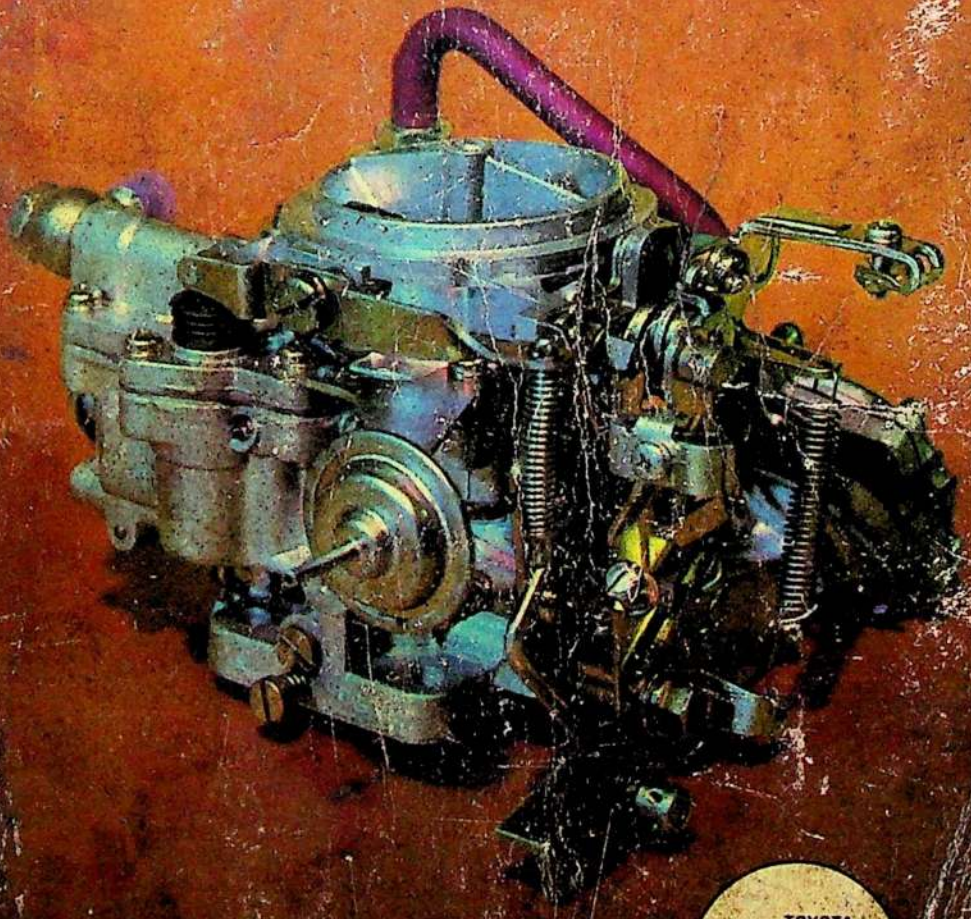
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TOYOTA

FUEL SYSTEMS



TOYOTA SERVICE TRAINING

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PRINCIPLES OF OPERATION

1

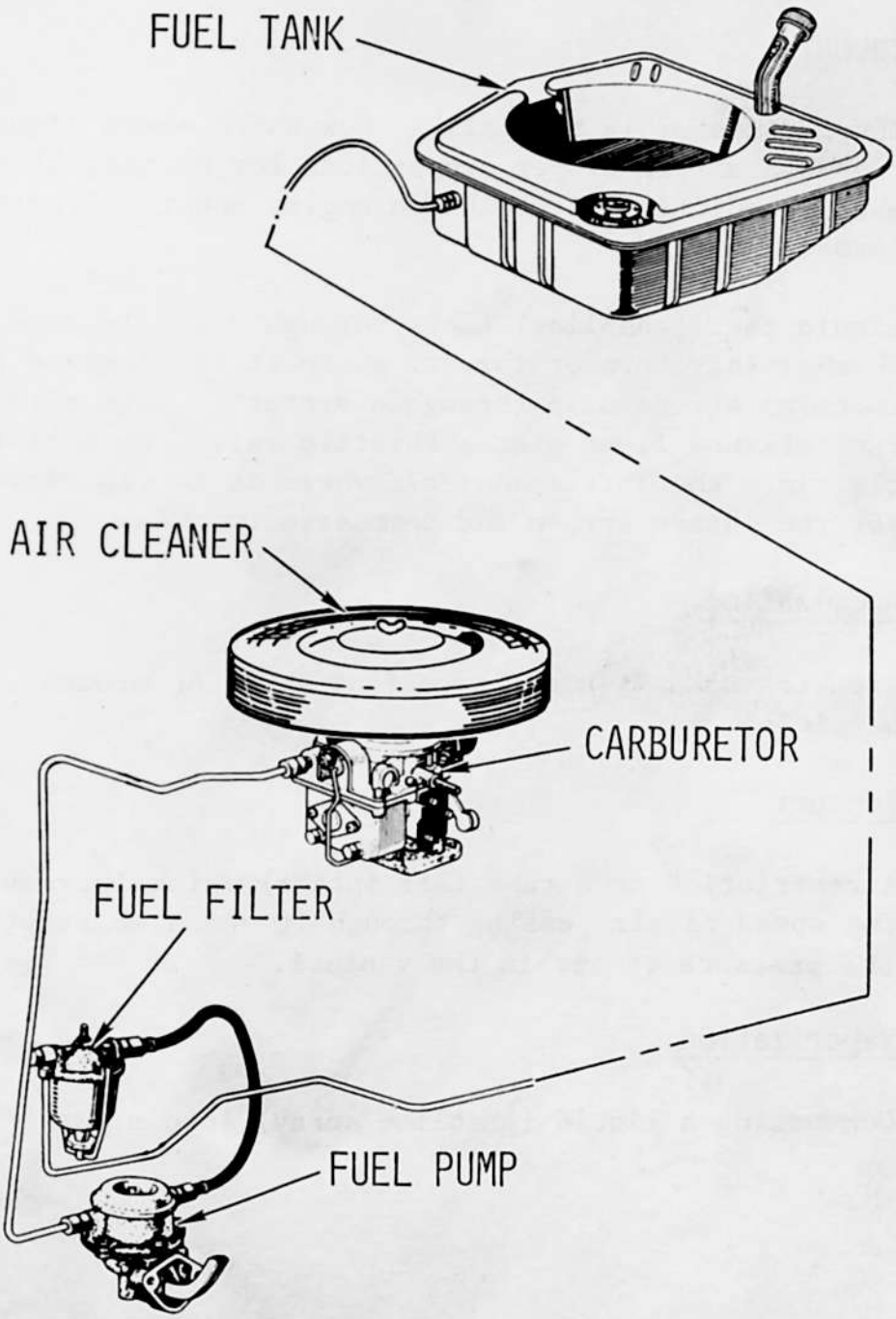
FUEL SYSTEMS MANUAL

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FUEL SYSTEM FUNCTIONS

The fuel system carries a supply of gasoline and delivers it to the engine as needed. Along with fuel lines and linkages, there are five major components in the system: air cleaner, carburetor, mechanical or electrical fuel pump, fuel filter, and fuel tank.

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CARBURETION

THEORY

The carburetor is basically a box which mixes liquid fuel and air in proper proportions for burning in a gasoline, internal combustion engine under different loads.

Liquid fuel (gasoline) flows through a nozzle into a chamber (air horn or throat) where it is atomized by incoming air passing through a venturi. This air-fuel mixture flows past a throttle valve, or butterfly, into the intake manifold where it is vaporized for the intake stroke and combustion.

Atomization

Breaking up a liquid into a fine spray of minute particles.

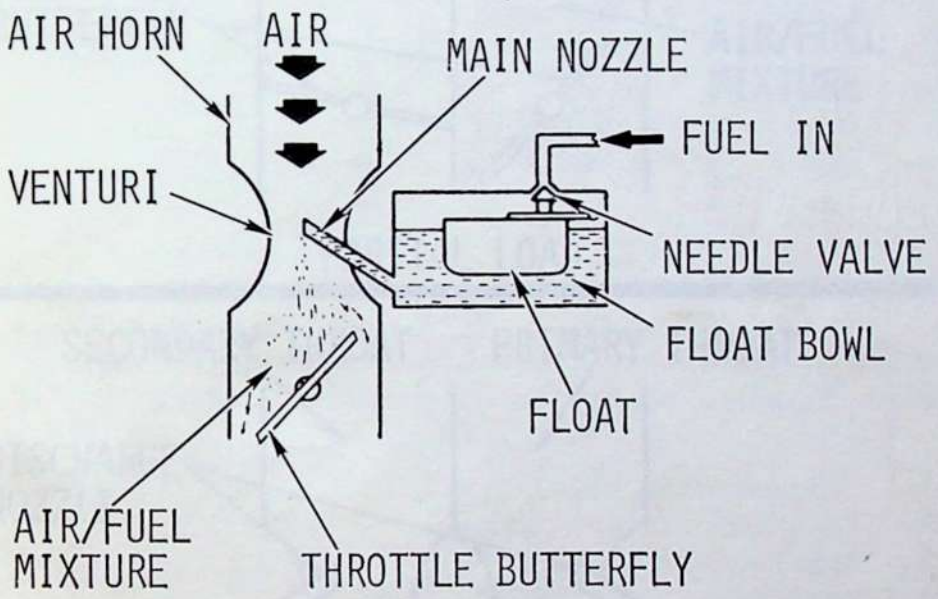
Venturi

A restriction in a tube (air intake) which increases the speed of air passing through it and also reduces the pressure of air in the venturi.

Vaporization

Converting a liquid (gasoline spray) into a gas.

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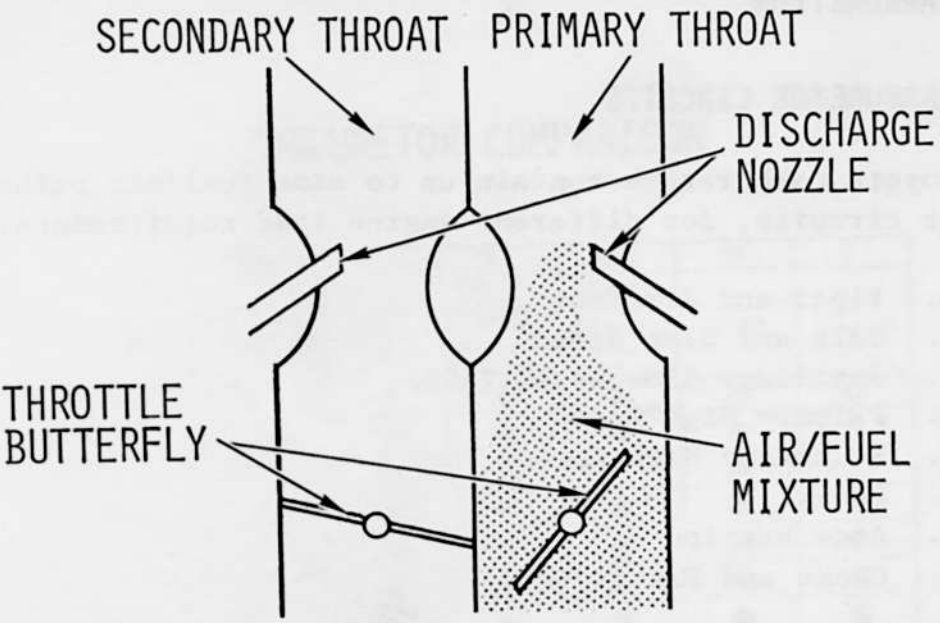
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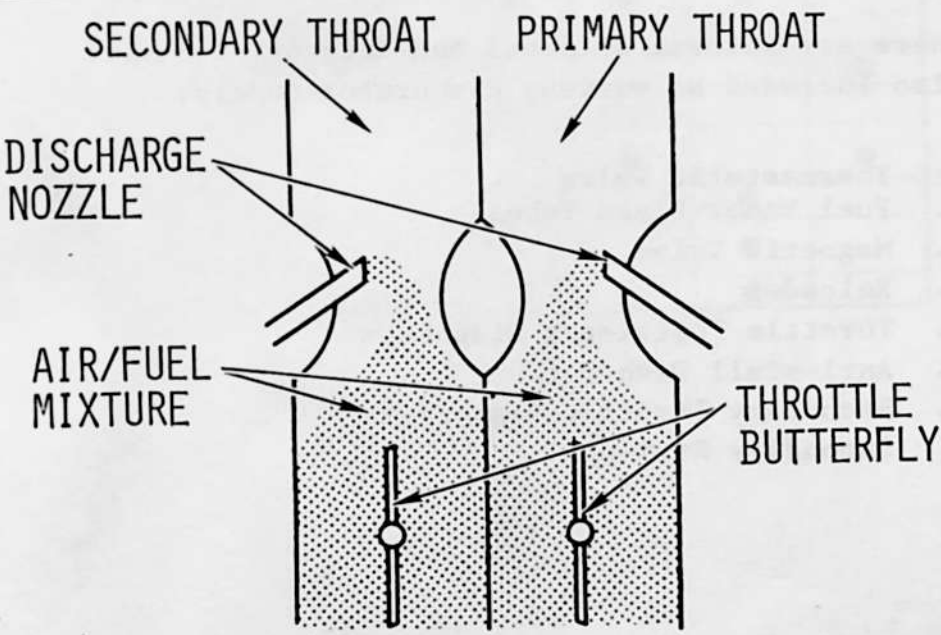
CARBURETION

Toyota vehicles are equipped with two-barrel, down-draft carburetors. The first or primary barrel handles low and medium engine load conditions. When higher loads are required, the secondary barrel system is also used.

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PARTIAL LOAD



FULL LOAD

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CARBURETION

CARBURETOR CIRCUITS

Toyota carburetors contain up to nine fuel/air paths, or circuits, for different engine load requirements.

1. Float and Air Vent
2. Idle and Slow Speed
3. Auxiliary Slow Speed (ASS)
4. Primary High Speed
5. Secondary High Speed
6. Power
7. Acceleration
8. Choke and Fast Idle

CARBURETOR FEATURES

There are several external and internal features also included on various carburetor models.

1. Thermostatic Valve
2. Fuel Vapor Bleed Tubes
3. Magnetic Valve
4. Reloader
5. Throttle Positioner Diaphragm
6. Anti-stall Dash Pot
7. Secondary Throttle Diaphragm
8. Secondary Kick-up

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CARBURETOR COMPARISON

	ENGINE	K-C, 3K-C	3R-C	8R-C	2M	F
	Vehicle Model	Corolla 1100 1200	Corona (PreRT83L) / Hi-Lux (PreRN12L)	Mark II / Hi-Lux (RN12L on) / Corona (RT83L on)	Crown	Land Cruiser
CARBURETOR CIRCUITS	Float & Air Vent	●	●	●	●	●
	Idle & Slow Speed	●	●	●	●	●
	Auxiliary Slow Speed	●			●	
	Primary High Speed	●	●	●	●	●
	Secondary High Speed	●	●	●	●	●
	Power	●	●	●	●	●
	Acceleration	●	●	●	●	●
	Choke & Fast Idle — Manual	●	Hi-Lux	Hi-Lux		●
	Choke & Fast Idle — Automatic		Corona	Mk II Corona	●	
CARBURETOR FEATURES	Thermostatic Valve		●	●	●	
	Vapor Bleed Tubes	●				
	Magnetic Valve					●
	Reloader			Mk II Corona		
	Throttle Positioner Diaphragm			●		●
	Anti-Stall Dash Pot				●	
	Secondary Throttle Diaphragm Positioner				●	
	Secondary Kick-Up				●	

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CARBURETION

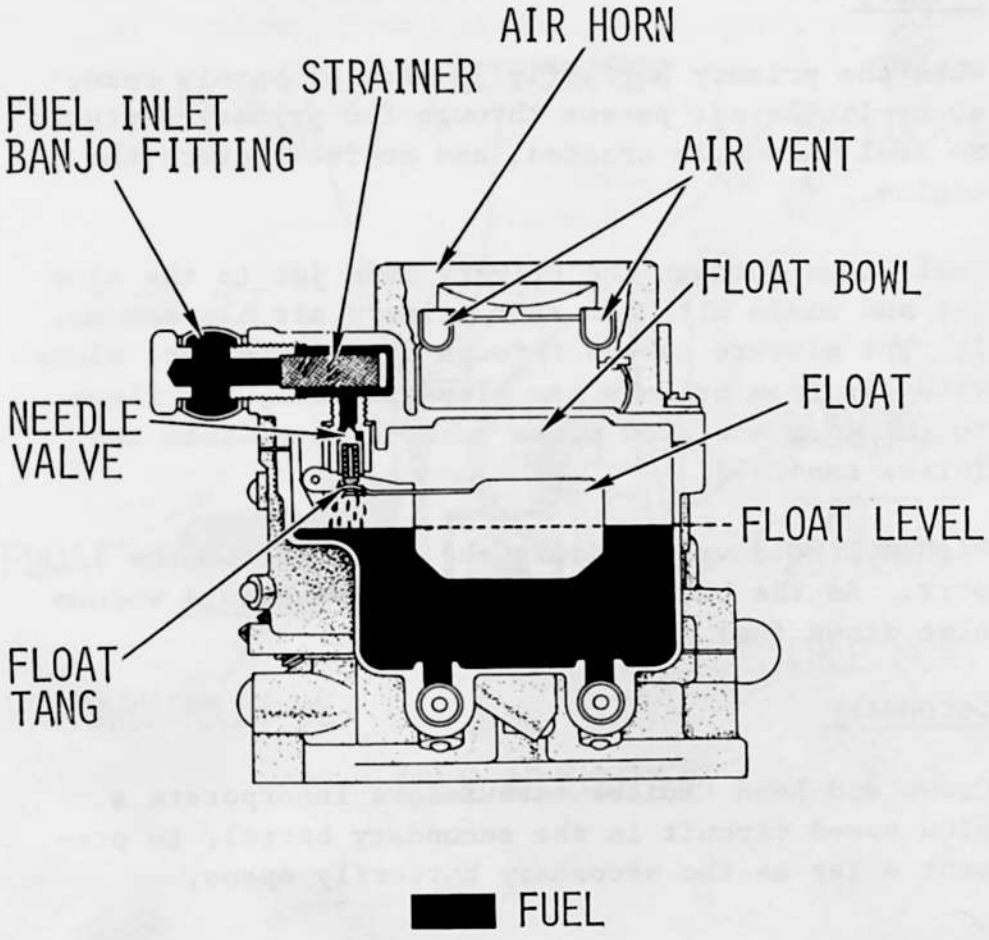
CARBURETOR CIRCUITS

Float and Air Vent Circuit

The float bowl is the carburetor fuel reservoir. Fuel enters through the strainer and needle valve. When fuel enters faster than it is consumed by the engine, the float rises and the tang lifts the needle valve firmly against its seat, shutting off fuel flow. When more fuel is needed, the float falls and the needle valve opens, allowing fuel to enter. During engine operation, the float constantly rises and falls to keep fuel level nearly constant.

Air vents (balance tubes) in air-horn assembly equalize pressure between the barrels and the bowl, to compensate for a clogged air cleaner.

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CARBURETION

IDLE AND SLOW SPEED CIRCUIT

Primary

When the primary butterfly is shut or barely open, no or little air passes through the primary venturi, no real vacuum is created, and no fuel enters the engine.

