

# **CARBURETTERS AND FUEL SYSTEM**

The 2.4 litre model is equipped with twin Solex B.32 PBI-5 type carburetters ; the 3.4 and 3.8 litre model are equipped with twin S.U. H.D.6 type carburetters.

## **CARBURETTERS (2.4 litre)**

### **DESCRIPTION**

The 2.4 litre model is fitted with twin Solex B.32 PBI-5 type carburetters. This type of carburetter is fully dust-proofed and has a progressive starting device with fast idle ; it also incorporates an anti-percolation device and accelerator pump.

#### **Dust-proofing**

The carburetters are fully dust-proof, all air to the engine (ventilating the float chambers, starting, slow-running and main spraying circuits) is drawn through the air cleaner. This ensures maintenance of a balanced mixture and complete filtration of all inducted air, even if the air cleaner gradually becomes clogged in service.

#### **The Starting Device**

The starting device, operated by the facia control, ensures immediate starting from cold and quick drive-away.

The control in the full rich position supplies a very rich mixture, to enable starting at low temperatures.

After starting, the mixture control should be placed in the intermediate position (half-way). This supplies a weaker mixture of greater volume, and enables the car to be driven away immediately. This position can also be used when the engine is not stone cold.

During the warming up period of the engine the control should be moved gradually towards the off position, thus progressively reducing richness until the starting device is out of action.

#### **Idling**

For idling, the mixture is supplied to the engine past the butterfly and from the pilot jet and the pilot jet air bleed. Engine speed can be varied by the slow-running adjustment screw which opens or closes the throttle as required, whilst adjustment of the volume control screw varies the mixture strength and volume from the pilot jet and the pilot air bleed.

#### **Main Circuit**

For normal running, petrol is supplied from the float chamber through the main jet ; it is mixed in the main well with air metered through the air correction jet, and carried into the well via the emulsion tube. The mixture is then discharged from the main spraying well into the air stream passing through the choke tube.

## CARBURETTERS (2.4 litre)

### Accelerating Pump

The accelerating pump is mechanical in operation and consists mainly of a pump membrane, membrane return spring, lever and an actuating rod, the latter item being the connecting link between the throttle spindle and lever. An inlet valve permits petrol to pass from the float chamber into the pump chamber.

On depressing the accelerator pedal, the movement of the actuating rod and lever displaces the pump membrane and forces the petrol from the chamber through the pump jet and pump injector pipe into the main air stream, thereby ensuring a condition of rapid, smooth acceleration. During this operation a small ball in the inlet valve prevents the petrol from returning to the float chamber.

Since the injector pipe is positioned in the waist of the choke tube and there is no outlet valve within the pump circuit, petrol passes from the pump to the injector at both part and full throttle running conditions.

