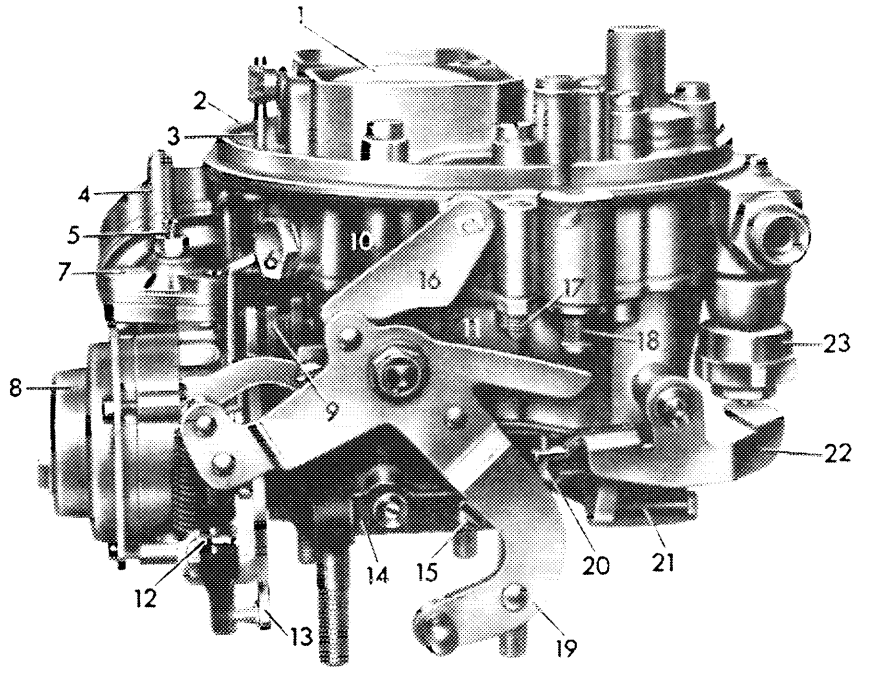
General Description

A. General

Fig. 07–1/1

Front carburetor

1 Choke
2 Carburetor cover
3 Connecting rod
4 Vacuum box
5 Adjusting screw
6 Holding screws for front atomizer
7 Starter valve
8 Starter cover
9 Throttle lever Stage II
10 Bedplate
11 Float housing
12 Idling speed adjusting screw
13 Throttle lever Stage I
14 Throttle valve section
15 Idling speed mixture control screw
16 Pump lever
17 Idling speed stop
18 Float chamber venting valve
19 Actuating lever
20 Adjusting screw
21 Idling throttle switch
22 Actuating lever
23 Fuel return valve
24 Vacuum regulator



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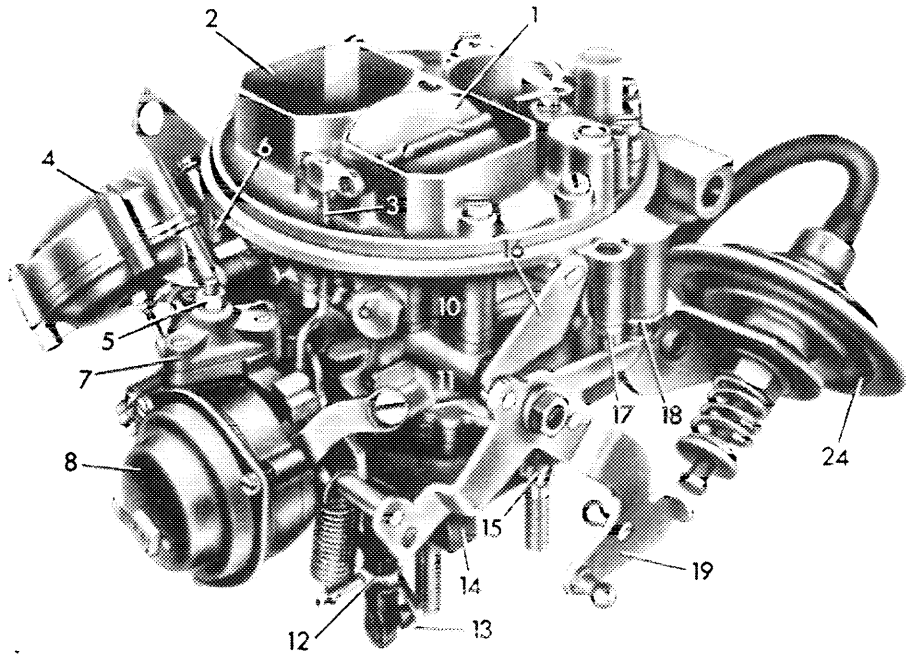

Fig. 07–1/2

Rear carburetor

The Zenith carburetor 35/40 INAT is a multi-stage carburetor with intake pipe widths of 35 mm for Stage I and of 40 mm for Stage II.

