






Chapter 4 Part B: Fuel and exhaust systems - single-point fuel injection models

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Degrees of difficulty

Easy , suitable for novice with little experience		Fairly easy , suitable for beginner with some experience		Fairly difficult , suitable for competent DIY mechanic		Difficult , suitable for experienced DIY mechanic		Very difficult , suitable for expert DIY or professional	
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Specifications

System type

1124 cc (H1A engine) models	Bosch Monopoint A2.2
1360 cc (KDY engine) models	Bosch Monopoint A2.2
1360 cc (KDX engine) models	Bosch Monopoint MA3.0
Early 1580 cc (B4A engine) models	Magneti Marelli G5.S2
Later 1580 cc (B4A engine) models	Magneti Marelli G6.12
1580 cc (BDY engine) models	Magneti Marelli G6.10

Note: Refer to the relevant part of Chapter 2 for further information on engine code identification

Fuel system data

Fuel pump type	Electric, immersed in tank
Fuel pump regulated constant pressure:	
Bosch system	1.0 bar
Magneti Marelli system	0.8 ± 0.1 bar
Specified idle speed (not adjustable)	850 ± 50 rpm (controlled by ECU)
Idle mixture CO content:	
Bosch system (not adjustable)	Less than 1.0 % (controlled by ECU)
Magneti Marelli system*:	
1580 cc (B4A engine) models	1.0 to 2.0 %
1580 cc (BDY engine) models	Less than 1.0 % (controlled by ECU)

*On the Magneti Marelli system, idle mixture adjustment is possible, but only using special electronic equipment - see text

Recommended fuel

Minimum octane rating:	
1580 cc (B4A engine) models	95 RON unleaded (UK unleaded premium) or 97 RON leaded (UK "4-star")
1580 cc (BDY engine) models, and all 1124 cc and 1360 cc models	95 RON unleaded (UK unleaded premium). Leaded fuel must not be used

Torque wrench settings

	Nm	lbf ft
Inlet manifold nuts:		
1124 cc and 1360 cc models	8	6
1580 cc models	22	16
Exhaust manifold nuts:		
1124 cc and 1360 cc models	16	12
1580 cc models	22	16
Exhaust system fasteners:		
1124 cc and 1360 cc models:		
Front pipe-to-manifold nuts	30	22
Front pipe mounting bolt	35	26
Front pipe-to-intermediate pipe nuts	10	7
Clamping ring nuts	20	15
1580 cc models:		
Front pipe-to-manifold nuts	10	7
Clamping ring nuts	20	15

1 General information and precautions

The fuel 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, and the throttle body assembly (which incorporates the single fuel injector and the fuel pressure regulator). In addition, there is an Electronic Control Unit (ECU) and various sensors, electrical components and related wiring. The air cleaner contains a disposable paper filter element, and incorporates a flap valve air temperature control system. This allows cold air from the outside of the car and warm air from around the exhaust manifold to enter the air cleaner in the correct proportions.

Refer to Section 7 for further information on the operation of each fuel injection system, and to Section 18 for information on the exhaust system.

Throughout this Section, it is occasionally necessary to identify vehicles by their engine codes rather than by engine capacity. Refer to the relevant Part of Chapter 2 for further information on engine code identification.

Warning: Many of the procedures in this Chapter require the removal of fuel lines and connections, 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.

Note: Residual pressure will remain in the fuel lines long after the vehicle was last used. When disconnecting any fuel line, first depressurise the fuel system as described in Section 8.

2 Air cleaner assembly and intake ducts - removal and refitting

1124 cc and 1360 cc models

1 Refer to Chapter 4A, Section 2, substituting "throttle body" for all references to the carburettor.

1580 cc models

Removal

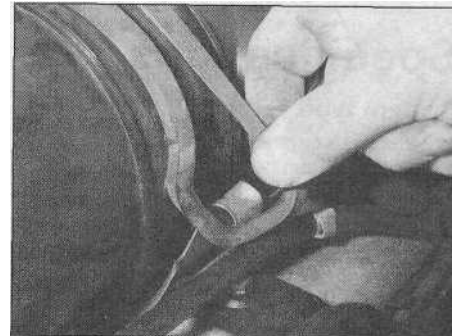
2 Slacken the retaining clip, and disconnect the air cleaner housing-to-throttle body duct from the front of the air cleaner housing.

3 Slacken the retaining clip, and disconnect the air cleaner air temperature control valve assembly from the end of the air cleaner housing.

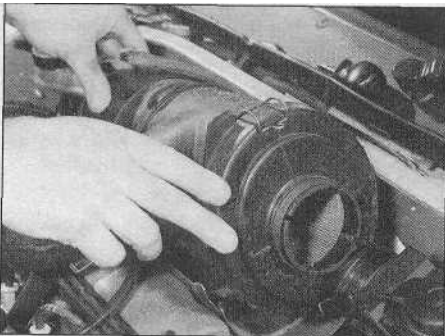
4 Free the air cleaner housing retaining strap

from its retaining clip, then lift the air cleaner housing away from its mounting bracket. If necessary, the mounting bracket can then be unbolted and removed from the engine compartment (see illustrations).

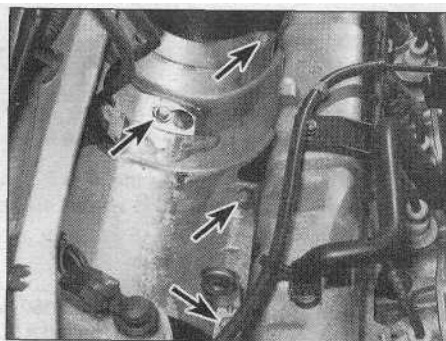
5 To remove the intake duct, first disconnect the vacuum hose from the air temperature control valve diaphragm. If not already done, slacken the retaining clip securing the control valve to the air cleaner housing. Undo the nut(s) securing the front of the duct to the vehicle body, then release the fastener securing the rear of the duct in position. Disconnect the hot-air intake hose from the manifold shroud, and remove the duct and hose assembly from the engine compartment (see illustration).



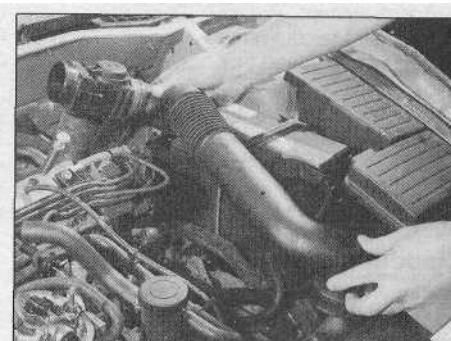
2.4a On 1580 cc models, release the rubber retaining strap ...



2.4b ... and lift the air cleaner housing out of the engine compartment



2.4c Air cleaner mounting bracket retaining bolts (arrowed) -1580 cc models



2.5 Removing the intake duct and hose assembly -1580 cc models

6 To remove the air cleaner housing-to-throttle body duct, disconnect the breather hose from the side of the duct, then disconnect the vacuum hoses from the air temperature control system vacuum valve, noting their correct fitted positions. Slacken the retaining clip securing the duct to the air cleaner housing, then slacken and remove the two nuts and washers securing the duct to the throttle body. Remove the duct from engine compartment. On early models, it will be necessary to disconnect the auxiliary air valve hose from the duct, and to recover the rubber sealing ring from the top of the throttle body (see illustrations).

Refitting

7 Refitting is a reversal of the removal procedure, ensuring that all hoses are properly reconnected, and that all ducts are correctly seated and securely held by their retaining clips.

3 Air cleaner air temperature control system - general information and component renewal



1124 cc and 1360 cc models

1 Refer to Chapter 4A, Section 3, substituting "throttle body" for all references to the carburettor.

1580 cc models

General information

2 Refer to Chapter 4A, Section 3, substituting "throttle body" for all references to the carburettor.

Vacuum switch - renewal

3 Remove the air cleaner-to-throttle body duct as described in paragraph 6 of Section 2.

4 Bend up the tangs on the switch retaining clip, then remove the clip and withdraw the switch from inside the duct.

5 On refitting, ensure the switch and duct mating surfaces are clean and dry, and position the switch on the inside of the duct. Refit the retaining clip, then press the switch firmly against the duct, securing it in position by bending down the retaining clip tangs.

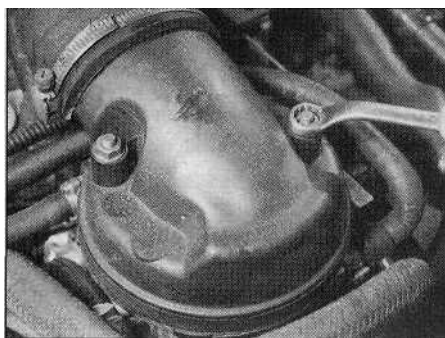
6 Refit the duct as described in Section 2.

