Part G Chapter 4
Solex 35 & 38 EEIT carburettor

Contents

Specifications

Manufacturer	Ford	Ford	Ford	Ford
Model	Cortina 2300	Cortina 2300 auto.	Cortina 2300	Cortina 2300 auto.
Year	Apr.1979 to Jun.1981	Apr.1979 to Jun.1981	Jun.1981 to 1982	Jun.1981 to 1982
Engine code	YYR (OHV)	YYR (OHV)	YYR (OHV)	YYR (OHV)
Capacity (cm³)/no. of cyls	2294/V6	2294/V6	2294/V6	2294/V6
Oil temperature (°C)	80	80	80	80
Transmission	Manual	Automatic	Manual	Automatic
Carb. ident. (Ford)	80TF 9510 AJA 80TF 9510 AJB	80TF 9510 AFA 80TF 9510 AFB	82TF 9510 VA 82TF 9510 AHA	82TF 9510 RA 82TF 9510 AJA
Idle speed (rpm)	800 ± 50	800 ± 50	800 ± 20	800 ± 20
Fast idle speed (rpm)	2900 ± 100	2900 ± 100	2900 ± 100	2900 ± 100
CO @ idle (% vol.)	1.5 ± 0.5	1.5 ± 0.5	1.5 ± 0.25	1.5 ± 0.25
Venturi diameter	26 (x2)	26 (x2)	26 (x2)	26 (x2)
Idle jet	47.5 (x2)	47.5 (x2)	47.5 (x2)	47.5 (x2)
Main jet	137.5 (x2)	137.5 (x2)	137.5 (x2)	137.5 (x2)
Air correction jet	200 (x2)	200 (x2)	185 (x2)	190 (x2)
Accel. pump jet	40 (x2)	45 (x2)	40 (x2)	45 (x2)
Float level 1 (mm)	14.5 ± 0.5	14.5 ± 0.5	11.0 ± 0.5	11.0 ± 0.5
Needle valve size (mm)	2.0	2.0	2.5	2.5
Choke modulator gap (mm)	1.9 ± 0.1	1.9 ± 0.1	1.8 ± 0.1	1.8 ± 0.1
Choke pull-down (mm)	3.1 ± 0.2	3.1 ± 0.2	3.2 ± 0.2	3.2 ± 0.2
Choke phasing (mm)	0.3 to 0.6	0.3 to 0.6	0.3 to 0.6	0.3 to 0.6

Manufacturer	Ford	Ford	Ford	Ford
Model	Sierra 2300	Sierra 2300 auto.	Granada 2300	Granada 2300 auto.
Year	1982 to 1984	1982 to 1984	1978 to 1979	1978 to 1979
Engine code	YYT (OHV)	YYT (OHV)	YYH (OHV)	YYH (OHV)
Capacity (cm³)/no. of cyls	2294/V6	2294/V6	2294/V6	2294/V6
Oil temperature (°C)	80	80	80	80
Transmission	Manual	Automatic	Manual	Automatic
Carb. ident. (Ford)	82TF 9510 AHA	82TF 9510 AJA	78TF 9510 CA 79TF 9510 DA	78TF 9510 FA 79TF 9510 EA
Idle speed (rpm)	800 ± 20	800 ± 20	800 ± 50	800 ± 50
Fast idle speed (rpm)	3000 ± 100	3000 ± 100	2900 ± 100	2900 ± 100
CO @ idle (% vol.)	1.5 ± 0.25	1.5 ± 0.25	1.5 ± 0.5	1.5 ± 0.5
Venturi diameter	26 (x2)	26 (x2)	25 (x2)	25 (x2)
Idle jet	47.5 (x2)	47.5 (x2)	42.5 (x2)	42.5 (x2)
Main jet	137.5 (x2)	137.5 (x2)	130 (x2)	130 (x2)
Air correction jet	200 (x2)	200 (x2)	200 (x2)	200 (x2)
Accel. pump jet	-	-	40 (x2)	45 (x2)
Float level 1 (mm)	11.0 ± 0.5	11.0 ± 0.5	11.0 (black float)	11.0 (black float)
Float level 2 (mm)	-	-	14.5 (white float)	14.5 (white float)
Needle valve size (mm)	2.0	2.0	-	-
Choke modulator gap (mm)	1.8 ± 0.1	1.8 ± 0.1	1.9 ± 0.1	1.9 ± 0.1
Choke pull-down (mm)	3.2 ± 0.2	3.2 ± 0.2	3.1 ± 0.2	3.1 ± 0.2
Choke phasing (mm)	0.3 to 0.6	0.3 to 0.6	0.3 to 0.6	0.3 to 0.6

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Manufacturer	Ford	Ford	Ford	Ford
Model	Granada 2300	Granada 2300 auto.	Granada 2300	Granada 2300 auto.
Year	1980 to 1981	1980 to 1981	1982 to 1985	1982 to 1985
Engine code	YYH (OHV)	YYH (OHV)	YYP (OHV)	YYP (OHV)
Capacity (cm³)/no. of cyls	2294/V6	2294/V6	2294/V6	2294/V6
Oil temperature (°C)	80	80	80	80
Transmission	Manual	Automatic	Manual	Automatic
Carb. ident. (Ford)	80TF 9510 AJA 80TF 9510 AJB	80TF 9510 AFA 80TF 9510 AFB	82TF 9510 ABA 82TF 9510 AHA	82TF 9510 ACA 82TF 9510 AJA
Idle speed (rpm)	800 ± 50	800 ± 50	800 ± 50	800 ± 50
Fast idle speed (rpm)	2900 ± 100	2900 ± 100	3000 ± 100	3000 ± 100
CO @ idle (% vol.)	1.5 ± 0.5	1.5 ± 0.5	1.5 ± 0.5	1.5 ± 0.5
Venturi diameter	26 (x2)	26 (x2)	26 (x2)	26 (x2)
Idle jet	47.5 (x2)	47.5 (x2)	47.5 (x2)	47.5 (x2)
Main jet	137.5 (x2)	137.5 (x2)	137.5 (x2)	137.5 (x2)
Air correction jet	200 (x2)	200 (x2)	185 (x2)	190 (x2)
Accel. pump jet	40 (x2)	45 (x2)	40 (x2)	45 (x2)
Float level 1 (mm)	14.5 ± 0.5	14.5 ± 0.5	11.0 ± 0.5	11.0 ± 0.5
Needle valve size (mm)	2.0	2.0	2.5	2.5
Choke modulator gap (mm)	1.9 ± 0.1	1.9 ± 0.1	1.8 ± 0.1	1.8 ± 0.1
Choke pull-down (mm)	3.5 ± 0.2	3.3 ± 0.2	3.2 ± 0.2	3.2 ± 0.2
Choke phasing (mm)	0.3 to 0.6	0.3 to 0.6	0.3 to 0.6	0.3 to 0.6

Manufacturer	Ford	Ford	Ford	Ford
Model	Granada 2800	Granada 2800 auto.	Granada 2800	Granada 2800 auto
Year	1978 to 1979	1978 to 1979	1980 to 1981	1980 to 1981
Engine code	PYA (OHV)	PYA (OHV)	PYA (OHV)	PYA (OHV)
Capacity (cm³)/no. of cyls	2792/V6	2792/V6	2792/V6	2792/V6
Oil temperature (°C)	80	80	80	80
Transmission	Manual	Automatic	Manual	Automatic
Carb. ident. (Ford)	78TF 9510 EA 79TF 9510 GA	78TF 9510 BA 79TF 9510 HA	80TF 9510 AMA 80TF 9510 AMB	80TF 9510 ASA 80TF 9510 ASB
Idle speed (rpm)	800 ± 50	800 ± 50	800 ± 50	800 ± 50
Fast idle speed (rpm)	2900 ± 100	2900 ± 100	2900 ± 100	2900 ± 100
CO @ idle (% vol.)	1.5 ± 0.5	1.5 ± 0.5	1.5 ± 0.5	1.5 ± 0.5
Venturi diameter	28 (x2)	28 (x2)	28 (x2)	28 (x2)
Idle jet	45 (x2)	45 (x2)	50 (x2)	50 (x2)
Main jet	147.5 (x2)	145 (x2)	150 (x2)	150 (x2)
Air correction jet	210 (x2)	200 (x2)	200 (x2)	200 (x2)
Accel. pump jet	50 (x2)	50 (x2)	50 (x2)	50 (x2)
Float level 1 (mm)	14.5 ± 0.5	14.5 ± 0.5	13.0 ± 0.5	13.0 ± 0.5
Needle valve size (mm)	2.0	2.0	2.5	2.5
Choke modulator gap (mm)	2.1 ± 0.1	2.1 ± 0.1	1.9 ± 0.1	1.9 ± 0.1
Choke pull-down (mm)	4.0 ± 0.2	4.0 ± 0.2	4.2 ± 0.2	4.5 ± 0.2
Choke phasing (mm)	0.3 to 0.6	0.3 to 0.6	0.3 to 0.6	0.3 to 0.6

