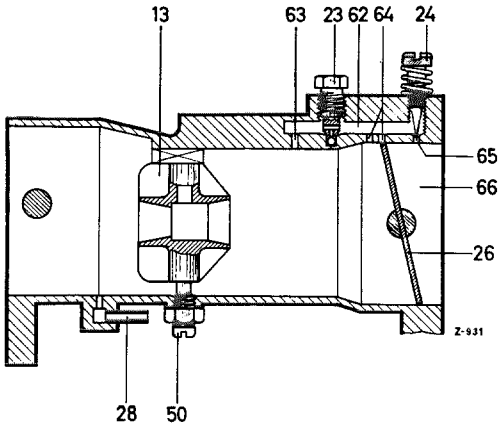

Fig. 07-0/42

Idle system of stage 2
(Die-cast carburetor)

13 Diffuser
23 Idle fuel jet of stage 2
24 Idle mixture adjustment screw of stage 2
26 Throttle valve of stage 2
28 Fuel suction line
50 Retaining screw for diffuser
62 Idle canal of stage 2
63 Idle air bore of stage 2
64 By-pass bores of stage 2
65 Idle mixture bore of stage 2
66 Suction canal of stage 2

When the engine reaches a speed of approx. 3500 rpm under full load, the throttle valve (26) of stage 2 begins to open. The fuel drawn in through the idle fuel jet (23) combines with the air entering through the idle air bore (63) to form a mixture in the idle canal (62). This mixture emerges at the by-pass bores (64) as soon as the throttle valve (26) of stage 2 opens. This additional enrichment of the fuel-air mixture prevents a change-over shock when stage 2 is brought into operation (see Figs. 07-0/42 and 07-0/43).

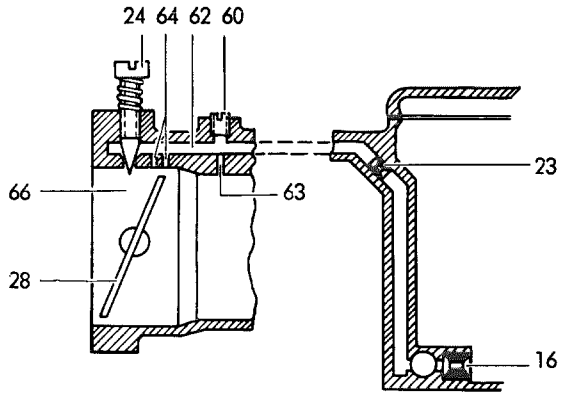

Fig. 07-0/43

Idle system of stage 2
(Sand-cast carburetor)

16 Main jet
23 Idle fuel jet of stage 2
24 Idle mixture adjustment screw of stage 2
26 Throttle valve of stage 2
60 Grub screw
62 Idle canal of stage 2
63 Idle air bore of stage 2
64 By-pass bores of stage 2
66 Suction canal of stage 2

Note: The idle mixture adjustment screw of stage 2 remains closed.

E. Main Carburetion System

The float chamber (9) of the carburetor is located in the center between the two suction canals. The connection (7) connects the float chamber with the outside air via the fuel overflow line. The float chamber is closed at the top by the carburetor cover (11). The cover carries the float valve (1) and the threaded union for the fuel line.

The suction canal of stage 1 has an air horn (32) with a diffuser (13) installed in front of it. The outlet tube for the fuel and the fuel mixture opens into the diffuser. By a canal the outlet tube is connected with a cylindrical cavity which is supplied with fuel from the float chamber via the main jet (16) screwed into the main jet plug. The mixing tube (15), which is held in the carburetor by the air correction jet (14), projects from above into the cylindrical cavity.

The suction canal of stage 2 has the same type of diffuser as stage 1, but it has no air horn because stage 2 is only brought into operation at relatively high engine speeds. Main jet plug with main jet, mixing tube and air correction jet are arranged symmetrically to stage 1.

