

Chapter 4 Part B:






Fuel and exhaust systems - Bosch LE3 Jetronic injection

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4B

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

For engine to model applications refer to Chapter 2

Air cleaner

Element Champion U543

Fuel filter

Type Champion L201

System

Type Bosch LE3 Jetronic electronic injection, with integral electronic control unit

Model application BX 19 GTi (pre July 1990)

Fuel pressure (at idle speed) 2 bar

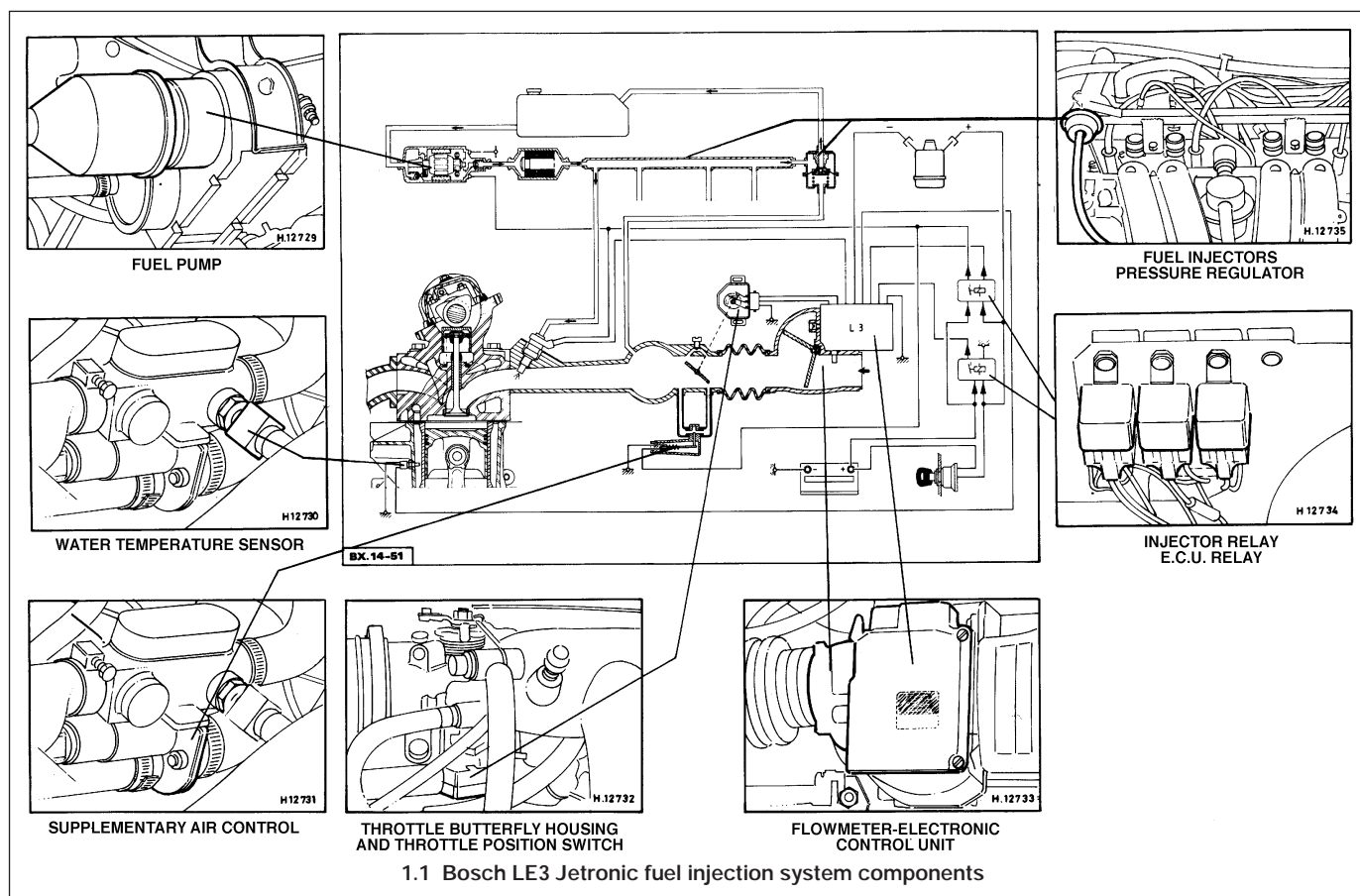
Idle speed:

