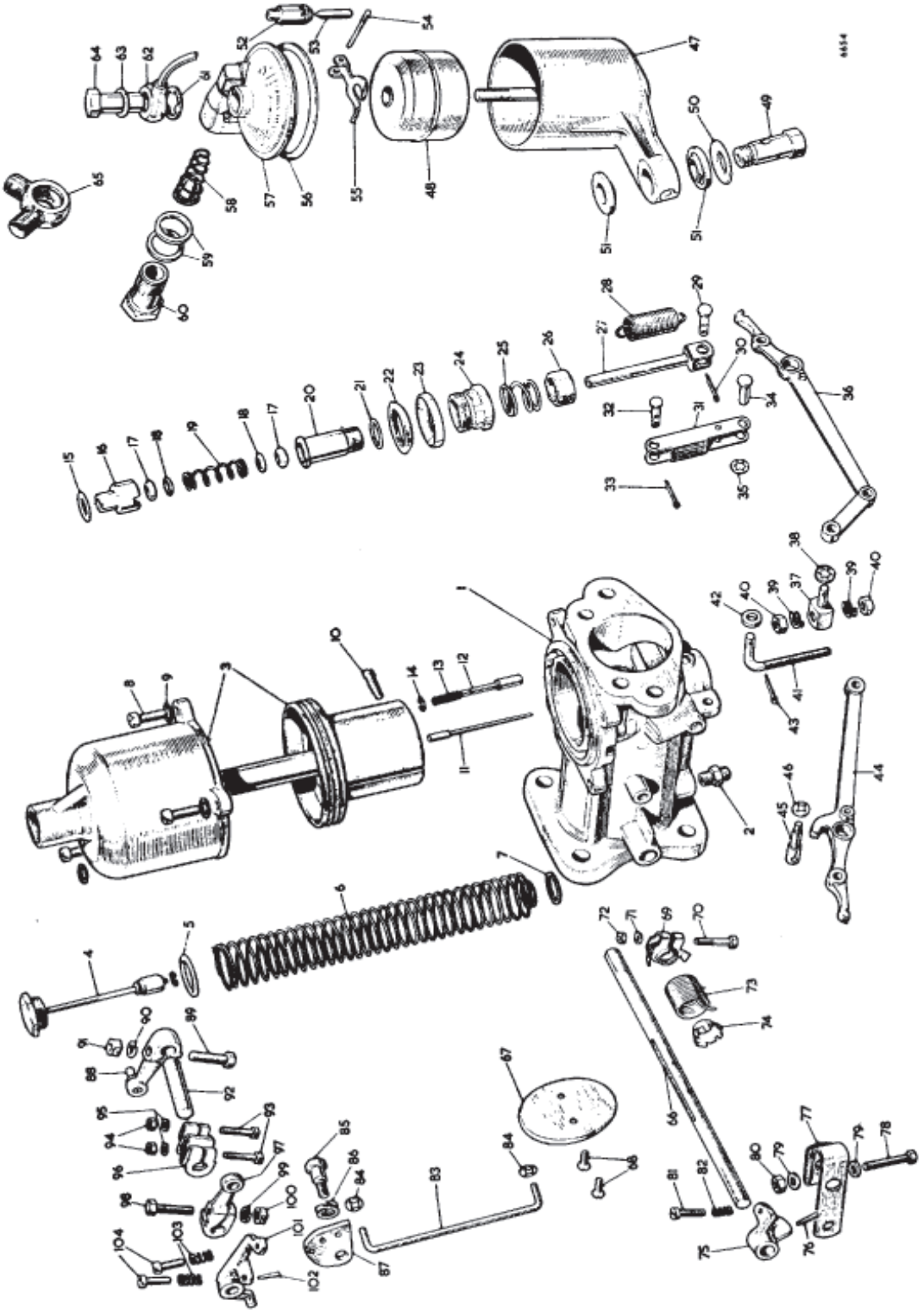
# SECTION D

## THE FUEL SYSTEM

# THE CARBURETTER COMPONENTS



## KEY TO THE CARBURETTER COMPONENTS

| No. | Description |
|---|---|
| 1. | Body (front). |
| 2. | Auto-ignition union. |
| 3. | Suction chamber and piston assembly. |
| 4. | Oil cap damper assembly. |
| 5. | Fibre washer for oil cap damper. |
| 6. | Piston spring. |
| 7. | Thrust washer. |
| 8. | Suction chamber securing screw. |
| 9. | Shakeproof washer. |
| 10. | Jet needle locking screw. |
| 11. | Jet needle. |
| 12. | Piston lift pin. |
| 13. | Spring for lift pin. |
| 14. | Circlip for lift pin. |
| 15. | Jet copper washer (top half). |
| 16. | Jet bearing (top half). |
| 17. | Jet gland washer (cork). |
| 18. | Jet gland washer (brass). |
| 19. | Jet gland spring. |
| 20. | Jet bearing (bottom half). |
| 21. | Jet copper washer (bottom half). |
| 22. | Jet sealing ring (neoprene). |
| 23. | Jet sealing ring. |
| 24. | Jet screw. |
| 25. | Jet adjusting lock spring. |
| 26. | Jet adjusting nut. |
| 27. | Jet with head. |
| 28. | Return spring—jet lever. |
| 29. | Pivot pin. |
| 30. | Split pin. |
| 31. | Jet link. |
| 32. | Pivot pin. |
| 33. | Split pin. |
| 34. | Pivot pin. |
| 35. | Starlock washer. |
| 36. | Jet lever (front). |
| 37. | Trunnion. |
| 38. | Starlock washer. |
| 39. | Spring washer for connecting rod. |
| 40. | Nut for connecting rod. |
| 41. | Connecting rod. |
| 42. | Washer for connecting rod. |
| 43. | Split pin. |
| 44. | Jet lever (rear). |
| 45. | Pivot pin. |
| 46. | Starlock washer. |
| 47. | Float-chamber. |
| 48. | Float. |
| 49. | Holding-up bolt—float-chamber. |
| 50. | Washer for holding-up bolt. |
| 51. | Rubber grommet for holding-up bolt. |
| 52. | Float needle seat. |
| 53. | Float needle. |
| 54. | Float hinged lever pin. |
| 55. | Float hinged lever. |
| 56. | Float-chamber lid sealing ring. |
| 57. | Float-chamber lid (front). |
| 58. | Filter. |
| 59. | Fibre washer for banjo bolt. |
| 60. | Banjo bolt. |
| 61. | Serrated fibre washer. |
| 62. | Vent pipe. |
| 63. | Aluminium washer. |
| 64. | Cap nut. |
| 65. | Banjo union—double (rear). |
| 66. | Throttle spindle (front). |
| 67. | Throttle disc. |
| 68. | Screw for throttle disc. |
| 69. | Retainer clip. |
| 70. | 4 BA bolt. |
| 71. | 4 BA washer. |
| 72. | 4 BA nut. |
| 73. | Throttle return spring (front). |
| 74. | Throttle return spring anchor plate. |
| 75. | Stop lever (front). |
| 76. | Taper pin for stop lever. |
| 77. | Throttle spindle connector (front half). |
| 78. | Bolt for throttle spindle connector. |
| 79. | Washer. |
| 80. | Nut. |
| 81. | Stop adjusting screw. |
| 82. | Stop adjusting screw spring. |
| 83. | Link rod. |
| 84. | Starlock washer. |
| 85. | Pivot bolt for cam. |
| 86. | Spring washer for pivot bolt. |
| 87. | Cam. |
| 88. | Throttle spindle connector (rear half). |
| 89. | Bolt for throttle spindle connector. |
| 90. | Spring washer. |
| 91. | Nut. |
| 92. | Connecting rod. |
| 93. | 4 BA bolt. |
| 94. | 4 BA nut. |
| 95. | 4 BA washer. |
| 96. | Connecting link. |
| 97. | Lever—throttle spindle. |
| 98. | Bolt—throttle spindle lever. |
| 99. | Washer. |
| 100. | Nut. |
| 101. | Stop lever (rear). |
| 102. | Taper pin for stop lever. |
| 103. | Spring for stop adjusting screw. |
| 104. | Stop adjusting screw. |