Particular importance attaches to the overflow control tube (12) in stage 2 through which the fuel mixture must pass on its way to the outlet tube of the diffuser (13) of stage 2. This device is necessary in order to counteract the effect of the partial vacuum which is formed in the air suction tube between carburetor and air filter. When the throttle valve of stage 2 is closed, this partial vacuum acts also on the main carburetion system of this stage and would flood it, i. e. without the overflow control tube, fuel would be drawn from the diffuser and – mixed with inlet air – would pass to stage 1 through the air suction tube (Fig. 07-0/44).

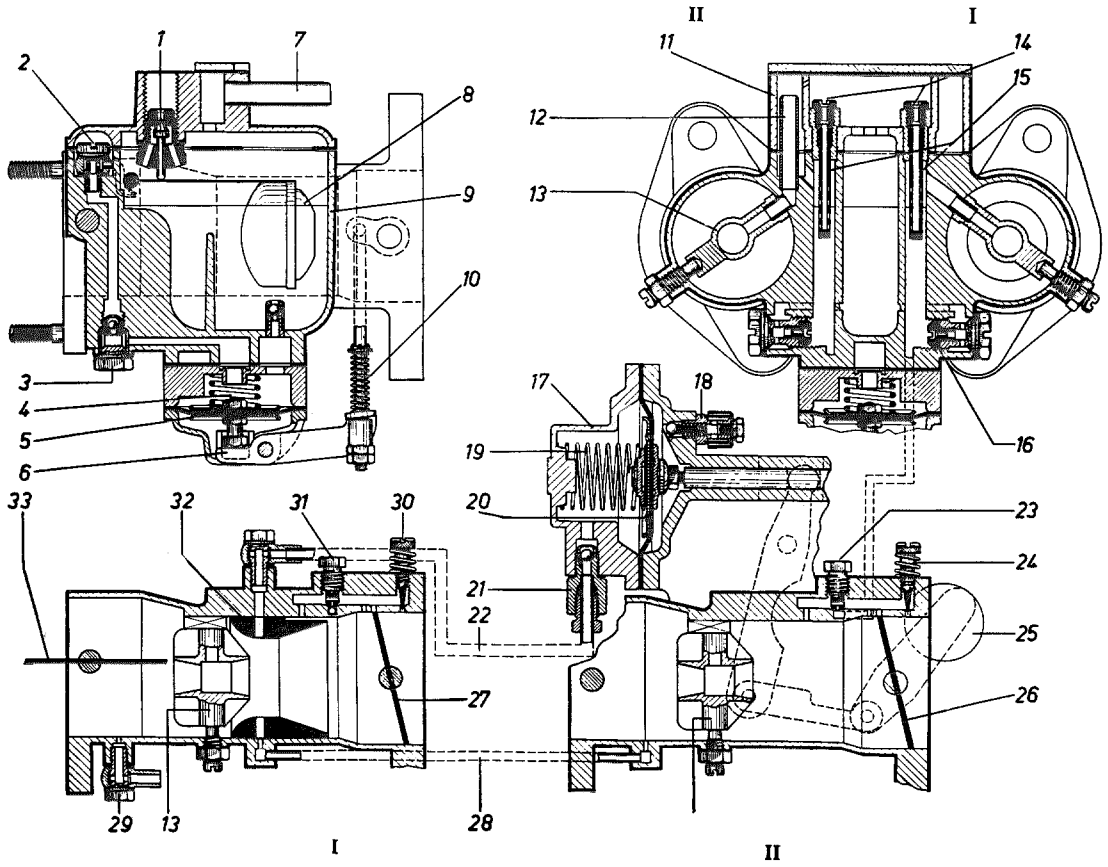

Fig. 07-0/44

I Stage 1 II Stage 2

1 Float needle valve
2 Pump jet
3 Ball valve for accelerating pump
4 Diaphragm spring
5 Pump diaphragm
6 Pump arm
7 Connection for fuel overflow line and float chamber ventilation
8 Float
9 Float chamber
10 Connecting rod with pressure spring and adjusting nuts
11 Carburetor cover
12 Overflow control tube
13 Diffuser
14 Air correction jets
15 Mixing tubes
16 Main jet plug with main jets
17 Vacuum box
18 Ball valve (delay valve on atmosphere side)
19 Diaphragm spring
20 Diaphragm
21 Ball valve (delay valve on vacuum side)
22 Vacuum line
23 Idle fuel jet of stage 2
24 Idle mixture adjustment screw of stage 2
25 Throttle valve lever of stage 2 with counterweight
26 Throttle valve of stage 2
27 Throttle valve of stage 1
28 Fuel suction line
29 Union for fuel outlet line
30 Idle mixture adjustment screw of stage 1
31 Idle fuel jet of stage 1
32 Air horn
33 Choke valve

Note: a) Fig. 07-0/44 shows the die-cast carburetor. As far as the main carburetion system is concerned, the sand-cast carburetor works the same way, the only difference is in the arrangement of the canals and jets (see 07-0/31).

