Part 1
Chapter 4 Overhaul

Contents

1 Introduction

Overhauling of the carburettor becomes necessary when the component parts are worn to such an extent that they are no longer serviceable or efficient in operation. The manufacturers recommend a general overhaul interval of 60 000 miles (97 000 km) but much will depend on the operating conditions and this may well have to be reduced in certain circumstances. However, if the maintenance and servicing procedures as given in Chapter 3 have been regularly carried out from new, this interval is a good guide to work to.

At the time of the overhaul the carburettor must be removed, disassembled, cleaned, inspected, repaired as necessary, reassembled and refitted. This Chapter includes the general overhaul procedures which apply to all carburettors but any special procedures, particularly those including the use of specialized tools, are included in the Chapters dealing with specific carburettor types.

The work involved is within the capabilities of most home mechanics, although in order to effect a first class overhaul it is important not to rush the work. Weber carburettors are manufactured to a high degree of workmanship and therefore must be treated as precision instruments; although they are manufactured to withstand the most adverse road conditions they also incorporate some extremely sensitive mechanisms.

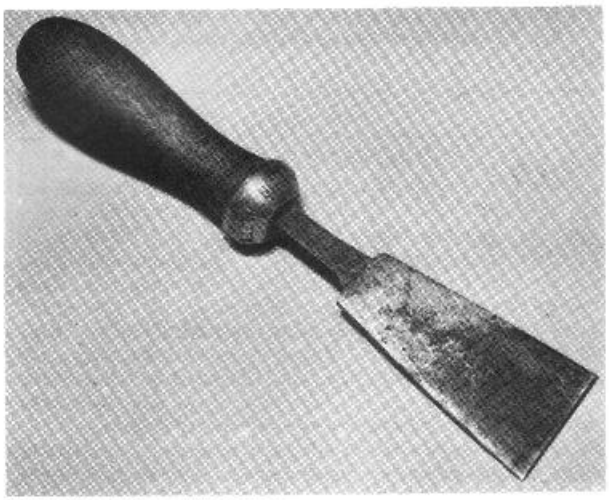
Extensive workshop equipment is not required and the majority of work can be carried out using the normal tools contained in a motorist's tool kit. However there are certain instances where a special tool is required and these are quoted in the relevant Chapters of this Manual.

Before starting work it is recommended that the home mechanic reads all the relevant Chapters of this Manual in order to acquaint himself with all the necessary procedures and spare parts required. By obtaining the spares and tools beforehand, the overhaul will be completed in the shortest time, and there will be little inconvenience due to the car being off the road.

2 Tools

Note: *In addition to the following list, the tools necessary to carry out any special overhaul procedures as given in the relevant Chapter of this Manual, must be obtained.*

Spanners, open-ended metric
Spanners, ring metric
Screwdrivers, large medium and small (flat blade)
Curved metal scraper
Surface plate or thick piece of plate glass
Steel straight-edge
Hard bristle brush, small
Feeler gauges
Vernier calipers or depth gauge
Large clean tray
Open-topped containers suitable for petrol
Pipe cleaners
Foot-operated tyre pump
Light hammer (100 gm)
Centre punch
Small files, flat and round
Hand chuck, small
Flat metal scraper (photo)



2.1 Typical flat metal scraper

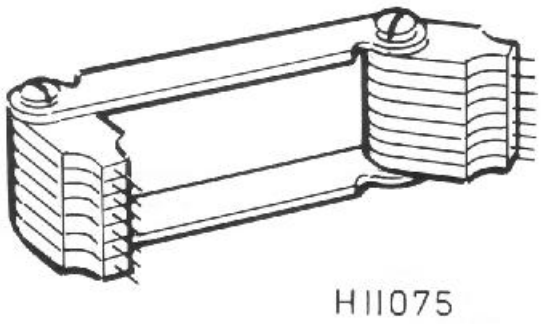


Fig. 4.1 Set of micron plug jet gauges (Sec 2)

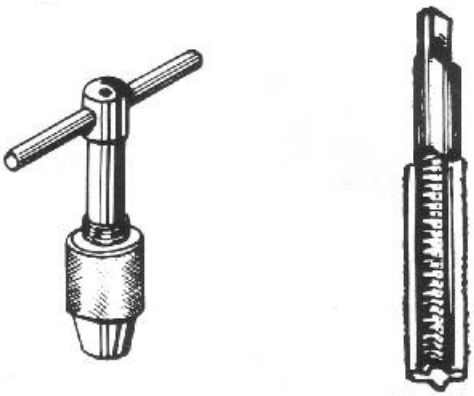


Fig. 4.2 Thread tap and tap holder (Sec 2)

Fig. 4.3 Typical thread die (Sec 2)

Where necessary, the following tools should be obtained from a Weber agent:

Set of jet gauges
Thread tap and tap holder
Thread die and die holder

It is important that all tools are in first class order to prevent damage to the carburettor components. This is particularly relevant to screwdrivers which should be ground flat and square before use. Always enter screwdrivers fully into screw slots and similarly fully engage spanners before attempting to turn them.

3 Materials

Before commencing the overhaul procedure it is advisable to obtain the following materials:

Degreasing fluid (paint stripper or thinners will do)
Petrol
Clean lint-free cloth
Emery cloth (fine)
Engine oil (SAE 30 or SAE 20/50)
Lithium based grease (DCOE and IDA range carburettors with spindle bearings)
Fine grinding paste
Liquid locking agent
Metal polish
Hand cleanser

4 Spare parts

The total amount of spare parts required for the overhaul will not be apparent until the carburettor has been completely dismantled, but at the minimum a gasket set should be obtained prior to commencing work.

The manufacturers currently supply three basic overhaul kits:

A gasket set
A tune-up kit
A master repair kit

The tune-up kit contains the gasket set plus needle valve, float, float fulcrum and accelerator pump diaphragms (if required). The master repair kit contains the tune-up kit plus main jets, air corrector jets, throttle shafts (oversize as necessary), throttle valves and ball bearings (if fitted).

When ordering parts from the manufacturers or agents, it is important to give as much information as you can concerning the carburettor and its application, including jet sizes and carburettor type numbers.

5 Disassembly

The main disassembly procedure is given in the relevant Chapter of this Manual, but it is recommended that the location of the various jets and the position of throttle valves and levers is noted on paper as each component is removed. This will be particularly helpful during the assembly procedure and is essential when working on the progressive or differential type carburettors, where a jet fitted in the incorrect position will completely upset the performance of the carburettor.

If more than one carburettor is being overhauled, it is advisable to work on one unit at a time to prevent accidental interchanging of components.

It is essential to have a large clear area of the workbench available when disassembling the carburettor and each item should be placed in order of removal as far as possible. The workbench must, of course, be scrupulously clean.

Where bypass idle carburettors, tamperproof carburettors and carburettors for use in the USA are fitted, the disassembly

procedure may be slightly different to that given in Part 2. USA type carburettors will be fitted with some or all of the items mentioned in Chapter 1 in connection with emission control.

6 Cleaning

This is possibly the most important aspect of overhauling the carburettor as dirt or sediment can lead to many diverse malfunctions. It should be carried out in a well ventilated area and sufficient precautions should be taken to prevent the possibility of fire.

The carburettor body and covers may be cleaned with a degreasant, but only after removing all components such as fibre and rubber washers and seals which may be adversely affected. All traces of gasket should be removed from the flange faces and the internal channels should be blown clear to remove the degreasant. It is advisable to completely immerse the components in fuel as an extra precaution.

The remaining carburettor components should be cleaned in fuel and allowed to dry on a clean tray. In extreme cases, the use of paint thinners will remove the more obstinate accumulation of dirt and sediment.

7 Inspection and repair

With all components cleaned and set out, they must now be inspected for wear and deterioration, in order to decide which are fit for further service, which have to be repaired and which must be renewed.

Special overhaul procedures are given in the relevant Chapter of this Manual but the following Sections give general procedures applicable to all carburettors.

8 Carburettor body and covers

Note: *The body and, on some types, the covers are the only parts of the carburettor which cannot be supplied as spares and therefore, where these items are damaged beyond repair, a new carburettor must be obtained.*

1 Check internally and externally for cracks. These are most likely to be found in the vicinity of the flange mounting holes and are due to overtightening or excessive vibration. On aluminium alloy carburettors it may be possible for a welding specialist to carry out a suitable repair, provided that none of the internal jets and passages are affected. However, great care must be taken to prevent distortion. Carburettors made from zinc alloy (Mazak) cannot be repaired in this way and will either require replacement parts or a new carburettor.

2 Check the flange faces for flatness using a straight-edge (photo). If any undulation or distortion is evident, lap the flange on a sheet of fine emery cloth placed on a surface plate. Where applicable, the carburettor covers may be checked and rectified using the same procedure.

3 Check all tapped (internally threaded) holes for the condition of the thread. It will be observed that the more frequently used threads are fitted with brass inserts and these do not normally deteriorate, but where the thread is tapped directly into the main body the threads may fracture. To repair the latter type of thread, an insert (sometimes called a Helicoil or Cross insert) must be fitted. This is a job best entrusted to a suitably equipped engineering works. An alternative method of repairing the thread is to drill out the threads completely and then tap an oversize thread, but this is only possible in some cases, as the attaching component must be non-standard and it may be necessary to drill adjacent components oversize.

4 Scrape away any corrosion which may have attacked the carburettor metal. This will normally be found in the vicinity of the float chamber on carburettors which have been out of service for a long time (photo). Finish the surface with fine emery cloth but take care not to enlarge any internal bores or channels as this may affect the calibration of the carburettor.

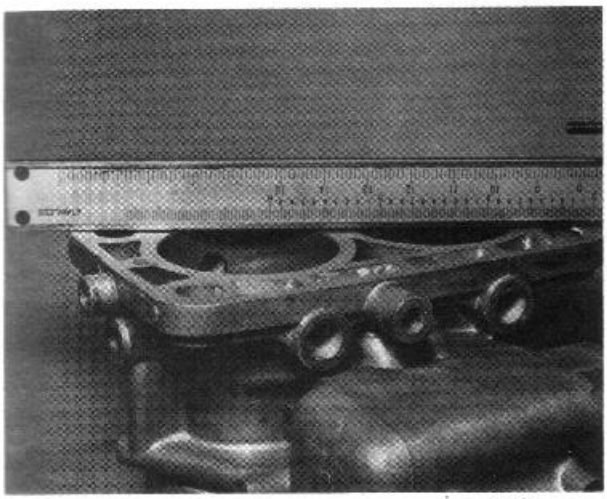
5 Clean any carbon deposits from the carburettor barrels using a curved scraper but ensuring that the barrel walls are not in any way damaged. On differential type carburettors it will be found that the primary barrel is particularly susceptible to carbon build-up which will adversely affect the carburettor performance if not removed. After cleaning, the barrels may be polished lightly with metal polish but make sure that all traces of the polish are removed when the operation is completed.

6 Where a piston type accelerator pump is fitted, check the bore in the carburettor body for scoring and damage. Although the bores are inserted on assembly they cannot be obtained as a spare, and unless an engineering works can effect the repair of a faulty bore, a new carburettor must be obtained.

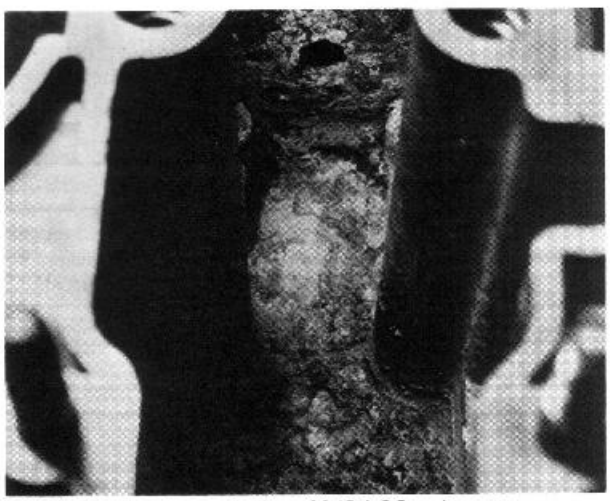
7 Where applicable, check the condition of all studs fitted to the carburettor body and cover and renew them if necessary.

9 Venturis and chokes

1 Check the auxiliary venturis and chokes for damage; depending on where it is, minor damage may be removed with a fine file and emery cloth, otherwise renew them.



8.2 Checking a carburettor flange with a straight-edge for distortion



8.4 A bad case of corrosion in a 40 IDA 3C carburettor

2 Using a tyre pump, blow through the auxiliary venturi internal channel and nozzle to make sure that it is unobstructed.
3 Where fitted, check that the locating springs are intact and firmly fitted to the auxiliary venturi and choke.

10 Throttle spindles and choke spindles

1 Check the throttle spindles for wear by temporarily refitting them to the body and moving them laterally. If wear is evident, an oversize spindle should be obtained and the body reduced as described in the relevant Chapter of this Manual.
2 Where ball bearings are fitted, spin them by hand and check for any roughness or excessive clearance. The bearing dust seals should be renewed at every overhaul.
3 If the spindle incorporates a cam for operation of the accelerator pump, check this for security and wear.
4 Examine the throttle valve slots in the spindle for signs of distortion; if evident, renew the spindle.
5 Choke spindles (where fitted) should be checked in a similar manner.
6 Check the valve retaining screw threads in the spindle for damage and clear them with a suitable tap if necessary.
7 Where the spindle is discoloured or has score marks, clean it with fine emery tape.

11 Throttle levers and return springs

1 Check all throttle levers and pivots for wear and damage and renew them where necessary.
2 On differential type carburettors, check that the lever slots and associated tags are not excessively worn.
3 Examine the throttle lever retaining nut locktabs for fracturing and, if the tabs appear to be weak, renew them.
4 Check the return springs for damage and renew them if necessary. The springs do not normally lose their tension, but it is worth checking that they return the relevant throttle lever fully when the carburettor is completely assembled.

12 Throttle valves

1 The throttle valves are not normally subject to wear, but the outer periphery of each should be examined for damage which could prevent it fully seating in the barrel.
2 If the throttle lever retaining nut has been tightened with the throttle valve closed, it is possible for the valve to be buckled. To check this, view the valve along its axis and if any distortion is evident, renew it.
3 Polish the throttle valves with metal polish or fine grinding paste to remove any carbon deposits.

