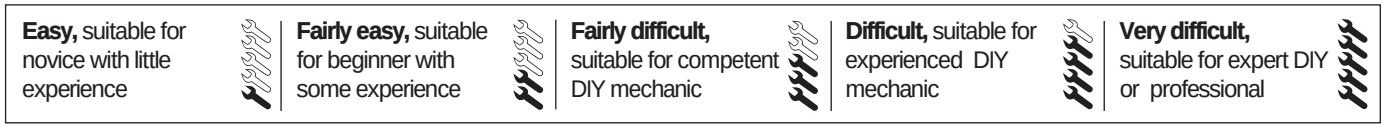
Chapter 4 Part A:
Fuel system - carburettor engines

Contents

Degrees of difficulty



Specifications

General

System type	Rear-mounted fuel tank, mechanical fuel pump, single Weber carburettor

Carburettor

Type	Single or twin choke, downdraught
Application:	
1.0 litre HCS engines	Weber (1V) TLM
1.1 litre HCS engines	Weber (2V) TLDM
1.3 HCS engines	Weber (2V) TLDM
1.4 litre CVH engines	Weber (2V) DFTM
1.6 litre CVH engines	Weber (2V) TLD

Fuel grade

Fuel octane requirement:	
Engines without catalytic converter*	95 RON unleaded or 97 RON leaded
Engines with catalytic converter	95 RON unleaded (leaded fuel must **not** be used)

**Refer to dealer for latest recommendations*

Fuel pump

Delivery pressure	0.24 to 0.38 bars

Carburettor data

Weber (1V) TLM carburettor - 1.0 litre HCS engines

Idle speed and mixture settings	See Chapter 1
Fast-idle speed	3400 ± 100 rpm
Float height	26.0 ± 1.0 mm
Venturi diameter	23 mm
Main jet	110
Air correction jet	220

Weber (2V) TLDM carburettor - 1.1 litre HCS engines

Idle speed and mixture settings	See Chapter 1	
Fast-idle speed:		
Manual transmission	2800 rpm	
CTX automatic transmission	2600 rpm	
Float height	29.0 ± 1.0 mm	
Throttle kicker speed:		
Manual transmission	1250 to 1350 rpm	
CTX automatic transmission	1050 to 1150 rpm	
	Primary	**Secondary**
Venturi diameter	26 mm	28 mm
Main jet:		
Manual transmission	92	122
CTX automatic transmission	92	112
Emulsion tube	F113	F75
Air correction jet	195	155

Weber (2V) TLDM carburettor - 1.3 litre HCS engines

Idle speed and mixture settings	See Chapter 1	
Fast-idle speed	2500 rpm	
Float height	29.0 ± 1.0 mm	
Throttle kicker speed	1900 ± 100 rpm	
	Primary	**Secondary**
Venturi diameter	19 mm	20 mm
Main jet	90	122
Emulsion tube	F113	F75
Air correction jet	185	130

Weber (2V) DFTM carburettor - 1.4 litre CVH engines

Idle speed and mixture settings	See Chapter 1	
Fast-idle speed	2800 ± 100 rpm	
Choke pull-down	2.7 to 3.2 mm	
Float height	8.0 ± 0.5 mm	
Throttle kicker speed:		
Manual transmission	1300 ± 50 rpm	
CTX automatic transmission	1100 ± 50 rpm (in Neutral)	
	Primary	**Secondary**
Venturi diameter	21 mm	23 mm
Main jet	100	125
Air correction jet	210	155
Emulsion tube	F22	F60
Idle jet	42	60

Weber (2V) TLD carburettor - 1.6 litre CVH engines

Idle speed and mixture settings	See Chapter 1	
Fast-idle speed	1800 ± 50 rpm (on third step of fast-idle cam)	
Choke pull-down	4.7 ± 0.5 mm	
Float height	29.0 ± 0.5 mm	
	Primary	**Secondary**
Venturi diameter	21	23
Main jet	117	127
Emulsion tube	F105	F71
Air correction jet	185	125

Torque wrench settings

	Nm	**lbf ft**
Fuel pump	16 to 20	12 to 15
Inlet manifold	16 to 20	12 to 15

1 General information and precautions

General information

The fuel system on all models with carburettor induction comprises a rear-mounted fuel tank, a mechanical diaphragm fuel pump, a carburettor and an air cleaner.

The fuel tank is mounted at the rear, under the floorpan behind the rear seats. The tank has a "ventilation-to-atmosphere system" through a combined roll-over/anti-trickle fill valve assembly, located in the left-hand rear wheel arch. A filler neck sensing pipe, integral with the fuel tank filler pipe, will shut off the petrol pump filler gun when the predetermined maximum level of fuel is reached in the tank, so preventing spillage and wastage. A conventional fuel level sender unit is mounted in the top face of the fuel tank.

One of two fuel pump types will be fitted, depending on the engine type. On HCS engines, the fuel pump is operated by a pivoting rocker arm; one end rests on an eccentric lobe on the engine camshaft, and the other end is attached to the fuel pump diaphragm. The pump fitted to the CVH engine is operated by a separate pushrod, one end rests on an eccentric lobe on the engine camshaft, and the other rests on the pump actuating rod which operates the diaphragm. Both types of mechanical pump incorporate a nylon mesh filter, and are of sealed type (they cannot be serviced or overhauled).

Four different types of Weber carburettor are featured in the range, further details being given in later Sections of this Chapter.

The air cleaner incorporates a "waxstat" controlled air inlet, supplying either hot air from a shroud mounted around the exhaust manifold, or cool air from a duct in the front of the vehicle.

Precautions

Warning: Petrol is extremely flammable - great care must be taken when working on any part of the fuel system. Do not smoke or allow any naked flames or uncovered light bulbs near the work area. Note that gas powered domestic appliances with pilot flames, such as heaters, boilers and tumble dryers, also present a fire hazard - bear this in mind if you are working in an area where such appliances are present. Always keep a suitable fire extinguisher close to the work area and familiarise yourself with its operation before starting work. Wear eye protection when working on fuel systems and wash off any fuel spilt on bare skin immediately with soap and water. Note that fuel vapour is just as dangerous as liquid fuel; a vessel that has just been emptied of liquid fuel will still contain vapour and can be potentially explosive. Petrol is a highly dangerous and volatile liquid, and the precautions necessary when handling it cannot be overstressed.

Many of the operations described in this Chapter involve the disconnection of fuel lines, which may cause an amount of fuel spillage. Before commencing work, refer to the above Warning and the information in "Safety first" at the beginning of this manual.

When working with fuel system components, pay particular attention to cleanliness - dirt entering the fuel system may cause blockages which will lead to poor running.

Certain adjustment points in the fuel system are protected by tamperproof caps, plugs or seals. In some territories, it is an offence to drive a vehicle with broken or missing tamperproof seals. Before disturbing a tamperproof seal, first check that no local or national laws will be broken by doing so, and fit a new tamperproof seal after adjustment is complete, where required by law. Do not break tamperproof seals on any vehicle whilst it is still under warranty.

Carburettors are delicate instruments, and care must be taken not to disturb any components unnecessarily. Before attempting work on a carburettor, ensure that the relevant spares are available; it should be noted that a complete strip down of a carburettor is unlikely to cure a fault which is not immediately obvious, without introducing new problems. If persistent problems occur, it is recommended that the services of a Ford dealer or a carburettor specialist are sought. Most dealers will be able to provide carburettor rejetting and servicing facilities. Where necessary, it may be possible to purchase a reconditioned carburettor.

2 Air cleaner - removal and refitting

Note: *Air cleaner element renewal and air cleaner temperature control system checks are described in Chapter 1.*

Removal

1 Disconnect the battery negative (earth) lead (refer to Chapter 5A, Section 1).

2 On CVH engine models, pull free and release the accelerator cable from the locating clip on the side of the air cleaner.

3 Undo the two (HCS engine) or three (CVH engine) retaining screws, and partially lift the air cleaner from the carburettor so that the hose and wiring connections to the underside of the air cleaner body are accessible **(see illustration)**.

4 Note their connections and routings, then detach the wiring multi-plug and hoses from the underside of the air cleaner **(see illustrations)**. On CVH engines, also disconnect the vacuum hose from the inlet manifold.

5 Lift the air cleaner from the carburettor.

6 If required, the inlet air temperature sensor can be unscrewed and removed from the base of the air cleaner (where fitted).

Refitting

7 Refit in the reverse order of removal. Renew any hoses that are perished or cracked, and ensure that all fittings are securely and correctly reconnected.

2.3 Undoing the air cleaner retaining screws (HCS engine shown)

2.4a Disconnecting the oil separator/ crankcase ventilation hose from the air cleaner (CVH engine shown)

2.4b Disconnecting the intake air temperature sensor multi-plug (CVH engine shown)

3.5a Remove the accelerator outer cable securing clip . . .

3.5b . . . then release from its support bracket

3 Accelerator cable (manual transmission models) - removal, refitting and adjustment

Removal

1 Disconnect the battery negative (earth) lead (refer to Chapter 5A, Section 1).
2 Working inside the vehicle, disconnect the cable from the top of the accelerator pedal, release the grommet and pull the cable free from the pedal. Withdraw the cable through the engine side of the bulkhead.
3 Refer to Section 2 and remove the air cleaner.
4 Detach the inner cable from the carburettor linkage.
5 Prise free the retaining clip, detach the outer cable from the support bracket, and remove the cable **(see illustrations)**.

Refitting and adjustment

6 To refit the cable, feed the inner cable through the bulkhead, and reconnect the inner cable to the accelerator pedal. Note that a plastic sleeve is supplied with new cables for the purpose of routing through the bulkhead panel.
7 Locate the grommet in the bulkhead, then push the outer cable into it to secure it in the bulkhead.
8 Lubricate the cable grommet at the carburettor end with a mild soapy solution, then reconnect the cable to the carburettor. Locate the outer cable by pulling it towards the rocker cover.
9 Have an assistant depress the accelerator pedal fully, and hold it in this position. The outer cable should be seen to move in its grommet. Refit the securing clip to the bracket, then release the accelerator pedal.
10 Depress the accelerator pedal, then release it and check that the throttle opens and shuts fully. Further adjust if necessary before refitting the air cleaner and reconnecting the battery.

4 Accelerator cable (CTX automatic transmission models) - adjustment

The system for operating the throttle-plate in the carburettor on CTX automatic transmission equipped vehicles is completely different to that employed on manual transmission vehicles. The cable from the accelerator pedal leads to a linkage mechanism which is bolted to the transmission housing. Two further cables lead from this linkage mechanism, one of which operates the throttle-plate in the carburettor.

As all three cables have to be adjusted at the same time, and access to a Ford special tool is required, it is recommended that a Ford dealer be entrusted with cable adjustments, or renewal.

6.5a Disconnect the inner cable from the choke linkage

6.5b Choke outer cable retaining clip released

5 Accelerator pedal - removal and refitting

Removal

1 Disconnect the battery negative (earth) lead (refer to Chapter 5A, Section 1).
2 Peel back the carpet and insulation from the driver's footwell to allow access to the accelerator pedal.
3 Detach the accelerator cable from the pedal (see Section 3), then release the circlip from the pivot shaft and remove the accelerator pedal.

Refitting

4 Refit in the reverse order of removal. On completion, check the action of the pedal and the cable to ensure that the throttle has full unrestricted movement, and fully returns when released.
5 Reconnect the battery negative lead.

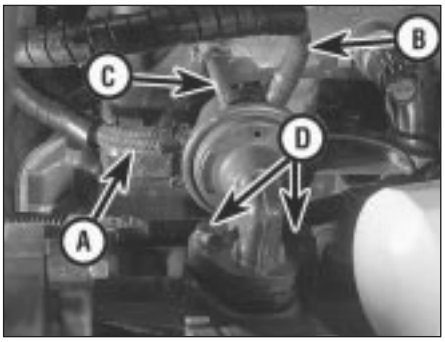
6 Choke cable - removal, refitting and adjustment

Removal

1 Disconnect the battery negative (earth) lead (refer to Chapter 5A, Section 1).
2 Refer to Section 2 and remove the air cleaner.
3 Referring to Chapter 10, Section 20, for further details and illustrations, remove the choke control knob on the side of the steering column shroud by pushing in the pin located on the side of the knob and withdrawing.
4 Detach the steering column lower shroud, disconnect the multi-plug from the choke warning light switch/pull control assembly, and unscrew the collar securing the switch/pull control assembly to the shroud.
5 Disconnect the choke inner cable from its location on the carburettor choke linkage, then release the outer cable retaining clip **(see illustrations)**.
6 Push the bulkhead panel grommet through the bulkhead and remove the cable.

