SECTION D

THE FUEL SYSTEM

GENERAL DESCRIPTION

The fuel system comprises a fuel tank mounted inside the luggage compartment, an S.U. AUF 201 or SP electrically operated diaphragm-type fuel pump, and S.U. HS2 semi-downdraught automatic expanding choke-type carburetter.

The level of the fuel in the tank is registered electrically by a meter on the instrument panel.

The air cleaner fitted to the carburetter has a renewable paper-element filter to trap road dust and other harmful matter from the air before it reaches the carburetter.

Section D.1

FUEL TANK

Removing

Disconnect the flexible fuel hose from the pump connection located on the inside of the left-hand rear sub-frame member and drain the fuel into a suitable container.

A fuel drain plug is fitted to later models, it operates on the same principle as a brake bleed screw and it is only necessary to unscrew it three complete turns. A tubular box spanner $\frac{7}{16}$ in. A.F. and 5 in. long is required to unscrew the plug and allow the fuel to drain clear of the exhaust pipe.

A modified fuel tank incorporating a fuel drain tube is fitted to later models. Where this drain tube is fitted the drain plug and tube must be removed before the tank can be withdrawn from the luggage compartment, and must not be refitted until the tank is repositioned in the vehicle.

(1) Remove the fuel filler cap and the tank strap securing bolt.
(2) Disconnect the flexible hose from the pump and the connections from the fuel gauge unit.
(3) Release the vent pipe from its clip on the seat panel and ease the tank towards the centre of the luggage compartment, at the same time feeding the fuel and vent pipes through the floor.

Refitting

(4) Refit the vent pipe through the same hole in the floor as the wiring harness, and secure the free end with a rubber clip to the flexible fuel feed pipe clear of the pump. Ensure that the clip retaining the vent pipe to the seat panel does not distort the pipe.
(5) The seal between the drain plug housing and the body must be watertight.
(6) Refit the locating plate beneath the tank before the straps are fastened.
(7) Replace the fuel tank drain plug and tube.

Section D.2

FUEL TANK GAUGE UNIT

Remove the earth lead from the battery terminal and disconnect the electrical lead from the fuel gauge unit. Remove the tank gauge locking ring with Service tool 18G 1001 and lift out the gauge assembly and rubber sealing ring. When refitting the gauge unit a new rubber sealing ring should be fitted if necessary to ensure a fuel-tight joint.

Section D.3

FUEL PUMP

Removing

Disconnect the battery earth lead.

Slacken the clip securing the flexible pipe from the tank to the inlet nozzle on the pump and pull off the pipe. Plug the end of the pipe to prevent fuel draining out. A $\frac{5}{16}$ in. (8 mm.) diameter bolt is a suitable plug. Slacken the retaining clip and pull off the flexible pipe from the outlet nozzle of the pump.

Disconnect the electrical leads from their connections on the pump, slacken and remove the nut and spring washer securing the fuel pump clamp to the bracket on the sub-frame, and remove the pump assembly. Refitting is a reversal of the removal procedure.

Dismantling

Contact breaker

(1) Remove the insulated sleeve, terminal nut, and connector together with its shakeproof washer. Remove the tape seal (if fitted) and take off the end-cover.
(2) Unscrew the 5 B.A. screw which holds the contact blade to the pedestal. This will allow the washer, the long-coil lead, and the contact blade to be removed.

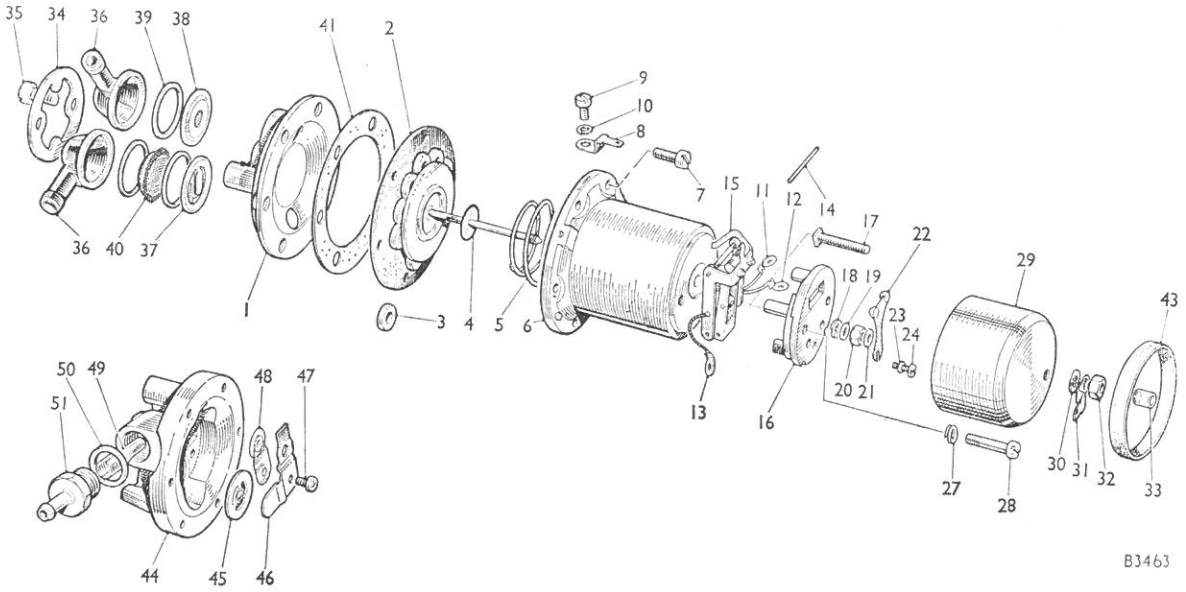
Coil housing and diaphragm

(3) Unscrew the coil housing securing screws, using a thick-bladed screwdriver to avoid damaging the screw heads.
(4) Remove the earthing screw.
(5) The coil housing may now be removed from the body. Next, remove the diaphragm and spindle assembly by taking hold of the diaphragm and unscrewing it anti-clockwise until the armature spring pushes the diaphragm away from the coil housing. It is advisable to hold the housing over the bench so that the 11 brass rollers will not fall on the floor. The diaphragm and its spindle are serviced as a unit and should not be separated.