13 Choke valves

Check that the choke valves are not distorted and that the periphery is not damaged. Use a fine file if necessary, as irregularities on the periphery may cause the valve to stick shut.

14 Jets and emulsion tubes

1 After cleaning, all jets should be cleared by blowing through them and finally looking through them to check that they are unobstructed. **Note** *Never use wire to clean a jet.*
2 On accelerator pump intake and delivery valves, check that the internal ball is free to move by shaking the valve.
3 Emulsion tubes should be cleaned then blown through with air from a tyre pump.

15 Float assemblies

1 Due to the fact that the float is normally half submerged in petrol, it will not usually require cleaning: however if the carburettor has been out of service for a long time, some corrosion may have accumulated and this should be wiped away.
2 Check visually for any punctures; if fuel has found its way into the float this can be ascertained by shaking it. If any doubt exists, immerse the float in boiling water; a stream of bubbles will issue from the puncture.
3 If a puncture exists, it is usually preferable to renew the float, as the extra weight of any internal fuel and solder used for repair will result in a higher fuel level. However, the weight of the float is usually stamped on the fulcrum tab and if a repair can be effected without exceeding this limit, it is in order to solder the puncture as follows:
4 Thoroughly clean the area around the puncture with fine emery cloth, then immerse the float in boiling water until bubbles cease to issue from the hole. Immediately remove the float, wipe dry, and solder the hole with flux and a lower melting point solder. Remove any excess solder with a small file and emery cloth.
5 Check the float fulcrum pin for wear and renew it if necessary.
6 Where the float assembly consists of two semi-floats, check that they are both level with each other and are at 90° to the fulcrum pin, otherwise in some instances they may foul the sides of the float chamber.

16 Needle valves

1 After cleaning the needle and needle valve seat, dry them and blow through the needle valve seat with air to clear any obstruction.
2 Check the contact surfaces of the needle and seat for wear and if a groove is evident on the needle, renew the complete valve.
3 Check that the ball in the end of the needle is tensioned by the internal spring and that it moves in and out freely.
4 Check the hooked spring on the end of the needle (if fitted); if the original needle valve is being refitted, it is best to fit the hook the same way round as removed but if a new valve is fitted, the hook can be fitted either way round.

17 Fibre washers and diaphragms

1 All fibre washers should be renewed whenever the carburettor is overhauled. Always use genuine Weber washers particularly on the fuel inlet unions, otherwise there is the possibility of a fire risk if a leakage should occur.
2 Examine all diaphragms (accelerator pump, automatic choke, full power valve, etc.) for fractures and renew them if necessary. If the full power valve diaphragm requires renewal, it will be necessary to obtain the complete valve assembly. If the accelerator pump diaphragm requires renewal, the return spring should be renewed at the same time.

18 Accelerator pumps

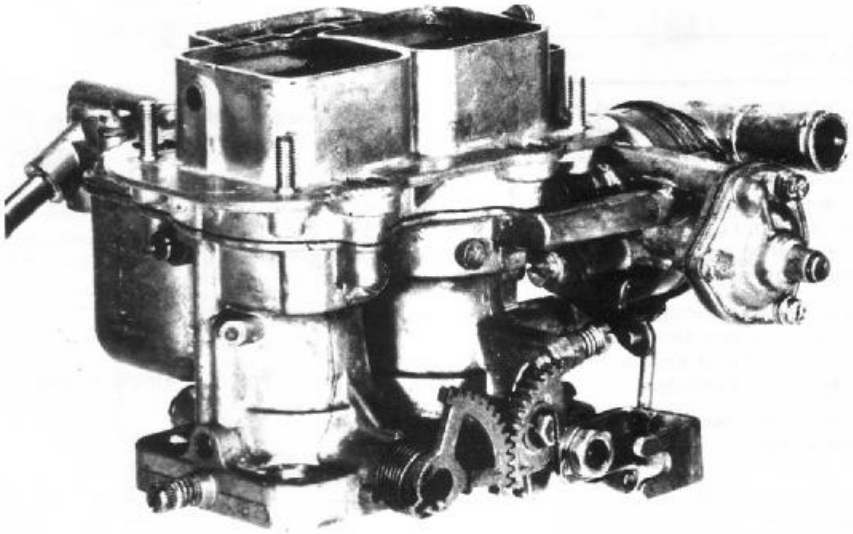
1 On piston types, check the piston for scoring and damage and check the operating rod for wear and distortion.
2 On diaphragm types, check the mating surfaces of the cover, body and carburettor body. If any corrosion or irregularities are evident remove them with metal polish.
3 Check the operating arm roller (if fitted) for wear and, if worn, obtain a new cover.

19 Screws and washers

1 Check all retaining screws and washers and renew them as necessary. In particular check screw slots for damage. If damage is not excessive, the slot can be reformed using a file and hacksaw blade.
2 If necessary, screw threads can be reformed using a die.
3 Check all idling adjustment screws and springs for damage. The taper on volume control adjustment screws and air compensation screws should also be checked and if it is not smooth and symmetrical, they must be renewed as necessary. If the carburettor is of the bypass idle type, note the comments in Chapter 1 of this Manual.

20 Air horns

The air horns are particularly vulnerable to damage due to their position. However if they are damaged, it is usually a simple matter to beat them back to the original shape using a length of dowel rod and a light hammer.



Part 2
Chapter 9 Type 40 DFA, 40 DFAV, 34 DGAS, 38 DGAS carburettors

Contents

Adjustment data

Fast idle throttle valve opening	in (mm)
High cam position:	
40 DFA and 40 DFAV types	0.029 to 0.031 (0.75 to 0.80)
34 DGAS and 38 DGAS types:	
38 DGAS 1A	0.026 to 0.028 (0.65 to 0.70)
38 DGAS 7A	0.025 to 0.027 (0.65 to 0.70)
38 DGAS 3A and 34 DGAS	0.027 to 0.029 (0.70 to 0.75)
38 DGAS 4A	0.029 to 0.031 (0.75 to 0.80)
Low cam position:	
38 DGAS 4A	0.080 to 0.100 (2.05 to 2.55)
38 DGAS 7A	0.080 to 0.100 (2.05 to 2.55)
38 DGAS 1A	0.100 to 0.120 (2.55 to 3.05)
38 DGAS 3A	0.100 to 0.120 (2.55 to 3.05)
Choke valve pull down clearance	in (mm)
38 DGAS types:	
Minimum:	
All types	0.112 to 0.124 (2.85 to 3.15)
Maximum:	
38 DGAS 4A and 7A	0.177 to 0.216 (4.5 to 5.5)
38 DGAS 1A and 3A	0.196 to 0.236 (5.0 to 6.0)

Float level setting dimension	**Closed position**	**Open position**	**Stroke**
40 DFA and 40 DFAV types	0.236 in (6.0 mm)	0.551 in (14.0 mm)	0.315 in (8.0 mm)
34 DGAS and 38 DGAS types (brass float)	1.57 in (40.0 mm)	1.968 in (50.0 mm)	0.393 in (10.0 mm)
34 DGAS and 38 DGAS types (plastic float)	1.35 in (34.3 mm)	1.744 in (44.3 mm)	0.393 in (10.0 mm)

1 Introduction

The carburettor types covered in this Chapter are of dual downdraught design. Each throttle valve is mounted on a separate shaft, but the shafts are linked by toothed sectors and their action is synchronised.

Semi-automatic choke controls are fitted to all carburettor types included in this Chapter.

The carburettor is normally fitted to the engine as a single unit, the most common arrangements being as follows:

1 One unit on a six-cylinder in-line engine, ie each barrel feeds three cylinders separately

2 One unit on a six-cylinder V-engine, ie each barrel feeds one bank of three cylinders

The carburettor identification mark is located on the lower flange outer surface.

2 Construction

The main body and cover of the carburettor types covered in this Chapter are of die cast aluminium construction and the mounting flange is machined flat for fitting purposes. The cover incorporates a mounting flange for the air cleaner assembly and is equipped with four mounting studs.

The throttle valves are of brass and the throttle shafts are of steel. The throttle shafts run on Teflon (PTFE) bearings mounted in the main body. The choke valves are cadmium plated steel and the choke shaft is of steel on DGAS types and brass on DFA and DFAV types.

All fuel and air jets are of brass construction and are screwed into the main body. The emulsion tubes are also constructed of brass.

Internal channels of the main body and cover are mostly drilled and are sealed with lead plugs where necessary.

The fuel float assemblies are of brass construction; DFA and DFAV types have a single float and DGAS types have two semi-floats.

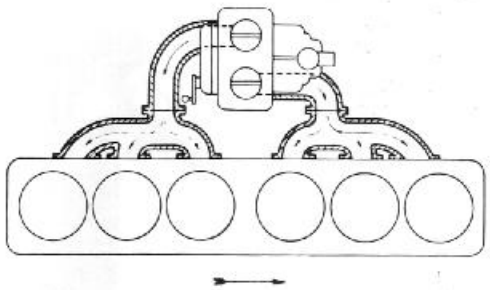


Fig. 9.1 Single carburettor fitted to a six-cylinder in-line engine (Sec 1)

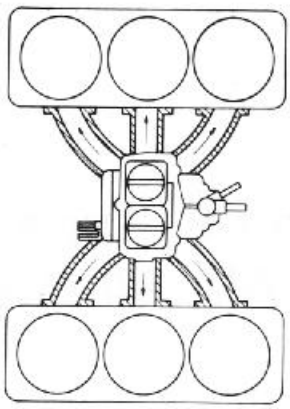


Fig. 9.2 Single carburettor fitted to a six-cylinder V-engine (Sec 1)

3 Operation

Cold starting

Refer to Fig. 9.3 and note that when the engine is cold and the throttle pedal has been depressed once, the bi-metallic spring (51) rotates the spindle (52) and closes the choke valves (55). At the same time the fast idle cam (59) prevents the throttle valves (12) from completely closing.

When the engine is cranked, a rich mixture is drawn from the nozzle (9) to facilitate starting. As soon as the engine fires, vacuum from below the throttle valve is relayed through the channel (53) to the diaphragm (47). The shaft (50) then moves and partially opens the choke valves (55) against the action of the bi-metallic spring (51). If the throttle is opened at this stage, the vacuum will cease and the choke valves (55) will close, however the passage of air will open the choke valves against the action of the bi-metallic spring (51) due to the offset construction of the choke valves (55). On DGAS types, the action of the shaft (50) is modulated by an internal spring (49).

As the engine warms up, the bi-metallic spring (51) progressively opens and the choke valves (55), until at normal operating temperature they are held fully open. The fast idling screw (62) does not now rest on the fast idling cam (59) since the latter has been rotated by the bi-metallic spring and therefore the throttle valves (12) are free to return to the normal idling position.

Idling and progression

Refer to Fig. 9.4 and note that when the engine is idling, the

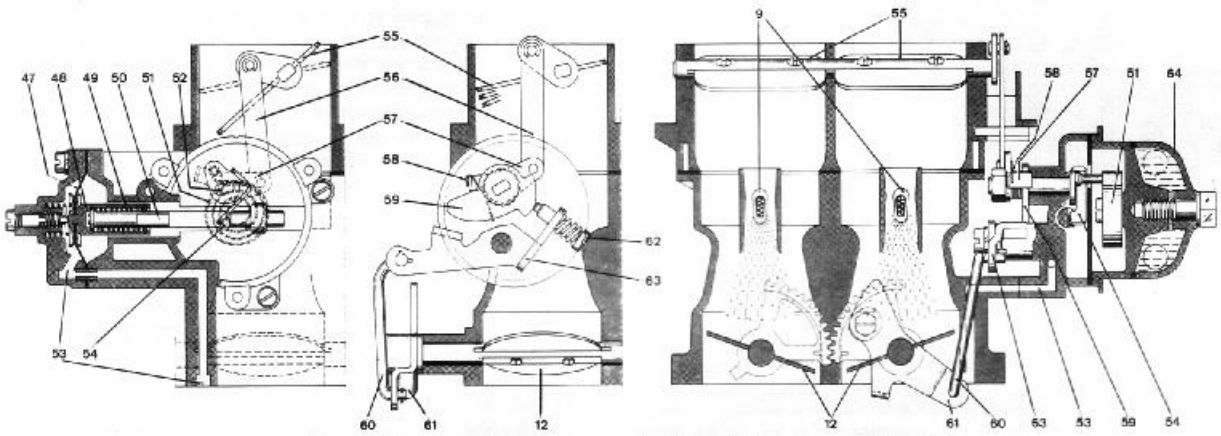


Fig. 9.3 Automatic choke operation (DGAS type shown) (Sec 3)

9 Nozzles
12 Throttle valves
47 Diaphragm
48 Bush
49 Modulating
50 Rod
51 Bi-metallic spring
52 Shaft
53 Channel
54 Lever
55 Choke valves
56 Lever
57 Lever
58 Spring
59 Cam
60 Linkage
61 Lever
62 Adjusting screw
63 Lever
64 Housing