Manufacturer	Ford	Ford
Model	Granada 2800	Granada 2800 auto
Year	1982 to 1985	1982 to 1985
Engine code	PYA (OHV)	PYA (OHV)
Capacity (cm³)/no. of cyls	2792/V6	2792/V6
Oil temperature (°C)	80	80
Transmission	Manual	Automatic
Carb. ident. (Ford)	82 TF 9510 AEA 82 TF 9510 AKA	82 TF 9510 AFA 82 TF 9510 ALA
Idle speed (rpm)	800 ± 50	800 ± 50
Fast idle speed (rpm)	3000 ± 100	3000 ± 100
CO @ idle (% vol.)	1.5 ± 0.5	1.5 ± 0.5
Venturi diameter	28 (x2)	28 (x2)
Idle jet	50 (x2)	50 (x2)
Main jet	150 (x2)	150 (x2)
Air correction jet	200 (x2)	200 (x2)
Accel. pump jet	50 (x2)	50 (x2)
Float level 1 (mm)	11.0 ± 0.5	11.0 ± 0.5
Needle valve size (mm)	2.5	2.5
Choke modulator gap (mm)	1.8 ± 0.1	1.8 ± 0.1
Choke pull-down (mm)	4.5 ± 0.2	4.2 ± 0.2
Choke phasing (mm)	0.3 to 0.6	0.3 to 0.6

1 Principles of operation

Introduction

1 The following technical description of the Solex EEIT carburettor should be read in conjunction with the more detailed description of carburettor principles in Part A.

Construction

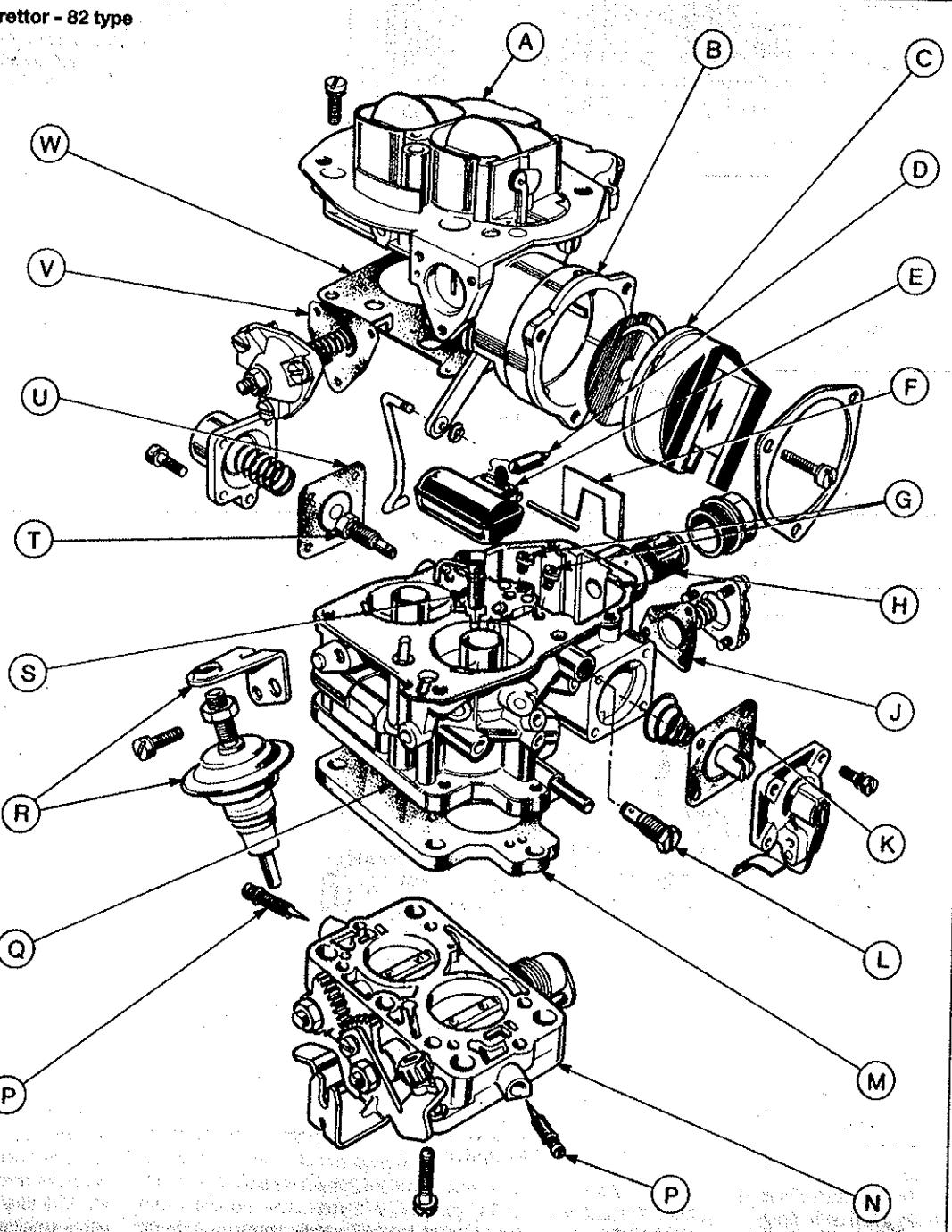
2 The Solex EEIT carburettor is a synchronised twin venturi downdraught instrument suitable for V6 engines **(see illustration)**. Each barrel has separate fuel and air circuits, supplied from a common float chamber, and provides the fuel requirements for three cylinders.

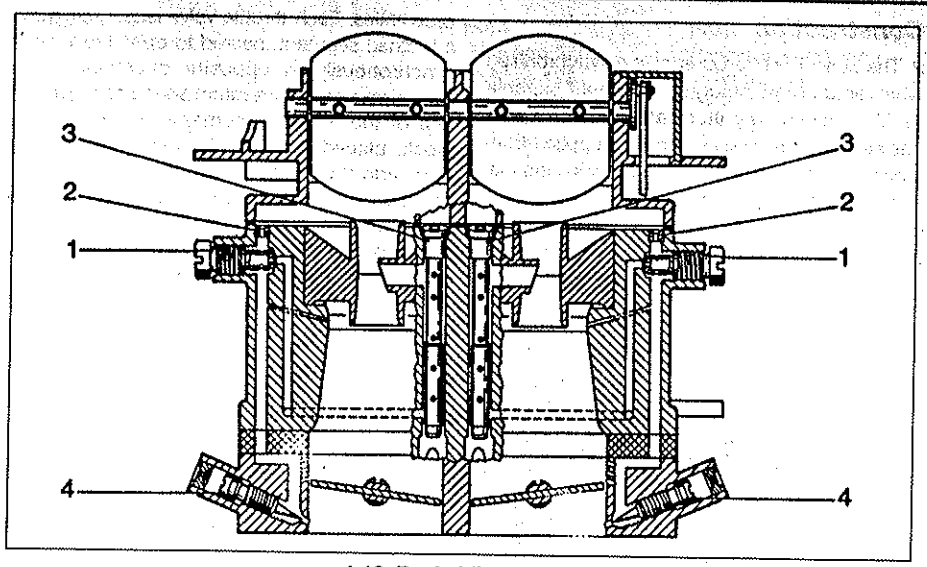
3 The carburettor is constructed in three main bodies. These are the upper body, main body and throttle body, which contains the throttle assemblies. Each throttle valve is controlled by a toothed segment, geared to open the valves synchronously in opposite directions. The valves are closed by a return spring acting upon one of the toothed segments. An insulating block, placed between the main carburettor body and the throttle body, prevents excess heat transference to the main body.

4 The EEIT carburettor has been subjected to a number of modifications to the basic design, mainly involving different methods of achieving

1.2 Solex EEIT carburettor - 82 type

A Upper body
B Automatic choke housing
C Choke bi-metal assembly
D Needle valve
E Float
F Plastic retaining piece
G Main jets
H Fuel filter
J Power valve diaphragm
K Accelerator pump diaphragm
L Idle jet
M Gasket block
N Throttle body assembly
P Mixture screws
Q Main body assembly
R Throttle damper and bracket
S Accelerator pump injector
T Idle jet
U Anti-stall diaphragm
V Pull-down diaphragm
W Top cover-to-main body gasket





1.10 Basic idle system

1 Idle jets
2 Idle air bleeds
3 Air correction jets with emulsion tube
4 Mixture control screws

idle CO adjustment and choke control. The three basic types and the periods when they were fitted are as follows:

Standard 77	*Fitted prior to June 1979*
80 type	*Fitted between June 1979 and August 1981*
82 type	*Fitted after August 1981*

Standard 77 type

5 The Standard 77 type allowed separate adjustment of the basic idle mixture and the bypass mixture. This was achieved by two throttle body-mounted mixture screws to vary the basic idle mixture and a single cover-mounted mixture screw, used in conjunction with an air bleed screw, to vary the bypass idle mixture. The throttle plate was tamperproofed and locked in position, although adjustment was still possible. The choke control was coolant-heated.

