Revision: Revised, starting device extended, full load enrichment and USA-version model year 1972 added.

General Description

A. General

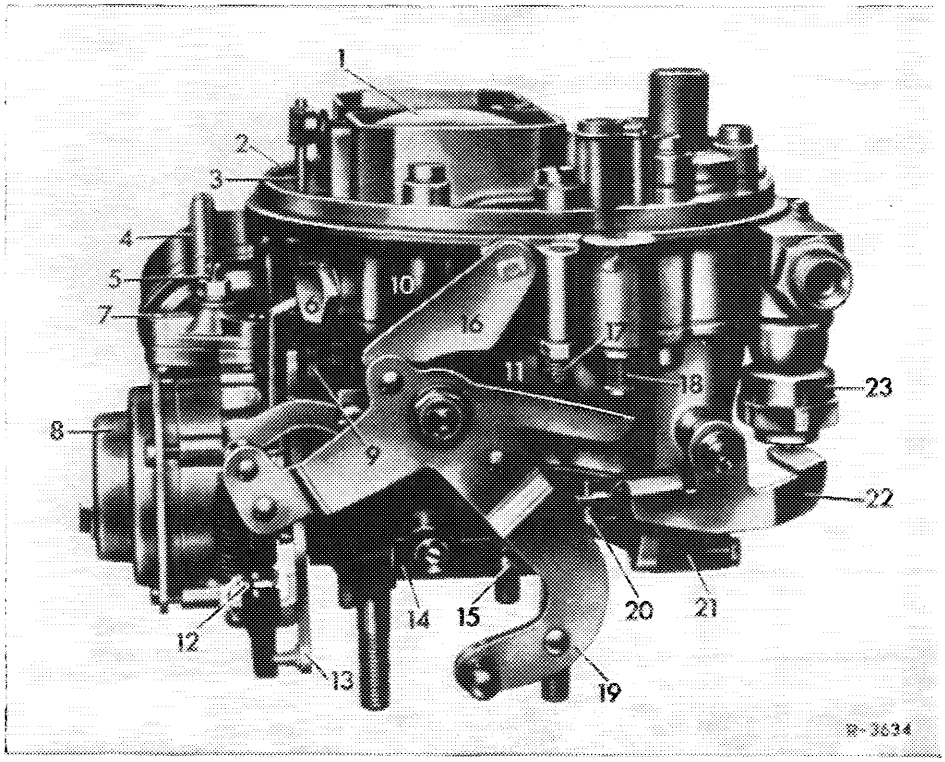

Fig. 07-26/1

Front Carburetor
1 Choke valve
2 Carburetor cover
3 Connecting rod
4 Vacuum chamber
5 Adjusting screw
6 Fastening bolts for pre-atomizer
7 Starter valve
8 Starter cover
9 Throttle lever, 2nd barrel
10 Plate block
11 Float chamber
12 Idle adjustment screw
13 Throttle lever, 1st barrel
14 Throttle valve part
15 Idle mixture adjustment screw
16 Pump lever
17 Idle stop
18 Float chamber vent valve
19 Actuating lever
20 Adjustment screw
21 Idle switch (not installed)
22 Actuating lever
23 Fuel return valve
24 Vacuum control