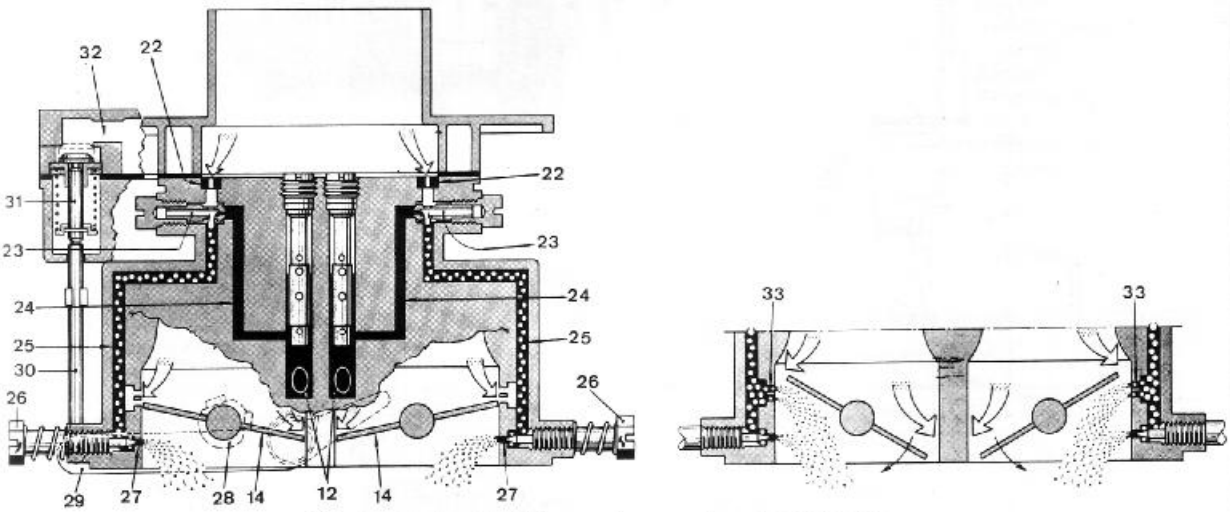
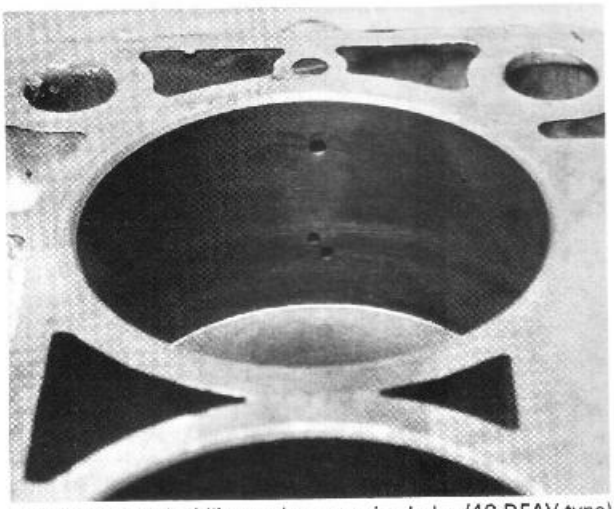


Fig. 9.4 Carburettor idling and progression phase (Sec 3)

12 Wells
14 Throttle valves
22 Calibrated hole
23 Idling jet
24 Channel
25 Channel
26 Mixture screw
27 Idling feed holes
28 Cam
29 Lever
30 Rod
31 Vent and air bleed control valve
32 Channel
33 Progression feed holes

throttle valves (14) are shut. Fuel is drawn from the float chamber through internal channels to the emulsion tube wells (12) and then passes along the channels (24) to the idling jets (23) where air is introduced through the calibrated bushes (22). The fuel and air is now an emulsion and continues through the channels (25), past the idling mixture control screws (26), through their idling feed holes (27) and into the carburettor throats at the engine side of the throttle valves (14) (photo). When the throttle valves (14) are opened slightly to increase the engine speed, the progression holes (33) are brought into action to provide extra fuel. Note that on DGAS types, three progression holes are provided in each barrel.

When the throttles valves (14) are sufficiently open, the idling and progression system ceases and the main fuel supply system operates.



3.2 Location of the idling and progression holes (40 DFAV type)

DFAV types are provided with a float chamber vapour discharge valve (31) which prevents the build up of vapour within the float chamber. The valve is open when the throttle valves are fully shut or fully open and additionally controls the overfeed enrichment air bleed.

Normal running

Under full throttle and high speed cruise conditions, the main fuel supply circuit is brought into action. Refer to Fig. 9.5 and note that fuel from the float chamber (9) passes through the main jets (10) to the emulsion tube wells (12). Air is drawn through the air corrector jets (2), through the holes in the emulsion tubes (13) and emulsifies the fuel which is then drawn through the nozzles (18) and auxiliary venturis (17). The mixture then combines with the main air supply as it is drawn through the chokes (16) and into the engine.

At high engine speeds with the throttle valves (14) open, the overfeed enrichment circuit is brought into action (not 40 DFA types) and additional fuel is supplied through the calibrated tubes (1) via the calibrated bushes (4).

DGAS type carburettors are also equipped with a full power valve which operates immediately the throttle valves are opened quickly. Refer to Fig. 9.6 and note that under these conditions the vacuum through the channel (7) is insufficient to draw the diaphragm (4) against the spring (6). The operating rod (5) therefore opens the full power valve (17). The fuel level in the emulsion tube wells (14) immediately rises and the mixture drawn from the nozzle (9) is enrichened. When the throttle valves (12) are partially open, the vacuum through the channel (7) overcomes the tension of the spring (6) and the full power valve shuts.

Acceleration

To provide the engine with a rich mixture when accelerating, the carburettor is provided with a diaphragm type acceleration pump which is operated by the primary throttle shaft but

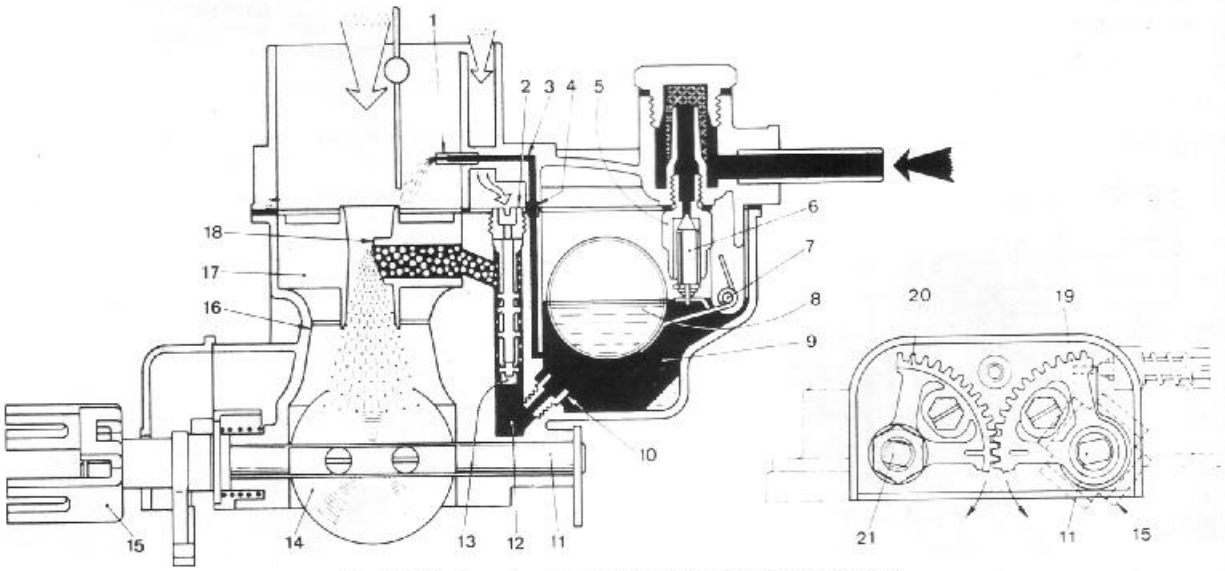


Fig. 9.5 Carburettor normal phase (DFAV types) (Sec 3)

1 *Enrichment tube*
2 *Air corrector jet*
3 *Channel*
4 *Calibrated bush*
5 *Needle valve seating*
6 *Needle*
7 *Fulcrum pin*
8 *Float*
9 *Float chamber*
10 *Main jet*
11 *Throttle shaft*
12 *Well*
13 *Emulsion tube*
14 *Throttle valve*
15 *Lever*
16 *Choke*
17 *Auxiliary venturi*
18 *Nozzle*
19 *Primary sector*
20 *Secondary sector*
21 *Throttle shaft*

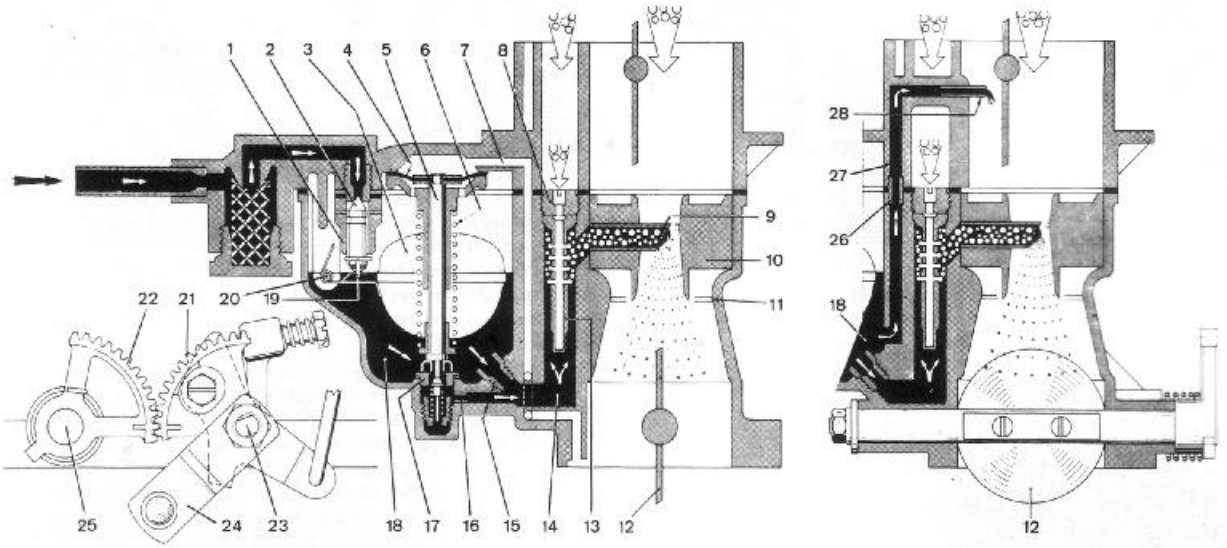


Fig. 9.6 Carburettor normal phase (DGAS types) (Sec 3)

1 *Needle valve seating*
2 *Needle*
3 *Float*
4 *Diaphragm*
5 *Rod*
6 *Spring*
7 *Channel*
8 *Air corrector jet*
9 *Nozzle*
10 *Auxiliary venturi*
11 *Choke*
12 *Throttle valve*
13 *Emulsion tube*
14 *Well*
15 *Main jet*
16 *Calibrated bush*
17 *Full power valve*
18 *Float chamber*
19 *Hook*
20 *Fulcrum pin*
21 *Primary sector*
22 *Secondary sector*
23 *Throttle shaft*
24 *Lever*
25 *Throttle shaft*
26 *Calibrated bush*
27 *Channel*
28 *Enrichment tube*

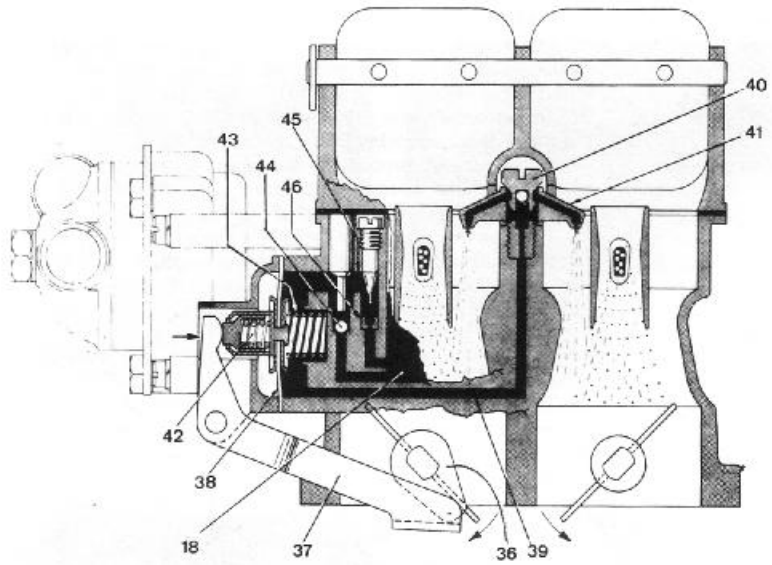


Fig. 9.7 Carburettor acceleration phase (Sec 3)

18 *Float chamber*
36 *Cam*
37 *Lever*
38 *Diaphragm*
39 *Channel*
40 *Delivery valve*
41 *Pump jet*
42 *Spring*
43 *Return spring*
44 *Ball*
45 *Blanking needle*
46 *Discharge jet*

injects into both venturis. Reference to Fig. 9.7 will show that when the throttle valves are closed, the accelerator pump diaphragm (38) draws fuel from the float chamber (18), through the ball valve (44) into the pump chamber. When the throttle valves are opened, the cam (36) moves the lever (37) and fuel is forced along the channel (39), through the delivery valve (40) and out of the pump jet (41). The spring (42) absorbs the initial movement of the lever (37) and prolongs the fuel delivery period. Excess fuel and any accumulated air is discharged into the float chamber (18) through the channel (45) and calibrated bush (46).

DGAS types are fitted with a discharge blanking needle which determines the amount of fuel returned to the float chamber (18).

DFAV types are equipped with an accelerator pump lever incorporating two pivot holes whereby the pump stroke can be varied.