Manual gearbox 825 ± 25 rpm

Automatic transmission 900 ± 50 rpm

With air conditioning on (where applicable) 975 ± 25 rpm

CO percentage in exhaust gas (maximum) 2.0



1 General information and precautions

General information

Operation of the Bosch LE3 Jetronic fuel injection system is as follows. A roller-type electric fuel pump draws fuel from the tank and pumps it through a filter to the injectors via a distribution pipe. The electronic control unit, which is triggered by the ignition circuit, sends impulses to the injectors, which operate simultaneously and inject fuel in the vicinity of the inlet valves. The electronic control unit is provided with sensors to determine engine temperature, speed and load, and the quantity of air entering the engine. This information is computed to determine the period of injection (see illustration).

For cold starting, additional air is provided by a supplementary air device. This excess air "tricks" the system into providing more fuel.

A fuel vapour recirculation system is integrated into the fuel system (see illustration). The fuel tank is vented via the charcoal filter canister. When the engine is started, any fuel vapour in the de-aerating reservoir and charcoal canister is drawn through the airflow meter and into the throttle

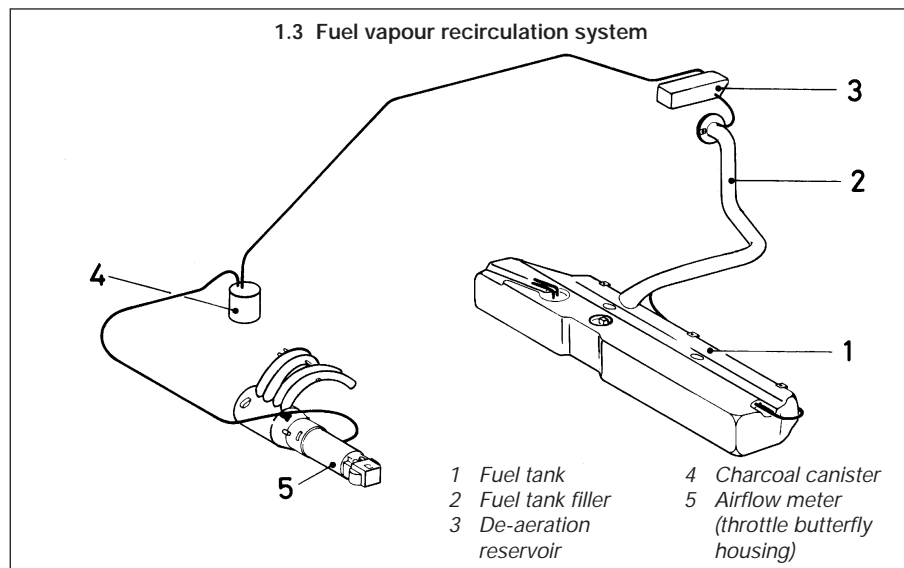
housing by the normal induction method, it is then burnt in the engine.

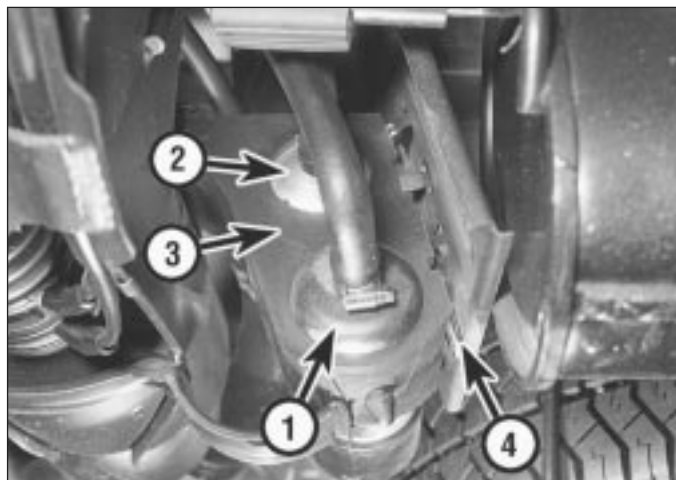
Precautions

Fuel 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.





4.4 Fuel pump (1), fuel filter (2), insulator (3) and heat shield (4) pivoted towards centre for removal



4.5 Fuel pump wiring connections

System maintenance

Residual fuel pressure will remain in the system lines long after the vehicle is used. Before disconnecting any fuel line, depressurise the fuel system.

