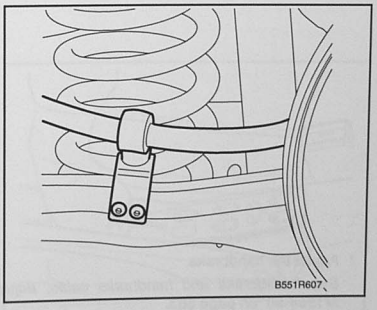


9 Remove the handbrake cable from the lever on the brake caliper and withdraw the cable.

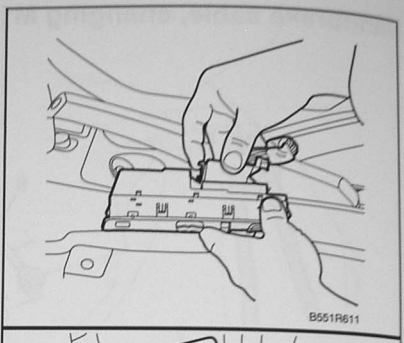


To fit

1 Feed the new cable through the lead-through in the body.
2 Attach the cable to the brake caliper and the bracket on the link arm.

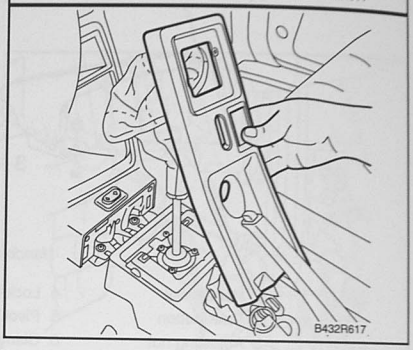


3 Remove the connector by pressing the catch.



4 Remove the rear centre console.

See To Remove under *"Centre console, rear"* on page 553.

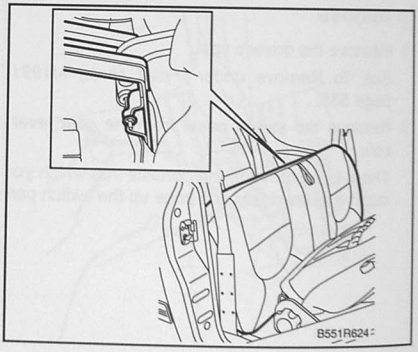


5 Remove both the rear sill scuff plates.

6 Raise the rear seat cushion. Remove the lock pins from the two studs in the seat cushion mountings. Remove the studs and lift out the seat cushion.

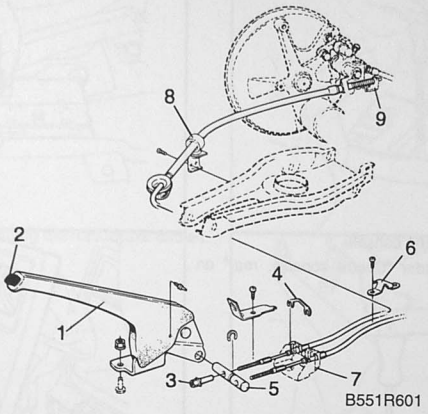
Convertible:

Remove the screws and the strip under the front edge of the seat cushion and remove the cushion.



7 Lift up the carpeting in the rear seat.

Handbrake cable, changing M1991-



Handbrake, M1988-

1 Handbrake	4 Lock brace	7 Bracket
2 Pawl button	5 Pivot pin	8 Bracket on link arm
3 Adjusting nut	6 Clamp	9 Lever

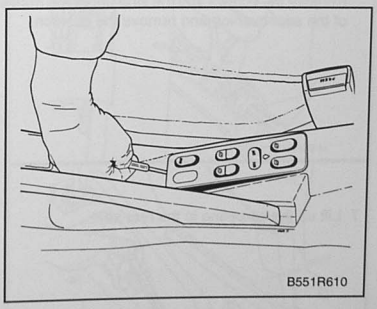
To remove

1 Remove the driver's seat.

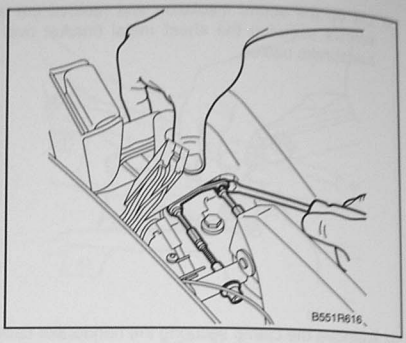
See To Remove under *"Front seats, M1991-"* on page 535.

2 Remove the switch panel from the gear lever console.

There is a groove in the console into which you can insert a screwdriver and prise up the switch panel.

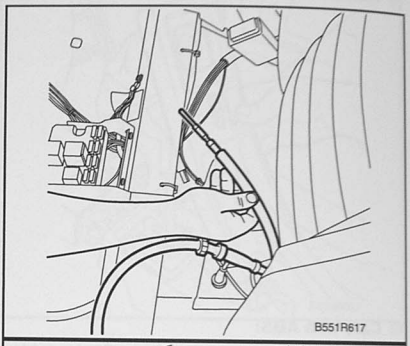


12 Raise the lock brace holding the cables in the bracket and pull out the cable.

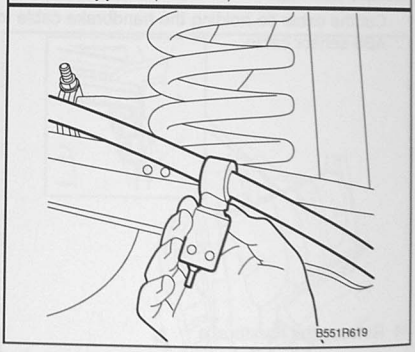


13 Raise the car and remove the rear wheel.

14 Detach the handbrake cable from the brake caliper.

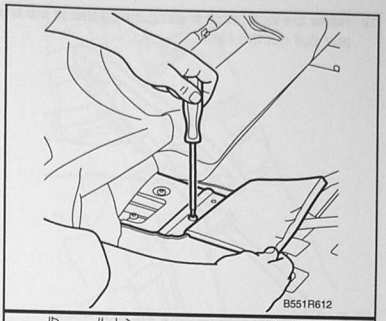


15 Remove the bracket from the link arm and remove the eye.

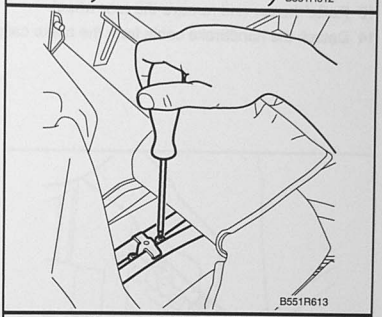


16 Lower the car slightly.

8 Lift up the sound insulation and remove the three screws securing the sheet metal bracket over the handbrake cables.

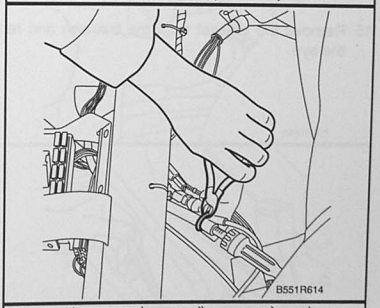


9 Remove the clamp securing the handbrake cables.



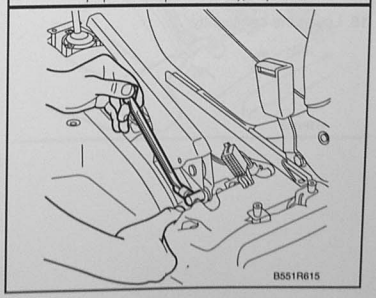
10 **Cars with ABS:**

Cut the cable tie holding the handbrake cable to the ABS sensor cable.

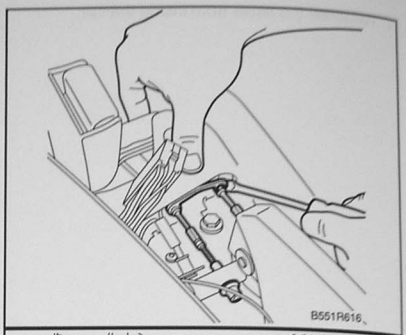


11 Release the handbrake.

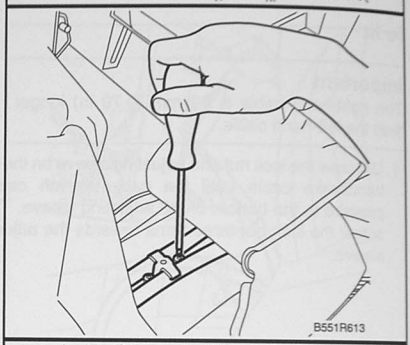
Remove the nut by the handbrake lever from the cable.



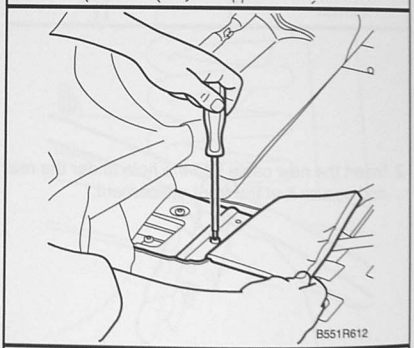
4 Fit the lock brace over the cables.



5 Screw the clamp securing the handbrake cables into place.

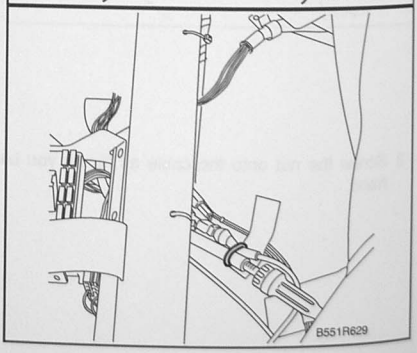


6 Fit the sheet metal bracket.

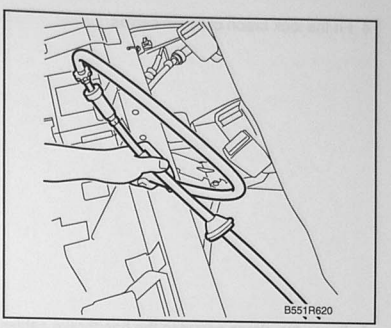


7 **Cars with ABS:**

Fit a cable to unite the handbrake cable and ABS sensor cable.



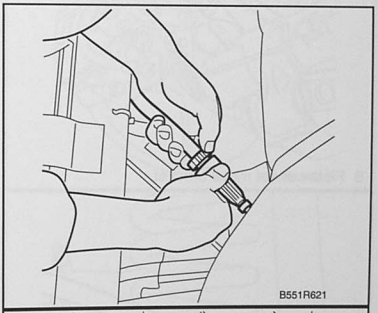
17 Withdraw the cable from inside the car.



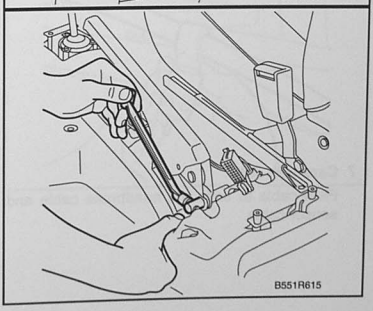
To fit

Important
The right-hand cable is 20 mm (0.79 in) longer than the left-hand cable.

1 Unscrew the lock nut and adjusting sleeve on the new handbrake cable until the cable sheath can be pressed to the bottom of the adjusting sleeve. Then, screw the lock nut three turns towards the adjusting sleeve.



2 Insert the new cable into the hole under the rear seat and secure it at the front attachment.

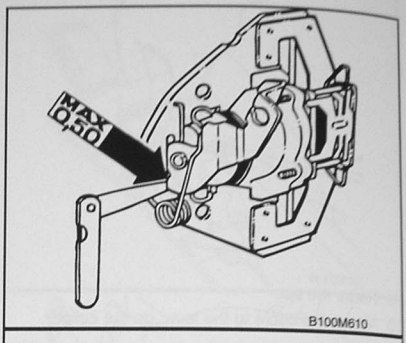


3 Screw the nut onto the cable as far as you can by hand.

Handbrake and handbrake cable, adjusting, -M1987

The handbrake should not be applied.

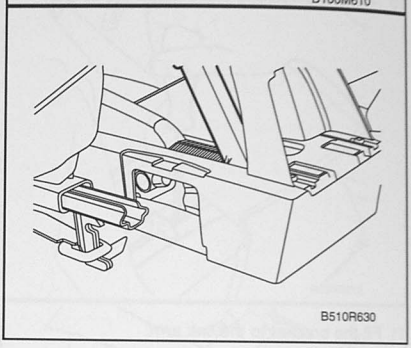
Measure the distance between the lever and the caliper. The clearance should be the same on both sides and 0.50 mm (0.02 in) at a maximum. If necessary, adjust the handbrake cable with the adjusting nuts on the handbrake lever.



B100M610

M1983-:

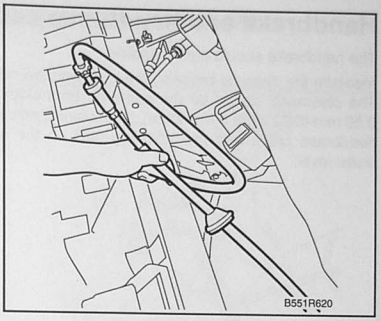
Slide the driver's seat as far forward as possible, so that you can remove the panel on the side of the floor console. Remove also the rear ashtray.


B510R630

Note

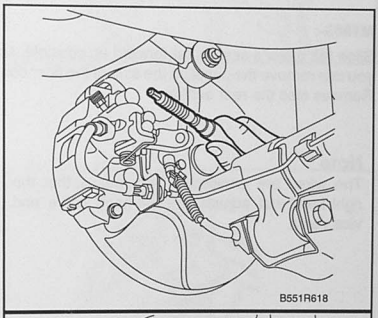
The wires are crossed, which means that the right-hand nut adjusts the left-hand cable and vice versa.

8 Insert the grommet into the hole.



9 Raise the car.

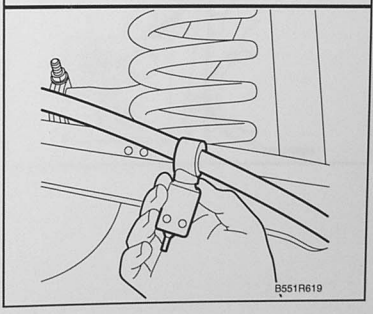
10 Attach the cable to the lever on the caliper.



11 Fit the bracket to the link arm.

12 Fit the rear wheel and lower the car.

Tightening torque, wheel bolts:
115 Nm (85 lbf ft)



13 Apply and release the handbrake a number of times to lock the adjusting device under the rear seat.

14 Adjust the handbrake cable.
See *"Handbrake and handbrake cable, adjusting, M1991-"* on page 364.

15 Fit the rear section of the centre console.
See To Fit under *"Centre console, rear"* on page 553.

16 Fit the left-hand front seat.
See To Fit under *"Front seats, M1991-"* on page 535.

17 Refit the rear seat carpeting and rear seat cushion.

18 Fit the rear sill scuff plates.

Handbrake and handbrake cable, adjusting, M1991-

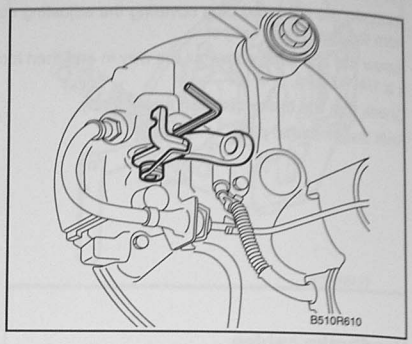
Handbrake

Remove the threaded plug covering the adjusting screw from the rear brake caliper.

Screw the adjusting screw all the way in and then loosen it a 1/4-1/2 turn.

Check that the brake disc can rotate freely.

Refit the threaded plug.



Handbrake cables

Only adjust the handbrake cable with the adjusting device located under the rear seat.

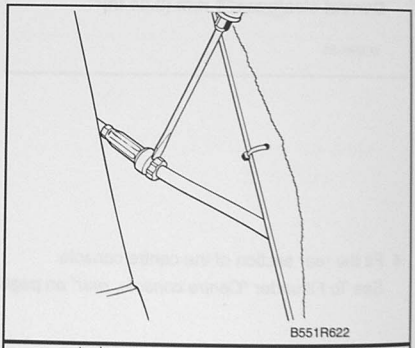
The cable can be adjusted a maximum of 30 mm (1.2 in).

1 Raise the seat cushion.

Convertible:

Remove the screws and the strip under the front edge of the seat cushion and remove the cushion.

2 Prise apart the adjusting device with a screwdriver.



3 Place a 2 mm (0.08 in) feeler gauge between the cable lever and the stop.

4 Screw the lock nut towards the adjusting sleeve until the feeler gauge falls out.

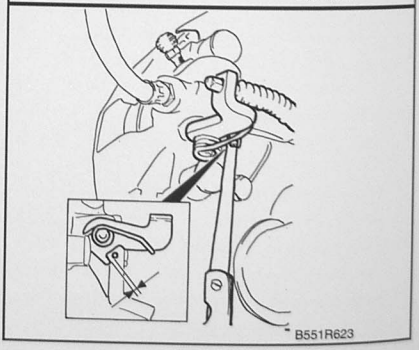
5 Apply and release the handbrake a number of times to lock the adjusting device.

6 Check that the clearance between the lever and the stop is 1 mm (0.04 in).

7 Lower the seat cushion.

Convertible:

Fit the seat cushion and press the front edge into place.



Handbrake and handbrake cable, adjusting, M1988-90

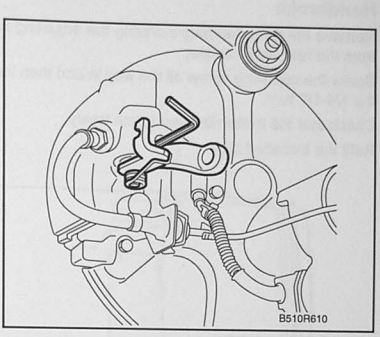
Handbrake

Remove the threaded plug covering the adjusting screw from the rear brake caliper.

Screw the adjusting screw all the way in and then loosen it a 1/4-1/2 turn.

Check that the brake disc can rotate freely.

Refit the threaded plug.



Handbrake cables

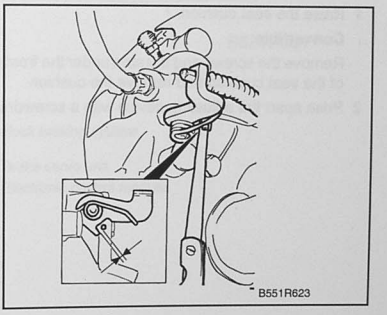
1 Remove the rear centre console.

See To Remove under *"Centre console, rear"* on page 553.

2 Insert a 1.0 mm feeler gauge between the lever and the stop on the rear brake caliper.

3 Screw the adjusting nut (under the handbrake lever) until the feeler gauge slips out.

Correct clearance: 1 mm (0.04 in)



4 Fit the rear section of the centre console.

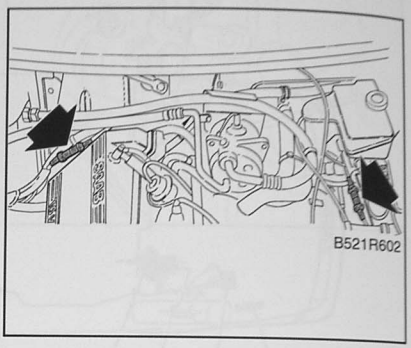
See To Fit under *"Centre console, rear"* on page 553.

Wheel sensors, front

Important
Never switch on the ignition while the sensor leads are disconnected.

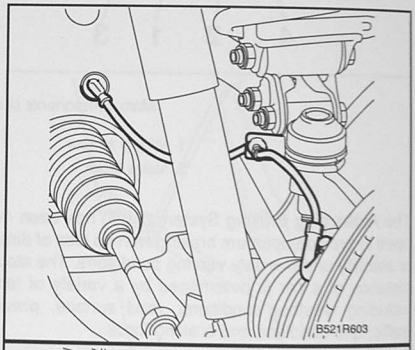
To remove

1 Unplug the sensor lead connector in the engine compartment (one for each front wheel) by squeezing together the sleeves to release the catches.

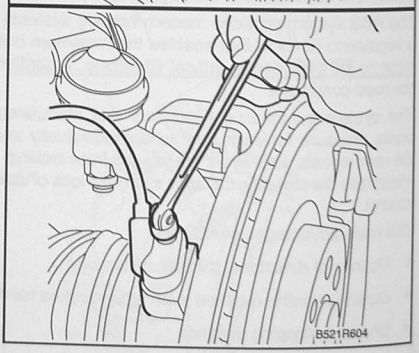


2 Raise the car and remove the front wheel(s).

3 Remove the sensor lead from the bracket.
Withdraw the sensor lead through the grommet in the wheel housing.

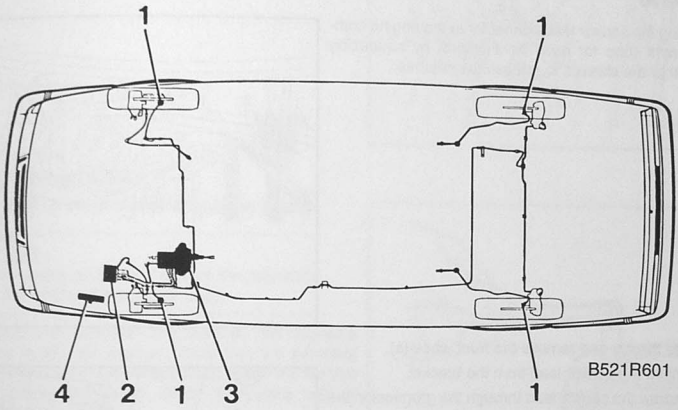


4 Undo the bolt securing the wheel sensor and remove the sensor.



ABS brakes

Technical description



Main components of the antilock braking system

1 Wheel sensor
2 Valve block
3 Brake servo unit
4 Electronic control module

The Antilocking Braking System (ABS) has been developed to provide optimum braking with no loss of direction or stability under widely varying conditions. The stopping distance of a car is determined by a variety of factors, including weather conditions, road surface, prevailing traffic, tyre condition and braking force.

The ABS system provides modern braking systems with a regulation function that enables the maximum braking force to be exploited in critical situations, regardless of the road conditions.

The system automatically monitors and modulates the brake pressure for each front wheel individually and for the rear wheels, to prevent the wheels from locking. This minimizes the stopping distance without a loss of steering control.

The main advantages of ABS are:

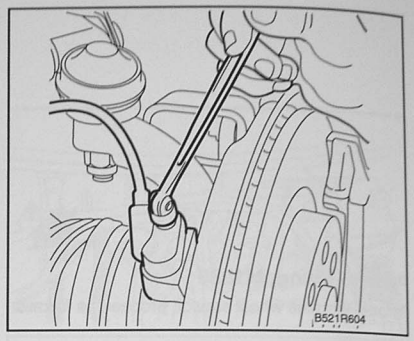
- No loss of directional stability on braking
- Steering control retained even when brakes hard on
- Shortest stopping distance
- Reduced tyre wear

To fit

M1989:

See *"Prior to fitting, M1989"* on page 367.

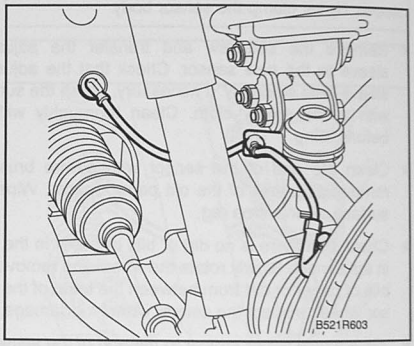
1 Position the wheel sensor and tighten the retaining bolt.



2 **M1989:**

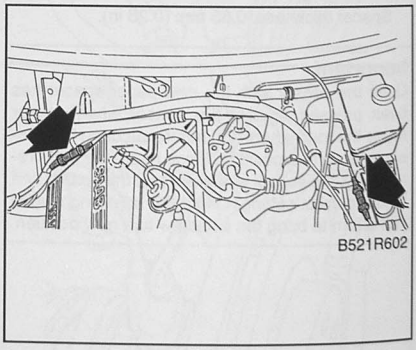
Lightly press the wheel sensor against the sensor wheel and tighten the setscrew.

3 Feed the sensor lead through the rubber grommet in the wheel housing and attach it to the bracket.



4 Plug in the sensor lead in the engine compartment.

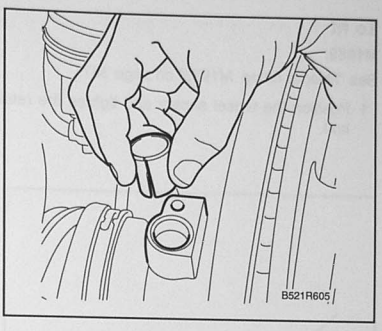
> **⚠ WARNING**
> After fitting, ensure that the sensor lead does not chafe against any suspension components when the wheels are at full lock.



5 Fit the front wheel(s).

Tightening torque, wheel nuts:
100 Nm (74 lbf ft)
Tightening torque, wheel bolts:
115 Nm (85 lbf ft)

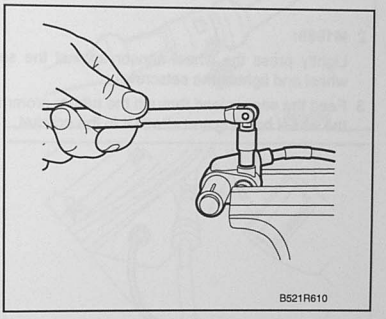
Retain the plastic sleeve in the steering swivel member fitted between the member and the sensor to prevent corrosion.



Prior to fitting, M1989

Before fitting the wheel sensor, proceed as follows.

Important
Place the wheel sensor in a vice by the adjusting sleeve. Never clamp the sensor body.

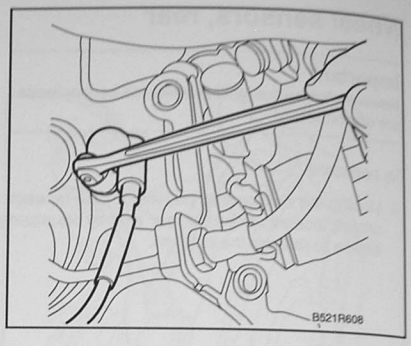


- Remove the setscrew and transfer the adjusting sleeve to the new sensor. Check that the adjusting sleeve runs smoothly. If necessary, polish the surface with a fine emery cloth. Clean thoroughly with oil before fitting.
- Clean the end of the sensor with a wire brush to remove all traces of the old paper spacer. Wipe the surface clean with a rag.
- Check that there is no dirt or bits of paper in the hole in the sensor. Slowly rotate the wheel and remove any bits of paper or dirt from between the teeth of the sensor wheel. Inspect the sensor wheel for damage.
- Glue a new paper spacer to the end of the sensor.

  Spacer thickness: 0.65 mm (0.26 in).

Important
Once the sensor with the new paper spacer has been pressed against the sensor wheel, never rotate the road wheel hub before securing the sensor in its correct position. If you rotate the hub prematurely, the sensor wheel will tear the spacer and hinder correct setting. Offset the adjusting sleeve half a turn to bring the setscrew to a new position.

6 Undo bolt securing the wheel sensor and remove the sensor.

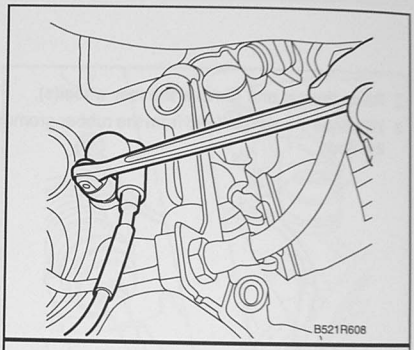


To fit

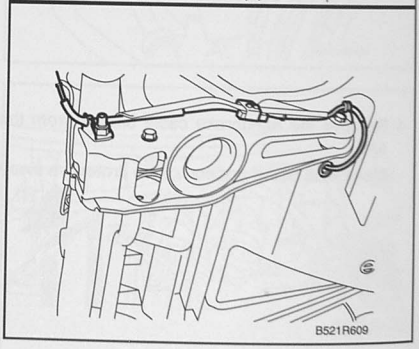
M1989:

See *"Prior to fitting, M1989"* on page 367.

1 Position the wheel sensor and tighten the retaining bolt.



2 Fit the handbrake cable bracket to the link arm.
Make note of the position of the protective sleeve.

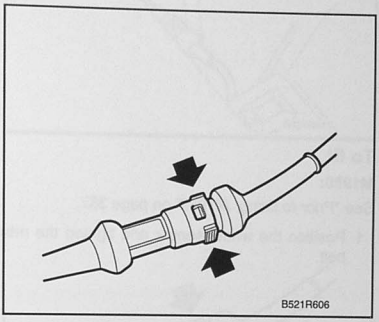


Wheel sensors, rear

Important
Never switch on the ignition while the sensor leads are disconnected.

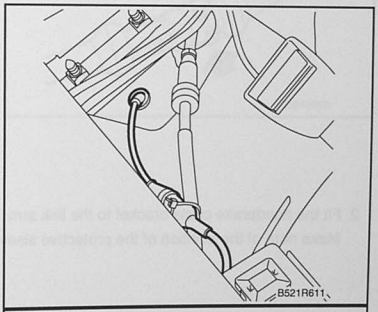
To remove

1 Unplug the sensor lead connector (one for each rear wheel) located under the rear seat by squeezing the sleeve to release the catches.



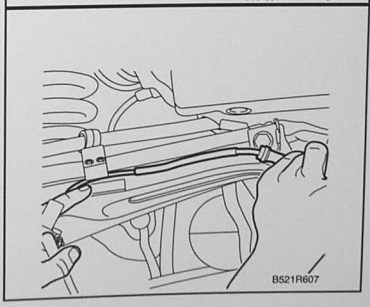
2 Raise the car and remove the rear wheel(s).

3 Withdraw the sensor lead from the rubber grommet in the floor.



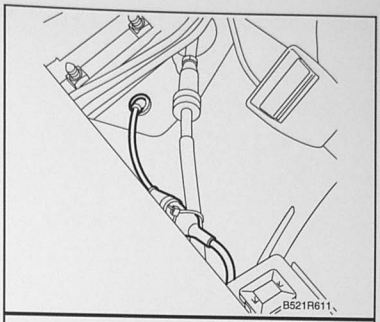
4 Remove the handbrake cable bracket from the link arm.

Make note of the position of the protective sleeve.

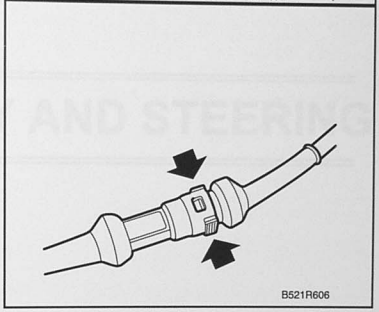


5 Remove the sensor lead from the bracket.

3 Feed the sensor lead through the rubber grommet in the floor and fit it to the bracket.



4 Plug in the sensor lead connector under the rear seat.



5 Fit the rear wheel(s).

Tightening torque, wheel nuts:
100 Nm (74 lbf ft)
Tightening torque, wheel bolts:
115 Nm (85 lbf ft)

Work Schedule

Explanation

The following table contains an outline of topics. The table makes it easy to see which jobs are described in each section as well as the parts and tools that are required to complete the work.

Remember to read carefully through the job description as well as General Information (pages 2-6) before you begin work.

Section	Applicable to the following work	Tools required	Parts required to carry out the work
Wheel alignment	Toe-in		
Wheel alignment	Pre-measurement checks		
Toe-in	Checking	Toe-in gauge 88 19 013	Chalk
Steering swivel member, upper and lower ball joints	Changing	Jack Tool 89 95 409 Torque wrench	Lock nuts
Upper suspension arm, right-hand side	Removing/Fitting	Spring compressor 88 18 791 Jaws 88 18 809 Lift Jack Tool 78 41 331 Torque wrench	Soapy water
Lower suspension arm	Removing/Fitting	Tool 78 41 349 Torque wrench	Soapy water
Steering wheel	Removing/Fitting	Puller 89 96 258 Torque wrench	
Steering wheel and airbag	Removing/Fitting	Torque wrench	
Track rod ends	Changing	Puller 89 95 409 Torque wrench	
Manual steering gear	Removing/Fitting	Puller 89 95 409 Torque wrench	
Power-assisted rack-and-pinion	Removing/Fitting	Wrench, 18 mm Wrench, 16 mm	Fabric-backed tape O-ring Container, 1 litre Hose Hydraulic oil, 75 cl Texaco Power Steering Fluid 4634 part no. 30 09 800

FRONT ASSEMBLY AND STEERING

Wheel alignment

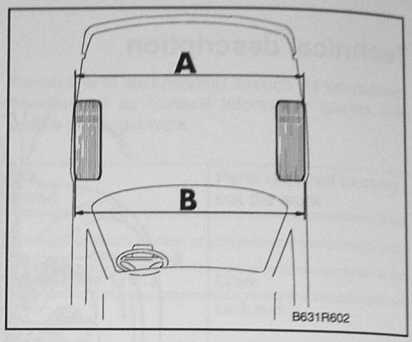
Toe-in

The toe-in value is the difference between **B** and **A**.

If both distance are exactly equal, toe-in is 0 and the wheels are parallel.

The toe-in value must always be positive, that is to say distance **B** must be greater than distance **A**.

B minus **A** should give a positive result.



Wheel alignment

Pre-measurement checks

If you suspect front wheel alignment to be incorrect, as indicated by abnormal tyre wear, impaired steering, road holding problems and the like, proceed as follows:

1 Check and if necessary adjust the tyre pressure.

2 Check the wheels, front wheel bearings, suspension arm mountings, steering swivel member ball joints, track rod ends and inner ball joints. Adjust or replace any defective part to eliminate any symptoms caused by such defects.

3 Check the dampers and change any that might be defective, as well as any worn bushes.

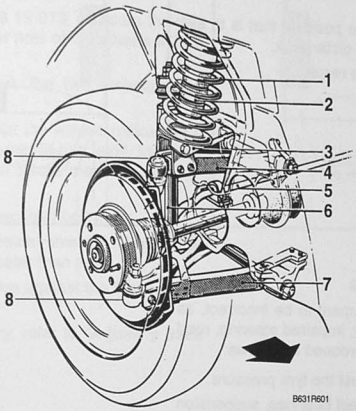
4 If the car has been involved in a collision, run off the road, been equipped with non-standard (temporary) equipment, been subjected to abnormal loads, or the like, repair any damage before checking wheel alignment.

5 To avoid erroneous readings, rock the car firmly a few times before measuring.

When checking alignment, the car should be unladen with nobody inside, with a full tank of fuel and on a level surface. There are various instruments for checking wheel alignment which are mounted on the wheels or directly to the stub axles.

Front suspension

Technical description



Front suspension

1 Coil spring
2 Bump stop
3 Lower spring seat
4 Upper suspension arm
5 Anti-roll bar
6 Damper
7 Lower suspension arm
8 Ball joint

The front wheels have independent suspension. The steering swivel members contain bearings for the hubs and stub axles.

Steering swivel member

The steering swivel member is the main component of the wheel bearing assembly and consists of a bearing housing with inswept arms. The wheel bearing is a double-row angular contact bearing.

When the steering wheel is turned, the steering swivel member, wheel hub and wheel turn around the swivel axis, an imaginary centreline running through the centre of the ball joints. Because the swivel axis intersects the centreline of the wheel below the ground, the car is said to have positive offset or a positive scrub radius.

The stub axles and drive shafts are connected via outboard CV joints. A rubber gaiter protects the CV joints from dirt and moisture.

Suspension arms

The front suspension consists of four suspension arms (two per wheel), each of which is mounted in two brackets containing rubber bushes. Each suspension arm is connected to the steering swivel member via a ball joint. The lower spring bracket is mounted on the upper suspension arm and also acts as stop for the bump stop.

Toe-in adjustment

Measured toe setting		Number of track rod turns required (in = clockwise, out = anticlockwise)	
		Standard chassis	Sports chassis
Toe-out (mm)	-6	1.6 out	1.5 out
	-5.5	1.5 out	1.4 out
	-5	1.4 out	1.3 out
	-4.5	1.3 out	1.2 out
	-4	1.2 out	1.1 out
	-3.5	1.1 out	1.0 out
	-3	1.0 out	0.9 out
	-2.5	0.9 out	0.8 out
	-2	0.8 out	0.7 out
	-1.5	0.7 out	0.6 out
	-1	0.6 out	0.5 out
	-0.5	0.5 out	0.4 out
	0	0.4 out	0.3 out
Toe-in (mm)	0.5	0.3 out	0.2 out
	1	0.2 out	0.1 out
	1.5	0.1 out	Correct value
	2	Correct value	0.1 in
	2.5	0.1 in	0.2 in
	3	0.2 in	0.3 in
	3.5	0.3 in	0.4 in
	4	0.4 in	0.5 in
	4.5	0.5 in	0.6 in
	5	0.6 in	0.7 in
	5.5	0.7 in	0.8 in
	6	0.8 in	0.9 in
	6.5	0.9 in	1.0 in
	7	1.0 in	1.1 in
	7.5	1.1 in	1.2 in
	8	1.2 in	1.3 in
	8.5	1.3 in	1.4 in
	9	1.4 in	1.5 in
	9.5	1.5 in	1.6 in
	10	1.6 in	1.7 in

Use the table according to the following example:

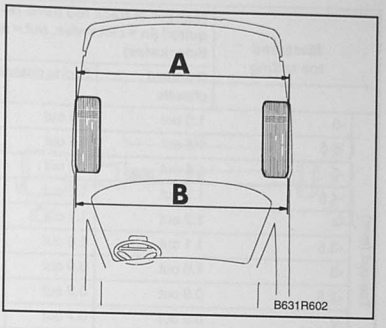
1 Assume that the calculated toe setting has given a negative result, e.g. **B-A** = -2 mm. This means that there is toe-out.

2 Find this value (-2 mm) in the "Measured toe setting" column in the table.

3 Follow the line across to the right-hand column where the number of turns required is specified, in this case 0.8 out. This means that the two track rods must be rotated a total of 0.8 turns, that is to say 0.4 turns per track rod.

Toe-in

Checking using a toe-in gauge



1 To avoid erroneous measurements, roll the car slowly forwards on a perfectly level surface and allow it to come to a stop without using the brakes.

2 Using the toe-in gauge 88 19 013, measure the distance **A** between the outer rims of the wheels at hub level.

Note this value and mark the two measurement points with chalk.

Roll the car forward so that the wheels rotate half a turn until the marks are again at hub level. Measure distance **B** with the gauge on the marked measurement points.

3 Calculate the toe-in as described below:

Measurement **B** minus measurement **A** should produce a positive result (greater than zero).

Check that calculated value against the table on the next page.

4 If adjustment is necessary, refer to *"Adjusting track rod length"* on page 379.

Steering swivel member, upper and lower ball joints

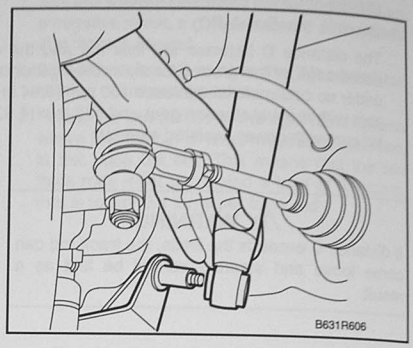
To change

1 Raise the car.

2 Remove the front wheel.

> **⚠ WARNING**
> Always use support stands when working under the vehicle.

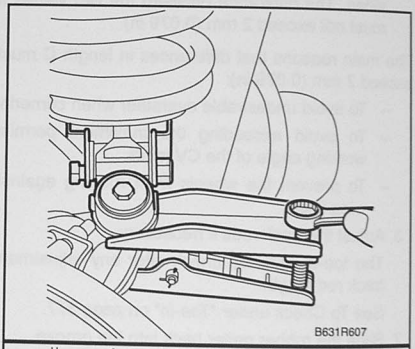
3 Place a jack under the outer end of the lower suspension arm and raise it slightly to relieve the tension on the damper. Undo the lower damper mounting.



4 Lower the jack so that the drive shaft just touches the edge of the hole in the body. Leave the jack in place to support the arm when the ball joint is removed.

5 Remove the nut holding the ball joint to the steering swivel member.

Remove the ball joint using tool 89 95 409.



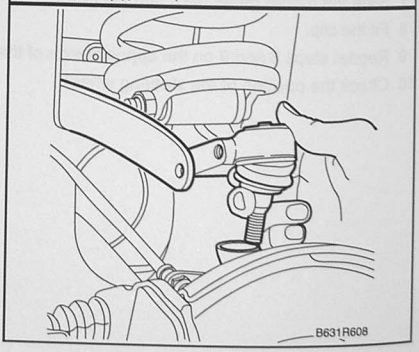
6 Remove the ball joint from the suspension arm. Block up the steering swivel member in a suitable way to make sure that the brake lines are not damaged.

7 Fit a new ball joint, attach this to the steering swivel member and tighten the nut.

Tightening torque: 45 Nm (33 lbf ft)

8 Attach the ball joint to the suspension arm using new lock nuts.

Tightening torque: 50 Nm (37 lbf ft)



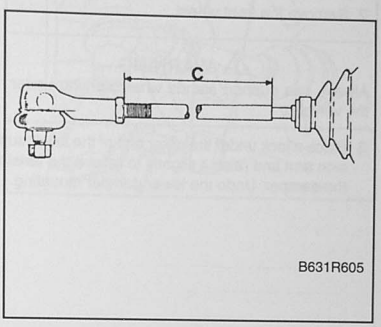
Adjusting track rod length

1 Remove the clip securing the rubber gaiter to the track rod.

2 Slide the rubber gaiter towards the rack housing to expose the groove in which it seals.

3 Measure the distance **C**.

The distance **C** between the lock nut and the outboard edge of the groove for the rubber gaiter must under no circumstances exceed 100 mm (3.94 in) for cars with manual steering gear and 125 mm (4.92 in) for cars with power-assisted steering



⚠ WARNING

If distance **C** exceeds the limits, the track rod can come loose and steering control be lost as a result.

4 Repeat steps 2 to 4 for the track rod on the opposite side of the car.

5 Compare the lengths measured on left and right-hand sides. The difference between the two values for **C** must not exceed 2 mm (0.079 in).

