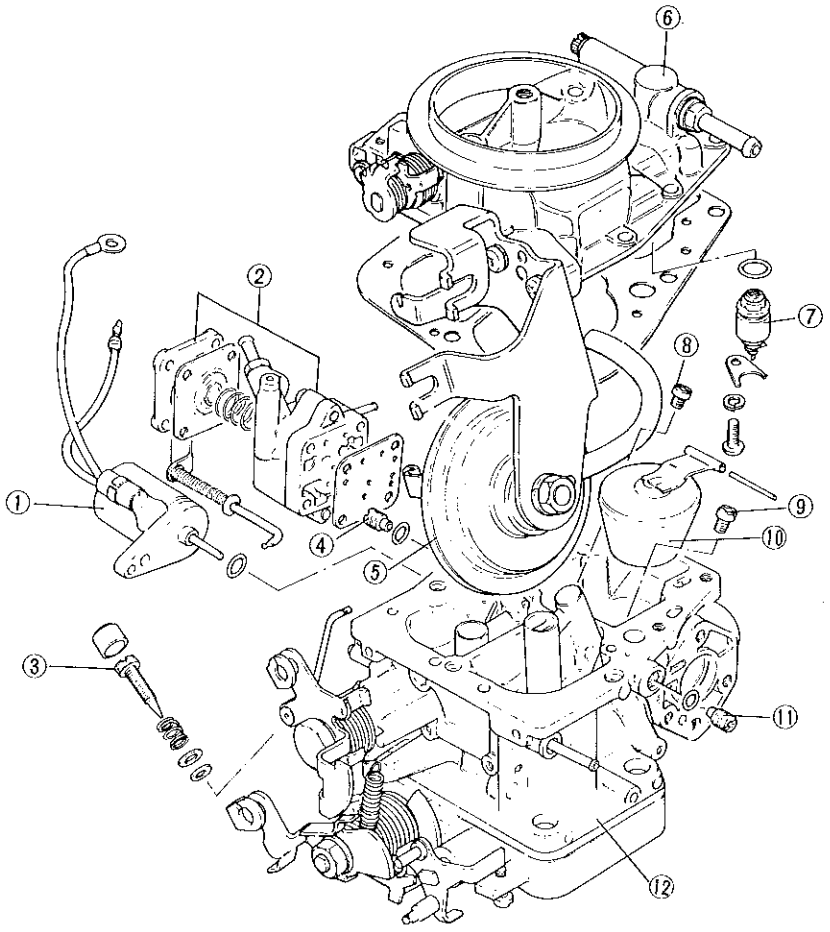
5. CARBURETOR

5–1. Description

This carburetor is of Solex type provided with two venturis, primary and secondary, and among its component parts as shown below are an acceleration pump which operates when accelerating, a fuel cut solenoid valve which helps prevent engine run-on and a depression chamber which actuates the secondary throttle valve.



①Solenoid ②Accelerating pump ③Pilot screw
④Primary pilot jet ⑤Depression chamber ⑥Float chamber upper cover
⑦Needle valve ⑧Primary main jet ⑨Secondary main jet
⑩Float ⑪Secondary pilot jet ⑫Carburetor body

Fig.5-1

5–2. Carburetor Specifications

Item	Primary	Secondary
Throttle bore diameter	24 mm (0.94 in)	30 mm (1.18 in)
Venturi diameter	19 mm (0.75 in)	25 mm (0.98 in)
Main jet	# 92.5	# 165
Main air hole	No. 1 0.5, No. 2 0.6	1.6
Pilot jet	# 40	# 55
Pilot air hole	No. 2 1.8, No. 1 1.5	1.6

5–3. Carburetor Operation

Float chamber

The float chamber with its needle valve is a vessel receiving the fuel from the fuel pump and holding it up to a certain constant level. The float responds to the up-and-down movement of fuel surface and actuates the needle valve.

Slow speed circuit

When the engine starts to run, the fuel in the float chamber flows out through main jet ① and reaches pilot (slow) jet ② . There, incoming fuel is metered and mixed with the air metered at pilot (slow) air holes No. 2 ⑲ and No. 1 ⑳. This air-fuel mixture is sprayed out from bypass port ③ and idle port ④ . During idling, the mixture is sprayed out mainly from idle port ④ and mixed with the air flowing into the main bore. Thus, the air-fuel mixture can be made leaner or richer by tightening or loosening the idle mixture adjusting screw respectively.

