

SECTION 6D

CARBURETOR

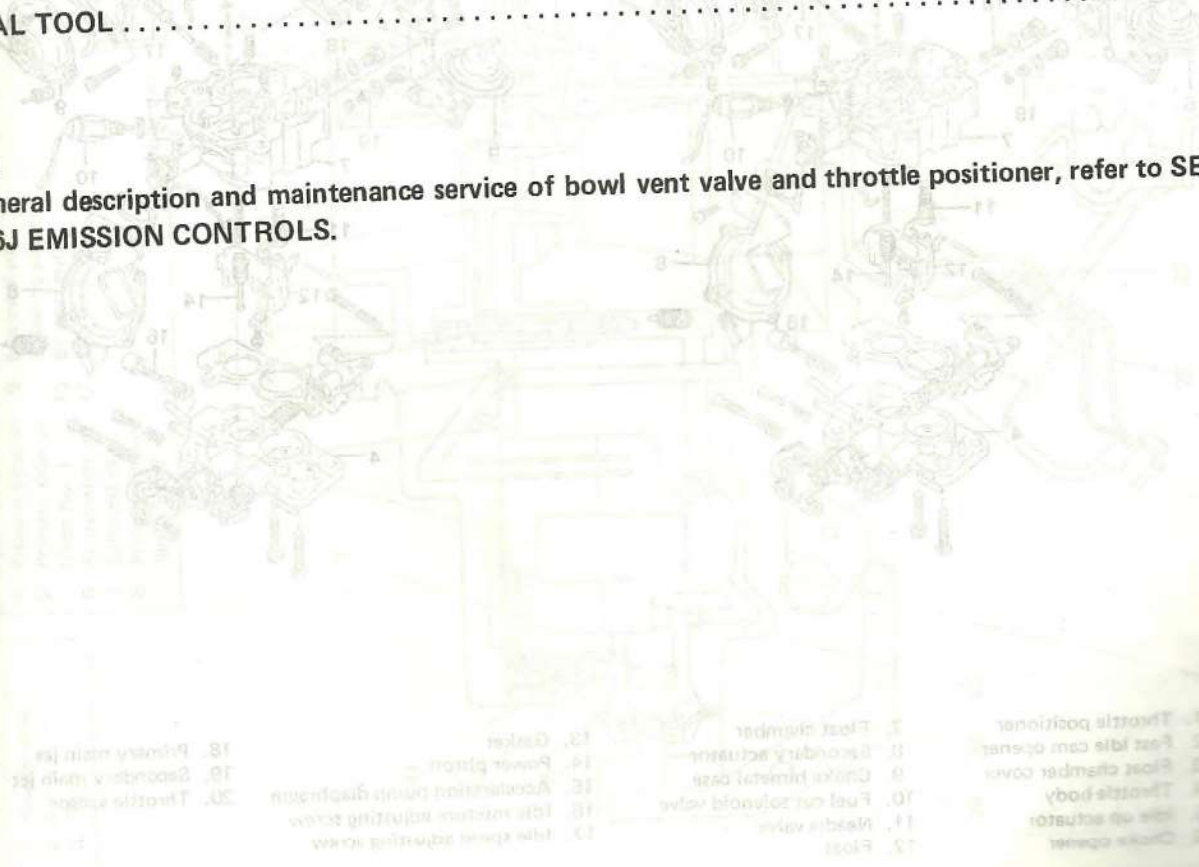
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NOTE:

For general description and maintenance service of bowl vent valve and throttle positioner, refer to SECTION 6J EMISSION CONTROLS.



- | | | | |
|------------------------|----------------------------------|-----------------------------|---------------------------|
| 18. Primary main jet | 13. Gasket | 7. First member | 1. Throttle positioner |
| 19. Secondary main jet | 14. Power piston | 8. Secondary jet | 2. Fast idle cam adjuster |
| 20. Throttle cable | 15. Acceleration pump diaphragm | 9. Choke first jet | 3. Float chamber cover |
| | 16. Idle mixture adjusting screw | 10. Fuel cut solenoid valve | 4. Throttle body |
| | 17. Idle speed adjusting screw | 11. Needle valve | 5. Bowl vent valve |
| | | 12. Float | 6. Choke cable |

GENERAL DESCRIPTION

This carburetor is a 2-barrel downdraft type having a primary system and a secondary system.

The primary system operates under normal driving condition, and the secondary system operates under high speed, high load driving condition.

In the primary system, a choke valve is incorporated.

NOTE:

The following variations in system or parts are used depending on specifications and as required by regulations of each country.

- Air vent solenoid valve — Equipped and not equipped.
- Throttle sensor — Automatic transmission

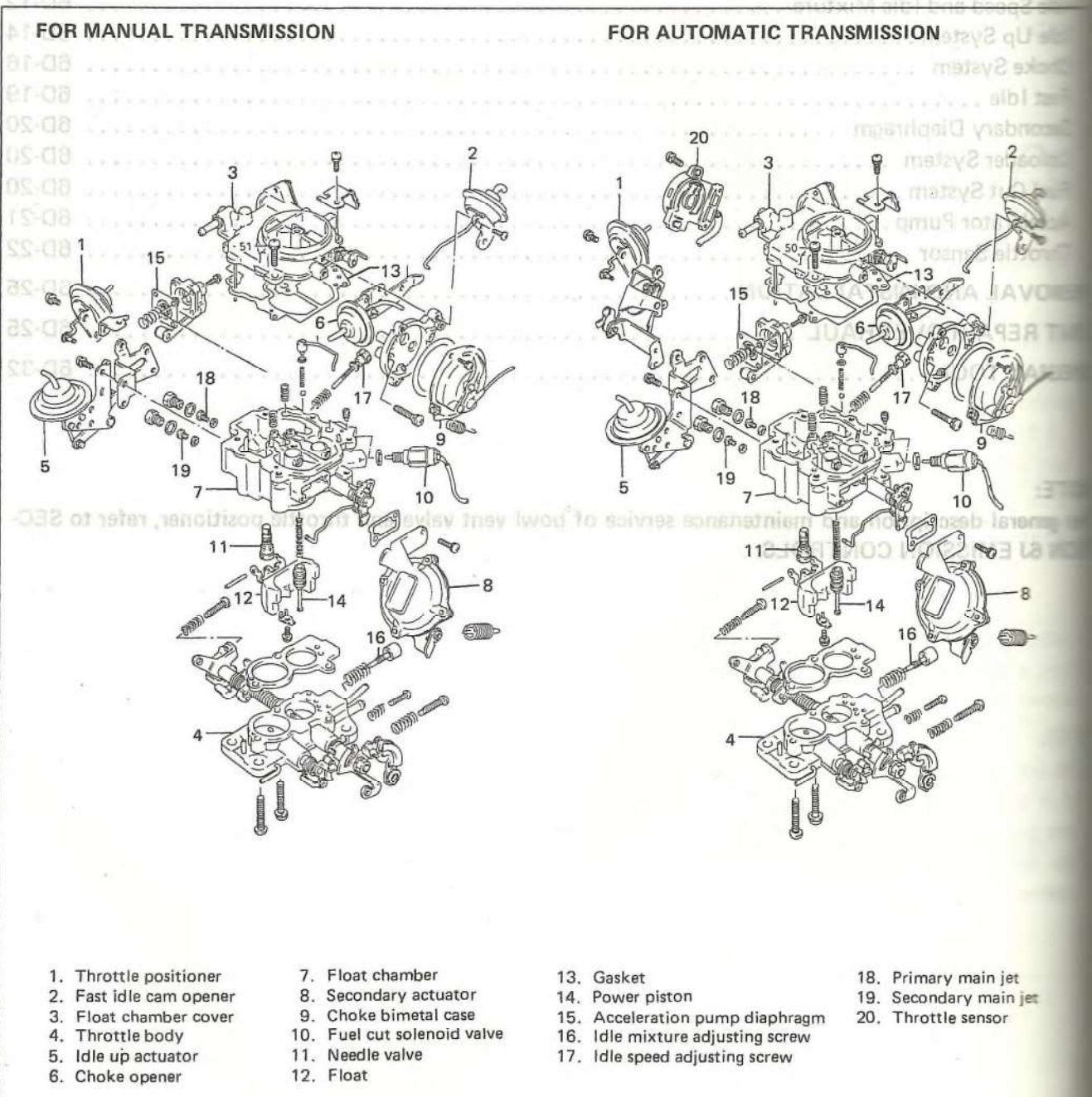
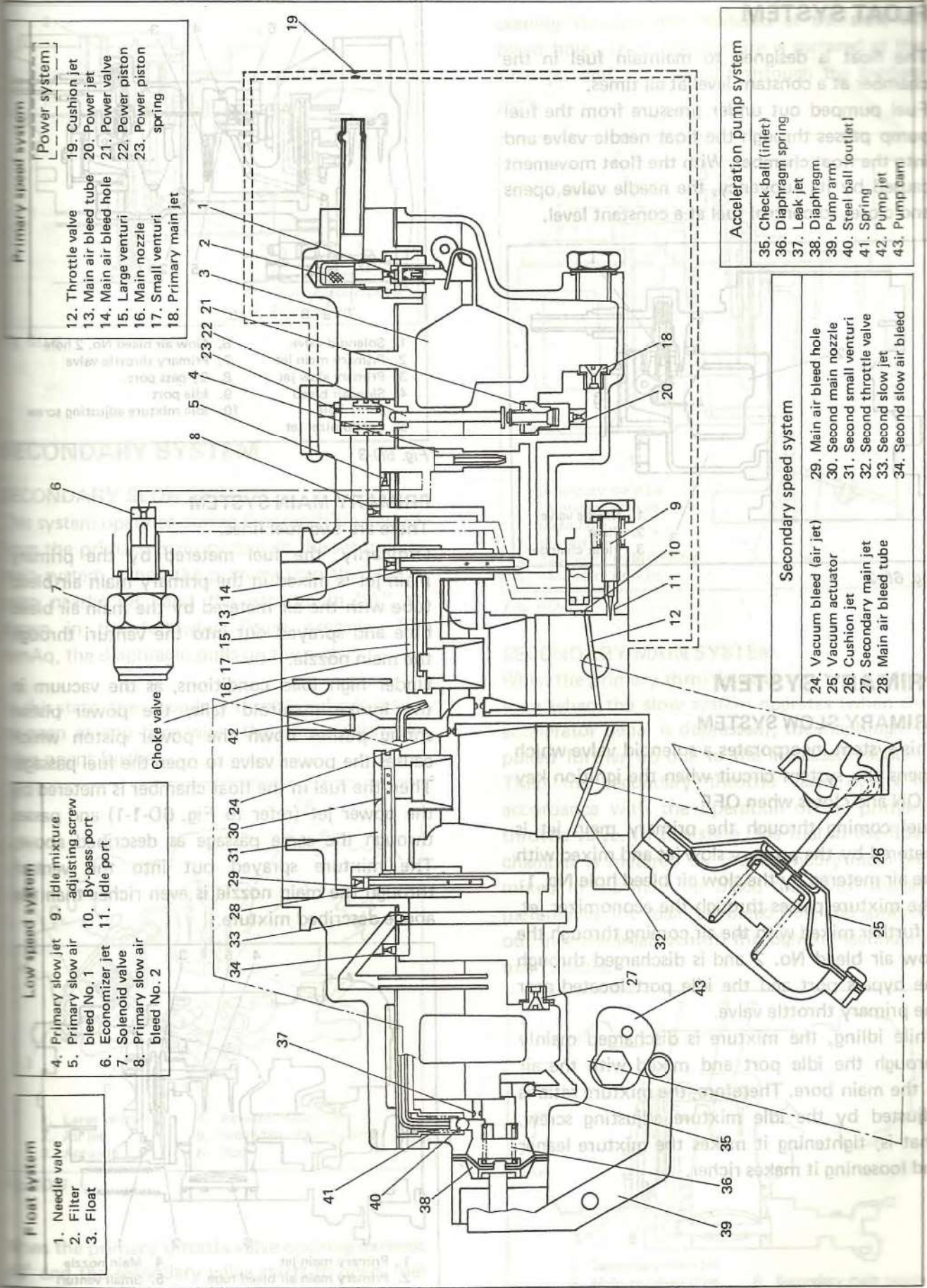


Fig. 6D-1



- Float system**
- 1. Needle valve
 - 2. Filter
 - 3. Float

- Low speed system**
- 4. Primary slow jet
 - 5. Primary slow air bleed No. 1
 - 6. Economizer jet
 - 7. Solenoid valve
 - 8. Primary slow air bleed No. 2
 - 9. Idle mixture adjusting screw
 - 10. By-pass port
 - 11. Idle port

- Primary speed system**
- 12. Throttle valve
 - 13. Main air bleed tube
 - 14. Main air bleed hole
 - 15. Large venturi
 - 16. Main nozzle
 - 17. Small venturi
 - 18. Primary main jet
 - 19. Cushion jet
 - 20. Power jet
 - 21. Power valve
 - 22. Power piston
 - 23. Power piston spring

- Secondary speed system**
- 24. Vacuum bleed (air jet)
 - 25. Vacuum actuator
 - 26. Cushion jet
 - 27. Secondary main jet
 - 28. Main air bleed tube
 - 29. Main air bleed hole
 - 30. Second main nozzle
 - 31. Second small venturi
 - 32. Second throttle valve
 - 33. Second slow jet
 - 34. Second slow air bleed

- Acceleration pump system**
- 35. Check ball (inlet)
 - 36. Diaphragm spring
 - 37. Leak jet
 - 38. Diaphragm
 - 39. Pump arm
 - 40. Steel ball (outlet)
 - 41. Spring
 - 42. Pump jet
 - 43. Pump arm

FLOAT SYSTEM

The float is designed to maintain fuel in the chamber at a constant level at all times.

Fuel pumped out under pressure from the fuel pump passes through the float needle valve and into the float chamber. With the float movement caused by its buoyancy, the needle valve opens and closes to control fuel at a constant level.

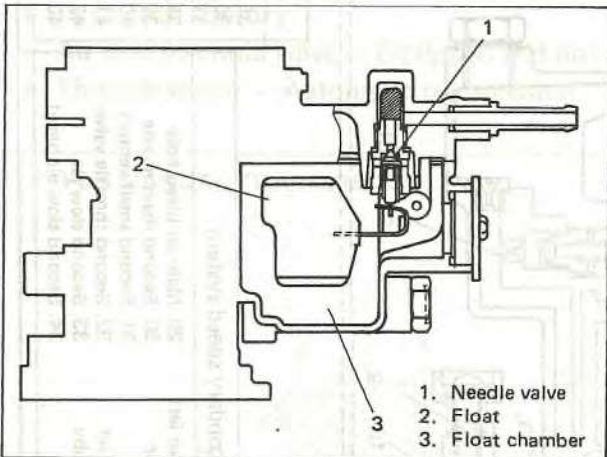


Fig. 6D-2

PRIMARY SYSTEM

PRIMARY SLOW SYSTEM

This system incorporates a solenoid valve which opens the system circuit when the ignition key is ON and closes when OFF.

Fuel coming through the primary main jet is metered by the primary slow jet and mixed with the air metered by the slow air bleed hole No. 1. The mixture passes through the economizer jet, is further mixed with the air coming through the slow air bleed No. 2 and is discharged through the bypass port and the idle port located near the primary throttle valve.

While idling, the mixture is discharged mainly through the idle port and mixed with the air in the main bore. Therefore, the mixture ratio is adjusted by the idle mixture adjusting screw. That is, tightening it makes the mixture leaner and loosening it makes richer.

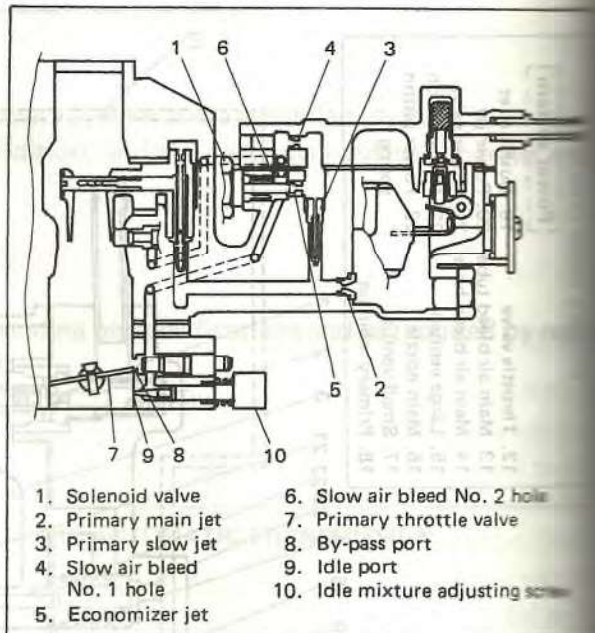


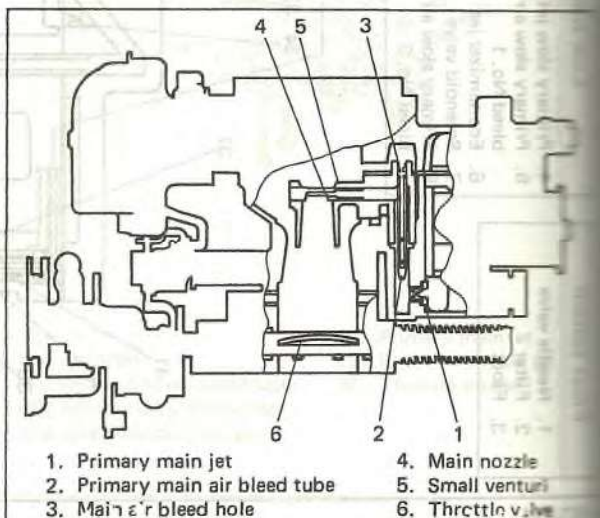
Fig. 6D-3

PRIMARY MAIN SYSTEM

There are two fuel lines.

