Chapter 3 Fuel and exhaust systems

For modifications, and information applicable to later models, see Supplement at end of manual

Contents

Specifications

Air cleaner	Automatic or manual air temperature control type with renewable paper element. Champion W145 (1108 cc and 1397 cc) or W190 (1721 cc)
Fuel pump	Mechanical, driven by camshaft
Fuel filter	Champion L101
Carburettor	
Type	Single or dual throat downdraught
Application:	
C1E, 1108 cc engines	Zenith 32IF2
C1J, 1397 cc engines	Solex 32BIS
C2J, 1397 cc and F2N, 1721 cc engines	Weber 32DRTM

Carburettor data

Zenith 32IF2:

	V10501	V10501B
Type identification number	23	23
Venturi	123	123
Main jet	61	61
Idling jet	90 x 200	90 x 200
Air compensating jet	66	66
Pneumatic enrichment jet	45	45
Accelerator pump jet	100	100
Auxiliary jet	1.25	1.25
Fuel needle valve	0.75 mm (0.030 in)	0.75 mm (0.030 in)
Initial throttle opening (fast idle) adjustment	13.55 to 13.75 mm (0.53 to 0.54 in)	13.55 to 13.75 mm (0.53 to 0.54 in)
Float height dimension	6.0 mm (0.24 in)	6.0 mm (0.24 in)
Auxiliary jet tube setting	60 mm (2.36 in)	60 mm (2.36 in)
Accelerator pump delivery tube setting	28.3 mm (1.11 in)	28.3 mm (1.11 in)
Accelerator pump stroke	2.0 mm (0.079 in) minimum	2.0 mm (0.079 in) minimum
Defuming valve setting	–	1.6 mm (0.06 in)
Pneumatic cold start device choke flap opening	–	2.1 mm (0.083 in)
Pneumatic part open setting	625 to 675 rpm	625 to 675 rpm
Idling speed	0.5 to 1.5%	0.5 to 1.5%
CO mixture		

Solex 32BIS:		
Venturi	24	
Main jet	117.5	
Idling jet	45	
Air compensating jet	155	
Accelerator pump jet	40	
Auxiliary jet	30	
Fuel needle valve	1.8	
Initial throttle opening (fast idle) adjustment	0.70 mm (0.028 in)	
Accelerator pump stroke	3.0 mm (0.12 in)	
Defuming valve setting	2.5 to 3.5 mm (0.098 to 0.138 in)	
Idling speed	600 to 650 rpm	
CO mixture	0.5 to 1.5%	
Weber 32DRTM:		
Type identification number	O/OC	1/1C
Venturi:		
Primary	23	23
Secondary	24	24
Main jet:		
Primary	100	105
Secondary	140	130
Idling jet	57	57
Air compensating jet:		
Primary	200	200
Secondary	230	230
Emulsifier:		
Primary	F44	F44
Secondary	F25	F25
Mixture centralizer:		
Primary	4R	4R
Secondary	4R	4R
Accelerator pump jet	50	50
Fuel needle valve	1.75	1.75
Float height dimension	11 mm (0.43 in)	11 mm (0.43 in)
Float travel dimension	18 mm (0.71 in)	18 mm (0.71 in)
Initial throttle opening (fast idle) adjustment	0.70 mm (0.028 in)	0.90 mm (0.035 in)
Defuming valve throttle opening	0.50 mm (0.02 in)	0.50 mm (0.02 in)
Choke flap pneumatic part open setting	4.5 mm (0.177 in)	3.5 mm (0.138 in)
Idling speed, C2J, 1397 cc engine:		
Manual transmission	675 to 725 rpm	675 to 725 rpm
Automatic transmission (selector lever in D)	575 to 625 rpm	575 to 625 rpm
Idling speed, F2N, 1721 cc engine	600 to 700 rpm	600 to 700 rpm
CO mixture	1.5%	1.5%

Fuel tank capacity

47 litres (10.34 gallons)

Fuel octane rating

Except C1J engine	97 RON (four star)
C1J engine	90 RON (two star)

Torque wrench settings

	Nm	lbf ft
Manifold retaining nuts and bolts	30	22

1 General description

The fuel system consists of a rear-mounted fuel tank, mechanical fuel pump and a single or dual throat downdraught carburettor.

The mechanical fuel pump is operated by an eccentric on the camshaft and is mounted on the forward facing side of the cylinder block on 1108 cc and 1397 cc engines, and on the rear facing side of the cylinder head on 1721 cc engines. Located in the pump is a small filter to which access is gained after removing the pump top cover. On certain models a disposable in-line filter is also fitted in the outlet pipe from the pump.

The air cleaner contains a disposable paper filter element and incorporates a flap valve air temperature control system. This system allows cold air from the air cleaner main intake spout, or warm air from the exhaust manifold stove, to enter the air cleaner via a secondary intake according to the position of the flap valve. Depending on model, the flap valve may be either manually-controlled by a two position selector on the side of the air cleaner body, or automatically-controlled by a temperature sensitive wax capsule located in the intake spout.

Carburettors may be of Zenith, Solex or Weber manufacture according to model. All types incorporate a water-heated lower body to improve fuel atomization, particularly when the engine is cold. Mixture enrichment for cold starting is by a manually-operated choke control on all models.

The exhaust system consists of three push-fit sections secured with circular clamps, and a cast iron exhaust manifold. A spring-loaded semi ball and socket joint is used to connect the exhaust front pipe section to the manifold and to provide a certain degree of flexibility, thus catering for engine and exhaust system movement. A silencer is fitted to the tailpipe section on all models, with an additional silencer incorporated in the intermediate section on certain versions. The system is suspended throughout its length on rubber block type mountings.

Warning: *Many of the procedures in this Chapter entail the removal of fuel pipes 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 implicity. Petrol is a highly dangerous and volatile liquid, and the precautions necessary when handling it cannot be overstressed.*

2 Maintenance and inspection

1 At the service intervals shown in Routine maintenance the

following checks and adjustments should be carried out on fuel and exhaust system components.

2 With the car over a pit, raised on a vehicle lift or securely supported on axle stands, carefully inspect the underbody fuel pipes, hoses and unions for chafing, leaks and corrosion. Renew any pipes that are severely pitted with corrosion or in any way damaged. Renew any hoses that show signs of cracking or other deterioration.

3 Check the fuel tank for leaks, for any signs of corrosion or damage, and the security of the mountings.

4 Check the exhaust system condition, as described in Section 19.

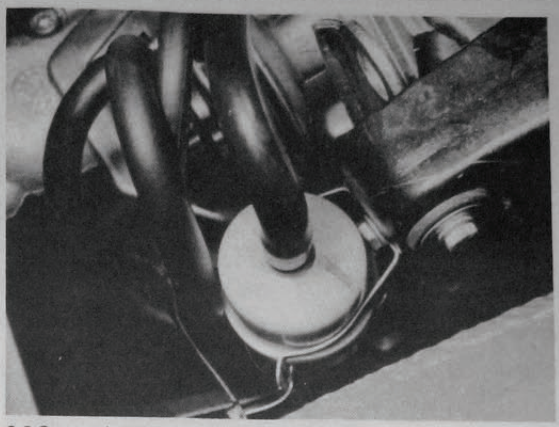
5 From within the engine compartment, check the security of all fuel hose attachments and inspect them for chafing, kinks, leaks or deterioration.

6 Clean the fuel filter in the fuel pump, as described in Section 4, and, where fitted, renew the additional filter in the pump outlet pipe (photo). Ensure that this filter is fitted with the arrows stamped on the filter body pointing in the direction of fuel flow.

7 Renew the air cleaner paper filter element, as described in Section 3. On models with a manually-operated air temperature control, set the control to the summer or winter position according to season. On models with automatically-operated air cleaner air temperature control, check the operation of the flap valve, as described in Section 3.

8 Check the operation of the accelerator and choke control linkage and lubricate the linkage, cables and accelerator pedal pivot with a few drops of engine oil.

9 Check the carburettor idle speed and mixture settings and adjust, if necessary, as described in Section 14.



2.6 On certain models an in-line fuel filter is fitted between pump and carburettor

3 Air cleaner and filter element – removal and refitting

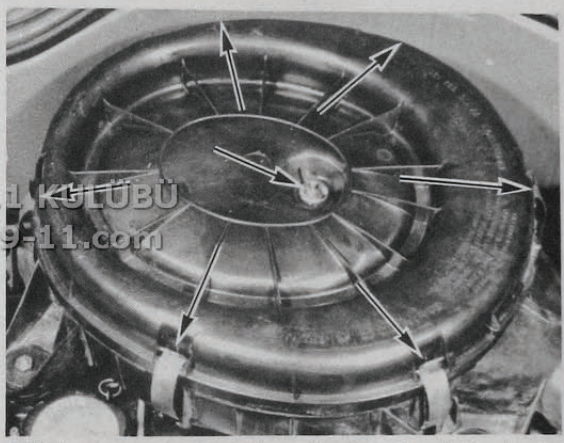
1 To remove the air cleaner filter element, unscrew the wing nut or the screw and three locknuts, then release the clips securing the top cover to the air cleaner body (photos). Lift off the cover and remove the filter element (photo).

2 Clean the inside of the air cleaner body and fit a new filter if the old one is dirty or has exceeded its service life (see Routine maintenance). Refit the top cover and secure with the wing nut or screw and locknuts, and the clips.

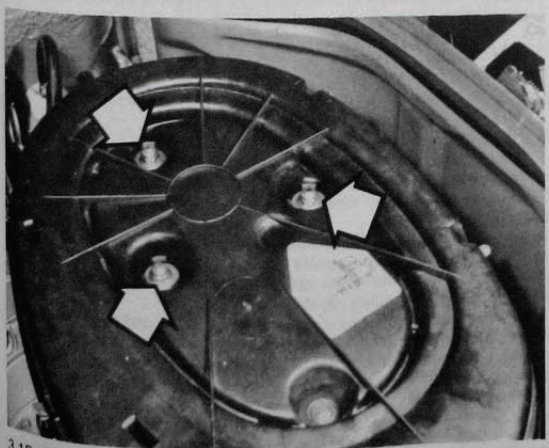
3 To remove the air cleaner assembly from the engine, proceed according to engine and carburettor type as follows:

1108 cc and 1397 cc engines with Zenith or Solex carburettor

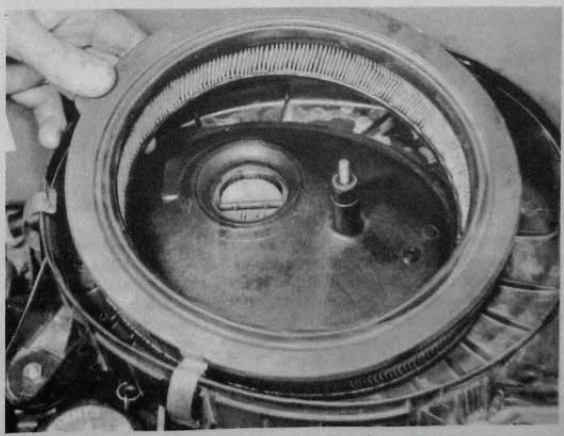
4 Undo the two nuts securing the air cleaner to the rocker cover (photo) and the bolt securing the air cleaner to the left-hand rear support bracket. Note the arrangement of rubber spacer, washers and sleeve under each front mounting nut.



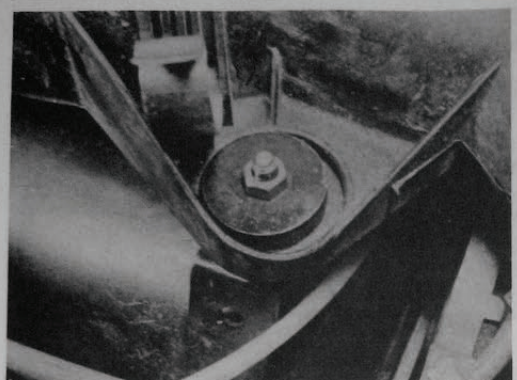
3.1A To gain access to the air cleaner filter element, undo the wing nut and release the retaining clips (arrowed) ...