> **NOTE:**
> Bypass screw ⑤ adjustment in your market is prohibited. The bypass screw ⑤ is used only within the assembly process of a new car in our factory to control idle mixture.

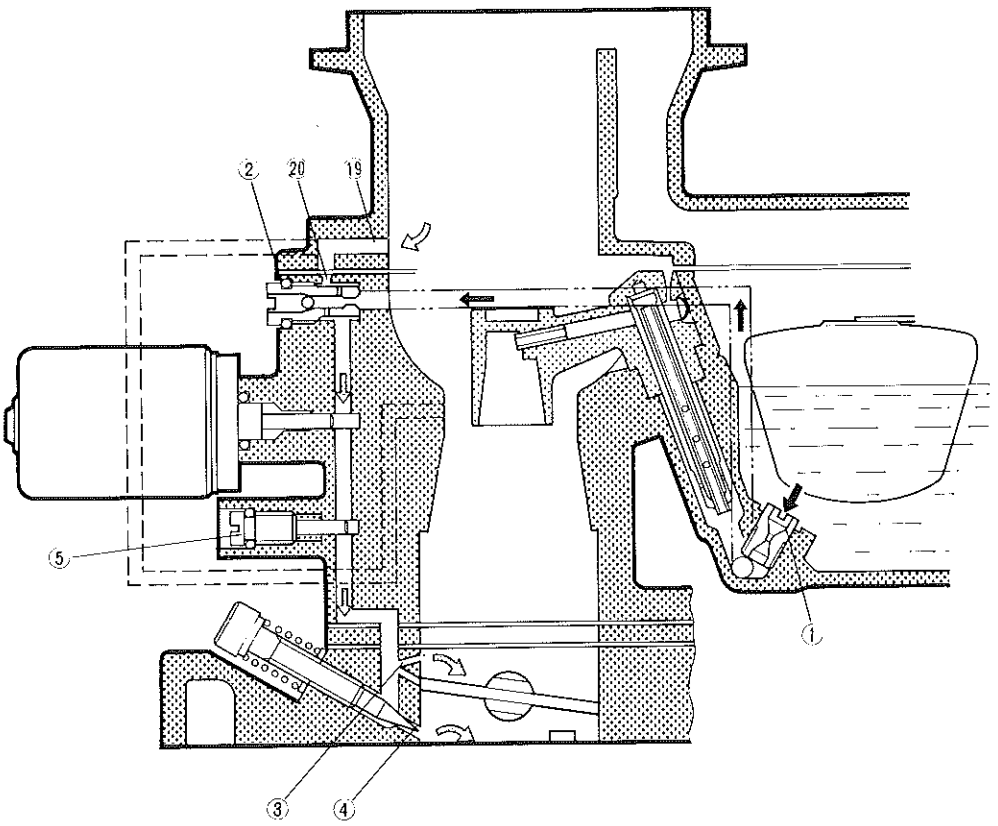


Fig. 5-2

High speed circuit

[Primary circuit]

When the accelerator pedal is depressed from the idle speed position (wider opening of the primary throttle valve), the fuel in the float chamber is metered at primary main jet ① and flows into primary bleed pipe ⑧. There, it is mixed with the air metered at primary main air holes No. 1 ⑥ and No. 2 ⑦. This air-fuel mixture is sprayed out into the inner venturi ⑨ through the primary main nozzle.