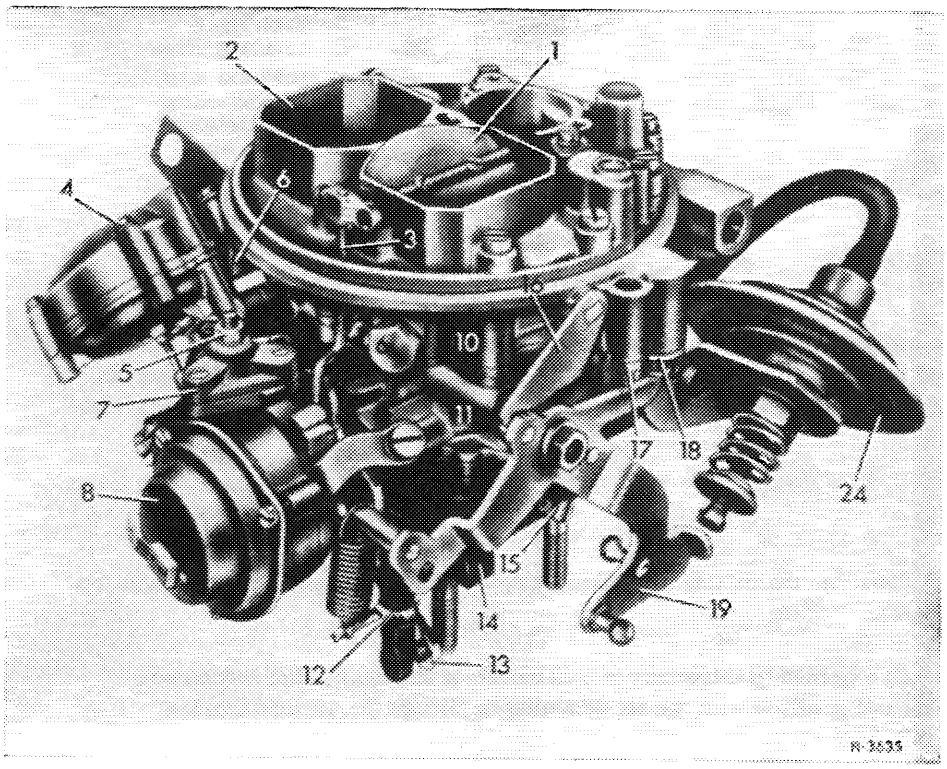

Fig. 07-26/2

Rear Carburetor

The Zenith-carburetor 35/40 or 35/42 INAT is a two-stage carburetor with intake pipe widths of 35 mm for the 1st stage and of 40 mm or 42 mm for the 2nd stage. The 35/42 INAT carburetor is provided with an additional enriching system for the full load range. The USA-version model year 1972 carries a 32/40 INAT carburetor.

The carburetor consists of four major components:

Carburetor Cover (with choke valve, idle air bore and speed build-up air bore)

Plate Block (with all jets, accelerating pump, float and float chamber vent valve)

Float Chamber Body (with emulsion chamber and air horn for barrel I and barrel II)

Throttle Valve Part (with throttle valves, idle mixture adjustment screw, and by-pass bores)