Ordinarily, the fuel metered by the primary main jet is mixed in the primary main air bleed tube with the air metered by the main air bleed hole and sprayed out into the venturi through the main nozzle.

Under high load conditions, as the vacuum in the intake manifold falls, the power piston spring pushes down the power piston which causes the power valve to open the fuel passage. Then the fuel in the float chamber is metered by the power jet (refer to Fig. 6D-1-1) and passes through the same passage as described above. The mixture sprayed out into the venturi through the main nozzle is even richer than the above described mixture.



- | | |
|--------------------------------|-------------------|
| 1. Primary main jet | 4. Main nozzle |
| 2. Primary main air bleed tube | 5. Small venturi |
| 3. Main air bleed hole | 6. Throttle valve |

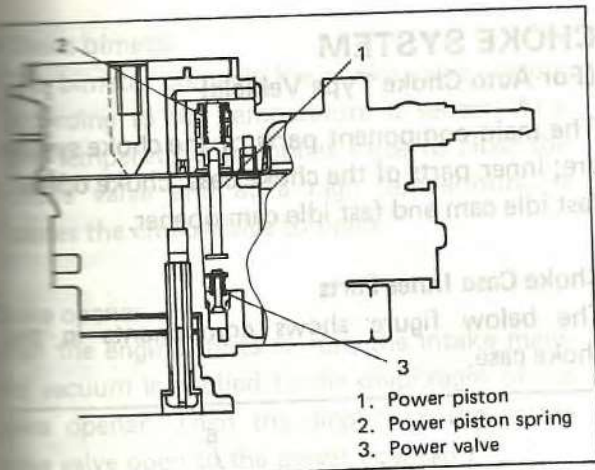


Fig. 6D-5

SECONDARY SYSTEM

SECONDARY SLOW SYSTEM

This system operates during the transition period from the primary main system to the secondary main system. When the primary throttle valve is open nearly 48° and the vacuum in "A" as shown in the following figure exceeds -60 mmAq, the diaphragm pulls up the rod.

In this state, the secondary throttle valve is ready to open at any time when the primary throttle valve opens further.

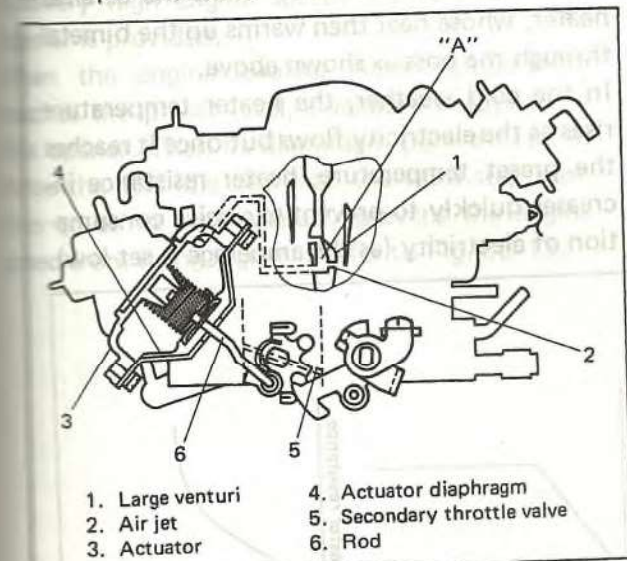


Fig. 6D-6

When the primary throttle valve opening exceeds 48° and the secondary valve starts to open, fuel from the float chamber is mixed with the air

coming through and metered at the slow air bleed hole. Then the mixture is metered at the slow jet and sprayed out through the by-pass port.

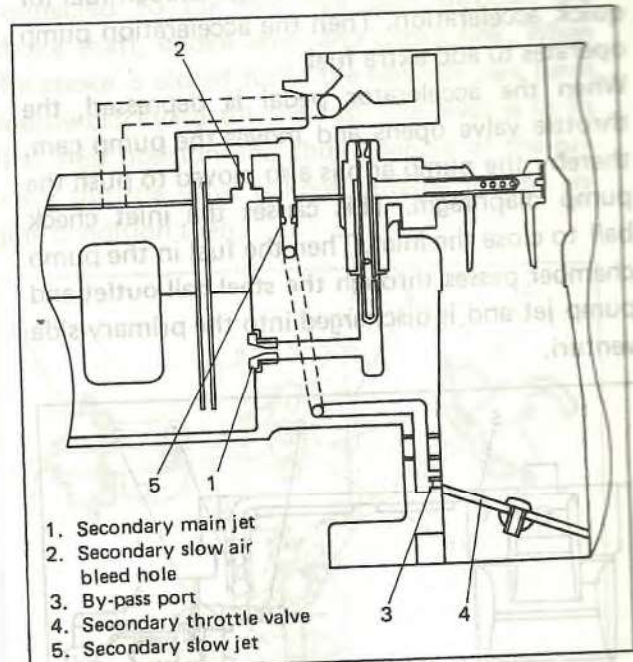


Fig. 6D-7

SECONDARY MAIN SYSTEM

When the primary throttle valve opening is wider than when the slow system operates (when the accelerator pedal is depressed), the diaphragm is pulled further up due to the increased vacuum. Then the secondary throttle valve opens in accordance with the operation of the primary throttle valve. In this state, the fuel in the float chamber is metered by the secondary main jet, mixed in the main air bleed tube with the air metered by the main air bleed hole and sprayed out into the small venturi through the secondary main nozzle.

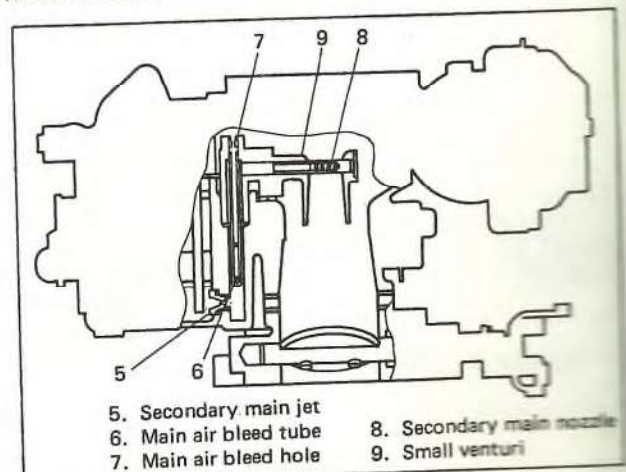


Fig. 6D-8

ACCELERATION PUMP SYSTEM

When the accelerator pedal is depressed quickly during idling or low speed driving, the throttle valve opens but cannot discharge enough fuel for quick acceleration. Then the acceleration pump operates to add extra fuel.

When the accelerator pedal is depressed, the throttle valve opens and moves the pump cam, thereby the pump arm is also moved to push the pump diaphragm. This causes the inlet check ball to close the inlet. Then the fuel in the pump chamber passes through the steel ball outlet and pump jet and is discharged into the primary side venturi.

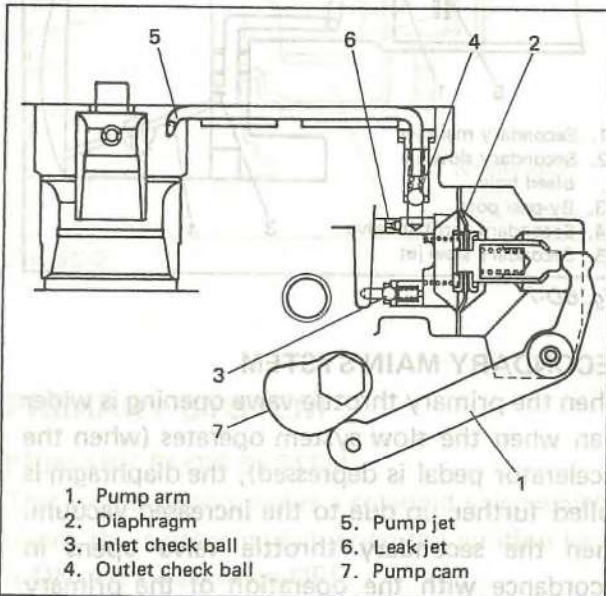


Fig. 6D-9

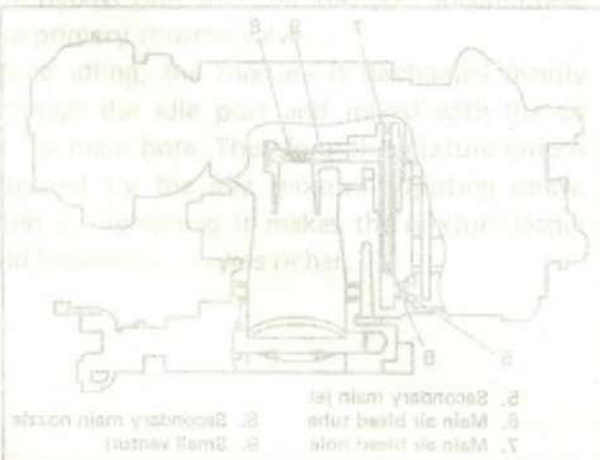


Fig. 6D-8

CHOKE SYSTEM

(For Auto Choke Type Vehicle)

The main component parts of the choke system are; inner parts of the choke case, choke case, fast idle cam and fast idle cam opener.

Choke Case Inner Parts

The below figure shows components in the choke case.

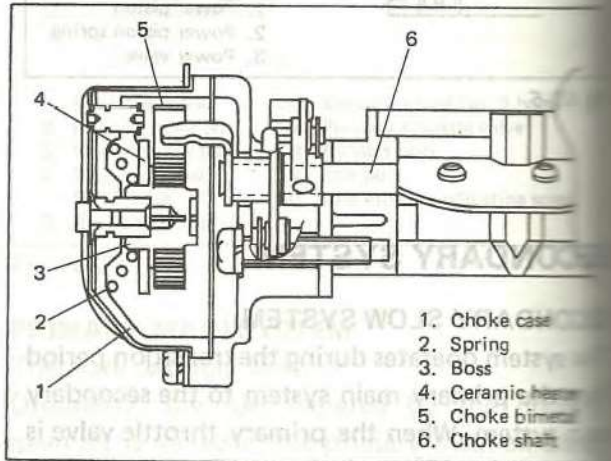


Fig. 6D-10

- Ceramic heater
The ceramic heater is fixed by the spring force. When the engine is started, about 14V voltage generated in the alternator heats the ceramic heater, whose heat then warms up the bimetal through the boss as shown above. In the cold weather, the heater temperature rises as the electricity flows but once it reaches the preset temperature, heater resistance increases quickly to prevent excessive consumption of electricity (as the amperage is set low).

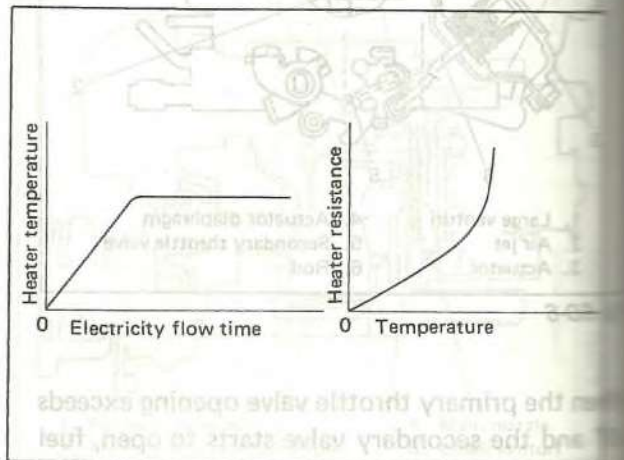


Fig. 6D-10-1

Choke bimetal

The bimetal controls the choke valve closure according to the temperature it senses. At a low temperature, it applies force to close the choke valve and at a high temperature, it causes the choke valve to open.

Choke opener

When the engine starts to run, the intake manifold vacuum is applied to the diaphragm of the choke opener. Then the diaphragm makes the choke valve open to the preset opening.

For further information, refer to AFTER ENGINE START on the next page.

Fast idle cam

As the fast idle cam is interlocked with the choke valve through the link, it keeps the fast idle lever positioned at the first step of the fast idle cam when the choke valve is closed. This causes the idle lever to open the throttle valve to the optimum opening so as to help the engine start and maintain the engine idle speed properly while the engine is being warmed.

Fast idle cam opener

Generally, the warmer the engine becomes, the higher the engine speed rises. To prevent an excessively high engine speed, the fast idle cam opener is provided.

When the engine cooling water temperature reaches the preset level, a vacuum is applied to the opener. Then its diaphragm pulls the rod to force the fast idle cam into the third step position so as to automatically prevent the engine speed from rising higher. (Refer to Fig. 6D-13.)

AT COLD ENGINE START

When the engine is cold, the choke bimetal is contracted and therefore applies force in such a direction as to close the choke valve which is connected to the fast idle cam through the choke shaft, choke lever and choke link. When the choke is closed fully, the fast idle cam turns counterclockwise till the fast idle lever is in its first step position and thus opening of the primary throttle valve is kept suitable for the engine condition then.

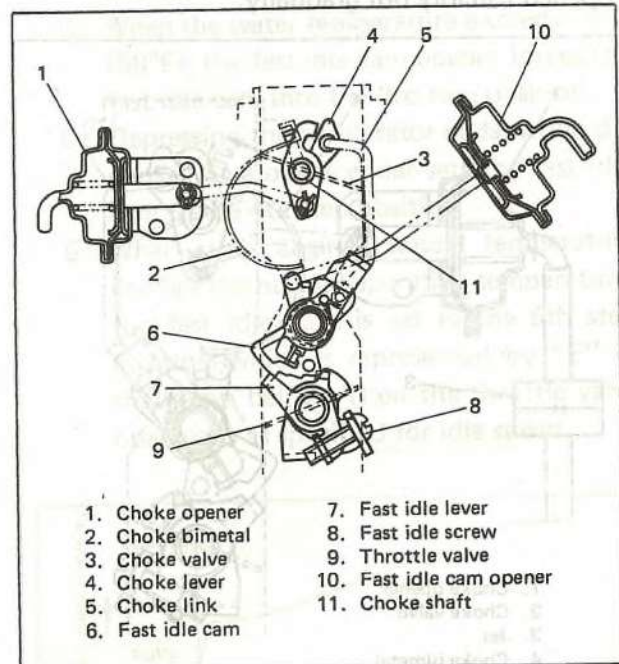


Fig. 6D-11

Fig. 6D-12

RELEASE OF CHOKE

As the engine becomes warmer, the bimetal expands and applies force to the choke valve to open gradually till it is fully open.

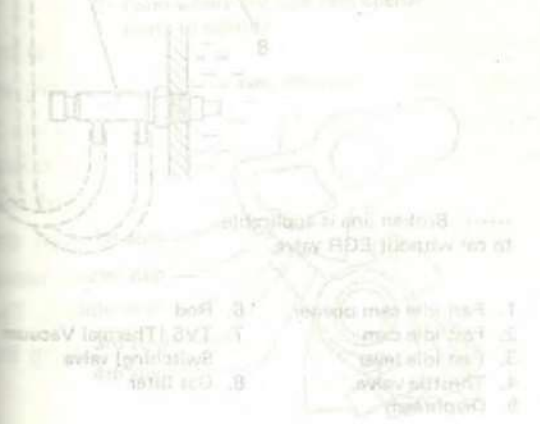


Fig. 6D-13

IMMEDIATELY AFTER ENGINE START

When the engine starts to run, the intake manifold vacuum increases. Then the diaphragm of the choke opener operates to force the choke valve to open a little to prevent air/fuel mixture from getting excessively rich.

Also a jet is provided between the choke opener and intake manifold. This is to prevent the choke valve from opening quickly as it would result in an unstable engine speed.

With working of these parts, the choke valve is opened forcibly but gradually.

