

Part 2 Weber carburetors

Chapter 7 Type 32 DFD, 32 DFE, 32 DFM, 32 DIF, 32 DAF, 32 DGV, 32/36 DFV, 32/36 DGV, 32/36 DFAV, 32/36 DGAV

Contents

	<i>Section</i>		<i>Section</i>
Assembly	7	Introduction	1
Carburettor adjustments	8	Operation	3
Construction	2	Removal and refitting	4
Disassembly	5	Special overhaul procedures	6
Fault diagnosis	10	Tuning	9

Adjustment data

Manual choke types

Fast idle primary throttle valve opening:	in (mm)
32 DFD	0.04 (1.0)
32 DFE	0.035 (0.9)
32 DFM	0.04 (1.0)
32 DIF	0.047 (1.2)
32 DGV	0.03 (0.8)
32/36 DFV	0.047 (1.2)
32/36 DGV	0.033 (0.85)

Automatic choke types

Fast idle primary throttle valve opening	in (mm)
32/36 DGAV type:	
Series 1A, 01A, 1B, 01B	0.03 to 0.035 (0.8 to 0.9)
Series 2A, 02A, 2B, 02B, 11A, 011A, 12A, 012A, 13A, 013A	0.039 to 0.043 (0.95 to 1.05)
Series 3A, 03A, 3B, 03B, 4A, 04A, 4B, 04B	0.04 to 0.045 (1.0 to 1.10)
Series 6A, 06A	0.03 to 0.033 (0.8 to 0.85)
Series 8A, 08A, 10A, 010A	0.035 to 0.04 (0.9 to 1.0)
Series 9A, 09A	0.045 to 0.049 (1.15 to 1.25)
DFAV and DAF types	0.049 (1.25)

Spindle to shaft clearance

32/36 DGAV (except series 3A)	in (mm)
32/36 DGAV (series 3A)	0.008 to 0.016 (0.2 to 0.4)
32/36 DFAV and DAF	0.008 to 0.1 (0.2 to 2.5)
	0.008 (0.2) min

Choke valve clearance

At minimum shaft travel	in (mm)
DGAV types:	
Series 1A, 01A, 1B, 01B	0.18 ± 0.006 (4.5 ± 0.15)
Series 2A, 02A, 2B, 02B, 9A, 09A	0.12 ± 0.006 (3.0 ± 0.15)
Series 3A, 03A, 3B, 03B, 4A, 04A, 4B, 04B, 8A, 08A, 10A, 010A, 11A, 011A, 12A, 012A, 13A, 013A	0.16 ± 0.006 (4.0 ± 0.15)
Series 6A, 06A	0.14 ± 0.006 (3.5 ± 0.15)
At maximum shaft travel	
Series 1A, 01A, 1B, 01B, 2A, 02A, 2B, 02B, 12A, 012A, 13A, 013A	0.26 ± 0.02 (6.5 ± 0.5)
Series 3A, 03A, 3B, 03B, 4A, 04A, 4B, 04B, 8A, 08A, 9A, 09A, 10A, 010A, 11A, 011A	0.24 ± 0.02 (6.0 ± 0.5)
Series 6A, 06A	0.22 ± 0.02 (5.5 ± 0.5)

Choke valve pull down

32/36 DFAV and DAF	in (mm)
	0.187 to 0.207 (4.75 to 5.25)

Choke valve opening

Low fast idle cam position	in (mm)
32/36 DGAV types:	
Series 1A to 06A inclusive	0.08 to 0.1 (2.0 to 2.5)
Series 8A to 011A inclusive	0.06 to 0.08 (1.5 to 2.0)
Series 12A to 13A inclusive	0.1 to 0.12 (2.5 to 3.0)

Float level setting dimensions

	Closed position (A) in (mm)	Stroke (B) in (mm)
32 DFD	0.256 (6.5)	0.315 (8.0)
32 DFE	0.285 (7.25)	0.315 (8.0)
32 DFM	0.256 (6.5)	0.315 (8.0)
32 DAF, 32 DIF	0.276 (7.0)	0.315 (8.0)
32 DGV	1.535 (39.0)	0.433 (11.0)
32/36 DFV, 32/36 DFAV	1.437 (36.5)	0.394 (10.0)
32/36 DGV, 32/36 DGAV	1.535 (39.0)	0.433 (11.0)

1 Introduction

The carburettor types covered in this Chapter are all of downdraught design and are of dual barrel construction to supply the primary and secondary functions.

Each throttle valve is mounted on a separate shaft and they

are of differential or progressive choke type. The linkage between the two throttle valves is arranged so that the secondary valve does not commence to open until the primary throttle valve is $\frac{2}{3}$ open.

DAF, DFAV and DGAV types are equipped with a semi-automatic choke control.

The carburettor is normally fitted to the engine as a single

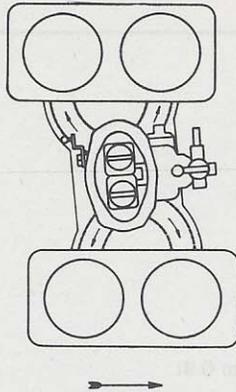


Fig. 7.1 Single carburettor fitted to a four-cylinder V-engine (Sec 1)

unit with both barrels feeding a common inlet manifold, the most common arrangements being as follows:

- 1 One unit on a four-cylinder in-line engine
- 2 One unit on a four-cylinder V engine

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 or zinc alloy (Mazak) construction. 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, which run directly in the carburettor body, are of steel.

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

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

Single fuel float assemblies are fitted to 32 DFD, 32 DFE, 32 DFM, 32 DIF and 32 DAF types and are of brass construction; two semi-floats are fitted to remaining types and they are of plastic or brass construction.

3 Operation

Cold starting – manually operated choke

Refer to Fig. 7.2 and note that when the lever (53) is moved to position A, the choke valves (50) close the air intake. At the same time the fast idle lever (55) partially opens the primary throttle valve (35).

When the engine is cranked, a rich mixture is drawn from the nozzle (9) to facilitate starting. As soon as the engine fires, the additional vacuum causes the choke valves (50) to partially open, due to the offset pivot shaft, against the tension of the spring (51).

As the engine warms up the control cable is progressively shut, until at position B the choke valves are fully open and the primary throttle (35) is returned to its idling position. The choke valves (50) are held open by the lever extension (52).

Cold starting – automatically operated choke

Refer to Fig. 7.3 and note that when the engine is cold and the throttle pedal has been depressed once, the bi-metallic

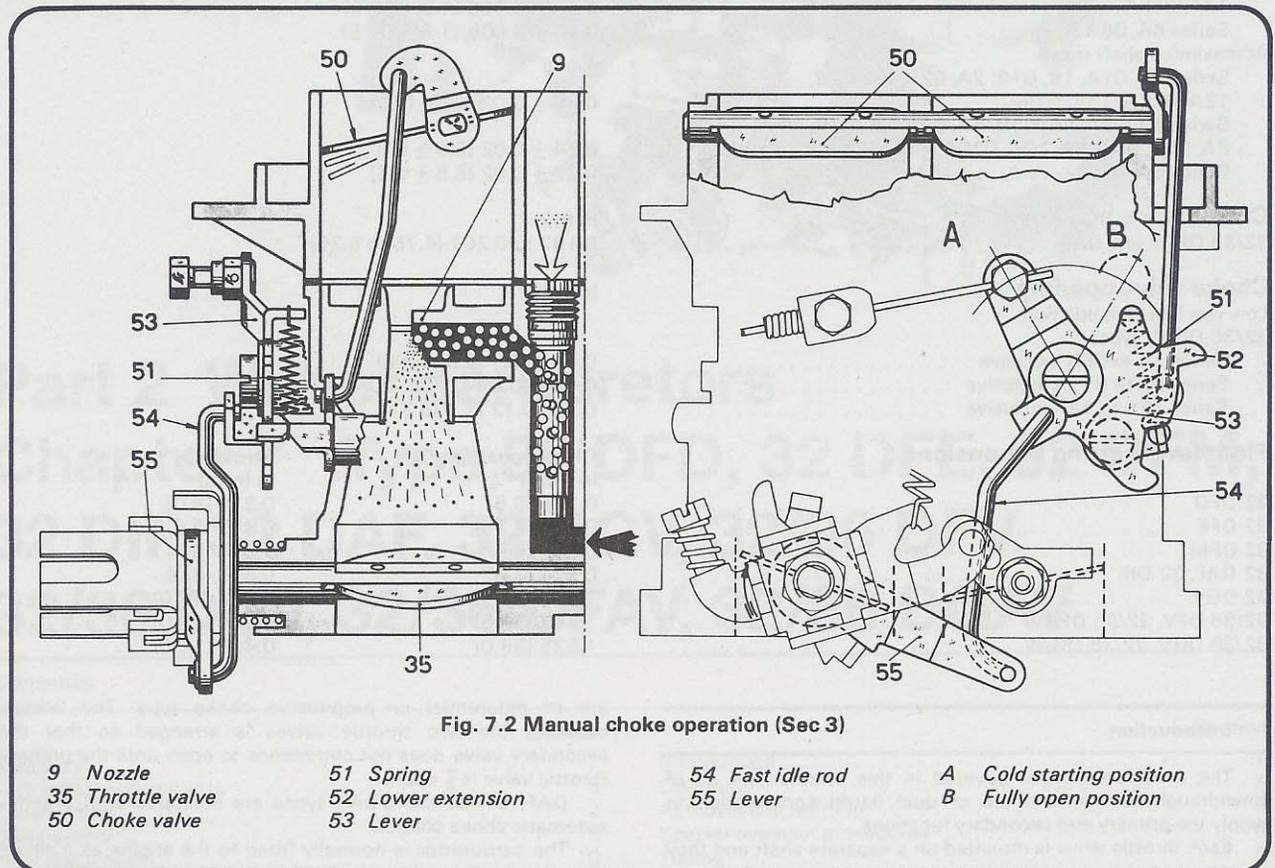


Fig. 7.2 Manual choke operation (Sec 3)

- | | | | |
|-------------------|--------------------|------------------|--------------------------|
| 9 Nozzle | 51 Spring | 54 Fast idle rod | A Cold starting position |
| 35 Throttle valve | 52 Lower extension | 55 Lever | B Fully open position |
| 50 Choke valve | 53 Lever | | |

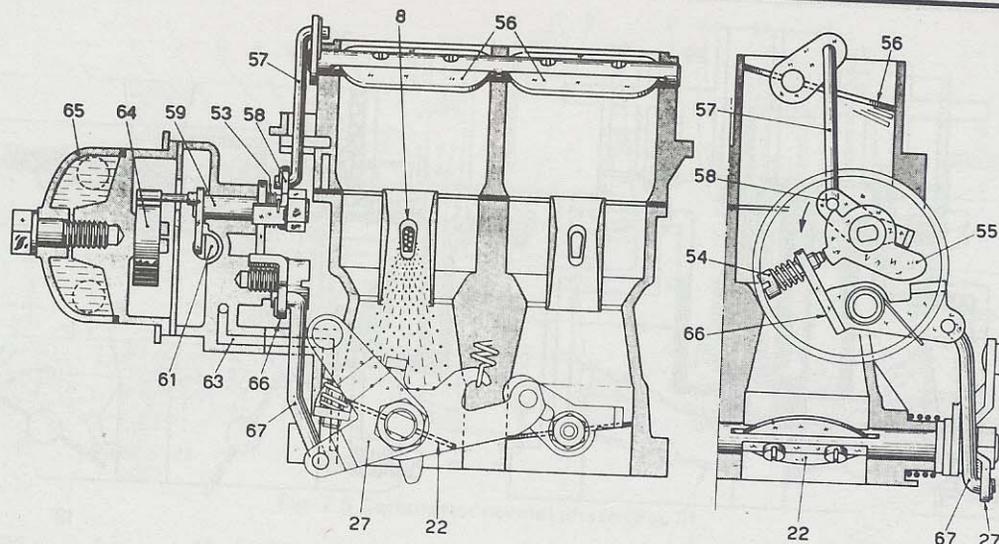


Fig. 7.3 Automatic choke operation (Sec 3)

- | | |
|-------------------------|-----------------------|
| 8 Nozzle | 59 Spindle |
| 22 Throttle valve | 60 Lever |
| 27 Lever | 61 Shaft |
| 53 Spring | 62 Diaphragm |
| 54 Fast idle adjustment | 63 Channel |
| 55 Fast idle cam | 64 Bi-metallic spring |
| 56 Choke valve | 65 Cover |
| 57 Operating rod | 66 Lever |
| 58 Lever | 67 Rod |

spring (64) rotates the spindle (59) and closes the choke valves (56). At the same time, the fast idle cam (55) prevents the throttle valve (22) from completely closing.

When the engine is cranked, a rich mixture is drawn from the nozzle (8) to facilitate starting. As soon as the engine fires, vacuum from below the throttle valve is relayed through channel (63) to diaphragm (62) and the shaft (61) moves and partially opens the choke valves (56) against the action of the bi-metallic spring (64). If the throttle is opened at this stage, the vacuum will cease and the choke valves (56) will close; however, the passage of air will open the choke valves against the action of the bi-metallic spring (64) and the auxiliary spring (53).

As the engine warms up, the bi-metallic spring (64) progressively opens the choke valves (56), until at normal operating temperature they are held fully open. The fast idling screw (54) does not now rest on the fast idling cam (55) since the latter has been rotated by the bi-metallic spring and therefore the throttle valve (22) is free to return it to its normal idling position.

Idling and progression

Refer to Fig. 7.4 and note that when the engine is idling both throttle valves (12 and 22) are shut. Fuel is drawn from the

float chamber, through an internal channel to the primary well (14) and then passes along the channel (36) to the idling jet (37) where air is introduced from the calibrated bush (38). The fuel and air is now an emulsion and continues through channel (35), past the idling mixture control screw (34) through the idling feed hole (33) and into the primary carburettor throat at the engine side of the throttle valve (22).

Refer to Fig. 7.5 and note that 32 DFD, 32 DFE and 32 DFM type carburetors have idling channels to both primary and secondary carburettor barrels and the mixture adjusting screw is located in the secondary barrel.

When the primary throttle valve is opened slightly to increase the engine speed, the progression holes (Fig. 7.4) (39) are brought into action to provide extra fuel.

When the primary throttle valve (22) is $\frac{2}{3}$ open, the secondary throttle valve (12) will commence to open and the secondary progression holes provide mixture to the secondary barrel.

When either throttle valve is sufficiently open, the idling and progression system ceases and the main fuel supply system operates.