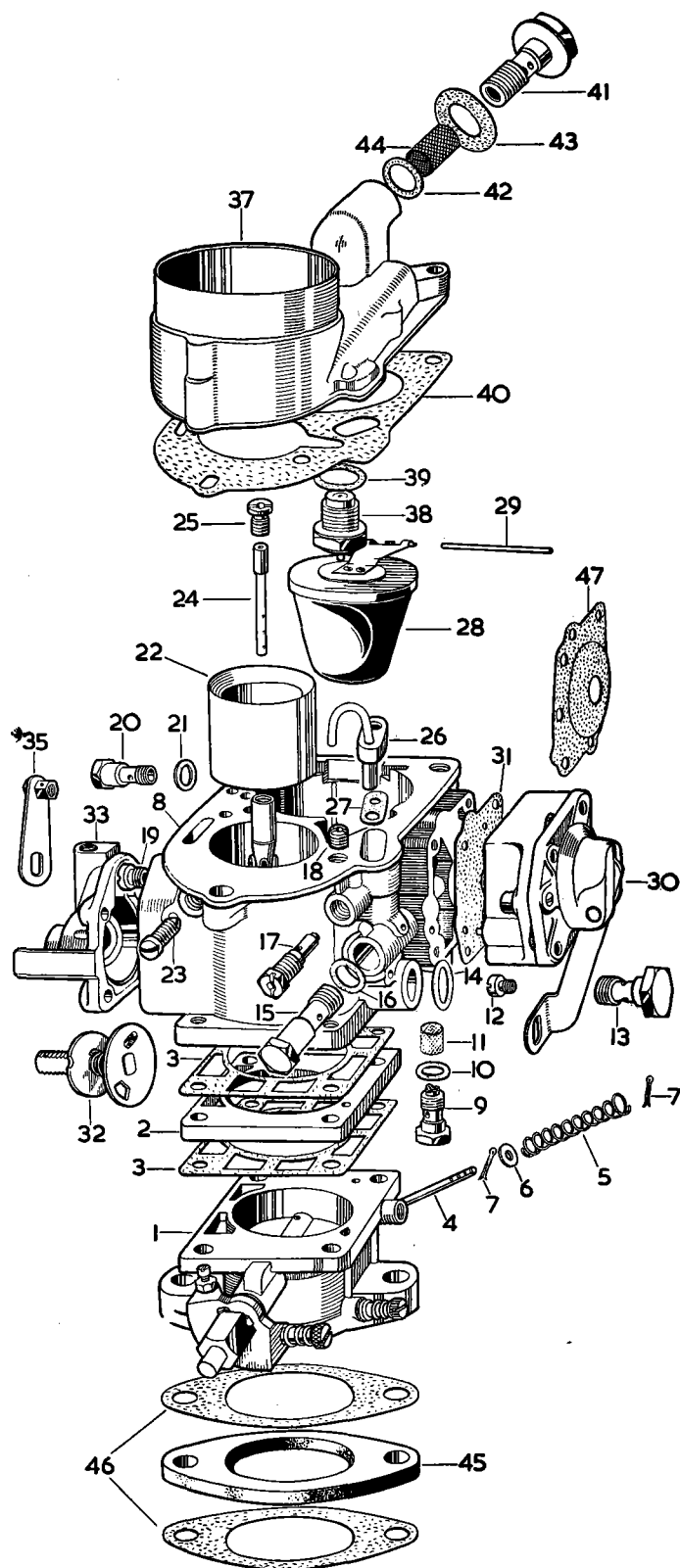
## DATA

| Type                   | Solex B.32 PBI-5 (twin) |    |    |    |    |    |                     |    |    |         |  |  |
|------------------------|-------------------------|----|----|----|----|----|---------------------|----|----|---------|--|--|
| Choke and Jet Sizes    | 7 to 1 comp. ratio      |    |    |    |    |    | 8 to 1 comp. ratio. |    |    |         |  |  |
| Choke .. .. .          | ..                      | .. | .. | .. | .. | .. | 23 mm.              | .. | .. | 24 mm.  |  |  |
| Main jet .. .          | ..                      | .. | .. | .. | .. | .. | 110                 | .. | .. | 110     |  |  |
| Air correction jet ..  | ..                      | .. | .. | .. | .. | .. | 200                 | .. | .. | 180     |  |  |
| Emulsion tube ..       | ..                      | .. | .. | .. | .. | .. | 14                  | .. | .. | 14      |  |  |
| Pump jet .. .          | ..                      | .. | .. | .. | .. | .. | 55                  | .. | .. | 55      |  |  |
| Pilot jet .. .         | ..                      | .. | .. | .. | .. | .. | 50                  | .. | .. | 50      |  |  |
| Pilot air bleed ..     | ..                      | .. | .. | .. | .. | .. | 1.2 mm.             | .. | .. | 1.2 mm. |  |  |
| Needle valve ..        | ..                      | .. | .. | .. | .. | .. | 1.5 mm.             | .. | .. | 1.5 mm. |  |  |
| Needle valve washer .. | ..                      | .. | .. | .. | .. | .. | 1 mm.               | .. | .. | 1 mm.   |  |  |
| Starter petrol jet ..  | ..                      | .. | .. | .. | .. | .. | GS.105              | .. | .. | GS.105  |  |  |
| Starter air jet ..     | ..                      | .. | .. | .. | .. | .. | GA.4.5              | .. | .. | GA.4.5  |  |  |

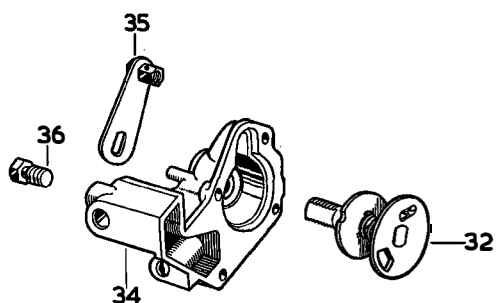
### Adjustments Required for Altitude

If the car is operated between 5,000 and 10,000 ft., it is recommended that the main jets are reduced by one size, that is, from 110 to 105. Above 10,000 ft. reduce the main jets to 100.