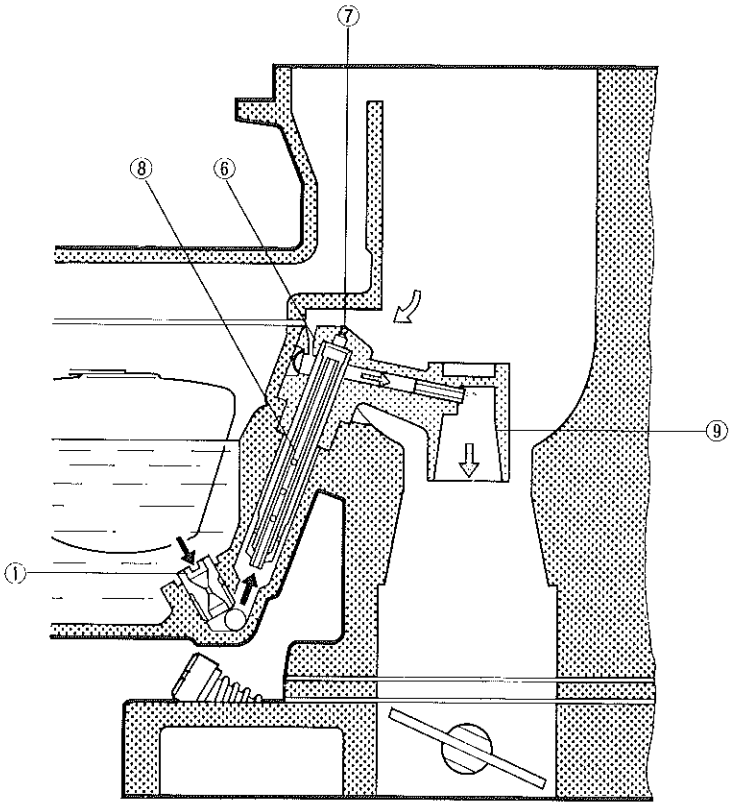


Fig. 5-3

[Secondary circuit]

When the primary throttle valve opens wider than in the above primary circuit (about 40°), the boost pressure about 7 mm Hg (0.275 in Hg) develops in the primary venturi. The boost pressure, being transmitted through the hole ⑩ provided in the primary venturi, surpasses the spring force in the depression chamber and pulls up diaphragm ⑪ as shown in the illustration.

In accordance with this movement of diaphragm, secondary throttle valve ⑫ opens as they are interlocked by way of the rod and lever. In this state, the fuel which has passed through secondary main jet ⑬ reaches secondary pilot jet ⑭ . There, it is metered and mixed with the air which is metered at secondary pilot air hole ⑮ . This mixture is sprayed out of bypass port ⑯ .

When the boost pressure in the primary venturi gets higher and boost pressure develops in the secondary venturi, too, the secondary throttle valve opens wider (more than about 5°). In this state, the fuel metered at main jet ⑬ and the air metered at secondary main air hole ⑱ are mixed in bleed pipe ⑰ . Then this air-fuel mixture is sprayed out into the secondary venturi.