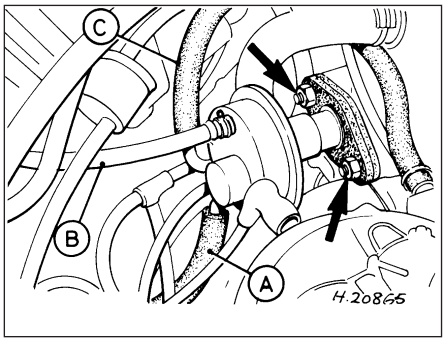
Refitting

7 Route the cable through the bulkhead then secure the bulkhead panel grommet to its location.
8 Reconnect the choke inner cable to its location on the carburettor choke linkage.
9 Refit the choke warning light switch/pull control assembly to the lower steering column shroud and secure with the collar, then reconnect the multi-plug.
10 Refit and secure the lower steering column shroud, then refit the choke control knob.
11 Pull the choke control knob to the fully-on position. Hold the choke in the fully-on



7.1a Fuel pump location on HCS engine (shown from below)

A Fuel inlet hose
B Fuel return hose to tank
C Fuel outlet hose to carburettor
D Pump securing bolts



7.1b Fuel pump assembly fitted to CVH engines (securing nuts arrowed)

A Fuel feed from tank
B Fuel return to tank
C Fuel feed to carburettor

position at the carburettor, then secure the outer cable with its retaining clip.

Adjustment

12 To check that the choke cable is correctly adjusted, the control knob must be pulled out to the full-on position and the choke lever must be in contact with its stop. Adjust as required if necessary.

13 Press the choke knob fully in (to the off position), then check that the choke linkage at the carburettor has fully returned to its off position and the choke valve plate in the carburettor is at a right angle (90º) to the venturi.

14 Refit the air cleaner.

15 Reconnect the battery, turn the ignition on, operate the choke and check that the choke warning light operates correctly.

7 Fuel pump - testing, removal and refitting

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

Testing

1 Access to the fuel pump on HCS engine models is best gained from underneath the vehicle **(see illustrations)**. Apply the handbrake, then raise and support it on axle stands at the front end (see *"Jacking and vehicle support"*).

2 The fuel pump may be tested by disconnecting the fuel feed pipe from the carburettor, and placing the pipe's open end in a suitable container.

3 Detach the multi-plug from the DIS ignition coil, or the LT lead from the negative terminal of the ignition coil, to prevent the engine from firing.

4 Actuate the starter motor. If the fuel pump is in good working order, regular well-defined spurts of fuel should eject from the open end of the disconnected fuel pipe.

5 If this does not occur, and there is fuel in the tank, the pump is defective and must be renewed. The fuel pump is a sealed unit, and cannot be repaired.

Removal

6 Two types of mechanical fuel pump are fitted, the application depending on the engine type. Some models may also be fitted with a fuel vapour separator **(see illustration)**; if this is removed, its hoses should be labelled to avoid the possibility of confusion and incorrect attachment on refitting.

7 To remove the fuel pump, first disconnect the battery negative (earth) lead (refer to Chapter 5A, Section 1).

8 Where applicable, remove the air cleaner to improve access to the fuel pump (see Section 2).

9 Disconnect the fuel hoses from the fuel pump, noting their respective connections for refitting. Where quick-release couplings are used on the fuel hoses, release the protruding locking lugs on each union, by squeezing them together and carefully pulling the coupling apart. Use rag to soak up any spilt fuel. Where the unions are colour-coded, the pipes cannot be confused. Where both unions are the same colour, note carefully which pipe is connected to which, and ensure that they are correctly reconnected on refitting. Plug the hoses to prevent fuel spillage and the ingress of dirt.

10 Unscrew and remove the retaining bolts or nuts (as applicable) and remove the fuel pump.

11 Recover the gasket/spacer **(see illustration)** and if required, withdraw the pump operating pushrod (CVH engines only).

12 Thoroughly clean the mating faces on the pump and engine.

Refitting

13 Refit in the reverse order of removal. Be sure to use a new gasket, and tighten the securing bolts/nuts securely. Ensure that the hoses are correctly and securely reconnected. If they were originally secured with crimped type hose clips, discard them and fit screw type clips. Where quick-release couplings are fitted, press them together until the locking lugs snap into their groove.

14 When the engine is restarted, check the pump connections for any signs of fuel leaks.

7.6 Fuel pump and fuel vapour separator arrangement on HCS engine (shown from below)

7.11 Gasket/spacer fitment on HCS engine. Note position of the lug (arrowed)

8 Fuel tank - removal, inspection and refitting

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

Removal

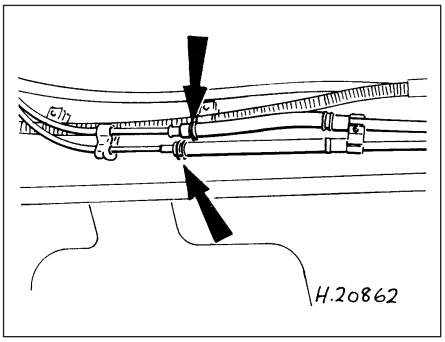
1 Run the fuel level as low as possible prior to removing the tank.

2 Disconnect the battery negative (earth) lead (refer to Chapter 5A, Section 1).

3 Remove the fuel filler cap, then syphon or pump out the remaining fuel from the fuel tank (there is no drain plug). The fuel must be emptied into a suitable container for storage.

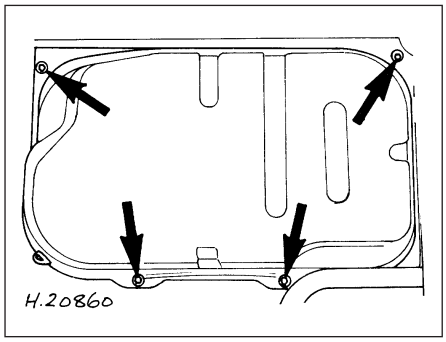
4 Chock the front wheels then jack up the rear of the car and support it on axle stands (see *"Jacking and vehicle support"*). Remove the rear roadwheels.

5 Unclip and disconnect the fuel feed and return hoses located in front of the fuel tank, and allow any residual fuel to drain into a



8.5 Fuel feed and return pipe connections (arrowed)

8.6 Filler neck sensing pipe connection at the rear of the fuel tank



8.7 Fuel tank securing bolts (arrowed)

container which can be sealed **(see illustration)**. Where quick-release couplings are used on the fuel hoses, release the protruding locking lugs on each union, by squeezing them together and carefully pulling the coupling apart. Note that the fuel supply hose couplings are identified by a white colour band and the return hose couplings by a yellow colour band.

6 Disconnect the filler neck sensing pipe connection from the rear of the tank **(see illustration)**.

7 Support beneath the tank to hold it in position and remove its four securing bolts **(see illustration)**.

8 Partially lower the fuel tank and disconnect the ventilation tube from the tank top surface and also disconnect the sender unit multi-plug. The filler pipe should release from its fuel tank seal location as the tank is withdrawn.

Inspection

9 Whilst removed, the fuel tank can be inspected for damage or deterioration. Removal of the sender unit (see Section 9) will allow a partial inspection of the interior. If the tank is contaminated with sediment or water, swill it out with clean petrol. Do not under any circumstances undertake any repairs on a leaking or damaged fuel tank; this work must be carried out by a professional who has experience in this critical and potentially-dangerous work.

10 Whilst the fuel tank is removed from the vehicle, it should not be placed in an area where sparks or open flames could ignite the fumes coming out of the tank. Be especially careful inside garages where a natural-gas type appliance is located, because the pilot light could cause an explosion.

11 Check the condition of the filler pipe seal in the fuel tank, and renew it if necessary.

Refitting

All models

12 Refitting is a reversal of the removal procedure. Apply a light smear of grease to the filler pipe seal, to ease fitting. Ensure that all connections are securely fitted. Where quick-release fuel couplings are fitted, press them together until the locking lugs snap into their groove. If evidence of contamination was found, do not return any previously-drained fuel to the tank unless it is carefully filtered first.

9 Fuel gauge sender unit - removal and refitting

Note: *Ford specify the use of their service tool 23-014 (a large box spanner with projecting teeth to engage the fuel gauge sender unit retaining ring's slots) for this task. While alternatives are possible, in view of the difficulty experienced in removing and refitting the sender unit, owners are strongly advised to obtain the correct tool before starting work. The help of an assistant will be required. Refer to the warning note in Section 1 before proceeding.*

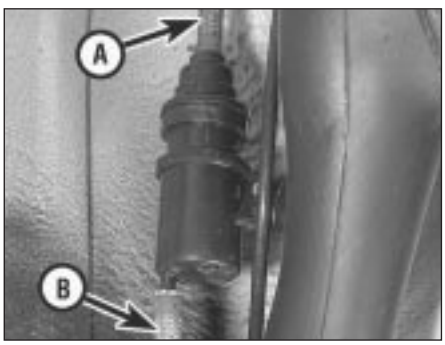
Removal

1 Remove the fuel tank as described in Section 8.

2 Engage the special tool into the sender unit then carefully turn the sender unit and release it from the top of the tank.

Refitting

3 Refit the sender unit in the reverse order of removal. Be sure to fit a new seal, and lubricate it with a smear of grease to prevent it from distorting when fitting the sender unit.



10.1 Combined roll-over anti-trickle-fill valve assembly

A Tube ventilating to atmosphere
B Ventilation tube from fuel tank

10 Fuel tank ventilation tube - removal and refitting

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

Removal

1 The fuel tank ventilation tube runs from the top surface of the fuel tank to the combined roll-over/anti-trickle-fill valve assembly mounted in the left-hand rear wheelarch **(see illustration)**. Its purpose is to eliminate any possibility of vacuum or pressure build-up in the fuel tank.

2 Disconnect the battery negative (earth) lead (refer to Chapter 5A, Section 1).

3 Chock the front wheels then jack up the rear of the car and support it on axle stands (see *"Jacking and vehicle support"*). Remove the left-hand rear roadwheel.

4 Support the fuel tank from underneath on a suitable jack, using a large thick sheet of board to spread the weight, then undo and remove the four fuel tank securing bolts.

5 Lower the fuel tank slightly in such a manner so as to allow access to disconnect the ventilation tube from the tank top surface. Ensure that the fuel tank does not foul or strain any adjacent components as it is lowered; take appropriate action, as necessary.

6 Disconnect the ventilation tube from the combined roll-over/anti-trickle-fill valve, release the tube from its retaining clips and remove.

Refitting

7 Refitting is a reversal of the removal procedure, ensuring that the fuel tank filler pipe is located correctly with the tank.

11 Fuel tank filler pipe - removal and refitting

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

Removal

1 Remove the fuel tank as described in Section 8.

2 Remove the filler cap surround **(see illustration)**.
3 Disconnect the ventilation tube from the combined roll-over/anti-trickle-fill valve, release the ventilation tube from its retaining clips and detach the valve from the vehicle.
4 Remove the filler pipe securing bolt, then twist and withdraw the filler pipe unit.
5 Prior to refitting, check the condition of the filler pipe seal in the fuel tank and renew if necessary.

Refitting

6 Refitting is a reversal of the removal procedure, but apply a light smear of grease to the filler pipe seal to aid filler pipe entry.

12 Carburettor (Weber TLM) - description

The carburettor is of the single (fixed) venturi downdraught type, featuring a fixed size main jet system with a mechanically-operated accelerator pump and vacuum-operated power valve to provide optimum fuelling.

A manually-operated choke system is fitted, featuring a vacuum-operated pull-down mechanism which brings the choke partially off during conditions of high manifold vacuum.