4 Removal and refitting

Note: *The following procedure gives a general rather than a specific method of removing and refitting the carburettor, as much will depend on the location within the vehicle.*

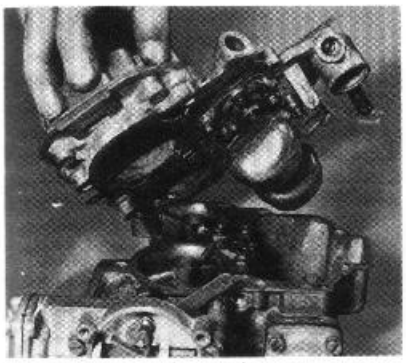
1 Unscrew and remove the retaining nuts and withdraw the air cleaner cover (screws are fitted to some models).
2 Lift out the air filter element.
3 Bend back the locktabs and unscrew the air cleaner body retaining nuts.
4 Unscrew and remove the mounting bracket bolts and

remove the air cleaner together with the reinforcement plate and gasket.
5 Partially drain the cooling system and disconnect the two water hoses.
6 Disconnect the fuel supply pipe and return pipe (where fitted) and release the vent tube from the top of the float chamber.
7 Release the distributor automatic advance pipe from the side of the carburettor.
8 Disconnect the throttle control shaft from the throttle lever.
9 Disconnect the crankcase ventilation pipe from the heat insulator spacer, if fitted.
10 Unscrew and remove the carburettor mounting nuts then withdraw the unit over the mounting studs.
11 Remove the inlet manifold gasket and spacer (if fitted) and clean all traces of gasket from the inlet manifold and carburettor flange.
12 Protect the inlet manifold from ingress of foreign matter by sealing it with masking tape.
13 Refitting is a reversal of removal, but the following additional points should be noted:

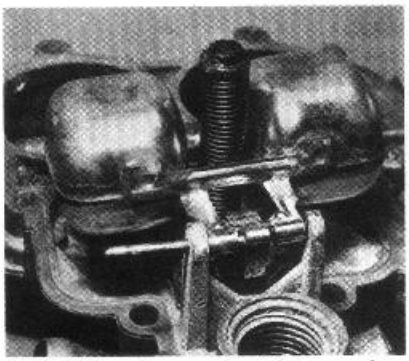
(a) Always fit new gaskets and tighten the mounting nuts in diagonal sequence
(b) Note that on some fittings the lower gasket has two metal V-notches which must locate within the inlet manifold
(c) Refill the cooling system in accordance with the manufacturer's instructions
(d) The idling adjustment screws should be set as described in Sections 8 and 9 and finally tuned as described in Section 10

6 Disassembly (34 DGAS and 38 DGAS types)

1 Thoroughly clean the carburettor exterior and wipe dry.
2 Referring to Fig. 9.10, unscrew and remove the fuel filter inspection plug (11) and extract the filter (10).
3 Disconnect the choke plate operating lever (37) from the choke shaft (4) after prising out the C-clip with a small screwdriver.
4 Unscrew and remove the carburettor cover retaining screws (3) together with the spring washers, then carefully lift the cover (1) from the main body (86) (photo).
5 Invert the carburettor cover (1) so that the float assembly (15) is uppermost, then extract the float fulcrum pin (90) and withdraw the float assembly (15) together with the needle of the needle valve (14). If necessary, use a suitable diameter pin punch to tap the pin from the two posts, but on no account prise the slotted post apart (photo).
6 Unhook the needle from the float assembly (15).
7 Lift the gasket (12) from the cover (1).
8 Unscrew and remove the retaining screws (91) and spring washers (92) and lift the power valve assembly (93) from the cover (1), taking care not to damage the diaphragm (photo).
9 Using a 10 mm socket or ring spanner, unscrew and remove the needle valve (14) seating and remove the gasket (13) (photo).
10 Unscrew the two main jets (19) and remove them from the bottom of the float chamber in the main body (photo).
11 Unscrew the idling jet holders (36) from each side of the carburettor body, then separate the idling jets (34) from their holders and remove the gaskets (35) (photos).
12 Unscrew and remove the air corrector jets (94) from the carburettor body (photo).
13 Invert the body and extract the emulsion tubes (89). If these are tight due to overtightening of the air corrector jets, use a selftapping screw to remove them but take care not to damage the tubes (photos).
14 Unscrew and remove the idling mixture adjusting screws (87) and springs (88) from the body (photo).
15 Unscrew and remove the throttle idling adjustment screw (73) and spring (74).
16 Unscrew and remove the full power valve (18) and gasket (17) from the bottom of the float chamber (photo).
17 Unscrew the accelerator pump delivery valve (97) and remove it together with the pump jet (96) and gaskets (95), then separate the gaskets and jet from the valve (photo).
18 Unscrew and remove the accelerator pump discharge blanking needle (16) (photo).
19 Unscrew the four screws (31) and withdraw the accelerator pump cover (41) together with the diaphragm (32) and spring (33). If necessary, peel the diaphragm assembly (32) from the cover (41) (photos).
20 Working on the carburettor cover (1), prise out the plug (8) and seal (7) using a screwdriver.
21 Note the location of each choke valve (5) and if necessary, mark them with a pencil.
22 Unscrew and remove the retaining screws (9), then withdraw the choke valves (5) from the shaft (4); the shaft (4) can now be removed from the cover (1).
23 Working on the carburettor body, unscrew the automatic choke water housing retaining bolt (46) and remove it together with the gasket (45) (photo).
24 Remove the cover (47) and gasket (48). Cut the gasket from the thermostat assembly (50) if it is stuck.
25 Unscrew and remove the retaining screws (44) and lift the automatic choke thermostat assembly (50) from the body (53), then remove the retaining ring (49) (photo).
26 Remove the disc gasket (51), then unscrew and remove the three retaining screws (42) and spring washers. Withdraw the automatic choke body (53), at the same time disengage the fast idling control rod (61) from the lever (64) (photo).
27 Disconnect the rod (61) from the fast idle lever (75) by extracting the split pin (60) (photo).
28 Note the location of the individual components of the automatic choke before dismantling them.
29 Prise the O-ring seal (69) from the side of the carburettor (photo).
30 Unscrew and remove the retaining screw (72) together with the lever (63) and washers (photo).
31 Separate the washer (62), lever (63), wave washer (70) and

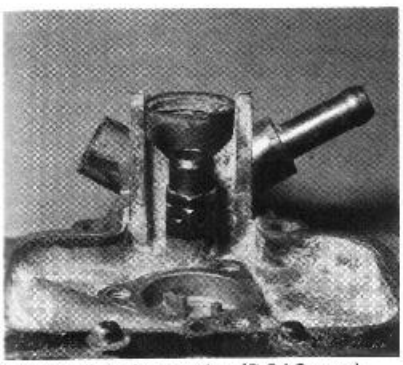


6.4 Removing the carburettor cover (DGAS type)

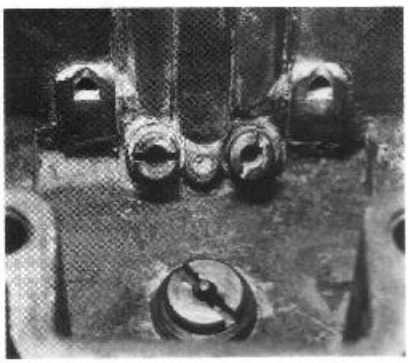


6.5 Withdrawing the float fulcrum pin (DGAS type)

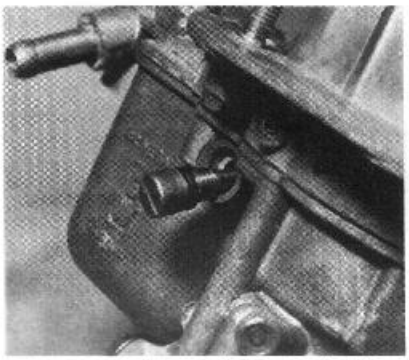
6.8 Removing the full power valve assembly (DGAS type)



6.9 Needle valve seating (DGAS type)

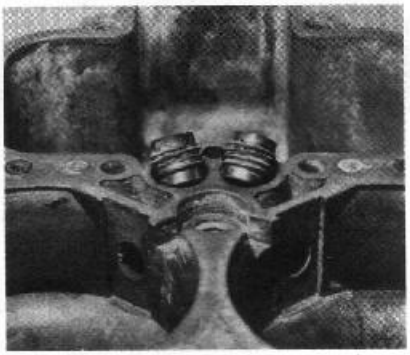


6.10 Main jet location (DGAS type)

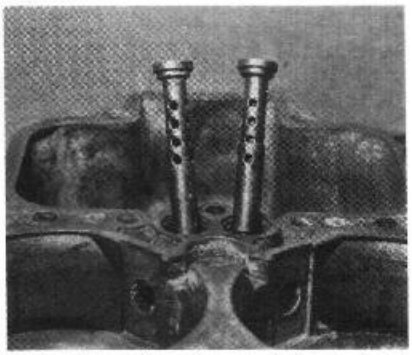


6.11a Removing an idling jet (DGAS type)

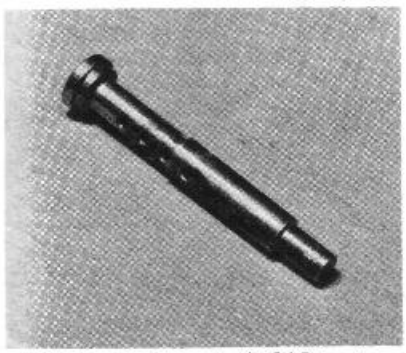
6.11b Idling jet and holder (DGAS type)



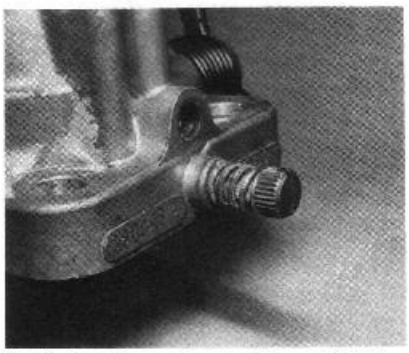
6.12 Removing the air corrector jets (DGAS type)



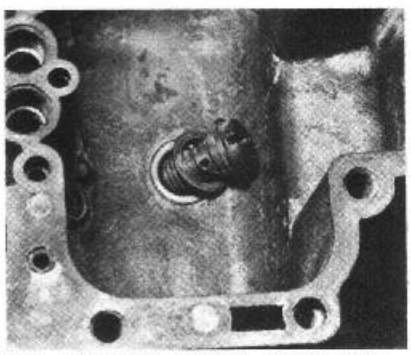
6.13a Removing the emulsion tubes (DGAS type)



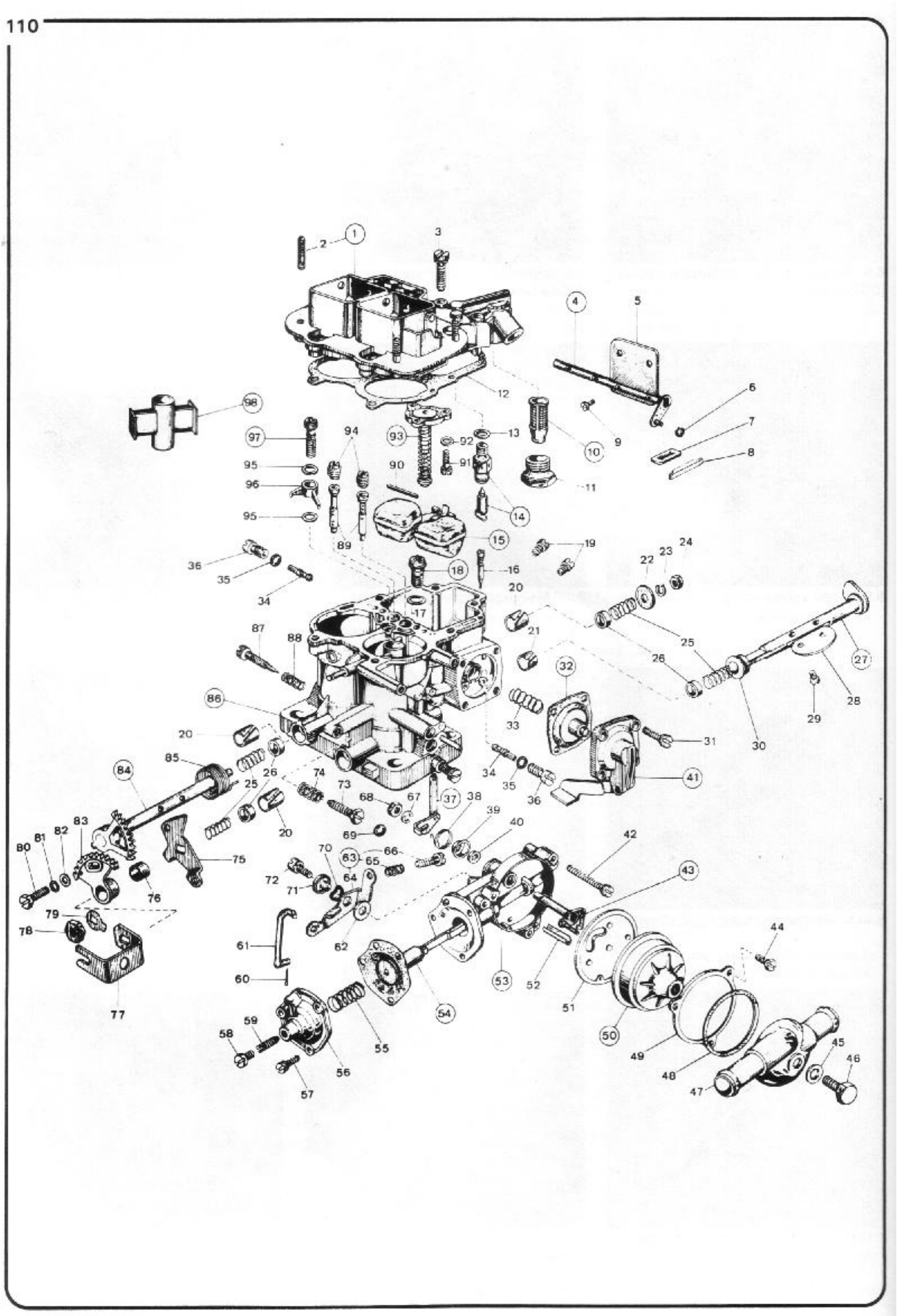
6.13b The emulsion tube (DGAS type)

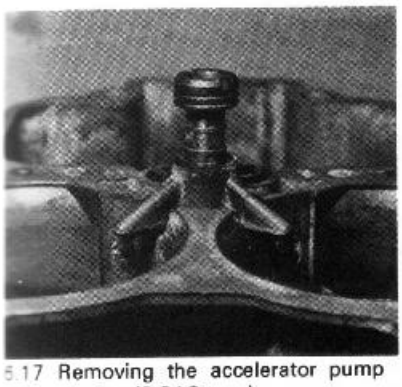


6.14 Location of an idling mixture adjusting screw (DGAS type)

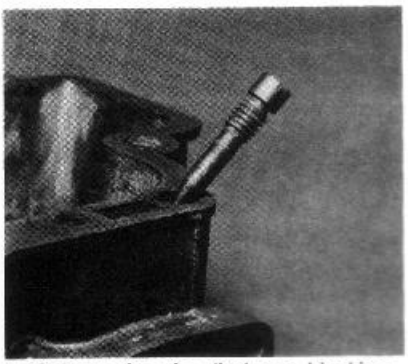


6.16 Removing the full power valve (DGAS type)

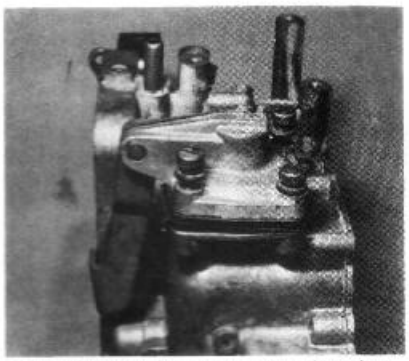




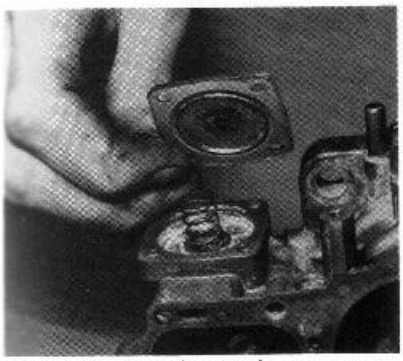
6.17 Removing the accelerator pump delivery valve (DGAS type)



