

REPAIR INSTRUCTIONS

To obtain the best engine performance, before adjusting the carburetors, make sure that the distributor dwell angle and ignition timing are correct. The ignition timing should be checked and adjusted by using a stroboscope with the engine running at rapid idling speed and the vacuum regulator disconnected.

In addition to this, the spark plugs, ignition cables and other ignition equipment should also be checked. See the correct values in the specifications. The instructions below concern only the carburetors for the B 16 B engine. The Service Manual for cars and vans, Part 1, B 16 A Engine should also be used where applicable.

FUEL SYSTEM

Carburetors

The hollow spindle on the suction chamber piston is filled with oil and functions together with the small damping plunger (3, Fig. 8) as a damper. This should be topped-up with oil at regular intervals, for example when the engine oil is changed. Screw off the nut at the top of the suction chamber, lift up the nut and the damping plunger and top-up with oil through the hole. Fill only the centre spindle so that the oil does not run over when the piston is fitted. Use SAE 20 engine oil.

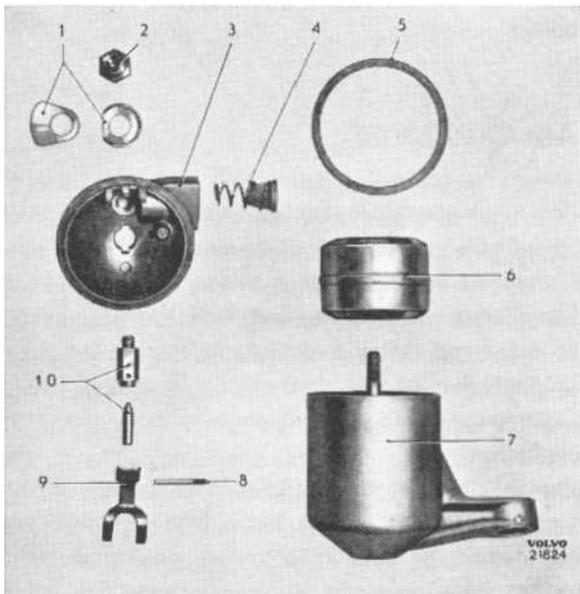


Fig. 12. Float chamber disassembled.

- | | |
|-------------------------|------------------|
| 1. Washers | 6. Float |
| 2. Nut | 7. Float chamber |
| 3. Float chamber cover | 8. Pin |
| 4. Strainer with spring | 9. Lever |
| 5. Gasket | 10. Needle valve |

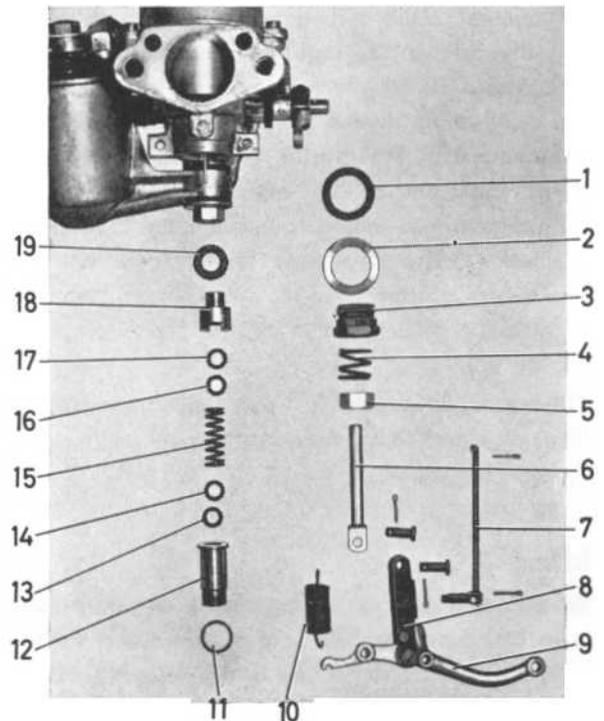


Fig. 13. Jet unit disassembled.