# CARBURETTERS (2.4 litre)



1. Throttle chamber.
2. Nylon insulating washer.
3. Gasket.
4. Control rod.
5. Spring.
6. Washer.
7. Split pin.
8. Float chamber.
9. Non-return valve.
10. Washer.
11. Filter.
12. Bolt.
13. Main jet.
14. Washer.
15. Pump jet.
16. Washer.
17. Pilot jet.
18. Air bleed.
19. Starter air jet.
20. Starter petrol jet.
21. Washer.
22. Choke tube.
23. Screw.
24. Emulsion tube.
25. Air correction jet.
26. Accelerator pump injector.
27. Gasket.
28. Float.
29. Float spindle.
30. Accelerator pump.
31. Gasket.
32. Starter valve.
33. Starter valve body (front carburetter).
34. Starter valve body (rear carburetter).
35. Starter valve lever.
36. Bolt.
37. Float chamber cover.



38. Needle valve.
39. Washer.
40. Gasket.
41. Banjo bolt.
42. Washer—small.
43. Washer—large.
44. Filter.
45. Insulating washer.
46. Gasket.
47. Diaphragm.

Fig. 1. Exploded view of the Solex carburetter.

**ROUTINE MAINTENANCE****EVERY 2,500 MILES (4,000 KM.)**

Check the slow running and adjust if necessary, as described under "Slow Running—Adjustment".

**EVERY 5,000 MILES (8,000 KM.)****Tune Carburetters**

See instructions on page C.10.

**Carburettor Filters**

Remove the bolts securing the petrol pipe banjo unions to the float chambers; withdraw the gauze filters from the banjo bolts. Clean the filters in petrol; do not use a cloth as particles will stick to the gauze.

**Fuel Feed Line Filter (Early Cars)**

The filter is attached to the inlet manifold, and is of the glass bowl type with a flat filter gauze.

At the recommended intervals, or more frequently if the glass bowl shows signs of becoming full of sedi-

ment, slacken the locking nut, swing the retaining clip to one side and remove the bowl (4) (Fig. 2), sealing washer (3), and filter gauze (2).

Clean the filter gauze and bowl by washing in petrol. Examine the sealing washer and if necessary fit a new one.

**EVERY 10,000 MILES (16,000 KM.)****Petrol Pump Filter (Early Cars)**

The petrol pump is situated behind the trim panel on the left-hand side of the luggage compartment.

To gain access to the filter remove the base plate by unscrewing the six cheese-headed screws. Thoroughly clean the filter in petrol; do not use cloth as particles will stick to the gauze.

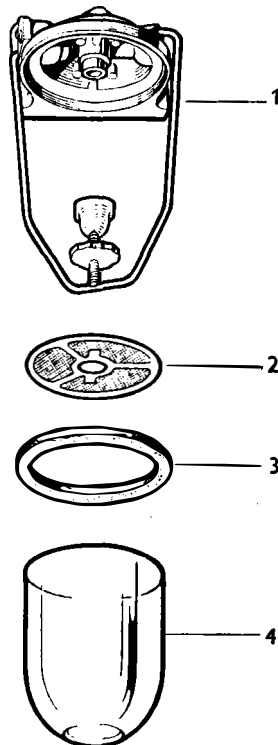


Fig. 2. Fuel feed line filter.

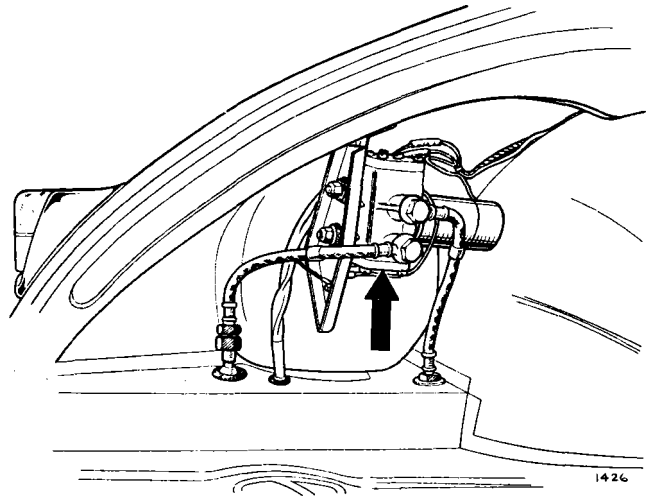


Fig. 3. Location of the petrol pump.