B. Method of Operation

Throttle Valve Arrangement

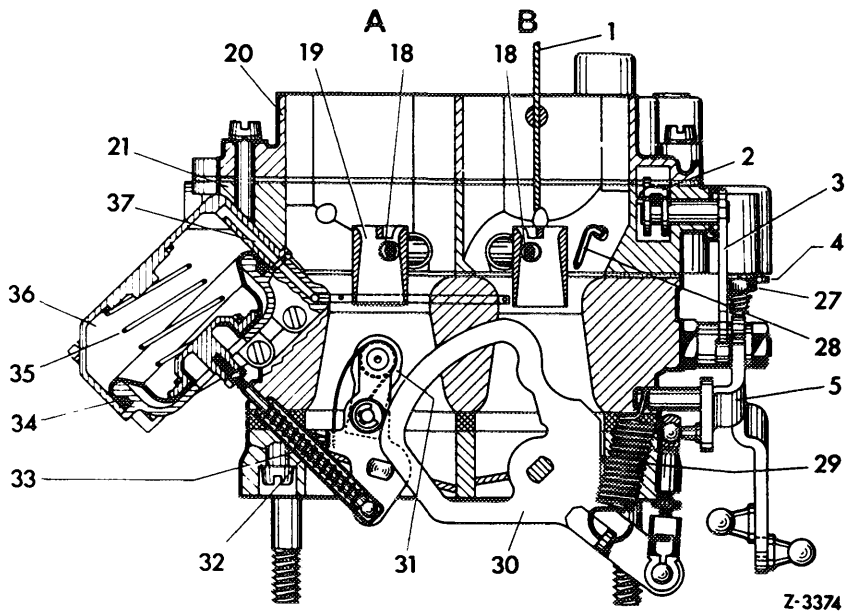

Fig. 07-26/3

B Barrel I
A Barrel II

1 Choke valve
2 Internal pump lever
3 External pump lever
4 Float chamber vent valve
5 Actuating lever
18 Exit arm
19 Pre-atomizer
20 Carburetor cover
21 Plate block
27 Adjusting screw
28 Injection tube
29 Tension spring
30 Throttle lever
31 Hinged lever
32 Stop screw
33 Connecting rod
34 Diaphragm
35 Diaphragm spring
36 Vacuum chamber
37 Vacuum canal

This carburetor features two suction canals with one throttle valve each. Each suction canal forms one barrel. The throttle valve of barrel I is opened via the control linkage. The throttle valve of barrel II opens via vacuum chamber (36) when a certain vacuum is reached within the air horn of barrel I, with throttle valve of barrel I fully opened.

Main Jet System

From the float chamber fuel flows into the mixing tube bores (reserve) of barrels I and II via the main jets (11) and (12) (see Fig. 07-26/4).

With the respective throttle valve opened (the function of both barrels is identical), fuel is vacuum-drawn from the exit arm (18), and is mixed with the air streaming in through the air intake scoop.

When the fuel level in the mixing tube bore falls with increasing vacuum, compensating air flows in through the air correction jets (24) and (23), respectively. Through the small bores in the mixing tube (26), this compensating air mixes to an emulsion with the fuel flowing in from the main jet.

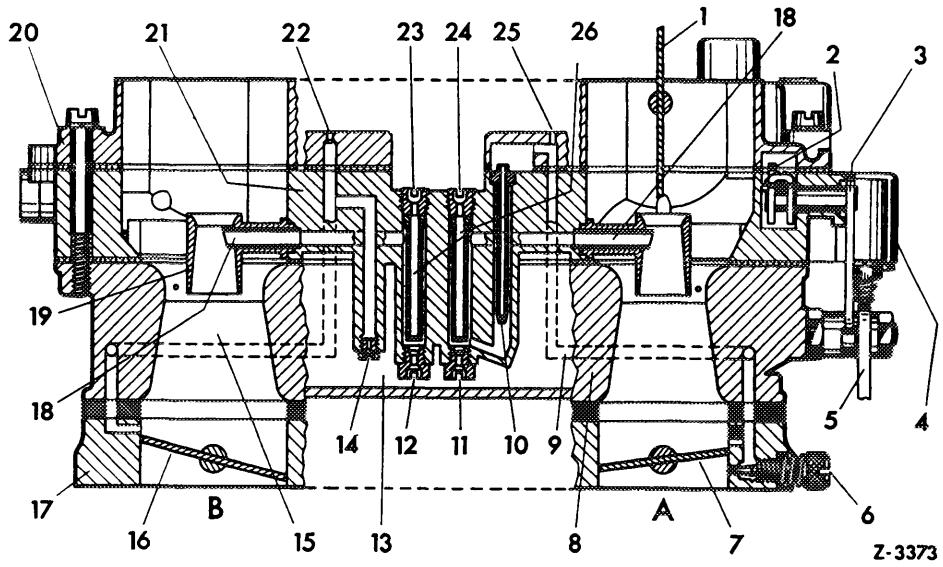

Fig. 07-26/4

A Barrel I B Barrel II

1 Choke valve
2 Internal pump arm
3 External pump arm
4 Front chamber vent valve
5 Actuating lever
6 Idle mixture adjusting screw
7 Throttle valve
8 Float chamber body
9 Canal
10 Idle fuel jet
11 Main jet, barrel I
12 Main jet, barrel II
13 Float chamber
14 Speed build-up jet
15 Air horn, barrel II
16 Throttle valve, barrel II
17 Throttle valve part
18 Exit arm
19 Pre-atomizer
20 Carburetor cover
21 Plate block
22 Speed build-up air bore
23 Air correction jet, barrel I
24 Air correction jet, barrel II
25 Idle air bore
26 Mixing tube

For transition from barrel I to barrel II, a speed build-up device similar to the idle unit of the 1st barrel is included in barrel II.