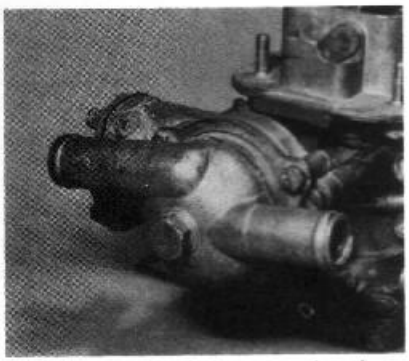
6.18 Removing the discharge blanking needle (DGAS type)



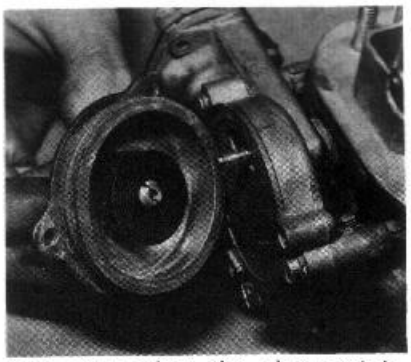
6.19a Acceleration pump cover location (DGAS type)



6.19b Removing the accelerator pump cover (DGAS type)



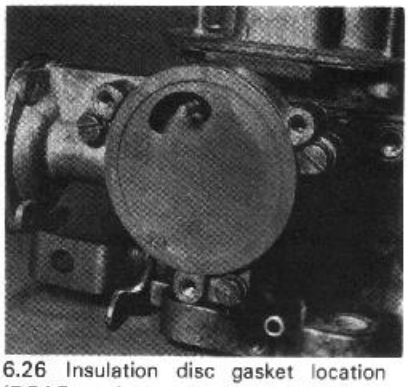
6.23 Automatic choke cover location (DGAS type)



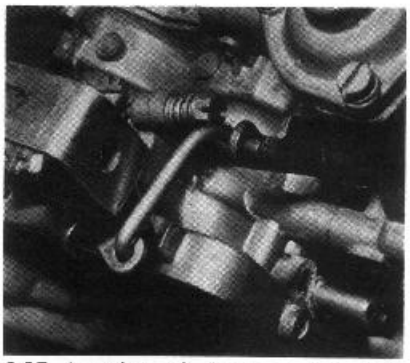
6.25 Removing the thermostat assembly (DGAS type)

Fig. 9.10 Exploded view of the 38 DGAS carburettor (typical) (Sec 6)

1 *Carburettor cover assy*
2 *Stud*
3 *Carburettor cover fixing screw*
4 *Choke shaft and lever assy*
5 *Choke throttle valve*
6 *Lock ring*
7 *Dust seal plate*
8 *Dust seal plug*
9 *Choke plates fixing screw*
10 *Strainer assy*
11 *Strainer inspection plug*
12 *Carburettor cover gasket*
13 *Gasket for needle valve*
14 *Needle valve assy*
15 *Float assy*
16 *Pump discharge blanking needle*
17 *Gasket for power valve*
19 *Main jet*
20 *Plate for shafts*
21 *Plate for shafts*
22 *Washer for secondary shaft*
23 *Spring washer*
24 *Secondary shaft fixing nut*
25 *Bush retaining spring*
26 *Bushing for shafts*
27 *Primary main shaft assy*
28 *Throttle valve*
29 *Throttle valve fixing screw*
30 *Spacer*
31 *Screw securing pump cover*
32 *Accelerator pump diaphragm assy*
33 *Pump loading spring*
34 *Idling jet*
35 *Gasket for idling jet holder*
36 *Idling jet holder*
37 *Choke control lever assy*
38 *Spring for fast idle cam*
39 *Spring retaining cover*
40 *Washer for shaft*
41 *Accelerator pump cover assy*
42 *Choke fixing screw*
43 *Auto-choke shaft and lever assy*
44 *Screw for plate*
45 *Seal for water cover fixing screw*
46 *Water cover fixing screw*
47 *Auto-choke water chamber*
48 *Water cover gasket*
49 *Thermostat assy locking ring*
50 *Auto-choke thermostat assy*
51 *Gasket for auto-choke body*
52 *Plate for auto-choke shaft*
53 *Auto-choke body assy*
54 *Choke diaphragm assy*
55 *Spring for diaphragm*
56 *Auto-choke cover*
57 *Screw securing auto-choke cover*
58 *Plug*
59 *Diaphragm adjusting screw*
60 *Pin for fast idle rod*
61 *Fast idling control rod*
62 *Washer for fast idle loose lever*
63 *Fast idle loose lever assy*
64 *Lever*
65 *Spring*
66 *Screw*
67 *Spring washer*
68 *Throttle shaft fixing nut*
69 *Auto-choke O-ring seal*
70 *Washer for idle loose lever*
71 *Bushing for idle loose lever*
72 *Screw securing fast idle loose lever*
73 *Throttles adjusting screw*
74 *Spring for throttle adjusting screw*
75 *Toothed sector control lever*
76 *Bushing for toothed sector*
77 *Throttle control lever*
78 *Primary shaft fixing nut*
79 *Lockwasher*
80 *Toothed sector fixing screw*
81 *Wave washer*
82 *Flat washer*
83 *Primary toothed sector*
84 *Secondary main shaft assy*
85 *Shaft return spring*
86 *Carburettor body*
87 *Idle adjusting screw*
88 *Spring for idle adjusting screw*
89 *Emulsioning tube*
90 *Float fixing pin*
91 *Screw securing power valve*
92 *Flat washer*
93 *Power valve assy*
94 *Air corrector jet*
95 *Pump jet gasket*
96 *Pump jet*
97 *Pump delivery valve assy*
98 *Auxiliary venturi*

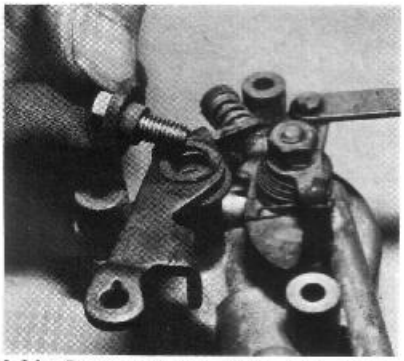


6.26 Insulation disc gasket location (DGAS type)

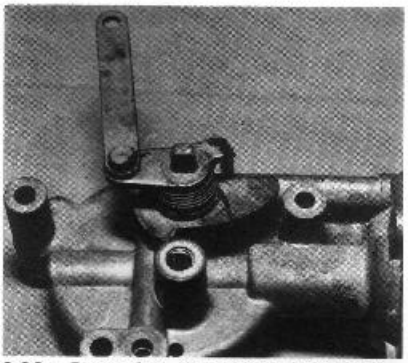


6.27 Location of the fast idle rod (DGAS type)

6.29 Automatic choke O-ring location (DGAS type)

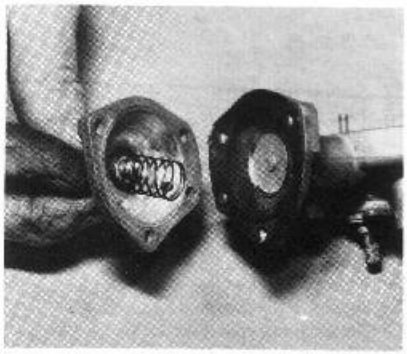


6.30 Removing the fast idle lever (DGAS type)

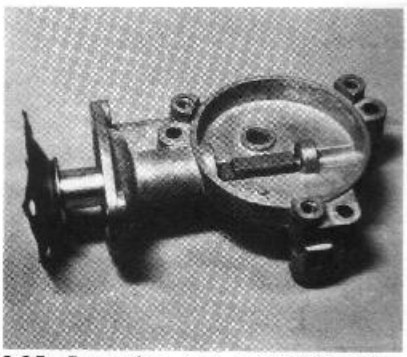


6.33a Removing the choke lever and spring (DGAS type)

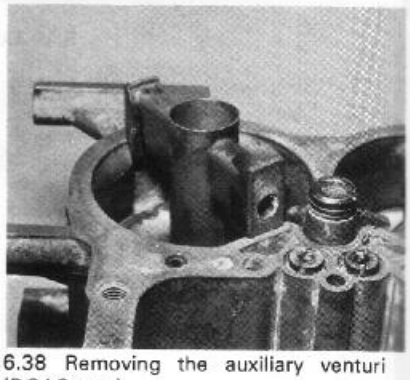
6.33b Removing the shaft cover (DGAS type)



6.34 Removing the diaphragm cover and spring (DGAS type)



6.35 Removing the operating rod (DGAS type)



6.38 Removing the auxiliary venturi (DGAS type)

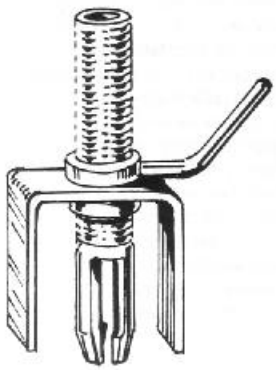
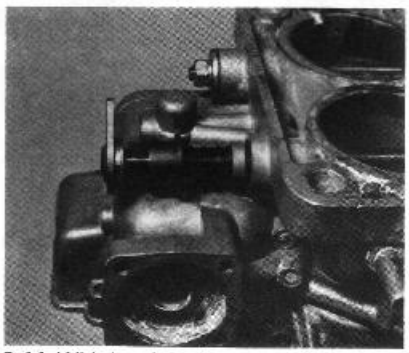
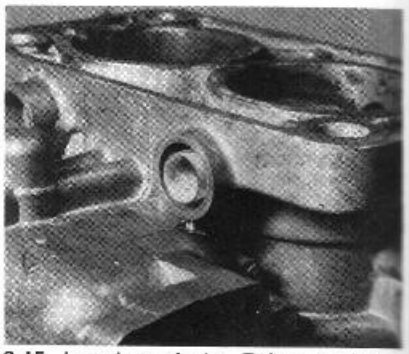


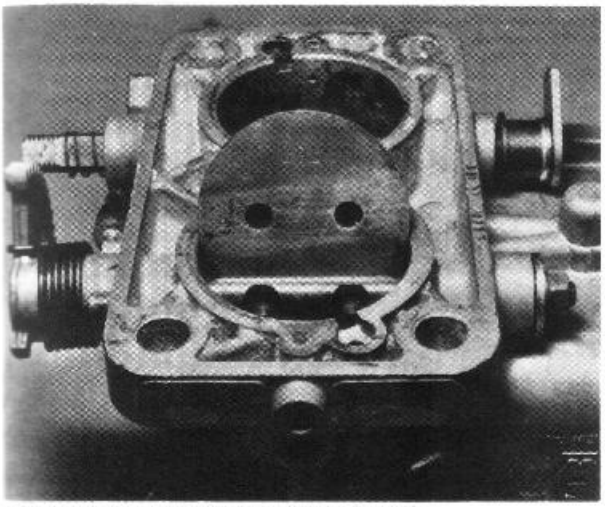
Fig. 9.11 Tool for removing the auxiliary venturis (Sec 6)



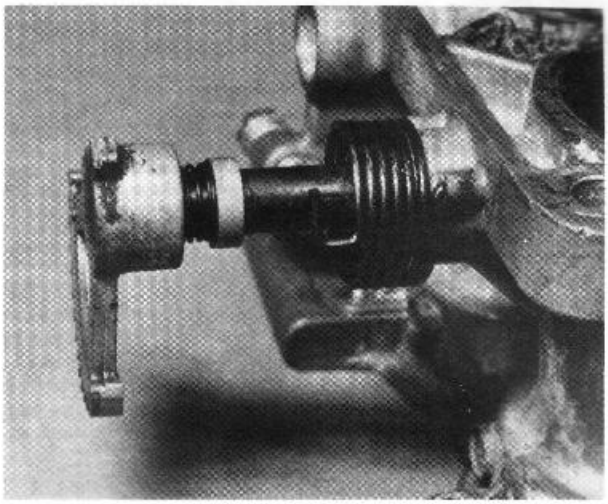
6.44 Withdrawing the primary throttle shaft (DGAS type)



6.45 Location of the Teflon bushes (DGAS type)



6.47 Removing a throttle valve (DGAS type)



6.50 Removing the secondary throttle shaft (DGAS type)

bush (71) from the screw (72).
32 Unscrew and remove the adjusting screw (66) and spring (65) from the lever (64).
33 Unscrew and remove the retaining nut (68) and spring washer (67), then withdraw the lever (37), spring (38), cover (39) and spacer (40). The shaft (43) can now be removed and the bearing (52) extracted from the body (53) (photos).
34 Unscrew and remove the retaining screws (57) and lift off the cover (56) and spring (55) (photo).
35 Carefully release the thin diaphragm, then withdraw the operating rod (54) from the body (53) (photo).
36 Unscrew and remove the plug (58) and adjusting screw (59) from the cover (56), noting the position of the screw.
37 The automatic choke body is supplied complete with the fast idle cam and it is therefore not necessary to dismantle this item. However if a second-hand part is being fitted, the cam, bush and spacer may be prised from the body using a wide blade screwdriver.
38 Mark the position and location of the auxiliary venturis (98) then remove them from the carburettor barrels (photo). If they are tight, open the throttle valves and use a plastic or wooden rod to tap them out. Failure of this method to remove the auxiliary venturis will necessitate obtaining Weber tool no 9610 150 0035.
39 Invert the carburettor body then bend back the tab washer (79).
40 Unscrew the nut (78). Provided that the lug on the fast idle lever (75) is intact, no harm can be done to the throttle valves or shaft; however if the lug is broken, the special Weber tool must be used to hold the shaft stationary while the nut is loosened.
41 Remove the nut (78), tab washer (79), lever (77) (noting its location), toothed sector assembly (83), spring (25) and bush (26). Gently tap the body to remove the bush (26) if necessary.
42 Unscrew and remove the sector screw (80), lock washer (81) and plain washer (82). Separate the lever (75) and bush (76) from the toothed sector (83).
43 Unscrew and remove the throttle valve retaining screws (29) from the throttle shaft with the accelerator pump cam fitted. Withdraw the throttle valve, noting which way round it is located. Mark it with a pencil if necessary.
44 Remove the throttle shaft (27) from the body, then remove the bush (26), spring (25) and spacer (30) (photo).
45 Extract the Teflon bushes (20 and 21) from the body and mark them relative to their locations (photo).
46 Hold the remaining throttle valve (28) closed and unscrew the nut (24). If this nut is excessively tight, it will be necessary to obtain the special Weber tool to hold the shaft stationary while the nut is loosened.
47 Unscrew and remove the throttle valve retaining screws (29), then open the valve against the spring tension and remove the throttle valve (28) (photo).
48 Release the spring tension and note the location of the return spring (85).
49 Remove the nut (24), spring washer (23), washer (22) and spring (25) and gently tap the body to remove the bush (26).
50 Remove the throttle shaft (84) from the body, then remove the bush (26), spring (25) and return spring (85) (photo).
51 Extract the Teflon bushes (20) from the body and mark them relative to their locations.