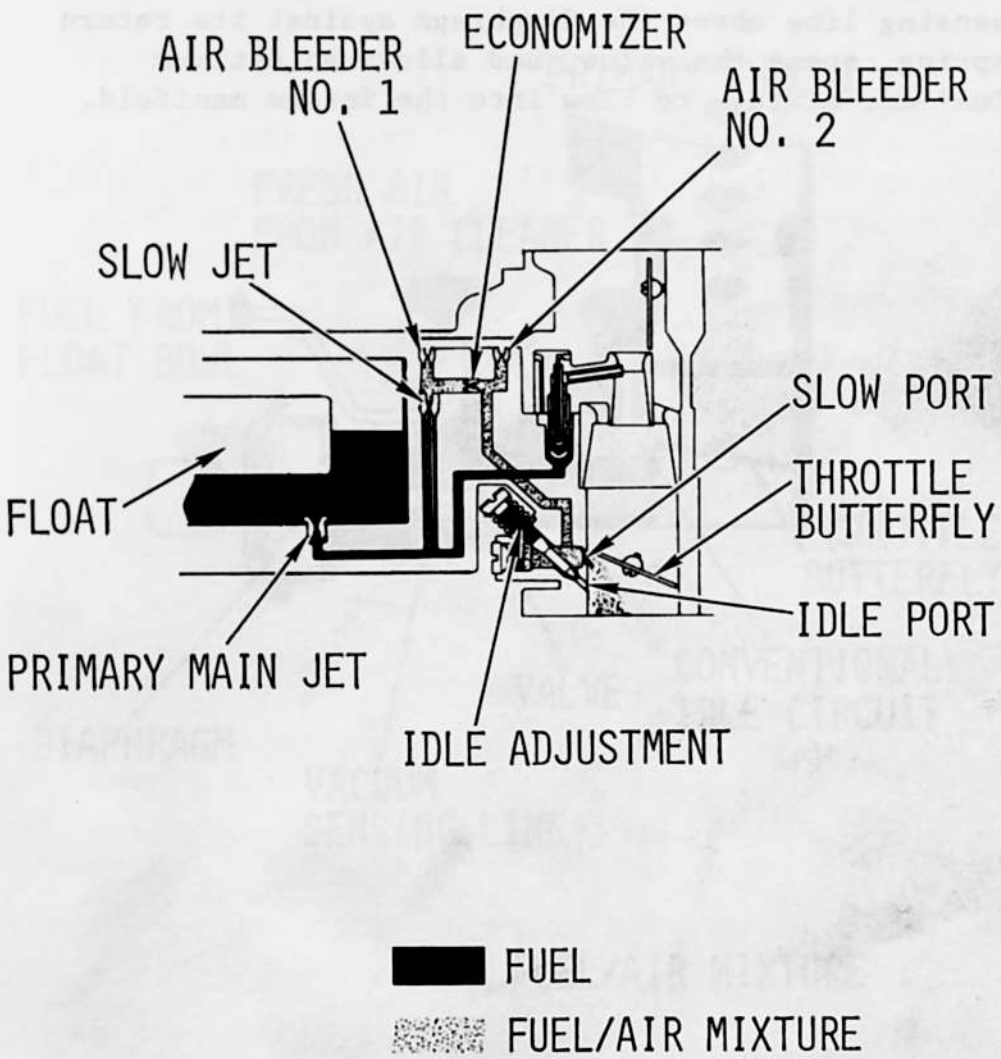
Fuel flows through the primary main jet to the slow jet and mixes with air from primary air bleeder no. 1. The mixture passes through the economizer, mixes with air from primary air bleeder no. 2, and flows to the idle and slow ports to be sprayed into the intake manifold.

High manifold vacuum draws the mixture from the idle port. As the butterfly is cracked, manifold vacuum also draws fuel from the slow port.

Secondary

Crown and Land Cruiser carburetors incorporate a slow speed circuit in the secondary barrel, to prevent a lag as the secondary butterfly opens.

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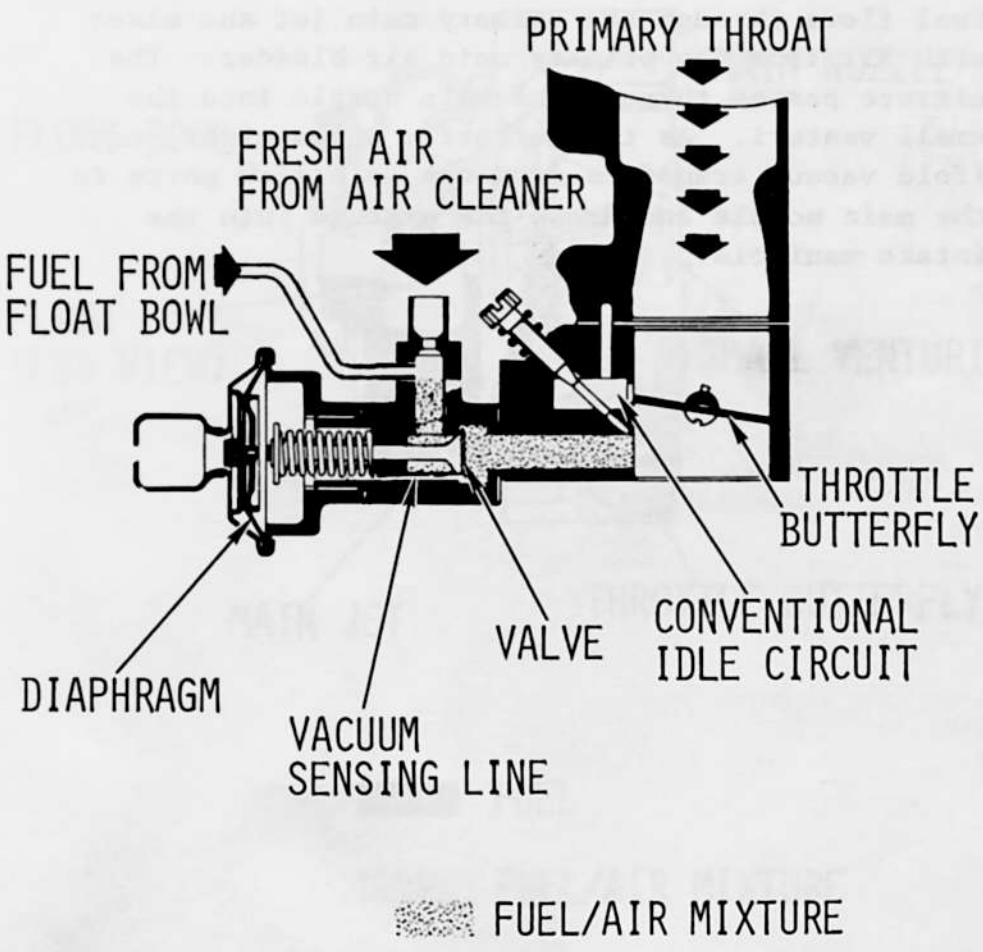
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CARBURETION

AUXILIARY SLOW SYSTEM (ASS)

Stabilizes combustion when vehicle is decelerating. During deceleration, manifold vacuum through its sensing line moves the diaphragm against its return spring, opens the valve, and allows an optimum fuel-air mixture to flow into the intake manifold.

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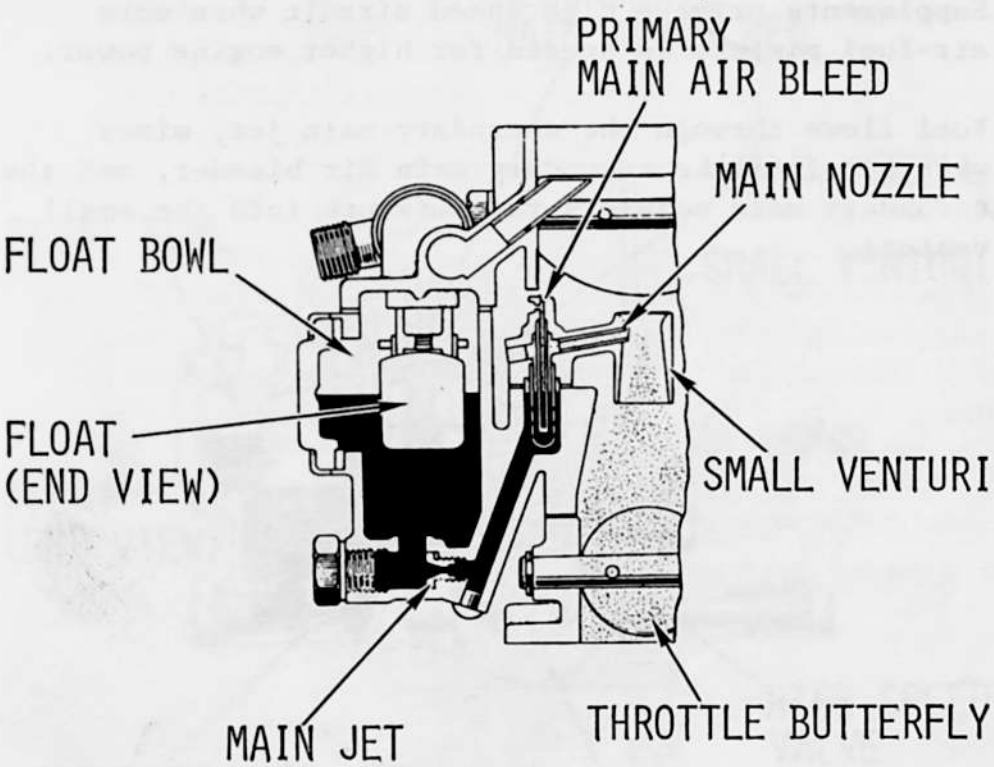
CARBURETION

PRIMARY HIGH SPEED CIRCUIT

Supplies air-fuel mixture for intermediate throttle opening or part-load operating requirements.

Fuel flows through the primary main jet and mixes with air from the primary main air bleeder. The mixture passes through the main nozzle into the small venturi. As the butterfly opens wider, manifold vacuum transfers from the idle/slow ports to the main nozzle and draws the mixture into the intake manifold.

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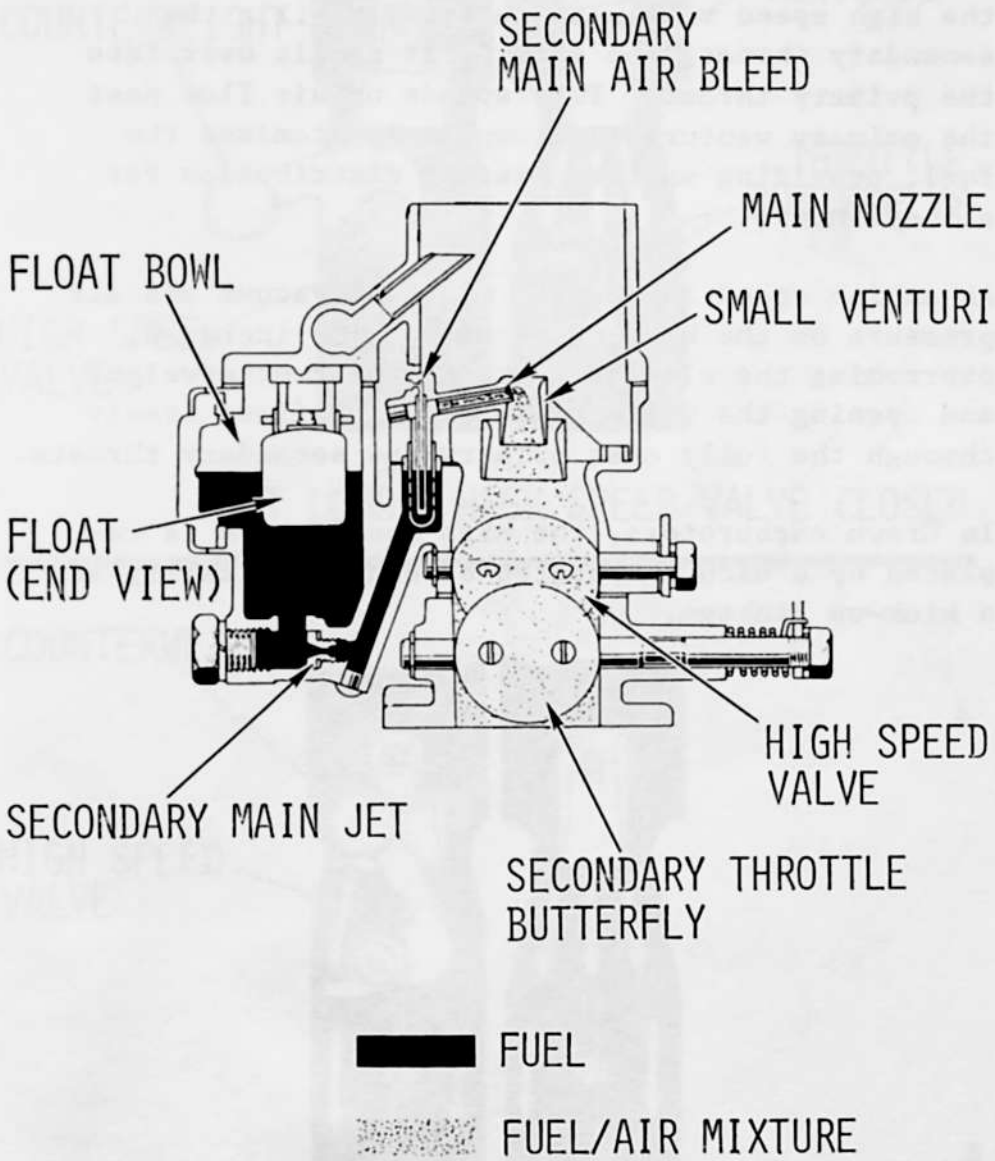
CARBURETION

SECONDARY HIGH SPEED CIRCUIT

Supplements primary high speed circuit when more air-fuel mixture is needed for higher engine power.

Fuel flows through the secondary main jet, mixes with air from the secondary main air bleeder, and the secondary main nozzle sprays mixture into the small venturi.

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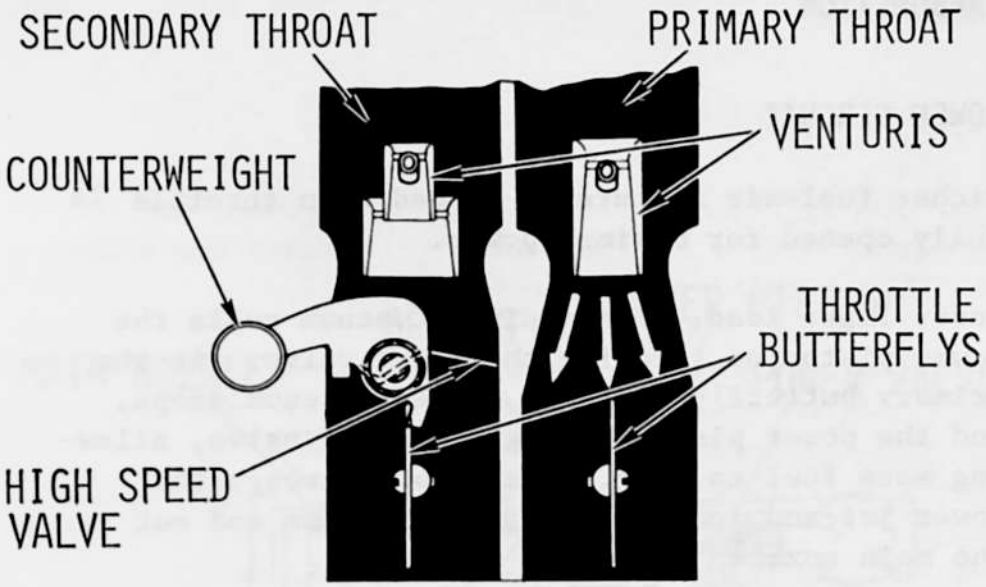
CARBURETION

Below 1500 RPM, manifold vacuum is too weak to open the high speed valve, so intake air fills the secondary throat, and some of it spills over into the primary throat. This speeds up air flow past the primary venturi and completely atomizes the fuel, providing uniform mixture distribution for all cylinders.

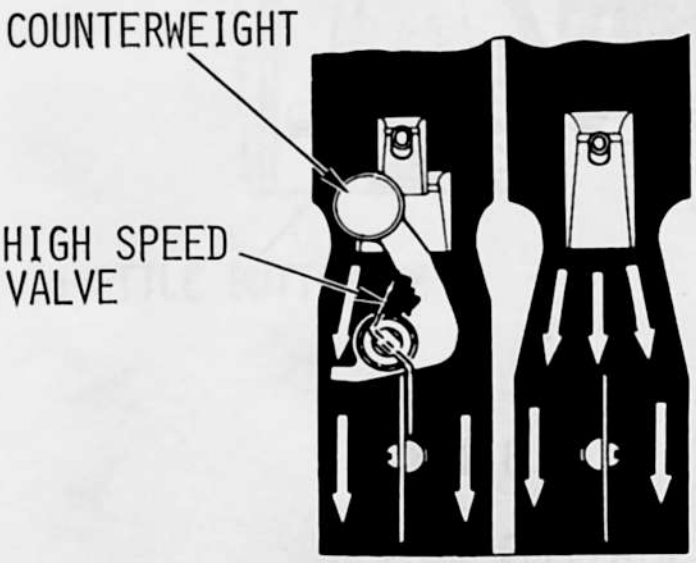
As engine speed increases, manifold vacuum and air pressure on the high-speed valve also increase, overcoming the closing force of the counterweight and opening the valve. Mixture then flows freely through the fully open primary and secondary throats.

In Crown carburetors, the high speed valve is replaced by a vacuum-operated secondary butterfly and a kick-up linkage.

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PART LOAD HIGH SPEED VALVE CLOSED



3800 RPM & ABOVE (FULL LOAD) VALVE FULL OPEN

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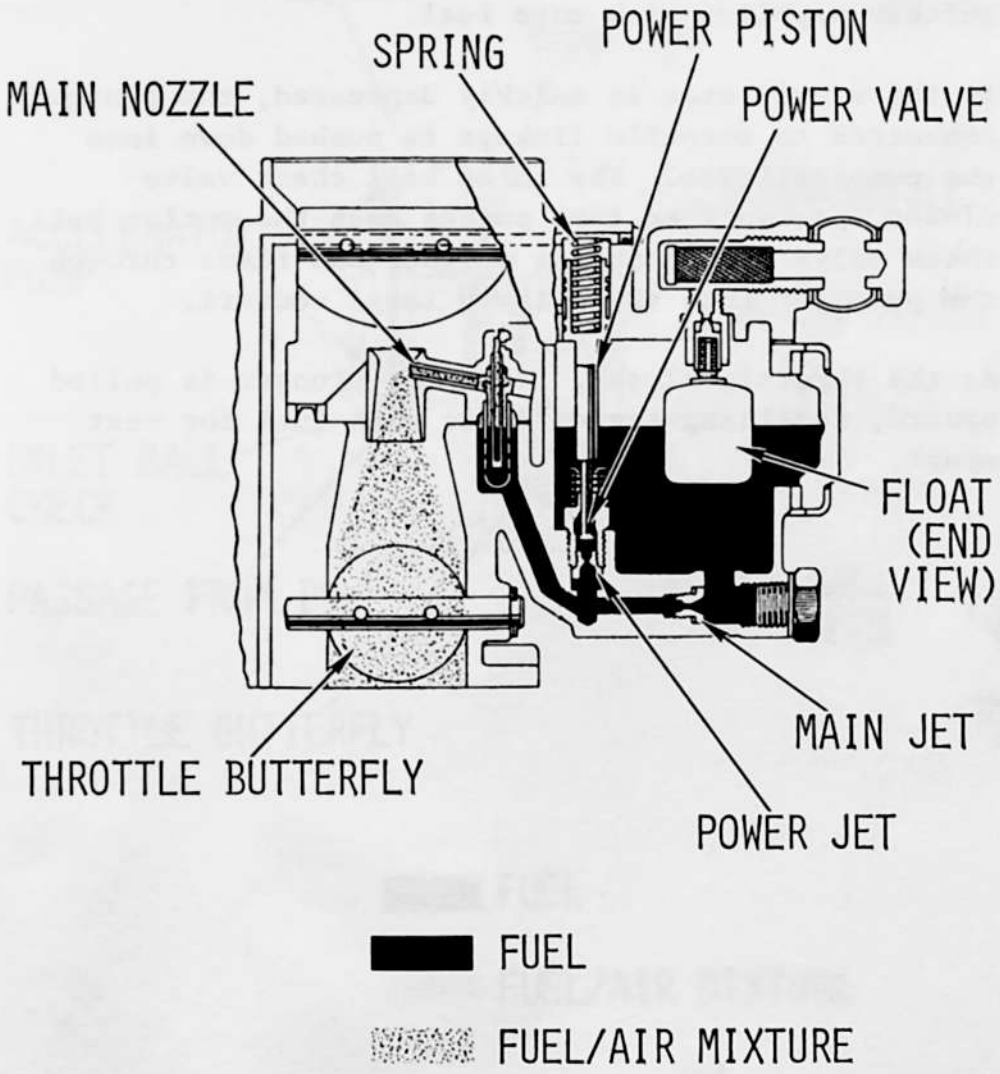
CARBURETION

POWER CIRCUIT

Richer fuel-air mixture is needed when throttle is fully opened for maximum power.