Pedestal and rocker

(6) Remove the end-cover seal washer, unscrew the terminal nut, and remove the lead washer; this will have flattened on the terminal tag and thread, and is best cut away with cutting pliers or a knife. Unscrew the two 2 B.A. screws holding the pedestal to the coil housing and remove the earth terminal tag. Tip the pedestal and withdraw the terminal stud from the terminal tag. The pedestal

THE AUF 201 and SP FUEL PUMP COMPONENTS



No.	*Description*	*No.*	*Description*	*No.*	*Description*	
1.	Pump body (AUF 200 only).	17.	Terminal stud.	35.	Set screw.	AUF 200 only.
2.	Diaphragm and spindle assembly.	18.	Spring washer.	36.	Inlet and outlet nozzles.	
3.	Armature centralizing roller.	19.	Lead washer.	37.	Inlet valve.	
4.	Impact washer.	20.	Terminal nut.	38.	Outlet valve.	
5.	Armature spring.	21.	End-cover seal washer.	39.	Sealing washer.	
6.	Coil housing.	22.	Contact blade.	40.	Filter.	
7.	Set screw.	23.	Washer.	41.	Gasket.	
8.	Earth connector.	24.	Contact blade screw.	43.	Sealing band.	SP type only.
9.	Set screw.	27.	Spring washer.	44.	Pump body.	
10.	Spring washer.	28.	Screw.	45.	Outlet valve.	
11.	Terminal tag.	29.	End-cover.	46.	Valve retainer.	
12.	Terminal tag.	30.	Shakeproof washer.	47.	Screw.	
13.	Earth tag.	31.	Connector.	48.	Inlet valve.	
14.	Rocker pivot pin.	32.	Nut.	49.	Filter.	
15.	Rocker mechanism.	33.	Insulating sleeve.	50.	Washer.	
16	Pedestal.	34.	Clamp plate (AUF 200 only).	51.	Inlet nozzle.	

may now be removed with the rocker mechanism attached.

(7) Push out the hardened steel pin which holds the rocker mechanism to the pedestal.

Body and valves (type AUF 201)

(8) Unscrew the two 2 B.A. screws securing the spring clamp plate holding the inlet and outlet nozzles. Remove the nozzles, filter, and valve assemblies.

Body and valves (type SP)

(9) Unscrew the inlet union and remove the filter. Unscrew the Phillips screw and take out the two valve assemblies.

Inspection

Type AUF 201

If gum formation has occurred in the fuel used in the pump, the parts in contact with the fuel will have become coated with a substance similar to varnish. This has a strong stale smell and may attack the neoprene diaphragm. Brass and steel parts so affected can be cleaned by being boiled in a 20 per cent. solution of caustic soda, dipped in a strong nitric acid solution, and finally washed in boiling water. Light alloy parts must be well-soaked in methylated spirits and then cleaned.

(1) Clean the pump and inspect for cracks, damaged joint faces, and threads.

(2) Examine the plastic valve assemblies for kinks or damage to the valve plates. They can best be checked by blowing and sucking with the mouth.

(3) Check that the narrow tongue on the valve cage, which is bent over to retain the valve and to prevent it being forced out of position, has not been distorted but allows a valve lift of approximately $\frac{1}{16}$ in. (2 mm.).

(4) Examine the valve recesses in the body for damage and corrosion; if it is impossible to remove the corrosion, or if the seat is pitted, the body must be discarded.

(5) Clean the filter with a brush and examine for fractures, renew if necessary.

(6) Examine the coil lead tag for security and the lead insulation for damage.

(7) Examine the contact breaker points for signs of burning and pitting; if this is evident, the rocker assembly and spring blade must be renewed.

(8) Examine the pedestal for cracks or other damage, particularly to the narrow ridge in the edge of the rectangular hole on which the contact blade rests.

(9) Examine the diaphragm for signs of deterioration.

(10) Renew the following parts: all fibre and cork washers, gaskets and 'O' section sealing rings, rollers showing signs of wear on periphery, damaged bolts and unions.

Type SP

As above except for the following:

(2) Examine the outlet valve for damage. Check that the centre rivet is tight and that the lift spring has not unwound, but is still holding the plastic valve disc on its seating. The valve disc should be free to lift, and not be trapped under the rivet shoulder. There must be no kinks or marks which might cause it to fail to seat.

(3) Examine the inlet valve assembly for kinks or damage; the slight discoloration of the valve disc is of no importance as the colour is present only to permit the valve to be seen more easily.

(4) Examine the valve seat in the body for damage and corrosion; if it is impossible to remove the corrosion, or if the seat is pitted, the body must be discarded.

Reassembling

Pedestal and rocker

NOTE.—The steel pin which secures the rocker mechanism to the pedestal is specially hardened and must not be replaced by other than a genuine S.U. part.

