

## Warm-Up Position II

(Starter knob pushed in about  $\frac{3}{4}$  of the way)

When the engine is warmed up, but if the idling speed with the starter mechanism inoperative is still too low, the starter knob can be pushed in about  $\frac{3}{4}$  of the way. As a result, the starter rotary slide valve is turned toward the right as seen from warm-up position I. The chamber (19) of the slide valve is now opposite the second part (26) of the split fuel slot in the starter flange on the carburetor housing. Since this second part of the slot is connected to the first part (22) of the fuel slot only by a very fine graded bore, the amount of fuel passed from the starter mechanism is decreased still further (Fig. 07-0/22).

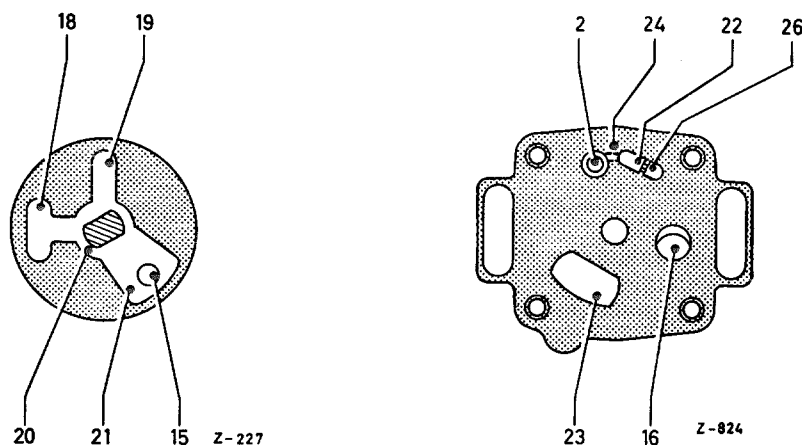


Fig. 07-0/22

Starter rotary slide valve

Starter flange  
of carburetor housing

- 2 Graded bore of fuel canal
- 15 Starter air bore in starter rotary slide valve
- 16 Graded bore of additional air canal
- 18 Chamber in starter rotary slide valve
- 19 Chamber in starter rotary slide valve
- 20 Mixing chamber in starter rotary slide valve
- 21 Cavity in starter rotary slide valve
- 22 Fuel slot, part 1
- 23 Starter mixture canal
- 24 Graded intake bore for fuel slot
- 26 Fuel slot, part 2

## D. Scavenging Device for Fuel System

### a) General

On Model 220 S a scavenging device for the fuel system can be installed as an optional extra. Even at high outside temperatures and when driving in a line of traffic, this scavenging device prevents the formation of vapor bubbles in the fuel system. The scavenging device consists mainly of the return valve (3) on the front carburetor which is connected to the fuel tank by the hose (7) and the fuel return line (12).

The fuel return valve is actuated mechanically by the pump arm (9) of the accelerating pump (8). When the return valve is open, the excess fuel runs back into the fuel tank through the return valve and the return line. This fuel circulation cools the fuel line and prevents the formation of vapor bubbles.

With the carburetor linkage in the idle position and the throttle valves slightly open, the valve pin of the return valve, which is fitted with a sealing cone, is pressed outward by the pressure spring so that the bore remains open for the fuel flow. When the throttle valves are opened further, the pump arm (9) by overcoming the elastic force, presses the valve pin far enough in to close the bore to the passage of fuel and thus interrupts the scavenging process (see Fig. 07-0/23).

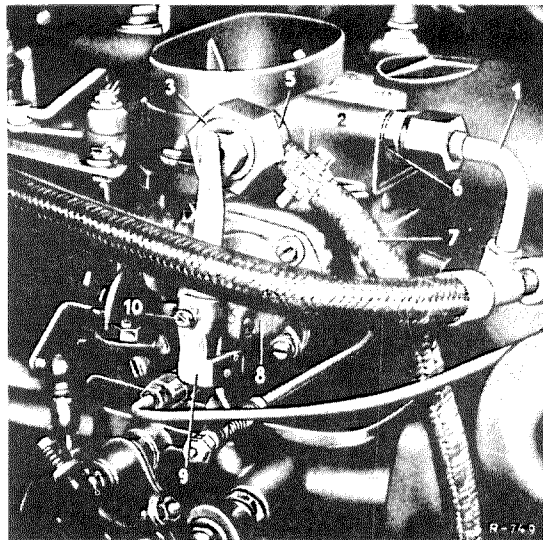


Fig. 07-0/23

- 1 Fuel pressure line
- 2 Connector at carburetor cover
- 3 Fuel return valve
- 4 Fiber gaskets
- 5 Ring connector
- 6 Threaded union
- 7 Hose for fuel return line
- 8 Accelerating pump
- 9 Pump arm
- 10 Adjusting screw and lock nut