Normal running

Under full throttle and high speed cruising conditions, the

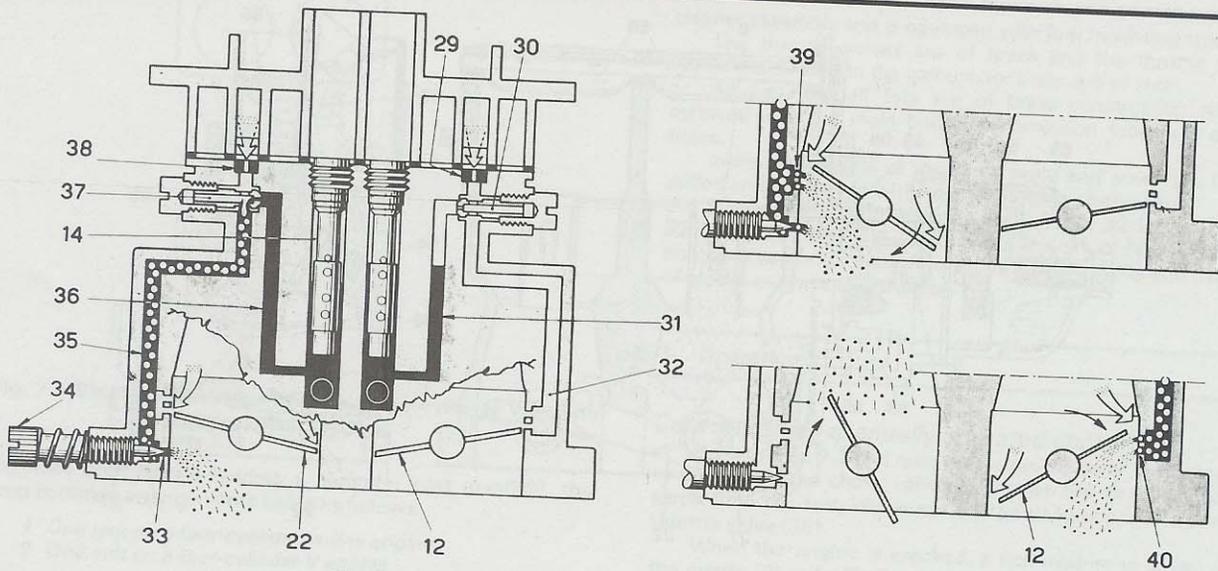


Fig. 7.4 Carburettor idling and progression phase (Sec 3)

- | | | | |
|-----------------------------|----------------------------------|--------------------------------|-----------------------|
| 12 Secondary throttle valve | 31 Secondary channel | screw | 37 Primary idling jet |
| 14 Primary well | 32 Secondary progression channel | 35 Primary progression channel | 38 Calibrated bush |
| 22 Primary throttle valve | 33 Idling feed hole | 36 Primary channel | 39 Progression holes |
| 29 Calibrated bush | 34 Idling mixture control | | 40 Progression holes |
| 30 Secondary idling jet | | | |

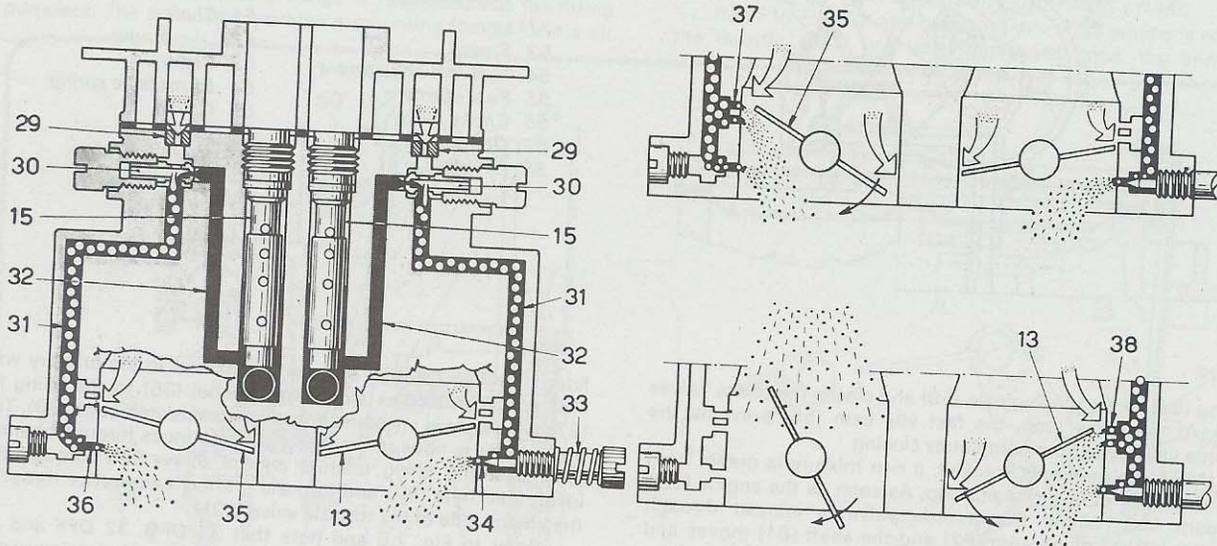


Fig. 7.5 Carburettor idling and progression phase (twin function) (Sec 3)

- | | | | |
|-----------------------------|---------------------------------|---------------------------|--------------------------------|
| 13 Secondary throttle valve | 31 Channel | 34 Feed hole | 37 Primary progression holes |
| 15 Secondary well | 32 Channel | 35 Primary throttle valve | 38 Secondary progression holes |
| 29 Calibrated bush | 33 Idling mixture control screw | 36 Feed hole | |
| 30 Idling jets | | | |

main fuel supply circuit is brought into action. Refer to Fig. 7.6 and note that fuel from the float chamber (18) passes through the main jets (15) to the emulsion tube wells (14). At the same time air is drawn through the air corrector jets (8), through the holes in the emulsion tubes (13) and emulsifies the fuel which is then drawn through the nozzles (9) and auxiliary venturis (10). The mixture then mixes with the main air supply as it is drawn

through the chokes (11) and into the engine.

When the throttle valves are both open fully, the overfeed enrichment circuit is brought into action to provide full power. Under these conditions the air velocity through the carburettor is high and extra fuel is drawn out of the calibrated orifice located at the top of the secondary barrel. The arrangement varies in the different carburetors; on DGV and DGAV types the

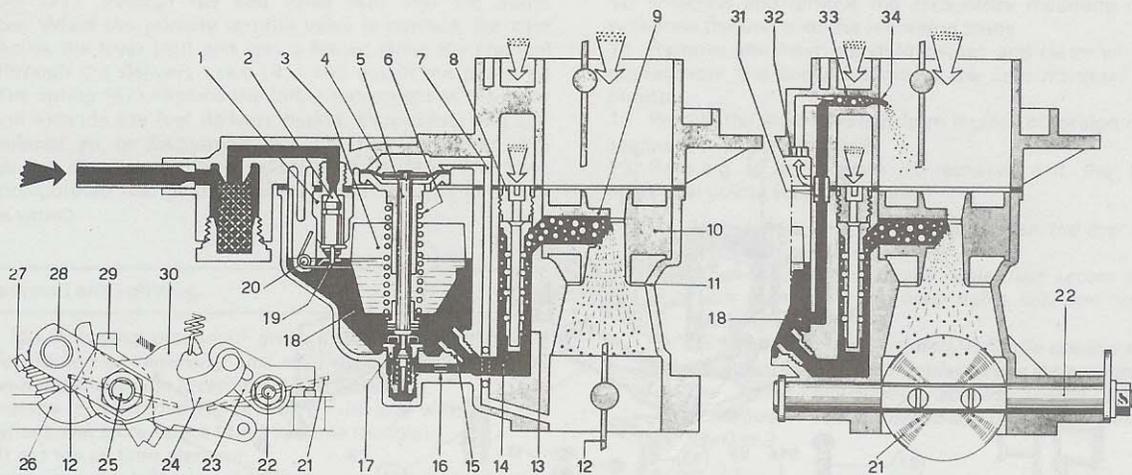


Fig. 7.6 Carburettor normal phase (Sec 3)

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|---------------|----------------------|-----------------------|-----------------------|
| 1 Needle seat | 10 Auxiliary venturi | 19 Spring hook | 27 Adjusting screw |
| 2 Needle | 11 Choke | 20 Pivot | 28 Lever |
| 3 Float | 12 Throttle valve | 21 Secondary throttle | 29 Lever |
| 4 Diaphragm | 13 Emulsion tube | 22 Shaft | 30 Lever |
| 5 Rod | 14 Well | 23 Lever | 31 Calibrated bush |
| 6 Spring | 15 Main jet | 24 Lever | 32 Calibrated bush |
| 7 Channel | 16 Calibrated bush | 25 Shaft | 33 Channel |
| 8 Air jet | 17 Full power valve | 26 Lever | 34 Calibrated orifice |
| 9 Nozzle | 18 Float chamber | | |

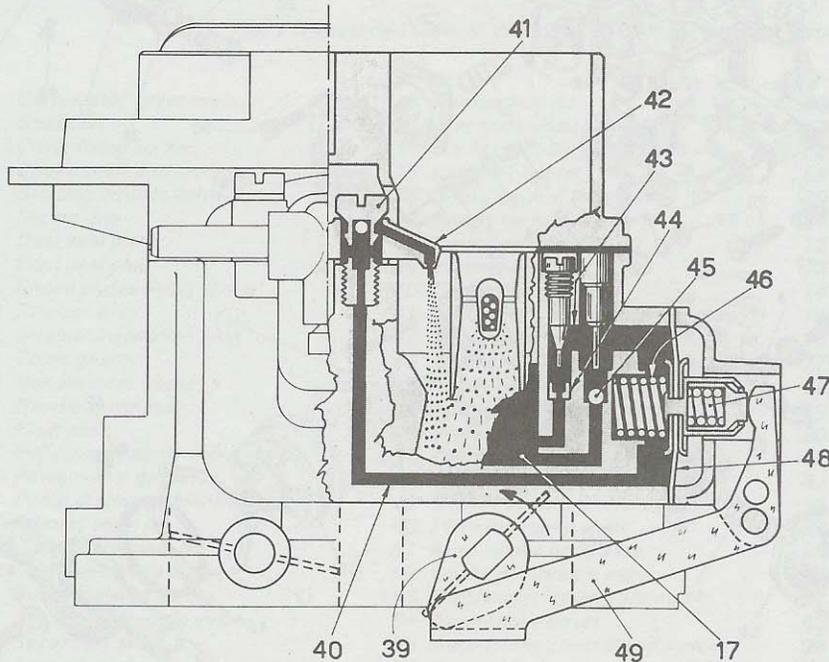


Fig. 7.7 Carburettor acceleration phase (Sec 3)

- | |
|-----------------------|
| 17 Float chamber |
| 39 Throttle shaft cam |
| 40 Channel |
| 41 Delivery valve |
| 42 Jet |
| 43 Channel |
| 44 Calibrated bush |
| 45 Ball |
| 46 Return spring |
| 47 Buffer spring |
| 48 Diaphragm |
| 49 Lever |

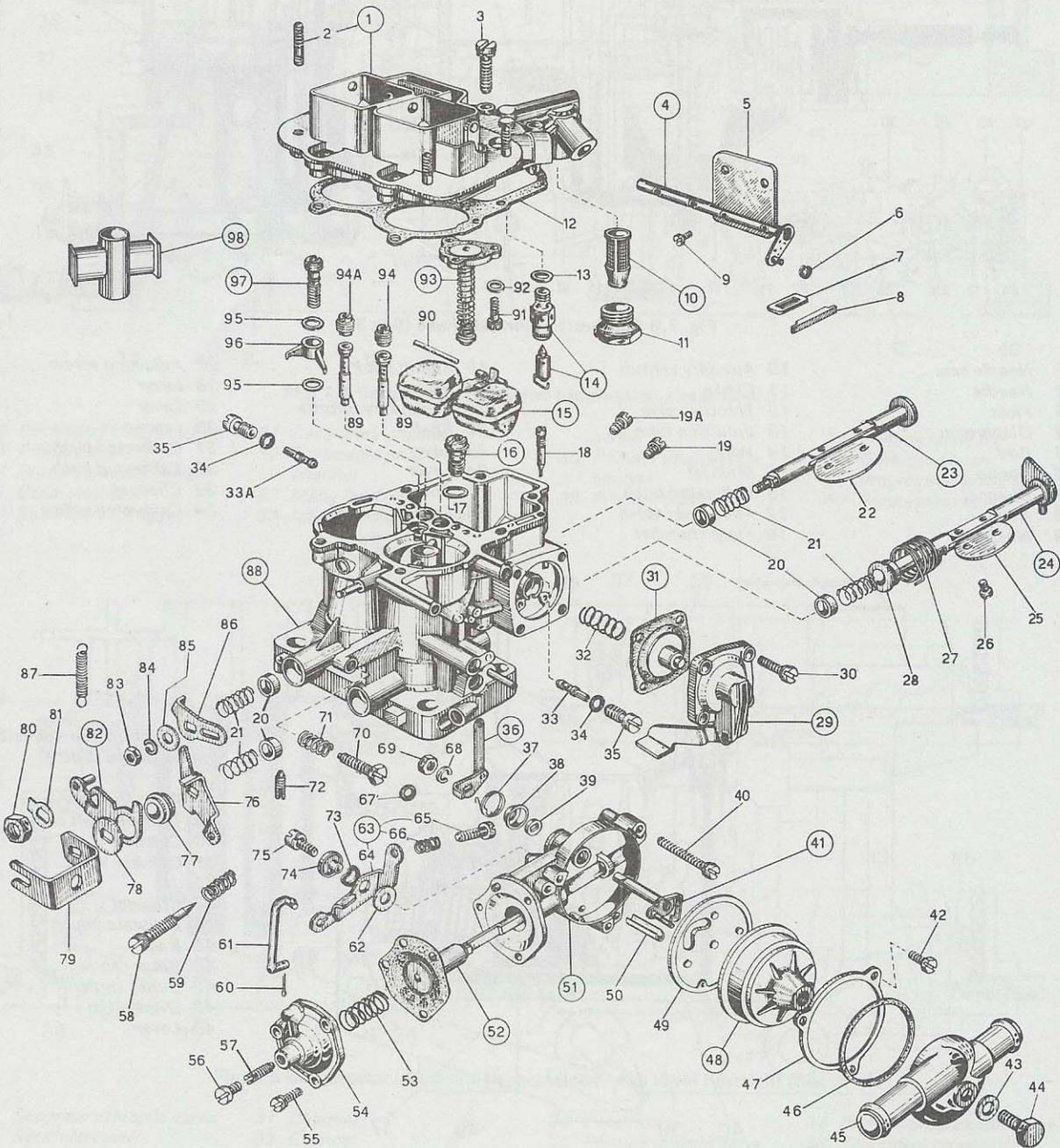
circuit does not include air correction and on 32 DFE and 32DFM types the circuit emerges directly above the secondary nozzle.

DFV, DFAV, DGV and DGAV carburetors are also equipped with a full power valve which operates immediately the primary throttle valve is opened quickly. Under these conditions the vacuum through channel (7) is insufficient to draw the diaphragm (4) against the spring (6) and the operating rod (5) therefore opens the full power valve (17). The fuel level in the primary emulsion tube well (14) immediately rises and the mixture drawn from the nozzle (9) is enriched. When the

primary throttle valve is partially open, the vacuum through 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 carburetor is provided with a diaphragm type acceleration pump which is operated by the primary throttle shaft and injects only into the primary venturi. Reference to Fig. 7.7 will show that when the primary throttle valve is closed, the accelerator pump diaphragm (48) draws fuel from the float



chamber (17), through the ball valve (45) into the pump chamber. When the primary throttle valve is opened, the cam (39) moves the lever (49) and fuel is forced along the channel (40), through the delivery valve (41) and out of the pump jet (42). The spring (47) absorbs the initial movement of the lever (49) and extends the fuel delivery period. Excess fuel and any accumulated air is discharged into the float chamber (17) through the channel (43) and calibrated bush (44). The lever (49) incorporates two pivot holes by which the pump stroke may 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.
- 5 On automatic choke models, partially drain the cooling system and disconnect the two water hoses.
- 6 On manual choke models, disconnect the choke cable.
- 7 Disconnect the fuel supply pipe and return pipe where fitted.
- 8 Release the distributor automatic advance pipe from the side of the carburettor.
- 9 Disconnect the throttle control shaft from the throttle lever.

10 Unscrew and remove the carburettor mounting nuts then withdraw the unit over the mounting studs.

11 Remove the inlet manifold gasket and clean all traces of gasket from the contact faces of the inlet manifold and carburettor.

