

# Description of Compound Carburetor for Model 220 S

## A. General

On Model 220 S, two compound or twin-stage carburetors, type Solex 32 PAITA, are used.

The carburetors are similar in their essentials to the type used for Models 300 b and 300 c, but they have no automatic starter mechanism and no automatic switch-over mechanism for the float chamber ventilation.

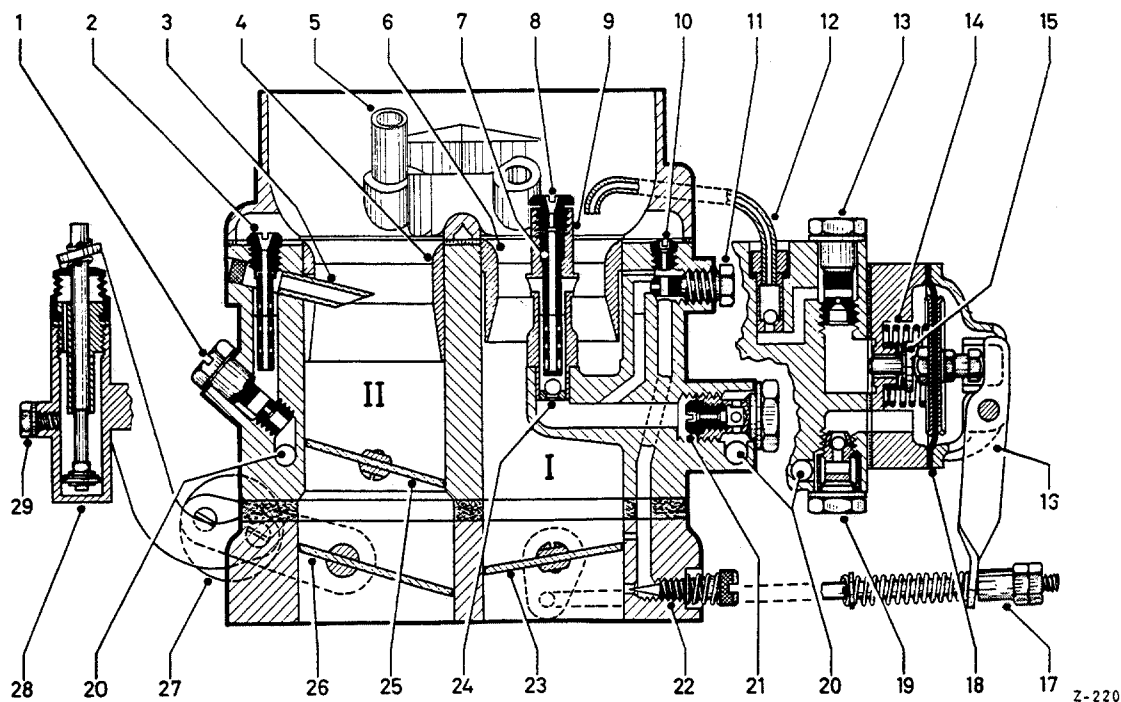


Fig. M 31 S/01

### II Stage 2

- 1 Main jet of Stage 2
- 2 Air-correction jet with mixing tube of Stage 2
- 3 Discharge tube for main jet system of Stage 2
- 4 Air horn of Stage 2
- 5 Float chamber ventilation
- 6 Air horn of Stage 1
- 7 Mixing tube of Stage 1
- 8 Air correction jet of Stage 1
- 9 Mixing tube holder of Stage 1
- 10 Idle air jet
- 11 Idle fuel jet
- 12 Injection tube
- 13 Pump jet
- 14 Diaphragm spring
- 15 Plate valve

### I Stage 1

- 16 Pump arm
- 17 Connecting rod with compression spring (adjustable)
- 18 Pump diaphragm
- 19 Check valve
- 20 Fuel feed
- 21 Main jet plug with main of Stage 1
- 22 Idle mixture adjustment screw
- 23 Throttle valve of Stage 1
- 24 Check valve in mixing tube holder
- 25 Throttle valve of Stage 2
- 26 Vacuum valve
- 27 Counterweight with lever
- 28 Oil shock-absorber
- 29 Plug and filler screw

Fast-running engines need carburetors of large section. This large section has, however, the disadvantage that at low engine speed the air flows through the carburetor at relatively low velocity, which results in relatively poor carburetion. This poor carburetion makes the engine sluggish at low engine speed and results in poor speed build-up. The compound carburetor has none of these disadvantages. In principle, it consists of two coupled carburetors, the so-called stages. At low engine speed, only Stage 1 is in operation. The small section of the air horn and suction tube results in perfect carburetion even at low engine speeds. When, at intermediate and high engine speeds, the engine demands more air and mixture, Stage 2 is brought into operation. Thus the required large section of the carburetor is available to the full extent.

## B. Arrangement and Function of the Throttle Valves

Both stages of the carburetor are combined in one housing (Fig. M 31 S/01). Throttle valve (23) of Stage 1 is located as usual in the lower part of the carburetor, set at an angle of  $8^\circ$ . Stage 2, however, has two throttle valves, set at an angle of  $17^\circ$ , the one (25) in the center section of the carburetor and the other (26) in the lower section. Throttle valves (23) and (25) of Stages 1 and 2 are coupled together by a linkage. The second throttle valve (26) of Stage 2 is not coupled to the other two. It is operated automatically by the pressure flow. The off-set shaft of the throttle valve is fitted with a lever, bearing a weight (27) (Fig. M 31 S/02).

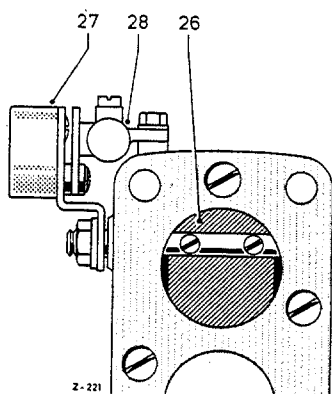


Fig. M 31 S/02

26 Vacuum valve  
27 Counterweight with lever  
28 Oil shock-absorber

This weight keeps the throttle valve closed under normal conditions. It is only when a certain pressure, coupled with decreased pressure in the body of Stage 2, develops that the effect of the weight is overcome and this throttle valve, the so-called vacuum valve, opens. In order to prevent the vacuum valve from being forcibly opened by the centrifugal effect on narrow left-hand bends, the movement of the vacuum valve is neutralized via the valve lever by an oil shock-absorber (28) (see Fig. M 31 S/02).