b) In the die-cast carburetor the compensating air passes to the correction jet through the fuel overflow line and in the sand-cast carburetor through two openings which are located at the side of the carburetor cover and are covered by strainers.

c) In both types of carburetors the float chamber is ventilated through the fuel overflow line whose connection has a 6 mm internal diameter in the die-cast carburetor and a 4 mm internal diameter in the sand-cast carburetor.

d) Arrangement and mounting of the float in the carburetor cover are the same for both types. The floats themselves have the same weight, but differ in their shape and must not be mixed up.

e) In the sand-cast carburetor the overflow control tube is screwed to the carburetor housing, whereas in the die-cast carburetor it is located inside the carburetor (see Figs. 07-0/31 and 07-0/44).

a) Partial-Load and Full-Load Range at Low Engine Speed

(Only stage 1 in operation)

Normally the fuel level is the same in the float chamber and in the two cylindrical cavities into which the fuel flows through the main jets (16).

When the throttle valve (27) of stage 1 is opened, the partial vacuum begins to have an effect on the outlet tube of the diffuser. As a result, fuel is drawn from the cylindrical cavity via the outlet tube of the diffuser and is mixed with the air entering through the air inlet branch. Compensating air enters through the air correction jet (14) in progressively larger amounts, passes through the bores of the mixing tube (15) and combines with the fuel flowing through the main jet to form a mixture. Air enrichment increases with increasing engine speed, thus preventing overenrichment of the mixture (Fig. 07-0/45).