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 a new gasket and tighten the four retaining nuts in diagonal sequence
- (b) When refitting the choke cable, first secure the outer cable then insert the inner cable fully and tighten the retaining screw
- (c) On automatic choke models, refill the cooling system in accordance with the manufacturer's instructions
- (d) The idling adjustment screws should be set as described in Section 8 and finally tuned as described in Section 9

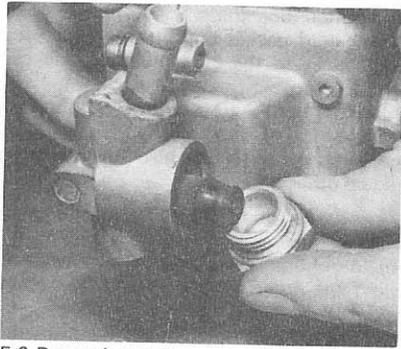
5 Disassembly

Note: Throughout the disassembly and assembly Sections, reference will be made to the illustrations of 32/36 DGAV, 32/36 DGV and 32 DFE/DFM carburetors. The remaining carburettor types covered in this Chapter are very similar in construction although the individual components may be located in different areas, or in some instances omitted.

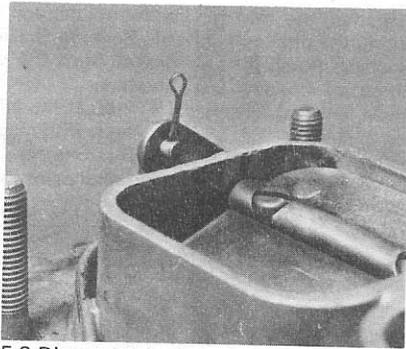
- 1 Thoroughly clean the carburettor exterior and wipe dry.
- 2 Referring to Fig. 7.8, unscrew and remove the fuel filter inspection plug (11) and extract the filter (10) (photo).

Fig. 7.8 Exploded view of the 32/36 DGAV carburettor (typical) (Sec 5)

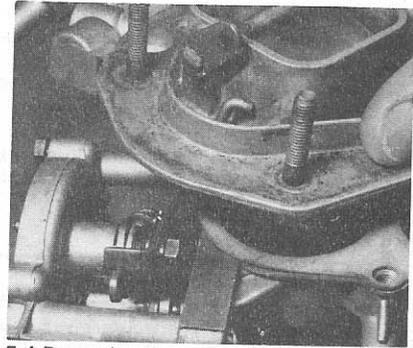
- | | | |
|------------------------------------|--|--|
| 1 Carburettor cover assy | 33 Primary idle jet | 66 Spring |
| 2 Stud bolt | 33A Secondary idle jet | 67 Auto-choke O-ring seal |
| 3 Cover fixing screw | 34 Gasket for idling jet holder | 68 Spring washer |
| 4 Choke shaft and lever assy | 35 Idling jet holder | 69 Throttle shaft fixing nut |
| 5 Starting throttle valve | 36 Choke control lever assy | 70 Primary throttle adjusting screw |
| 6 Spring ring | 37 Spring for fast idle cam | 71 Spring for throttle adjusting screw |
| 7 Dust seal plate | 38 Spring retaining cover | 72 Secondary throttle adjusting screw |
| 8 Dust seal plug | 39 Washer for shaft | 73 Wave washer for loose lever |
| 9 Choke plates fixing screw | 40 Choke fixing screw | 74 Bushing for loose lever |
| 10 Strainer assy | 41 Auto-choke shaft and lever assy | 75 Loose lever fixing screw |
| 11 Strainer inspection plug | 42 Plate screw | 76 Primary throttle control lever |
| 12 Cover gasket | 43 Washer for water cover fixing screw | 77 Bushing for loose lever |
| 13 Needle valve gasket | 44 Water cover fixing screw | 78 Washer for loose lever |
| 14 Needle valve assy | 45 Auto-choke water chamber | 79 Throttle valve control lever |
| 15 Float assy | 46 Water chamber seal gasket | 80 Throttle shaft fixing nut |
| 16 Full power needle valve assy | 47 Thermostat assy locking ring | 81 Lockwasher |
| 17 Power valve gasket | 48 Auto-choke thermostat assy | 82 Loose lever assy |
| 18 Pump discharge blanking needle | 49 Gasket to auto-choke body | 83 Secondary shaft fixing nut |
| 19 Primary main jet | 50 Plate for choke shaft | 84 Spring washer |
| 19A Secondary main jet | 51 Auto-choke body assy | 85 Washer for loose lever |
| 20 Shafts retaining bush | 52 Choke diaphragm assy | 86 Secondary throttle control lever |
| 21 Bush retaining spring | 53 Diaphragm loading spring | 87 Spring for loose lever |
| 22 Secondary throttle valve | 54 Auto-choke cover | 88 Carburettor body |
| 23 Secondary shaft | 55 Auto-choke cover fixing screw | 89 Emulsifying tube |
| 23 Secondary shaft assy oversize | 56 Screw plug | 90 Float fixing pin |
| 24 Primary shaft | 57 Diaphragm adjusting screw | 91 Control valve retaining screw |
| 24 Primary shaft assy oversize | 58 Idle adjusting screw | 92 Washer for control valve screw |
| 25 Primary throttle valve | 59 Spring for idle adjusting screw | 93 Power valve assy |
| 26 Throttle plates fixing screw | 60 Split pin | 94 Primary air corrector jet |
| 27 Shaft return spring | 61 Fast idling control rod | 94A Secondary air corrector jet |
| 28 Spacer | 62 Washer for loose lever | 95 Pump jet gasket |
| 29 Accelerator pump cover assy | 63 Fast idling loose lever assy | 96 Accelerator pump jet |
| 30 Pump cover fixing screw | 64 Lever | 97 Pump delivery valve assy |
| 31 Accelerator pump diaphragm assy | 65 Screw | 98 Auxiliary venturi |
| 32 Pump loading spring | | |



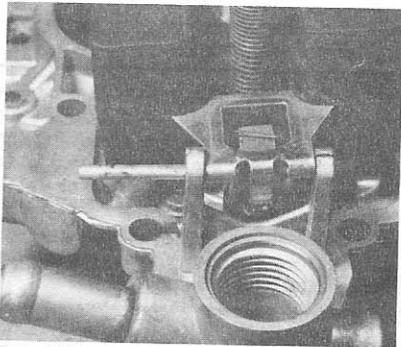
5.2 Removing the fuel filter inspection plug and filter



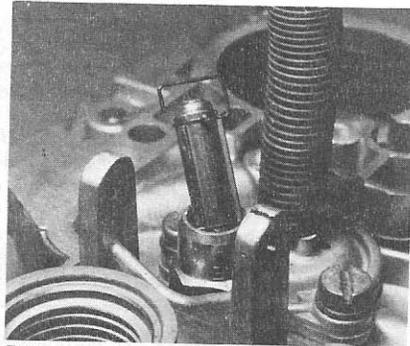
5.3 Disconnecting the choke operating rod



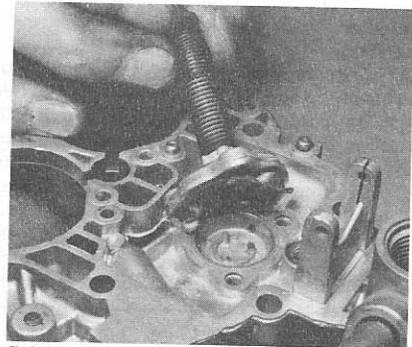
5.4 Removing the carburetor cover (DFAV type shown)



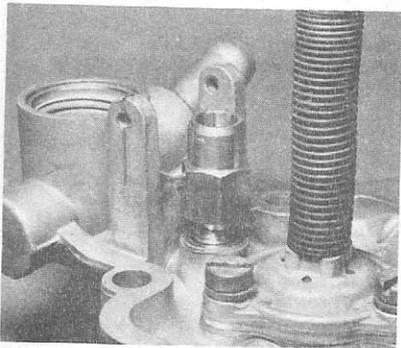
5.5a Withdrawing the float fulcrum pin ...



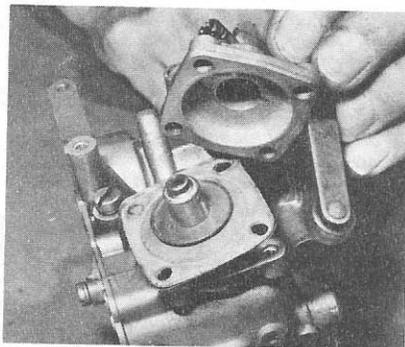
5.5b ... needle valve and return hook



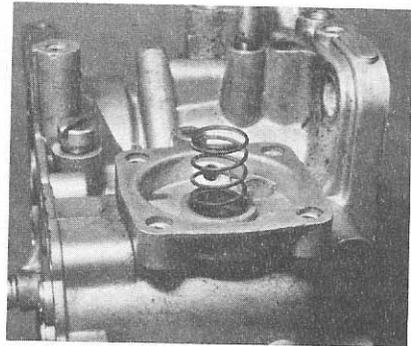
5.8 Removing the full power valve assembly



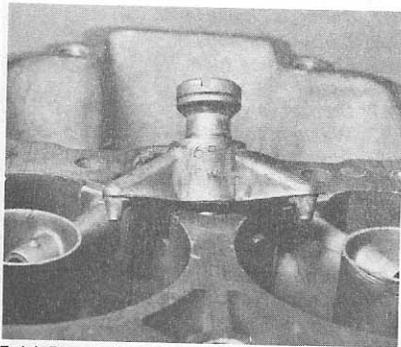
5.9 Removing the needle valve seating



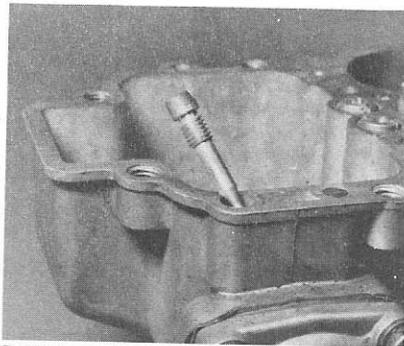
5.10a Withdrawing the accelerator pump cover ...



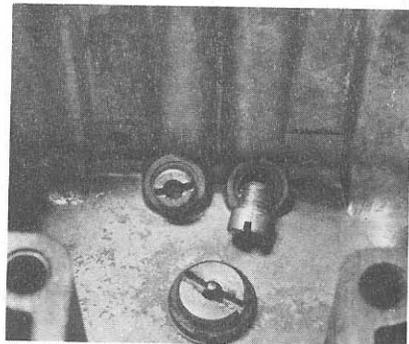
5.10b ... and spring



5.11 Removing the accelerator pump delivery valve and jet



5.13 The accelerator pump discharge blanking needle



5.14 Removing the primary main jet

5.1
sec
5.17

3 Disconnect the choke plate operating rod (36) at its upper end by removing the split pin or prising off the circlip (6). On automatic types, slightly open the throttle if necessary to allow the choke plates to fully close (photo).

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 (88) at the same time disengaging the choke operating rod (36) by tilting the cover (photo).

5 Invert the carburettor cover (1) so that the float assembly 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. **Note: On no account prise the slotted post apart (photos).**

6 Unhook the needle from the float assembly (15).

7 Lift the gasket (12) from the cover (1).

8 Where fitted, unscrew the three screws (91) and remove them together with the spring washers (92), then lift the power valve assembly (93) from the cover (1) being careful not to damage the thin diaphragm (photo).

9 Using a 10 mm box spanner or socket, unscrew the needle valve (14) seating and remove the gasket (13) (photo).

10 Unscrew the four screws (3) and withdraw the accelerator pump cover (29) from the carburettor body (88) together with the diaphragm (31) and spring (32). If necessary, carefully peel the diaphragm assembly (31) from the cover (29) (photos).

11 Unscrew the accelerator pump delivery valve (97) and remove it together with the pump jet (96) and gaskets (95). Note that on some types with an upper tapered seating, only one lower gasket is fitted (photo).

12 Separate the delivery valve (97), gaskets (95) and pump jet (96).

13 Unscrew and remove the accelerator pump discharge blanking needle (18) (photo).

14 Unscrew the primary (19) and secondary (19A) main jets

from the bottom of the float chamber, noting their correct locations (photo).

15 Unscrew the primary (94) and secondary (94A) air corrector jets from the carburettor body (88), noting their correct locations (photos).

16 Invert the carburettor body and extract the primary and secondary emulsion tubes (89); if these are tight due to over-tightening of the air corrector jets, use a selftapping screw to remove them, but take care not to damage the tubes (photo).

17 Unscrew the idling jet holders (35) from each side of the carburettor and place them in separate marked containers (photo).

18 Remove the gaskets (34) if fitted, then separate the idling jets (33 and 33A) from their holders (photo).

19 Unscrew and remove the idling mixture adjusting screw (58) and spring (59). Where fitted, remove the plug from the opposite end of the carburettor flange (photo).

20 Unscrew and remove the throttle idling adjustment screw (70) and spring (71); on some types these are located on the throttle linkage.

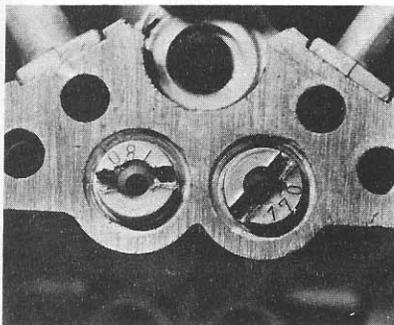
21 Note the location of each choke valve (5) and mark them if necessary with a pencil.

22 Unscrew the retaining screws (9) and remove the choke valves (5) from the shaft (4), then remove the shaft (4) from the cover (1) (photo). Note that some types are fitted with brushes and circlips.

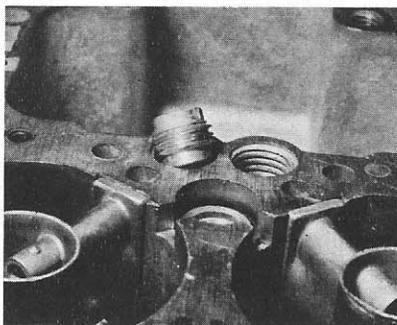
23 Where fitted, prise the dust cover (8) from the cover (1) then extract the dust seal (7).