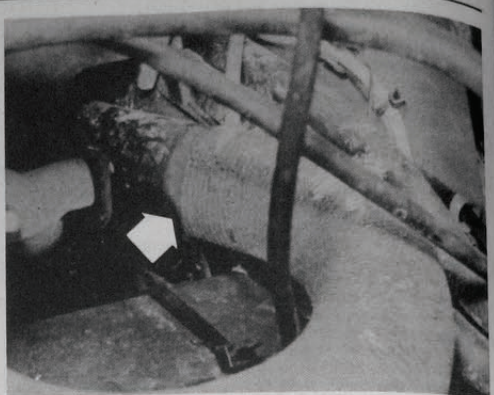
3.1B ... or undo the three locknuts and retaining screw (arrowed), followed by the clips



3.1C Lift off the cover and take out the paper element



3.4 On 1108 cc and 1397 cc engines fitted with Zenith or Solex carburettors undo the nuts securing the air cleaner in position



3.5A Detach the hot air duct at the exhaust manifold stove (arrowed) ...

3.5B ... and lift off the air cleaner

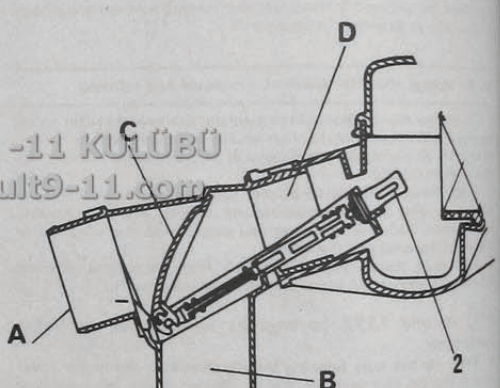


Fig. 3.1 Air cleaner automatic air temperature control layout (Sec 3)

A Cold air intake
B Hot air intake
C Flap valve
D Air cleaner body intake spout
2 Wax capsule

5 Detach the hot air duct from the stove on the exhaust manifold and lift the air cleaner assembly off the engine (photos).

1397 cc engines with Weber carburettor

6 Remove the air cleaner top cover and filter element, as previously described.

7 Undo the nut securing the air cleaner body to the rocker cover, noting the arrangement of rubber spacer, washers and sleeve under the nut.

8 Undo the three nuts securing the air cleaner body to the top of the carburettor. Detach the hot air duct from the stove on the exhaust manifold, detach the peg on the side of the body from the support bracket and lift up the air cleaner. Disconnect the crankcase ventilation hose and remove the air cleaner from the car. Recover the gasket.

1721 cc engines

9 Undo the three nuts securing the air cleaner to the carburettor and detach the hot air duct from the stove on the exhaust manifold. Release the wiring harness clips (photos).

10 Lift the air cleaner off the carburettor, disconnect the crankcase ventilation hose and remove the unit from the engine. Recover the gasket on the carburettor (photos).

All models

11 If the air cleaner is equipped with an automatic air temperature control device, this may be tested as follows:

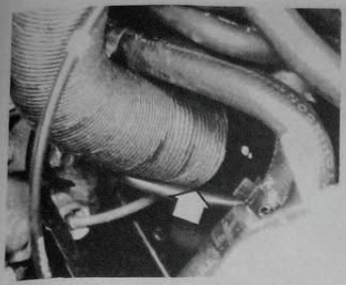
12 First remove the air filter element, if still in place, and the hot air duct.

13 Immerse the air cleaner body in water at 26°C (79°F) or less, ensuring that the wax capsule in the intake spout is completely submerged. After 5 minutes observe the position of the flap valve which should be blanking off the cold air intake.

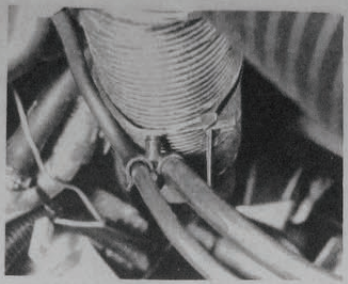
14 Now repeat the test in water at 36°C (97°F) and after 5 minutes check that the flap is blanking off the hot air intake. If the flap valve does not operate as described at the specified temperatures, the wax capsule control assembly is faulty and must be renewed.

15 After completing the tests, dry off the air cleaner body and refit the hot air duct.

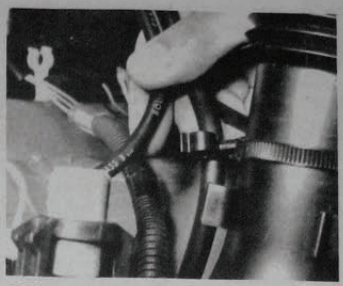
16 Refitting the air cleaner and element is the reverse sequence to removal. On models with a manually-operated air temperature control, set the flap valve to the summer or winter setting (photo), as applicable, after refitting.



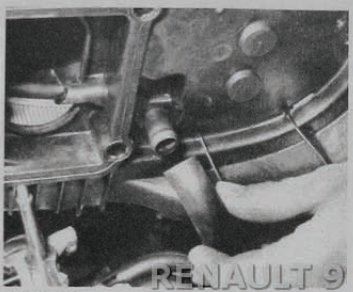
3.9A On 1721 cc engines undo the air cleaner retaining locknuts then detach the hot air duct at the exhaust manifold stove (arrowed)



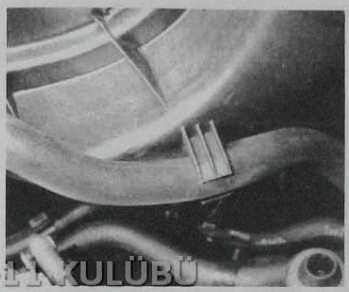
3.9B Release the wiring harness clips at the hot ...



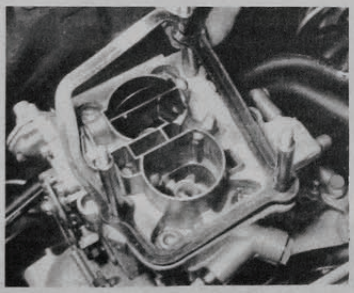
3.9C ... and cold air intakes



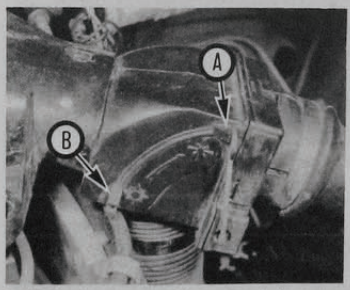
3.10A Lift up the air cleaner and detach the breather hose from the outlet



3.10B ... and at the support clip then lift off the air cleaner



3.10C Recover the gasket from the carburettor after removal



3.16 Air cleaner manually-operated air temperature control winter position (A) and summer position (B)

4 Fuel pump – testing and cleaning

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

1 One of two different types of fuel pump may be fitted to Renault models covered in this manual. Both are similar in construction and identical in operation.

2 To test the operation of the pump, first remove it from the engine, as described in Section 5.

3 Refit the fuel inlet pipe to the pump and hold a wad of rag near the outlet. Operate the pump lever by hand and if the pump is in a satisfactory condition a strong jet of fuel should be ejected from the pump outlet as the lever is released. If this is not the case, check that fuel will flow from the inlet pipe when it is held below tank level, if so the pump is faulty.

4 To clean the pump filter, first disconnect the fuel inlet pipe at the pump and plug it to prevent loss of fuel. Disconnect the outlet pipe, unscrew the retaining screw(s) and lift off the cover and gasket.

5 The filter, which will be either a flat or circular fine gauze screen, can now be withdrawn. Blow through the filter and brush or wipe out any dirt and sediment from the pump interior.

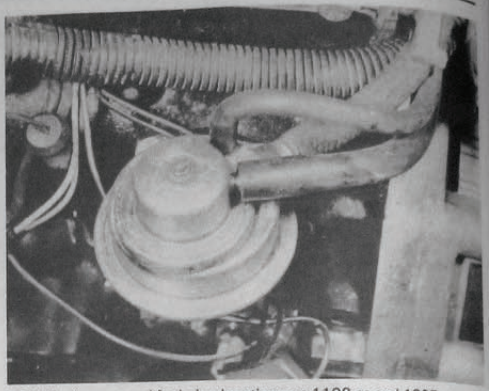
6 Reassemble the components in the reverse order to dismantling, but make sure that the retaining screws are not overtightened. If crimp type retaining clips were used to secure the fuel pipes, these should be replaced by screw type clips when reassembling.

5 Fuel pump – removal and refitting

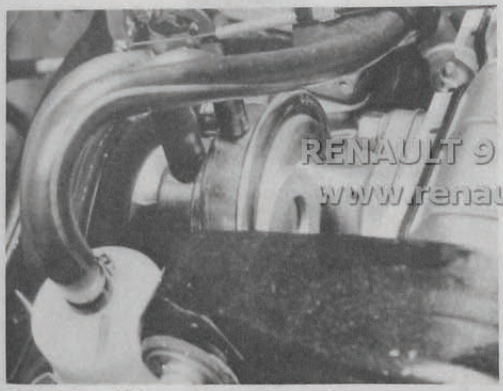
Note: *Refer to the warning note in Section 1 before proceeding*

1 Disconnect the battery negative terminal.

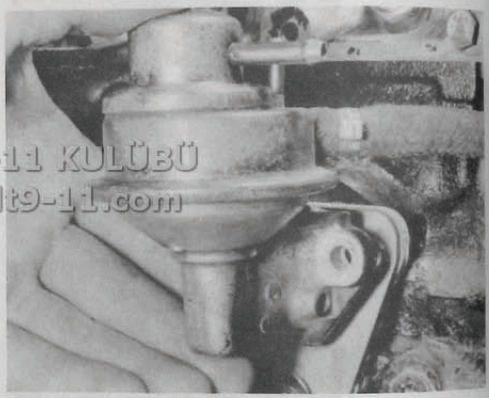
2 Note the location of the fuel inlet, outlet and return pipes and disconnect them from the pump (photos).
3 Undo the two nuts and washers or nut, bolt and washers securing the pump to the engine and withdraw it from its location (photo).
4 On 1108 cc and 1397 cc engines, note the arrangement of insulating blocks and gaskets and remove them from the cylinder block after undoing the lower retaining bolt. On 1721 cc engines, remove the insulating block and gaskets from the cylinder head studs.
5 Before refitting the pump, thoroughly clean the pump and cylinder block or head mating faces.
6 On 1108 cc and 1397 cc engines place the insulating block in position with a large gasket each side (photos). If a second insulating block is used (depending on pump type), place this in position followed by the small gasket then secure the insulating block assembly with the lower retaining bolt (photos). On 1721 cc engines, place the insulating block and gaskets over the cylinder head studs.
7 Refit the pump and secure with the two nuts and washers or nut, bolt and washers.
8 Reconnect the fuel pipes to their original positions, as noted during removal. If crimp type retaining clips were used to secure the fuel pipes, these should be replaced by screw type clips.
9 Reconnect the battery negative terminal.



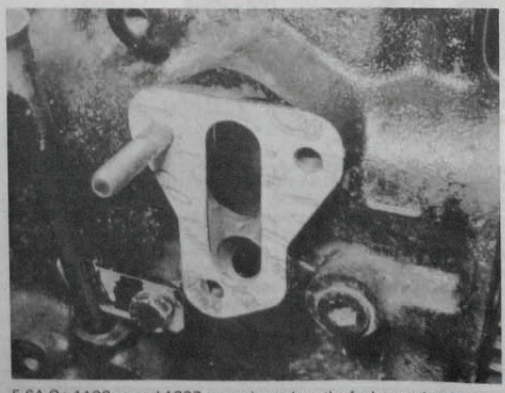
5.2A Fuel pump and fuel pipe locations on 1108 cc and 1397 cc engines ...



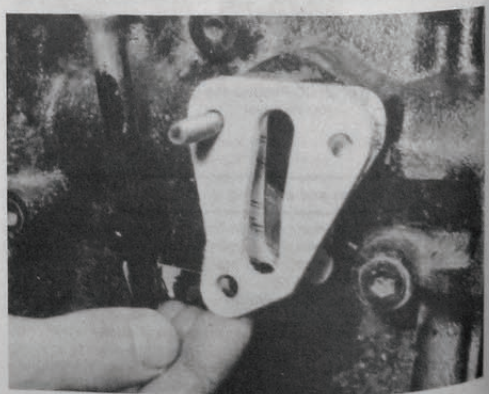
5.2B ... and on 1721 cc engines



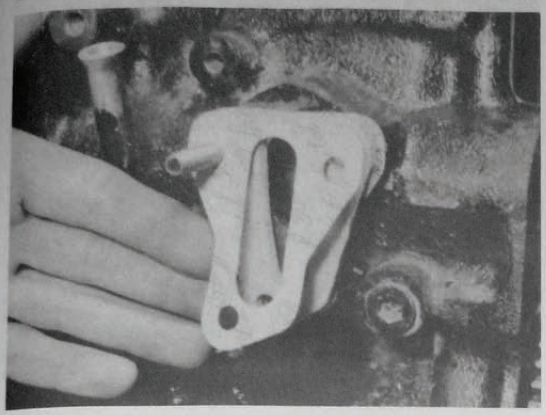
5.3 Removing the fuel pump from an 1108 cc engine



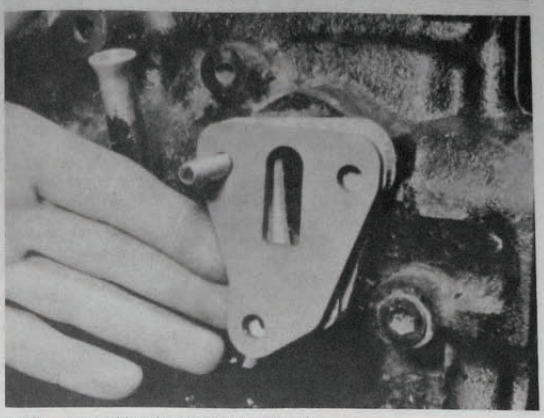
5.6A On 1108 cc and 1397 cc engines place the fuel pump insulating block inner gasket in position ...