The main reasons that differences in length **C** must not exceed 2 mm (0.079 in):

- To avoid undesirable oversteer when cornering.
- To avoid exceeding the maximum permissible working angle of the CV joints.
- To prevent the wheels from rubbing against the wing liner.

6 Adjust the track rods if necessary.

The toe-in must be check after any adjustments to track rod length.

See To Check under *"Toe-in"* on page 377.

7 Slide the rubber gaiter back into the groove.

8 Fit the clip.

9 Repeat steps 8 and 9 on the opposite side of the car.

10 Check the position of the steering wheel.

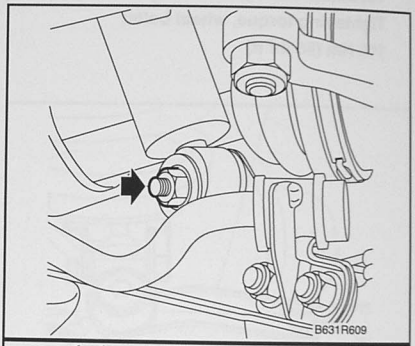
Upper suspension arms

⚠ WARNING
If the suspension arm has been subjected to great stress, such as in an accident, check it carefully for fractures and deformation. Change the suspension if it is deformed.

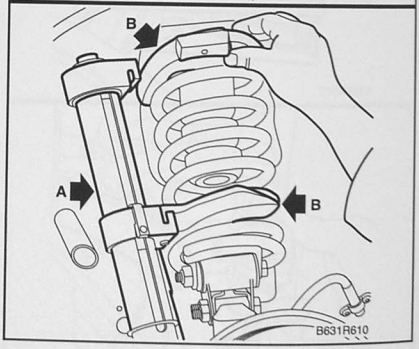
Removing the right-hand upper suspension arm

Important
Removing the left-hand upper suspension arm requires the engine and gearbox to be removed. Contact your local Saab workshop for assistance with this work.

1 Raise the car.
2 Remove the front wheel.
3 Relieve the tension from the damper by raising the outer end of the lower suspension arm with a jack. Undo the lower mounting and remove the jack.

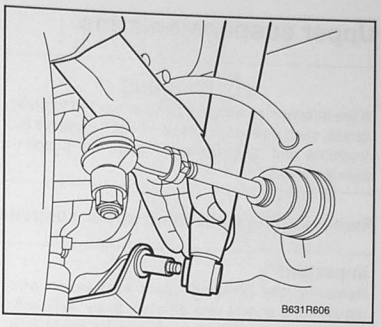


4 Fit spring compressor 88 18 791 (**A**) and jaws 88 18 809 (**B**). Fit the lower jaw first, then the upper jaw.



9 Raise the suspension arm slightly using the jack and fit the damper.

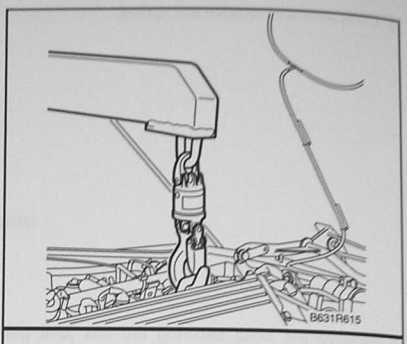
Tightening torque: 90 Nm (66 lbf ft)



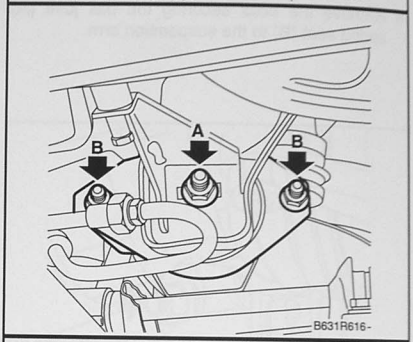
10 Fit the front wheel and lower the car.

Tightening torque, wheel nuts:
100 Nm (74 lbf ft)
Tightening torque, wheel bolts:
115 Nm (85 lbf ft)

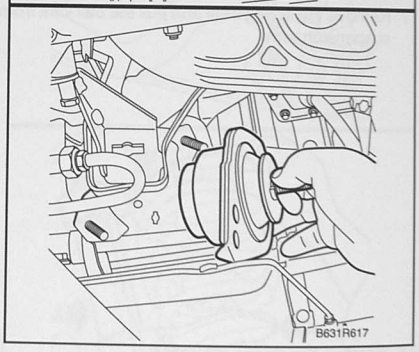
– Raise the engine slightly with an engine lift.
You can use a jack to raise the engine. Place the jack under the gearbox with a block or wood in-between so as not to damage gearcase.



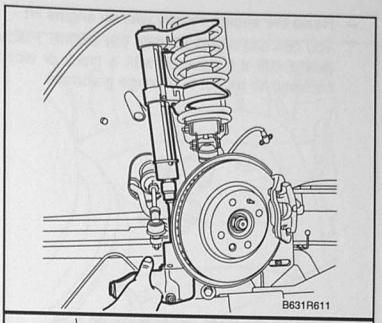
– Remove the three upper retaining nuts.
Cars with deflection limiter:
Remove the deflection limiter.



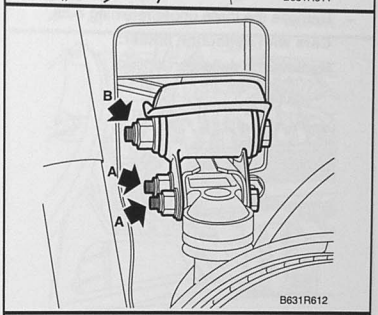
– Lift up the engine mounting.



5 Compress and remove the spring.


B631R611

6 Remove the bolts securing the ball joint (**A**) and spring seat (**B**) to the suspension arm.



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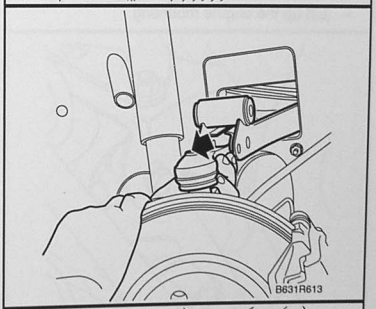
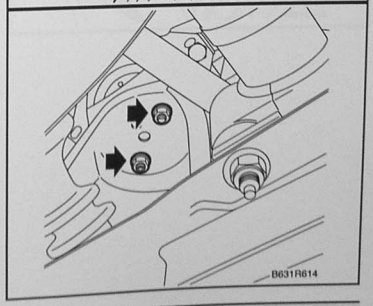
7 Remove the spring seat and pull the ball joint from the suspension arm.


B631R613

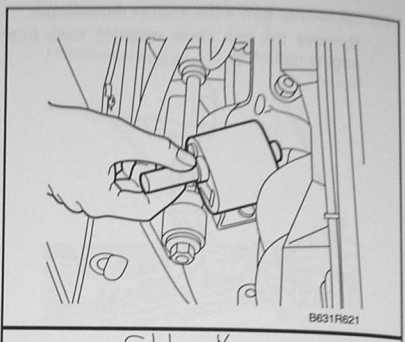
8 Remove the engine mounting.

Cars with hydraulic engine mountings:

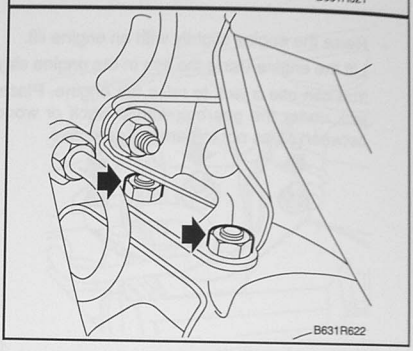
- Remove the two lower retaining nuts.


B631R614

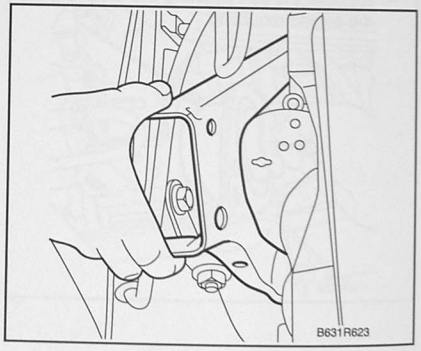
– Remove the mounting rubber.



– Undo the two nuts securing the engine mounting to the engine stay.

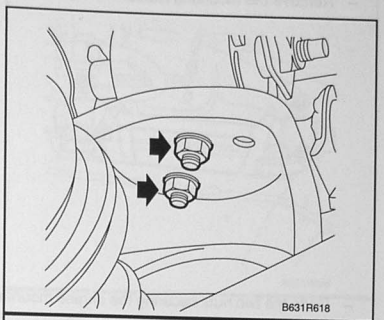


– Undo the two nuts securing the engine mounting to the engine block.
– Remove the engine mounting.
Be careful or the drive shaft gaiter.



Cars not having hydraulic engine mountings:

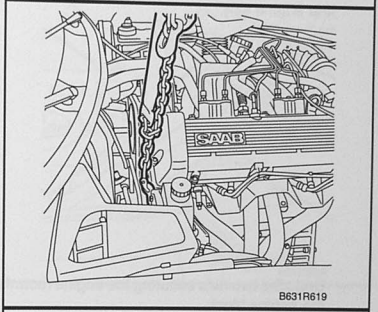
- Remove the two lower retaining bolts from the engine mounting.


B631R618

- Raise the engine slightly with an engine lift.

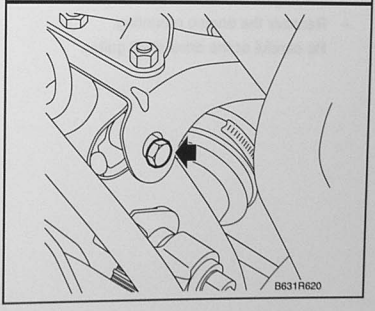
  Lift the engine using the eye in the engine stay.

  You can use a jack to raise the engine. Place the jack under the gearbox with a block or wood in-between so as not to damage gearcase.



B631R619

- Remove the bolt securing the mounting rubber to the engine mounting.

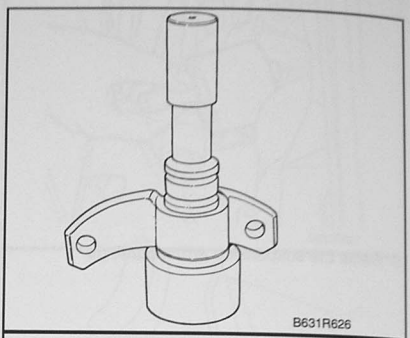

B631R620

Fitting the upper suspension arm

Clean the components thoroughly prior to fitting. Change all worn or damaged parts.

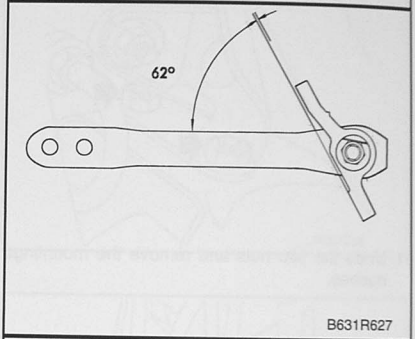
1 Fit the rubber bushes. Press the bushes into the mountings with tool 78 41 331. Wet the bushes with soapy water to assist fitting.

Important
Never use oil or grease to facilitate fitting the rubber bushes. If necessary, use soapy water.


B631R626

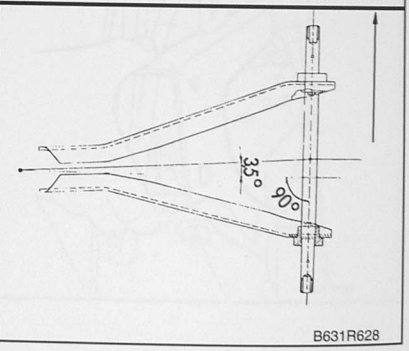
2 Fit the mountings to the suspension arm. Position the mountings at an angle of 62° to the suspension arm.

Tightening torque: 62 Nm (46 lbf ft)



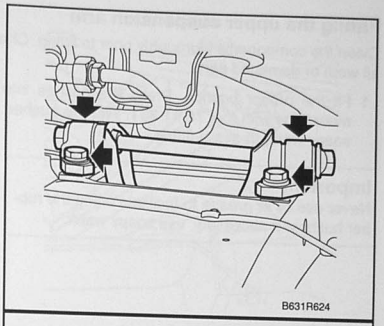
B631R627

Important
The suspension arm is asymmetrical (left and right-hand design). See the illustration.

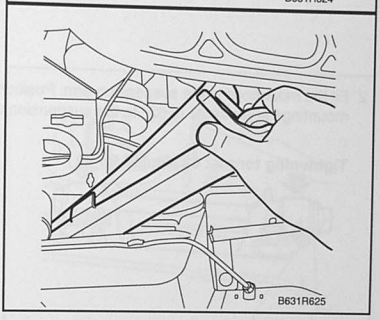


B631R628

9 Remove the four bolts securing the suspension arm mountings to the body. Recover the spacers and make a note of the number of spacers on each bolt.

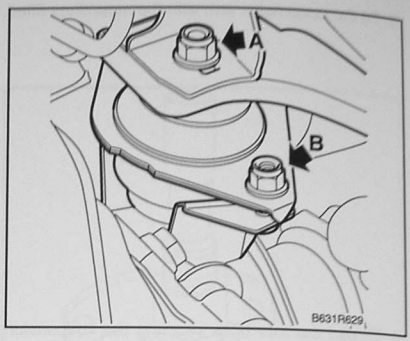

B631R624

10 Raise the suspension arm mountings.


B631R625

11 Undo the two nuts and remove the mountings with bushes.

– Thread the three upper retaining nuts.
Cars with deflection limiter:
Fit the deflection limiter.

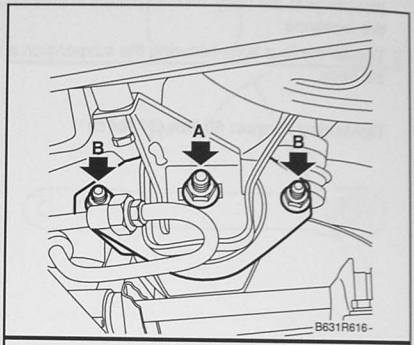


– Lower the engine.
– Tighten the three upper retaining nuts.

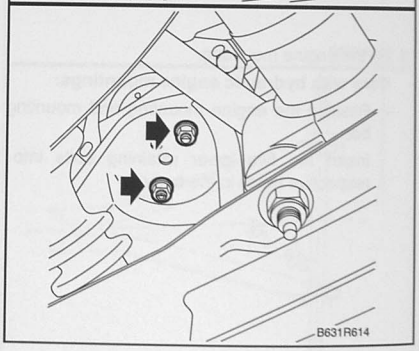
Tightening torque:

A = 70 Nm (51 lbf ft)

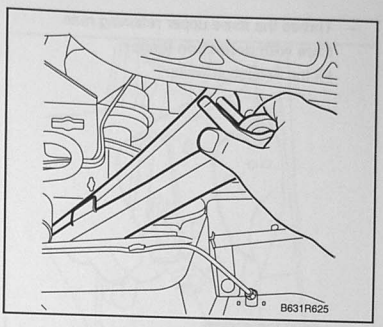
B = 39 Nm (29 lbf ft)



– Tighten the two lower retaining nuts.



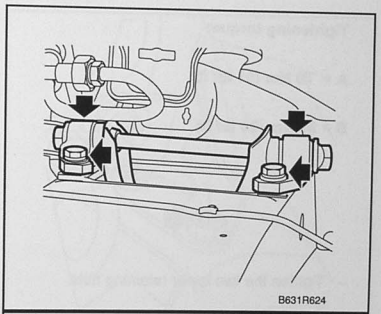
3 Fit the suspension arm with the mountings fitted.



4 Thread the four bolts securing the suspension arm mountings to the body. Fit the spacers in their respective locations.

5 Tighten the four bolts securing the suspension arm to the body.

Tightening torque: 50 Nm (37 lbf ft)

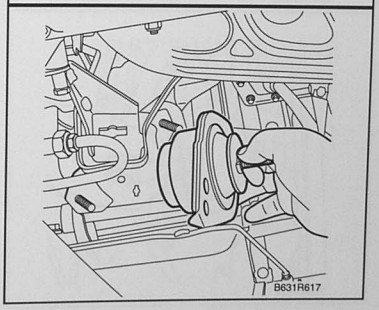


6 Fit the engine mounting.

Cars with hydraulic engine mountings:

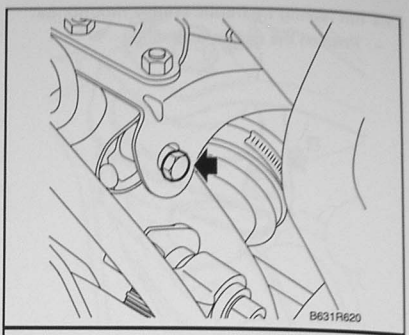
– Position the engine mounting and mounting rubber.

Insert the two lower retaining bolts into their respective holes in the body.



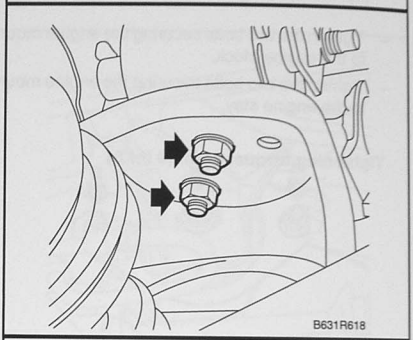
– Tighten the bolt securing the mounting rubber to the engine mounting.

Tightening torque: 34 Nm (25 lbf ft)



– Tighten the two lower retaining bolts.

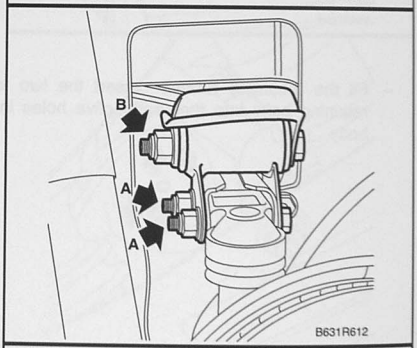
Tightening torque: 20 Nm (15 lbf ft)



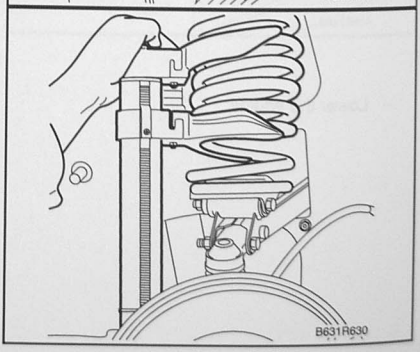
7 Tighten the bolt securing the spring seat (**B**) to the suspension arm, and the two bolts securing the ball joint (**A**) to the suspension arm.

Tightening torque A: 50 Nm (37 lbf ft)

Tightening torque B: 80 Nm (59 lbf ft)

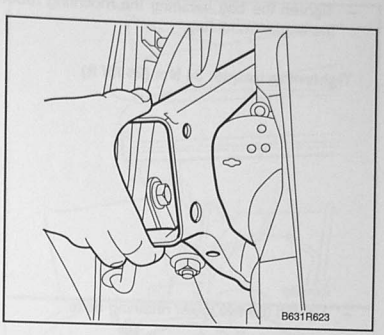


8 Position the coil spring.



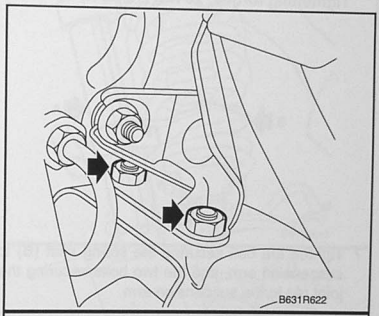
Cars not having hydraulic engine mountings:

- Position the engine mounting.

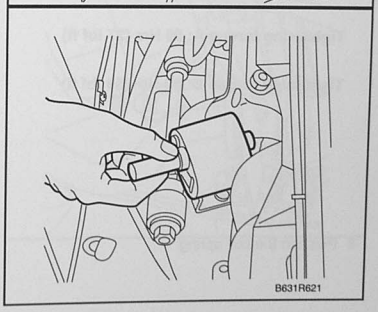


- Tighten the two bolts securing the engine mounting to the engine block.
- Tighten the two bolts securing the engine mounting to the engine stay.

Tightening torque: 8 Nm (6 lbf ft)



- Fit the mounting rubber. Insert the two lower retaining bolts into their respective holes in the body.



- Lower the engine.

Lower suspension arms

> **⚠ WARNING**
> If the suspension arm has been subjected to great stress, such as in an accident, check it carefully for fractures and deformation. Change the suspension if it is deformed.

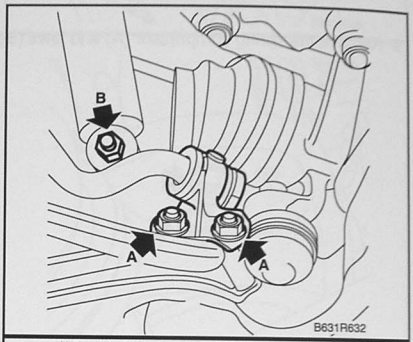
Removing the lower suspension arm

1 Raise the car.
2 Remove the front wheel.
3 Remove the two bolts (**A**) securing the suspension arm to the ball joint.

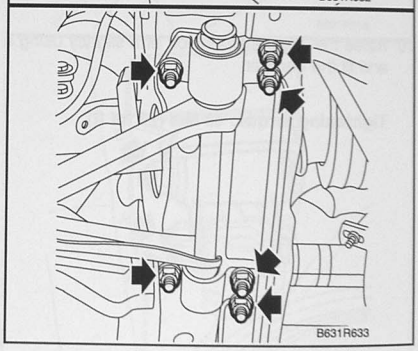
Cars with anti-roll bar:

Move the anti-roll bar to one side.

4 Remove the bolt from the lower end of the damper (**B**). If necessary, place a jack under the outer end of the suspension arm and raise this slightly.

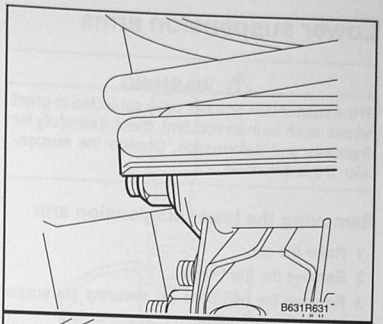


5 Remove the six bolts securing the suspension arm.

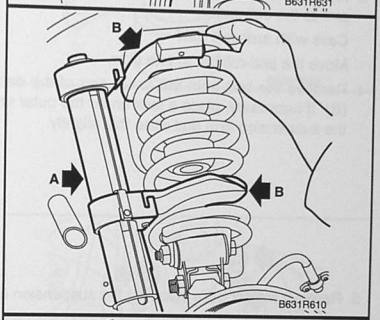


6 Remove and remove the suspension arm.
7 Undo the nuts and remove the two mountings from the suspension arm.

Make sure that the spring is seated against the stop on the spring seat.

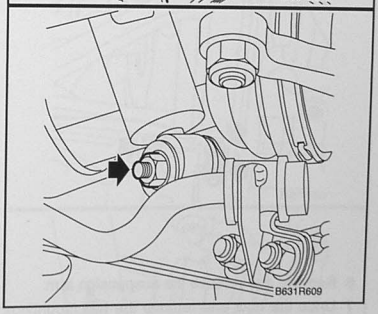


9 Remove the spring compressor (**A**) and jaws (**B**).



10 Raise the lower suspension arm slightly using a jack and fit the damper.

Tightening torque: 40 Nm (29 lbf ft)



11 Fit the front wheel and lower the car.

Tightening torque, wheel nuts:
100 Nm (74 lbf ft)
Tightening torque, wheel bolts:
115 Nm (85 lbf ft)

12 Check wheel alignment.
Refer to *"Wheel alignment"* on page 376 or contact your local Saab workshop for assistance with this work.

13 Road test the car.

6 Fit the front wheel.

Tightening torque, wheel nuts:
100 Nm (74 lbf ft)
Tightening torque, wheel bolts:
110 Nm (80 lbf ft)

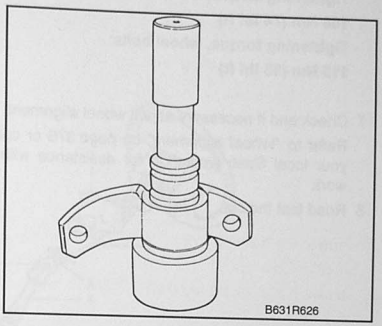
7 Check and if necessary adjust wheel alignment.
Refer to "Wheel alignment" on page 376 or contact your local Saab workshop for assistance with the work.

8 Road test the car.

Fitting the lower suspension arm

Clean the components thoroughly prior to fitting. Change all worn or damaged parts.

1 Fit the rubber bushes. Press the bushes into the mountings using tool 78 41 349. Wet the bushes with soapy water.



Important
Never use oil or grease to facilitate fitting the rubber bushes. If necessary, use soapy water.

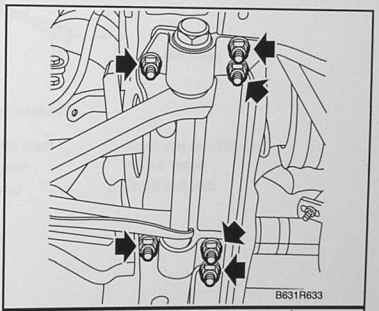
2 Position the mountings at an angle of 18° to the suspension arm.

Tightening torque: 83 Nm (60 lbf ft)

3 Lift the suspension arm into position.

4 Fit the six bolts securing the suspension arm.

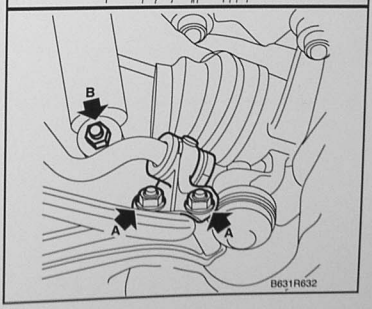
Tightening torque: 80 Nm (59 lbf ft)



5 Tighten the two bolts securing the suspension arm to the ball joint (**A**) and fit the damper (**B**). If necessary, place a jack under the outer end of the suspension arm and raise this slightly.

Tightening torque: 50 Nm (37 lbf ft)

Cars with anti-roll bar:
Reposition the anti-roll bar.



Steering wheel

Important
To remove or fit the steering wheel in a car with driver airbag, refer to To Remove/To Fit under *"Steering wheel and airbag"* on page 401.

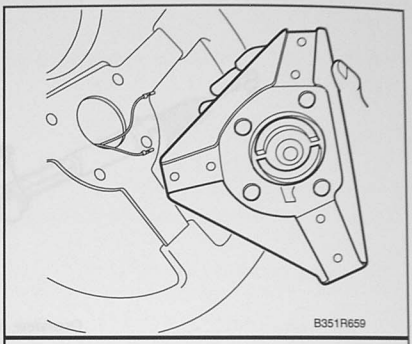
Important
Never tap the steering wheel to remove or fit it. Handle with care.

To remove

1 Remove the steering wheel pad:

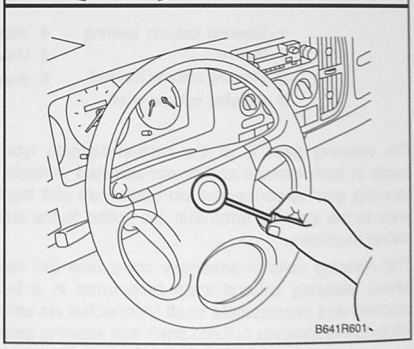
3-spoke wheel:

Release the rubber lug on the pad from the steering wheel spokes.



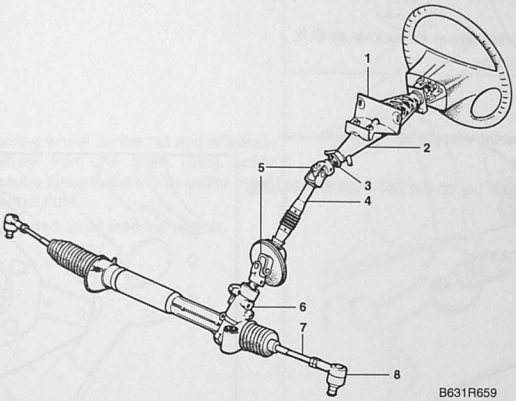
4-spoke wheel:

Prise off the steering wheel badge using a screwdriver.



Steering assembly

Technical description



Overview, steering assembly

1 Steering column bearing bracket
2 Steering column bracket
3 Steering column shaft
4 Intermediate shaft
5 Universal joint
6 Steering gear
7 Track rod with inboard rubber gaiter
8 Track rod end

The steering gear is of the rack-and-pinion type and exists in both manual and power-assisted variants. The steering gear is connected via track rods and track rod ends to the steering arms that are bolted to the steering swivel members.

The steering column assembly comprises the steering wheel, steering column shaft (supported in a bearing bracket) and intermediate shaft (connected via universal joints to the steering column shaft and steering gear).

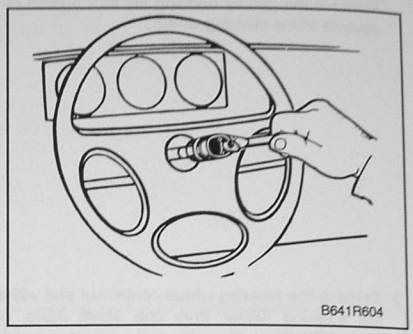
To fit

1 Fit the steering wheel to the steering column shaft. The road wheels should be pointing straight ahead and the steering wheel fitted so that the spokes are at similar angles. If it is not possible to align the steering wheel spokes with the dashboard, for example, fine adjustments can be made by lengthening the track rod on one side of the car and shortening the other track rod by the same amount.

See *"Adjusting track rod length"* on page 379.

Tighten the steering wheel centre nut with a torque wrench.

Tightening torque: 26.5 Nm (19.5 lbf ft)



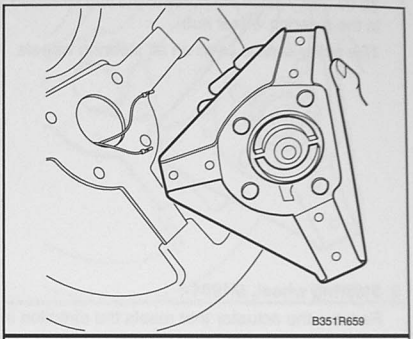
2 Fit the pad to the steering wheel.

3-spoke wheel:

Hook the rubber lug on the pad onto the steering wheel spokes.

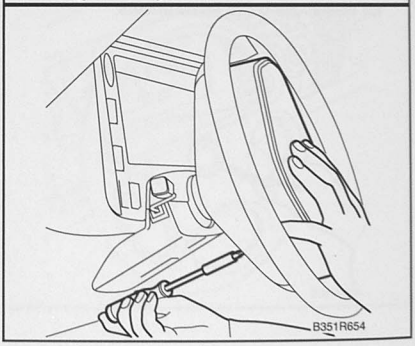
4-spoke wheel:

Fit the steering wheel badge.



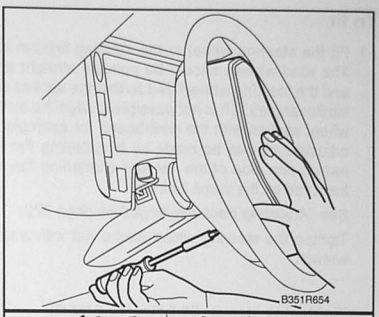
Steering wheel, M1979-80:

Secure the pad by fitting the four screws on the reverse of the steering wheel.



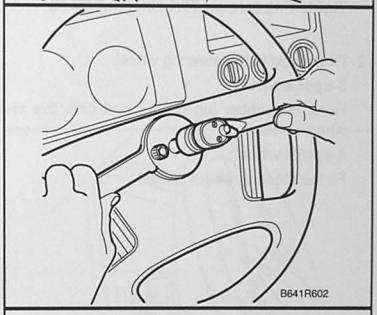
Steering wheel, M1979-80:

Remove the pad by undoing the four screws on the reverse of the steering wheel.



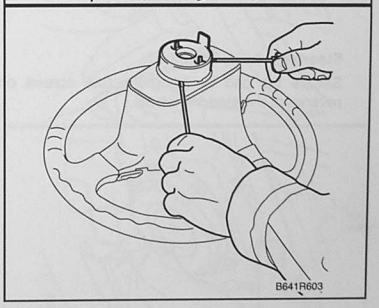
2 Remove the steering wheel centre nut and withdraw the steering wheel from the shaft using puller 89 96 258. Attach the puller to the two threaded holes in the steering wheel hub.

This puller can be used on all steering wheels.

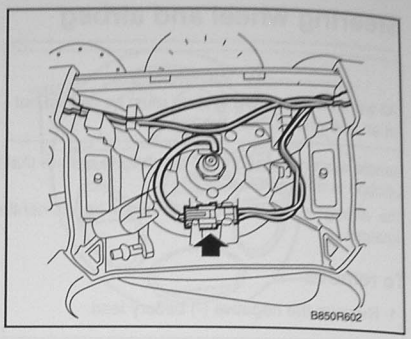


3 **Steering wheel, M1981-:**

Remove the actuator that resets the direction indicator switch using two screwdrivers.



5 Unplug the horn connector.

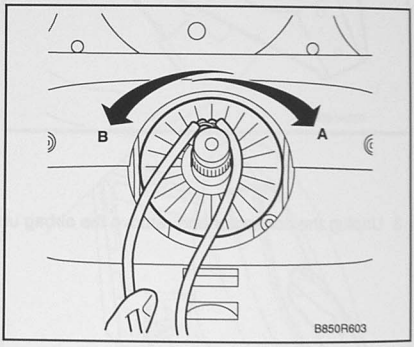


6 Remove the steering wheel.

Important
Remove the steering wheel carefully making sure not to damage the contact roller (coil spring).

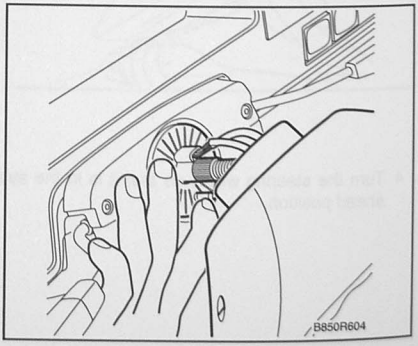
To fit

1 Set the contact roller (coil spring) as follows:
- Make sure the road wheels are pointing straight ahead.
- Turn the contact roller clockwise (**A**) to its stop.
- Turn the roller back (**B**) the number of turns (2.5 or 3.5) specified on the yellow label on the connector on the contact roller lead.



2 Fit the steering wheel as follows:
- Thread the leads through the steering wheel.
- Align the steering wheel and the contact roller. Fit the wheel.
- Tighten the steering wheel centre nut.

Tightening torque: 36.5 Nm (27 lbf ft)



Steering wheel and airbag

> **⚠ WARNING**
> All work on the airbag system must be carried out at an authorized Saab workshop.

Handle system components carefully to ensure that their function is not impaired.

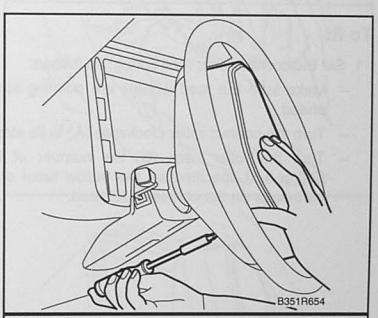
The airbag is a unit and must never be dismantled or repaired.

To remove

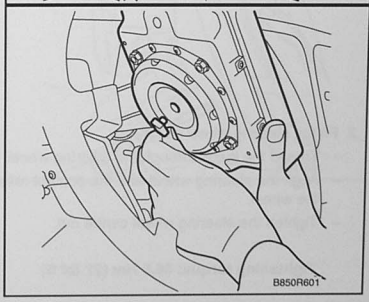
1 Remove the negative (-) battery lead.

Important
The engine must not be running when you remove the battery lead. The alternator could otherwise be seriously damaged.

2 Remove the two screws securing the airbag unit.



3 Unplug the connector and remove the airbag unit.



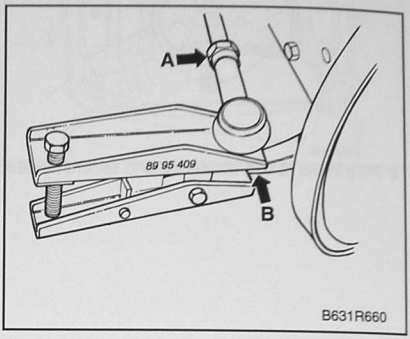
4 Turn the steering wheel so that it is in the straight-ahead position.

Track rod ends

The track rod ends cannot be dismantled. Change the track rod ends if there is any play.

To change

1 Raise the car and remove the front wheel.
2 Remove the nut (**B**) securing the track rod end to the steering swivel member.
3 Slacken the lock nut (**A**).
4 Remove the track rod end from the steering arm using puller 89 95 409.



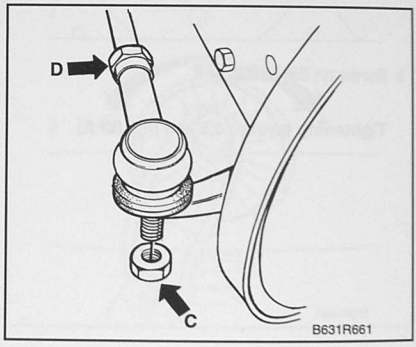
Important
Do not tap off the track rod end as this may damage other parts.

5 Unscrew the track rod end from the track rod. Count the number of turns.
6 Screw a new track rod end onto the track rod the same number of turns as required to remove the old track rod end. Do not tighten the lock nut yet.
7 Connect the track rod end to the steering arm. Fit the nut (**C**) and tighten to torque.

Tightening torque: 55 Nm (41 lbf ft)

8 Tighten the lock nut (**D**).

Tightening torque: 55 Nm (41 lbf ft)



9 Fit the front wheel and lower the car.

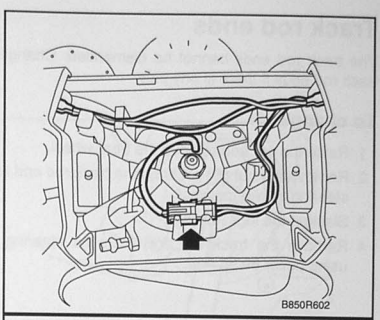
Tightening torque, wheel nuts:
100 Nm (74 lbf ft)
Tightening torque, wheel bolts:
115 Nm (85 lbf ft)

10 Check and if necessary adjust toe-in.
See *"Toe-in"* on page 377.
11 Tighten the track rod end lock nut.

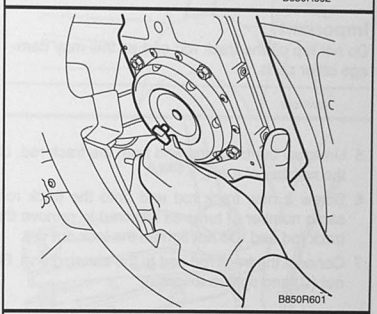
Tightening torque: 70 Nm (51 lbf ft)

12 Road test the car.

3 Plug in the horn connector.

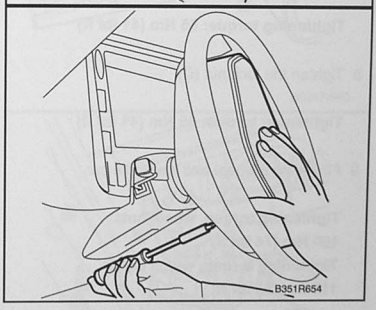


4 Plug in the airbag connector and secure the leads.



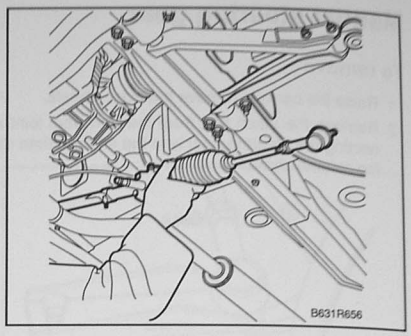
5 Screw on the airbag unit.

Tightening torque: 6.5 Nm (4.7 lbf ft)



6 Connect the negative (-) battery lead.

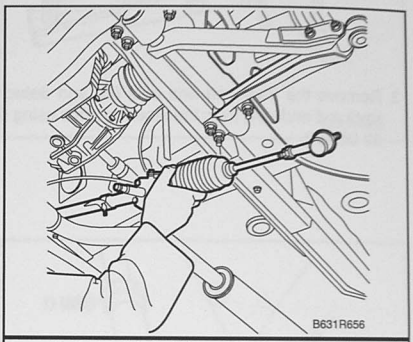
5 Remove the universal joint from the steering gear. Lift the steering gear to one side and then lower it at an angle out from under the engine compartment.



Important
Take care not to damage the rubber gaiters against the edges of the body.

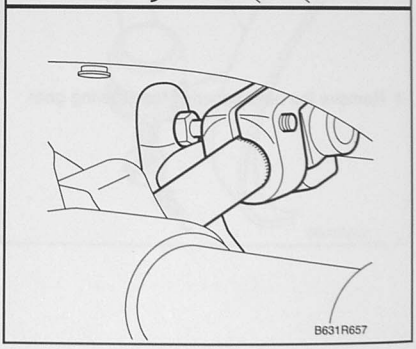
To fit

1 Lift the steering gear into place inserting it through the hole under the engine compartment.



2 Attach the intermediate steering column shaft to the steering gear. Make sure the pinch bolt engages the groove on the pinion shaft.

Tightening torque, pinch bolt: 29 Nm (22 lbf ft)

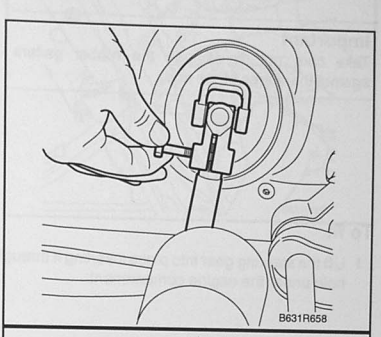


Manual steering gear

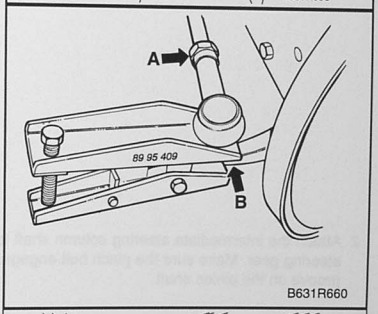
To remove

1 Raise the car and remove the front wheels.

2 Remove the pinch bolt from the universal joint connecting the steering gear and the intermediate steering column shaft.



