Removal, Installation and Adjustment of Carburetor

Types 220 and 220 a

Operation No.
M 31

Procedure:

1. Loosen cap screw and remove intake silencer and vent line.

2. Unhook accelerator linkage and detach control cable for starting system.

3. Unscrew fuel line and connection for vacuum line to distributor, counterholding the connecting pieces.

4. Loosen nuts with spring washers and remove carburetor with rock asbestos gaskets and cover plate (Fig. M 31/4).

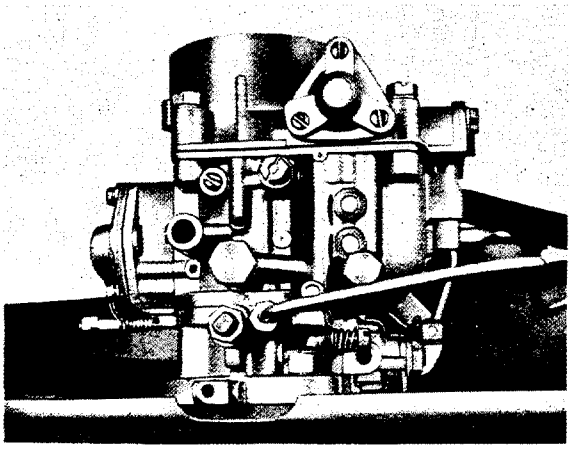

Fig. M 31/4

5. Installation is effected in reverse order of removal.

6. Paste lower asbestos gasket to intake manifold with a sealing compound (Teroson or the like), put on sanded cover plate and paste upper asbestos gasket to carburetor flange using a sealing compound, such as Teroson.

Note: Apply only a thin layer of sealing compound to the upper gasket, so that the small milled-out recess at carburetor for vacuum line to additional-air valve will not be closed. Check gaskets for planeness; if necessary, use new gaskets.

7. Install carburetor and tighten nuts with spring washers evenly.

Note: Check throttle housing (carburetor flange) for planeness before pasting on the asbestos gasket. If necessary, rework the housing carefully.

8. Screw fuel line and connection for vacuum line in place and attach control cable for the starting system.

Note: Fasten control cable with starting plunger (Type 220a: starter slide) moved in all the way in such a manner that starting knob clears instrument panel by approx. 2 mm (0.08″). This is to ensure that the starter plunger (Type 220a: starter slide) will close completely when the starter control is actuated.

9. Attach accelerator linkage and check whether entire carburetor control mechanism moves easily.

Carburetor Adjustment

Special Tools:

Fuel pump gauge	000 589 30 21
Revolution counter	000 589 12 21
Graduated glass	000 589 31 21

10. After the engine has been run warm for the first time, all pipe connections and screws on the carburetor must be retightened.

Checking the Fuel Level:

11. Check fuel level with car standing level. It is recommended to check the delivery pressure of the fuel pump before attempting to check the fuel level. At an idling speed of 550 to 600 r.p.m. the delivery pressure should not be more than 0.2 kg/sq.cm (2.85 p.s.i.).

Check delivery pressure with fuel pump gauge 000 589 30 21

Check number of revolutions with revolution counter 000 589 12 21

If the delivery pressure of the fuel pump is too high, the pressure exerted on the float needle valve may be excessive, the result being a too high fuel level.

Excessive delivery pressure of the fuel pump is caused by a too great pump stroke or a hardened pump diaphragm. In either case the pressure can be reduced to the permissible value by interposing shims between intermediate flange and crankcase. The play between pump push rod at pressure point and cam at BDC should be 0.4 to 0.5 mm (0.016 to 0.02″). See also Operation No. M 34, Removal and Installation of Fuel Pump.

12. Before taking off the carburetor cover run engine for about 15 seconds at idling speed, so that fuel level will correct itself. This is all the more important if the hand lever of the fuel pump has before been actuated in order to fill the carburetor.

13. Cut ignition out, disconnect fuel line and take carburetor cover off.

14. Check fuel level **immediately** after carburetor cover has been removed, otherwise fuel will evaporate if engine is warm.

Note: Make the check with a dip stick or depth gauge. Insert the gauge slowly and evenly at the separting wall of the float chamber beside the Venturi until it reaches the fuel (Fig. M 31/14).

The fuel level specifications only refer to checks that are made at this point. Consideration has been given to the fact that owing to surface tension the fuel will climb about 2 mm (0.08″) up the walls. The fuel level should be **13–15 mm (0.51–0.59″)**.