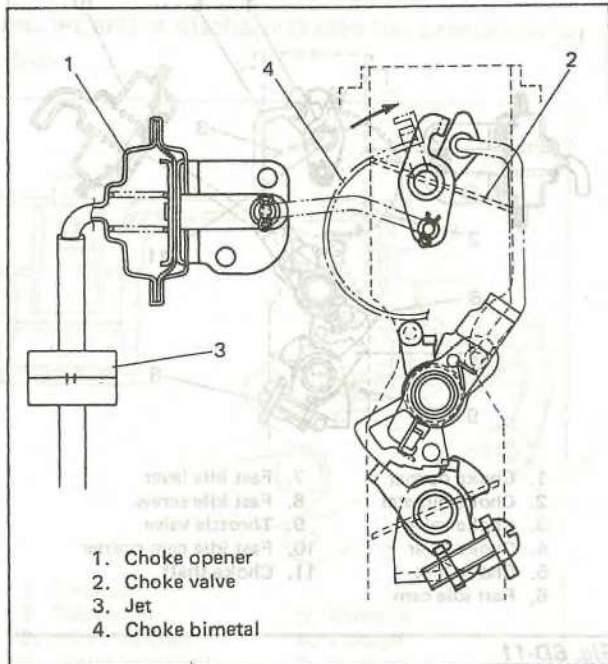


Fig. 6D-12

RELEASE OF CHOKE

As the engine becomes warmer, the bimetal expands and applies force to the choke valve to open gradually till it is full open.

FAST IDLE CAM OPERATOR OPERATION

If the accelerator pedal is not depressed, engine speed increases as the engine becomes warmer. However, when the water temperature exceeds about 15°C (59°F), TVSV (Thermal Vacuum Switching Valve) opens the passage between the fast idle cam opener and intake manifold, thereby the manifold vacuum is applied to the diaphragm of the idle cam opener. As the diaphragm pulls up the rod in this state, the positions of the fast idle cam and idle cam change and at the same time, the throttle valve closes a little to decrease the engine speed about 400 r/min. higher than the specified speed.

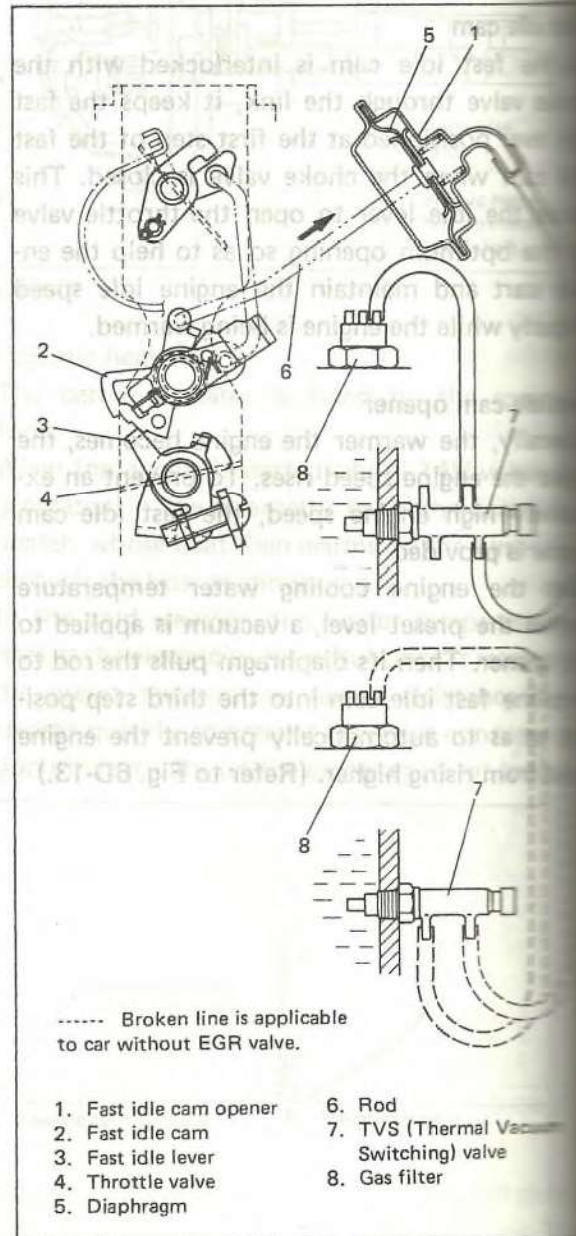


Fig. 6D-13

SUMMARY OF CHOKE SYSTEM OPERATION

From cold engine start till warmed up
 The description here covers the state in which the accelerator pedal is depressed fully before the engine start and it is released later.

- A: When the engine is started, the choke opener operates to open the choke valve to the specified opening which provides a stable engine speed.
- B: As the bimetal is heated by the ceramic heater, the choke valve opens gradually and thus the engine speed increases gradually as the engine is warmed up.
- C: When the engine becomes warmer and the engine water temperature reaches the pre-set temperature, the fast idle cam opener operates to set the fast idle cam to its 3rd step position as shown below, thereby increase in the engine speed is prevented.

- Choke valve opening and fast idle cam operation from cold engine start (at a temperature lower than 15°C or 59°F) through vehicle running till fully warmed up

- A: Depressing the accelerator pedal before the engine start sets the fast idle cam to the 1st step position as shown below.
- B: When the engine is started, the choke opener operates to open the choke valve to the specified opening. Depressing the accelerator pedal in this state sets the fast idle cam to the 2nd step position.
- C: When the water temperature exceeds 15°C (59°F), the fast idle cam opener forces the fast idle cam into the 3rd step position.
- D: Depressing the accelerator pedal while the choke valve opens wider sets the fast idle cam to the 4th step position.
- E: When the engine water temperature reaches the normal operating temperature, the fast idle cam is set to the 5th step position which is represented by "E" in the graph below. Then the throttle valve opening is as specified for idle speed.

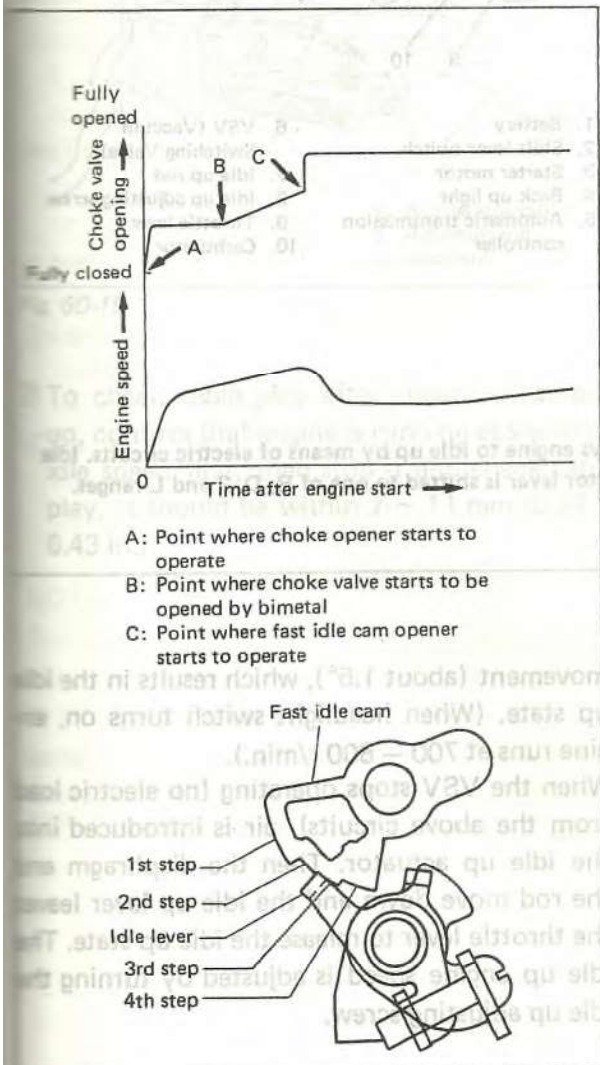


Fig. 6D-13-1

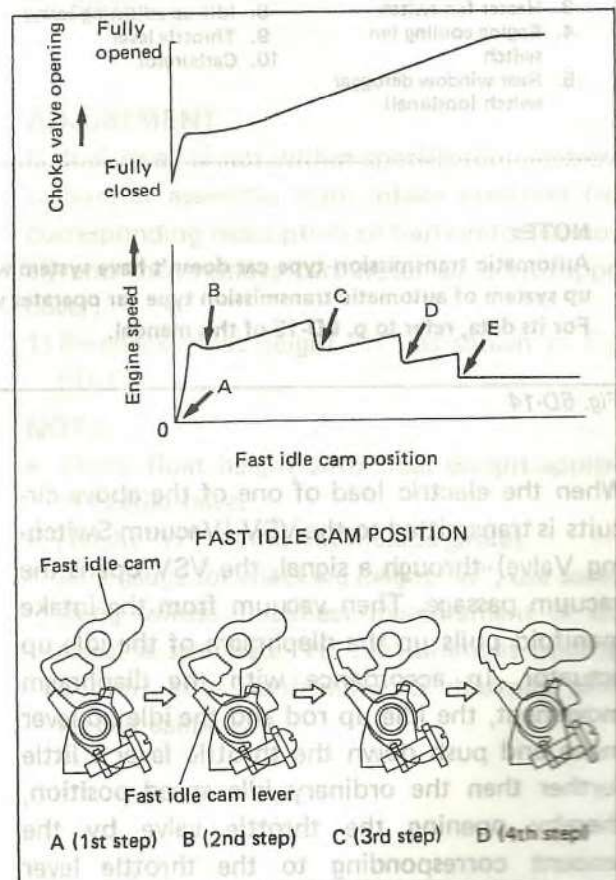
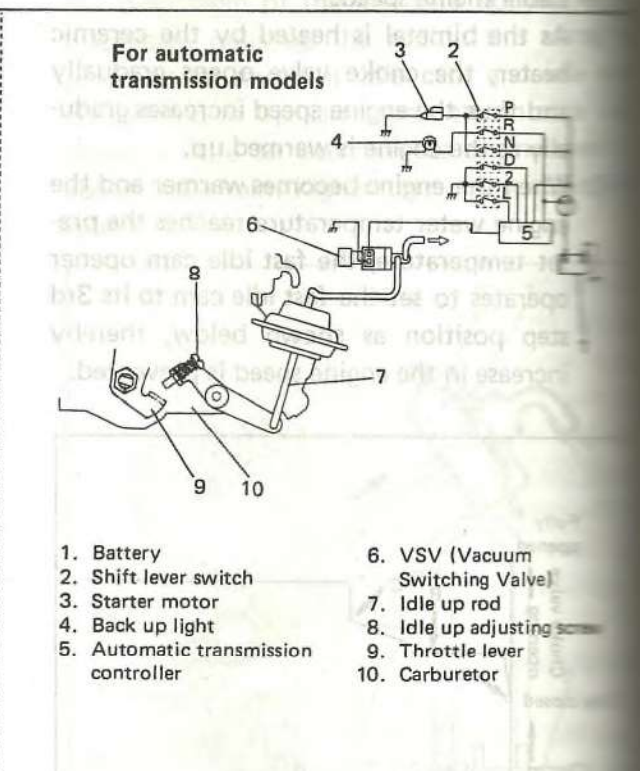
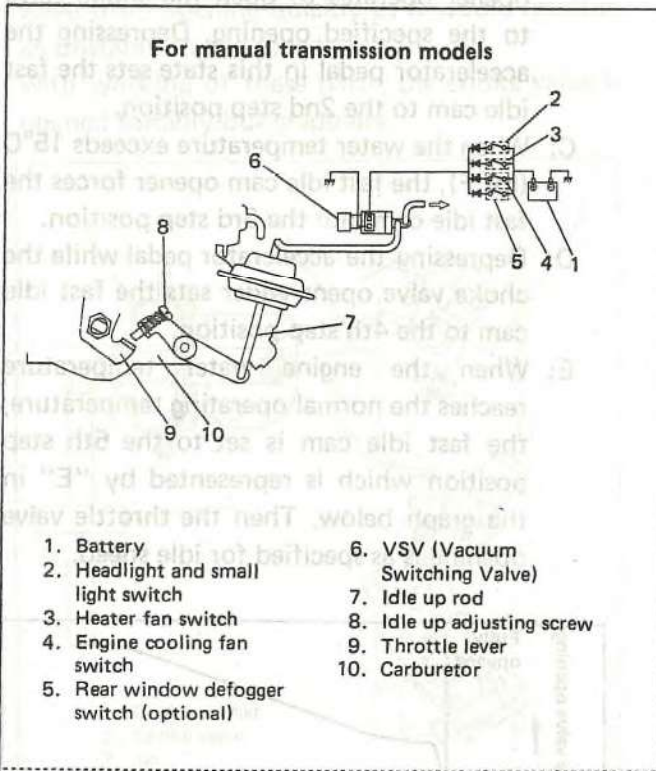


Fig. 6D-13-2

IDLE UP SYSTEM

The structure of this system is as shown below. The system operates to stabilize the engine idle when one of the following electric circuits is ON. By using this system, the engine idle speed can be increased under ordinary conditions.

- ① Headlight and small light
- ② Heater fan
- ③ Engine cooling fan
- ④ Rear defogger



NOTE:

Automatic transmission type car doesn't have system which allows engine to idle up by means of electric circuits. Idle up system of automatic transmission type car operates when selector lever is shifted to one of R, D, 2 and L ranges. For its data, refer to p. 6D-15 of this manual.

Fig. 6D-14

When the electric load of one of the above circuits is transmitted to the VSV (Vacuum Switching Valve) through a signal, the VSV opens the vacuum passage. Then vacuum from the intake manifold pulls up the diaphragm of the idle up actuator. In accordance with the diaphragm movement, the idle up rod and the idle up lever move and push down the throttle lever a little further than the ordinary idle speed position, thereby opening the throttle valve by the amount corresponding to the throttle lever

movement (about 1.5°), which results in the idle up state. (When headlight switch turns on, engine runs at 700 – 800 r/min.). When the VSV stops operating (no electric load from the above circuits), air is introduced into the idle up actuator. Then the diaphragm and the rod move down and the idle up lever leaves the throttle lever to release the idle up state. The idle up engine speed is adjusted by turning the idle up adjusting screw.

ON CAR SERVICE

ACCELERATOR CABLE PLAY

APPLICABLE TO CAR EQUIPPED WITH AUTOMATIC CHOKE TYPE CARBURETOR

Check accelerator cable for play and adjust if necessary.

After confirming that carburetor and coolant are cold, choke valve is fully closed and engine is not running, depress accelerator pedal fully and release it. In such state, cable play "A" should be 13 – 17 mm (0.52 – 0.67 in.) If not within specification, adjust by loosening lock nut.

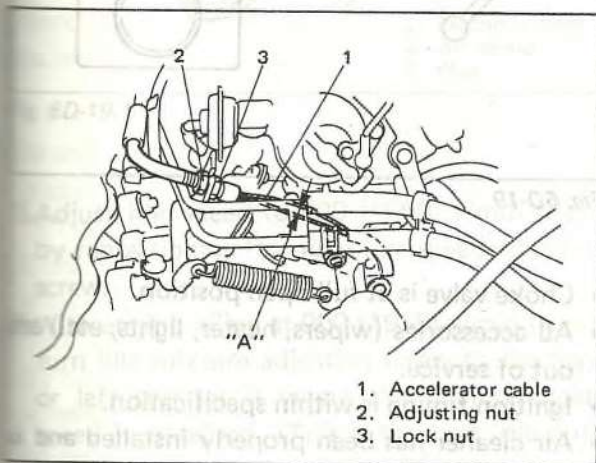


Fig. 6D-15

To check cable play after engine is warmed up, confirm that engine is running at specified idle speed first, then stop it and check cable play. It should be within 7 ~ 11 mm (0.27 ~ 0.43 in.).

FLOAT LEVEL

WARNING:

Float level inspection and adjustment must be performed in well-ventilated place where no fire is used around.

INSPECTION

A mirror and light may be necessary for this work. Fuel level in float chamber should be within "A" range as shown in figure below.

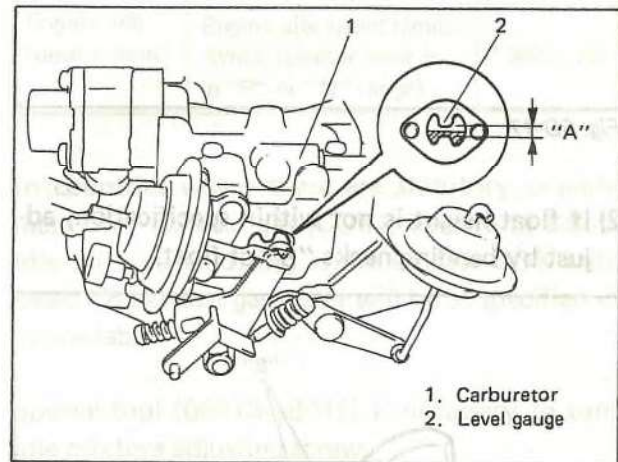


Fig. 6D-16

ADJUSTMENT

If fuel level is not within specification, remove carburetor assembly from intake manifold (see corresponding description of Carburetor Removal) and then remove carburetor air horn (upper cover).

1) Re-check float height "H" as shown in Fig. 6D-17.

NOTE:

- Check float height with float weight applied to needle valve.
- Height "H" should not include gasket.
- As a gauge for checking height "H", use something whose thickness measurement is the same as specified "H" measurement (such as a drill) after confirming its thickness with vernier calipers.