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|-----------------------|
| 1. Washer |
| 2. Seal washer |
| 3. Lock nut |
| 4. Spring |
| 5. Adjuster nut |
| 6. Jet |
| 7. Link rod |
| 8. Link |
| 9. Lever |
| 10. Spring |
| 11. Washer |
| 12. Lower jet bearing |
| 13. Seal ring |
| 14. Washer |
| 15. Spring |
| 16. Washer |
| 17. Seal ring |
| 18. Upper jet bearing |
| 19. Washer |

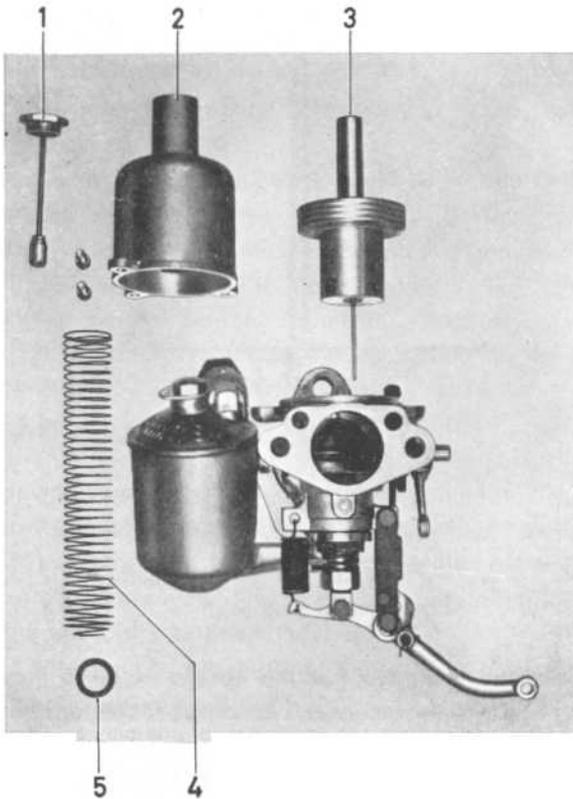


Fig. 14. Suction chamber dismantled.

- | | |
|--------------------|-----------|
| 1. Damping plunger | 4. Washer |
| 2. Suction chamber | 5. Spring |
| 3. Piston | |

REMOVAL

1. Blow the carburetors externally.
2. Loosen and remove the air cleaners and the control retainer with the control rod between them.
3. Remove the fuel line connections and the vacuum line connections (to the distributor).
4. Loosen the nuts in the connections on the shaft between the carburetors. Move up the connections on the shaft. Loosen the throttle controls. Remove the carburetors.

Disassembly and cleaning

FLOAT CHAMBER

1. Loosen the float chamber from the carburetor housing.
2. Remove the nut on the float chamber cap. Remove the cap and lift out the float. See Fig. 12.
3. Remove the float lever by pulling out the pin upon which it pivots.
4. Loosen the needle valve in the cap and the hollow bolt and strainer.

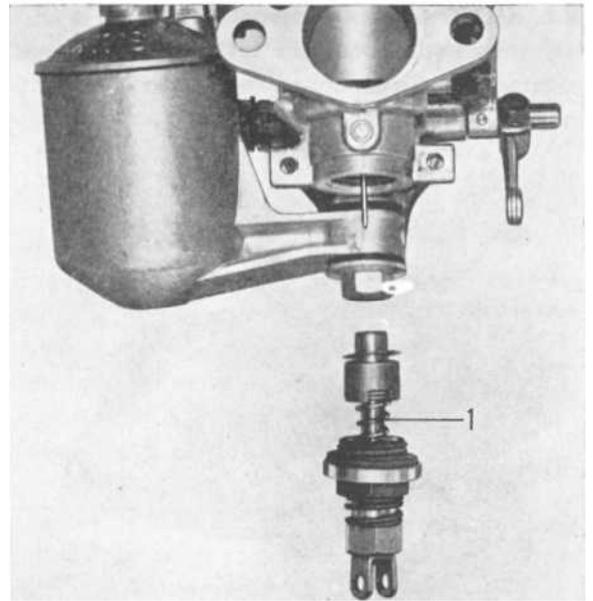


Fig. 15. Jet unit assembled.

1. Jet and associated parts

JET UNIT

1. Remove the return spring for the jet lever and the link rod between the lever and the cam-shaped plate.
2. Remove the bolt for the jet head and the upper bolt for the link and then remove the lever. See Fig. 13.
3. Remove the lock nut and take out the jet bearings with the spring and gland. Pull out the jet. Screw off the adjuster nut and remove its spring.

