



# AUH 300 RANGE

## CARBURETTER AUTOMATIC ENRICHMENT DEVICE—(A.E.D.)

SERVICING, SETTING,  
AND FAULT DIAGNOSIS



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## SERVICING

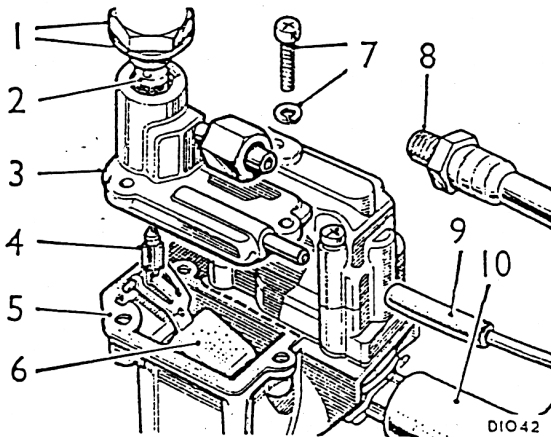
### Filter cleaning and float level check

#### Workshop hand tools:

Spanner sizes:  $\frac{11}{16}$  A/F open-ended  
Phillips screwdriver, medium; Flexible 6-in. steel rule

1. Remove the fuel inlet pipe and the float-chamber vent pipe.
2. Remove the heat insulation cover.
3. Unscrew the plug from the float-chamber lid and remove filter.
4. Remove the three retaining screws and washers. Tap the side of the float-chamber lid sharply with a screwdriver handle if necessary to separate it from the gasket.

Carefully lift the lid of the float-chamber and remove the needle and float assembly. If the gasket is damaged or unserviceable cut along the edge of the body and remove the float-chamber portion. Do not remove the screws holding the top cover and valve body. Thoroughly clean the float-chamber lid and float-chamber.



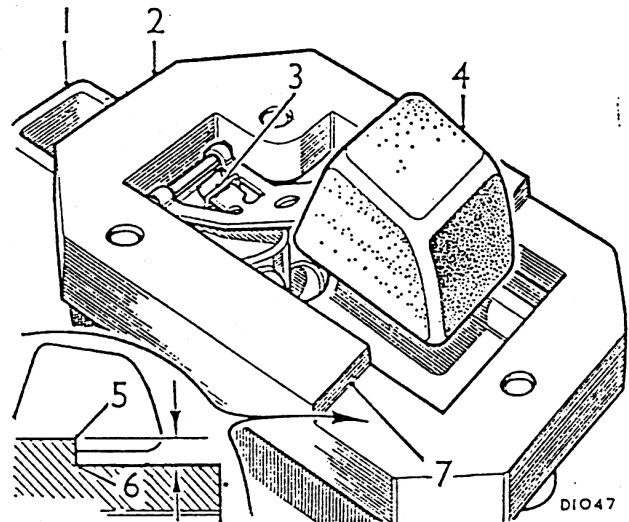
Float-chamber lid removal

- |   |   |
|---|---|
| 1. Plug and washer for filter.  | 6. Float.                                     |
| 2. Nylon filter.  | 7. Screw and washer fixing float-chamber lid. |
| 3. Float-chamber lid.   | 8. Fuel inlet pipe.                           |
| 4. Needle.  | 9. Float-chamber vent pipe.                   |
| 5. Gasket for float-chamber, cut at dotted line if replacement is required. | 10. Air intake hose.                          |

#### Special tools:

Checking tool for float level, Part No. 9004  
(Available from V. L. Churchill and Co. Ltd., P.O. Box 3, London Road, Daventry, Northants.)

5. Examine the float needle tip for wear or damage. Examine the seating in the lid. Replace any faulty parts.
6. Check the float level as follows:
  - a. Invert the float-chamber lid.
  - b. Locate the float needle and float to the lid using checking tool for float lid, Part No. 9004, as illustrated.
  - c. Check the float level as illustrated; the float should rest lightly on the needle.



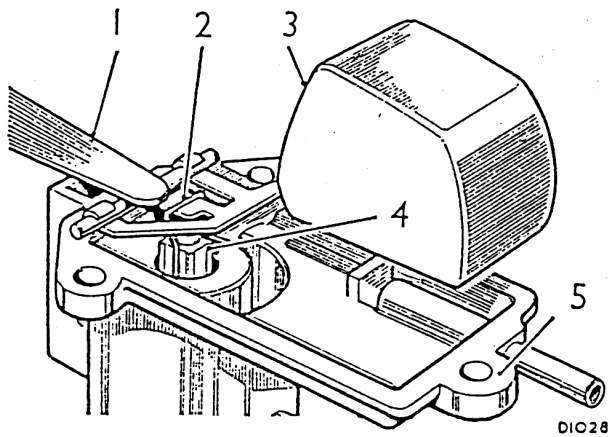
Checking the float level

- |                                  |                              |
|----------------------------------|------------------------------|
| 1. Float-chamber lid.            | 4. Float.                    |
| 2. Checking tool, Part No. 9004. | 5. Upper setting limit.      |
| 3. Stirrup for needle.           | 6. Lower setting limit.      |
|                                  | 7. Setting limit indication. |

- d. If the float level is outside the limits, adjust by setting the tongue on the float lever.
- e. Remove the special tool, together with the float and float needle.