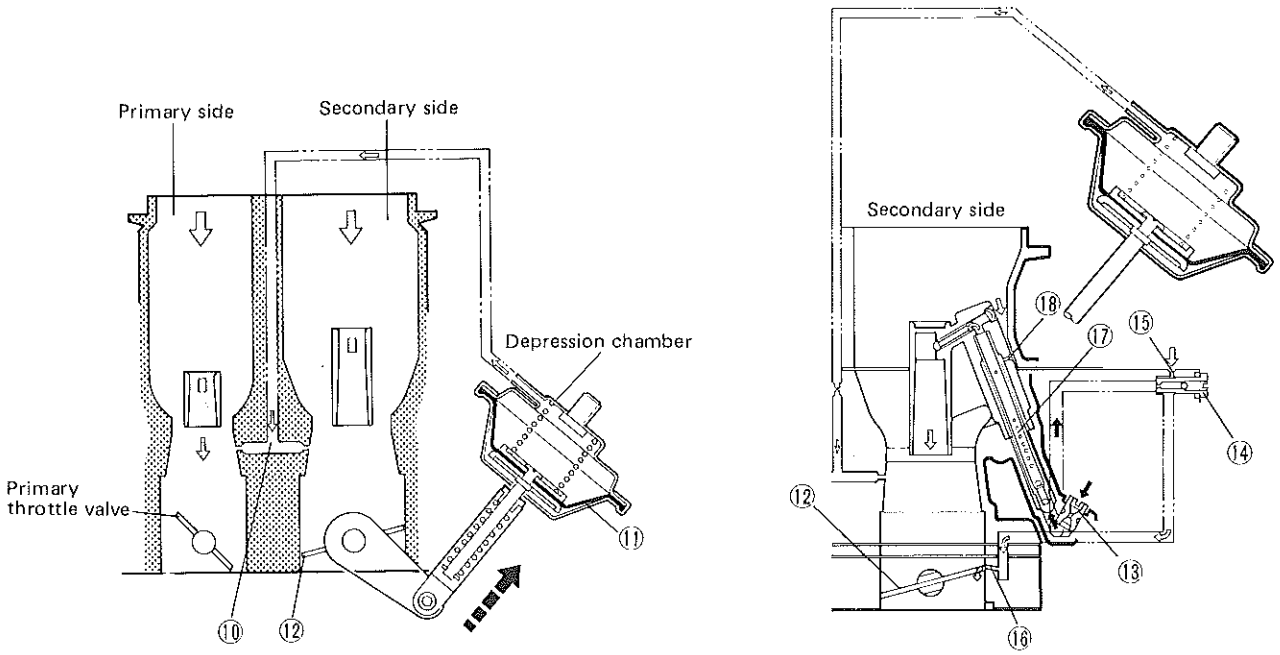


Fig. 5-4

Acceleration power system

The main device of this system is an accelerating pump for making the carburetor respond without delay to the accelerator pedal depressed abruptly while the engine is running in its low speed range or is idling. The actuating lever of this pump is linked to the primary throttle shaft so that, as primary throttle valve opens quickly, the pump lever pushes up the diaphragm, thereby closing suction ball valve and opening discharge ball valve. Consequently, the fuel in the pump is forced out of pump nozzle into the primary venturi.

With the accelerator pedal released, the diaphragm is set back to the original position with the pump spring. In this state, the fuel in the float chamber opens up the inlet check valve and enters the pump chamber.

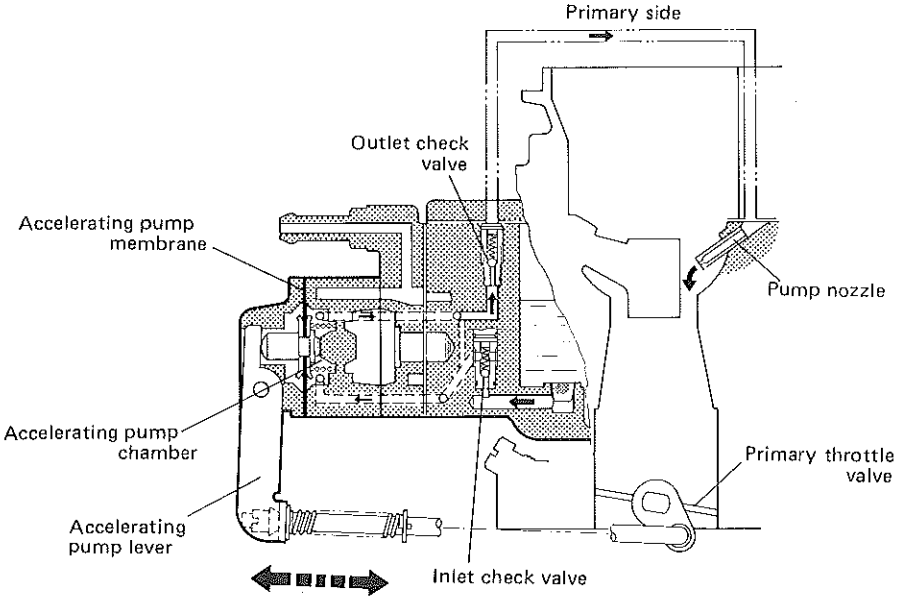


Fig. 5-5

Solenoid valve

This is to prevent engine run-on (the engine doesn't stop at the ignition key OFF). With the ignition key turned ON, current flows in the solenoid coil which generates magnetic force. This pulls the needle valve and opens the passage for slow mixture. On the other hand, with the ignition key turned OFF, magnetic force disappears and the needle valve is brought back to the original position with the spring in the solenoid valve. The closed passage cuts off slow mixture, thus preventing engine run-on.