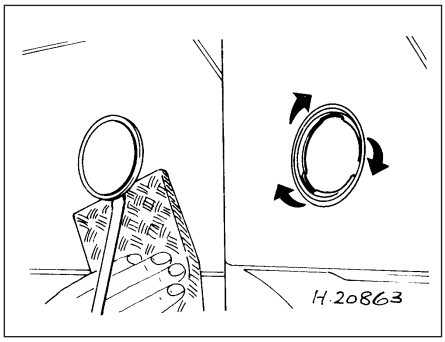
An anti-dieseling (fuel cut-off) solenoid (where fitted) prevents the possibility of engine run-on when the ignition is switched off.

Idle speed and mixture adjustment procedures are described in Chapter 1, but it is important to note that accurate adjustments can only be made using the necessary equipment.

13 Carburettor (Weber TLM) - fast-idle speed adjustment

Note: *Before carrying out any carburettor adjustments, ensure that the spark plug gaps are set as specified, and that all electrical and vacuum connections are secure. To carry out checks and adjustments, an accurate tachometer and an exhaust gas analyser (CO meter) will be required.*

1 Check the idle speed and mixture settings are as specified (as described in Chapter 1). These must be correct before checking/adjusting the fast-idle speed.
2 With the engine at its normal operating temperature, and a tachometer connected in accordance with the manufacturer's instructions, remove the air cleaner (if not already done) as described in Section 2.
3 Actuate the choke by pulling its control knob fully out, then start the engine.
4 Hold the choke plate open using a 5.0 mm twist drill held between the plate and the venturi, and record the fast-idle speed achieved. If adjustment is necessary, turn the fast-idle adjusting screw until the specified speed is obtained **(see illustration)**.
5 Re-check the fast-idle and basic idle speeds.
6 On satisfactory completion of the adjustment, stop the engine, disconnect the tachometer and CO meter then refit the air cleaner.
7 Remove the bridging wire from the radiator cooling fan thermal switch multi-plug, and reconnect the multi-plug to the thermal switch.



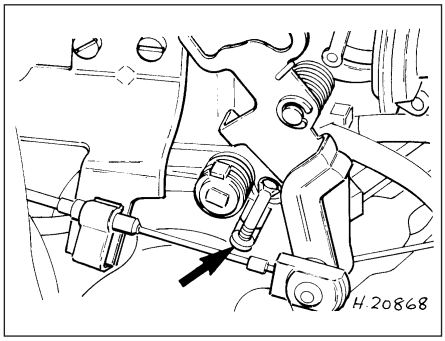
11.2 Removing the filler cap surround

14 Needle valve and float (Weber TLM carburettor) - removal, refitting and adjustment

Note: *Refer to the warning note in Section 1 before proceeding. New gaskets and a washer (seal) will be required when reassembling. A tachometer and an exhaust gas analyser (CO meter) will also be required to check the idle speed and mixture settings on completion.*

Removal and refitting

1 Disconnect the battery negative (earth) lead (refer to Chapter 5A, Section 1).
2 Remove the air cleaner as described in Section 2.
3 Clean the exterior of the carburettor, then disconnect the fuel feed hose.
4 Disconnect the choke cable and the choke vacuum hose.

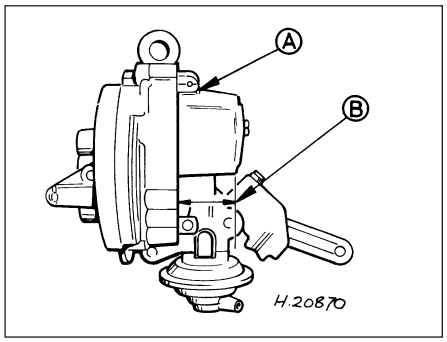


13.4 Fast-idle speed adjusting screw (arrowed) (Weber TLM carburettor)

5 Remove the four screws securing the carburettor upper body (two of these screws are Torx head type), and detach it. Note that the carburettor lower body is now loose on the inlet manifold.
6 Tap out the float retaining pin, remove the float and withdraw the needle valve. Unscrew the needle valve housing, as required, noting washer fitment.
7 Inspect the components for damage and renew as necessary. Check the needle valve for wear, and check the float assembly for leaks by shaking it to see if it contains petrol. Whilst accessible, clean the float chamber and jets (refer to Section 17).
8 Using a new washer, refit the needle valve housing.
9 Refit the needle valve, float and retaining pin, ensuring that the tag on the float engages between the ball and clip on the needle valve.
10 Before refitting the carburettor upper body, check and if necessary adjust the float level as described in paragraph 15 to 18. Also check the float and needle valve for full and free movement.
11 Clean the gasket contact faces (including the inlet manifold) then, using new gaskets for the carburettor upper body and the inlet manifold faces, refit the carburettor upper body and secure the carburettor assembly to the inlet manifold.
12 Reconnect the choke vacuum hose. If the fuel feed hose was originally secured with a crimped type clip, discard this and secure the fuel feed hose with a nut and screw type clip.
13 Reconnect and adjust the choke cable, then refit the air cleaner.
14 Reconnect the battery negative lead, start and warm up the engine then check the idle speed and mixture settings as described in Chapter 1.

Float level adjustment

15 With the carburettor upper body removed as described in paragraphs 1 to 5 inclusive, proceed as follows.
16 Hold the carburettor upper body in the position shown **(see illustration)**, ensuring that the needle valve is shut off. Fit the new upper body gasket to the carburettor upper



14.16 Float level adjustment (Weber TLM carburettor)

A Adjusting tag
B Float level setting dimension

body, then measure the distance between the gasket and the step on the float.
17 If the measurement is not as specified, adjust by bending the tag on the float, then re-check.
18 Refitting should be carried out in accordance with paragraphs 11 to 14 inclusive.

15 Carburettor (Weber TLM) - removal and refitting

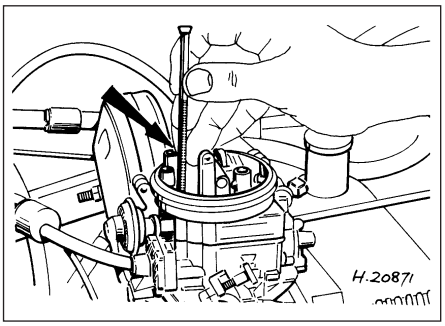
Note: *Refer to the warning note in Section 1 before proceeding. New gaskets will be required when reassembling. A tachometer and an exhaust gas analyser (CO meter) will also be required to check the idle speed and mixture settings on completion.*

Removal

1 Disconnect the battery negative (earth) lead (refer to Chapter 5A, Section 1).
2 Remove the air cleaner as described in Section 2.
3 Disconnect the accelerator inner and outer cable from the carburettor (Section 3).
4 Disconnect the choke inner and outer cable from the carburettor (Section 6).
5 Disconnect the fuel feed hose from the carburettor, and plug its end to avoid spillage and prevent dirt ingress. If a crimped type hose clip is fitted, cut this free taking care to avoid damage to the hose.
6 Where applicable, disconnect the electrical lead from the anti-dieseling (fuel cut-off) solenoid, and all relevant carburettor vacuum pipes (having labelled them for correct subsequent refitting).
7 Remove the two Torx head screws securing the carburettor to the inlet manifold, then withdraw it from the vehicle **(see illustration)**.

Refitting

8 Clean the inlet manifold and carburettor gasket mating faces.
9 Refit in the reverse order of removal. Fit a new gasket, and tighten the retaining screws securely. Ensure that the fuel supply hose connection to the carburettor is securely fitted, using a new screw type retaining clip.
10 Reconnect the accelerator cable, and adjust it as described in Section 3.
11 Reconnect the choke cable, and adjust it as described in Section 6.
12 Refer to Section 2 and refit the air cleaner.
13 When the battery is reconnected, start and warm up the engine then check the idle speed and mixture settings as described in Chapter 1.



15.7 Removing one of the two Torx head screws (arrowed) securing the carburettor to the inlet manifold (Weber TLM carburettor)

16 Accelerator pump diaphragm (Weber TLM carburettor) - removal and refitting

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

Removal

1 Remove the carburettor as described in Section 15 and place it on a clean flat work surface.
2 Remove the accelerator pump cover retaining screws and detach the cover.
3 Withdraw the diaphragm and spring. Check the diaphragm for damage, and renew if evident.

Refitting

4 Clean the carburettor and cover mating faces.
5 Refit the spring and diaphragm to the carburettor, aligning the diaphragm with its cover retaining screw holes. Position the actuating lever on its cam, then carefully press the cover against the diaphragm and secure with its retaining screws.
6 Refit the carburettor as described in Section 15.

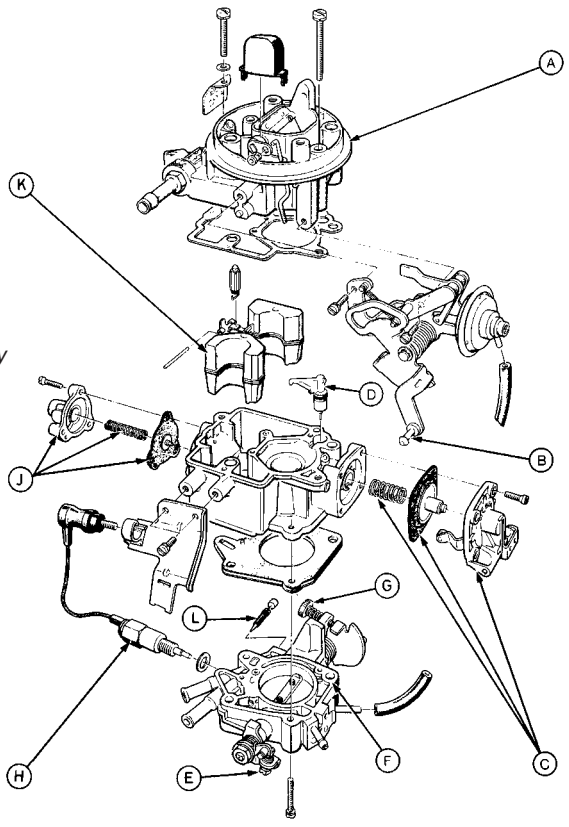
17 Carburettor (Weber TLM) - dismantling, cleaning, inspection and reassembly

Note: *Refer to the warning note in Section 1 before proceeding. Check parts availability before dismantling. If possible, obtain an overhaul kit containing all the relevant gaskets, seals, etc, required for reassembly prior to dismantling the carburettor.*

Dismantling

1 Remove the carburettor as described in Section 15 and place it on a clean flat work surface.
2 Clean the exterior of the carburettor, then undo the two retaining screws and lift off the upper carburettor body **(see illustration)**.
3 Remove the float and needle valve from the carburettor upper body, as described in Section 14.
4 Remove the accelerator pump components

A Upper body
B Choke mechanism
C Accelerator pump assembly
D Accelerator pump discharge tube
E Fast-idle speed adjusting screw
F Throttle housing
G Idle speed adjusting screw
H Anti-dieseling (fuel cut-off) solenoid
J Power valve assembly
K Float
L Idle mixture adjusting screw



17.2 Exploded view of the carburettor (Weber TLM)

as described in Section 16. The power valve assembly can also be removed in a similar fashion.
5 Prise free the accelerator pump discharge tube, but take care not to damage it or the carburettor body.
6 Remove the jets and emulsion tubes as required, making careful notes of their respective locations for reassembly.

Cleaning and inspection

7 Soak out the fuel in the float chamber using a clean rag; this must be safely disposed of. Clean the float chamber, jets, drillings and passages with clean petrol. The careful use of an air line (or footpump) is ideal to blow out the upper and lower bodies. *Never use a piece of wire for cleaning purposes.*
8 Examine all of the carburettor components for signs of damage or wear, paying particular attention to the diaphragms, throttle spindle and plates, and needle valve. Renew all diaphragms, sealing washers and gaskets as a matter of course.

Reassembly

9 Refit the emulsion tubes and jets to their locations as noted during dismantling.
10 Refit the accelerator pump discharge tube.
11 Refit the accelerator pump and power valve assemblies as described in Section 16.
12 Refit the needle valve and the float, and adjust the float setting as described in Section 14.
13 Locate a new gasket onto the mating face, then refit the carburettor upper body to the main body. As they are reassembled, take care not to snag the float on the carburettor main body. Fit and tighten the retaining screws to secure.
14 On completion, refit the carburettor as described in Section 15.