SUCTION CHAMBER WITH PISTON AND FUEL NEEDLE

The suction chamber and the piston are matched as units and if one of these is replaced then the other must be replaced at the same time. The suction chamber has three attaching screws which are staggered to ensure that it is fitted the right way.

1. Remove the damper (1 Fig. 14) from the suction chamber.
2. Loosen the screws on the suction chamber and lift it out.
3. Lift up the spring and the piston. Take care to ensure that the needle is not damaged (bent).
4. Screw out the lock screw on the fuel needle and pull it out.

CLEANING

After disassembly, all parts should be cleaned in kerosene or alcohol and then blown clean with compressed air.

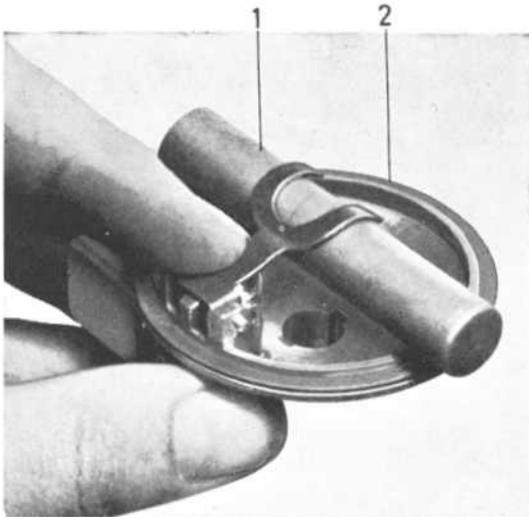


Fig. 16. Checking fuel lever.

1. Gauge SVO 2324
2. Float chamber cover

Fit of suction chamber piston

Test this fit when the carburetor is disassembled and cleaned.

1. Screw in the damping plunger but do not fill with oil.
2. Plug the hole in the lower part of the plunger at the needle.
3. Place the piston in the chamber (without spring) and turn the chamber upside down.
4. Measure the time taken by the piston to sink from the upper edge level of the large part. The time taken is normally 5-7 seconds.

ASSEMBLY AND FITTING

Assembly and refitting on the engine is carried out in the reverse order to that used when disassembling and removing.

Before assembling, check that all gaskets and sealing glands are free from damage. Replace these if necessary. Make sure that all other parts are neither damaged nor worn.

Neither the suction chamber nor the piston may be filed or rubbed with emery paper since this will change the fit and this has been very carefully calculated so that the carburetor will function properly. Any small unevenness can, however, be carefully rubbed away.

When attaching the needle in the piston it is very

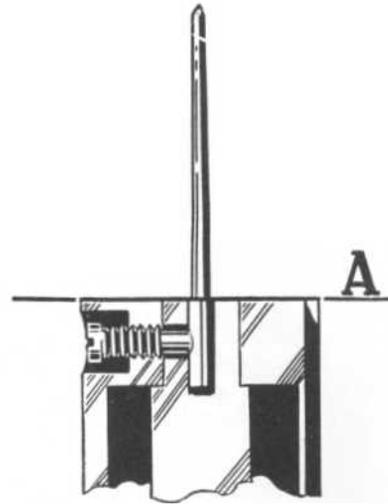


Fig. 17. Attachment of fuel needle.
A=attaching level

important to ensure that the needle assumes the right depth. See under the heading "Replacement of fuel needle".

Do not tighten the float chamber hollow screws too hard otherwise the gaskets can be damaged.

The piston in the suction chamber is grooved and a guide projection in the carburetor housing fits into this groove. Lubricate the piston spindle lightly with thin engine oil before reassembling.

The jet must be centralized before it is tightened.

See under the heading "Centralizing the jet".

Add oil (engine oil SAE 20) to the damping cylinders after reassembling the carburetors.

The shaft between the carburetors should be fitted so that there is a small axial clearance at both ends. Make sure that the fuel pipe between the carburetors is curved upwards when tightening the hollow bolts so that the carburetor levers are free at full throttle.

Checking the fuel level

The fuel level can be checked indirectly after removing the float chamber cap.