Float height "H"	4.5 mm (0.177 in.)
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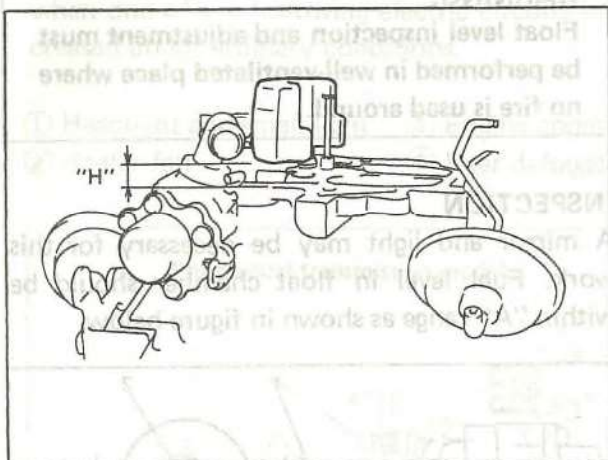


Fig. 6D-17

2) If float height is not within specification, adjust by bending necks "B" of float.

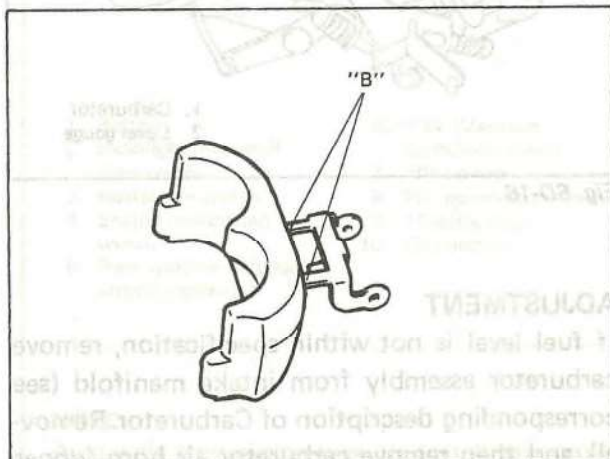


Fig. 6D-18

3) Check needle valve for wear and dust. Also, check to ensure that no fuel is in float by shaking it.

After installing carburetor to intake manifold, start engine and check each part for fuel leakage or air entry. Also, check each link system and each part, referring to corresponding description in ON CAR SERVICE section for details.

IDLE SPEED AND IDLE MIXTURE

NOTE:

This check requires use of external tachometer.

As preliminary steps, check to be sure that:

- Coolant temperature is within below indicated range.

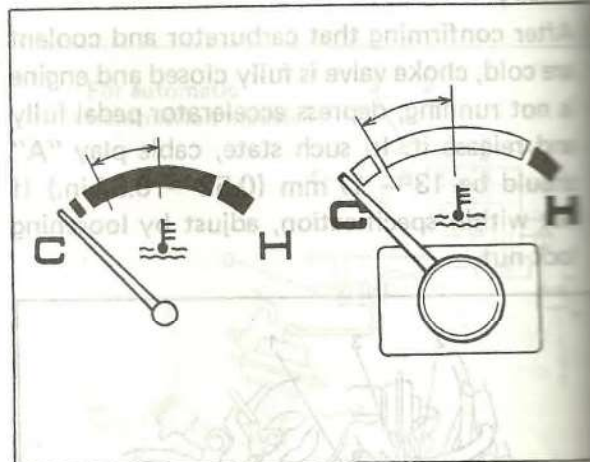


Fig. 6D-19

- Choke valve is at full-open position.
- All accessories (wipers, heater, lights, etc.) are out of service.
- Ignition timing is within specification.
- Air cleaner has been properly installed and is in good condition.
- Engine valve clearance is within specification.
- Parking brake is pulled fully.
- Selector lever is in "P" range. (For A/T)
- Drive wheels are blocked. (For A/T)

NOTE:

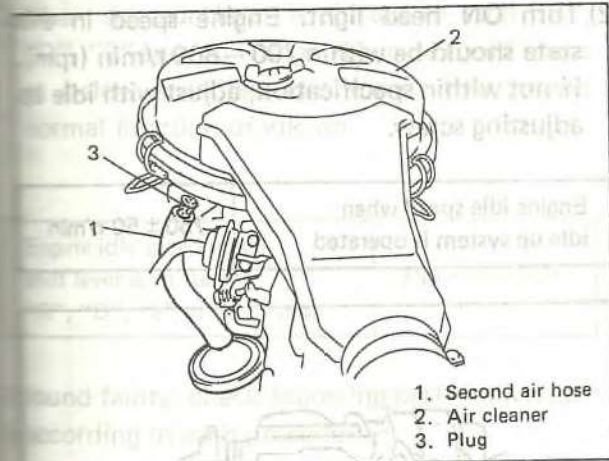
A/T: For Automatic Transmission

[Idle speed and idle mixture adjustment]

NOTE:

The data marked with an asterisk (*) given below are applicable to cars equipped with Automatic transmission.

Adjust idle speed and idle mixture according to the following procedure.
If car to be inspected or/and adjusted is equipped with second air valve, disconnect second air hose from air cleaner and plug it first.



1. Second air hose
2. Air cleaner
3. Plug

Fig. 6D-19-1

- 1 Adjust idle speed to 900 (*950) r/min (rpm) by repositioning (turning) idle speed adjusting screw.
- 2 With engine idling at 900 (*950) r/min (rpm), turn idle mixture adjusting screw to the right or left and set it where the highest engine speed is obtained. (This is the best idle position).
- 3 Perform above 1) and 2) once again, and then readjust idle speed to 830 (*880) r/min (rpm) with idle mixture adjusting screw.
- 4 Upon completion of the work so far, readjust engine idle speed to the below specification by turning idle speed adjusting screw slowly.

NOTE:

For car equipped with second air valve, remove plug from second air hose and connect that hose to air cleaner case.

All cars of this model are now shipped with their CO% factory adjusted as follows.

Engine idle mixture CO%		1.0 ± 0.5
Engine idle speed (r/min)	Manual transmission	800 ± 50
	Engine idle speed r/min (When selector lever is in "P" or "N" range)	* 850 ± 50

Data for cars with second air valve		
Engine idle mixture CO(%)	With second air hose blank plugged	1.0 ± 0.5
	Ordinary condition	Less than 0.2
Engine idle speed (r/min)	Manual transmission	800 ± 50
	Engine idle speed r/min (When selector lever is in "P" or "N" range)	* 850 ± 50

In countries where there are statutory requirements for exhaust gas (CO%), be sure to adjust idle mixture adjusting screw so that CO% indicated on exhaust gas tester will be as specified in above table.

Special tool (09913-18010) is necessary to turn idle mixture adjusting screw.

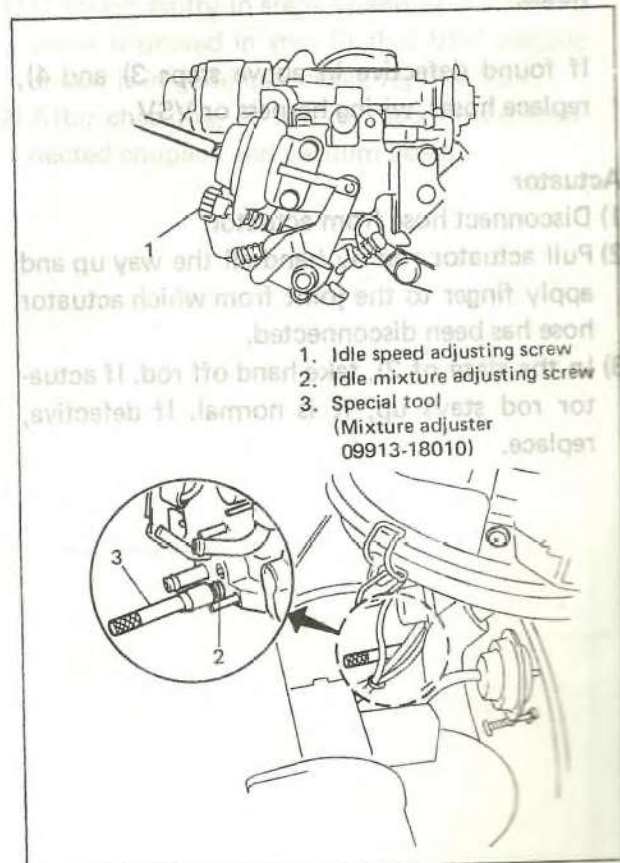


Fig. 6D-20

IDLE UP (For Manual transmission)**INSPECTION**

- 1) Adjust idle speed to specification by referring to **Idle Speed and Idle Mixture** and maintain engine at that speed.
- 2) Turn ON head light. If engine idle speed keeps at specified idle speed, that proves normal function of idle up.

If found faulty, check following parts individually according to each procedure.

VSV (Vacuum Switching Valve)

- 1) Make sure that head light, small light, engine cooling fan, heater fan and rear defogger (if equipped) are all turned OFF.
- 2) Disconnect VSV vacuum hoses from gas filter and actuator.
- 3) By blowing air into hose disconnected from intake manifold, make sure there is no continuity between these hoses.
- 4) Turn ON head light and by blowing air into hose disconnected from intake manifold, make sure that there is continuity between hoses.

If found defective in above steps 3) and 4), replace hoses, wiring harness or VSV.

Actuator

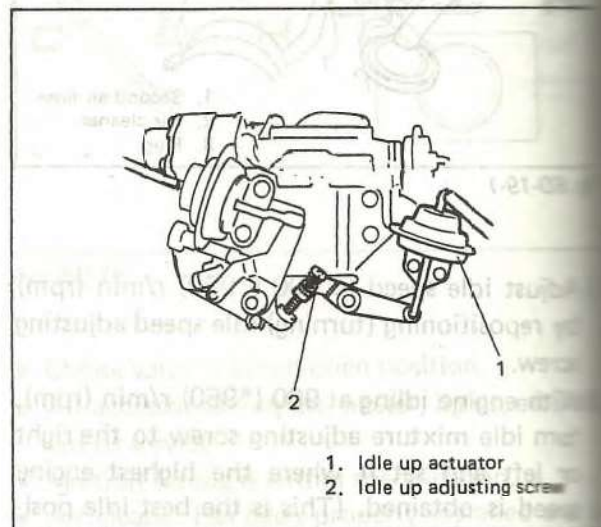
- 1) Disconnect hose from actuator.
- 2) Pull actuator rod by hand all the way up and apply finger to the joint from which actuator hose has been disconnected.
- 3) In the state of 2), take hand off rod. If actuator rod stays up, it is normal. If defective, replace.

**ADJUSTMENT**

If VSV, actuator, hose wiring harness and battery capacity are normal and yet idle up is not attained, adjust as follows.

- 1) Start engine.
- 2) Turn ON head light. Engine speed in this state should be within 700 – 800 r/min. If not within specification, adjust with idle up adjusting screw.

Engine idle speed when idle up system is operated	750 ± 50 r/min
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1. Idle up actuator
2. Idle up adjusting screw

Fig. 6D-21

IDLE UP (For Automatic transmission)

Inspection

- 1 Adjust idle speed to specification and maintain engine at that speed.
- 2 When selector lever is shifted to each "R", "D", "2" and "L" range, if engine speed keeps at below specified idle speed, that proves normal function of idle up.

Engine idle speed when shift lever is shifted to "R", "D", "2" or "L" range	750 ± 50 r/min
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If found faulty, check following parts individually according to each procedure.

[VSV and its circuit]

- 1 Make sure that selector lever is shifted to "P" range.
- 2 Disconnect VSV vacuum hoses from gas filter and actuator.
- 3 Turn ignition switch to "ON" position.
- 4 By blowing air into hose disconnected from actuator, make sure there is no continuity between these hoses. Then, shift selector lever to "N" range and also check to make sure that there is no continuity between these hoses.
- 5 Shift selector lever to "R" range, by blowing air into the hose disconnected from actuator, make sure that there is continuity between hoses. Also, with selector lever shifted to "D", "2" and "L" ranges, check to make sure that there is continuity between these hoses in each range. If found faulty in steps 4) and 5), proceed to following checks.
- 6 With ignition switch at "OFF" position, disconnect lead wire coupler from VSV.
- 7 Turn ignition switch to "ON" position.
- 8 Connect voltmeter to coupler terminals. Shift selector lever to "P" and then "N" ranges and check that voltmeter indicates 0V in each range. Also, shift selector lever to "R", "D", "2" and "L" ranges and check that voltmeter indicates about 12V in each range.

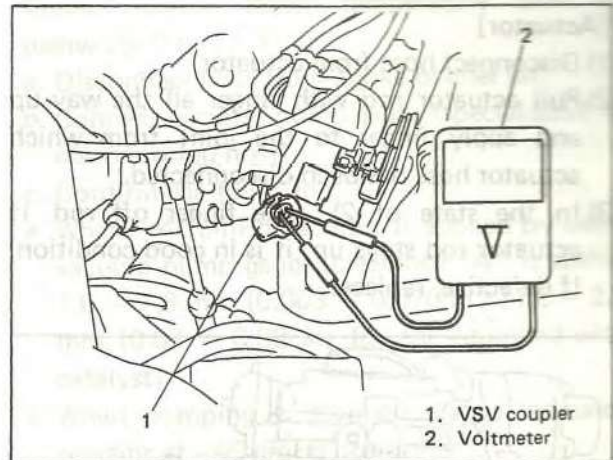
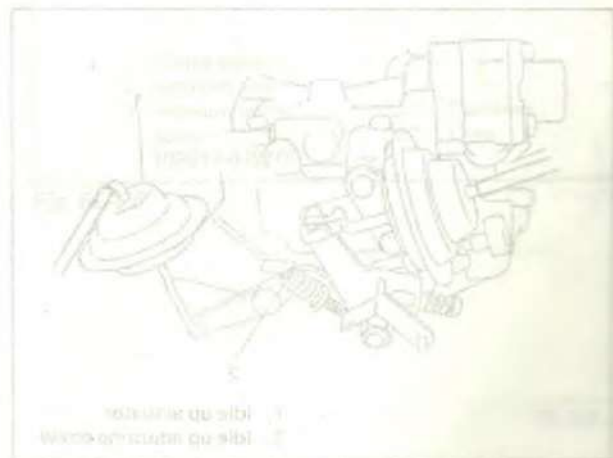


Fig. 6D-22

- 9) If found faulty in step 8), inspect shift lever switch and its circuit by referring to description of shift lever switch inspection of "AUTOMATIC TRANSMISSION" section.
- 10) If found faulty in above step 9), replace shift lever switch or wire harness.
If found faulty in step 8), and yet it is proved in step 9) that shift lever switch and wire harness are in good condition, replace AT controller or wire harness.
- 11) If found faulty in steps 4) and 5) checks and yet it is proved in step 8) that VSV electric circuit is in good condition, replace VSV.
- 12) After checking, be sure to reconnect disconnected couplers and vacuum hoses.



[Actuator]

- 1) Disconnect hose from actuator.
- 2) Pull actuator rod with finger all the way up and apply finger to the joint from which actuator hose has been disconnected.
- 3) In the state of 2), take finger off rod. If actuator rod stays up, it is in good condition. If defective, replace.

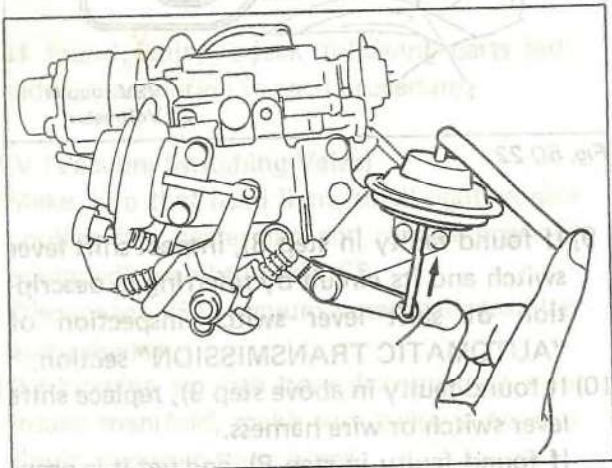


Fig. 6D-22-1

Adjustment

If idle up system is normal and yet idle up speed is not attained, adjust as follows.

1. Check to be sure that:
 - Engine idle speed with selector lever shifted to "P" or "N" range is as specified.
 - Parking brake is pulled fully and drive wheels are blocked.
2. Engine speed with selector lever shifted to "D", "2", "L" or "R" range should be within specification. (See p. 6D-15)
If not within specification, adjust with idle up adjusting screw.

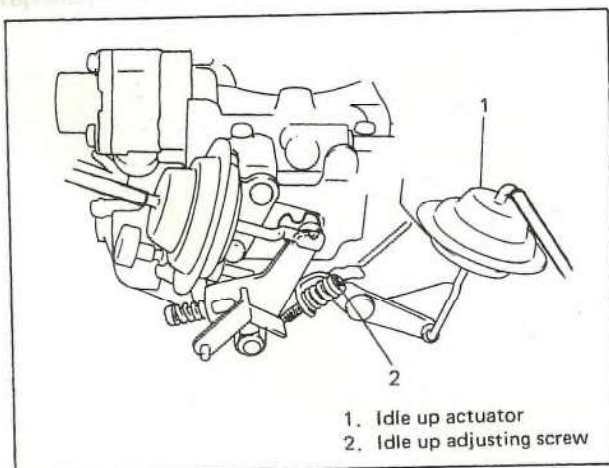


Fig. 6D-22-2

CHOKE SYSTEM**Inspection**

- 1) Depress accelerator pedal fully and release. Then remove air cleaner case.
- 2) Check to ensure that choke valve is closed when engine is cold and ambient temperature is below 20°C (68°F). Then check choke valve for smooth operation by pushing choke valve lightly with finger.