18 Carburettor (Weber TLDM) - description

The carburettor is of twin venturi, downdraught type, featuring a fixed size main jet system, adjustable idle system, a mechanically-operated accelerator pump, and a vacuum-operated power valve. A manually-operated cold start choke is fitted, and a throttle kicker is used on certain models.

In order to comply with emission control regulations and maintain good fuel consumption, the main jets are calibrated to suit the 1/4 to 3/4 throttle range. The power valve is therefore only used to supply additional fuel during full-throttle conditions.

The accelerator pump is fitted to ensure a smooth transmission from the idle circuit to the main jet system. As the accelerator pedal is depressed, a linkage moves the diaphragm within the accelerator pump, and a small quantity of fuel is injected into the venturi, to prevent a momentary weak mixture and resultant engine hesitation.

The manually-operated choke features a vacuum-operated pull-down mechanism which controls the single choke plate under certain vacuum conditions.

On CTX automatic transmission models, the throttle kicker acts as an idle speed compensator for when the transmission shift lever positions R, D or L are selected. The throttle kicker is operated by vacuum supplied from the inlet manifold. When the appropriate transmission shift lever position is selected, the throttle kicker control solenoid allows the vacuum to pass to the throttle kicker which maintains the idle speed by means of a diaphragm and mechanical linkage.

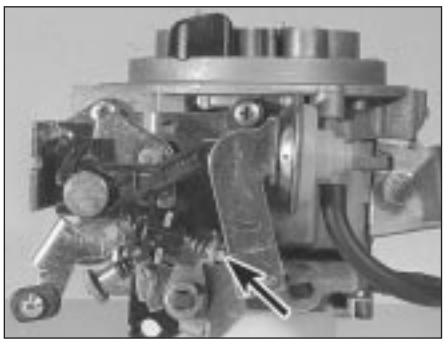
On manual transmission models, the throttle kicker (when fitted) acts as a damper by slowing down the closing action of the throttle plate. Under deceleration, this maintains the combustion of the air/fuel mixture entering the cylinders, thus improving the exhaust emission levels. A vacuum sustain valve controls the carburettor-sourced vacuum applied to the throttle kicker unit; this allows the vacuum slowly to decay, allowing normal engine idling speed to be achieved.

An anti-dieseling (fuel cut-off) solenoid is fitted to prevent the possibility of the engine running on after the ignition is switched off.

Idle speed and mixture adjustment procedures are described in Chapter 1, but it is important to note that accurate adjustments can only be made using the necessary equipment.

19 Carburettor (Weber TLDM) - fast-idle speed adjustment

Note: *Before carrying out any carburettor adjustments, ensure that the spark plug gaps are set as specified, and that all electrical and vacuum connections are secure. To carry out checks and adjustments, an accurate tachometer and an exhaust gas analyser (CO meter) will also be required.*
1 Check the idle speed and mixture settings are as specified (as described in Chapter 1). These must be correct before checking/adjusting the fast-idle speed.
2 With the engine at its normal operating temperature, and a tachometer connected in accordance with the manufacturer's instructions, switch the engine off, then remove the air cleaner (if not already done) as described in Section 2.
3 Actuate the choke by pulling the control knob fully out, then start the engine and note the engine fast-idle speed. Compare it with the specified speed.
4 If adjustment is required, turn the fast-idle adjusting screw clockwise to decrease, or anti-clockwise to increase, the fast-idle speed **(see illustration)**.
5 Recheck the fast-idle and basic idle speeds.
6 On completion of the adjustment, stop the engine, detach the tachometer and CO meter, reconnect the radiator cooling fan lead, and refit the air cleaner.



19.4 Fast-idle speed adjusting screw (arrowed) (Weber TLDM carburettor)

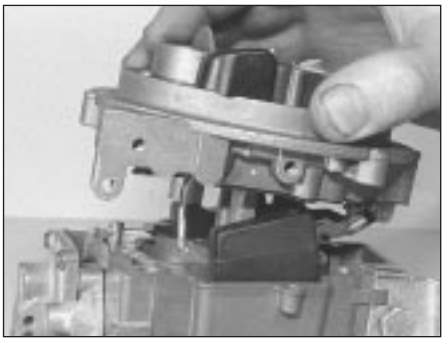
20 Needle valve and float (Weber TLDM carburettor) - removal, refitting and adjustment

Note: *Refer to the warning note in Section 1 before proceeding. New gaskets and a washer (seal) will be required when reassembling. A tachometer and an exhaust gas analyser (CO meter) will also be required to check the idle speed and mixture settings on completion.*

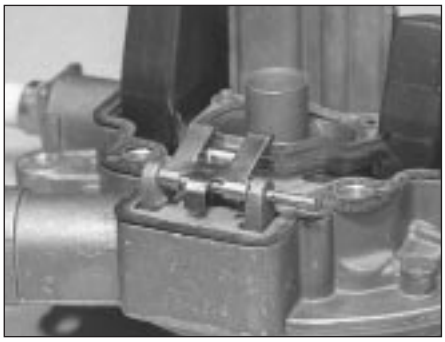
Removal and refitting

1 Disconnect the battery negative (earth) lead (refer to Chapter 5A, Section 1).
2 Remove the air cleaner as described in Section 2.
3 Clean the exterior of the carburettor, then disconnect the fuel supply hose and the anti-dieseling solenoid wiring.
4 Disconnect the choke control cable.
5 Undo and remove the six retaining screws (four of which are Torx type) and carefully lift the carburettor upper body clear **(see illustrations)**.
6 Invert and support the upper body of the carburettor for access to the float and pivot.

20.5a Remove the carburettor upper body securing screws . . .



20.5b . . . then detach the carburettor upper body



20.6a Slide out the float retaining pin . . .

20.6b . . . then detach the float and needle valve

Lightly tap out the float pivot pin, then withdraw the float, taking care not to distort the arms of the float **(see illustrations)**.

7 Unscrew the needle valve housing, and extract it from the carburettor upper body. Collect the washer from the threads of the needle valve housing.

8 Clean and inspect the components for signs of damage or wear, particularly the pivot holes in the float arm. Check the float for signs of leakage, by shaking it to see if it contains fuel. Clean the float chamber and jets (refer to Section 24 for details). Renew any components as necessary.

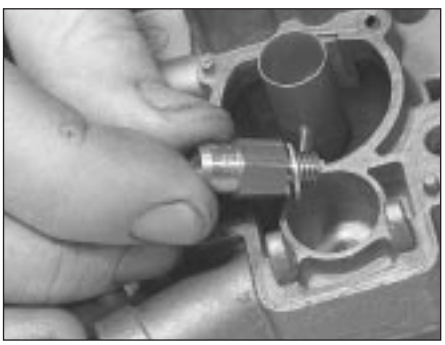
9 Fit a new washer over the needle valve housing threads, and then carefully screw the valve unit into position in the upper body.

10 Refit the needle valve, float and retaining pin, ensuring that the tag on the float engages with the ball and clip of the needle valve.

11 Before refitting the upper body to the carburettor, check and if necessary adjust the float level as described in paragraphs 16 to 18. Also check the float and needle valve for free movement.

12 Clean the gasket contact faces, then locate a new gasket and refit the upper body to the carburettor.

13 Reconnect the fuel supply hose, anti-dieseling solenoid wiring and the choke cable. Adjust the choke cable as described in Section 6. If the fuel hose was originally secured with a crimped type clip, discard it and fit a screw type clip.



20.6c Remove the needle valve housing and its washer

14 Refit the air cleaner as described in Section 2.

15 Reconnect the battery earth lead, then restart the engine and check the idle speed and mixture settings. Adjust if necessary as described in Chapter 1.

Float level adjustment

16 With the carburettor upper body removed as described in paragraphs 1 to 5 inclusive, proceed as follows.

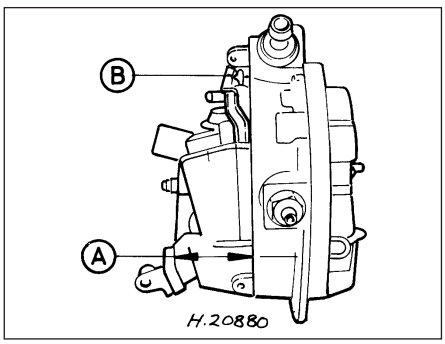
17 Support the carburettor upper body vertically, ensuring that the needle valve is shut off. Locate the new upper body gasket onto the carburettor upper body, then measure the distance between the gasket and the bottom of the float **(see illustration)**.

18 If the measurement is not as specified, adjust the setting by carefully bending the tag on the float as required, then recheck.

19 Refit with reference to paragraphs 12 to 15 inclusive.

21 Throttle kicker unit (Weber TLDM carburettor) - removal, refitting and adjustment

Note: *A tachometer and exhaust gas analyser (CO meter) will be required to check and make any adjustment necessary.*



20.17 Float level adjustment (Weber TLDM carburettor)

A Float level setting dimension
B Adjusting tag

Removal and refitting

1 Disconnect the battery negative (earth) lead (refer to Chapter 5A, Section 1).

2 Refer to Section 2 and remove the air cleaner.

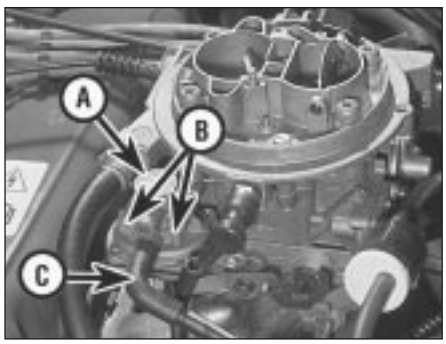
3 Detach the vacuum hose from the kicker unit. Undo the two retaining screws, detach the linkage and remove the kicker unit **(see illustration)**.

4 Refitting the kicker unit is a reversal of the removal procedure. If the unit is to be checked for adjustment, loosely locate the air cleaner, reconnect the inlet air temperature sensor multi-plug and the battery earth lead, then proceed as follows.

Adjustment

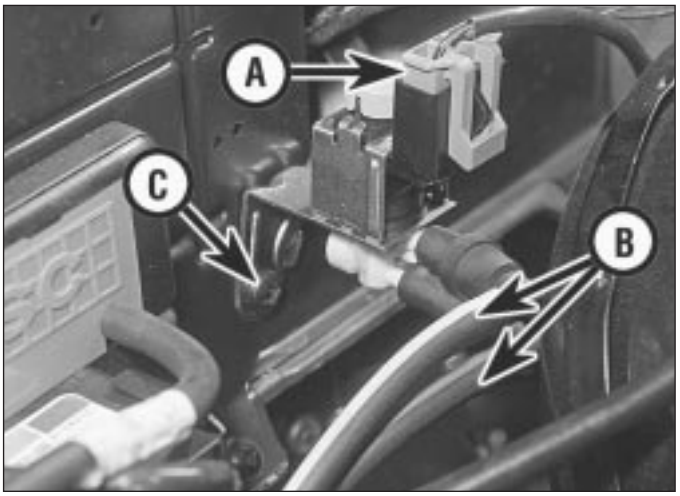
5 Start and run the engine up to its normal operating temperature (at which point the cooling fan will start to operate) then switch the engine off.

6 Remove the air cleaner again, then detach the wiring connector of the cooling fan thermostatic switch. Bridge the terminals in the connector with a suitable piece of wire to actuate the cooling fan and keep it running. Start the engine and run it at 3000 rpm for 30 seconds to stabilise it, then release the throttle and check (and if necessary adjust) the idle speed and mixture settings as described in Chapter 1. Stop the engine.