3 Remove the track rod end nuts (**B**) and detach the track rod ends (**A**) from the steering arms using puller 89 95 409.



4 Remove the bolts securing the steering gear.

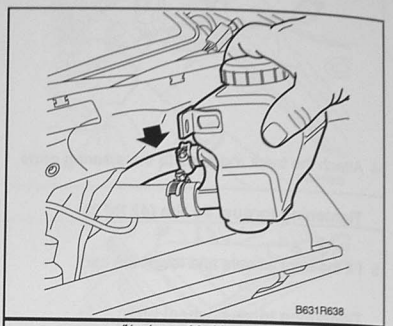
Power-assisted rack-and-pinion

To remove

1 Drain the hydraulic fluid from the steering gear as follows:

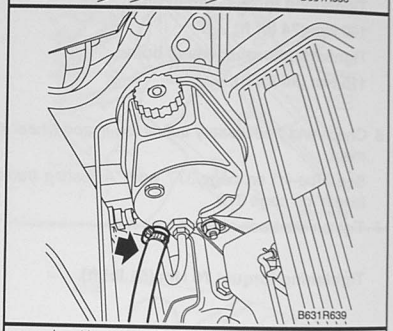
– **Cars with B202/B212 engine:**

Remove the power steering fluid reservoir and disconnect the return hose. Plug the hole in the reservoir.

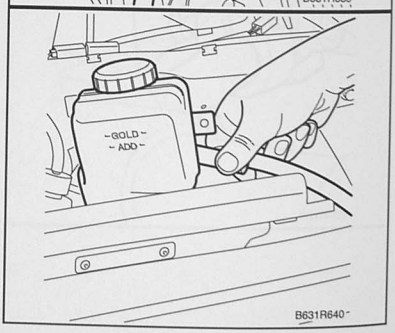


Cars with B201 engine:

Disconnect the return hose from the pump and plug the hole.



– Connect a hose or pipe to the return hose and insert this into a 1-litre container (or larger).



– Start the engine and allow the fluid to be pumped out of the steering gear. Turn the steering wheel to left and right full lock twice to completely empty the steering gear.

– **Cars with B202 engine:**

Connect the return hose to the fluid reservoir and fit the reservoir.

Cars with B201 engine:

Connect the return hose to the pump.

3 Fit the two bolts securing the steering gear to the body.

Tightening torque: 70 Nm (51 lbf ft)

4 Attach the track rod ends to the steering arms.

Tightening torque: 55 Nm (42 lbf ft)

5 Fit the front wheels and lower the car.

Tightening torque, wheel nuts:
100 Nm (74 lbf ft)
Tightening torque, wheel bolts:
115 Nm (85 lbf ft)

6 Check and if necessary adjust toe-in and wheel alignment.

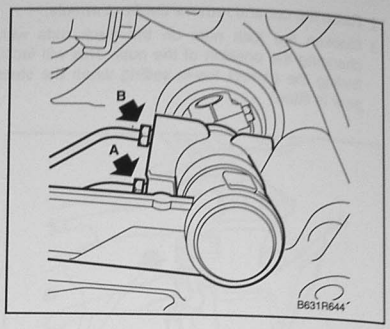
See *"Toe-in"* on page 377 and *"Adjusting track rod length"* on page 379.

7 Tighten the track rod end lock nut.

Tightening torque: 70 Nm (51 lbf ft)

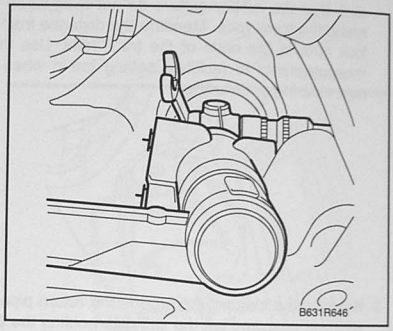
6 Remove the delivery pipe (**A**) from the control valve using an 18 mm wrench. Wrap some paper around the delivery pipe to avoid oil spills and hook it onto the exhaust pipe.

7 Remove the return pipe (**B**) from the control valve using a 16 mm wrench. Suspend the return hose from the speedometer cable.



8 Plug the hole in the control valve.

9 Remove the bolt from the universal joint between the pinion shaft and intermediate shaft.



⚠ WARNING

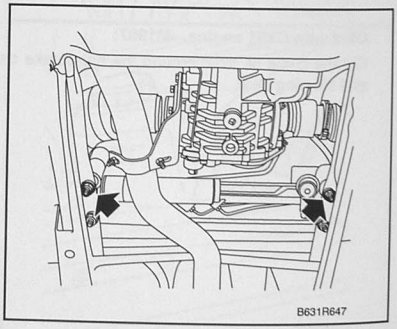
Cars with airbag:

To prevent the contact roller (coil spring) from being twisted and braking, fixate the steering wheel.

One way to secure the steering wheel is to tape it to the dashboard using a strong tape, e.g. fabric-backed tape.

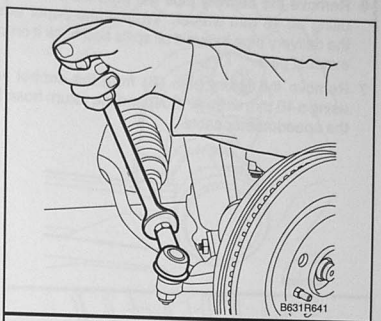
If the basic setting of the contact roller is altered the coil spring conductor will be damaged when the steering wheel is turned to full lock. This will disrupt the function of the airbag risking personal injury or a traffic accident.

10 Remove the two bolts securing the steering gear.

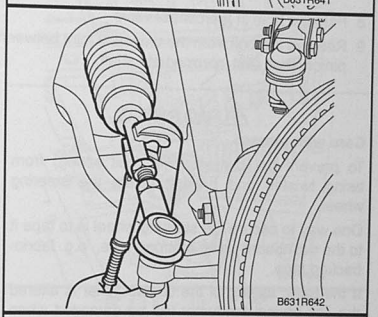


2 Raise the car and remove the front wheels.

3 Slacken the lock nuts on the track rods without changing the position of the nuts. This will facilitate finding the correct toe-in setting when the steering gear is fitted.



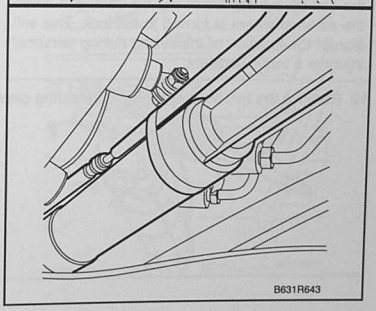
4 Remove the track rods from the track rod ends. Make sure that the rubber gaiters do not twist when you rotate the track rods. Measure the distance from the lock nuts to the ends of the track rods. Use these measurements to facilitate setting toe-in when the new steering gear is fitted.



5 Remove the clamp from around the return pipe and steering gear and cut the cable tie holding the delivery hose to the pipe between the control pressure valve and power steering servo cylinder.

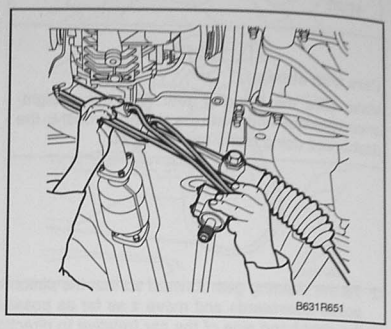
Cars with B201 engine, -M1987:

Cut the cable tie from around the handbrake cables and steering gear.



To fit

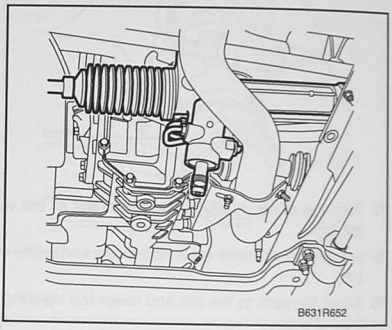
1 Move the rack all the way to the left (pinion shaft end) and lift the steering gear into the car with the pinion shaft pointing downwards.



2 Turn the pinion shaft to move the rack all the way to the right.

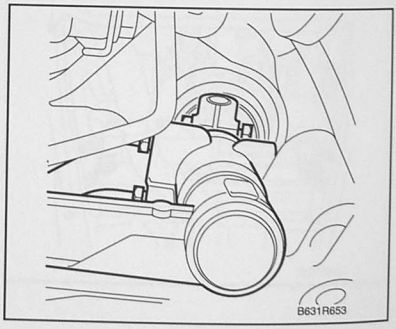
3 Lift the left-hand track rod over the member.

4 Centre the rack. The bolt groove in the pinion shaft should point towards the rear of the car when the pinion shaft is pointing downwards.



5 Rotate the steering gear so that the pinion shaft points upwards.

6 Attach the pinion shaft to the intermediate shaft and thread the bolt and nut.



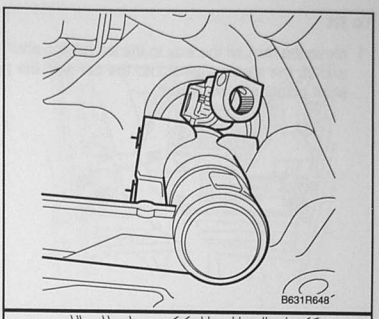
⚠ WARNING

Cars with airbag:

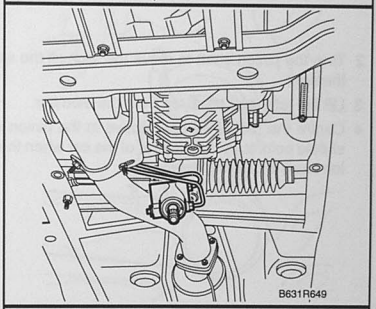
Make sure that the steering gear is in the straight-ahead position before connecting the intermediate shaft and pinion shaft.

11 Disconnect the pinion shaft from the intermediate shaft.

> **⚠ WARNING**
>
> **Cars with airbag:**
>
> Make sure the steering gear is in the straight-ahead position and fixate the steering wheel to the dashboard using fabric-backed tape.



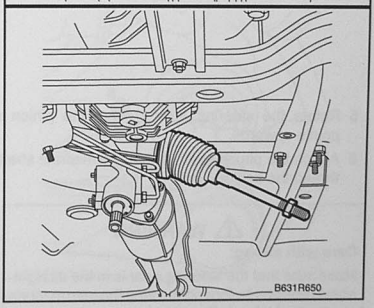
12 Tilt the steering gear forward so that the pinion shaft points downwards and move it as far as possible to the right-hand side of the car (relative to direction of travel).



13 Turn the pinion shaft to move the rack all the way to the right.

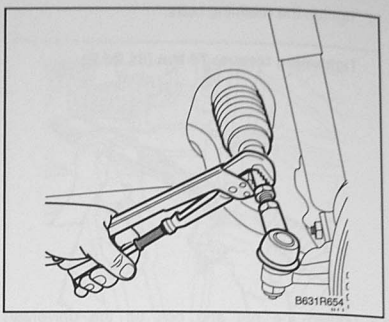
14 Angle the left-hand track rod down under the member.

15 Move the rack to the left and lower the steering gear from the car.



12 Screw the track rods into the track rod ends until the ends meet the lock nuts. Tighten the lock nuts after checking toe-in.

See *"Toe-in"* on page 376.



13 Fit the front wheels and lower the car.

Tightening torque, wheel nuts:
100 Nm (74 lbf ft)
Tightening torque, wheel bolts:
115 Nm (85 lbf ft)

14 Fill the system with 75 cl Texaco Power Steering Fluid 4634 part no. 30 09 800.

15 Bleed the system by turning the steering wheel to left and right full lock 3 or 4 times, with the engine switched off and the front wheels raised.

16 Lower the car.

17 Start the engine and turn the steering wheel to left and right full lock to check operation. Check the fluid level.

18 Check and if necessary adjust toe-in.

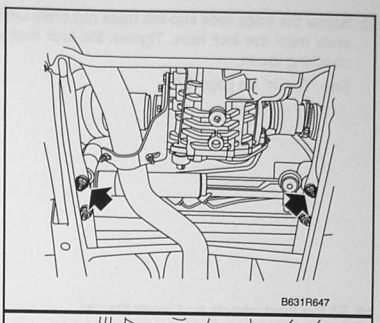
See *"Toe-in"* on page 377.

19 Tighten the lock nuts on the track rods.

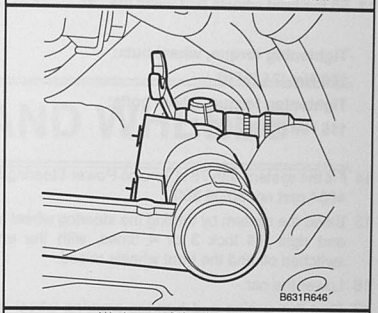
Tightening torque: 70 Nm (51 lbf ft)

7 Tighten the retaining bolts.

Tightening torque: 70 Nm (51 lbf ft)


B631R647

8 Tighten the nut and bolt on the universal joint between the pinion shaft and intermediate shaft.


B631R646

9 Connect the return pipe (**B**) to the valve housing using a 16 mm wrench.

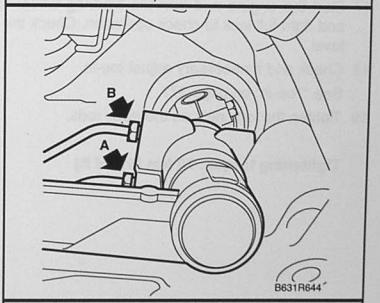
Inspect the O-ring on the return pipe.

If the O-ring is in poor condition, change it.

10 Connect the delivery pipe (**A**) to the valve housing using an 18 mm wrench.

Inspect the O-ring on the delivery hose.

If the O-ring is in poor condition, change it.



B631R644

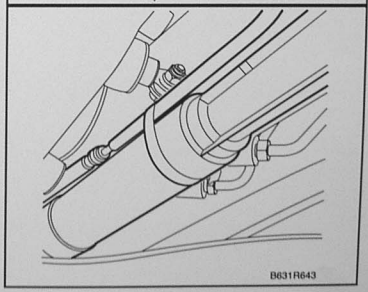
11 Fit a clamp around the return pipe and steering gear, and a cable tie around the delivery hose and one of the delivery pipes between the control pressure valve and steering servo cylinder.

Important

Never clamp the equalization pipe between the rubber gaiters.

Cars with B201 engine, -M1987:

Fit a new cable tie around the handbrake cables and steering gear.


B631R643

Work schedule

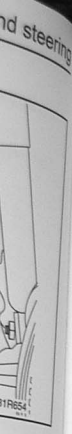
Explanation

The following table contains an outline of topics. The table makes it easy to see which jobs are described in each section as well as the parts and tools that are required to complete the work. Remember to read carefully through the job description as well as General Information (pages 2-6) before you begin work.

Important

When changing coil springs, dampers, torque rods and rubber bushes on one of the axles, change them on both sides of the car.

Section	Applicable to the following work	Tools required	Parts required to carry out the work
Coil spring, front	Removing/Fitting	Spring compressor 88 18 791 Spring jaws 88 18 809 Torque wrench	
Rubber bush, spring seat	Changing	Push extractor 89 96 274	Petroleum jelly
Damper, front	Removing/Fitting	Torque wrench	
Coil spring, rear	Removing/Fitting	Torque wrench	
Damper, rear	Removing/Fitting	Torque wrench	
Trailing arm	Removing/Fitting	Torque wrench	
Torque arms	Removing/Fitting	Torque wrench	
Rubber bushes, torque arms	Changing	24 mm socket	Petroleum jelly
Bump stop	Removing/Fitting	6 mm Allen key	Spacer sleeve
Wheel hub, rear -M1987	Removing/Fitting	Puller 89 96 084 Drift 89 96 241 Torque wrench	Sealing ring Wooden board Nut Ball bearing grease
Wheel hub, rear M1988-	Removing/Fitting	Emery cloth Torque wrench	Light oil Hub centre nut
Drive shafts	Removing/Fitting	Spacer 83 93 209 Torque wrench	115 g grease, Shell Stamina Grease 0233 part no. 87 92 624 Hub centre nut
Outboard CV joint	Dismantling/Assembling	Oetker pliers, Knipex 1099	80 g grease, Molycote VN 2461C part no. 87 81 676
Gaiter, outboard CV joint	Changing	Oetker pliers, Knipex 1099	80 g grease, Molycote VN 2461C part no. 87 81 676
Inboard universal joints, Tripod	Dismantling/Assembling		60 g grease, Shell Stamina Grease 0233 part no. 87 92 624
Gaiter, inboard universal joint	Changing	Spacer 83 93 209 Torque wrench Oetker pliers, Knipex 1099	60 g grease, Shell Stamina Grease 0233 part no. 87 92 624



SUSPENSION AND WHEELS

Coil springs

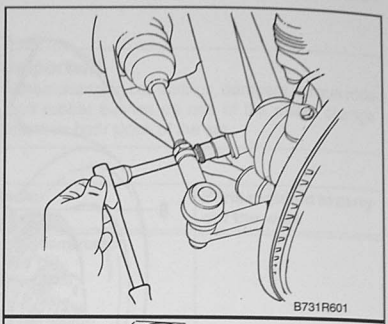
To remove

1 Raise the car and remove the front wheel.

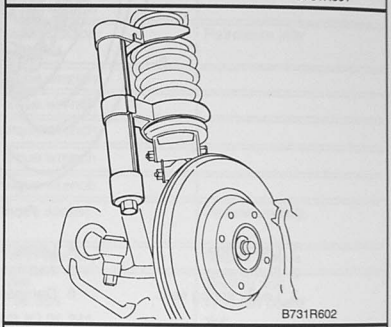
2 Relieve the tension from the damper by raising the outer end of the lower suspension arm with a jack.

Remove the nut and washer from the lower mounting and detach the damper.

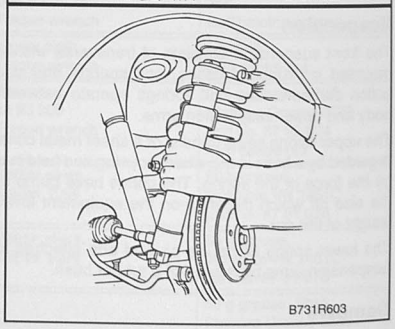
Important
If necessary, use a steel bar to lever out the lower end of the damper. Lower the suspension arm with the jack.


B731R601

3 Fit spring compressor 88 18 791 with jaws 88 18 809.

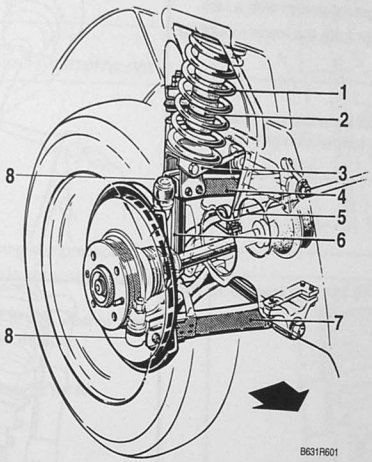

B731R602

4 Compress and remove the spring.


B731R603

Front suspension

Technical description



Front suspension

1 Coil spring
2 Bump stop
3 Lower spring seat
4 Upper suspension arm
5 Anti-roll bar
6 Dampers
7 Lower suspension arm
8 Ball joint

Suspension

The front suspension consists of transverse wishbones mounted on rubber bushes, coil springs and double-action dampers. The coil springs operate between the body and upper suspension arms.

The upper spring seats consist of a sheet metal cone that is guided by a boss in the wheel housing and held in place by the force of the spring. The cones have bump stops, the size off which depends on the equipment level and weight of the car.

The lower spring seats are pivoted and attached to the suspension arms by means of a rubber bush.

Dampers

The front dampers have rubber bushes at both ends. The upper ends of the dampers are attached to the body and the lower ends to the lower suspension arms.

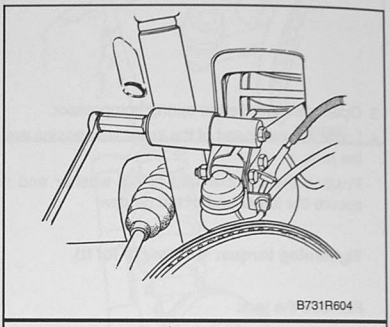
Rubber bush, spring seat

Important
Suspension mountings incorporating rubber bushes must only be tightened when the weight of the car is on the wheels. Failure to observe this can result in the bushes being distorted, which can adversely affect road handling and shorten the life of the bushes.

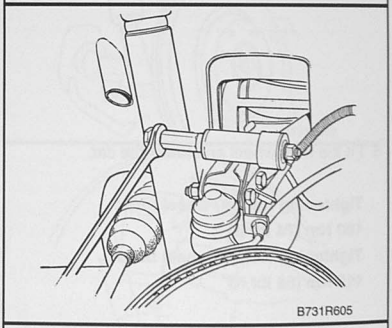
To change

1 Remove the spring seat from the upper suspension arm.

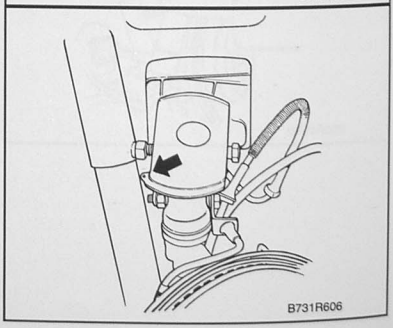
2 Press out the bush with push extractor 89 96 274.


B731R604

3 Grease the new bush with petroleum jelly and press it in with the same tool.


B731R605

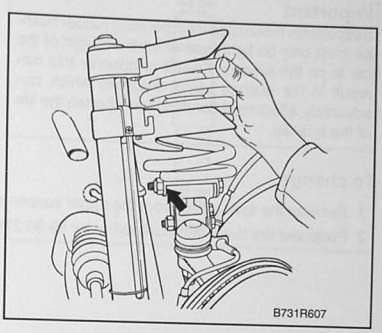
4 Fit the spring seat.
Note the position of the spring stop.


B731R606

To fit

1 Compress and position the spring (metal cone and rubber cup at the upper end of the spring).

2 Release the spring compressor slightly so that the spring assumes its correct position.


B731R607

Important
Place the end of the spring against the spring stop.

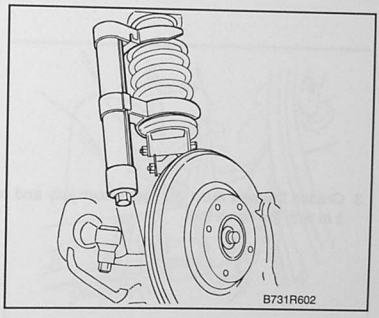
3 Open and remove the spring compressor.

4 Lower the outer end of the lower suspension arm with the jack.

Position the damper and fit the washer and nut to secure the lower end of the damper.

Tightening torque: 95 Nm (70 lbf ft)

Remove the jack.


B731R602

5 Fit the front wheel and lower the car.

Tightening torque, wheel nuts:
100 Nm (74 lbf ft)
Tightening torque, wheel bolts:
115 Nm (85 lbf ft)

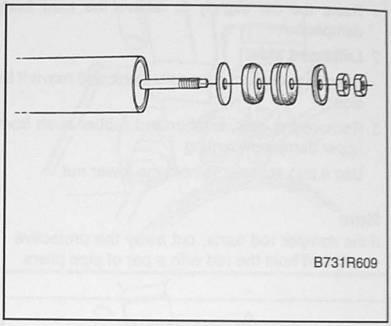
To fit

Important
If fitting hydraulic dampers, expel any air from the dampers prior to fitting by pumping up and down several times with the damper mounted vertically in a vice.

1 Grease the rubber bush in the lower damper mounting with petroleum jelly.
2 Position the compressed damper and fit the washer and nut to the lower end of the damper.

Tightening torque: 95 Nm (70 lbf ft)

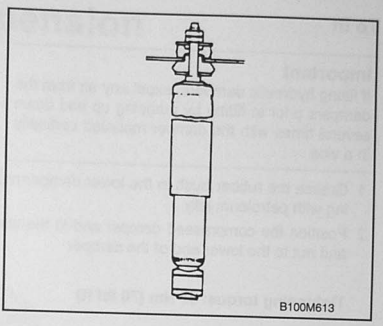
3 Lift the outer end of the lower suspension arm slightly with a jack.
Fit the rubber bush, washer and nuts to the upper end of the damper.


B731R609

4 Remove the jack.
5 **Left-hand side:**
Fit the expansion tank.
6 Fit the front wheel and lower the car.

Tightening torque, wheel nuts:
100 Nm (74 lbf ft)
Tightening torque, wheel bolts:
115 Nm (85 lbf ft)

Dampers


B100M613

Important

- Both dampers must be changed at the same time to retain the handling characteristics of the car.
- The dampers are of a special design that incorporates an extension stop. Therefore, always use Saab Original dampers. If dampers without extension stops are used, the front assembly could be damaged.

To remove

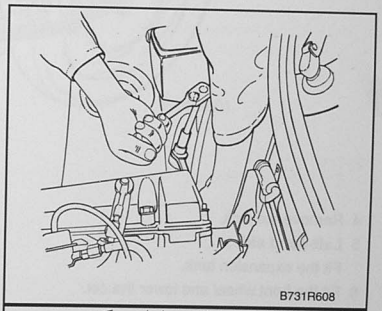
1 Raise the car slightly to relieve the load from the dampers.

2 **Left-hand side:**

Unbolt the coolant expansion tank and move it to one side.

3 Remove the nuts, washer and rubber bush from the upper damper mounting.

Use a thin spanner to hold the lower nut.


B731R608

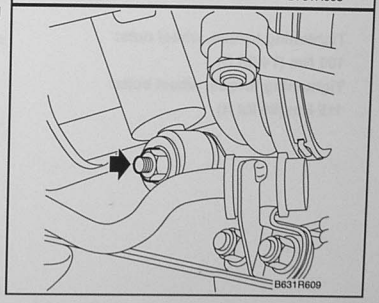
Note

If the damper rod turns, cut away the protective sleeve and hold the rod with a par of pipe pliers.

> ⚠ **WARNING**
> Use protective goggles, ear defenders and protective gloves for grinding and similar work.

4 Raise the car and remove the front wheel.

5 Remove the nut and washer from the lower mounting and detach the damper.


B631R609

Important

If necessary, use a steel bar to lever out the lower end of the damper.

6 Compress the damper and remove it.

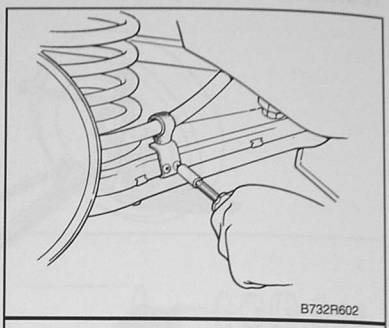
Coil springs

To remove

1 Raise the car and remove the rear wheel.

2 **M1988-:**

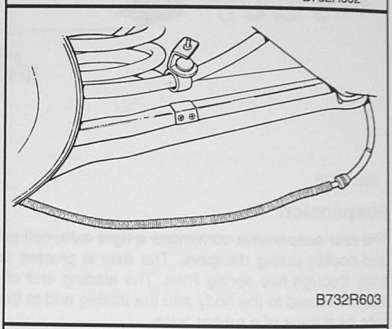
Remove the handbrake cable bracket from the spring link.



B732R602

Cars with ABS:

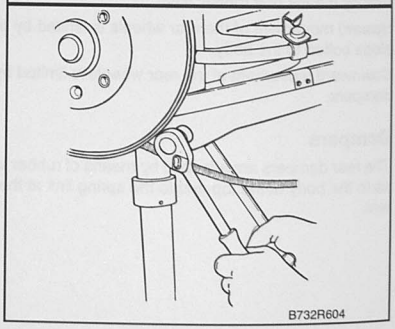
Detach the wheel sensor lead from the two clips and the brackets at either end of the spring link. Allow the sensor lead to hang free.



B732R603

3 Position a jack underneath the spring link and raise this slightly to relieve the load on the damper.

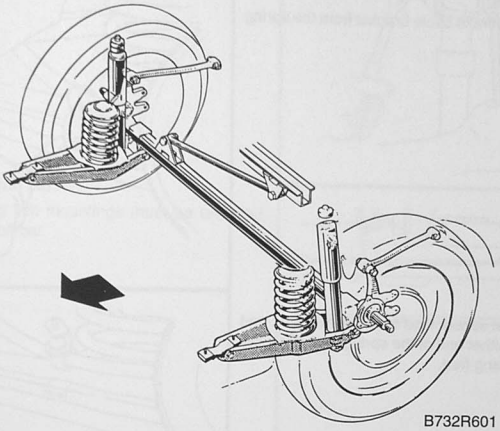
Remove the nut and bolt securing the lower damper mounting.



B732R604

Rear suspension

Technical description



B732R601

Suspension

The rear suspension comprises a rigid axle, coil springs and double-acting dampers. The axle is pivoted on the body through two spring links. The leading end of each link is secured to the body and the trailing end to the rear axle by means of a rubber bush.

Upward movement of the rear wheels is limited by bump stops bolted to the body.

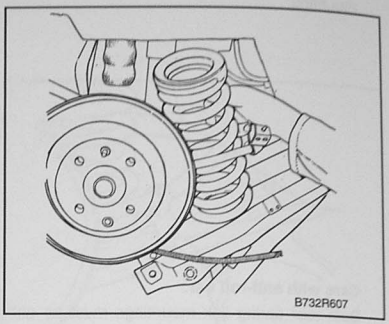
Downward movement of the rear wheels is limited by the dampers.

Dampers

The rear dampers are attached by means of rubber bushes to the body at the top and to the spring link at the bottom.

To fit

1 Place the coil spring on the spring link.


B732R607

2 Raise the spring link with the jack making sure that the coil spring assumes the correct position.

Cars with anti-roll bar:

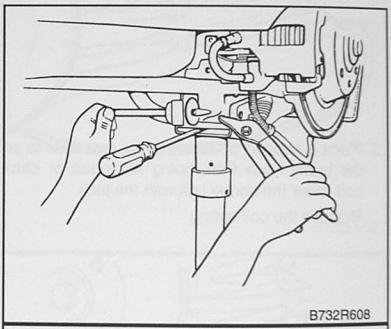
Raise the anti-roll bar.

3 Fit the nut and bolt to the rear spring link mounting.

To facilitate fitting the bolt, use a large pair of multi-grip pliers and a screwdriver to line up the holes.

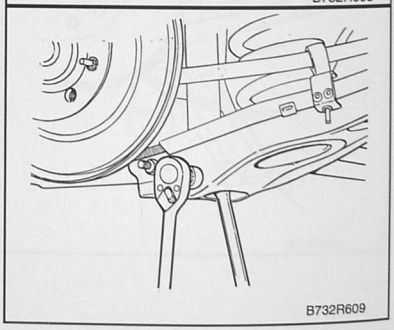
Cars with anti-roll bar:

Fit the nut and bolt to the rear spring link mounting on both sides.

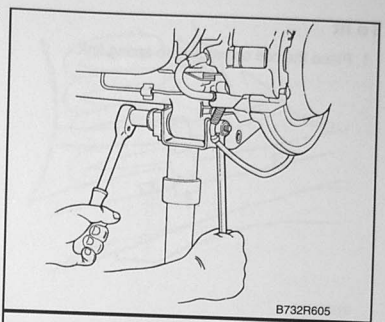

B732R608

4 Using a screwdriver to centre the damper, fit the nut and bolt in the lower damper mounting.

Remove the jack.

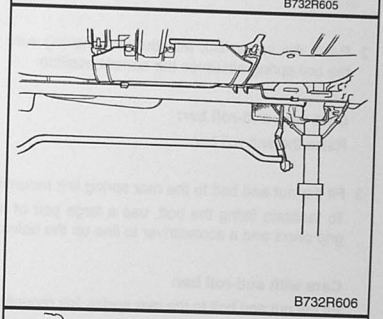

B732R609

4 Remove the nut and bolt securing the rear spring link mounting.


B732R605

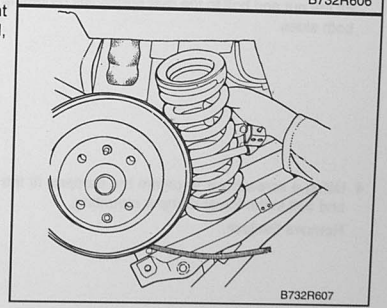
Cars with anti-roll bar:

Both rear spring link mountings must be unbolted. Lower the anti-roll bar.


B732R606

5 Place a support underneath the rear axle to prevent the brake hose from being stretched or damaged, and lower the spring link with the jack.

Remove the coil spring.


B732R607

Dampers

Important

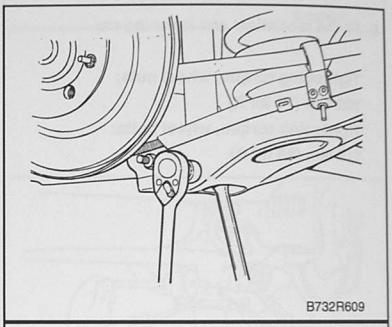
- Both dampers must be changed at the same time to retain the handling characteristics of the car.
- The dampers are of a special design that incorporates an extension stop. Therefore, always use Saab Original dampers.

To remove

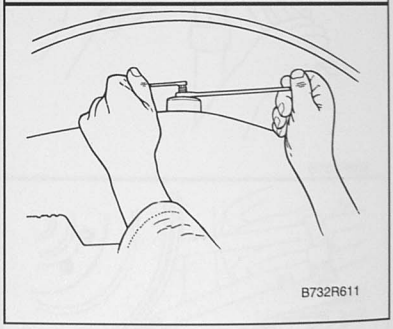
1 Raise the car and remove the rear wheel.

2 Place a jack underneath the spring link and raise this slightly to relieve the load on the damper.

Remove the nut and bolt from the lower damper mounting.


B732R609

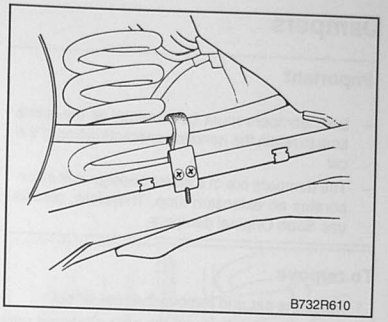
3 Take away the jack and remove the nuts, washer and rubber bush from the upper damper mounting.


B732R611

4 Compress the damper and remove it.

5 **M1988-:**
Attach the handbrake cable bracket to the spring link.

Cars with ABS:
Fit the wheel sensor lead (2 clips).


B732R610

6 Fit the rear wheel and lower the car.

Tightening torque, wheel nuts:
100 Nm (74 lbf ft)
Tightening torque, wheel bolts:
115 Nm (85 lbf ft)

Trailing arms

To remove

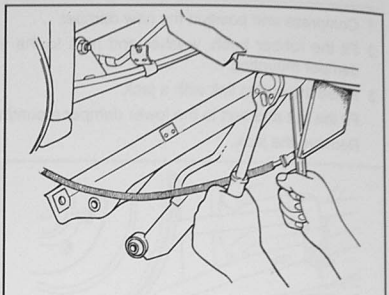
To remove the spring link, first follow the procedure:

To Remove under "*Coil springs*" on page 424.

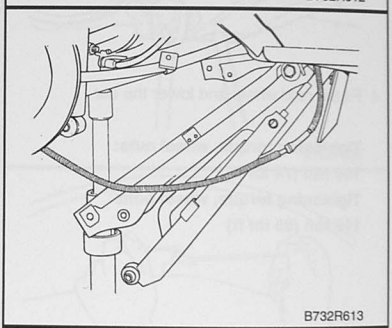
Then proceed as follows.

1 **Cars with anti-roll bar:**

Remove the bolt from the front spring link mounting and lower the anti-roll bar.

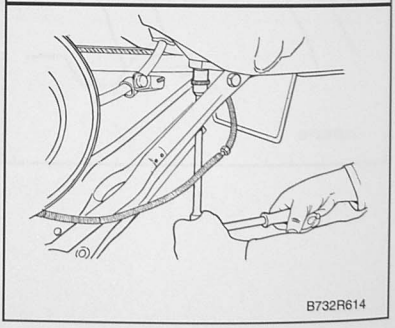


B732R612



B732R613

2 Remove the two bolts from the front spring link mounting and remove the spring link.

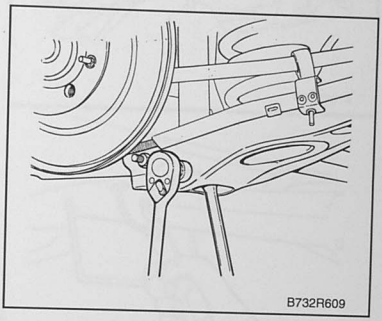


B732R614

To fit

Important
If fitting hydraulic dampers, expel any air from the dampers prior to fitting by pumping up and down several times with the damper mounted vertically in a vice.

1 Compress and position the new damper.
2 Fit the rubber bush, washer and nuts to the upper damper mounting.
3 Raise the spring link with a jack.
Fit the nut and bolt to the lower damper mounting.
Remove the jack.


B732R609

4 Fit the rear wheel and lower the car.

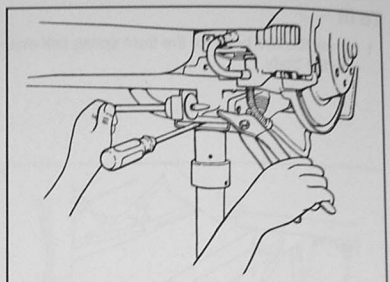
Tightening torque, wheel nuts:
100 Nm (74 lbf ft)
Tightening torque, wheel bolts:
115 Nm (85 lbf ft)

4 Fit the nut and bolt to the rear spring link mounting.

To facilitate fitting the bolt, use a large pair of multi-grip pliers and a screwdriver to line up the holes.

Cars with anti-roll bar:

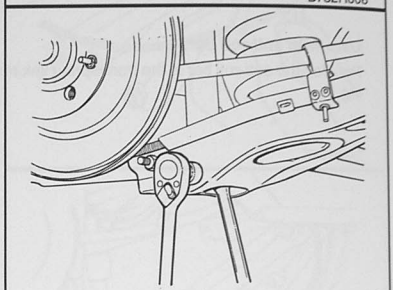
Fit the nut and bolt to the rear spring link mounting on both sides.



B732R608

5 Using a screwdriver to centre the damper, fit the nut and bolt in the lower damper mounting.

Remove the jack.

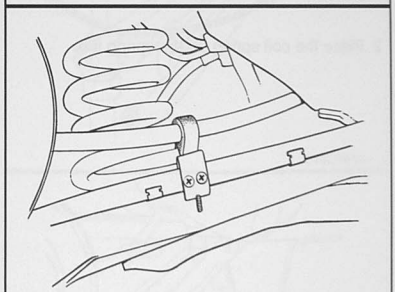


B732R609

6 Attach the handbrake cable bracket to the spring link.

Cars with ABS:

Fit the wheel sensor lead (2 clips).



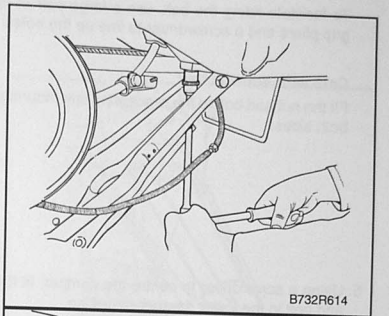
B732R610

7 Fit the rear wheels and lower the car.

Tightening torque, wheel nuts:
100 Nm (74 lbf ft)
Tightening torque, wheel bolts:
115 Nm (85 lbf ft)

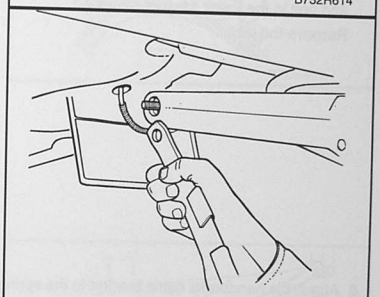
To fit

1 Screw the two bolts for the front spring link mounting into the body.

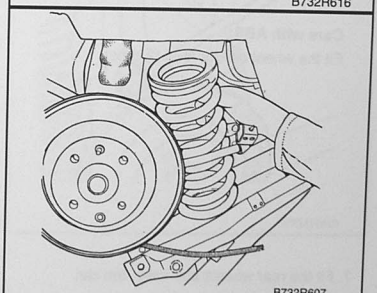

B732R614

Cars with anti-roll bar:

Position the anti-roll bar in the front spring link mounting.


B732R616

2 Place the coil spring on the spring link.


B732R607

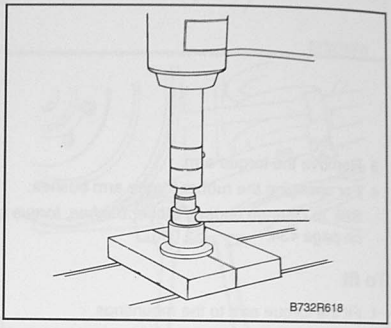
3 Raise the spring link with a jack making sure that the coil spring assumes the correct position.

Rubber bushes, torque arms

To change

Important
Suspension mountings incorporating rubber bushes must only be tightened when the weight of the car is on the wheels. Failure to observe this can result in the bushes being distorted, which can adversely affect road handling and shorten the life of the bushes.

1 Press out the front bush using a 24 mm socket and a suitable support.



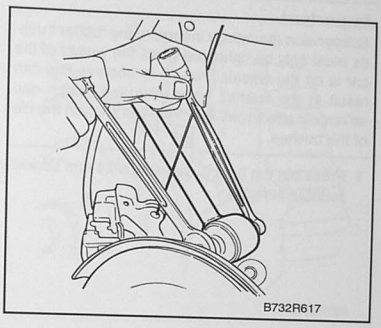
2 Lubricate the new front bush with petroleum jelly and insert this using the same tools.
3 Press out the rear bush using a smaller socket and a suitable support.
4 Lubricate the rear bush with petroleum jelly and insert this using the same tools.