1. Loosen the fuel line and remove the float chamber cap.
2. Turn the float chamber cap upside down.
3. Measure the distance from the float chamber cap to the lever by means of gauge SVO 2324 as shown in Fig. 16. When the needle valve is closed, the needle valve lever should just contact the gauge.
4. If necessary, bend the lever where it joins the yoke-shape section in order to maintain the clearance mentioned in point 3 above.

Replacement of fuel needle

1. Remove the suction chamber and the piston and fuel needle.
2. Loosen the screw on the fuel needle and pull out the fuel needle.
3. Fit a new fuel needle. Check that this is marked as mentioned in the Specifications. Push the needle so far into the piston that only the tapered working section is outside it. See Fig. 17. Tighten the lock screw.
4. Fit the parts into the carburetor. Then check that the piston moves easily up and down. The piston can be lifted slightly without having to remove the air filter with the help of the pin (11, Fig. 5). When the pin is slowly released, the piston should be heard to meet the bridge with a characteristic sound.

Replacement of jet

1. Remove the jet as described under the heading "Disassembly and cleaning, jet unit". The adjuster nut does not need to be removed. If the carburetor is fitted on the engine the wire on the jet lever should be loosened.
2. Fit the new jet in the lower bearing and then fit the lower seal washer and packing, the spring, the upper seal washer with packing and the upper bearing with its copper washer. The brass washers for the upper and lower seals should be in contact with the spring.

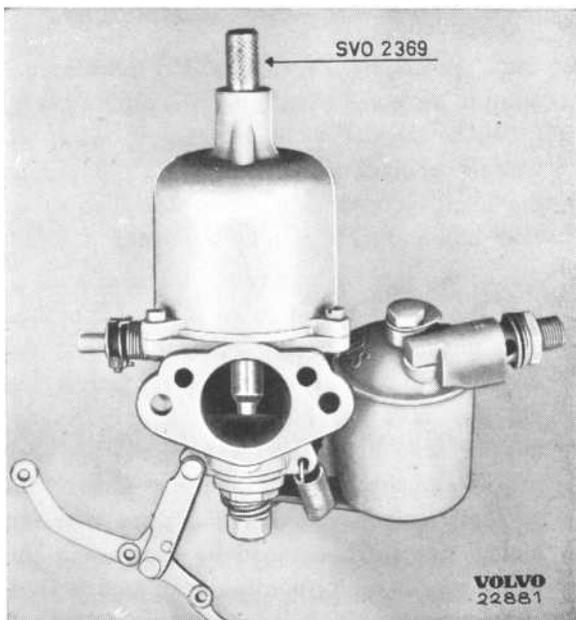


Fig. 18. Centralizing the jet.

3. Push in the jet together with the assembled parts into the carburetor housing, see Fig. 15. Screw on the lock nut loosely. Centralize the jet as shown below and then fit the lever and the other disassembled parts.

Centralizing the jet

In order to ensure that the carburetor functions in the correct way it is extremely important to make sure that the fuel needle moves easily up and down in the jet without jamming against the walls of the jet. For this reason a very careful fit (centralizing) of the jet relative to the fuel needle is necessary.

The jet bearings are attached with quite a large lateral clearance so that they can be moved laterally when adjustment is carried out.

1. Remove the air cleaner, damping plunger and suction chamber with piston. Then fit only the suction chamber.
2. Loosen lock nut for jet sleeves (5, Fig. 6). Unhook the spring at the lever and pull out necessary cotter pins and bolts so that the lever can be turned out of the way.
3. Slide the centering tool SVO 2369 into the carburetor as shown in Fig. 18. The narrow end of the tool should then press down in both jet sleeves and press out the jet.

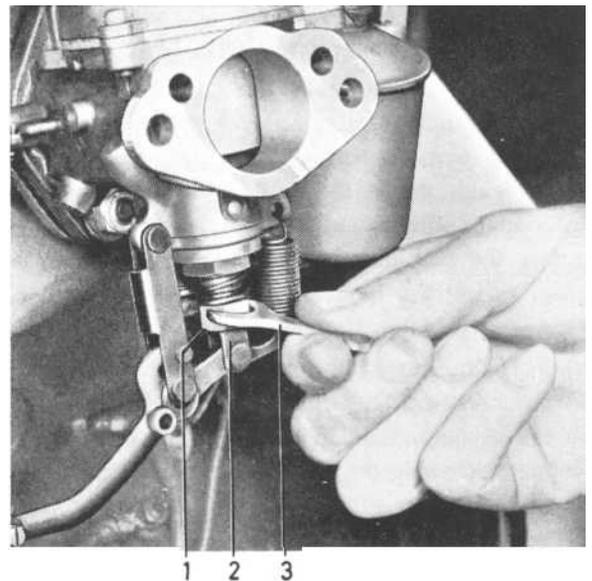


Fig. 19. Setting the adjuster nut.