24 *On manually operated choke types follow paragraphs 25 or 26 as applicable:*

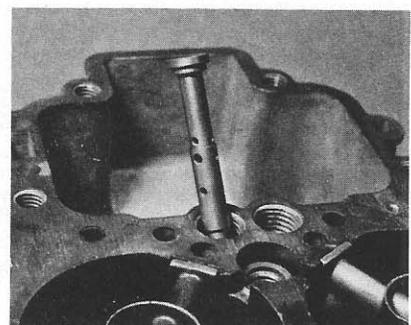
25 Refer to Fig. 7.9 and, on DGV type carburettors, unscrew the retaining screw (46) and withdraw the bush (45), control lever (41) and return spring (44), together with the choke operating rod (7). Detach the rod (7) from the lever and remove the screw (43). Extract the split pin (50) and detach the fast idle



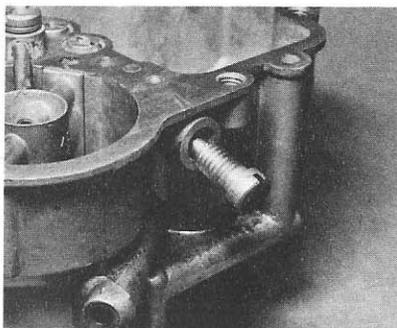
5.15a Location of the primary and secondary air corrector jets



5.15b Removing the primary air corrector jet



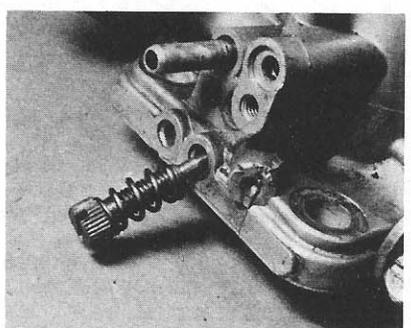
5.16 Removing the primary emulsion tube



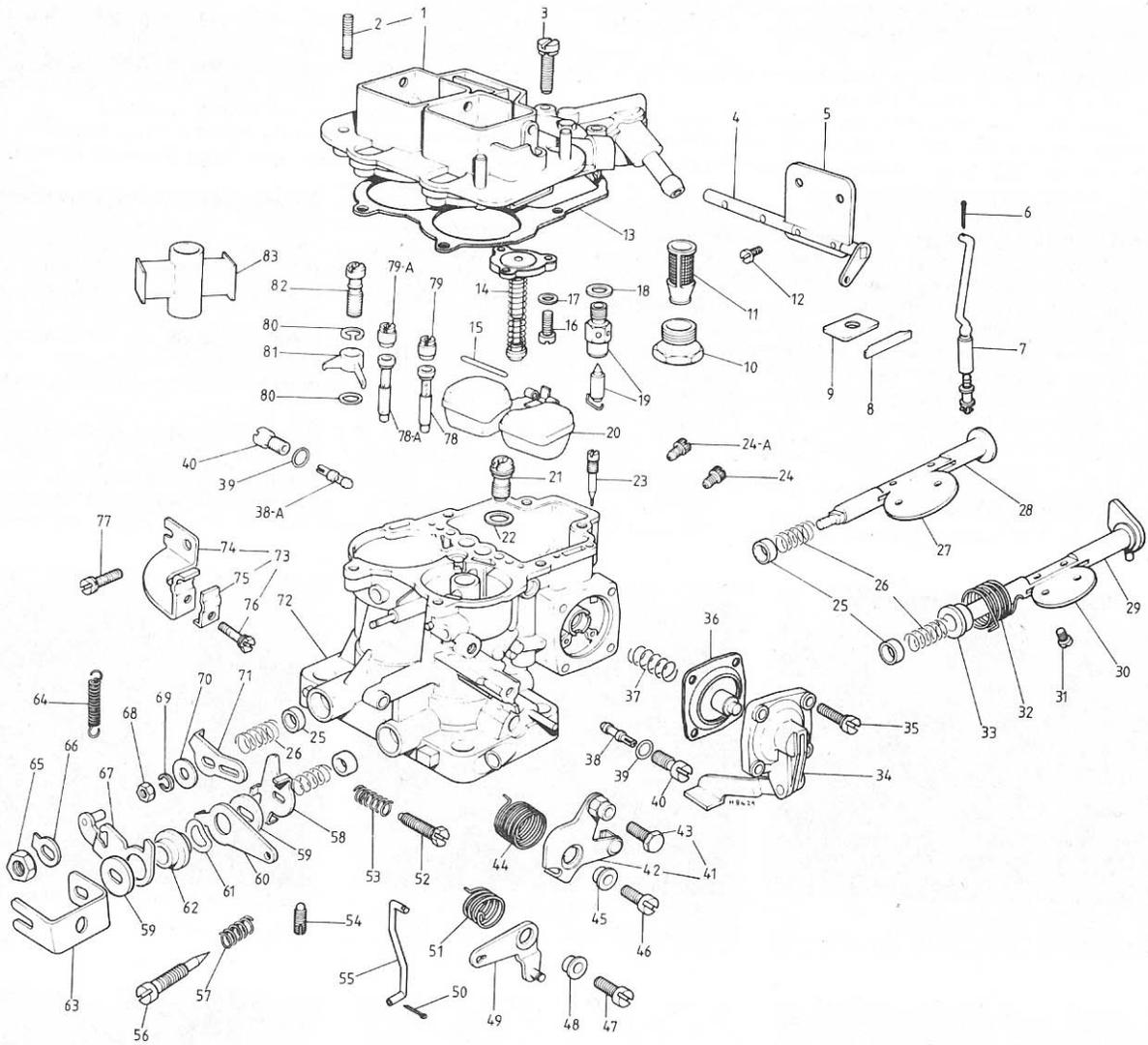
5.17 An idling jet holder location



5.18 An idling jet separated from its holder



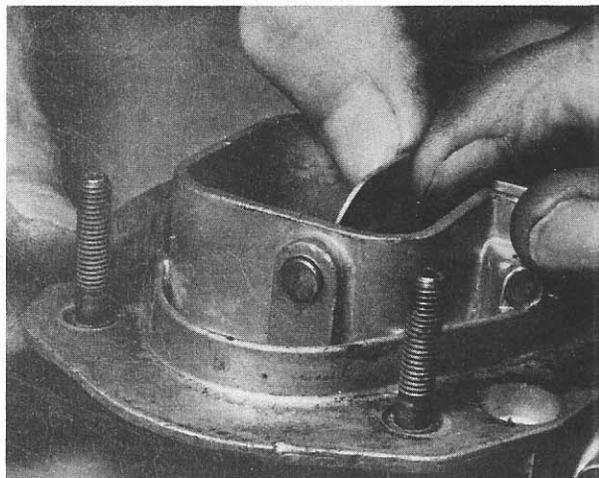
5.19 Removing the idling mixture adjusting screw



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Fig. 7.9 Exploded view of the 32/36 DGV carburettor (typical) (Sec 5)

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| 1 Carburettor cover assy | 42 Lever |
| 2 Stud bolt | 43 Screw securing wire |
| 3 Cover fixing screw | 44 Spring for choke lever |
| 4 Choke shaft and lever assy | 45 Bushing for choke lever |
| 5 Choke throttle valve | 46 Choke lever fixing screw |
| 6 Split pin | 47 Square lever fixing screw |
| 7 Choke rod | 48 Bushing for square lever |
| 8 Dust seal plug | 49 Fast idle control square lever assy |
| 9 Dust seal plate | 50 Split pin |
| 10 Strainer inspection plug | 51 Spring for square lever |
| 11 Strainer assy | 52 Primary throttle adjusting screw |
| 12 Choke plates fixing screw | 53 Spring for throttle adjusting screw |
| 13 Cover gasket | 54 Secondary throttle adjusting screw |
| 14 Power valve assy | 55 Fast idling control rod |
| 15 Float fixing pin | 56 Idle adjusting screw |
| 16 Control valve retaining screw | 57 Spring for idle adjusting screw |
| 17 Washer for control valve screw | 58 Primary throttle control lever |
| 18 Needle valve gasket | 59 Washer for loose lever |
| 19 Needle valve assy | 60 Fast idling loose lever |
| 20 Float assy | 61 Wave washer |
| 21 Full power needle valve assy | 62 Bushing for loose lever |
| 22 Power valve gasket | 63 Throttle valve control lever |
| 23 Pump discharge blanking needle | 64 Spring for loose lever |
| 24 Primary main jet | 65 Throttle shaft fixing nut |
| 24A Secondary main jet | 66 Lockwasher |
| 25 Shaft retaining bush | 67 Loose lever assy |
| 26 Bush retaining spring | 68 Secondary shaft fixing nut |
| 27 Secondary throttle valve | 69 Spring washer |
| 28 Secondary shaft | 70 Washer for loose lever |
| 28 Secondary shaft assy oversize | 71 Secondary throttle control lever |
| 29 Primary shaft | 72 Carburettor body |
| 29 Primary shaft assy oversize | 73 Sheat support assy |
| 30 Primary throttle valve | 74 Sheat support |
| 31 Throttle plates fixing screw | 75 Sheat securing plate |
| 32 Shaft return spring | 76 Sheat support fixing screw |
| 33 Spacer | 77 Sheat support fixing assy |
| 34 Accelerator pump cover assy | 78 Primary emulsioning tube |
| 35 Pump cover fixing screw | 78A Secondary emulsioning tube |
| 36 Accelerator pump diaphragm assy | 79 Primary air corrector jet |
| 37 Pump loading spring | 79A Secondary air corrector jet |
| 38 Primary idle jet | 80 Pump jet gasket |
| 38A Secondary idle jet | 81 Accelerator pump jet holder |
| 39 Gasket for idling jet holder | 82 Pump delivery valve assy |
| 40 Idling jet holder | 83 Auxiliary venturi |
| 41 Choke control lever assy | |



5.22 Removing a choke valve

rod from the lever (60), then remove the retaining screw (47) and withdraw the brush (48), lever (49) and spring (51). Disengage the fast idle rod (55) from the lever (49).

26 Refer to Fig. 7.10 and, on all but DGV type carburetors, extract the split pin (6) and detach the fast idle rod (40) from the lever (50). Unscrew the retaining screw (34) and unhook the spring (27). Remove the washer (33), lever assembly (30) and spring (29) from carburettor body, then disengage the rod (40) from the lever (31) and remove the screw (32). Extract the split pin (6), remove the washer (67) and detach the operating rod (9) from the lever (26). Extract the split pin (6A), remove the washer (28) and withdraw the lever (26) from the carburettor body.

27 On automatically operated choke types, follow paragraphs 28 to 40 inclusive.

28 Unscrew and remove the three screws (42) and lift the automatic choke thermostat assembly (48) away from the body (51) (photo).

29 Remove the gasket (49), then unscrew and remove the three retaining screws (40) and spring washers. Withdraw the automatic choke body (51), at the same time disengage the fast idling control rod (61) from the throttle lever (76). Note that some models have a retaining split pin (60) instead of an offset lug (photos).

30 Unscrew the water housing retaining bolt (44) together with the gasket (43), then separate the housing (45) from the thermostat assembly (48); cut the gasket (46) from the assembly if it is stuck.

31 Remove the retaining ring (47).

32 Note the location of the individual components of the automatic choke body (51) before dismantling them.

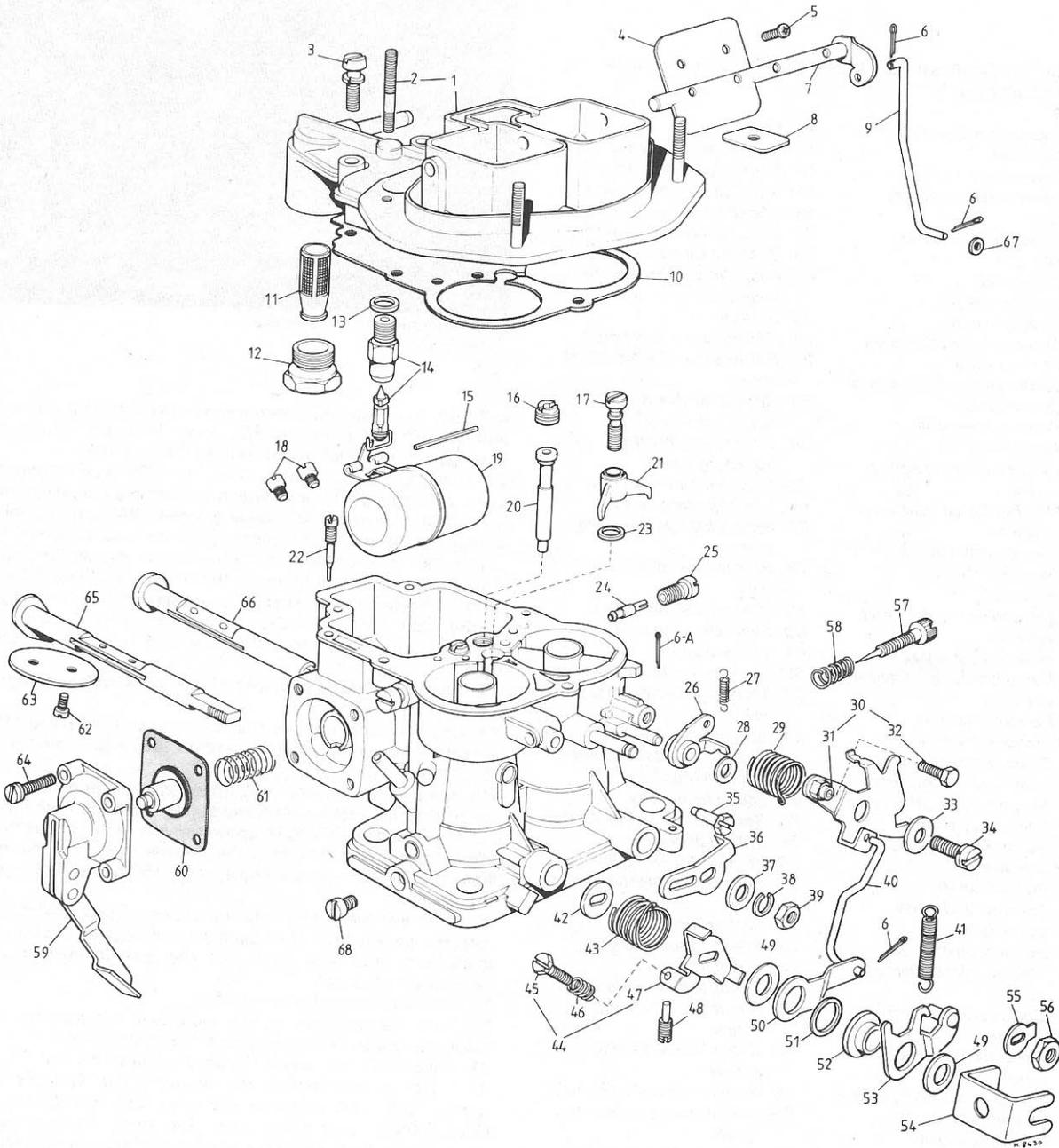
33 Prise the O-ring seal (67) from the rear of the unit.

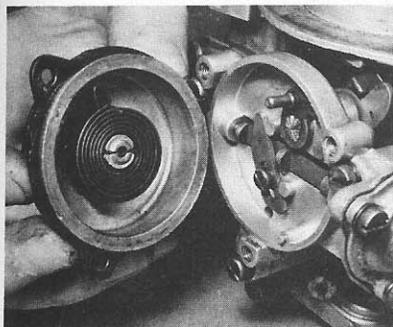
34 Unscrew and remove the retaining nut (69) and spring washer (68), then withdraw the lever (36), spring (37), cover (38), if fitted, and spacer (39). The shaft (41) can now be removed (photos) extract the split pin and separate the rod from the lever (36) where these are separate items.

36 Unscrew the screw (75) and remove it together with the spring washer and fast idling lever (63), then remove the brush (74), wave washer (73) where fitted, washer (62), adjusting screw (65) and spring (66) (photo).

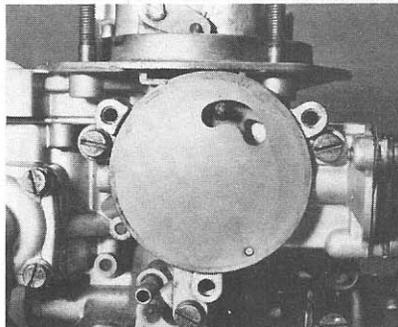
37 On 32/36 DFAV and 32 DAF types, mark the location of the adjusting stop plate in the automatic choke body, then remove the screw and lift the plate out (photo).

38 On all types, unscrew the diaphragm cover retaining screws (55) and lift off the cover (54) and spring (53). Where fitted, remove the screw plug (56) and adjusting screw (57), noting how many turns are necessary to remove the plug (photo).