(1) Invert the pedestal and fit the rocker assembly to it by pushing the steel pin through the small holes in the rockers and pedestal struts. Then position the centre toggle so that, with the inner rocker spindle in tension against the rear of the contact point, the centre toggle spring is above the spindle on which the white rollers run.

This positioning is important to obtain the correct 'throw-over' action; it is also essential that the rockers are perfectly free to swing on the pivot pin and that the arms are not binding on the legs of the pedestal. If necessary, rockers can be squared-up with a pair of long-nosed pliers.

(2) Assemble the square-headed 2 B.A. terminal stud to the pedestal, the back of which is recessed to take the square head.

(3) Assemble the 2 B.A. spring washer and put the terminal stud through the 2 B.A. terminal tag, then fit the lead washer and the coned nut with its coned face to the lead washer. (This makes better contact than an ordinary flat washer and nut.) Tighten the 2 B A. nut, and finally add the end-cover seal washer.

(4) Assemble the pedestal to the coil housing by fitting the two 2 B.A. pedestal screws, ensuring that the spring washer on the left-hand screw (9 o'clock position) is between the pedestal and the earthing tag.

(5) Tighten the screws, taking care to prevent the earthing tag from turning, as this will strain or break the earthing flex. Do not overtighten the screws or the pedestal will crack.

Do not fit the contact blade at this stage.

Diaphragm assembly

(6) Place the armature spring into the coil housing with its larger diameter towards the coil.

(7) Before fitting the diaphragm, make sure that the impact washer is fitted to the armature (this is a small neoprene washer that fits in the armature recess). Do not use jointing compound or dope on the diaphragm.

(8) Fit the diaphragm by inserting the spindle in the hole in the coil and screwing it into the threaded trunnion in the centre of the rocker assembly.

(9) Screw in the diaphragm until the rocker will not throw over; this must not be confused with jamming the armature on the coil housing internal steps.

(10) Fit the 11 brass centralizing rollers by turning back the diaphragm edge and dropping the rollers into the coil recess. The pump should be held in the left hand, rocker end downwards, to prevent the rollers from falling out.

On later-type rocker mechanisms with adjustable fingers fit the contact blade and adjust the finger settings as described under those headings, then carefully remove the contact blade.

(11) Holding the coil housing assembly in the left hand, in an approximately horizontal position, push the diaphragm spindle in with the thumb of the right hand, pushing firmly but steadily. Unscrew the diaphragm, pressing and releasing with the thumb of the right hand, until the rocker just 'throws over'. Now turn the diaphragm back (unscrew) to the nearest hole and again four holes (two-thirds of a complete turn).

(12) Press the centre of the armature and fit the retaining fork at the back of the rocker assembly. This is done to prevent the rollers from falling out when the coil housing is placed on the bench, prior to fitting the body, and is not intended to stretch the diaphragm before tightening the body screws.

Body components (type AUF 201)

(13) Inlet and outlet valves are identical assemblies and are held in position in the one-piece body casting by a steel spring clamp plate, secured by two 2 B.A. screws. This plate also secures the inlet and outlet nozzles, including the filter, all of which are arranged to be accessible from the outside of the pump. This inlet recess is deeper than the outlet to allow for the filter and extra washer.

(14) Place the outlet valve assembly, tongue side uppermost, in the recess marked 'outlet', place a joint washer on top of the valve assembly, and complete by adding the outlet nozzle.

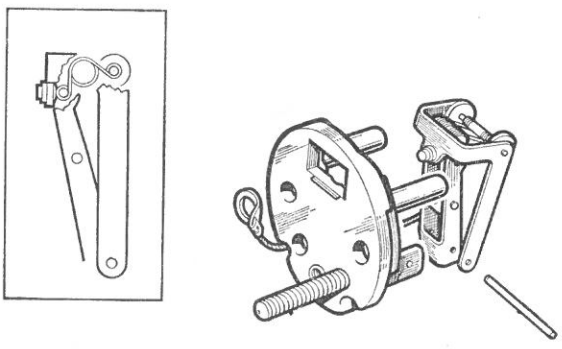


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Fig. D.1

Fitting the rocker assembly to the pedestal: (inset) the correct position of the centre toggle spring after assembly

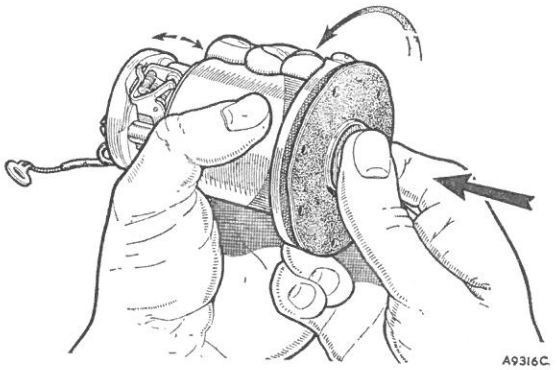

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Fig. D.2

Unscrew the diaphragm until the rocker just throws-over

(15) Place the inlet valve assembly, tongue side downwards, in the recess marked 'inlet', follow this with a joint washer, then the filter, dome side upwards, then another joint washer, completing the assembly with the inlet nozzle.

(16) Take care that both assemblies rest down evenly into their respective recesses. Position the nozzles as required, place the clamp plate on top, and tighten down firmly on to the body with the two 2 B.A. screws.

Body components (type SP)

(17) Insert the filter into the recess in the inlet union before screwing it, with its fibre washer, into the pump body. This will lessen the risk of the tip of the filter being forced into the valve recess and lifting the valve from its seating.