The return mechanism is adjusted by means of the adjusting screw (10) on the pump arm with the throttle valve of Stage 1 completely closed. In this position there must still be a valve travel of 0.4–0.6 mm (see Fig. 07-0/24).

#### b) Subsequent Installation of Scavenging Device

1. Disconnect and remove the fuel pressure line at the fuel feed pump and at the carburetors.
2. Remove the carburetor cover of the front carburetor. Unscrew the float needle valve and the threaded union for the fuel pressure line.
3. Drill through the front part of the connector (2) on the carburetor cover which was hitherto closed, using a 7 mm diameter drill, and tap an M 12×1.5 thread (Fig. 07-0/24).
4. Clean the carburetor cover and carefully remove all chips.
5. Fit the carburetor cover and screw the threaded union (6) for the fuel pressure line into the front connection of the carburetor cover. If necessary, use a new fiber sealing ring (see Fig. 07-0/25).
6. Screw the fuel return valve (3) with fiber sealing rings (4) and ring connector (5) into the side connection hitherto used for the fuel pressure line and tighten (see Fig. 07-0/24).

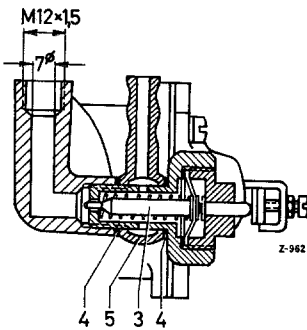
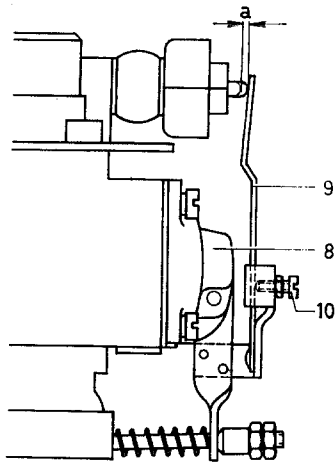


Fig. 07-0/24

- a) Travel of fuel return valve
- 3 Fuel return valve
  - 4 Fiber sealing rings
  - 5 Ring connector
  - 8 Accelerating pump
  - 9 Pump arm
  - 10 Adjusting screw and lock nut

7. Slide the hose (7) of the fuel return line onto the ring connector (5) and fasten with a hose clip (see Fig. 07-0/25).
8. Connect the new fuel pressure line (1) (Fig. 07-0/25).
9. Unscrew the accelerating pump (8) and remove the cover taking care not to damage the pump diaphragm. After carefully tapping out the shaft remove the pump arm (see Fig. 07-0/24).
10. Install the new pump arm (9) and drive in the shaft. Screw the cover to the accelerating pump making sure that the pump diaphragm is correctly positioned. Screw the accelerating pump to the carburetor.

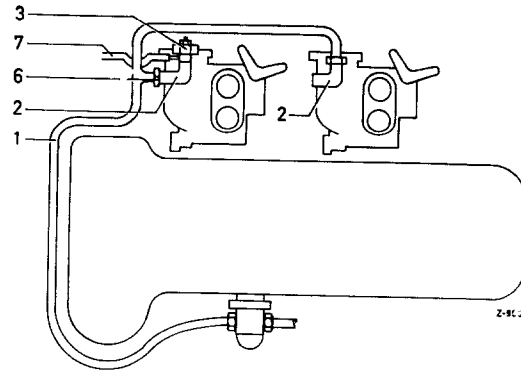


Fig. 07-0/25

- 1 Fuel pressure line
- 2 Connectors at carburetor cover
- 3 Fuel return valve
- 6 Threaded union
- 7 Hose for fuel return line

If necessary, use a new rubberised-fabric gasket (see Fig. 07-0/24).