Air temperature control valve - renewal

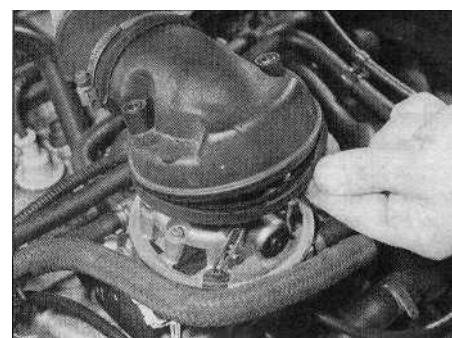
7 Disconnect the vacuum pipe from the air temperature control valve, then slacken the retaining clips securing the valve to the air cleaner housing, hot-air intake hose, and the intake duct.

8 Disconnect the intake duct and hose from the control valve, then free the valve from the air cleaner assembly and remove it from the vehicle.

9 Refitting is the reverse of the removal



2.6a Undo the two retaining nuts ...



2.6b ... then detach the duct from the throttle body, and recover the sealing ring

procedure, noting that the air temperature control valve assembly can only be renewed as a complete unit.

4 Accelerator cable - removal, refitting and adjustment



1 Refer to Chapter 4A, Section 7, substituting "throttle body" for all references to the carburettor. On automatic transmission models, once the accelerator cable is correctly adjusted, check the kickdown cable adjustment as described in Chapter 7B.

5 Accelerator pedal - removal and refitting



Refer to Chapter 4A, Section 8.

6 Unleaded petrol - general information and usage

Note: *The information given in this Chapter is correct at the time of writing. If updated information is thought to be required, check with a Citroen dealer. If travelling abroad, consult one of the motoring organisations (or a similar authority) for advice on the fuel available.*

1 The fuel recommended by Citroen is given in the Specifications Section of this Chapter, followed by the equivalent petrol currently on sale in the UK.

2 All Citroen ZX single-point injection models are designed to run on fuel with a minimum octane rating of 95 (RON). All 1124 cc and 1360 cc models are equipped with catalytic converters, and therefore must be run on unleaded fuel *only*. Under no circumstances should leaded (UK "4-star") fuel be used, as this may damage the catalytic converter. This also applies to later 1580 cc models with a catalytic converter. Early 1580 cc models without a catalytic converter can, however, be run on leaded fuel without modification or risk of damage.

3 Super unleaded petrol (98 octane) can also be used in all models if wished, though there is no advantage in doing so.

7 Fuel injection systems - general information

Bosch Monopoint A2.2 system - 1124 cc and early 1360 cc models

1 The Bosch Monopoint A2.2 fuel injection system is fitted to all 1124 cc fuel-injected models, and to early fuel-injected 1360 cc (KDY engine) models. The system incorporates a closed-loop catalytic converter and an evaporative emission control system, and complies with the latest emission control standards. The system operates as follows.

2 The fuel pump, immersed in the fuel tank, pumps fuel from the fuel tank to the fuel injector, via a filter mounted underneath the rear of the vehicle. Fuel supply pressure is controlled by the pressure regulator in the throttle body assembly. The regulator operates by allowing excess fuel to return to the tank.

3 The electrical control system consists of the ECU, along with the following sensors.

- Throttle potentiometer - informs the ECU of the throttle position, and the rate of throttle opening or closing.
- Coolant temperature sensor - informs the ECU of engine temperature.
- Intake air temperature sensor - informs the ECU of the temperature of the air passing through the throttle body.
- Lambda sensor - informs the ECU of the oxygen content of the exhaust gases (explained in greater detail in Part D of this Chapter).
- Microswitch (built into idle speed stepper motor) - informs the ECU when the throttle valve is closed (ie when the accelerator pedal is released).
- Ignition HT coil - ECU monitors the coil low tension (LT) circuit to determine the engine speed.

4 All the above information is analysed by the ECU and, based on this, the ECU determines the appropriate fuelling requirements for the engine. The ECU controls the fuel injector by varying its pulse width - the length of time the injector is held open - to provide a richer or

weaker mixture, as appropriate. The mixture is constantly varied by the ECU, to provide the best setting for cranking, starting (with either a hot or cold engine), warm-up, idle, cruising, and acceleration.

5 The ECU also has full control over the engine idle speed, via a stepper motor which is fitted to the throttle body. The motor pushrod rests against a cam on the throttle valve spindle. When the throttle valve is closed (accelerator pedal released), the ECU uses the motor to vary the opening of the throttle valve and so control the idle speed.

6 The ECU also controls the exhaust and evaporative emission control systems, which are described in detail in Part D of this Chapter.

7 If there is an abnormality in any of the readings obtained from either the coolant temperature sensor, the intake air temperature sensor or the lambda sensor, the ECU enters its back-up mode. In this event, the ECU ignores the abnormal sensor signal, and assumes a pre-programmed value which will allow the engine to continue running (albeit at reduced efficiency). If the ECU enters this back-up mode, the warning light on the instrument panel will come on, and the relevant fault code will be stored in the ECU memory.

8 If the warning light comes on, the vehicle should be taken to a Citroen dealer at the earliest opportunity. A complete test of the engine management system can then be carried out, using a special electronic diagnostic test unit which is simply plugged into the system's diagnostic connector.

Bosch Monopoint MA3.0 system - later 1360 cc models

9 The Bosch Monopoint MA3.0 engine management (fuel injection/ignition) system is fitted to all later 1360 cc models with the KDX engine. The system differs from the earlier A2.2 system in that it is an engine management system, controlling both the fuel injection system and ignition system, rather than purely a fuel injection system. Refer to Chapter 5 for information on the ignition side of the system.

10 The fuel injection side of the system is very similar to the A2.2 system described above, the only difference being that a couple of additional sensors are incorporated into the system. A crankshaft sensor is fitted to the engine, to inform the ECU of engine speed and crankshaft position, and a vehicle speed sensor is fitted to the gearbox, to inform the ECU of the road speed.

11 The crankshaft sensor is needed since the ECU also controls the ignition side of the system, and cannot use the ignition low tension (LT) circuit to calculate engine speed. The sensor works in conjunction with a reluctor ring fixed to the rear of the flywheel. The reluctor ring originally has a total of sixty teeth, which are equally-spaced at intervals of

6°. Of these sixty teeth, two adjacent teeth are removed, to leave a gap of 18°. The ECU uses this gap to establish where TDC is, and calculates engine speed from the frequency of teeth passing the crankshaft sensor.

Magneti Marelli system - 1580 cc models

12 On 1580 cc models, a Magneti Marelli engine management (fuel injection/ignition) system is fitted. There are three versions of the system, all of which differ slightly, but operate on the same principle. The differences are as follows.

13 Early models with the B4A (XU5M 2K) engine are fitted with the **G5.S2 system**. This system differs from later models in that it uses an auxiliary air valve to control the engine idle speed.

14 Later models with the B4A (XU5M 2K or 3K) engine are fitted with the **G6.12 system**. On this system, a stepper motor is fitted to the throttle body assembly to control the engine idle speed.

15 Later models with the BDY engine are fitted with the **G6.10 system**. This system is a development of the G6.12 system, incorporating a catalytic converter and an evaporative emission control system.

16 The fuel injection side of the system operates as described in the following paragraphs. Refer to Chapter 5 for information on the ignition side of the system.

17 The fuel pump, immersed in the fuel tank, pumps fuel from the fuel tank to the fuel injector, via a filter. Fuel supply pressure is controlled by the pressure regulator in the throttle body assembly. The regulator operates by allowing excess fuel to return to the tank. To reduce emissions and to improve driveability when the engine is cold, engine coolant is passed through the manifold and around the throttle body assembly.

18 The electrical control system consists of the ECU, along with the following sensors.

- (a) *Manifold absolute pressure (MAP) sensor - informs the ECU of the load on the engine (expressed in terms of inlet manifold vacuum).*
- (b) *Crankshaft sensor - informs the ECU of crankshaft position and engine speed.*
- (c) *Throttle potentiometer - informs the ECU of the throttle position, and the rate of throttle opening/closing.*
- (d) *Coolant temperature sensor - informs the ECU of engine temperature.*
- (e) *Fuel/air mixture temperature sensor - informs the ECU of the temperature of the fuel/air mixture charge entering the cylinders.*
- (f) *Lambda (oxygen) sensor - informs the ECU of the oxygen content of the exhaust gases (explained in greater detail in Part D of this Chapter).*

19 In addition, the ECU senses battery voltage (adjusting the injector pulse width to suit, and using the stepper motor to increase

the idle speed and, therefore, the alternator output if the voltage is too low). Short-circuit protection and diagnostic capabilities are incorporated into the ECU, and it can both receive and transmit information via the engine management circuit diagnostic connector, thus permitting engine diagnosis and tuning by special diagnostic equipment.