(18) Place the outlet valve assembly into its recess spring downwards, making sure that it sits evenly on the seating in the body, on which it will be held permanently in contact by the clamp plate. Tighten the Phillips screws, making sure that the inlet valve disc is centralized on its seating.

Body attachment

(19) Offer up the coil housing to the body—ensure correct seating between them.

(20) Line up the six securing holes, making sure that the cast lugs on the coil housing are at the bottom, insert the six 2 B.A. screws finger-tight. Fit the earthing screw with its Lucar connector.

(21) Remove the roller-retaining fork carefully, making sure that the rollers retain their position; a displaced roller will cut the diaphragm. It is not necessary to stretch the diaphragm before tightening the securing screws.

(22) Tighten the securing screws in sequence as they appear diametrically opposite each other.

Contact blade

(23) Fit the contact blade and coil lead to the psedetal with the 5 B.A. washer and screw.

(24) Adjust the contact blade so that the contact points on it are a little above the contact points on the rocker when the points are closed; also, that when the contact points make or break, one pair

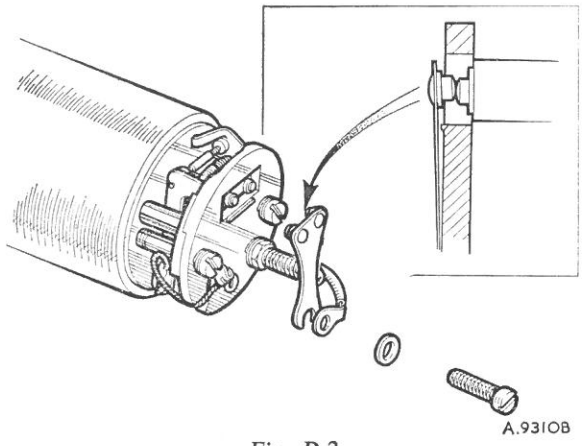


Fig. D.3

Setting the correct relative position of blade and rocker contact points

of points wipe over the centre-line of the other in a symmetrical manner. As the contact blade is provided with a slot for the attachment screw, some degree of adjustment is possible.

(25) Tighten the contact blade attachment screw when the correct setting is obtained.

Contact gap setting

(26) Check that when the outer rocker is pressed on to the coil housing, the contact blade rests on the narrow rib or ridge which projects slightly above the main face of the pedestal. If it does not, slacken the contact blade attachment screw, swing the blade clear of the pedestal, and bend it downwards a sufficient amount so that when repositioned it rests against the rib lightly; over-tensioning of the blade will restrict the rocker travel.

Earlier-type rocker assemblies

(27) Check the gap between the points indirectly by carefully holding the contact blade against the rib on the pedestal without pressing against the tip. Then check if a ·030 in. (·76 mm.) feeler will pass between the fibre rollers and the face of the coil housing. If necessary, the tip of the blade can be set to correct the gap.

Modified rocker assemblies

(28) Check the lift of the contact blade tip above the top of the pedestal with a feeler gauge, bending the stop finger beneath the pedestal, if necessary, to obtain a lift of ·035+·005 in. (·9+·13 mm.).

(29) Check the gap between rocker finger and coil housing with a feeler gauge, bending the stop finger, if necessary, to obtain a gap of ·070+·005 in. (1·8+·13 mm.).

End-cover

(30) Ensure that the end-cover seal washer is in position on the terminal stud, fit the bakelite end-cover, secure with the brass nut, fit the terminal tag or connector, and insulated sleeve.

(31) The pump is now ready for test.

Testing on standard rig

(1) Check that the pump points are correctly gapped and adjusted.

(2) Fit the appropriate pump adaptor set to a standard test rig and mount the pump on the rig. In order to observe the action of the contact breaker assembly fit a cut-away cover to the pump.

(3) Contact the pump to a 12-volt D.C. electrical supply with a resistance and a voltmeter in the circuit.

(4) Ensure that there is an adequate supply of paraffin (kerosene) in the test rig tank.

Priming and maximum delivery check

Open the tap on the test rig and switch on the pump. The pump should prime from dry in 10 to 15 seconds and the fuel should rise in the glass jar until it flows over the top of the drain pipe. If the fuel level does not rise above the small hole in the drain pipe the pump is not operating at the required standard and must be inspected.

Air leak check

When the pump is first switched on air bubbles will be seen emerging from the drain pipe. These bubbles should cease after the pump has been operating for a minute or two. If the bubbles continue to appear it is an indication that an air leak exists on the suction side of the pump and this must be found and rectified.

Valve seat check

Operate the pump for about 10 minutes and then turn the tap right off. The pump should not beat for at least 20 seconds. If pumping action takes place within 20 seconds the inlet valve is not seating correctly and must be renewed.

Minimum delivery check

Partially open the tap and check that fuel is delivered to the glass jar. Gradually depress the spring blade to reduce the stroke; the pump should continue working with increasing frequency until it eventually stops due to there being no gap left between the points.

Reduced voltage check

Turn the tap fully on, reduce the voltage to 9·5 volts and check that the pump is functioning satisfactorily.