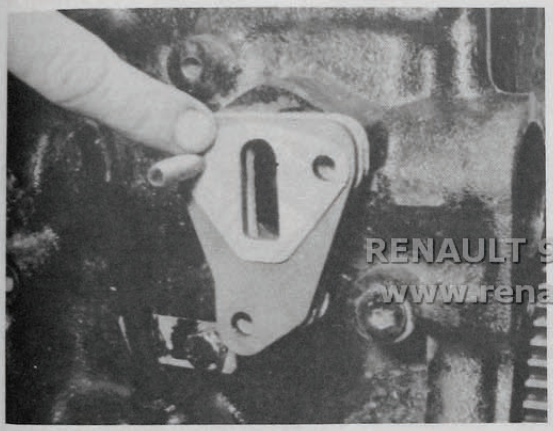
5.6B ... followed by the insulating block ...



5.6C ... outer gasket ...



5.6D ... second insulating block (if fitted) ...



5.6E ... then the final gasket

5.6F Secure this assembly with the retaining bolt then refit the fuel pump

6 Fuel tank – removal, servicing and refitting

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

1 A drain plug is not provided on the fuel tank and it is therefore preferable to carry out the removal operation when the tank is nearly empty. Before proceeding, disconnect the battery negative terminal and then syphon or hand pump the remaining fuel from the tank.

2 Jack up the rear of the car and securely support it on axle stands. Remove the spare wheel.

3 Lift up the luggage compartment floor covering and withdraw the plastic cover to gain access to the fuel pipes at the sender unit (photo).

4 Disconnect the electrical multi-plug, the vent pipes and the fuel feed and return pipes at the sender unit (photo).

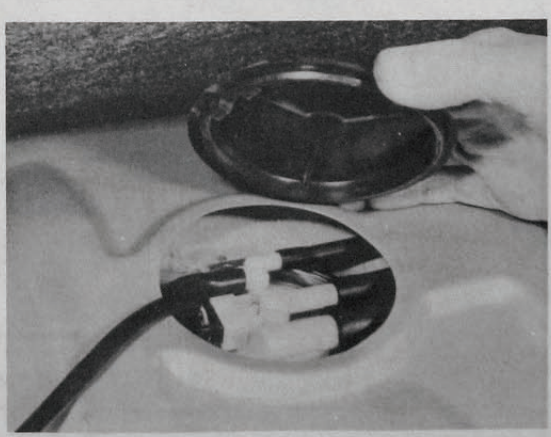
5 From under the car, release the retaining clips and detach the fuel filler pipe connecting hose from the tank outlet (photo).

6 Take the weight of the tank on a suitable jack with a block of wood interposed.

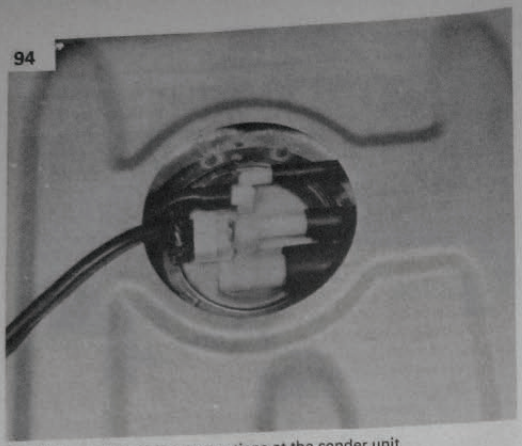
7 Undo the bolts securing the tank to the underbody (photo) and carefully lower the tank. When sufficient clearance exists, release the clips securing the vent pipes to the top of the tank.

8 Lower the tank completely and withdraw it from under the car.

9 If the tank is contaminated with sediment or water, remove the sender unit, as described in Section 7, and swill the tank out with clean



6.3 The fuel pipes and connections at the sender are accessible after removing the plastic cover in the luggage compartment floor



6.4 Wiring and fuel pipe connections at the sender unit

6.5 Fuel filler pipe connecting hose at the tank outlet

6.7 Fuel tank retaining bolt (arrowed)

Fig. 3.2 Fuel tank and filler neck details (Sec 6)

1 Filler neck vent *2 Vent tube*

fuel. If the tank is damaged, or leaks, it should be repaired by a specialist or, alternatively, renewed. **Do not** under any circumstances solder or weld the tank.
10 Refitting the tank is the reverse sequence to removal.

7 Fuel gauge sender unit – removal and refitting

Note: *Refer to the warning note in Section 1 before proceeding*
1 Disconnect the battery negative terminal.
2 Lift up the luggage compartment floor covering and withdraw the plastic cover to gain access to the sender unit (photo 6.3).
3 Disconnect the electrical multi-plug, the vent pipes and the fuel feed and return pipes at the sender unit (photos 6.4).
4 Turn the unit with a screwdriver or a flat blade to release it from the tangs of the tank.
5 Withdraw the unit carefully to avoid damaging the float arm and recover the gasket.
6 Refitting is a reversal of the removal sequence, but use a new gasket if the old one is damaged or shows any sign of deterioration.

8 Accelerator cable – removal and refitting

1 Remove the air cleaner assembly, as described in Section 3.
2 From inside the car, release the cable end fitting, which is a push fit in the accelerator pedal rod.
3 At the carburettor, slacken the clamp bolt and remove the outer cable from the support bracket on the manifold.
4 Detach the throttle return spring, open the throttle by hand and slip the cable end out of the slot on the linkage or bellcrank connector (photos).
5 According to model, the cable may be secured to a bracket attached to the brake master cylinder or engine compartment bulkhead, or it may be retained by a circlip adjacent to its bulkhead grommet. Disconnect the cable, depending on its method of retention and withdraw it from the car.
6 Refitting the cable is the reverse sequence to removal. Before finally securing the outer cable to the support bracket on the manifold, adjust its position so that there is a small amount of slack in the cable when the throttle is closed.

9 Accelerator pedal – removal and refitting

1 Working inside the car, release the accelerator cable end fitting, which is a push fit in the pedal rod.
2 Undo the bolt securing the pedal assembly to the bulkhead and withdraw it from inside the car.
3 Refitting is the reverse sequence to removal.

10 Choke cable – removal and refitting

1 Disconnect the battery negative terminal.
2 Remove the air cleaner assembly, as described in Section 3.
3 Release the choke outer cable from its support bracket on the carburettor by carefully prising the retaining clip tangs out of the bracket slots (photos).
4 Disconnect the cable end from the carburettor by prising the spring loop off the stud on the linkage.
5 The procedure for removing the cable from the facia now varies according to model, as follows:

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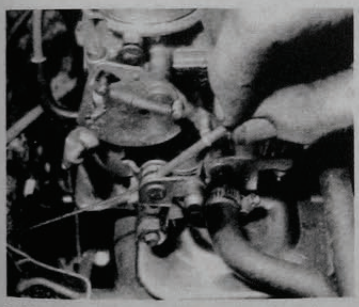
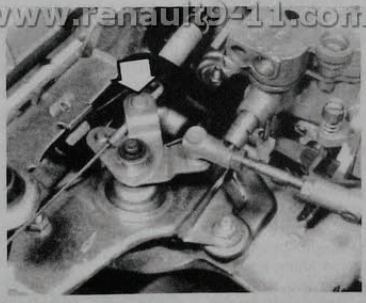
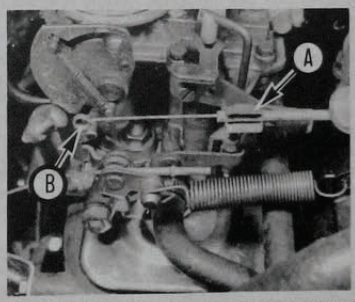
6 Reach up under the facia and disconnect the electrical lead for the choke warning lamp from the choke control body. If necessary greater access can be gained by removing the air duct between the heater and facia vent unit.
7 Compress the sides of the choke body and push it out of its location in the facia (photo).



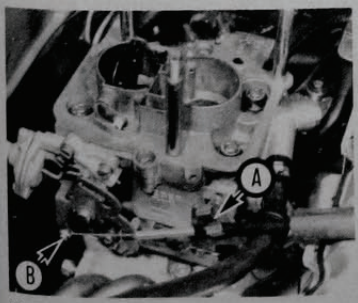
8.4A Detach the accelerator cable from the linkage ...



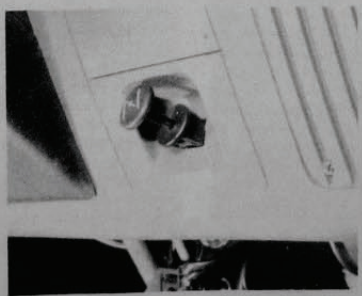
8.4B ... or bellcrank connector (arrowed)



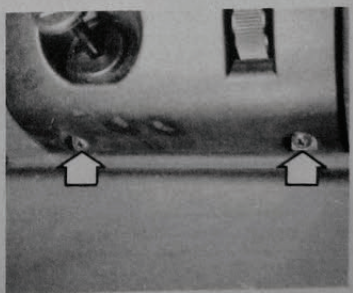
10.3A Choke cable support bracket clip (A) and cable end loop (B) on Zenith and Solex carburettors



10.3B Choke cable support bracket clip (A) and cable end loop (B) on Weber carburettors



10.7 Remove the choke cable from the facia on Renault 9 models by reaching behind and pushing it out of its location



10.9 On Renault 11 models undo the screws (arrowed) and release the side panel to gain access to the choke cable

8 Release the grommet in the engine compartment bulkhead and pull the choke cable through and into the car.

Renault 11 models

9 Undo the two screws securing the side panel to the facia (photo). Lift the panel up at the bottom and disengage the upper retaining lugs.
10 Disconnect the electrical lead for the choke warning lamp from the choke control body.
11 Compress the sides of the choke body and push it out of its location in the facia side panel.
12 Release the grommet in the engine compartment bulkhead and pull the choke cable through and into the car.

All models

13 Refitting is the reverse sequence to removal. Adjust the position of the outer cable in its carburettor support bracket clip as necessary so that the choke linkage opens fully when the knob is pushed in, and closes fully when the knob is pulled out.

11 Zenith carburettor – description and identification

1 The Zenith 32IF2 carburettor is a single throat downdraught type and is fitted to the C1E, 1108 cc engine. Two versions of this carburettor are available. Both are virtually identical except for a pneumatically-controlled cold start device which is only fitted to one version. The type identification number is stamped on the float chamber cover and reference should be made to this number before consulting the Specifications for repair or adjustment data.
2 The carburettor functions as follows: Fuel, maintained at a constant level in the float chamber by the float and needle valve, passes through the main jet where it reaches the emulsion tube.
3 Air is drawn through the air calibration jet to mix with the fuel in the emulsion tube. The vacuum created in the main and secondary venturis, according to engine speed and load, causes this emulsified mixture to be discharged into the airstream through the carburettor. The calibration of the main and air jets and the shape of the venturi ensures that this emulsified mixture is in the right proportions at all engine speeds.
4 Under conditions of high engine speed, high engine load or acceleration, additional enrichment is provided by a pneumatic enrichment device and by an accelerator pump. The pneumatic enrichment device senses high manifold vacuum below the throttle valve and opens an additional fuel circuit calibrated by a jet. A tube immersed in the float chamber and also fitted with a jet supplies fuel through the auxiliary jet tube when the vacuum rises above the throttle valve. Movement of the throttle linkage actuates the accelerator pump assembly through a series of levers. The pump, consisting of two pistons, springs and two valves, pumps fuel to the delivery tube where it is injected into the airstream.
5 When the engine is idling, the high manifold vacuum below the throttle valve draws fuel from the float chamber to the idling jet. The fuel is emulsified with air drawn through a calibrated jet and atomized as it is discharged into the airstream below the throttle valve. As the throttle is opened during the progression stage, the mixture is discharged through additional holes. The strength of the mixture is controlled by the mixture adjusting screw.
6 A manually-operated cold start (choke) control is used to provide the necessary rich mixture for starting. When the choke knob is pulled out the choke flap is closed by the action of the linkage. When the engine is cranking, high vacuum is created below the choke flap and a very rich mixture is discharged. The linkage also opens the throttle valve by a predetermined amount so that the engine will run at a fast idle speed. On versions having a pneumatically-controlled cold start device, manifold vacuum passes through drillings and a valve to act on a diaphragm connected to the choke flap. According to engine load, this 'override' device alters the position of the choke flap on demand, thus altering the strength of the cold start mixture.