20 All the above signals are compared by the ECU, using digital techniques, with set values pre-programmed (mapped) into its memory. Based on this information, the ECU selects the response appropriate to those values, and controls the ignition HT coil (see Chapter 5), and the fuel injector (varying its pulse width - the length of time the injector is held open - to provide a richer or weaker mixture, as appropriate). The mixture, idle speed and ignition timing are constantly varied by the ECU, to provide the best settings for cranking, starting (with either a hot or cold engine), warm-up, idle, cruising, and acceleration.

21 On the G5.S2 system, the ECU controls the idle speed via an auxiliary air valve. The air valve is connected to the air intake duct and to the throttle body, downstream of the throttle valve. When the throttle valve is closed, the ECU controls the opening of the valve, which in turn regulates the amount of air entering the manifold, and so controls the idle speed.

22 On the G6.12 and G6.10 systems, the ECU regulates the engine idle speed via a stepper motor which is fitted to the throttle body. The motor has a pushrod controlling the opening of an air passage which bypasses the throttle valve. When the throttle valve is closed, the ECU controls the movement of the motor pushrod, which regulates the amount of air which flows through the throttle body passage, and so controls the idle speed. The bypass passage is also used as an additional air supply during cold starting.

23 On the G6.10 system, the ECU also controls the exhaust and evaporative emission control systems, which are described in detail in Part D of this Chapter.

24 If there is an abnormality in any of the readings obtained from any of engine management circuit sensors, the ECU enters its back-up mode. In this event, the ECU ignores the abnormal sensor signal, and assumes a pre-programmed value which will allow the engine to continue running (albeit at reduced efficiency). On entering this back-up mode, the engine management warning light in the instrument panel will come on, informing the driver of the fault, and the relevant fault code will be stored in the ECU memory.

25 If the warning light comes on, the vehicle should be taken to a Citroen dealer at the earliest opportunity. A complete test of the engine management system can then be carried out, using a special electronic diagnostic test unit which is simply plugged into the system's diagnostic connector.

8 Fuel injection system - depressurisation



Note: Refer to the warning note in Section 1 before proceeding.

Warning: The following procedure will merely relieve the pressure in the fuel system - remember that fuel will still be present in the system components, and take precautions accordingly before disconnecting any of them.

1 The fuel system referred to in this Section is defined as the tank-mounted fuel pump, the fuel filter, the fuel injector and the pressure regulator in the injector housing, 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. The pressure will remain for some time after the ignition has been switched off, and it must be relieved in a controlled fashion when any of these components are disturbed for servicing work.

2 Disconnect the battery negative terminal.

3 Place a suitable container beneath the connection or union to be disconnected, and have a large rag ready to soak up any escaping fuel not being caught by the container.

4 Slowly loosen the connection or union nut to avoid a sudden release of pressure, and position the rag around the connection, to catch any fuel spray which may be expelled. Once the pressure is released, disconnect the fuel line. Plug the pipe ends, to minimise fuel loss and prevent the entry of dirt into the fuel system.

9 Fuel pump - removal and refitting



Note: Refer to the warning note in Section 1 before proceeding.

Removal

1 Disconnect the battery negative lead.

2 For access to the fuel pump, tilt or remove the rear seats as described in Chapter 11.

3 Using a screwdriver, carefully prise the plastic access cover from the floor to expose the fuel pump. The pump is located under the right-hand cover.

4 Disconnect the wiring connector from the fuel pump, and tape the connector to the vehicle body, to prevent it disappearing behind the tank.

5 Mark the hoses for identification purposes, then slacken the feed and return hose retaining clips. Where the crimped-type Citroen hose clips are fitted, cut the clips and discard them; use standard worm-drive hose clips on refitting. Disconnect both hoses from the top of the pump, and plug the hose ends.

6 Noting the alignment marks on the tank, pump cover and the locking ring, unscrew the ring and remove it from the tank. This is best accomplished by using a screwdriver on the raised ribs of the locking ring. Carefully tap the screwdriver to turn the ring anti-clockwise until it can be unscrewed by hand.

7 Displace the pump cover, then reach into the tank and unclip the pump from the tank base. Lift the fuel pump assembly out of the fuel tank, taking great care not to damage the filter, or to spill fuel onto the interior of the vehicle. Recover the rubber sealing ring and discard it - a new one must be used on refitting.

8 Note that the fuel pump is only available as a complete assembly - no components are available separately.

Refitting

9 Ensure the fuel pump pick-up filter is clean and free of debris. Fit the new sealing ring to the top of the fuel tank.

10 Carefully manoeuvre the pump assembly into the fuel tank, and clip it into position in the base of the tank.

11 Align the mark on the fuel pump cover with the centre of the three alignment marks on the fuel tank, then refit the locking ring. Securely tighten the locking ring, then check that the locking ring, pump cover and tank marks are all correctly aligned.

12 Reconnect the feed and return hoses to the top of the fuel pump, using the marks made on removal to ensure that they are correctly reconnected, and securely tighten their retaining clips.

13 Reconnect the pump wiring connector.

14 Reconnect the battery negative terminal, and start the engine. Check the fuel pump feed and return hoses unions for signs of leakage.

15 If all is well, refit the plastic access cover. Tilt or refit the rear seat as described in Chapter 11 (as applicable).

10 Fuel gauge sender unit - removal and refitting



Refer to Chapter 4A, Section 5, noting that there are no fuel pipe connections to the sender unit.

11 Fuel tank - removal and refitting



Refer to Chapter 4A, Section 6, noting that it will be necessary to depressurise the fuel system as the feed and return hoses are disconnected (see Section 8). It will also be necessary to disconnect the wiring connector from the fuel pump before lowering the tank out of position.

12 Throttle body - removal and refitting



Note: Refer to the warning note in Section 1 before proceeding.

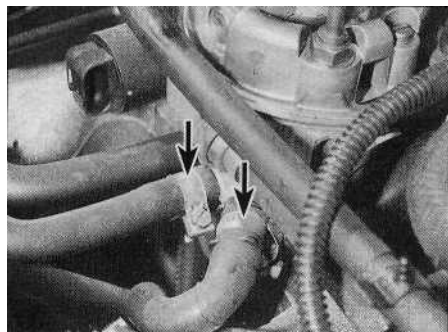
Removal

1 Disconnect the battery negative terminal.

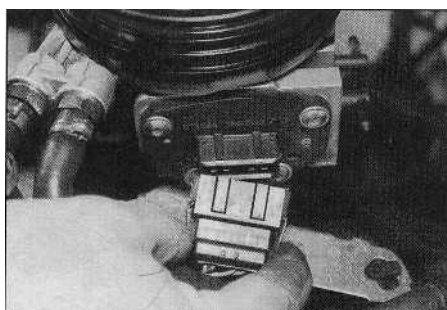
2 On 1124 cc and 1360 cc models, remove the air cleaner housing-to-throttle body duct, using the information given in Section 2.

3 On 1580 cc models, relieve any pressure in the cooling system by unscrewing the filler cap. Undo the two nuts securing the intake duct to the throttle body, and position the duct clear of the body along with its rubber sealing ring. Working quickly to minimise coolant loss, disconnect the two coolant hoses from the rear of the throttle body assembly, and plug the hose ends with a suitable bolt or screw (**see illustration**).

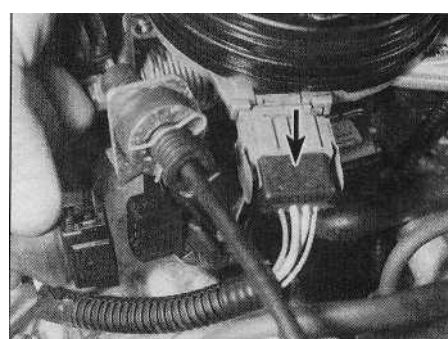
4 Depress the retaining clips and disconnect the wiring connectors from the throttle



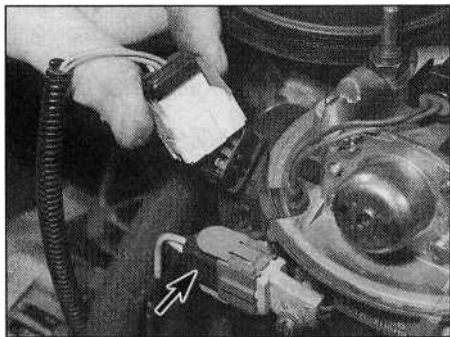
12.3 Throttle body coolant hoses (arrowed) -1580 cc models



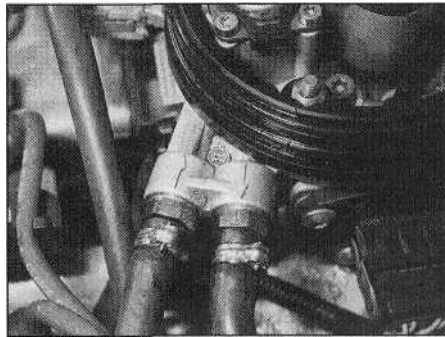
12.4a On 1124 cc and 1360 cc models, disconnect the wiring connectors from the throttle potentiometer ...