Under light load, high manifold vacuum pulls the power piston up, closing the power valve. As the primary butterfly is fully opened, vacuum drops, and the power piston spring opens the valve, allowing more fuel to flow. Fuel flows through the power jet and joins the main jet stream and out the main nozzle.

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CARBURETION

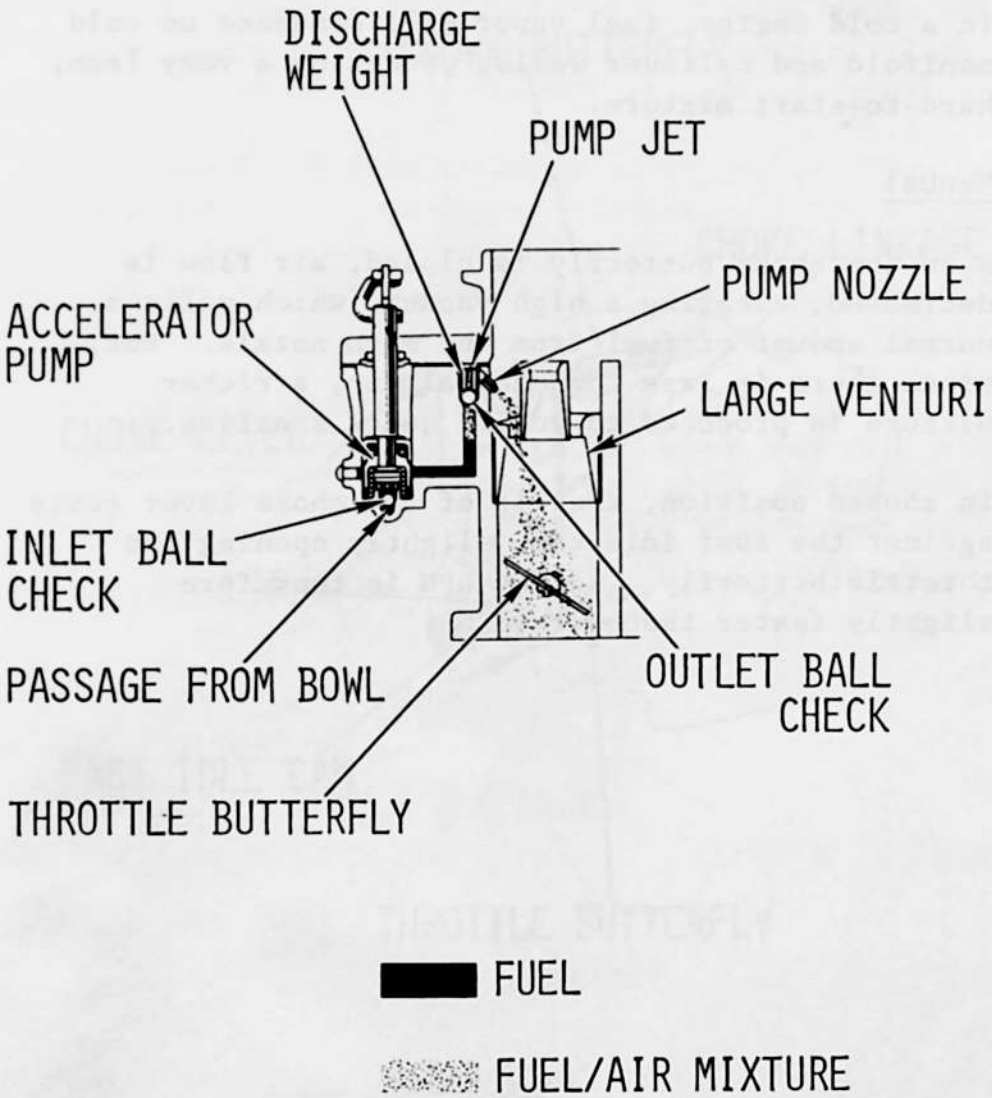
ACCELERATION CIRCUIT

When the throttle valve is suddenly opened, and air is dumped into manifold, the engine would lug unless quickly supplied with more fuel.

As the accelerator is quickly depressed, the plunger connected to throttle linkage is pushed down into the pump cylinder. The inlet ball check valve closes, pressurized fuel pushes open the outlet ball check valve and discharge weight, and flows through the pump jet into the primary large venturi.

As the throttle closes, the pump plunger is pulled upward, refilling the cylinder with fuel for next spurt.

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CARBURETION

CHOKE AND FAST IDLE CIRCUIT

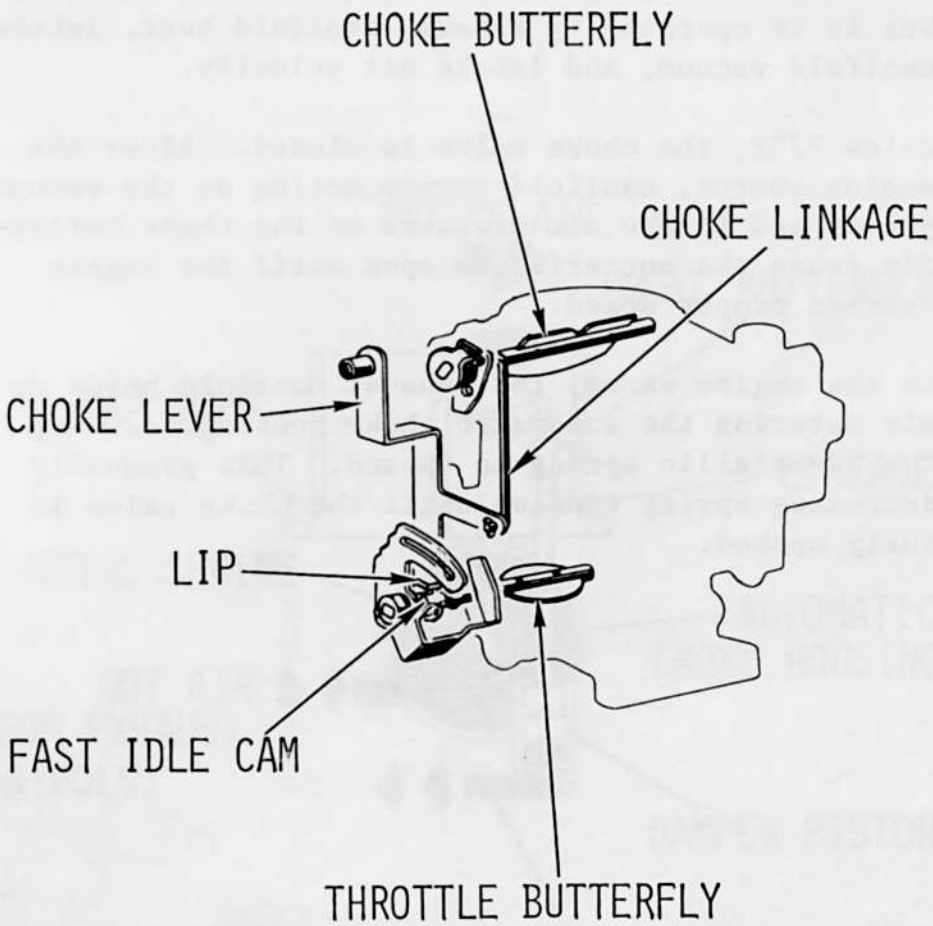
In a cold engine, fuel vapor will condense on cold manifold and cylinder walls, producing a very lean, hard-to-start mixture.

Manual

When the choke butterfly is closed, air flow is decreased, creating a high vacuum, which pulls a normal amount of fuel from the main nozzle. But, since there is less than normal air, a richer mixture is produced to enable quick starting.

In choked position, the lip of the choke lever rests against the fast idle cam, slightly opening the throttle butterfly. Idling RPM is therefore slightly faster than normal.

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CARBURETION

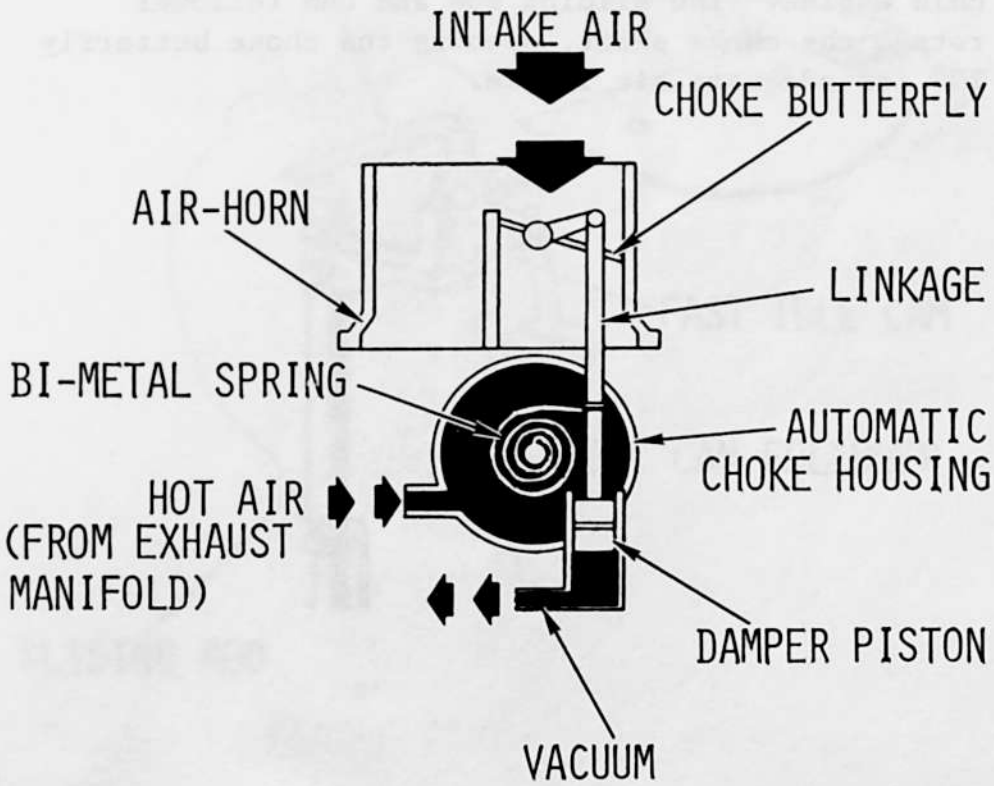
Automatic

The choke butterfly is similar to a manual system, but it is operated by exhaust manifold heat, intake manifold vacuum, and intake air velocity.

Below 77°F, the choke valve is closed. After the engine starts, manifold vacuum acting on the vacuum piston and intake air pressure on the choke butterfly cause the butterfly to open until the engine reaches proper speed.

As the engine warms, the exhaust manifold heats up air entering the automatic choke housing, causing the bi-metallic spring to expand. This gradually decreases spring tension until the choke valve is fully opened.

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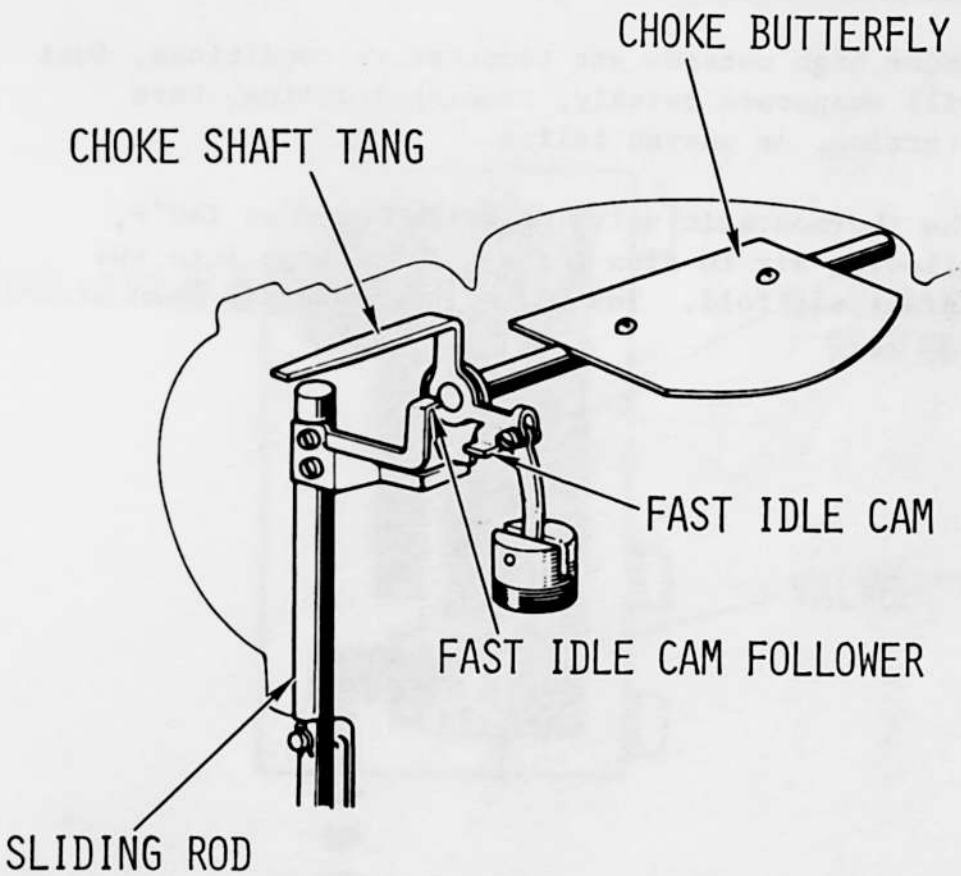


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In choked position, the fast idle cam follower on the sliding rod attached to throttle linkage rests against the fast idle cam. This slightly opens the throttle butterfly, producing faster idling RPM.

An unloader is built into the automatic choke to prevent stalling when the vehicle is driven with a cold engine. The sliding rod and cam follower rotate the choke shaft, opening the choke butterfly 20° for adequate air intake.

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CARBURETION

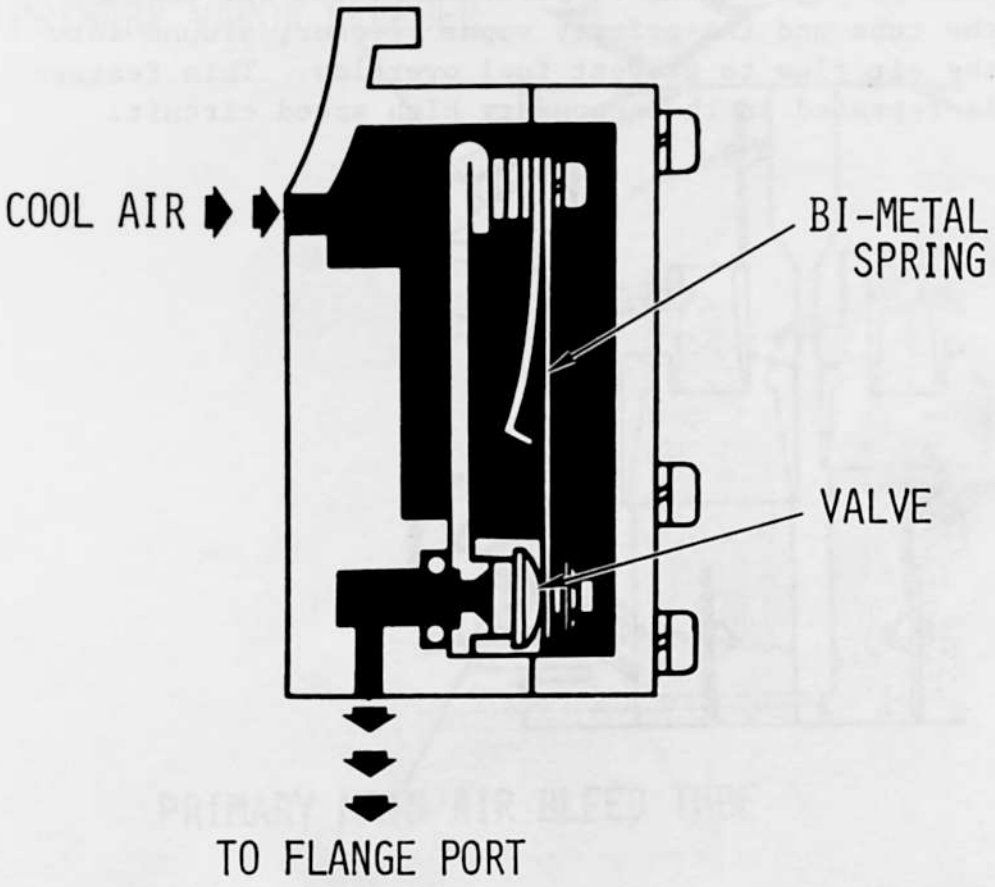
CARBURETOR FEATURES

Thermostatic Valve

Under high outside air temperature conditions, fuel will evaporate quickly, causing stalling, hard starting, or uneven idling.

The thermostatic valve starts to open at 140°F, allowing air to flow through the flange into the intake manifold. The valve is completely open at 168°F.