## Section D.1

### REMOVING THE FUEL TANK

Remove the hexagon drain plug and empty the tank.

Slacken the two clips on the filler neck hose and withdraw the filler extension.

Pull the hose from the tank. Take out the three screws and remove the tank filler neck seal and clamp plate.

Disconnect the fuel pipe at the union and the fuel gauge cable from the tank unit, each on the right-hand side of the tank.

Remove the two nuts from the bolts securing the rear of the tank to the anchorage brackets on the frame and remove the two bolts with spring washers which secure the front of the tank to the frame.

Withdraw the rear bolts and distance tubes.

Replacement is a reversal of the above instructions.

## Section D.2

### REMOVING THE FUEL PUMP

Raise the hood and remove the spare wheel.

Remove the hood stowage compartment floor. This is secured by two quick-release screws and each requires only a quarter-turn anti-clockwise to release the cover.

Disconnect the inlet and outlet pipe union nuts.

Disconnect the earth lead and the supply lead from the terminals on the pump.

Remove the two set screws securing the fuel pump to the bracket on the frame cross-member.

## Section D.3

### CONSTRUCTION OF THE FUEL PUMP

The fuel pump is a 12-volt electric S.U. type LCS and is located close to the right-hand side of the fuel tank.

The pump consists of three main assemblies: the body, the magnet assembly, and the contact breaker.

The body (17) is an aluminium die-casting, to which two identical cover-plates (6 and 18) are secured by six 2 BA screws with spring washers. Removal of the lower cover-plate (18) gives access to the fuel filter (see Fig. D.5), whilst the top plate covers the outlet valve cage (5). When the outlet valve cage is removed the inlet valve (3) is revealed. The valves consist of thin brass discs which should be assembled smooth side downwards.

The outlet valve can be extracted after the spring retaining circlip has been detached. Care should be taken not to distort the circlip or the correct valve lift may be affected.

A $\frac{3}{8}$ in. diameter hole connects the space between the valves to the pumping chamber, which is a shallow depression in one face of the body casting. This space contains the diaphragm unit (20) which is clamped on its rim between the iron coil housing (9) and the main body (17).

A bronze rod (10) is screwed through the centre of the armature, to which the diaphragm is attached, and it passes through the magnet core to the contact breaker, which is located at the other end. A volute spring (22) is interposed between the armature and the end plate of the coil to return the armature and diaphragm.

The magnet consists of a cast-iron pot having an iron core (23), on which is wound a coil of copper wire which energizes the magnet. Between the magnet housing and the armature are fitted 11 spherical-edged rollers (7). These locate the armature centrally within the magnet at all times, and allow absolute freedom of movement in a longitudinal direction. The contact breaker consists of a small bakelite moulding carrying two rockers (11 and 12) which are both hinged to the moulding at one end and are connected together at the top end by two small springs arranged to give a 'throw-over' action. A trunnion is fitted into the centre of the inner rocker, and the bronze push-rod (10) connected to the armature is screwed into this. The outer rocker (11) is fitted with a tungsten point, which makes contact with a further tungsten point on a spring blade (14). This spring blade is connected to one end of the coil, and the other end of the coil is connected to the terminal (26).

In order to provide a good earth a short length of flexible wire connects the outer rocker to one of the screws which hold the bakelite moulding.

## Section D.4

### ACTION OF THE FUEL PUMP

The action of the pump is as follows.

When the pump is at rest the outer rocker lies in the outer position and the tungsten points are in contact. The current passes from the terminal through the coil back to the blade, through the points, and to the earth return, thus energizing the magnet and attracting the armature. This comes forward, bringing the diaphragm with it and sucking fuel through the suction valve into the pumping chamber. When the armature has advanced nearly to the end of its stroke the 'throw-over' mechanism operates and the outer rocker flies back, separating the points and breaking the circuit. The spring (22) then pushes the armature and diaphragm back, forcing fuel through the delivery valve at a rate determined by the requirements of the engine. As soon as the armature gets near the end of this stroke the 'throw-over' mechanism again operates, the points again make contact, and the cycle of operations is repeated.

## Section D.5

### DISMANTLING AND REASSEMBLING THE FUEL PUMP

When a pump comes in for reconditioning the first thing to do is to determine whether it has been in contact with gum formation in the fuel, resulting in the parts in contact with the fuel becoming coated with a substance similar to varnish. These deposits cause the eventual destruction of the neoprene diaphragm. The easiest way to identify this deposit is to smell the outlet union. If an unpleasant, stale smell is noticed it indicates the presence of gum in the pump. The ordinary sharp, acrid smell of petrol (gasoline) denotes that no gum is present.

Assuming that trouble with gum formation is indicated, the whole of the parts coming into contact with fuel will have to be dismantled. Those made in brass or steel should be boiled in 20 per cent. caustic soda solution, given a dip in strong nitric acid, and then washed in boiling water. Those made in aluminium should be well soaked in methylated spirits and cleaned.

**To dismantle the pump**

First remove the six bottom cover securing screws and withdraw the filter, which may be found to be completely clogged with gum. Remove the top cover, the outlet valve retaining circlip, and the outlet valve disc. Unscrew the valve cage and withdraw the inlet valve disc.

