

1.1 Fuel filter located next to the fuel tank

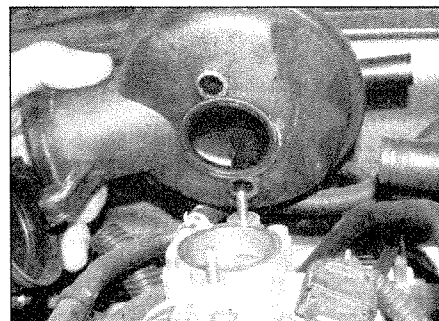
## 1 General information and precautions

### General information

1 The fuel supply system consists of a fuel tank (which is mounted under the rear of the car, with an electric fuel pump immersed in it), a fuel filter, fuel feed and return lines. The fuel pump supplies fuel to the fuel rail, which acts as a reservoir for the fuel injectors which inject fuel into the inlet tracts. The fuel filter incorporated in the feed line from the pump to the fuel rail (see illustration) ensures that the fuel supplied to the injectors is clean. There is no return line from the engine compartment to the fuel tank, only a short line from the fuel filter (on the side of the tank) to the tank. The fuel pressure regulator is located on the fuel pump.



2.2 Disconnecting the breather hose



2.3b ... and lift the airbox from the throttle body

2 The electronic control unit controls both the fuel injection system and the ignition system, integrating the two into a complete engine management system. Refer to Section 8 for further information on the operation of the fuel system and to Chapter 5B for details of the ignition side of the system.

3 The exhaust manifold incorporates an integral catalytic converter to reduce harmful exhaust gas emissions. The remaining exhaust system is in two sections. Further details can be found in Part D of this Chapter, along with details of the other emission control systems and components.

### Precautions

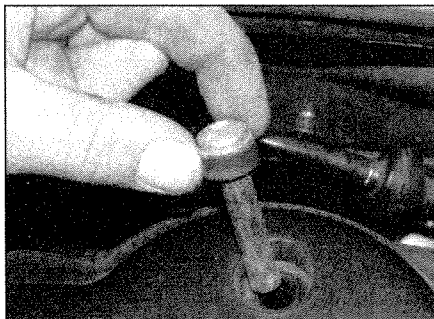
**Note:** Refer to Part D of this Chapter for general information and precautions relating to the catalytic converter.

4 Before disconnecting any fuel lines, or working on any part of the fuel system, the system must be depressurised as described in Section 4.

5 Care must be taken when disconnecting the fuel lines. When disconnecting a fuel union or hose, loosen the union or clamp screw slowly, to avoid sudden uncontrolled fuel spillage. Take adequate fire precautions.

6 When working on fuel system components, scrupulous cleanliness must be observed, and care must be taken not to introduce any foreign matter into fuel lines or components.

7 After carrying out any work involving disconnection of fuel lines, it is advisable to check the connections for leaks; pressurise the system by switching the ignition on and off several times.



2.3a Undo the bolts ...



2.4a Undo the screws ...

8 Electronic control units are very sensitive components, and certain precautions must be taken to avoid damage to these units as follows.

- When carrying out welding operations on the vehicle using electric welding equipment, the battery and alternator should be disconnected.
- Although the underbonnet-mounted control units will tolerate normal underbonnet conditions, they can be adversely affected by excess heat or moisture. If using welding equipment or pressure-washing equipment in the vicinity of an electronic control unit, take care not to direct heat, or jets of water or steam, at the unit. If this cannot be avoided, remove the control unit from the vehicle, and protect its wiring plug with a plastic bag.
- Before disconnecting any wiring, or removing components, always ensure that the ignition is switched off.
- Do not attempt to improvise fault diagnosis procedures using a test light or multi-meter, as irreparable damage could be caused to the control unit.
- After working on fuel injection/engine management system components, ensure that all wiring is correctly reconnected before reconnecting the battery or switching on the ignition.

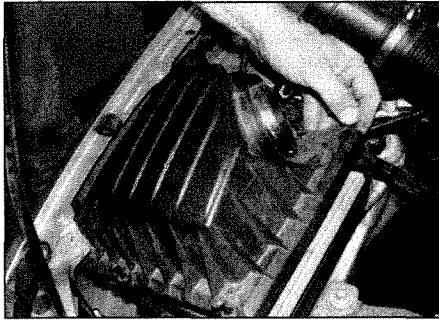


**Warning:** Many of the procedures in this Chapter require the disconnection of fuel line connections, and the removal of components, which may result in some fuel spillage. Before carrying out any operation on the fuel system, refer to the precautions given in 'Safety first!' at the beginning of this manual, and follow them implicitly. Petrol is a highly-dangerous and volatile liquid, and the precautions necessary when handling it cannot be overstressed.