7 Special overhaul procedures

After carrying out the general overhaul procedures given in Chapter 4, the following special procedures should be made:
1 Using a hand chuck and Weber tool no 9600 325 1047, reform the idling jet seats by carefully rotating the tool. Finish the seatings by inserting Weber tool no 9610 315 1202 and gently tapping the top of the tool whilst rotating it (Fig. 9.12).
2 If the emulsion tube bores are discoloured and have signs of sediment build up, ream them clear again using Weber tool no 9600 325 0765. Rotate the tool slowly with a hand chuck until it moves quite freely, then remove it whilst still rotating it.
3 If on disassembly the choke shaft (8) is a tight fit in the carburettor cover (1) and it is of original diameter (6.0 mm), use Weber tool no 9600 035 0540 to ream the shaft bore clear with the aid of a hand chuck (Fig. 9. 14). Should the shaft bores be excessively worn, a new carburettor cover (1) must be obtained, but note that normally the shaft itself will wear quicker than its bore, it which case a new shaft will cure the problem.
4 If the Teflon bushes which support the throttle shafts are worn, they should be renewed.
5 Check the internal channels of the carburettor body and cover for blockage by injecting fuel with a syringe and observing that it emerges freely from the particular channel being tested. If any are blocked, the lead plugs must be drilled out and the channels cleared and checked with the special Weber tool.
6 The channels are of three diameters, viz 1.0 mm, 1.5 mm and 2.0 mm. The corresponding tools are Weber tool nos 9620 175 1846, 9620 175 1847 and 9620 175 1848. Fig. 9.15 shows the location of the various channels.
7 The carburettor body and cover should be thoroughly cleaned after overhaul to remove swarf and dirt, preferably using clean fuel and air pressure. The lead plugs should be renewed and retained in position by using Weber tool nos 9610

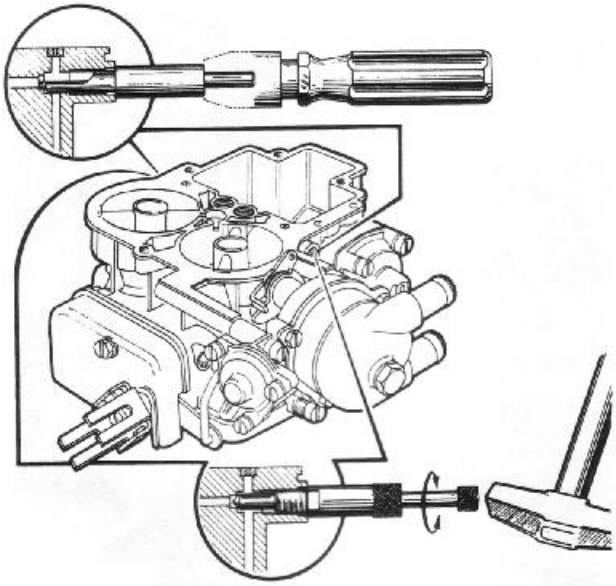


Fig. 9.12 Reforming the idling jet seats (Sec 7)

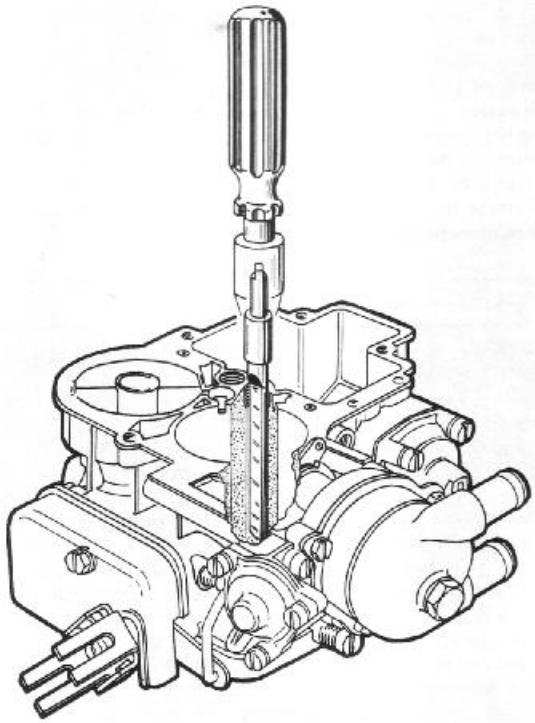


Fig. 9.13 Reaming the emulsion tube bores (Sec 7)

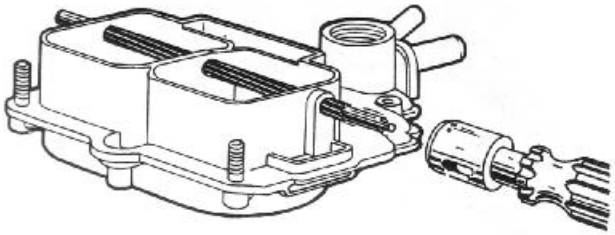


Fig. 9.14 Reaming the choke shaft bore (Sec 7)

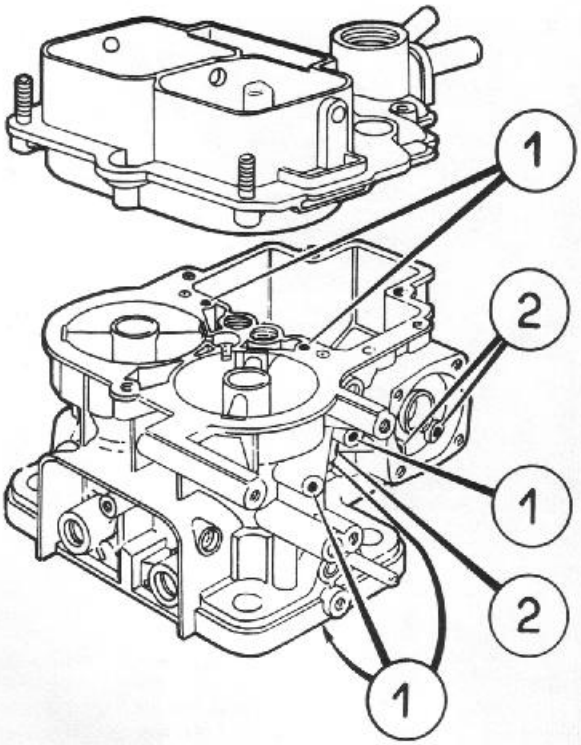


Fig. 9.15 Location of the internal channels of the carburettor body (Sec 7)

1 Idling channels *2 Accelerator pump channels*

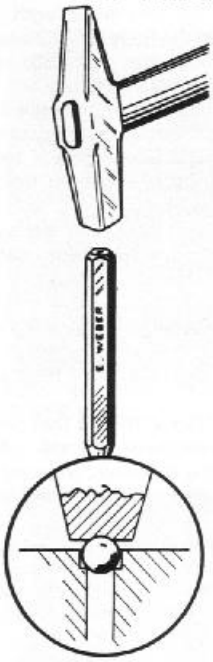


Fig. 9.16 Method of fitting the lead plugs (Sec 7)

315 0822 and 9610 315 0823 to expand them into their bores.

8 On 38 DGAS types, check the condition of the power valve diaphragm and diaphragm seat; if necessary, clean the seat with a little metal polish.

9 During the manufacture of the carburettor, a ball is inserted into the accelerator pump channel and retained by a brass plug (see Fig. 9.17). To check that this ball is free and unobstructed, shake the carburettor body and listen to the ball movement.

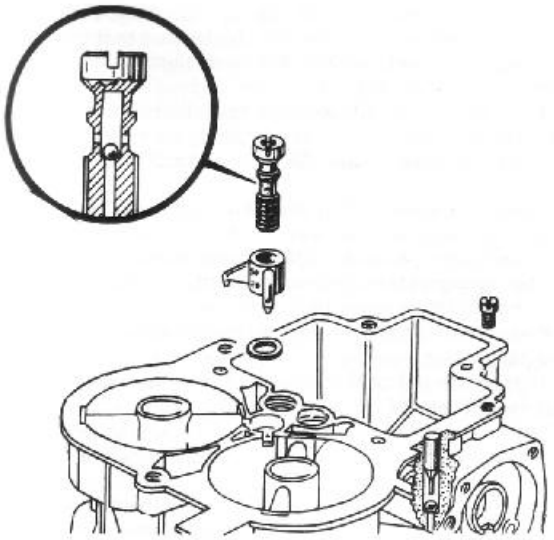
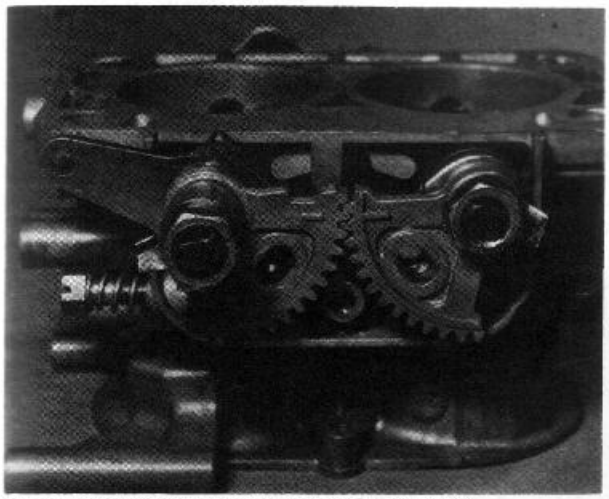
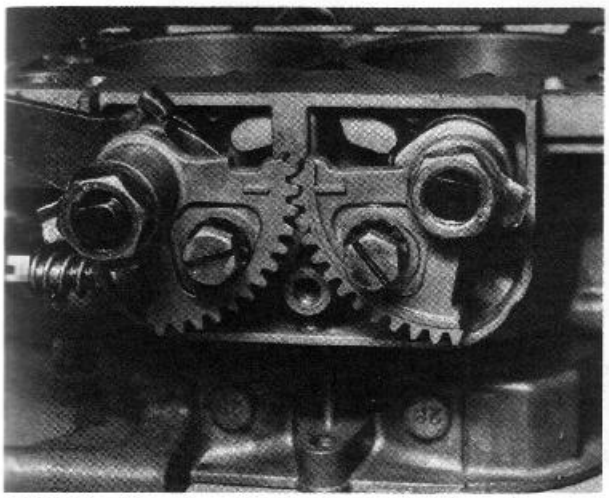


Fig. 9.17 Location of the acclerator pump ball valve (Sec 7)

10 Check that the internal channel of the automatic choke body is free and unobstructed. Also check that the diaphragm and corresponding surfaces are serviceable; if necessary clean the surfaces with metal polish.
11 Check the accelerator pump diaphragm and corresponding surfaces in the same manner to that described in paragraph 10.
12 Renew the diaphragm assemblies checked in paragraph 10 and 11 if necessary.
13 Check the accelerator pump lever for wear, especially on the type fitted with a roller bearing. Renew the lever if necessary.
14 Check the walls of the choke intake, where the choke valves rest when they are fully shut. If there is a deep wear ridge, this could cause the valves to temporarily stick shut, especially after an engine 'blow back'. The ridge should be removed using fine emery tape.
15 On 38 DGAS types, check the automatic choke shaft Teflon bush for wear and renew it if necessary.



8.9 Correct toothed sector alignment (DFAV type)



8.11 Fitting the sector adjustment screws (DFAV type)

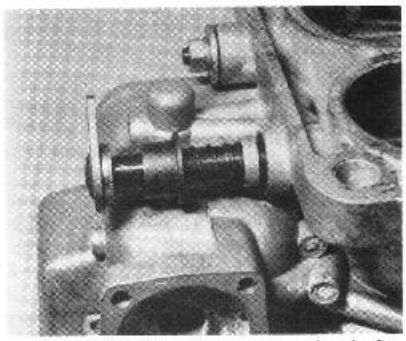
9 Assembly (34 DGAS and 38 DGAS types)

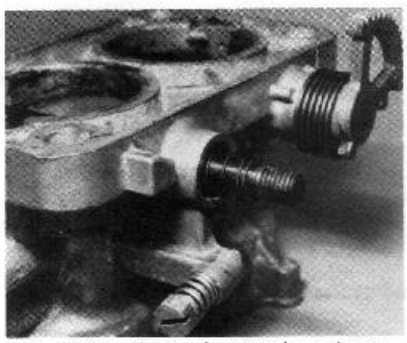
Note: *All components should be clean and dry before starting the assembly procedure.*

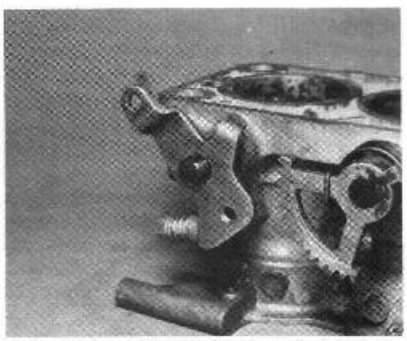
1 Insert the Teflon bushes (20) into the secondary throttle shaft bore of the carburettor body (86) and lightly lubricate them with a little engine oil.