In order to prevent damage to the electrical components of the system, observe the following precautions:

- Never disconnect the battery with the engine running
- Never disconnect the electronic control unit with the ignition on
- Never use a test light for checking system circuits

Tamperproof adjustment screws

Certain adjustment points in the fuel system are protected by "tamperproof" caps, plugs or seals. The purpose of such tamperproofing is to discourage, and to detect, adjustment by unqualified operators.

In some EEC countries (though not yet in the UK), it is an offence to drive a vehicle with missing or broken tamperproof seals. Before disturbing a seal, satisfy yourself that you will not be breaking local or national anti-pollution regulations by doing so. Fit a new seal when adjustment is complete, when this is required by law.

Do not break tamperproof seals on a vehicle which is still under warranty.

Unleaded petrol - usage

Models equipped with the Bosch LE3 Jetronic injection system should be run on 97 RON leaded petrol only. However, it is possible to run on 95 RON unleaded fuel if suitable adjustments are first carried out. Consult your Citroën dealer for further information. Note that the use of unleaded fuel in a vehicle not suitably adjusted will lead to serious damage of the valve seats.

2 Air cleaner element - renewal

Refer to Chapter 1, Section 28.

3 Fuel system - depressurisation

Note: Depressurise the fuel system before carrying out any work on its component parts

Warning: The following procedure will merely relieve the pressure in the fuel system.

Remember that fuel will still be present in system components, so take precautions accordingly before disconnecting them

1 The fuel system is defined as the fuel pump, filter, injectors and pressure regulator, also the metal pipes and flexible hoses of the lines between these components. All these components contain fuel which will be under pressure while the engine is running and/or while the ignition is switched on. Pressure will remain for some time after the ignition has been switched off and must be released before any of these components are disturbed for servicing work. Proceed as follows:

- Disconnect the battery earth lead.
- Place a suitable container beneath the relevant union to be disconnected and have a large rag ready to soak up any escaping fuel not being caught by the container.
- Slowly loosen the union to avoid a sudden release of pressure and position the rag around the connection to catch any fuel spray which may be expelled.
- Once pressure is released, disconnect the union and insert plugs into its open ends to minimise fuel loss and to prevent the entry of contamination into the system.

4 Fuel pump - removal and refitting

Removal

1 The fuel pump is located on the underside of the vehicle, at the rear on the right-hand side, just to the rear of the fuel tank. The pump unit is housed in a rubber insulator, together with the fuel filter unit which is located directly above it.

2 For access to the pump (and/or filter), raise and support the vehicle at the rear.

3 Disconnect the battery earth lead.

4 Unclip and swing the heat shield, insulator, pump and filter units towards the centre (see illustration).

5 Pull back the rubber protective gaiter from the end of the fuel pump and then detach the wiring connectors. Note that, whilst both wires are yellow, one has a white connector sleeve for identification. Note which has the sleeve and its connection (see illustration).

6 Bearing in mind the information given on depressurising the fuel system, loosen the clips and remove the fuel lines from the front and rear of the pump unit.

7 Carefully pull and withdraw the pump unit from the insulator.

Refitting

8 Refitting is a reversal of the removal procedure. Ensure that all connections are correctly and securely made. On completion, check for satisfactory operation, and for any signs of fuel leaks from the pump connections.

5 Fuel filter - removal and refitting

Refer to Chapter 1, Section 36.

6 Fuel level transmitter - removal and refitting



Refer to Section 9 in Part A of this Chapter.

7 Fuel tank - removal, inspection and refitting



The fuel tank is of similar design to that fitted to carburettor models.

Note the information given for depressurising the fuel system when disconnecting the tank fuel lines (see illustration) before following the procedure given in Section 10 in Part A of this Chapter.

8 De-aeration reservoir - removal and refitting



Removal

1 The de-aeration reservoir is located at the rear of the car, under the right-hand rear wheel arch (see illustration). It is connected to the fuel filler pipe and the charcoal filter canister, their function being to vent the fuel tank. Any fuel vapour stored in them is drawn into the throttle housing when the engine is started.



8.1 De-aeration reservoir location - GTi



8.2 De-aeration reservoir retaining strap and mounting bolt (arrowed)



7.2 Fuel tank supply and return hoses - GTi

2 If removing the de-aeration reservoir, take the same precautions as those mentioned for fuel tank removal. Detach the hoses from the reservoir, undo the retaining strap and mounting bolts, then lower and remove it (see illustration).