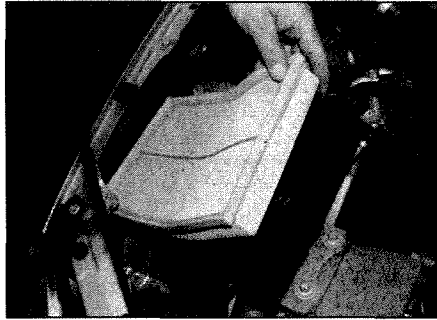
## 2 Air cleaner assembly – removal and refitting

### Removal

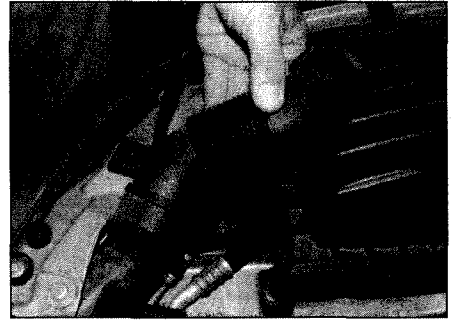
- Disconnect the wiring plug from the air mass meter, located in the air inlet trunking.
- Release the hose clamp and disconnect the breather hose from the side of the airbox (see illustration). Also, unclip the purge valve.
- Undo the bolts and lift off the airbox and inlet trunking from the throttle body (see illustrations).
- Undo the screws, lift off the air cleaner cover, and remove the trunking and airbox from the vehicle (see illustrations).
- Lift out the air cleaner element (see illustration).
- Disconnect the air inlet duct from the front of the air cleaner (see illustration).



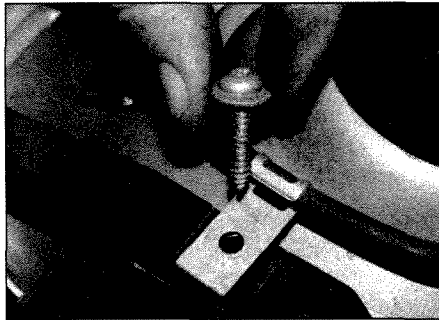
2.4b ... lift off the air cleaner cover ...



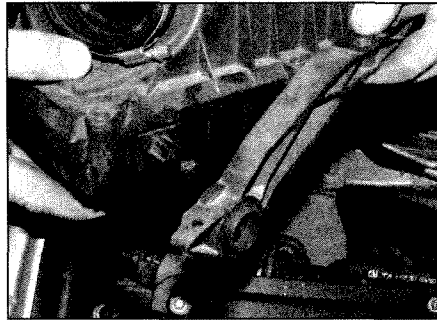
2.5 ... then lift out the element



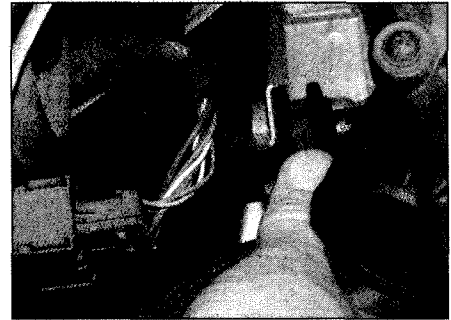
2.6 Removing the front inlet duct from the air cleaner



2.7a Remove the screw ...



2.7b ... and release the crossbar from the mounting pegs



2.8 Pull the air cleaner from the front mounting rubber

7 Unscrew the crossbar mounting screw at the rear of the air cleaner, and release the crossbar rubber mountings from the mounting pegs. Note that the screw retains the purge valve-to-carbon canister line support (see illustrations).

8 Pull the air cleaner body rearwards from the front mounting rubber (see illustration), and withdraw from the engine compartment.

### Refitting

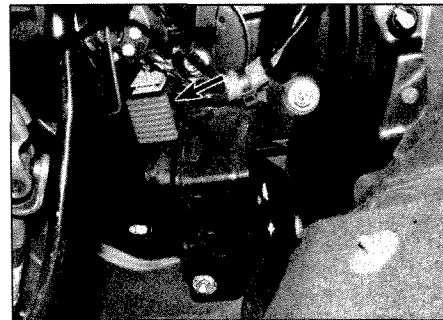
9 Refitting is a reversal of removal.