This device is supplied with fuel from the speed build-up fuel jet (14). Air necessary for the air-fuel-mixture is taken in through the speed build-up bore (22) in the carburetor cover.

Idle

The idle unit is contained in the first barrel of the carburetor. Fuel is drawn up into a cavity within the carburetor cover through the idle fuel jet (10) where it is mixed into an emulsion with the air entering through the idle air bore (25). Via canal (9), this emulsion flows to the fuel mixture outlet at the idle mixture adjustment screw and to the by-pass bores. The by-pass bores serve to improve transition from idle jet to main jet system.

Acceleration

The plunger-type accelerating pump is only effective in the first barrel. Upon actuation of the pump arm (2), the pump plunger (38) presses fuel into the emulsion chamber via canal (54) and through the calibrated injection tube (28) (see Fig. 07-26/5).

During the compression stroke of the pump, suction valve (40) prevents fuel from flowing back into the float chamber. During the suction stroke, pressure valve (41) prevents air entering from the emulsion chamber.

In order to enrich the mixture at full throttle or high speeds, additional fuel is drawn in from the pumping system. The quantity of this additionally supplied fuel is dependent upon the vacuum which exists in the emulsion chamber.

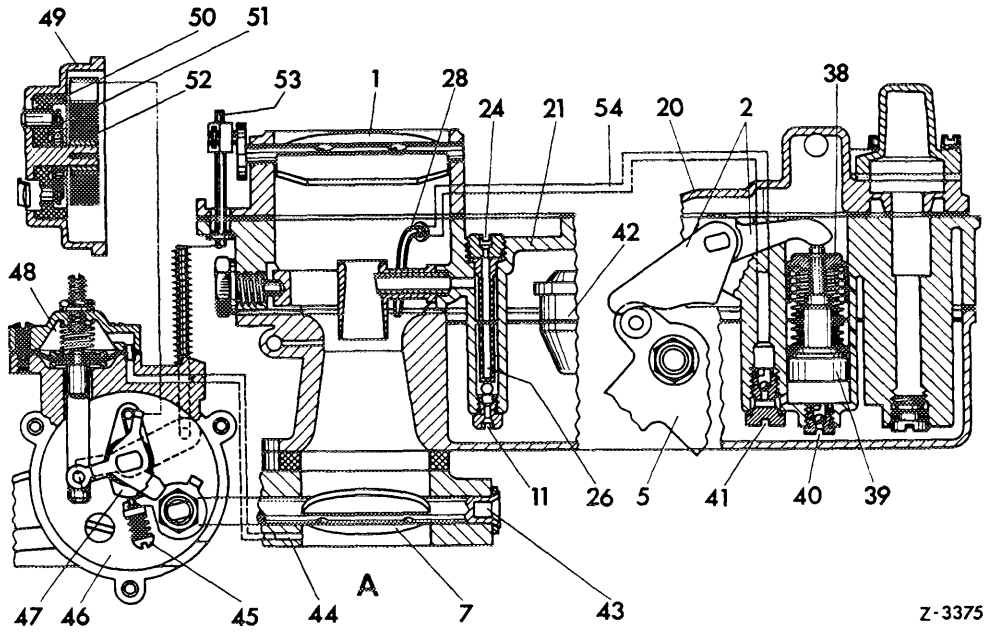

Fig. 07-26/5

A Barrel I

1 Choke valve	24 Air correction jet	42 Float	49 Starter cover
2 Pump arm	26 Mixing tube	43 Throttle valve shaft	50 Ceramic insert
5 Actuating lever	28 Injection tube	44 Vacuum canal	51 Heater coil
7 Throttle valve	38 Pump plunger	45 Adjusting screw	52 Bi-metal spring
11 Main jet	39 Sleeve	46 Starter housing	53 Connecting rod
20 Carburetor cover	40 Suction valve	47 Barrel control disk	54 Canal
21 Plate block	41 Pressure valve	48 Starter valve	

Starter Mechanism

Via connecting rod (53), choke valve (1) is subjected to the tension of a bi-metal spiral spring (52) which is designed to respond to temperature fluctuations. Depending upon the environmental temperature, the choke valve is more or less closed, while the engine is cold. Upon warm-up of the bi-metal spring, the choke valve opens until the air inlet is completely freed at normal operating temperature.