3 A vent valve is also fitted and is located near the de-aeration reservoir. This can be removed by detaching the hoses and unclipping the valve (see illustration).

Refitting

4 Refitting is a reversal of the removal procedure. Renew any hoses or clips as necessary and check for leakage and security on completion.

9 Idle speed and mixture - adjustment



1 Before making any adjustments to the fuel system, the following conditions must be met:

- a) The ignition system must be in good condition and correctly adjusted
- b) The air cleaner element must be clean
- c) The throttle initial position must be correctly set, as must the throttle butterfly spindle switch
- d) The engine must be at its normal operating temperature, the cooling fan having cut in and then out

Idle speed adjustment

2 Refer to Chapter 1, Section 23.



8.3 Vent valve location (arrowed) - GTi

Mixture adjustment

3 To adjust the mixture setting, you will need to punch a hole in the tamperproof plug over the mixture screw and prise out the plug. Turn the mixture adjustment screw to give a maximum CO reading of 2.0%. If required, readjust the idle speed as described previously (see illustration).

4 Recheck the CO reading and readjust the mixture setting and idle speed settings as necessary.

5 On completion, a new tamperproof plug should be fitted over the mixture screw. Disconnect the tachometer and the exhaust gas analyser to complete.

10 Throttle initial position - setting



Note: This is not a routine adjustment. It should only be necessary if new components have been fitted, or if the setting has been accidentally disturbed.

1 Remove the tamperproof plug from the throttle butterfly stop screw (located on the other side of the throttle housing from the idle speed adjuster screw).

2 Unscrew the throttle butterfly stop screw until it is no longer in contact with its stop and the butterfly is fully closed. Screw it in again until it just contacts the stop. From this position, screw it in exactly one quarter of a turn.

3 Fit a new tamperproof plug, when required.

4 Check the throttle butterfly switch setting.

11 Throttle position switch - setting



1 Disconnect the multi-plug from the throttle position switch. Connect an ohmmeter or continuity tester between switch terminals 2 and 18.

2 Insert a 0.30 mm feeler blade between the butterfly stop screw and its stop.

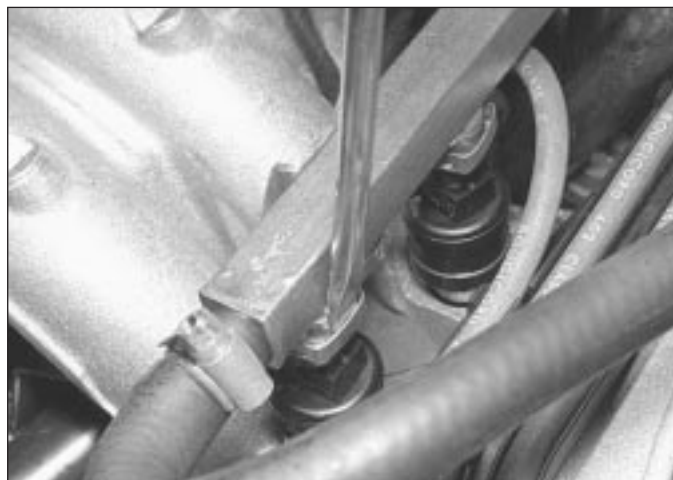
3 Slacken the switch mounting screws. Turn the switch in either direction until the contacts



9.3 Mixture adjustment screw (arrowed)



12.2 Disconnecting a fuel injector wiring connector



12.3a Prising fuel rail free from injectors

are just closed (continuity or zero resistance). Tighten the screws in this position.

4 Remove the feeler blade and insert another of 0.70 mm thickness. With this blade inserted, the contacts must be open (no continuity, or infinite resistance). If not, repeat the adjustment. Remove the feeler blade.

5 Transfer the ohmmeter to terminals 3 and 18. Have an assistant depress the throttle pedal to the floor. At full-throttle, the contacts must be closed.

6 Disconnect the test equipment and reconnect the multi-plug.

12 Fuel injectors - removal and refitting



Removal

- 1 Disconnect the battery earth lead.
- 2 Detach the wiring connections from the injectors by prising open the wire retaining clip in the connector (see illustration).
- 3 Prise free the injector-to-fuel supply rail (tube) retaining clip, using a screwdriver as a lever (see illustrations).

4 Bearing in mind the information given on depressurising the fuel system, undo the retaining bolts and remove the fuel supply rail. The hoses and pressure regulator can be left attached (see illustrations).