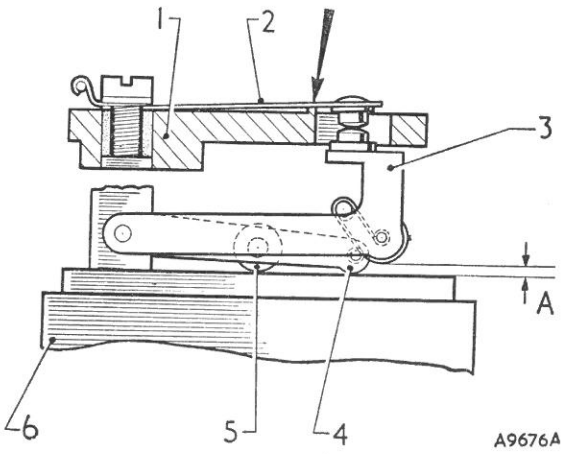


Fig. D.4

The contact gap setting on earlier-type rocker assemblies

1. Pedestal.
2. Contact blade.
3. Outer rocker.
4. Inner rocker.
5. Trunnion.
6. Coil housing.

A = ·030 in. (·8 mm.).

Sparking check

Switch on the pump and check for excessive sparking between the points. A small degree of sparking is permissible, but a special leak wire in the solenoid winding is designed to reduce sparking to a minimum. If excessive sparking is evident the solenoid assembly must be renewed.

Refitting

When replacing, ensure that the outlet is vertically above the inlet port, i.e. the inlet and outlet nozzles are horizontal.

Also ensure a good earth connection.

Fault diagnosis

1. *Suspected fuel feed failure*

Disconnect the fuel line at the carburetter and check for flow.

(*a*) If normal, examine for obstructed float-chamber needle seating or gummed needle.

(*b*) If normal initially, but diminishing rapidly and accompanied by slow pump operation, check for correct tank venting by removing the filler cap. Inadequate venting causes a slow power stroke, with resultant excessive burning of contact points.

(*c*) If reduced flow is accompanied by slow operation of the pump, check for any restriction on the inlet side of the pump, such as a clogged filter, which should be removed and cleaned. In the case of reduced flow with rapid operation of the pump, check for an air leak on the suction side, dirt under the valves, or faulty valve sealing washers.

(*d*) If no flow, check for:

(i) *Electrical supply*

Disconnect the lead from the terminal and test for an electrical supply.

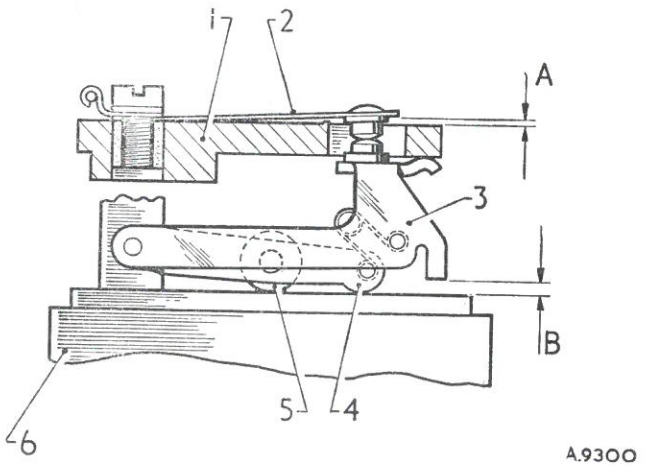


Fig. D.5

The rocker finger settings on modified rocker assemblies

1. Pedestal.
2. Contact blade.
3. Outer rocker.
4. Inner rocker.
5. Trunnion.
6. Coil housing.

A = ·035 in. (·9 mm.). $\frac{1}{4}$ = ·070 in. (1·8 mm.).

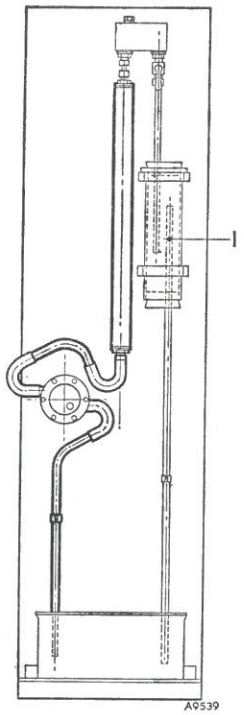


Fig. D.6

A checking rig for the fuel pump is obtainable from the S.U. Carburetter Co. Ltd.

1. The $\frac{5}{32}$ in. (4 mm.) dia. hole is 2 in. (50 mm.) below the top of the pipe.

(ii) *Faulty contact points*

If electrical supply is satisfactory the bakelite cover should be removed to check that the tungsten points are in contact. The lead should then be replaced on the terminal and a short piece of bared wire put across the contacts. If the pump then performs a stroke the fault is due to dirt, corrosion, or maladjustment of the tungsten points.

(iii) *Obstructed pipeline between fuel tank and pump*

The inlet pipe should be disconnected; if the pump then operates, trouble is due to a restriction in the pipeline between the pump and the tank. This may be cleared by the use of compressed air after removing the fuel tank filler cap. It should be noted, however, that compressed air should not be passed through the pump, as this will cause serious damage to the valves.

(iv) *Faulty diaphragm action*

If the previous operation fail to locate the trouble, stiffening of the diaphragm fabric or abnormal friction in the rocker 'throw-over' mechanism is to be suspected. To remedy these faults, the coil housing should be removed and the diaphragm flexed a few times, taking care not to lose any of the 11 rollers under it. Prior to reassembly, it is advisable to apply a little thin oil to the 'throw-over' spring spindles at a point where

they pivot in the brass rockers. The diaphragm armature assembly should then be assembled and set in accordance with the instructions given under that heading.