An electrical heater coil (51), embedded in a ceramic heating flange (50), serves to heat the bi-metal spring. When the ignition is switched on, the coil is heated up and heats the bi-metal spring. The heating process lasts as long as the ignition is switched on. The eccentric bearing arrangement of the starter valve shaft within the air intake scoop is contributive to the opening of the choke valve.

With the choke valve closed, the throttle valve of the first barrel is positively opened to some extent by the action of the barrel control disk (47) and the adjusting screw (45). This causes the vacuum in the emulsion chamber to become effective.

The starter valve (48) serves to open the choke valve to the pilot throttle gap after the engine has started to prevent over-enrichment of the engine.

On vehicles with USA emission control starting May 1969 the automatic starting system is controlled at rear carburetor by means of a 55° C temperature switch located in cylinder crankcase, for model year 1970/71 and on vehicles with Europe emission control (starting 1971) by means of a 65° C temperature switch located in cylinder head, to improve the driving characteristics during the warming-up period (Fig. 07-26/6 to 8).

As from + 65° C cooling water temperature, the temperature switch (23) or (2) in cylinder head, or as from + 55° C the temperature switch in crankcase (3) are establishing a ground connection.

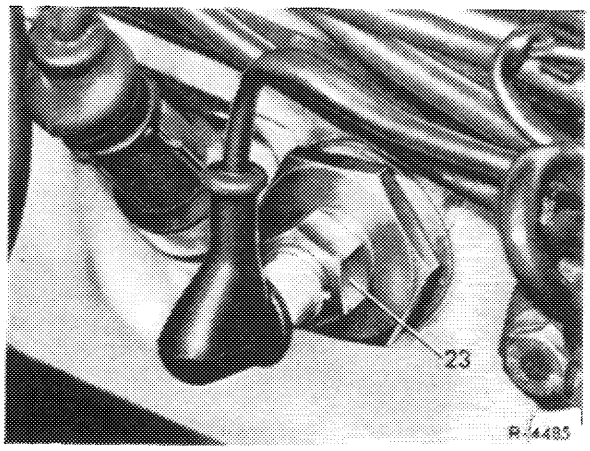

Fig. 07-26/6

USA emission control model year 1970/71

23 Temperature switch 65° C

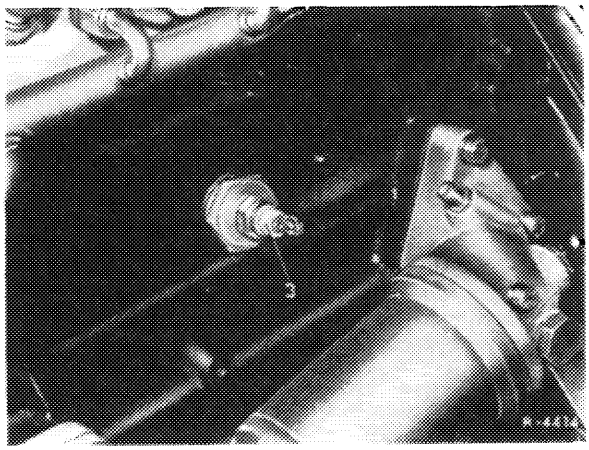

Fig. 07-26/7

USA emission control up to model year 1970

3 Temperature switch 55° C

As from this cooling water temperature, the heating coil (3) in starter cover of rear carburetor is heated (Fig. 07-26/9 and 07-26/10).