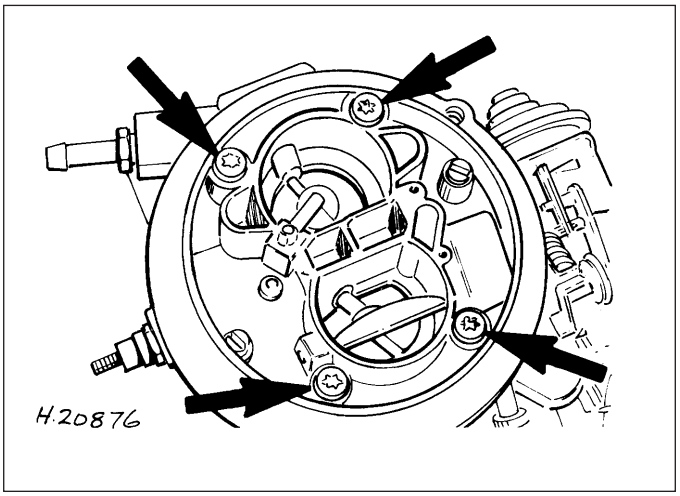
21.3 General view of throttle kicker arrangement (Weber TLDM carburettor)

A Tamperproof plug covering adjusting point
B Throttle kicker securing screws
C Vacuum supply pipe



22.2 Throttle kicker control solenoid

A Multi-plug B Vacuum pipes C Securing screw



23.7 Four Torx head screws (arrowed) secure the carburettor to the inlet manifold (Weber TLDM carburettor)

7 Detach the vacuum hose between the throttle kicker and the inlet manifold at source (but not the vacuum supply to the ignition module). Connect a new length of vacuum hose directly between the manifold and the kicker unit.

8 Restart the engine and check the engine speed. The throttle kicker should increase the engine speed above its normal idle. Check the speed registered against the specified throttle kicker operating speed.

9 If required, the throttle kicker speed can be adjusted by prising free the tamperproof plug and the adjustment screw turned as necessary **(see illustration 21.3)**.

10 When the adjustment is complete, stop the engine, fit a new tamperproof plug, disconnect the temporary vacuum hose (between the manifold and the kicker unit) and reconnect the original hose (between the carburettor and the kicker unit).

11 Remove the bridging wire, and reconnect the cooling fan thermostatic switch multi-plug. Refit and secure the air cleaner, and disconnect the tachometer and CO meter to complete.

22 Throttle kicker control solenoid (Weber TLDM carburettor) - removal and refitting

Removal

1 Disconnect the battery negative (earth) lead (refer to Chapter 5A, Section 1).

2 Disconnect the multi-plug from the solenoid **(see illustration)**.

3 Remove both vacuum pipes, having labelled them for correct subsequent refitting.

4 Remove the screw securing the solenoid and mounting bracket assembly to the bulkhead panel, then withdraw the assembly from the vehicle.

Refitting

5 Refitting is a reversal of the removal procedure, ensuring that the locating lug snaps into position and that the vacuum pipes are connected to their correct terminals.

23 Carburettor (Weber TLDM) - removal and refitting

Note: *Refer to the warning note in Section 1 before proceeding. New gaskets will be required on refitting, and a tachometer and an exhaust gas analyser will be required on completion.*

Removal

1 Disconnect the battery negative (earth) lead (refer to Chapter 5A, Section 1).

2 Remove the air cleaner as described in Section 2.

3 Disconnect the accelerator cable from the carburettor (Section 3).

4 Disconnect the choke cable from the carburettor (Section 6).

5 Disconnect the fuel hose from the carburettor, and plug its end to prevent fuel spillage and the ingress of dirt. If a crimped type hose clip is fitted, cut it free, but take care not to damage the hose. Crimped clips must be discarded and replaced with screw type clips during refitting.

6 Disconnect the wiring from the anti-dieseling solenoid.

7 Unscrew and remove the four carburettor-to-manifold retaining Torx head screws, then carefully lift the carburettor from the manifold **(see illustration)**.

Refitting

8 Clean the carburettor and manifold gasket mating faces.

9 Refit in the reverse order of removal. Fit a new gasket, and tighten the retaining screws securely. Ensure that the fuel supply hose connection to the carburettor is securely fitted, using a new screw type retaining clip.

10 Reconnect the accelerator cable, and adjust it as described in Section 3.

11 Reconnect the choke cable, and adjust it as described in Section 6.

12 Refer to Section 2 and refit the air cleaner.

13 When the battery is reconnected, start and warm up the engine then check the idle speed and mixture settings as described in Chapter 1.

24 Carburettor (Weber TLDM) - dismantling, cleaning, inspection and reassembly

Note: *Refer to the warning note in Section 1 before proceeding. Check parts availability before dismantling. If possible, obtain an overhaul kit containing all the relevant gaskets, seals, etc, required for reassembly prior to dismantling the carburettor.*

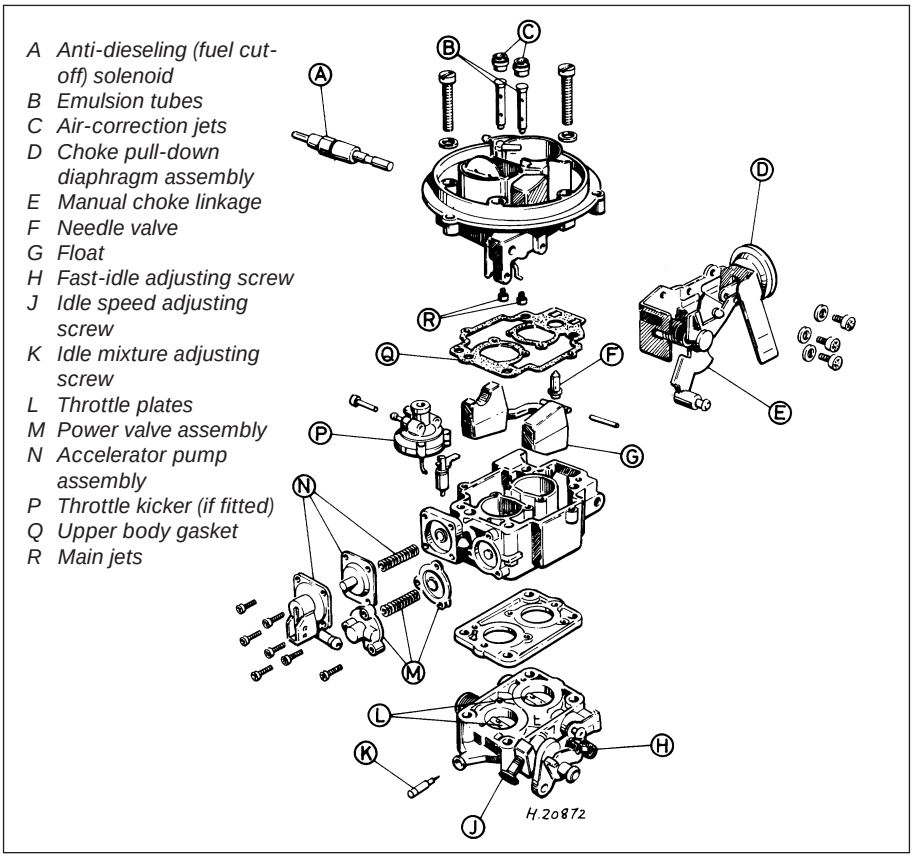
Dismantling

1 With the carburettor removed from the vehicle, prepare a clean, flat work surface prior to commencing dismantling. The following procedures may be used for partial or complete dismantling, as required.

2 Clean the exterior of the carburettor, then undo the two retaining screws and lift the upper carburettor body from the lower section **(see illustration overleaf)**.

3 Remove the float and needle valve from the carburettor upper body, as described in Section 20.

4 Unscrew and remove the anti-dieseling solenoid from the upper body, but ensure that



24.2 Exploded view of the carburettor (Weber TLDM)

the seal washer is removed together with the valve **(see illustration)**.

5 Undo the three screws securing the choke mechanism, and detach it **(see illustration)**.

6 Unscrew and remove the two air correction jets from the underside of the upper body. Note the size and location of each, to ensure correct refitting.

7 Invert the upper body so that the emulsion tubes can fall out of their apertures (above the air correction jets). Remove the emulsion tubes from their locations, again having noted the size and location of each.

8 Unscrew and remove the main jets, again having noted their fitted positions.

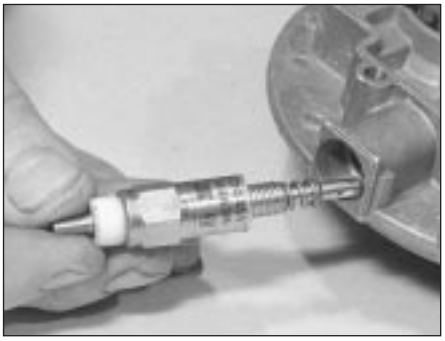
9 Dismantle the carburettor lower (main) body as follows.

10 Prise free the accelerator pump discharge tube, but take care not to damage it or the carburettor body **(see illustration)**.

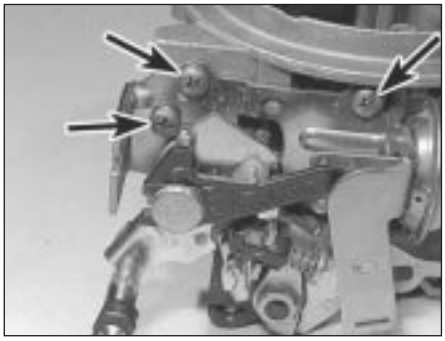
11 Undo the four screws securing the accelerator pump; remove the cover, followed by the diaphragm and return spring **(see illustrations)**. The valve should come out on the end of the return spring. Check that the valve is complete and with its O-ring seal (where applicable).

12 Undo the three retaining screws, and remove the power valve unit. Remove the cover and return spring, followed by the diaphragm.

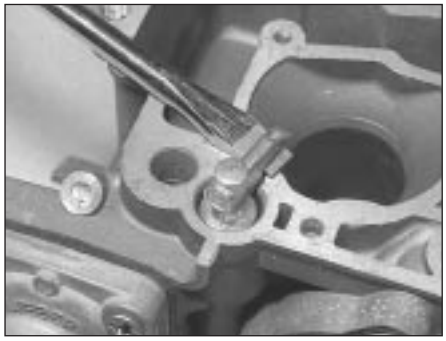
13 Where fitted, undo the retaining screws and remove the throttle kicker unit from the lower (main) body.



24.4 Withdrawing the anti-dieseling (fuel cut-off) solenoid

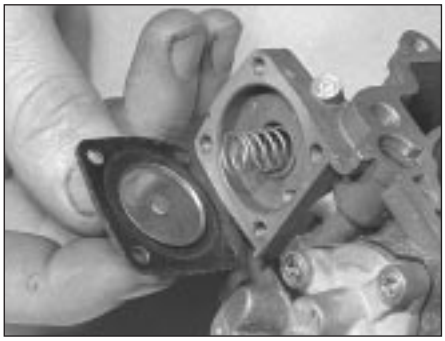


24.5 Undo the three screws securing the choke mechanism (arrowed)



24.10 Carefully prising out the accelerator pump discharge tube assembly

24.11a Remove the accelerator pump cover . . .



24.11b . . . followed by its diaphragm . . .

24.11c . . . and the return spring and valve assembly

14 Prise free and remove the tamperproof seal, then unscrew and remove the idle mixture adjustment screw.
15 Undo the retaining screws, and remove the throttle housing from the carburettor main body.

Cleaning and inspection

16 Wash the carburettor components, drillings and passages with clean petrol, then blow them dry using a low-pressure air line. A high-pressure air line must not be applied to the accelerator pump discharge assembly or the pump supply valve, as they each contain a rubber Vernay valve, and these can easily be damaged under high pressure. *Never use a piece of wire for cleaning purposes.*
17 Examine all of the carburettor components for signs of damage or wear, paying particular attention to the diaphragms, throttle spindle and plates, needle valve and mixture screw; the power valve jet is adjacent to the primary main jet. Renew all diaphragms, sealing washers and gaskets as a matter of course.