1. Adjuster nut
2. Lower part of jet
3. Wrench

4. Tighten the lock nut with the tool pushed fully down and then turn the tool to see if it moves easily. It may be necessary to loosen the nut, turn the tool and tighten the nut several times in succession to obtain a good result.
5. The tool should then be pressed up by the jet. This protects the jet sleeve washers. Remove the tool. Fit the bolts for the lever and the return spring. Lift the outer end of the lever, release it and check that the jet is pushed up by the spring.
6. Fit the carburetor parts except the air cleaner. Check that the piston operates easily by lifting and releasing it. When released, it should strike the bridge with a slight bang.
7. Fit the air cleaner making sure that the gasket is turned correctly so as not to block the ventilation holes. Add oil to the damping cylinders. Set the adjuster nut as described below.

Idling settings and the coupling together of the carburetors

Idling setting is carried out partly by means of the screws (3 and 7, Fig. 4) on the throttle arms which regulate engine speed, and partly by turning the adjuster nuts on the jet heads (1, Fig. 19) whereby the richness of the fuel mixture is altered. When the nuts are screwed down, a richer fuel mixture is obtained. If the nuts are screwed up the mixture will be leaner. The richness of the mixture is set during idling to cover the whole speed range of the engine.

When the correct idling speed has been obtained and both carburetors have been adjusted to the same level, they are then connected together. Individual settings should be carefully carried out before the carburetors are connected together in order to get the highest output from the engine.

1. Run the engine until it is thoroughly warmed up. If the jets have not been adjusted, a rough adjustment can be first carried out by screwing the adjuster nuts to their upper position and then screwing them down again one complete turn.
2. Loosen one of the connections (9, Fig. 4) on the shaft between the carburetors. Make sure that the jets on both the carburetors are pressing against the adjuster nuts and that the screw (4) for rapid idling is not in contact with the cam-shaped plate on each carburetor.

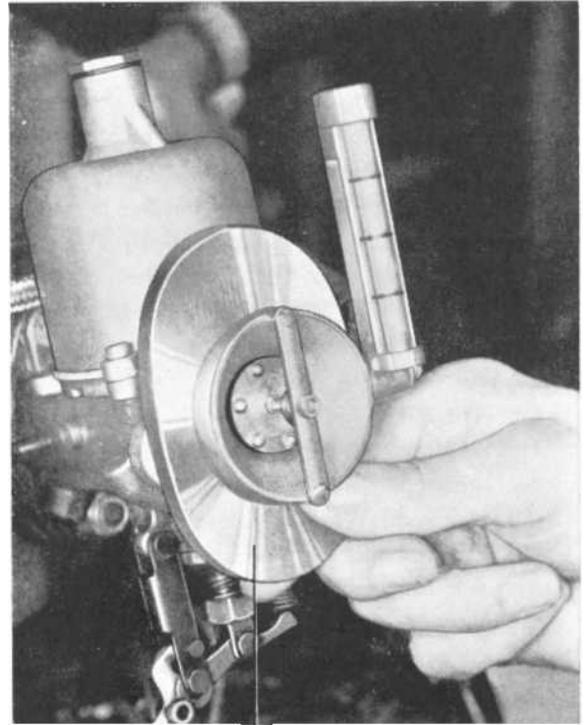


Fig. 20. Measuring air flow for identical settings on both carburetors.