80 type

6 In the 80 type, the earlier basic idle adjusters were replaced with non-adjustable fixed idle bushings. The bypass idle mixture was varied by a single auxiliary mixture screw, in conjunction with an air bleed screw. There were two alternative locations for the auxiliary screw; it was either body-mounted near the air bleed screw or mounted in the upper body. It was not possible to adjust the throttle plate because this was set in production and the end of the adjusting screw was then sheared off. The choke control was electrically-heated.

82 type

7 The bypass system of the 82 type is sealed and totally non-adjustable. Two mixture screws (one for each barrel) are used to vary the basic idle mixture. Idle speed (and the throttle plate) are fully adjustable and the choke control is electrically-heated.

Fuel control

8 Fuel flows horizontally into the carburettor through a fine mesh filter. The fuel level in the float chamber is controlled by a needle valve and plastic float assembly. The needle seat is pressed into the float chamber and is not replaceable. An anti-vibration ball is incorporated into the needle valve design. A hairpin clip, attached to the needle valve seat and to the float arm, prevents the needle from sticking in the seat as the fuel level drops. The float chamber is vented internally into the venturi. A calibrated fuel return system is provided to ensure that relatively cool fuel is supplied to the carburettor.

Idle and slow running

9 Two idle systems are provided to improve emission control, these being the basic idle system and the idle bypass system.

Basic idle system

10 Fuel, sourced from the main wells, will pass into the idle channels through metered idle jets, one for each barrel. Here the fuel is mixed with a small amount of air from a calibrated air bleed. The emulsion formed is drawn through two channels to the throttle body, where it is discharged from the idle orifices under the throttle plates **(see illustration)**.

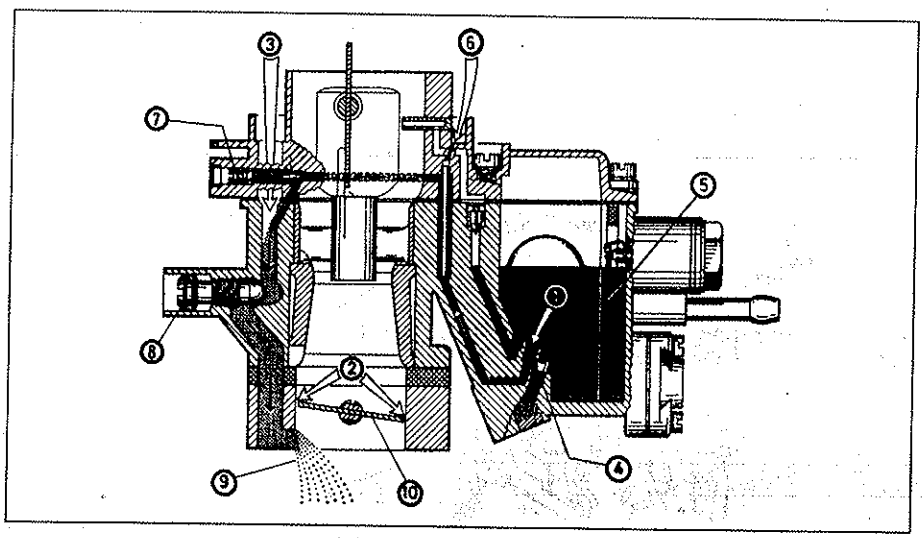
11 Up to June 1979 (Standard 77), a tapered mixture control screw (in each barrel) was used to vary the outlets and this ensured fine control of the idle mixture. The throttle plate was tamperproofed and locked in position, although adjustment was still possible.

12 In the 80 type carburettor, the basic idle adjusters were replaced with non-adjustable fixed idle bushings. It was no longer possible to adjust the throttle plate.

13 The 82 type carburettor uses two mixture screws (one per barrel) to vary the basic idle mixture. The idle speed (and the throttle plate position) are fully adjustable by an idle speed screw.

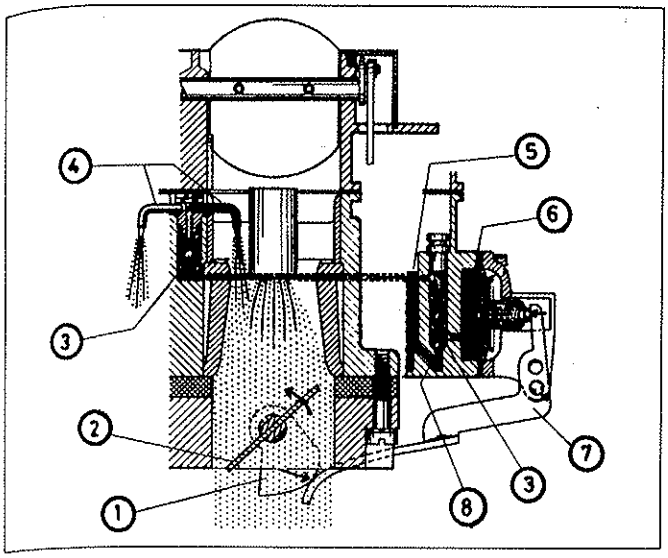
Idle bypass circuit

14 A supplementary air passage is drilled from under the throttle valve, through the carburettor body to atmosphere. The majority of air required for idle passes through this bypass passage. Fuel, sourced from the float chamber, will pass through a metered idle jet into the auxiliary idle channel. Here the fuel is mixed with a small amount of air from a calibrated air bleed to form an emulsion **(see illustration)**.



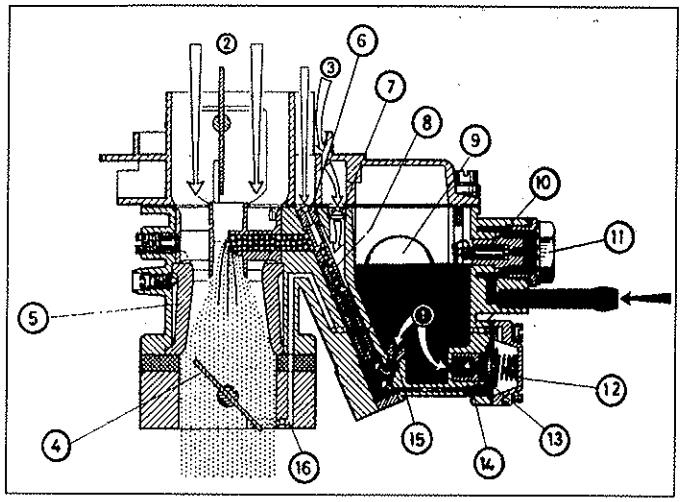
1.14 Bypass idle system

1 Bypass fuel supply
2 Main air supply
3 Bypass air supply
4 Main jet
5 Float chamber
6 Bypass air bleed
7 Bypass mixture screw
8 Bypass air screw
9 Bypass fuel mixture
10 Throttle plate



1.19 Accelerator pump system

1 *Pump actuating cam*
2 *Throttle plate*
3 *Outlet valve*
4 *Pump injectors*
5 *Float chamber*
6 *Diaphragms*
7 *Pump lever*
8 *Inlet valve*



1.20 Main circuit and power circuit

1 *Fuel supplies to main/power circuits*
2 *Main air supply*
3 *Air supply to anti-syphon valve*
4 *Throttle plate*
5 *Venturi*
6 *Air corrector*
7 *Anti-syphon air bleed*
8 *Emulsion tube*
9 *Float*
10 *Needle valve*
11 *Fuel inlet*
12 *Power diaphragm*
13 *Power valve*
14 *Power jet*
15 *Main jet*
16 *Vacuum passage for power valve*

15 Up to August 1981 (Standard 77 and 80 types), the fuel/air mixture is regulated by a tapered mixture control screw before being drawn into the supplementary air passage where it is further controlled by an idle bypass air screw. This screw controls idle speed and the throttle plate is locked into a set position.

16 From August 1981 (82 type), the bypass system was sealed and totally non-adjustable.

17 The adjustable mixture, idle speed and air bleed screws are tamperproofed at production level, in accordance with the emission regulations.

Progression

18 A number of progression drillings in each barrel are uncovered by the opening throttles as the engine is accelerated.

Accelerator pumps

19 The EEIT carburettor uses two accelerator pumps. Both are diaphragm-controlled. One is operated by a lever and cam attached to the throttle linkage and the other by manifold vacuum. Both pumps are actuated in the conventional manner and discharge through the same twin-nozzle pump injector. The vacuum-actuated pump operates on load and doubles as an anti-stall device. During idle or low-speed running, the manifold vacuum will be high. As a stall situation develops, the vacuum will deplete and the pump is actuated **(see illustration)**.

Main circuit

20 The amount of fuel discharged into the airstream is controlled by calibrated main jets, one for each barrel. Fuel is drawn from the float chamber, through the main jets, into the base of two vertical wells which dip down into the fuel. Two emulsion tubes, one for each barrel, are placed in the wells. The fuel is mixed with air drawn in through calibrated air correction jets and the holes in the emulsion tubes. The resulting emulsified mixture is discharged from the main nozzles through two auxiliary venturis. An additional air jet is mounted over each emulsion well to prevent a syphoning effect when the engine is stopped **(see illustration)**.