Torque arms

To remove

1 Raise the car and remove the rear wheel.

2 Remove the bolts from the front and rear torque arm mountings.


B732R617

3 Remove the torque arm.

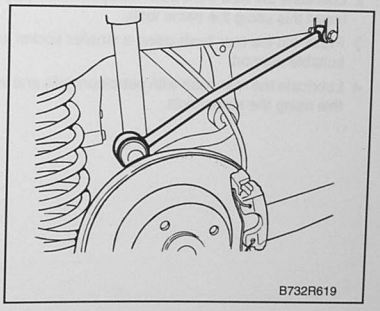
4 For changing the rubber torque arm bushes:

See To Change under *"Rubber bushes, torque arms"* on page 434.

To fit

1 Fit the torque arm to the mountings.

2 Fit the bolts for the front and rear mountings but do not tighten the nuts.


B732R619

3 Fit the rear wheel and lower the car.

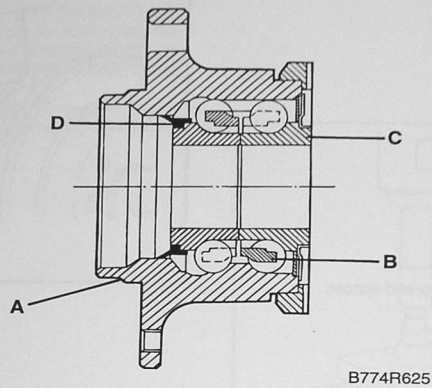
Tightening torque, wheel nuts:
100 Nm (74 lbf ft)
Tightening torque, wheel bolts:
115 Nm (85 lbf ft)

4 Tighten the torque arm mountings.

Tightening torque: 55 Nm (41 lbf ft)

Hubs

Technical description



Wheel hubs, rear (M1988)

A Bearing housing
B Bearing
C Bearing race
D Seal

Front wheel hubs

The stub axles and wheel hubs are journalled in a double-row angular contact bearing mounted in the steering swivel member.

The bearings are permanently lubricated and have integral seals.

The wheel bearing is rendered unusable when the front wheel hub is removed.

A description of how to remove the front wheel hubs is therefore not included in this manual.

Contact your local Saab workshop for assistance with this work.

Rear wheel hubs

The rear wheel hubs on M1979-82 cars are journalled in two taper roller bearings, with the inboard bearing having a larger diameter than the outboard bearing. A removable seal is fitted between the hub and the axle.

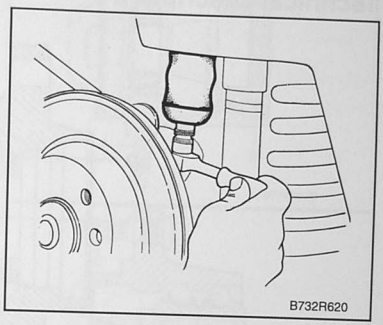
As of M1982, double-row angular contact bearings are used.

The bearing, seal and hub are removed and fitted as a unit.

Bump stops

To remove

1 Raise the car and remove the rear wheel.
2 Remove the bolt from the centre of the bump stop. Use a 6 mm Allen key.


B732R620

3 Remove the bump stop and spacer.

To fit

Fit in the reverse order.

Tightening torque, wheel nuts:
100 Nm (74 lbf ft)
Tightening torque, wheel bolts:
115 Nm (85 lbf ft)

7 Prise out the sealing ring with a screwdriver (this destroys the sealing ring!) and remove the two inner bearing races.

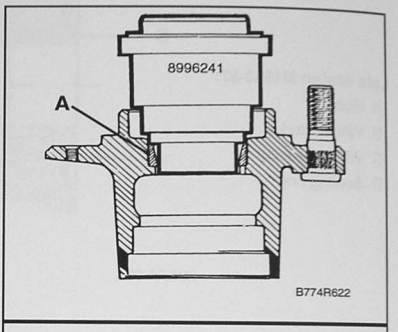
8 Insert a suitable drift into the milled recess in the hub and drive out the outer bearing races. Place a wooden board under the hub to prevent the end faces from being damaged.

Fitting the hub -M1982

Clean the components thoroughly prior to fitting. Change all worn and damaged parts.

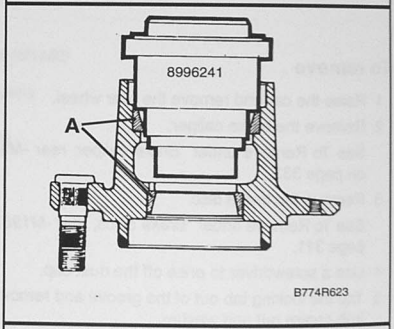
1 Press the outer bearing races (**A**) into the hub using drift 89 96 241.

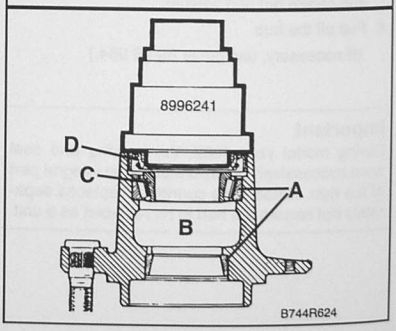
2 Half fill the space (**B**) between the bearing races (**A**) with Saab Special Chassis Grease.



3 Grease and fit the inner race of the inner bearing (**C**). Lubricate the new axle seal (**D**) with grease or heavy oil and fit the seal.

4 Inspect the surface of the axle in contact with the seal to ensure it is in perfect condition. If pitted or scored, polish the axle using a fine emery cloth. Finally, grease the surface of the axle.

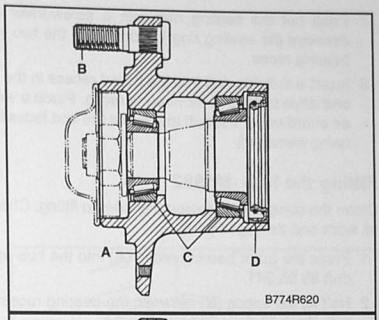




Wheel hubs, rear -M1987

Early design -M1982:

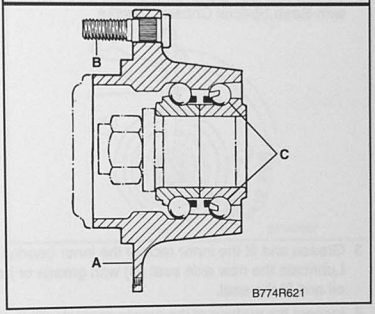
A Hub
B Wheel stud
C Wheel bearing
D Sealing ring



B774R620

Late design M1983-87:

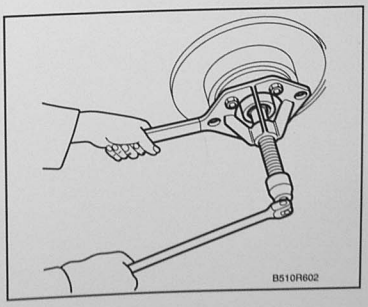
A Hub
B Wheel stud
C Wheel bearing
D Sealing ring



B774R621

To remove

1 Raise the car and remove the rear wheel.
2 Remove the brake caliper.
See To Remove under *"Brake caliper, rear -M1987"* on page 333.
3 Remove the brake disc.
See To Remove under *"Brake discs, rear -M1987"* on page 311.
4 Use a screwdriver to prise off the dust cap.
5 Tap the locking tab out of the groove and remove the hub centre nut and washer.
6 Pull off the hub.
(If necessary, use puller 89 96 084.)


B510R602

Important
During model year 1982, the bearing and seal were successively incorporated as an integral part of the hub. These parts cannot be replaced separately but require the hub to be replaced as a unit.

Fitting the hub M1983-87

Clean the components thoroughly prior to fitting. Change all worn and damaged parts.

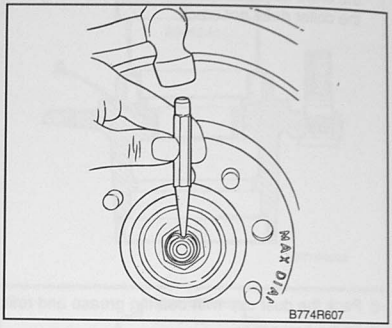
1 Position the hub. Fit the washer and lock nut.

2 Tighten the lock nut to torque.

Tightening torque, lock nut:
300 Nm (220 lbf ft)

If the part of the collar previously upset ends up in line with the groove in the shaft, fit a new nut.

Lock the nut by peening the collar it into the groove in the shaft using a round-head drift, making sure that the collar does not crack.



3 Fit the dust cap.

4 Fit the brake disc.

See To Fit under *"Brake discs, rear -M1987"* on page 311.

5 Fit the brake caliper.

See To Fit under *"Brake caliper, rear -M1987"* on page 333.

6 Fit the rear wheel and lower the car.

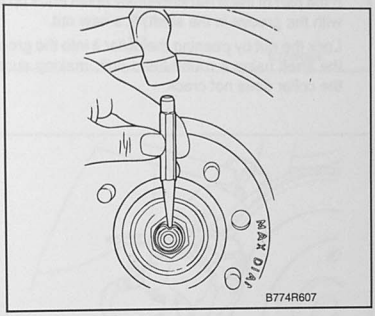
Tightening torque, wheel nuts:
100 Nm (74 lbf ft)

5 Fit the hub. Grease and fit the inner race of the outer bearing. Fit the washer and nut.

If the part of the collar previously upset ends up in line with the groove in the shaft, fit a new nut.

Tightening torque:
Stage 1: 49 Nm (36 lbf ft)
Stage 2: Slacken the nut
Stage 3: 3 Nm (2.2 lbf ft)

Lock the nut by peening the collar it into the groove in the shaft using a round-head drift, making sure that the collar does not crack.



6 Pack the dust cap with bearing grease and refit it.

7 Fit the brake disc.

See To Fit under *"Brake discs, rear -M1987"* on page 311.

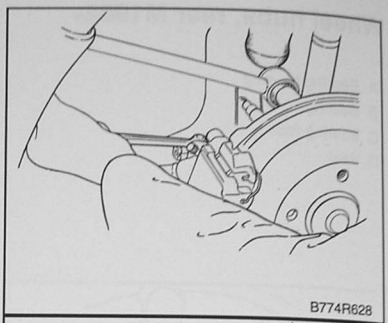
8 Fit the brake caliper.

See To Fit under *"Brake caliper, rear -M1987"* on page 333.

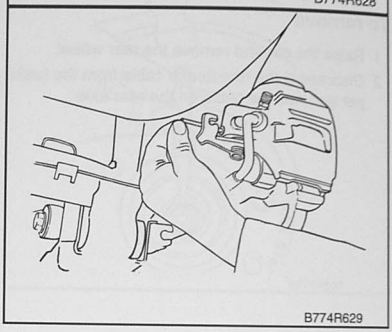
9 Fit the rear wheel and lower the car.

Tightening torque, wheel nuts:
100 Nm (74 lbf ft)

4 Remove the threaded plug and unscrew the adjusting screw in the brake caliper.



B774R628



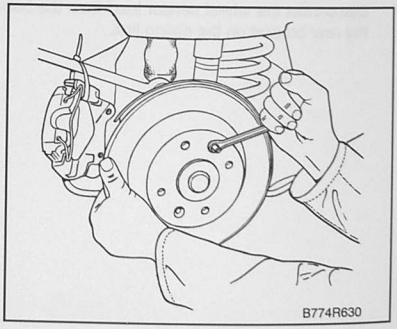
B774R629

5 Unbolt the brake caliper and suspend this from the torque arm with a cable tie or similar.

See To Remove under *"Brake caliper, rear M1988-"* on page 335.

6 Slacken the locating pin in the brake disc and remove the disc.

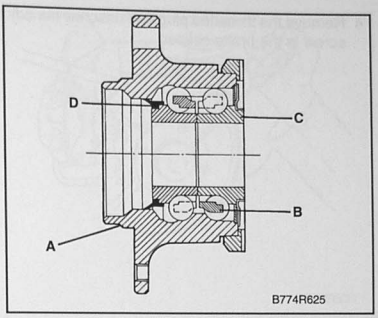
See To Remove under *"Brake discs, rear M1988-"* on page 312.



B774R630

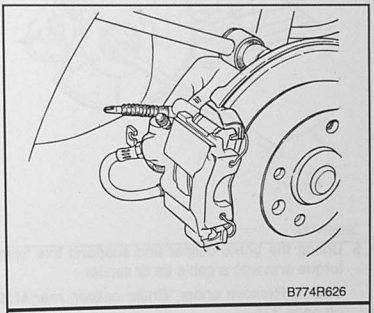
Wheel hubs, rear M1988-

A Bearing housing
B Bearing
C Bearing race
D Seal

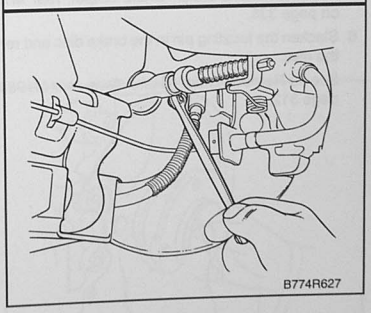


To remove

1 Raise the car and remove the rear wheel.
2 Disconnect the handbrake cable from the brake caliper and rest the cable on the rear axle.

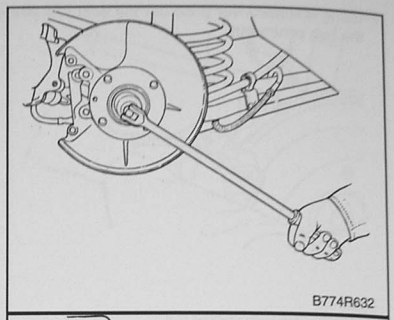


3 **Cars with ABS:**
Disconnect the wheel sensor lead from the hub and the rear bracket on the spring link.



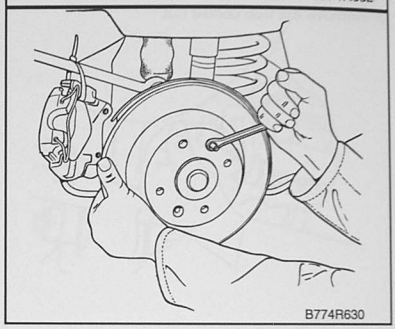
4 Fit a new hub centre nut and refit the dust cap.

Tightening torque, hub centre nut:
290 Nm (214 lbf ft)


B774R632

5 Fit the brake disc and locating pin.

See To Fit under *"Brake discs, rear M1988-"* on page 312.

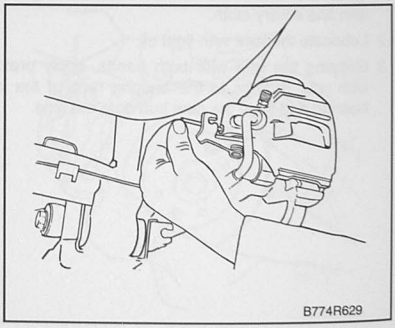

B774R630

6 Fit the brake caliper.

See To Fit under *"Brake caliper, rear M1988-"* on page 335.

7 Fit the handbrake cable to the brake caliper and adjust the handbrake.

Refer to *"Handbrake and handbrake cable, adjusting, M1988-90"* on page 363 or *"Handbrake and handbrake cable, adjusting, M1991-"* on page 364.


B774R629

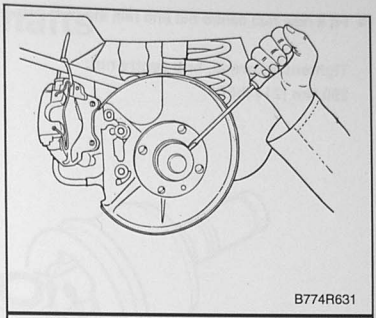
8 **Cars with ABS:**

Attach the wheel sensor lead to the hub and the bracket on the spring link.

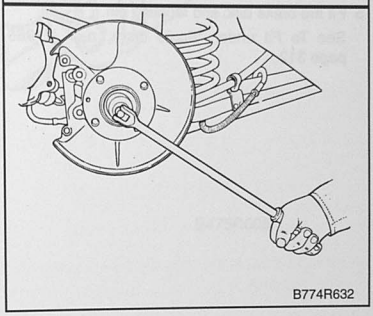
9 Fit the rear wheel and lower the car.

Tightening torque, wheel bolts:
115 Nm (85 lbf ft)

7 Using a screwdriver prise out the dust cap covering the hub centre nut.


B774R631

8 Remove the hub centre nut.


B774R632

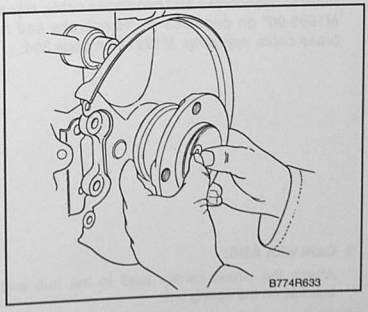
9 Pull off the hub.

To fit

1 Clean the end of the axle and remove any defects with fine emery cloth.

2 Lubricate the axle with light oil.

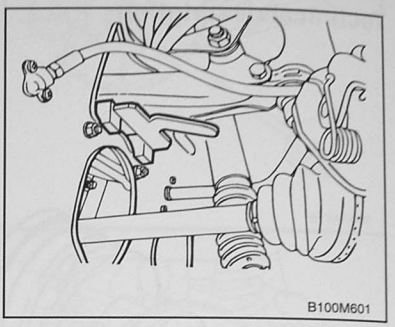
3 Gripping the hub with both hands, apply pressure with your thumbs to the bearing race of the outer bearing and slide the new hub onto the axle.


B774R633

Drive shafts

To remove

1 Place spacer 83 93 209 under the upper suspension arm.


B100M601

2 Slacken the hub centre nut slightly.

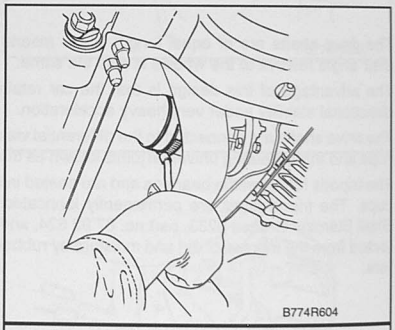
3 Raise the car.

Remove the front wheel and remove the hub centre nut.

Important

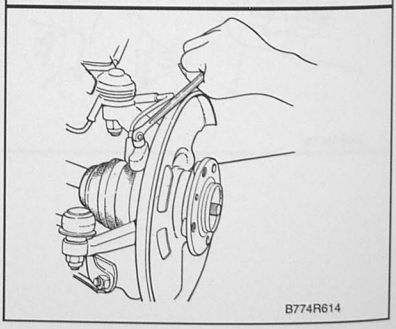
Take special care to remove all dirt and grit.

4 Remove the clip securing the rubber gaiter from the drive cup end.


B774R604

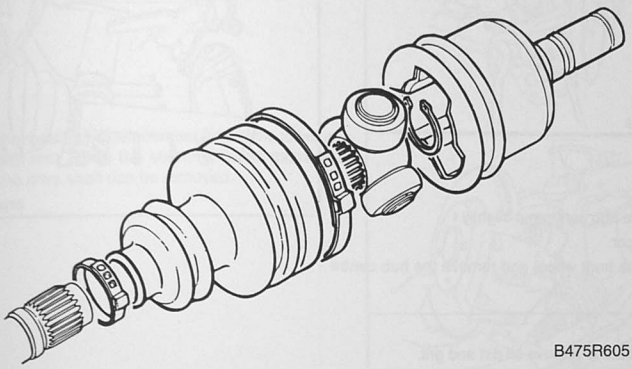
5 **Cars with ABS:**

Remove the wheel sensor and bend aside the lead.


B774R614

Drive shafts

Technical description



B475R605

The drive shafts are of equal length which means that their angle relative to the wheels is also the same.

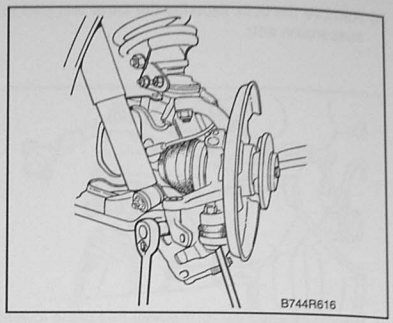
The advantage of this design is that the car retains its directional stability under very heavy acceleration.

The drive shafts are connected to the differential via drive cups and three-bearing universal joints known as tripods.

The tripods have needle bearings and are seated in drive cups. The tripod joints are permanently lubricated with Shell Stamina Grease 0233, part no. 87 92 624, and protected from the ingress of dirt and moisture by rubber gaiters.

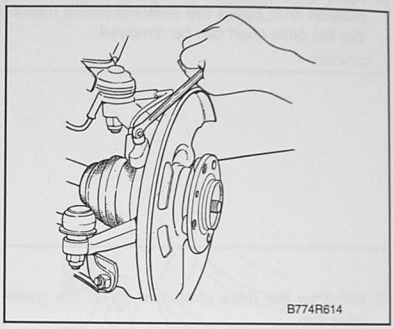
6 Fit the bolts securing the lower ball joint on the suspension arm.

Tightening torque: 47 Nm (24.5 lbf ft)


B744R616

7 Thread a new hub centre nut.

8 **Cars with ABS:**
Fit the wheel sensor.

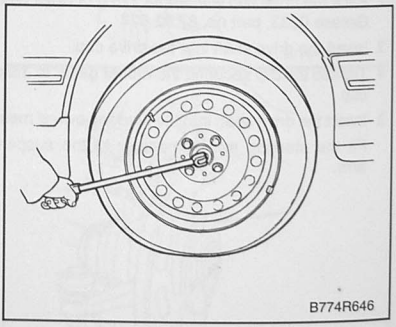

B774R614

9 Fit the wheel and lower the car.

Tightening torque, wheel nuts:
100 Nm (74 lbf ft)
Tightening torque, wheel bolts:
115 Nm (85 lbf ft)

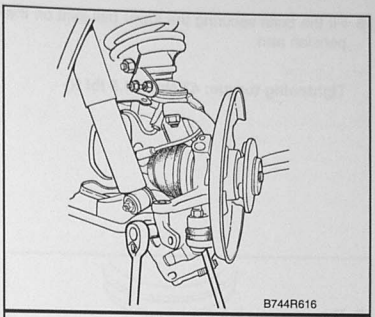
10 Tighten the hub centre nut.

Tightening torque, hub centre nut:
290 Nm (214.5 lbf ft)

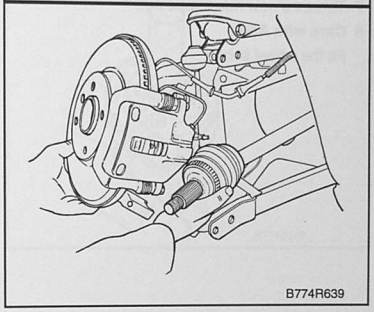

B774R646

11 Remove the spacer from under the upper suspension arm.

6 Remove the bolts securing the lower ball joint to the suspension arm.


B744R616

7 Pull the steering swivel member free of the lower suspension arm. Raise the steering swivel member so that the drive shaft can be removed.

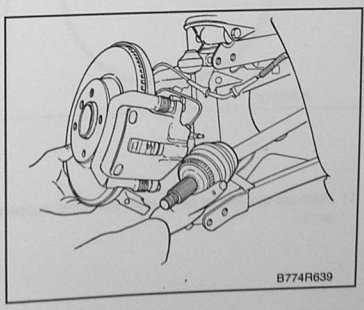

B774R639

8 Withdraw the drive shaft and cover the gaiter and drive cup.

To fit

Important
Take special care to remove all dirt and grit.

1 Remove the covers from the drive cup and gaiter.
2 Pack the drive cup with about 115 g of Shell Stamina Grease 0233, part no. 87 92 624.
3 Insert the drive shaft into the drive cup.
4 Tighten the clip securing the rubber gaiter to the drive cup.
5 Insert the drive shaft into the steering swivel member. Fit the steering swivel member to the suspension arm.


B774R639

Gaiter, outboard CV joint

To change

Important
Take special care to remove all dirt and grit.

1 Remove the outer CV joint.
See To Remove under *"Outboard CV joints"* on page 449.

2 Remove the clip and pull the rubber gaiter off the drive shaft.

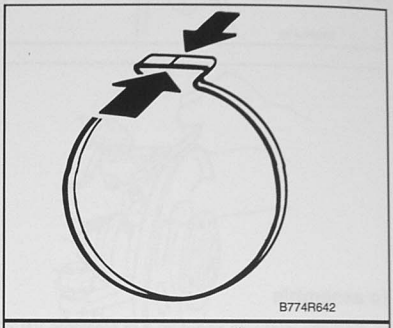
Important
Screwless clips can be removed with snips as illustrated. Take care not to damage the rubber gaiter.

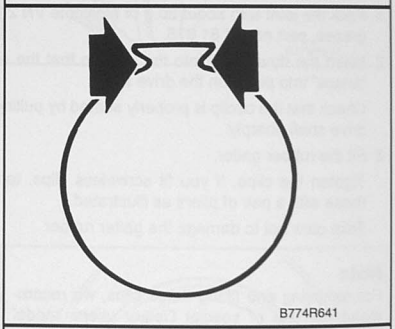
3 Fit a new rubber gaiter.

Tighten the clips. If you fit screwless clips, tension these with a pair of pliers as illustrated.

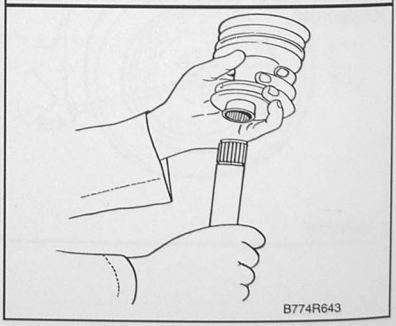
Take care not to damage the gaiter rubber.

Note
For removing and fitting these clips, we recommend the use of special Oetker pliers, model Knipex 1099.


B774R642


B774R641

4 Fit the outboard CV joint.


B774R643

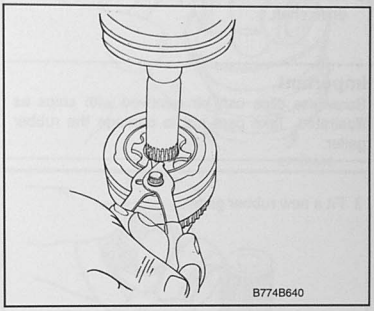
5 Pack the joint with 80 g of Molycote VN 2461C grease, part no. 87 81 676.

Outboard CV joints

Important
When dismantling the CV joint, use plastic covers or plastic bags to keep dirt and dust out of the joint.

To dismantle

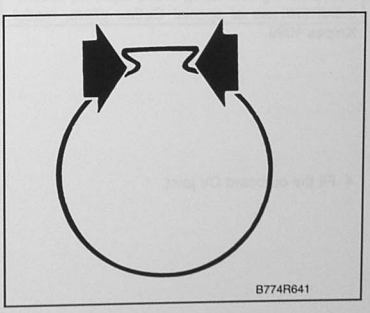
1 Remove all grease from the joint.
Release the clips and slide the rubber gaiter a way up the drive shaft.
2 Open the circlip and pull the shaft out of the joint.


B774B640

To assemble

1 Pack the joint with about 80 g of Molycote VN 2461C grease, part no. 87 81 676.
2 Insert the drive shaft into the joint so that the circlip "snaps" into place on the drive shaft.
Check that the circlip is properly seated by pulling the drive shaft sharply.
3 Fit the rubber gaiter.
Tighten the clips. If you fit screwless clips, tension these with a pair of pliers as illustrated.
Take care not to damage the gaiter rubber.

Note
For removing and fitting these clips, we recommend the use of special Oetker pliers, model Knipex 1099.


B774R641

Gaiter, inboard universal joint

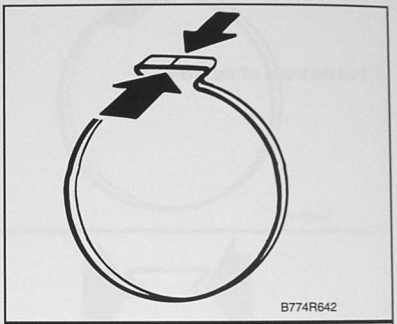
Important
Take special care to remove all dirt and grit.

To change

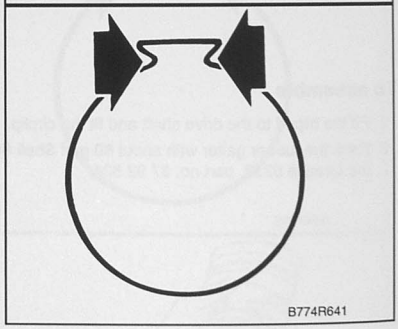
1 Remove the gaiter clip at the drive cup end.
2 Remove the drive shaft.
See To Remove under *"Drive shafts"* on page 446.
3 Remove the tripod.
See To Dismantle under *"Inboard universal joints, Tripod"* on page 451.
4 Remove the gaiter clip on the drive shaft and pull the gaiter off the shaft.

Important
Screwless clips can be removed with snips as illustrated. Take care not to damage the rubber gaiter.

5 Fit a new rubber gaiter.


B774R642

6 Tighten the clips. If you fit screwless clips, tension these with a pair of pliers as illustrated.
Take care not to damage the gaiter rubber.


B774R641

Note
For removing and fitting these clips, we recommend the use of special Oetker pliers, model Knipex 1099.

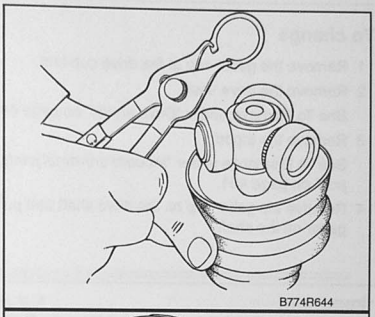
7 Pack the joint with about 60 g of Shell Stamina Grease 0233, part no. 87 92 624.
8 Fit the drive shaft.
See To Fit under *"Drive shafts"* on page 446.
9 Fit the tripod.
See To Assemble under *"Inboard universal joints, Tripod"* on page 451.
10 Fit the gaiter clip at the drive cup end.

Inboard universal joints, Tripod

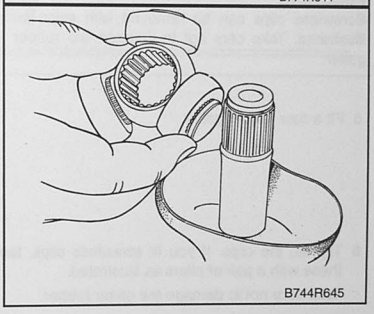
To dismantle

1 Remove all grease from the joint.
2 Remove the circlip.

Important
Drive shafts of late design have a taper to limit the movement of the tripod instead of a second, inner circlip.
The tripod splines have a corresponding taper.
Late-design drive shafts must be fitted with late-design tripods.
Late-design tripods can however be fitted to early-design drive shafts.


B774R644

3 Pull the tripod off the shaft.


B744R645

To assemble

1 Fit the tripod to the drive shaft and fit the circlip.
2 Pack the rubber gaiter with about 60 g of Shell Stamina Grease 0233, part no. 87 92 624.

Work schedule

Explanation

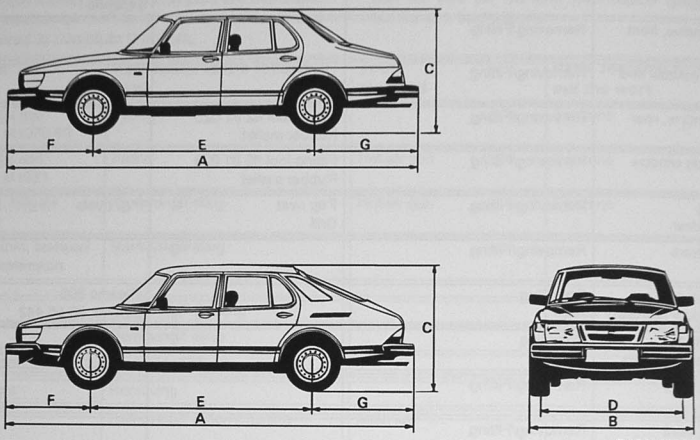
The following table contains an outline of topics. The table makes it easy to see which jobs are described in each section as well as the parts and tools that are required to complete the work.

Remember to read carefully through the job description as well as General Information (pages 2-6) before you begin work.

Section	Applicable to the following work	Tools required	Parts required to carry out the work
Mouldings and badges, M1979-80	Fitting		Benzene
Mouldings and badges, M1981-	Fitting	Hot-air gun	Benzene
Flashing, tailgate 3/5-door	Removing/Fitting	Hot-air gun	Benzene
Bumper trim, bumper/ bumper extension M1987-	Removing/Fitting		
Bonnet	Removing/Adjusting		Spacer washers
Grille	Removing/Fitting		
Front doors	Removing/Fitting		
Rear doors	Removing		
Bootlid 2/4-door	Removing/Fitting/Adjusting	Allen key	
Tailgate, 3/5-door	Removing/Fitting	Allen key Spacer	Black electrical tape
Central locking system	Description		
Door locks, front door	Changing Cars with central locking Cars without central locking	Brake spring tool 89 95 607	
Door locks, rear door	Changing Cars with central locking Cars without central locking	Brake spring tool 89 95 607	
Lock cylinder, door	Removing/Dismantling/ Assembling/Fitting	Multi-grip pliers	Circlip
Opening handles	Removing/Fitting	Brake spring tool 89 95 607	
Lock, bootlid 2/4-door	Removing/Fitting Cars without central locking Cars with central locking		
Lock, tailgate 3/5-door	Removing/Fitting Cars without central locking Cars with central locking		
Lock cylinder, tailgate	Removing/Dismantling/ Assembling/Fitting		Circlip
Lock cylinder, bootlid	Removing/Dismantling		Plastic circlip
Windscreen	Removing/Fitting	Fitting tool 82 91 023 Slightly bent screwdriver	Paraffin oil Sealant 30 15 781

BODY

Technical data



B100M689

Saab 900 Combi Coupé and 900 Sedan

General particulars -M1986

A Overall length	mm (in)	4739 (186.6)
B Overall width	mm (in)	1690 (66.53)
C Maximum height	mm (in)	1420 (55.90)
Ground clearance	mm (in)	150 (5.90) 1984- approx. 140 (5.51)
D Track, front	mm (in)	1420 (55.90), with 5.5" wheels 1430 (56.30)
Track, rear	mm (in)	1430 (56.30), with 5.5" wheels 1440 (56.70)
E Wheelbase	mm (in)	2525 (99.41)
(1982 -)	mm (in)	2517 (99.1)
F Overhang, front	mm (in)	1050 (41.34)
G Overhang, rear	mm (in)	1165 (45.86)
(1982 -)	mm (in)	1172 (46.14)
Turning circle (wall-to-wall)	m (ft)	5,3 (17.4)
Kerb weight	kg (lb)	1200-1350 (2650-2980)
Gross vehicle weight	kg (lb)	1620-1720 (3570-3790)
Max. roof load	kg (lb)	100 (220)
Max. trailer weight	kg (lb)	1500 (3300)

Section	Applicable to the following work	Tools required	Parts required to carry out the work
Rear window	Removing/Fitting	Fitting tool 82 91 023	Rubber strip 92 35 516 or Rubber strip 92 31 499 Tape 92 89 414 Sealant 30 15 781 Benzene
Door window, front door	Removing/Fitting		
Electric window and motor	Removing/Fitting		
Door window, rear door	Removing/Fitting	Fitting tool 82 91 023 Rubber mallet	
Fixed side window	Removing/Fitting	Fitting tool 82 91 023 Rubber mallet	
Opening side window	Removing/Fitting	Pop rivet Drill	Pop rivets
Door mirrors M1981-	Removing/Fitting		
Mirror glass, manual door mirrors	Changing		Gleitmo 805 part no. 30 06 442
Mirror glass, electric door mirrors	Changing		
Bumper, front -M1986	Removing/Fitting		
Bumper, front M1987-	Removing/Fitting		
Bumper, rear -M1986	Removing/Fitting		
Bumper, rear M1987-	Removing/Fitting		
Bumper extensions - M1986	Removing/Fitting	Drill	Self-tapping screw Anti-corrosion treatment
Bumper extension, front M1987-	Removing/Fitting		
Bumper extension, rear M1987-	Removing/Fitting		
Spoiler skirt -M1986	Removing/Fitting		
Spoiler skirt M1987-	Removing/Fitting		
Cellular block, -M1986	Changing		

General particulars M1992-

A Overall length	mm (in)	4680 (182.5)	Note: CC 4687 (182.8)
B Overall width	mm (in)	1693 (66.65)	
Turbo 16 IT	mm (in)	1710 (67.32)	
Aero/S	mm (in)	1695 (66.73)	
US, CA, TW	mm (in)	1690 (66.53)	
C Maximum height	mm (in)	1420 (55.90)	Note: Convertible 1405 (55.31)
Maximum height during soft top operation Convertible	mm (in)	2250 (88.6)	
Ground clearance	mm (in)	135 (5.27)	
T16 Aero/S	mm (in)	120 (4.68)	
T16 Aero/S IT	mm (in)	135 (5.27)	
Minimum ground clearance at GVW	mm (in)	105 (4.09)	
D Track, front	mm (in)	1432 (56.3)	5.5" steel wheel
	mm (in)	1430 (56.4)	5.5" alloy wheel
Track, rear	mm (in)	1442 (56.7)	5.5" steel wheel
	mm (in)	1440 (56.7)	5.5" alloy wheel
E Wheelbase	mm (in)	2517 (99.1)	
F Overhang, front	mm (in)	1032 (40.20)	
G Overhang, rear	mm (in)	1131 (44.10)	Note: CC 1138 (44.4)
Turning circle (wall-to-wall)	m (ft)	5,6 (18.4)	
Kerb weight	kg (lb)	1260-1450 (2780-3190)	Note: Convertible 1350-1505 (2980-3320)
US, CA	kg (lb)	1295-1400 (2860-3090)	Note: Convertible 1390-1490 (3070-3290)
AU	kg (lb)	1287-1339 (2840-2960)	Note: Convertible 1374-1474 (3030-3250)
Gross vehicle weight	kg (lb)	1830 (4030)	Note: Convertible 1780 (3920)
US, CA	kg (lb)	1650-1780 (3640-3920)	Note: Convertible 1695-1775 (3740-3910)
AU	kg (lb)	1830 (4030)	Note: Convertible 1780 (3920)
Max. roof load	kg (lb)	100 (220)	
Maximum carrier/ski holder load (Convertible)	kg (lb)	30 (66)	
Max. trailer weight (trailer with brakes)	kg (lb)	1500 (3300)	
Max. trailer weight (trailer without brakes)	kg (lb)	750 (1650)	
Maximum permissible luggage compart ment load	kg (lb)	90 (198)	

General particulars M1987-1991

A Overall length M1987- with new nose	mm (in) mm (in)	4739 (186.6) 4680 (182.5)	Note: CC 4687 (182.8)
B Overall width	mm (in)	1690 (66.53)	Note: Italy T16 1710 (66.7)
C Maximum height	mm (in)	1420 (55.90)	Note: Convertible 1400 (54.6)
Ground clearance	mm (in)	135 (5.27)	Note: T16S 120 (4.68)
Minimum ground clearance at GVW	mm (in)	105 (4.09)	
D Track, front with 5.5" wheels	mm (in)	1430 (56.30)	
Track, rear with 5.5" wheels	mm (in)	1440 (56.70)	
E Wheelbase	mm (in)	2517 (99.1)	
F Overhang, front M1987- with new nose	mm (in) mm (in)	1050 (41.34) 1032 (40.20)	
G Overhang, rear M1987- with new nose	mm (in) mm (in)	1172 (46.14) 1131 (44.10)	Note: CC 1138 (44.4)
Turning circle (wall-to-wall)	m (ft)	5,6 (18.4)	
Kerb weight	kg (lb)	1200-1450 (2640-3190)	Note: Convertible 1420-1480 (3124-3256)
Gross vehicle weight	kg (lb)	1620-1830 (3570-4030)	Note: Convertible 1720-1780 (3790-3916)
Max. roof load	kg (lb)	100 (220)	
Maximum carrier/ski holder load (Convertible)	kg (lb)	30 (66)	
Max. trailer weight (trailer with brakes)	kg (lb)	1500 (3300)	
Max. trailer weight (trailer without brakes)	kg (lb)	750 (1650)	

How to repair paintwork damage

The future appearance of your car depends largely on how it is cared for presently.

A car that is well looked after commands a better second-hand price and at the same time provides the owner the satisfaction of being able to drive around in a clean, attractive car. There follows a description of how to repair paintwork damage, but firstly some preventative measures.

Car enamel changes with time and requires regular care to retain its gloss and shine:

- Wash your car regularly! If the car remains dirty for a long period of time, the enamel will quickly become matt and gain scratches.
- Remove salt spray during the winter using a degreasant (bear in mind that degreasants will also remove any wax protection).
- Wax the paintwork regularly. Wax increases the lustre of the paintwork and provides a protective layer that retains the enamel's natural durability and shine.

Let us now look more closely at paintwork repairs such as touching up stone chips and other minor repairs.

Useful basic facts:

A vehicle's paintwork consists of several thin layers. The sheet metal is coated with phosphate, a primer, an undercoat and a top coat. If any paintwork is damaged and bare metal exposed, the paintwork must be built up layer by layer.

Repair paintwork damage as soon as you detect it. Bare metal rusts quickly. If the metal is given time to rust, the rust must first be removed and the repair of the paintwork becomes more complicated and time consuming.

General information about spray painting

When buying spray paint for you car, check your car's colour code to ensure the correct paint colour. The colour code can be found on a label on the door/door pillar, on a label in the luggage compartment or in the engine compartment. Shake the can well before use. Shake it for a couple of minutes once the mixing balls have started to meet the sides of the can. Otherwise, the paint will not be mixed properly which may result in the wrong tone of colour. Always spray a piece of sheet metal first to check that the colours match. It is impossible to achieve exactly the same tone as the original paintwork, one reason being that the top coat fades and becomes matt with time.

Apply the spay paint in a check pattern. Apply 3 to 4 coats, allowing each coat to dry for 3 to 4 minutes before the next coat is applied. The paint will be touch-dry after about 15 minutes and fully dried after about 60 minutes. The paint can be polished 24 to 28 hours after spraying.

Once you have finished spraying, turn the can upside-down and clean the nozzle by depressing it until only propellant comes out. This prevents paint from drying and blocking the nozzle.

If the paint damage is minor, such as a stone chip, it is easier to apply the paint with a brush.

You can purchase touch-up pens that are suitable for repairing stone chips and scratches from your local Saab workshops.

Surface treatment

General bodywork care

Restoring the underseal

To retain the benefits of the underseal it should be regularly inspected and restored. As well as having anti-corrosive properties, the underseal is important for sound insulation. This is particular important for the wings, which are constantly subjected to abrasion from stones thrown up from the road.