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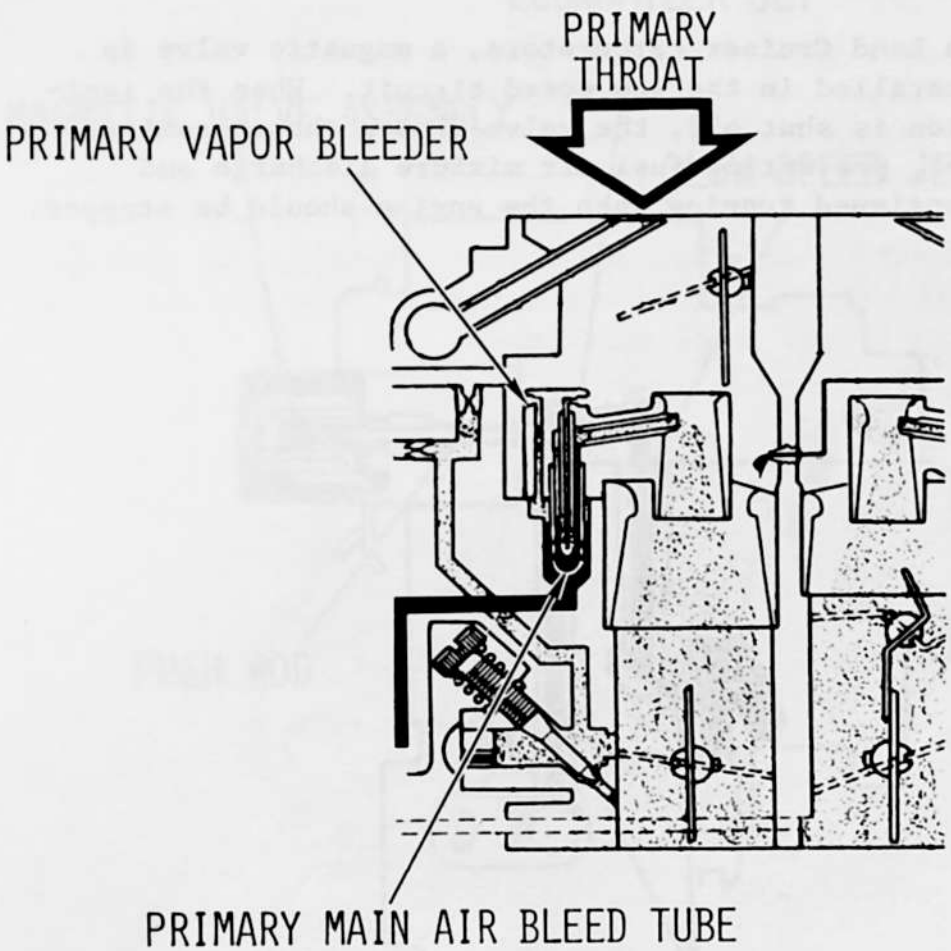
8019

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Fuel Vapor Bleed Tubes

In Corolla carburetors, a tube surrounds the primary main air bleeder (high speed circuit). Fuel vaporized by high engine temperature bleeds off through the tube and the primary vapor bleeder, around into the air flow to prevent fuel overflow. This feature is repeated in the secondary high speed circuit.

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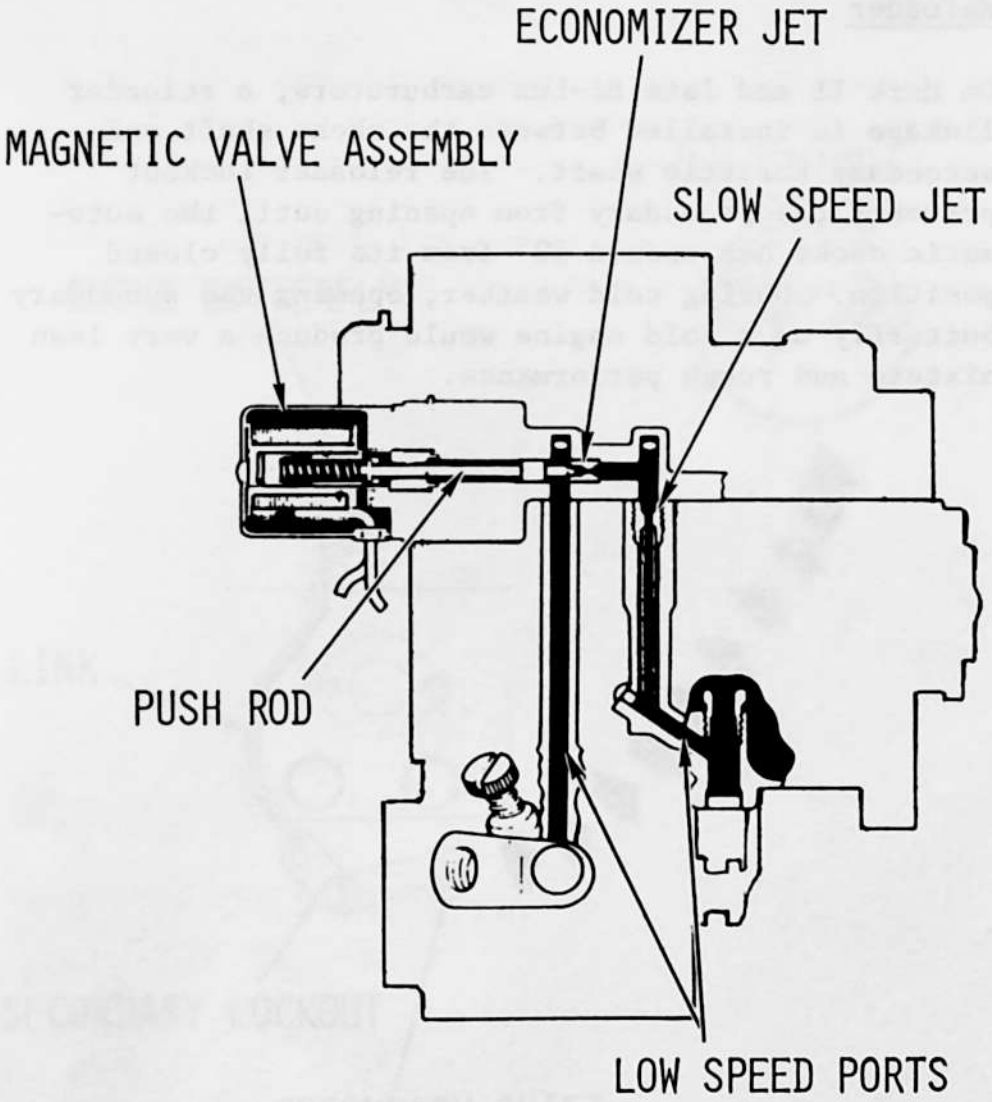
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Magnetic Valve

On Land Cruiser carburetors, a magnetic valve is installed in the low speed circuit. When the ignition is shut off, the valve closes the economizer jet, preventing fuel air mixture discharge and continued running when the engine should be stopped.

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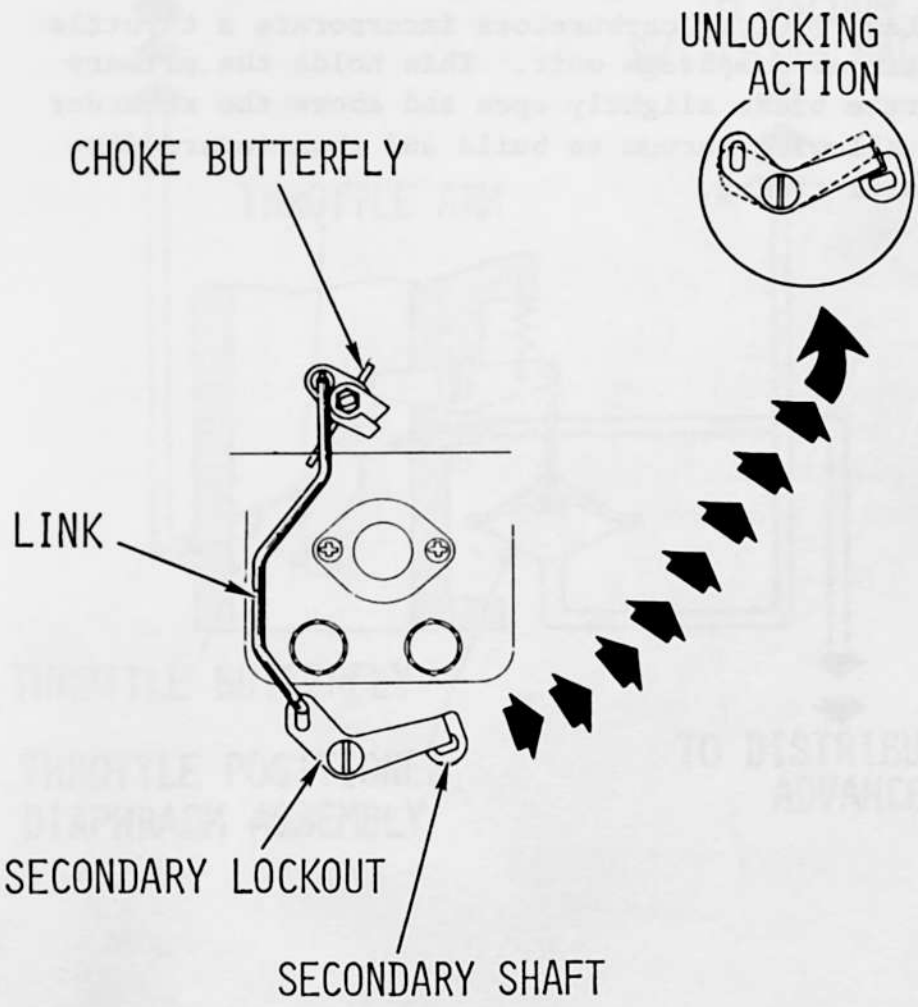


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Reloader

On Mark II and late Hi-Lux carburetors, a reloader linkage is installed between the choke shaft and secondary throttle shaft. The reloader lockout prevents the secondary from opening until the automatic choke has opened 50° from its fully closed position. During cold weather, opening the secondary butterfly on a cold engine would produce a very lean mixture and rough performance.

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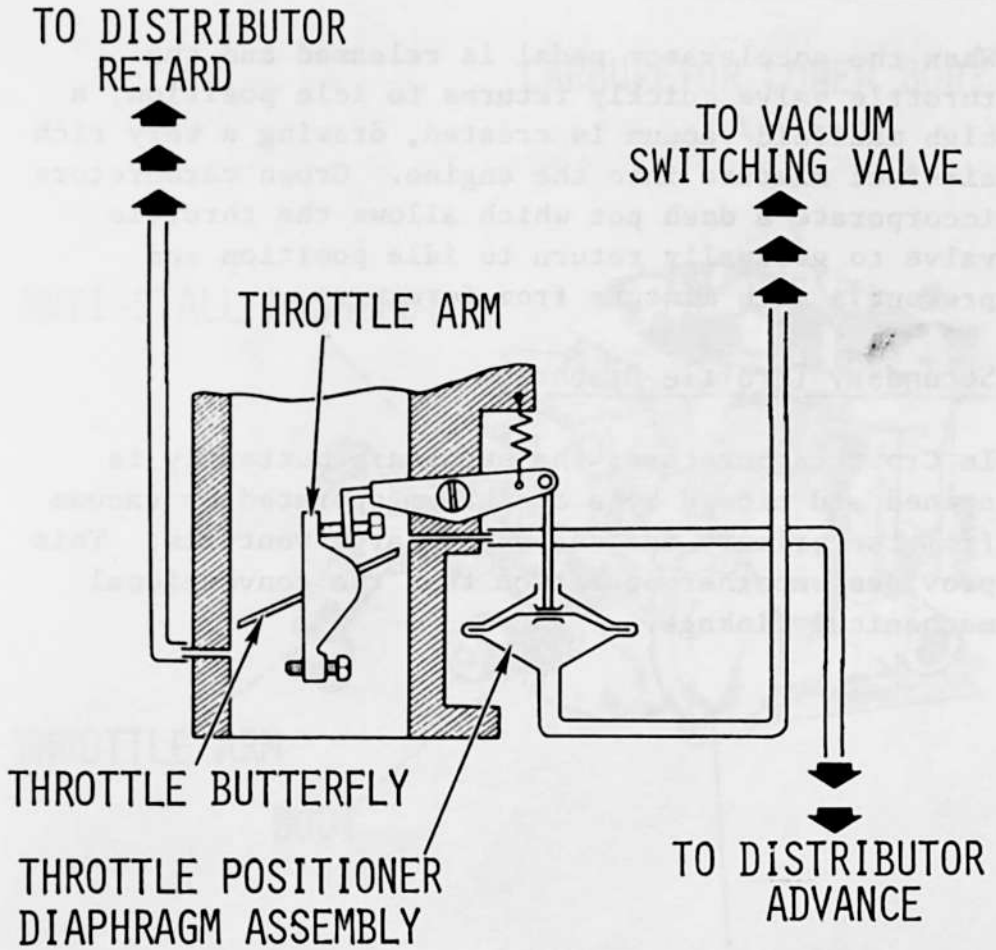
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CARBURETION

Throttle Positioner Diaphragm

In conjunction with the Engine Modification System for controlling air pollution, Mark II, late Hi-Lux and Land Cruiser carburetors incorporate a throttle positioner diaphragm unit. This holds the primary throttle blade slightly open and above the retarder port allowing vacuum to build and then retard distributor timing.

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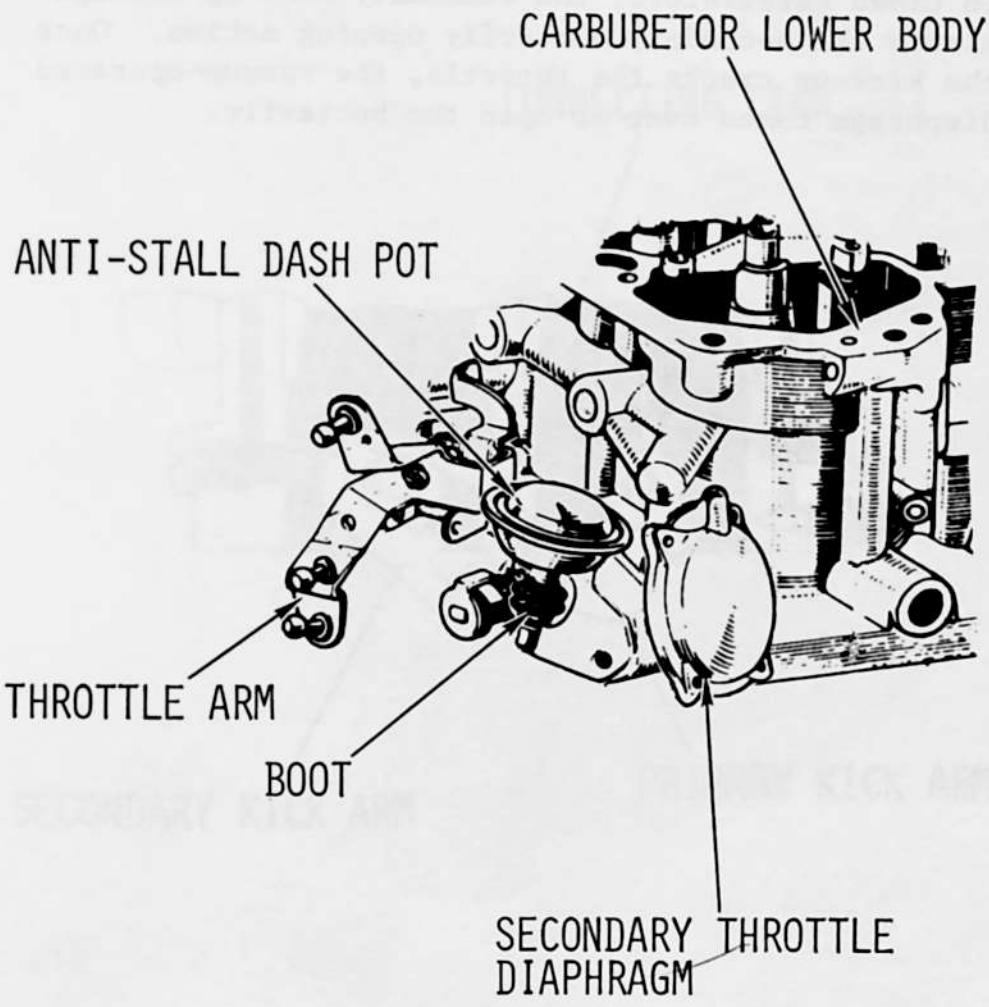
Anti-Stall Dash Pot

When the accelerator pedal is released and the throttle valve quickly returns to idle position, a high manifold vacuum is created, drawing a very rich air-fuel mixture into the engine. Crown carburetors incorporate a dash pot which allows the throttle valve to gradually return to idle position and prevent a rich mixture from forming.

Secondary Throttle Diaphragm

In Crown carburetors, the secondary butterfly is opened and closed by a diaphragm operated by vacuum from the primary and secondary large venturis. This provides smoother operation than the conventional mechanical linkage.

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Secondary Kick-up

In Crown carburetors, the secondary kick-up linkage starts the secondary butterfly opening action. Once the kick-up cracks the throttle, the vacuum-operated diaphragm takes over to open the butterfly.

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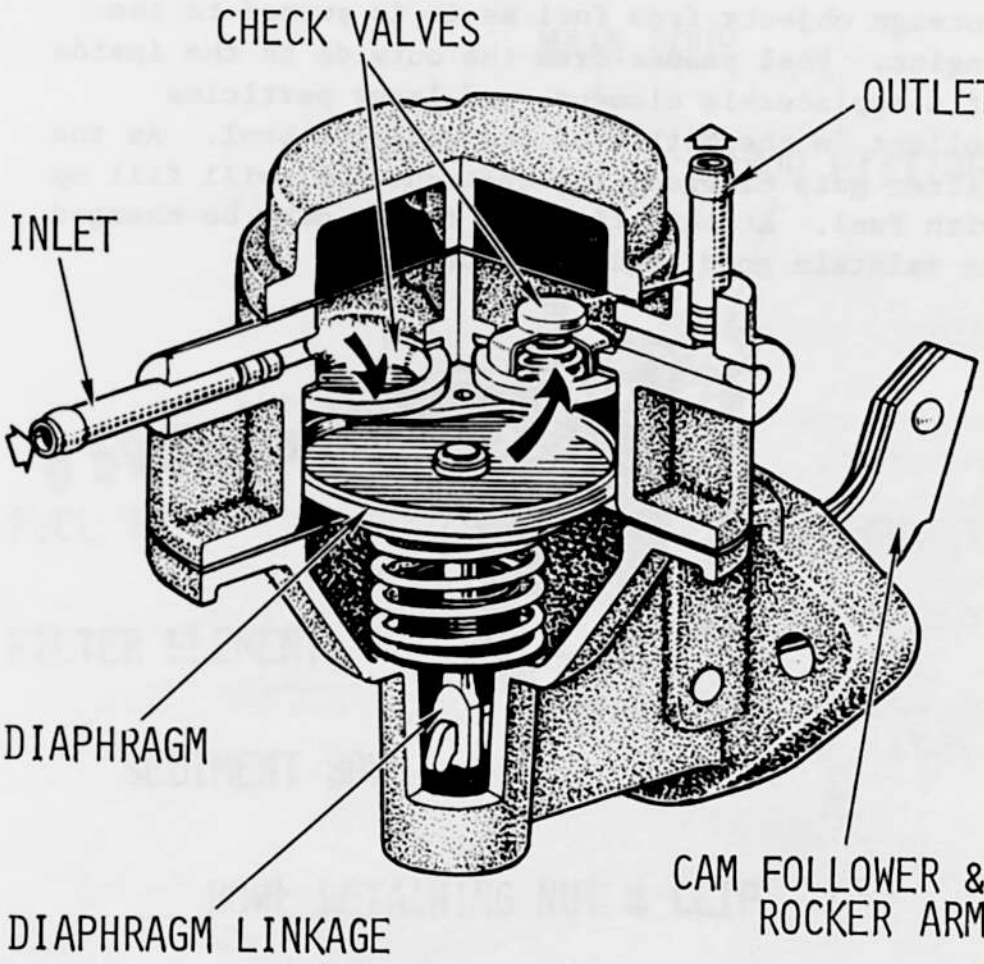
FUEL PUMP AND FILTER

FUEL PUMP

The mechanical fuel pump rocker arm converts rotary motion (from camshaft or auxiliary shaft) to diaphragm reciprocating movement. The pump draws fuel from the tank through a filter and supplies it to the carburetor float chamber. When the chamber is full, the needle valve closes, cutting off fuel supply, and back pressure on the diaphragm causes the pump to stop operating until the needle valve opens to relieve pressure.