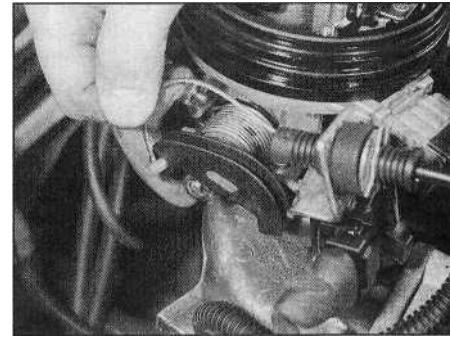
12.4b ... the idle control stepper motor and the injector wiring loom (arrowed)



12.4c Disconnecting the throttle potentiometer wiring connector - 1580 cc models (injector wiring connector arrowed)



12.5 Throttle body fuel feed and return hose unions (1360 cc model shown)



12.6a Disconnect the accelerator inner cable from the throttle cam ...

potentiometer, the idle control stepper motor (where fitted), and the injector wiring loom connector which is situated on the side of the throttle body (see illustrations).

5 Bearing in mind the information given in Section 8 about depressurising the fuel system, release the retaining clips and disconnect the fuel feed and return hoses from the throttle body assembly. If the original crimped-type Citroen clips are still fitted, cut the clips and discard them; use standard worm-drive hose clips on refitting (see illustration).

6 Disconnect the accelerator inner cable from the throttle cam, then withdraw the outer

cable from the mounting bracket, along with its flat washer and spring clip (see illustrations).

7 Disconnect the distributor vacuum hose, idle control auxiliary air valve and/or purge valve hose from the throttle body (as applicable) (see illustration).

8 Slacken and remove the bolts securing the throttle body assembly to the inlet manifold, then remove the assembly along with its gasket and/or insulating spacer (see illustrations).

9 If necessary, with the throttle body removed, undo the retaining screws and separate the upper and lower sections, noting the gasket which is fitted between the two.

Refitting

10 Refitting is a reverse of the removal procedure, bearing in mind the following points:

- (a) Where applicable, ensure the mating surfaces of the upper and lower throttle body sections are clean and dry. Fit a new gasket and reassemble the two sections, tightening the retaining screws securely.
- (b) Ensure the mating surfaces of the manifold and throttle body are clean and dry, then fit a new gasket. Securely tighten the throttle body retaining bolts.
- (c) Ensure all hoses are correctly reconnected and, where necessary, that their retaining clips are securely tightened.

(d) On completion, adjust the accelerator cable using the information given in Section 4.

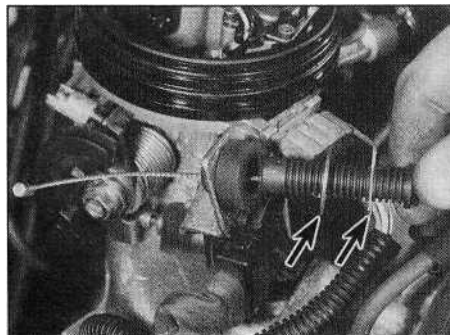
(e) On 1580 cc models, check and, if necessary, top-up the cooling system as described in Chapter 1.

13 Fuel injection system - testing and adjustment

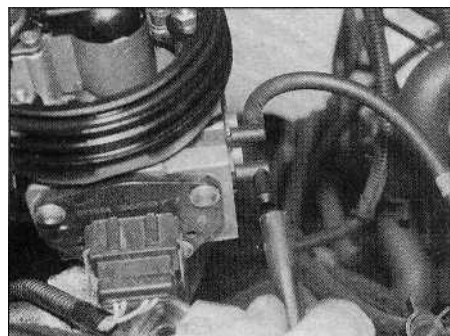
Testing

1 If a fault appears in the fuel injection system, first ensure that all the system wiring connectors are securely connected and free of corrosion. Ensure that the fault is not due to poor maintenance; ie, check that the air cleaner filter element is clean, the spark plugs are in good condition and correctly gapped, the valve clearances are correctly adjusted, the cylinder compression pressures are correct, the ignition timing is correct, and that the engine breather hoses are clear and undamaged, referring to Chapters 1, 2 and 5 for further information.

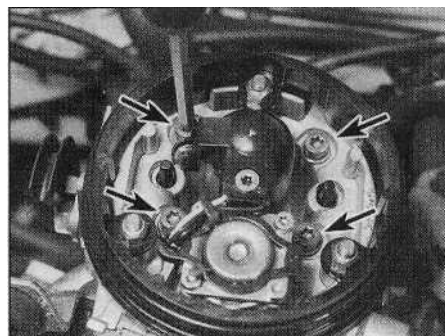
2 If these checks fail to reveal the cause of the problem, the vehicle should be taken to a suitably-equipped Citroen dealer for testing. A wiring block connector is incorporated in the engine management circuit, into which a special electronic diagnostic tester can be plugged. The connector is located inside either the engine compartment junction box or



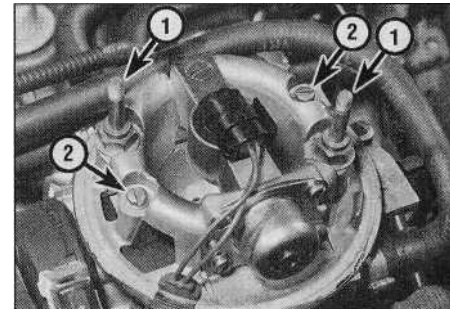
12.6b ... then free the outer cable from its bracket, and recover the flat washer and spring clip (arrowed) - 1360 cc model shown



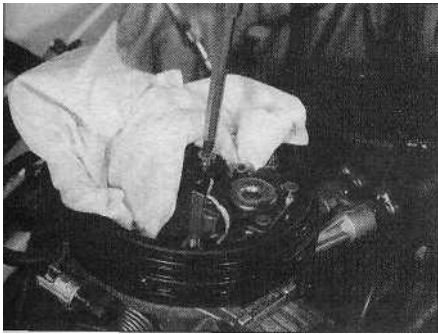
12.7 Disconnecting the purge valve hose from the throttle body - 1360 cc model



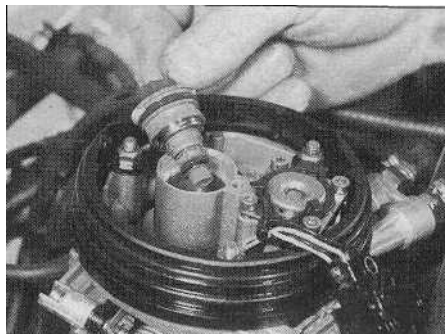
12.8a Throttle body retaining bolts (arrowed) -1360 cc model



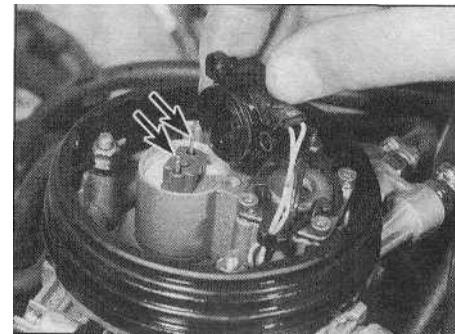
12 8b Throttle body retaining bolts/studs (1) and upper body retaining screws (2) - 1580 cc model



14.3a Undo the injector cap retaining screw, noting the use of a rag to catch any fuel spray ...



14.3b ... then lift off the cap and withdraw the injector



14.4 On refitting, ensure that the cap terminals are correctly aligned with the injector pins (arrowed)

the ECU plastic box. The tester will locate the fault quickly and simply, alleviating the need to test all the system components individually, which is a time-consuming operation that also carries a risk of damaging the ECU.

Adjustment

3 Experienced home mechanics with a considerable amount of skill and equipment (including a tachometer and an accurately calibrated exhaust gas analyser) may be able to check the exhaust CO level and the idle speed. However, if these are found to be in need of adjustment, the car *must* be taken to a suitably-equipped Citroen dealer for further testing.

4 On the Bosch Monopoint system, no adjustment is possible. Should the idle speed or exhaust gas CO level be incorrect, then a fault must be present in the fuel injection system.