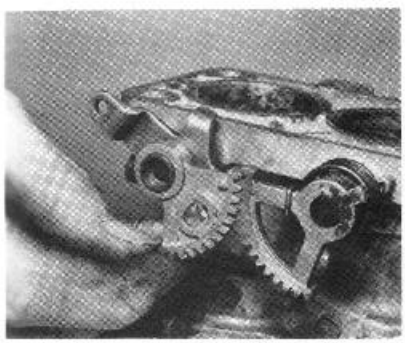
2 Locate the return spring (85), spring (25) and bush (26) to the secondary throttle shaft (84), then insert it into the carburettor body from the side opposite the float chamber. Make sure that the Teflon bushes are not displaced and locate the

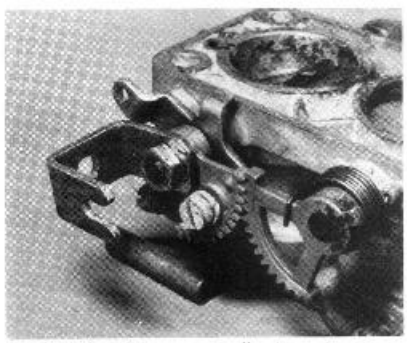
return spring (85) in the special hole.
3 Fit the bush (26), spring (25), washer (22), spring washer (23) and nut (24) to the end of the throttle shaft (84), then tighten the nut (84) whilst holding the shaft stationary with a screwdriver inserted through the toothed sector.
4 Tension the spring (85) by turning the toothed sector, then insert the throttle valve into the throttle shaft (84) and close the valve. Make sure that the angled perimeter of the valve seats correctly in the barrel and allow it to snap shut several times to centralise it.
5 Insert the throttle valve retaining screws (29) and tighten them evenly but without exerting excessive pressure on the shaft. It is recommended that new screws are always fitted to avoid cross-threading previously peened screws. Lock the screws (29) by peening with Weber tool no 98010 900 whilst supporting the shaft with a block of wood. Alternatively, coat the screw threads with a liquid locking agent (fuel resistant) prior to inserting them.
6 Insert the Teflon bushes (20 and 21) into the primary throttle shaft bore of the carburettor body (86) and lightly lubricate them with a little engine oil. Note that the smaller bush (21) is located at the float chamber end.
7 Locate the spacer (30), spring (25) and bush (26) to the primary throttle shaft (27) with the smaller diameter of the spacer against the accelerator pump operating cam.
8 Insert the throttle shaft (27) into the carburettor body from the float chamber side, making sure that the Teflon bushes are not displaced (photo).
9 With the accelerator pump cam facing the centre of the float chamber, fit the bush (26), spring (25) and lever (75), making sure that the threaded hole in the lever (75) is towards the secondary toothed sector (photos).
10 Fit the bush (76) to the throttle shaft (27) then press on the toothed sector (83) and mesh it with the secondary sector so that the alignment marks are in line (photo).
11 Fit the lever (77), tab washer (79) and nut (78).
12 Locate the spring (74) on the throttle idling adjustment screw (73), then insert the screw into the carburettor body and screw it in as far as it will go. The nut (78) may now be fully tightened and the locktab (79) bent. Fully unscrew the adjustment screw (73) but leave it in the carburettor body.
13 Open the primary throttle shaft (27) and insert the throttle valve (28), observing the procedure given in paragraphs 4 and 5 to centralise it. Fit the retaining screws (29).
14 Insert the sector screw (80) with lockwasher (81) and plain washer (82) and tighten it whilst holding both throttle valves completely shut; this will synchronise the throttle valves (photo).
15 Lubricate the toothed sectors with a little grease and check that the throttle valves operate smoothly and fully.
16 Fit the auxiliary venturis (98) into their respective positions as noted previously, making sure that the supply channels are adjacent and that the nozzle cut away sections face the throttle valves.
17 If removed, locate the fast idle cam on the bush followed by the spacer, then press the bush onto the rear of the automatic choke body (53) using a suitable diameter length of tubing. Note that when fitted the round contour of the cam must face the diaphragm end of the body with the flat edge uppermost (photo).
18 Fit the screw (59) and plug (58) to the cover (56), positioning the screw as previously noted.
19 Fit the operating rod (54) to the body (53), at the same time locate the diaphragm over the brass dowel.
20 Locate the spring (55) into the cover (56) then fit the cover to the body making sure that the spring locates in the diaphragm plate.
21 Insert and tighten the retaining screws (57) evenly.
22 Insert the Teflon bearing (52) into the body (53).
23 Lightly lubricate the shaft (43) with engine oil and fit it in

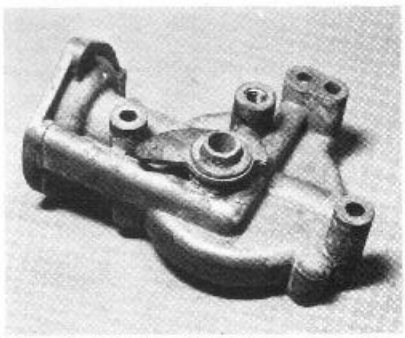

9.8 Inserting the primary throttle shaft (DGAS type)


9.9a Fitting the spring to the primary throttle shaft (DGAS type)

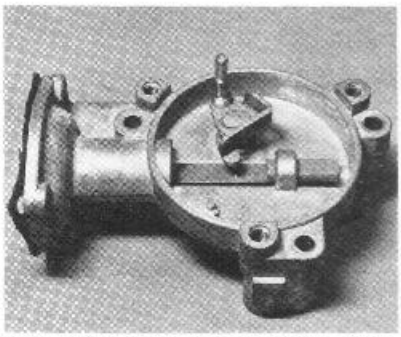

9.9b Fitting the lever to the primary throttle shaft (DGAS type)

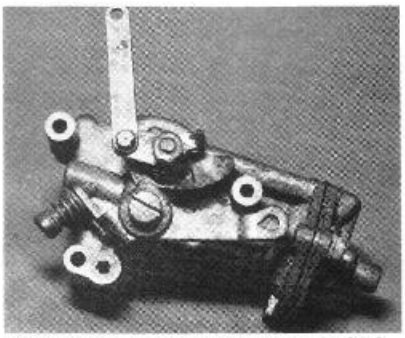

9.10 Aligning the toothed sectors (DGAS type)

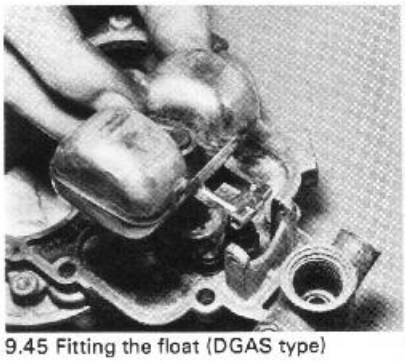

9.14 Fitting the sector adjustment screw (DGAS type)

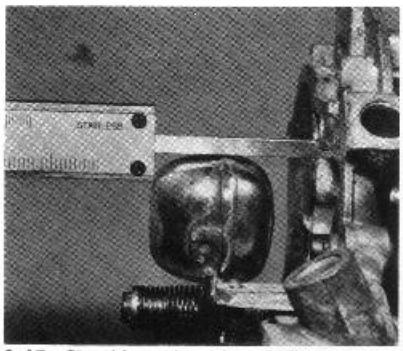

9.17 Correct location of the fast idle cam (DGAS type)

the body (53) (photo).
24 Fit the spacer (40), cover (39), spring (38), lever (37), spring washer (67) and nut (68). Tighten the nut, being careful not to bend the arm on the end of the shaft (43). Make sure that the lever and spring are assembled as shown in Fig. 9.10 with the lever resting on the flat edge of the fast idle cam.
25 Fit the spring (65) to the adjusting screw (66) and fit the screw to the lever (64).
26 Locate the spring washer, bush (71), wave washer (70), lever (63) and washer (62) to the retaining screw (72), then tighten the screw into the body (53). Make sure that the fast idle screw (66) can locate on the stepped edge of the fast idle cam (photo).
27 Press the O-ring seal (69) to the side of the carburettor.
28 Engage the rod (61) to the fast idle lever (75) and retain it with the split pin (60).
29 Engage the rod (61) with the fast idle lever (64), then fit the automatic choke body (53) to the carburettor body (86). Insert the retaining screws (42) and spring washers and tighten them evenly.
30 Working on the carburettor cover (1), lightly lubricate the choke shaft (4) with engine oil and insert it into the cover.
31 With the choke shaft (4) in the open position, fit the choke valves (5) into their location slots, then close the shaft to allow the valves to centralise.
32 Holding the shaft closed, insert the valve retaining screws (9) and tighten them evenly without exerting excessive pressure on the shaft (4). It is recommended that new screws are always fitted to avoid cross-threading previously peened screws. Lock the screws (9) by peening with Weber tool no 98010 900 or alternatively, by coating the threads with a liquid locking agent (fuel resistant) prior to inserting them. If the tool method is used, support the shaft (4) with a piece of wood.
33 Fit the seal (7) and plug (8) into the carburettor cover (1).
34 Locate the accelerator pump diaphragm assembly (32) to the cover (41) then, with the carburettor body on end, fit the spring (33) into the pump chamber and lower the diaphragm and cover onto it.
35 Insert the accelerator pump cover retaining screws (31), depress the cover and tighten the screws in diagonal sequence, making sure that the pump lever locates on the throttle shaft cam.
36 Fit and tighten the accelerator pump discharge blanking needle (16).
37 Fit a gasket (95) to the accelerator pump delivery valve (97) followed by the pump jet (96) and a further gasket (95), then locate the pump jet into the carburettor body and tighten the delivery valve (97).
38 Fit and tighten the full power valve (18) and gasket (17) to the bottom of the float chamber.
39 Fit the springs (88) to the idling adjusting screws (87) and locate them in the carburettor body.
40 Lower the emulsion tubes (89) into the body (86) then fit and tighten the air corrector jets (94).
41 Press the idling jets (34) into their holders (36) and fit the gaskets (35), then tighten the holders (36) into the body (86).
42 Fit and tighten the main jets (19) to the bottom of the float chamber.
43 Fit the gasket (13) to the needle valve (14) seating and tighten the seating into the carburettor cover (1) using a 10 mm socket or ring spanner.
44 With the cover (1) inverted, locate the power valve assembly (93), then depress the valve with one hand and lift the valve cover slightly to settle the diaphragm. While keeping the valve depressed, insert and tighten the retaining screws (91) complete with spring washers (92).
45 Lower the needle into the needle valve (14) seating, then locate the float assembly (15) and insert the float tab beneath the needle hook (photo).
46 Insert the fulcrum pin (90) through the two posts and float.
47 The float level adjustment must now be checked in the following manner. Hold the carburettor cover vertically so that the float assembly hangs from the fulcrum pin and the float arm is in light contact with the needle ball (ie the ball is not depressed). Using vernier calipers, check that the distance from the cover to the furthest part of the two semi-floats is as given in the adjustment data. If not, carefully bend the wide tab on the float arm as necessary (photo).
48 Tilt the carburettor cover so that the float assembly moves away from the cover and the narrow tab makes contact with the needle valve seating. The distance from the cover to the furthest part of the two semi-floats should now be as given in the adjustment data. If not, carefully bend the narrow tab on the float arm as necessary (photo).
49 The difference between the dimensions obtained in paragraphs 47 and 48 represents the needle valve stroke which should be 0.393 in (10.0 mm).
50 Locate the gasket (12) onto the carburettor body (86) then lower the carburettor cover (1) onto the main body (86), at the same time inserting the choke control lever (37) through the dust seal (7).
51 Fit the cover retaining screws (3) together with the spring washers and tighten them evenly in diagonal sequence.
52 Engage the choke plate operating lever (37) with the choke shaft (4) and retain by pressing the C-clip into the groove (photo).
53 Fit the fuel filter (10) and tighten the inspection plug (11) into the cover (1).
54 With the carburettor completely assembled, the idling and automatic choke adjustments must be made. To do this, first turn the throttle idling adjustment screw (73) until it just touches the fast idle lever (75), then continue to screw it in 2 complete turns. Note that if this adjustment is being made with the automatic choke completely assembled, it will be necessary to first open the throttle fully, hold the choke valves open and release the throttle. It is preferable to hold the choke valves open whilst making the adjustment.
55 Turn both idling mixture screws (87) until they are in light

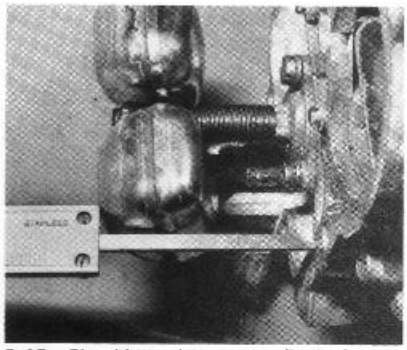

9.23 Fitting the automatic choke shaft (DGAS type)


9.26 Fitting the fast idle lever (DGAS type)

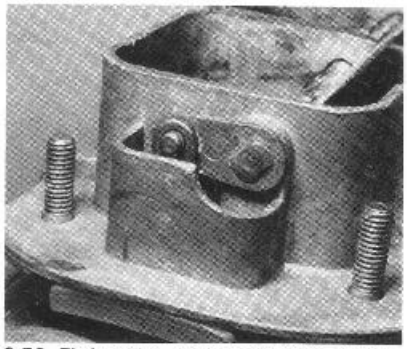

9.45 Fitting the float (DGAS type)



9.47 Checking the closed float level adjustment (DGAS type)



9.48 Checking the open float lever adjustment (DGAS type)



9.52 Fitting the choke operating lever (DGAS type)

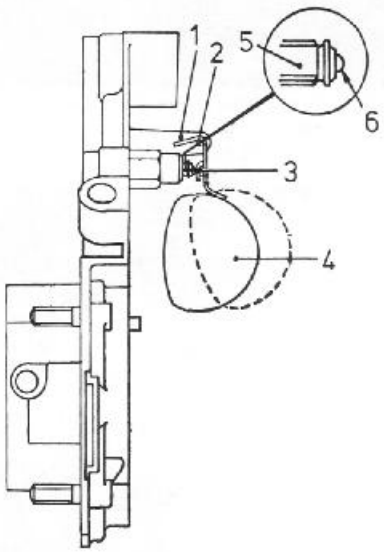


Fig. 9.21 Float level adjustment diagram (34 DGAS and DGAS types) (Sec 9)

1 *Stroke adjustment*
2 *Fulcrum pin*
3 *Closed adjustment*
4 *Float*
5 *Needle*
6 *Spring tensioned ball*

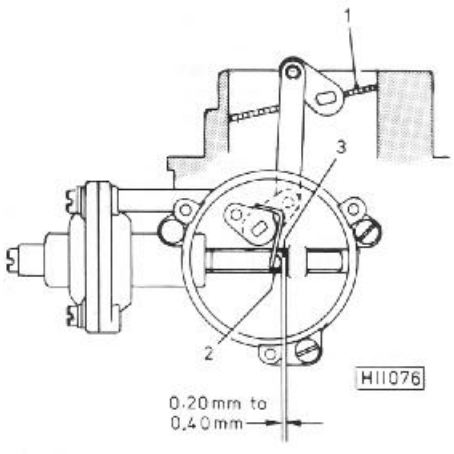


Fig. 9.22 Checking the shaft arm to rod clearance (DGAS types) (Sec 9)

1 *Choke valves*
2 *Shaft arm*
3 *Rod abutment*

contact with their seats, then back them off one complete turn each.

