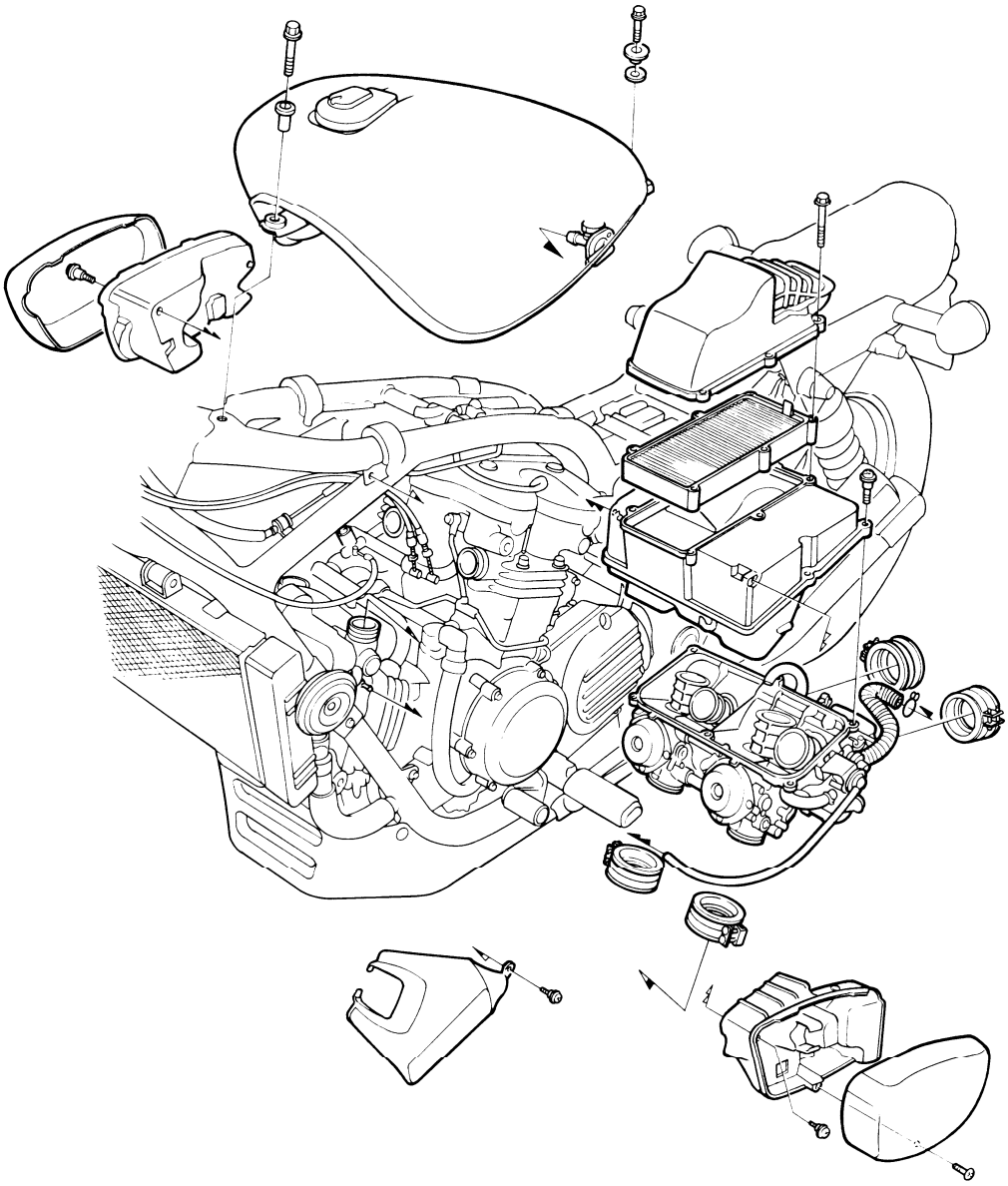


4. FUEL SYSTEM

SERVICE INFORMATION

GENERAL

WARNING

- *Gasoline is extremely flammable and is explosive under certain conditions. Work in a well ventilated area. Do not smoke or allow flames or sparks in the work area.*

CAUTION

- *Do not bend or twist control cables. Damaged control cables will not operate smoothly and will stick or bind.*

- When disassembling fuel system parts, note the locations of the O-rings. Replace them with new ones on reassembly.
- The float bowls have drain screws that can be loosened to drain residual gasoline.
- Refer to section 3 for throttle and choke cable adjustment.

California model:

- All hoses used in the evaporative emission control system are numbered for identification. When connecting one of these hoses, compare the hose numeber with the Vacuum Hose Routing Diagram Label, page 3-11, for its routing.

SPECIFICATIONS

ITEM	REAR CARBURETORS	FRONT CARBURETORS
Identification No.	VD-ECA [VD-EDA, California model]	
Venturi dia	30.0 mm (1.18 in)	
Main jet	#105	#108 [#105, California model]
Slow jet	#35	
Float level	8.9 mm (0.35 in)	
Idle speed	1,200 ± 100 rpm	
Throttle grip free play	2—6 mm (1/8—1/4 in)	
Pilot screw initial opening	1-7/8 turns out [2-1/8 turns out, California model]	

TOOLS

Special

Hand vacuum pump gauge	ST—AH—260—MC7 or A937X—041—XXXX (U.S.A. only)
Valve guide driver, 7 mm	07942—8230000 (U.S.A. only)
Hand pressure pump	ST—AH—255—MC7

Common

Float level gauge	07401—0010000

TROUBLESHOOTING

Engine cranks but won't start
- No fuel in tank
- No fuel to carburetor
- Engine flooded with fuel
- No spark at plug (ignition system faulty)
- Air cleaner clogged
- Intake air leak
- Improper choke operation
- Improper throttle operation
- Faulty purge control valve
- Faulty air vent control valve vacuum tube
- Faulty automatic fuel valve vacuum hose
- Faulty automatic fuel valve
- Clogged automatic fuel valve vacuum hose

Hard starting or stalling after starting
- Improper choke operation
- Ignition malfunction
- Faulty carburetor
- Contaminated fuel
- Intake air leak
- Incorrect idle speed
- Faulty purge control valve (California model)
- Faulty air vent control valve (California model)
- Incorrect pilot screw adjustment

Lean mixture
- Clogged fuel jets
- Piston stuck closed
- Faulty float valve
- Float level low
- Blocked fuel cap vent
- Clogged fuel strainer screen
- Restricted fuel line
- Intake air leak
- Clogged air vent tube
- Faulty automatic fuel valve
- Faulty automatic fuel valve vacuum hose
- Clogged automatic fuel valve vacuum hose

Rich mixture
- Clogged air jets or cleaner
- Faulty float valve
- Float level too high
- Choke bystarter stuck closed
- Dirty air cleaner
- Worn jetneedle or needle jet

Rough idle
- Faulty ignition system
- Incorrect idle speed
- Incorrect carburetor synchronization
- Faulty carburetor
- Contaminated fuel

Misfiring during acceleration
- Faulty ignition system
- Lean mixture

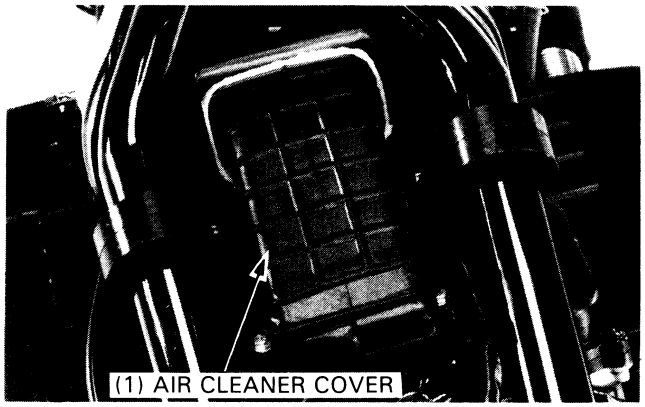
Backfiring
- Faulty ignition system
- Lean mixture

Poor performance (driveability) and poor fuel economy
- Clogged fuel system
- Faulty ignition system
- Faulty hose of emission control system (California model)
- Air cleaner clogged

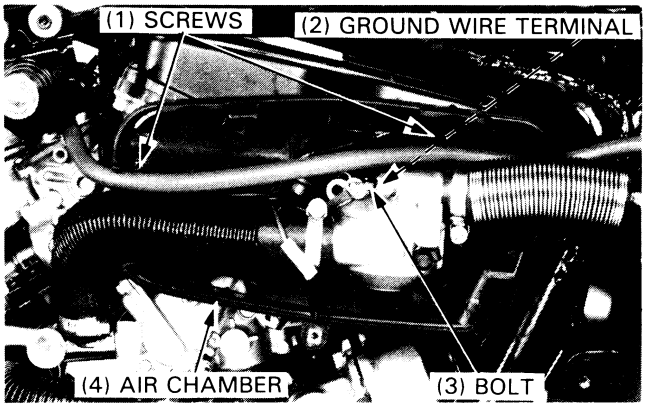
CARBURETOR REMOVAL

Remove the seats and fuel tank (page 4-17).
Remove the right and left air chamber covers.

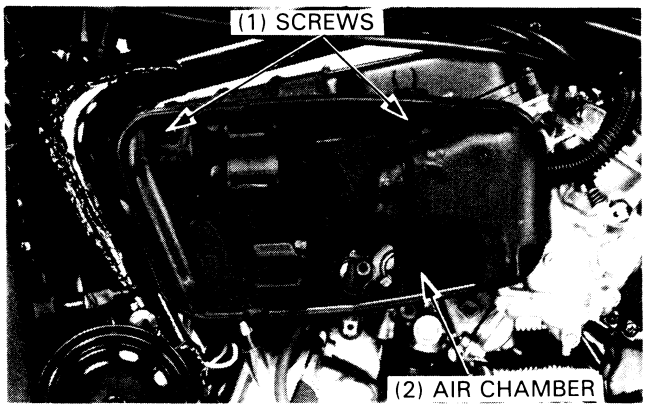
Remove the front left and right side covers.
Remove the air cleaner case cover and element (page 4-16).