### 3 Accelerator pedal/position sensor - removal and refitting



### Removal

1 Disconnect the battery negative lead (refer



3.2 Disconnecting the wiring from the top of the accelerator pedal/position sensor

to *Disconnecting the battery* at the end of this manual).

2 Working in the driver's footwell under the fascia, disconnect the wiring from the top of the accelerator pedal/position sensor (see illustration). Where necessary, pull back the footwell carpet first.

3 Unscrew the three mounting nuts, and withdraw the sensor from the bulkhead.

### Refitting

4 Refitting is a reversal of removal. After reconnecting the battery, have a Vauxhall dealer reprogram the volatile memories.

### 4 Fuel system - depressurising



**Warning:** The fuel system is pressurised all the time the ignition is switched on, and a high pressure will remain in the system even 20 minutes after switching off. It is therefore essential to depressurise the system before disconnecting fuel lines, or carrying out any work on the fuel system components. Failure to do this before carrying out work may result in a sudden release of pressure which may cause fuel spray - this constitutes a fire hazard, and a health risk. Note that, even when the system has been depressurised, fuel will still be present in the system fuel lines and components, and adequate precautions should still be taken when carrying out work.

1 The fuel system referred to in this Section is defined as the tank-mounted fuel pump and pressure regulator, the fuel filter, the fuel injectors, the fuel rail, and the metal pipes and flexible hoses of the fuel lines between these components. All these contain fuel which will be under pressure while the engine is running, and/or while the ignition is switched on. High pressure will remain for at least 20 minutes after the ignition has been switched off, and must be relieved in a controlled fashion when any of these components are disturbed for servicing work.

2 Where necessary, remove the engine top cover.

3 Place a container beneath the fuel pressure testing point on the fuel rail and have a cloth rag ready to soak up any escaping fuel not being caught by the container.

4 Slowly loosen the cap and allow the fuel to escape. With the cap fully unscrewed, all fuel pressure will have escaped, and the cap can then be refitted and tightened.

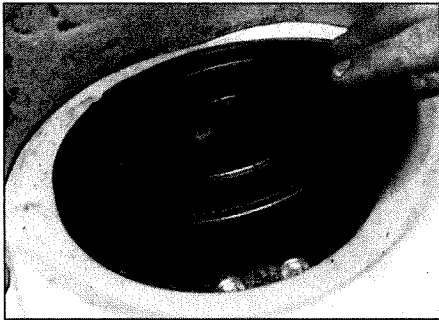
### 5 Fuel tank - removal and refitting



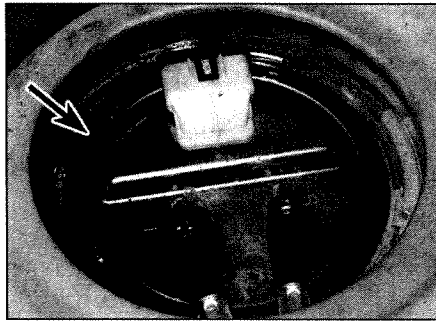
**Note:** Refer to the precautions given in Section 1 before proceeding.

### Removal

1 Depressurise the fuel system (see Section 4).  
2 Disconnect the battery negative lead (refer to *Disconnecting the battery* at the end of this manual).



6.5a Prise the plastic cover from the floor ...



6.5b ... to expose the fuel pump cover. Locking ring arrowed

3 Syphon out any remaining fuel in the tank through the filler pipe into a clean metal container which can be sealed.

4 Chock the front wheels then jack up the rear of the vehicle and support on axle stands (see *Jacking and vehicle support*). Remove both rear wheels.

5 Refer to Chapter 9 and disconnect the front ends of the rear (secondary) handbrake cables from the underbody clips after backing off the primary cable adjustment. Unclip the cables from the underbody and the right-hand side of the fuel tank, then tie them to one side, away from the fuel tank. Where necessary on ECO models, remove the underbody air guide plate.

6 Disconnect the rear of the exhaust system from its rubber mountings, and lower the system, then move it to one side sufficiently to enable removal of the fuel tank. Alternatively, remove the exhaust system completely to provide greater clearance (refer to Section 13).