Power enrichment and economy circuit

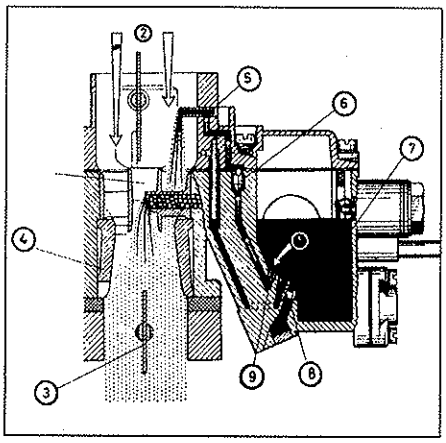
21 Fuel flows into the inner chamber from the float chamber through a brass outlet valve. An air passage is taken from under the throttle plate to the cover of the power diaphragm chamber. At idle and during light-throttle operation, manifold vacuum in the passage draws the diaphragm back against spring pressure. The diaphragm pintle is withdrawn from the outlet valve and a spring-loaded ball seats to close off the channel.

22 During acceleration and wide-open throttle operation, the vacuum in the manifold collapses. The diaphragm returns under spring pressure and the power diaphragm pintle pushes the ball to open the fuel channel. Fuel then flows through the valve into the two power jets, to supplement the fuel in the main well. The fuel level rises in each well and the fuel mixture is enriched.

23 At full-load and high engine speed, even more fuel is required. The velocity of air creates a depression sufficient to raise fuel from the float chamber into two channels. The fuel then passes through calibrated bushings to the upper section of the air intakes, where it is discharged into the airstream from the full-load enrichment tubes **(see illustration)**.

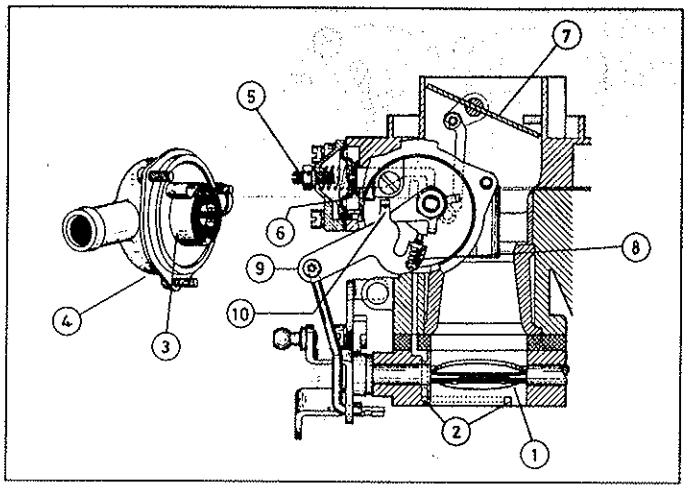
Cold start system

24 The EEIT carburettor uses a semi-automatic choke starting system **(see illustration)**. A bi-metal spring is used to control two strangler choke flaps on a common spindle which shut off the air



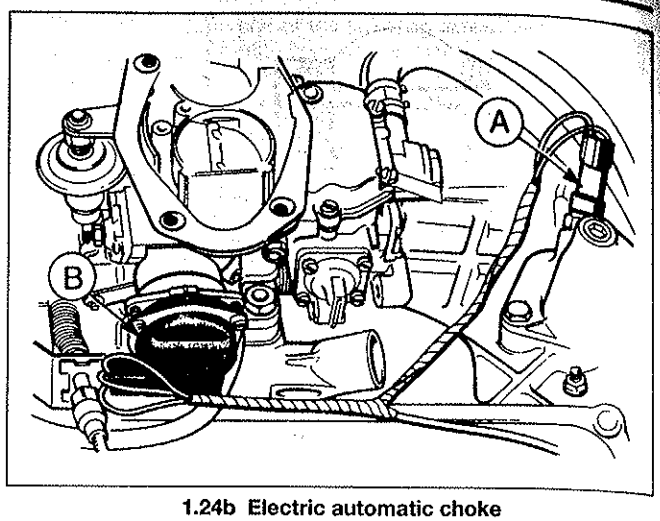
1.23 Full-load enrichment

1 *Fuel supplies to enrichment tubes and bypass idle circuits*
2 *Main air supply*
3 *Throttle plate*
4 *Venturi*
5 *Full-load enrichment tube*
6 *Valve*
7 *Float chamber*
8 *Main jet*
9 *Enrichment jet*



1.24a Automatic choke

1 *Throttle plate*
2 *Vacuum passage to diaphragm*
3 *Bi-metal spring*
4 *Bi-metal housing*
5 *Pull-down adjusting screw*
6 *Pull-down diaphragm*
7 *Choke flap*
8 *Fast idle screw*
9 *Choke lever*
10 *Wide-open kick adjustment tag*



1.24b Electric automatic choke

A Thermo-switch *B Electric choke housing*

intakes. Heating of the spring may be by engine coolant (up to June 1979) or by an electrical 12-volt supply (from June 1979) **(see illustration)**. The system is primed by depressing the accelerator pedal once or twice.

25 The choke flaps are eccentrically mounted so that during cranking, they are partially opened to prevent an over-rich fuel mixture.

26 Once the engine has fired, the choke flaps must open slightly to weaken the mixture and avoid flooding during idle and light-throttle operation. This is achieved by using manifold vacuum to actuate a diaphragm. Linkage attached to the diaphragm will then pull upon the flaps.

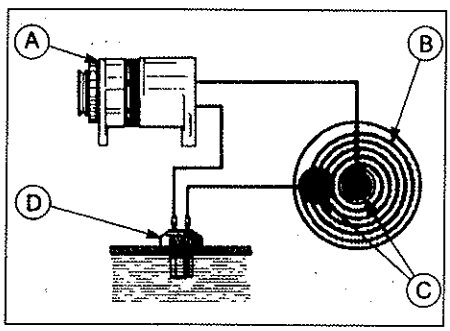
27 The fast idle is achieved with the aid of a stepped cam attached to the choke spindle. An adjustable screw, connected to the throttle lever mechanism and butting against the cam, can be used to vary the fast idle speed. As the bi-metal coil is heated and the flap opens, the screw will rest on successively less-stepped parts of the cam. Idle speed is thus progressively reduced until ultimately, the cam is released and the idle speed returns to normal.

28 Where a coolant-heated bi-metal coil is used, the choke will remain almost closed until the coolant becomes hot enough to heat the bi-metal coil. This may initially cause rich operation for the first few minutes after a cold start.

29 Where an electrically-heated choke is used, the choke will open fairly quickly and this may cause engine hesitation during warm-up. Should the engine be inadvertently left with the ignition switched on, the choke will operate to the fully-open position, causing poor starting with a cold engine.

30 For a tighter control of the choke flaps during the warm-up period, the EEIT carburettor (from June 1979) uses two separate electrical heating elements. Both elements take their (7 to 9-volt) supply from the alternator and therefore function only while the engine is running **(see illustration)**.

31 Element one is a direct feed and begins to heat the coil slowly immediately the engine starts running. Element two is controlled by a thermo-switch in the coolant system and it will not function until a predetermined coolant temperature is reached. Either element is capable of opening the choke individually, although proper control is only exercised when both operate jointly.



1.30 Electric automatic choke wiring circuit

A Alternator *C Heating elements*
B Bi-metal coil *D Thermo-switch*

Throttle dashpot

32 The throttle dashpot allows the throttle plate to close slowly to introduce normal idle vacuum in a controlled manner.

2 Identification

1 A metal tag giving the Ford identification code is attached to one of the carburettor upper body fixing screws.

2 Solex or Pierburg stamped upon the cover is the only identification mark used by the carburettor manufacturer.

3 General servicing

Introduction

1 Read this Chapter in conjunction with Part B, which describes some of the operations in more detail. It is assumed that the carburettor is removed for this service. However, many of the operations can be tackled with the carburettor in place. Where this is undertaken, first soak the fuel out of the float chamber using a clean tissue or soft cloth, after removing the upper body assembly.

Dismantling and checking

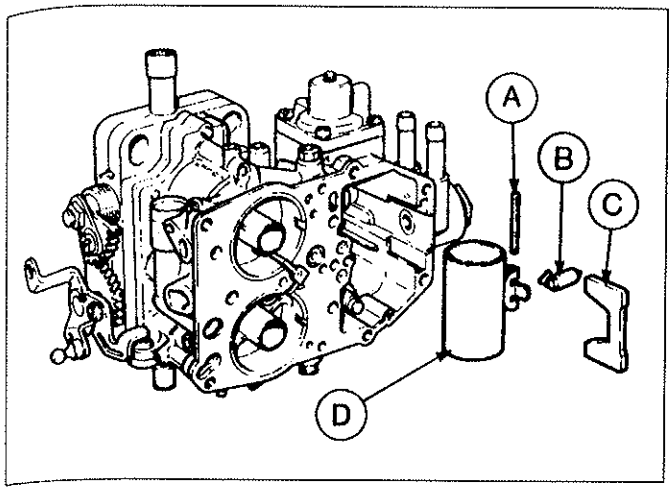
2 Remove the carburettor from the engine (see Part B).