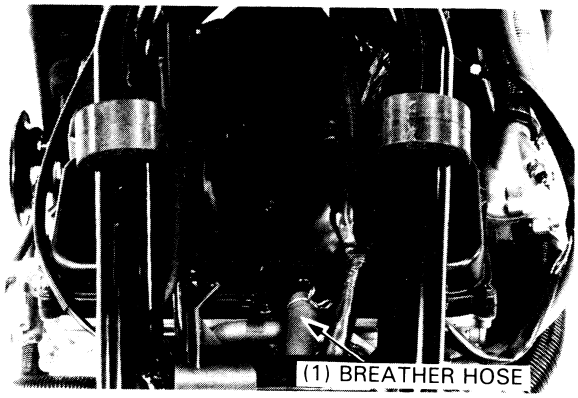
Remove the thermostat mounting bolt and disconnect the ground wire terminal.
Remove the right air chamber and screws.



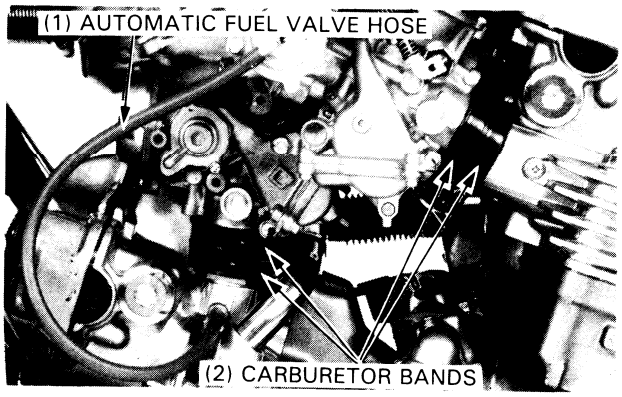
Remove the left air chamber and screws.
Remove the No. 2 spark plug cap.



Remove the air cleaner case (page 4-16).
Disconnect the breather hose from the air cleaner case.



Disconnect the automatic fuel valve tube from the intake manifold.
Loosen the carburetor bands and pull out the carburetor base.

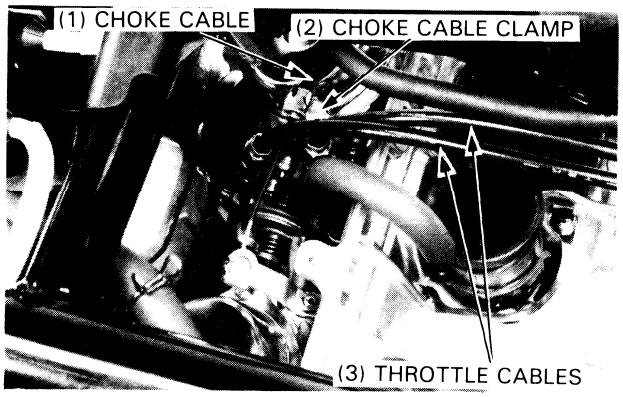


Disconnect the throttle cables from the throttle drum.
Remove the choke cable clamp and disconnect the choke cable.

Remove the carburetors.

NOTE

- Seal the cylinder head intake ports with tape or a clean cloth to keep dirt and debris from entering the intake ports.



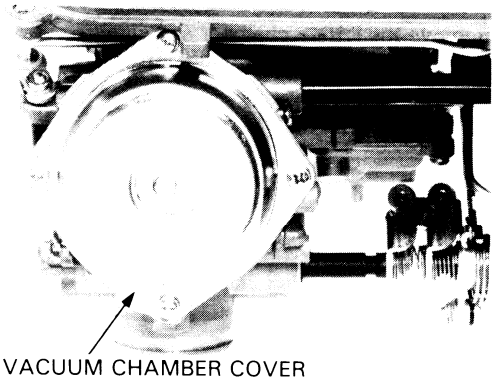
VACUUM CHAMBER

REMOVAL

Remove the four vacuum chamber cover screws and cover.

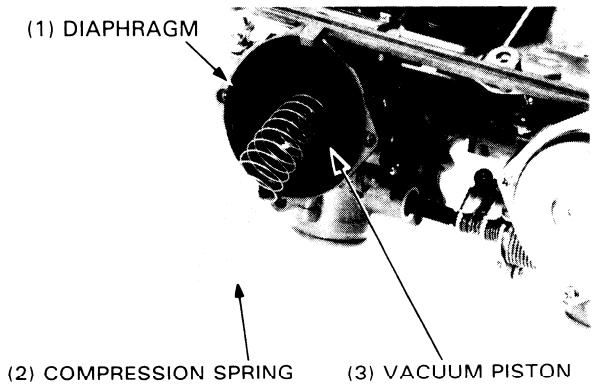
CAUTION

- *Do not interchange vacuum chamber covers, springs, pistons or jet needles between carburetors.*

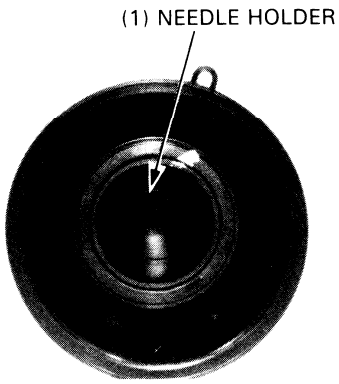


Remove the compression spring, diaphragm and vacuum piston.

Inspect the vacuum piston for wear, nicks, scratches or other damage. Make sure the piston moves up and down freely in the chamber.

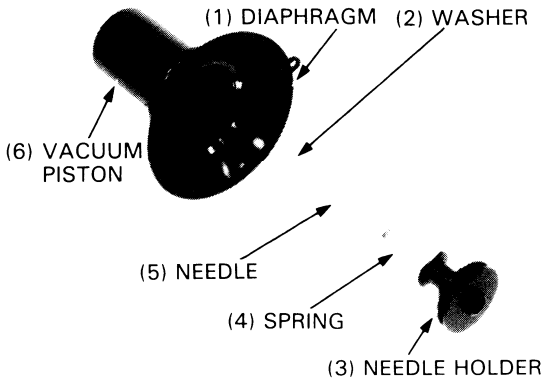


Push the needle holder in and turn it 60 degrees with an 8 mm socket. Then remove the needle holder, spring and needle from the piston.



Inspect the needle for excessive wear at the tip and for bending or other damage.

Check the diaphragm for deterioration and tears.

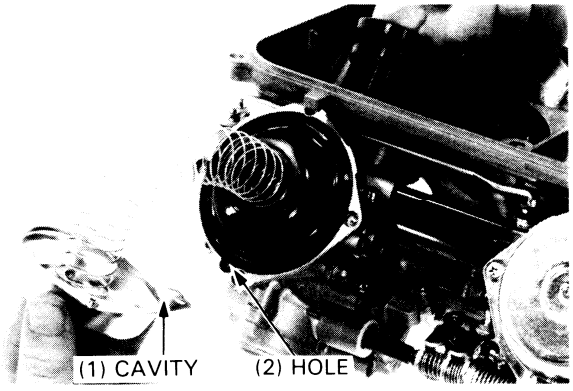


INSTALLATION

Installation is essentially the reverse of removal but to avoid distorting the diaphragm, install the vacuum piston/diaphragm as follows:

Insert the vacuum piston into the carburetor. Stick your finger into the carburetor bore and hold the vacuum piston in the full throttle pisition, then turn down the diaphragm so its lip fits into the carburetor groove.

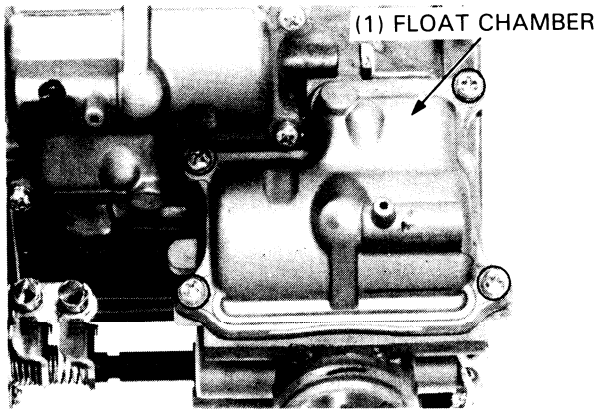
Install the chamber cover, aligning its cavity with the hole in the carburetor, and secure with at least two screws before releasing the vacuum piston.



FLOAT CHAMBER

REMOVAL

Remove the four float chamber screws and the float chamber.

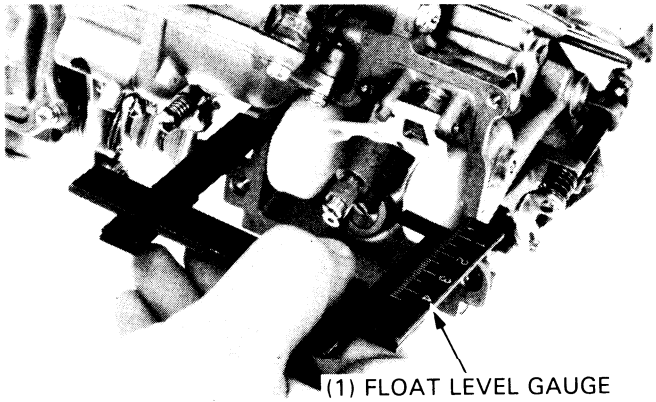


FLOAT LEVEL

Measure the float level with the carburetor inclined 15° – 45° from vertical and the float tang just contacting the float valve.

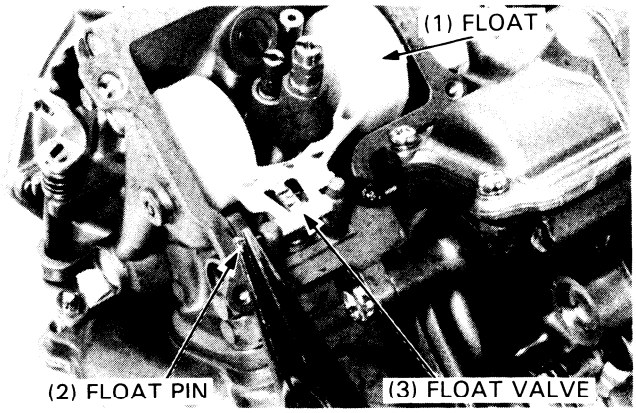
TOOL:
FLOAT LEVEL GAUGE **07401 – 0010000**
SPECIFICATION: **8.9 mm (0.35 in)**

If the float level is not within specifications, replace the float. Recheck the float level.



