A. Removal and Installation of Carburetors

Removal:

1. After releasing the vent line and the hose clips at the carburetors, take off the air intake silencer.
2. Unscrew the fuel lead, detach the connectors and unscrew the vacuum line to the distributor at the front carburetor.
   Then disconnect the Bowden cable for the start mechanism and unscrew the connecting rods from the angle relay lever of the start mechanism on both carburetors.
3. Unscrew the fixing nuts on both carburetors and take off the carburetors. Take off the asbestos gasket (insulation flanges) and the screening plates.

Checking:

4. Check the insulation flanges for evenness and if necessary, re-condition them.
   Broken or damaged insulation flanges must be replaced.
5. Check the separating surface at the carburetor flange for evenness and inspect it for burrs. If necessary, carefully remachine the separating surface.
6. Check the starter rotary slide valve for freedom of movement.

Installation:

7. Put on the insulation flanges and the screening plates.
   The air jet (1) in the upper insulation flange (2) must be on the manifold side of Stage 1 (Fig. M 31 S/1).

Note: The air jet (1) and the insulation flange (2) must be flush.

The two insulation flanges are fitted without any sealing compound!

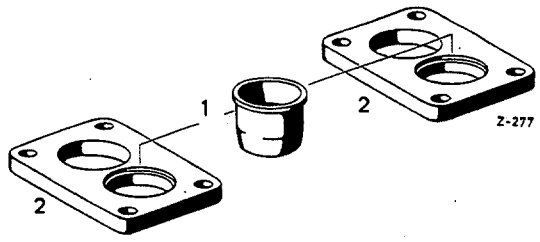


Fig. M 31 S/1

1 Air jet
2 Upper insulation flange

8. Install the hexagon nuts and lock washers for fixing the carburetors and tighten up.

Note: Tighten up the screws evenly to avoid any distortion of the carburetor flange.

9. Screw the connecting rod onto the two angle relay levers for actuating the starter rotary slide valves.
10. Connect the Bowden cable to the rear angle relay lever.
    When this is done the starter rotary slide valves must be completely closed and there must be a distance of approx. 2 mm between the pull knob and the attaching plate for the control knobs.

Note: The distance between the pull knob and the attaching plate for the control knobs must be strictly maintained in order to ensure that the starter rotary slide valves can be closed completely.

11. Warm up the engine to its normal working temperature (70—80° C. cooling water temperature) and retighten all pipe unions, jets, screws and fixing nuts on the carburetors.

B. Adjustment of Carburetors

Measurement and Adjustment of Fuel Level:

Note: Before measuring the fuel level it is advisable to check the delivery pressure of the fuel pump. The delivery pressure must not exceed
0.20 kg/cm² = 147 mm Hg at an idling speed of approx. 800 r. p. m.
Measure delivery pressure with
Fuel Pump Test Gage 000 589 30 21
and engine speed with
Revolution Counter 000 589/12 21.

If the delivery pressure of the fuel pump is excessive, this may cause the float needle valves to be forced, which would result in the fuel level being too high.
Excessive delivery pressure of the fuel pump can be caused either by too long a pump stroke or by hardening of the pump diaphragm.
In both cases the delivery pressure should be reduced to the permissible amount by using shims between the fuel pump and the jointing flange.

When the pump arm is at the beginning of the compression stroke it should have a clearance of 0.4—0.5 mm with the tappet when the latter is at its lowest point (see also Job No. M 34, Removal and Installation of Fuel Pump).

1. Warm up engine (radiator temperature at least 70° C) and tighten up all pipe unions and screws on the carburetor.
2. If possible, place the vehicle on a perfectly horizontal floor.
3. Allow the engine to run for approx. 30 seconds at idle speed. This is in order to allow the fuel level to settle.

Note: This is particularly important if the manual lever of the fuel feed pump was previously used for filling the carburetor.

4. Switch off the ignition. Remove the air intake silencer, disconnect the fuel pipe at the carburetor and take off the carburetor cover.
5. Measure the fuel level with the aid of a depth gage inserted at the separating partition of the float chamber, the measured distance being between the upper face of the carburetor housing and the surface of the fuel (see Fig. M 31 S/2).

Note: Measurement of the fuel level must be made **immediately** after switching off the engine and after removing the carburetor cover because otherwise, when the engine is hot, the fuel will evaporate and a false reading will be obtained.

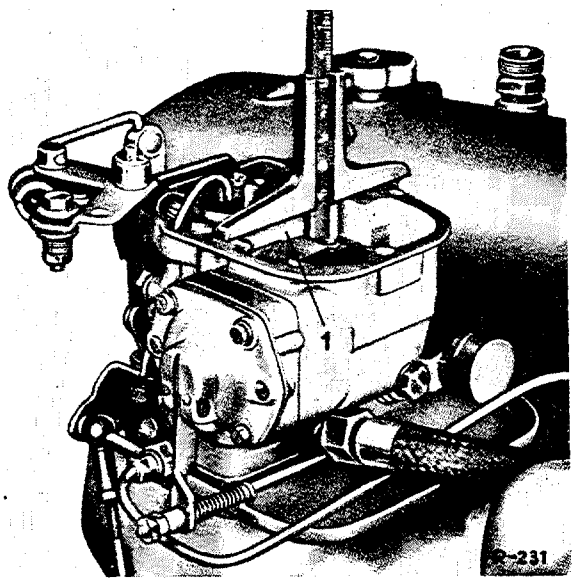


Fig. M 31 S/2

1 Separating partition of float chamber

6. **The measurement of the fuel level must be made directly against the separating partition (1).**

   The reading should be 19—21 mm.