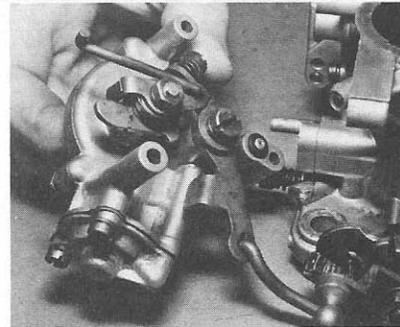




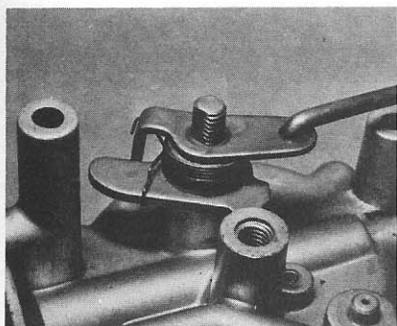
5.28 Withdrawing the automatic choke thermostat assembly (DFAV type shown)



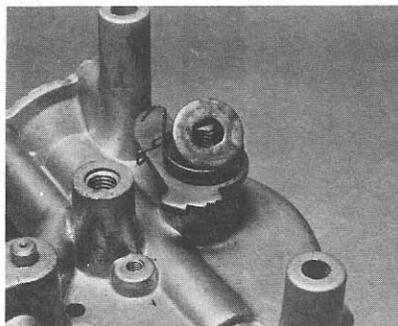
5.29a Location of the automatic choke disc gasket (DFAV type shown)



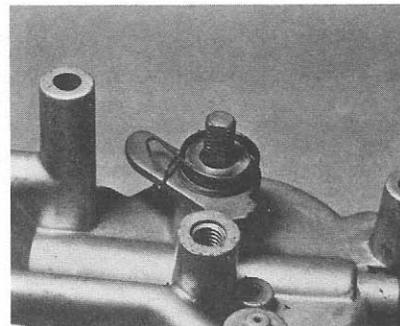
5.29b Disengaging the fast idle control rod (DFAV type shown)



5.34a Removing the automatic choke lever ...



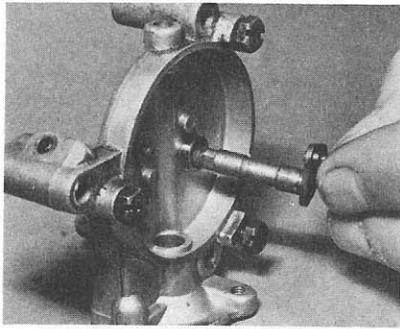
5.34b ... spacer ...



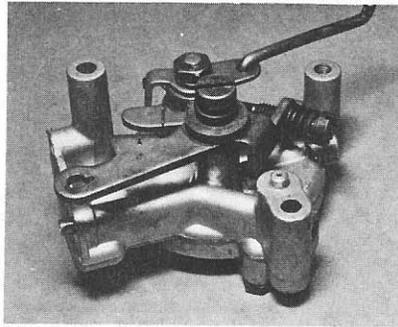
5.34c ... spring ...

Fig. 7.10 Exploded view of the 32 DFE and 32 DFM carburettor (typical) (Sec 5)

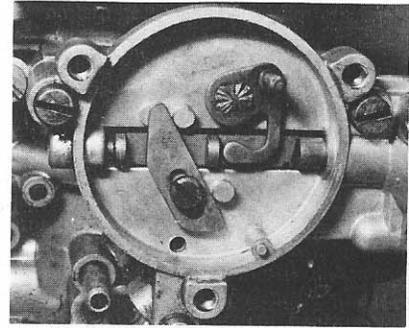
- | | | |
|--|---|---|
| 1 Air horn and plugs assy | 22 Accelerator pump discharge blanking needle | 44 Fast idle adjustment lever assy (Primary) |
| 2 Air cleaner retaining stud | 23 Nozzle bar gasket | 45 Screw |
| 3 Horn and plug assy fixing screw and washer | 24 Idling jet (Primary) | 46 Spring |
| 4 Choke plate | 24A Idling jet (Secondary) | 47 Lever |
| 5 Choke plate screw | 25 Idling jet holder | 48 Screw |
| 6 Control rod split pin | 26 Choke lever assy | 49 Primary throttle shaft assy washer |
| 6 Choke/throttle interconnecting rod split pin | 27 Choke lever spring | 50 Choke/throttle interconnecting lever |
| 6A Choke lever pivot split pin | 28 Choke lever pivot washer | 51 Throttle shaft (Primary) wave washer |
| 7 Choke shaft and lever assy | 29 Choke lever return spring | 52 Throttle shaft bushing |
| 8 Air cleaner dust seal | 30 Choke control lever assy | 53 Throttle control lever |
| 9 Choke control rod | 31 Lever | 54 Throttle lever |
| 10 Air horn to throttle body gasket | 32 Screw securing wire | 55 Throttle shaft (Primary) tab washer |
| 11 Fuel inlet strainer assy | 33 Washer | 56 Throttle shaft (Primary) nut |
| 12 Fuel inlet strainer plug | 34 Screw and washer | 57 Idle adjustment needle |
| 13 Fuel intake valve washer | 35 Screw securing sheath | 58 Idle adjusting needle spring |
| 14 Fuel inlet valve and seat assy | 36 Full throttle stop lever | 59 Accelerator pump cover assy |
| 15 Float lever shaft | 37 Geared sector adjusting screw washer | 60 Accelerator pump diaphragm assy |
| 16 Starting air adjusting jet (Primary) | 38 Auto-choke lever fixing nut spring washer | 61 Accelerator pump rod spring |
| 16A Starting air adjusting jet (Secondary) | 39 Auto-choke lever fixing nut | 62 Throttle plate screw |
| 17 Accelerator pump discharge valve assy | 40 Faet idle rod | 63 Throttle plate |
| 18 Main primary jet | 41 Throttle control return spring (RH Secondary) | 64 Accelerator pump cover fixing screw and washer |
| 19 Float assy | 42 Throttle lever and shaft assy washer (Primary) | 65 Throttle shaft assy (LH Primary) |
| 20 Emulsion tube | 43 Throttle control return spring (LH) | 66 Throttle shaft assy (RH Secondary) |
| 21 Pump discharge nozzle | | 67 Rod/choke control washer |
| | | 68 Idle primary duct plug |



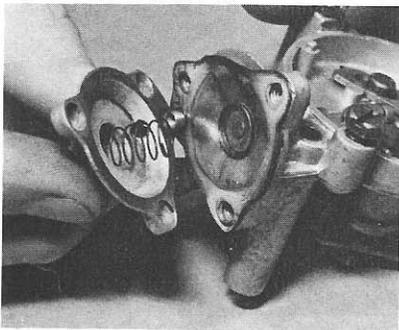
5.34d ... and shaft (DFAV type shown)



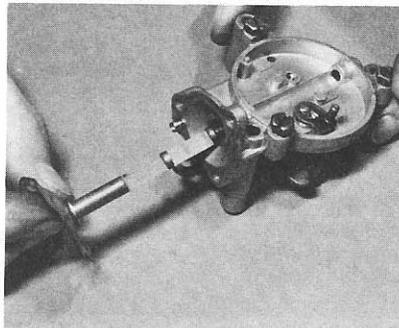
5.36 Automatic choke control levers (DFAV type shown)



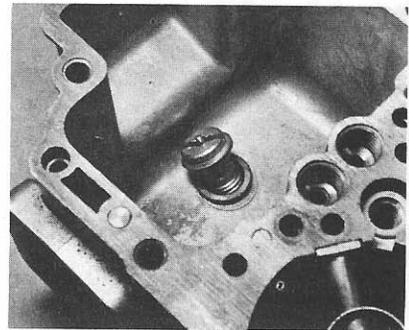
5.37 Location of the automatic choke adjusting stop plate (DFAV type shown)



5.38 Removing the automatic choke diaphragm cover and spring (DFAV type shown)



5.39 Withdrawing the automatic choke operating rod (DFAV type shown)



5.41 Removing the full power valve from the float chamber

39 Carefully release the thin diaphragm, then withdraw the operating rod (52) from the body (51) (photo).

40 The automatic choke body (51) is supplied complete with the fast idle cam and shaft bush and it is therefore of no consequence to remove the bush and cam.

41 Where fitted, unscrew the full power valve (16) from the base of the float chamber and remove the gasket (17) (photo).

42 Mark the position and location of the auxiliary venturis (98), then remove them from the primary and secondary barrels. If they are tight, open each throttle valve in turn 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 (photo).

43 Unhook the spring (87) from the lever (82) and the carburettor body, then bend back the tab washer (81) and unscrew the nut (80) from the end of the primary throttle shaft. If the nut is tight, Weber tool no 9610 315 1514 should be used to hold the shaft stationary, otherwise the shaft could be buckled (photo).

44 Remove the nut (80), tab washer (81), lever (79), washer (78), lever (82), lever (77), lever (76) and return spring (27). On DGV and DGAV types, the return spring (27) is located on the opposite end of the primary shaft and cannot be removed until the shaft has been removed (photos).

45 Remove the spring (21) and bush (20) on DGV and DGAV types. Remove the spacer on all other types (photo).

46 With the primary throttle valve closed, unscrew and remove the retaining screws (26), then mark the valve (25) with a pencil so that it can be refitted in its original position.

47 Fully open the primary throttle and remove the valve (25) from the shaft (24), then withdraw the primary shaft (25) from the carburettor body (88) (photos).

48 On DGV and DGAV types, remove the bush (20), spring (21), spacer (28) and spring (27).

49 Unscrew the nut (83) from the end of the secondary throttle

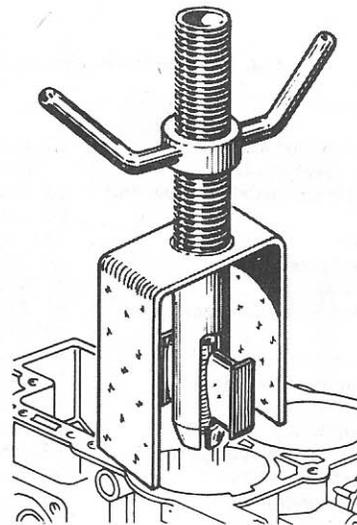
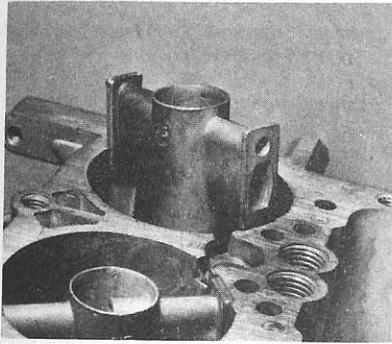


Fig. 7.11 Removing the primary auxiliary venturi with the special tool (Sec 5)

shaft (23); if it is tight, use Weber tool no 9610 315 1514 to hold the shaft stationary (photo).

50 Remove the nut (83), spring washer (84), plain washer (85), and lever (86); additionally on DGV and DGAV types, remove the bush (20) and spring (21).

51 With the secondary throttle valve closed, unscrew and remove the retaining screws (26) then mark the valve (22) with a pencil to identify its location and position (photo).



5.42 Withdrawing the primary auxiliary venturi

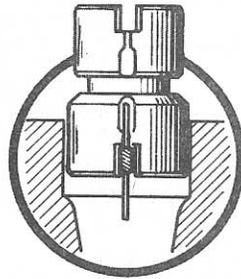
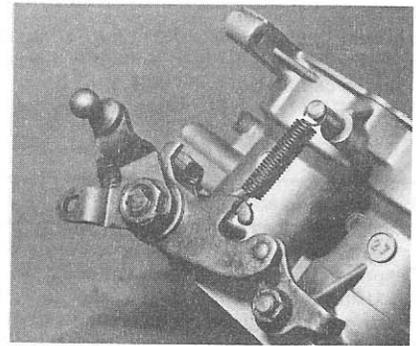
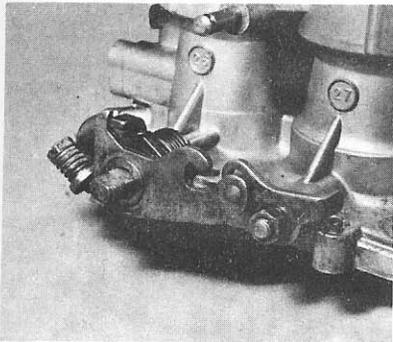


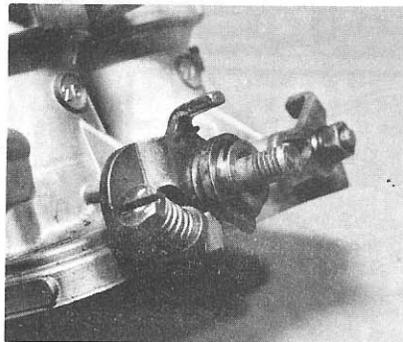
Fig. 7.12 Using the special tool to hold the throttle shaft stationary (Sec 5)



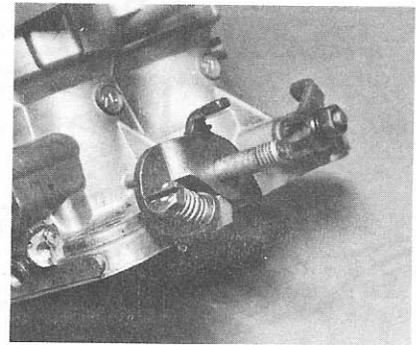
5.43 Primary throttle lever components



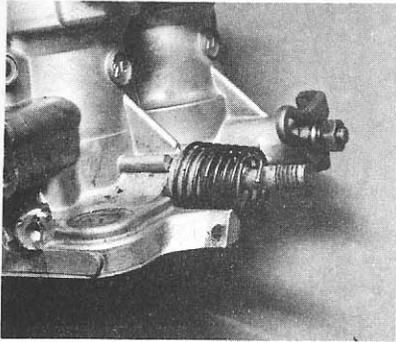
5.44a Removing the primary throttle shaft lever ...



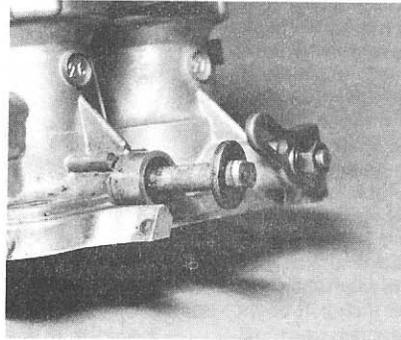
5.44b ... bush ...



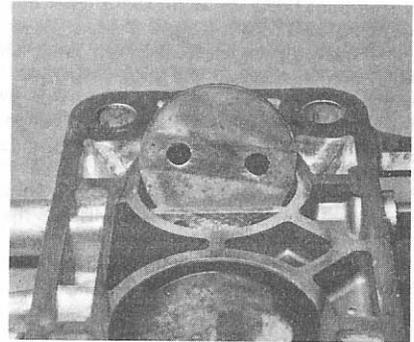
5.44c ... idling lever ...