5 Withdraw the injectors. Ensure that no contamination is allowed to enter the fuel system whilst disconnected.

Refitting

6 Refitting is a reversal of the removal procedure. Use new injector seals. To ease fitting of the injectors to their cylinder head ports, lubricate the seals with a small amount of soapy solution. Check for signs of fuel leakage on completion.

13 Accelerator cable - removal and refitting



This procedure is similar to that described in Section 23 in Part A of this Chapter. However, the cable connection to the throttle housing differs (see illustration).

Cable adjustment is the same as for the carburettor type. Whenever the cable has been disturbed, check the idle speed.

14 Inlet and exhaust manifolds - removal and refitting



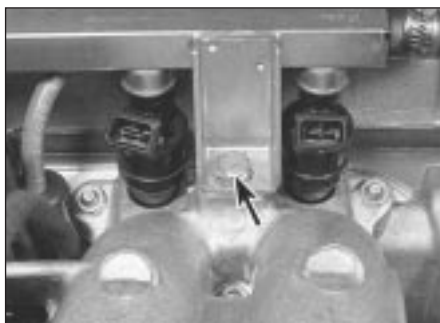
1 The basic procedures are much the same as those given in Part A of this Chapter.

2 When removing the inlet manifold, items such as the injectors and ignition coil will need to be detached. The manifold can either be removed together with, or separate from, the throttle housing. Disconnect as appropriate but note the hose connections.

3 Always use new gaskets when refitting.



12.3b Fuel rail/injector clip



12.4a Fuel supply rail retaining bolt (arrowed)



12.4b Pressure regulator attached to fuel rail

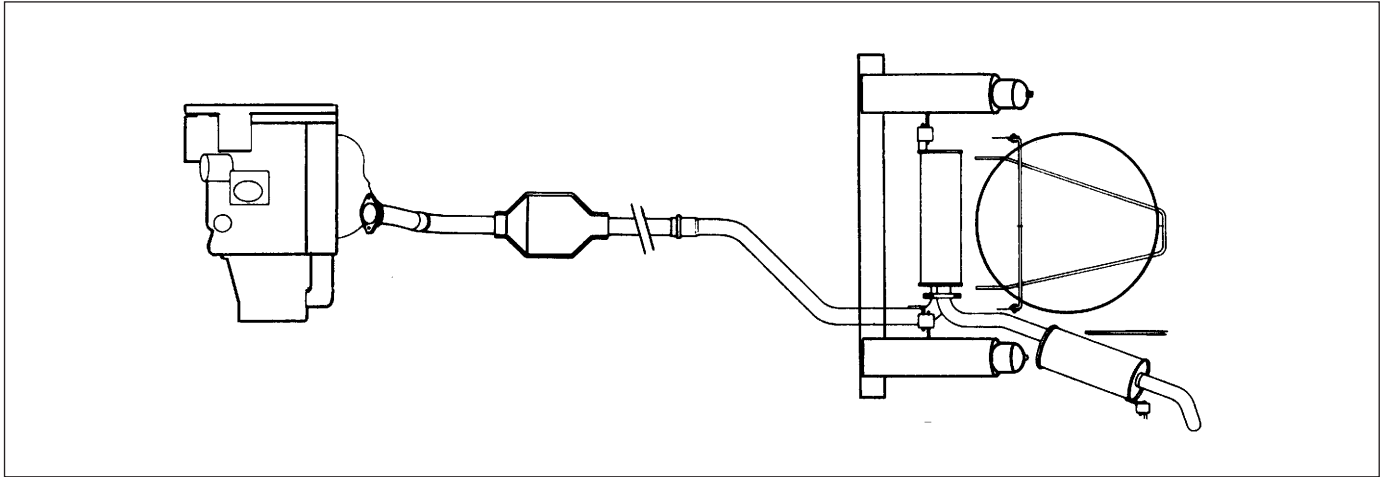


13.1 Accelerator cable adjustment ferrule (arrowed)

15 Exhaust system -
maintenance, removal and
refitting



Note the information given in Part A of this Chapter. The exhaust system fitted to fuel injection models differs from that fitted to carburettor models, the main difference being that the front pipe section incorporates an expansion chamber. All other components in the system are also specific to model type and this must be considered when ordering replacement parts (see illustration).



15.1 Exhaust system - BX 19 GTi