Reassembly

18 Refit the throttle housing to the carburettor main body (fitting a new gasket), and secure with its retaining screws.
19 Refit the idle mixture adjustment screw. Make an initial adjustment by screwing it fully in (but do not overtighten or screw it onto its seat), then unscrew it two full turns.
20 Where fitted, reassemble the throttle kicker, ensuring that its diaphragm lies flat, and that the relative position of the operating link to the kicker cover is correct.
21 Fit the power valve, ensuring that its diaphragm lies flat and the vacuum gallery aligns with the diaphragm and housing.
22 Refit the accelerator pump. Take care not damage the valve as it is inserted, and check that the O-ring seal is correctly located on the end of the valve. Check that the valve is not trapped by the spring.
23 Refit the accelerator pump discharge jet. Take care not to damage the valve and/or the O-ring seal, and ensure that they are correctly located.
24 Commence reassembly of the upper body by inserting the emulsion tubes and the air correction jets into their respective ports (as noted during removal).
25 Screw the anti-dieseling solenoid into position. Ensure that the aluminium washer is fitted, and take care not to overtighten the valve.
26 Refit the needle valve and the float, and adjust the float setting as described in Section 20.
27 Refit the choke control mechanism, and secure with its three retaining screws.
28 Locate a new gasket onto the mating face, then refit the carburettor upper body to the main body. As they are reassembled, take care not to snag the float on the carburettor main body. Fit and tighten the retaining screws to secure.
29 On completion, refit the carburettor as described in Section 23. Where applicable, check and adjust the throttle kicker setting (Section 21) after adjusting the idle speed and mixture settings.

25 Carburettor (Weber DFTM) - description

The carburettor operates in essentially the same manner as TLDM instrument described in Section 18, but the following features should be noted.

A throttle kicker is fitted to both manual transmission, and CTX automatic transmission models, the operation of the unit is described in Section 18.

The secondary venturi (barrel) is vacuum-operated on manual transmission models. On CTX automatic transmission equipped models it is operated sequentially.

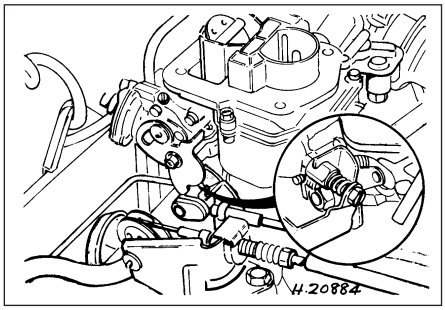
A bleed back solenoid (if fitted) is used to control the amount of fuel being delivered to the venturi by the action of the accelerator pump.

Idle speed and mixture adjustment procedures are described in Chapter 1, but it is important to note that accurate adjustments can only be made using the necessary equipment.

26 Carburettor (Weber DFTM) - fast-idle speed adjustment

Refer to the procedure contained in Section 19, but note the following points:

a) When removing the air cleaner, do not disconnect the vacuum supply or crankcase ventilation hoses; the air cleaner should be positioned clear of the carburettor assembly.
b) The fast-idle adjusting screw is located on the side of the linkage ***(see illustration)****.*



26.1 Manual choke fast-idle adjustment. Inset shows fast-idle adjusting screw (Weber DFTM carburettor)

27 Throttle kicker unit (Weber DFTM carburettor) - removal, refitting and adjustment

Refer to the procedure contained in Section 21.

28 Carburettor (Weber DFTM) - removal and refitting

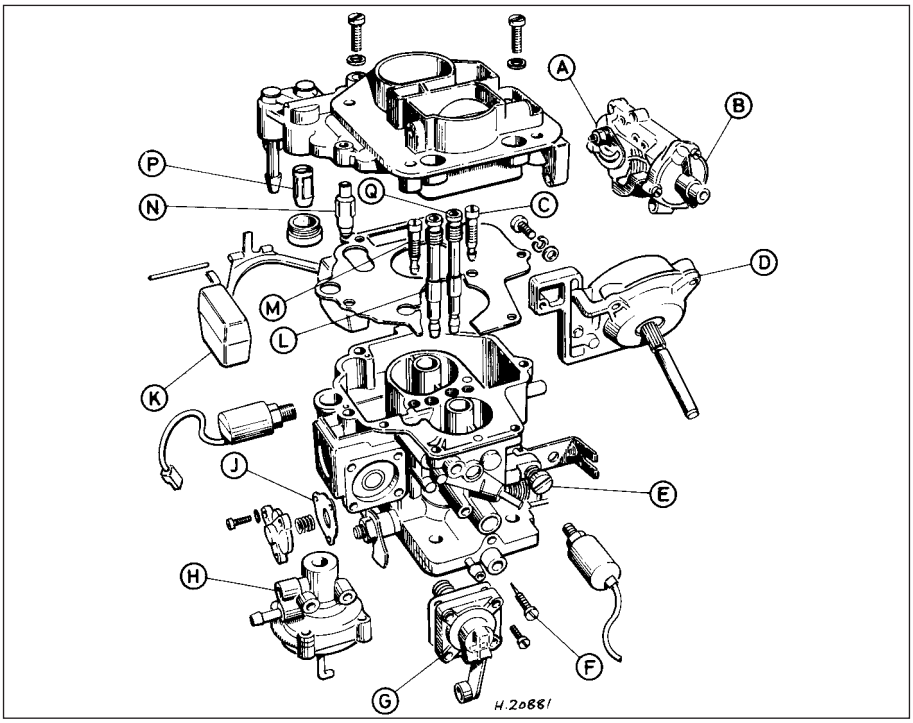
Note: *Refer to the warning note in Section 1 before proceeding. New gaskets will be required on refitting, and a tachometer and an exhaust gas analyser will be required on completion.*

Removal

1 Disconnect the battery negative (earth) lead (refer to Chapter 5A, Section 1).
2 Remove the air cleaner as described in Section 2.
3 Disconnect the choke cable from the carburettor (Section 6).
4 Carefully prise out the accelerator link retaining clip, remove both securing bolts, then detach the cable and bracket assembly. Position the cable and bracket assembly clear of the carburettor.
5 Disconnect the fuel feed hose at the carburettor, and plug its end to avoid spillage and prevent dirt ingress. If a crimped type hose clip is fitted, cut this free taking care not to damage the hose.
6 Disconnect all relevant vacuum pipes from the carburettor, having labelled them for subsequent refitting.
7 Disconnect the electrical lead from the anti-dieseling (fuel cut-off) solenoid, and the bleed back solenoid (if fitted).
8 Remove the four nuts securing the carburettor to the inlet manifold, then withdraw it from the vehicle.

Refitting

9 Clean the carburettor and manifold gasket mating faces.
10 Refit in the reverse order of removal. Fit a new gasket, and tighten the retaining screws securely. Ensure that the fuel supply hose connection to the carburettor is securely fitted, using a new screw type retaining clip.
11 Reconnect the choke cable, and adjust it as described in Section 6.
12 Refer to Section 2 and refit the air cleaner.
13 When the battery is reconnected, start and warm up the engine then check the idle speed and mixture settings as described in Chapter 1.



29.3 Exploded view of the carburettor (Weber DFTM)

A Manual choke assembly
B Choke vacuum pull-down
C Secondary idle jet
D Secondary barrel diaphragm assembly
E Idle speed adjusting screw
F Idle mixture adjusting screw
G Accelerator pump assembly
H Throttle kicker
J Power valve diaphragm
K Float
L Primary main jet combined assembly
M Primary idle jet
N Needle valve
P Fuel feed filter
Q Secondary main jet combined assembly

29 Carburettor (Weber DFTM) - dismantling, cleaning, inspection and reassembly

Note: *Refer to the warning note in Section 1 before proceeding. Check parts availability before dismantling. If possible, obtain an overhaul kit containing all the relevant gaskets, seals, etc, required for reassembly prior to dismantling the carburettor.*

Dismantling

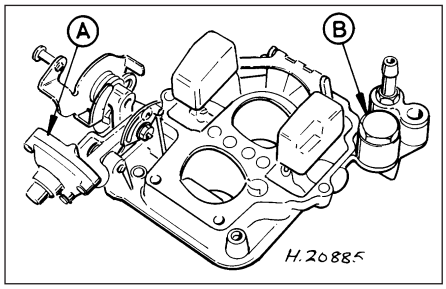
1 With the carburettor removed from the vehicle, prepare a clean, flat work surface prior to commencing dismantling. The following procedures may be used for partial or complete dismantling, as required.

2 Clean the exterior of the carburettor and detach all vacuum pipes (where applicable), having noted their fitted location for correct subsequent reassembly.

3 Remove the six screws securing the carburettor upper body, and detach it. Discard the gasket **(see illustration)**.

4 Dismantle the carburettor upper body as described in the following paragraphs.

5 Remove the three screws securing the choke pull-down diaphragm and detach it **(see illustration)**.



29.5 Choke pull-down assembly (A) and fuel feed filter housing (B) (Weber DFTM carburettor)

6 Unscrew the brass nut adjacent to the fuel feed connection, and remove the fuel feed filter.

7 Tap out the float retaining pin, then detach the float and needle valve.

8 Unscrew and remove the needle valve housing.

9 Dismantle the carburettor main body as described in the following paragraphs.

10 Remove the main and idle jets, having noted the size and fitted location of each one to ensure correct subsequent reassembly. Note that the main jets are a combined assembly incorporating air correction jets and emulsion tubes. Carefully prise out the accelerator pump discharge tube.

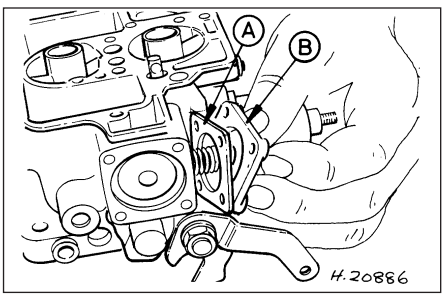
11 Detach the throttle kicker and its mounting bracket assembly.

12 Remove the anti-dieseling (fuel cut-off) solenoid.

13 Remove the four screws securing the accelerator pump assembly, and dismantle the assembly noting the fitment of its components **(see illustration)**.

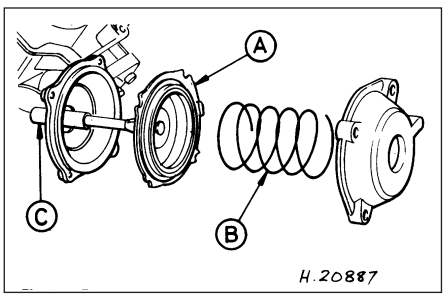
14 Disconnect the secondary barrel diaphragm operating rod by pulling the lower section of rod downwards and twisting to release it from its retaining socket. Remove its four cover retaining screws and dismantle the assembly **(see illustration)**.

15 Undo the three screws securing the power valve assembly and remove its diaphragm **(see illustration)**.



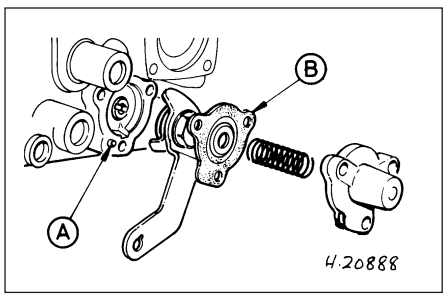
29.13 Accelerator pump renewal (Weber DFTM carburettor)

A Diaphragm B Housing (cover)



29.14 Exploded view of the secondary barrel diaphragm assembly

A Diaphragm C Operating rod
B Return spring



29.15 Exploded view of the power valve assembly (Weber DFTM carburettor)

A Vacuum gallery B Diaphragm

16 Prise out the tamperproof seal covering the fuel mixture screw, then undo and remove the mixture screw.

Cleaning and inspection

17 Wash the carburettor components, drillings and passages with clean petrol, then blow them dry using a low-pressure air line. A high-pressure air line must not be applied to the accelerator pump discharge assembly or the pump supply valve, as they each contain a rubber Vernay valve, and these can easily be damaged under high pressure. *Never use a piece of wire for cleaning purposes.*

18 Examine all of the carburettor components for signs of damage or wear, paying particular attention to the diaphragms, throttle spindle and plates, needle valve and mixture screw; the power valve jet is adjacent to the primary main jet. Renew all diaphragms, sealing washers and gaskets as a matter of course.

Reassembly

19 Refit the fuel mixture screw by fully winding the screw in, then unwinding three turns to give an approximate setting.

20 Refit the power valve assembly ensuring that the diaphragm lies flat, and that the vacuum gallery lines up correctly with the diaphragm and housing.

21 Reassemble the secondary barrel diaphragm into its housing, ensuring that the diaphragm lies flat and that the vacuum gallery lines up with the diaphragm and housing. Also, to assist with installation, do not reconnect its operating rod until the cover has been secured.