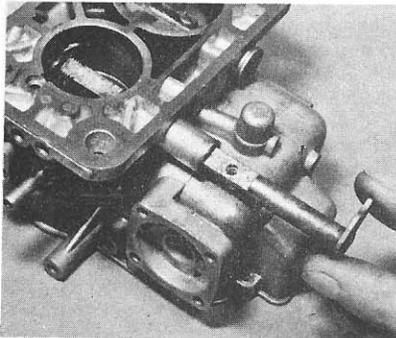
5.44d ... and return spring



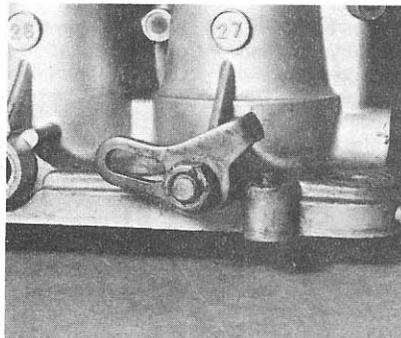
5.45 Removing the primary throttle shaft spacer



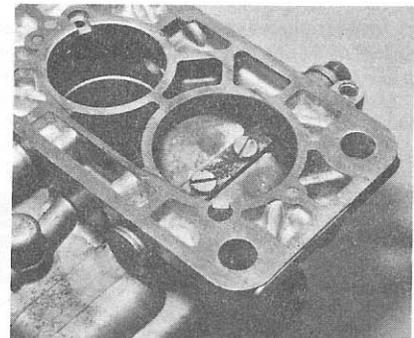
5.47a Removing the primary throttle valve ...



5.47b ... and throttle shaft



5.49 Secondary throttle lever components



5.51 Secondary throttle valve retaining screws

52 Fully open the secondary throttle and remove the valve (22) from the shaft (23), then withdraw the secondary shaft (23) from the carburettor body (88).

53 On DGV and DGAV types, remove the bush (20) and spring (21) from the shaft (23).

6 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 in alternate directions. Finish the seatings by inserting Weber tool no 9610 315 1202 and gently tapping the top of the tool whilst rotating it.

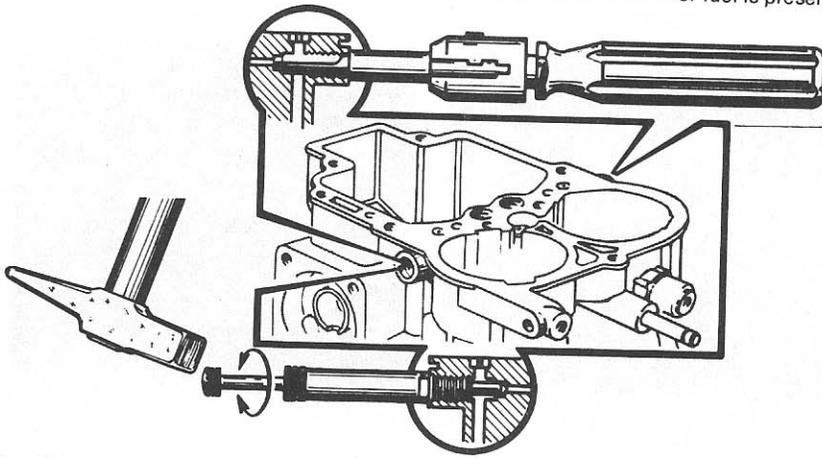


Fig. 7.13 Overhauling the idling jet seats (Sec 6)

2 If the emulsion tube bores are discoloured and show 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 while still rotating it.

3 If on disassembly, the choke shaft (4) (Fig. 7.8) 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. 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, in which case a new shaft will cure the problem.

4 If on disassembly, the throttle shafts (23 and 24) are a tight fit in the carburettor body (88) and they are of original diameter (8.0 mm), use Weber tool no 9600 035 0407 to ream the shaft bores clear with the aid of a hand chuck. Should the shaft bores be excessively worn, oversize shafts of 8.5 mm diameter must be fitted and the bores should be reamed using Weber tool no 9600 035 0406.

5 Using a small file remove any burrs, which have been formed as a result of reaming as described in paragraphs 3 and 4.

6 Check the internal channels of the carburettor body (88) and cover (1) 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.

7 The channels are of three diameters (1.0 mm, 1.5 mm, and 2.0 mm) and the corresponding tools are Weber tool nos 98014 300, 98014 400 and 98014 500. Fig. 7.17 shows the location of the various channels.

8 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 315 0822 and 9610 315 0823 to expand them into their bores.

9 Check the float unit for damage and leakage; shake the float to determine whether fuel has entered. If the float is damaged or fuel is present, it must be renewed.

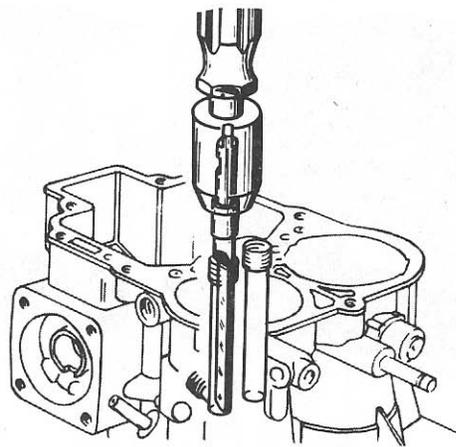


Fig. 7.14 Reaming the emulsion tube bores (Sec 6)

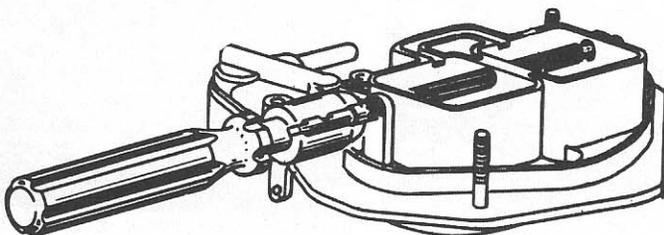


Fig. 7.15 Reaming the choke shaft bore (Sec 6)

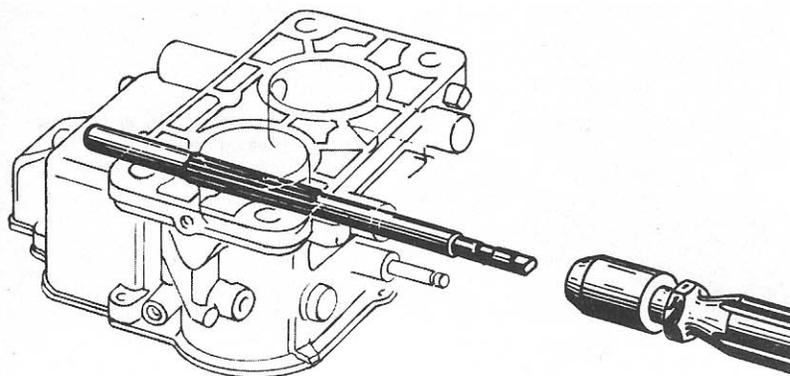


Fig. 7.16 Reaming the throttle shaft bore (Sec 6)

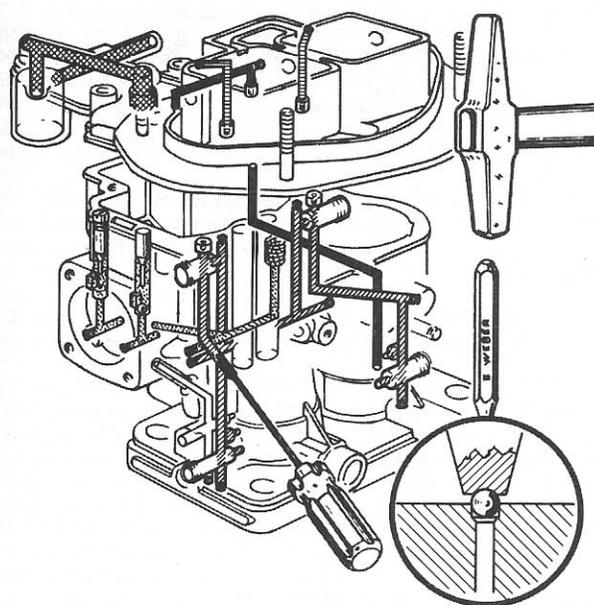


Fig. 7.17 Location of the carburettor internal channels and method of fitting the lead plugs (Sec 6)

10 Where a power valve is fitted, check the condition of the diaphragm seat in the carburettor cover. If necessary clean the seat with a little metal polish.

11 During the manufacture of the carburettor a ball is inserted into the accelerator pump channel and retained by a brass plug (see Fig. 7.18). To check that this ball is free and unobstructed, shake the carburettor body (88) and listen to the ball movement.

12 On carburetors fitted with an automatic choke, check that the internal channel of the automatic choke body (51) is free and unobstructed. Also check that the diaphragm (52) and corresponding surfaces are serviceable; if necessary clean the surfaces with metal polish.

13 Check the accelerator pump diaphragm and corresponding surfaces in the same manner to that described in paragraph 12.

14 Renew the diaphragm assemblies checked in paragraphs 12 and 13 if necessary.

15 Check the accelerator pump lever for wear, especially on the type fitted with a roller bearing and renew it as necessary.

16 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 'blowback' (photo). The ridge should be removed using fine emery tape.

7 Assembly

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

1 On DGV and DGAV types, fit the spring (21) (Fig. 7.8) to the secondary shaft (23) followed by the bush (20).

2 Insert the shaft (23) into the carburettor body (88) from the float chamber end.

3 On DGV and DGAV types, fit the spring (21) and bush (20) to the remaining end of the secondary shaft (23).

4 Fit the lever (86), plain washer (85), spring washer (84) and nut (83) to the secondary shaft (23) and tighten the nut (83). If available, use the Weber tool no 9610 315 1514 to hold the shaft stationary while the nut is tightened.

5 Insert the secondary valve (22) into the shaft slot, then turn the lever (86) onto the adjusting screw (72) or stop. Check that the angled perimeter of the valve (22) seats correctly in the secondary barrel. If necessary loosen the screw (72) during this procedure.

6 With the throttle valve (22) held closed, insert the valve retaining screws (26) and tighten them evenly but without exerting excessive pressure on the shaft. It is recommended that new screws are always fitted as it is quite easy to cross-thread previously peened screws. Lock the screws (26) by peening with Weber tool no 98010 900 while supporting the shaft (23) with a block of wood. Alternatively, coat the screw threads with a liquid locking agent (fuel resistant) prior to inserting them (Figs. 7.19 and 7.20).

7 On DGV and DGAV types, fit the spring (27), spacer (28), spring (21) and bush (20) to the primary throttle shaft (24).

8 Insert the shaft (24) into the carburettor body (88) from the float chamber end and tension the spring (27) where fitted.

9 On DGV and DGAV types, fit the bush (20) and spring (21) to the remaining end of the primary shaft (24); on all other types, fit the spacer and return spring.

10 Fit the lever (76) and bush (77), then fit the lever (82) and enter its lug into the secondary lever (86).

11 Fit the washer (78), lever (79), tab washer (81) and nut (80). Note that the accelerator pump cam on the end of the primary shaft (24) should be facing the well at the bottom of the float chamber while fitting the components.

12 Tighten the nut (80) and lock it by bending the tab washer (81); if available, use the Weber tool no 9610 315 1514 to hold the shaft stationary.

13 Insert the primary valve (25) into the shaft slot and check that when it is closed the angled perimeter seats correctly in the primary barrel (photo).

14 With the throttle valve (25) held closed, insert the valve retaining screws (26) and tighten them evenly but without exerting excessive pressure on the shaft. Refer to paragraph 6 for details of locking the screws.

15 Hook the spring (87) to the lever (82) and the carburettor body extension.

16 Check that both the primary and secondary throttle valves

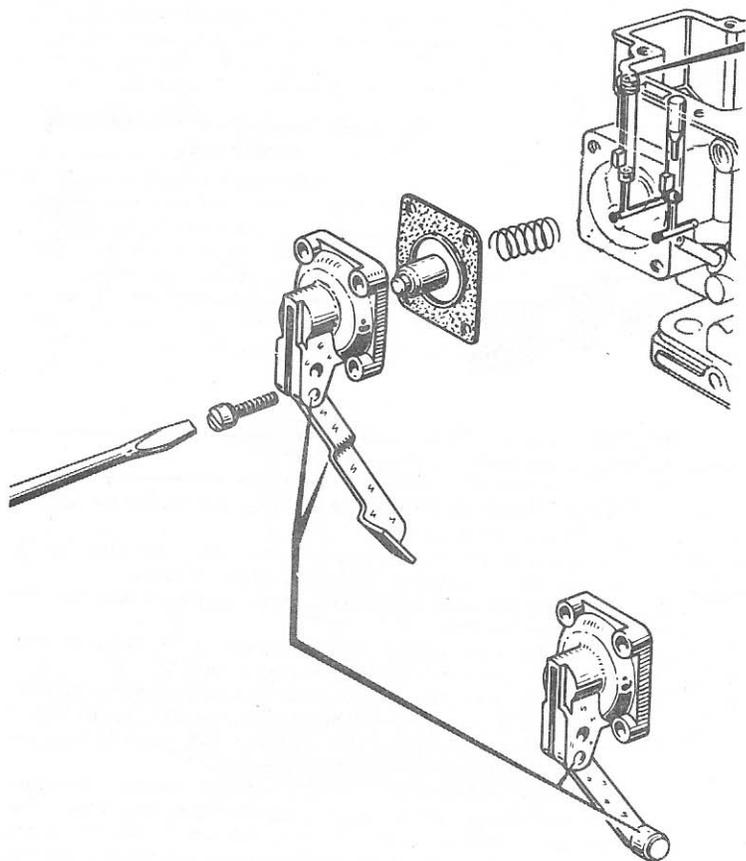


Fig. 7.18 Location of the accelerator pump inlet ball valve (Sec 6)

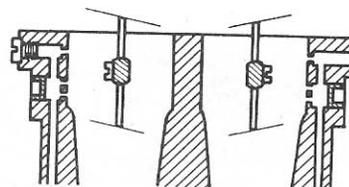
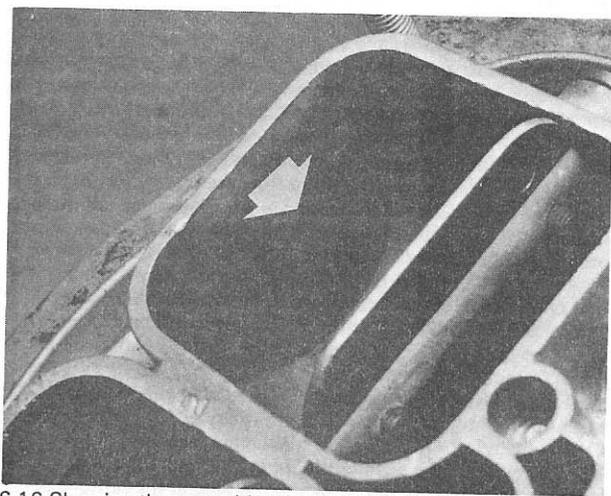


Fig. 7.19 Correct attitude of the throttle valve angled perimeters when fitted to the carburettor (Sec 7)



6.16 Showing the wear ridge on the choke intake walls

operate smoothly and fully without any signs of sticking.

17 Fit the auxiliary venturis (98) into their respective positions as noted previously, making sure that the supply channels are adjacent and that the extended venturis face the throttle valves.

18 Fit the gasket (17) to the full power valve (16) then tighten the valve into the base of the float chamber (where this component is fitted).

19 *On automatically operated choke types follow paragraphs 20 to 37 inclusive:*

20 Lubricate the operating rod (52) with a little engine oil, then insert it into the automatic choke body (51) and locate the

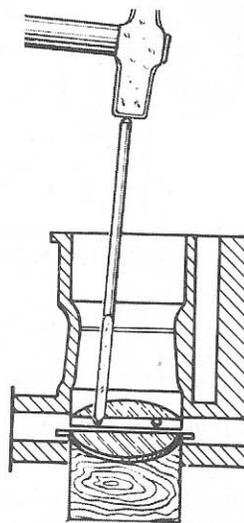


Fig. 7.20 Peening the throttle valve retaining screws (Sec 7)

diaphragm over the brass tube.