56 To adjust the automatic choke, first fully unscrew the fast idle adjustment screw (66). The choke valve pull down dimension must now be checked.

57 Connect an elastic band between the automatic choke shaft (43) and the diaphragm cover (56) so that the choke valves are held shut. With the operating rod (54) in the rest position, the clearance between the shaft (43) arm and the rod (54) abutment must be between 0.007 in and 0.015 in (0.2 mm and 0.4 mm). Make the check with a feeler gauge. If it is not correct the diaphragm may be stretched or the shaft arm bent. Check and rectify both of these items before proceeding (photo).

58 Using a small electrician's screwdriver or length of welding rod, push the outer diameter of the operating rod (54) hard against the adjustment screw (59) by inserting it into the rod bore. The tension of the elastic band must be sufficient to overcome the tension of the spring inside the operating rod (54). This can be checked by temporarily opening the choke valves and observing whether the visible section of the rod (54) moves. Check that the distance from the lower edge of the choke valves to the intake wall is between 0.112 in and 0.124 in (2.85 mm and 3.15 mm). Make the check using a drill shank and if not correct, adjust the screw (59) as necessary, after first removing the plug (58) (photo).

59 Using the blade of a screwdriver, press both sections of the rod (54) hard against the screw (59). The distance from the lower edge of the choke valves to the intake well should now be the maximum choke valve gap given in the adjustment data. Make the check using a drill shank and if not correct, renew the operating rod (54) (photo).

60 If a new automatic choke body (53) has been fitted, the alignment mark must now be stamped on the top of the body. To do this it is essential to obtain Weber tool no 98028 600. The mark is made while keeping the choke valves completely shut by applying light pressure on the tool.

61 Fit and tighten the plug (58) into the diaphragm cover (56).

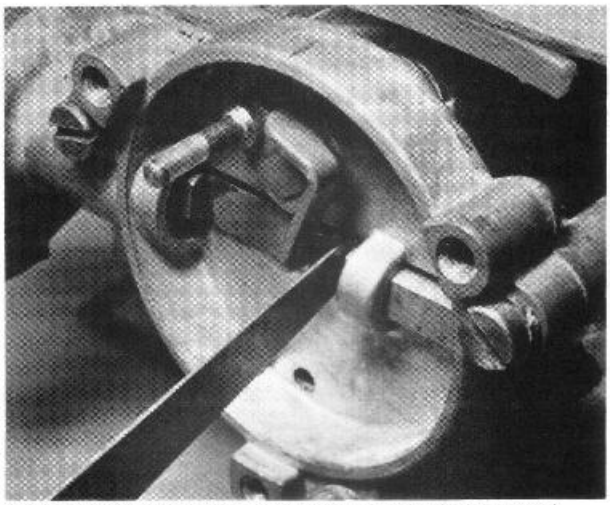
62 Fit the disc gasket (51) to the automatic choke body (53).

63 Fit the thermostat assembly (50) to the body (53), at the same time locating the bi-metallic spring onto the shaft (43), then fit the retaining ring (49) and insert the three screws (44) (photo).

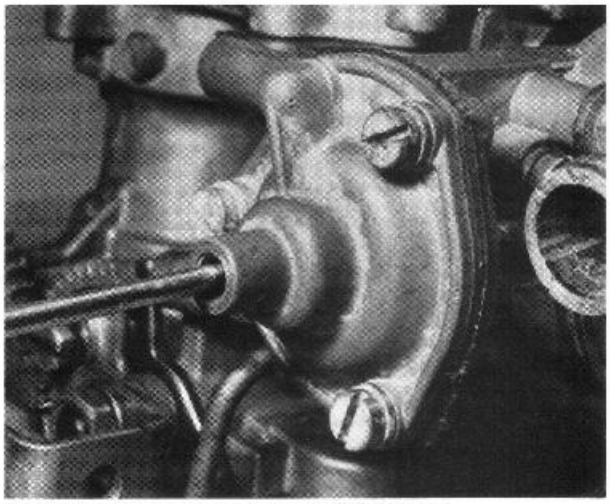
64 Whilst holding the thermostat assembly (50) so that the alignment mark is opposite the mark on the body (53), tighten the three screws (44) evenly (photo).

65 Fit the gasket (48) and the cover (47), then insert and tighten the retaining bolt (46) with the gasket (45).

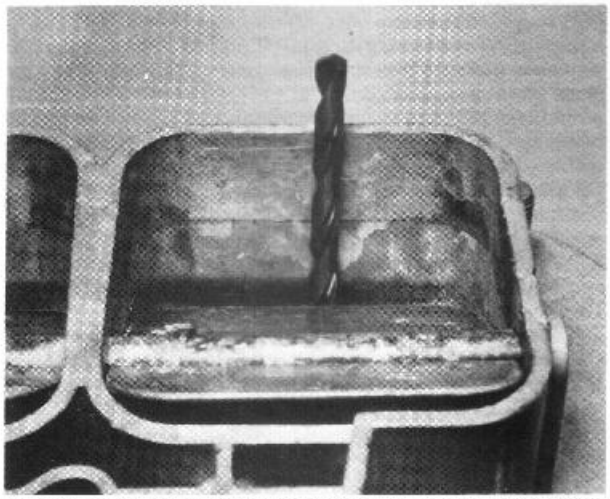
66 The automatic choke fast idling adjustment must now be made. Open and close the throttles and make sure that the fast idling adjustment screw (66) is against the fast idle cam highest point with the choke valves completely shut. Using a small drill or a feeler gauge, check that the distance from the throttle valves to the outer wall of the barrels by the progression holes is as given in the adjustment data. If not, adjust the fast idling



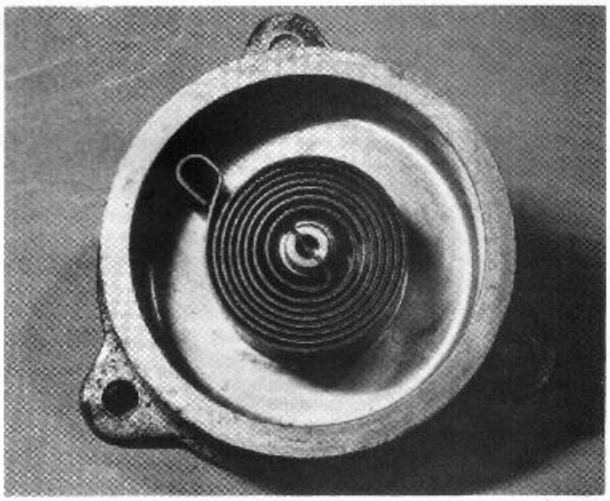
9.57 Checking the shaft arm to rod clearance (DGAS type)



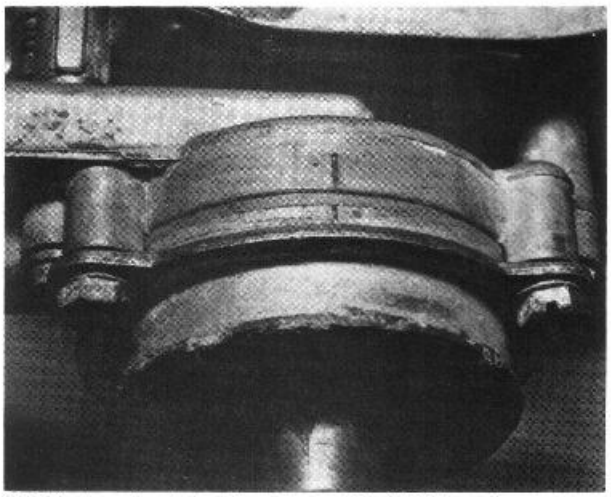
9.58 Adjusting the rod stop screw (DGAS type)



9.59 Checking the choke valve clearance with a drill (DGAS type)



9.63 Automatic choke thermostat bi-metallic spring (DGAS type)



9.64 Automatic choke alignment marks (DGAS type)

screw (66) to give the correct clearance.

67 Slightly open the throttles and, by moving the choke valves, position the adjustment screw (66) into the step on the fast idling cam. The distance from the lower edge of the choke valves to the intake walls must now be as given in the adjustment data.

68 Fully open the throttles and slowly close the choke valves. The fast idle cam should rotate until the adjustment screw (66) rests against the step. If not, re-check the idling screw (73) adjustment and the fast idling screw (66) adjustment and correct so that the above check is achieved.

10 Tuning

Note: *Refer to Chapter 3 for general notes on tuning.*

1 The idling adjustment screws should be set to their preliminary positions as described in Sections 8 and 9.

2 Connect a tachometer to the engine in accordance with the manufacturer's instructions.

3 Start the engine and run until normal operating temperature has been reached (ie the thermostat has opened).

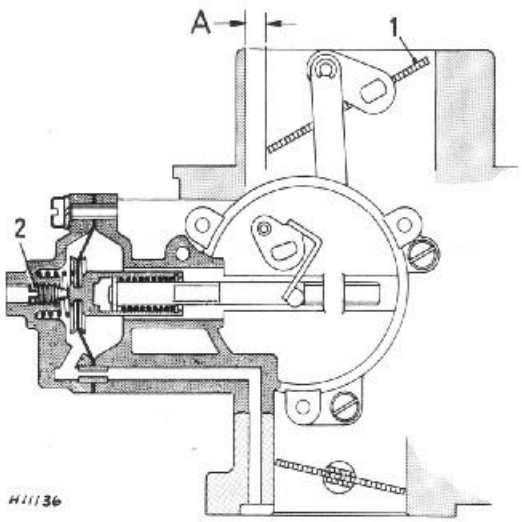


Fig. 9.23 Automatic choke minimum gap setting (DGAS types) (Sec 9)

1 Choke valves
2 Adjustment screw
A Choke valve clearance

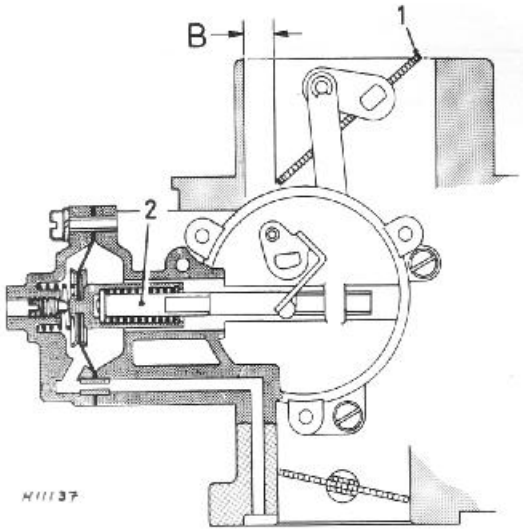


Fig. 9.24 Automatic choke maximum gap setting (DGAS types) (Sec 9)

1 Choke valves
2 Operating rod
B Choke valve clearance

4 Turn the throttle valve idling adjusting screw so that the engine runs at the recommended idling speed for the particular engine being worked on; this will be between 600 rpm and 800 rpm for touring models and approximately 1000 rpm for sports car models.
5 Turn the idle mixture adjustment screws in or out by equal amounts until the engine runs at the highest rpm commensurate with even running.
6 Re-adjust the throttle valve adjusting screw, if necessary, to bring the engine speed within limits.
7 Ideally a vacuum gauge should be used to make the adjustment described in paragraph 5, in which case the mixture adjustment screws are adjusted to give the maximum vacuum reading.
8 When the adjustment is completed, switch off the engine and remove the tachometer and vacuum gauge if fitted.
9 On bypass idle type carburettors, the procedure is similar but the bypass idle adjustment screw should be first fully screwed in, then screwed out 1 full turn. The basic idle adjustment is then made in the normal way and the bypass idle adjustment used for any final adjustment of speed. If an exhaust analyser is available, the percentage of CO should be made on the basic idle adjustment, prior to making the final speed adjustment on the bypass idle screw.

11 Fault diagnosis

Symptom	Reason/s
Engine will not start	Faulty automatic choke Blocked fuel filter or jets
Uneven idling	Leaking carburettor flange or manifold gasket Loose idling jets or auxiliary venturis Excessive sediment or water in carburettor Throttle shafts and bearings or carburettor body excessively worn Faulty automatic choke Leaking ignition advance tube
Carburettor floods	Worn needle valve Leaking or damaged float assembly Incorrect float level adjustments Excessive sediment in fuel
Engine lacks performance	Incorrect tuning adjustments Incorrect float level adjustments Excessive sediment in fuel Faulty acceleration pump Throttle valves do not fully open
Excessive fuel consumption	Needle valve not seating Leaking or damaged float assembly Incorrect float level adjustments Faulty automatic choke Choked air filter