If the compound has worn or come off, the area of the bodywork should be thoroughly cleaned before new underseal is applied. To start with, scrape the area clean or brush it with a wire brush. Then wash the area benzene. Apply an anti-corrosion agent before applying new underseal. Before the anti-corrosion agent has dried, apply a roughly 1.5 mm thick layer of underseal. If the underseal is applied too liberally it can run and even detach from the surface.

When new sheet metal parts, such as wings, are fitted, these must of course be treated in the same way once fitted. If treated prior to painting, the underseal must be removed from all surfaces to be painted.

Anti-corrosion treatment

Cars are provided with anti-corrosion protection during assembly. Anti-corrosion agent is sprayed into the members, cavities and joints. This is since the body joints settle when the car is put into service. Provided that this treatment is applied according to Saab's directions, anti-corrosion treatment will only need to be applied (sprayed) every other or every third year.

Engine compartment

Clean the engine compartment with engine detergent and then rinse with warm water. The headlights must be covered before rinsing with water.

Important

Avoid spraying water directly onto electrical components such as the distributor and alternator, especially if you use a pressure washer.

Do not use petrol as a cleaner or solvent when making repairs or during maintenance. Use an environmentally suitable degreasant.

Washing

The body should be washed regularly. When the car is new or resprayed, the body should be washed by hand with cold water only. Use a soft, clean brush through which the water can flow. Automatic car washes should be avoided initially.

After 5 to 6 months, the paintwork will have hardened allowing cleaning with a special vehicle detergent or a mild washing-up liquid added to the water. The water should be warm but not hot. Tar spots can be removed using a cloth moistened with white spirit. Do not use other chemicals, as stronger cleaning agents can dry the paintwork.

The underbody should also be washed regularly, and especially carefully at the end of winter. After washing repeatedly in an automatic carwash, the underbody should be washed thoroughly by hand, since this is not normally washed in carwashes.

Never wash the car in direct sunlight. Do not allow the car to dry in sunshine but instead dry it with a chamois leather immediately after washing. This will prevent spots from being left.

When the bodywork is washed, the windows should be cleaned inside and out with a glass cleaner.

⚠ WARNING

Check that the brakes function properly after washing the car.

Important

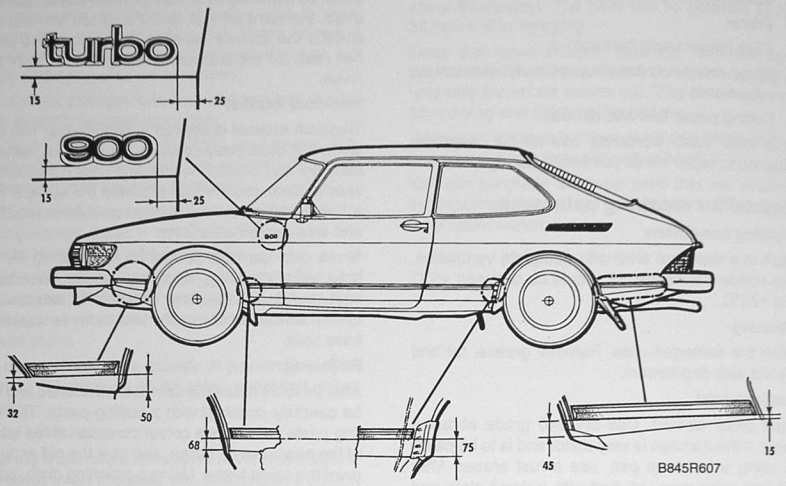
To avoid damaging the wiper arms when the car is washed in a carwash, park them in a vertical position on the windscreen. Do so by cutting off the power supply to the windscreen wipers using the ignition key instead of the wiper stalk switch.

Waxing and polishing

A car that is new or resprayed should not be waxed for 3 to 4 months. Polishing is not necessary until the paintwork has oxidized and become matt. Only in exceptional circumstances may a cutting compound be used on a new or resprayed car. The bodywork must be thoroughly clean before the car is waxed or polished.

Body shell

Mouldings and badges, M1979-80



Before attaching a badge or moulding, ensure that the body is dust and grease free. Clean the area with benzene or a similar solvent. The ambient temperature during fitting should not be lower than +18°C.

Remove the backing from the tape and press each item into place by hand.

All measurements are in millimetres.

Materials required

- Degreasant
- Abrasive paper 240/400
- Rust eraser
- Masking and masking tape
- Primer
- Filler (minor panel damage)
- Spray enamel or touch-up pen with the correct colour code
- Cutting paste, buff and car wax

Your local Saab workshop has all the materials required to repair minor paintwork damage.

Method for repairing paintwork

Working conditions

Work in a dust-free area with adequate ventilation. The ambient temperature should be between +5°C and +25°C.

Cleaning

Wash the damaged area. Remove grease, tar and the like with degreasant.

Rust removal

Grind away all rust. Use dry 240 grade abrasive paper. If the damage is very minor and is to be painted using a touch-up pen, use a rust eraser. After grinding, wipe away all dust with a damp cloth and allow the area to dry.

Masking

Mask areas not to be painted with newspaper and masking tape. To avoid sharp boundaries between the old and new paint, hold a piece of card 2 to 3 centimetres (about one inch) from the surface just inside the masked area.

Priming

To optimise the adhesion of the filler, spray the area with primer first. Spray 3 or 4 thin coats allowing each coat to dry for 3 to 4 minutes before the next coat is applied. Allow the final coat to dry for about 15 minutes.

Filling

Minor dents, stone chip damage and scratches can be filled with a fine-grain, quick-drying filler. The filler must only be applied thinly in millimetre thick layers. Drying times and preparatory work are specified on the packaging.

Sanding

Once the filler has dried, after about 2 to 3 hours, sand with wet 240 or 400 grade abrasive paper.

Painting

Spray a piece of sheet metal to compare the colours. Spray 3 to 4 coats in a check pattern, allowing each coat to dry for 3 to 4 minutes before the next coat is applied. Hold the can at a suitable distance, about 25 centimetres at +20°C. If the can is held too close, the paint will run, and if held too far from the surface the solvent will evaporate before the paint has reached the surface reducing the lustre of the finish.

Two-coat enamel

Two-coat enamel is applied in two stages. The first layer, the base coat, contains the pigment, metallic particles and binder. The second coat consists of a special clear enamel that provides the surface with a lustre and protects the base coat from moisture and environmental factors.

Stone chip damage should be touched up as follows: After cleaning, apply the primer, then base coat and finally the clear enamel. To achieve the best possible finish, apply two or three layers of base coat.

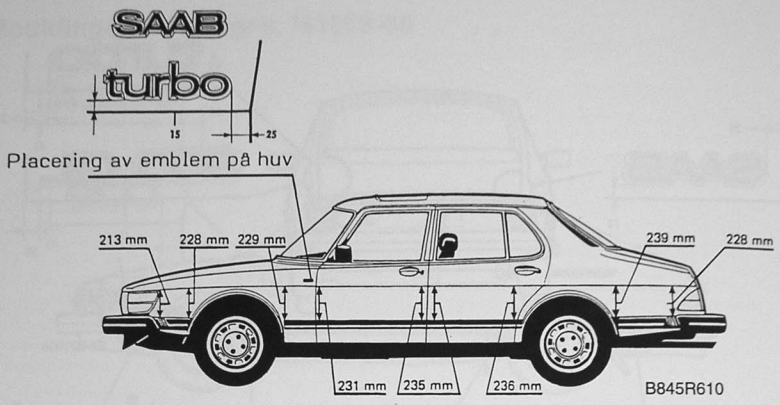
Polishing

After 24 to 28 hours the paint will have dried and can be carefully polished with a cutting paste. The cutting paste will remove colour contours at the edges of the newly painted area, and give the old and new paint the same lustre. Using a polishing cloth, polish using cutting paste and then simply a dry cloth. Use circular movements starting at the centre of the repaired area.

Waxing

Finnish repairs by waxing the entire car several days after the initial repair. This increases the shine of the paintwork and protects it for several months.

Mouldings and badges, M1981-



The mouldings on cars from M1981 are wider than on earlier models. There is a silver stripe along the lower edge of the otherwise black mouldings. When replacing individual mouldings, fit the new moulding so that the silver stripe lines up with the adjacent mouldings. When fitting all new mouldings, line up the silver stripes with those on the bumpers.

See the illustration for measurements.

During model year 1983, the mouldings between the wheel housings were raised by about 10 mm (0.4 in). When replacing the moulding on one side of the car, check therefore the height of the moulding on the other side.

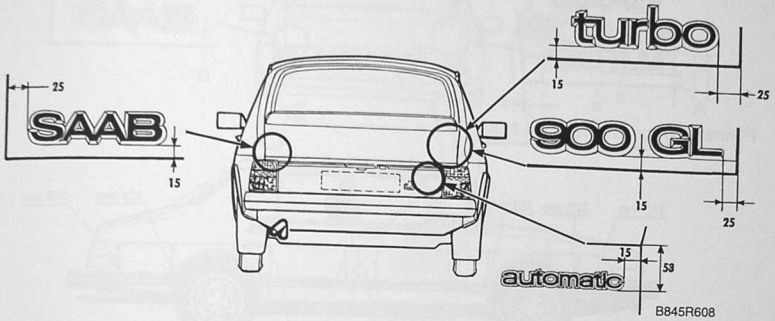
The measurements given apply to later models.

As from model year 1984, the front and rear side mouldings have been replaced by mouldings that are an extension of the bumpers. These are secured to the wings or side panels by screws and plastic nuts.

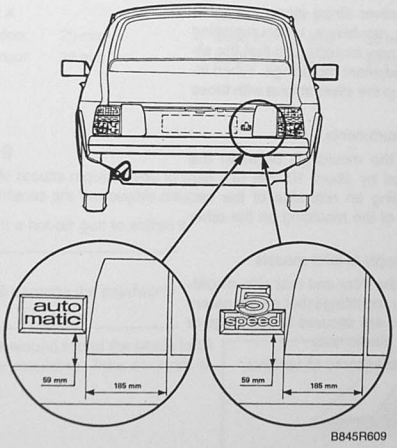
The nominal measurements apply to all variants.

Tolerance of 2 mm.

All measurements are in millimetres.



B845R608



B845R609

Fitting a moulding

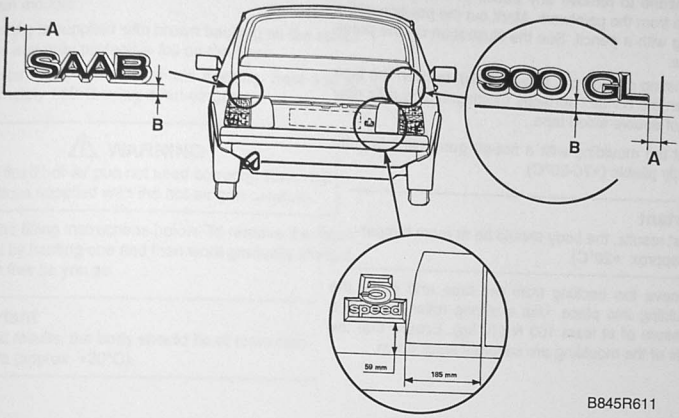
Use benzene to remove any traces of dirt, grease and adhesive from the paintwork. Mark out the position of the moulding with a pencil. See the illustration on the previous page.

If the existing moulding is to be refitted, remove the tape and clean the contact surfaces thoroughly and affix new lengths of double-sided tape.

1 Heat the moulding with a hot-air gun until it is sufficiently pliable (+70-80°C).

Important
For best results, the body should be at room temperature (approx. +20°C).

2 Remove the backing from the tape and press the moulding into place. Use a strong roller to apply a pressure of at least 100 N (10 kg). Ensure that the ends of the moulding are securely stuck down.



B845R611

Measurements for 2/4-door and 3/5-door

Measurement A		Measurement B	
Saab 900 2/4-door	20 mm	Saab 900 2/4-door	50 mm
Saab 900 3/5-door	25 mm	Saab 900 3/5-door	25 mm

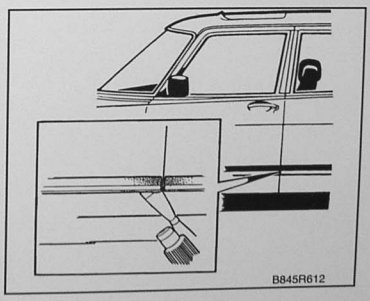
Removing a moulding

To achieve the best possible results requires you to work with care and ensure all surfaces are thoroughly clean.

1 Warm the moulding with a hot-air gun to soften it.

Important
Do not overheat as this will damage the paintwork and moulding.

2 Use a scraper with tape wound round the blade to lift the trailing edge of the moulding. Take care not to damage the paintwork.



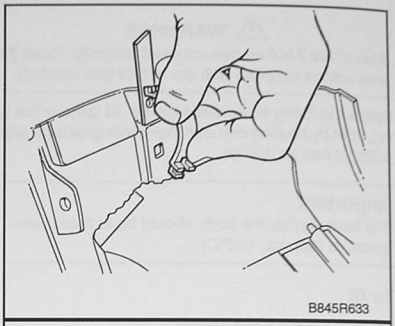
B845R612

Bumper trim, bumper and bumper extension M1987-

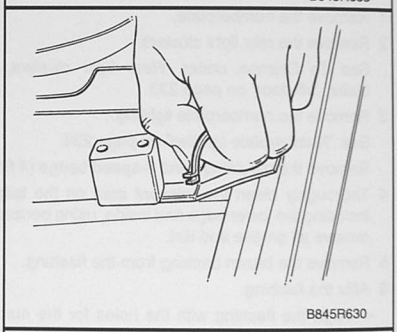
To remove

1 **Front bumper:**
Remove the light cluster.
See To Remove under *"Front light clusters, M1987-"* on page 230.

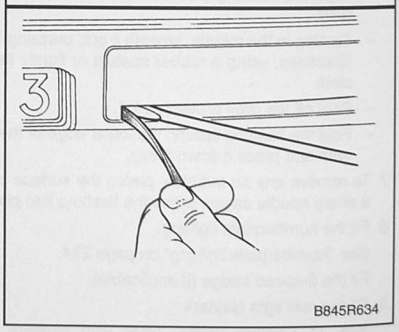
2 **Front and rear bumper:**
Remove the trim tensioning spring.


B845R633

3 **Bumper extension:**
Remove the trim tensioning spring.


B845R630

4 Insert a small screwdriver and unhook the clip.



B845R634

To fit

Fit in the reverse order.

Tailgate flashing, 3/5-door

Black flashing is fitted on the vertical parts of the tailgate on certain models.

The flashing is supplied with brown backing on the adhesive side and grey protective foil on the front.

Before starting to remove the old flashing, heat this to approximately +80°C using a hot-air gun.

> **⚠ WARNING**
> Risk of fire if hot-air gun not used correctly. Read the instructions supplied with the hot-air gun carefully.

Follow the fitting instructions below. To remove the flashing, start by heating one end then work gradually along it, pulling it free as you go.

Important
For best results, the body should be at room temperature (approx. +20°C).

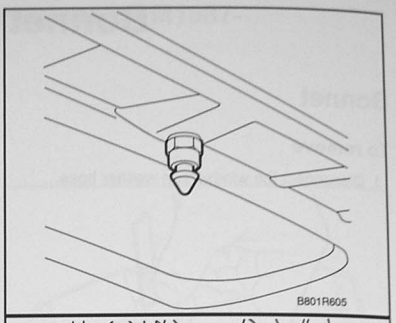
To fit

1 Remove the numberplate.
2 Remove the rear light clusters.
See To Change under *"Rear light clusters, bulbs, 3/5-door"* on page 233.
3 Remove the numberplate lighting.
See *"Numberplate lighting"* on page 234.
Remove the mouldings and 5-speed badge (if fitted).
4 Thoroughly clean the relevant area on the tailgate, including the lower edge and inside, using benzene to remove all grease and dirt.
5 Remove the brown backing from the flashing.
6 Affix the flashing.
- Align the flashing with the holes for the numberplate.
- Starting in the middle, smooth it out, pressing in all directions, using a rubber spatula or tightly folded cloth.
- Peel off the grey protective foil.
- Fold the flashing around the lower edge of the tailgate and press it down firmly.

7 To remove any air bubbles, pierce the surface using a sharp needle as you press the flashing into place.
8 Fit the numberplate lighting.
See *"Numberplate lighting"* on page 234.
Fit the 5-speed badge (if applicable).
9 Fit the rear light clusters.
See To Change under *"Rear light clusters, bulbs, 3/5-door"* on page 233.
10 Fit the numberplate.

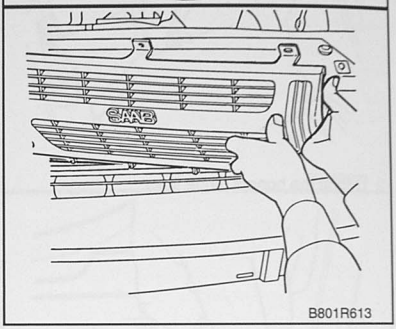
Adjusting the bonnet

The bonnet lock pin can be adjusted using spacer washers. (The total thickness of washers should not exceed 5 mm.)



Grille

The top of the grille is secured to the radiator member by three self-tapping screws. Guide pins along the lower edge of the grille locate in corresponding holes in the spoiler.

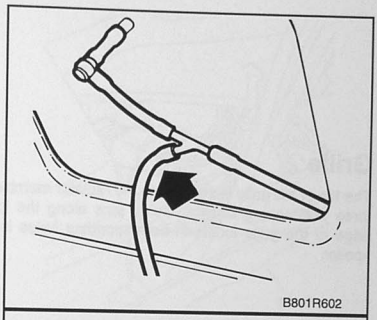


Bonnet and grille

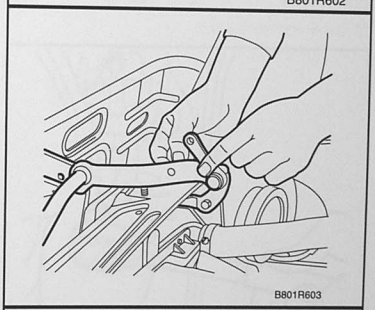
Bonnet

To remove

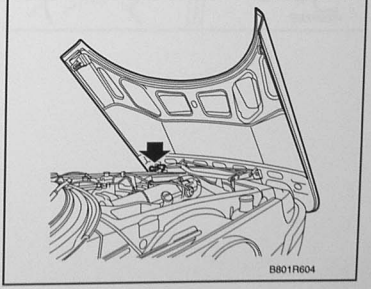
1 Disconnect the windscreen washer hose.


B801R602

2 Unbolt the bonnet hinge links.


B801R603

3 Get someone to help you to lift off and place it to one side.


B801R604

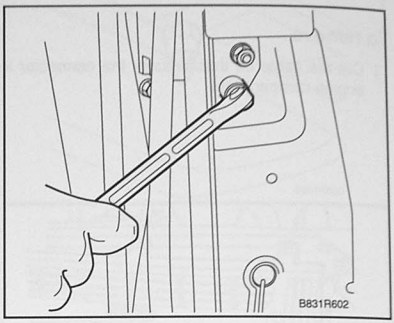
To fit

Fit in the reverse order.

Rear doors

To remove

1 Remove the lower trim from the door pillar.
2 Remove the nuts from the through bolts.



3 **Cars with central locking and electric windows:**
Remove the terminal block.

To fit

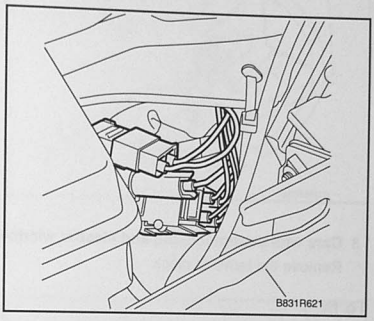
Fit in the reverse order.

Doors, tailgate, bootlid and windows

Front doors

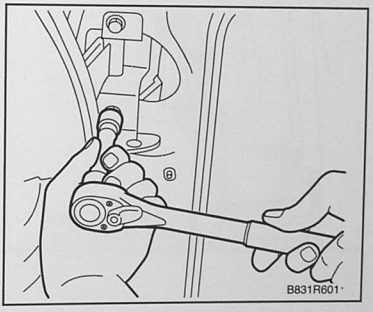
To remove

1 Cut the cable tie that secures the connector in the engine compartment.



2 Remove the rubber grommet from the door and withdraw all the connectors.

3 Remove the six bolts securing the hinges to the body.



4 Remove the door complete with hinges.

5 **Cars with central locking and electric windows:**
Remove the terminal block.

To fit

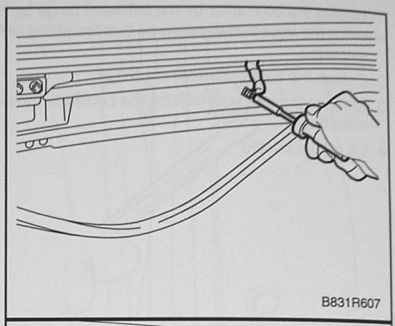
Fit in the reverse order.

Tailgate, 3/5-door

To remove

1 Remove the cable clip. Unplug the connectors between the body and tailgate and remove the ground connection from the body.

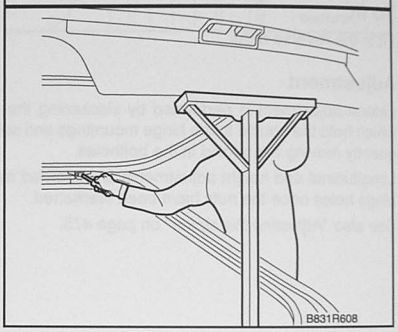
2 Mark the position of the tailgate at the hinge if it is to be refitted, and slacken the Allen bolts slightly.


B831R607

3 Remove the gas springs and place a suitable support under the rear edge of the tailgate.

Important
The gas springs could be damaged if detached from the tailgate but left attached to the body and the tailgate is closed.

4 With assistance, remove the Allen bolts and lift aside the tailgate.


B831R608

⚠ WARNING
Do not dismantle the gas springs. If the circlip is removed the internal components will be ejected with great force and could cause personal injury.

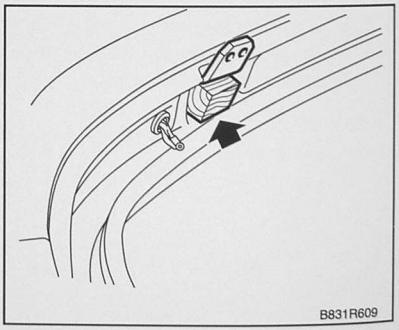
To fit

1 Place suitable spacers (wooden blocks) under the hinge plates.

2 Get someone to help you to lift the tailgate into position. Bolt the tailgate to the hinges. To make this easier, place a suitable support under the rear edge of the tailgate.

3 Remove the spacers from under the hinges before lowering the tailgate.

4 Adjust the fit of the tailgate at the hinges and, if necessary, adjust the lock mechanism.


B831R609

Important
The gas springs could be damaged if detached from the tailgate but left attached to the body and the tailgate is closed.

5 Fit the gas springs.

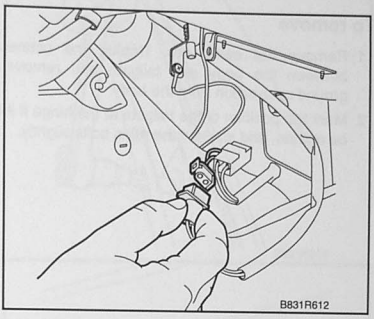
6 Plug in the connectors and secure the leads to the body.

7 Connect the earth lead.

Bootlid, 2/4-door

To remove

1 Unplug the connector by the left-hand hinge by loosening the door switch screw so that the wiring can be extracted.
2 Detach the cable clip from the hinge.
3 Remove the four nuts holding the bootlid to the hinge mountings.
4 Lift off the bootlid.



To fit

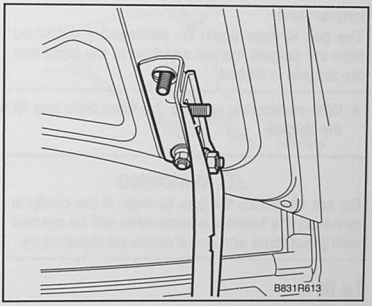
Fit in the reverse order.

Adjustment

Lateral adjustment is performed by slackening the nuts which hold the bootlid to the hinge mountings and subsequently moving the bootlid in the boltholes.

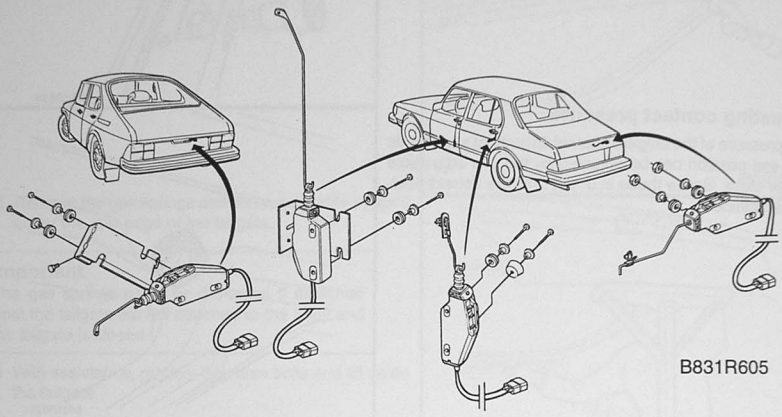
Longitudinal and height adjustments are afforded by the hinge holes once the nuts have been slackened.

See also *"Adjusting the striker"* on page 475.



Locks

Central locking system



Central locking components

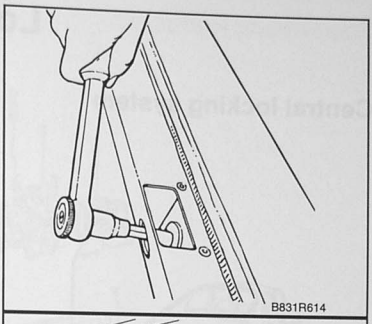
Certain models are equipped as standard with central locking.

The central locking system consists of electrically controlled lock units that activate the door and luggage compartment locks via link arms.

The driver's door lock operates all locks but the front passenger door and luggage compartment can be opened independently using the key.

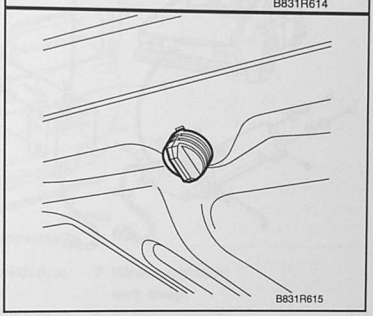
Adjusting the striker

The striker can be adjusted in its free fit mounting once it has been slackened using an Allen key.

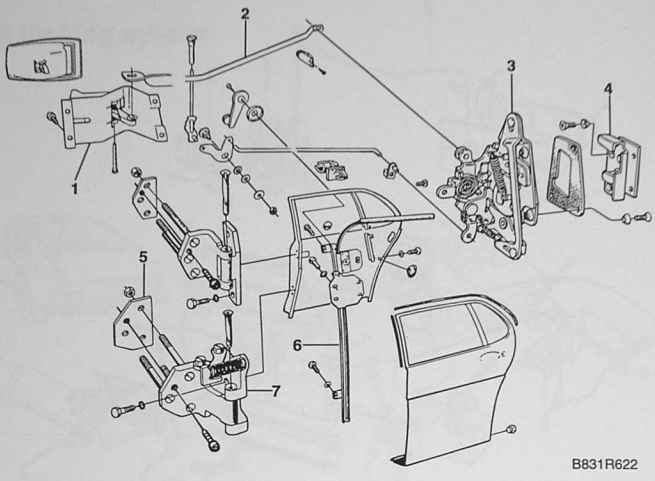


Adjusting contact pressure

The pressure of the tailgate against its contact surface, its seal and position can be adjusted by the two adjustable rubber stops. Screw these in or out until the correct position is obtained.



Door locks, rear door



Rear door components

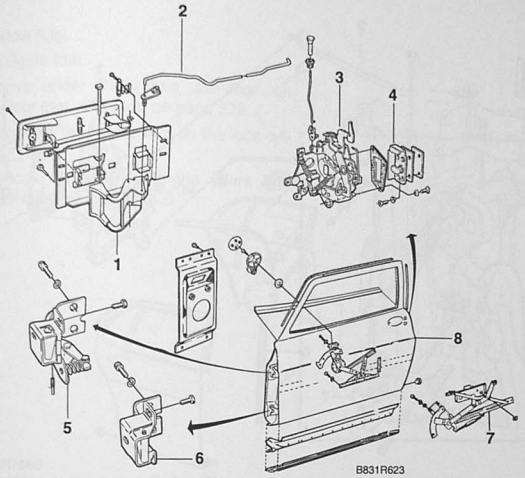
1 Interior door handle
2 Link
3 Door locks
4 Striker plate
5 Upper hinge
6 Lower hinge with door check arm
7 Window regulator

The rear doors have child locks that can be engaged to prevent the doors from being opened inadvertently.

To change

1 Raise the window fully.
2 Remove the tailgate trim.
See To Remove under "*Door trim, 4/5-door*" on page 523.
3 Set the lock mechanism to the closed position and remove the three retaining screws from the door lock.
4 Unhook the door lock knob link from the door lock.
5 Loosen the exterior door handle by slackening the front screw inside the door and the rear screw on the trailing edge half way.
6 Remove the interior door handle and unhook the front end of the link.
7 Push the lock into the door and unhook the link from the lock. Remove the lock, waggling the exterior door handle slightly.
8 If necessary remove the exterior door handle.
See To Remove under "*Opening handles*" on page 480.
9 Fit the handle and lock in the reverse order.
Cars with central locking:
Fit the lock knob pull rod and central locking pull rod.
10 Before fitting the lock, make sure that all moving parts and the lock springs are well greased with Saab Special Chassis Grease.

Door locks, front door



Front door components

1 Interior door handle
2 Link
3 Door locks
4 Striker plate
5 Upper hinge with door check arm
6 Lower hinge
7 Window regulator early design
8 Window regulator late design

To change

1 Raise the window fully.

2 Remove the lock knob and door trim.

See To Remove under *"Door trim, 2/3-door"* on page 521.

3 Set the lock mechanism to the closed position and remove the three retaining screws from the door lock.

4 **Door lock with pull rod operation:**

Unhook the rear part of the link from the door lock and remove the link from the lock cylinder.

5 Remove the door lock.

Slacken the exterior handle retaining screws slightly so that the handle can be wiggled when removing the lock mechanism. One of the screws is inside the door and the other in the trailing edge.

Cars with central locking:

Remove the screws securing the lock motor. Unplug the leads from the central locking motor and remove the motor.

6 If necessary remove the exterior door handle.

See To Remove under *"Opening handles"* on page 480.

7 Fit the handle and lock in the reverse order.

Cars with central locking:

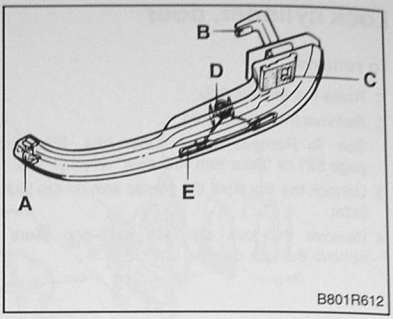
Fit the lock knob pull rod and central locking pull rod.

8 Before fitting the lock, make sure that all moving parts and the lock springs are well greased with Saab Special Chassis Grease.

Opening handles

Door handle overview:

A Bearing
B Slide plate
C Guide
D Spring
E Spring guide



To remove

1 Remove the tailgate trim.

See To Remove under *"Door trim, 2/3-door"* on page 521 or *"Door trim, 4/5-door"* on page 523.

2 Remove the front screw from the door handle, located inside the door.

3 Slacken the door handle screw in the trailing edge of the door four turns.

4 Separate the handle from the door by using brake spring tool 89 95 607 to draw the door lock arm to one side. Turn the handle and withdraw it diagonally upwards and rearwards.

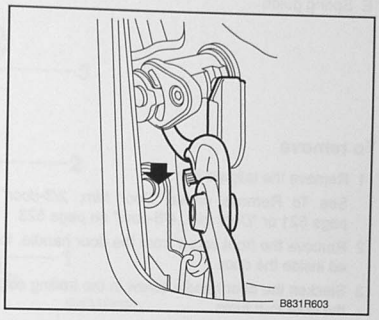
To fit

Fit in the reverse order.

Lock cylinder, door

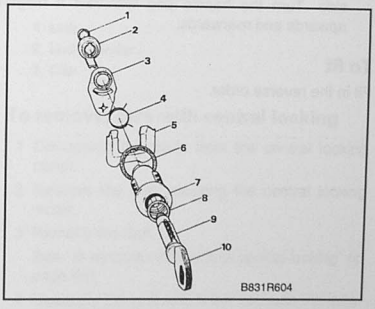
To remove

1 Raise the window fully.
2 Remove the tailgate trim.
See To Remove under *"Door trim, 2/3-door"* on page 521 or *"Door trim, 4/5-door"* on page 523.
3 Unhook the link from the plastic arm on the lock cylinder.
4 Remove the lock clip with multi-grip pliers and remove the lock cylinder unit.



To dismantle

1 Insert the key (**10**) into the lock cylinder (**9**).
2 Prise off the actuator (**2**) and remove the circlip (**1**).
3 Remove the plastic arm (**3**) and spring (**4**).
4 Withdraw the lock cylinder from the lock sleeve (**7**). Leave the key in the lock cylinder while it is withdrawn from the lock sleeve as it may otherwise fall apart.
5 Remove the O-ring (**8**).
(Item **5** is a lock clip and item **6** a seal.)



Important
Do not remove the key from the new lock cylinder until the cylinder is fitted in the lock sleeve.

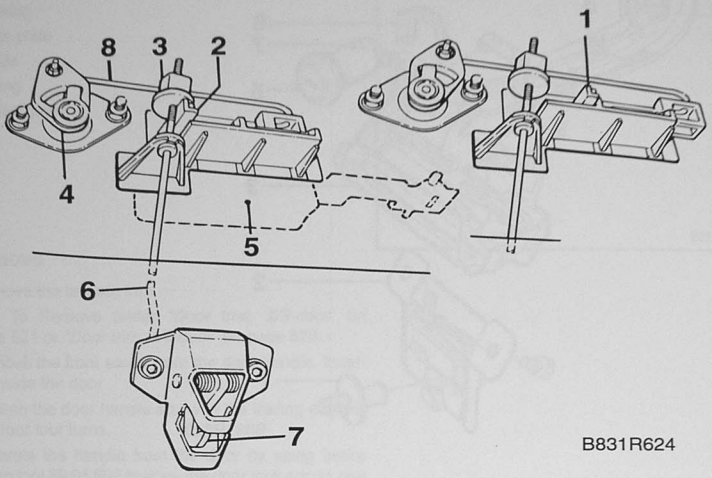
To assemble

1 Fit a new circlip.
2 Assemble in the reverse order.

To fit

Fit in the reverse order.

Lock, tailgate 3/5-door



Lock, tailgate 3/5-door

1 Actuator in locked position
2 Actuator in unlocked position
3 Adjusting nut
4 Lock cylinder
5 Opener
6 Pull rod
7 Lock catch
8 Tie rod

To remove, cars without central locking

1 Remove the tailgate trim.
See To Remove under "*Trim, bootlid/tailgate*" on page 527.
2 If necessary, remove the cover.
3 Slacken the adjusting nut and carefully prise out the pull rod.
4 Disconnect the tie rod from the lock cylinder.
5 Remove the lock cylinder.
6 Unplug the connector for the numberplate lighting.
7 Remove the nuts securing the panel with opener and numberplate lighting.
8 Remove the panel.

To fit

Fit in the reverse order.

If the thread of the adjusting nut is stripped lock the adjusting nut with another nut. This will prevent the adjusting nut from coming loose and rendering the opener inoperative.

To remove, cars with central locking

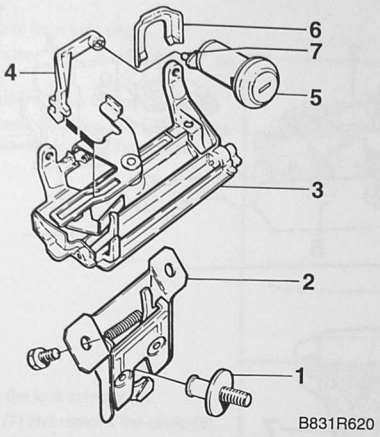
1 Remove the tailgate trim.
See To Remove under "*Trim, bootlid/tailgate*" on page 527.
2 If necessary, remove the cover.
3 Unplug the central locking motor connector.
4 Slacken the adjusting nut and carefully prise out the pull rod.
5 Disconnect the tie rod from the lock cylinder.
6 Remove the lock cylinder.
7 Unplug the connector for the numberplate lighting.
8 Remove the nuts securing the panel with opener and numberplate lighting.
9 Remove the panel.

To fit

Fit in the reverse order.

If the thread of the adjusting nut is stripped lock the adjusting nut with another nut. This will prevent the adjusting nut from coming loose and rendering the opener inoperative.

Lock, bootlid 2/4-door



Lock, bootlid 2/4-door

1 Striker plate
2 Lock
3 Operating mechanism

1 Link
2 Lock cylinder
3 Clip

To remove, cars without central locking

1 Release the lock cylinder by removing the clip.
2 Use a screwdriver to remove the link from the actuator ball.
3 Withdraw the lock cylinder.
4 Undo the screws securing the lock mechanism and handle.
5 Remove the lock mechanism.
6 Remove the handle by guiding it between the inner and outer panels.

To fit

Fit in the reverse order.

To remove, cars with central locking

1 Disconnect the leads from the central locking motor.
2 Remove the nuts securing the central locking motor.
3 Remove the lock.
See "*To remove, cars without central locking*" on page 481.
4 Guide out the lock and motor between the inner and outer panels.
5 Remove the motor pull rod from the lock link.

To fit

1 Attach the central locking motor pull rod to the lock with a clip.
2 Plug in the connector to the central locking motor.
3 Insert the lock and central locking motor. Make sure the pull rod is correctly seated in the link.
4 Secure the lock and central locking motor.
5 Fit the lock cylinder.

Lock cylinder, bootlid

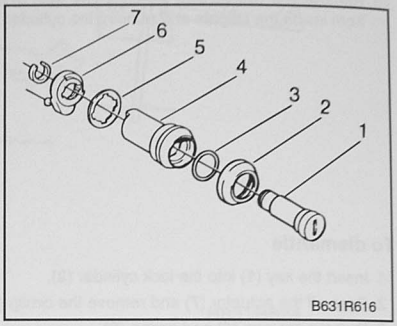
To remove

1 Open the bootlid and pull the clip from the lock cylinder.
2 Prise the link off the cylinder lever and remove the cylinder.

To dismantle

1 Insert the key into the lock cylinder (**1**) (prevents the lock cylinder from falling apart).
2 Prise the actuator (**6**) off the cylinder with a suitable screwdriver.
3 Withdraw the cylinder from the lock sleeve (**4**).
4 Fit a new plastic circlip (**7**) to the lock cylinder stub. (The circlip is destroyed during removal.)
5 Insert the cylinder into the lock sleeve (**4**) and press on the actuator (**6**).

(**2**) is a cover, (**3**) is a seal and (**5**) a spacer.



To fit

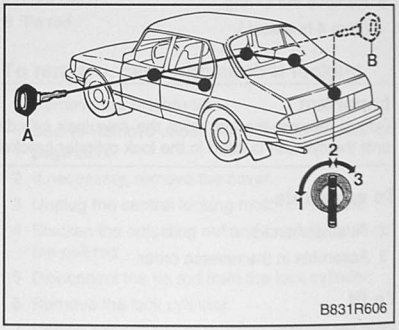
Fit in the reverse order.

Keys

New cars are delivered with two keys that fit all locks and the ignition.

Spare parts

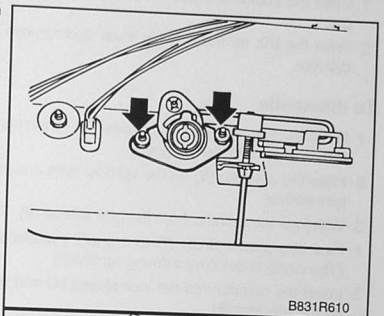
If one of the car's lock cylinders (door, bootlid/tailgate or ignition) is damaged, a new lock cylinder can be ordered on by quoting the serial number on the key and the part number. This means that the master keys will continue to work in all locks without the need to fit a new set of locks to the car.



Lock cylinder, tailgate

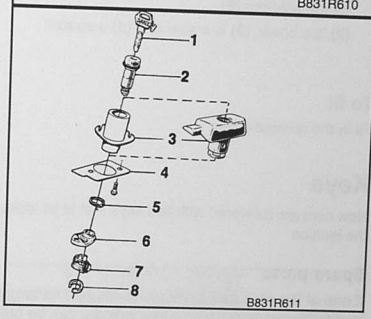
To remove

1 Remove the interior trim from the tailgate.
See To Remove under "*Trim, bootlid/tailgate*" on page 527.
2 Unhook the link from the arm on the lock cylinder.
3 Remove the two screws securing the lock cylinder from inside the tailgate and remove the cylinder.


B831R610

To dismantle

1 Insert the key (**1**) into the lock cylinder (**2**).
2 Prise off the actuator (**7**) and remove the circlip (**8**).
3 Remove the arm (**6**) and spring (**5**).
4 Withdraw the lock cylinder from the lock cylinder bracket (**3**). Leave the key in the lock cylinder while it is withdrawn from the lock cylinder bracket as it may otherwise fall apart.
5 Remove the O-ring.
(Item **4** is a seal.)



B831R611

Important
Do not remove the key from the new lock cylinder until the cylinder is fitted in the lock cylinder bracket.

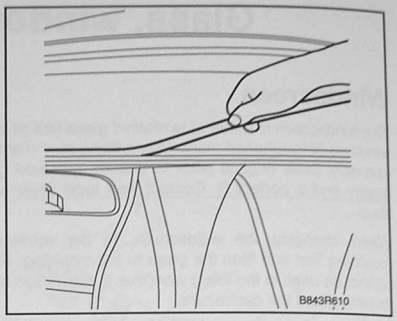
To assemble

1 Fit a new circlip.
2 Assemble in the reverse order.

To fit

Fit in the reverse order.