21 Locate the spring (53) into the cover (54) then fit it over the diaphragm making sure that the spring seats correctly in the diaphragm plate.

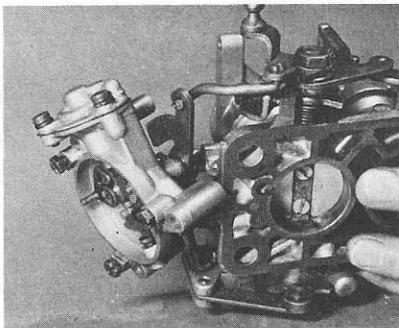
22 Press the operating rod (52) towards the cover (54) and insert the retaining screws (55) and spring washers; tighten the screws evenly.

23 Fit the adjusting screw (57) and plug (56), where fitted, to the previously noted adjustment.

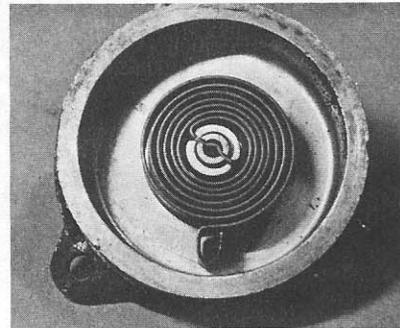
24 Check that the diaphragm is sealing properly by placing a finger over the brass entry pipe after lifting the operating rod



7.13 The primary throttle valve (the angle relates to the total movement of the valve)



7.34 Refitting the fast idling control rod and the automatic choke assembly



7.36 Location of the automatic choke bi-metal spring

(52) against the spring (53); it should hold its position, but if it slowly moves to the rest position, a leak is indicated.

25 On 32/36 DFAV types, fit the adjustment stop plate to its previously noted position and tighten the retaining screw.

26 Fit the adjustment screw (65) and spring (66) to the fast idling lever (63), then fit the screw (75) to the lever together with the bush (74), wave washer (73) where fitted, and washer (62).

27 Tighten the screw (75) into the body (51) and check that the adjustment screw (65) locates on the fast idle cam correctly.

28 Where applicable, fit the rod to the lever (36) and insert the split pin, bending the legs back to secure.

29 Lubricate the shaft (41) with engine oil then insert it into the body (51) and locate the lever against the operating rod (52).

30 Fit the spacer (39), cover (38) if fitted, spring (37), lever (36), spring washer (68) and nut (69). Hook the spring (37) onto the lever (36) and tighten the nut (69). Position the cam towards the adjusting screw (65) during this operation and make sure that the lug of the lever (36) locates on top of the smooth part of the fast idle cam.

31 Press the rubber O-ring seal (67) to the rear of the unit.

32 Fit the retaining ring (47) to the thermostat assembly (48), then fit the gasket (46).

33 Locate the housing (45) to the assembly (48), then insert and tighten the retaining bolt (44) and gasket (43) making sure that the inlet and outlet pipes are facing the correct way.

34 Engage the fast idling control rod (61) to the lever (64) making sure that the single retaining lug end is fitted, then engage the remaining end with the throttle lever (76) and fit the split pin where necessary (photo).

35 Fit the auto-choke body (51) to the carburettor body (88) and tighten the retaining screws (40) and spring washers, noting that they are different lengths.

36 Locate the gasket (49) over the operating shaft arm and the location peg. Fit the thermostat assembly (48), at the same time locating the bi-metal spring end over the shaft arm (photo).

37 Align the marks on the thermostat assembly (48) and body (51), then insert the screws (42) and tighten them evenly. It may be necessary to reposition the housing (45) during this operation. If a new body (51) has been fitted, it will be necessary to make the fast idle adjustments given in Section 8, then to make an alignment mark using Weber tool no 98028 600, at the same time keeping the choke valves completely shut.

38 On manually operated choke types paragraphs 39 or 40 as applicable:

39 Refer to Fig. 7.10 and, on all but DGV type carburetors, fit the lever (26) to the carburettor body followed by the washer (28) and split pin (6). Fit the operating rod (9) to the lever (26), then locate the washer (67) and split pin (6). Insert the screw (32) into the lever (31), then engage the rod (40) to the lever (31) and fit the spring (29), lever assembly (30) and washer (33)

to the carburettor body. Insert and tighten the screw (34) and spring washer, then hook the spring (27) to the lever assembly (30) and lever (26). Locate the rod (40) to the lever (50) and fit the split pin (6).

40 Refer to Fig. 7.9 and, on DGV type carburetors, engage the fast idle rod (55) to the lever (49) then fit the bush (48) and lever (49) to the retaining screw (47). Mount the spring (51) to the carburettor, then fit and tighten the screw (47); hook the spring (51) over the lever (49). Locate the lower end of the rod (55) to the lever (60) and fit the split pin (50). Insert the screw (43) through the lever (42), then fit the rod (7) to the lever (42). Mount the return spring (44) to the carburettor body and fit the lever (41), bush (45) and retaining screw (46). Tighten the screw (46), hook the spring (44) to the lever (41) and make sure that the cam abuts the peg on the lever (49).

41 Referring to Fig. 7.8, fit the dust seal (7) and dust cover (8) to the carburettor cover (1).

42 Lubricate the choke shaft (4) with a little engine oil and insert it into the cover (1), together with bushes and circlips where fitted.

43 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 (photo).

44 Holding the shaft closed, insert the valve retaining screws (9) and tighten them evenly without exerting excessive pressure on the brass shaft (4). It is recommended that new screws are always fitted as it is quite easy to cross-thread previously peened screws. Lock the screws (9) by peening with Weber tool no 9610 315 0833, 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.

45 Fit the spring (71) to the throttle idling adjustment screw (70) and locate the screw in the carburettor body or linkage as applicable.

46 Fit the spring (59) to the idling mixture adjusting screw (58) and locate the screw in the carburettor body.

47 Where fitted, tighten the plug into the carburettor flange.

48 Prise the idling jets (33 and 33A) into their respective holders (35) and fit the gaskets (34) if fitted.

49 Tighten each idling jet into their primary and secondary locations in the carburettor body (88).

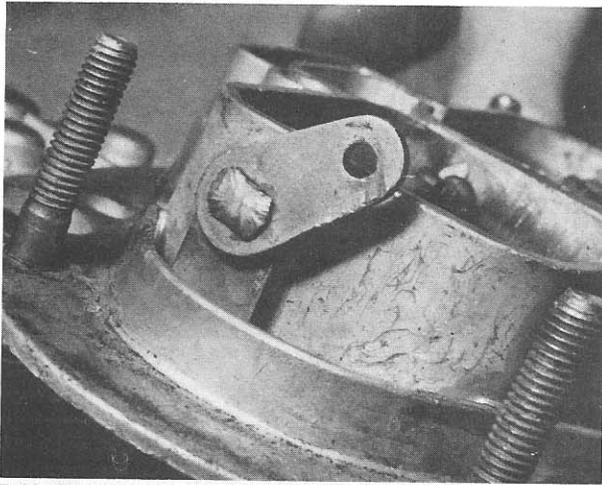
50 Insert the primary and secondary emulsion tubes (89) into the carburettor body (88), then fit and tighten the primary (94) and secondary (94A) air corrector jets.

51 Fit and tighten the primary (19) and secondary (19A) main jets to the bottom of the float chamber.

52 Fit and tighten the accelerator pump discharge blanking needle (18).

53 Fit a gasket (95) to the accelerator pump delivery valve (97) followed by the pump jet (96) and a further gasket (95). Note that on some types the upper gasket is omitted.

54 Fit and tighten the delivery valve (97) to the carburettor body (88).



7.43 Choke lever position with the valves shut

55 Locate the diaphragm (31) to the accelerator pump cover (29) and insert the screws (30) through the cover and diaphragm.

56 Place the carburetor body on end and locate the spring (32) into the housing, then lower the diaphragm and cover into the spring and tighten the retaining screws in diagonal sequence. Make sure that the roller or arm, as applicable, locates on the primary shaft (24) cam.

57 Fit the gasket (13) to the needle valve (14) seating then tighten it into the carburetor cover (1) using a 10 mm box spanner or socket.

58 Locate the power valve (93) (where fitted) on the inverted cover (1) 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) together with spring washers (92). Check the operation of the valve by depressing it and placing a finger over the brass connecting channel; the valve should remain in the closed position but, if it

moves, a leak is indicated in the diaphragm.

59 On all but DFV, DFAV, DGV and DGAV type carburetors, locate the gasket (12) to the carburetor cover (1). On the types given, the gasket is fitted after checking the float level.

60 Hook the needle onto the wide tab of the float (15), then lower both items into position and insert the fulcrum pin (90) into the two posts. Lightly pinch the slotted post with a pair of flat pliers to retain the pin.

61 The float level adjustment must now be checked in the following manner, remembering that DFV, DFAV, DGV and DGAV types must *not* have the gasket (12) in position. Hold the carburetor cover vertically so that the float(s) is hanging from the fulcrum pin and the float arm is in light contact with the needle ball (ie the ball is not depressed).

62 On DFV, DFAV, DGV and DGAV types, use vernier calipers to determine the distance from the cover to the further edge of the floats as indicated in Fig. 7.21. On all other types obtain a drill or dowel rod of diameter equal to the closed checking dimension and check that the distance from the cover gasket to the nearest part of the float is correct. The annular seam must not be taken into consideration for the check and for this reason a groove must be filed in the checking rod.

63 If the dimension obtained in paragraph 62 is not correct, carefully bend the wide tab on the float as necessary.

64 Tilt the carburetor cover so that the float(s) moves away from the cover and the narrow tab makes contact with the needle valve seating. Now, using the same methods as described in paragraph 62, check the needle valve fully-open dimension. The difference between the dimension and the closed dimension is the needle valve stroke. If this is not correct, bend the narrow tab as necessary.

65 On DFV, DFAV, DGV and DGAV types, place the gasket (12) onto the cover (1) making sure that it is the correct way round.

66 Tilt the cover (1) and insert the choke operating rod (36) through the dust seal (7), then lower the cover (1) onto the carburetor body (88) (photo).

67 Fit the retaining screws (3) together with the spring washers and tighten then evenly in diagonal sequence.

68 Engage the choke plate operating rod (36) to the choke shaft (4) and retain with the circlip (6) or split pin as applicable.

69 Fit the fuel filter (10) and tighten the inspection plug (11) into the cover (1).

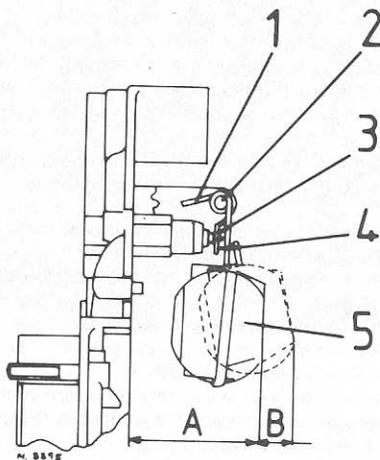


Fig. 7.21 Checking the float level adjustment (DFV, DFAV, DGV, DGAV types) (Sec 7)

- | | |
|----------------|--------------------|
| 1 Stop tab | 5 Float |
| 2 Fulcrum pin | A Closed dimension |
| 3 Contact tab | B Stroke |
| 4 Needle valve | |

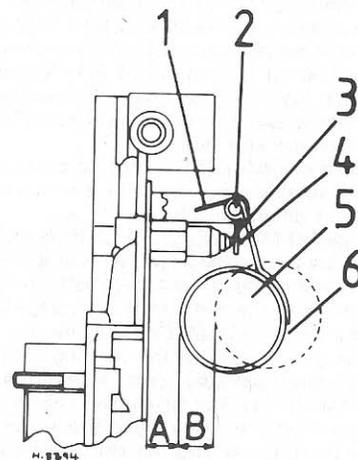
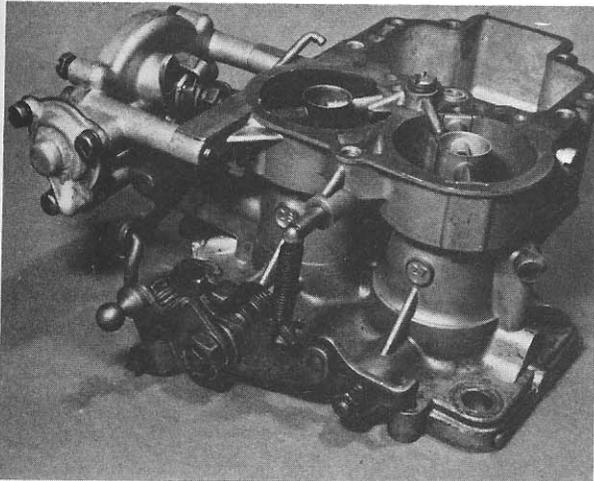


Fig. 7.22 Checking the float level adjustment (DFD, DFE, DFM, DIF, DAF types) (Sec 7)

- | | |
|----------------|--------------------|
| 1 Stop tab | 5 Float |
| 2 Fulcrum pin | 6 Seam |
| 3 Contact tab | A Closed dimension |
| 4 Needle valve | B Stroke |



7.66 The main carburettor body ready for assembly of the cover (DFAV type shown)

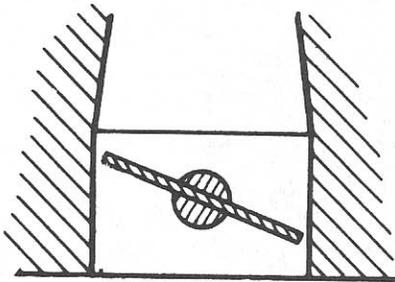


Fig. 7.23 Fast idle throttle opening checking location (Sec 8)

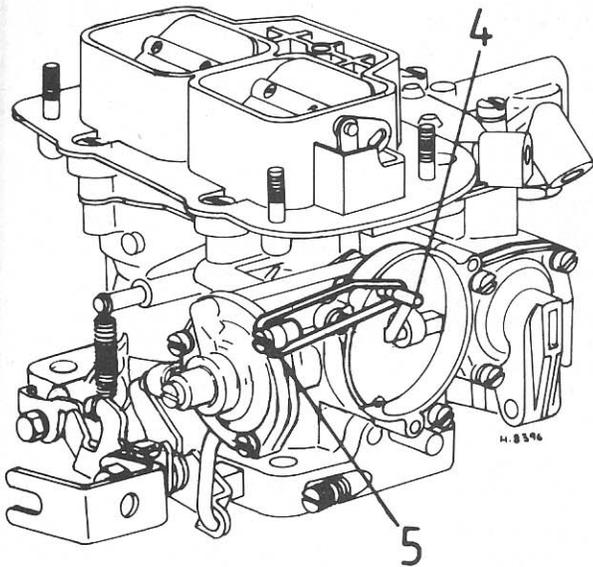


Fig. 7.24 Checking the automatic choke shaft setting on DGAV type carburetors (Sec 8)

4 Spindle arm

5 Elastic band

8 Carburettor adjustments

With the carburettor completely assembled, the following adjustments must be made prior to fitting it to the engine:

- 1 Turn the throttle idling adjustment screw until it just touches the throttle lever (DGV and DGAV types) or carburettor lug (all other types), then continue to screw it in 2 further turns. On automatic choke types, it will be necessary to first open the throttle fully, hold the choke valves open, then release the throttle; it is preferable to hold the choke valves open while making the adjustment.
- 2 Turn the idling mixture screw in until it is in light contact with its seat, then back it off 1 complete turn.
- 3 Turn the secondary throttle adjustment stop until a gap of 0.05 mm (0.002 in) exists between the outer edge of the secondary throttle valve and the secondary barrel. Check the gap with feeler gauges.