**PERIODICALLY****Inlet Manifold Drain Tubes**

Two drain tubes are fitted at the bottom of the inlet manifold and it is important that they are kept clear. Obstructions in the tubes will cause excess petrol to collect in the manifold which may result in difficult starting.

Periodically, the tubes and adaptors should, therefore, be removed and checked for being clear.

## CARBURETTERS (2.4 litre)

### STARTING

#### Starting from Cold

For starting from cold the mixture control (marked Start) should be moved up to the fully rich (Cold) position.

Switch on the ignition and press the starter switch button but do not touch the accelerator. Release the starter button as soon as the engine fires—this is important. If for any reason the engine does not start, do not operate the starter switch again until both the engine and the starter motor have come to rest.

As soon as the engine speed increases slide the mixture control to the intermediate (Hot) position; this position will be felt as a marked resistance in the slide.

Drive off at a moderate speed, progressively moving the mixture control to the off (Run) position until the knob is at the bottom of the slide and the red warning light is extinguished.

#### Starting in Moderate Temperature

In warm weather or if the engine is not absolutely cold, it is usually possible to start the engine with the mixture control in the intermediate (Hot) position by adopting the procedure given above.

#### Starting when Hot

Do not use the mixture control. If the engine does not start immediately, slightly depress the accelerator pedal when making the next attempt.

Do NOT pump the accelerator pedal as owing to the action of an accelerating pump in the carburetter an excessively rich mixture will be admitted into the engine.

#### Difficult Starting (engine hot)

On extremely hot days or when the engine is stopped after a fast climb, occasional difficulty may be experienced in starting immediately.

This may be due to a temporary richness of mixture. On no account pump the accelerator, but slowly depress it to about one-third of its travel, maintaining this position until the engine fires.

#### Use of the Mixture Control—Important

Use of the mixture control (marked "Start") brings into operation a starting device which provides the richer mixture necessary for starting. Do NOT

permit the starting device to remain in operation longer than is necessary but return the control to the (Run) position as soon as the engine will allow. Unnecessary use of the mixture control will result in increased cylinder bore wear.

A reminder that the starting device is in operation is provided by a red warning light adjacent to the mixture control slide. When the control is returned to the (Run) position the starting device is taken out of action and the warning light is extinguished.

## CARBURETTERS

### Removal

Bend the rubber seal, joining the air intake pipe to the air cleaner, back on to the air cleaner flange. Disconnect the air intake pipe steady bracket. The air intake pipe can now be removed by applying a steady pressure under the centre, care being taken not to lose the two connecting sleeves from the top of the carburetters.

Disconnect the distributor vacuum feed pipe from front carburetter by unscrewing the union. Disconnect the petrol feed pipe by removing the banjo bolts. Disconnect the accelerator linkage from the throttle spindle. By removing the two retaining setscrews from the mixture control levers and also the outer cable retaining setscrew, the control cable can be withdrawn from the carburetters. Remove the four carburetter flange securing nuts and washers and lift off the carburetters.

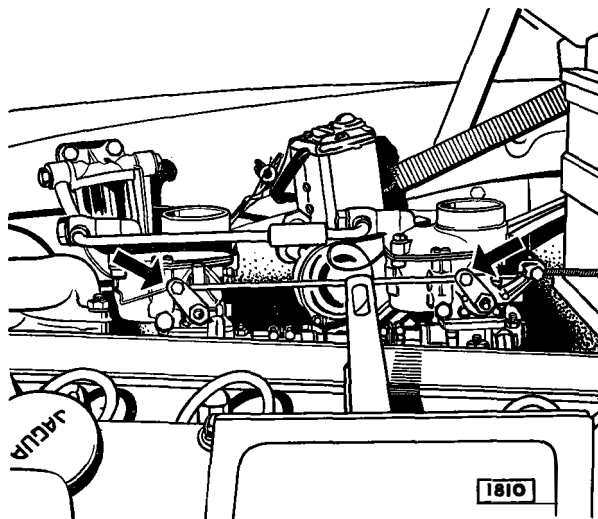


Fig. 4. The mixture control wire should be connected with the carburetter levers pushed fully forward and with the manual lever on the facia placed in the "Run" position.