5 On the Magneti Marelli system, it is possible to adjust the mixture setting (exhaust gas CO level) and ignition timing. However, adjustments can be made only by re-programming the ECU, using special diagnostic equipment connected to the system via the diagnostic connector.

14 Bosch Monopoint system components - removal and refitting



Note: On later 1360 cc models with the MA3.0 system, the throttle body is effectively a sealed unit, with no components available separately. This means that, if any of the throttle body components (including the idle control stepper motor) become faulty, the complete assembly must be renewed.

Fuel injector

Note: Refer to the warning note in Section 1 before proceeding. If a faulty injector is suspected, before condemning the injector, it is worth trying the effect of one of the proprietary injector-cleaning treatments.

On later 1360 cc models with the MA3.0 system, at the time of writing, neither the fuel injector or its seals are available separately. If the injector is faulty, the complete throttle body assembly must be renewed. Refer to

your Citroen dealer for the latest information. Although the unit can be dismantled for cleaning, if required, it should not be disturbed unless absolutely necessary.

- 1** Disconnect the battery negative terminal.
- 2** Remove the air cleaner-to-throttle body duct, using the information given in Section 2.
- 3** Undo the injector cap retaining screw, then lift off the cap and withdraw the injector from the housing, noting the sealing ring and O-ring. As the cap screw is slackened and the injector is withdrawn, place a clean rag over the injector, to catch any fuel spray which may be released (**see illustrations**).
- 4** Refitting is a reversal of the removal procedure, ensuring that the injector sealing ring(s) and injector cap O-ring are in good condition. When refitting the injector cap, ensure that the injector pins are correctly aligned with the cap terminals - the terminals are marked "+" and "-" for identification (**see illustration**).

Fuel pressure regulator

Note: Refer to the warning note in Section 1 before proceeding. At the time of writing, the fuel pressure regulator assembly was not available separately from the throttle body assembly. Refer to a Citroen dealer for the latest information. Although the unit can be dismantled for cleaning, if required, it should not be disturbed unless absolutely necessary.

- 5** Disconnect the battery negative terminal.
- 6** Remove the air cleaner-to-throttle body

duct, using the information given in Section 2.

- 7** Using a marker pen, make alignment marks between the regulator cover and throttle body, then slacken and remove the cover retaining screws (**see illustration**). As the screws are slackened, place a clean rag over the cover, to catch any fuel spray which may be released.

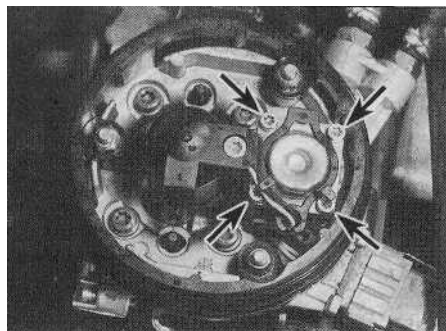
- 8** Lift off the cover, then remove the spring and withdraw the diaphragm, noting its correct fitted orientation. Remove all traces of dirt, and examine the diaphragm for signs of splitting. If damage is found, it will probably be necessary to renew the throttle body assembly.

- 9** Refitting is a reverse of the removal procedure, ensuring that the diaphragm and cover are fitted the correct way round, and that the retaining screws are securely tightened.

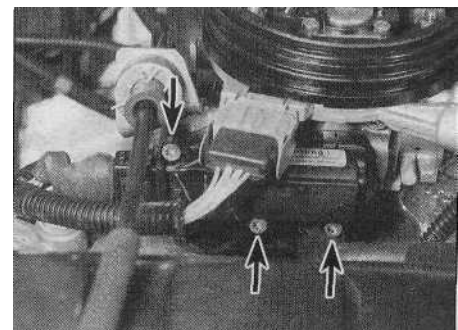
Idle control stepper motor

Note: On later 1360 cc models with the MA3.0 system, at the time of writing, the idle control stepper motor was not available separately. If the motor is faulty, the complete throttle body assembly must be renewed. Refer to your Citroen dealer for the latest information.

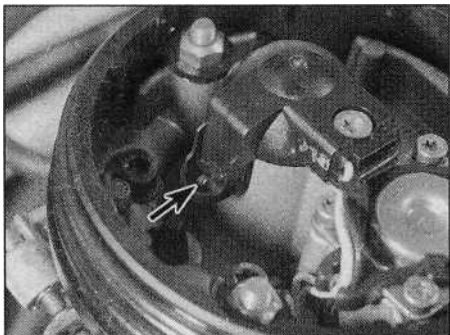
- 10** Disconnect the battery negative terminal.
- 11** Depress the retaining clip, and disconnect the wiring connector from the idle control stepper motor.
- 12** Undo the retaining screws, and remove the motor from the front of the throttle body (**see illustration**).



14.7 Fuel pressure regulator retaining screws (arrowed)



14.12 Idle control stepper motor retaining screws (arrowed)



14.15 Intake air temperature sensor (arrowed) is an integral part of the injector cap

13 Refitting is a reverse of the removal procedure, ensuring that the motor retaining screws are securely tightened.

Throttle potentiometer

14 The throttle potentiometer is a sealed unit, and *under no circumstances* should it be disturbed. For this reason, on some models, it is secured to the throttle body assembly by tamperproof screws. If the throttle potentiometer is faulty, the complete throttle body assembly must be renewed - refer to your Citroen dealer for the latest information.

Intake air temperature sensor

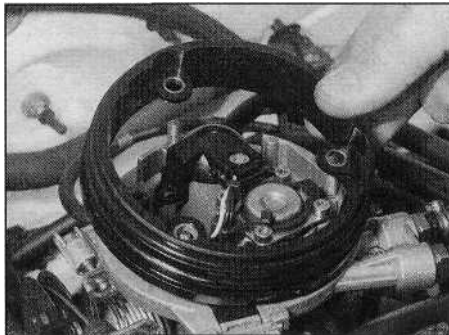
Note: Refer to the warning note in Section 1 before proceeding. On later 1360 cc models with the MA3.0 system, at the time of writing, the intake air temperature sensor was not available separately. If the sensor is faulty, the complete throttle body assembly must be renewed. Refer to your Citroen dealer for the latest information.

15 The intake air temperature sensor is an integral part of the throttle body injector cap (see illustration). To remove the cap, first disconnect the battery negative terminal, then remove the air cleaner-to-throttle body duct, using the information given in Section 2.

16 Depress the retaining clip, and disconnect the wiring connector from the front of the throttle body.



14.24a Slide out the mounting plate ...



14.18 Circular plastic cover (where fitted) is retained by three nuts

17 Place a clean rag over the injector cap, to catch any fuel spray which may be released. Undo the injector cap retaining screw, and lift off the cap along with its O-ring.

18 Where necessary, undo the three retaining nuts and remove the circular plastic cover from the top of the throttle body (see illustration).

19 Release the injector cap connector from the throttle body, and remove the injector cap assembly (see illustration).

20 Refitting is a reversal of the removal procedure, ensuring that the injector cap O-ring is in good condition. Take care to ensure that the cap terminals are correctly aligned with the injector pin, and securely tighten the cap retaining screw.

Coolant temperature sensor

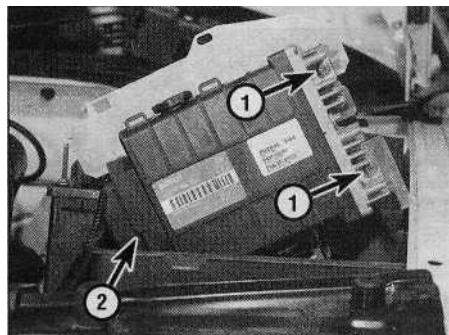
21 Refer to Chapter 3.

Electronic control unit (ECU)

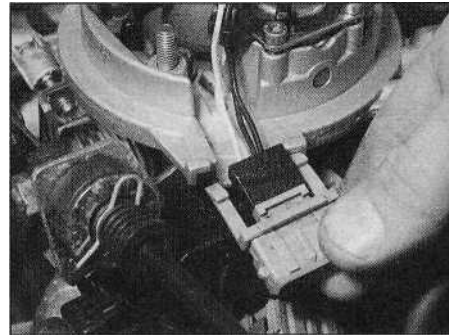
22 The ECU is located inside the plastic box which is situated directly in front of the battery.

23 To remove the ECU, first disconnect the battery.

24 Unclip the lid from the box, and slide out the ECU and mounting plate. Disconnect the wiring connector(s) from the ECU, slacken and remove the bolts securing it to the mounting plate, and remove it from the vehicle (see illustrations).