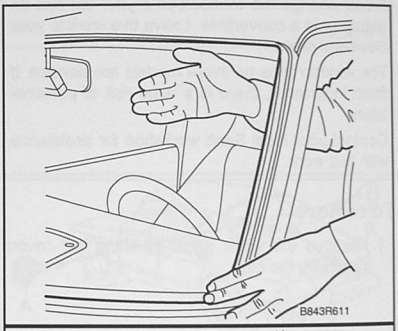
3 Remove the decorative strip from the windscreen.



4 Release the windscreen from the rubber moulding by inserting a slightly bent screwdriver under the moulding and sliding it around the windscreen.

Note
Take care not to damage the paintwork.

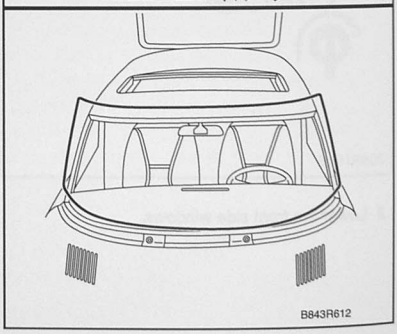
5 Push out the upper left-hand corner by pressing carefully from the inside.



6 Free the upper edge and sides of the windscreen from the rubber moulding.

Free the lower edge.

Lift aside the windscreen.



Glass, windows and mirrors

Windscreen

The windscreen is made of laminated glass and all other windows of toughened glass. When fitting new windows, use only Saab original parts to ensure approved glass quality and a perfect fit. Contact your local Saab workshop.

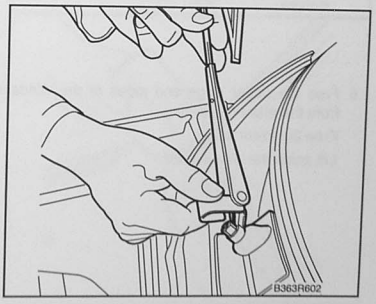
When changing the windscreen, fit the windscreen moulding first and then the glass to the moulding. String cannot be used in the fitting work due to the design of the moulding and the dashboard.

If for any reason the moulding should become detached from the body, apply anti-corrosion treatment (oil) to the exposed metal flanges of the window opening to improve the anti-corrosion protection.

> ⚠ **WARNING**
>
> Never change the windscreen if your car has an airbag or is a convertible. Leave this work to your Saab workshop.
>
> The windscreens on these models are bonded. If fitted incorrectly, there is a large risk of personal injury.
>
> Contact your local Saab workshop for assistance with this work.

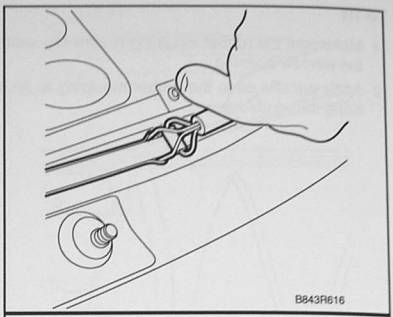
To remove

1 Remove the wiper arms by lifting the covers and removing the nuts.



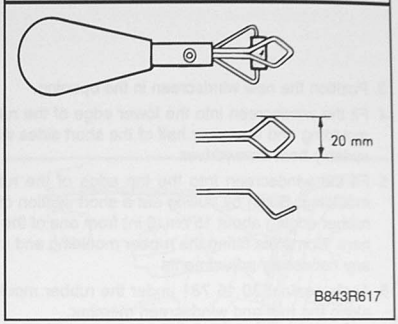
2 Lower the front side windows.

8 Fit the decorative strip with tool 82 91 023.



Fitting tool 82 91 023 can be fitted with attachments of varying width to suit the wide variety of mouldings that exist.

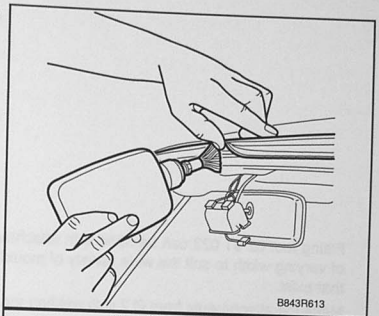
Make the attachments from Ø 2 mm welding rod.



To fit

1 Make sure the rubber moulding is correctly seated in the window opening.

2 Apply paraffin oil to the rubber moulding to facilitate fitting the windscreen.

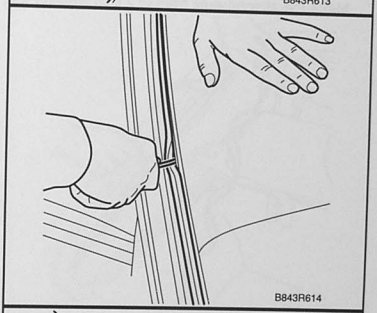

B843R613

3 Position the new windscreen in the opening.

4 Fit the windscreen into the lower edge of the rubber moulding and the lower half of the short sides with a suitably bent screwdriver.

5 Fit the windscreen into the top edge of the rubber moulding. Begin by pulling out a short section of the rubber edging about 15 cm (6 in) from one of the corners. Complete fitting the rubber moulding and make any necessary adjustments.

6 Apply sealant 30 15 781 under the rubber moulding along the roof and windscreen member.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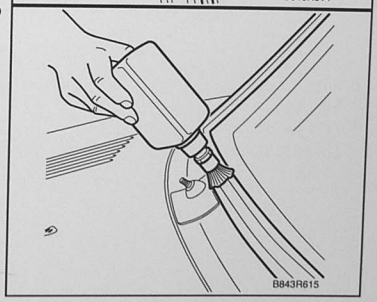
7 Apply paraffin oil to the groove for the decorative strip to facilitate fitting.


B843R615

Door window, front doors

The door window is clamped at its base in a U-shaped retainer with a guide rail for the operating arm of the window regulator. The leading and trailing edges of the pane are located in U-shaped channels.

A triangular plate for mounting the door mirror is provided at the lower front corner of the window frame. The size of the window has therefore been reduced correspondingly and the guide channel moved backwards.

To remove

1 Remove the tailgate trim.

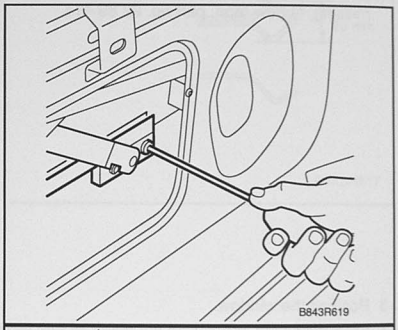
See To Remove under *"Door trim, 2/3-door"* on page 521 or *"Door trim, 4/5-door"* on page 523.

2 Remove the interior weatherstrip from the lower edge of the window aperture.

3 **Early design:**

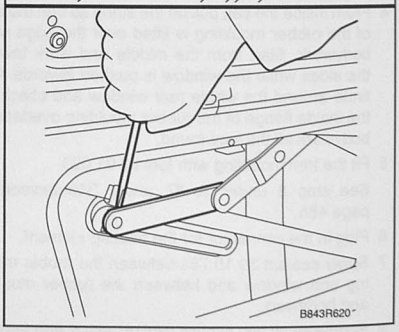
a Lower the window to access the screws.

b Remove the two screws securing the front arm of the window regulator to the window retainer.



c Rotate the pane so that the front edge is inclined downwards and move it forward so that the plastic runner is aligned with the recess in the operating arm.

d Insert a screwdriver between the operating arm and the guide rail and carefully prise out the plastic runner through the slot.



Rear window

To remove

1 Unplug the connector from the heating element on the rear window.

2 Free the moulding from around the rear window.

3 Push out the rear window by pressing carefully from the inside and remove the window.

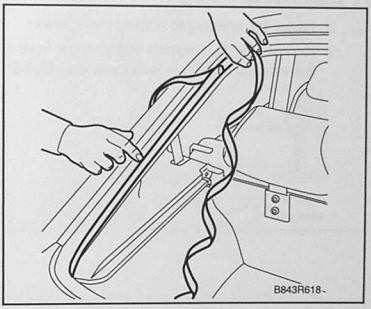
4 Clean the contact surface for the rubber moulding on the body/tailgate and remove any old sealant.

To fit

1 Fit the rubber moulding to the window and insert a length of string into the channel in the rubber.

The ends of the string should cross at the centre of the lower edge.

2 Inspect the tape along the edge of the window aperture. If the tape has come loose, is damaged or is missing, fit new tape, part no. 92 89 414.



3 Position the window.

4 From inside the car, pull on the string so that the edge of the rubber moulding is lifted over the edge of the bodywork. Start from the middle and work towards the sides while the window is pushed inwards. Continue around the whole rear window and check that the inside flange of the rubber moulding overlaps the bodywork all the way round.

5 Fit the trim moulding with tool 82 91 023.

See step 8 under To Fit under *"Windscreen"* on page 485.

6 Plug in the connector for the heating element.

7 Spray sealant 30 15 781 between the rubber moulding and window and between the rubber moulding and bodywork.

8 Scrape away any excess sealant with a wooden putty knife.

9 Clean the glass and moulding with neat methylated spirits.

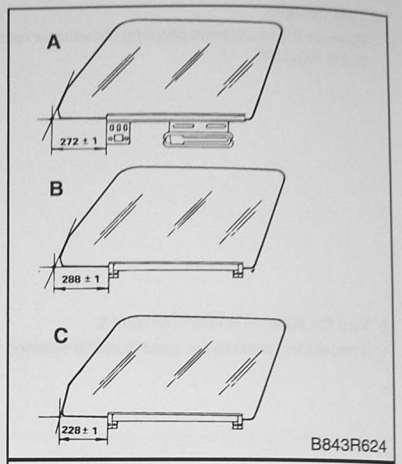
10 Clean the inside and outside of the glass with window cleaner.

Measurement (mm) for fitting door window retainer, 2-door model

A Early design, M1979-80

B Late design, M1979-80

C M1981-



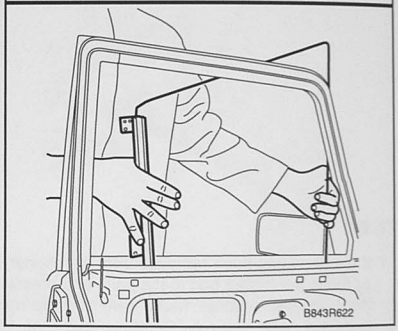
2 Lower the pane into the door with the leading edge facing downwards and the retainer backwards. Then, rotate the pane to the horizontal.

3 Press the plastic runner on the rear operating arm into the guide rail, and tighten the two screws for the front arm.

4 Fit the weatherstrip along the lower edge of the window aperture.

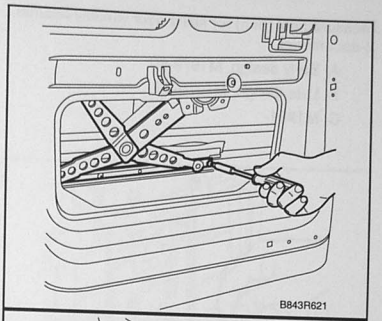
5 Check the operation of the window and fit the door trim.

See To Fit under "*Door trim, 2/3-door*" on page 521 or "*Door trim, 4/5-door*" on page 523.



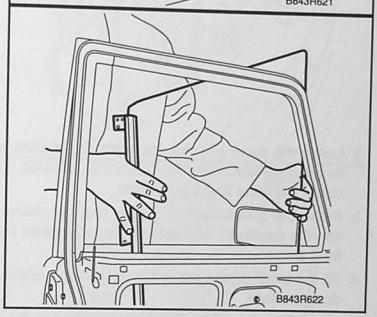
4 **Late design:**

Remove the two screws securing the window retainer to the regulator.


B843R621

5 Turn the pane on end and remove it.

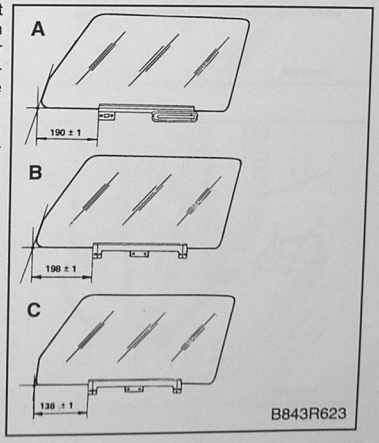
6 If necessary, remove the pane from the retainer.


B843R622

To fit

1 If the pane has been removed from its retainer, start by fitting the rubber pad to the pane and pressing on the U-shaped retainer. Make sure that the retainer grips the pane securely. Carefully follow the measurements shown in the illustration. It will otherwise be difficult to operate the window.

When fitting, make sure you press the retainer on evenly. If, for instance, you press centre the retainer on harder than the ends, the retainer can be deformed. The glass can then easily creep out of the retainer.



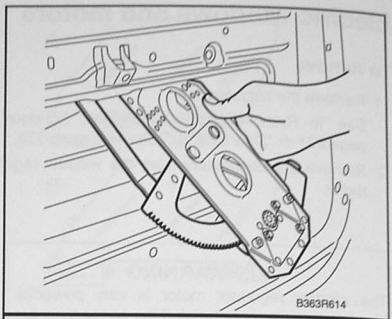
Measurement (mm) for fitting door window retainer, front door of 4-door model

A Early design, M1979-80

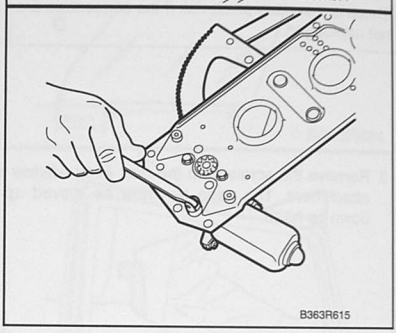
B Late design, M1979-80

C M1981-

6 Remove the window regulator.



7 Remove the electric motor.



To fit

Fit in the reverse order.

Electric windows and motors

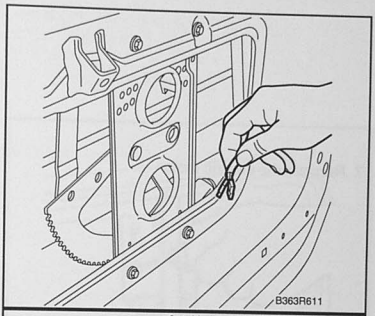
To remove

1 Remove the tailgate trim.

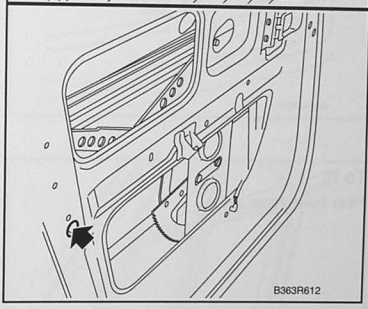
See To Remove under *"Door trim, 2/3-door"* on page 521 or *"Door trim, 4/5-door"* on page 523.

2 Remove the connectors from the window regulator motor.

> **⚠ WARNING**
> The window regulator motor is very powerful. There is a serious pinch risk if the connectors are not unplugged.

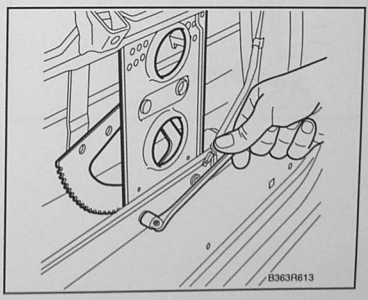

B363R611

3 Remove the screw from the rear, fixed window lever attachment. The pane can now be moved up and down by hand.


B363R612

4 Remove the pane.

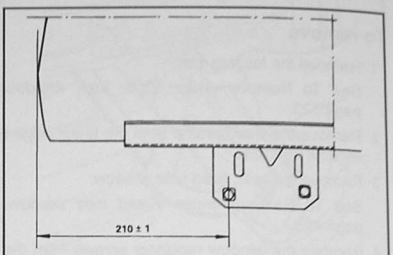
5 Remove the four bolts securing the window regulator to the door.


B363R613

To fit

1 If the pane has been removed from its retainer, start by fitting the rubber pad to the pane and pressing on the U-shaped retainer. Make sure that the retainer grips the pane securely. Carefully follow the measurements shown in the illustration. It will otherwise be difficult to operate the window.

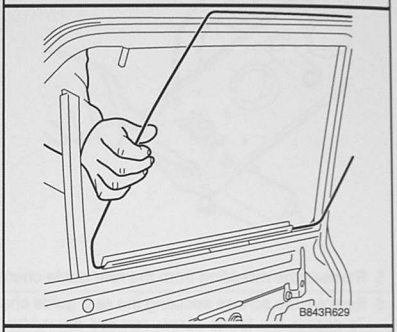
When fitting, make sure you press the retainer on evenly. If, for instance, you press centre the retainer on harder than the ends, the retainer can be deformed. The glass can then easily creep out of the retainer.



B843R628

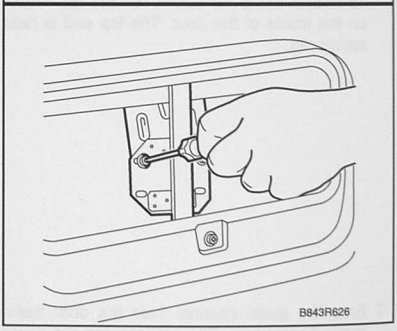
Measurement for fitting window retainer, rear door window.

2 Lower the windowpane horizontally into the door from inside.



B843R629

3 Secure the retainer to the window regulator bracket.



B843R626

Door window, rear doors

To remove

1 Remove the tailgate trim.

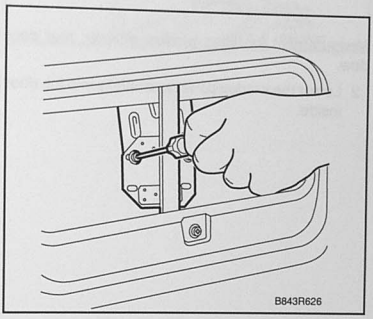
See To Remove under *"Door trim, 4/5-door"* on page 523.

2 Remove the weatherstrip from the lower edge of the window aperture.

3 Remove the rear, fixed side window.

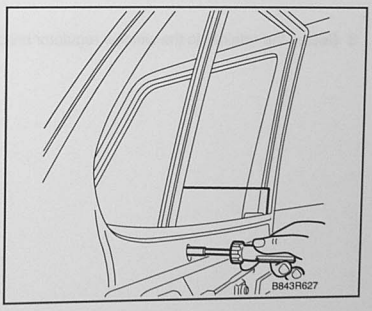
See To Remove under *"Fixed side windows"* on page 498.

4 Remove the window regulator screws from the windowpane retainer.



5 Remove the moulding from the rear guide channel.

6 Remove the screws securing the rear guide channel. To access the lower screw, remove the rubber plug on the inside of the door. The top end is held by a spring clip.



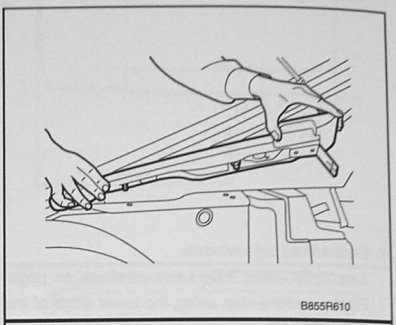
7 Free the guide channel from the door frame and move it rearwards. The windowpane can now be lifted out.

8 If necessary, remove the pane from the retainer.

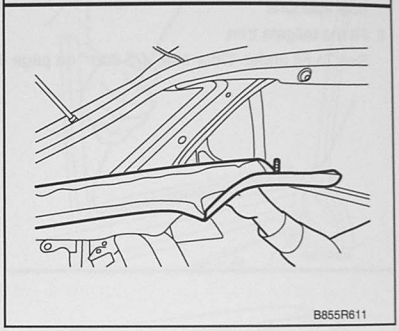
Fixed side windows

To remove

1 **5-door:**
First, remove the trim from the C-pillar:
a Remove the cowl from the backrest catch.
b Remove the parcel shelf bracket.


B855R610

c Unbolt the seatbelt guide.
d Carefully release the fastener at the top front corner of the trim using a screwdriver and remove the trim.


B855R611

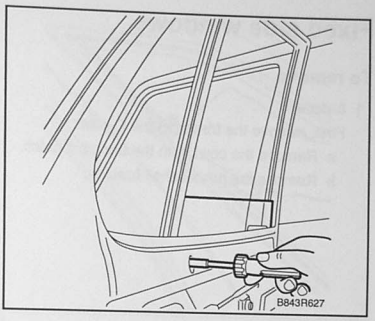
2 Push the pane out from the inside, starting at the trailing edge, while lifting the flange on the rubber moulding.

To fit

1 Fit the moulding round a new pane. Insert a length of string into the slot in the rubber moulding, with the ends of the string meeting at the rear
2 From inside the car, pull on the string so that the edge of the rubber moulding is lifted over the edge of the bodywork. Start at the trailing edge. Carefully tap the pane into place using a plastic mallet. Continue around the whole side window and check that the inside flange of the rubber moulding overlaps the bodywork all the way round.

4 Fit the rear guide channel and the rubber plug on the inside of the door.

5 Free the guide strip from the channel and fit the trim moulding. Then, press the strip back into place.



6 Fit the fixed side window.
See To Fit under "*Fixed side windows*" on page 498.

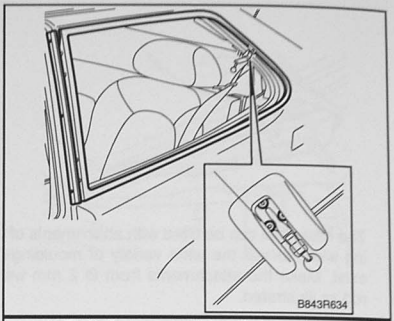
7 Fit the weatherstrip along the lower edge of the window aperture.

8 Fit the tailgate trim.
See To Fit under "*Door trim, 4/5-door*" on page 523.

Opening side windows

To remove

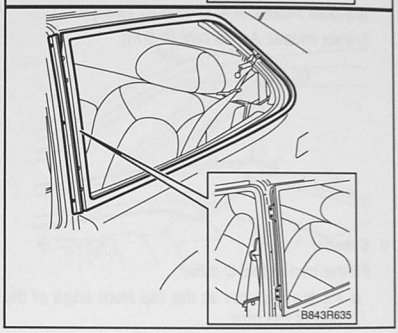
1 Unscrew the lock catch at the trailing edge from the body.



2 Drill out the pop rivets and remove the cover plate over the hinge mounting.

> ⚠ **WARNING**
> Risk of eye injury when drilling pop rivets. Use protective goggles.

3 Unscrew the four retaining screws at the leading edge of the window.

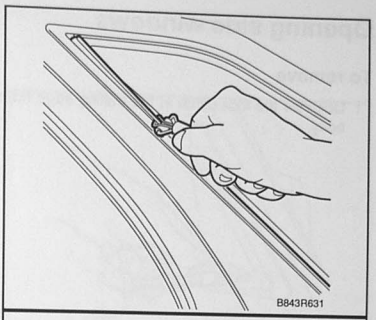


4 Remove the window.

To fit

Fit in the reverse order.

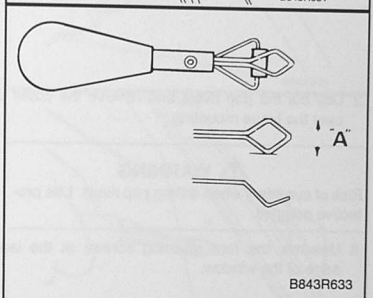
3 Fit the trim moulding with connecting piece to the rubber moulding using fitting tool 82 91 023.


B843R631

The fitting tool can be fitted with attachments of varying width to suit the wide variety of mouldings that exist. Make the attachments from Ø 2 mm welding rod as illustrated.

2/3-door model: A = 17 mm (0.75 in)

5-door model: A= 13 mm (0.5 in)

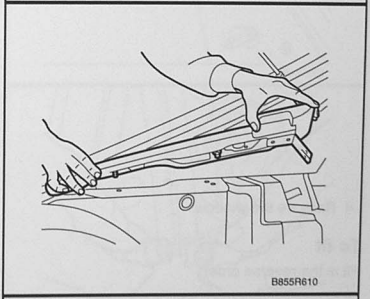


B843R633

4 **5-door:**

Fit the trim to the C-pillar:

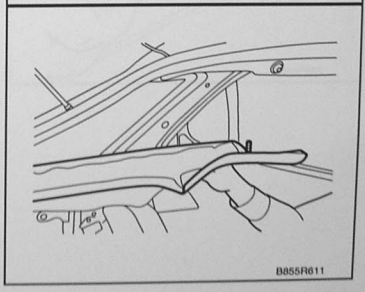
a Fit the fastener at the top front edge of the trim and fit the trim.


B855R610

b Bolt the seatbelt guide into place.

c Fit the parcel shelf bracket.

d Fit the cowl from the backrest catch.


B855R611

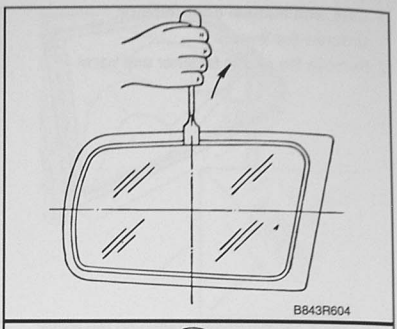
Mirror glass, manual door mirrors

To change

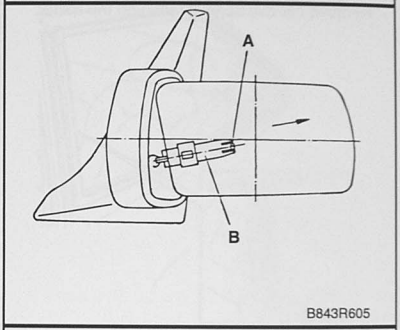
1 Adjust the mirror so that you can insert a screwdriver between the glass and the upper edge of the housing.

2 Prise the mirror glass off the ball joint. Position the screwdriver at the centre of the upper edge of the glass to avoid unnecessary tension.

Important
The plastic material is very brittle at low temperatures.


B843R604

3 Position the mirror so that the rear side is visible and the runner comes into contact with the stop (**A**) on the plastic rail (**B**).



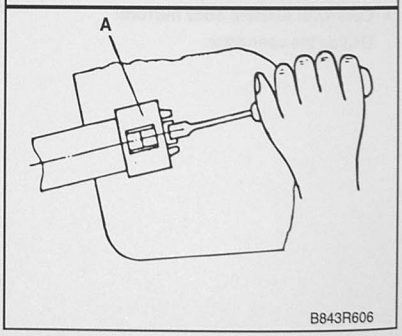
B843R605

4 Press down the stop (**A**) with a screwdriver and remove the mirror glass.

Fit in the reverse order.

Press the centre of the glass when fitting the mirror.

If required, lubricate the joints and ball cup with Gleitmo 805, part no. 30 06 442.



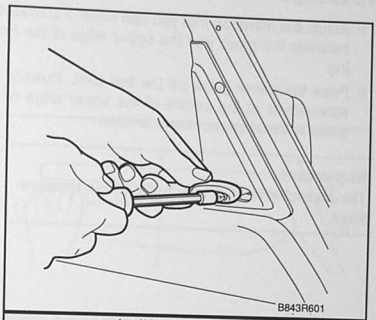
B843R606

Door mirrors M1981-

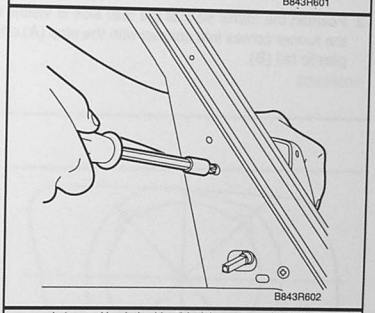
To remove

1 **Cars with manual door mirrors:**
Unscrew the lever.

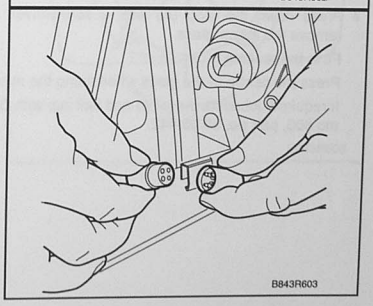
2 Remove the plastic fastener and bezel.


B843R601

3 Remove the two screws retaining the mirror.


B843R602

4 **Cars with electric door mirrors:**
Unplug the connector.


B843R603

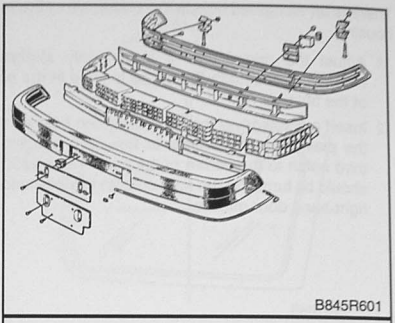
5 Remove the rear window.

To fit

Fit in the reverse order.

Bumpers

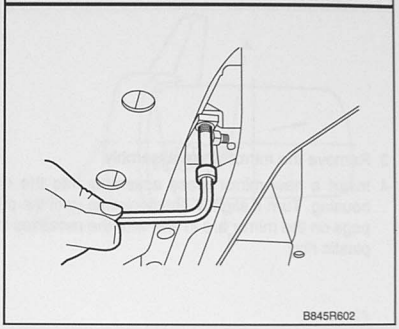
Front bumper, -M1986



B845R601

To remove

1 Raise the car.
2 Remove the two retaining bolts from underneath.



B845R602

To fit

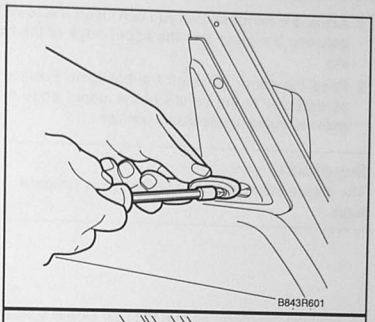
Fit in the reverse order.

Door mirrors M1981-

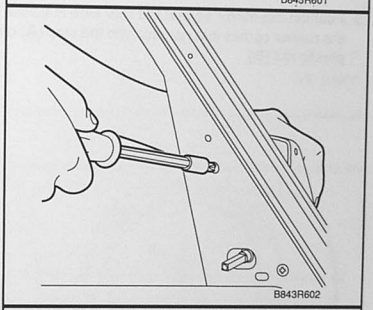
To remove

1 **Cars with manual door mirrors:**
Unscrew the lever.

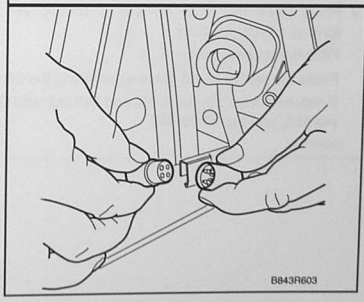
2 Remove the plastic fastener and bezel.



3 Remove the two screws retaining the mirror.



4 **Cars with electric door mirrors:**
Unplug the connector.

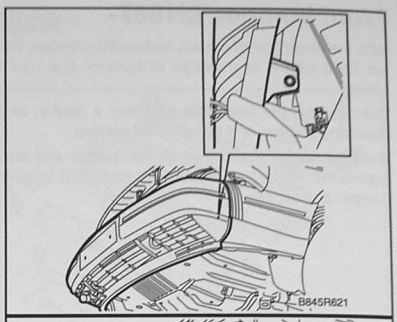


5 Remove the rear window.

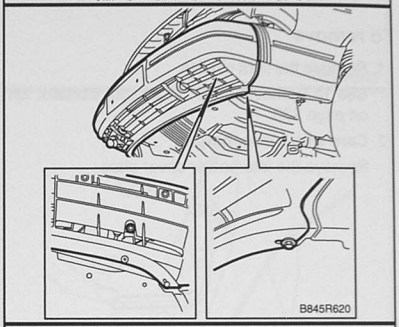
To fit

Fit in the reverse order.

6 **M1991-:**
Remove the bolts from above that secure the spoiler skirt.

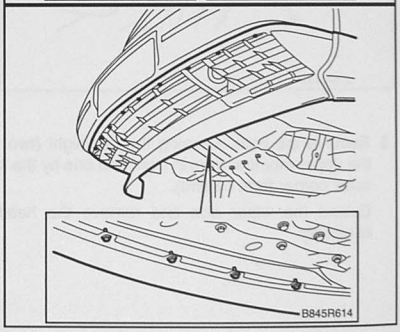


7 Remove the bolts holding the spoiler to the bumper.



8 **Cars with Aero spoiler:**
Remove the bolts securing the spoiler skirt to the bumper.

9 Remove the bolts securing the spoiler to the bumper.



10 Remove the washer hoses from the headlight washers.

11 Undo the two bolts securing the bumper and remove the bumper.

To fit

Fit in the reverse order.

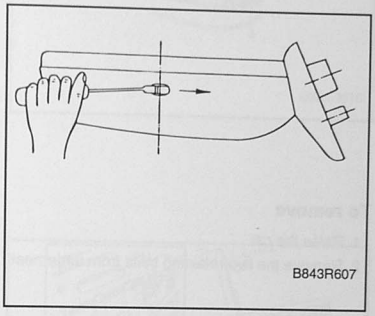
Mirror glass, electric door mirrors

To change

There is an elongated hole in the underside of the mirror housing.

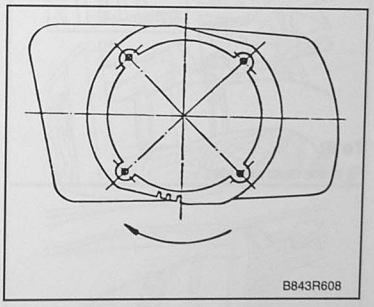
1 Adjust the mirror until it is perfectly straight. A notched plastic ring will now be located in the centre of the hole.

2 Insert a screwdriver into the elongated hole and turn the plastic ring two clicks to the right, bringing the third notch to the centre of the hole. The plastic ring should be turned to the right on both the left-hand and right-hand door mirrors.


B843R607

3 Remove the mirror glass assembly.

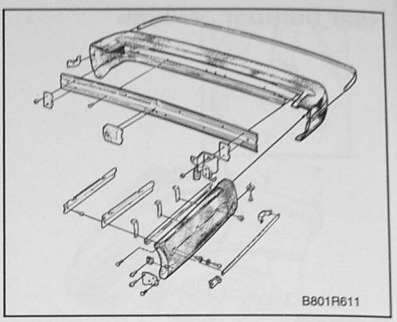
4 Insert a new mirror glass assembly into the mirror housing. Turn it slightly anticlockwise until the plastic pegs on the mirror are in line with the recesses in the plastic ring.


B843R608

5 Fit the mirror to the adjusting unit in the housing. The plastic pegs should fit into the holes in the ring on the adjusting unit.

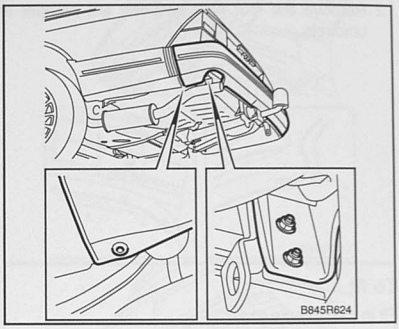
6 Insert a screwdriver into the elongated hole in the mirror housing and turn the plastic ring two clicks to the left to secure the mirror.

Rear bumper, M1987-



To remove

1 Raise the car.
2 Remove the two bolts on each side.
3 Remove the screw on each side attaching the bumper to the bumper extension.



4 Remove the bumper.

To fit

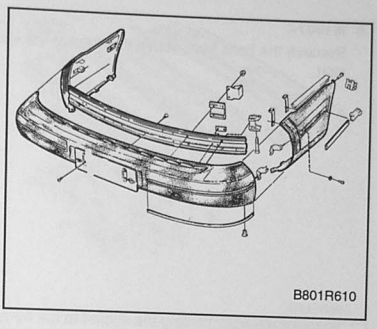
Fit in the reverse order.

Front bumper, M1987-

With the exception of certain carburettor models, all cars are fitted with a new design of bumper and new front spoiler.

The new bumper has three sections: a centre, energy-absorbing section and two side extensions.

The front spoiler is attached to the bumper and the side extensions, which form a rearward extension for both the bumper and spoiler.



B801R610

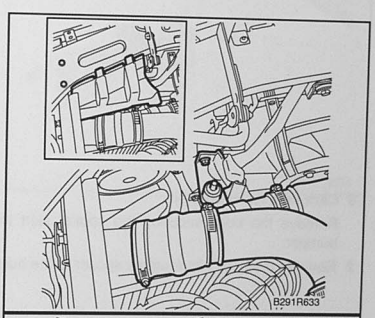
To remove

1 Remove the light cluster.

See To Remove under *"Front light clusters, M1987-"* on page 230.

2 **Cars with turbocharger:**

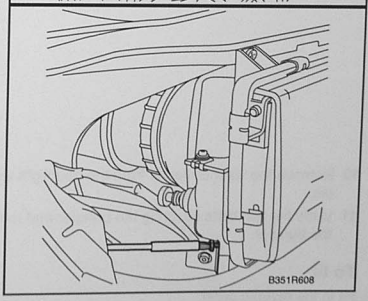
Remove the intercooler cover plate.



B291R633

3 Remove the bolts securing the headlight (two from the upper member from in front and one by the lower outer corner from behind).

Extend the wiper arm and remove the headlight assembly.



B351R608

4 Unplug the headlight wiper motors.

5 Remove the grille.

See *"Grille"* on page 470.

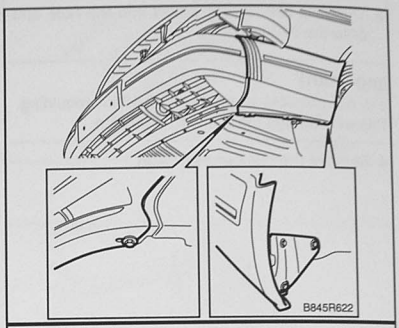
Bumper extension, front M1987-

To remove

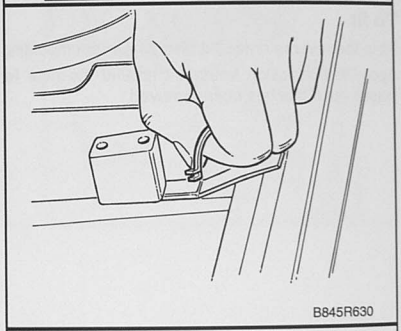
1 Remove the light cluster.
See To Remove under *"Front light clusters, M1987-"* on page 230.

2 Remove the outer screw from the centre spoiler skirt.

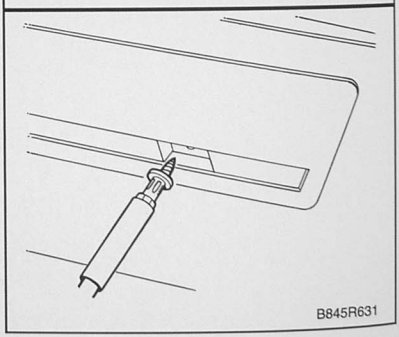
3 Remove the screw from the wing attachment and the screw from the edge of the wing.



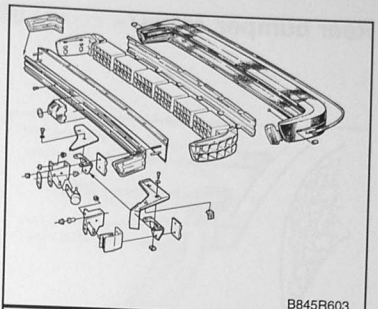
4 Remove the trim tensioning spring.



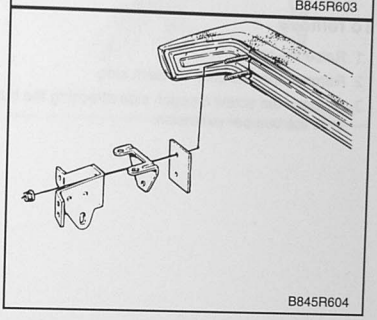
5 Remove the screws securing the bumper extension and remove the extension.



Rear bumper, -M1986



B845R603



B845R604

To remove

1 Raise the car.
2 Remove the four nuts securing the bumper to the brackets.

To fit

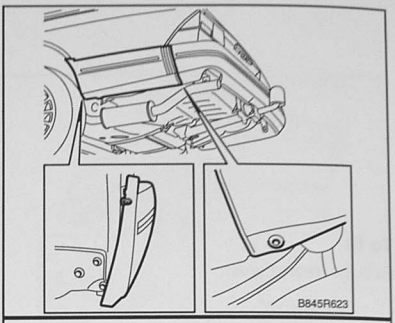
Fit in the reverse order.

Bumper extension, rear M1987-

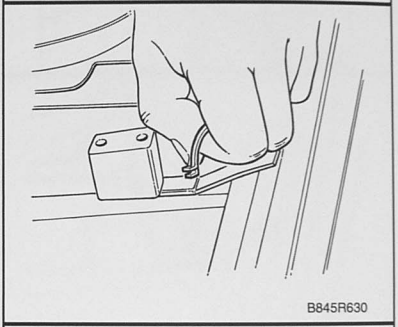
To remove

1 Remove the screw from the wing attachment and the screw from the edge of the wing.

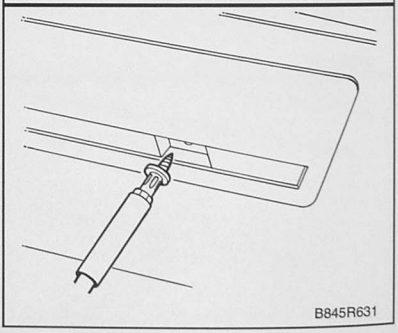
2 Remove the screw attaching the bumper extension to the bumper.



3 Remove the trim tensioning spring.



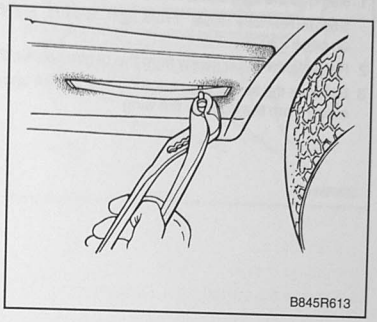
4 Remove the screws (under the trim moulding) securing the bumper extension and remove the extension.



Bumper extension and trim -M1986

To remove

1 Remove the trim moulding.
2 Drill a 3 mm (0.12 in) hole, 25 mm (1 in) from the trailing edge of the trim moulding.
3 Thread a self-tapping screw into the hole and withdraw the trim moulding.