## Refitting

Refitting is the reverse of the removal procedure. Always fit two new joints to each flange on assembly, one on each side of the carburettor insulating distance piece. When refitting the mixture control ensure that the mixture lever inside the car is in the "Run" position and that the levers on the carburetters are as far forward as possible. Thread the control wire into position, remembering to replace the distance tube between the two choke levers (see Fig. 4).

## DISMANTLING TO CLEAN

Remove the air cleaner. Unscrew banjo bolts (Bb) (Fig. 5) and remove filter gauzes.

Unscrew float chamber cover fixing screws and gently remove each cover (Fc). Needle valves (Nv) are now exposed for removal.

Lift and remove float toggles (Ft), spindles (Fs) and floats (F). Remove pilot (g), pump (Gp) and starter jets, the latter being situated at bottom left-hand side of starter box, then pump non-return valve and gauze, situated at base of pump chamber, plug (Gu)

and main jets located in holders (T). The emulsion tubes may be lifted out with a matchstick after removing air correction jets (a) (before doing so, make sure that throttles are closed in case parts are accidentally dropped).

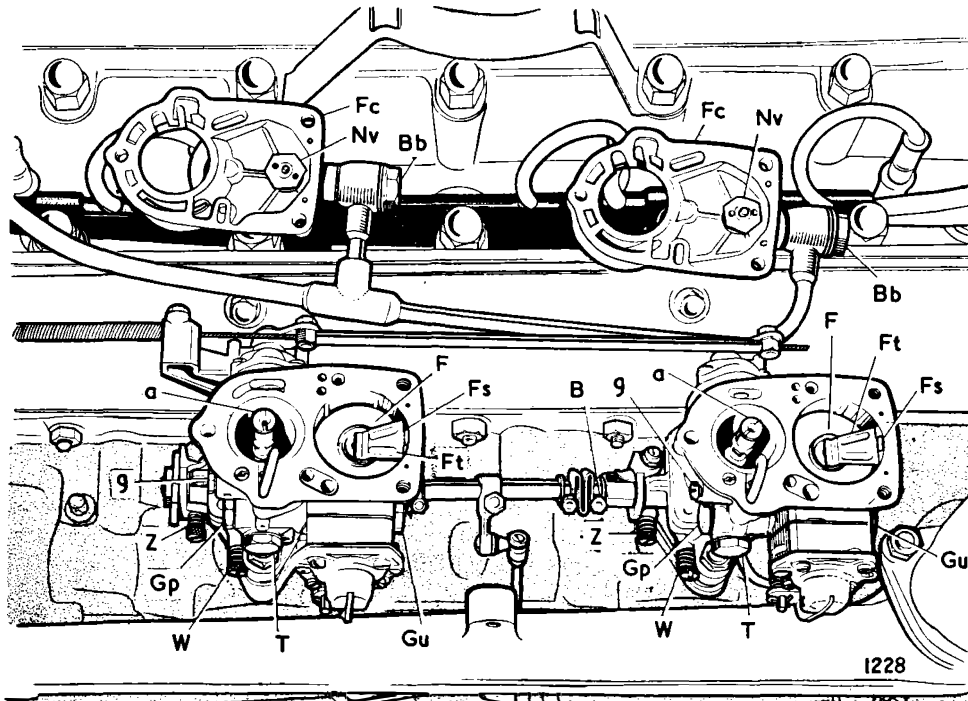
## Cleaning and Inspection

Cleanliness during servicing is of the utmost importance, and rag should on no account be used for cleaning or drying the interior of the carburetters. A clean tray filled with petrol, a small stiff paint brush (no loose hairs) and compressed air for the dismantled instruments and parts, is desirable.

Sediment can be quickly removed by gentle brushing followed by swilling out with petrol.

The interior of the carburetters and exposed passages should be blown out, to ensure that all loose particles of foreign matter are cleared.

For cleaning jets use compressed air only ; never use wire as a probe, as this can easily result in increased petrol consumption, and a possible reduction in engine performance.



- Bb Banjo bolt.
- Fc Float chamber cover.
- Nv Needle valve.
- F Float.
- Fs Float spindle.
- Ft Float toggle.
- g Pilot jet.
- Gp Pump jet.
- Gu Plug.
- T Main jet holder.
- a Air correction jet.
- B Clamping bolt.
- Z Slow running adjustment screw.
- W Volume control screw.