The carburetor comprises four main components:

Carburetor cover (with choke, idling speed air hole and transition air hole)

Bedplate (with all the nozzles, accelerating pump, float and float chamber venting valve)

Float housing (with mixing chamber and venturi for Stage I and II)

Throttle valve section (with throttle valves, idling speed mixture regulating screw and bypass bores)

B. Operation

Arrangement of Throttle Valves

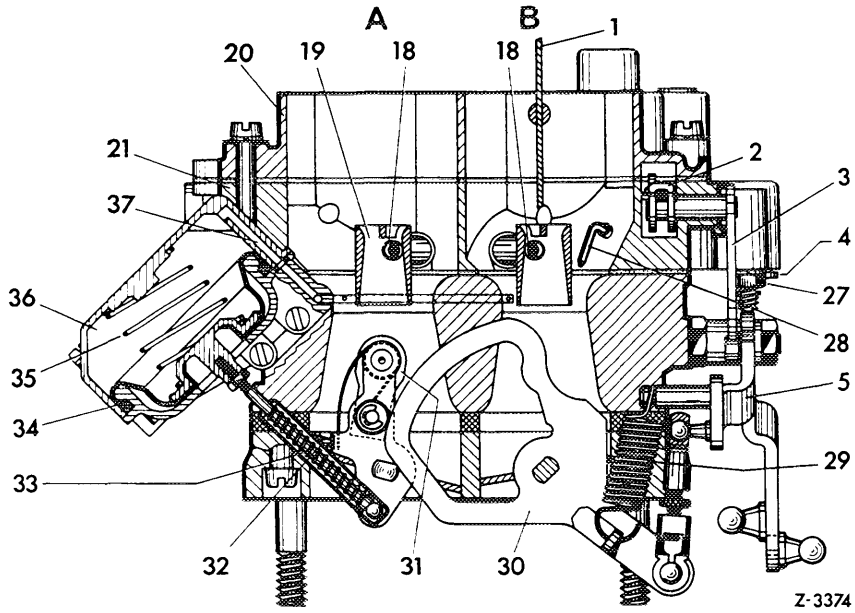

Fig. 07–1/3

A Stage I
B Stage II

1 Choke
2 Inner pump lever
3 Outer pump lever
4 Float chamber venting valve
5 Actuating lever
18 Outlet arm
19 Preatomizer
20 Carburetor cover
21 Bedplate
27 Idling speed stop
28 Injection tube
29 Return spring
30 Throttle lever
31 Articulated lever
32 Stop screw
33 Connecting rod
34 Diaphragm
35 Diaphragm spring
36 Vacuum box
37 Vacuum duct

The carburetor is provided with two intake ducts having one throttle valve each. Each intake duct is a stage. The throttle valve of Stage I is opened via the regulating linkage. The throttle valve of the Stage II is opened via the vacuum box (36), when with the throttle valve of the first stage fully open, a given vacuum value is obtained in the venturi of Stage I.

Main Jet System

The fuel flows from the float chamber via the main jets (11) and (12) into the mixing tube holes (reserve) of Stage I and II (Fig. 07–1/4).

With the throttle valve of each stage opened (the function of both stages is the same) the fuel is sucked up by the vacuum via the outlet arm (18) and is mixed with the air flowing in from the air connection. When the increasing vacuum causes the fuel level in the mixing tube hole to drop, compensating air will flow in through the air correction nozzle (24) or (23). This compensating air is mixed through the small holes in the mixing tube (26) with the fuel flowing in from the main jet into an emulsion.