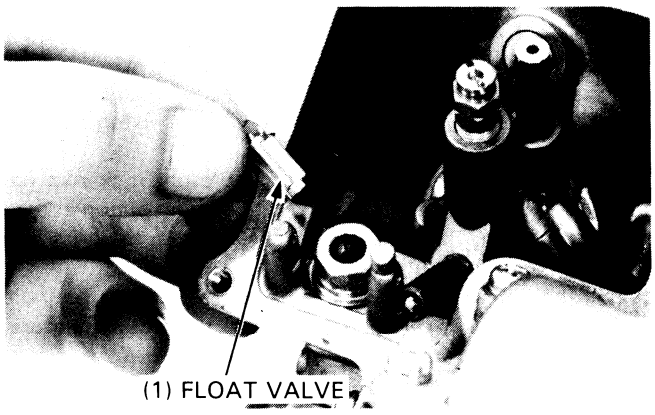
FLOAT AND JETS

Remove the float pin, float and float valve.

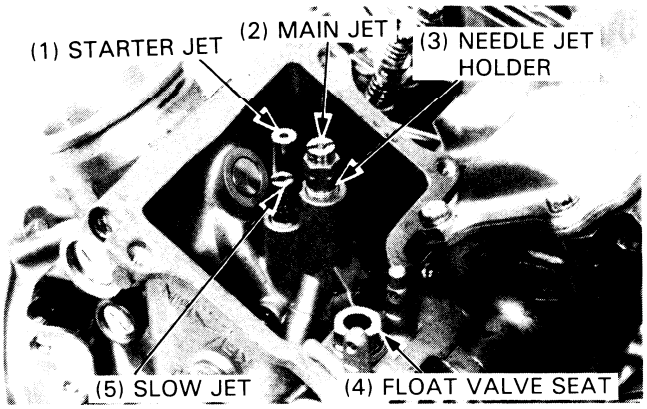


Inspect the float valve for grooves and nicks.

Inspect operation of the float valve.



Remove the starter jet, main jet and slow jet.
Remove the float valve seat and filter.
Remove the needle jet holder and needle jet.
Before removing the pilot screw, turn it in and carefully count the number of turns until it seats lightly.
Inspect the float valve for grooves, nicks, or deposits.
Clean all jets and passage with compressed air if necessary.



ASSEMBLY

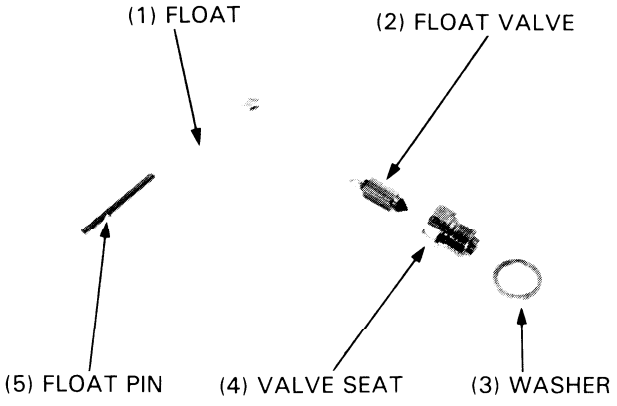
Assemble the float chamber components in the reverse order of disassembly.

AUTOMATIC FUEL VALVE

WARNING

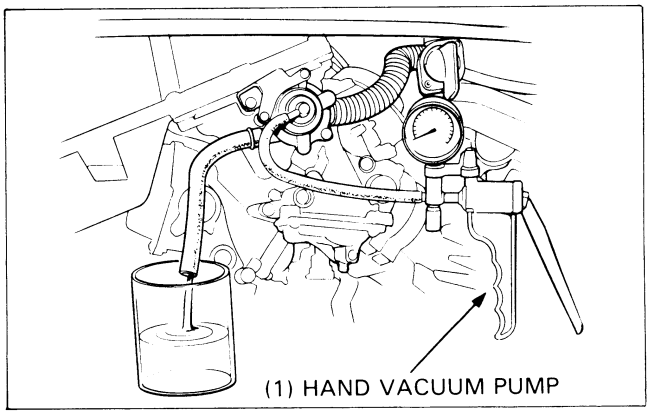
- ***Gasoline is flammable and is explosive under certain conditions. Do not smoke or allow flames or sparks near the equipment while draining fuel.***

Remove the left air chamber cover and air chamber.
Turn the fuel valve off.
Place the clean container under the fuel line.
Disconnect the fuel line at the carburetor.
Drain the remaining gasoline in the fuel valve and fuel line.
Turn the fuel valve on.
If gasoline does not flow out of the fuel line, the automatic fuel valve is functional.
If gasoline flows out, check the vacuum hose and the diaphragm.



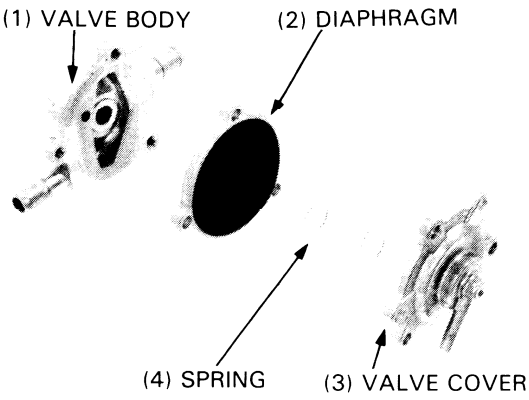
DIAPHRAGM INSPECTION

Perform the following inspections to check the automatic fuel valve operation.
Disconnect the vacuum hose from the No. 2 cylinder intake port and connect a hand vacuum pump to the vacuum hose.
Operate the vacuum pump.
Gasoline should flow out of the fuel line.
Remove the vacuum pump from the vacuum hose.
Gasoline should not flow out.
If the operation of the automatic fuel valve is defective, check the diaphragm and spring.



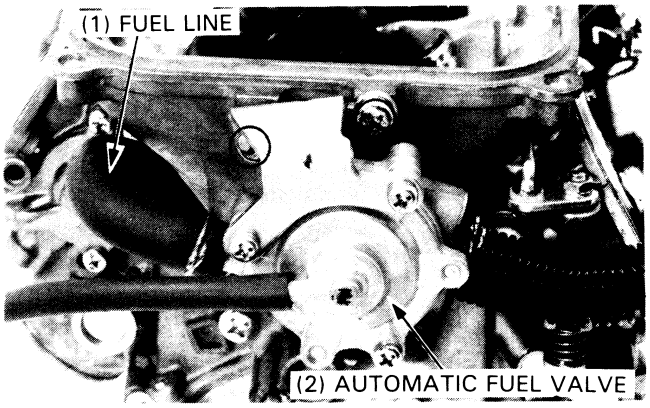
DISASSEMBLY

Remove the automatic fuel valve from the carburetor chamber.
Remove the automatic fuel valve cover and screws.
Check the diaphragm for deterioration and tears or other damage. Replace the defective parts as necessary.

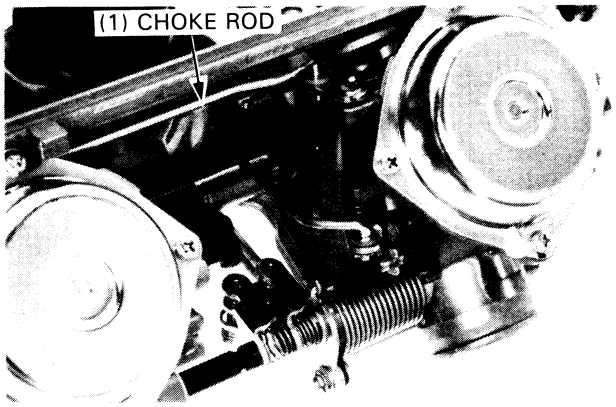


CARBURETOR SEPARATION

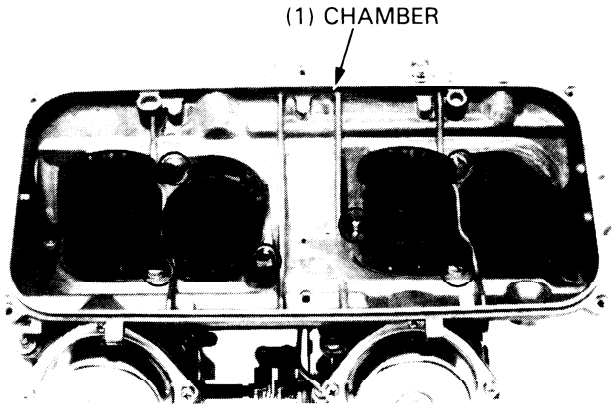
Remove the fuel line and vacuum hose from the carburetor, then remove the two screws and the automatic fuel valve.



Remove the nuts and washers from the choke lever end, and remove choke rods.



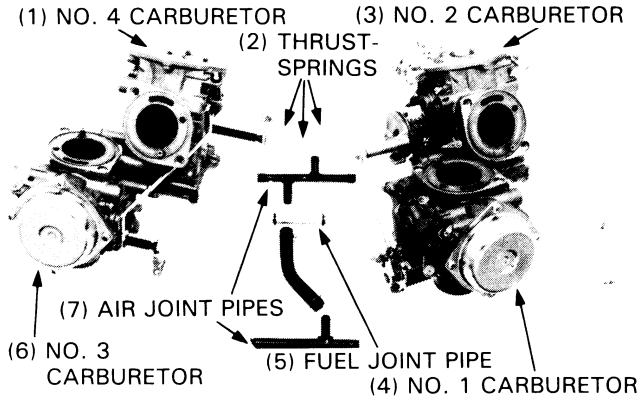
Remove the screws attaching the air chamber to the carburetors and separate the chamber and carburetors.



Carefully separate the No. 1 and No. 2 carburetors from the No. 3 and No. 4 carburetors.