1. Vacuum-meter

3. Adjust both throttles to the same position by screwing out the throttle adjuster screws (3 and 7) and then screwing them in again until contact with the stop projections is just made. Then screw down each screw exactly one turn. Make sure that the throttles work freely and independently.
4. Start the engine. Check that the throttles are open to the same extent in both carburetors by fitting a special vacuum-meter to each air cleaner contact surface. See Fig. 20. Adjust the idling screws until the meter reading on both carburetors is exactly the same.
5. Adjust the jets by turning the adjuster nuts so that the idling speed is as high as possible with unchanged throttle opening. Adjust the carburetors one at a time. First screw the adjuster nuts (1, Fig. 19) upwards (leaner mixture) until the engine runs unevenly and then in the opposite direction until the engine runs perfectly smoothly. If the idling speed is too high it can be decreased by unscrewing the idling screws on the throttle shaft levers. Then check again as specified above that the air intake is equal on both carburetors.

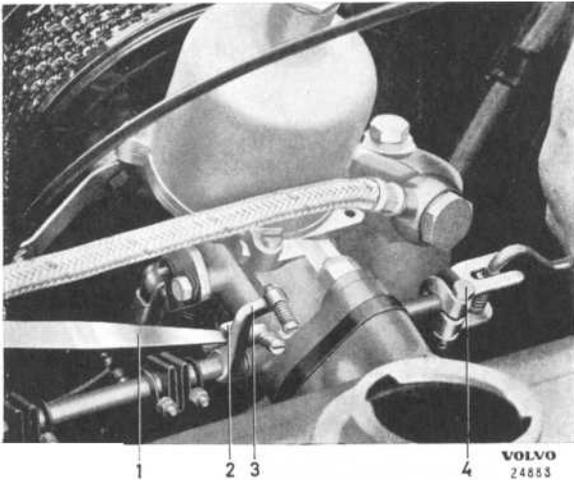


Fig. 21. Adjusting the throttle setting.

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|-------------------------|-------------|
| 1. Feeler gauge, 1.5 mm | 3. Lever |
| 2. Full throttle stop | 4. Coupling |

6. Check that the fuel-air mixture is correct on both carburetors. First lift the piston on one of the carburetors slightly by means of the pin beside the air intake. Then release the pin and carry out the same procedure on the other carburetor.

The degree of uneven running on the engine should be the same in both cases.

If the engine stalls when the piston on one of the carburetors is lifted, this usually means that the mixture on the other carburetor is too lean. The jet adjuster nut on the carburetor in question should be screwed carefully downwards to remedy this.

7. Connect the carburetors together by tightening the couplings on the shaft. Check that air flow is equal on both carburetors. See point 4. Adjust idling speed to 500-700 r.p.m. by using the idling adjuster screws. Adjust the rapid idling screws. This is done by screwing each screw until it is in contact with the cam plate and then screwing it back until a certain clearance is obtained.

Rapid idling and choke control mechanism

When the choke control is completely pushed in, the clearance between the adjuster screw (4, Fig. 4) and the cam plate should correspond to $\frac{1}{2}$ to 1 turn.

The clamp on the end of the choke cable should

be attached so that the jets begin to go down when the choke button on the instrument panel has been pulled out about $\frac{1}{2}$ " (rapid idling movement). Increased resistance will be felt on the choke button when the jets begin to move downwards.

When the choke control button is pulled out as far as it will go, the long lever ends should be lifted so far that the jets are completely lowered, i.e. the levers should contact the stops in the links. Make sure that both levers are influenced to the same extent through the curved cable so that both jets start to move downwards at the same time.

Throttle setting

The position of the accelerator pedal should be adjusted so that there is a clearance of 0.060" (1.5 mm) between the stop arm and full-throttle stop when the accelerator pedal is fully depressed. This will give the pedal the correct height above the floor and will also unload the control to a certain extent.

When adjusting, loosen the coupling (4, Fig. 21), place a weight on the pedal so that it is pressed down fully, adjust the clearance and then tighten the coupling.

N.B. The clearance must not exceed 0.080" (2 mm) as this will reduce the output. (On early production there is a lever in front of the carburetor instead of the coupling (4).

The shaft between the carburetors is fitted so that the end float is distributed equally at both ends. In cases where the coupling behind the rear carburetor is in the form of a ridged spring, ensure that there is clearance between the shaft ends before tightening.

Air cleaners

The air cleaners with wire wool should be disassembled for cleaning after every 3000 miles. Clean the filters in clean kerosene and blow them dry with compressed air. Then soak them in engine oil, let the excess oil run off and re-assemble them.