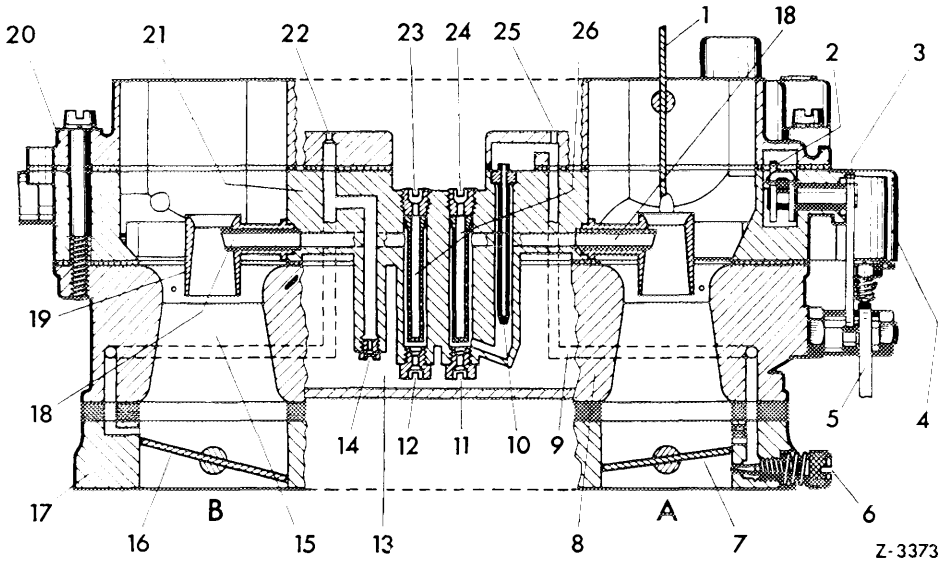

Fig. 07–1/4

A Stage I B Stage II

1 Choke
2 Inner pump lever
3 Outer pump lever
4 Float chamber venting valve
5 Actuating lever
6 Idling speed mixture regulating screw
7 Throttle valve
8 Float housing
9 Duct
10 Idling speed fuel jet
11 Main jet Stage I
12 Main jet Stage II
13 Float chamber
14 Transition fuel jet
15 Venturi Stage II
16 Throttle valve Stage II
17 Throttle valve section
18 Outlet arm
19 Preatomizer
20 Carburetor cover
21 Bedplate
22 Transition air hole
23 Air correction jet Stage II
24 Air correction jet Stage I
25 Idling speed air hole
26 Mixing tube

For the transition from Stage I to II the second stage is provided with a transition device similar to the idling speed device of Stage I.

This device is supplied with fuel by the transition fuel jet (14). The air required for the mixture is taken from the transition air hole (22) in the carburetor cover.

Idling Speed

The idling speed device is located in Stage I of the carburetor. The fuel is sucked up by the idling speed fuel jet (10) into a cavity in the carburetor cover and is mixed into an emulsion with the air coming in from the idling speed air hole (25). This emulsion flows via duct (9) to the mixture outlet on the idling speed mixture regulating screw and to the bypass holes. The bypass holes improve the transition from the idling speed to the main jet system.

Acceleration

The accelerator pump is designed as a piston pump and is effective in Stage I only. When the pump lever (2) is actuated, the pump piston (38) forces fuel via duct (54) through the calibrated injection pipe (28) into the mixing chamber (Fig. 07–1/5).

During the pressure stroke of the pump the suction valve (40) prevents the fuel from flowing back into the float chamber. During the suction stroke the pressure valve (41) prevents any air flow from the mixing chamber.

For enriching the mixture at full load and at high speeds additional fuel is sucked from the pump system depending on the vacuum in the mixing chamber.

