d) **Ball valve in mixing tube holder**

An additional ball valve (polyamide ball) has been incorporated in the mixing tube holder of Stage 1. This ball valve (43) is designed to prevent the engine from stalling even when the brakes are applied suddenly (see Fig. M 31 S/016). When the vehicle is in motion, the polyamide ball is raised from its seat by the fuel emerging. If the accelerator is released, the throttle of Stage 1 closes and the polyamide ball falls back onto its seat because there is no longer any depression at the mixing tube holder. The polyamide ball now prevents air from penetrating into the idle system when the brakes are suddenly applied. This therefore prevents the engine from stalling, as it otherwise would because the fuel flows back into the float chamber at the front by virtue of the inertia.

E. Accelerating Pump

The accelerating pump used is a so-called "neutral" pump, i. e., the engine can draw in fuel via the injection tube according to the degree of depression prevailing in the intake manifold. The accelerating pump (Fig. M 31 S/017) is a mechanically-operated diaphragm pum which is connected to the throttle of Stage 1 by means of an adjustable lever-linkage. When the accelerator is depressed, the diaphragm pump sprays extra fuel into the mixing chamber of Stage 1. By virtue of this additional injection, a smooth speed build-up and good acceleration is achieved. When the accelerator is depressed, the pump arm (49) is moved by means of the connecting rod (51). The pump arm in turn presses on the diaphragm (48) and in consequence, the fuel which is in front of the diaphragm is injected via the plate valve (47), the pump jet (45), the ball valve (44) and the injection tube (43) into the mixing chamber of Stage 1. The aperture of the injection tube takes the form of a precision bore of 0.8 mm ϕ.

During the injection, the ball valve (50), operating as a check valve, is closed. When the accelerator pedal is released, the diaphragm spring (46) presses the diaphragm back. The ball valve (44) now closes (operating as a check valve) and fresh fuel is drawn up from the float chamber via the ball valve (50).

Extra fuel can be drawn in without operating the accelerating pump in proportion to the degree of depression obtaining in the inlet manifold above the air horn, it flows via the drilled plate valve (47).

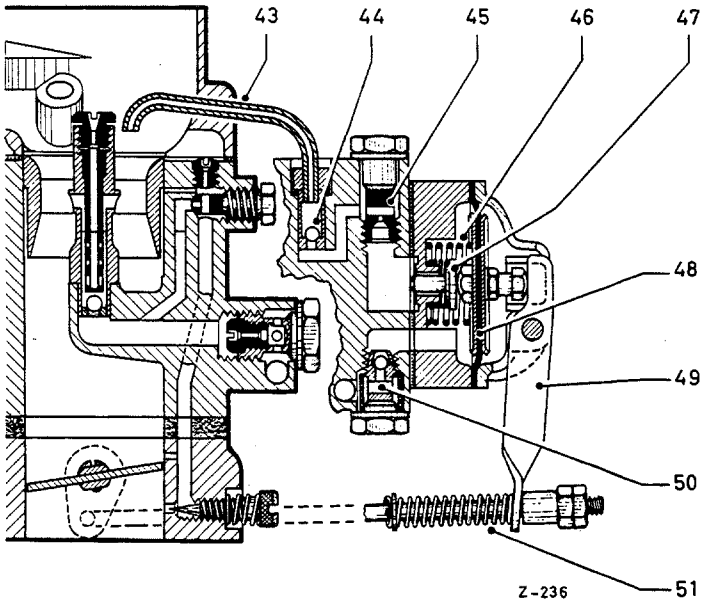

Fig. M 31 S/017

43 Injection tube
44 Ball valve
45 Pump jet Gp
46 Diaphragm spring
47 Drilled plate valve
48 Diaphragm of accelerating pump
49 Pump arm
50 Ball valve
51 Connecting rod

Thus the plate valve, in the case of the "neutral" pump, operates simply as a stop for the diaphragm and limits the amount of delivery.

The injection amount can be altered by adjusting the nuts on the connecting rod (51). When the nuts are tightened, the pump stroke, and in consequence, the injection amount, is increased and vice versa.

The nuts must not be tightened so far that the pump arm (49) moves away from the diaphragm since if they are, the injection does not take place immediately the throttle is opened. Changing the pump jet Gp (45) does not alter the injection amount but merely the duration of injection.