For Corolla models KE-10, 11, 15, 16, 17, 18, with factory air conditioning, an electric fuel pump is installed.

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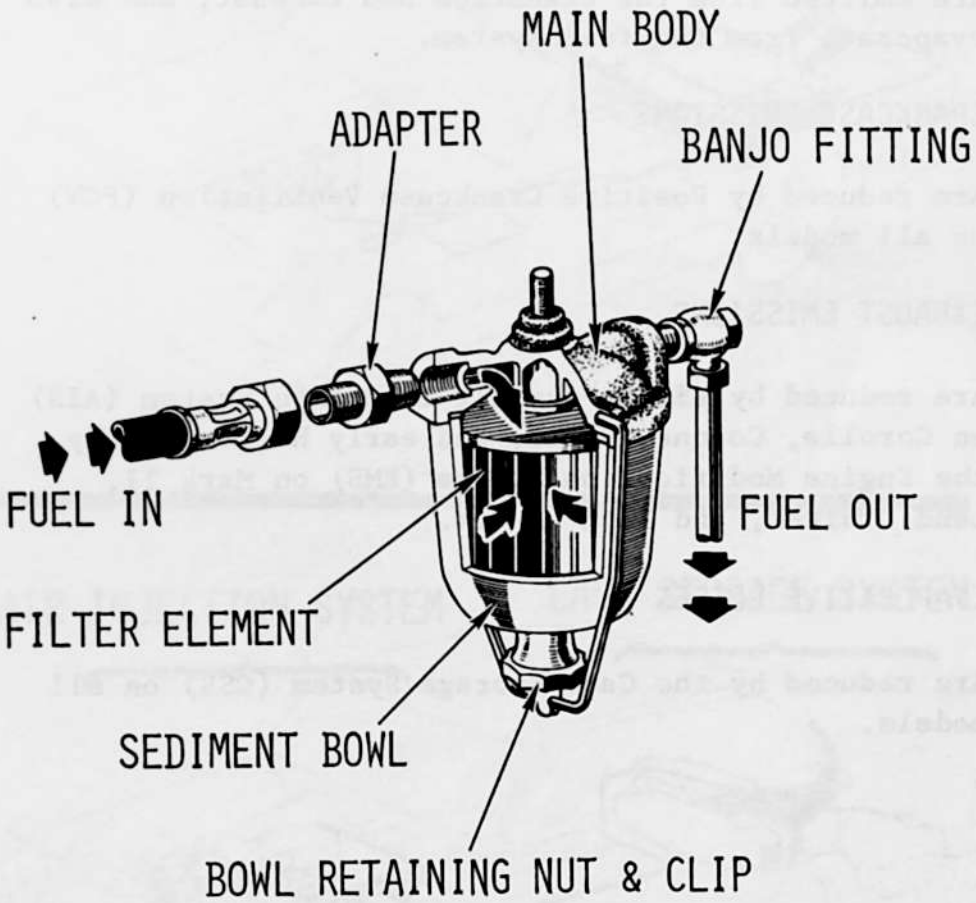
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FUEL PUMP AND FILTER

FUEL FILTER

The fuel filter removes dirt particles or other foreign objects from fuel as it is pumped to the engine. Fuel passes from the outside to the inside of a replaceable element, and large particles collect in the bottom of the sediment bowl. As the filter gets clogged, the sediment bowl will fill up with fuel. At this time the filter must be changed to maintain good engine performance.

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EMISSION CONTROL

Gasoline internal combustion engines produce many air pollutants, including carbon monoxide concentrates and unburned hydrocarbons. These pollutants are emitted from the crankcase and exhaust, and also evaporate from the fuel system.

CRANKCASE EMISSIONS

Are reduced by Positive Crankcase Ventilation (PCV) on all models.

EXHAUST EMISSIONS

Are reduced by either the Air Injection System (AIS) on Corolla, Corona, Crown, and early Hi-Lux; or by the Engine Modification System (EMS) on Mark II, Land Cruiser, and late Hi-Lux.

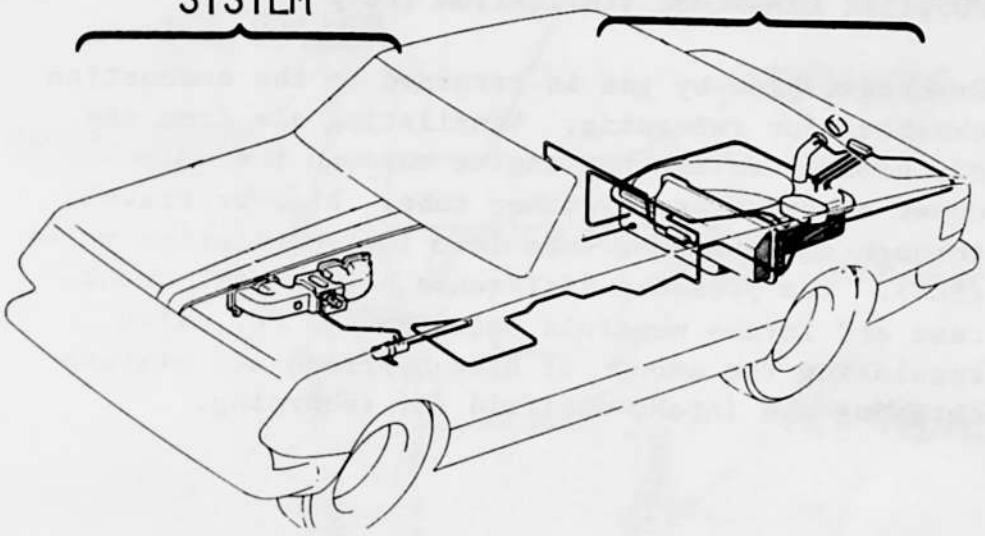
EVAPORATIVE LOSSES

Are reduced by the Case Storage System (CSS) on all models.

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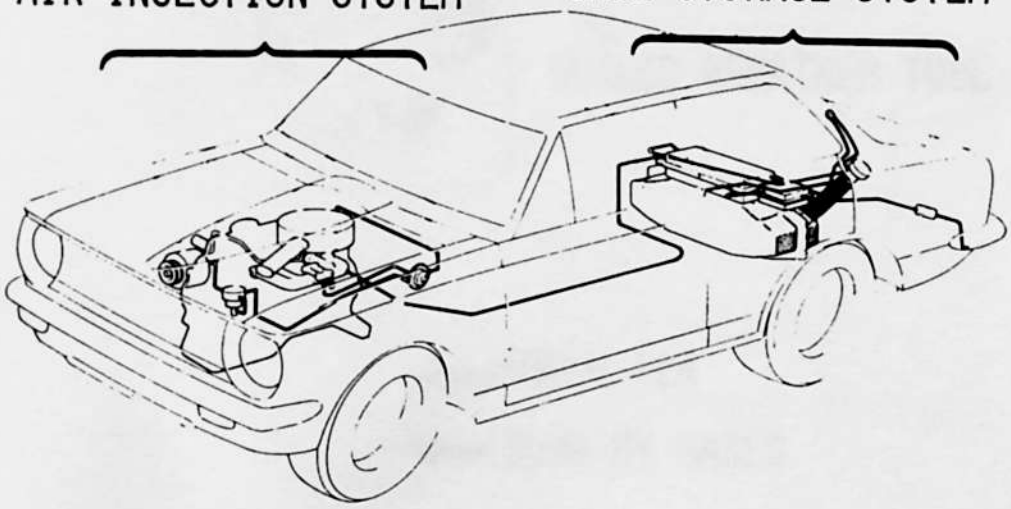
ENGINE MODIFICATION SYSTEM

CASE STORAGE SYSTEM



AIR INJECTION SYSTEM

CASE STORAGE SYSTEM



8031

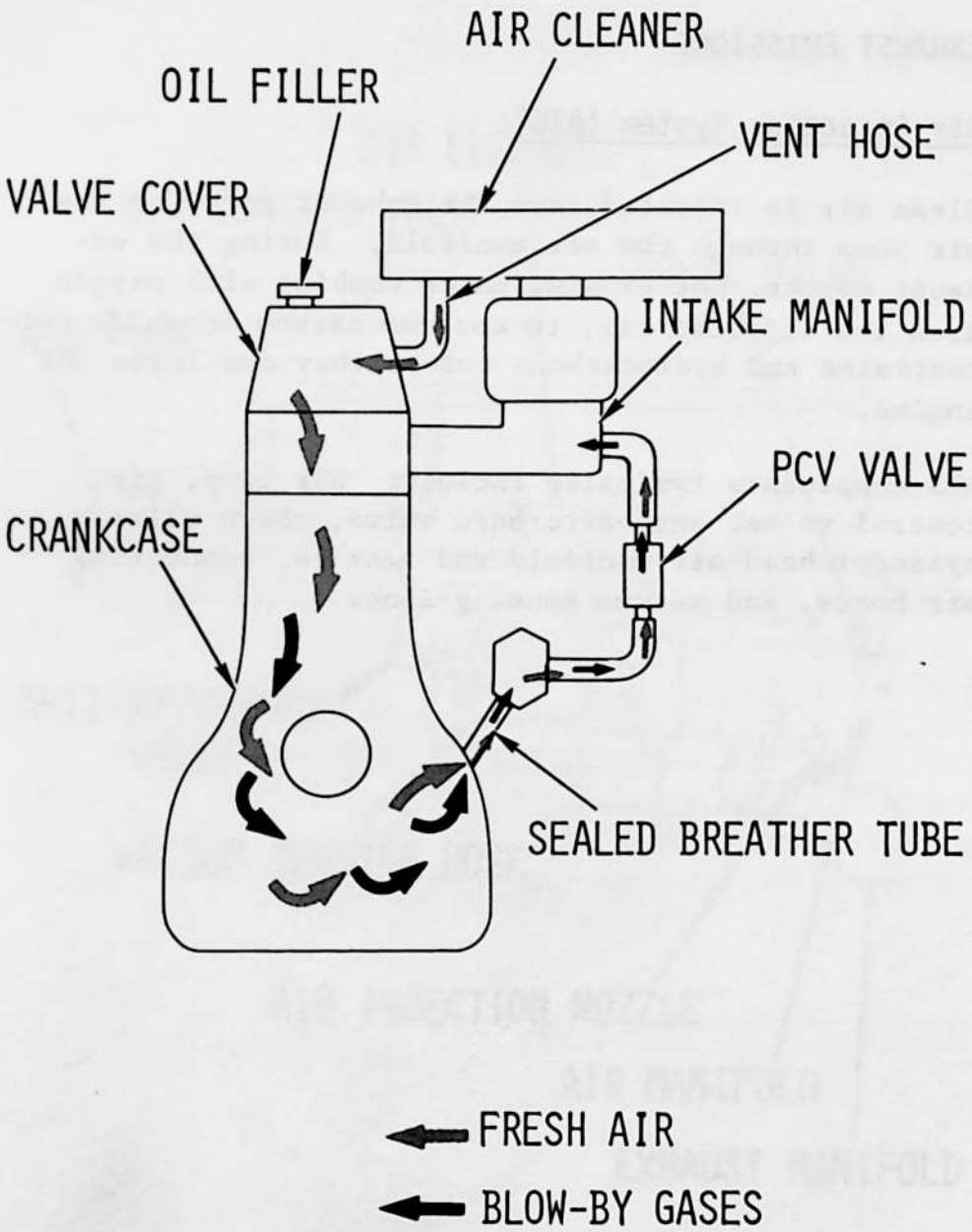
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EMISSION CONTROL

POSITIVE CRANKCASE VENTILATION (PCV)

Crankcase blow-by gas is returned to the combustion chambers for reburning. Ventilating air from the air cleaner enters the engine through the valve cover or crankcase breather tube. Blow-by travels through the breather tube into the ventilation valve (PCV). The pressure difference between the crankcase and intake manifold operates the PCV valve, regulating the amount of blow-by/fresh air mixture entering the intake manifold for reburning.

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EMISSION CONTROL

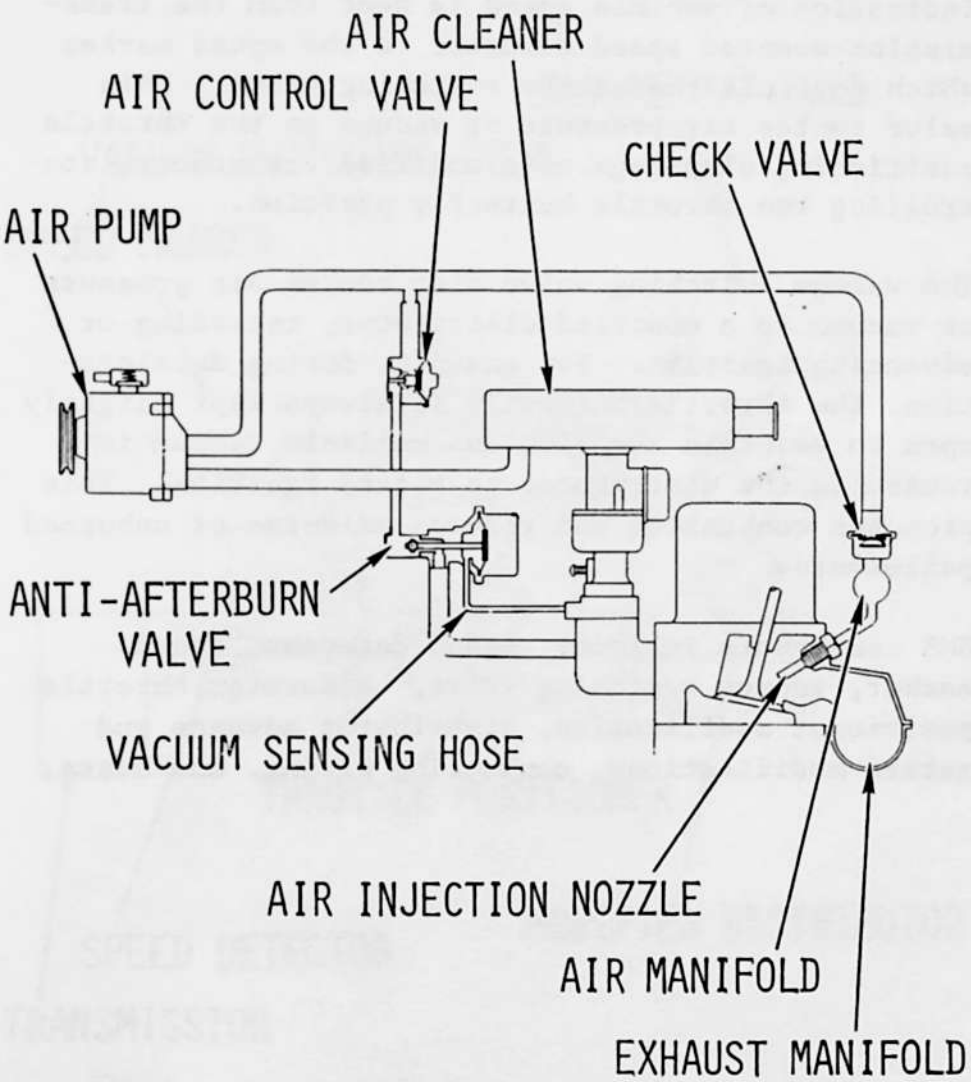
EXHAUST EMISSIONS

Air Injection System (AIS)

Clean air is injected into the exhaust ports by the air pump through the air manifold. During the exhaust stroke, hot exhaust gases combine with oxygen from the injected air, to consume carbon monoxide concentrates and hydrocarbons before they can leave the engine.

AIS components typically include: air pump, air control valve, anti-afterburn valve, check valve, cylinder head air manifold and nozzles, connecting air hoses, and vacuum sensing line.

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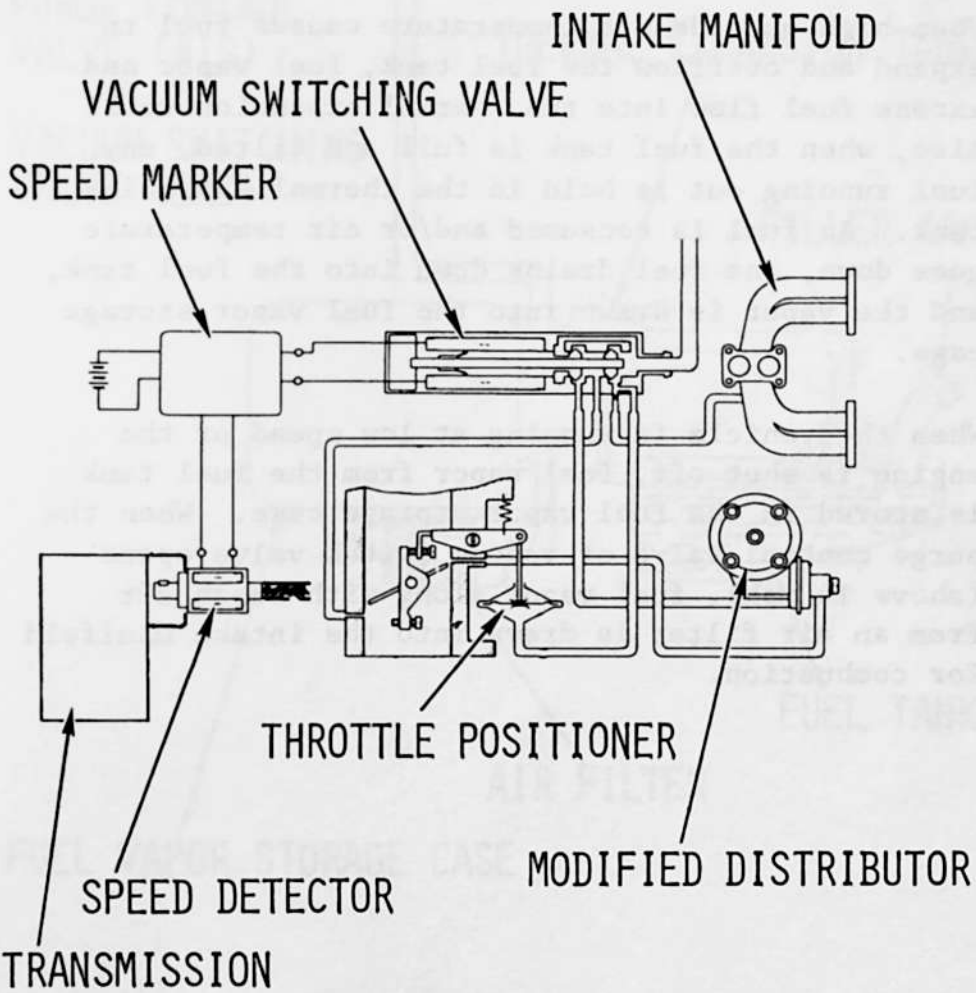
Engine Modification System (EMS)

Indication of vehicle speed is sent from the transmission-mounted speed detector to the speed marker which controls the vacuum switching valve. This valve routes air pressure or vacuum to the throttle positioning diaphragm on a modified carburetor, controlling the throttle butterfly position.