22 Refit the throttle kicker mounting bracket.

23 Refit the anti-dieseling (fuel cut-off) solenoid, using a new sealing washer.

24 Refit the accelerator pump assembly, ensuring that the diaphragm lies flat and is not kinked.

25 Reassemble the throttle kicker, ensuring that the diaphragm lies flat and that the relative position of the diaphragm operating link to the throttle kicker cover is correct. Fully attach the throttle kicker assembly.

26 Refit the main and idle jets, making reference to the notes taken during dismantling to ensure correct fitted locations.

27 Reassemble the carburettor upper body as described in the following paragraphs.

28 Refit the needle valve housing (using a new washer if applicable).

29 Refit the needle valve and float assembly, having ensured that the float tag locates below the spring clip on the needle valve. Insert the float retaining pin to secure.

30 Adjust the float level as follows. Ensuring that a new gasket is fitted to the carburettor upper body, hold the upper body in the vertical position; the needle valve must be shut off. Measure the distance shown **(see illustration)**, and adjust by bending the float tag if the measurement is outside the specification. Recheck the float level adjustment after bending the float tag, as necessary.

31 Refit the choke pull-down diaphragm, ensuring that the diaphragm lies flat and that the vacuum gallery lines up correctly with the diaphragm and housing **(see illustration)**.

32 Adjust the choke pull-down as follows. Fully close the choke, then manually push the diaphragm operating rod up to its stop; measure the distance between the downdraught side of the choke plate and the venturi, using a gauge rod or the shank of a twist drill bit (of known size). If the measurement is outside specification, remove the tamperproof seal from the housing, and adjust the now revealed adjustment screw accordingly. Fit a new tamperproof seal after successful adjustment.

33 Refit the fuel feed filter, and secure with its brass nut and sealing washer.

34 Refit the carburettor upper body to the carburettor main body, ensuring that its new gasket seats correctly and that the float does not foul during assembly. Insert and tighten the securing screws.

35 Reconnect any vacuum pipes removed during dismantling (where applicable).

36 On completion, refit the carburettor as described in Section 28. Where applicable, check and adjust the throttle kicker setting (Section 27) after adjusting the idle speed and mixture settings.

30 Carburettor (Weber TLD) - description

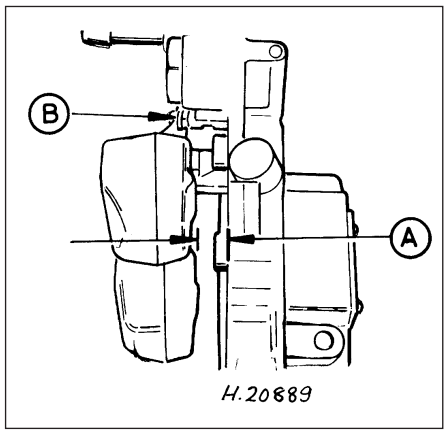
This carburettor incorporates many of the features of the TLDM type described in Section 18. The main differences are that a throttle kicker is not used, the secondary venturi (barrel) is vacuum-operated, and that a coolant-heated automatic choke control system is fitted.

The choke system is fully automatic. When the engine is cold, the bi-metal spring which controls the position of the choke plate is fully wound up, and holds the plate closed. As the engine warms up, the bi-metal spring is heated by the coolant and begins to unwind, thereby progressively opening the choke plate. A vacuum-operated pull-down mechanism controls the choke plate under certain operating conditions, and an internal fast-idle system is incorporated.

Idle speed and mixture adjustment procedures are described in Chapter 1, but it is important to note that accurate adjustments can only be made using the necessary equipment.

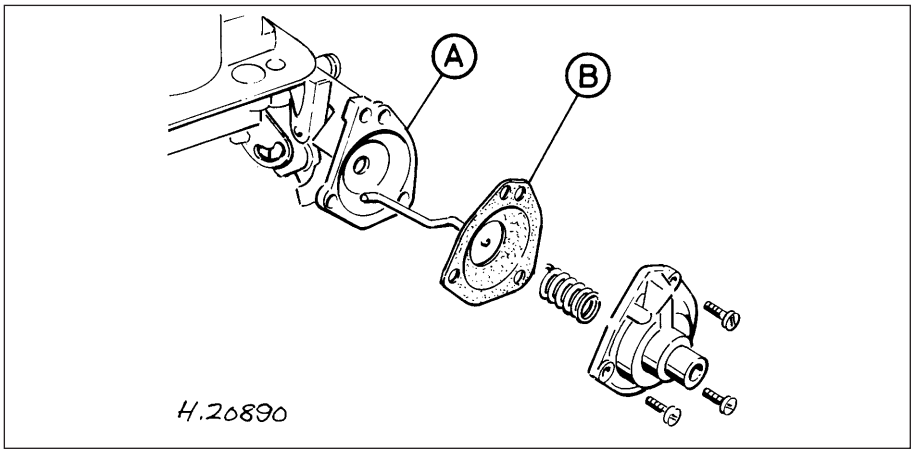
31 Carburettor (Weber TLD) - fast-idle speed adjustment

Note: *Before carrying out any carburettor adjustments, ensure that the spark plug gaps are set as specified, and that all electrical and vacuum connections are secure. To carry out checks and adjustments, an accurate*



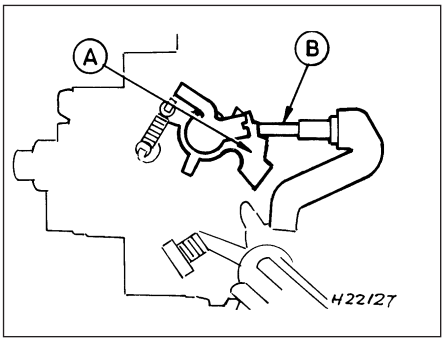
29.30 Float level adjustment (Weber DFTM carburettor)

A Float level setting dimension
B Adjusting tag



29.31 Exploded view of the choke pull-down assembly (Weber DFTM carburettor)

A Housing B Diaphragm



31.3 Fast-idle speed adjustment (Weber TLD carburettor) (Housing cut away for illustration clarity)

A Fast-idle cam
B Fast-idle speed adjusting screw on third step of cam

tachometer and an exhaust gas analyser (CO meter) will be required.

1 Check that the idle speed and mixture settings are as specified (as described in Chapter 1). These must be correct before checking/adjusting the fast-idle speed.

2 Switch the engine off, then remove the air cleaner as described in Section 2.

3 With the engine at its normal operating temperature and a tachometer connected in accordance with its manufacturer's instructions, hold the throttle linkage partly open, then close the choke plate until the fast-idle adjusting screw aligns with the third (middle) step on the fast-idle cam **(see illustration)**. Release the throttle linkage so that the fast-idle speed adjusting screw rests on the cam. Release the choke plate. The linkage will hold it in the fast-idle speed setting position, as long as the accelerator pedal is not depressed.

4 Without touching the accelerator pedal, start the engine and record the fast-idle speed achieved. If adjustment is required, turn the fast-idle speed adjusting screw until the specified fast-idle speed is obtained.

5 When the throttle linkage is opened, the choke plate should return to its fully-open position. If this does not happen, either the engine is not at its normal operating temperature, or the automatic choke mechanism is faulty.

6 Switch off the engine and disconnect the tachometer. Refit the air cleaner.

32 Needle valve and float (Weber TLD carburettor) - removal, refitting and adjustment

1 Refer to Section 20 and proceed as described, noting the following difference.

2 In paragraph 4, ignore the instruction to detach the choke cable (an automatic choke is fitted to the TLD type carburettor). Instead, clamp the coolant supply and return hoses which lead to the automatic choke unit to minimise coolant loss, then ensure that the cooling system is not pressurised (see Chapter 1). Identify then detach both of the coolant hoses at the automatic choke housing. Catch any coolant spillage in a suitable container**.**

Warning: DO NOT attempt to remove the expansion tank filler cap, or to disturb any part of the cooling system, while it or the engine is hot, as there is a very great risk of scalding. If the expansion tank filler cap must be removed before the engine and radiator have fully cooled down (even though this is not recommended) the pressure in the cooling system must first be released. Cover the cap with a thick layer of cloth, to avoid scalding, and slowly unscrew the filler cap until a hissing sound can be heard. When the hissing has stopped, showing that pressure is released, slowly unscrew the filler cap further until it can be removed; if more hissing sounds are heard, wait until they have stopped before unscrewing the cap completely. At all times, keep well away from the filler opening.

3 On completion, reconnect the hoses to the automatic choke unit, and remove the clamps from the hoses. Check and top-up the coolant level on completion (see *"Weekly Checks"* and Chapter 1).

33 Automatic choke (Weber TLD carburettor) - adjustment

1 Disconnect the battery negative (earth) lead (refer to Chapter 5A, Section 1).

2 Remove the air cleaner as described in Section 2.

3 Disconnect the coolant hoses to the choke unit as described in paragraph 2 of the previous Section.

4 Note the position of the choke coil housing alignment marks, then undo the three retaining screws and withdraw the automatic choke bi-metal coil housing **(see illustration)**.

5 Remove the inner heat shield **(see illustration)**. To check and adjust the choke vacuum pull-down, secure the choke plate lever in the closed position by fitting a rubber band, open the throttle to allow the choke plate to fully close, then release the throttle.

6 Using a screwdriver, push the operating arm to the right against its spring, and measure the clearance between the lower edge of the choke plate and the venturi using a twist drill or other suitable gauge rod **(see illustration)**. Where the clearance is outside that specified, remove the plug from the diaphragm housing, and turn the adjusting screw (now exposed) in the required direction.

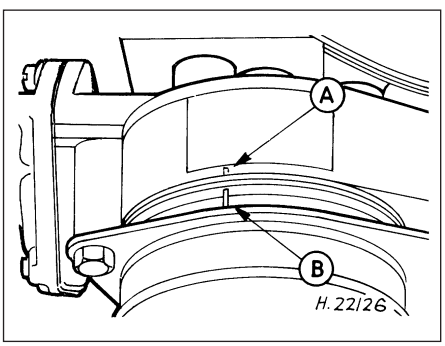
7 Fit a new diaphragm housing plug and remove the rubber band.

8 Refit the heat shield so that its slotted hole engages over the choke housing peg.

9 Refit the bi-metal coil housing by first connecting the bi-metal spring to the choke lever (ensuring correct engagement), locate the housing and hand-tighten the three retaining screws. Rotate the housing to align the index line on the housing with the dot mark on the choke main body, then retighten the retaining screws.

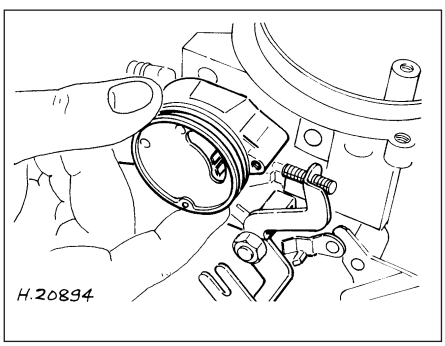
10 Reconnect the coolant hoses with reference to paragraph 3 in the previous Section.

11 Refit the air cleaner as described in Section 2.

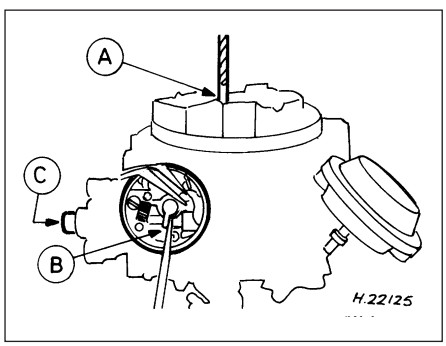


33.4 Automatic choke housing alignment (Weber TLD carburettor)

A Dot punch mark
B Choke housing alignment mark



33.5 Automatic choke internal heatshield (Weber TLD carburettor)



33.6 Choke plate pull-down adjustment (Weber TLD carburettor)

A Twist drill
B Diaphragm held fully open
C Adjusting screw

34 Automatic choke (Weber TLD carburettor) - removal, inspection and refitting

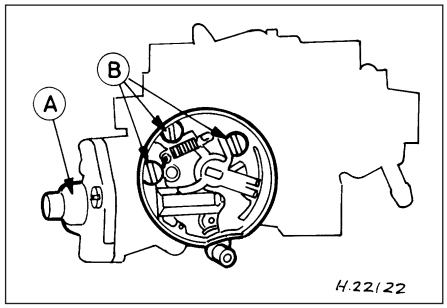
Note: *Refer to the warning note in Section 1 before proceeding. A new carburettor upper body gasket will be required when reassembling. On completion, a tachometer will be required to check the fast-idle speed adjustment.*

Removal

1 Disconnect the battery negative (earth) lead (refer to Chapter 5A, Section 1).
2 Remove the air cleaner as described in Section 2.
3 To prevent excess coolant loss, clamp the coolant supply and return hoses to the automatic choke unit, and ensure that the cooling system is not pressurised (see Chapter 1). Identify then detach both of the coolant hoses at the automatic choke housing. Catch any coolant spillage in a suitable container.