Fig. 5. View of the carburetters with float chamber covers removed.

## CARBURETTERS (2.4 litre)

### Floats

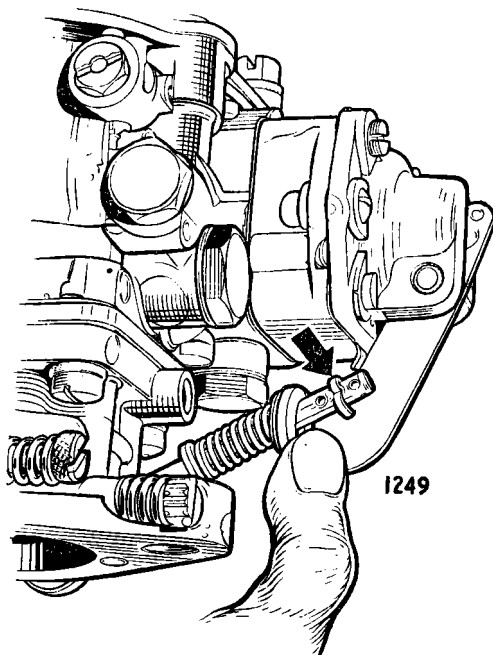
Inspect floats for leakage and dents. Leaking or dented floats should be renewed ; never repair except in cases of dire emergency, as the volume and weight of the floats are important.

### Needle Valves

Thoroughly clean with petrol, blow out and check needles for quick drop and seal. Any tendency for a needle to stick can usually be cured by a short immersion in a degreasing tank, otherwise the unit should be renewed.

Should the occasion arise where the pump and starter units have to be dismantled, careful note should be made of the position of the various parts, as incorrect assembly will result in complete failure of either component.

It is stressed that the accelerating pump is specially set at the factory, therefore the unit should not needlessly be dismantled. However, should the membrane require replacing, they are not normally supplied separately but form part of an assembly.



**Fig. 6.** Showing the position for the split pin in the accelerator pump control rod.

### REASSEMBLING

Before reassembling, check all carburettor assembly screws and flange nuts for tightness ; do not use undue force.

When replacing petrol jets and needle valves, fit new fibre washers, using genuine parts only ; failure to do so may upset the calibration of the carburettor.

The nose of the pilot jet makes seating contact in the casting, therefore they should be screwed in tightly, but not with undue force or the seating will be damaged.

Refit toggles and spindles, taking care that toggles are fitted with the letters "TOP" uppermost and move freely on their spindles. Refit needle valves to float chamber covers, using the correct washers, as their thickness partly determine petrol level ; make a final check on needle stems for free movement.

Fit new gaskets to float chambers before replacing covers—the carburetters, being dustproof, require a seal at this joint. Refit petrol pipe and air cleaner.

**Note :—**If the carburetters have been lifted off the manifold, new flange joints must be used on reassembly. At the same time it is advisable to check the flatness of the face of the carburettor flanges before refitting them to the manifold, to eliminate any possibility of air leaks at this point.

### SLOW RUNNING ADJUSTMENT

Adjustment and synchronisation of the carburetters is quite simple, but is dependent on cylinder compressions, valve clearances, the ignition setting, sparking plug gaps and contact breaker gap being set as laid down.

The idling must be set with a fully warmed up engine.

Each carburettor has two external adjustments, the slow-running adjustment screw (Z) (Fig. 5) and mixture volume control screw (W).

- (1) Switch off the engine and loosen the clamping bolt (B) on the flexible link between the carburetters. Each instrument should now be separately adjusted. Starting with the front carburettor :—
- (2) Unscrew the screw (Z), and ensure the throttle is closed by manual pressure on the slow running screw. Insert a .002" feeler (or strip of paper) between screw (Z) and the casting stop, screw in (Z) until feeler or paper is lightly nipped. Remove feeler and screw in (Z) one further complete turn from this point.