Next undo the six screws holding the two main components of the pump together. All the components of the pump body—with the exception of the washer, but including the pump body itself—should now be cleaned to remove all trace of gum. New fibre washers should be used on replacement.

If there is no evidence of gum formation, proceed as follows: first undo the six screws holding the two parts of the pump together. The action of the valves can then be checked by blowing and sucking in the inlet union to check the suction valve and in the outlet union to check the delivery valve. In the former case it should be possible to blow freely but not to suck air back, and with the latter to suck and not blow.

Clean the filter in fuel with a brush and swill out the body of the pump.

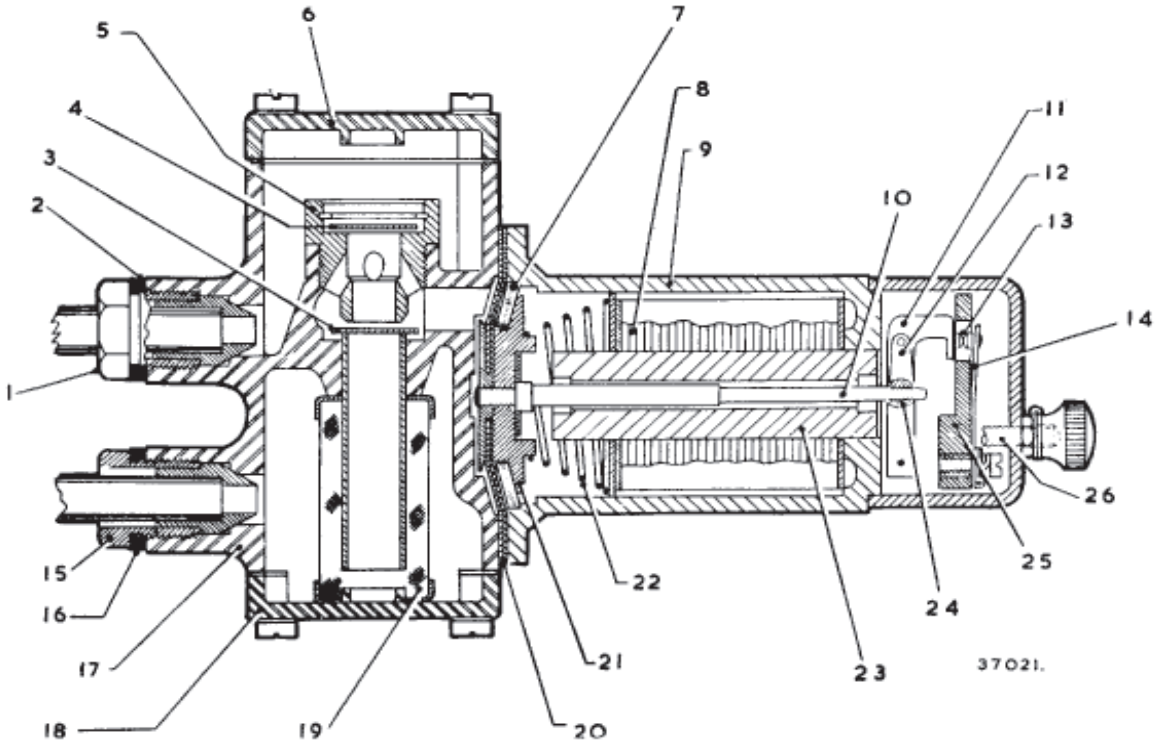



*Fig. D.1*

*The type LCS fuel pump components*

1. Outlet union.
2. Rubber ring.
3. Inlet valve.
4. Outlet valve.
5. Outlet valve cage.
6. Top cover-plate.
7. Spherical rollers.
8. Magnet coil.
9. Iron coil housing.
10. Bronze rod.
11. Outer rocker.
12. Inner rocker.
13. Tungsten points.
14. Spring blade.
15. Inlet union.
16. Rubber ring.
17. Body.
18. Lower cover-plate.
19. Filter.
20. Diaphragm.
21. Armature.
22. Armature spring.
23. Magnet core.
24. Trunnion.
25. Bakelite moulding.
26. Terminal screw.

Next unscrew the diaphragm assembly from its trunnion in the contact breaker. This is done by rotating the whole assembly in an anti-clockwise direction. Take care not to lose the brass rollers fitted behind the diaphragm. The easiest method is to hold the body in the left hand and to rotate the diaphragm.

Now remove the contact breaker cover by taking off the nut which holds it in place on the terminal, and then undo the last nut on the terminal, which acts as a seating for the cover. Beneath this will be found a lead washer which is squeezed into the thread on the terminal. This should be cut away with a pocket-knife, allowing the terminal to be pushed down a short way so that the tag on the coil end is free on the terminal.

Remove the 5 BA screw holding the contact blade in position, together with its spring washer and the contact blade.

Remove the two long 2 BA screws holding the bakelite pedestal in place, together with their spring washers. Take off the contact breaker assembly, using great care to get the coil end tag over the terminal without damaging the coil end.

Push out the hinge pin sideways and the pump is completely dismantled, since the rocker mechanism is supplied only as a complete assembly.

**Do not disturb** the core of the magnet; it can only be located correctly with special press tools.

**To reassemble the pump**

When reassembling, see that all parts are clean. The valves (3 and 4) should be fitted with the smooth side downwards. Care should be taken that the valve retaining clip in the outlet valve cage (5) is correctly located in its groove. When refitting the top and bottom covers new gaskets should be used.

The contact breaker should be assembled on its pedestal in such a manner that the rockers are free in their mountings, without appreciable side-play. Any excessive side-play on the outer rocker will allow the points to get out of line, while excessive tightness will make the action of the contact breaker sluggish. To obtain the required freedom in cases of tightness it may be necessary to square up the outer rocker with a pair of thin-nosed pliers. **The hinge pin is case-hardened, and on no account should ordinary wire be used as a replacement. Always use the correct hardened pin.**

Should the spring contact breaker blade be removed, it must always be replaced bearing directly against the bakelite pedestal, i.e. underneath the tag.

When properly fitted the blade should rest against the ledge on the pedestal while the points are separated, and it should not be sufficiently stiff to prevent the outer rocker from coming right forward when the points are in contact. The points should make contact when the rocker is in its midway position. The simplest way to check this is to hold the blade in contact with the pedestal, taking care not to press on the overhanging portion, and ascertain that a ·030 in. (·76 mm.) feeler can be inserted between the white rollers and the cast-iron body of the pump. If necessary, the tip of the blade may be set to give the correct clearance.