14.24b ... then undo the retaining bolts (1), disconnect the wiring connector (2), and remove the ECU



14.19 Injector cap wiring connector is a push fit in the throttle body

25 Refitting is a reverse of the removal procedure, ensuring that the wiring connectors are securely reconnected.

Fuel injection system relay unit

26 The relay unit is inside the plastic box which is situated directly in front of the battery.

27 To remove the relay unit, first disconnect the battery.

28 Unclip the lid from the box, then unclip the relay unit from the mounting plate, disconnect the wiring connector and remove it from the vehicle (see illustration).

29 Refitting is the reverse of removal, ensuring that the relay unit is securely held in position by its retaining clip.

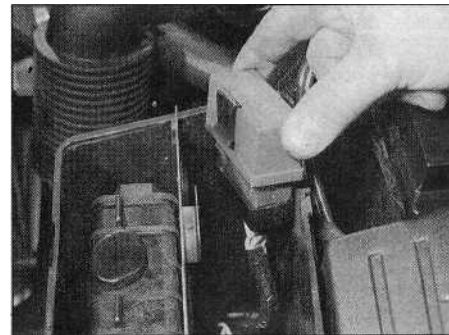
Injector resistor

30 The injector resistor is inside the plastic box which is situated directly in front of the battery.

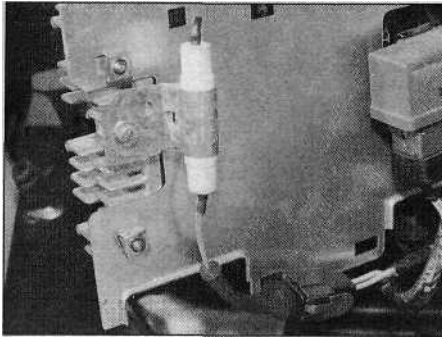
31 To remove the resistor, first disconnect the battery.

32 Unclip the lid from the box, then slide out the mounting plate and undo the resistor retaining bolt. Disconnect the wiring connector, and remove the resistor from the vehicle (see illustration).

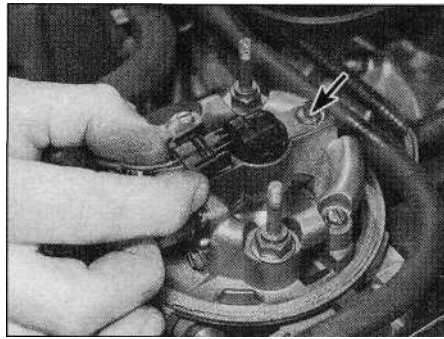
33 Refitting is a reversal of the removal procedure.



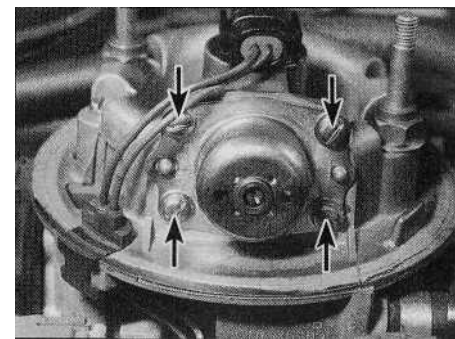
14.28 Removing the fuel injection system relay unit



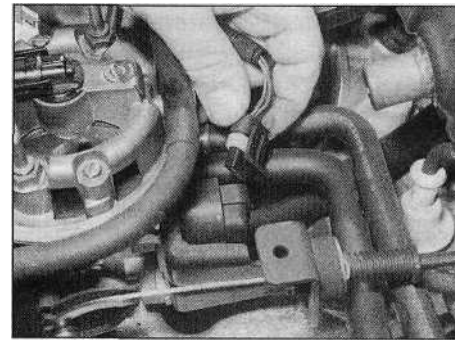
14.32 Injector resistor is mounted on the rear of the ECU mounting plate



15.3 Disconnecting the injector wiring connector. Injector retaining clip screw (arrowed)



15.7 Fuel pressure regulator is retained by four screws (arrowed)



15.15 Disconnecting the stepper motor wiring connector

Crankshaft sensor (MA3.0 system) - later 1360 cc models

- 34 The crankshaft sensor is situated on the front face of the transmission (clutch) housing.
- 35 To remove the sensor, first disconnect the battery negative terminal.
- 36 Trace the wiring back from the sensor to the wiring connector, and disconnect it from the main harness.
- 37 Prise out the rubber grommet, then undo the retaining bolt and withdraw the sensor from the transmission.
- 38 Refitting is a reverse of the removal procedure. Ensure that the sensor retaining bolt is securely tightened, and that the grommet is correctly seated in the transmission housing.

Vehicle speed sensor (MA3.0 system) - later 1360 cc models

- 39 The vehicle speed sensor is an integral part of the speedometer drive housing. Refer to Chapter 7A, Section 6 for removal and refitting details.

15 Magneti Marelli system components - removal and refitting



Fuel injector

Note: Refer to the warning note at the start of this Section before proceeding. If a faulty injector is suspected, before condemning the injector, it is worth trying the effect of one of the proprietary injector-cleaning treatments. If this fails, the vehicle should be taken to a Citroen dealer for testing using the appropriate specialist equipment. At the time of writing, it appears that the fuel injector is not available separately and, if faulty, the complete upper throttle body assembly must be renewed. Refer to a Citroen dealer for the latest information.

- 1 Disconnect the battery negative terminal.
- 2 Slacken and remove the two nuts and washers securing the intake duct to the

throttle body, and move the duct out of the way. Remove the rubber sealing ring from the top of the throttle body.

- 3 Release the retaining tangs, and disconnect the injector wiring connector (see illustration).
- 4 Undo the retaining screw, then remove the retaining clip and lift the injector out of the housing, noting its sealing ring. As the screw is slackened, place a clean rag over the injector, to catch any fuel spray which may be released.
- 5 Refitting is a reverse of the removal procedure, ensuring that the injector sealing ring is in good condition.

Fuel pressure regulator

Note: Refer to the warning note in Section 1 before proceeding. At the time of writing, the fuel pressure regulator assembly was not available separately from the throttle body assembly. Refer to a Citroen dealer for the latest information. Although the unit can be dismantled for cleaning, if required, it should not be disturbed unless absolutely necessary.

- 6 Slacken and remove the two nuts and washers securing the intake duct to the throttle body, and move the duct out of the way, along with its rubber sealing ring. Disconnect the battery negative terminal.
- 7 Using a marker pen, make alignment marks between the regulator cover and throttle body, then undo the four retaining screws (see illustration). As the screws are slackened, place a clean rag over the cover, to catch any fuel spray which may be released.
- 8 Lift off the cover, then remove the spring and withdraw the diaphragm, noting its correct fitted orientation. Remove all traces of dirt, and examine the diaphragm for signs of splitting. If damage is found, it will apparently be necessary to renew the complete upper throttle body assembly, as described earlier in this Section.
- 9 Refitting is a reverse of the removal procedure, ensuring that the diaphragm and cover are fitted the correct way around, and that the retaining screws are securely tightened.

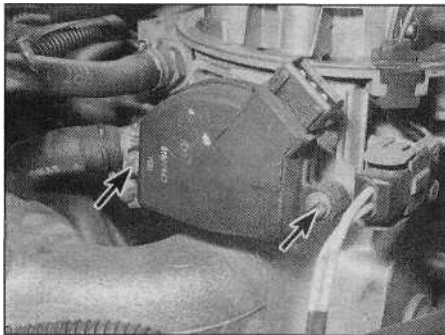
Idle control auxiliary air valve - G5.S2 system

- 10 The idle control auxiliary air valve is situated directly behind the throttle body, mounted onto the cylinder head.
- 11 To remove the valve, first disconnect the battery.
- 12 Slacken the retaining clips, and disconnect the two hoses from the side of the valve. Mark the hoses to ensure they are correctly reconnected on refitting.
- 13 Disconnect the wiring connector, then undo the two retaining nuts and remove the auxiliary air valve from the engine compartment.
- 14 Refitting is a reverse of the removal procedure.

Idle control stepper motor - G6.12 and G6.10 systems

Note: At the time of writing, it appears that the stepper motor is not available separately and, if faulty, the complete lower throttle body assembly must be renewed as described earlier in this Section. Refer to your Citroen dealer for the latest information.

- 15 To remove the stepper motor, depress the retaining tabs and disconnect the wiring connector (see illustration). Undo the two retaining screws, and withdraw the motor from the rear of the throttle body assembly.
- 16 Refitting is a reverse of removal.



15.18 Throttle potentiometer is secured to the throttle body by two screws (arrowed)

Throttle potentiometer

17 Disconnect the battery negative terminal, then depress the retaining tabs and disconnect the wiring connector from the throttle potentiometer.

18 Undo the two retaining screws, and remove the throttle potentiometer from the right-hand side of the throttle body assembly (see illustration).