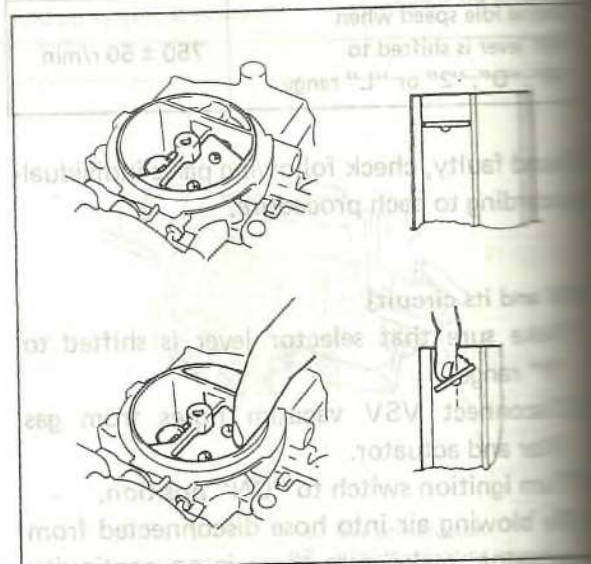
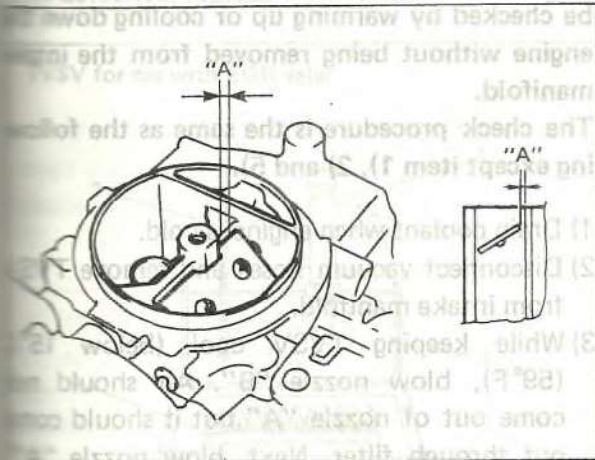


Fig. 6D-23

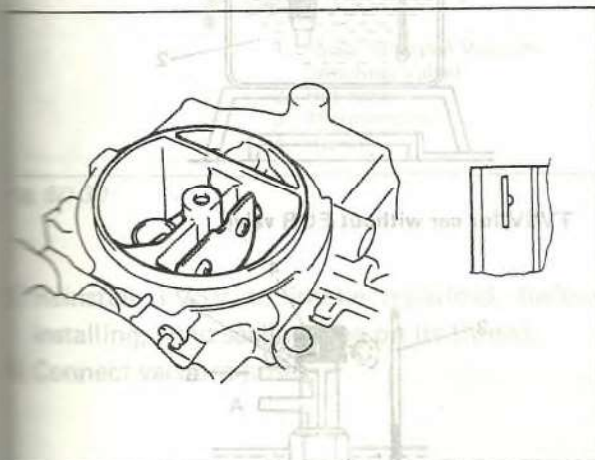
- 3) Disconnect vacuum hose from fast idler and close disconnected hose with finger.
- 4) After steps 2) & 3), start and run engine at idle speed.
And immediately, visually check clearance between choke valve and carburetor body (indicated as "A" in figure). If choke valve is open slightly from its fully closed position, vacuum control parts are in good condition.
- 5) Connect vacuum hose to fast idler and check that choke valve-to-carburetor body clearance "A" has increased bigger than checked in step 4).

NOTE: When engine is warm, clearance "A" becomes larger, varying with temperatures.



6D-24

- 8 Stop engine. After installing air cleaner case, start engine again and warm it up fully. Then race it a few times (so that its speed becomes about 3,000 r/min).
- 9 Stop engine when it is warmed up and remove air cleaner case again, and then check to ensure that choke valve is fully open.



6D-25

- 10 If nothing was found faulty in the above check, install air cleaner case.
- 11 If step 4) check result is unsatisfactory, check following parts (choke opener and jet) according to each procedure.
- 12 If choke valve is not open fully in step 7) check, cause may be poor connection of bi-metal lead cord connector, disconnection in lead cord or defect in bimetal assembly. Repair or replace defective part.

Choke opener (Water temperature must be below 25°C or 77°F)

- a. Disconnect hose from choke opener jet.
- b. Connect vacuum pump gauge (special tool) to disconnected hose.
- c. Confirm the following.
 - When -40 cmHg vacuum is applied by using vacuum pump gauge, clearance "A" is within 1.6 - 1.8 mm (0.063 - 0.070 in.) [1.8 - 2.1 mm (0.07 - 0.08 in) for car equipped with catalyst]
 - When pumping is stopped, gauge indicator remains at -40 cmHg position.

If both are checked all right, parts between choke opener and choke valve are in good condition, but if not, correct or replace.

To correct clearance, bend lever "B" as shown.

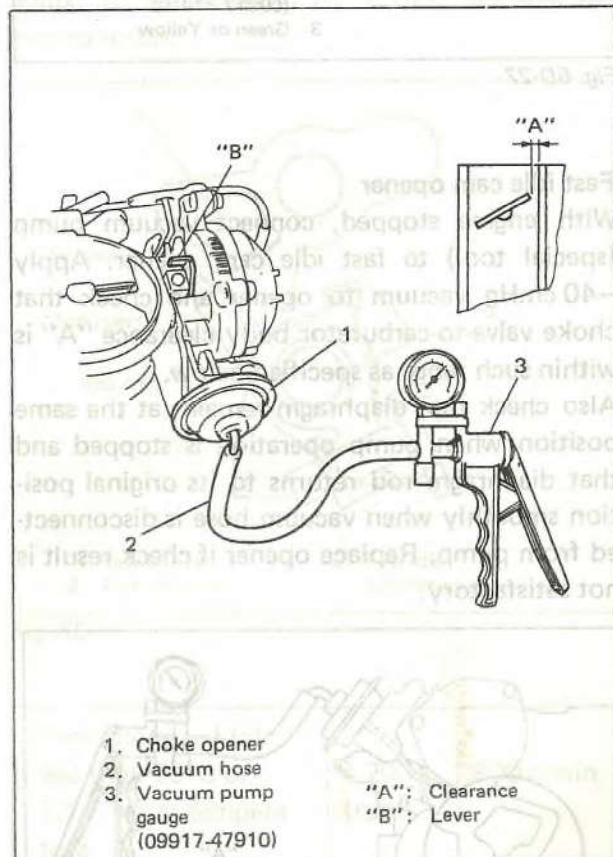


Fig. 6D-26

Jet

- Remove jet with vacuum hose.
- Close one side of jet with finger as shown and apply -50 cmHg vacuum by means of vacuum pump. Then check that vacuum is relieved gradually when finger is taken off. Replace if defective.

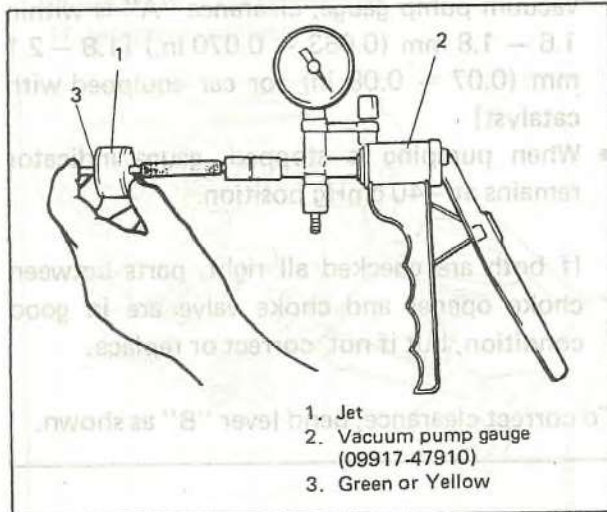


Fig. 6D-27

Fast idle cam opener

With engine stopped, connect vacuum pump (special tool) to fast idle cam opener. Apply -40 cmHg vacuum to opener and check that choke valve-to-carburetor body clearance "A" is within such range as specified below. Also check that diaphragm remains at the same position when pump operation is stopped and that diaphragm rod returns to its original position smoothly when vacuum hose is disconnected from pump. Replace opener if check result is not satisfactory.

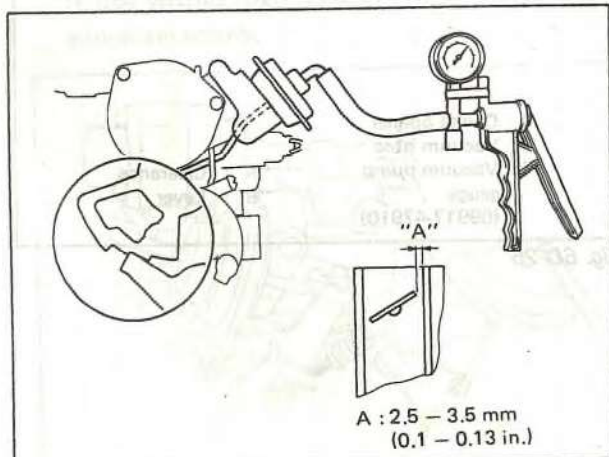


Fig. 6D-28

TVS (Thermal Vacuum Switching) Valve

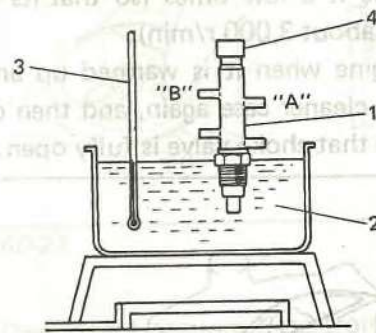
NOTE:

For the rough check of the operation, TVSV can be checked by warming up or cooling down the engine without being removed from the intake manifold.

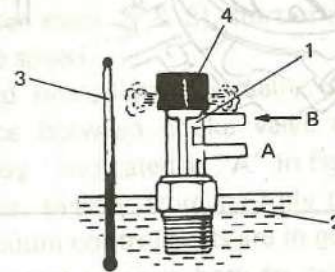
The check procedure is the same as the following except item 1), 2) and 5).

- 1) Drain coolant when engine is cold.
- 2) Disconnect vacuum hoses and remove TVSV from intake manifold.
- 3) While keeping TVSV cool (below 59°F), blow nozzle "B". Air should come out of nozzle "A" but it should not come out through filter. Next, blow nozzle "B" then air should not come out at all. Repair or replace defective TVSV.

TVSV for car with EGR valve



TVSV for car without EGR valve

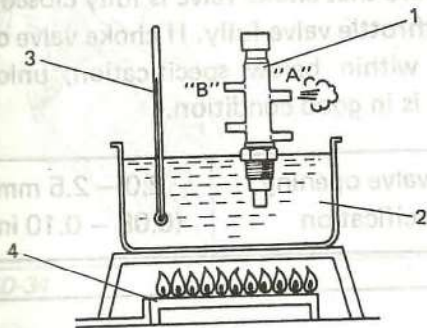


- "A" : To intake manifold
"B" : To fast idle cam opener
1. TVS (Thermal Vacuum Switching) valve
 2. Cool water
 3. Thermometer
 4. Filter

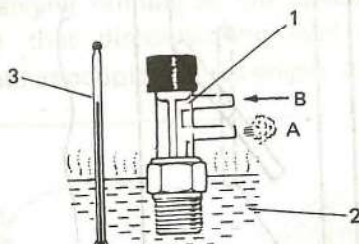
Fig. 6D-29

While keeping TVSV warm (above 25°C (77°F)) in hot water, blow nozzle "B". Air should come out of nozzle "A". If defective, replace TVS valve.

TVSV for car with EGR valve



TVSV for car without EGR valve



1. TVSV (Thermal Vacuum Switching Valve)
2. Hot water
3. Thermometer
4. Heater

6D-30

- Reinstall TVSV to intake manifold. Before installing, wind sealing tape on its thread.
- Connect vacuum hoses.

FAST IDLE

- 1) Depress accelerator pedal and release it.
- 2) With air cleaner case removed, make sure that choke valve is fully closed. (Coolant temperature must be below 25°C or 77°F.)
- 3) Start engine and immediately read engine tachometer. If reading is 1,200 – 1,800 r/min (rpm), fast idle speed is normal.

NOTE:

Condition for above fast idle speed data is that fast idle lever is positioned at 3rd step of fast idle cam as shown in Fig. 6D-31. When reading engine speed, check that fast idle lever is thus positioned.

Adjustment

If above inspection result is unsatisfactory, adjust to specification by turning fast idle adjusting screw.

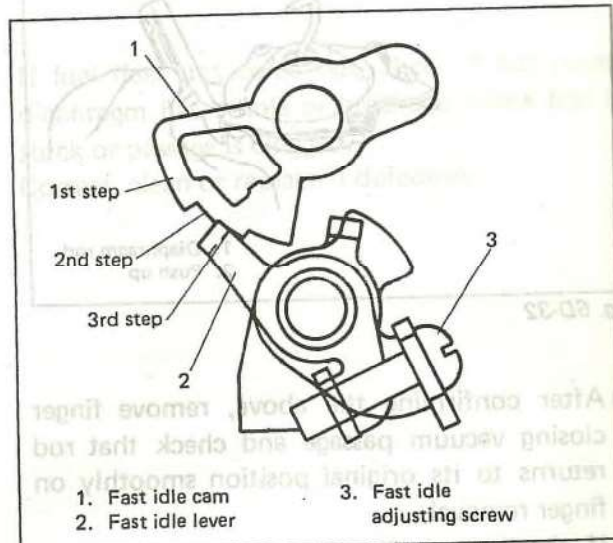


Fig. 6D-31

Fast idle speed (at less than 25°C or 77°F water temperature)	1,200 – 1,800 r/min (rpm)
---	---------------------------

SECONDARY DIAPHRAGM**INSPECTION**

- 1) Remove air cleaner case and carburetor from intake manifold.
- 2) Remove secondary diaphragm assembly from carburetor.
- 3) Push rod fully toward diaphragm with finger as shown in figure. Then with vacuum passage (hole) in mating surface with carburetor closed with finger, take off finger from rod.
- 4) Check that rod stays as it was pushed toward diaphragm even after finger is taken off.

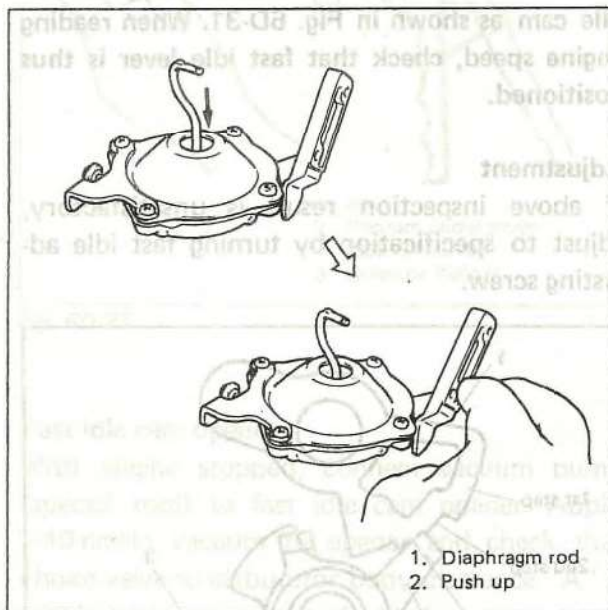


Fig. 6D-32

- 5) After confirming the above, remove finger closing vacuum passage and check that rod returns to its original position smoothly on finger removal.
- 6) If check result is not satisfactory in either step 4) or step 5), replace secondary diaphragm assembly.

Fast idle speed (at less than 25°C or 77°F water temp)	1.200 - 1.800 r/min
--	---------------------

UNLOADER SYSTEM**INSPECTION**

This inspection must be performed when engine is cool (at lower than 25°C or 77°F water temperature) and not running.

- 1) Remove air cleaner case.
- 2) Make sure that choke valve is fully closed.
- 3) Open throttle valve fully. If choke valve opening is within below specification, unloader system is in good condition.