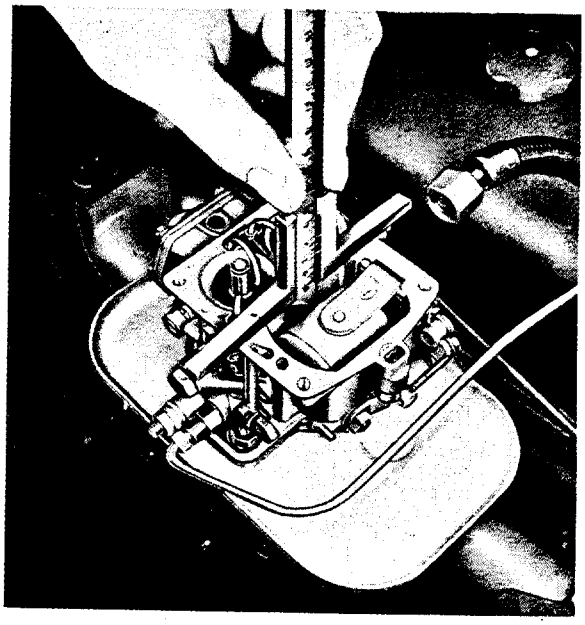

Fig. M 31/14

The fuel level can be lowered by placing a second sealing ring under the float needle valve or by carefully bending the float plate. If an 0.5 mm (0.02″) thick sealing ring is added, the level will be lowered by approx. 1 mm (0.04″).

Checking the Injection Volume:

15. Before attempting the check, make sure that

    a) injection pipes under the holder are tight,

    b) pump lever of diaphragm pump operates properly, and

    c) a full and uniform jet emits from the injection pipes **immediately** after the linkage has been moved **however little** from idling position.

Note: Immediate injection is of utmost importance for proper transition and smooth acceleration.
Use a suitable graduated glass or glass 000 589 31 21.

16. Screw injection pipes out and replace with measuring pipes whose bend projects beyond the side of the carburetor housing.

Note: It is recommended to use injection pipes with bend turned outwards as measuring tubes. After turning the injection pipes, check whether they are tight. If necessary, solder pipes at holder.

The injection pipes installed in the carburetor must by no means be turned to and fro, as this would result in leakage.

17. Measure injection volume by making five injecting measurements. During injection move accelerator linkage steadily and evenly to full load position. Release linkage only after the end of the injection process (Fig. M 31/17).

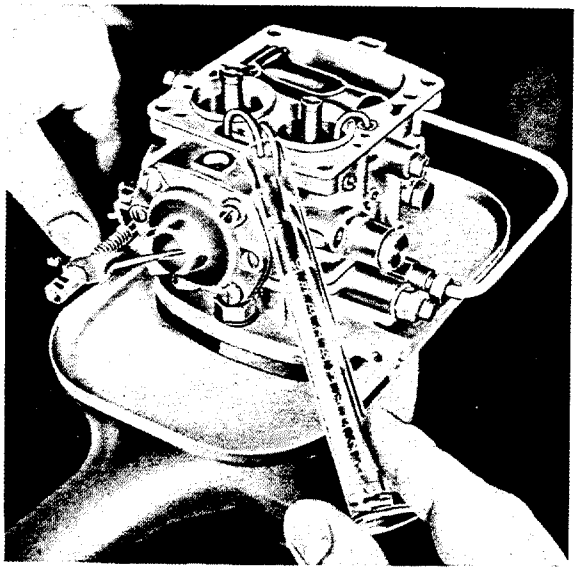

Fig. M 31/17

18. To increase the injection volume, turn nuts at tie rod in (Fig. M 33/12); to reduce the volume, turn screws out.

Note: The nuts on the tie rod must not be turned in so far that in idling position the pump lever lifts off the diaphragm shaft; note that the pump lever must be at pressure point at least, as otherwise injection will be effected too late.

Idling Regulation:

19. Install intake silencer and fasten vent pipe. Make sure that rubber ring between intake silencer and air inlet pipe is not pinched.

20. Turn idle adjusting screw in through half a rotation. Then turn both idle mixture adjusting screws all the way in and after this turn them out through one rotation.

21. Run engine until operating temperature is reached.

22. Now turn idle mixture adjusting screws evenly in or out, as required, until maximum number of revolutions is reached and engine runs smoothly.

Note: To make the idle mixture leaner, turn idle mixture adjusting screws in; to enrich the mixture, turn the screws out. It is of great importance that the screws be turned in or out as evenly as possible.

23. After the idle regulation has been accomplished by means of the idle mixture adjusting screws, adjust an idling speed of approx. 550–600 r.p.m. with the aid of the idle adjusting screw (Use revolution counter 000 589 12 21).
Select most favourable adjustment by readjusting the idle mixture adjusting screws critically.