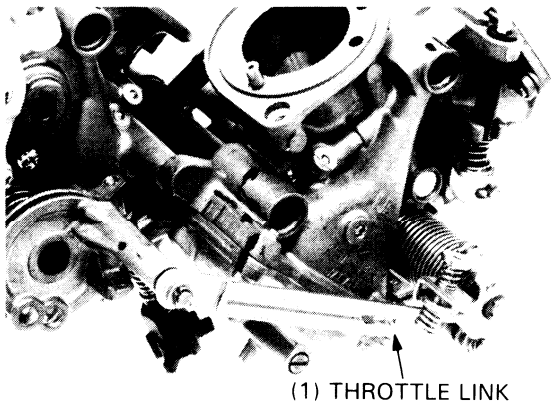
CAUTION

- *Separate the carburetors horizontally to prevent damage to the joint pipes.*

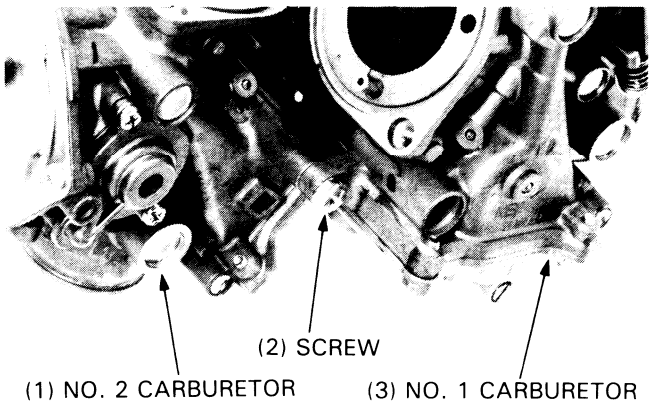


Remove the choke rod cotter pins and choke rod from the No. 1 and No. 2 carburetors.

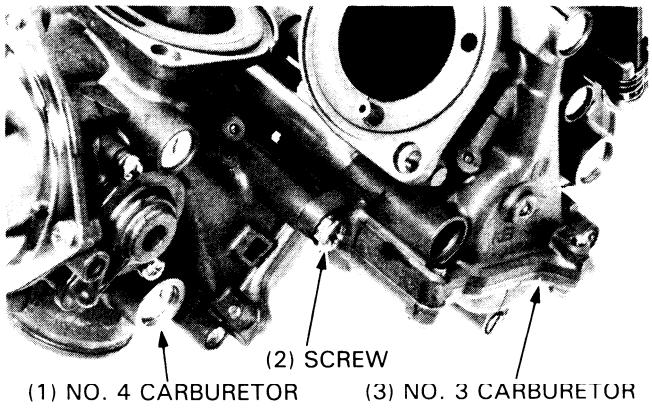
Disconnect the throttle link from the No. 1 and No. 2 carburetors by removing the cotter pins.



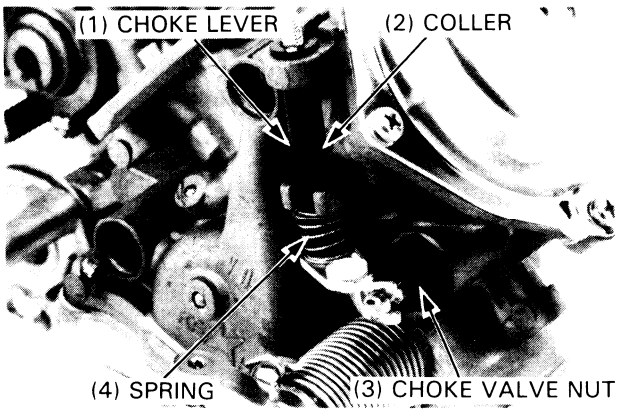
Remove the screw from the No. 1 carburetor.
Carefully separate the No. 1 and No. 2 carburetors.



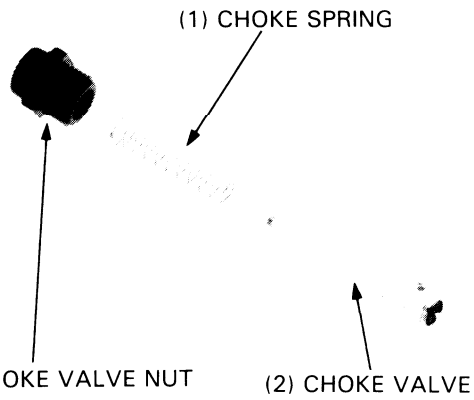
Remove the choke rod cotter pins and the choke rod from the No. 3 and No. 4 carburetors.
Remove the screw from the No. 4 carburetor.
Carefully separately the No. 3 and No. 4 carburetors.



Loose the choke valve nut, then remove the choke lever, spring and coller.
Remove the choke valve spring and valve.

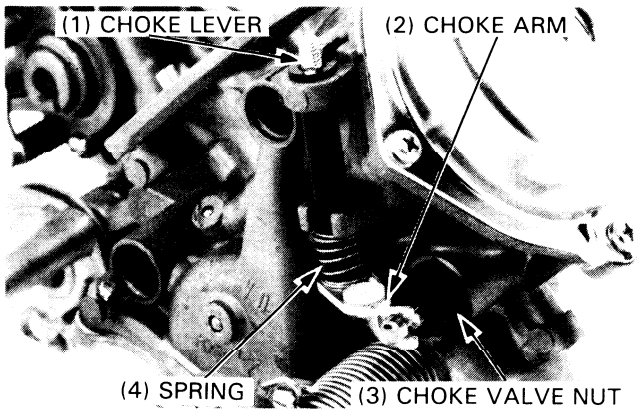


Check the choke valve and spring for nicks, grooves or other damage.



CARBURETOR ASSEMBLY

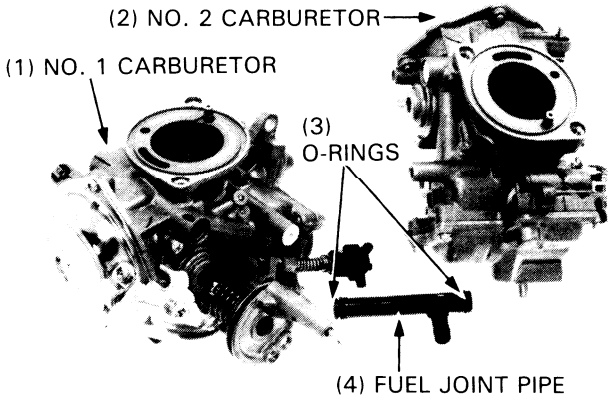
Install the choke valve, valve spring and nut and tighten the nut while hooking the choke arm onto the groove in the valve. Install the choke lever.



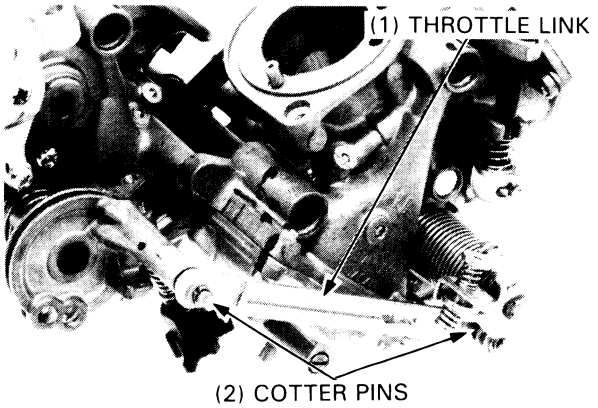
Coat new O-rings with oil and install them on the fuel joint pipe for No. 1 and No. 2 carburetors.
Install the fuel joint pipe to the No. 1 and No. 2 carburetors.
Install the screw loosely into the No. 1 carburetor.

NOTE

- Tighten the attaching screws after the air chamber has been installed.



Reconnect the throttle linkage between the No. 1 and No. 2 carburetors using new cotter pins.



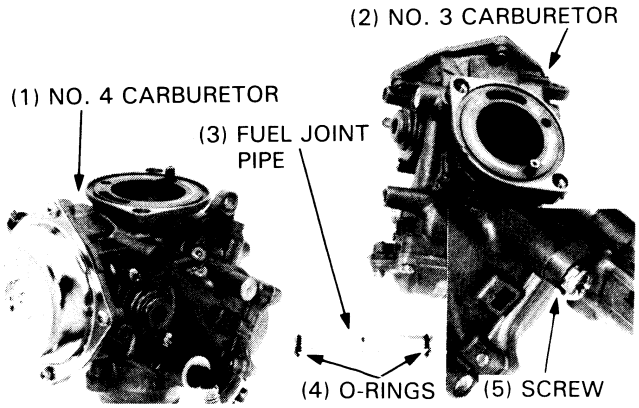
Coat the new O-rings with oil.
Install them on the fuel joint pipe for No. 3 and No. 4 carburetors.
Install the fuel joint pipe and the No. 3 and No. 4 carburetors.

Install the screw loosely into the No. 4 carburetor.

NOTE

- Tighten the attaching screw after the air chamber has been installed.

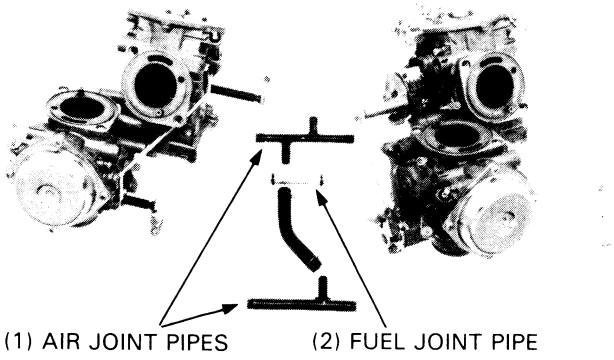
Install the choke rods using new cotter pins.



Coat new O-rings with oil and install them on the fuel and air joint pipes.
Assemble the No. 3 and No. 4 carburetors together with the air joint pipes.

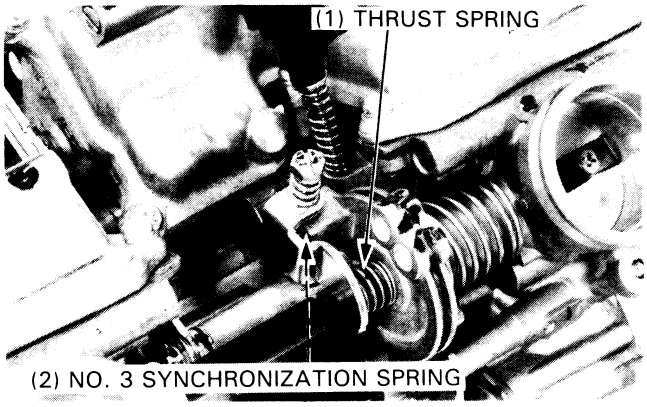
NOTE

- Be careful not to damage the O-rings during assembly.