**NOTE.—The spring washer on the BA screw to which the earth connection is made should be fitted between the tag and the pedestal. The spring washer is not a reliable conductor, and the brass tag must bear directly against the head of the screw.**

All four connections, namely, the two ends of the earthing tag and the two ends of the coil, should be soldered. The coil end leading to the terminal should be soldered to its tag and not to the retaining nut. In the case of the terminal screw which holds the bakelite cover in position similar considerations apply, the assembly being: spring washer (1), wiring tag (2), lead washer (3), and recessed nut (4) (see Fig. D.2). A lead washer has been found necessary at this point as some few cases of bad connection have been found. Under no circumstances must the spring washer be omitted, or the assembly shortened in any way. Any attempt to do so is likely to lead to breakage of the pedestal when the nut retaining the cover in position is tightened up.

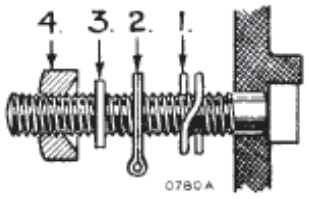



*Fig. D.2*

*The correct sequence of assembly of the connecting components on the terminal screw*

The armature return spring should be fitted with its larger diameter towards the coil and its smaller diameter resting against the armature. This spring must not be stretched or otherwise interfered with, or the action of the pump will be affected.

## Section D.6

### RESETTING THE DIAPHRAGM FOR CONTACT BREAKER 'THROW-OVER'

If the armature and centre rod have been unscrewed it will be necessary to reset as follows:

(1) **Swing to one side the spring blade which carries the contact points.**

(2) Fit the impact washer in the recess of the armature.
(3) Screw the armature into position.
(4) Place the 11 guide rollers in position around the armature. **Do not use jointing compound on the diaphragm.**
(5) Hold the magnet assembly in the left hand in an approximately horizontal position.
(6) Screw the armature inwards until the 'throw-over' ceases to operate, and then screw it back gradually, a sixth of a turn (or one hole) at a time, and press the armature in after each part of a turn until it is found that when it is pushed in slowly and firmly the 'throw-over' mechanism operates. **Unscrew the armature a further two-thirds of a turn** (four of the six holes). When a new diaphragm is fitted it is probable that considerable pressure will be required to push the armature right home.
(7) Place the cast-iron body in position on the main body, taking care to see that the drain hole in the cast-iron body is at the bottom and all the rollers are still in their correct positions.

If a roller drops out of position it will get trapped between the two ports, and this will cut a hole in the diaphragm.

Make sure that the cast-iron body is seating properly on the main body and insert the six securing screws. **Before tightening the screws down it is essential that the diaphragm should be stretched to its outermost position.**

This may be done by inserting a matchstick behind one of the white fibre rollers on the outer rocker, thus holding the points in contact (after first repositioning the spring blade into its normal position). If a current is then passed through the pump the magnet will be energized and will pull the armature and diaphragm forward, and while it is in this position the six screws should be tightened. Although the diaphragm-stretching operation can be effected by the matchstick method, a special tool for this purpose is available from the S.U. Carburetter Co. or their Distributors. The tool is a steel wedge, to be inserted under the trunnion in the centre of the inner rocker in order to stretch the diaphragm to its outermost position before tightening the six flange screws.
(8) Finally, check that when the spring blade is in its normal position the clearance hole in it is so positioned around the locking screw that each contact point, according to the operation of the outer rocker, **wipes over the centre-line of the other contact point** and that this action is not to one side of the centre on either contact. The width of the gap at the points is approximately ·030 in. (·76 mm.).
(9) The pump should now be placed on test, using a cut-away cover to enable the contact breaker action to be observed and at the same time to prevent the rocker hinge pin from falling out.

A test rig of the type illustrated in Fig. D.4 is advised; either petrol (gasoline) or paraffin (kerosene) may be used for testing purposes. Test figures are given in **'GENERAL DATA'.** The use of a glass tube and rubber connections between the sump and the test tank is advised. When the pump is switched on it should prime itself promptly, and the paraffin, which is normally used for testing, should rise in the glass container until it flows over the top of the pipe having the $\frac{5}{32}$ in. (4 mm.) hole drilled in it 2 in. (5 cm.) below the top of the pipe. If the output of the pump is not up to normal the $\frac{5}{32}$ in. (4 mm.) diameter hole will be able to deal with all the paraffin pumped and the liquid will not flow over the top of the pipe. If a time-test is used, 1·5 pints (·9 litre) of fuel per minute should be pumped.

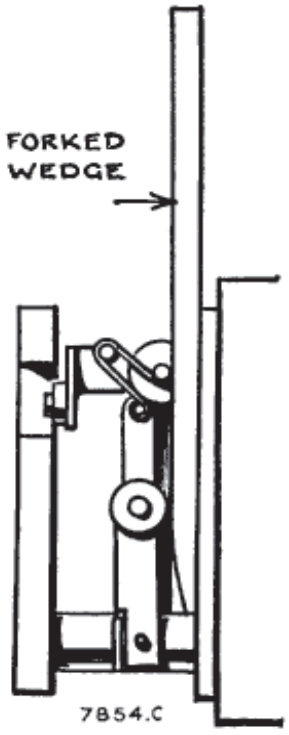



*Fig. D.3*

*The use of a forked wedge to keep the armature in the correct position for fitting the diaphragm*

These test rigs can be obtained complete from the Service Parts Department of the S.U. Carburetter Co. or their Distributors.

This, therefore, constitutes a simple form of flow-meter which establishes in a simple manner whether the pump is giving a sufficient output or not. If there is any

air leak in the pump or in its connections, bubbles will be seen coming out of the pipe projecting downwards into the flow-meter. Bubbles will certainly come through here for a short while after starting up, but they should cease after the pump has been running for a minute or so. The tap should then be turned right off and the pump should stand without repeating its action for at least 12 seconds. If it repeats within this time the suction valve is not seating correctly.