B845R613

Important
It is not possible to prise out the trim moulding. This will damage the bumper extension.

4 Remove the bumper extension.

To fit

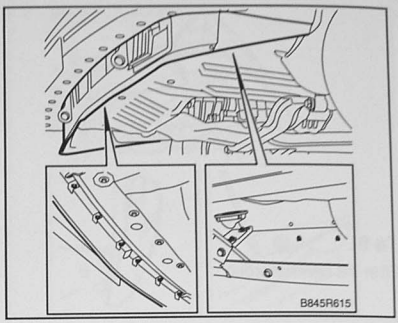
Fit in the reverse order. Fit also a new trim moulding.

Apply anti-corrosion treatment around the hole for the plastic nut if this has been removed.

Spoiler skirt -M1986

To remove

1 Remove the bolts securing the spoiler skirt to the spoiler.



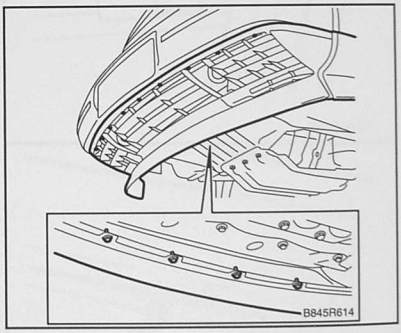
To fit

Fit in the reverse order.

Spoiler skirt M1987-

To remove

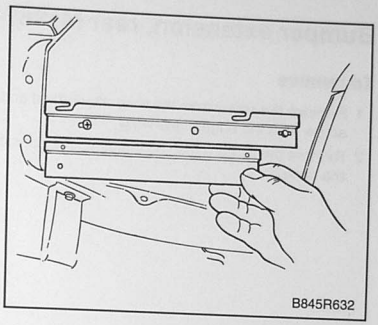
1 Remove the bolts securing the spoiler to the bumper. 10 bolts for the centre section and 3 on each side section.



To fit

Fit in the reverse order.

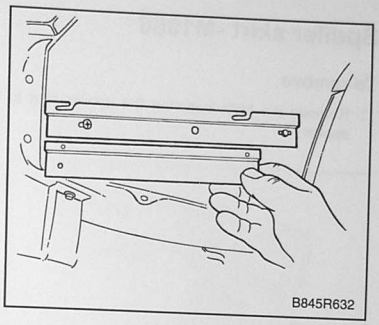
The bumper extension is screwed to a split attachment rail.


B845R632

To fit

Fit in the reverse order.

The bumper extension is screwed to a split attachment rail.


B845R632

To fit

Fit in the reverse order.

Work schedule

Explanation

The following table contains an outline of topics. The table makes it easy to see which jobs are described in each section as well as the parts and tools that are required to complete the work.

Remember to read carefully through the job description as well as General Information (pages 2-6) before you begin work.

Section	Applicable to the following work	Tools required	Parts required to carry out the work
Door trim, 2/3-door	Removing/Fitting		Loctite Protective sheeting
Door trim, 4/5-door	Removing/Fitting		Loctite Protective sheeting
Side trim by rear seat, 2/3-door	Removing/Fitting		Quick-release screws
Side trim by rear seat, 4/5-door	Removing/Fitting		
Trim, bootlid/tailgate	Removing/Fitting		
Side trim in luggage compartment,	Removing/Fitting		Quick-release screws
Headlining, 2/4-door	Removing/Fitting	Tool 82 91 023	Rubber strip 92 35 516 or Rubber strip 92 31 499 Tape 92 89 414 Sealant 30 15 781 Benzene
Headlining, 3/5-door	Removing/Fitting	Drill Pop rivet	Pop rivets
General cleaning		Sponge Medium-stiff brush	Spot remover Paper kitchen towel Luke-warm soap solution White spirit Carpet shampoo
Driver's seat, M1979-80	Removing/Fitting		
Driver's seat, M1981-90	Removing/Fitting		
Passenger seat, M1979-80	Removing/Fitting	Allen key	
Passenger seat, M1981-90	Removing/Fitting		
Front seats, M1991-	Removing/Fitting	Torque wrench	
Front seat, electrically adjustable M1991-	Removing/Fitting	Torque wrench	
Front seat, backrest upholstery M1979	Removing/Fitting		
Front seat, backrest upholstery M1980-	Removing/Fitting		
Front seats, seat upholstery -M1990	Removing/Fitting		
Front seats, seat upholstery M1991-	Removing/Fitting	Bent welding rod	Fitting kit 84 71 062

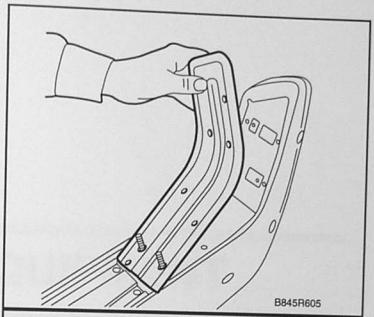
Cellular blocks -M1986

To change

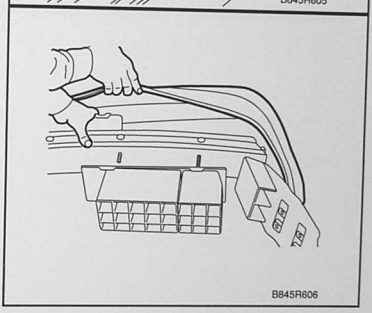
1 Remove the bumper.

See To Remove under *"Front bumper, -M1986"* on page 504 or *"Rear bumper, -M1986"* on page 507.

2 Remove the centre plate and the plate on the side of the bumper on which the cellular block is to be changed.



3 Hold up the rubber sheath to access the cellular block and change the block.

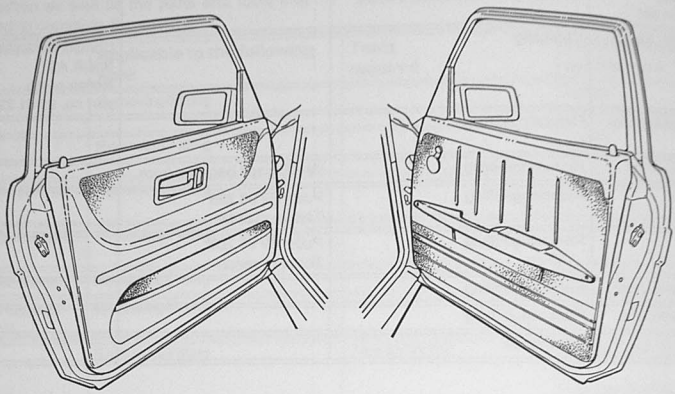


To fit

Fit in the reverse order.

Trim

Technical description



B855R601

Door trim, 2 and 3-door models Door trim, 4 and 5-door models

Door trim, 2 and 3-door models

The door trim is made of hard polyurethane foam covered with a plastic film.

Door trim, 4 and 5-door models

The door trim is stretched over a fibreboard backing and secured to the door by screws and snap fasteners.

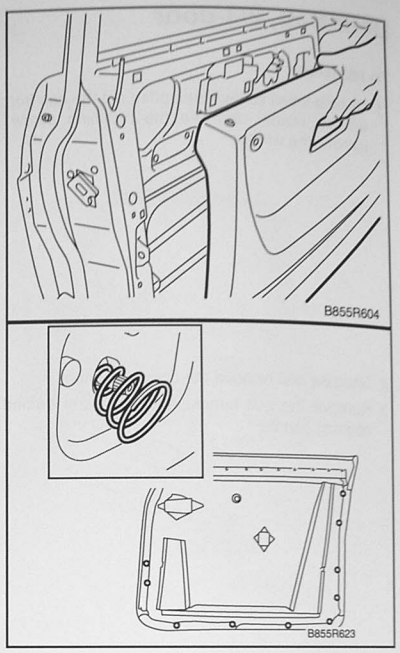
Headlining

The headlining is made of form-pressed fibreglass covered with a nylon velour. The rigidity of the headlining makes it susceptible to cracking, especial in at the edges of the apertures for the roof lights, sun visors and sunroof.

Exercise great care when fitting the headlining.

INTERIOR EQUIPMENT

5 Carefully remove the door trim making sure not to lose the window winder spring.



Note
Recover the spring from between the door trim and window regulator.

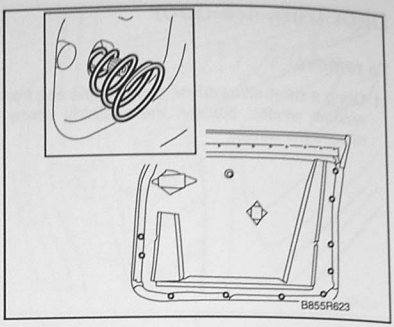
To fit

Fit in the reverse order.

Make sure the protective sheeting covers the apertures on the inside of the door and that the lower edge of the sheeting is inserted into the door (to lead any moisture away from the trim).

Apply Loctite to the window winder screw.

Section	Applicable to the following work	Tools required	Parts required to carry out the work
Heating pads, changing -M1990	Removing/Fitting		Benzene Contact adhesive, Bostik A3
Heating pads, changing M1991-	Removing/Fitting		Benzene
Heating pads, thermostat in net	Changing		
Heating pads, thermo-stat in foam	Changing		Contact adhesive, Bostik A3 Repair patch part no. 95 51 227
Rear seat, seat cush-ion	Removing/Fitting		
Rear seat backrest	Removing/Fitting	Welding rod bent into hook	
Switch panel	Removing/Fitting	Puller 89 96 258 Torque wrench	
Dashboard	Removing/Fitting	Puller 89 96 258 Torque wrench	
Centre console, front	Removing/Fitting		
Centre console, rear	Removing/Fitting		
Seatbelts	Information		



Note
Recover the spring from between the door trim and window regulator.

To fit

Fit in the reverse order.

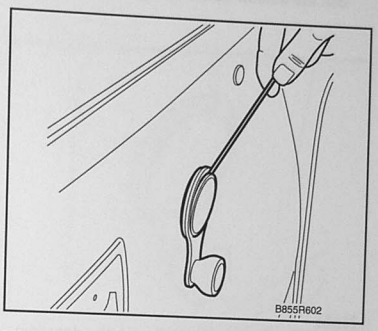
Make sure the protective sheeting covers the apertures on the inside of the door and that the lower edge of the sheeting is inserted into the door (to lead any moisture away from the trim).

Apply Loctite to the window winder screw.

Door trim, 2/3-door

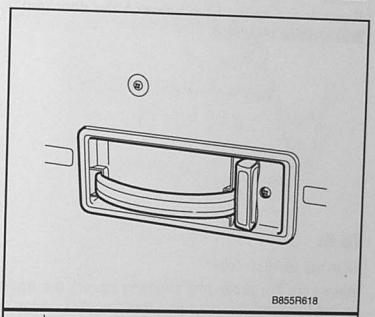
To remove

1 Using a small screwdriver, prise out the cap from the window winder. Slacken the retaining screw and remove the winder.



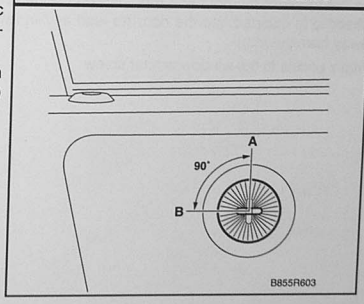
2 Unscrew and remove the door lock knob.

3 Remove the pull handle and the bezel behind the opening handle.



4 Remove the three cross-head screws and plastic washers at the top of the door, and the two quick-release screws at the bottom.

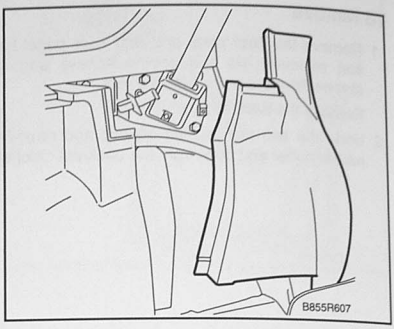
Remove the quick-release screws by turning them through 90° anticlockwise from the fitted position (**A**) to the removal position (**B**).



Side trim by rear seat, 4/5-door

To remove

1 Fold the seat cushion forward and remove the lower retaining screw from the side trim.
2 Fold down the backrest and remove the upper retaining screw from the side trim and the cowl from the backrest catch.
3 Remove the side trim.



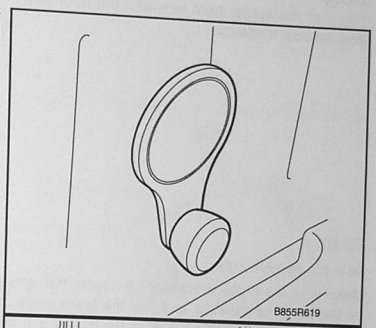
To fit

Fit in the reverse order.

Door trim, 4/5-door

To remove

1 Using a small screwdriver, prise out the cap from the window winder. Slacken the retaining screw and remove the winder.



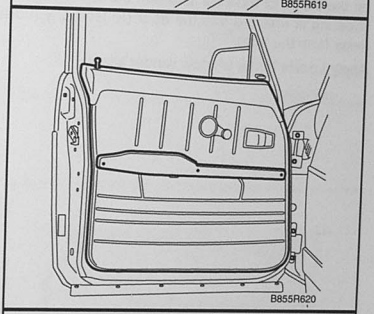
2 Unscrew and remove the door lock knob.

3 **Front doors:**

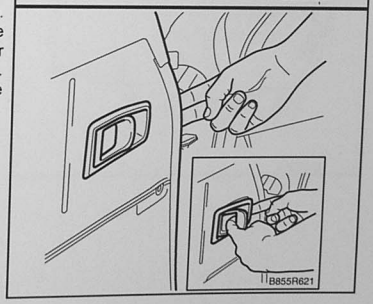
Undo the three screws from the armrest and remove the armrest.

4 **Rear doors:**

Undo the two screws from the armrest and remove the armrest.



5 Remove the bezel from behind the opening handle. Work around the outside of the trim panel and release the fasteners holding the door trim by inserting your fingers at the edge and carefully prising outwards. Remove the trim panel. Make sure not to lose the window winder spring.

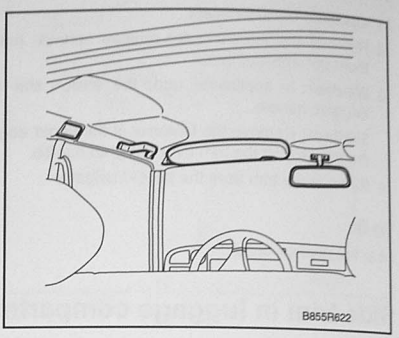


Headlining, 2/4-door

To remove

1 Remove the rearview mirror, roof light, sun visors and courtesy handles.

If your car has a sunroof, remove the plastic edging around the sunroof opening to free the headlining.



2 Remove the seatbelt fittings and safety padding from the B-pillars.

3 Detach the padding from the A-pillars and lower this inwards.

4 Tape the sealing strip to the roof to prevent this falling out of the window frame when the rear window is removed.

5 Remove the rear window.

See To Remove under *"Rear window"* on page 489.

6 Slide the headlining forwards slightly to free it from the rear C-pillar trim.

7 Remove the headlining through the rear window opening.

On 2-door models, you can, exercising the greatest of care, remove the headlining through the right-hand front door.

To fit

Fit in the reverse order.

To fit the rear window:

See To Fit under *"Rear window"* on page 489.

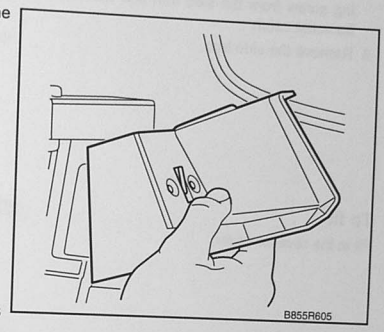
Side trim by rear seat, 2/3-door

To remove

1 Remove the floor plate and rear floor panel having first removed the self-tapping screws and hinge screws from the rear seat backrest.

Remove the backrest from the car.

2 Undo the two self-tapping screws and remove the rubber buffer and cowl from the backrest catches.



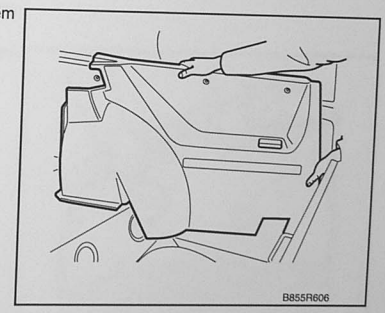
3 Unbolt the front seatbelt from the attachment points on and at below the B-pillar.

4 Remove the ashtray and belt guide from the side trim.

Remove the special belt guide.

5 Remove the quick-release screws by turning them 90° anticlockwise.

Remove the trim.



To fit

Fit in the reverse order.

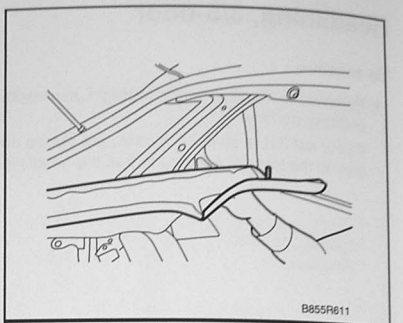
Tightening torque, seatbelt attachment:
47 Nm (35 lbf ft)

Inspect the condition of the quick-release nuts. To fit the quick-release screws, twist 90° clockwise while pressing in the screw.

4 Remove the C-pillar trim by releasing the fasteners.

If applicable, remove the seatbelt fittings and the catches on the opening side windows.

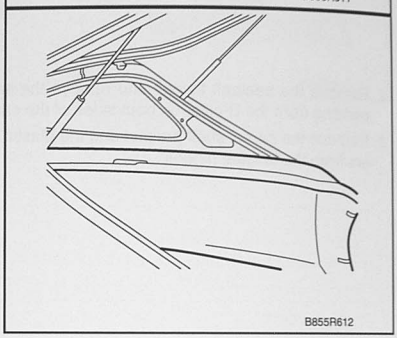
See To Remove under *"Opening side windows"* on page 500.



B855R611

5 Support the rear edge of the headlining and slide it backwards to free it from the top of the A-pillar padding.

Lift out the headlining through the luggage compartment.



B855R612

To fit

Fit in the reverse order.

Trim, bootlid/tailgate

To remove

1 Open the bootlid/tailgate.

2 Remove the interior quick-release screws, turning them 90° anti-clockwise.

3 **2/4-door:** In applicable, undo the screws and raise the grab handle.

3/5-door: Remove the fastener at the upper edge of the trim and lift the trim over the grab handle.

4 Remove the trim from the bootlid/tailgate.

To fit

Fit in the reverse order.

Side trim in luggage compartment

To remove

1 **M1979-80:**

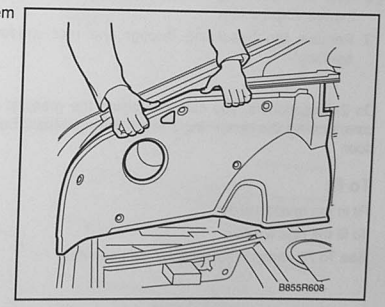
Left-hand side: Remove the spare wheel cover and spare wheel. Unscrew the spare wheel support bracket.

M1979-93:

Remove the floor plate and the rear floor panel from the luggage compartment.

2 Remove the quick-release screws by turning them 90° anticlockwise.

Remove the trim.



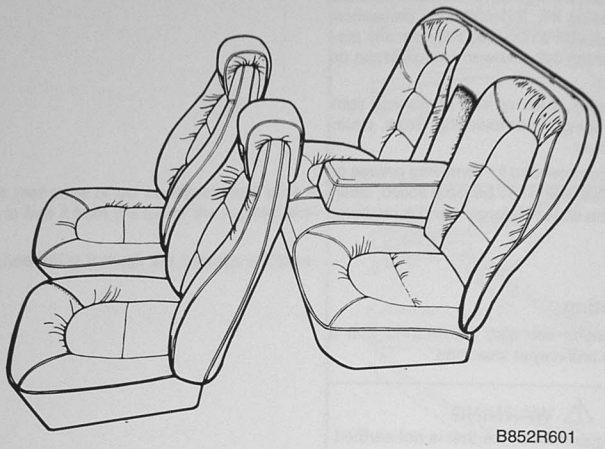
To fit

Fit in the reverse order.

Inspect the condition of the quick-release nuts. To fit the quick-release screws, twist 90° clockwise while pressing in the screw.

Seats and seat cushions

Technical description



B852R601

Seats

The front seats have a sheet metal chassis to which the backrest is attached. The padding consists of moulded foam cushions mounted on rubber bases. As of model year 1986, wire lattices and coil springs are used. The seats are upholstered with fabric, imitation leather, leather and vinyl coated fabric.

The front seats are mounted on rails on the floor to allow legroom adjustment. There is a bar at the front or lever at the side of the driver's seat for adjusting seat height. Grease the seat rails with petroleum jelly, which is less messy than engine oil.

The driver's seat and some passenger seats are heated. Heating pads, consisting of a resistor wire loop and a reflector held in a plastic net, are fitted to the seat cushion and backrest. These are connected to the ignition switch via a thermostat.

The heating pads are switched on if the temperature of the seat is lower than roughly +12°C, and switched off when the temperature exceeds +27°C.

Rear seat

The rear seat cushion and backrest are sprung and have padding and upholstery. Two hinges on the lower edge of the backrest allow it to be tilted forward. Catches hold the backrest in its raised position, preventing it from being pushed forward by unsecured items in the luggage compartment when the car is braking hard. If required, the luggage compartment area can be extended by tipping forward the rear seat cushion and backrest.

Carpeting

The floor carpets are made of fabric-backed nylon carpeting.

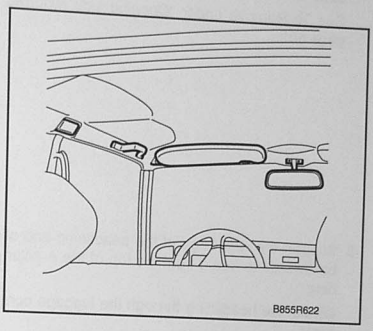
The carpets are secured by means of press studs and Velcro fasteners. They are secured at the sides by the sill scuff plates, which are screwed to the sills with self-tapping screws.

Headlining, 3/5-door

To remove

1 Remove the rearview mirror, roof light, sun visors and courtesy handles.

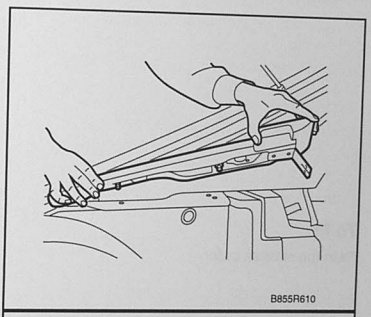
If your car has a sunroof, remove the plastic edging around the sunroof opening to free the headlining.



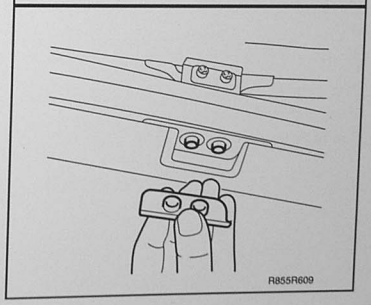
B855R622

2 Remove the seatbelt fittings and remove the safety padding from the B-pillar on both sides of the car.

3 Remove the parcel shelf bracket and the plastic covers from the tailgate hinges.



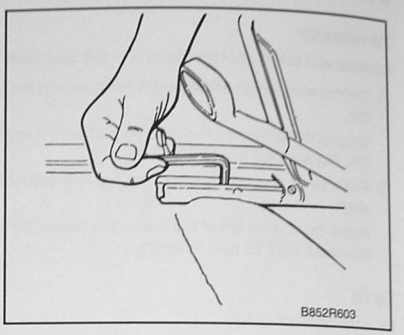
B855R610



R855R609

Passenger seat, M1979-80

Remove the seat by removing the bolts securing the seat rails (Allen bolts).



Passenger seat, M1981-90

To remove

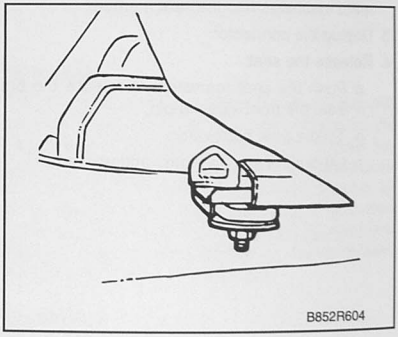
1 Slide the seat backwards.

Unplug the connector.

Remove the bolts securing the seat rails to the seat member.

2 Slide the seat fully forward.

Remove the nuts securing the rails to the height adjustment brackets.



3 Lift up and remove the seat.

To fit

Fit in the reverse order.

General cleaning

Trim

Clean the seats and headlining using a cloth moistened with lukewarm soapy water. If using stain remover, work from the outside of the stain inwards to avoid a ring being left. If despite this precaution you should be left with a ring, this will normally disappear after washing with lukewarm soapy water or plain water.

Remove spilt liquids, such as soft drinks and light oil, immediately using paper towelling. Then, clean with a stain remover.

White spirit is recommended for removing grease or oil stains. If the plastic trim has become soiled, clean this with lukewarm water, detergent and a medium-stiff brush.

Textile carpeting

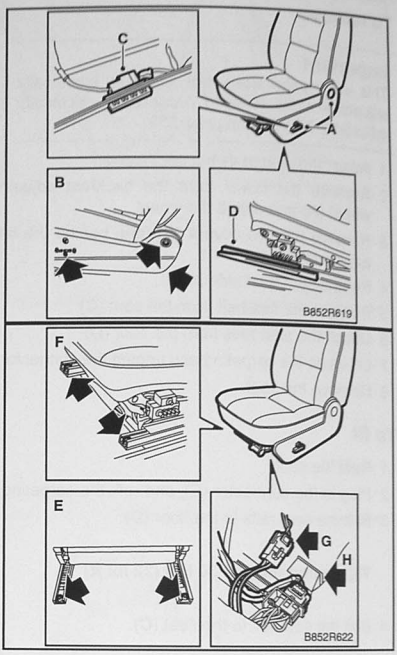
The textile carpeting can also be cleaned with a brush or sponge and carpet shampoo.

> **⚠ WARNING**
> Do not use a vacuum cleaners that is not earthed (grounded) out of doors.

Front seats, electrically adjustable M1991-

To remove

1 Adjust the seat to its highest position.
2 Prise out the buttons and remove the cover (**A**).
3 Remove the seat side cover (three screws) (**B**).
4 Pull the plastic cover forward to release it from the rail (**D**).
Unscrew the seatbelt from the seat.



5 Slide the seat forward and remove the rear nuts (**E**).
Slide the seat back and remove the front bolts (**F**).
6 Tip the seat back and unplug the connector (**G**).
Release the wiring harness and unplug the 8-pin connector (**H**).

Note
Make a note of how the wiring is routed.

7 Remove the seat.

Driver's seat, M1979-80

To remove

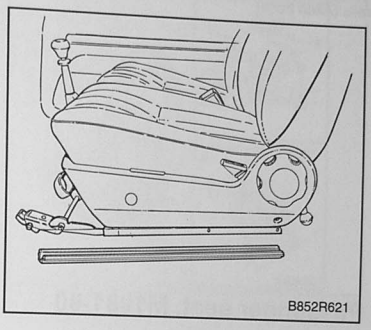
Remove and fit the seat complete with the seat rails.

1 Set the seat to its middle height position with the handle.

Unplug the wiring for the heating pad and, if applicable, the seatbelt warning system.

2 Push back the catches to release the adjustment shaft.

Raise the front edge of the seat, tip it backwards and release it from its rear mounting.


B852R621

To fit

Fit in the reverse order.

Driver's seat, M1981-90

To remove

Remove and fit the seat complete with the seat rails.

1 Slide the seat to its rearmost position.

2 Remove the two bolts securing the seat and adjustment mechanism to the seat member.

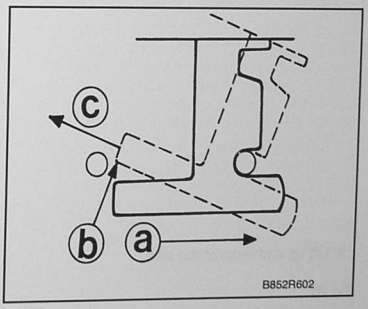
3 Unplug the connector.

4 Release the seat:

a Push the seat rearwards to release the bracket from the front locating pin.

b Tip the seat backwards.

c Lift out the seat forwards and upwards.



B852R602

To fit

Fit in the reverse order.

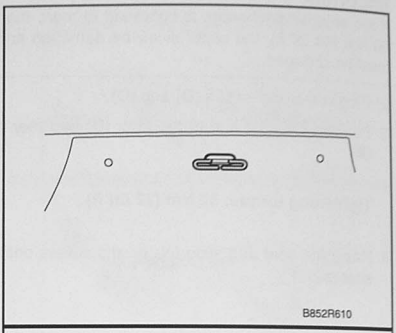
Front seats, backrest upholstery M1979

To remove

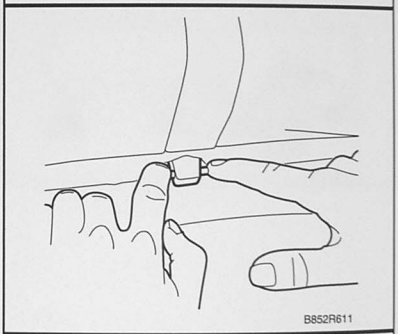
1 Undo the zip at the bottom of the backrest. Unhook the hooks on the sides, one on each side at the bottom.

2 Roll up the upholstery cover and release the elastic holding it in at the bottom of the backrest.

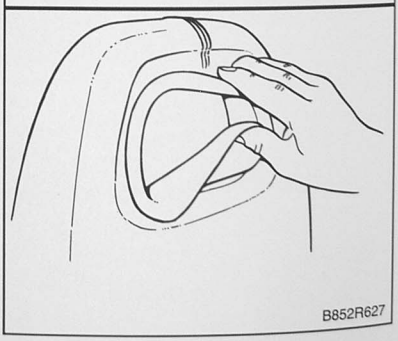
3 Remove the cable tie fastener from the back of the backrest and pull the tie and fastener to the front.


B852R610

4 Unhook the wire which holds the upholstery at the front from below the aperture in the backrest.


B852R611

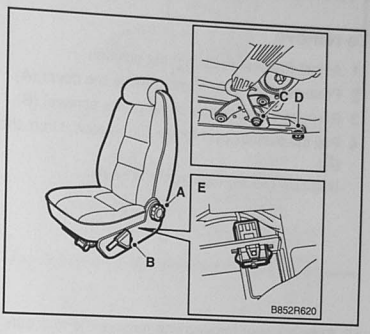
5 Compress the plastic ring that secures the upholstery in the hole in the head restraint and pass this through to the front.


B852R627

Front seats, M1991-

To remove

Important
This description **does not** apply to electrically adjustable seats. Refer to *"Front seats, electrically adjustable M1991-"* on page 536.



1 Adjust the seat to its highest position.
2 Remove the cover from the backrest adjustment wheel (**A**) and unbolt the wheel.
3 Remove the two covers (**B**) (one behind the height adjustment lever).
4 Remove the seat side panel.
5 Remove the seatbelt from the seat (**C**).
6 Unbolt the seat rails from the floor (**D**).
7 Lift aside the carpeting and unplug the connector (**E**).
8 Remove the seat.

To fit

1 Refit the seat.
2 Plug in the connector (**E**), and refit the carpeting.
3 Bolt the seat rails to the floor (**D**).

Tightening torque: 30 Nm (22 lbf ft)

4 Bolt the seatbelt to the seat (**C**).

Tightening torque: 40 Nm (29.5 lbf ft)

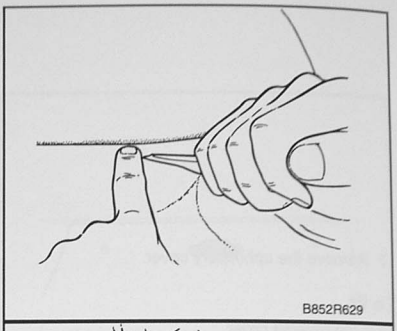
5 Screw on the seat side cover and refit the two covers (**B**).
6 Fit the backrest adjustment wheel. Fit the bolt and refit the cover (**A**).
7 Check that the seat can be properly adjusted.

Front seats, backrest upholstery M1980-

To remove

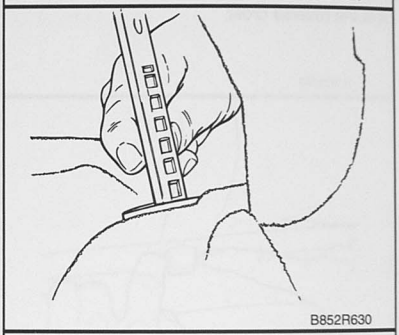
1 Raise the head restraint to its uppermost position.

2 Remove the self-tapping screw at the top front edge of the backrest (accessible if the cover is carefully pulled down).

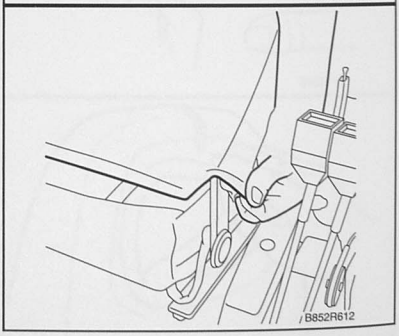

B852R629

3 Squeeze together the spring-loaded tongues by the head restraint mounting.

Raise and remove the head restraint.


B852R630

4 Undo the zip at the bottom of the backrest. Unhook the hooks on the sides, one on each side at the bottom.


B852R612

To fit

1 Lift in the seat and bolt on the seatbelt. Check that the seatbelt is correctly positioned and not twisted (**A**).

Tightening torque: 40 Nm (29.5 lbf ft)

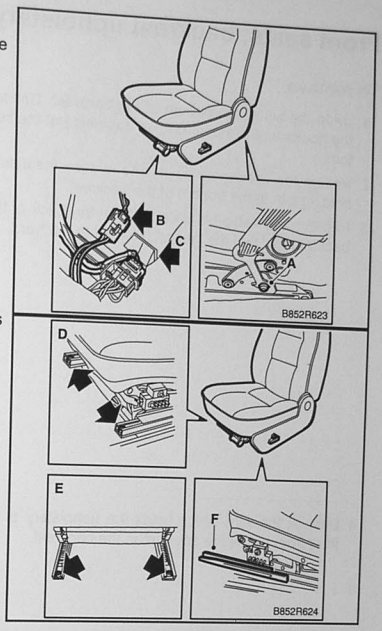
Important
If the seatbelt anchorage is tightened to more than 60 Nm (44 lbf ft), the seat rail will be damaged and must be changed.

2 Plug in the connectors (**B**) and (**C**).

3 Position the seat and fit the front (**D**) and rear bolts (**E**).

Tightening torque: 30 Nm (22 lbf ft)

4 Raise the seat and slide the plastic covers onto the seat rails (**F**).

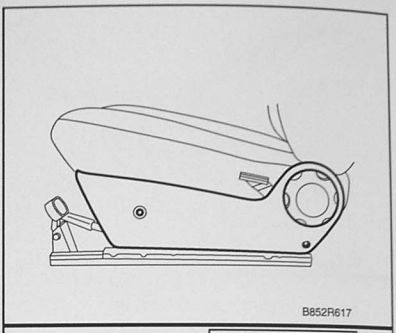


Front seats, seat upholstery -M1990

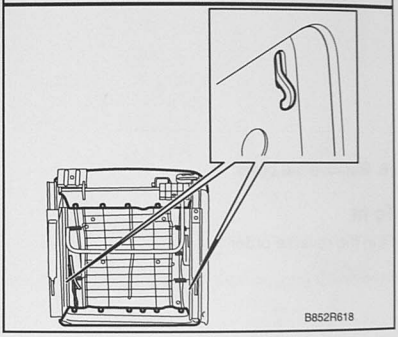
To remove

1 Remove the seat.
See To Remove under *"Driver's seat, M1979-80"* on page 533 or *"Driver's seat, M1981-90"* on page 533.

2 Remove the cover from the side of the seat.


B852R617

3 To remove the seat cushion upholstery on all models, unhook the fasteners behind the side ribs and under the bottom rib.

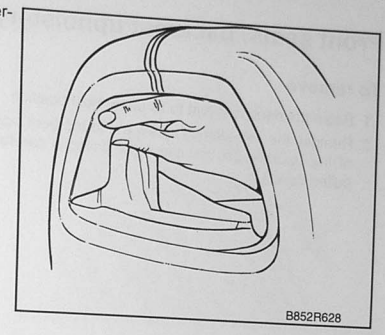

B852R618

4 Pull up the upholstery from the right-hand side to expose the heating pad.

To fit

Fit in the reverse order.

6 Fold back the flaps from the groove inside the aperture.


B852R628

7 Remove the upholstery cover.

To fit

Fit in the reverse order.

Heating pads, changing -M1990

To remove

1 Remove the seat.

See To Remove under *"Driver's seat, M1979-80"* on page 533 or *"Driver's seat, M1981-90"* on page 533.

2 Remove the backrest upholstery.

See To Remove under *"Front seats, backrest upholstery M1979"* on page 538 or *"Front seats, backrest upholstery M1980-"* on page 540.

3 Remove the seat cushion upholstery.

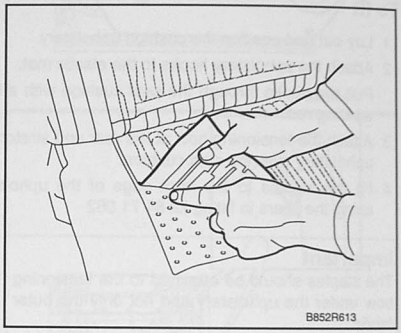
See To Remove under *"Front seats, seat upholstery -M1990"* on page 542.

4 Remove the heating pad. Make a note of how the heating pad is connected.

5 **Destructive removal:**

Soften the adhesive with benzene to avoid large chunks of foam from being pulled off the foam cushion.

> ⚠ **WARNING**
> Use protective gloves when working with benzene.



To fit

1 Glue on the new heating pad with a suitable contact adhesive, such as Bostik A3.

2 Plug in the heating pad. Refer to the notes you made about connection.

3 Fit the seat upholstery.

See To Fit under *"Front seats, seat upholstery -M1990"* on page 542.

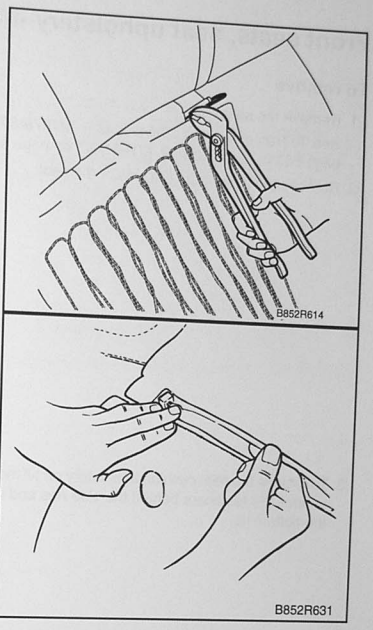
4 Fit the backrest upholstery.

See To Fit under *"Front seats, backrest upholstery M1979"* on page 538 or *"Front seats, backrest upholstery M1980-"* on page 540.

5 Fit the seat.

See To Fit under *"Driver's seat, M1979-80"* on page 533 or *"Driver's seat, M1981-90"* on page 533.

5 Roll up the cover and unhook the two wire rods that hold the cover front and back.



6 Remove the cover.

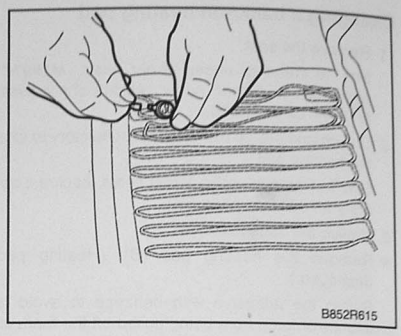
To fit

Fit in the reverse order.

Heating pads, thermostat in net

To change

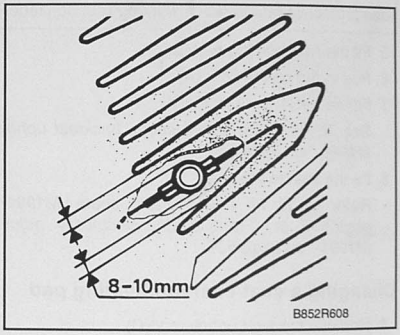
1 Remove the seat upholstery.
Refer to step 4 under *"Heating pads, changing - M1990"* on page 544.
2 Remove the thread securing the thermostat leads then remove and change the thermostat.
3 Secure the new thermostat with thread to make sure that the leads do not work loose after some time.
4 Check that the thermostat is at least 6-7 mm (0.25 in) from the closes heating cable.



Heating pads, thermostat in foam

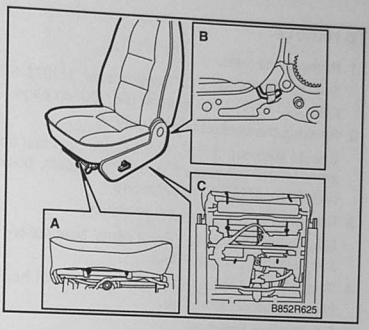
To change

1 Unplug the thermostat connector under the seat.
2 Remove the seat from the car.
See To Remove under *"Driver's seat, M1979-80"* on page 533 or *"Driver's seat, M1981-90"* on page 533.
3 Detach the seat upholstery and lift it to access the thermostat.
4 Carefully cut the foam around the thermostat.
5 Change the thermostat. Position the new thermostat at least 8-10 mm (0.38 in) from the heating cables.
6 Secure the thermostat and heating cables with repair patch 95 51 227.
7 Refit the seat upholstery and fit the seat into the car.
See To Fit under *"Driver's seat, M1979-80"* on page 533 or *"Driver's seat, M1981-90"* on page 533.
8 Plug in the connector under the seat and check the function of the heating pad.



Front seats, seat upholstery M1991-

To remove



1 Remove the seat.

See To Remove under *"Front seats, M1991-"* on page 535 or *"Front seats, electrically adjustable M1991-"* on page 536.

2 Remove the two staples from the front edge (**A**).

3 Unfasten the upholstery hooks at the sides (**B**).

4 Unfasten the upholstery hooks from the underside of the seat cushion using a bent piece of welding rod (**C**).

5 Release the tensioning bow at each side.

Remove the upholstery.