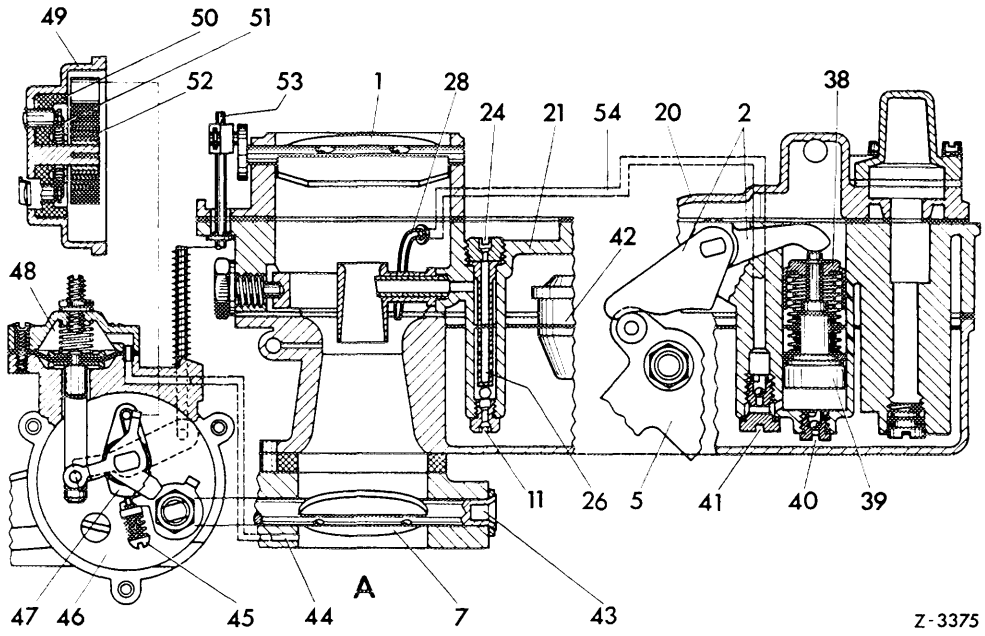

Fig. 07–1/5

A Stage I

1 Choke	24 Air correction jet	42 Float	49 Starter cover
2 Pump lever	26 Mixing tube	43 Throttle valve shaft	50 Ceramic insert
5 Actuating lever	28 Injection pipe	44 Vacuum duct	51 Heater coil
7 Throttle valve	38 Pump piston	45 Adjusting screw	52 Bimetallic spring
11 Main jet	39 Sleeve	46 Starter housing	53 Connecting rod
20 Carburetor cover	40 Suction valve	47 Step disc	54 Duct
21 Bedplate	41 Pressure valve	48 Starter valve	

Starting Device

The connecting rod (53) keeps the choke (1) under the tension of a spiral-shaped bimetallic spring (52) which responds to any temperature difference. When the engine is cold, the choke is more or less closed independent of the outside temperature. The gradual heating of the bimetallic spring will open the choke until the air inlet is fully opened when the normal operating temperature is attained.

The bimetallic spring is heated by an electric heating coil (51) which is embedded in a ceramic heating flange (50). When the ignition is switched on, the heating of the coil and thereby of the bimetallic spring will start. The heating will continue as long as the ignition is switched on. The opening of the choke is supported by the eccentric support of the choke valve in the air connection.

When the choke is closed, the throttle valve of the 1st stage is simultaneously and automatically slightly opened via step disc (47) and adjusting screw (45). This will make the vacuum in the mixing chamber to become effective.

The starter valve (48) serves the purpose of opening the choke slightly (up to choke valve gap) after the engine fires to prevent any excessive enrichment of the fuel.

On vehicles with US exhaust emission control manufactured as of May 1969, the automatic choke at the rear carburetor is controlled by a 55°C thermostatic switch accomodated in the cylinder crankcase, on vehicles of model year 1970/71 and equipped with Europe exhaust emission control (as of year of manufacture 1971) by a 65°C thermostatic switch in the cylinder head, in order to improve the driving properties during the warm-up period (Figs. 07-1/6, 07-1/7 and 07-1/8).

The thermostatic switch (23) or (2) in the cylinder head switches to ground as of + 65°C cooling water temperature, the thermostatic switch in the crankcase as of 55°C. As from this cooling water temperature the heating coil (3) in the choke cover of the rear carburetor is heated (Figs. 07-1/9 and 07-1/10). The bimetal spring in the automatic choke cover of the rear carburetor is softer in order to avoid over-enrichment of the mixture at cooling water temperatures ranging up to 65°C or up to 55°C. The automatic choke cover is marked with the punched-in number "18".

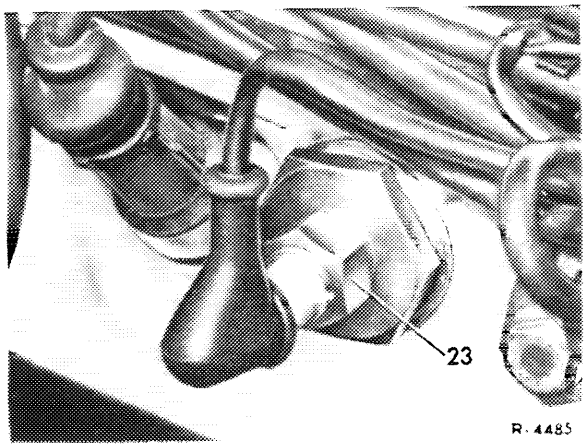

Fig. 07–1/6
US exhaust emission control, model year 1970/71
23 65°C thermostatic switch