Choke valve opening "A" specification	2.0 - 2.5 mm (0.08 - 0.10 in.)
---------------------------------------	-----------------------------------

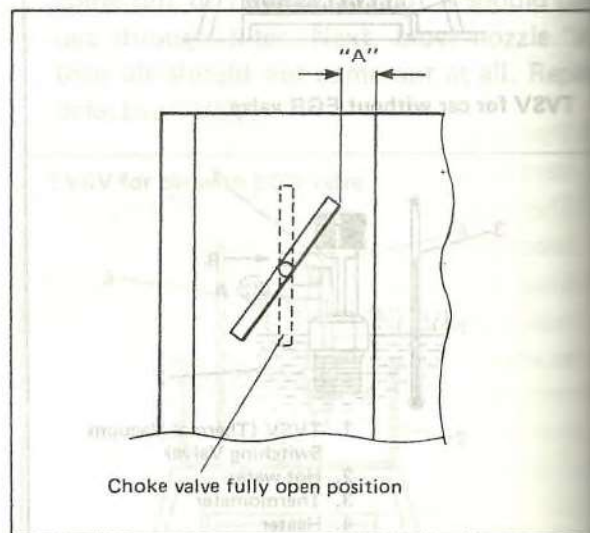


Fig. 6D-33

FUEL CUT SYSTEM**INSPECTION****NOTE:**

If car is equipped with catalytic converter, use checking procedure described in SECTION 6 of this manual (p. 6J-20).

- 1) Check to ensure that carburetor fuel cut solenoid makes "clicking" sound when ignition switch key is turned "ON" and "OFF" (without starting engine).

ACCELERATOR PUMP

INSPECTION

- 1) Remove the air cleaner case.
- 2) Make sure that fuel comes out of pump discharge nozzle when accelerator pedal is depressed.

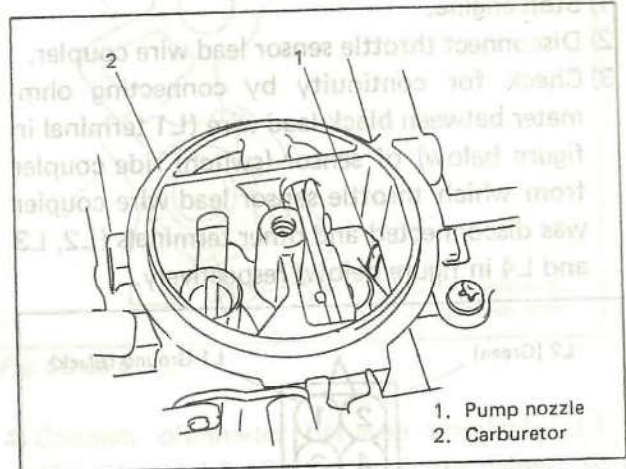


Fig. 6D-36

If fuel does not come out, check if fuel pump diaphragm has a hole or breakage, check ball is stuck or passage is clogged. Correct, clean or replace if defective.

4) While opening choke valve, move throttle lever so that cam lever is positioned in the 1st step of 1st idle cam.

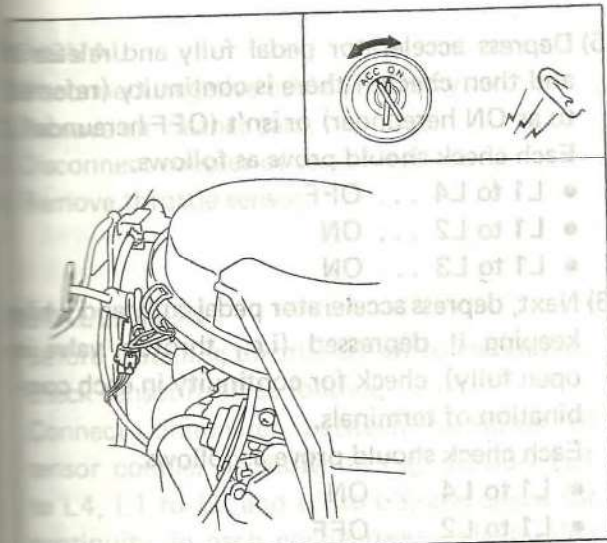


Fig. 6D-34

2) Warm up engine to normal operating temperature.

With engine running at idle speed, check to ensure that disconnecting lead wire from solenoid at coupler causes engine to stop.

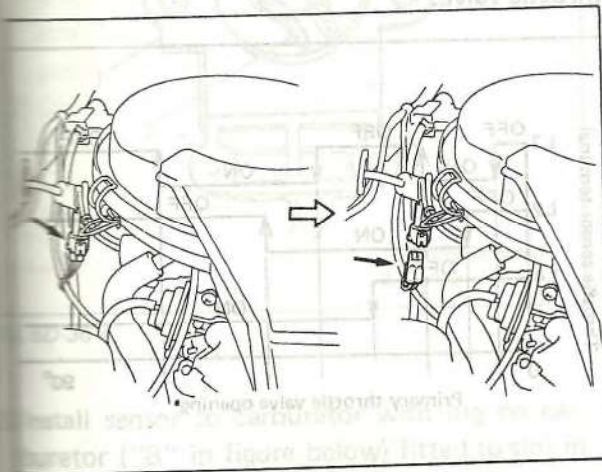


Fig. 6D-35

If anything faulty was found in steps 1) or 2), check connector for proper connection. Also, check by using a voltmeter if electric current is obtained at the coupler of solenoid lead wire when ignition key is turned "ON". Correct or replace if defective.

THROTTLE SENSOR (For Automatic transmission)

INSPECTION

Described below is an easy inspection procedure which does not require removal of carburetor from engine.

- 1) Stop engine.
- 2) Disconnect throttle sensor lead wire coupler.
- 3) Check for continuity by connecting ohmmeter between black lead wire (L1 terminal in figure below) of sensor (switch) side coupler from which throttle sensor lead wire coupler was disconnected and other terminals (L2, L3 and L4 in figure below) respectively.

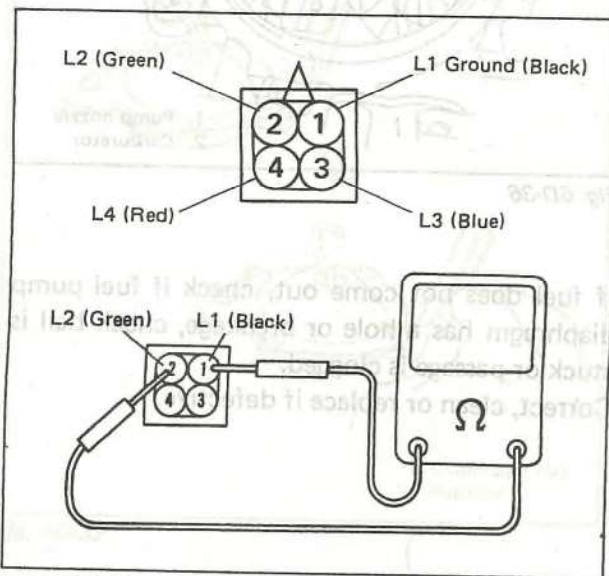


Fig. 6D-36-1

- 4) While opening choke valve, move throttle lever so that cam lever is positioned in the 1st step of fast idle cam.

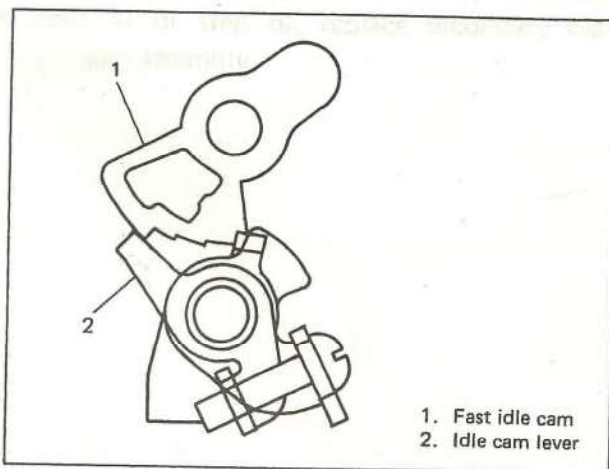


Fig. 6D-36-2

- 5) Depress accelerator pedal fully and release and then check if there is continuity (between terminals to as ON hereunder) or isn't (OFF hereunder). Each check should prove as follows.

- L1 to L4 ... OFF
- L1 to L2 ... ON
- L1 to L3 ... ON

- 6) Next, depress accelerator pedal fully and keep it depressed (i.e., throttle valve open fully), check for continuity in each combination of terminals.

Each check should prove as follows.

- L1 to L4 ... ON
- L1 to L2 ... OFF
- L1 to L3 ... OFF

- 7) If check results in steps 5) and 6) are satisfactory, replace sensor.

Reference:

Figure below represents throttle sensor operation relational to opening angle of primary throttle valve.

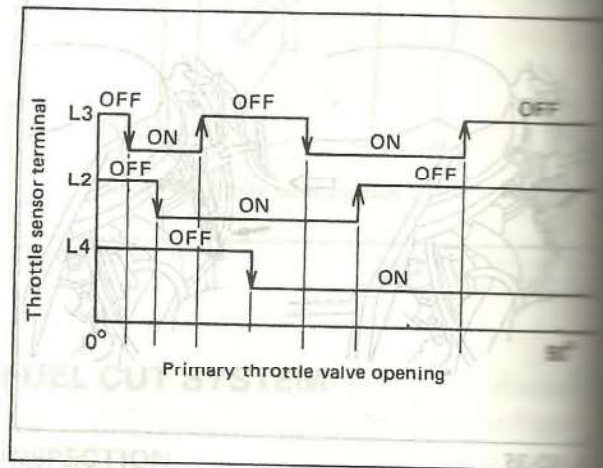


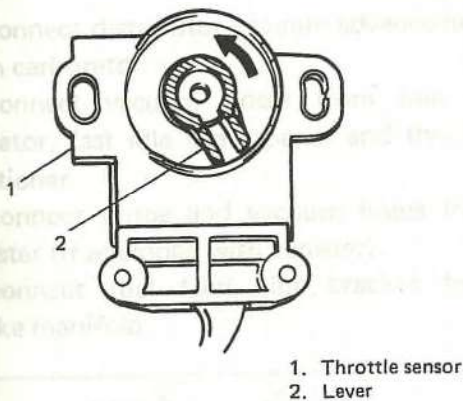
Fig. 6D-36-3

REMOVAL

- 1) Disconnect negative cable at battery.
- 2) Remove air cleaner case.
- 3) Disconnect coupler of sensor lead wire.
- 4) Remove throttle sensor.

INSTALLATION

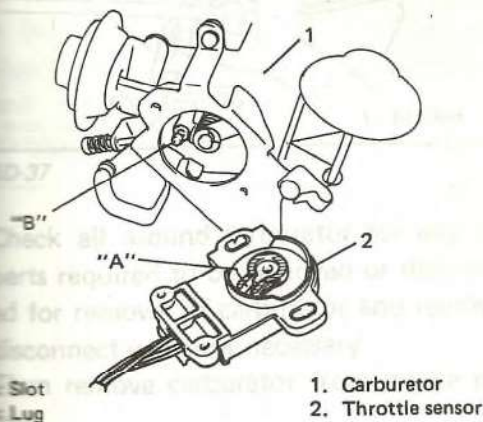
1) Before installing throttle sensor to carburetor, check sensor itself as follows.
 Connect ohmmeter between terminals of sensor coupler as shown in Fig. 6D-36-1 (L1 to L4, L1 to L2 and L1 to L3) and check for continuity in each connection while turning sensor lever. Whether continuity occurs (ON) or not (OFF) should follow each pattern in Fig. 6D-36-3.



1. Throttle sensor
2. Lever

Fig. 6D-36-4

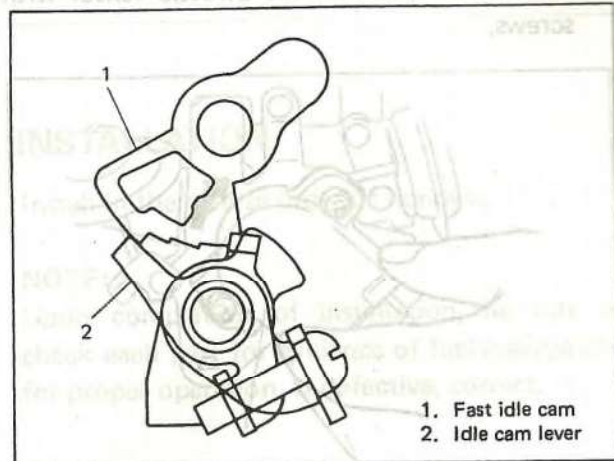
2) Install sensor to carburetor with lug on carburetor ("B" in figure below) fitted to slot in sensor lever. Tighten screws only to such extent as to allow sensor to move.



A: Slot
B: Lug
1. Carburetor
2. Throttle sensor

Fig. 6D-36-5

3) While closing choke valve fully, move throttle lever so that cam lever is positioned in the 1st step of fast idle cam.



1. Fast idle cam
2. Idle cam lever

Fig. 6D-36-6

4) Connect ohmmeter between terminals [L1 (Black) and L2 (Green) in figure below] of throttle sensor coupler.

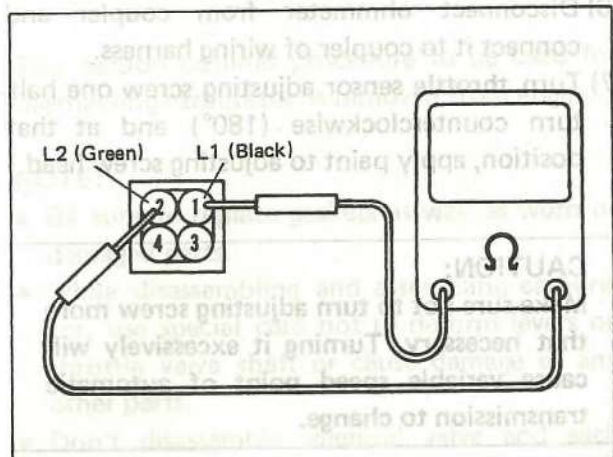


Fig. 6D-36-7

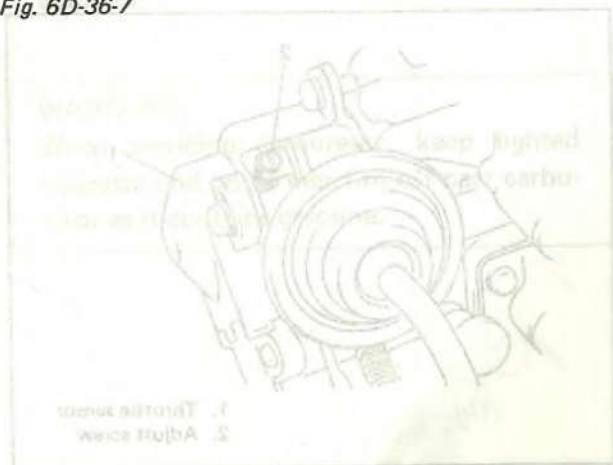


Fig. 6D-36-8

- 5) After steps 3) and 4), move throttle sensor in arrow direction as shown below till continuity occurs between above connected terminals and at that position fix throttle sensor with screws.

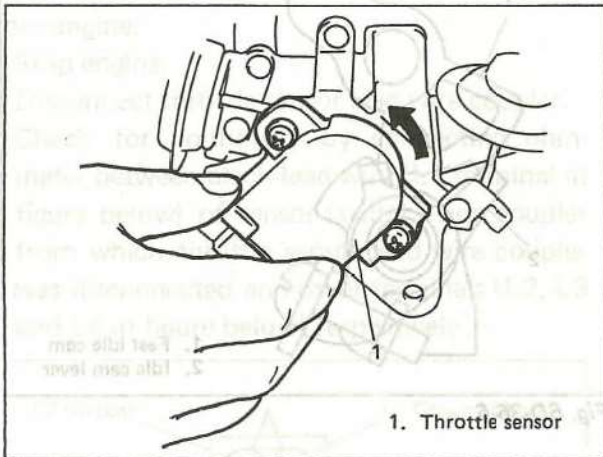


Fig. 6D-36-8

- 6) Disconnect ohmmeter from coupler and connect it to coupler of wiring harness.
 7) Turn throttle sensor adjusting screw one half turn counterclockwise (180°) and at that position, apply paint to adjusting screw head.

CAUTION:

Make sure not to turn adjusting screw more that necessary. Turning it excessively will cause variable speed point of automatic transmission to change.

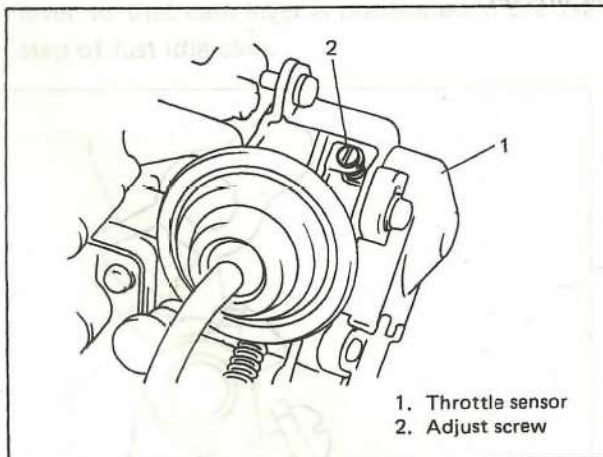
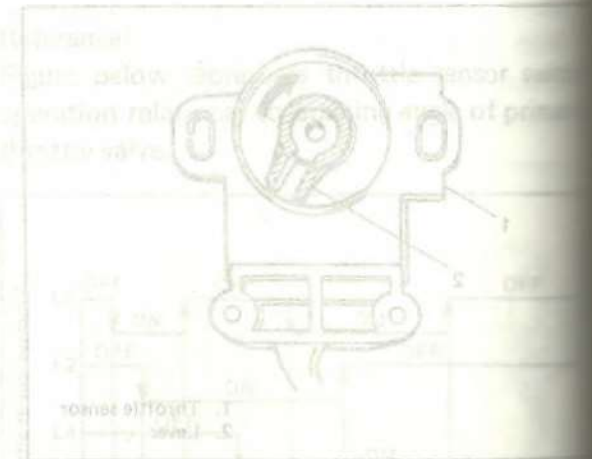


Fig. 6D-36-9

- 8) Install air cleaner case and connect hoses
 9) Connect negative cable at battery.