The vacuum switching valve also routes air pressure or vacuum to a modified distributor, retarding or advancing ignition. For example, during deceleration, the throttle butterfly is always kept slightly open to maintain air flow and manifold vacuum is routed to the distributor to retard ignition. This promotes combustion and reduces emission of unburned pollutants.

EMS components include: speed detector, speed marker, vacuum switching valve, carburetor throttle positioner modification, distributor advance and retard modifications, connecting wiring, and hoses.

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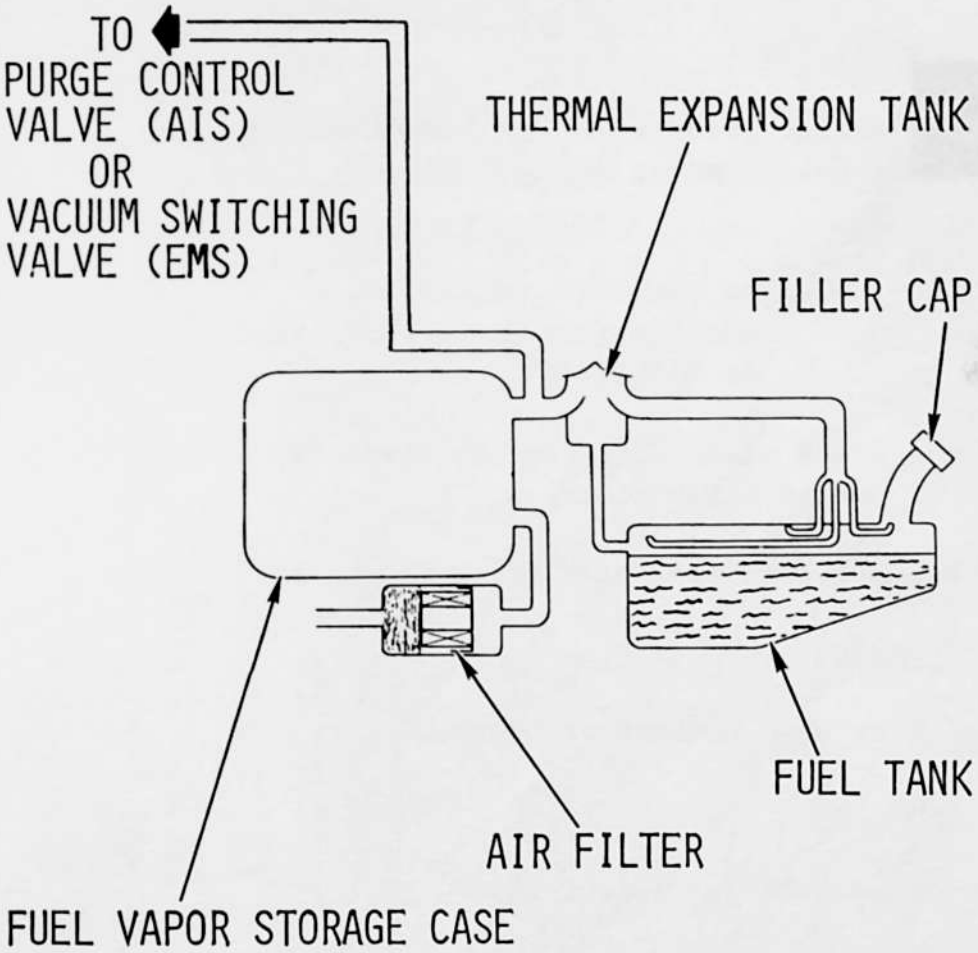
EVAPORATIVE LOSSES

Case Storage System

When high outside air temperature causes fuel to expand and overflow the fuel tank, fuel vapor and excess fuel flow into the thermal expansion tank. Also, when the fuel tank is full and tilted, any fuel running out is held in the thermal expansion tank. As fuel is consumed and/or air temperature goes down, the fuel drains down into the fuel tank, and the vapor is drawn into the fuel vapor storage case.

When the vehicle is running at low speed or the engine is shut off, fuel vapor from the fuel tank is stored in the fuel vapor storage case. When the purge control valve or vacuum switch valve opens (above 14 mph), fuel vapor along with fresh air from an air filter is drawn into the intake manifold for combustion.

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COROLLA 3K-C

2

FUEL SYSTEMS MANUAL

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K-C, 3K-C CARBURETOR OVERHAUL

JOB SETUP

Special Tools

Carburetor Screwdriver Set, 09860-11010.
Float Level Gauge, 09240-22010.

NOTE

To overhaul carburetor, a small pocket screwdriver must be modified.

1. Cut a slot 1/16" deep in blade tip of small pocket screwdriver.

2. Squeeze tips together so they almost touch.

Supplies

K-C or 3K-C Carburetor Overhaul Kit.

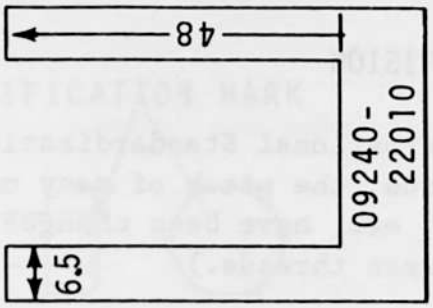
Vehicles

Corona 1100 and Corona 1200.

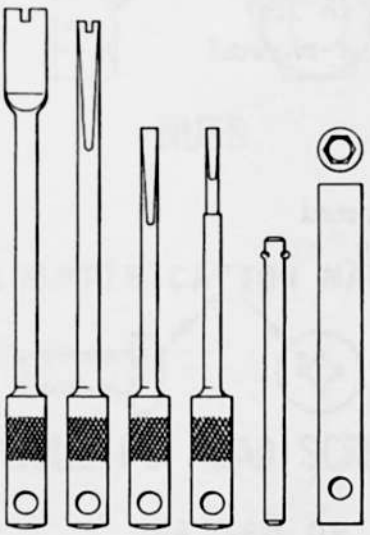
NOTE

Follow the steps in order, unless directed otherwise.

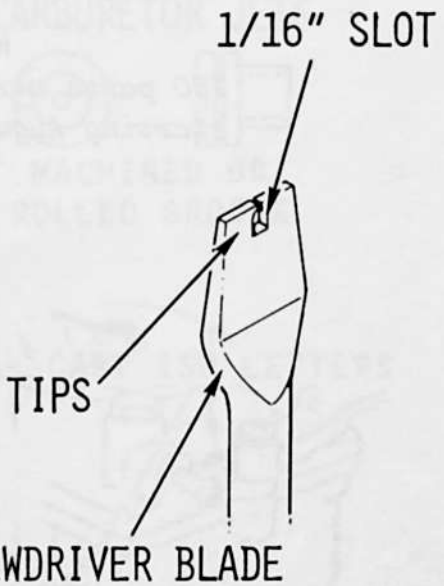
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FLOAT GAUGE



SCREWDRIVER SET
09860-11010



MODIFIED SCREWDRIVER

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K-C, 3K-C CARBURETOR

ISO THREAD PITCH REVISION

To conform with International Standardization Organization standards, the pitch of many machined bolts, nuts, screws, etc. have been changed. (Pitch is the distance between threads.)

ISO parts carry distinctive identification marks so they will not be substituted for ordinary parts.

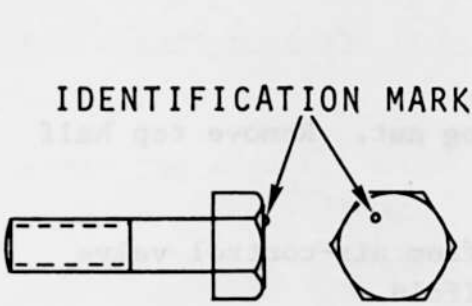
CAUTION

Do not install ordinary nuts, screws, bolts, etc. in ISO carburetors. Serious thread damage will result.

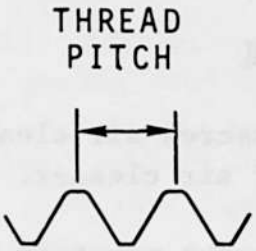
NOTE

ISO parts were produced starting August 1968.

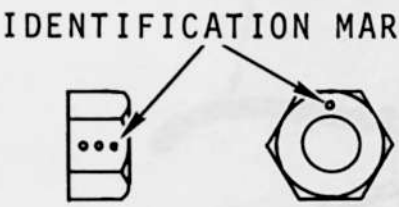
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BOLTS

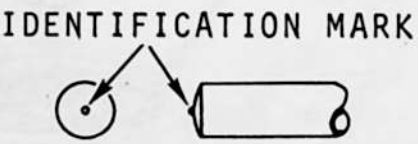


THREADS

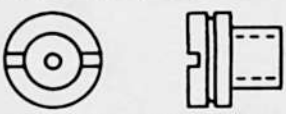


NUTS

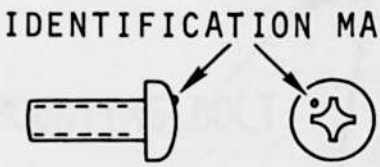
STUD



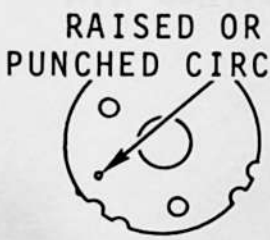
CARBURETOR JETS



MACHINED OR
ROLLED GROOVE



PHILLIPS HEAD SCREWS



DISTRIBUTOR



CARBURETOR

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K-C, 3K-C CARBURETOR

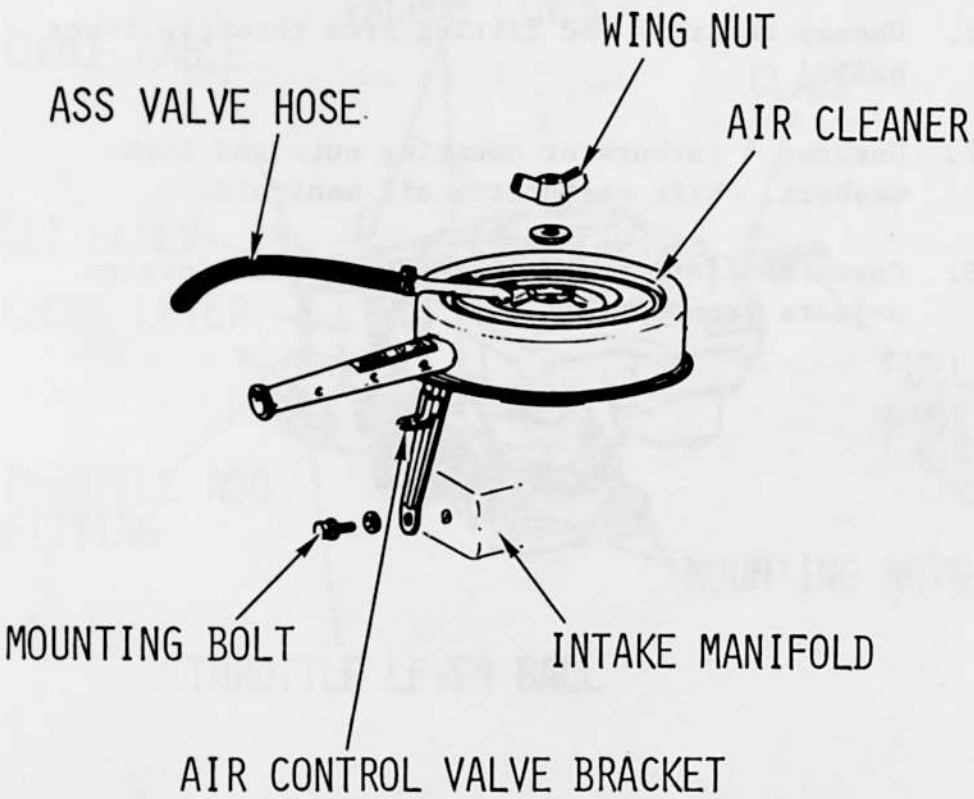
REMOVAL

1. Unscrew air cleaner wing nut. Remove top half of air cleaner.

2. Remove mounting bolts from air-control valve bracket and intake manifold.

3. Disconnect ASS valve hose. Remove air cleaner bottom half.

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4. Squeeze open clamp and pull off fuel line. Pull off both vacuum lines.

5. Loosen choke cable set screw and pull out cable. Tighten screw.

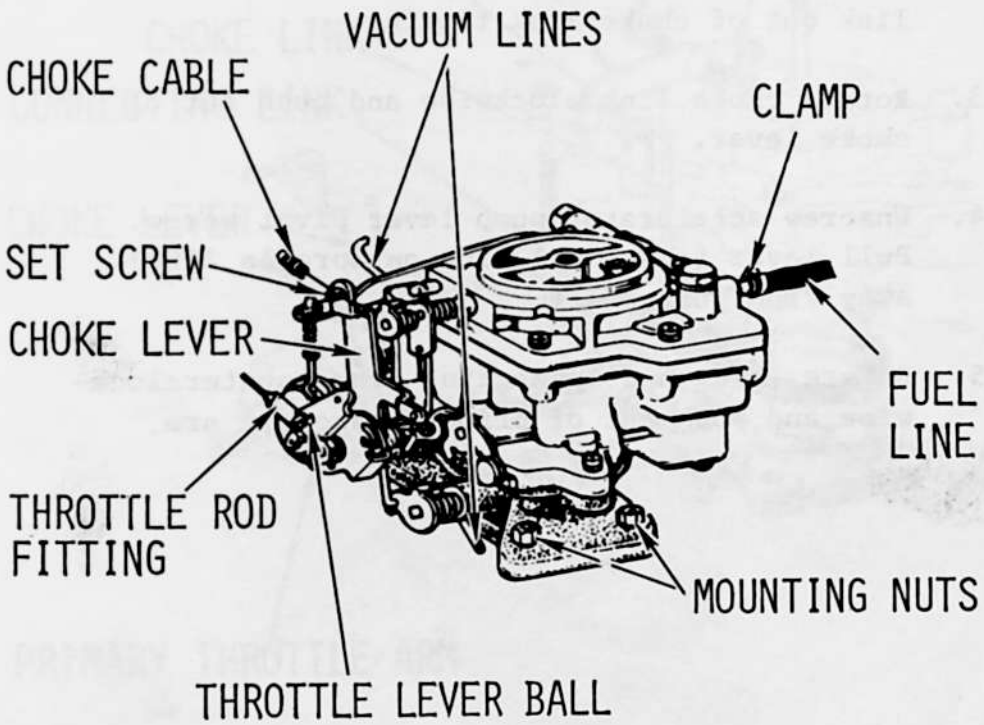
6. Unsnap throttle rod fitting from throttle lever ball.

7. Unscrew 4 carburetor mounting nuts and lock-washers. Lift carburetor off manifold.

8. Cover manifold intake port to prevent foreign objects from entering.

END OF REMOVAL

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K-C, 3K-C CARBURETOR

DISASSEMBLY

1. Unscrew air cleaner rod.

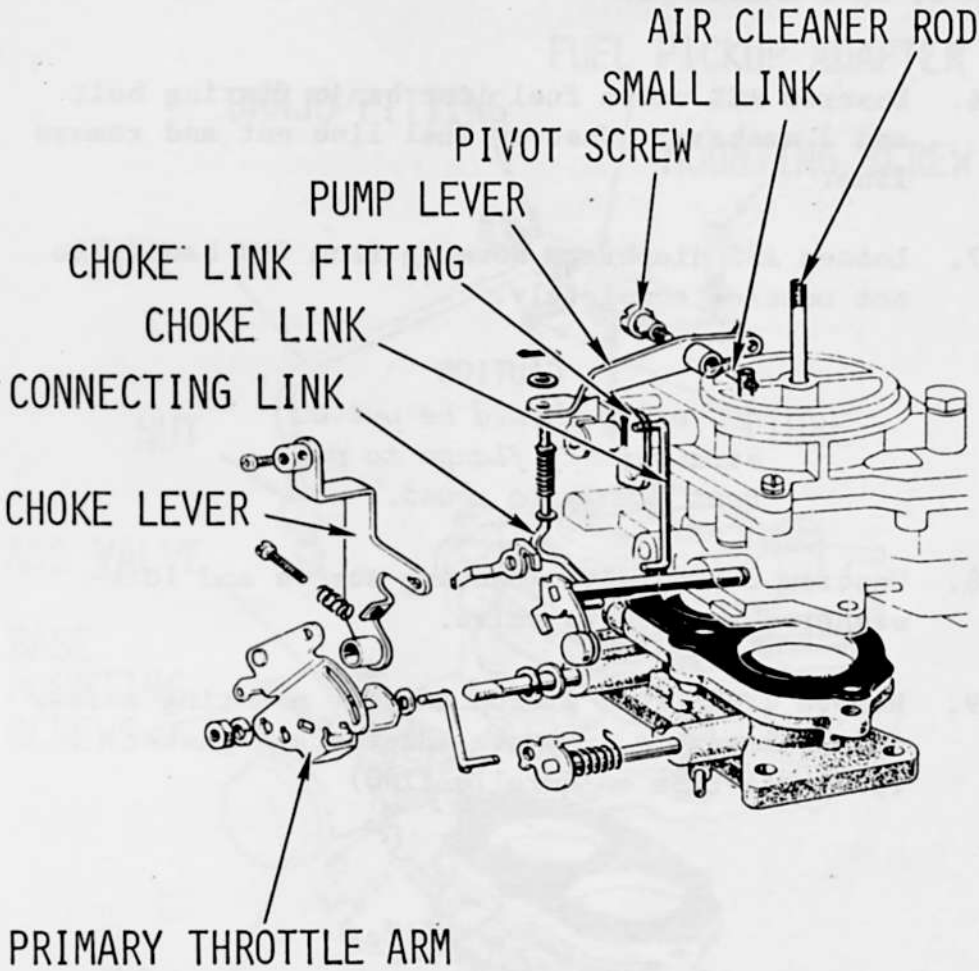
2. Remove choke link cotter pin and washer. Slide link out of choke link fitting.

3. Rotate choke link clockwise and push out of choke lever.

4. Unscrew accelerator pump lever pivot screw. Pull lever (and small link on Corolla 1100) away from pump shaft.

5. Rotate lever and connecting link counterclockwise and push out of primary throttle arm.

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6. Unscrew ASS valve fuel line banjo fitting bolt and 2 washers. Unscrew fuel line nut and remove line.