3 Make visual checks for damage and wear.

4 Remove the seven screws, disconnect the choke link rod and detach the carburettor upper body.

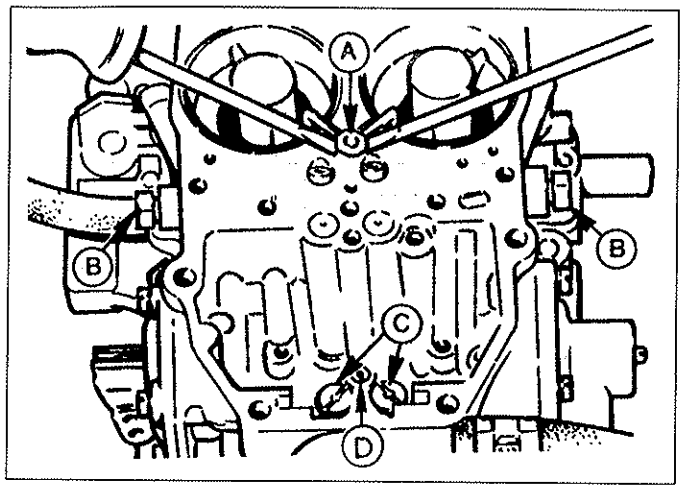
5 Use a straight-edge to check for distorted flanges on all facing surfaces.

6 Inspect the float chamber for corrosion and calcium build-up.



3.7 Needle valve and float components

A Float pin
B Needle valve
C Plastic retaining piece
D Float



3.16 Removing accelerator pump injector - and showing jet locations

A Accelerator pump injector
B Idle jets
C Main jets
D Auxiliary idle fuel jet

7 Remove the plastic float retaining piece, tap out the float pin, then remove the float, needle valve and float chamber gasket. The needle seat is pressed into the float chamber and is not replaceable **(see illustration)**.

8 Check that the anti-vibration ball is free in the valve end.

9 Check the needle valve tip for wear and ridges. This is more likely with the brass needle valve tip than when a viton one is used. Use a viton-tipped replacement when possible.

10 The float should be checked for damage and for ingress of petrol. Shaking the float will indicate any ingress of petrol.

11 Renew the float pin if it shows signs of wear.

12 Remove the hexagon bolt and inspect the fuel filter. Clean the chamber and the fuel inlet and return of debris and dirt. Ensure that the inlet and fuel return connections are tightly pushed into the upper body.

13 Remove the mixture screws and inspect their tips for damage and ridges.

14 Remove the four screws and detach the mechanical accelerator pump cover, diaphragm and spring. Check the diaphragm for fatigue and damage.

15 Remove the four screws and detach the anti-stall device cover, spring and diaphragm. Check the diaphragm for fatigue and damage.

16 The pump injector is a push fit in the body. Carefully prise it from its location using two thin screwdrivers, then test it by shaking. No noise from the outlet ball would indicate that the valve is seized **(see illustration)**.

17 Remove the two idle jets from the carburettor body.

18 Remove the main jets and check that the channels into the emulsion tube wells are clear. The emulsion tubes and air correctors are not removable. Carefully remove the small auxiliary idle fuel jet (located between the two main jets in the float chamber).

19 Remove the three screws and detach the power valve cover, spring and diaphragm from the body. Check the diaphragm for fatigue and damage.

20 The power valve brass outlet valve is cast into the body and is not removable. The ball in the outlet valve should seal the outlet. Depress and release the ball with a small screwdriver. It should smoothly move in and out.

21 Very carefully remove the two small power jets and check that the channels into the emulsion tube wells are clear.

22 Remove the six screws and separate the carburettor main body and throttle body assemblies. The throttle body can be renewed separately if the spindles or throttle bores are worn. Inspect the toothed segments and renew them if they are sticky in action or worn.

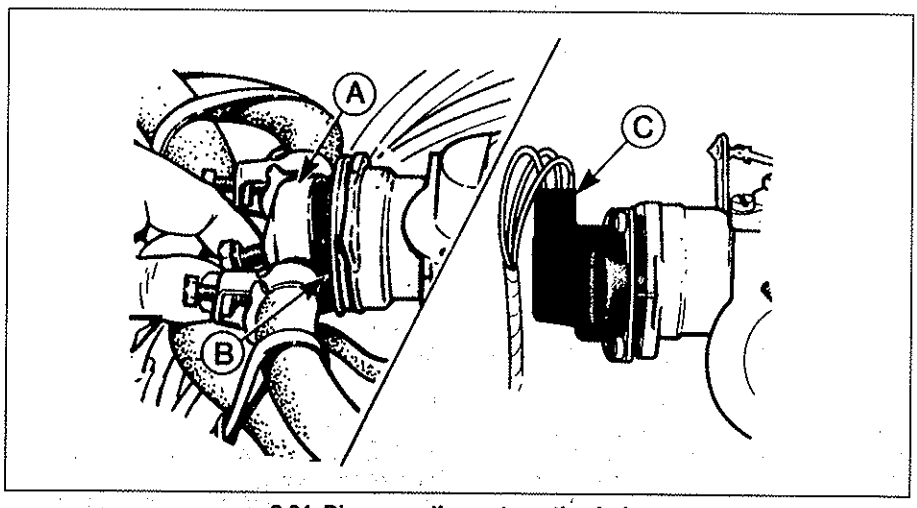
23 Remove the plastic dust cover from the choke linkage and the heat shield from the inside of the choke housing. Inspect the choke spindle, mechanism and levers for stickiness and wear.

24 Complete removal of the choke housing is normally unnecessary. However, it can be accomplished after removal of the two screws and the nut retaining the choke operating mechanism **(see illustration)**.

25 Remove the three screws and detach the cover, spring and diaphragm from the choke housing. Check the diaphragm for fatigue and damage **(see illustration)**.

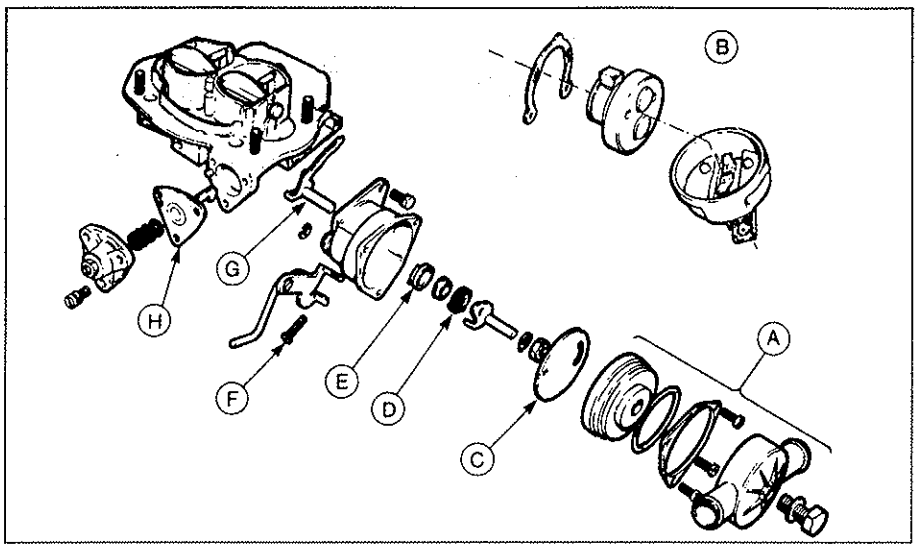
Preparation for reassembly

26 Clean the carburettor body, the jets and internal channels, then clean any sediment from the float chamber. An air line may be used to clear the internal channels once the



3.24 Disconnecting automatic choke

A Choke outer housing
B Housing O-ring seal
C Electric choke loom connection



3.25 Automatic choke assembly

A Bi-metal coil assembly (coolant-heated choke)
B Bi-metal Coil assembly (electric choke)
C Internal heat shield
D Cam retaining spring
E Fast idle cam
F Fast idle adjusting screw
G Upper choke link
H Pull-down diaphragm

carburettor is fully dismantled. Spraying carburettor cleaner into all the channels and passages in the carburettor body will often clear them of gum and dirt.

27 Note that if an air line is used with the diaphragms in place and air is directed into the diaphragm passages, diaphragm damage may result.

28 During reassembly, a complete set of new gaskets should be fitted. Also renew the needle valve, float pin and all diaphragms.

29 Inspect and renew (where necessary) the mixture screws, main jets, idle jets and pump injector. Renew worn linkages, springs and other parts where necessary.

30 Ensure that all jets are firmly locked into their original positions (but do not overtighten). A loose jet can cause a rich (or even lean) running condition.

31 Clean all mating surfaces and flanges of old gasket material. Ensure that housings are assembled with their air and fuel routes correctly aligned.