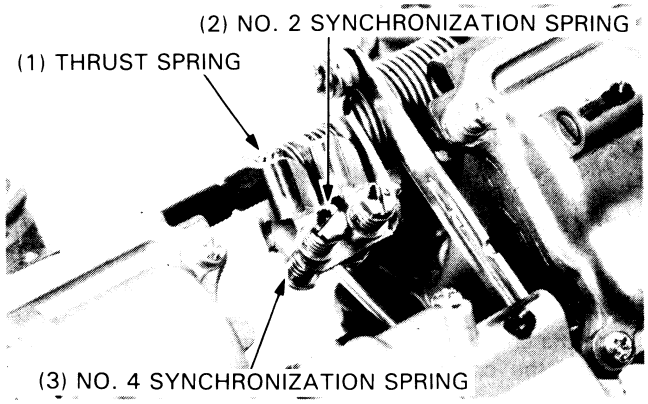


Loosen the synchronization adjusting screws until there is no tension.
Install the synchronization spring between the No. 2 and No. 4 carburetor throttle arms.

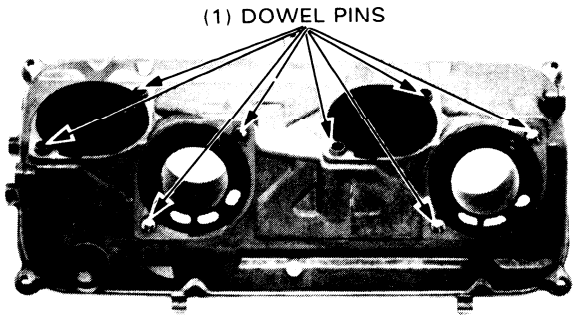
Install the thrust springs between the throttle valve shafts.



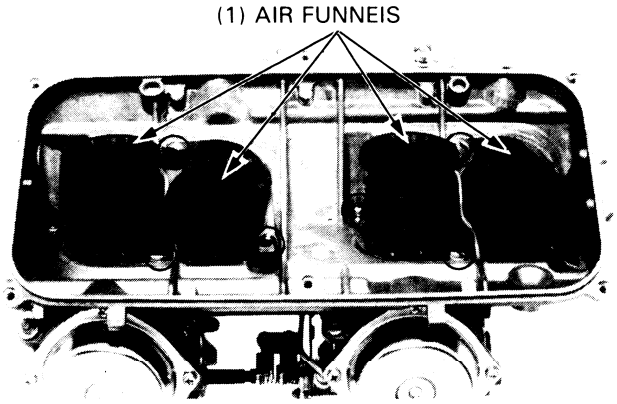
Install the synchronization springs between the No. 2 and No. 4 carburetor throttle arm, throttle link arm and the thrust springs between the throttle shafts.
Make sure the fuel joint and air joint pipes are securely installed.



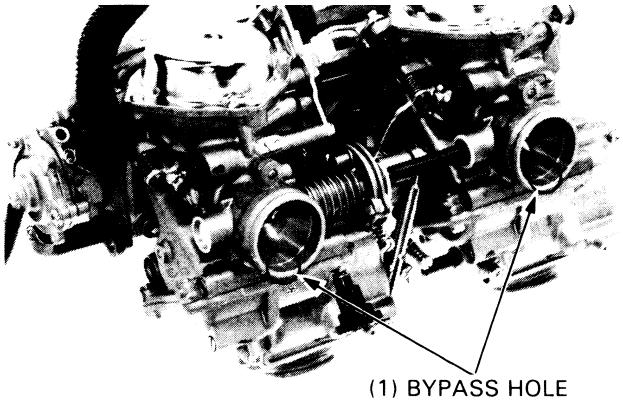
Make sure the air funnels and dowel pins are in place.



Place the air chamber over the carburetors, aligning the dowel pins with the carburetor holes.
Attach the air chamber to the carburetors with the eight screws.
Tighten the carburetor attaching (No. 1-to-No. 2 and No. 3-to-No. 4) screws.
Install the choke rods and lever, using the nuts and washers.
Connect the fuel lines to the fuel joint pipes, and install the automatic fuel valve.



Turn the throttle stop screw to align the No. 1 throttle valve with the edge of the bypass hole.



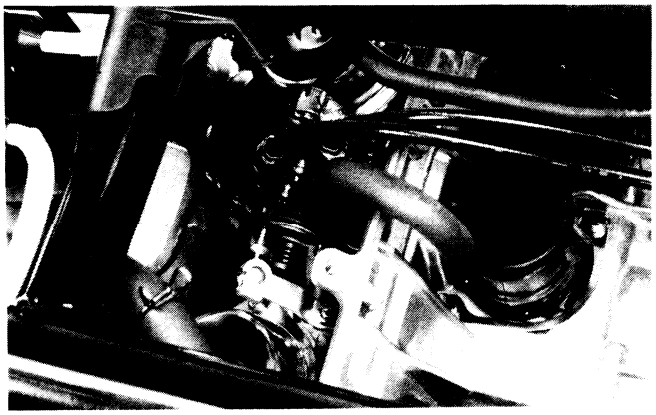
Align each throttle valve with the bypass hole edge by turning the synchronization adjusting screws.
Inspect throttle operation as described below:

- Open the throttle slightly by pressing the throttle linkage, then release the throttle.
- Make sure that it returns smoothly.
- Make sure that there is no drag when opening and closing the throttle.

Make sure that choke valve operation is smooth by moving the choke linkage.

Close the choke valve by turning the choke linkage.
Release the choke linkage and make sure that it returns smoothly.

CARBURETOR INSTALLATION



Installation is essentially the reverse of removal.

NOTE

- Route the throttle and choke cables properly (page 1-9 to 1-10).

Perform the following inspections and adjustments:
- Throttle operation (page 3-4).
- Carburetor choke (page 3-5).
- Carburetor idle speed (page 3-10).
- Carburetor synchronization (page 3-9).

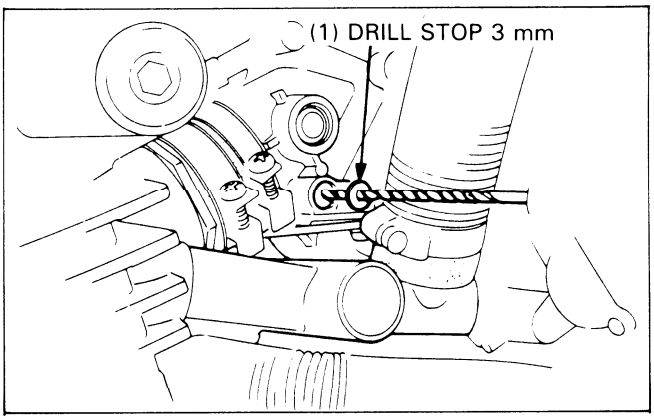
PILOT SCREW

REMOVAL

NOTE

- The pilot screws are factory pre-set and should not be removed unless the carburetors are overhauled.
- The pilot screw plugs are factory installed to prevent pilot screw misadjustment. Do not remove the plugs unless the pilot screws are being removed.
- Cover all openings with tape to keep metal particles out when the plugs are drilled.

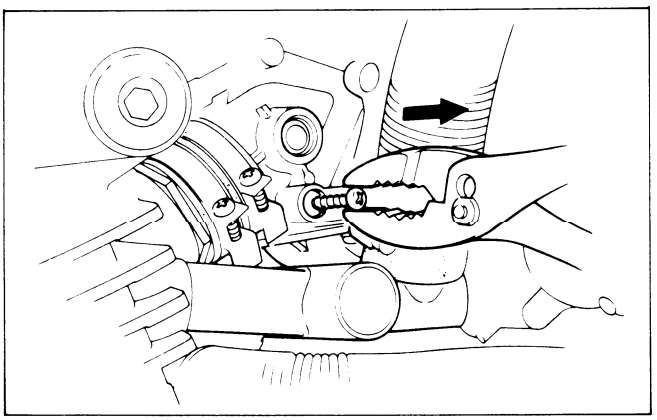
Center punch the pilot screw plug to center the drill point.
Drill through the plug with a 4 mm (5/32 in) drill bit.
Attach a drill stop to the bit, 3 mm (1/8 in) from the end to prevent drilling into the pilot screw.



CAUTION

- *Be careful not to drill into the pilot screw. For proper pilot screw adjustment, see page 4-14.*

Force a self-tapping 4 mm screw (H/C 069399H, P/N 93903—35410) into the drilled plug and continue turning the screwdriver until the plug rotates with the screw.
Pull on the screw head with pliers to remove the plug.
Use compressed air to clean the pilot screw area and remove metal shavings.

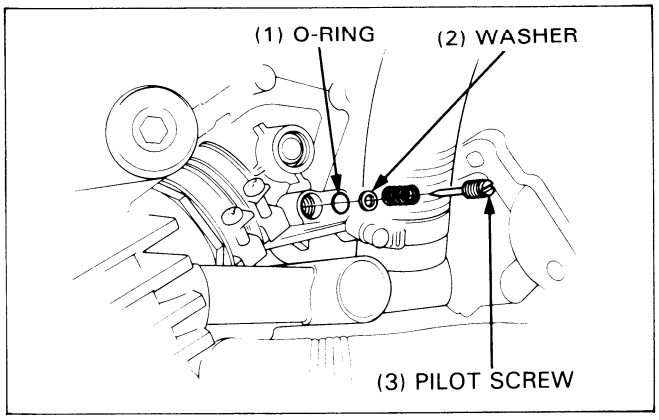


Turn each pilot screw in and carefully count the number of turns before it seats lightly. Make a note of this to use as a reference when reinstalling the pilot screws.

CAUTION

- *Damage to the pilot screw seat will occur if the pilot screw is tightened against the seat.*

Remove the pilot screws and inspect them. Replace them if they are worn or damaged.



INSTALLATION

Install the pilot screws and return them to their original positions as noted during removal.
Perform the pilot screw adjustment (below) if new pilot screws are installed.