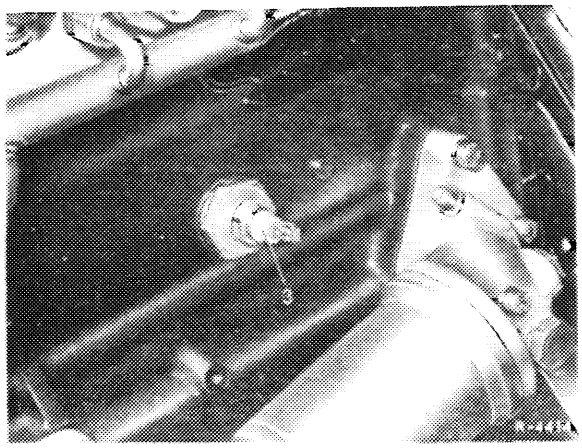

Fig. 07–1/7
US exhaust emission control up to model year 1970
3 55°C thermostatic switch

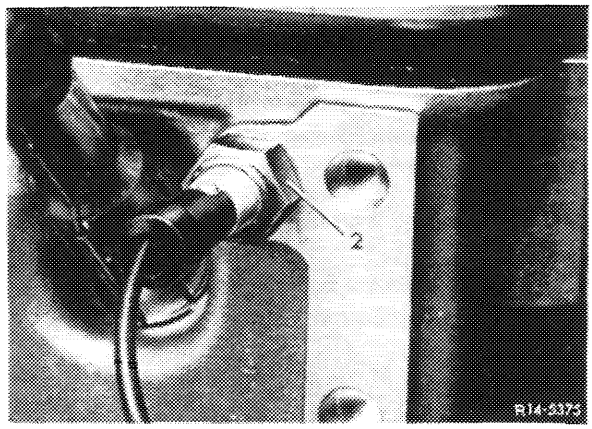

Fig. 07–1/8
Europe exhaust emission control manufactured as of 1971
2 65°C thermostatic switch

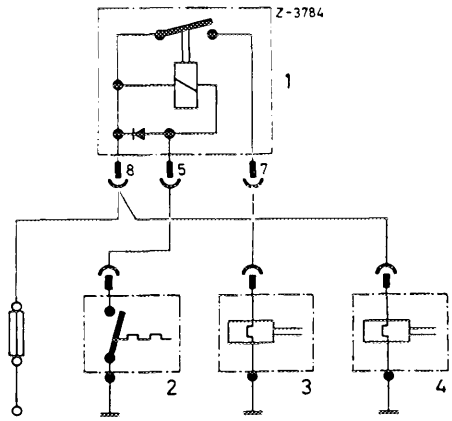

Fig. 07–1/9
Wiring diagram of US exhaust emission control, model year 1970/71

1 Operating contact relay (im relay box)
2 Thermostatic switch
3 Heating coil – automatic choke cover (rear carburetor)
4 Heating coil – automatic choke cover (front carburetor)

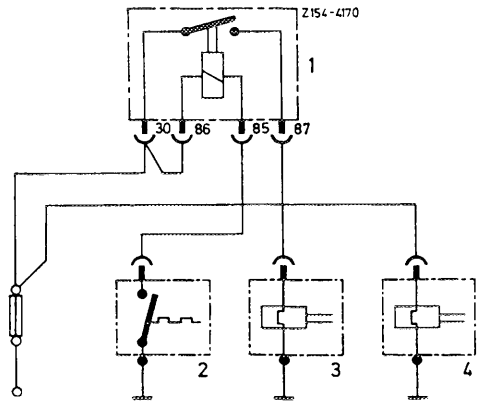

Fig. 07–1/10
Wiring diagram of US exhaust emission control up to model year 1970 and Europe exhaust emission control manufactured as of 1971

1 Operating contact relay
2 Thermostatic switch
3 Heating coil – automatic choke cover (rear carburetor)
4 Heating coil – automatic choke cover (front carburetor)

Checking Thermostatic Switch

1 Pull plug from thermostatic switch.

2 Connect test lamp to battery positive terminal post and to thermostatic switch.

3 Operate engine. The test lamp should come on as soon as the cooling water temperature exceeds + 55°C or + 65°C. If necessary, renew thermostatic switch.

Checking Operating Contact Relay

1 Pull plug from rear automatic choke cover.

2 Connect test lamp to the plug and to ground.

3 Operate engine. The test lamp should come on as soon as the cooling water temperature exceeds + 55°C or + 65°C. If required, renew operating contact relay.