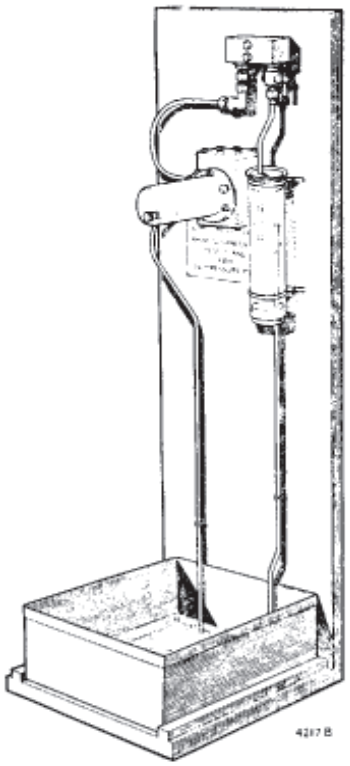


*Fig. D.4*
*Checking rig*

The tap should then be turned on slowly to see if the pump idles satisfactorily and that the outer rocker comes forward till it makes contact with the pedestal, and while it is in this position the tip of the blade should be pressed inwards to reduce the stroke of the pump gradually. However much this stroke is reduced, the pump should go on pumping normally until it fails altogether owing to there being no gap left. If instead of pumping it buzzes, it usually indicates excessive flexibility in the diaphragm. This, of course, is not likely to be experienced with a new diaphragm. Then, with the tap turned on fully, the pump should be tested on 10 volts and it should work satisfactorily under these conditions, although probably with a reduced output.

It is as well to let the pump run for 10 minutes or so before carrying out these various tests. The cover should then be fitted and held in place with two ordinary brass nuts fitted on the end of the terminal.

**NOTE.—There are three important points which are repeatedly overlooked by operators. These seriously affect the functioning of the pump; they are:**

**(1) To keep the contact breaker blade out of contact while obtaining the correct diaphragm setting.**

**(2) To press firmly and steadily on the armature, instead of jerking it while obtaining the setting.**

**(3) Omission to stretch the diaphragm to the limit of its stroke while tightening up the body screws.**

## Section D.7

### TRACING FUEL PUMP TROUBLES

Should the pump cease to function, first disconnect the fuel delivery pipe from the pump. If the pump then works the most likely cause of the trouble is a sticking needle in the float-chamber of the carburetter. Should the pump not work, disconnect the lead from the terminal and strike it against the body of the pump after switching on the ignition. If a spark occurs it indicates that the necessary current is available at the terminals and that the trouble arises with the pump mechanism. If no spark can be detected, then it is an indication that the current supply has failed and that attention should be given to the wiring and battery. If no current is present, further investigation should be carried out by removing the bakelite cover which is retained by the terminal nut. Touch the terminal with the lead. If the pump does not operate and the contact points are in contact, yet no spark can be struck off the terminal, it is very probable that the contact points are dirty and require cleaning. These may be cleaned by inserting a piece of card between them, pinching them together, and sliding the card backwards and forwards.

It is possible that there may be an obstruction in the suction pipe, which should be cleared by blowing air through it, or that some irregularity in the pump itself is preventing the correct movement. This may be due either to the diaphragm having stiffened, or to foreign matter in the roller assembly which supports the diaphragm, in which case the diaphragm should be removed and the whole assembly cleaned and reassembled in accordance with the instructions given in Section D.5.

On the other hand, if the points are not making contact see that the tips of the inner rocker (12) are in contact with the magnet housing. If they are not, it is an indication that the armature has failed to return to the end of its normal travel.

To cure this, loosen the six screws which attach the magnet housing to the pump body and make sure that the diaphragm is not sticking to the face of the magnet housing by carefully passing a penknife between the two. The hinge pin should then be removed and the six retaining screws tightened up again. The tips of the inner rockers will probably now be found to be making contact with the face of the magnet housing, but if they are not it will be necessary to remove and dismantle the whole magnet assembly in order to ascertain if an accumulation of foreign matter has caused a jam. Remember that whenever the magnet housing is removed care should be taken to see that the guide rollers (7) do not drop out.

**Pump noisy**

If the pump becomes noisy and works rapidly it is usually an indication that there is an air leak on the suction side of the pump. Check the level of the fuel in the tank and see that it is not too low.

The simplest way to test for air leakage is to disconnect the fuel pipe from the carburetter and place its end in a glass jar (approximately 1 pint or half a litre) and allow the pump to deliver fuel into it. If air bubbles appear when the end of the pipe has become submerged in the fuel it is a clear indication of an air leak on the suction side of the pump in the fuel feed pipe between the tank and the pump which should be found and cured. Check all the unions and joints, making sure that the filter union and inlet unions are all quite airtight.

**Failure to deliver fuel**

Should the pump continue beating without delivering fuel, it is probable that dirt has become lodged under one of the valves, in which case they should be dismantled by removing the top cover and unscrewing the valve cage, when they can be cleaned and reassembled.

If the pump struggles to operate and becomes very hot it is probable that the filter has become clogged or there is an obstruction on the suction side. The filter is readily removed for cleaning by unscrewing the six 2 BA screws securing the bottom plate.

## Section D.8

### FUEL PUMP MAINTENANCE

Apart from keeping the contacts clean and removing the filter at regular intervals for cleaning, there is no maintenance required on the fuel pump.

The filter can be extracted by removing the pump body bottom cover, when it can be cleaned in fuel with a stiff brush. Never use rag to clean a filter.

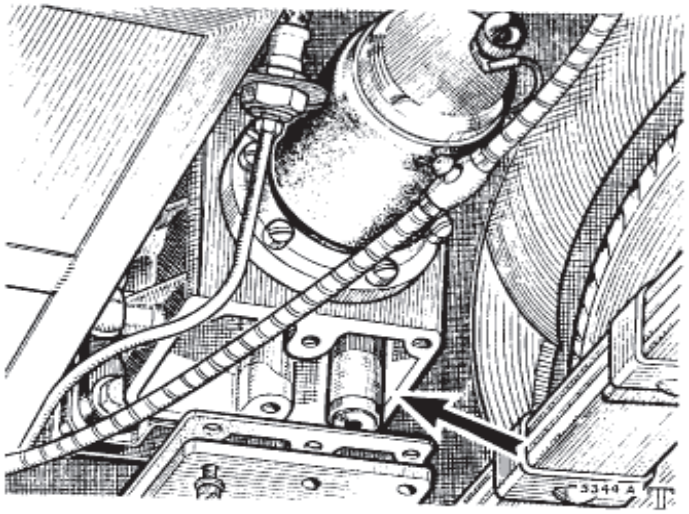


*Fig. D.5*

*The pump filter should be cleaned with a brush every* 6,000 *miles* (10000 *km.*)

## Section D.9

### CARBURETTERS

The S.U. carburetters are of the controllable jet type drawing air through oil-wetted air cleaners.

A damper is provided in each unit, consisting of a plunger and non-return valve attached to the oil cap nut. The damper operates in the hollow piston rod, which is partly filled with oil. Its function is to give a slightly enriched mixture on acceleration by controlling the rise of the piston, and also to prevent flutter.

## Section D.10

### CARBURETTER ADJUSTMENTS

Slow running is governed by the setting of the jet adjusting nuts and the throttle stop screws, all of which must be correctly set and synchronized if satisfactory results are to be obtained.