**SERVICING** (continued)

7. Install the float in the main body and check for end-float of the hinge pin in the body and clearance around the float. Remove the float.
8. If the gasket has been cut and part removed, obtain a new float-chamber and valve body gasket and cut it to fit adjacent to the existing valve body gasket. Place the cut gasket in position on the main body.

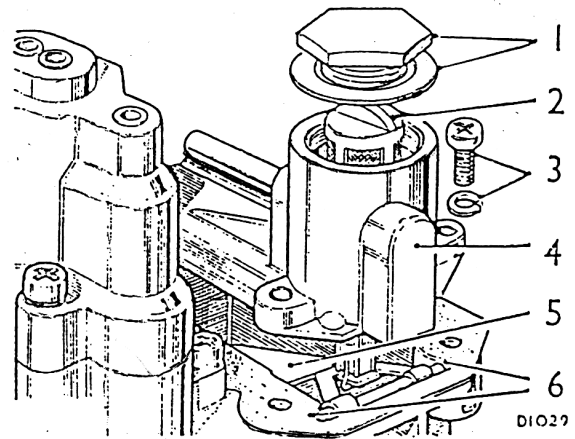


Float replacements in the lid

1. Float held against the face of the lid with a steel rule or feeler gauge.
2. Stirrup on float needle.
3. Float.
4. Float needle.
5. Float-chamber lid.

9. Drop the needle into the seating of the inverted float-chamber lid. Then ensure that the float needle is correctly located on the float lever by the wire stirrup. Holding the float assembly to the face of the lid with the tip of a steel rule or feeler gauge,

position the lid over the float-chamber close enough to allow the float assembly to be dropped so that the hinge pin falls into the recesses in the body without disengaging the needle from the seating bore.



Float replacement in the body

1. Plug and washer retaining the nylon filter.
2. Nylon filter.
3. Screw and washer fixing the float-chamber lid.
4. Float-chamber lid.
5. Float.
6. Ensure that the hinge pin falls into the recesses of the body.

Lower the lid onto the main body, align the screw holes, fit three screws and spring washers, and tighten. Test that the float is moving freely in the chamber by rotating the whole unit around the float pin axis and listening for the movement of the float.

10. Clean and then replace the filter in the float-chamber lid, using a new aluminium washer; refit the plug and tighten.

For Setting Instructions see page 3.

## SETTING

### Main valve and jet needle

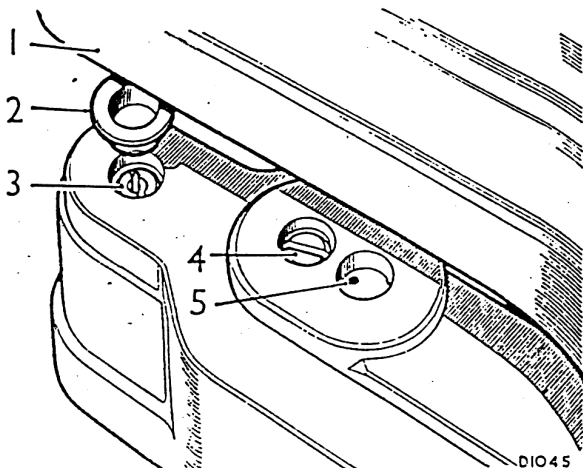
Workshop hand tools:  
Screwdriver, small

Special tools:

Setting screwdriver and the alignment tool, Part No. 9005;  
Setting probe for main valve and needle lift, Part No. 9003; Thermometer  
(Available from V. L. Churchill and Co. Ltd., P.O. Box 3, London Road, Daventry, Northants.)

**NOTE.**—If the setting operation is to be done with the unit installed, it is of paramount importance to ensure that the engine is at ambient room temperature before any adjustment is attempted. Failure to observe this rule will give incorrect setting.

1. If the unit is being set after overhaul, hold it securely in an upright position.
2. Remove the polypropylene heat insulation cover from the unit and prise out the three aluminium blanking plugs using a penknife or thin-bladed screwdriver.