12 Solex carburettor – description and identification

1 The Solex 32BIS carburettor is a single throat downdraught type and is fitted to the C1J, 1397 cc engine. The carburettor type identification number is stamped to a plate attached to one of the float chamber retaining screws.
2 The function of the unit is as follows: Fuel, maintained at a constant level in the float chamber by the float and needle valve, passes through the main jet to the emulsion tube. The fuel is emulsified with air drawn in through the air compensating jet. The vacuum created in the carburettor venturi causes the emulsified mixture to be discharged and atomized by the air passing through the venturi. The calibration of the main and air jets and the shape of the venturi ensures that this emulsified mixture is in the right proportions at all engine speeds.
3 Under condition of high engine speed, high engine load or acceleration, additional enrichment is provided by a full throttle enrichment device and an accelerator pump. The diaphragm of the full throttle enrichment device moves under the influence of manifold vacuum and spring pressure to open an additional fuel circuit calibrated by a jet. This provides an additional fuel mixture at high engine speed. The accelerator pump is operated by a cam and rod connected to the throttle valve spindle. The necessary rich mixture needed for acceleration is provided by the accelerator pump diaphragm which ejects a stream of neat fuel through the discharge nozzle whenever the throttle is operated.
4 When the engine is idling, the high manifold vacuum below the throttle valve draws fuel from the float chamber to the idling jet. The fuel is emulsified with air drawn through a calibrated orifice and atomized as it is discharged into the airstream below the throttle valve. The strength of the mixture is controlled by the mixture adjusting screw. An additional idling circuit is also used, whereby an emulsified mixture of fuel from the auxiliary jet and air from a calibrated orifice are mixed with air from a drilling in the venturi wall. This mixture is regulated by the volume control screw before being discharged below the throttle plate. This circuit allows a fine degree of engine idling speed adjustment via the volume control screw without upsetting the mixture strength to any degree.
5 A slotted bypass machined in line with the higher edge of the throttle valve is supplied with an emulsified mixture in the same way as the main idling circuit. This provides the correct mixture strength during progression from the idling phase to the main jet phase.
6 A manually-operated cold start (choke) control is used to provide the necessary rich mixture from starting. When the choke knob is pulled out the choke flap is closed by the action of the linkage. When the engine is cranking, high vacuum is created below the choke flap and a very rich mixture is discharged. The linkage also opens the throttle valve by a predetermined amount so that the engine will run at a fast idle speed.

13 Weber carburettor – description and identification

1 The Weber 32DRTM carburettor is a dual throat downdraught type and is fitted to the C2J, 1397 cc engine and F2N, 1721 cc engine. Two versions of this carburettor are available. Both are identical in operation, but are externally different with respect to their mounting arrangement (one type is secured to the inlet manifold by through-bolts, the other locates over studs), and position of the mixture adjusting screw. The type identification number is stamped on the carburettor lower flange and reference should be made to this number before consulting the Specifications for repair or adjustment data.
2 The carburettor functions as follows: During normal running, fuel maintained at a constant level in the float chamber by the float and needle valve passes through the main jet to the emulsion tubes.
3 Air is drawn through the air calibration jets to mix with the fuel in the emulsion tubes. The vacuum created in the main and secondary venturis, according to engine speed and load causes this emulsified mixture to be discharged into the airstream through the carburettor. The calibration of the main and air jets and the shape of the venturi ensures that this emulsified mixture is in the right proportions at all engine speeds.
4 Under conditions of high engine speed, high engine load or acceleration, additional enrichment is provided by a pneumatic enrichment device and by an accelerator pump. Under the action of manifold vacuum and spring pressure a diaphragm in the pneumatic enrichment device opens a valve to allow fuel, calibrated by a jet, to enter the main jet circuit to the primary throat. Under full load and at high engine speed, the vacuum created in the venturi of the secondary throat draws an emulsified mixture of fuel and air from the secondary enrichment jets and discharges it into the airstream above the secondary venturi. The accelerator pump is actuated by movement of

the throttle valve to inject fuel into the primary throat via a discharge nozzle.

5 When the engine is idling the high manifold vacuum below the throttle valve draws fuel from the float chamber to the idling jet. The fuel is emulsified with air drawn through a calibrated jet and atomized as it is discharged into the airstream below the throttle valve. As the throttle is opened during the progression stage, the mixture is discharged through additional holes. The strength of the mixture is controlled by the mixture adjusting screw.

6 A manually-operated cold start (choke) control is used, operating on the primary throat only, to provide the necessary rich mixture for starting. When the choke knob is pulled out, the choke flap is closed by the action of the linkage. With the engine cranking, high vacuum is created below the choke flap and a very rich mixture is discharged. The linkage also opens the primary throat throttle valve by a predetermined amount so that the engine will run at a fast idle, but holds the secondary throat throttle valve closed while the choke is in operation. A pneumatically-controlled cold start device allows manifold vacuum to act on a diaphragm connected to the choke flap. Under certain conditions this 'override' device alters the position of the choke flap on demand, thus altering the strength of the cold start mixture.

14 Carburettor – idle speed and mixture adjustment

1 The procedure for idle speed and mixture adjustment is the same on each of the three carburettor types that may be fitted. Refer to the accompanying photos and illustrations and identify the carburettor type fitted and the adjustment screw locations. Note that on later Weber carburettors, the mixture adjustment screw is contained in an extension housing attached to the side of the carburettor body (photos).

2 Before carrying out the following adjustments, ensure that the spark plugs are in good condition and correctly gapped and that, where applicable, the contact breaker points and ignition timing settings are correct.

3 Connect a tachometer to the engine in accordance with the manufacturer's instructions if one is not already fitted to the car. The use of an exhaust gas analyser (CO meter) is also preferable, although not essential. If a CO meter is available this should also be connected in accordance with the maker's recommendations.

4 Before proceeding with the adjustments, remove the tamperproof cap (if fitted) over the mixture adjustment screw by hooking it out with a scriber or small screwdriver.

5 Run the engine until it reaches normal operating temperature. Increase the engine speed to 2500 rpm for 30 seconds and repeat this at three minute intervals during the adjustment procedure. This will ensure that any excess fuel is cleared from the inlet manifold.

6 With the engine idling, turn the idle speed screw on Zenith and Weber carburettors, or the volume control screw on Solex carburettors until the engine is idling at the specified speed.

7 Turn the mixture adjustment screw clockwise to weaken the mixture until the engine speed just starts to drop or the tickover becomes lumpy. Now turn the screw slowly anti-clockwise to richen the mixture until the maximum engine speed is obtained consistent with even running. If a CO meter is being used, turn the mixture adjustment screw as necessary to obtain the specified CO content.

8 Return the engine idling speed to the specified setting by means of the idle speed screw or volume control screw.

9 Repeat the above procedure a second time and then switch off the engine and disconnect the instruments.

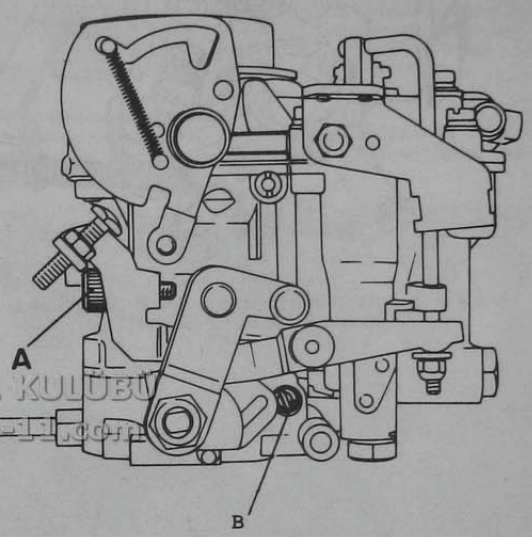
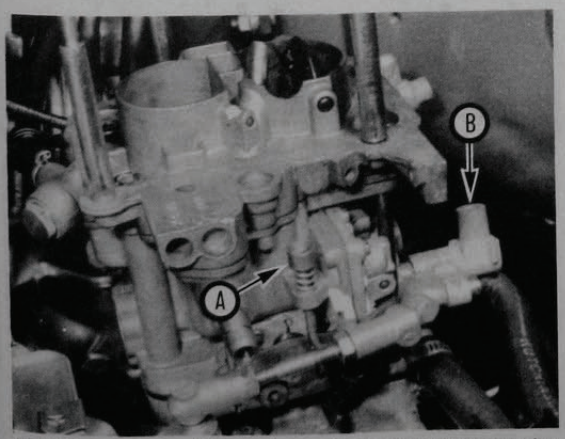
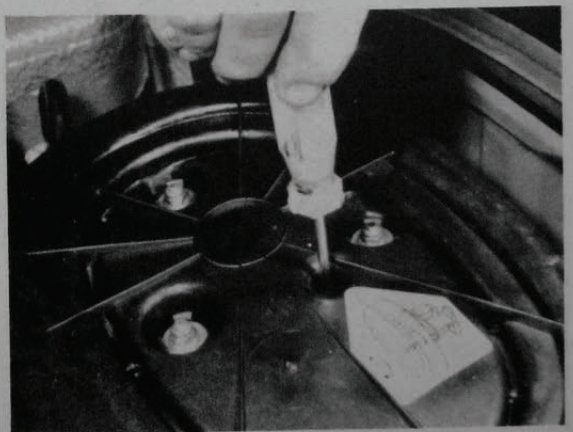


Fig. 3.3 Zenith carburettor idle speed screw (A) and mixture adjustment screw (B) (Sec 14)



14.1A Idle speed screw (A) and mixture adjustment screw in extension housing (B) on later Weber carburettors



14.1B On the 1721 cc engine the idle speed screw is accessible through a hole in the air cleaner

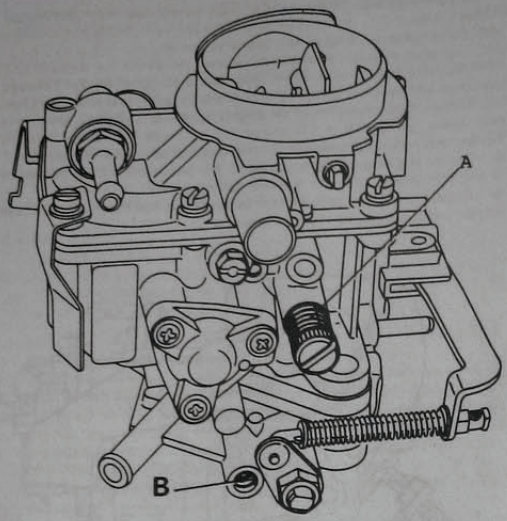


Fig. 3.4 Solex carburettor volume control screw (A) and mixture adjustment screw (B) (Sec 14)

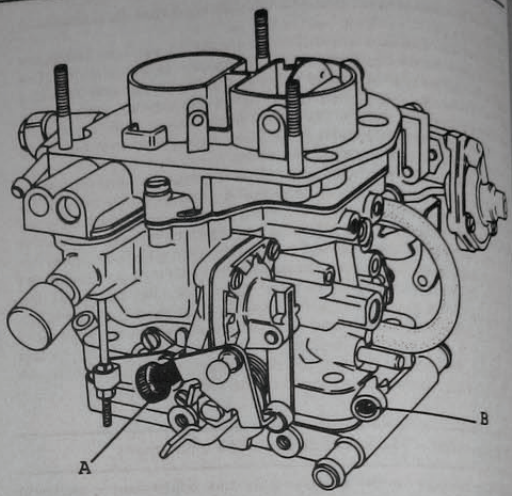


Fig. 3.5 Weber carburettor idle speed screw (A) and mixture adjustment screw (B) (Sec 14)

15 Carburettor – anti-stall device adjustment

1 On models equipped with air conditioning, an anti-stall device consisting of a vacuum-operated throttle opener diaphragm is used to raise the engine idling speed slightly when the air conditioner is in operation. The throttle opener diaphragm is attached to the carburettor and acts directly on the throttle linkage via an adjustable plunger.