The two throttles are interconnected by a coupling shaft and coupling clips, enabling them to be set and correctly synchronized when adjustments are being made.

The mixture control levers are also connected, between the carburetters, by a short adjustable link.

Before blaming the carburetter settings for poor slow running make certain that the trouble is not caused by badly adjusted contact points, faulty plugs, incorrect valve clearance, or faulty valves and springs.

**Adjusting the jets**

Run the engine until it attains its normal running temperature.

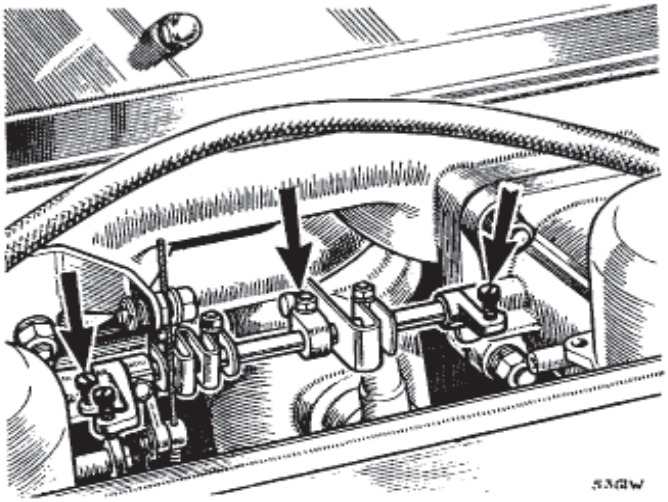


*Fig. D.6*

*After slackening the nut indicated by the centre arrow the slow running can be regulated on each carburetter by adjusting the two screws indicated by the outer arrows*

Slacken the nut indicated by the centre arrow (Fig. D.6) to allow each carburetter spindle to operate independently.

Disconnect the mixture control cable and the connecting link between the two jet adjusting levers.

Unscrew both throttle lever setting screws until the throttles are completely closed. Turn the adjusting screw of the rear carburetter in a clockwise direction approximately one turn to set the throttle for fast idling; lift the piston of the front carburetter $\frac{1}{2}$ in. (13 mm.) to leave the carburetter out of action.

With the engine running, set the jet adjusting nut of the rear carburetter so that a mixture strength is obtained which will give the best running speed for this particular throttle opening, taking care to see that the jet head is in firm contact with the adjusting nut the whole time.

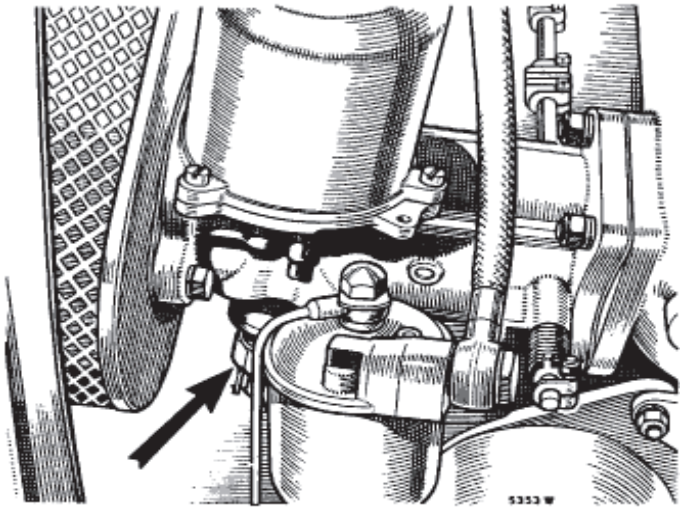


*Fig. D.8*

*The arrow indicates the jet adjusting nut*

The correctness or otherwise of this setting can be checked by raising the suction piston about $\frac{1}{32}$ in. (·8 mm.) with the piston lifting pin. This should cause a very slight momentary increase in the speed of the engine without impairing the evenness of the running. If the engine stops the mixture is too weak. If the speed increases and continues to increase when the piston is raised as much as $\frac{1}{4}$ in. (6 mm.) the mixture is too rich.

When the setting of the mixture is correct for the rear carburetter unscrew the throttle adjusting screw until

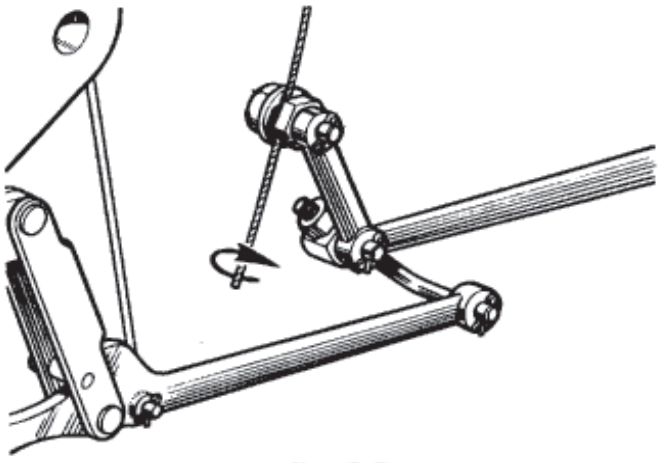


*Fig. D.7* 5377A

*When connecting the mixture control wire give a twist as indicated to ensure correct operation of the lock*