Reassembly

32 Refit the choke diaphragm, spring and cover to the choke housing assembly, then secure with the three screws.

33 Refit the choke housing to the carburettor body (if removed) and secure with the two screws.

34 Assemble the main body and throttle bodies with a new gasket block and secure with six screws. Tighten the screws progressively and evenly to avoid distortion of the assemblies.

35 Synchronise the throttles, see Section 4.

36 Refit the two small power jets. Refit the power diaphragm, spring and cover assembly, then secure with the three screws.

37 Refit the main jets and auxiliary idle fuel jet into the float chamber.

38 Refit the two idle jets.

39 Refit the anti-stall diaphragm, spring and cover assembly, then secure with the four screws.

40 Refit the mechanical pump spring, diaphragm and cover assembly, then secure with the four screws.

41 Push the pump injector into the body, renewing the small seal on the injector body. Fill the float chamber partially with petrol and operate the mechanical accelerator pump. The injected fuel should strike the throttle plates at the clearance from the inner air intake walls given below **(see illustration)**. If not, adjust as necessary by carefully bending the injector tubes:

2.3 engine (MT)	*3 to 6 mm*
2.3 engine (AT)	*1 to 3 mm*
2.8 engine	*1 to 3 mm*

42 Refit the idle mixture screws and carefully turn them in until they just seat. Unscrew three turns each (five turns for the Standard 77 type). This will provide a basic setting so that the engine can be started.

43 Clean or renew the fuel filter and refit the hexagon bolt.

44 Renew the needle valve. Insert the needle valve into the valve body with the seat facing inwards. Ensure that the hairpin clip (where fitted) is correctly connected to the needle valve and to the float tag.

45 Refit the float, float pivot pin and the plastic float retaining piece.

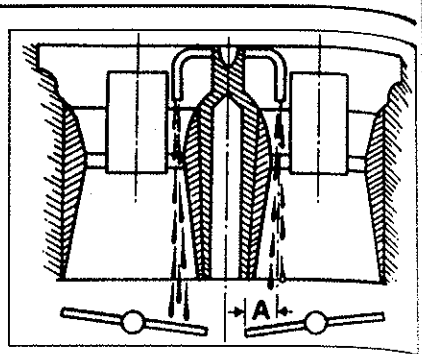
46 Adjust the float level. Refer to Section 4 for details on adjustment.

47 Place a new float chamber gasket on the carburettor body.

48 Refit the upper body assembly and secure with the seven screws.

49 Refit the choke link rod to the choke arm.

50 Refit the carburettor to the engine.



3.41 Accelerator pump stroke fuel pattern

For dimension A, see text

51 Always adjust the carburettor idle speed and mixture after any work has been carried out on the carburettor, preferably with the aid of a CO meter.

52 Ensure that the choke flap and linkage moves smoothly and progressively. See Section 4 for details on choke adjustment. Firmly place the plastic dust cover in position over the choke linkage. If this becomes displaced in service, it could jam the choke linkage.

4 Service adjustments

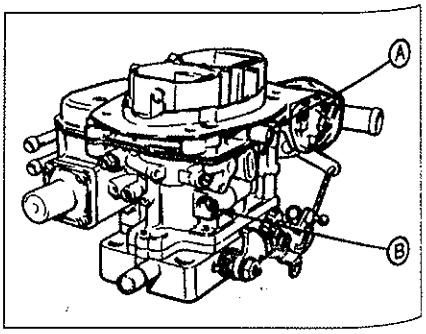
Adjustment preconditions

1 Refer to Part B for general advice on preconditions to correct adjustment of this carburettor.

Bypass idle adjustment: Standard 77 and 80 type

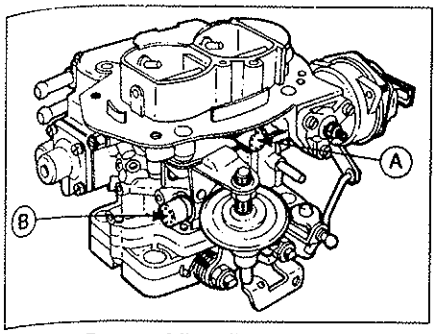
2 Run the engine at 3000 rpm for 30 seconds to clear the manifold of fuel vapours, then allow the engine to idle.

3 Check the idle speed and compare with the specified value. If incorrect, remove the tamperproof plug and use the air bypass screw to set the correct idle rpm. Note that adjustment of the idle speed will affect the CO level **(see illustrations)**.



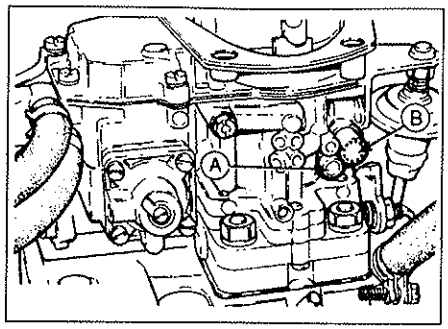
4.3a Bypass idle adjustment screw location - Standard 77 type

A Bypass mixture screw
B Bypass idle speed screw



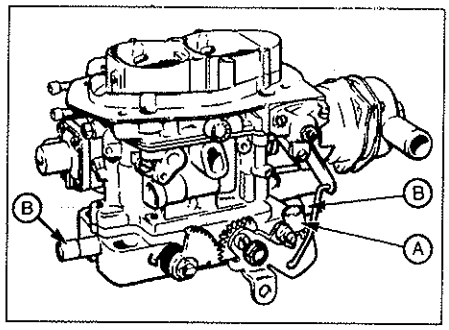
4.3b Bypass idle adjustment screw location - 80 type

A Bypass mixture screw
B Bypass idle speed screw



4.3c Bypass idle adjustment screw alternative location - 80 type

A Bypass mixture screw
B Bypass idle speed screw



4.10 Carburettor basic idle adjustment screw location - Standard 77 type

A Basic idle speed screw
B Basic idle mixture screws

4 Check the CO level against the specified value. If incorrect, remove the tamperproof cap and adjust the auxiliary idle mixture screw to achieve the correct level. Turning the screws clockwise (inwards) will reduce the CO level. Turning the screws anti-clockwise (outwards) will increase the CO level.
5 Repeat paragraphs 3 and 4 until the CO and idle speed are correct.
6 If the results are unsatisfactory, make the basic idle adjustment (Standard 77 only).
7 Increase the speed to 2000 rpm and note the CO reading. The cruise reading should be less than half the idle CO reading.
8 Fit new tamperproof caps/plugs to the mixture adjusting screws.

Basic idle adjustment: Standard 77

9 Turn in the air bypass screw until it is fully seated.
10 Remove the tamperproof caps from the two basic idle mixture screws and carefully turn in the idle mixture screws until they just seat. Unscrew each screw five full turns **(see illustration)**.
11 Start the engine, remove the tamperproof cap from the throttle stop screw and adjust the screw until 600 ± 20 rpm is obtained.
12 Adjust both mixture screws by equal increments until 2.5 to 3 % CO is obtained.
13 Unscrew the air bypass screw to achieve 800 ± 20 rpm.
14 Adjust the auxiliary idle mixture screw to achieve the correct CO level. If the CO needs a large adjustment at this stage, repeat paragraphs 9 to 13. Once the correct CO is reached at the correct idle speed, the carburettor is properly adjusted.
15 Fit new tamperproof caps to the adjusting screws.

Idle adjustment: 82 type

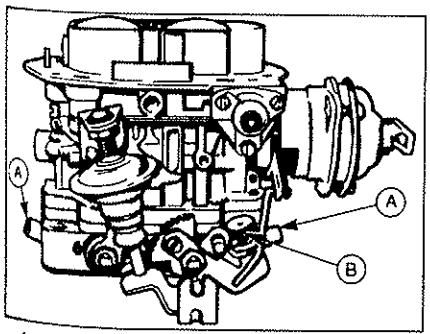
16 Run the engine at 3000 rpm for 30 seconds to clear the manifold of fuel vapours, then allow the engine to idle.
17 Use the idle speed screw to set the specified idle speed **(see illustration)**.
18 Check the CO level and compare with the specified value. If incorrect, remove the tamperproof plug and adjust to the correct level.
19 Repeat paragraphs 17 and 18 until both adjustments are correct.
20 Clear the manifold every 30 seconds during the setting operation by running the engine at 3000 rpm for 30 seconds.
21 Fit a new tamperproof plug to the mixture adjusting screw.

Throttle plate synchronisation

22 Inspect the toothed segments for wear, which occurs where the segment teeth mesh together. Renew the segments if there is play between the teeth **(see illustration)**.
23 Remove the tamperproof cap from the throttle stop screw and turn the screw out until it is clear of the throttle stop.
24 Block open the choke flaps so that the fast idle screw is released.
25 Slacken the synchronisation adjusting screw.
26 Open the throttle and allow both throttle plates to snap shut.
27 Tap the plates to ensure that they are both fully closed and lock up the synchronisation screw. Check for binding in the throttle bores and re-adjust as necessary.
28 Partially open the throttles using the throttle stop screw, until the first progression hole (in both barrels) is just uncovered. The position of each throttle plate relative to each progression hole should be exactly the same. This position is more important than the fully-closed position. Re-adjust as necessary.