2 To adjust the anti-stall device, first ensure that the engine idling speed is correctly adjusted, as described in the previous Section.

3 With the engine idling, switch on the air conditioning and check that the engine speed increases to between 900 and 1000 rpm. If necessary turn the adjusting screw located on top of the unit to obtain the specified setting.

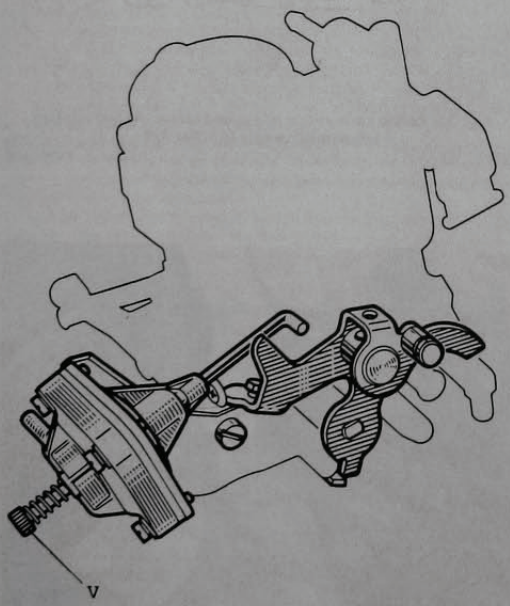


Fig. 3.6 Solex carburettor anti-stall device adjustment screw (V) (Sec 15)

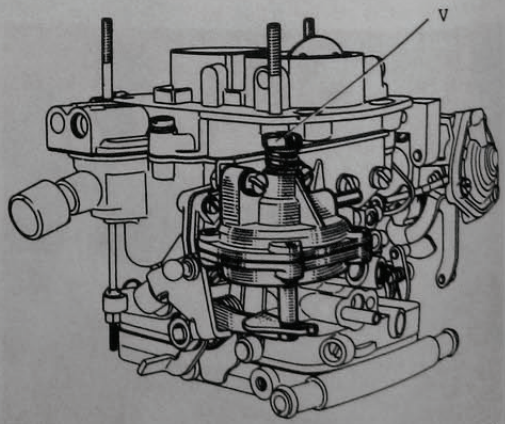


Fig. 3.7 Weber carburettor anti-stall device adjustment screw (V) (Sec 15)

16 Carburettor – removal and refitting

1 Unscrew the filler cap on the cooling system expansion tank. If the engine is hot, place a rag over the cap and unscrew it slowly, allowing all the pressure in the system to be released before completely removing the cap.
2 Place a suitable container beneath the radiator bottom hose outlet. Disconnect the hose and drain approximately 1 litre (1.76 pints) of the coolant. Refit the hose and tighten the clip.
3 Refer to Section 3, and remove the air cleaner assembly.
4 The procedure now varies according to carburettor type as follows:

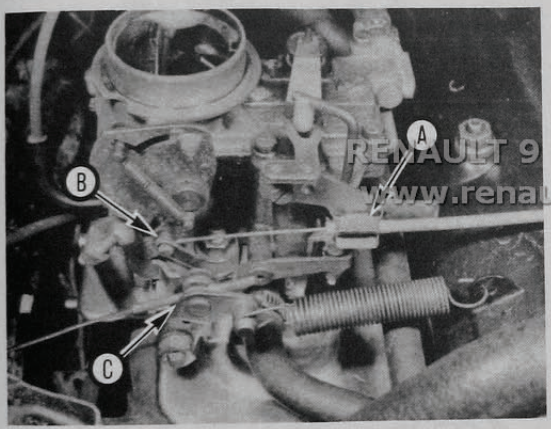
Zenith and Solex carburettors

5 Carefully prise the choke cable retaining clip out of its support bracket on the carburettor and disconnect the cable end spring loop from the stud on the linkage (photo).
6 Detach the throttle return spring, open the throttle by hand and slip the cable end out of the slot on the linkage connector.
7 Disconnect the fuel inlet pipe from the carburettor and plug the pipe end after removal (photo).
8 Remove the crankcase ventilation hoses from the connector on the carburettor (photo).
9 Disconnect the distributor vacuum pipe from the carburettor connector.
10 Slacken the retaining clips and remove the coolant hoses from their outlets on the base of the carburettor.
11 Undo the two nuts and washers securing the carburettor to the inlet manifold and withdraw the unit from the manifold studs (photo).
12 Recover the gasket fitted between the base of the carburettor and the heat shield.
13 Refitting the carburettor is the reverse sequence to removal, bearing in mind the following points:

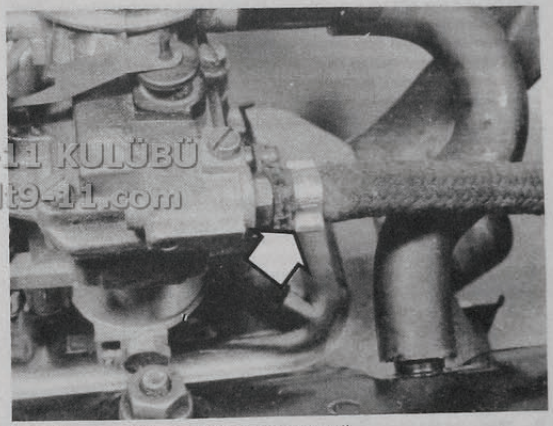
(a) Ensure that the mating faces of the carburettor and heat shield are clean and use a new gasket
(b) If crimp type clips were used to secure the coolant or fuel hoses these should be replaced by the screw type clips
(c) Adjust the position of the choke and accelerator cables in their support bracket slips to give a small amount of free play at rest, consistent with full travel of the relevant linkage
(d) Refill the cooling system, with reference to Chapter 2

Weber carburettors

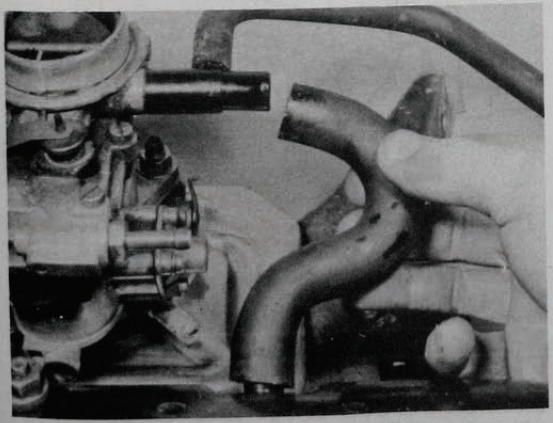
14 Carefully prise the choke cable retaining clip out of its support bracket on the carburettor and disconnect the cable end spring loop from the stud on the linkage.



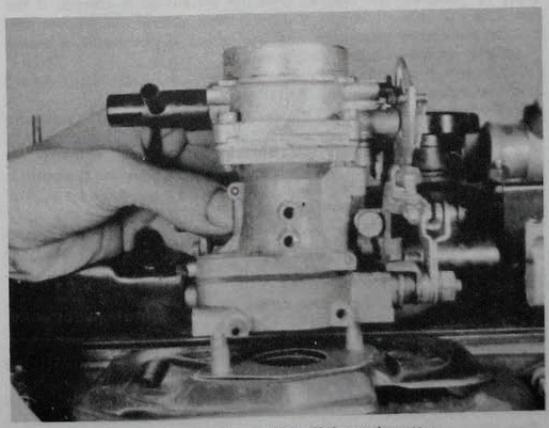
16.5 Disconnect the choke cable at the retaining clip (A) and at the linkage stud (B) then release the accelerator cable end (C) from the linkage



16.7 Disconnect the fuel inlet pipe (arrowed) ...



16.8 ... and the crankcase ventilation hoses



16.11 Undo the retaining nuts and lift off the carburettor

15 Carefully prise the accelerator bellcrank rod ball socket off the stud on the carburettor linkage.
16 Disconnect the fuel inlet pipe from the carburettor and plug the pipe end after removal.
17 Remove the crankcase ventilation hose and vacuum pipes from their connectors on the carburettor.
18 Slacken the retaining clips and remove the coolant hoses from their outlets on the base of the carburettor.
19 Undo the four nuts and washers, or the four socket-headed bolts and washers securing the carburettor to the inlet manifold. Withdraw the carburettor from the manifold and recover the gasket.
20 Refitting the carburettor is the reverse sequence to removal, but refer to the additional points listed in paragraph 13.

17 Carburettors – overhaul

1 Under normal circumstances, overhaul means removing the fixing screws and separating the main bodies of the carburettor so that the float chamber can be cleaned out and the jets and other passages cleaned with compressed air.
2 If the carburettor has been in service for a high mileage or the throttle spindles and their bushes have become worn, it is recommended that a new carburettor is obtained. It is unlikely that the individual parts will be available to recondition the carburettor yourself, and the cost involved in purchasing a new unit will soon be offset by the increase in fuel economy.
3 When reassembling the carburettor, carry out the following adjustments as work proceeds and use all the new gaskets, seals and other items supplied in the special repair kit for each carburettor.
4 It is necessary to remove the carburettor from the engine to carry out the following adjustments.

Zenith carburettors

Initial throttle opening (fast idle) adjustment

5 Turn the choke operating cam on the side of the carburettor by hand as far as it will go, so that the choke flap is fully closed.
6 A twist drill or suitable rod having a diameter equal to the initial throttle opening setting given in the Specifications, should just slide between the throttle valve and the venturi wall (Fig. 3.9).
7 If adjustment is necessary, slacken the locknut and turn the fast idle adjusting screw to obtain the special setting. Tighten the locknut when adjustment is complete.

Float height adjustment

8 Turn the carburettor top cover upside down and hold the float arm clear so that it is not touching the needle valve.
9 Measure the distance between the upper face of the needle valve body washer and the end of the needle valve (Fig. 3.10). If the measured dimension is greater than specified, tighten the needle valve body to compress the washer until the dimension is correct. If the measured dimension is less than specified, renew the washer and tighten the needle valve body until the correct dimension is obtained.

Auxiliary jet tube (Econostat) setting

10 Measure the distance between the top of the carburettor venturi and the top of the tube (Fig. 3.11).
11 If necessary bend the tube up or down slightly to obtain the specified dimension.

Accelerator pump delivery tube setting

12 Measure the distance between the end of the tube and the bottom of the carburettor mounting flange. If necessary bend the tube slightly to achieve the specified setting.
13 Also make sure that the jet of fuel that flows from the tube strikes the diffuser in the position shown in Fig. 3.12. Again bend the tube slightly as required.

Accelerator pump stroke

14 With the carburettor top cover removed, withdraw the fuel delivery valve.
15 With the choke flap open and the throttle valve fully closed, measure the depth between the delivery valve locating face and the bottom of the piston (Fig. 3.13).
16 Turn the nut on the pump operating rod as necessary to obtain the specified dimension.

Defuming valve adjustment

17 With the throttle valve open in the idling position the defuming valve on the float chamber should also be open by the amount shown in Fig. 3.14. With the choke flap closed, the valve should also be closed and a small amount of free play should exist between the spring blade and the lifting peg. Bend the spring blade as necessary to achieve these conditions.