7. Loosen ASS diaphragm housing from its base. Do not unscrew completely.

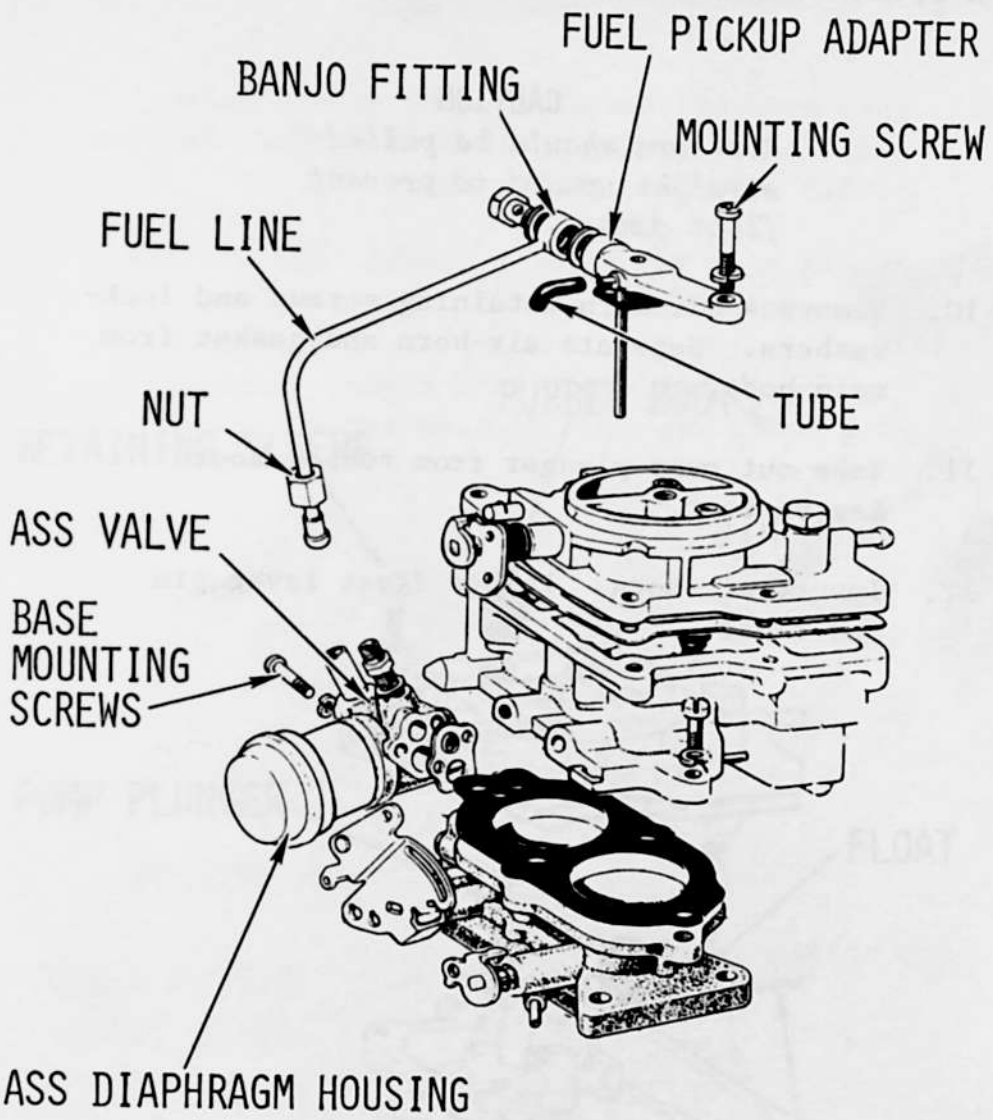
CAUTION

ASS valve should be pulled straight off flange to prevent damage to mount.

8. Unscrew 2 ASS valve mounting screws and lockwashers, and remove valve.

9. Remove 2 ASS fuel pickup adapter mounting screws and lockwashers. Remove adapter and gasket (pull off tube on Corolla 1200)

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K-C, 3K-C CARBURETOR

CAUTION

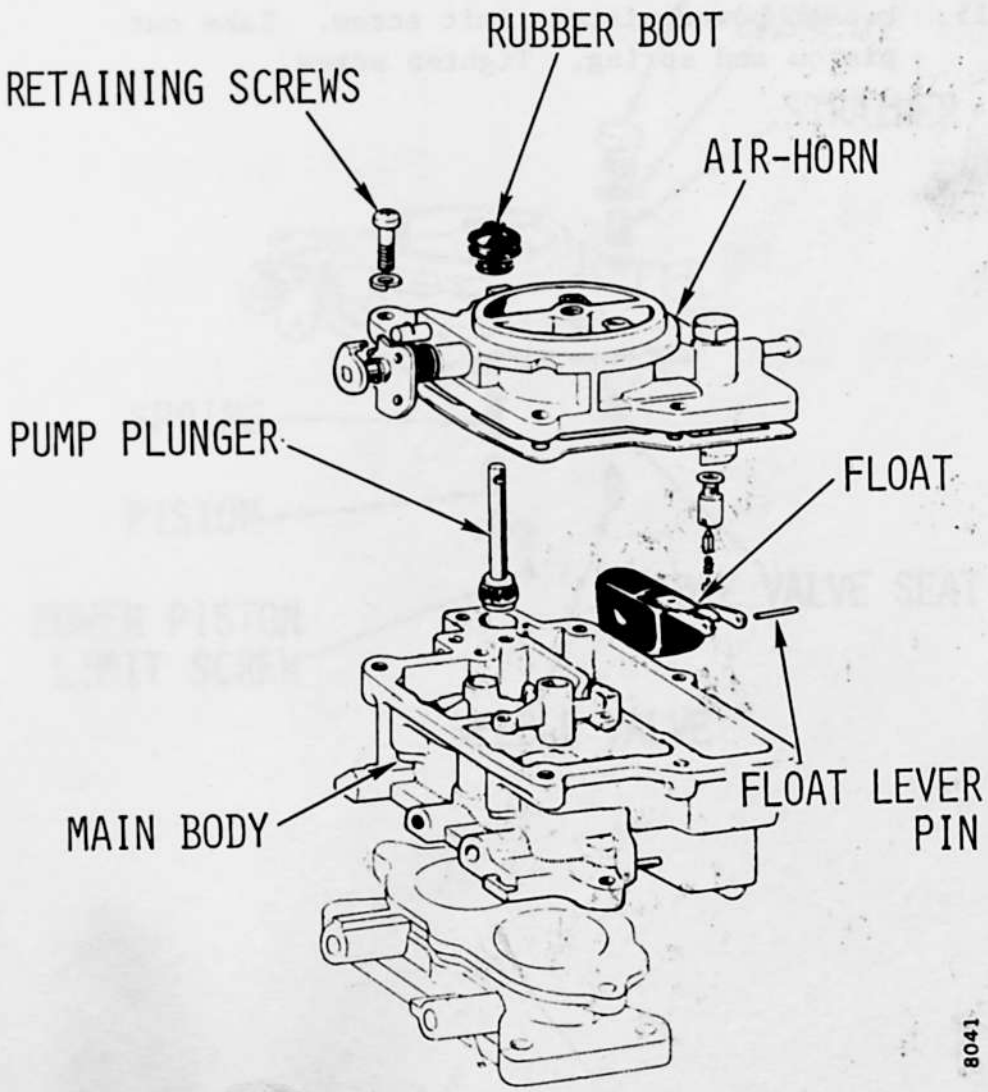
Air-horn should be pulled straight upward to prevent float damage.

10. Remove 4 air-horn retaining screws and lock-washers. Separate air-horn and gasket from main body.

11. Take out pump plunger from rubber boot. Remove boot.

12. Invert air-horn. Remove float lever pin and float.

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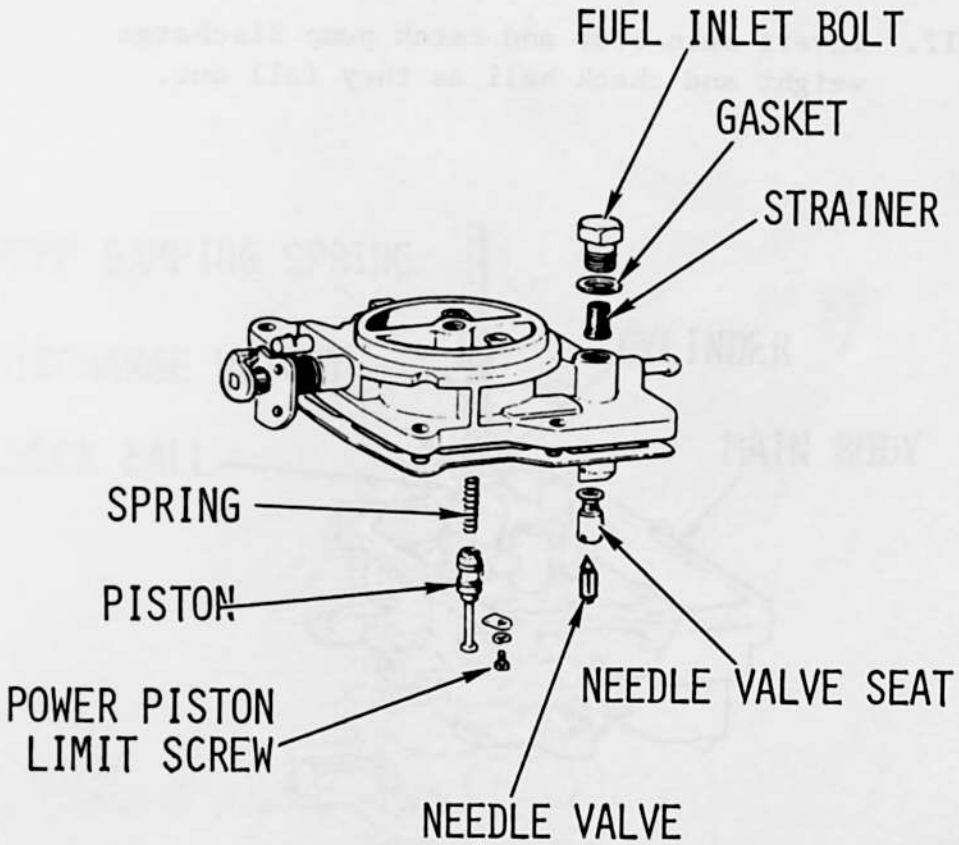
K-C, 3K-C CARBURETOR

13. Turn over air-horn and catch needle valve, damper, and spring as they fall out. Unscrew needle valve seat and gasket.

14. Remove fuel inlet bolt, gasket, and strainer from air-horn.

15. Loosen power piston limit screw. Take out piston and spring. Tighten screw.

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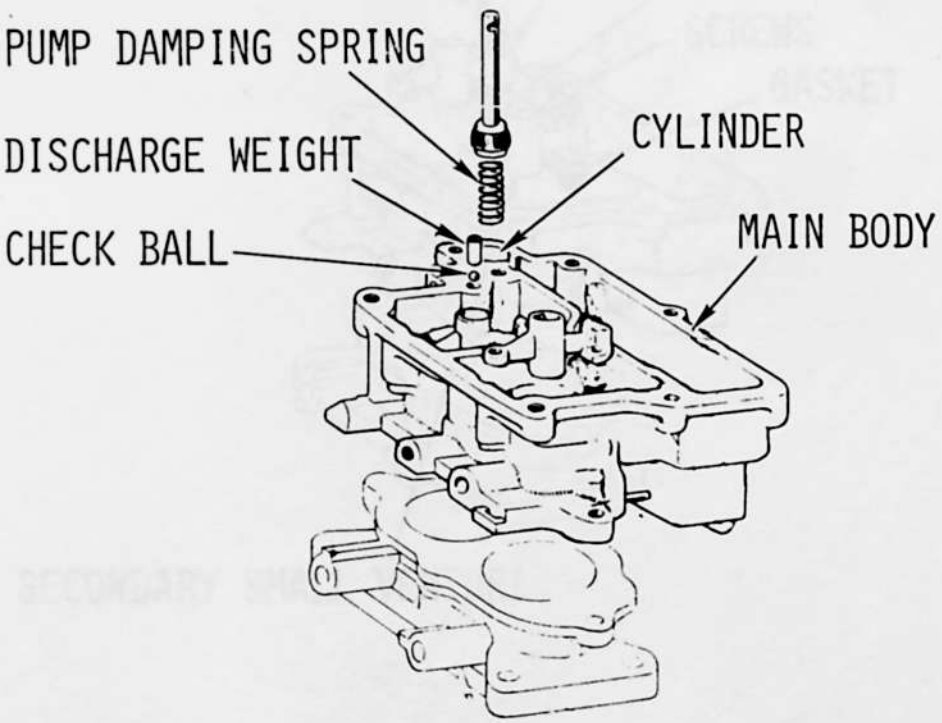
NOTE

Do not lose pump check ball.

16. Pull out pump damping spring.

17. Invert main body and catch pump discharge weight and check ball as they fall out.

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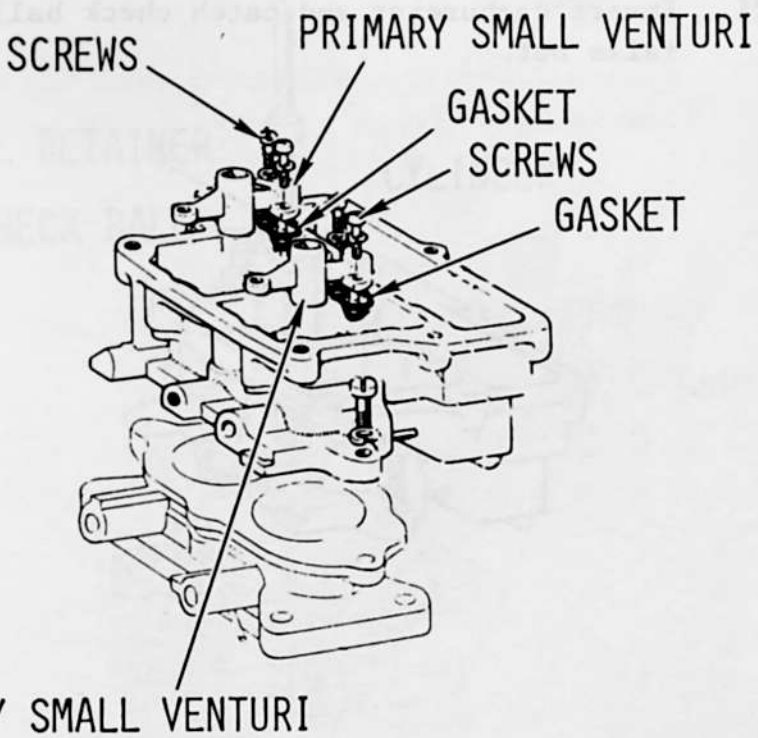
8043

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18. Unscrew 2 primary small venturi retaining screws and lockwashers. Remove venturi and gasket.

19. Unscrew 2 secondary small venturi retaining screws and lockwashers. Remove venturi and gasket.

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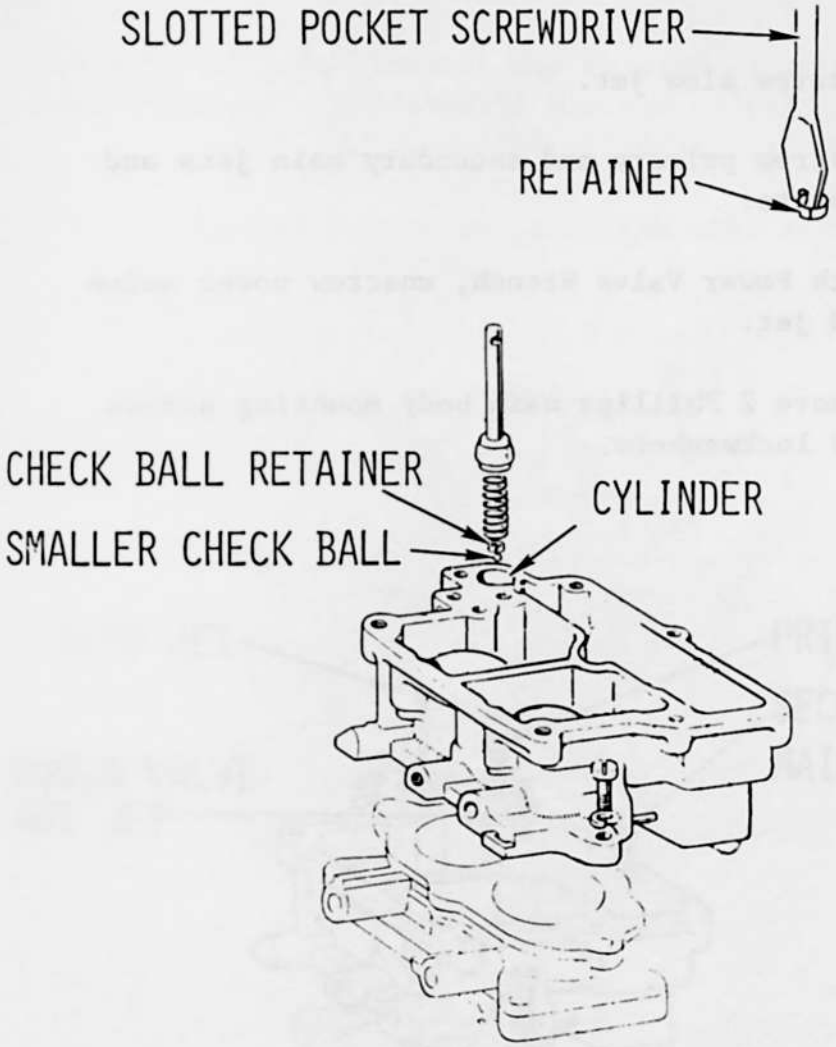
20. Grasp check ball retainer in pump cylinder with slotted screwdriver. Rotate screwdriver to compress retainer, and pull retainer out.

NOTE

Do not lose check ball.

21. Invert carburetor and catch check ball as it falls out.

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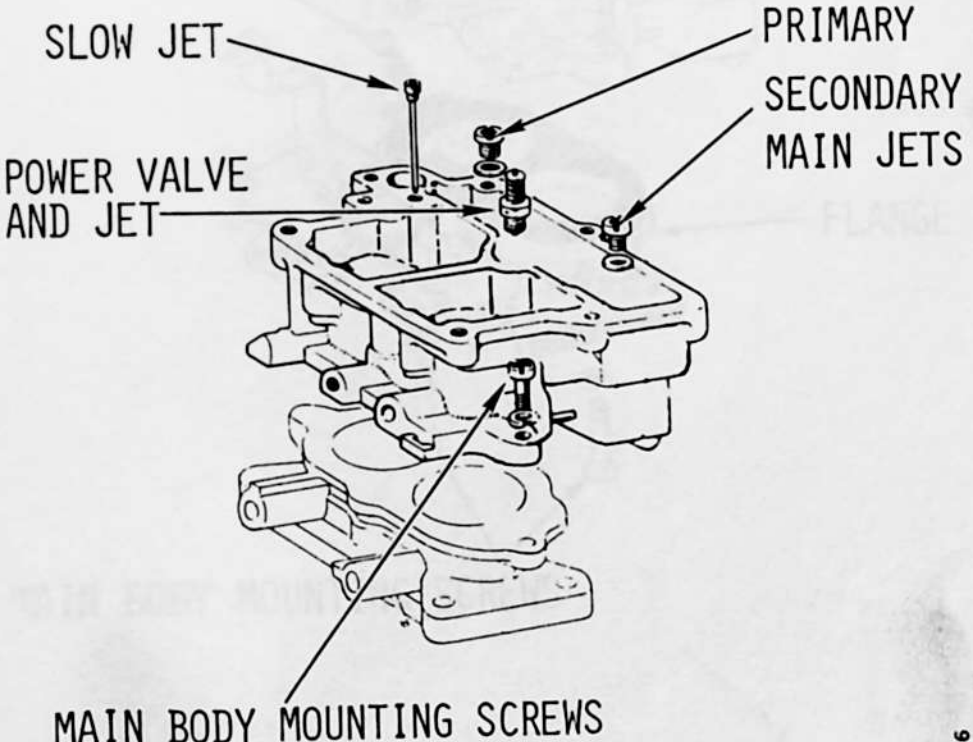
22. Unscrew slow jet.