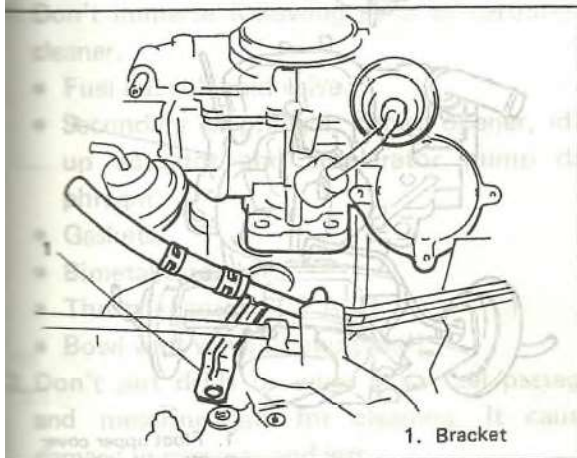
... sensor to carburetor with lug on car-
 ... (B" in figure below) fitted to slot in
 ... level. Tighten screws only to such
 ... as to allow sensor to move.



REMOVAL AND INSTALLATION

REMOVAL

- 1 Disconnect negative battery cable from battery.
- 2 Remove air cleaner case from carburetor.
- 3 Disconnect coupler of solenoid coil and bimetal lead wires.
- 4 If equipped with CATALYTIC CONVERTER disconnect coupler of fuel cut solenoid valve, bimetal and air vent solenoid valve lead wires.)
- 5 With automatic transmission model, in addition to the above, disconnect coupler of throttle angle sensor lead wire.
- 6 Disconnect fuel inlet hose from carburetor.
- 7 Disconnect accelerator cable from carburetor.
- 8 Disconnect distributor vacuum advance hose from carburetor.
- 9 Disconnect vacuum hoses from idle up actuator, fast idle cam opener and throttle positioner.
- 10 Disconnect purge and vacuum hoses from canister (if equipped with canister).
- 11 Disconnect fuel feed pipe bracket from intake manifold.



6D-37

- 12 Check all around carburetor for any other parts required to be removed or disconnected for removal of carburetor and remove or disconnect whatever necessary.
- 13 Then remove carburetor from intake manifold.

WARNING:

Removal or disassembly of carburetor must be carried out in a well-ventilated place where no fire is used around.

INSTALLATION

Install in the reverse order of removal.

NOTE:

Upon completion of installation, be sure to check each part for evidence of fuel leakage and for proper operation. If defective, correct.

UNIT REPAIR OVERHAUL

This section outlines procedure to be used for overhauling carburetor as removed from engine.

NOTE:

- Be sure to replace gaskets as well as worn or damaged parts.
- While disassembling and assembling carburetor, use special care not to deform levers on throttle valve shaft or cause damage to any other parts.
- Don't disassemble solenoid valve and each actuator.

WARNING:

When servicing carburetor, keep lighted cigarette and any other fire off near carburetor as it contains gasoline.

DISASSEMBLY

1) Remove choke shaft rod clip and disconnect rod from joint lever.

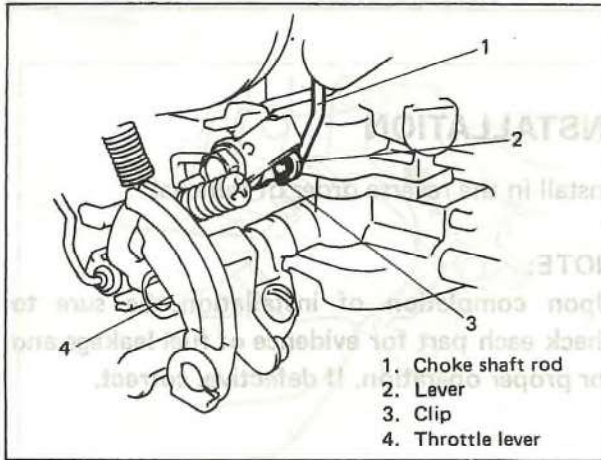


Fig. 6D-38

2) Remove fast idle cam opener rod clip and disconnect rod from lever.

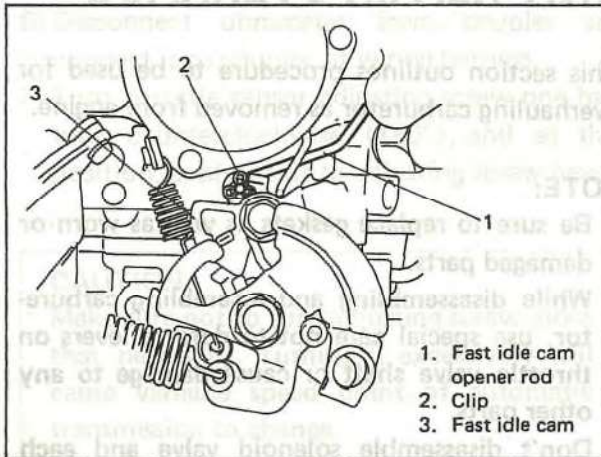


Fig. 6D-39

3) Remove spring from bimetal case bracket.

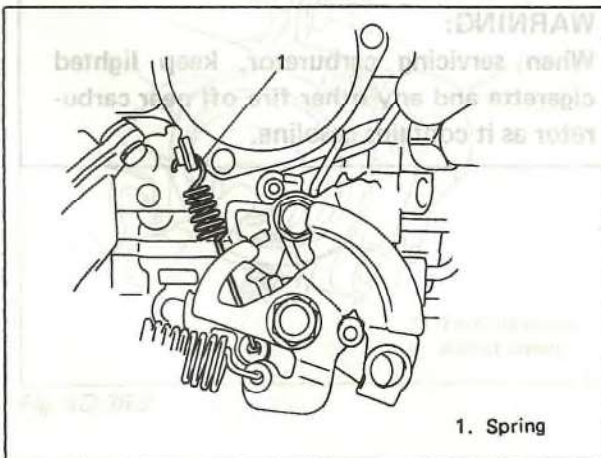


Fig. 6D-40

4) Remove 6 screws.

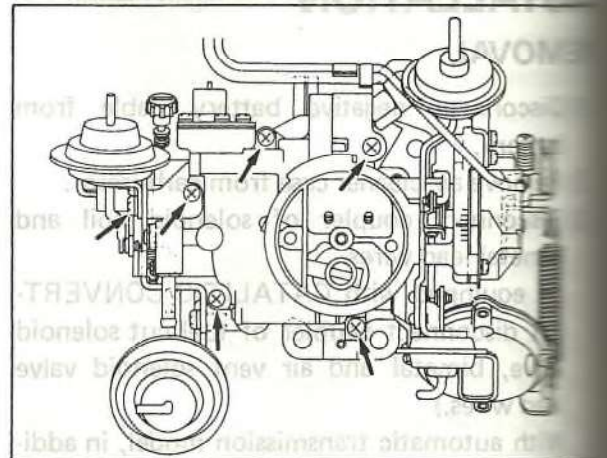


Fig. 6D-41

5) Remove float chamber upper cover from float chamber.

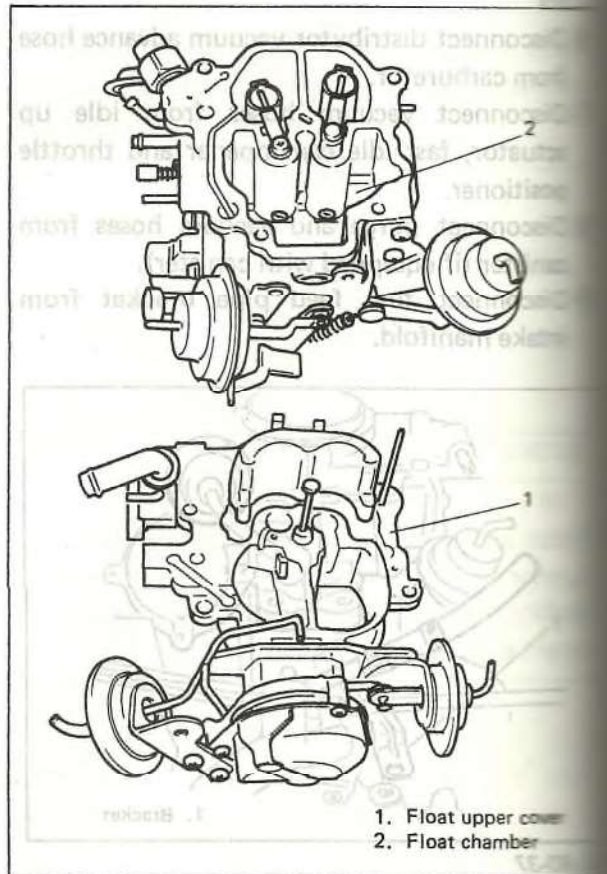
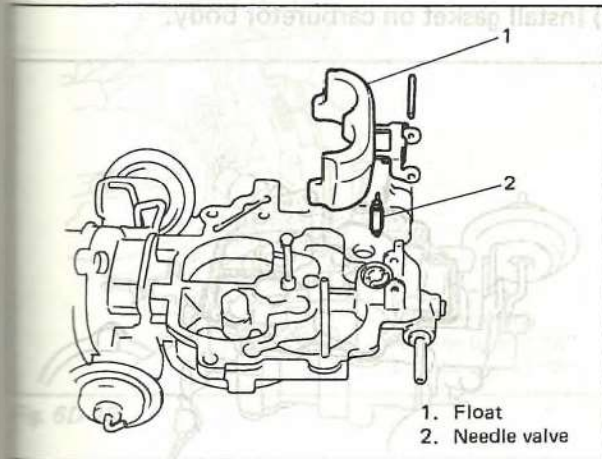


Fig. 6D-42

Remove float and needle valve.



1. Float
2. Needle valve

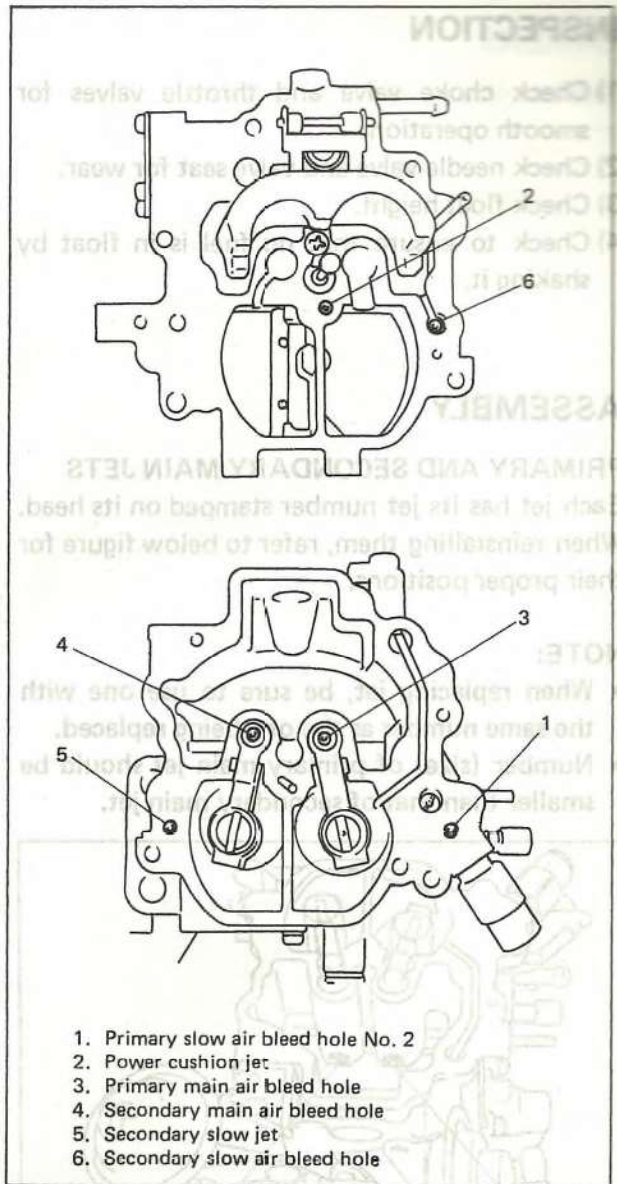
Fig. 6D-43

CLEANING

- 1 Wash below listed items and then clean them by blowing compressed air.
 - All air bleed holes and fuel jets.
 - Needle valve, valve seat and filter, and float.
- 2 Blow compressed air into all passages to clean.
- 3 Clean bottom of float chamber.

NOTE:

- 1 Don't immerse following parts in carburetor cleaner.
 - Fuel cut solenoid valve.
 - Secondary diaphragm, choke opener, idle-up actuator and accelerator pump diaphragm.
 - Gaskets.
 - Bimetal assembly.
 - Throttle sensor (For A/T)
 - Bowl vent valve (if equipped).
- 2 Don't put drills or wires into fuel passages and metering jets for cleaning. It causes damage in passages and jets.



1. Primary slow air bleed hole No. 2
2. Power cushion jet
3. Primary main air bleed hole
4. Secondary main air bleed hole
5. Secondary slow jet
6. Secondary slow air bleed hole

Fig. 6D-44

INSPECTION

- 1) Check choke valve and throttle valves for smooth operation.
- 2) Check needle valve and valve seat for wear.
- 3) Check float height.
- 4) Check to ensure that no fuel is in float by shaking it.

ASSEMBLY

PRIMARY AND SECONDARY MAIN JETS

Each jet has its jet number stamped on its head. When reinstalling them, refer to below figure for their proper positions.

NOTE:

- When replacing jet, be sure to use one with the same number as the one being replaced.
- Number (size) of primary main jet should be smaller than that of secondary main jet.

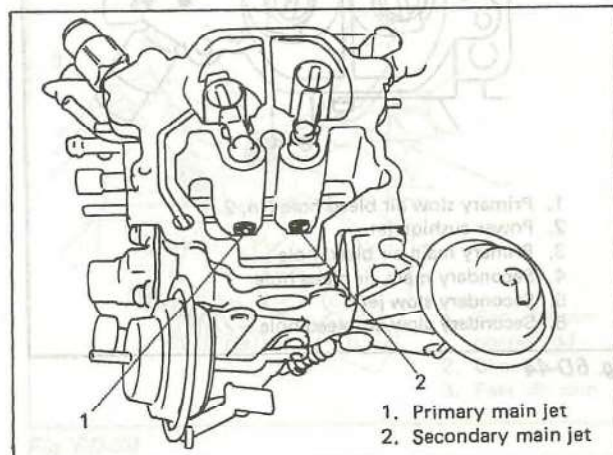


Fig. 6D-45

FLOAT CHAMBER COVER

- 1) Install gasket on carburetor body.

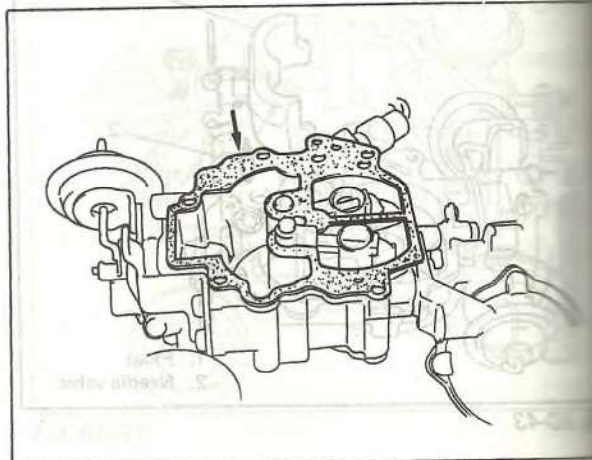


Fig. 6D-46

- 2) Install float chamber cover on gasket, using care not to cause gasket to slip out of place.
- 3) Tighten screws indicated in figure below.