19 Refitting is a reversal of the removal procedure, ensuring that the throttle potentiometer tang is correctly engaged with the throttle spindle.

Fuel/air mixture temperature sensor

20 The fuel/air mixture temperature sensor is screwed into the right-hand side of the inlet manifold, and is removed as follows (see illustration).

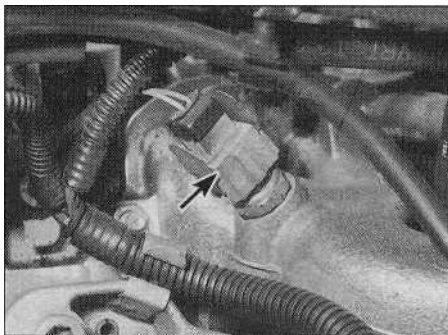
21 To remove the sensor, first disconnect the battery negative terminal.

22 Disconnect the wiring connector, then unscrew the fuel/air mixture temperature sensor from the inlet manifold.

23 Refitting is a reverse of the removal procedure, ensuring that the switch is securely tightened.

Manifold absolute pressure (MAP) sensor

24 The MAP sensor is mounted on a bracket



15.20 The fuel/air mixture temperature sensor (arrowed) is screwed into the right-hand side of the inlet manifold

situated on the right-hand side of the engine compartment, next to the alternator.

25 To remove the sensor, first disconnect the battery negative terminal.

26 Slacken and remove the three retaining nuts and bolts, then free the MAP sensor from the bracket. Disconnect the wiring connector and vacuum hose, and remove the sensor from the engine compartment (see illustrations).

27 Refitting is a reverse of the removal procedure.

Coolant temperature sensor

28 Refer to Chapter 3, Section 6.

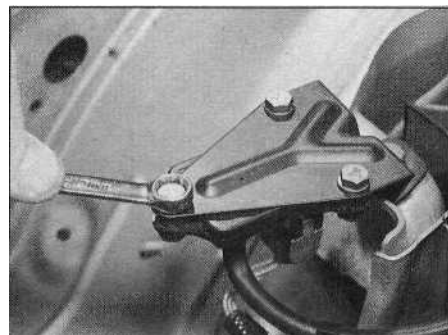
Crankshaft sensor

29 The crankshaft sensor is fitted to the top of the transmission housing, beside the left-hand end of the cylinder block.

30 To remove the sensor, first disconnect the battery negative terminal.

31 Trace the wiring back from the sensor to its wiring connector, then depress the retaining tabs and disconnect it from the main wiring harness. Release the wiring connector from any relevant retaining clips (see illustration).

32 To gain access to the sensor, it is necessary to remove the metal plate from the top of the transmission housing. The plate is retained by one of the engine-to-transmission



15.26a Undo the three retaining bolts .

bolts, and by a second bolt securing the plate to the top of the transmission.

33 With the plate removed, undo the bolt securing the sensor to the transmission housing, and remove the sensor from the vehicle.

34 Refitting is a reverse of removal, ensuring that the sensor retaining bolt is securely tightened.

Electronic control unit (ECU)

35 Refer to paragraphs 22 to 25 of Section 14.

Fuel injection system relay unit

36 Refer to paragraphs 26 to 29 of Section 14.

16 Inlet manifold - removal and refitting

Removal

1124 cc and 1360 cc models

1 Remove the throttle body as described in Section 12.

2 Drain the cooling system as described in Chapter 1.

3 Slacken the retaining clip, and disconnect the coolant hose(s) from the manifold.

4 Slacken the retaining clip, and disconnect the vacuum servo unit hose from the left-hand side of the manifold.

5 Make a final check that all the necessary vacuum/breather hoses have been disconnected from the manifold.

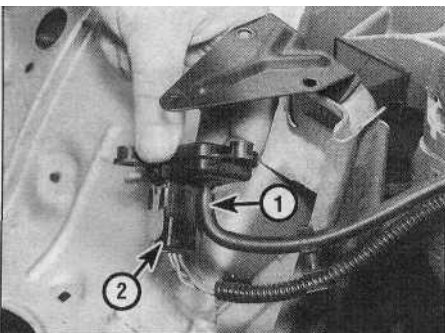
6 Unscrew the six retaining nuts, then manoeuvre the manifold away from the head and out of the engine compartment. Note that there is no manifold gasket.

1580 cc models

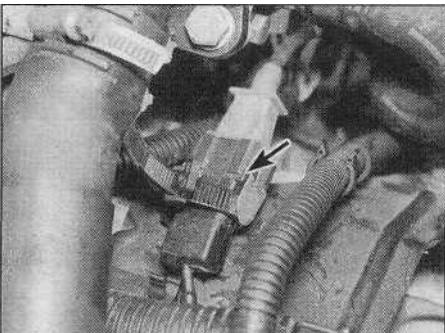
7 Remove the throttle body as described in Section 12.

8 Drain the cooling system as described in Chapter 1.

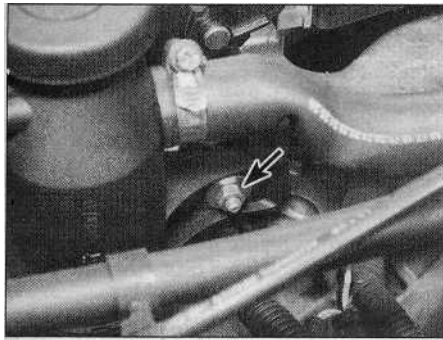
9 Disconnect the wiring connector from the fuel/air mixture temperature sensor, which is situated on the right-hand side of the manifold.



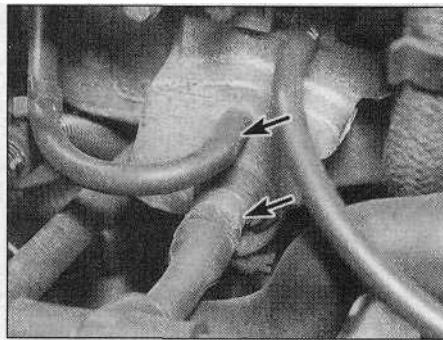
15.26b ... then release the MAP sensor from its mounting bracket, and disconnect the vacuum hose (1) and wiring connector (2)



15.31 The crankshaft sensor wiring connector (arrowed) is situated on top of the transmission housing



16.10 Oil filler/breather retaining nut (arrowed) - 1580 cc models



16.12 Inlet manifold coolant hose and MAP sensor hose (arrowed) -1580 cc models

- (b) Ensure that the manifold and cylinder head sealing faces are clean and flat, and fit the new manifold gaskets. Tighten the manifold retaining nuts to the specified torque.
- (c) Reconnect the front pipe to the manifold using the information given in Section 18.
- (d) On 1580 cc models, refit the disturbed air cleaner components as described in Section 2.

18 Exhaust system - general information, removal and refitting

General information

1 On 1124 cc and 1360 cc models, the exhaust system consists of four sections; the front pipe, the catalytic converter, the intermediate pipe, and the tailpipe and main silencer box. All exhaust sections are joined by a flanged joint. The front pipe joints are secured by nuts and bolts, the catalytic converter joint being of the spring-loaded ball type, to allow for movement in the exhaust system. The catalytic converter-to-intermediate pipe joint and the intermediate pipe-to-silencer joint are secured by a clamping ring.

2 On 1580 cc models without a catalytic converter, the exhaust system consists of two sections; the front pipe and intermediate silencer box, and the tailpipe and main silencer box. On 1580 cc models with a catalytic converter, the system consists of three sections; the front pipe and catalytic converter, the intermediate pipe and silencer box, and the tailpipe and main silencer box. The front pipe-to-manifold joint is of the spring-loaded ball type, to allow for movement in the exhaust system, the other joint(s) being secured by a clamping ring.

3 The system is suspended throughout its entire length by rubber mountings.

Removal

4 Each exhaust section can be removed individually, or alternatively, the complete system can be removed as a unit. Even if only one part of the system needs attention, it is often easier to remove the whole system and separate the sections on the bench.

5 To remove the system or part of the system, first jack up the front or rear of the car, and support it on axle stands. Alternatively, position the car over an inspection pit, or on car ramps.

Front pipe -1124 cc and 1360 cc models

6 Trace the wiring back from the lambda (oxygen) sensor to its wiring connectors, and disconnect it from the main wiring harness.

7 Undo the nuts securing the front pipe flange joint to the manifold, and the single bolt

- (d) On completion, refill the cooling system as described in Chapter 1.

17 Exhaust manifold - removal and refitting

Removal

1124 cc and 1360 cc models

1 Refer to Chapter 4A, Section 16, noting that the lambda (oxygen) sensor wiring connectors should be disconnected. Alternatively, care must be taken to support the front pipe, to avoid any strain being placed on the sensor wiring.