To fit

1 Lay out and position the cushion upholstery.

2 Attach the upholstery hooks to the elastic mat.

Pull the hooks through the seat cushion with a bent welding rod.

3 Attach the tensioning bow at the rear and stretch the upholstery over the seat cushion.

4 Fit the stables to the front edge of the upholstery using the pliers in fitting kit 84 71 062.

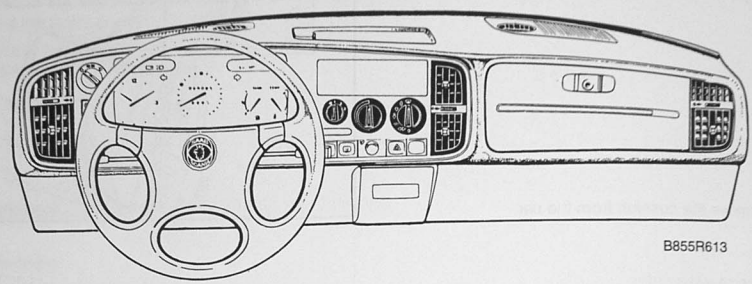
Important
The staples should be attached to the tensioning bow under the upholstery and not only the outer fabric.

5 Fit the seat.

Refer to To Fit under *"Front seats, M1991-"* on page 535 or *"Front seats, electrically adjustable M1991-"* on page 536.

Interior equipment

Technical description



B855R613

Instruments

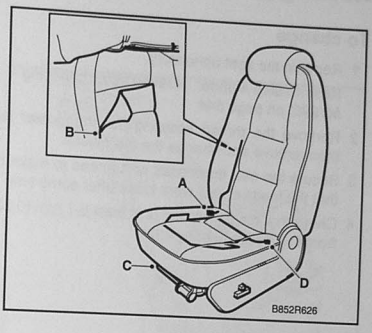
The dashboard and heating and ventilation system are built around a sturdy panel member.

The main components of the dashboard:

- Top section of dashboard and glovebox
- Switch panel
- Lower section of dashboard (knee protector)

Heating pads, changing M1991-

Changing a backrest heating pad



1 Remove the seat.

See To Remove under *"Front seats, M1991-"* on page 535 or *"Front seats, electrically adjustable M1991-"* on page 536.

2 Detach and pull up the backrest upholstery to expose the heating pad.

See To Remove under *"Front seats, backrest upholstery M1980-"* on page 540.

3 Unplug the connectors (**A**).

4 Remove the heating pad (**B**). (Heating pad is destroyed.)

Soften the adhesive with benzene to avoid large chunks of foam from being pulled off the foam cushion.

> **⚠ WARNING**
> Use protective gloves when working with benzene.

5 Fit the new heating pad (**B**).

6 Pug in the connectors (**A**).

7 Fit the backrest upholstery.

See To Fit under *"Front seats, backrest upholstery M1980-"* on page 540.

8 Fit the seat in the car.

Refer to To Fit under *"Front seats, M1991-"* on page 535 or *"Front seats, electrically adjustable M1991-"* on page 536.

Changing a seat cushion heating pad

1 Remove the seat upholstery (**C**).

See To Remove under *"Front seats, seat upholstery M1991-"* on page 543.

2 Cut the cable tie.

Mark the heating pad leads and unplug these from the connectors (**D**).

3 Remove the heating pad and/or thermostat.

(Heating pad is destroyed.)

Soften the adhesive with benzene to avoid large chunks of foam from being pulled off the foam cushion.

> **⚠ WARNING**
> Use protective gloves when working with benzene.

4 Fit the new heating pad and/or thermostat.

5 Plug together the seatbelt warning system and the heating pad connectors (**D**).

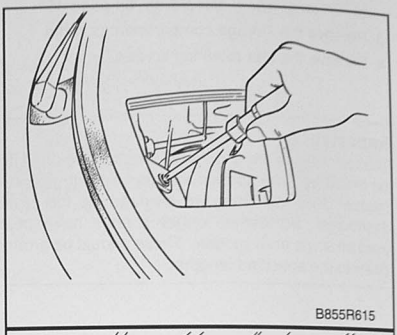
6 Fit the seat upholstery (**C**).

See To Fit under *"Front seats, seat upholstery M1991-"* on page 543.

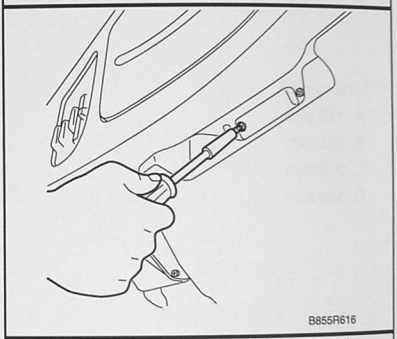
Dashboard

To remove

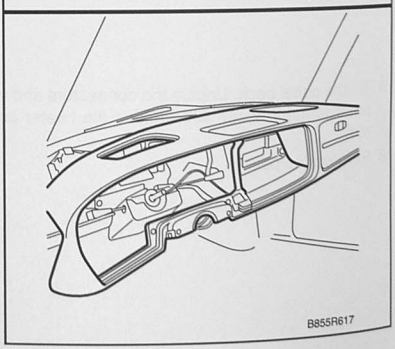
1 Remove the negative (-) battery lead.
2 Remove the switch panel.
See *"Switch panel"* on page 549.
3 Remove the two speaker and defroster grilles.
4 Remove the retaining screws at the windscreen.


B855R615

5 Remove the two retaining screws under the glove-box.


B855R616

6 Remove the dashboard.


B855R617

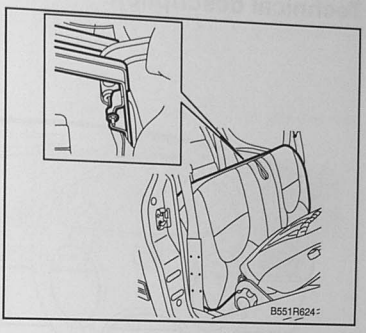
To fit

Fit in the reverse order.

Rear seat, seat cushion

To remove

1 Raise the seat cushion and tip it forwards.
2 Remove the lock plates from the ends of the hinge pins.
3 Move the seat cushion to one side and remove the hinge pins.



4 Remove the cushion from the car.

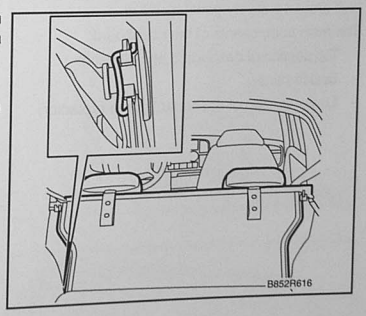
To fit

Fit in the reverse order.

Rear seat backrest

To remove

1 Tip the seat cushion forwards.
2 Lower the backrest as far as it will go.
3 Remove the spring clips from the hinge mountings on both sides. Use a piece of welding rod bent into a hook or a similar tool.
4 Withdraw the plastic discs with pliers.
5 Push the backrest to one side, then lift the hinge pin from the bracket and plastic clip.
Repeat this procedure for the other side.

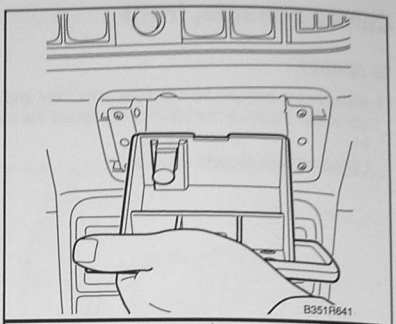


6 Remove the backrest from the car.

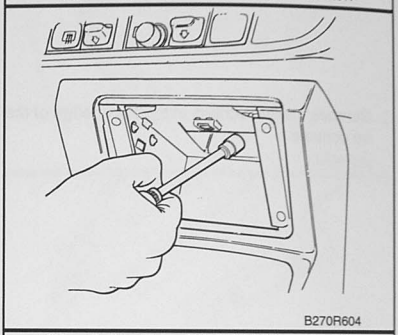
To fit

Fit in the reverse order.

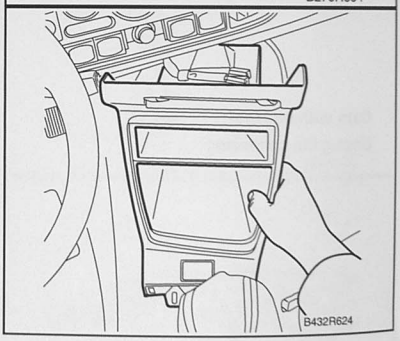
3 Remove the ashtray.



4 Remove the upper bolt located behind the ashtray.



5 Withdraw the centre console. Disconnect the ashtray lighting and remove the centre console.



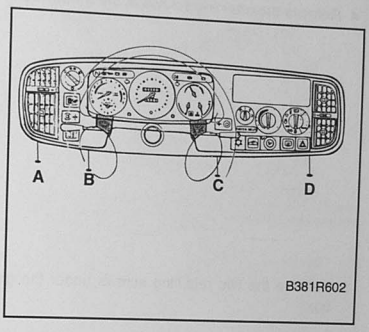
To fit

Fit in the reverse order.

Switch panel

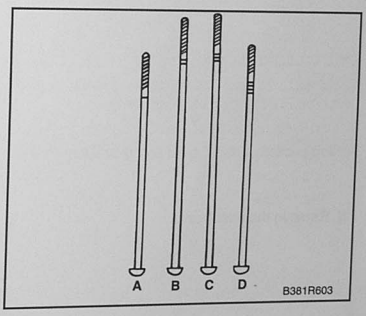
To remove

1 Remove the negative (-) battery lead.
2 Remove the steering wheel.
See To Remove under *"Steering wheel"* on page 398 or *"Steering wheel and airbag"* on page 401.
3 Remove the storage compartment or radio.
4 Remove the four retaining screws.

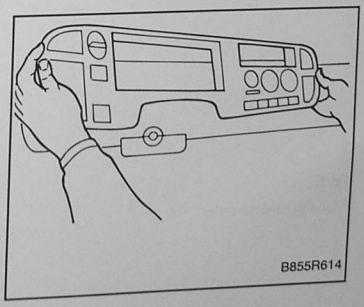


Important
The four screws are of different lengths and must not be mixed up. The screws are marked with grooves (hoops). Incorrect fitting will damage the top of the dashboard. Somewhat longer screws have been used on some early models. These should be ground down to the specified lengths.

Screw length:
A 176 mm
B 205 mm
C 210 mm
D 189 mm



5 Tilt the panel back. Unplug the connectors and vacuum distributor hoses and remove the heater control rod.
6 Remove the panel.

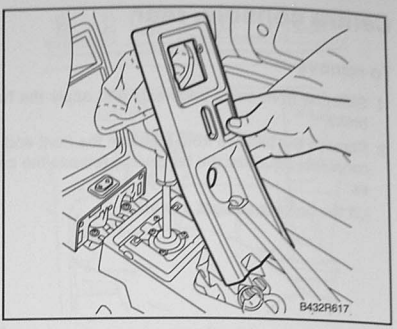


To fit

Fit in the reverse order.

Manual gearbox:

Insert the ignition key under the console to disengage reverse. Remove the cowl over the gear lever.

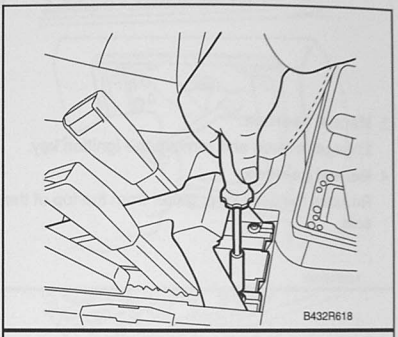


6 Remove the ashtray located at the trailing edge of the console.

7 Remove the five screws securing the rear console.

M1989-:

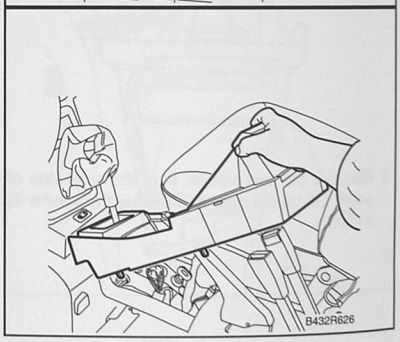
Remove the four screws securing the rear console.



Guide the console backwards and upwards and remove the lamp from the ignition lighting. Remove the console from the gear lever.

Cars with electric windows:

Unplug the connector.



To fit

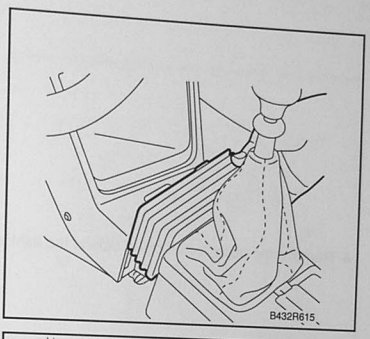
Fit in the reverse order.

Centre console, front

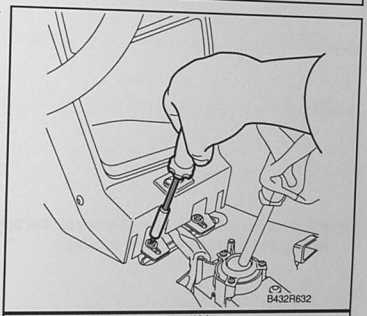
To remove

1 Remove the bellows from between the front and rear consoles. Squeeze the bellows to release the catches.

Lift the bellows straight upwards.

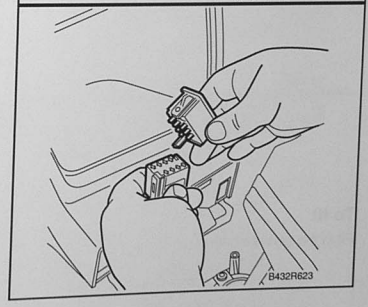


2 Remove the two screws at the lower edge of the centre console.



Cars with sunroof:

Unplug the connector.



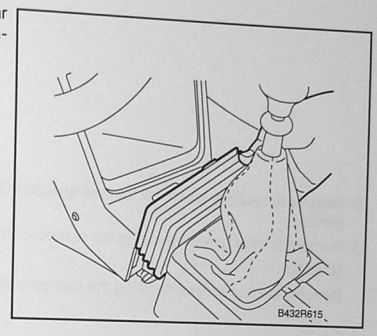
Centre console, rear

To remove

1 Slide the front seats back fully and apply the handbrake.

2 Remove the bellows from between the front and rear consoles. Squeeze the bellows to release the catches.

Lift the bellows straight upwards.

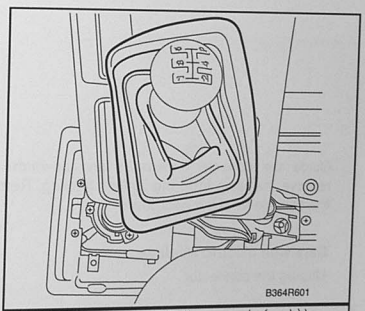


3 **Manual gearbox:**

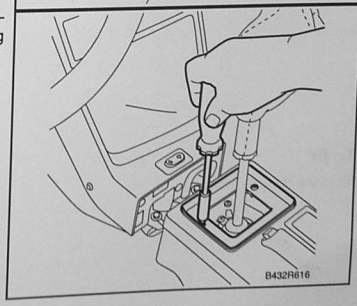
Engage reverse and remove the ignition key.

4 **Manual gearbox:**

Remove the gear lever gaiter from the top of the console.



5 Remove the two screws from the cowl (top of console). Lift up the cowl and unplug the interior lighting switch.



Work schedule

Explanation

The following table contains an outline of topics. The table makes it easy to see which jobs are described in each section as well as the parts and tools that are required to complete the work.

Remember to read carefully through the job description as well as General Information (pages 2-6) before you begin work.

Section	Applicable to the following work	Tools required	Parts required to carry out the work
Fan motor	Removing/Fitting	Puller 89 96 258 Torque wrench	
Cabin air filter	Changing		Protective gloves
Water valve	Changing	Screwdriver 84 71 054	Gasket adhesive Coolant
Water valve actuator pin	Changing	Screwdriver 84 71 054 Grinder or Drill Pop rivet	Gasket adhesive Coolant

Seatbelts

Saab cars are equipped with seatbelts for the front and rear seats, in accordance with the requirements on the different markets. This can involve different combinations of fixed belts and inertial reel belts.

A label on the belt specifies the make, manufacturer's part number, year of manufacture, type approval code, and Saab part number.

Important

Do not remove this label from the seatbelt.

Do not modify or repair the seatbelts or attachment points in any way. Ensure that the correct type of belt is fitted and that it is positioned in accordance with the spare part instructions, available from your local Saab workshop.

> ⚠ **WARNING**
>
> Seatbelts that have been loaded in an accident will have stretched 50-60 mm (2-2.5 in)
>
> Therefore, change and destroy the seatbelt immediately so that it is not refitted.

Three-point inertia reel seatbelt

At rest, the seat belt is retracted into an inertia reel (**1**). When the belt is extracted, it runs through a guide (**2**) fitted near the top of the B or C-pillar. When fastened, the belt is inserted into a buckle (**3**) attached to a flexible arm anchored between the front seats. The buckles for the rear seat belts are attached to flexible arms or webbing under the seat. The end of the belt (**4**) is well secured to the car body just below the inertia reel (**1**).

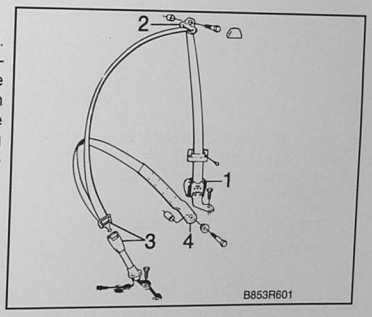
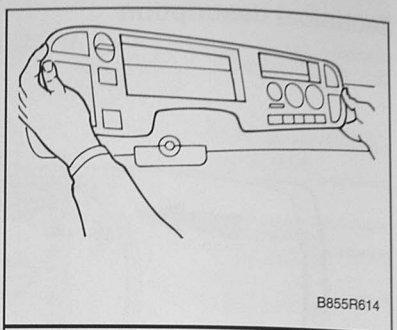


Illustration: Seatbelt, 3-door model M1981-

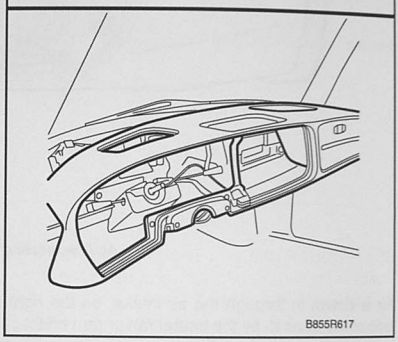
Fan motor

To remove

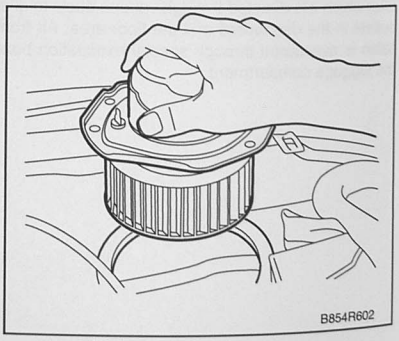
1 Remove the switch panel.
See To Remove under"*Switch panel*" on page 549.


B855R614

2 Remove the top section of the dashboard.
See To Remove under "*Dashboard*" on page 550.


B855R617

3 Unplug the fan motor.
4 Remove the screws securing the right-hand defroster damper housing.
5 Remove screws securing the fan motor and lift out the motor.


B854R602

To fit

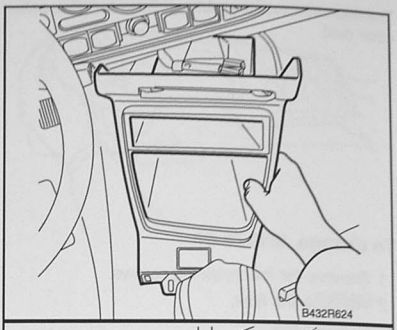
Fit in the reverse order.

CLIMATE CONTROL

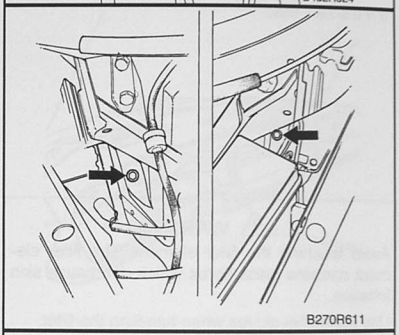
Water valve

To change

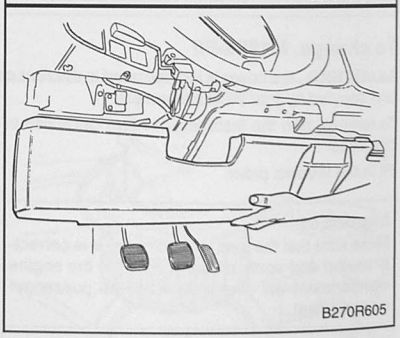
1 **Cars with front centre console:**
Remove the front centre console.
See To Remove under *"Centre console, front"* on page 551.



2 Remove the two bolts securing the knee protector. These are located on either side of the engine compartment on the bulkhead.



3 Remove the knee protector.



4 Remove the left-hand loudspeaker grille.

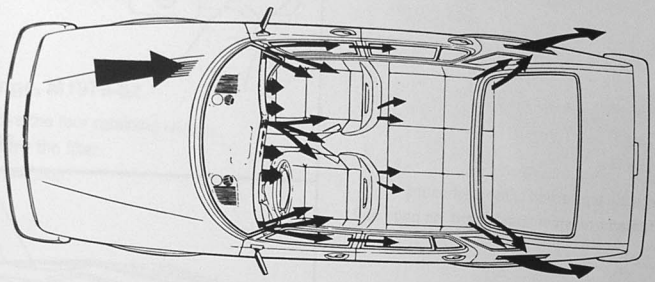
5 Disconnect the two coolant hoses from the water valve in the engine compartment.

Note

Approximately 0.3 litres of coolant will drain out.

Heating and ventilation system

Technical description



B854R601

Air flow, heating and ventilation system

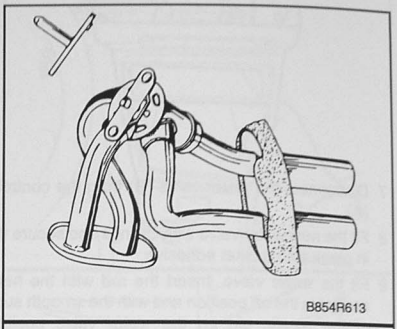
Air is drawn in through the air intake, on the right-hand side of the bonnet, by the heater fan or ram effect caused by the motion of the car. The air passes through a robust filter which separates out particles of dust and dirt. It then passes through the fan casing and the heat exchanger, after which it is directed through various ducts to different outlets in the dashboard and the floor area. Air from the cabin is evacuated through special evacuation boxes in the luggage compartment.

Water valve actuator pin

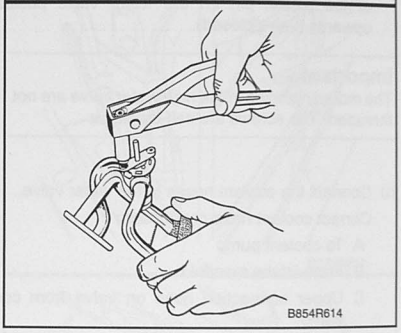
To change

1 Remove the water valve.
See To Change under *"Water valve"* on page 562.

2 Remove the actuator pin from the water valve using a grinder or drill out the rivets.
Check the valve. If it binds, change the valve.


B854R613

3 Fit a new actuator to the water valve with pop rivets. The design of the actuator pin means it can only be attached in one way.


B854R614

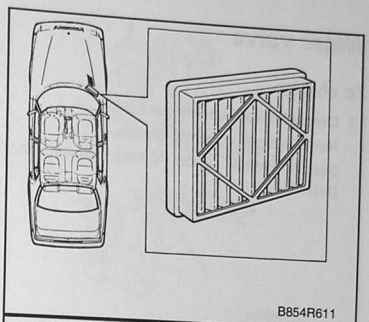
Important
If a leaking water valve has been changed, change the coolant first flushing the system with water.

The coolant contains anti-corrosive agents, the effectiveness of which depletes over time increasing the risk of rusting.

Cabin air filter

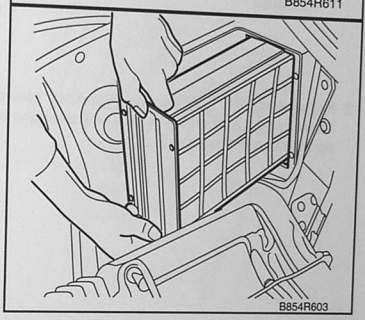
The filter is located on the right-hand side of the bulkhead seen from inside the car.

The filter removes all visible particles but also pollen and other dust.


B854R611

To change, M1979-82

1 Remove the four retaining screws.
2 Withdraw the filter.
3 Fit a new filter.


B854R603

> **⚠ WARNING**
> Avoid touching the filter element. The filter element contains glass fibres which can cause skin irritation.
> Use protective gloves when handling the filter.

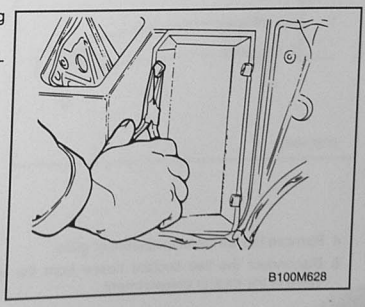
To change, M1983-90

As of M1983-, the cover is incorporated in the filter casing and secured by four plastic fasteners.

To remove, turn the fasteners 1/4 turn clockwise or anti-clockwise.

Fit in the reverse order.

> **Important**
> Make sure that the seal under the cover is correctly seated and seals properly. Air from the engine compartment will otherwise enter the passenger compartment.


B100M628

To change, M1991-

Remove in the same way as for M1983-90. The filter element is a separate unit.

Special tools

General information

Certain procedures require special to facilitate removing and fitting components.

This makes these special tools invaluable when working on Saab components.

The special tools in the table are listed by part number. If the tools do not have a part number, they are listed in alphabetical order.

This section provides a complete overview of the special tools used in this manual to enable repair work and ensure satisfactory results.

The table shown below lists the tools and the sections in which they are used.

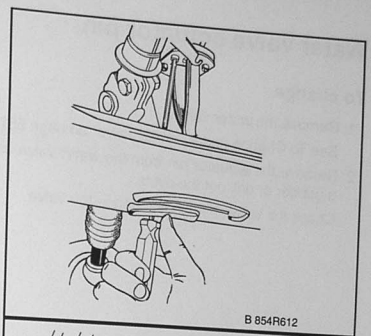
These tools are available for purchase from your local Saab dealer.

Part no.	Designation	Section
30 05 477	Pressure tester	E
30 05 758	Coolant tester	E,ES
30 07 739	Pinch-off pliers	B
78 41 331	Tool	F-S
78 41 349	Tool	F-S
78 62 014	Oil filter wrench	E
82 91 023	Fitting tool	B-I
83 90 023	Spacer ring	G
83 90 270	Sliding hammer	B
83 92 128	Guide pin	E
83 92 540	Tool	E
83 92 953	Tool	E
83 92 961	Wrench	E
83 92 979	Fitting sleeve	E
83 92 987	Flywheel locking attachment	E
83 93 209	Spacer	S-W
83 93 332	Oil filter wrench	E
83 93 365	Tool	E
83 93 472	12-point 24 mm wrench	E
83 93 514	Pressure gauge	E
83 93 639	Tool	E
83 93 795	Bracket	E
87 93 985	IPU Tension meter	E
83 94 033	Included under part no. 87 92 186	G
83 94 330	Wrench	E
83 94 397	Wrench, fuel pump	E
83 94 462	Wrench, fuel pump	E
83 95 485	Spark plug socket	E,ES
87 90 370	Socket	G
87 91 576	Locating tool	G
87 91 618	Spacer ring	G
87 92 020	Included under part no. 87 92 186	G
87 92 038	Included under part no. 87 92 186	G
87 92 186	Tool kit	G
88 18 791	Spring compressor	F-S,S-W
88 18 809	Jaws	F-S,S-W
88 19 013	Toe-in gauge	F-S
88 19 096	Bleeder unit	B
89 95 409	Tool	F-S,S-W
89 95 607	Brake spring tool	B-I
89 95 771	Puller	B
89 96 043	Wrench	B
89 96 084	Puller	B,S-W
89 96 175	Tool	B
89 96 241	Drift	S-W
89 96 258	Puller	F-S
89 96 274	Push extractor	S-W
	Feeler gauge	ES,B
	Circlip pliers	ES
	Multimeter	ES
	Stroboscope	E,ES
Oetker pliers	Knipex 1099	S-W

E=Engine
ES=Electrical System
G=Gearbox
B=Brakes

F-S=Front assembly and Steering
S-W=Suspension and Wheels
B-I=Body, Interior equipment
C-A=Climate control, Airbag

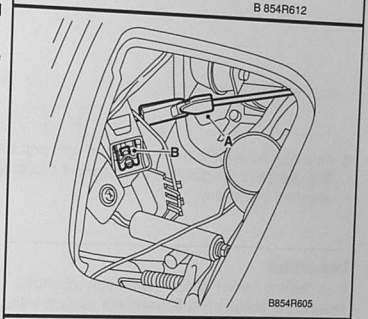
6 Remove the water valve using screwdriver 84 71 054.


B 854R612

7 Disconnect the water valve (**B**) from the control rod (**A**).

8 Fit the new water valve with O-rings and secure these in place with gasket adhesive.

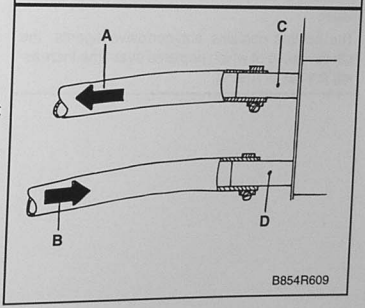
9 Fit the water valve. Insert the rod with the heating control in the off position and with the smooth surface of the plastic pin on the water valve positioned upwards (valve closed).



B854R605

Important
The mounting holes in the new water valve are not threaded. The screws are self-tapping.

10 Connect the coolant hoses to the water valve.
Correct coolant hose connection:
- A To coolant pump
- B From intake manifold
- C Upper connection hose on valve from coolant pump
- D Lower connection hose on valve from intake manifold



B854R609

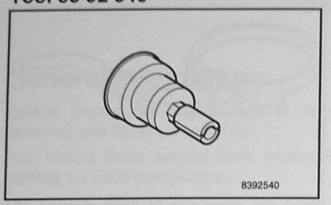
11 Fill the system with coolant.
See To Fill under *"Coolant"* on page 154.

12 Pressure test and bleed the system. Check for leaks.
See *"Checking and pressure testing"* on page 149.

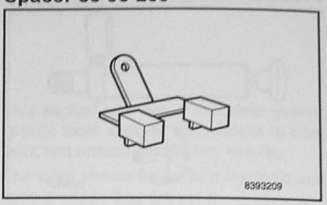
13 Fit the left-hand loudspeaker grille.

14 Fit the knee protector and the two bolts, one on each side of the engine compartment.

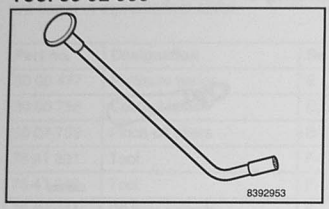
Tool 83 92 540



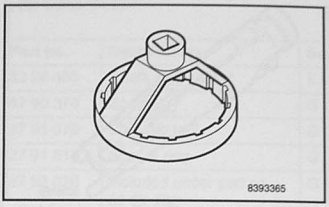
Spacer 83 93 209



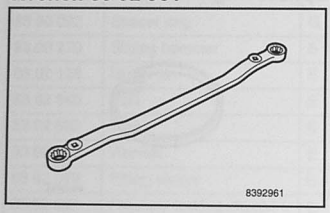
Tool 83 92 953



Tool 83 93 365



Wrench 83 92 961



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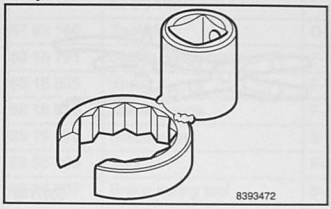

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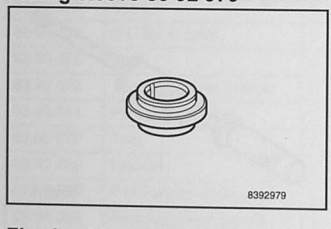

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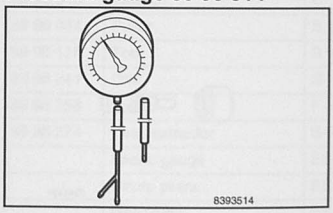

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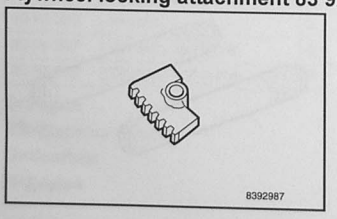

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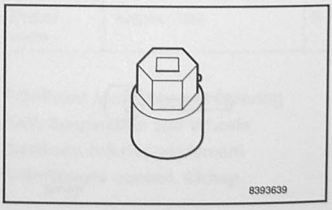

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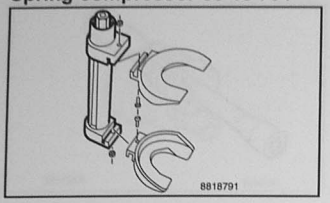

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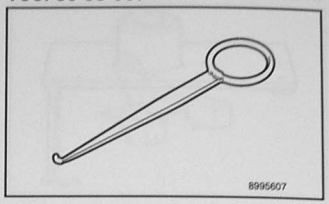

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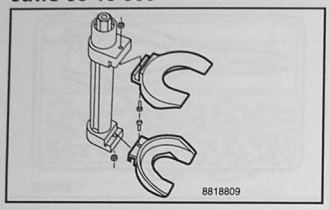

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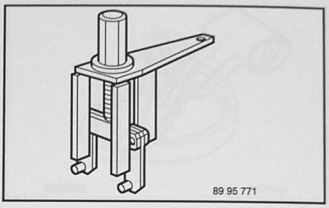

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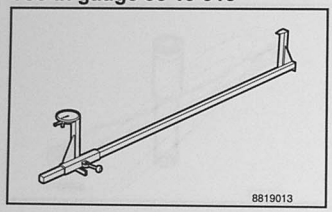

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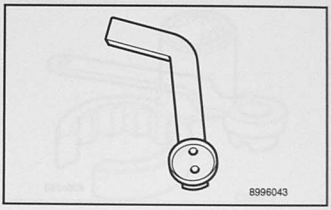

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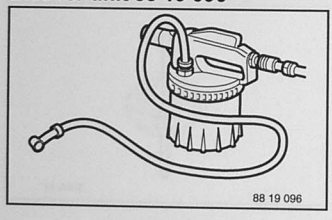

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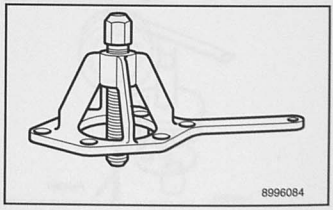

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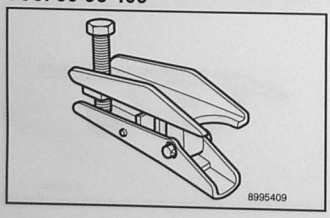

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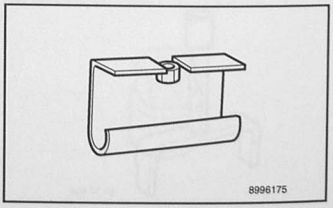

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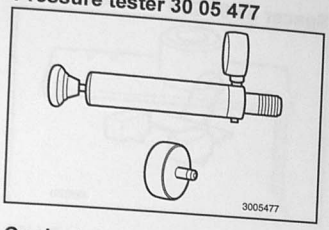

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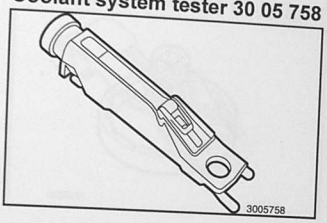

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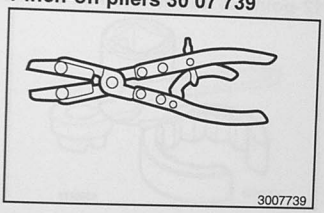

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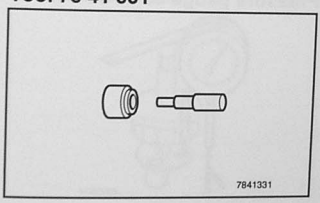

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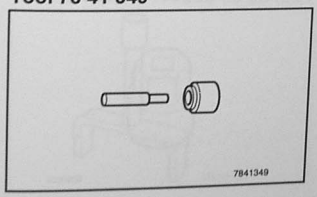

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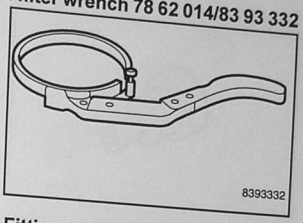

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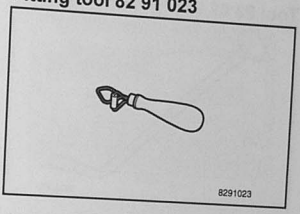

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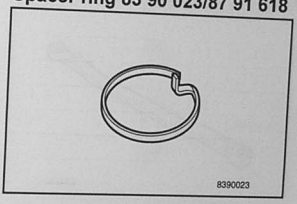

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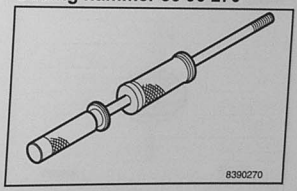

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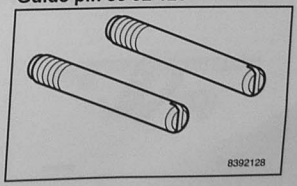

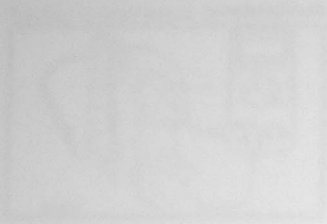

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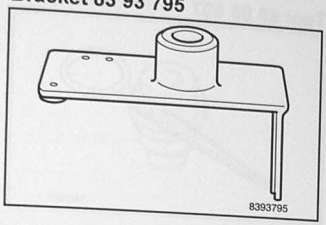

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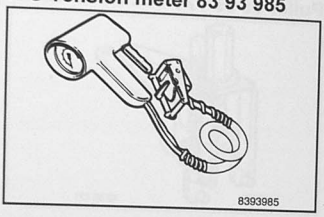

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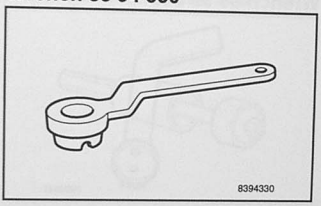

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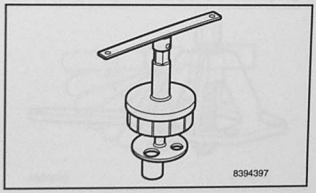

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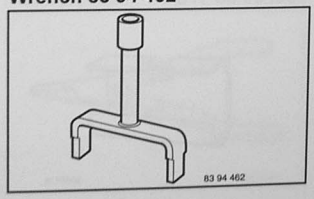

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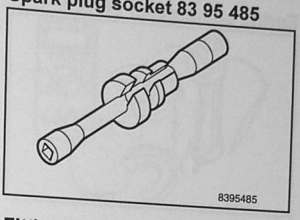

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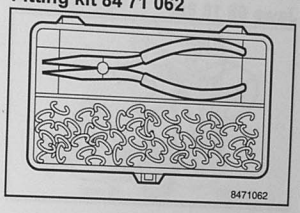

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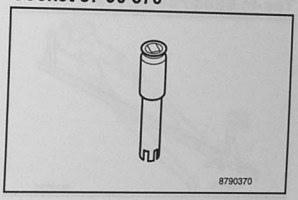

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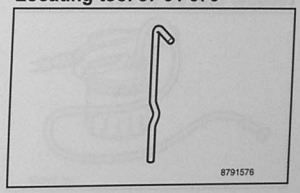

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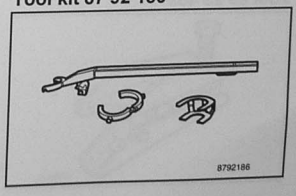

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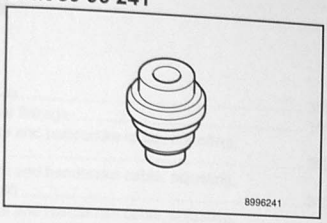

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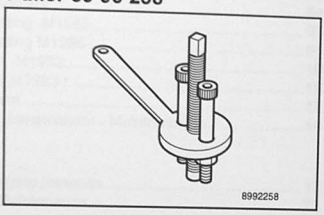

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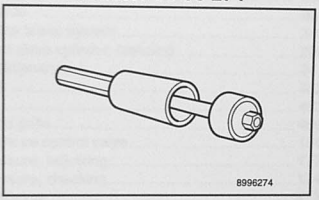

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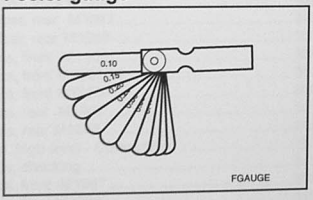

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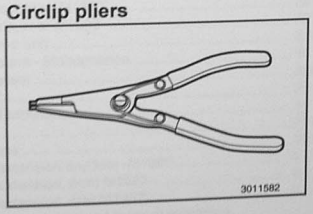

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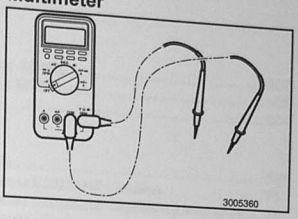

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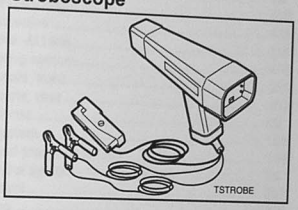

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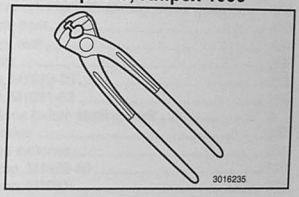

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Saab 900

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