Pneumatically-controlled cold start device adjustment

18 On certain Zenith carburettors a vacuum diaphragm is used to

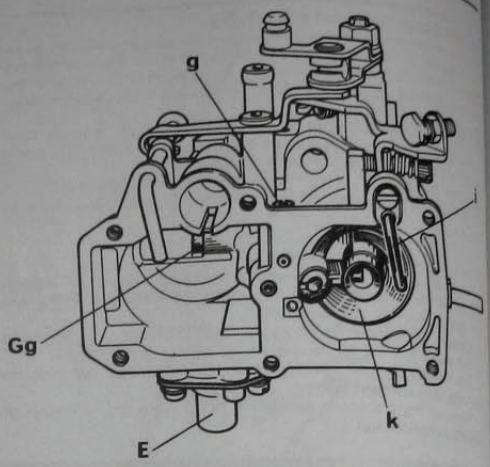


Fig. 3.8 Zenith carburettor overhaul (Sec 17)

E Pneumatic enrichment device
Gg Main jet
g Idling jet
i Accelerator pump jet
k Venturi

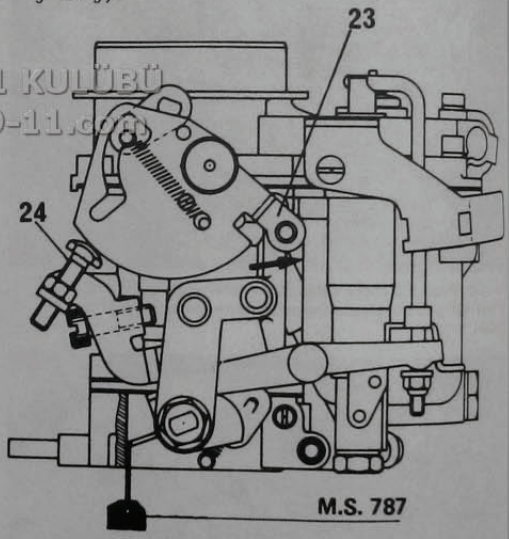


Fig. 3.9 Initial throttle opening adjustment – Zenith carburettor (Sec 17)

M.S. 787 Gauge rod equal to specified initial throttle opening setting
23 Choke operating cam fully open
24 Fast idle adjusting screw

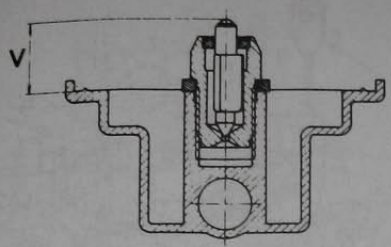


Fig. 3.10 Float height adjustment – Zenith carburettor (Sec 17)

V Specified float height dimension

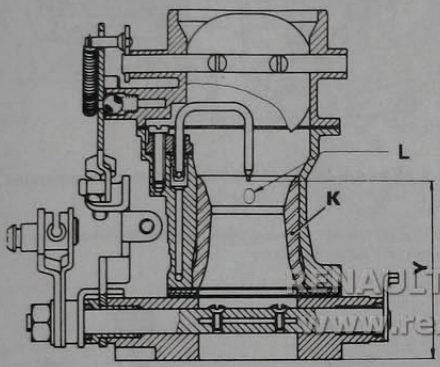


Fig. 3.12 Accelerator pump delivery tube setting – Zenith carburettor (Sec 17)

Y Specified delivery tube height setting
Fuel should strike diffuser (K) in the zone indicated (L)

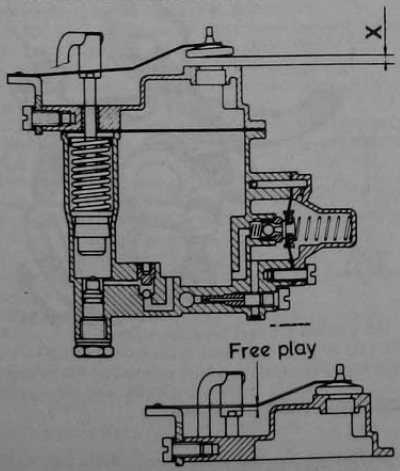


Fig. 3.14 Defuming valve adjustment – Zenith carburettor (Sec 17)

X Specified defuming valve setting
Lower illustration indicates desired free play between blade and lifting peg with choke flap closed

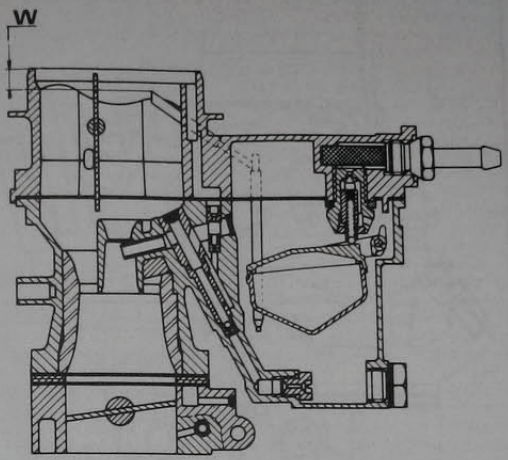


Fig. 3.11 Auxiliary jet tube setting – Zenith carburettor (Sec 17)

W Specified auxiliary jet tube setting dimension

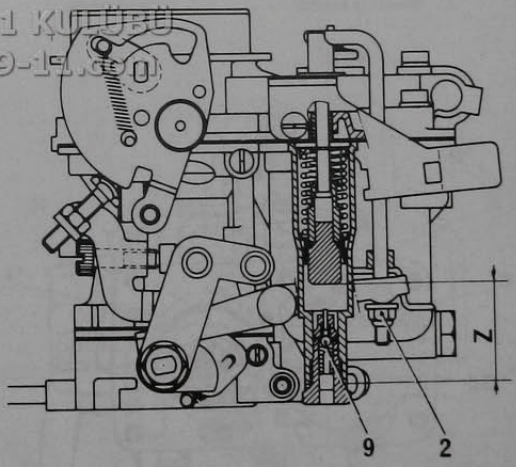


Fig. 3.13 Accelerator pump stroke – Zenith carburettor (Sec 17)

2 Pump operating rod adjusting nut
9 Fuel delivery valve
Z Specified accelerator pump stroke dimension

control the opening of the choke flap when the choke is in operation. Adjustment of the unit is as follows:

19 Move the choke linkage by hand to the fully closed position. A twist drill or suitable rod having a diameter equal to the specified choke flap opening dimension should just fit between the edge of the flap and the venturi wall (Fig. 3.15). Bend the vacuum diaphragm mounting bracket as necessary to achieve the specified dimension.

Pneumatic part open setting

20 Move the choke linkage by hand to the fully closed position. Push the spindle into contact with the adjusting screw on the vacuum

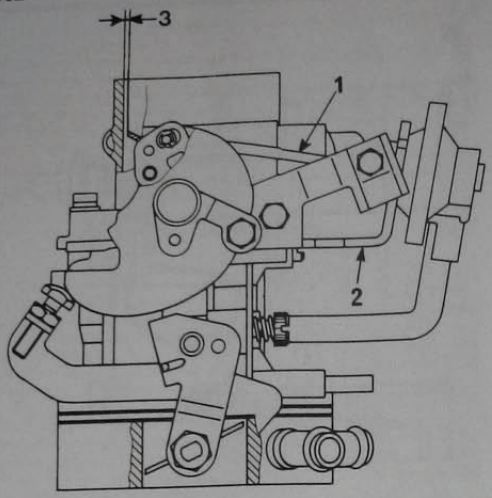


Fig. 3.15 Pneumatic cold start device choke flap opening – Zenith carburettor (Sec 17)

1 Operating rod
2 Mounting bracket
3 Specified choke flap opening

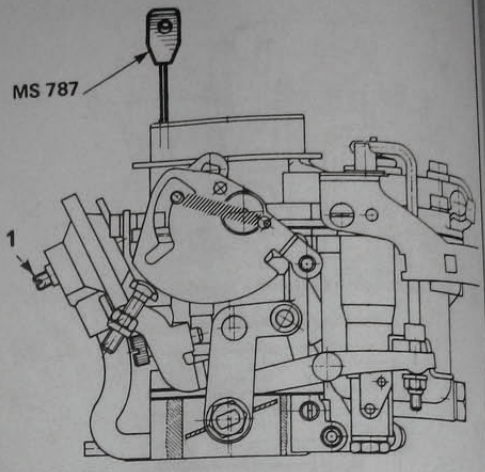


Fig. 3.16 Pneumatic part open setting – Zenith carburettor (Sec 17)

M.S. 787 Gauge rod equal to specified pneumatic part opening setting
1 Vacuum unit adjusting screw

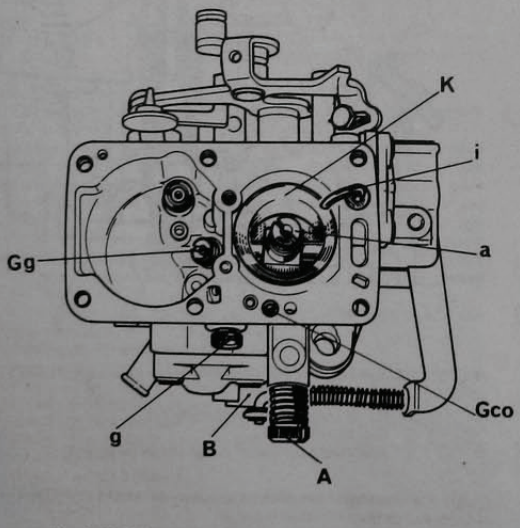
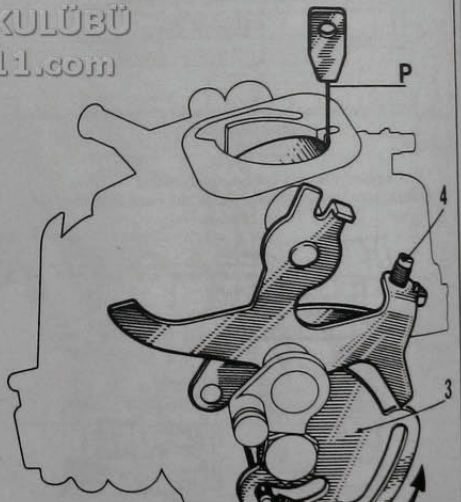


Fig. 3.17 Solex carburettor overhaul (Sec 17)

A Volume control screw
a Air compensating jet
B Mixture adjustment screw
GCo Auxiliary jet
Gg Main jet
g Idling jet
i Accelerator pump jet
k Venturi



ACCELERATOR PUMP STROKE

Fig. 3.18 Initial throttle opening adjustment – Solex carburettor (Sec 17)

3 Choke flap fully closed
4 Fast idle adjusting screw
P Gauge rod equal to specified initial throttle opening setting

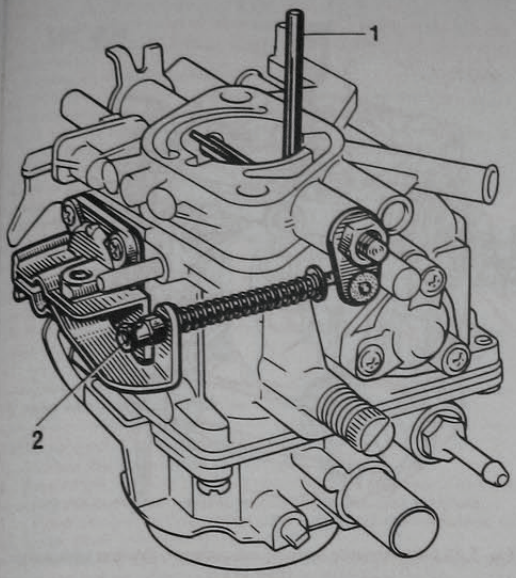


Fig. 3.19 Accelerator pump stroke – Solex carburettor (Sec 17)

1 Twist drill equal to specified accelerator pump stroke dimension
2 Connecting rod nut

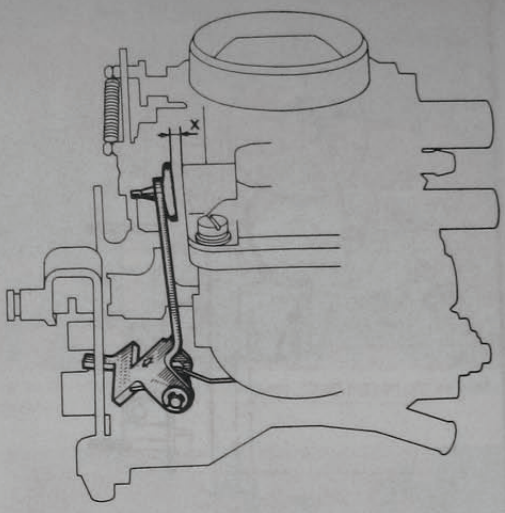


Fig. 3.20 Defuming valve adjustment – Solex carburettor (Sec 17)

X Specified defuming valve setting

diaphragm unit (Fig. 3.16). A twist drill or suitable rod having a diameter equal to the specified pneumatic part open setting should just fit between the edge of the choke flap and the venturi wall. Turn the adjusting screw on the vacuum unit if adjustment is necessary.

Solex carburettors

Initial throttle opening (fast idle) adjustment

21 Turn the carburettor upside down and turn the choke linkage by hand as far as it will go, so that the choke flap is fully closed.

22 A twist drill or suitable rod having a diameter equal to the specified initial throttle opening should just slide between the throttle valve and the venturi wall (Fig. 3.18).

23 If adjustment is necessary, remove the tamperproof cap (where fitted) and turn the fast idle adjusting screw as necessary to obtain the specified setting.