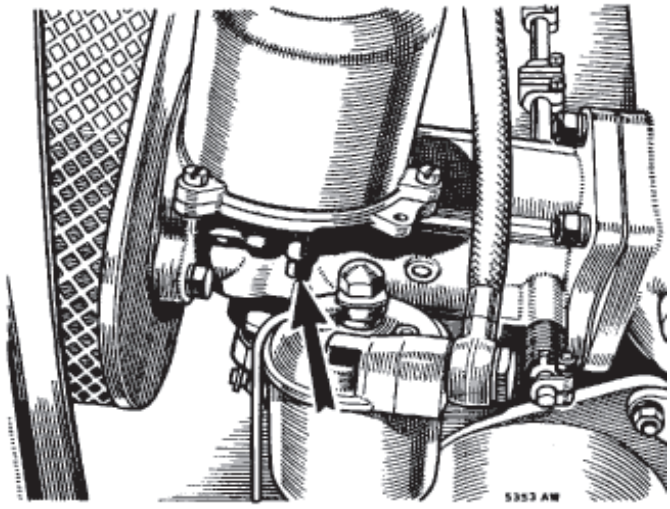


*Fig. D.9*

*The piston lifting pin*

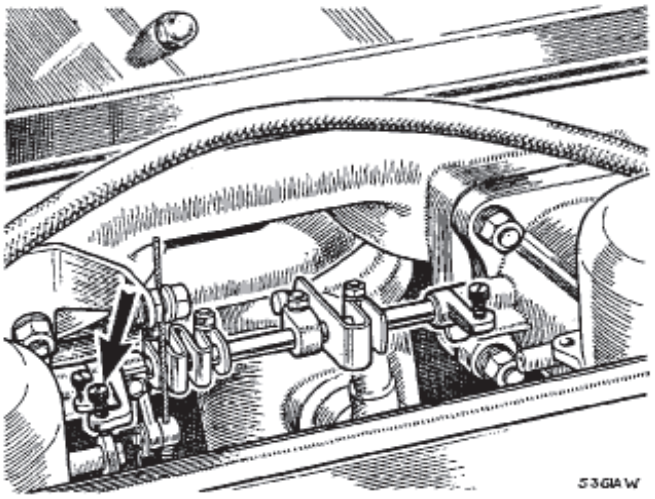



*Fig. D.10*

*With the mixture control right home there should be a small clearance between the adjusting screw (arrowed) and the cam beneath it*

the throttle is fully closed and lift the piston ½ in. (13 mm.) to put it out of action. Repeat the adjustment operations on the front carburetter.

When both carburetters are correctly adjusted for mixture set the throttle adjustment screw of each to give the required slow running. Adjust the link between the mixture levers so that each lever is moved the same amount when the mixture control is used.

**Slow running and synchronization**

Turn the throttle adjustment screw of each carburetter to give a fast idling speed, taking care to turn each screw the same amount. Next unscrew each throttle lever adjustment screw an equal amount, a fraction of a turn at a time, until the desired slow-running speed is obtained.

Accuracy of synchronization can be checked by listening at each carburetter air intake in turn through a length of rubber tubing and noticing if the noise produced by the incoming air is the same at both. Any variation in the intensity of the sound indicates that one throttle is set more widely open than the other.

When the same intensity of sound is given by both carburetters the coupling shaft clip should be tightened to ensure that the throttles work in unison.

Note that a small peg in one lever fits loosely in a hole in the other lever to form a connection between the two spindles. When tightening the lever clamping nut make certain that the peg is located centrally in the hole when both throttles are closed.

Since the delivery characteristics when both carburetters are working together vary somewhat from those existing when each is working separately, it will be necessary to check again for correctness of mixture strength by lifting each piston in turn as indicated in **'Adjusting the jets'** and adjusting as necessary.

## Section D.11

### REMOVING AND REPLACING THE CARBURETTERS

Disconnect the fuel supply pipe and the flexible connecting pipe at the rear carburetter union.

Remove the two set screws and spring washers securing each air cleaner and remove the air cleaners. Remove the split pin and flat washer and release the mixture cable and clevis pin from the mixture control linkage, and release the mixture outer cable abutment complete with bracket.

Remove the split pin from the jet lever interconnecting link to separate the two jet levers. Detach the throttle return spring and release the throttle cable.

Unscrew the union nut and disconnect the ignition vacuum control pipe from the front carburetter.

Remove the nut and flat washer on top of each float-chamber to release the vent pipes.

Remove the four nuts, spring washers, and plain washers securing each carburetter flange and withdraw the carburetters. The throttle cable abutment bracket and throttle return spring bracket will also be withdrawn.

Replacement is a reversal of the above instructions.

**Do not attempt to remove the carburetters and induction manifold as an assembly. The induction manifold is secured by two studs inside the intakes and cannot be released until the carburetters are removed.**

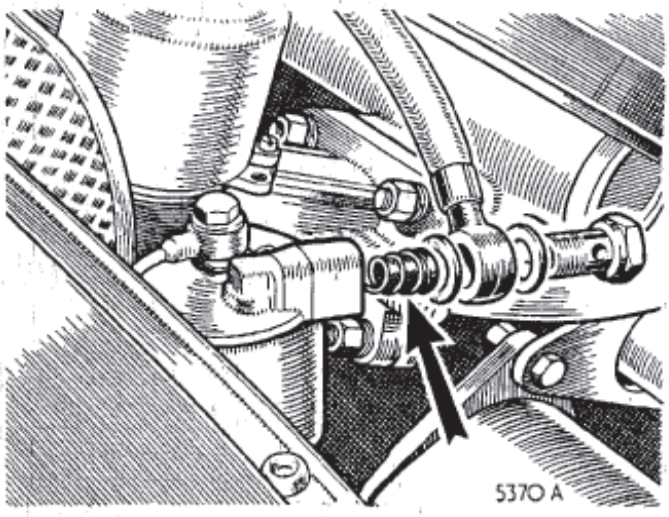



*Fig. D.11*

*The carburetter filters should be removed and cleaned with a brush every 6,000 miles (10000 km.)*

## Section D.12

### CENTRING THE JET

First remove the clevis pin at the base of the jet which attaches the jet head to the jet operating lever; withdraw the jet completely, and remove the adjusting nut and the adjusting nut spring. Replace the adjusting nut without its spring and screw it up to the highest position. Slide the jet into position until the jet head is against the base of the adjusting nut.

When this has been done remove the dashpot piston and test for free piston movement by lifting it with a finger. If it is not perfectly free, slacken the jet holding screw and manipulate the lower part of the assembly, including the projecting part of the bottom half jet bearing, adjusting nut, and jet head. Make sure that the assembly is now slightly loose. The piston should rise and fall quite freely as the needle is now able to move the jet into the required central position. Tighten the jet holding screw and check the position again. If it is still not free, slacken the jet holding screw and repeat the operation. When the piston is completely free-moving remove the adjusting nut and replace its spring. Replace the nut, screwing it to its original position.

Experience shows that a large percentage of the carburetters returned for correction have had jets removed and incorrectly centred on replacement.