2. *Noisy pump*

Air leaks. If the pump is noisy in operation, an air leak at one or other of the suction lines may be the cause. Such a leak may be checked by disconnecting the fuel pipe from the carburetter and allowing the pump to discharge into a suitable container with the end of the pipe submerged. The emission of continuous bubbles at this point will confirm the existence of an air leak. The fault should be rectified by carrying out the following procedure:

(*a*) Check that all connections from the fuel tank to the pump are in good order.
(*b*) Check that the inlet union is tight.
(*c*) Check that the coil housing securing screws are well and evenly tightened. Air leaks on the suction side cause rapid operation of the pump and are the most frequent cause of premature failure.

3. *Pump operates without delivering fuel*

If the pump operates without delivering fuel the most likely causes are:

(*a*) A serious air leak on the suction side, or,
(*b*) Foreign matter lodged under one of the valves, particularly under the inlet valve.

To remedy (*a*) see para. 2 above.

To remove any foreign matter lodged under the valves these should be removed for cleaning.

Section D.4

CARBURETTER

Description

The HS2 carburetter is of the automatically expanding choke type in which the size of the main air passage (or choke) over the jet, and the effective area of the jet, are variable according to the degree of throttle opening used.

To serve the complete throttle range a single jet only is used, being a simple metal tube sliding in a single bearing bush, fed by fuel along a small-diameter nylon tube leading direct from the base of the float-chamber. The jet is varied in effective area by a tapered fuel metering needle sliding into it.

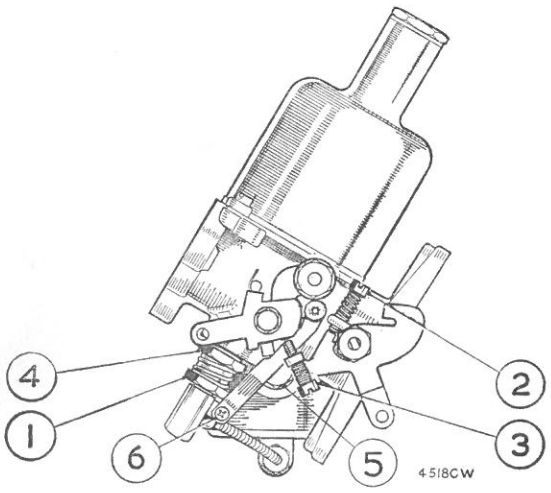


Fig. D.5

The carburetter adjusting screws

1. Jet adjusting nut.
2. Throttle adjusting screw.
3. Fast-idle adjustment screw.
4. Jet locking nut.
5. Float-chamber bolt.
6. Jet link securing screw.

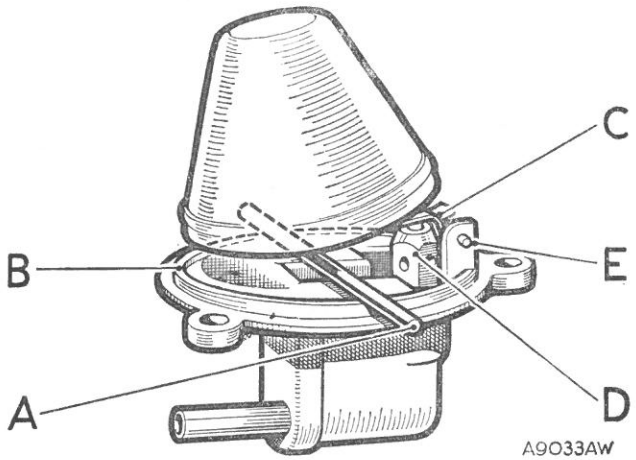


Fig. D.6

The method of checking the correct adjustment of the float lever

A. $\frac{1}{8}$ in. (3·18 mm.) bar.
B. Machined lip.
C. Angle of float lever.
D. Float needle and seat assembly.
E. Lever hinge pin.

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 ascertained by removing the piston damper and lifting the piston by pressing the piston lifting pin; the piston 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 and dirt in the carburetter

Should a blocked jet be suspected, start the engine, open the throttle, and block up the air inlet momentarily, keeping the throttle open until the engine starts to race.

If the jet is completely blocked and the engine will not run, the jet must be removed and thoroughly cleaned.

Float-chamber flooding

This is indicated by fuel flowing from the breather hole

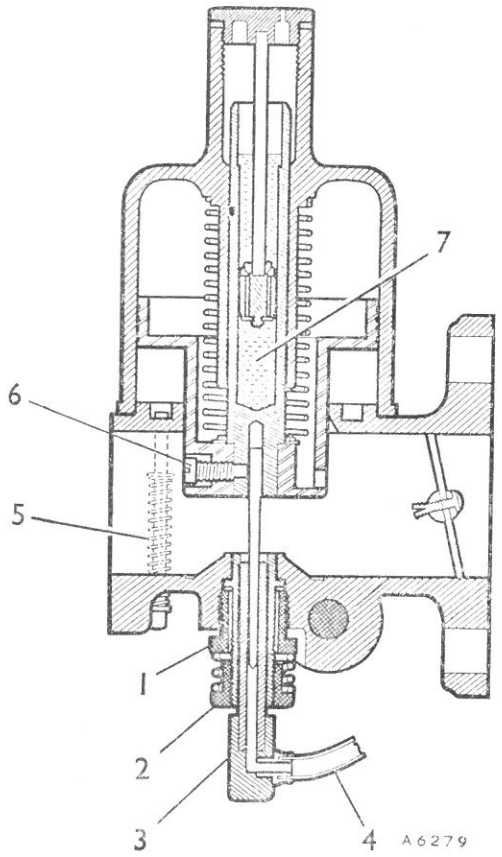


Fig. D.7

A section through the carburetter showing:

1. Jet locking nut.
2. Jet adjusting nut.
3. Jet head.
4. Nylon fuel pipe.
5. Piston lifting pin.
6. Needle securing screw.
7. Piston damper oil well.

in the top of the float-chamber lid below the main fuel feed pipe, and is generally caused by grit between the float-chamber needle and its guide. The float-chamber lid should be removed and the needle and its guide thoroughly cleaned.