Accelerator pump stroke

24 With the carburettor upside down, insert a twist drill or suitable rod having a diameter equal to the specified accelerator pump stroke, between the throttle valve and venturi wall (Fig. 3.19).

25 In this position the accelerator pump operating arm should be at the end of its stroke. Alter the position of the connecting rod nut as necessary if adjustment is required.

Defuming valve adjustment

26 With the choke flap fully open and the throttle valve against the idling stop, the defuming valve should be open by an amount equal to the specified defuming valve stroke. If adjustment is required, bend the defuming valve lever as necessary (Fig. 3.20).

Weber carburettors

Float level adjustment

27 With the float chamber cover held vertically so that the float just closes the fuel needle valve without causing the valve ball to enter the housing, the dimension A in Fig. 3.22 should be as specified. Note that the cover gasket should be in position. Bend the tag of the float arm that contacts the needle valve if adjustment is necessary.

28 Allow the float to hang under its own weight and measure

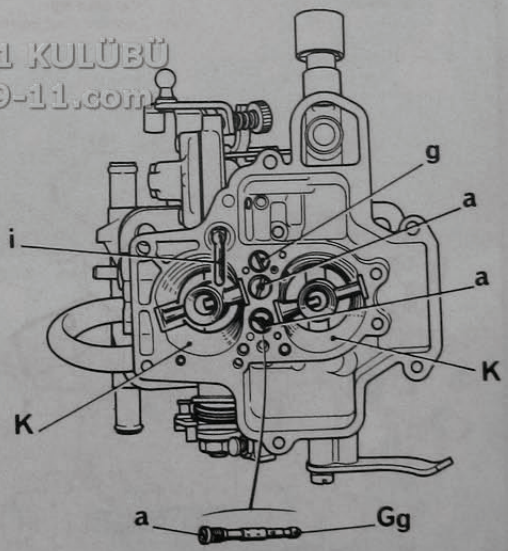


Fig. 3.21 Weber carburettor overhaul (Sec 17)

a Air compensating jets
Gg Main jet
g Idling jet
i Accelerator pump jet
k Venturis

dimension B in Fig. 3.22. Bend the float stop tag as necessary to achieve the specified dimension.

Initial throttle opening (fast idle) adjustment

29 Turn the carburettor upside down and turn the choke linkage by hand as far as it will go, so that the choke flap is fully closed.

30 A twist drill or suitable rod having a diameter equal to the

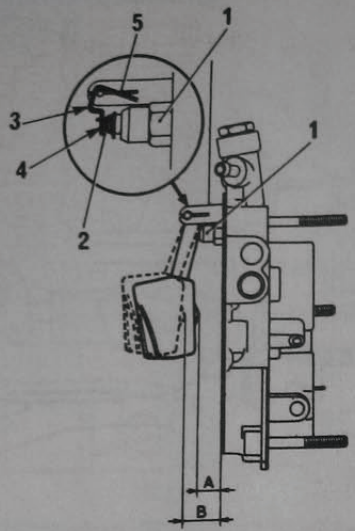


Fig. 3.22 Float level adjustment – Weber carburettor (Sec 17)

1 Needle valve
2 Needle valve ball
3 Float arm tag
4 Float arm tag end must remain at right-angles to the valve ball
5 Float stop tag
A Specified float height dimension
B Specified float travel dimension

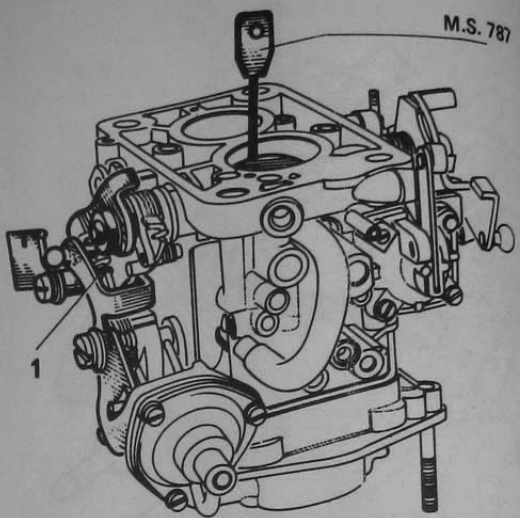


Fig. 3.23 Initial throttle opening adjustment – Weber carburettor (Sec 17)

M.S. 787 Gauge rod equal to specified initial throttle opening
1 Fast idle adjusting screw

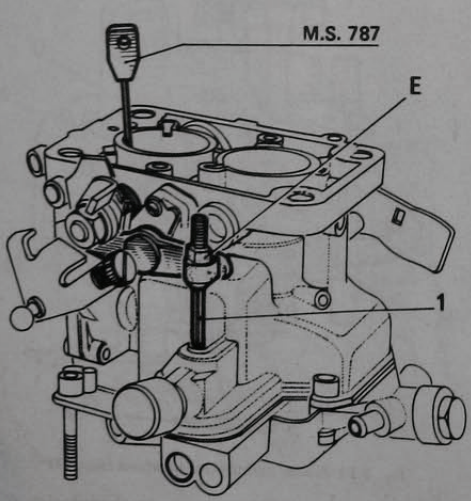


Fig. 3.24 Defuming valve adjustment – Weber carburettor (Sec 17)

M.S.787 Gauge rod equal to the specified defuming valve throttle opening dimension
1 Defuming valve rod
E Defuming valve rod nut

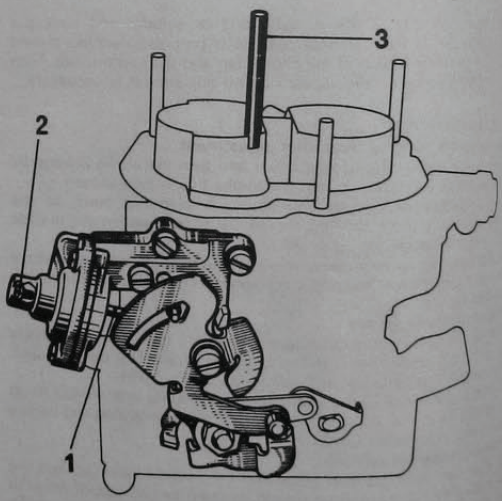


Fig. 3.25 Choke flap pneumatic part opening setting – Weber carburettor (Sec 17)

1 Operating rod
2 Adjusting screw
3 Twist drill equal to the specified choke flap pneumatic part opening setting dimension

specified initial throttle opening should just slide between the throttle valve and the venturi wall (Fig. 3.23).
31 If adjustment is required, slacken the locknut and turn the fast idle adjusting screw on the linkage as necessary. Tighten the locknut after adjustment.

Defuming valve adjustment

32 With the carburettor upside down and the choke flap open, press the defuming valve rod down as far as it will go (Fig. 3.24).
33 In this position a twist drill or suitable rod having a diameter equal to the specified defuming valve throttle opening should just fit between the throttle valve and venturi wall.
34 Alter the position of the nuts on the defuming valve rod as necessary to achieve the correct setting.

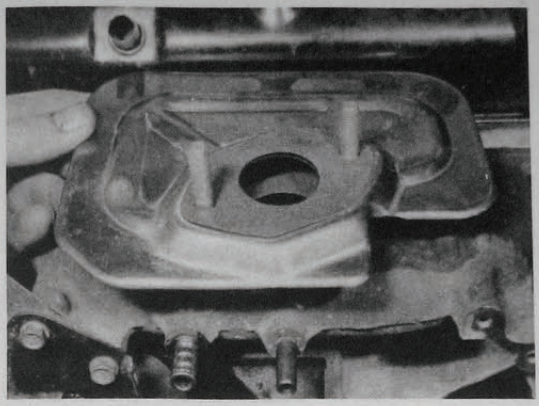
Choke flap pneumatic part open setting

35 Move the choke linkage by hand to the fully closed position and push the operating rod as far as it will go into the vacuum diaphragm unit (Fig. 3.25). In this position a twist drill or suitable rod having a diameter equal to the choke flap pneumatic part open setting should just fit between the choke flap and venturi wall.
36 If adjustment is necessary, turn the small screw in the vacuum unit cover as required.

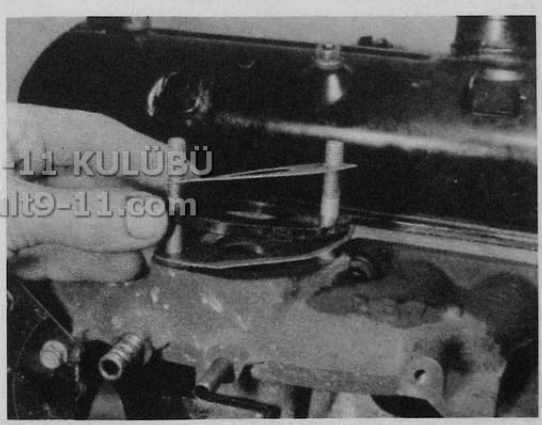
18 Inlet and exhaust manifolds – removal and refitting

1108 cc and 1397 cc engines

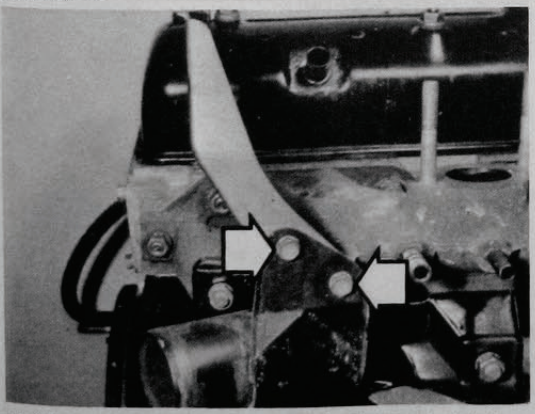
1 Remove the carburettor, as described in Section 16.
2 Slacken the retaining clips and disconnect the brake servo vacuum hose and the crankcase ventilation hose from the inlet manifold.
3 Lift the carburettor heat shield off the manifold studs followed by the spacer block and gaskets (photos).
4 Undo the two bolts and washers securing the air cleaner support bracket and hot air outlet to the manifolds. Withdraw the bracket and outlet (photo).
5 Undo the two nuts securing the heat shield to the manifold and cylinder block at the crankshaft pulley end of the engine (photo). Undo the nuts and remove the heater hose bracket.
6 Undo the two nuts, washers and tension springs securing the exhaust front pipe to the manifold. Slide the flange plate off the manifold studs to separate the joint.
7 Undo the two nuts and washers securing the hot air stove to the manifold and withdraw the stove (photo).
8 Undo the nuts and washers securing the manifolds to the cylinder head and withdraw the assembly from the engine (photos). Recover the manifold gasket.
9 Refitting the manifold assembly is the reverse sequence to removal. Ensure that the cylinder head and manifold mating faces are clean and use a new gasket. Tighten the manifold nuts to the specified torque and tighten the front pipe flange nuts so that the springs are compressed as shown in Fig. 3.29. Refit the carburettor, as described in Section 16.



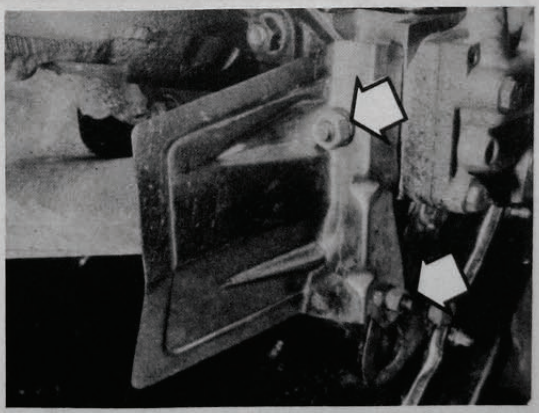
18.3A On 1108 cc and 1397 cc engines, lift off the carburettor heat shield ...