## Section D.13

### SOURCES OF CARBURETTER TROUBLE

**Piston sticking**

The piston assembly comprises the suction disc and the piston forming the choke, into which is inserted the hardened and ground piston rod which engages in a bearing in the centre of the suction chamber and in which is, in turn, inserted the jet needle. The piston rod running in the bearing is the only part which is in actual contact with any other part, the suction disc, piston, and needle all having suitable clearances to prevent sticking. If sticking does occur the whole assembly should be cleaned carefully and the piston rod lubricated with a spot of thin oil. No oil must be applied to any other part except the piston rod. A sticking piston can be

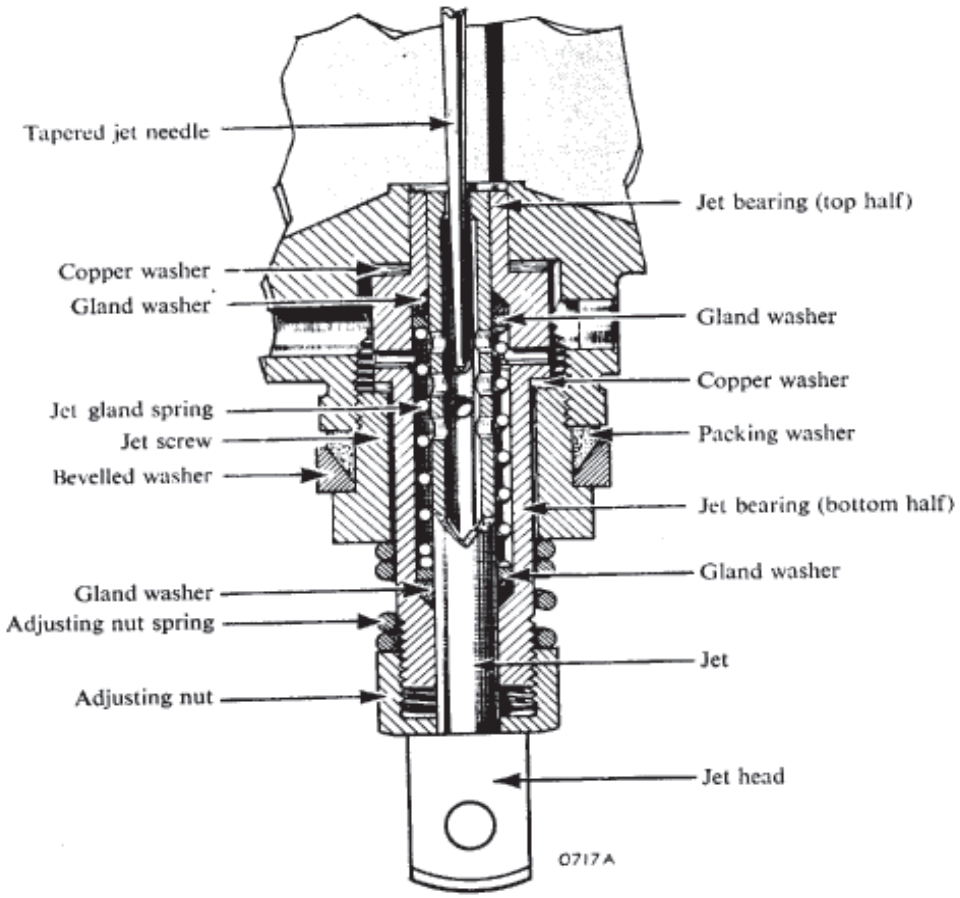



*Fig. D.12*

*An enlarged view of the jet assembly, showing the component parts*

ascertained by removing the dashpot damper, inserting a finger in the air intake, and lifting the piston, which should come up quite freely and fall back smartly onto its seating when released. On no account should the piston return spring be stretched or its tension altered in an attempt to improve its rate of return.

**Water or dirt in the carburetter**

When this is suspected remove the air cleaners, start the engine, open the throttle, and block up the air inlet momentarily without shutting the throttle, keeping the throttle open until the engine starts to race. This trouble seldom arises with the S.U. carburetter owing to the size of the jet and fuel ways. When it does happen the above method will nearly always clear it. Should it not do so, the only alternative is to remove the jet. This, however, should on no account be done unless it is absolutely necessary, as it has to be carefully centred when refitting. (See Section D.12.)

**Float-chamber flooding**

This is indicated by the fuel dripping from the drain pipe, and is generally caused by grit between the float-chamber needle and its guide. This is cured by removing the float-chamber, washing the valve and float-chamber components, and reassembling.

**Float needle sticking**

If the engine stops, apparently through lack of fuel, when there is plenty in the tank and the pump is working properly, the probable cause is a sticking float needle. An easy test for this is to disconnect the pipe from the electric pump to the carburetters and switch the ignition on and off quickly while the end of the pipe is directed onto a pad of cloth or into a container.

If fuel is delivered, starvation is almost certainly being caused by the float needle sticking to its seating, and the float-chamber lid should therefore be removed and the needle and seating cleaned and refitted. At the same time it will be advisable to clean out the entire fuel feed system, as this trouble is caused by foreign matter in the fuel and unless this is removed it is likely to recur. It is of no use whatever renewing any of the component parts of either carburetter, and the only cure is to make sure that the fuel tank and pipe lines are entirely free from any kind of foreign matter or sticky substance capable of causing this trouble.

## Section D.14

### AIR CLEANERS

Every 3,000 miles (4800 km.), or more frequently in dusty conditions, the air cleaners should be serviced as follows: unscrew and remove the two bolts, remove the outer cover, and withdraw the element from the body of each cleaner. Wash the element thoroughly in petrol (gasoline), drain, and dry. Wet the element with S.A.E. 20 engine oil and allow to drain before replacing.

A modified air cleaner, incorporating a venturi, was introduced at Car No. 2468.

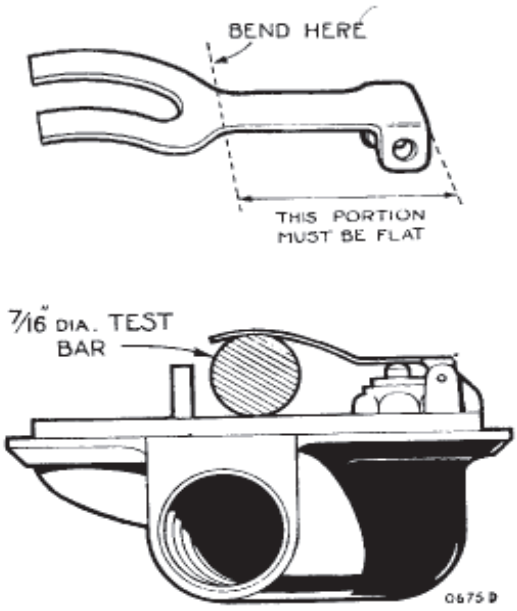



*Fig. D.13*

*Showing the place where the float lever should be set and the method of checking the correct adjustment of the lever*

## Section D.15

### MODIFIED CARBURETTER DAMPER ASSEMBLIES

To allow the carburetter pistons to lift more freely new hydraulic damper assemblies have been fitted in production. The damper pistons of the new assemblies have been shortened from ·378 in. (9·596 mm.) to ·308 in. (7·823 mm.).

The new hydraulic damper assemblies (Part No. AUC8114) are identified by the letter 'O' stamped on the brass hexagon caps. They can be fitted, with advantage, to earlier carburetters in pairs. Alternatively, the original damper pistons may be modified by machining ·070 in. (1·78 mm.) off their lower faces.