NOTE

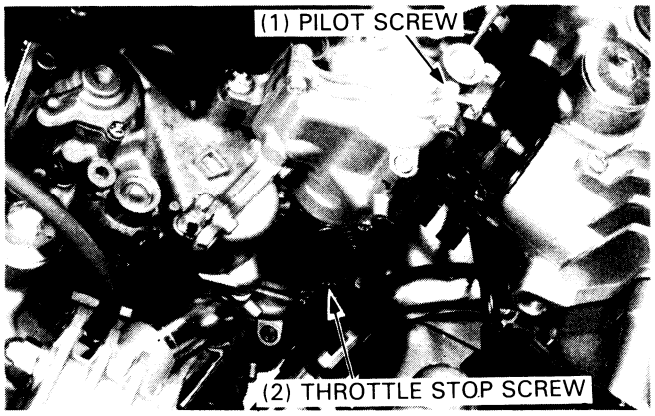
- Do not install new plugs on pilot screw holes until adjustment has been make.
- If you replace the pilot screw in one carburetor, you must replace the pilot screws in the other carburetors for proper pilot screw adjustment.

ADJUSTMENT (Idle Drop Procedure, U.S.A. Only)

NOTE

- The pilot screws are factory pre-set and no adjustment is necessary unless the pilot screws are replaced (page 4-12).
- Use a tachometer with graduations of 50 rpm or smaller that will accurately indicate a 50 rpm change.

1. Turn each pilot screw clockwise until it seats lightly and back it out to the specification given. This is an initial setting prior to the final pilot screw adjustment.
   INITIAL OPENING: 1 7/8 Turns out

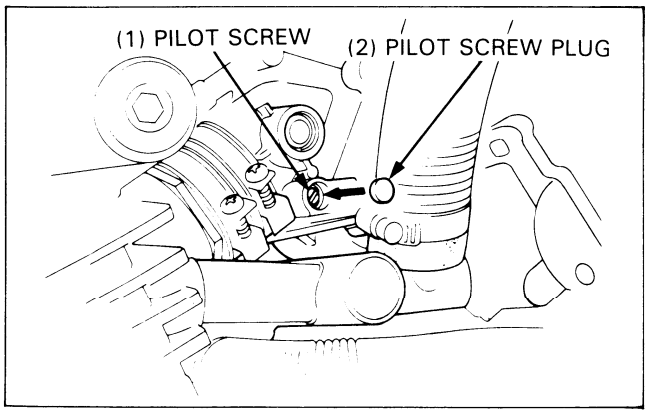


CAUTION

- *Damage to the pilot screw seat will occur if the pilot screw is tightened against the seat.*

2. Warm up the engine to operating temperature. Stop and go driving for 10 minutes is sufficient.
3. Attach a tachometer according to the manufacturer's instructions.
4. Adjust the idle speed with the throttle stop screw.
   IDLE SPEED: 1,200 ± 100 rpm
5. Turn all pilot screws 1/2 turn out from the initial setting.
6. If the engine speed increases by 50 rpm or more, turn all pilot screws out by 1/2 turn each until engine speed drops by 50 rpm or less.
7. Adjust the idle speed with the throttle stop screw.
8. Turn the No. 1 carburetor pilot screw in until the engine does not increase.
9. Turn the No. 1 carburetor pilot screw 1 turn out from the position obtained in step 8.
10. Adjust the idle speed with the throttle stop screw.
11. Perform steps 8, 9 and 10 for the No. 2, 3, 4 carburetor pilot screws.

12. Drive new pilot screw plugs into the pilot screw bores with a 7 mm valve guide driver, P/N 07942—8230000. When fully seated the plug surfaces will be recessed 1 mm.



HIGH ALTITUDE ADJUSTMENT (U.S.A. only)

When the vehicle is to be operated continuously above 2,000 m (6,500 feet) the carburetor must be readjusted as follows to improve driveability and decrease exhaust emissions.

Warm up the engine to operating temperature. Stop and go driving for 10 minutes is sufficient.
Remove each pilot screw plug (page 4-13).
Turn each pilot screw clockwise 1 turn.
Adjust the idle speed to 1,200 ± 100 rpm with the throttle stop screw.
Drive new pilot screw plugs into the pilot screw bores.

NOTE

- This adjustment must be made at high altitude to ensure proper high altitude operation.

Attach a Vehicle Emission Control Information Update label onto the frame as shown. Refer to Service Bulletin #SL132 for information on obtaining the label.

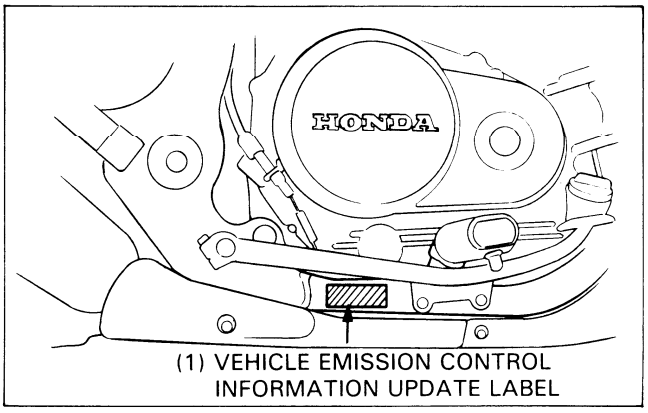
NOTE

- Do not attach the label to any part that can be easily removed from the vehicle.

WARNING

- ***Operation at an altitude lower than 1,500 m (5,000 feet) with the carburetors adjusted for high altitudes may cause the engine to idle roughly and stall.***

When the vehicle is to be operated continuously below 1,500 m (5,000 feet), turn each pilot screw counterclockwise 1 turn to its original position after removing each pilot screw plug and adjust the idle speed to 1200 ± 100 rpm. Drive new pilot screw plugs into the pilot screw bores.
Be sure to do these adjustments at low altitude.

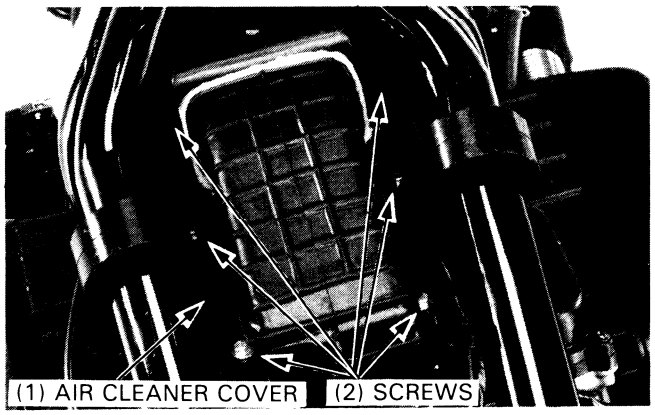


AIR CLEANER CASE

REMOVAL/INSTALLATION

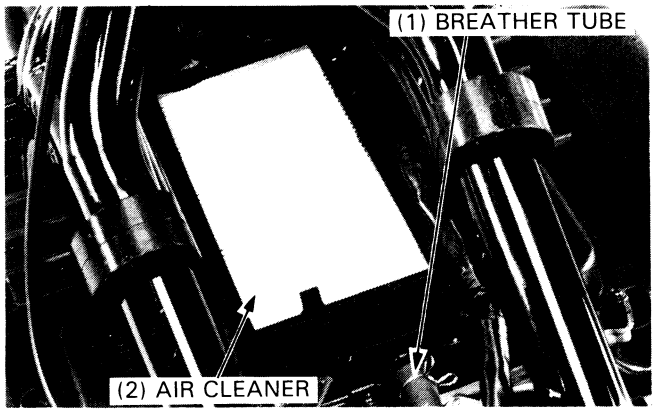
Remove the seats and fuel tank. (page 4-17).
Remove the frame cover.

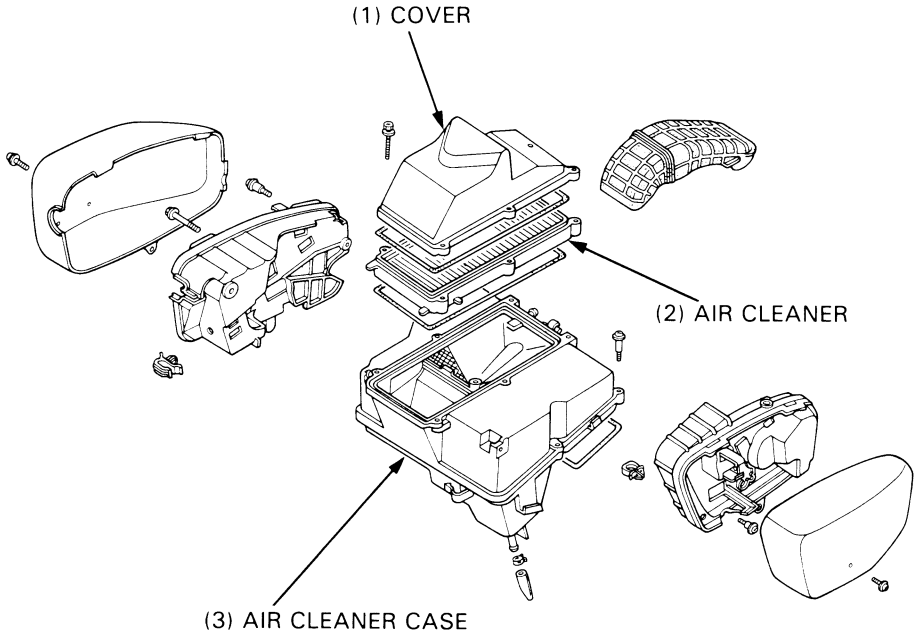
Remove the six attaching screws and air cleaner case covers.



Disconnect the breather tube from the air cleaner.
Remove the following:
- air cleaner element.
- air chamber covers and air chamber.
- air cleaner case screws.
- air cleaner case.

Installation is the reverse order of removal.