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 carburetter 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 the 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.

Adjustments

Slow-running is governed by the setting of the jet adjusting nut and the throttle adjusting screw, both of which must be correctly set and synchronized if satisfactory results are to be obtained.

Before blaming the carburetter setting for bad slow-running make certain that the trouble is not caused by badly adjusted distributor contact points, faulty plugs, incorrect valve clearance, or faulty engine valves and springs. Check the oil level of the piston damper and top up with thin engine oil.

Adjusting the jets

Run the engine until it attains its normal running temperature.

Remove the air cleaner.

Disconnect the mixture control cable.

Unscrew the throttle lever adjusting screw until the throttle is completely closed. Turn the adjusting screw in a clockwise direction approximately one turn to set the throttle for fast idling.

With the engine running, set the jet adjusting nut 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.

The correctness or otherwise of this setting can be checked by raising the suction piston about $\frac{1}{32}$ in. (1 mm.). 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 carburetter is correctly adjusted for mixture set the throttle adjusting screw to give the required slow-running.

Slow-running

Turn the throttle adjusting screw to give a fast idling speed. Then unscrew, a fraction of a turn at a time, until the desired slow-running is obtained.

Float-chamber

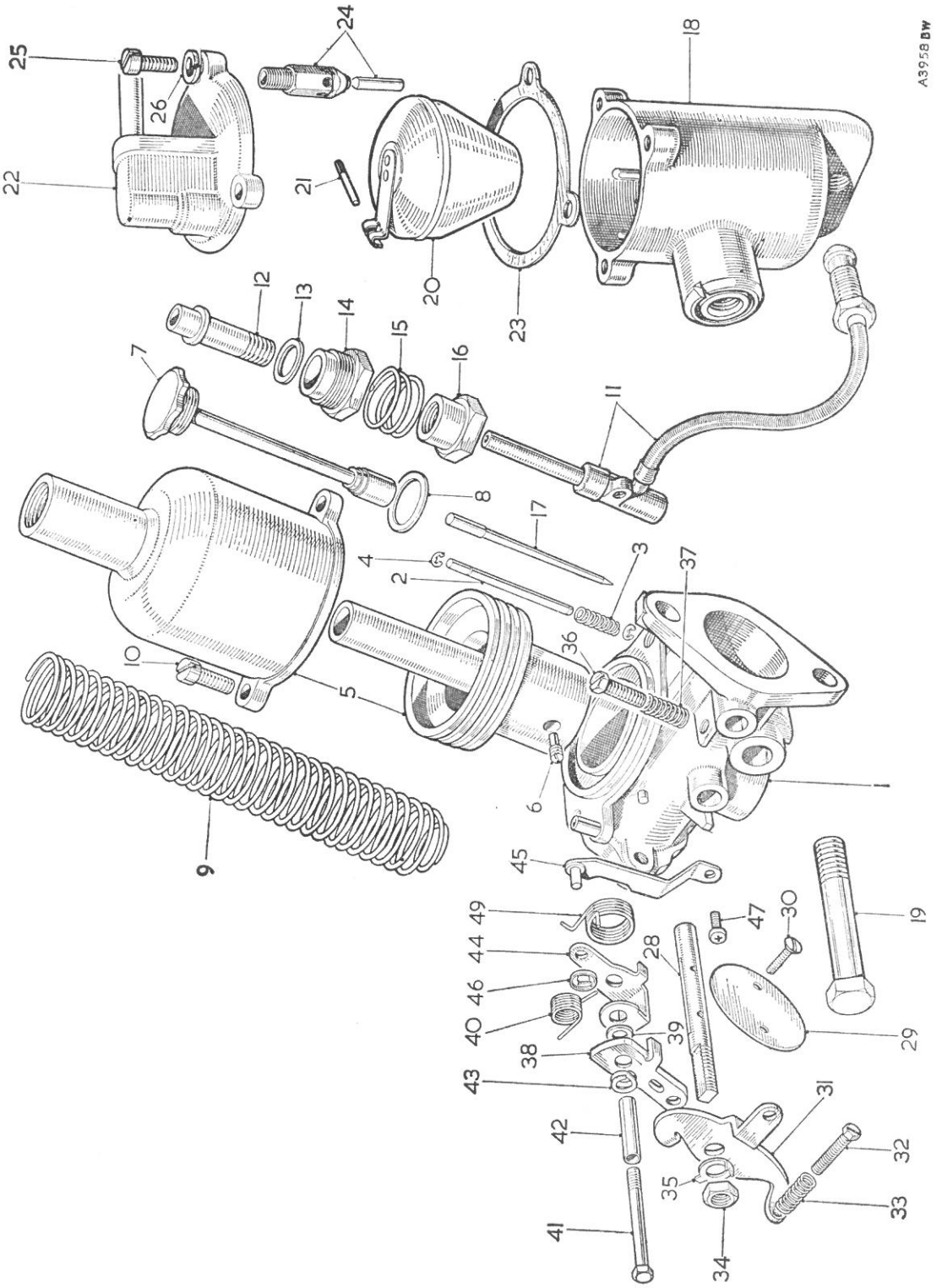
The position of the hinged float lever must be such that the level of the float (and therefore the height of the fuel at the jet) is correct.