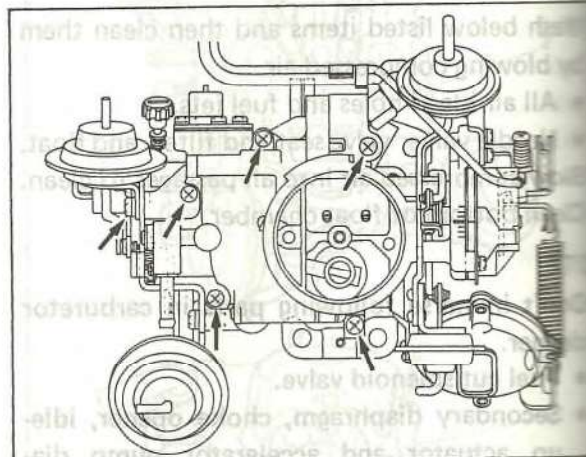
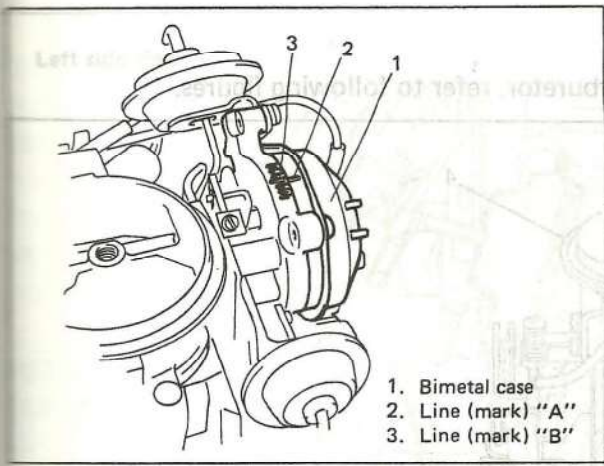


Fig. 6D-47

BIMETAL CASE

When installing bimetal case to carburetor, be sure to align line on bimetal case ("A" in figure) and embossed line on carburetor ("B").

OTHERS



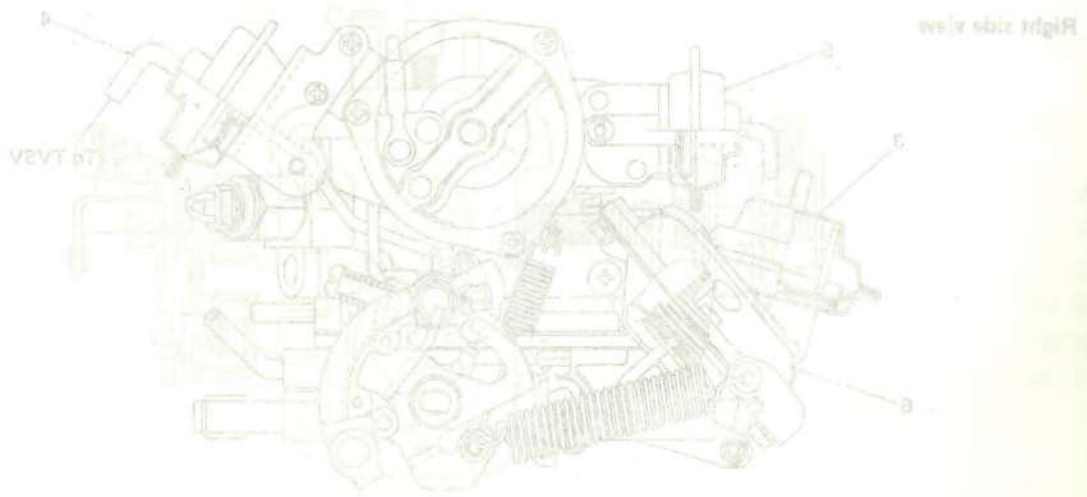
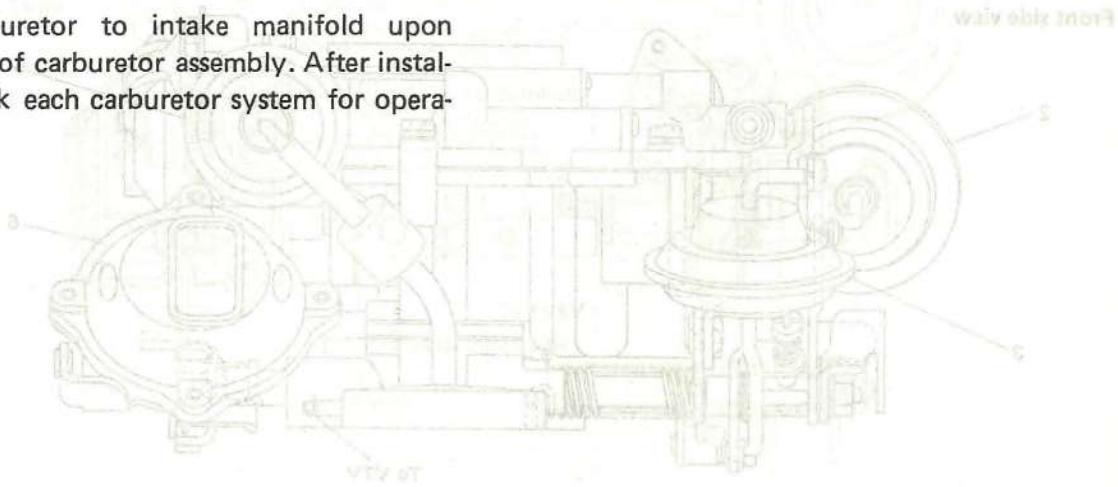
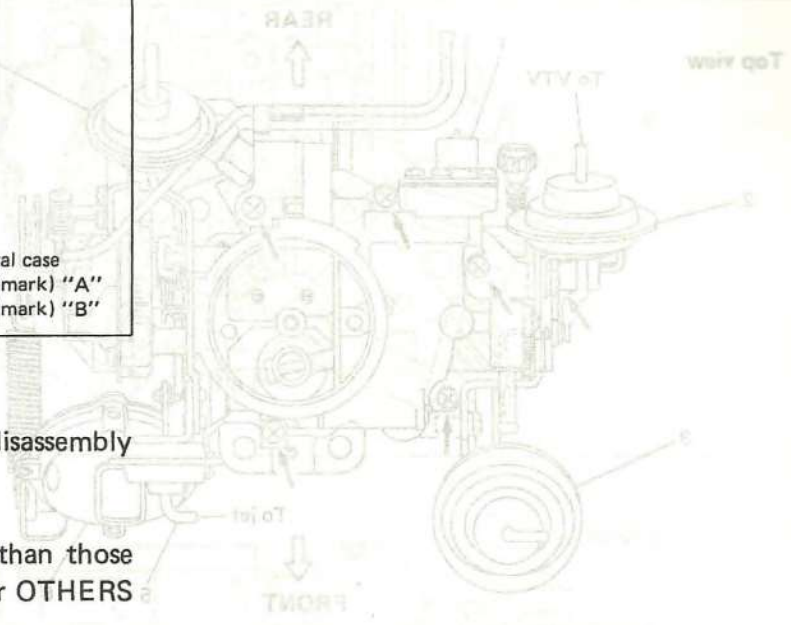
- 1. Bimetal case
- 2. Line (mark) "A"
- 3. Line (mark) "B"

Fig. 6D-48

For assembly hereafter, reverse disassembly procedure.

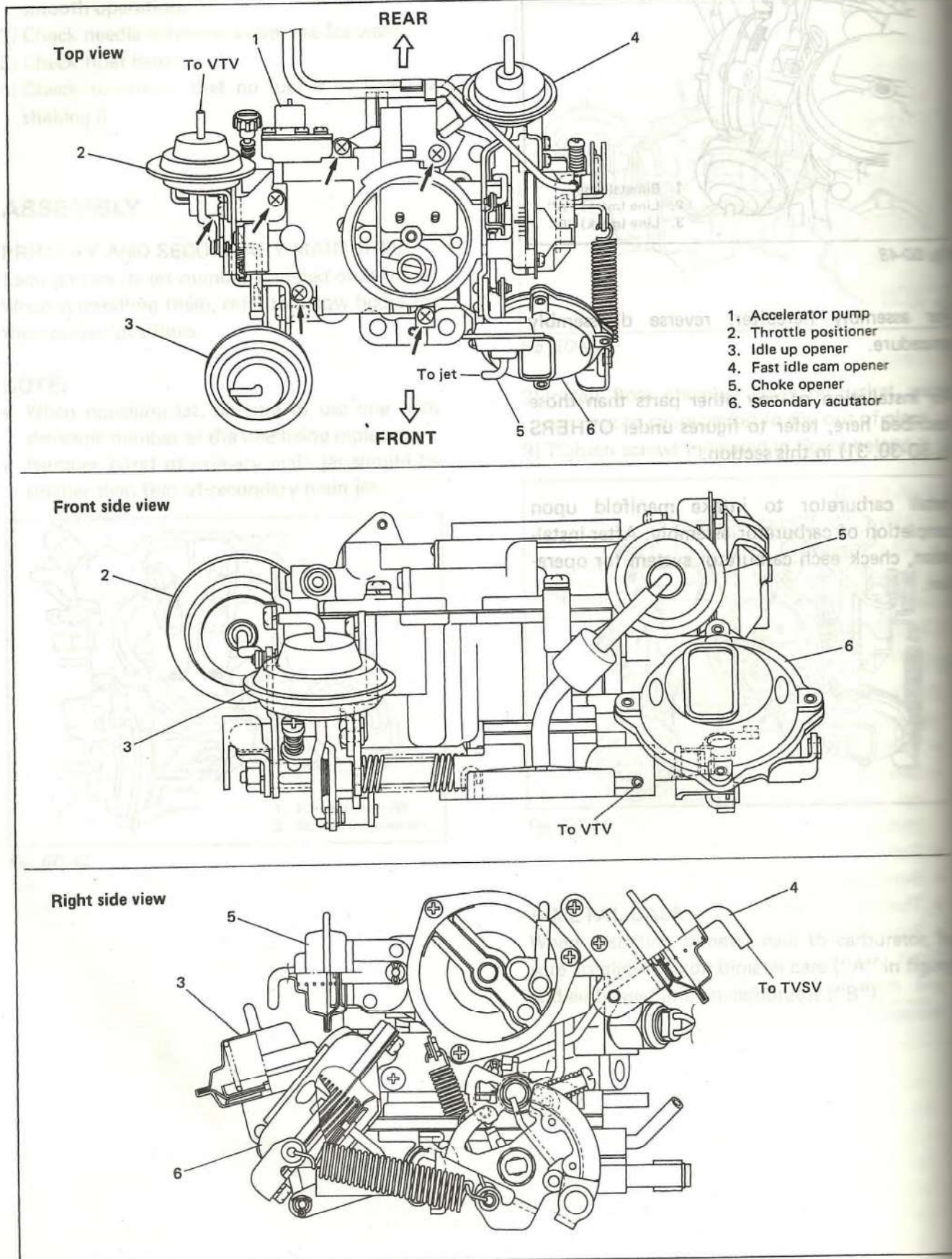
For installation of any other parts than those described here, refer to figures under OTHERS (p. 6D-30, 31) in this section.

Install carburetor to intake manifold upon completion of carburetor assembly. After installation, check each carburetor system for operation.



OTHERS

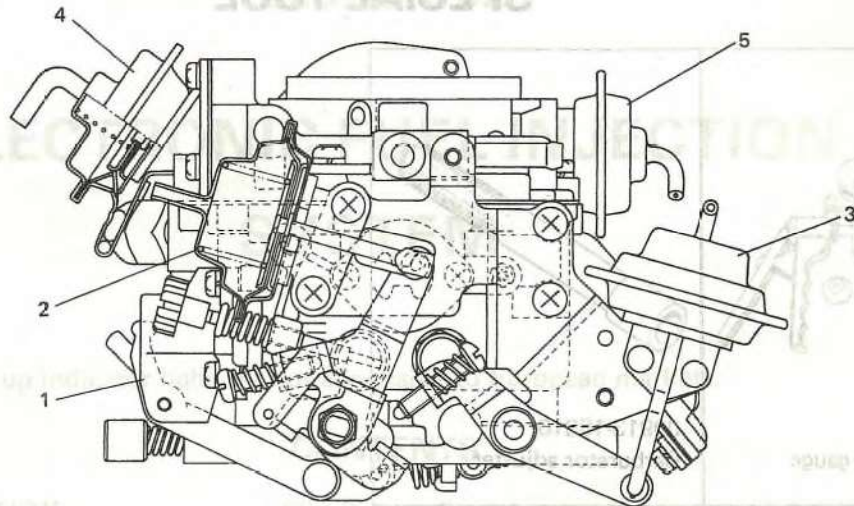
For installation and layout of each lever and linkage of carburetor, refer to following figures.



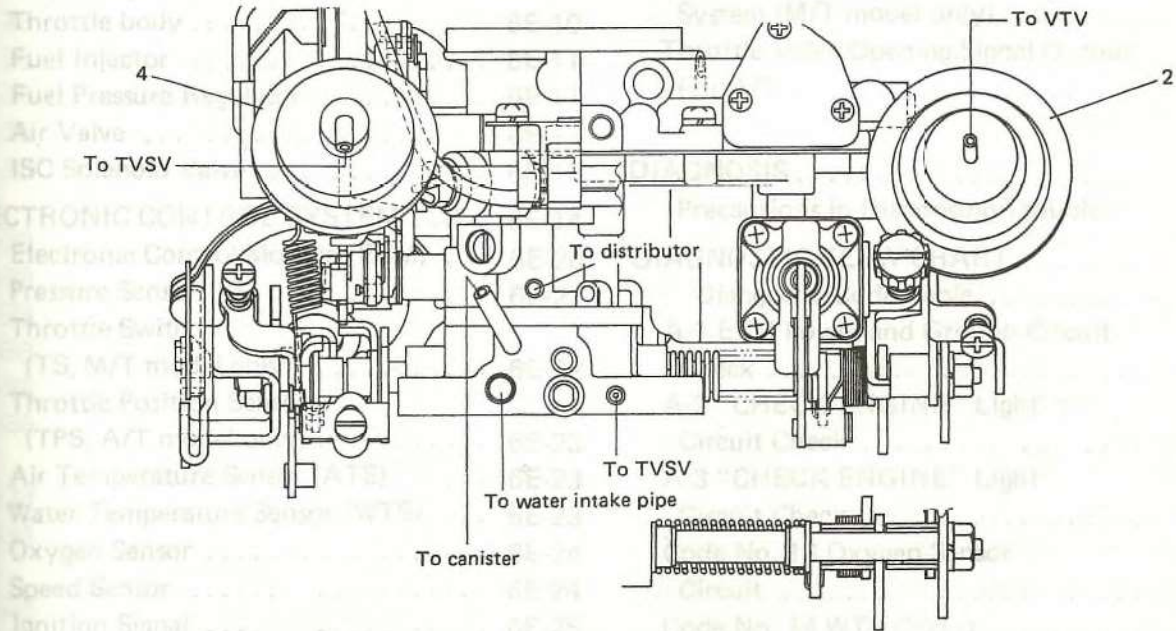
1. Accelerator pump
2. Throttle positioner
3. Idle up opener
4. Fast idle cam opener
5. Choke opener
6. Secondary acuator

Fig. 6D-49

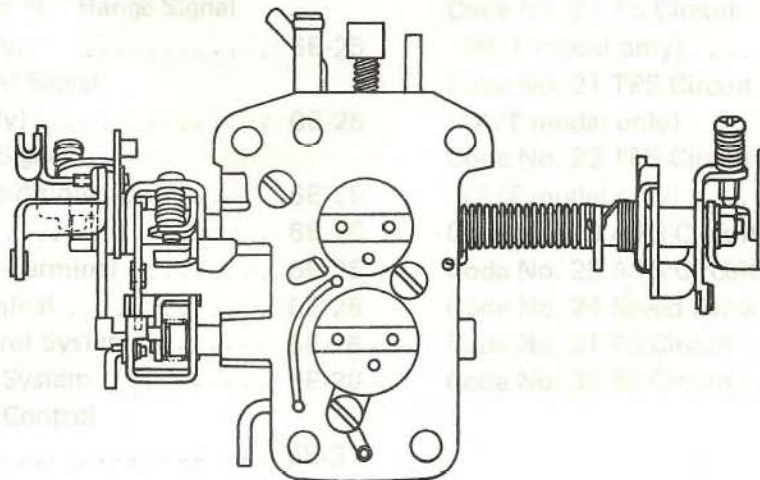
Left side view



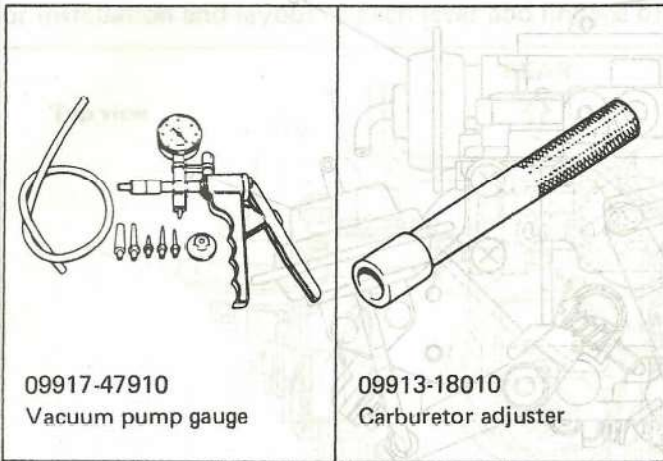
Rear view



Underside view



SPECIAL TOOL



09917-47910
Vacuum pump gauge

09913-18010
Carburetor adjuster