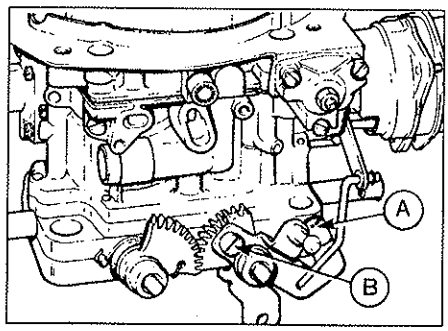
Float level

29 Fill the float chamber with petrol until the float fully closes the needle valve. Use a depth gauge to measure the distance between the carburettor body face (without the gasket) and the top of the float. Adjust as necessary by bending the float tag **(see illustration)**.



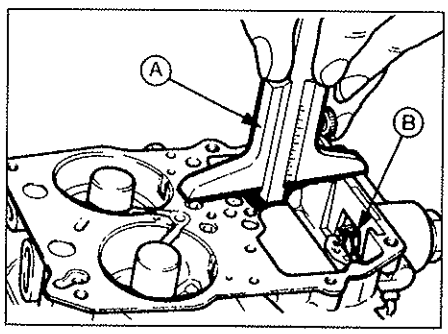
4.17 Carburettor basic idle adjustment screw location - 82 type

A Basic idle speed screw
B Basic idle mixture screws



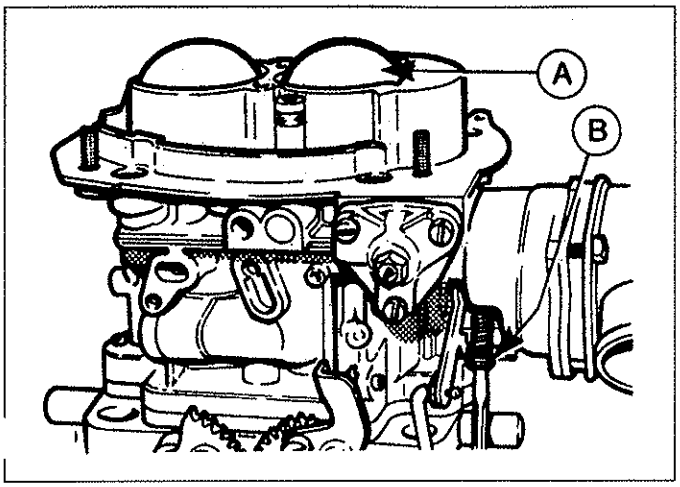
4.22 Throttle plate synchronisation adjustment

A Basic idle adjustment
B Throttle plate synchronisation screw



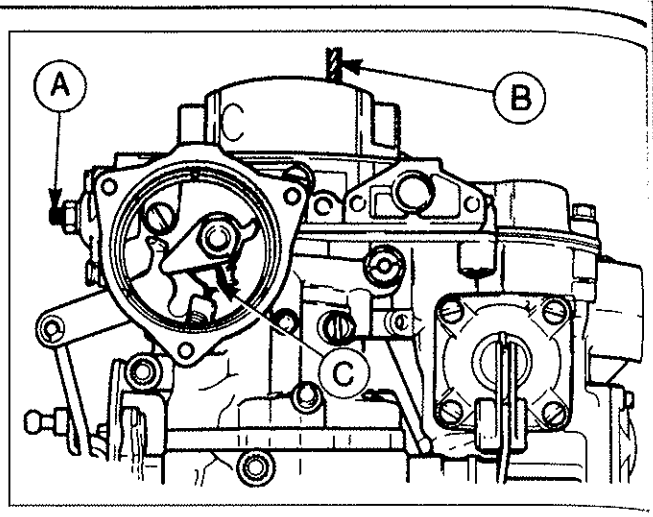
4.29 Checking float level adjustment

A Depth gauge
B Float level adjusting tag



4.33 Fast idle adjustment

A Choke plates fully open
B Fast idle adjustment screw



4.43 Carburettor set for choke flap pull-down adjustment

A Diaphragm adjustment screw
B Twist drill
C Choke mechanism set on high cam

Automatic choke

30 Warm the engine to normal running temperature before making any of the choke adjustments.

Fast idle

31 Adjust the idle speed and mixture, as described above.
32 Remove the air filter assembly and place it clear of the carburettor with the vacuum hoses still connected.
33 Partially open the throttle and fully close the choke flaps. Release the throttle and the choke flaps. The fast idle adjustment screw should remain against the highest step of the fast idle cam **(see illustration)**.
34 Start the engine without moving the throttle and record the fast idle speed. Refer to Specifications for the correct value.
35 Adjust as necessary by turning the fast idle screw in the appropriate direction. Because access to the adjustment screw is limited, stop the engine and partially open the throttle. A half-turn of the screw will alter the speed by approximately 100 rpm.
36 Refit the air filter assembly, ensuring that the vacuum hoses remain connected.

Choke vacuum pull-down

37 Remove the three screws and detach the bi-metal coil housing from the carburettor.
38 Remove the internal heat shield.
39 Partially open the throttle and fully close the choke flaps. Release the throttle and the choke flaps. The fast idle adjustment screw should remain against the highest step of the fast idle cam.
40 Start the engine without moving the throttle.
41 Carefully close the choke flaps until a resistance is felt.
42 Use the shank of a twist drill to measure the gap between the lower part of the choke flaps and the air intake (see Specifications for the required drill size).
43 Adjust as necessary by turning the diaphragm adjusting screw **(see illustration)** in the appropriate direction
44 Adjust the choke phasing, as described below.

Choke phasing

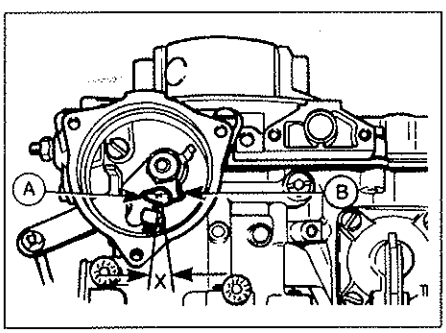
45 Refer to paragraphs 37 to 41.
46 Hold the choke flaps in this position. This can be accomplished using the drill mentioned in paragraph 42 above.
47 Partially open the throttle and the fast idle cam will fall into its natural position. The fast idle screw will locate on the second-highest step of the cam to leave a small operating clearance 'x' **(see illustration)**. See Specifications.
48 Adjust as necessary by bending the phasing adjustment tag.
49 Refit the internal heat shield.
50 Refit the bi-metal coil housing and ensure that the spring locates in the slot of the choke lever. Secure loosely with the three screws.
51 Align the cut mark on the bi-metal cover with the correct mark on the choke assembly housing, and tighten the three screws **(see illustration)**.

Choke modulator spring gap

52 This adjustment is only necessary if the choke operation is still unsatisfactory after the fast idle, choke pull-down and choke phasing have been adjusted.
53 Remove the seven screws, disconnect the choke link rod and detach the carburettor upper body.
54 Use the shank of a twist drill to measure the gap between the choke lever and the modulator spring. Refer to Specifications for the correct drill size **(see illustration)**.
55 Adjust as necessary by bending the modulator spring.
56 Refit the carburettor upper body.

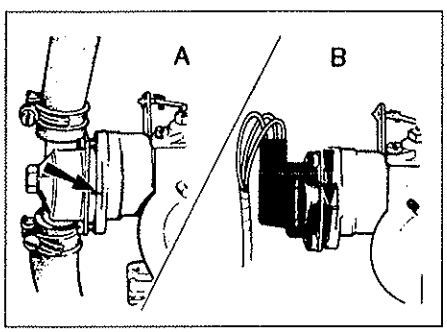
Wide-open kick

57 Fully close the choke flaps and fully open the throttle valves.
58 Measure the gap between the lower part of the choke flaps and the air intake. This should be 10 ± 1 mm.
59 Adjust as necessary by bending the tab on the choke lever.