## CARBURETTORS (2.4 litre)

- (3) Gently screw the volume control screw (W) clockwise until light contact is made with the casting seat, then unscrew three-quarters of a turn.  
Repeat the above adjustments to the rear carburettor.
- (4) Start the engine and, watching the Rev. counter, adjust each slow running screw (Z) equally, until the engine is turning at 650 r.p.m. Then screw out each volume control screw (W) a quarter of a turn at a time, until a drop in r.p.m. is registered indicating richness.
- (5) Carefully screw in each volume control screw (W) by quarter turns until the engine reaches the highest and steadiest idling speed, taking care not to go beyond this point where erratic running will be evident due to weakness.
- (6) Should the engine speed now be other than 650 r.p.m., adjust the slow running adjustment screws (Z) as required, repeating the adjustments in order to obtain the required idling speed and synchronisation.
- (7) Throttle connecting linkage between the carburettors should now be securely tightened, care being taken that both throttles are against their stops during the process.

### FAULT FINDING

#### Sudden break in performance

This may be due to tiny particles of foreign matter or water escaping the filters in the carburettors and fuel pump, and blocking one or more of the petrol metering jets.

#### Poor slow running

Sudden failure to idle smoothly may be due to one or both pilot jets becoming obstructed and failing to meter the quantity of petrol required by the engine.

Pilot jets should then be removed and the metering orifices cleared by blowing through.

When replacing jets, screw in securely but do not use undue force.

#### Heavy fuel consumption

In cases of heavy fuel consumption on 2.4 litre cars, the usual checks on choke levers, throttle synchronisation, timing, tuning, etc., should be carried out but in addition the accelerator pump discharge injector tube should be checked for correct positioning.

The position should be checked by placing a straight

edge across the lower face of the mounting block and measuring the gap between the end of the tube and the straight edge as shown in Fig. 7. The correct gap should be .020"—.040" (.50—1.00 mm.). If this dimension is not correct, remove the assembly and fit a replacement (Part No. 5032) taking care to refit the gasket under the base of the assembly and tighten the locating screw. The injector tube must not be bent as there is a danger of loosening the tube in the mounting block.

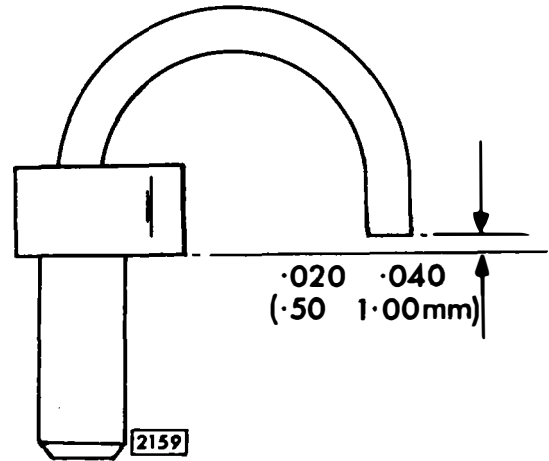


Fig. 7. Check the gap as illustrated.

#### Failure to respond to throttle opening (engine hot)

If the engine will idle but suddenly fails to respond to throttle opening, the main jets should be removed for cleaning. Main jets are assembled in holders, the heads of which are clearly marked "Main Jet Holder". The latter are easily removed with an adjustable spanner, the jets then being exposed. Gripping the holder between the jaws of the spanner, the jets can be removed with a screwdriver and blown out. During this operation the float chamber will have drained, thereby carrying away impurities.

**Important:—**Do not probe the jet metering orifices with wire—disregard of this precaution may lead to increased petrol consumption and sub-standard performance.

#### Flat spot (engine hot)

Should the engine become reluctant to accelerate from slow to normal speeds the pump jets may be partly or completely obstructed and should be removed for cleaning. After replacing jets and priming the carburettors, pump action may be checked in the following manner. Remove air cleaner and open throttles. A discharge should then occur from each pump injector, visible in the choke tubes of the carburettors.



## **CARBURETTERS (2.4 litre)**

A discharge should then occur from each pump injector, visible in the choke tubes of the carburetters.

### **Difficult starting (engine cold)**

Provided the carburetters contain petrol and the ignition spark is good, the engine should start immediately.

If it does not and there is no smell of petrol after considerable cranking, the starter petrol jets may need blowing out to clear obstructions.

Note :—When refitting main, petrol and starter jets

make certain that each fibre sealing washer is undamaged and that the jets are securely tightened.

### **Deterioration of performance**

This is usually due to wear after long use, therefore, when the time arrives for a major overhaul, due consideration must also be given to the condition of the carburetters as they will also have suffered the effects of general wear and tear. It is therefore recommended that full advantage be taken of the manufacturer's reconditioned carburetter service by fitting replacement units.