To check the float level, hold the float-chamber lid and float assembly upside down and place a $\frac{1}{8}$ in., (3·18 mm.) diameter bar across the diameter of the machined lip of the float-chamber lid, parallel to the float lever hinge pin, and under the float lever (see Fig. D.6). The face of the float lever should just rest on the bar when the float needle is held fully on its seating by the lever. If this is not so, carefully re-set the angle made between the straight portion of the float lever and its hinge until the correct position is obtained.

Centring the jet

When the suction piston is lifted by the spring-loaded piston lifting pin it should fall freely and hit the inside

THE CARBURETTER COMPONENTS



KEY TO THE CARBURETTER COMPONENTS

No.	*Description*
1.	Body.
2.	Piston lifting pin.
3.	Spring for pin.
4.	Circlip for pin.
5.	Suction chamber and piston assembly.
6.	Needle locking screw.
7.	Piston damper assembly.
8.	Washer for damper cap (fibre).
9.	Piston spring.
10.	Screw—suction chamber to body.
11.	Jet assembly.
12.	Jet bearing.
13.	Washer for jet bearing (brass)
14.	Lock screw for jet bearing.
15.	Lock spring.
16.	Jet adjusting screw.
17.	Jet needle.
18.	Float-chamber body.
20.	Float and lever assembly.
21.	Lever hinge pin.
22.	Float-chamber lid assembly.
23.	Washer for lid.
24.	Needle and seat assembly.
25.	Screw—float-chamber lid to body.
26.	Spring washer.
28.	Throttle spindle.
29.	Throttle disc.
30.	Screw—throttle disc.
31.	Throttle lever.
32.	Cam stop screw.
33.	Spring for stop screw.
34.	Throttle spindle nut.
35.	Tab washer for nut.
36.	Idling stop screw.
37.	Spring for stop screw.
38.	Cam lever.
39.	Washer.
40.	Cam lever spring.
41.	Cam lever pivot bolt.
42.	Pivot bolt tube.
43.	Spring washer.
44.	Pick-up lever assembly.
45.	Jet link.
46.	Jet link retaining clip.
47.	Jet link securing screw.
49.	Spring for pick-up lever.

jet bridge with a soft, metallic click—that is, with the jet adjusting nut (2) (Fig. D.7) in its topmost position.

If this click is not audible, but is so when the test is repeated with the jet in the fully lowered position, then the jet unit requires recentring on the needle, as described below.

(1) Disconnect the rod between the jet lever and the jet head (3) (Fig. D.7).

(2) Unscrew the union holding the nylon feed tube into the base of the float-chamber, and withdraw the tube and jet together. Unscrew the jet adjusting nut and remove the lock spring. Replace the adjusting nut and screw it right up to its topmost position, then replace the jet and feed tube.

(3) Slacken off the large jet locking nut (1) (Fig. D.7) until the jet bearing is just free to rotate by finger pressure.

(4) Remove the piston damper and press the piston down onto the bridge. Tighten the lock nut.

(5) Lift the piston and note whether it falls freely; fully lower the adjusting nut and check again. If the second check produces a sharper click than the first, repeat the centring.

(6) Refit the parts that have been removed, pour thin oil into the hollow rod of the piston damper to within ·5 in. (12·7 mm.) of the top of the rod.

Needle

(7) Mark the suction chamber and carburetter for correct refitting, remove the piston and suction chamber assembly.

(8) Slacken the needle clamping screw, extract the needle and check its identifying mark (see **'GENERAL DATA'**). Refit the correct needle, ensuring that the shoulder on the shank is flush with the piston base.

Removing from engine

(9) Remove the air cleaner as detailed in Section D.5.

(10) Disconnect the mixture and throttle control cables, the suction advance pipe, and the fuel delivery hose from their respective positions on the carburetter.

(11) Remove the two nuts and spring washers securing the carburetter to the manifold flange and lift off the carburetter and the cable abutment plate.

Refitting

(12) Reverse the removal instructions, fitting new joint washers between the manifold face and the abutment plate and carburetter flange if any have been damaged during removal.

Section D.5

AIR CLEANER

Renew the filter element at the recommended periods.

Element replacement

(1) Unscrew the wing nut at the top of the cleaner, remove the cover and extract the element.

(2) Wipe all dust deposit from inside the container.

(3) Fit the new element and refit the cover.

Removing

(4) Carry out instruction (1).

(5) Disconnect the breather hose.

(6) Lift the air cleaner from the carburetter.

Refitting

(7) Reverse the removal procedure.

NOTE.—The air cleaner intake should be positioned adjacent to the exhaust manifold during winter operating conditions in order that the possibility of carburetter icing is reduced to the minimum. It is advisable to move the intake away from the manifold in warmer weather.

Section D.6

INDUCTION AND CARBURETTER SUCTION CHAMBER HEATERS

Heaters are fitted between the carburetter and the induction manifold and to the carburetter suction chamber on models exported to countries where conditions of extreme cold exist.

The induction heater is fitted with the bulb of the thermostat pointing inwards towards the centre-line of the engine and the insulating washer against the manifold. Earth return is through a small cut-away in the insulating washer, and contact is made against the manifold flange. The accelerator cable abutment plate is interposed between the heater and the carburetter with an insulating washer on each side of the plate.

The carburetter suction chamber heater is fitted on the outside of the suction chamber and secured in position with a retaining clip. The lead is connected to the thermostat on the induction heater.