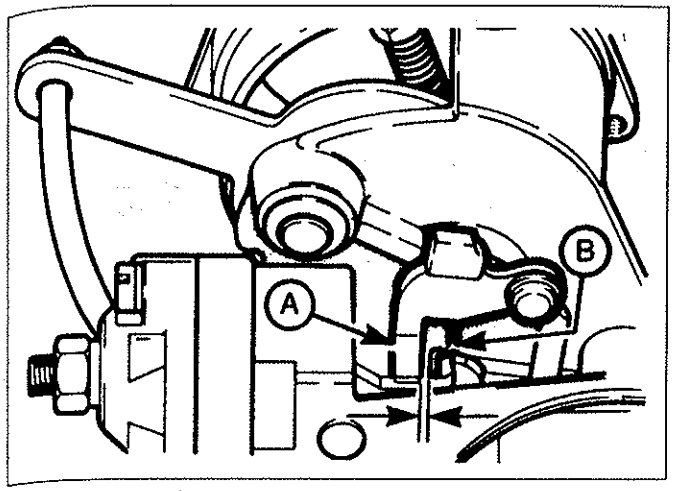
4.47 Choke phasing adjustment

X Operating clearance (see Specifications)
A Fast idle cam
B Phasing adjustment tag



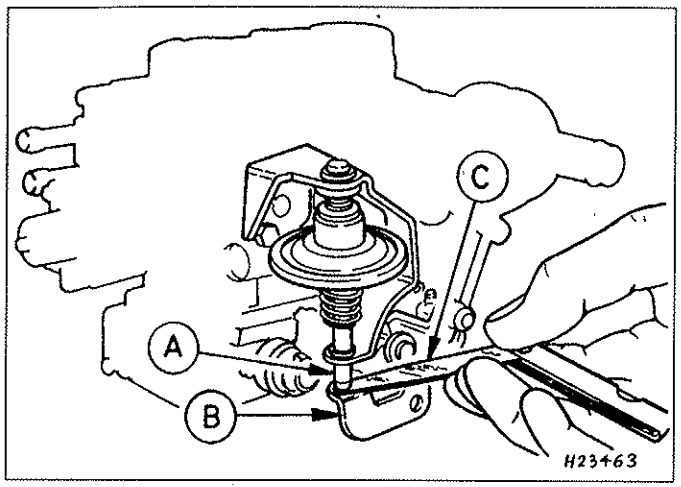
4.51 Choke housing alignment marks

A Coolant-heated choke system
B Electric choke system



4.54 Choke modulator spring adjustment

A Choke lever
B Modulator spring



4.61 Throttle damper adjustment

A Plunger
B Throttle lever
C Feeler gauge (0.05 mm)

Throttle damper (where fitted)

60 Warm the engine to normal running temperature and adjust the idle speed and mixture before attempting throttle damper adjustment.

61 Slacken the locknut and turn the damper until a clearance of 0.05 mm exists between the plunger and the throttle lever **(see illustration)**.

62 Make a reference mark on the casing and screw the damper down towards the throttle lever exactly 3 turns (2.3 engines) or 2 turns (2.8 engines). Tighten the locknut on completion.

63 Ensure that the idle screw contacts the throttle stop. Blip the throttle a few times, check that the damper does not bind or stick and that it returns the throttle slowly to its correct idle speed.

5 Fault diagnosis

Refer to Part D for general diagnosis of carburettor faults. The following faults are specific to Solex EEIT carburettors.

Diaphragm failure

- ☐ The power valve, anti-stall device and accelerator pump are all internally linked. A failure of one diaphragm will therefore affect all three circuits

Poor choke operation

- ☐ Failure of the 7 to 9-volt supply output from the alternator to the automatic choke (the choke will take much longer to open fully):
- ☐ Check the alternator output supply to the choke with a voltmeter. The reading should be 7 to 9 volts with the engine running
- ☐ If there is no alternator output, repair the alternator or take a new wire from the coil + terminal to the choke control. The 7-volt supply at the coil will work quite satisfactorily

Hesitation or lack of power

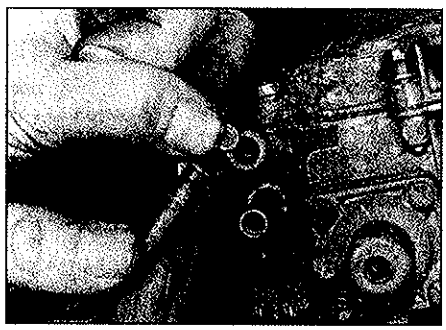
- ☐ Blockage of the small power jets or fuel channels leading to the main fuel wells
- ☐ Loose upper body fixing screws
- ☐ Worn throttle segments can cause fluffy pick-up
- ☐ Displaced fuel return restrictor:
- ☐ Pulling on the fuel return pipe connector in the upper body can cause it to loosen. The restrictor plate can become displaced and fuel will return to the tank unrestricted. Where this happens, the flow into the float chamber is reduced and high-speed power loss is the result. Remove the return connector and refit the restrictor plate into its correct position. Knurl the return connector and refit, ensuring that it is tightly locked into position **(see illustration)**

Poor idle and/or stalling

- ☐ One or both idle jets blocked:
- ☐ A common fault, which often causes the engine idle speed to vary over several hundred rpm. This is because the anti-stall diaphragm is actuated as the engine tries to stall. The extra fuel from the pump injector makes the engine pick up briefly and as the engine again tries to stall, the whole cycle repeats
- ☐ It is very difficult to clear the dirt, which often becomes trapped in the jet body. In a few miles the problem will recur. When repeated idle jet blockage occurs, renew the idle jet assembly. Place a finger over the idle bypass air supply. The correct response is for the engine to stall. Should the engine speed pick up, the idle adjustment is likely to be incorrect. Under no circumstances should the air bleed be sealed off, as sometimeshappens when work is carried out by an unqualified person

Idle speed too high

- ☐ Maladjusted or sticking throttle damper. This could also result in a clonking noise from the rear axle as the gears change from being driven to driving



5.0 Removing restrictor plate and fuel return connector from location in upper body

19 In some instances, the breather hose should be disconnected from the air filter, and the opening in the air filter plugged during adjustment. Reconnect the breather hose after adjustment is completed. If the CO level increases by more than 1 to 1.5% on reconnecting the hose, change the sump oil. If the CO level still increases after an oil change, suspect worn or sticking piston rings.

20 In all instances, if no CO change is noted when connecting or disconnecting the breather hose, check for a clogged PCV valve or metering orifice.

Removing tamperproof caps or plugs

21 When removing a tamperproof cap, use a pair of pliers to squeeze the cap. This action will compress the outside of the cap and it can then be levered off.

? When removing a tamperproof plug, use a sharp point to puncture the plug then lever it off.

Idle speed and mixture (CO)

23 Refer to the specific carburettor Chapter for the adjustment method for the particular carburettor being worked on.

24 If the CO is stable but the engine cannot be made to idle smoothly (even when adjusted slightly rich), then suspect a mechanical fault such as tight valve clearances (where applicable), an intake vacuum leak, compression problem, or an ignition misfire. The HC level is also likely to be higher than normal.

Alternative method of adjustment

Note: *It may not be possible to set the carburettor in this way once emission laws are finalised.*

25 If engine blow-by is excessive due to worn pistons and rings, then it may only be possible to obtain a satisfactory idle when the mixture is set slightly richer than specified.

26 Remove the PCV valve or breather pipe so that it sucks fresh air. The CO reading should drop by a maximum of 1 to 1.5%. No drop would indicate a clogged PCV valve. If the drop is more than 1.5%, then either the sump oil is fuel-contaminated and must be changed, or the pistons/rings are badly worn. In this case, it may be necessary to set the CO with the breather disconnected.

27 The final idle CO with the breather reconnected will read rich and the engine may idle a little lumpily but the only real cure is an engine overhaul.

Idle mixture adjustment (without a gas analyser)

28 Run the engine at 3000 rpm for 30 seconds to clear the manifold of fuel vapours, then allow the engine to idle.

29 Use the idle speed adjustment screw to set the correct idle speed at the upper limit of the tolerance given in the Specifications.

30 Remove the tamperproof plug and adjust the idle mixture control screw until the highest engine speed is recorded. On all Weber, Pierburg and Solex carburettors covered by this manual (with the exception of the Pierburg 2E2), turning the screw clockwise (inwards) will weaken the idle mixture and turning the screw anti-clockwise (outwards) will enrich the idle mixture.

31 Repeat paragraphs 29 and 30 until the highest steady idle speed is reached (using the correct idle speed as a starting point).

32 Clear the manifold every 30 seconds during the setting operation by running the engine at 3000 rpm for 30 seconds.

33 Screw in the idle mixture control screw until the engine speed is reduced by 25 rpm.

34 Fit a new tamperproof plug to the mixture control screw.

Fast idle (without removing carburettor)

35 The recommended method of setting the fast idle for most carburettors is made after removing the carburettor. However, the following method may give acceptable results when it is inconvenient to remove the carburettor.

36 Observe the adjustment preconditions given above. It is particularly important that the dwell and ignition timing are correct and that the idle speed and mixture are accurately set.

Carburettors with automatic choke

37 Place the fast idle adjustment screw against the second-highest step of the fast idle cam.

38 Start the engine without moving the throttle and record the fast idle speed. A value between 1500 and 2000 rpm will give acceptable results on most engines.

39 Adjust as necessary by turning the adjustment screw in the appropriate direction.

Carburettors with manual choke

40 Use the manual choke control to fully close the flap.

41 Start the engine and open the choke flap as far as possible.

42 Adjust as necessary by turning the adjustment screw in the appropriate direction.

Throttle angle

43 The basic throttle angle and fast idle throttle angle may also be set by means of a throttle angle gauge. For the throttle angles, refer to the Specifications in the appropriate Chapter.