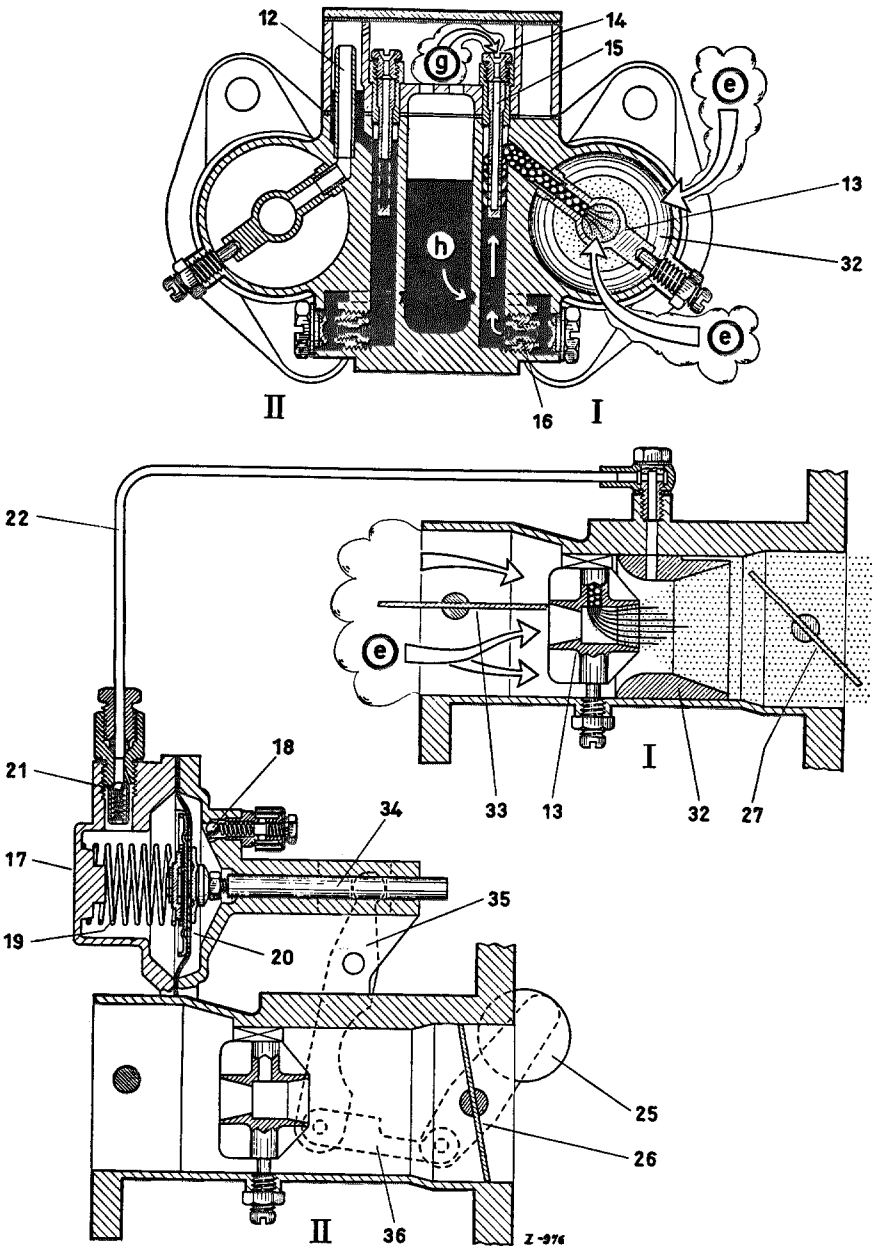

Fig. 07-0/45

Function in partial-load range and
in full-load range at low engine speed
(Only stage 1 in operation)

I Stage 1 II Stage 2

e) Entry of main air
g) Entry of compensating air for main carburetion system
h) Fuel feed

12 Overflow control tube
13 Diffuser
14 Air correction jets
15 Mixing tubes
16 Main jet plug with main jets
17 Vacuum box
18 Ball valve (delay valve on atmosphere side)
19 Diaphragm spring
20 Diaphragm
21 Ball valve (delay valve on vacuum side)
22 Vacuum line
25 Throttle valve lever of stage 2 with counterweight
26 Throttle valve of stage 2
27 Throttle valve of stage 1
32 Air horn
33 Choke valve
34 Diaphragm rod
35 Relay lever
36 Relay arm

b) Full-Load Range at High Engine Speed

(Stage 2 brought into operation)

When the engine has reached approx. 3500 rpm with the throttle valve of stage 1 completely open, the partial vacuum in the air horn has increased to such an extent that through the vacuum line (22) it begins to operate the vacuum box (17) by overcoming the weight and the spring pressure. As a result, the throttle valve (26) of stage 2 begins to open; the change-over is made easier by the fuel mixture which emerges through the by-pass bores (64) of the idle system of stage 2. With increasing throttle valve opening the supply of mixture is taken over by the main jet system of stage 2, so that the engine can reach its full output.