11. Remove the extension for the filler neck of the fuel tank. As shown in Fig. 07-0/26 drill a 9.5 mm diameter hole into the filler tube (14) of the extension and braze the union (11) D 6 DIN 7613 for connecting the fuel return line.
12. Fit the front part (12) of the fuel return line onto the chassis base panel along the propeller shaft cover and fasten it with six fixing clips using oval head tapping screws and spring washers (Fig. 07-0/27).

**Note:** a) When fitting the front part of the fuel return line make sure that there is enough space for the front end of the line between the right longitudinal member of the chassis and the subframe. Fasten the line to the longitudinal member in such a way that it cannot be damaged by the movements of the subframe.

b) In order to avoid damage to the fuel return line (12) grind down the welding seam along the longitudinal member over a length of approx. 10 cm (see Fig. 07-0/27).

13. Slide the hose (7) onto the fuel return line (12) and fasten with a hose clip.

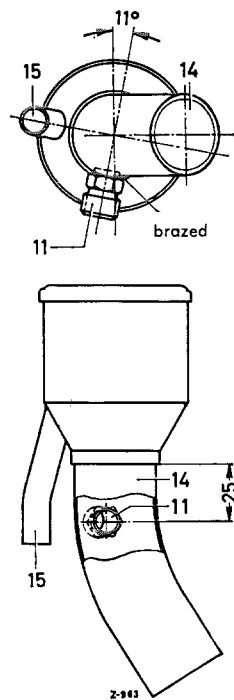


Fig. 07-0/26

- 11 Fuel return line union
- 14 Fuel filler tube
- 15 Pipe for air vent line

14. Fit the rear part (13) of the fuel return line above the chassis cross member and connect to the front part (12) of the line. Then fasten the line (13) to the chassis base panel by three fixing clips using oval head tapping screws and spring washers (see Fig. 07-0/27).
15. Install the extension of the fuel tank filler neck making sure that the hoses and the upper and lower parts of the rubber cuff are correctly positioned. Connect the fuel return line.

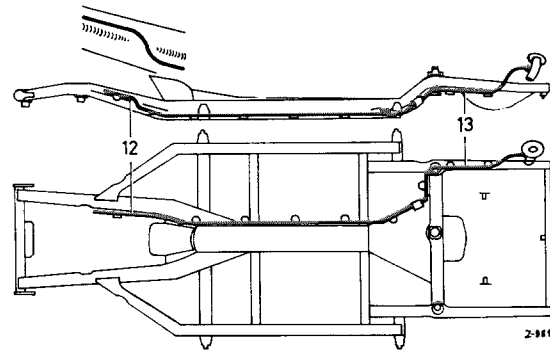


Fig. 07-0/27

- 12 Fuel return line (front part)
- 13 Fuel return line (rear part)

16. Adjust the injection amount of the accelerating pump (see Job No. 01-3, Section H).
17. Detach the spring-loaded push rod at the throttle valve lever of the front carburetor. Then back off the idle adjustment screw until the throttle valve of stage 1 is completely closed. Turn in the adjusting screw (10) on the pump arm until the return valve is completely closed. Then back the adjusting screw out again until the valve pin of the return valve has travelled the specified distance "a" of 0.4–0.6 mm. Then lock the adjusting screw with the hexagon nut (Fig. 07-0/24).
18. Check the basic adjustment of the carburetor linkage and adjust the idle (see Job No. 01-3, Section K).

## List of Parts

Number required	Designation	Part No. or DIN designation
1	Fuel return valve with ring connector	000 070 10 46
1	Pump arm	000 070 13 21
1	Fuel pressure line	180 070 11 32
1	* Fuel return line (front part)	180 470 00 72
1	* Fuel return line (rear part)	180 470 01 72
9	* Fixing clips	1×8 DIN 72571
9	* Spring washers	B 5 DIN 137
9	* Oval head tapping screws	B 4.2×9.5 DIN 7981
1	* Fuel hose	B 8×12×480 DIN 73379
2	* Hose clips	S 15/9 Zy N 288 a
1	* Union	D 6 DIN 7613

**Note:** In some engines the fuel return valve (without ring connector), the pump arm and the fuel pressure line have already been installed as standard parts.

In these cases only the fuel return line has to be installed subsequently in order to make the scavenging device complete. For this purpose the parts marked with an asterisk and a ring connector (Part No. 000 990 19 88) are required.