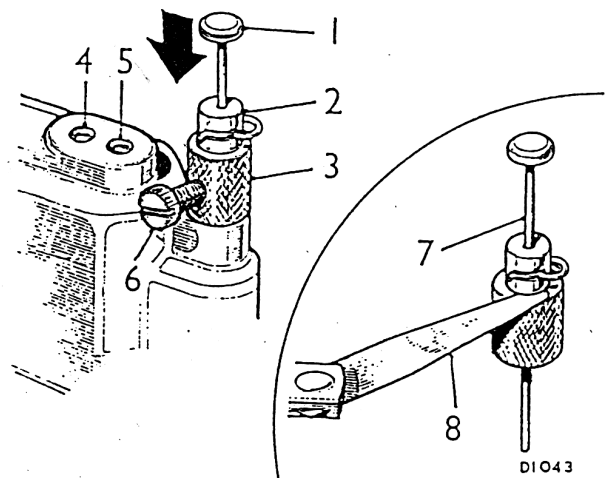
Heat insulation cover removal

1. Heat insulation cover.
2. Aluminium blanking plugs.
3. Hollow grub screw position, jet needle lift adjustment.
4. Grub screw position adjacent to probe hole, main valve adjustment.
5. Probe hole, centre of top cover.

3. To measure the jet needle lift insert the probe through the hollow grub screw. With the knurled portion held firmly on the top cover and the sliding member of the probe abutting the knurled portion, press the probe down firmly to stop, and release. Continue to hold the knurled portion of the probe firmly against the top cover, then tighten the lock screw.

4. Remove the setting probe and measure the gap between the knurled portion of the probe and the sliding member.

Then refer to Chart 'A' and check that the gap is correct in relation to the ambient room temperature.



Setting probe in position

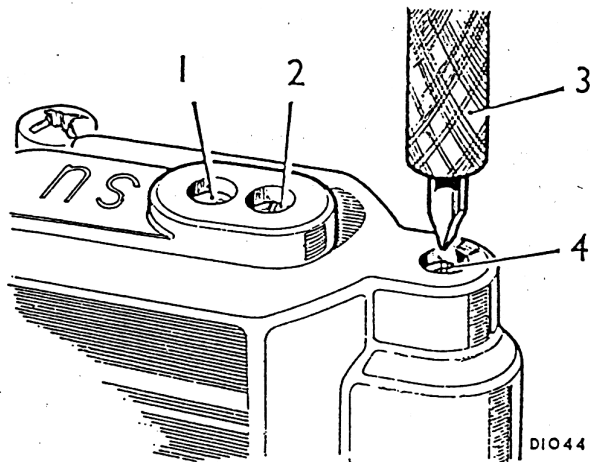
1. Probe inserted at hollow grub screw position for needle lift adjustment.
2. Sliding member.
3. Knurled portion of probe.
4. Probe hole for the main valve.
5. Main valve adjustment position.
6. Lock screw.
7. Probe removed.
8. Feeler gauge.

Gap on setting probe for	Ambient room temperature of
·050 in. (1·25 mm.)	10° C. (50° F.)
·040 in. (1·00 mm.)	15·5° C. (60° F.)
·031 in. (0·80 mm.)	21° C. (70° F.)
·022 in. (0·60 mm.)	26·5° C. (80° F.)

Chart 'A'—Probe gap and room temperature for jet needle lift setting

5. If the gap is incorrect use the screwdriver end of the alignment bar, Part No. 9005, to adjust the hollow grub screw up or down to achieve the correct gap on the probe.

## SETTING (Continued)



Setting the main valve and jet needle lift

1. Probe hole, for main valve.
  2. Main valve adjustment.
  3. Alignment bar and screwdriver, Part No. 9005.
  4. Hollow grub screw and probe hole for jet needle lift adjustment.
6. To measure the main valve opening insert the probe through the hole in the middle of the top cover and operate the probe as previously described. This time the gap indicates the distance the valve is off its seating.

7. Now refer to Chart 'B' and check that the gap is correct in relation to the ambient air temperature.

Gap on setting probe for	Ambient room temperature of
.045 in. (1.115 mm.)	10° C. (50° F.)
.038 in. (0.95 mm.)	15.5° C. (60° F.)
.030 in. (0.75 mm.)	21° C. (70° F.)
.023 in. (0.58 mm.)	26.5° C. (80° F.)

Chart 'B'—Probe gap and room temperature for main valve setting

If the gap is incorrect, adjust as previously, but this time use the grub screw adjacent to the centre probe hole.

8. When setting has been completed seal all three recesses in the top cover with new aluminium plugs. Replace the polypropylene heat insulation cover.