The bimetallic spring in the starter cover of the rear carburetor is designed for a softer pressure to prevent any excessive enriching of mixture at cooling water temperatures up to + 65° C or up to + 55° C. The starter cover is marked with the punched-in number "18".

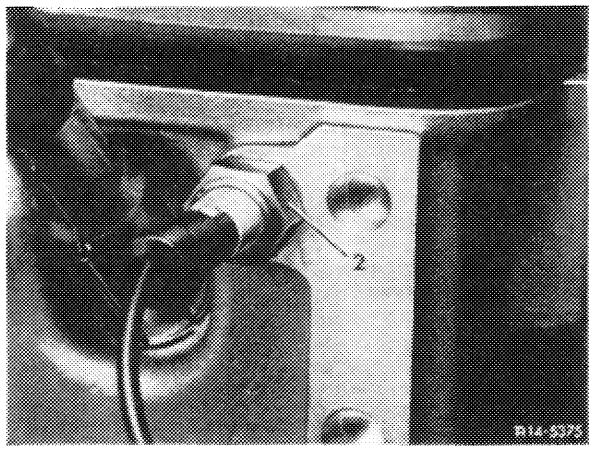

Fig. 07-26/8

Europe emission control as from 1971

2 Temperature switch 65° C

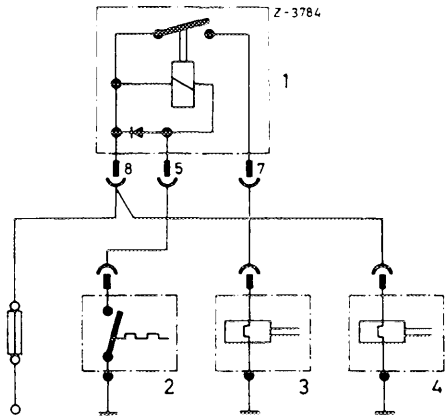

Fig. 07-26/9

Wiring diagram USA emission control model year 1970/71

1 Working contact relay (in relay box)
2 Temperature switch
3 Heater coil-starter cover (rear carburetor)
4 Heater coil-starter cover (front carburetor)

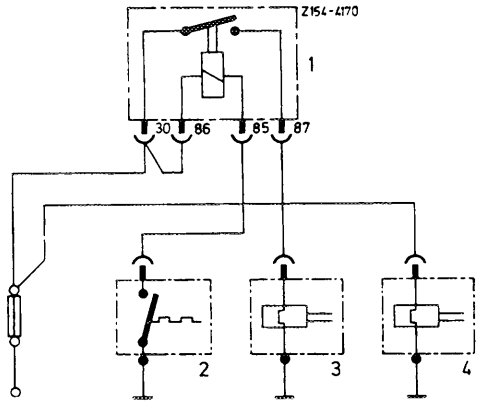

Fig. 07-26/10

Wiring diagram USA emission control up to model year 1970 and Europe emission control as from 1971

1 Working contact relay
2 Temperature switch
3 Heater coil-starter cover (rear carburetor)
4 Heater coil-starter cover (front carburetor)

Checking Temperature Switch

1 Pull plug from temperature switch.

2 Connect test lamp to positive pole of battery and to temperature switch.

3 Run engine. At a cooling water temperature of above 55° C or 65° C the test lamp should light up. Renew temperature switch, if required.

Checking Working Contact Relay

1 Pull plug from rear starter cover.

2 Connect test lamp to plug and to ground.

3 Run engine. At a cooling water temperature of above 55° C or 65° C the test lamp should light up. Renew working contact relay, if required.