1580 cc models

2 Remove the air cleaner housing and mounting bracket, as described in Section 2.

3 Slacken the clip securing the hot-air intake hose to the bottom of the air temperature control valve, then disconnect the hose from the manifold shroud and remove it from the engine compartment.

4 Undo the remaining manifold shroud retaining bolts, and remove the shroud.

5 Firmly apply the handbrake, then jack up the front of the vehicle and support it on axle stands.

6 Slacken and remove the two nuts securing the front pipe flange joint to the manifold, and recover the springs. Remove the bolts, then free the front pipe from the manifold, and recover the wire-mesh sealing ring. Either support the front pipe to avoid placing any strain on the lambda sensor wiring (where fitted), or disconnect the wiring connectors.

7 Undo the eight retaining nuts securing the manifold to the head. Manoeuvre the manifold out of the engine compartment, and discard the manifold gaskets.

Refitting (all models)

8 Refitting is the reverse of the removal procedure, noting the following points:

- (a) Examine all the exhaust manifold studs for signs of damage and corrosion; remove all traces of corrosion, and repair or renew any damaged studs.

10 Undo the nut securing the oil filler/breather to the side of the manifold, then release the assembly from its retaining stud, and position it clear of the manifold (see illustration).

11 Undo the bolt securing the wiring/hose support bracket to the top of the manifold, and position the bracket clear of the manifold.

12 Disconnect the coolant hose and the MAP sensor vacuum hose from the front of the manifold (see illustration).

13 Undo and remove the six manifold retaining nuts and washers, and remove the manifold from the engine. Remove the gasket and discard it - a new one should be used on refitting.

Refitting

1124 cc and 1360 cc models

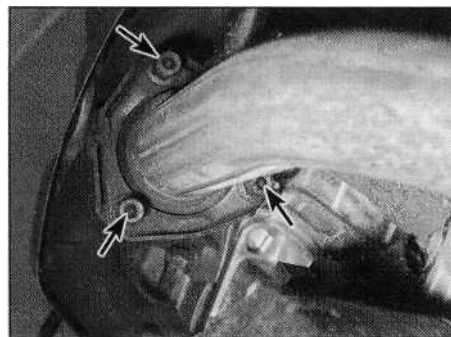
14 Refitting is the reverse of the removal procedure, noting the following points:

- (a) Ensure that the manifold and cylinder head mating surfaces are clean and dry, and apply a thin coating of suitable sealing compound to the manifold mating surface. Refit the manifold, and tighten its retaining nuts to the specified torque.
- (b) Ensure that all relevant hoses are reconnected to their original positions, and are securely held (where necessary) by their retaining clips.
- (c) Refit the throttle body as described in Section 12.
- (d) On completion, refill the cooling system as described in Chapter 1.

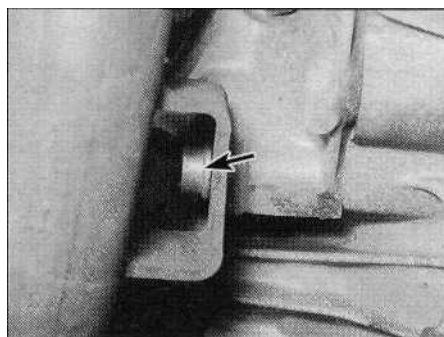
1580 cc models

15 Refitting is a reverse of the removal procedure, noting the following points:

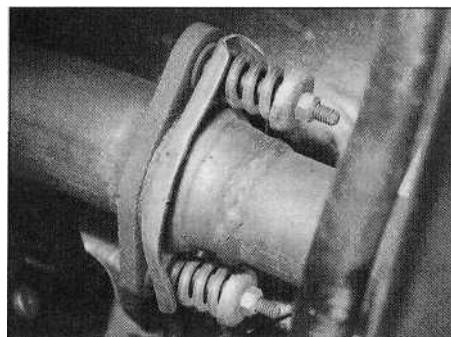
- (a) Ensure that the manifold and cylinder head mating surfaces are clean and dry, and fit a new manifold gasket. Refit the manifold, and tighten its retaining nuts to the specified torque.
- (b) Ensure that all relevant hoses are reconnected to their original positions, and are securely held (where necessary) by the retaining clips.
- (c) Refit the throttle body as described in Section 12.



18.7a Front pipe-to-manifold retaining nuts (arrowed)...



18.7b ... and front pipe mounting bolt (arrowed) - 1124 cc and 1360 cc models (viewed from underneath)



18.8 Front pipe-to-catalytic converter joint - 1124 cc and 1360 cc models



18.10 Typical exhaust system clamping ring

securing the front pipe to its mounting bracket (see illustrations). Separate the flange joint, and collect the gasket.

8 Slacken and remove the two nuts securing the front pipe to the catalytic converter, and recover the spring cups and springs (see illustration). Remove the bolts, then withdraw the front pipe from underneath the vehicle, taking care not to damage the lambda sensor, and recover the wire-mesh gasket from the joint.

Front pipe assembly -1580 cc models without a catalytic converter

9 Slacken and remove the two nuts securing the front pipe to the manifold, and recover the spring cups and springs. Remove the bolts, then release the front pipe from the manifold, and recover the wire-mesh gasket from the joint.

10 Slacken the front pipe-to-tailpipe clamping ring bolts, and disengage the clamp from the flange joint (see illustration).

11 Free the front pipe assembly from its mounting rubbers, and withdraw it from underneath the vehicle.

Front pipe assembly -1580 cc models with a catalytic converter

12 Trace the wiring back from the lambda (oxygen) sensor to its wiring connectors, and disconnect it from the main wiring harness.

13 Disconnect the front pipe from the manifold and intermediate pipe as described

above in paragraphs 9 and 10, then remove the front pipe assembly from underneath the vehicle. Be careful not to drop it - the catalytic converter is fragile.

Catalytic converter -1124 cc and 1360 cc models

14 Undo the two nuts securing the front pipe flange joint to the catalytic converter. Recover the springs and spring cups, and withdraw the bolts.

15 Slacken the catalytic converter-to-intermediate pipe clamping ring bolts, and disengage the clamp from the flange joint.

16 Free the catalytic converter from the intermediate pipe, then withdraw it from underneath the vehicle. Be careful not to drop it - it is fragile. Recover the wire-mesh gasket from the front pipe joint.

Intermediate pipe -1124 cc and 1360 cc models

17 Slacken the clamping ring bolts, and disengage the clamps from both the intermediate pipe flange joints.

18 Free the intermediate pipe from its mounting rubbers, then disengage it first from the tailpipe and then from the catalytic converter. Remove the intermediate pipe from underneath the vehicle.

Intermediate pipe -1580 cc models with a catalytic converter

19 Slacken the clamping ring bolts, and

disengage the clamps from both the intermediate pipe flange joints.

20 Free the intermediate pipe from its mounting rubbers, then disengage it first from the tailpipe and then from the front pipe. Remove the intermediate pipe from underneath the vehicle.

Tailpipe - all models

21 Slacken the intermediate pipe-to-tailpipe clamping ring bolts, and disengage the clamp from the flange joint.

22 Unhook the tailpipe from its mounting rubbers, and remove it from the vehicle.

Complete system - all models

23 Using the information given under the relevant sub-heading above, unbolt the front pipe from the manifold, removing the bolt securing the front pipe to its mounting bracket and/or disconnecting the lambda sensor wiring (as applicable). Free the system from all its mounting rubbers, and withdraw it from under the vehicle.

Heat shield(s) - all models

24 The heat shields are secured to the underside of the body by various nuts and bolts. Each shield can be removed once the appropriate exhaust section has been removed. If the shield is being removed to gain access to a component located behind it, it may prove sufficient in some cases to remove the retaining nuts and bolts, and simply lower the shield, without disturbing the exhaust system.

Refitting

25 Each section is refitted by reversing the removal procedure, noting the following points:

- Ensure that all traces of corrosion have been removed from the flanges, and renew all necessary gaskets.
- Inspect the rubber mountings for signs of damage or deterioration, and renew as necessary.
- Prior to assembling a spring-loaded ball type joint, a smear of high-temperature grease should be applied to the joint mating surfaces. Citroen recommend the use of Grippcott AF G2 grease (available from your Citroen dealer).
- On joints which are secured by clamping rings, apply a smear of exhaust system jointing paste to the joint mating surfaces, to ensure an gas-tight seal. Tighten the clamping ring nuts evenly and progressively to the specified torque, so that the clearance between the clamp halves is equal on either side.
- Before tightening the exhaust system fasteners, ensure that all rubber mountings are correctly located, and that there is adequate clearance between the exhaust system and vehicle underbody.