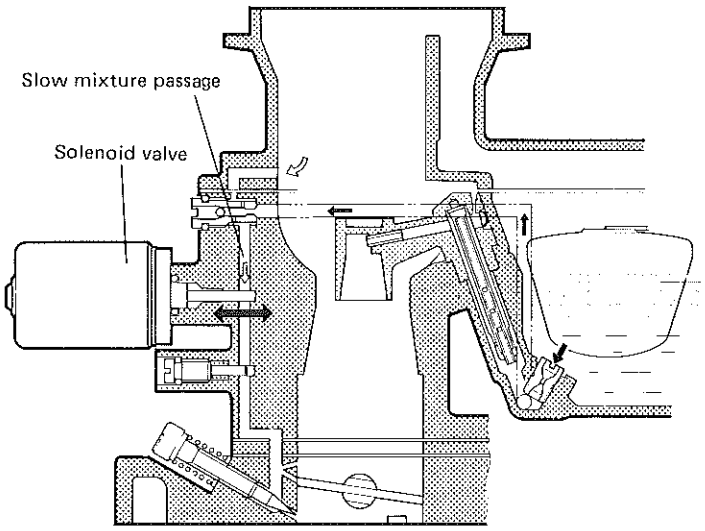


Fig. 5-6

Fuel return system

A fuel return circuit is provided in this carburetor in order to avoid "vapor locking" of fuel. How "vapor locking" is avoided will be explained: When the fuel level rises in the float chamber, its float valve closes; and, as the level falls, the valve opens. With the valve closed, the incoming fuel (delivered under pressure by the pump) finds its way through the sidewise hole provided in the top part of the float valve anchoring point and flows through the passage drilled out through the float chamber wall and around the acceleration pump chamber and back to the fuel tank filler. This arrangement allows the fuel pump to keep on delivering fuel. For this reason, the incoming fuel for the float chamber is always "cold" and cools the acceleration-pump chamber by flowing past its chamber, thereby suppressing the conditions leading to vapor locking.

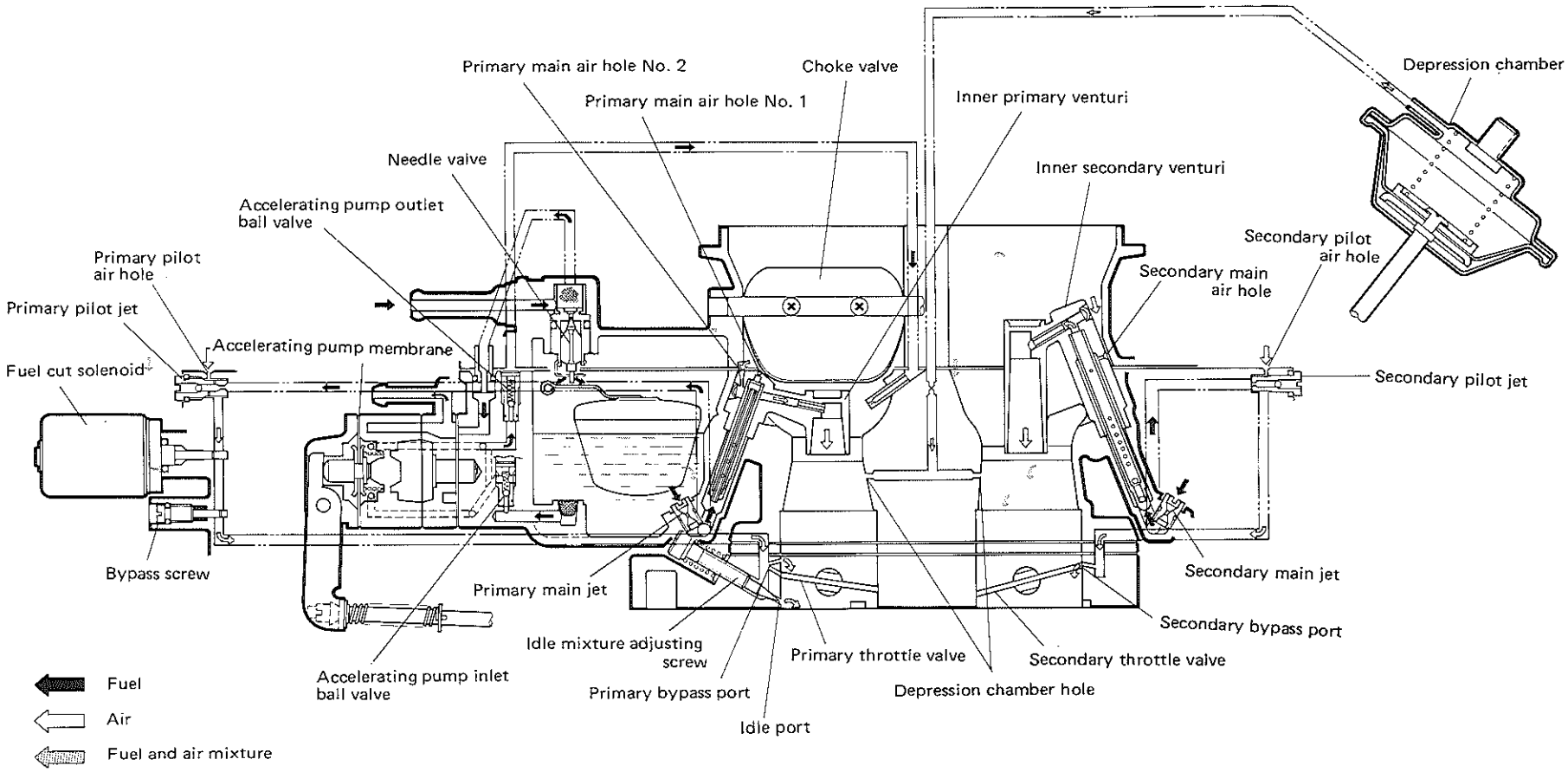


Fig. 5-7 Carburetor circuit diagram

5—4. Inspecting and Adjusting

Jets

Wash the jets clean. Wash the holes in which jets are located, and clear each hole by directing compressed air to it, thereby removing foreign matter, if any.