Air cleaners with paper cartridges must not be washed or oiled in.

They should be replaced after every 12,500 miles. If the vehicle is used in very dusty or contaminated

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air, they can also be cleaned by carefully blowing through with compressed air after every 3000 miles. Blow from the inside out but do not hold the compressed air nozzle too near.

Make sure that the gaskets are fitted correctly when re-assembling. The ventilation holes (3, Fig. 11 and 2, Fig. 6) must not, under any circum-

stances, be blocked since this can prevent the carburetor in question from operating correctly.

Fuel

Since this engine has a comparatively high compression ratio, fuel with an octane rating of 93 (Research) should be used.

FAULT TRACING

Apart from the points shown below we refer you to the fault tracing table in the Service Manual for PV Part 1, B 16 A Engine where this applies. Before the carburetors are examined in detail, elementary precautions such as checking that the

fuel is reaching the carburetors, that the spark plugs are working correctly and are receiving electric current, that all the controls are functioning properly, etc., should be carried out.

FAULT

CAUSE	REMEDY
Low oil pressure	
Blocked oil filter element. Faulty valve in oil filter.	Replace oil filter element. Check valve and replace if necessary.
The engine will not idle properly or is difficult to start	
Pistons chafing in the carburetors. The pistons are not going down until they meet the bridge.	Check the movement of the pistons with the aid of the pin on the air intake. Dismantle and clean the pistons if required.
Incorrectly centred jet hampering fuel needle movement.	Centre the jet.
The cold starting device is not taking the jet down to its lowest position.	Adjust the controls and cable attachments in the carburetor levers. See under the heading "Rapid idling and choke control mechanism".
Uneven acceleration	
No oil in the carburetor damping devices, the fuel mixture obtained when the accelerator pedal is rapidly depressed being too lean. Excessively lean fuel-air mixture.	Top-up with SAE 20 oil in the damping cylinders.
Poor synchronization of carburetors.	Adjust the vertical setting of the jet. See under the heading "Idling settings and coupling of carburetors". Check the position of the fuel needle. See "Replacement of fuel needle". Connect together the carburetors when the passage of air through each of them is equal. See "Idling adjustment and coupling together of carburetors".

Excessively high fuel consumption

Incorrectly fitted fuel needle.

Jet not being properly pressed up against the adjuster nut, this resulting in excessively rich fuel mixture.

Driving habits in many cases. Repeated fierce acceleration and braking.

Adjust the fitting. See "Replacement of fuel needle". Adjust the vertical position of the jet. See under the heading "Idling adjustment and coupling of carburetors".

Check or replace lever spring. Centralize jet. Lower jet and smear exposed part with oil.

More sensible driving habits.

Leakage from the lower part of the jet

Seal rings damaged.

Replace the seal rings.

The cold starting device functions stiffly

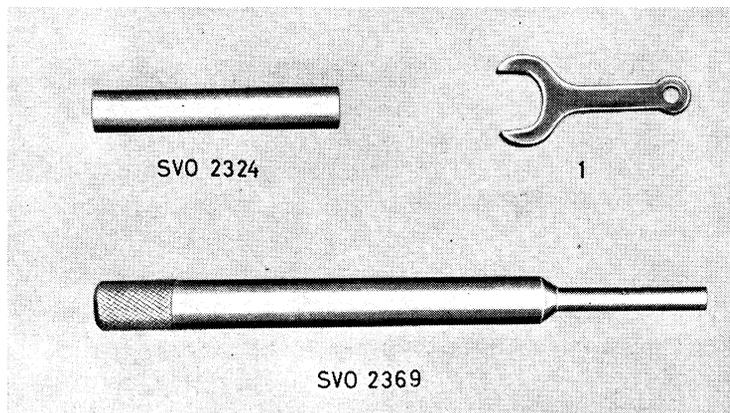
Chafing jet.

Jet sleeves badly centred.

Lower the jet and lubricate the exposed portion. Centre sleeves, see "Centralizing the jet".

TOOLS

(Only carburetor tools. See also Service Manual for B 16 A).



1 Wrench for adjuster nut.
SVO 2324 Gauge for float level.

SVO 2369 Centralizing tool for upper and lower jet sleeves.