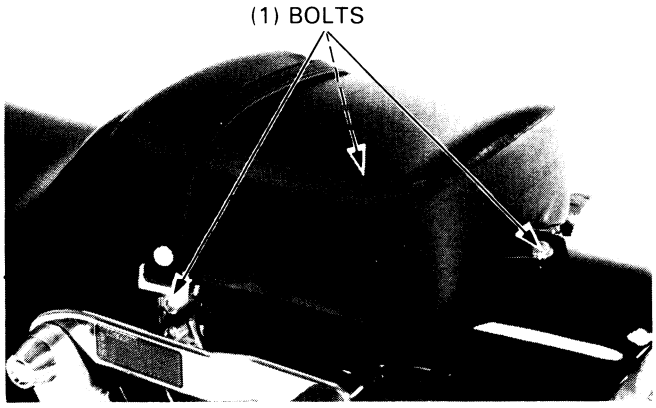




FUEL TANK

REMOVAL/INSTALLATION

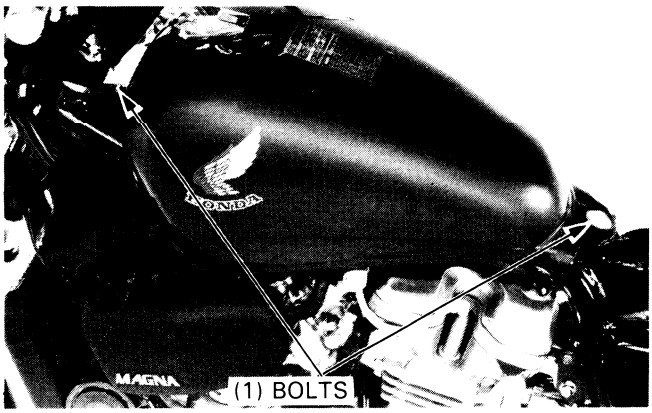
Remove the seat mounting bolts, and remove both seats.



WARNING

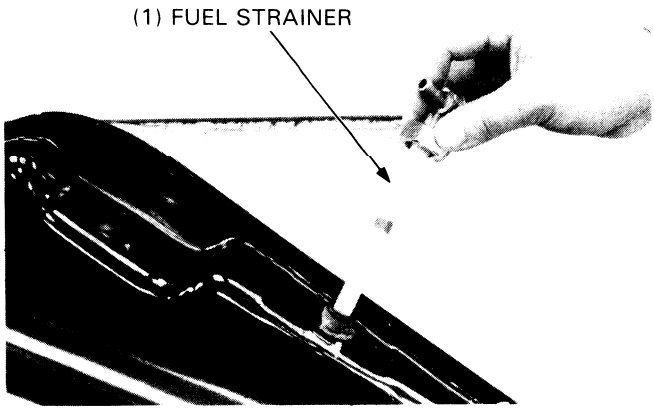
- *Do not allow flames or sparks near gasoline. Wipe up spilled gasoline at once.*

Turn the fuel valve "OFF" and disconnect the fuel line.
Remove the fuel tank mounting bolts, then remove the fuel tank.
Check that fuel flows freely from the fuel valve.



Remove the fuel valve and clean the fuel strainer if fuel flow is restricted.

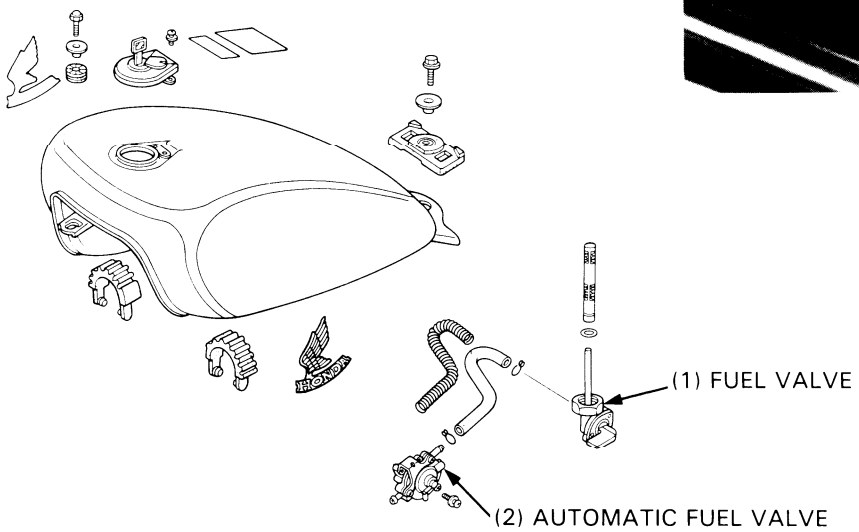
Installation is the reverse order of removal.



CAUTION

- *Do not overtighten the fuel valve.*

After installation, check that there are no fuel leaks.

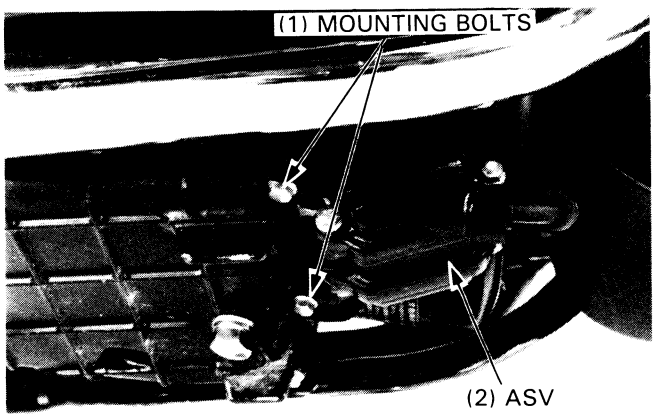


SECONDARY AIR SUPPLY SYSTEM (California model)

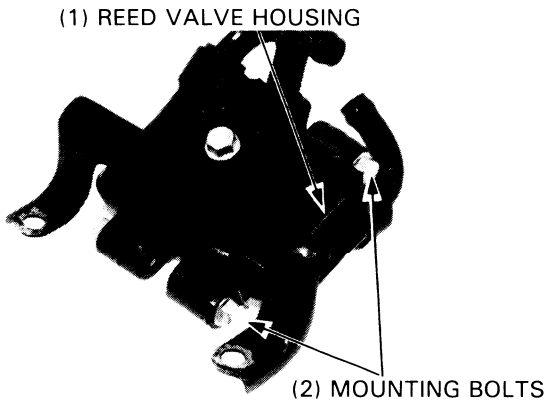
AIR SUCTION VALVE (ASV) REMOVAL

Front:
Remove the lower cowl (page 5-3).
Remove the oil pan mounting bolts.
Disconnect the pipes from the ASV of front side.

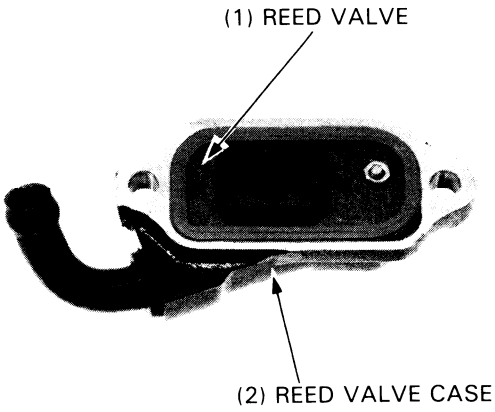
Rear:
Remove the left and right side covers.
Remove the tool Box, and air suction valve mounting bolts.
Disconnect the hoses from the air suction valve of rear side.



Remove the reed valve housing mounting bolts.



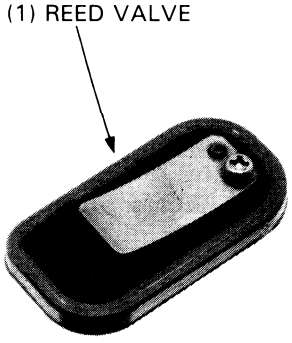
Disassemble the reed valve case.



REED VALVE INSPECTION

Check the reed valve for damage or fatigue; replace if necessary.

Check the reed valve stopper for damage; replace if necessary.



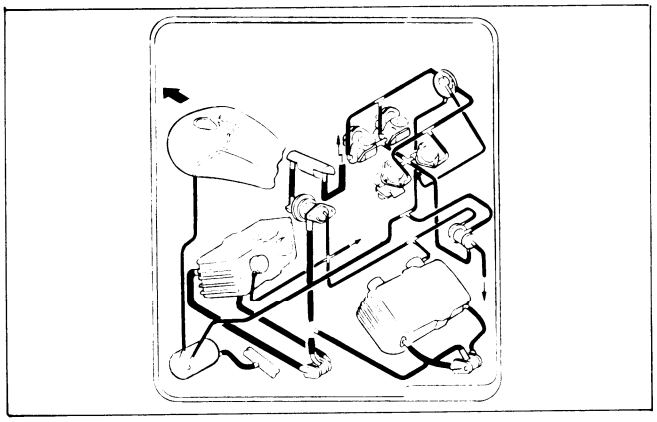
INSTALLATION

Installation is the reverse order of removal.

NOTE

- Make sure that the reed valve is seated properly.

Check the system tubes for deterioration, clogging, damage loose joints and connection (page 3-11).
Replace any hose that shows signs of damage or deterioration.

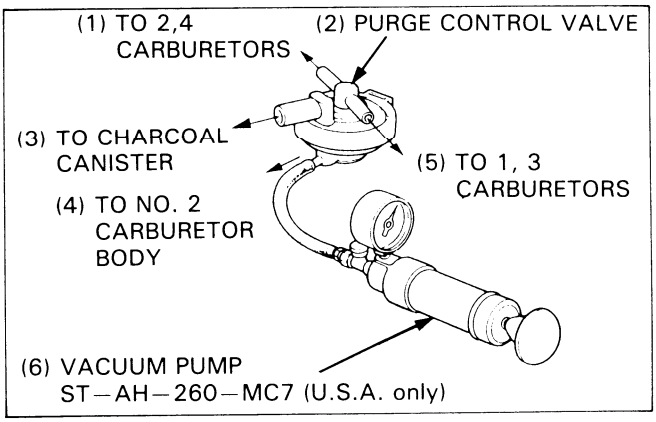


PURGE CONTROL VALVE INSPECTION (California model)

NOTE

- The purge control valve should be inspected if hot restart is difficult.

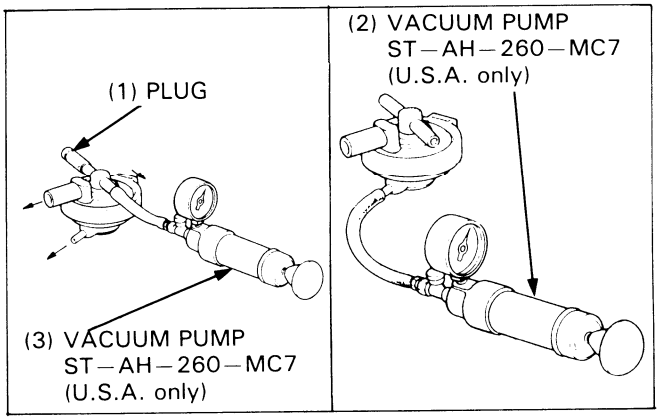
Disconnect the PCV hose fittings, and remove the PCV from the mount.
Refer to the routing label on the rear fender below the seat for hose connections.
Plug the connection that goes to the No. 2, 4 carburetors.