A clogged pilot jet is usually responsible for erratic engine idling. Erratic engine operation in the medium and high-speed ranges and during acceleration is often accounted for by a clogged condition of main jet, main air hole or hole constrictions in the carburetor body.

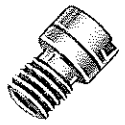


Fig. 5-8

Needle valve

The conical tip of needle valve is subject to wear as this tip seats and unseats in the normal operation of the needle valve. When the needle valve is in closed condition, this tip is pushed against the seat by the float.

Inspect the conical tip and seat for evidence of clogging. As necessary, remove the seat and wash it clean. A worn needle, illustrated in Fig. 5-9, must be replaced. Remember, a clogged or poorly seating needle valve is usually accountable for "overflow."

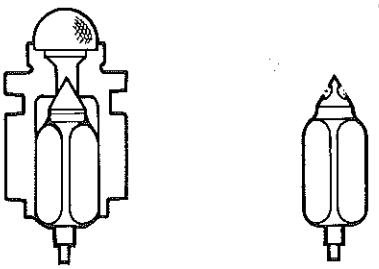


Fig. 5-9

Choke valve

Check to be sure that, when the choke knob is pulled out all the way, the shaft of choke valve in the carburetor will rotate, and that, when the knob is pushed in, the shaft will rotate back to original position.

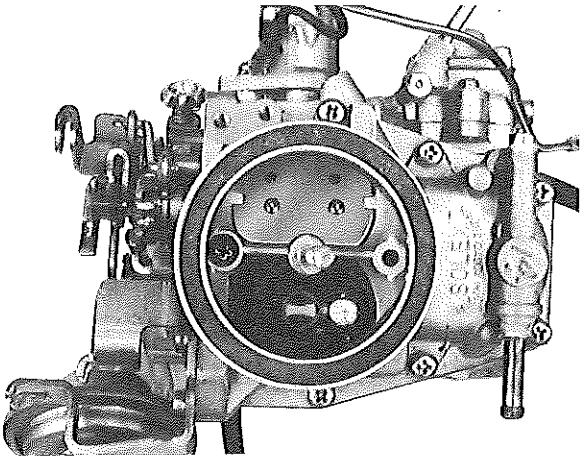


Fig. 5-10 Choke valve (with knob pulled out fully)

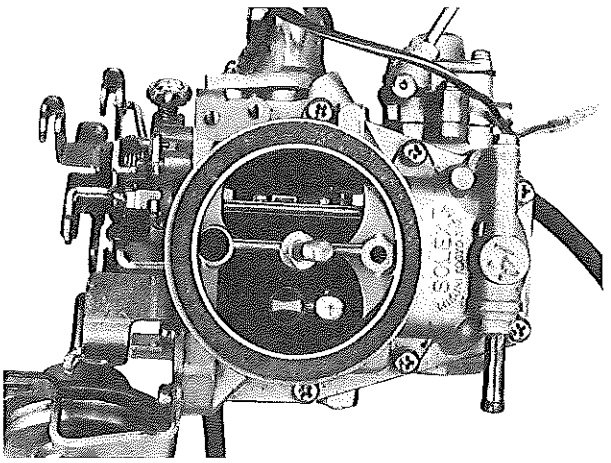


Fig. 5-11 Choke valve (with knob pushed in fully)

Depression chamber

With the engine stopped, check the diaphragm in the depression chamber for breakage according to the following procedures.

1) Keep the primary throttle valve open more than 40°.
2) Pull out the boost hose on the depression chamber from the carburetor body side.
3) Maintain a certain negative pressure in the chamber by sucking air out of the boost hose.

If the secondary throttle valve doesn't open or comes to close gradually even if it opens, the diaphragm in the depression chamber is defective and needs to be replaced.