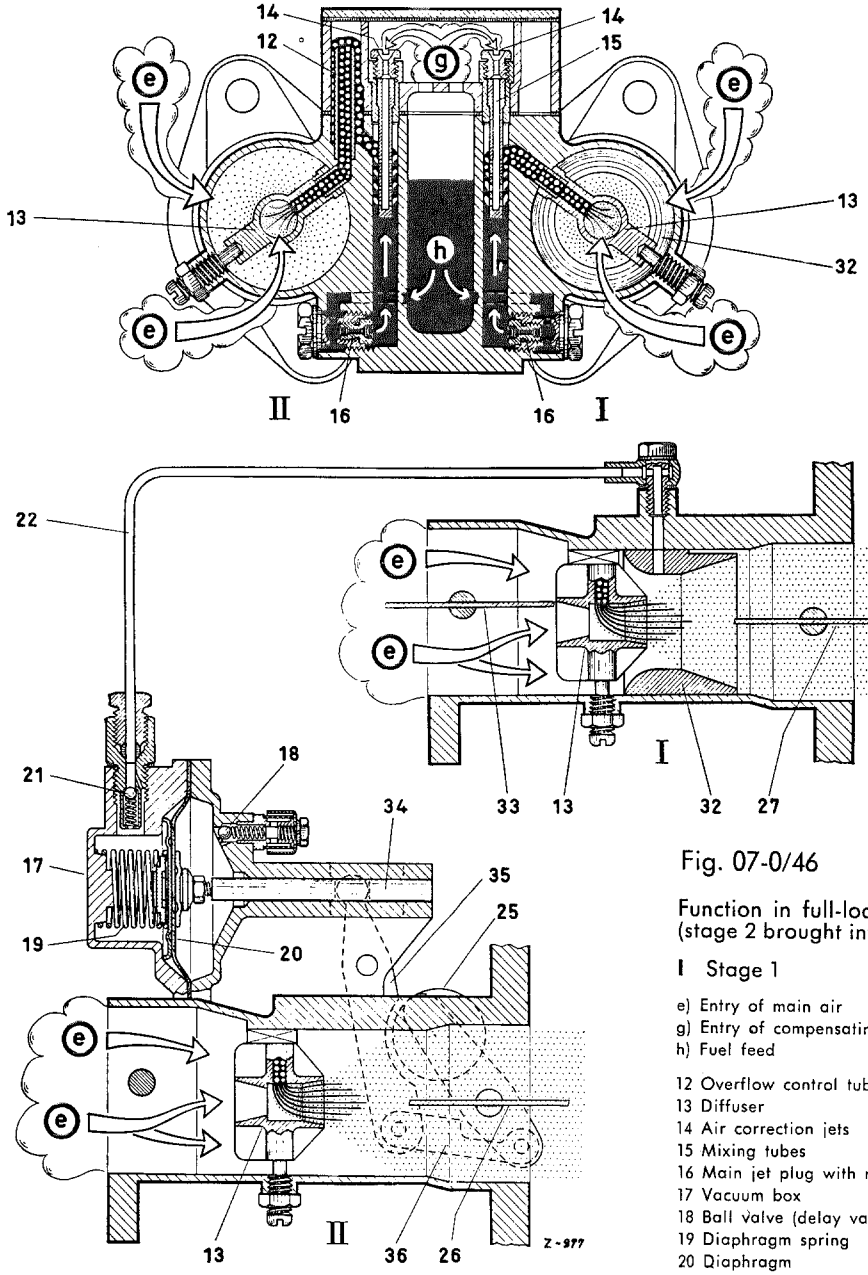

Fig. 07-0/46

Function in full-load range at high engine speed (stage 2 brought into operation)

I Stage 1 II Stage 2

e) Entry of main air
g) Entry of compensating air for main carburetion system
h) Fuel feed

12 Overflow control tube
13 Diffuser
14 Air correction jets
15 Mixing tubes
16 Main jet plug with main jets
17 Vacuum box
18 Ball valve (delay valve on atmosphere side)
19 Diaphragm spring
20 Diaphragm
21 Ball valve (delay valve on vacuum side)
22 Vacuum line
25 Throttle valve lever of stage 2 with counterweight
26 Throttle valve of stage 2
27 Throttle valve of stage 1
32 Air horn
33 Choke valve
34 Diaphragm rod
35 Relay lever
36 Relay arm

Note: The amount of vacuum required to bring the 2nd stage into operation can only be achieved under full load. Over the whole partial-load range only stage 1 is in operation.