7 Disconnect the wiring from the fuel pump and fuel gauge sensor at the connector on the underbody.

8 Disconnect the fuel feed line and the evaporative vent line at the quick-release connectors on the underbody (if necessary, detach the line retaining bracket from the underbody). Be prepared for some loss of fuel. A Vauxhall special tool is available to release the fuel line connectors, but provided care is taken, the connectors can be released using a pair of long-nosed pliers, or a similar tool, to depress the retaining tangs. Refer to *Fuel filter renewal* in Chapter 1A for further details.

9 Unscrew the lower filler hose mounting bolt, then unclip the ventilation and carbon canister purge hoses from the bottom of the fuel tank.

10 Loosen the clip and disconnect the fuel filler hose from the fuel tank.

11 Support the weight of the fuel tank on a jack with interposed block of wood.

12 Unbolt and remove the two securing straps from the fuel tank.

13 Lower the tank sufficiently to enable access to the fuel hoses on the tank, then disconnect them. Be prepared for some loss of fuel.

14 Continue to lower the tank until it can be removed from under the vehicle.

15 Plug or clamp the fuel and vent hoses to prevent entry of dust and dirt.

16 If necessary, remove the fuel lines and hoses, heat shield and wiring from the tank for transfer to the new tank. If a new tank is being fitted, it is recommended that the filter is renewed at the same time.

17 If the tank contains sediment or water, it may be cleaned out with two or three rinses of clean fuel. Remove the fuel gauge sender unit and fuel pump as described in Sections 6 and 7 respectively. Shake the tank vigorously, and change the fuel as necessary to remove all contamination from the tank. *This procedure should be carried out in a well-ventilated area, and it is vital to take adequate fire precautions.*

18 Any repairs to the fuel tank should be carried out by a professional. Do not under any circumstances attempt any form of DIY repair to a fuel tank.

### Refitting

19 Refitting is a reversal of removal, bearing in mind the following points:

- Ensure that all hoses are securely reconnected to their correct locations.
- Check the handbrake cable adjustment, as described in Chapter 9.
- On completion, fill the fuel tank, then run the engine and check for leaks. If leakage is evident, stop the engine immediately and rectify the problem without delay.



6.6 Disconnect the fuel gauge sender wiring plug

## 6 Fuel gauge sender unit – removal and refitting

**Note:** Refer to the precautions given in Section 1 before proceeding.

**Note:** The fuel tank should be as empty as possible when carrying out this procedure.

### Removal

1 Disconnect the battery negative lead (refer to *Disconnecting the battery* at the end of this manual).

2 Depressurise the fuel system as described in Section 4.

3 Syphon out any remaining fuel in the tank through the filler pipe into a clean metal container which can be sealed.

4 On Hatchback models, remove the rear seat as described in Chapter 11. On standard Van models, fold up the rear seat. On Combo Van models, unbolt the tank cover flap from the rear floor.

5 Fold up the acoustic insulation, then, using a screwdriver, carefully lever out the plastic cover to expose the fuel pump cover (see illustrations).

6 Disconnect the main wiring plug from the cover (see illustration).

7 Identify the position of the two fuel lines, then disconnect the quick-release fittings. Be prepared for some loss of fuel. A Vauxhall special tool is available to release the fuel line connectors, but provided care is taken, the connectors can be released using a pair of long-nosed pliers, or a similar tool, to depress the retaining tangs. Clamp or plug the open ends of the hoses, to prevent dirt ingress and further fuel spillage.

8 Release the fuel pump cover locking ring. A special tool (Vauxhall tool No KM-797) is available for this, but the ring can be removed by tapping anti-clockwise until the locking clips release.

**Warning:** To prevent the possibility of any sparks which could ignite fuel vapour, use a plastic, wooden or brass tool to release the locking ring.

9 Remove the locking ring, then carefully lift the cover from the top of the pump, noting the location of the wiring and hose connections.

10 Disconnect the sender unit wiring and the fuel pump wiring from the bottom of the cover.

11 On Van models, disconnect the earth wiring from the pressure regulator.

12 Release the clip and disconnect the fuel supply hose from the cover.

13 Disconnect the fuel return hose from the pressure regulator, and withdraw the cover.

14 Remove the cover sealing ring.

15 Using the hook provided, pull the sender unit from the clips on the side of the fuel pump housing (see illustrations).