## FAULT DIAGNOSIS

SYMPTOM	POSSIBLE CAUSE	REMEDY
A—ENGINE FAILS TO FIRE WHEN COLD	<ol style="list-style-type: none"> <li>1. Inadequate or no fuel supply to the A.E.D.</li> <li>2. Inadequate or no fuel supply from the A.E.D. to the inlet manifold</li> </ol>	<ol style="list-style-type: none"> <li>1. Slacken the filter plug on the A.E.D. Crank the engine; fuel should leak from the plug. If no fuel, check the system leading to the A.E.D. If fuel is present, tighten the plug. Then carry out check 2 under symptom A.</li> <li>2. Crank the engine for several seconds. Remove the pipe at the inlet manifold. If fuel is present, it indicates that the A.E.D. is satisfactory and the cause for failure to start must be traced to some other source. If no fuel is present this indicates a faulty A.E.D. Proceed as follows: <ol style="list-style-type: none"> <li>a. Check that the main valve is open by inserting the probe down the centre hole—press down fully; the probe should return approximately .030 in. (0.75 mm.) when released. NOTE:—This check is not applicable when temperature is above 35° C. (95° F.)</li> <li>b. Remove the float-chamber lid and check that the needle valve and float are free to move. If there is no fuel in the float chamber check that the fuel filter is clean and that ample fuel is being delivered to the unit. See <b>SERVICING</b> (Float level).</li> </ol> </li> </ol>

## FAULT DIAGNOSIS (Continued)

SYMPTOM	POSSIBLE CAUSE	REMEDY
<p><b>B—ENGINE FIRES BUT FAILS TO KEEP RUNNING WHEN COLD</b></p>	<ol style="list-style-type: none"> <li>1. Sticking or faulty needle valve or float</li> <li>2. Faulty air flap valve</li> <li>3. Inadequate fuel supply</li> <li>4. Faulty jet needle diaphragm</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the following:               <ol style="list-style-type: none"> <li>a. Remove the vent pipe from the float chamber and check that fuel is not discharged when cranking the engine.</li> <li>b. If fuel is discharged check the operation of the needle valve and float as detailed under 'A' Item 2 (b.).</li> </ol> </li> <li>2. Remove the air inlet elbow on the A.E.D. and check that the flap valve is free to move and return under spring load. If jammed, dismantle the unit and rectify.</li> <li>3. Check for lack of fuel as detailed under 'A' 1 and 'A' Item 2 (b.).</li> <li>4. Remove the A.E.D. complete, remove the cap for the needle diaphragm, then withdraw the diaphragm and check for damage. Replace faulty parts. Reassemble as detailed in REASSEMBLING Leaflet. If diaphragm is satisfactory, a complete overhaul of the unit is indicated.</li> </ol>
<p><b>C—ENGINE FAILS TO START WHEN HOT OR PART WARM OR FIRES AND FAILS TO KEEP RUNNING</b></p>	<ol style="list-style-type: none"> <li>1. Incorrect starting procedure</li> <li>2. Leaks from pipe layout</li> <li>3. Before carrying out further checks ensure that the A.E.D. is not the cause of failure to start</li> <li>4. Sticking or faulty needle valve or float</li> <li>5. Main valve faulty. This fault and the checking procedure applies only when engine is really hot.</li> <li>6. Incorrect needle movement</li> <li>7. Faulty needle diaphragm</li> </ol>	<ol style="list-style-type: none"> <li>1. Crank the engine and open the throttle slightly. If the unit is badly over-choked open the throttle fully do not over-rev. If the engine starts but fails to keep running, carry out check '4' below.</li> <li>2. Ensure that all pipes are correctly fitted, particularly the pipe between the hot air pick-up and the A.E.D. Rectify as necessary, ensuring airtight joints. NOTE:—Air leaks at the hot air entry will result in excessive fuel consumption and the possibility of stalling at certain engine temperatures.</li> <li>3. Remove the pipe from the A.E.D. to inlet manifold. Blank off the aperture in the manifold. If the engine starts this indicates that the A.E.D. is at fault, and further checks must be made. However, if the engine is flooded it may be necessary to crank for several seconds, with a slightly open throttle before the engine will fire.</li> <li>4. Check the following:               <ol style="list-style-type: none"> <li>a. Remove the vent pipe from the float-chamber and check that fuel is not discharged when cranking the engine.</li> <li>b. If fuel is discharged, check the operation of the needle valve and float. Remove the float chamber lid; check that the needle valve and float are free to move. If there is no fuel in the float-chamber check that the fuel filter is clean and that ample fuel is being delivered to the unit. See SERVICING (Filter Cleaning).</li> </ol> </li> <li>5. Check that the main valve is completely closed by inserting the probe down the centre hole, press down fully; probe should not return which indicates that the valve is fully seated. If probe returns under spring pressure dismantle the unit and rectify.</li> <li>6. Check the movement of the jet needle by inserting the probe down the hollow grub screw. Push down fully. If the engine is at its normal working temperature, probe should not return; if partly warm, probe should return approximately .015 in. (0.40 mm.).</li> <li>7. Carry out checks as detailed under 'B' Item 4.</li> </ol>