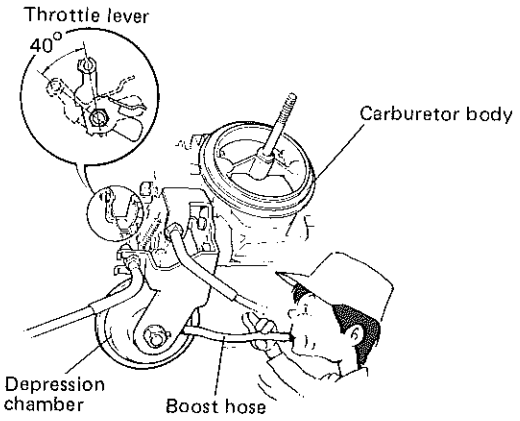


Fig. 5-12

Accelerator and choke cables

Inspect these cables for wear and tear, and check to be sure that each cable connection is in sound condition. Do not hesitate to replace a defective cable or other part; when installing a replacement cable, tighten the connections good and hard.

> **NOTE:**
> Install the choke cable to the carburetor body with the choke knob pulled out about 7 mm (0.27 in.). If this is not done, the choke valve may not return completely to the original position.

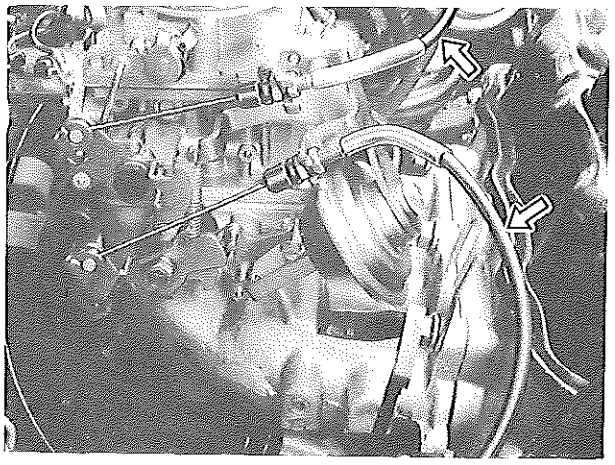


Fig. 5-13

Fuel hose

Inspect the hose for cracks and signs of breakage, and replace it as necessary. Examine it for signs of leakage, too. Be sure that the hose is free of any leak and that its connections are tight.

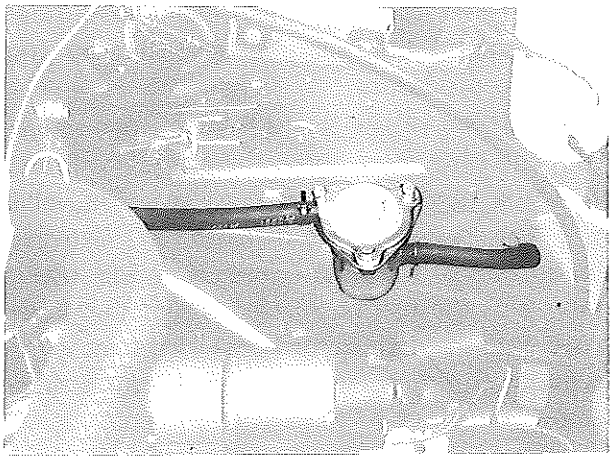


Fig. 5-14

Fuel tank cap

This cap is fitted with a rubber packing. Be sure that the packing is in good condition and that the cap in place is tight and leak-free.

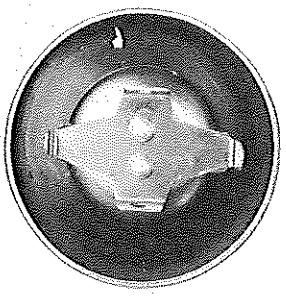


Fig. 5-15

Fuel level adjustment

To see if fuel level is properly maintained, float height should be measured according to the following procedure.

At first, remove the float chamber upper cover from the carburetor body. Invert the cover and allow the float arm ① to contact needle valve ② . Then measure the distance "A" between the bottom of the float (which is upside in this state) and the mating surface line of the upper cover and the carburetor body. If the measurement is 35 mm (1.38 in), the fuel level is satisfactory.

NOTE:
The gasket must be removed when taking measure of "A".