   The figures given take into account the fact that the surface tension causes the fuel to rise approx. 2 mm at the separating partition. Thus any measurement taken at other points would give a false fuel level adjustment.

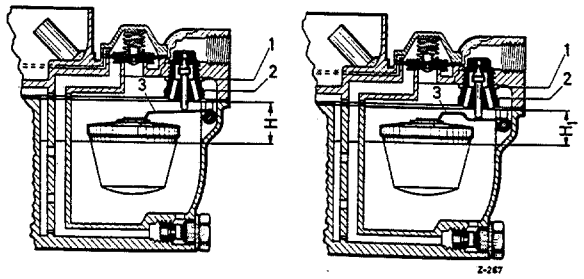
7. Correct the fuel level if necessary. This can be done by adding a second sealing ring (1) for the float needle valve (2) or by carefully bending the float anchor strip (3) downward in order to make the fuel level lower (see Fig. M 31 S/3).

   This additional sealing ring takes the form of a fiber sealing ring of the appropriate thickness, inserted between the carburetor cover and the copper sealing ring of the float needle valve.

8. A further sealing ring of 0.5 mm thickness lowers the level of the fuel approx. 1 mm. The fuel level can be made higher by replacing the sealing ring (1) by a thinner sealing ring or by carefully bending the float anchor strip (3) upward (see Fig. M 31 S/3).

Measurement and adjustment of injection amount:

9. Unscrew retaining screw of injection tube and remove injection tube.
10. Screw in a measuring tube in place of the injection tube.



Fuel level unchanged.

Fuel level made higher by bending the float anchor strip upward.

Fig. M 31 S/3

1 Sealing ring 12×16×1 Cu
2 Float needle valve 2 mm (M 12×1.25)
3 Float anchor strip
H Fuel level unchanged
H_1 Fuel level made higher

A normal injection tube, the neck of which projects sideways over the edge of the carburetor housing, can be used as a measuring tube. After turning the arched neck of the tube, there must be no leakage at the collar when the injection is done. If necessary, seal the collar with Teroson plastic solder.

Under no circumstances must the injection tube normally fitted to the carburetor be turned outward and used to take the measurement.

11. Check the injection amount by repeating the injection five times. Use a suitable graduated tube or Graduated Tube (Burette) 000 589 31 21 (see Fig. M 31 S/4).

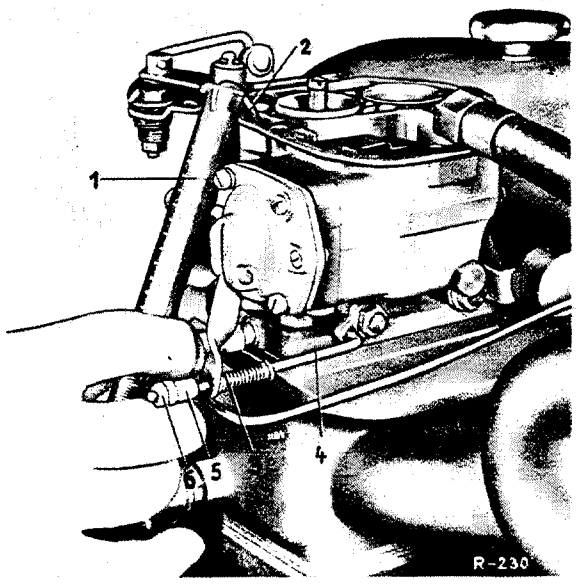


Fig. M 31 S/4

1 Graduated tube (Burette)
2 Injection tube
3 Pump arm
4 Connecting rod
5 Shoulder nut
6 Hexagon nut

The accelerator linkage must be moved evenly and smartly to the maximum position and only released when the injection is over.

Caution! Wait at least two to three seconds between the individual strokes as otherwise the full fuel amount will not pass into the diaphragm bowl and the graduated tube reading will be too low.

12. When the measurement of the injection amount is being made, the following points must be taken into account:

a) The measuring tube must form a perfect seal with the collar.

b) The pump arm of the diaphragm pump must be working properly.

c) The slightest possible movement of the linkage from the idle position must produce an ample and even jet of fuel from the injection tube immediately.

13. **The injection amount should be 1.2 to 1.4 cm³/stroke.**

14. If necessary, correct the injection amount. The injection amount can be increased by screwing in the hexagon nut (5) on the connecting rod (4) and decreased by screwing it out (see Fig. M 31 S/4). After adjusting, lock with hexagon nut (6). The nuts (5) and (6) on the connecting rod (4) must not be screwed in to the point where the pump arm (3) rises above the diaphragm shaft in the idle position (see Fig. M 31 S/4). When the accelerator is depressed, the injection would not begin at once because the pump arm must first take up the clearance between its own contact surface and the end of the diaphragm shaft.
But it should be noted that immediate injection is necessary for smooth speed build-up and perfect acceleration.

15. Unscrew the measuring tube and fit the injection tube of the carburetor, using a new gasket.

Caution! The retaining screw of the injection tube must be tightened after at the most 500 km because the gasket tends to shrink after the first tightening and could cause leakage.

16. Check once more that satisfactory injection is taking place, paying attention to the points mentioned in Paragraph 12.

17. Screw on the carburetor cover and connect the fuel line. Put on the air intake silencer.

Note: Pay attention to the Servicing Instructions for the Shock-Absorbers (see Page M 33 S/4, Paragraphs 33—38). If the shock-absorbers are filled with oil with the carburetors removed from the vehicle, care must be taken to ensure that the carburetors are not tilted since this would cause the oil to flow out. When the main jet of Stage 2 is being removed or installed, care must be taken to ensure that the rubber bellows of the shock-absorber is not damaged.