Fast idle adjustment – manual choke

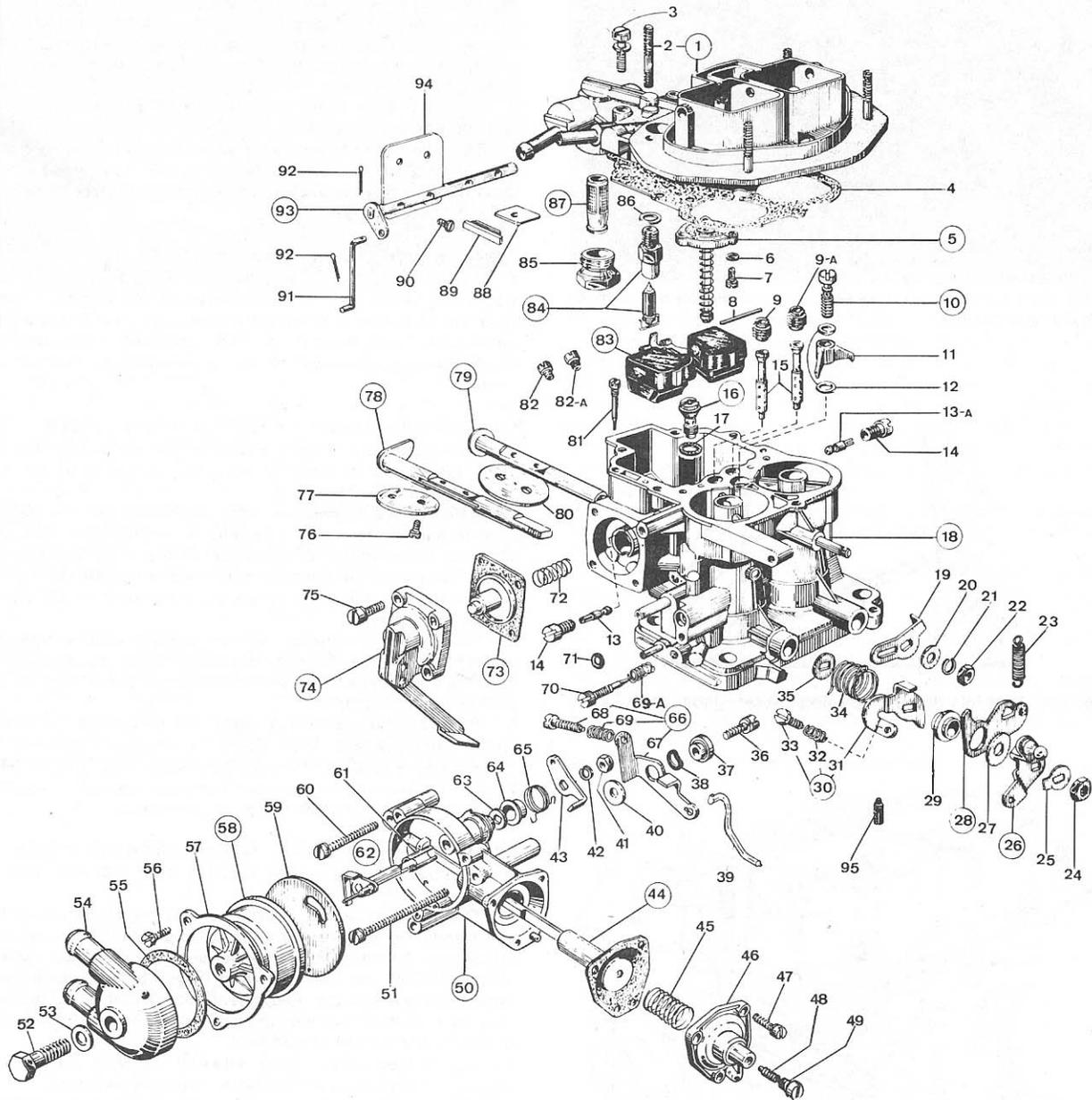
- 4 Fully operate the choke lever and, while keeping the lever stationary, check that the gap between the primary throttle valve and the outer primary barrel bore is as given in the adjustment data. If not, bend the fast idle operating rod accordingly. Check the gap with a drill of the correct diameter inserted into the barrel.

Fast idle adjustment – DGAV automatic choke

- 5 Fully open and close the throttle and check that the fast idling adjustment screw (Fig. 7.8) (65) is resting on the high part of the fast idle cam.
- 6 Refer to the adjustment data and determine the fast idle throttle opening for the carburettor being worked on, then obtain a drill or length of dowel rod of the same diameter and insert it between the primary throttle valve and the outer barrel wall. Turn the adjusting screw as necessary to obtain the correct clearance.
- 7 Fully open the throttle, then hold the choke valves open and release the throttle. Slowly release the choke valves until the fast idle adjusting screw rests on the lower part of the fast idle cam (against the step).
- 8 Refer to the adjustment data and determine the correct choke valve opening, then check the clearance between the longest choke valve section and the intake wall using a drill or length of dowel rod. If necessary, bend the lever which contacts the fast idle cam to obtain the correct clearance.

Choke valve pull down – DGAV automatic choke

- 9 Remove the thermostat housing (Fig. 7.8) (48) and the gasket disc.
- 10 Open and close the throttle so that the choke valves fully close under finger pressure, then holding the choke valves shut, check that there is a clearance between the diaphragm spindle (Fig. 7.8) (52) and the shaft arm (Fig. 7.8) (41) equal to the dimension given in the adjustment data. If not, the diaphragm may be stretched or the shaft arm bent. Check and rectify both of these items before proceeding.
- 11 Connect an elastic band between the shaft arm and the diaphragm cover so that the choke valves are held shut.
- 12 Open and close the throttle so that the choke valves shut, then using a small electrician's screwdriver or length of welding rod, push the outer diameter of the diaphragm spindle hard against the adjustment screw by inserting it into the spindle bore. The tension of the elastic band must be sufficient to overcome the tension of the spring inside the diaphragm spindle. This can be checked by temporarily opening the choke valves and observing whether the visible section of the spindle moves.
- 13 Check that the clearance between the longest section of the choke valve and the intake wall is not less than the dimension given in the adjustment data. If it is, use a narrow screwdriver to adjust the setting screw (Fig. 7.8) (57).
- 14 Using the blade of a screwdriver, press both sections of the spindle hard against the adjustment screw; the clearance



between the lower edge of the choke valves and the intake wall should now be as given in the adjustment data. If not, the internal spring of the spindle is faulty and the spindle should be renewed.

15 Remove the elastic band and refit the gasket and thermostat housing.

Fast idle adjustment – DAF and DFAV automatic choke

16 Fully open and close the throttle and check that the fast idling adjustment screw (Fig. 7.25) (68) is resting on the high part of the fast idle cam.

17 Refer to the adjustment data and determine the fast idle throttle opening for the carburettor being worked on, then obtain a drill or length of dowel rod of the same diameter and insert it between the primary throttle valve and the outer barrel well. Turn the adjusting screw as necessary to obtain the correct clearance.

Choke valve pull down – DAF and DFAV automatic choke

18 Remove the thermostat housing (Fig. 7.25) (58) and the gasket disc.

19 Open and close the throttle so that the choke valves fully close under finger pressure, then holding the choke valves shut, check that there is a clearance between the diaphragm spindle (Fig. 7.25) (62) and the shaft arm (Fig. 7.25) (44) of at least 0.008 in (0.2 mm). Make the check with feeler gauges and, if incorrect, check the shaft arm or linkage for damage. If any damage is found, they should be bent back to the original shape; alternatively the diaphragm may be found to be damaged.

20 Using an elastic band, hold the primary throttle valve fully

open, then move the diaphragm spindle so that it abuts the stop plate. Move the shaft arm against the spindle central stop and check that the clearance between the choke valve longest section and the intake well is between 0.187 in (4.75 mm) and 0.207 in (5.25 mm). Use a drill to make the check and if incorrect, adjust the position of the stop plate as necessary.

21 Remove the elastic band and refit the gasket and thermostat housing.

9 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 Section 8 paragraphs 1 and 2.

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).

4 Turn the throttle valve adjusting screw so that the engine runs at the recommended idling speed for the particular engine being worked on; this will be between 600 and 800 rpm for touring models and approximately 1000 rpm for sports car models.

5 Turn the idle mixture adjustment screw in or out 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 Repeat the procedure given in paragraphs 5 and 6, then switch off the engine and remove the tachometer.

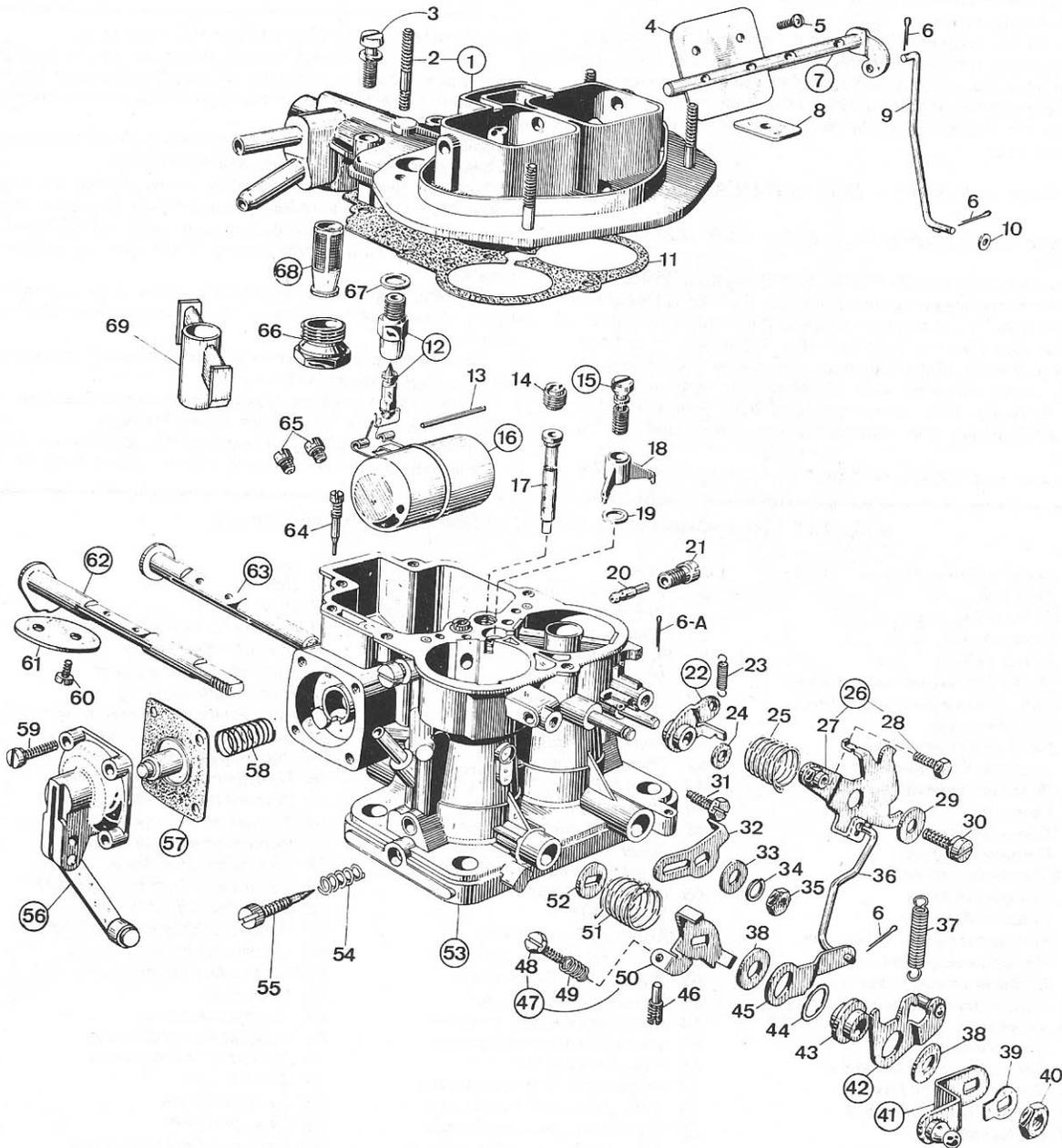
8 On bypass idle type carburetors, the procedure is similar but the bypass idle adjustment screw should first be fully

Fig. 7.25 Exploded view of the 32/36 DFAV carburettor (typical) (Sec 8)

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

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.



10 Fault diagnosis

Symptom	Reason/s
Engine will not start	Faulty choke linkage 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 spindle or carburettor body excessively worn Secondary throttle valve partially sticking open 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 Acceleration pump seized Throttle valves do not fully open
Excessive fuel consumption	Needle valve not seating Choked air filter Leaking or damaged float assembly Faulty automatic choke (when fitted) Incorrect float level adjustments

Fig. 7.26 Exploded view of the 32 DIF carburettor (typical) (Sec 9)

- | | | |
|--|--|---|
| 1 Air horn and plugs assy | 26 Choke control lever assy | 49 Spring |
| 2 Air cleaner retaining stud | 27 Lever | 50 Lever |
| 3 Horn and plug assy fixing screw and washer | 28 Screw securing wire | 51 Throttle control return spring (LH Primary) |
| 4 Choke plate | 29 Choke control lever assy retaining washer | 52 Throttle lever and shaft assy (Primary) washer |
| 5 Choke plate screw | 30 Choke control lever assy retaining screw and washer | 53 Carburettor body |
| 6 Choke control rod split pin | 31 Screw securing sheath | 54 Fast idle adjusting screw spring |
| 6A Choke lever pivot split pin | 32 Full throttle stop lever | 55 Idle adjustment needle |
| 7 Choke shaft and lever assy | 33 Full throttle stop washer | 56 Accelerator pump cover assy |
| 8 Air cleaner dust seal | 34 Full throttle stop lockwasher | 57 Accelerator pump diaphragm assy |
| 9 Choke control rod | 35 Full throttle stop nut | 58 Accelerator pump rod spring |
| 10 Choke rod washer | 36 Fast idle rod | 59 Accelerator pump cover fixing screw and washer |
| 11 Air horn to throttle body gasket | 37 Throttle control return spring (RH Secondary) | 60 Throttle plate screw |
| 12 Fuel inlet valve and seat assy. | 38 Primary throttle shaft assy washer | 61 Throttle plate |
| 13 Float lever shaft | 39 Throttle shaft (Primary) tab washer | 62 Throttle shaft assy oversize (LH Primary) |
| 14 Starting air adjusting jet | 40 Throttle shaft (Primary) nut | 63 Throttle shaft assy (RH Secondary) |
| 15 Accelerator pump discharge valve assy | 41 Throttle lever | 64 Accelerator pump discharge blanking needle |
| 16 Float assy | 42 Throttle control lever | 65 Main primary jet |
| 17 Fuel jet | 43 Throttle shaft bushing | 65A Main secondary jet |
| 18 Pump discharge nozzle | 44 Throttle shaft (Primary) wave washer | 66 Fuel inlet strainer plug |
| 19 Nozzle bar gasket | 45 Choke/throttle interconnecting lever | 67 Fuel intake valve washer |
| 20 Idling secondary jet | 46 Fast idling adjustment screw | 68 Fuel inlet strainer assy |
| 21 Idling jet holder | 47 Fast idle adjustment lever assy | 69 Fuel discharge units |
| 22 Choke lever assy | 48 Screw | |
| 23 Choke lever spring | | |
| 24 Choke lever pivot washer | | |
| 25 Choke lever return spring | | |