Connect vacuum pump to the 8 mm I.D. hose that goes to the No. 1, 3 carburetors. Apply the specified vacuum to the PCV.

SPECIFIED VACUUM: 40 mm (1.6 in) Hg

The specified vacuum should be maintained.
Replace the PCV if vacuum is not maintained.
Remove the vacuum pump and connect it to the hose that goes to the No. 3 carburetor body (P.C. port). Apply the specified vacuum to the PCV.



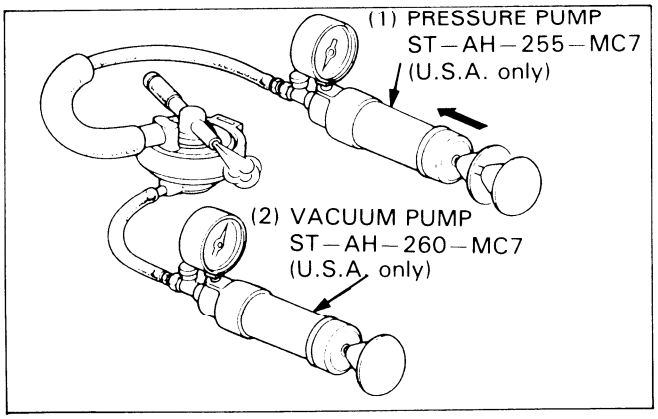
SPECIFIED VACUUM: 200 mm (7.9 in) Hg

The specified vacuum should be maintained.
Replace the PCV if vacuum is not maintained.

Connect a pressure pump to the 10 mm I.D. hose that goes to the charcoal canister. While applying the specified vacuum to the PCV hose that goes to the No. 3 carburetor body, pump air through the canister hose. Air should flow through the PCV and out the hose that goes to the No. 1, 3 carburetor body.
Replace the PCV if air does not flow out.

CAUTION

- *To prevent damage to the purge control valve, do not use high air pressure sources. Use a hand operated air pump only.*



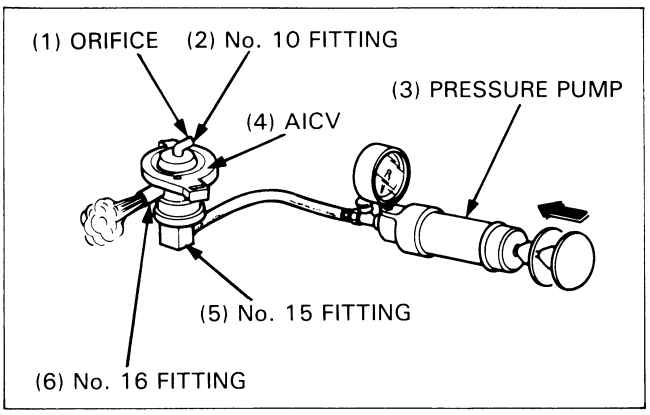
Remove the pumps, install the PCV on its mount, and route and reconnect the hoses according to the routing label.

AIR INJECTION CONTROL VALVE INSPECTION (California model)

CAUTION

- *To prevent damage to the air injection control valve, do not use high air pressure sources. use a hand operated air pump only.*

Remove the AICV.
Connect the pressure pump to the No. 15 fitting. Apply a light pressure and make sure that air flows through the AICV and out the No. 16 fitting.

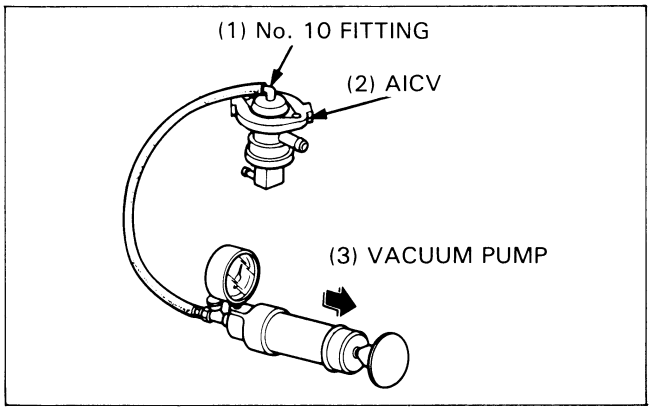


If there is no air flow, inspect the orifice in the No. 10 fitting for clogging.
If it is not clogged, replace the AICV.

Connect the vacuum pump to the AICV No. 10 fitting and apply the specified vacuum to the AICV.

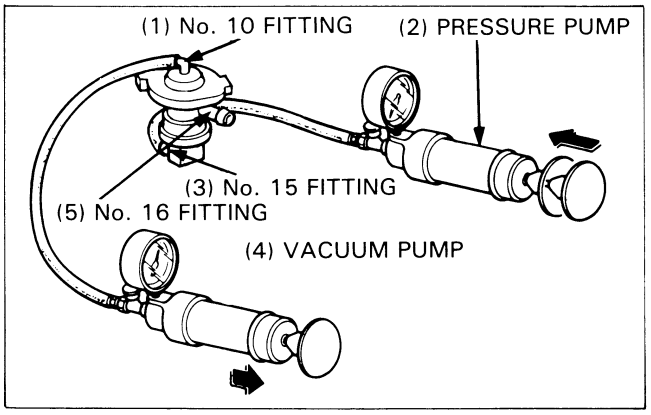
SPECIFIED VACUUM: 250 mm (9.8 in) Hg

The specified vacuum should be maintained.
If the vacuum is not held, replace the AICV.



Connect the pressure pump to the AICV No. 15 fitting.
Connect the vacuum pump to the No. 10 fitting and apply pressure gradually.

When the pressure to the No. 10 fitting reaches 300–360 mm (11.8–14.2 in) Hg, the valve should close and there should be no air flow between No. 15 fitting to the No. 16 fitting.
If there is air flow, replace the AICV.

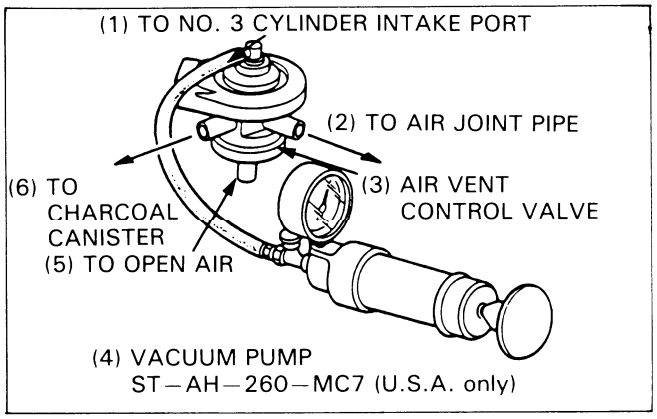


AIR VENT CONTROL VALVE INSPECTION (California model)

Disconnect the AVCV hose fittings from their connections and remove the AVCV from its mount. Refer to the routing label on rear fender behind the seat for hose connections.

Connect a vacuum pump to the hose fittings that goes to the No. 3 cylinder intake port.
Apply the specified vacuum to the AVCV.

SPECIFIED VACUUM: 250 mm (9.8 in) Hg

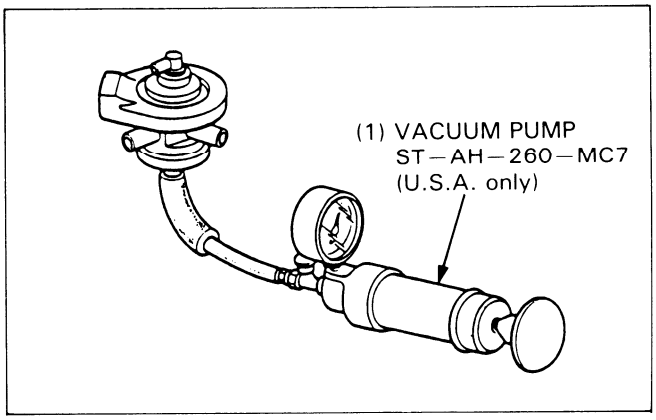


The specified vacuum should be maintained.
Replace the AVCV if vacuum is not maintained.

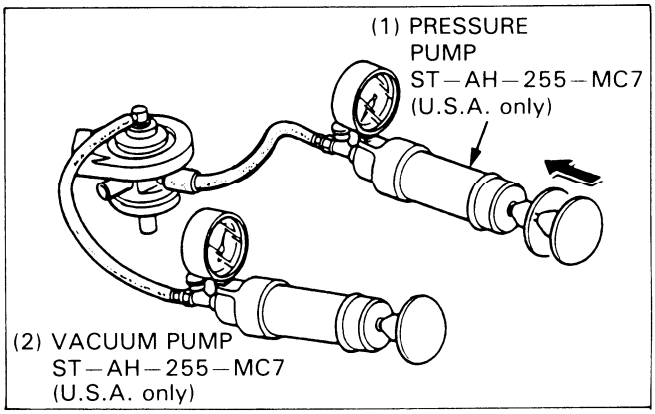
CAUTION

- *To prevent damage to the air vent control valve, do not use high air pressure sources. Use a hand operated air pump only.*

Connect the vacuum pump to the air vent port of the AVCV.
Apply vacuum to the AVCV. The vacuum should hold steady.
Replace the AVCV if vacuum leaks.



Connect the vacuum pump to the hose that goes to the No. 3 cylinder intake port.
Connect the pressure pump to the air vent port of the AVCV.
While applying the vacuum to the AVCV that goes to the No. 3 cylinder intake port, pump air through the air vent port.
Air should flow through the AVCV and out the hose that goes to the open air pipe.



Plug the hose fitting that goes to the carburetor air joint pipe.
While applying vacuum to the AVCV hose fitting that goes to the No. 3 cylinder intake port, apply air pressure.
If should hold steady.
Replace the AVCV if pressure is not retained.

Remove the pumps, install the AVCV on its mount, route and reconnect the hoses according to the routing label.