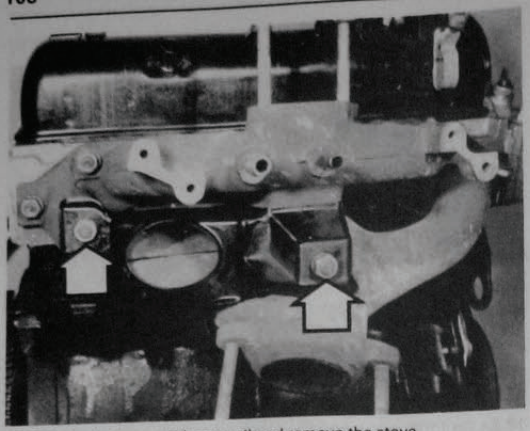
18.3B ... then remove the spacer block and gaskets



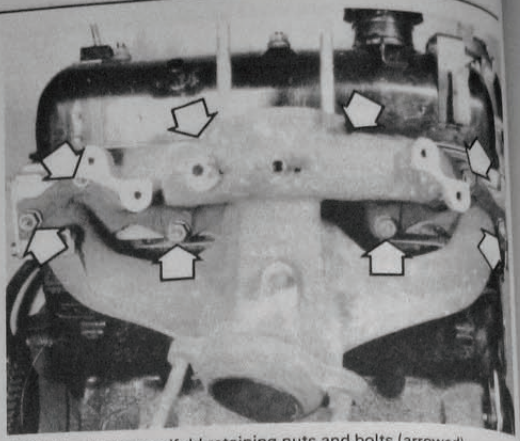
18.4 Undo the two retaining bolts (arrowed) and remove the hot air outlet and air cleaner support bracket



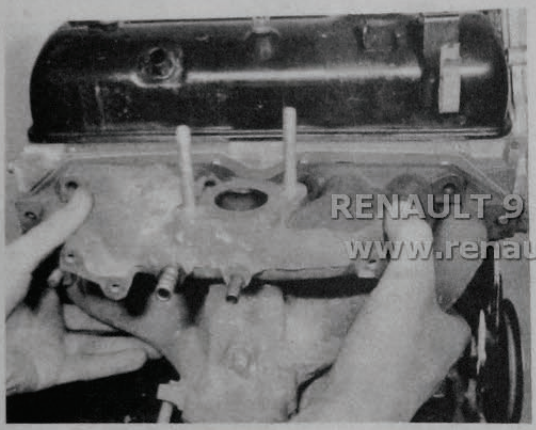
18.5 Undo the two nuts (arrowed) and remove the heat shield



18.7 Undo the two nuts (arrowed) and remove the stove



18.8A Undo the manifold retaining nuts and bolts (arrowed) ...



18.8B ... and withdraw the manifold from the cylinder head

1721 cc engine

10 Remove the carburettor, as described in Section 16.

11 Undo the retaining bolts and lift off the air cleaner support plate above the throttle linkage bellcrank.

12 Undo the nuts securing the heat shield and bellcrank mounting to the manifold and remove the shield.

13 Slacken the retaining clip and detach the brake servo vacuum hose from the manifold.

14 Undo the two nuts, washers and tension springs securing the exhaust front pipe to the manifold. Slide the flange plate off the manifold studs to separate the joint.

15 Undo the three nuts securing the hot air stove to the manifold and remove the stove.

16 Undo the nuts and bolts securing the inlet and exhaust manifolds to the cylinder head and withdraw the assembly from the engine. Recover the manifold gasket.

17 Refitting is the reverse sequence to removal. Ensure that the cylinder head and manifold mating faces are clean and use a new gasket. Tighten the manifold nuts and bolts to the specified torque and tighten the front pipe flange nuts so that the springs are compressed as shown in Fig. 3.29. Refit the carburettor, as described in Section 16.

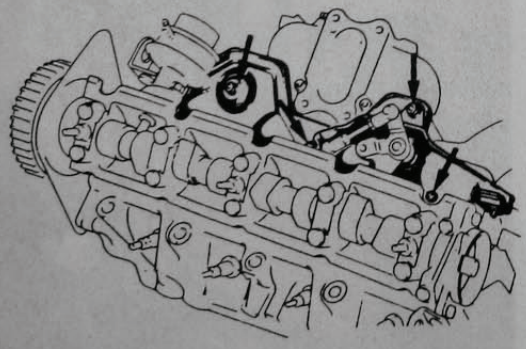


Fig. 3.26 Heat shield and bellcrank mounting attachments (arrowed) at the inlet manifold – 1721 cc engines (Sec 18)

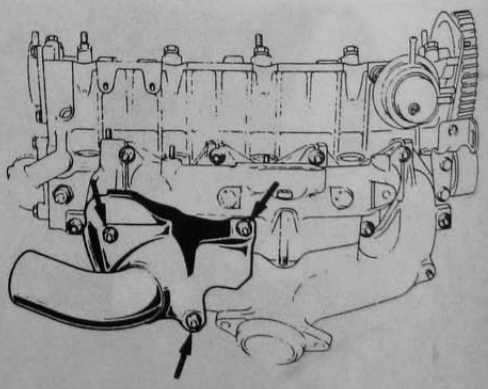


Fig. 3.27 Hot air stove to inlet manifold attachments (arrowed) – 1721 cc engines (Sec 18)

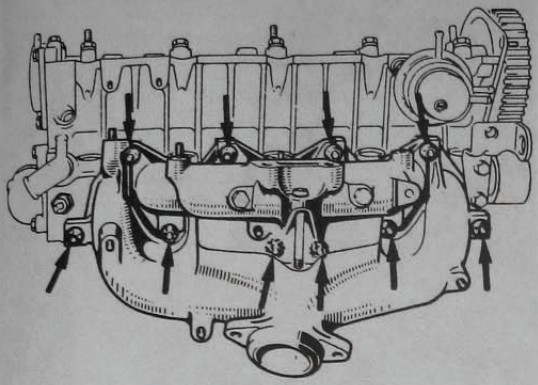


Fig. 3.28 Inlet and exhaust manifold retaining nut locations (arrowed) – 1721 cc engines (Sec 18)

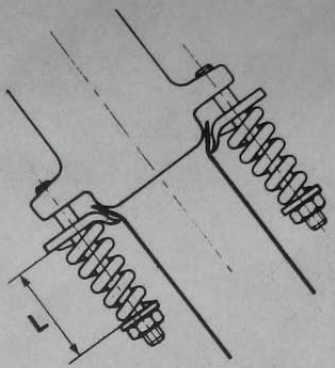


Fig. 3.29 Exhaust front pipe flange tension spring dimension (Sec 19)

L = 43.5 mm (1.7 in)

19 Exhaust system – checking, removal and refitting

1 The exhaust system should be examined for leaks, damage and security at regular intervals (see Routine maintenance). To do this, apply the handbrake and allow the engine to idle. Lie down on each side of the car in turn and check the full length of the exhaust system for leaks while an assistant temporarily places a wad of cloth over the end of the tailpipe. If a leak is evident, stop the engine and use a proprietary repair kit to seal it. Holts Flexiwrap and Holts Gun Gum exhaust repair systems can be used for effective repairs to exhaust pipes and silencer boxes, including ends and bends. Holts Flexiwrap is an MOT approved permanent exhaust repair. Check the rubber mountings for deterioration and renew them if necessary.

2 To remove the system, jack up the front and/or the rear of the car and support it securely on axle stands. Alternatively drive the front or rear wheels up on ramps.

3 The system consists of three sections which can be individually removed. If the intermediate section is to be removed, it will, however, be necessary to remove the front or rear section first.

4 To remove the rear or intermediate sections of the system, unscrew the retaining clamp nut and bolt and tap the clamp clear of the joint (photos).

5 Release the mounting hooks from the rubber mounting blocks and twist the section clear (photos). If the joint is stubborn, liberally apply penetrating oil and leave it to soak. Tap the joint with a hammer and it should now be possible to twist it free. If necessary, carefully heat the joint with a blowlamp to assist removal, but shield the fuel tank, fuel pipes and underbody adequately from heat.

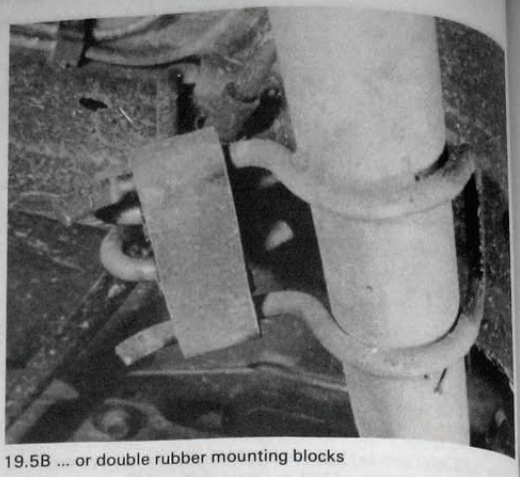
6 To remove the front section, undo the nuts and tension springs securing the front pipe flange to the exhaust manifold. Slide the flange off the manifold studs and separate the joint (photo). Undo the retaining clamp nut and bolt and withdraw the front section forwards, as previously described.

7 Refitting is the reverse sequence to removal. Position the joints so that there is adequate clearance between all parts of the system and the underbody, and ensure that there is equal load on all mounting blocks. When refitting the front section tighten the front pipe flange retaining nuts so that the tension springs are compressed as shown in Fig. 3.29. The springs must not become coil bound.

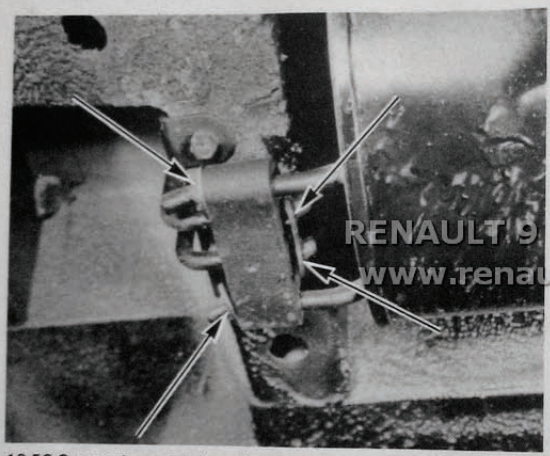
19.4A Exhaust rear section ...

19.4B ... and intermediate section retaining clamps

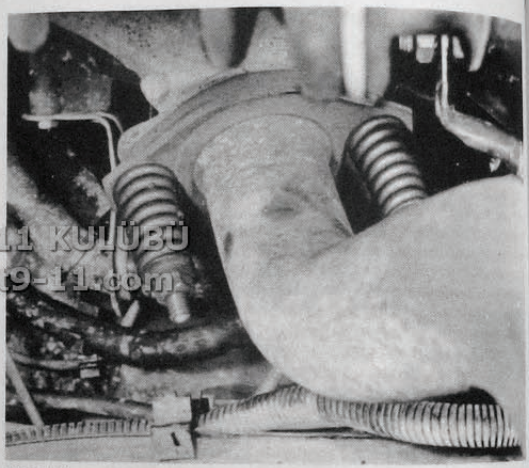
19.5A The exhaust sections are suspended from single ...



19.5B ... or double rubber mounting blocks



19.5C On certain models the spire type retaining clips (arrowed) must be released to allow the section to be removed from the mounting block



19.6 Exhaust front section-to-manifold joint with retaining nuts, washers and tension springs

20 Fault diagnosis – fuel and exhaust systems

Unsatisfactory engine performance and excessive fuel consumption are not necessarily the fault of the fuel system or carburettor. In fact they more commonly occur as a result of ignition and timing faults, particularly on models equipped with conventional contact breaker point ignition systems. Before acting on the following it is necessary to check the ignition system first. Even though a fault may lie in the fuel system it will be difficult to trace unless the ignition system is correct. The faults below, therefore, assume that this has been attended to first (where appropriate).

Symptom	Reason(s)
Engine difficult to start when cold	Choke cable incorrectly adjusted Choke flap not closing Insufficient fuel in float chamber
Engine difficult to start when hot	Choke cable incorrectly adjusted Air cleaner element dirty or choked Insufficient fuel in float chamber Float chamber flooding
Engine will not idle or idles erratically	Air cleaner dirty or choked Choke cable incorrectly adjusted Carburettor idling adjustments incorrectly set Blocked carburettor jets or internal passages Disconnected, perished or leaking crankcase ventilation hoses Air leaks at carburettor or manifold joint faces Generally worn carburettor Engine internal defect
Engine performance poor accompanied by hesitation, missing or cutting out	Blocked carburettor jets or internal passages Accelerator pump faulty or diaphragm punctured Float level low Fuel filter choked Fuel pump faulty or delivery pressure low Fuel tank vent blocked Fuel pipes restricted Air leaks at carburettor or manifold joint faces Engine internal components worn or out of adjustment
Fuel consumption excessive	Choke cable incorrectly adjusted or linkage sticking Air cleaner dirty or choked Fuel leaking from carburettor, fuel pump, fuel tank or fuel pipes Float chamber flooding
Excessive noise or fumes from exhaust system	Leaking pipe or manifold joints Leaking, corroded or damaged silencers or pipe System in contact with body or suspension due to broken mounting