Float height specification "A"	35 mm (1.38 in)

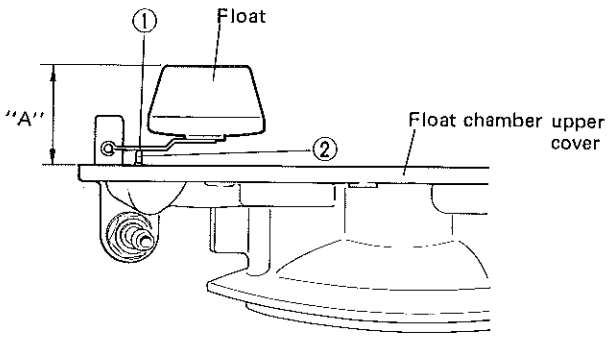


Fig. 5-16

If the measurement is less than specified value, insert the washer between the float chamber upper cover and needle valve so that the specified value can be obtained.

Thickness of float level adjusting washer (Parts No. 13378-73000)	0.3 mm (0.0118 in)

NOTE:
If the measurement is more than specified value, bend the part ③ of the float arm indicated in Fig. 5-17 so that the specified value can be obtained. Never bent the part ④ of the float arm touching needle valve.

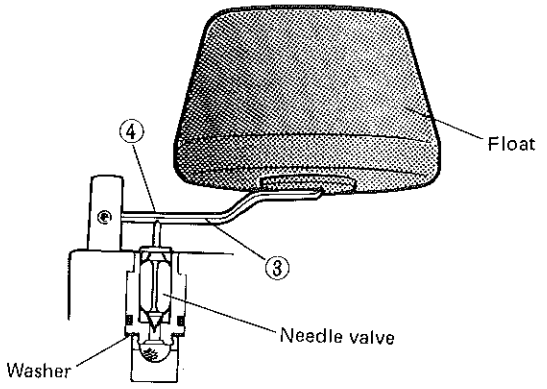


Fig. 5-17

Idle speed and idle mixture adjustment

NOTE: Requires external tachometer.

As preliminary steps, check to be sure that:

- Coolant temperature is approximately 82° C (180° F).

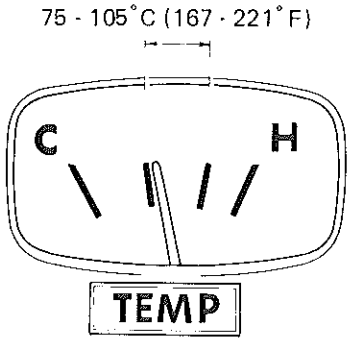


Fig. 5-18

- Choke valve is in the full-open position.
- All accessories (wipers, heater, lights, etc.) are out of service.
- The ignition timing is within specification.
- Fuel level in the carburetor should be specification.
- The air cleaner has been properly installed and is in good condition.
- The engine valve clearance is within specification.

[Idle speed and idle mixture adjustment]
Adjust idle speed by repositioning the idle speed adjusting screw ① , making sure the engine idles steady at 900 r/min (rpm).

Idle mixture adjusting screw ② generally needs no adjustment. However, when the adjusting screw is removed to overhaul the carburetor, adjustment is necessary as follows:
Tighten idle mixture adjusting screw ② fully position where the engine speed is the highest (best idle). Then, readjust the engine idling speed to 900 r/min (rpm) with idle speed adjusting screw ① .

All the cars of this model now manufactured are delivered from the factory after their CO % is preadjusted to the following values.

Engine idle mixture CO %	1.5 ± 0.5
Engine idle speed r/min (rpm)	900 ± 50

In the country with the statutory requirements for the exhaust gas (CO %), be sure to adjust the idle mixture adjusting screw so that the CO % indicated on the exhaust gas tester will be the specified value in the above table.

Adjust the screw ② with special tool (09913-17310).

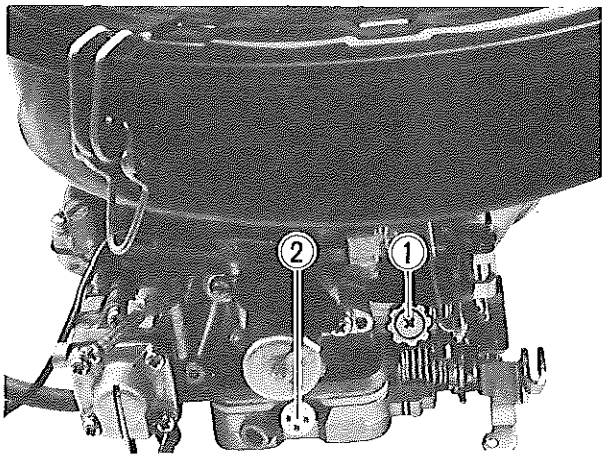


Fig. 5-19