Warning: DO NOT attempt to remove the expansion tank filler cap, or to disturb any part of the cooling system, while it or the engine is hot, as there is a very great risk of scalding. If the expansion tank filler cap must be removed before the engine and radiator have fully cooled down (even though this is not recommended) the pressure in the cooling system must first be released. Cover the cap with a thick layer of cloth, to avoid scalding, and slowly unscrew the filler cap until a hissing sound can be heard. When the hissing has stopped, showing that pressure is released, slowly unscrew the filler cap further until it can be removed; if more hissing sounds are heard, wait until they have stopped before unscrewing the cap completely. At all times, keep well away from the filler opening.

4 Detach the fuel pipe and the anti-dieseling solenoid wiring connector. Any crimped type hose clips must be replaced with a screw clamp type clips during reassembly.
5 Unscrew and remove the retaining screws (two conventional, and four Torx type), then lift the carburettor upper body clear and remove it.
6 Note the position of the choke housing alignment marks, then undo the three retaining screws and remove the choke bi-metal coil unit. Remove the internal heat shield.
7 To remove the automatic choke unit, undo the three retaining screws and detach the choke link from the operating lever **(see illustration)**.
8 Undo the three retaining screws to remove the vacuum diaphragm unit.
9 If dismantling the choke mechanism any further, note the component fitment as an aid to reassembly, but do not detach the choke spindle.



34.7 Automatic choke assembly (Weber TLD carburettor)

A Pull-down diaphragm housing
B Securing screws

Inspection

10 Clean and inspect all components for wear, damage and/or distortion. Pay particular attention to the condition of the vacuum (pull-down) diaphragm and the choke housing O-ring. Renew any items that are defective (or suspect).

Refitting

11 Reassemble the automatic choke mechanism, making references to the notes taken during dismantling. Note that no lubricants must be used **(see illustration)**.
12 Refit the vacuum unit, making reference to the notes taken during dismantling. Ensure that the diaphragm is lying flat before tightening the housing retaining screws.
13 Locate the O-ring (ensuring that it is correctly seated), then reconnect the choke link. Refit the automatic choke unit, and secure with the retaining screws. Check and adjust the choke vacuum pull-down as described in the previous Section (paragraphs 5 and 6).
14 Refit the inner heat shield, ensuring that the location peg is securely engaged in its notch.
15 Refit the automatic choke housing and the bi-metal spring unit as described in the previous Section (paragraph 9).
16 Refit the carburettor upper body, ensuring that a new gasket is used and that the mating surfaces are clean. Fit the retaining screws to secure.
17 Reconnect the fuel hose to the carburettor, using new screw type hose clips to secure it.
18 Reconnect the anti-dieseling solenoid wiring connector.
19 Reconnect the coolant hoses to the automatic choke unit, then check and if necessary top-up the cooling system as described in "*Weekly Checks*" and Chapter 1.
20 Reconnect the battery negative lead, then check and adjust the fast-idle speed as described in Section 31.
21 Refit the air cleaner (Section 2).

35 Carburettor (Weber TLD) - removal and refitting

Note: *Refer to the warning note in Section 1 before proceeding. New gaskets will be required on refitting and a tachometer and an exhaust gas analyser will be required on completion.*

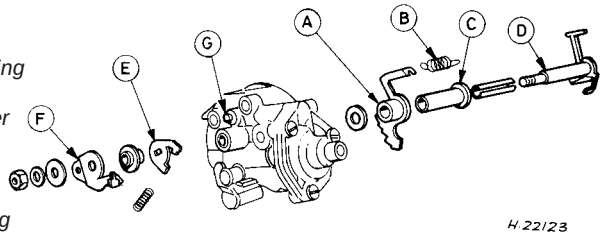
Removal

1 Disconnect the battery negative (earth) lead (refer to Chapter 5A, Section 1).
2 Remove the air cleaner as described in Section 2.
3 Release any pressure remaining in the cooling system (see Chapter 1), and then detach the two coolant hoses from the automatic choke unit. Catch any coolant spillage in a suitable container. Identify each hose for subsequent refitting, then plug their ends or position them as high as possible to prevent coolant leakage.

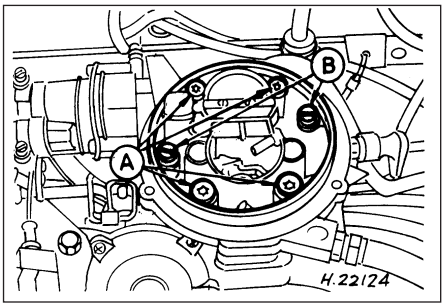
Warning: DO NOT attempt to remove the expansion tank filler cap, or to disturb any part of the cooling system, while it or the engine is hot, as there is a very great risk of scalding. If the expansion tank filler cap must be removed before the engine and radiator have fully cooled down (even though this is not recommended) the pressure in the cooling system must first be released. Cover the cap with a thick layer of cloth, to avoid scalding, and slowly unscrew the filler cap until a hissing sound can be heard. When the hissing has stopped, showing that pressure is released, slowly unscrew the filler cap further until it can be removed; if more hissing sounds are heard, wait until they have stopped before unscrewing the cap completely. At all times, keep well away from the filler opening.

4 Disconnect the accelerator cable from the linkage at the carburettor, as described in Section 3.
5 Detach the anti-dieseling solenoid wiring connector.
6 Detach the fuel feed hose at the carburettor.

A Operating link/fast-idle cam
B Fast-idle cam return spring
C Spindle sleeve
D Connecting rod and lever assembly
E Pull-down kink
F Actuating lever
G Automatic choke housing



34.11 Exploded view of the automatic choke linkage (Weber TLD carburettor)



35.8 General view of Weber TLD carburettor

A Torx head screws securing carburettor to inlet manifold
B Standard screws securing upper body to main body

As it is detached, plug the end of the hose to prevent excessive fuel spillage and the ingress of dirt. Where a crimped type hose clip is fitted, cut it free, taking care not to damage the hose; a new screw type clip will need to be obtained to replace the crimped clip during reassembly.

7 Disconnect the relevant vacuum pipes from the carburettor. As they are detached, label them to ensure correct reassembly.

8 Unscrew and remove the four Torx-type retaining screws, and carefully lift clear the carburettor from the inlet manifold **(see illustration)**. Remove the gasket.

Refitting

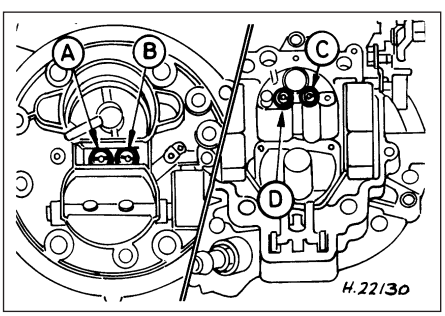
9 Clean the carburettor and the inlet manifold mating faces.

10 Refit the carburettor in the reverse order of removal, ensuring that a new gasket is fitted.

11 If they are perished or were damaged during removal, renew the fuel and/or vacuum hoses.

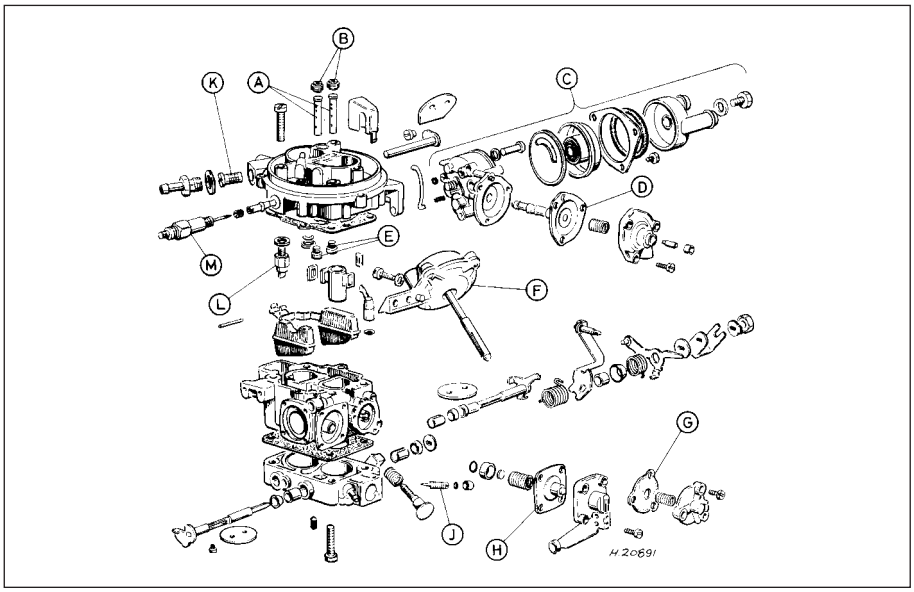
12 Reconnect the automatic choke unit hoses, and then check/top-up the cooling system if required, as described in *"Weekly Checks"* and Chapter 1.

13 When the battery is reconnected, start and warm up the engine then check the idle speed and mixture settings as described in Chapter 1.



36.1b Jet arrangement in carburettor upper body (Weber TLD carburettor)

A Primary air correction jet
B Secondary air correction jet
C Secondary main jet
D Primary main jet



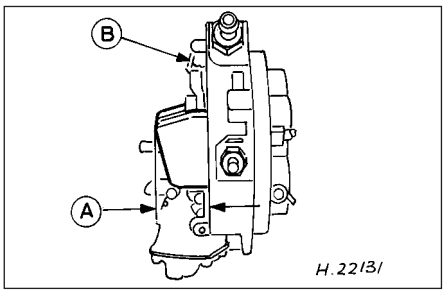
36.1a Exploded view of the carburettor (Weber TLD)

A Emulsion tubes
B Air correction jets
C Automatic choke assembly
D Choke pull-down diaphragm
E Main jets
F Secondary barrel diaphragm assembly
G Power valve diaphragm
H Accelerator pump diaphragm
J Idle mixture adjusting screw
K Fuel feed filter
L Needle valve assembly
M Anti-dieseling (fuel cut-off) solenoid

36 Carburettor (Weber TLD) - dismantling, cleaning, inspection and reassembly

Proceed as described in Section 24, but refer to the appropriate illustrations for the TLD carburettor **(see illustrations)**. The following should also be observed:

a) When refitting the idle mixture adjustment screw, make the initial adjustment by screwing it fully into position (without overtightening it), then unscrewing it by three full turns.
b) Refer to Section 32 to adjust the needle valve and float.
c) When the carburettor is reassembled and refitted, check and adjust the idle speed and mixture settings as described in Chapter 1.



36.1c Float level adjustment (Weber TLD carburettor)

A Float level setting dimension
B Adjusting tag

37 Inlet manifold - removal and refitting

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

Removal

1 Drain the cooling system as described in Chapter 1.

2 Remove the carburettor as described in the relevant earlier Sections of this Chapter, according to carburettor type.

3 Noting their locations, disconnect the coolant, vacuum and breather hoses from the manifold.

4 Disconnect the wiring multi-plugs from the engine sensors at the inlet manifold. Disconnect the radio earth lead at the inlet manifold connector.

5 Undo the retaining bolts, and withdraw the manifold from the cylinder head. Remove the gasket.

6 With the manifold removed, clean all traces of the old gasket from the mating surfaces of the manifold and the cylinder head.

Refitting

7 Refitting is the reversal of removal. Use a new gasket, and tighten the retaining bolts to the specified torque. Refit the remainder of the components with reference to the appropriate Chapters of this manual. On completion, refill the cooling system as described in Chapter 1.