Additional Full Load Enrichment

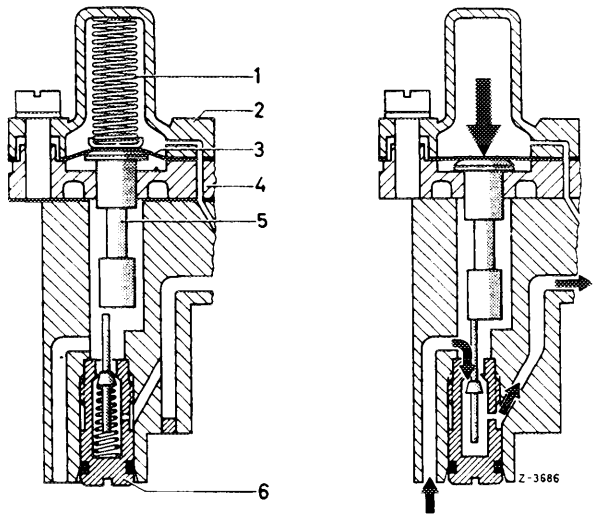

Fig. 07-26/11

Technical and diagrammatic view of full load enrichment system

1 Compression spring
2 Cover
3 Vacuum diaphragm
4 Carburetor cover
5 Actuating pin
6 Enrichment valve

On 35/42 INAT-carburetor, the enriching system comprises the enriching valve (6) in plate block and the vacuum diaphragm (3) with actuating pin (5) in carburetor cover or in plate block (Fig. 07-26/11).

The vacuum used for control is taken from intake manifold below throttle valve of 1st stage. At high intake manifold vacuum, the vacuum diaphragm (3) is pulled against spring (1). The actuating pin (5) of the diaphragm releases the enrichment valve (6), which will then be closed by spring pressure. If the vacuum drops below a given value, spring (1) will push diaphragm with actuating pin downward and will open the enrichment valve. Now, additional fuel can flow via enrichment valve to mixing tube of 1st stage and will therefore enrich the fuel-air mixture still further.

As compared with the 35/40 INAT-carburetor used up to now, the 32/40 INAT-carburetor installed in vehicles of model year 1972 has the following modifications:

1. Changed nozzle lineup.
2. Smaller float housing.
3. Carburetor has inside ventilation only. The former venting valve is no longer installed.
4. The fuel feed is provided with a fuel strainer (Fig. 07-26/12).

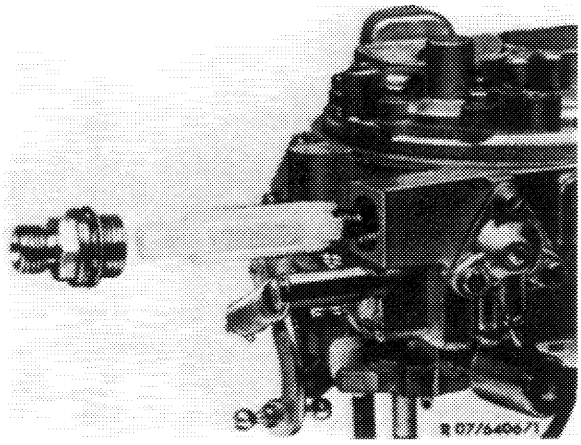

Fig. 07-26/12

5 When the ignition is switched on, the heater coils of the automatic starting device are immediately and simultaneously heated on both carburetors.

The former 65° C temperature switch for heating the automatic starting device of the rear carburetor has been eliminated.

6. Modified fuel return flow. At the start of the series, the fuel return valve had been controlled by vacuum (Fig. 07-26/13).

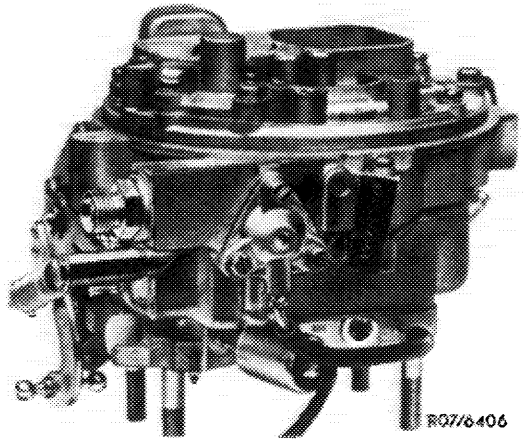

Fig. 07-26/13

Later, the return valve has been replaced by a throttle bore in carburetor housing.