23. Unscrew primary and secondary main jets and gaskets.

24. With Power Valve Wrench, unscrew power valve and jet.

25. Remove 2 Phillips main body mounting screws and lockwashers.

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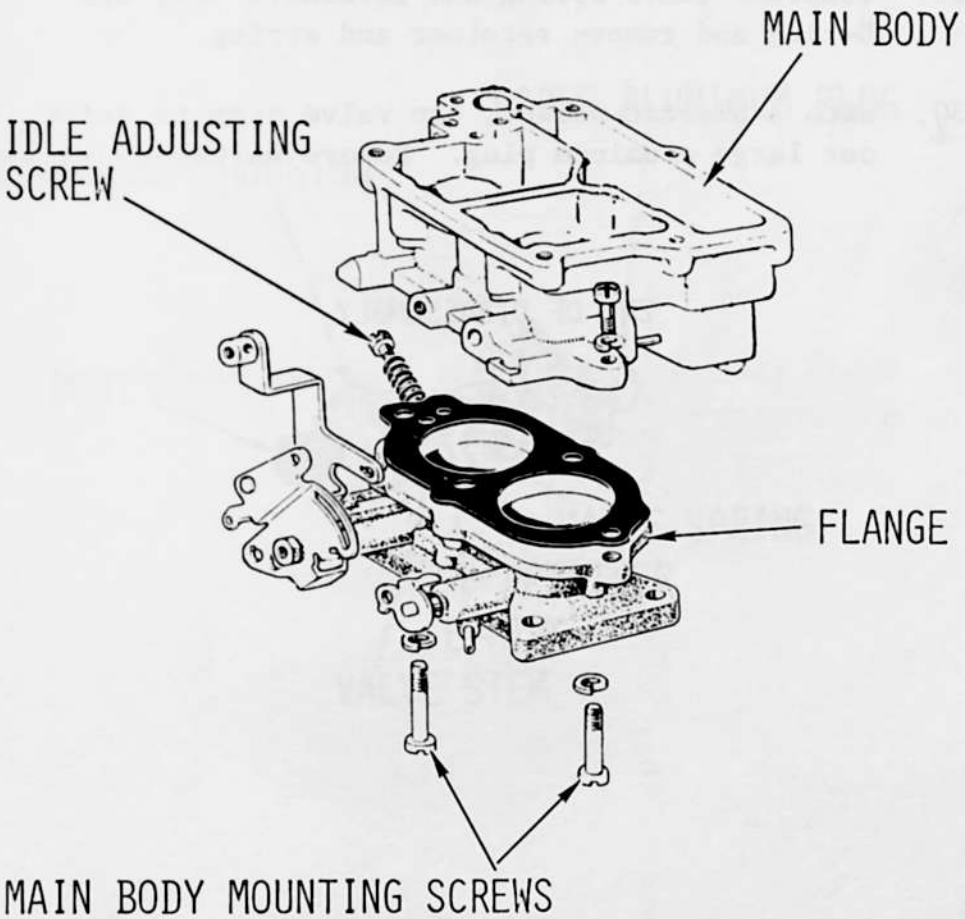


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26. Invert carburetor and remove 2 slotted main body mounting screws and lockwashers. Separate main body and gasket from flange.

27. Remove idle adjusting screw and spring.

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K-C, 3K-C CARBURETOR

ASS VALVE

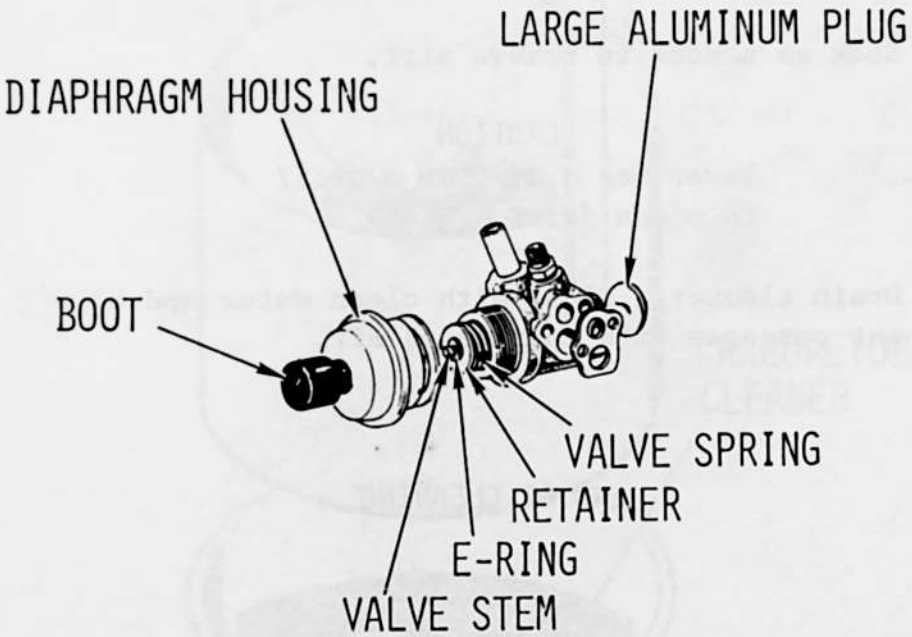
28. Unscrew diaphragm housing and gasket (Corolla 1200 does not have rubber boot)

29. Compress valve spring and retainer. Pry off E-ring and remove retainer and spring.

30. With a plastic mallet, tap valve stem to drive out large aluminum plug. Remove valve.

END OF DISASSEMBLY

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K-C, 3K-C CARBURETOR

CLEANING

CAUTION

Do not soak ASS valve, float, rubber boot, or gaskets.

1. Place parts in carburetor basket and immerse in suitable carburetor cleaner.

2. Soak as needed to remove dirt.

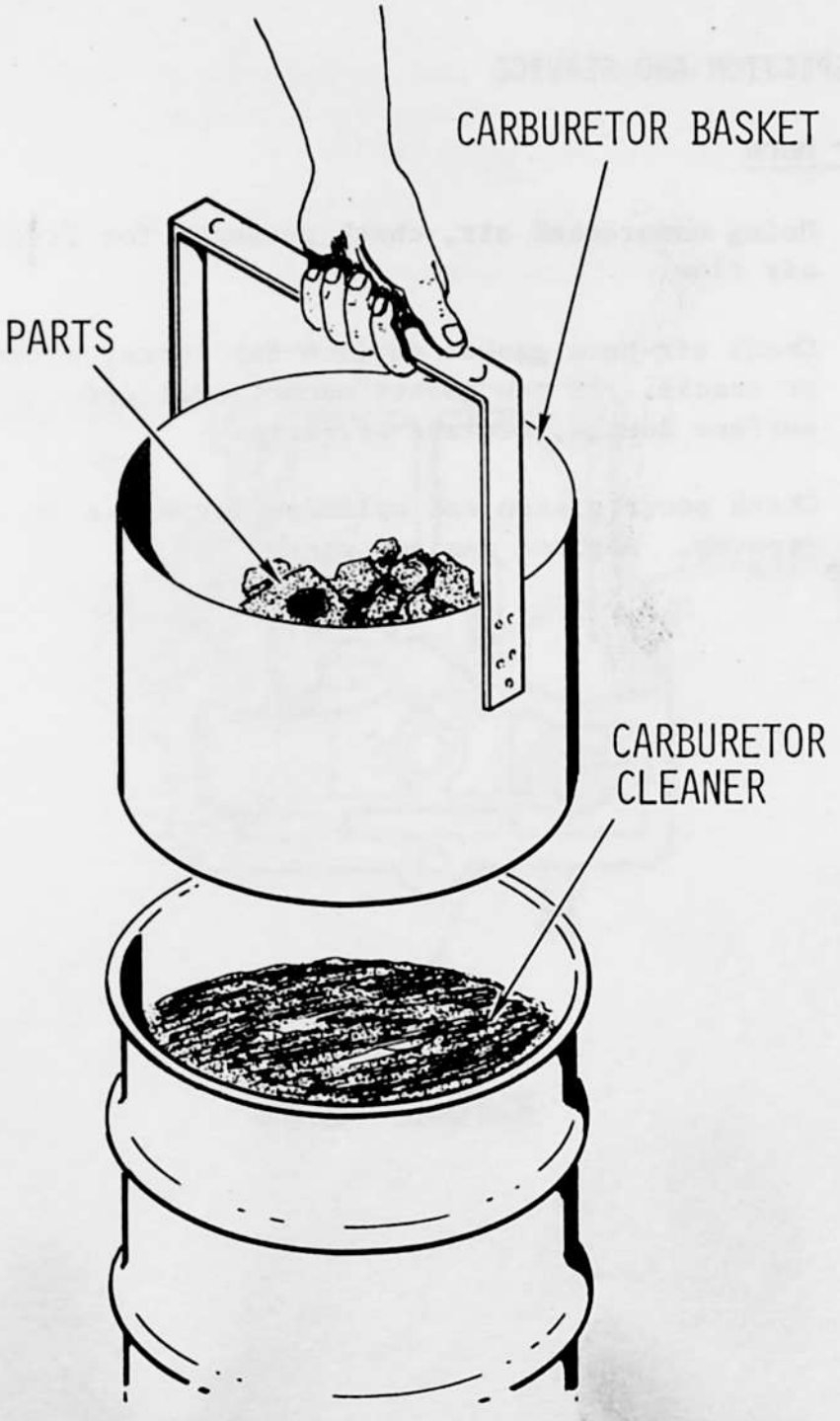
CAUTION

Never use a wire or a drill to clean jets.

3. Drain cleaner. Rinse with clean water and blow out passages with compressed air.

END OF CLEANING

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K-C, 3K-C CARBURETOR

INSPECTION AND SERVICE

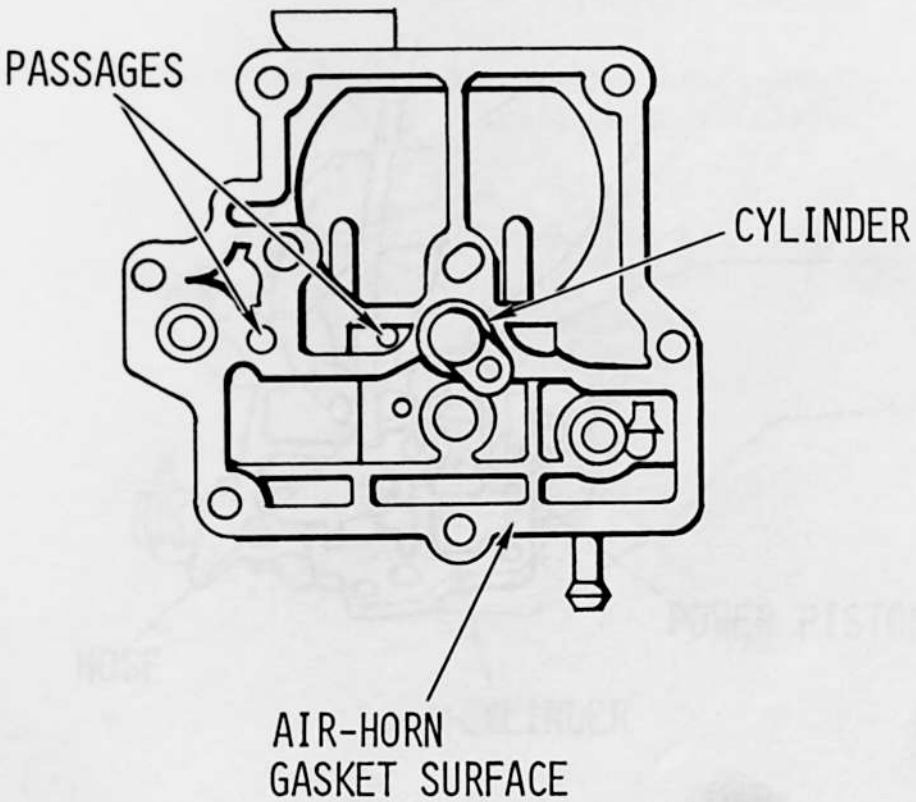
Air Horn

1. Using compressed air, check passages for free air flow.

2. Check air-horn gasket surface for burrs, nicks or cracks. If new gasket cannot seal off surface damage, replace air-horn.

3. Check power piston and cylinder for nicks or grooves. Replace damaged parts.

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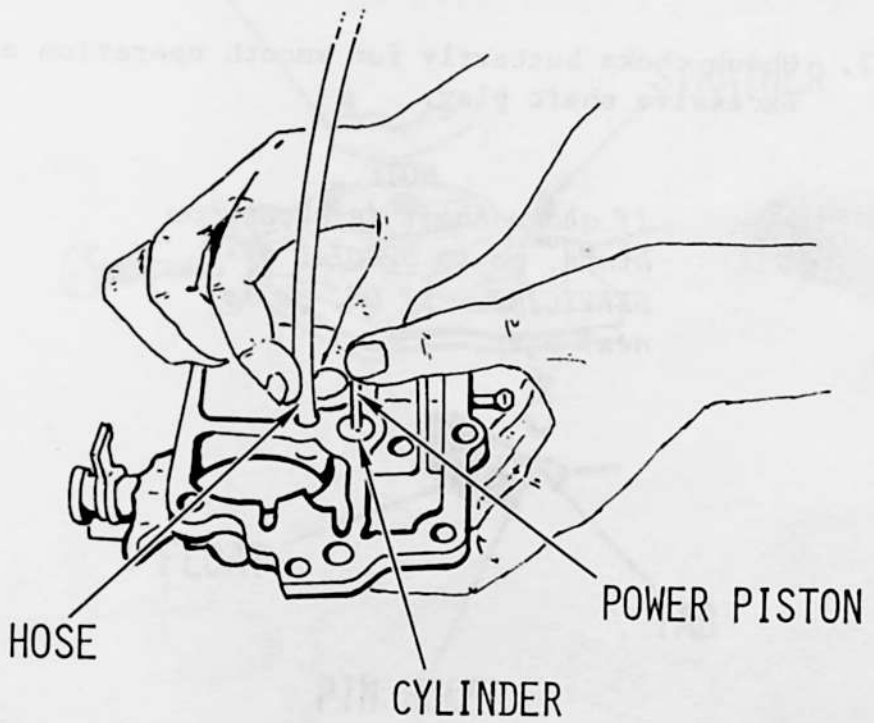
8051

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4. Insert power piston and spring into cylinder and tighten retainer. Place short length of hose over hole next to cylinder.

5. Breathe in and out through hose. Check air leak and smooth piston movement against spring.

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6. Inspect float for:

   deformation
   surface damage
   tab damage
   elongated pin holes

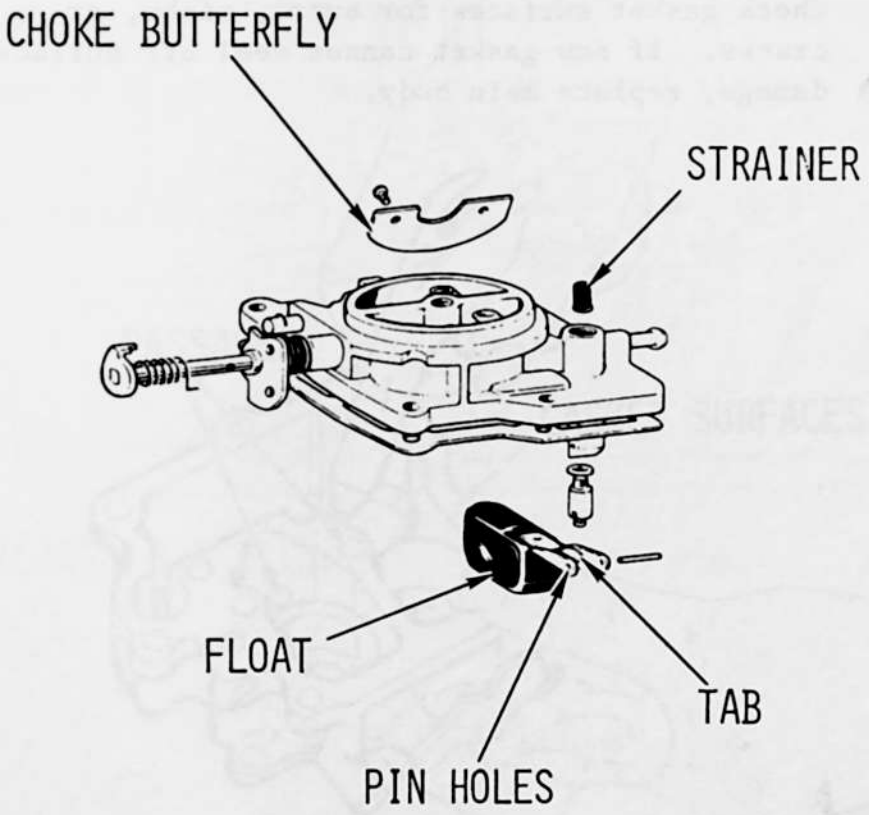
   Replace if damaged or worn.

7. Check choke butterfly for smooth operation and excessive shaft play.

   NOTE

   If choke shaft is sloppy or binds, go to SPECIAL SERVICING. If OK, go to next step.

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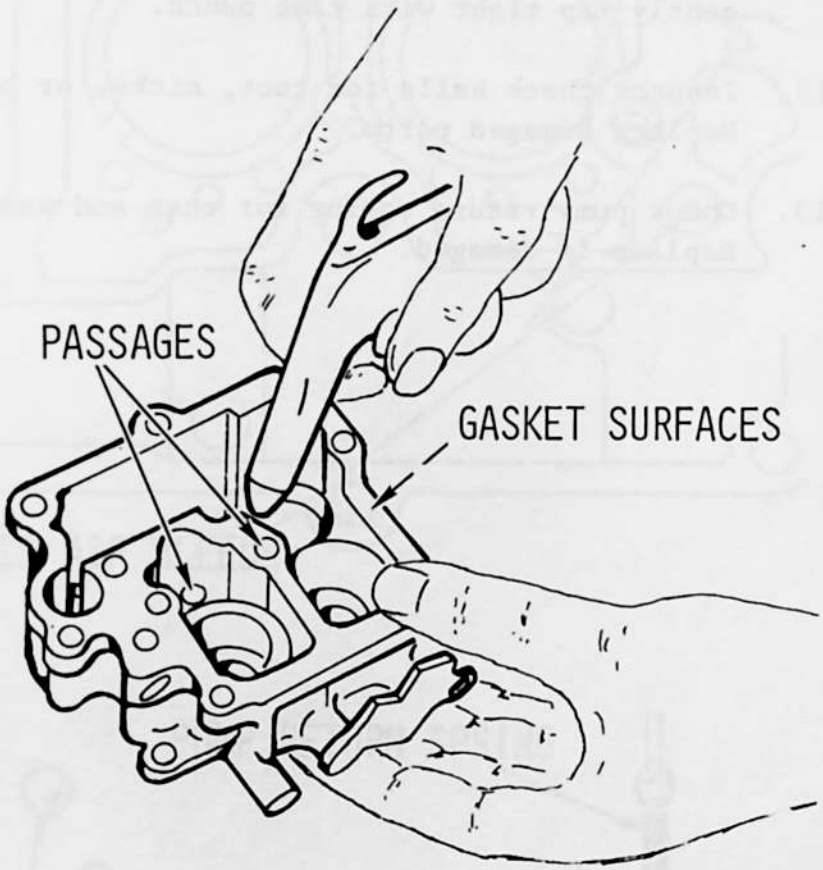
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Main Body

8. Using compressed air, check passages for free air flow.

9. Check gasket surfaces for burrs, nicks, or cracks. If new gasket cannot seal off surface damage, replace main body.

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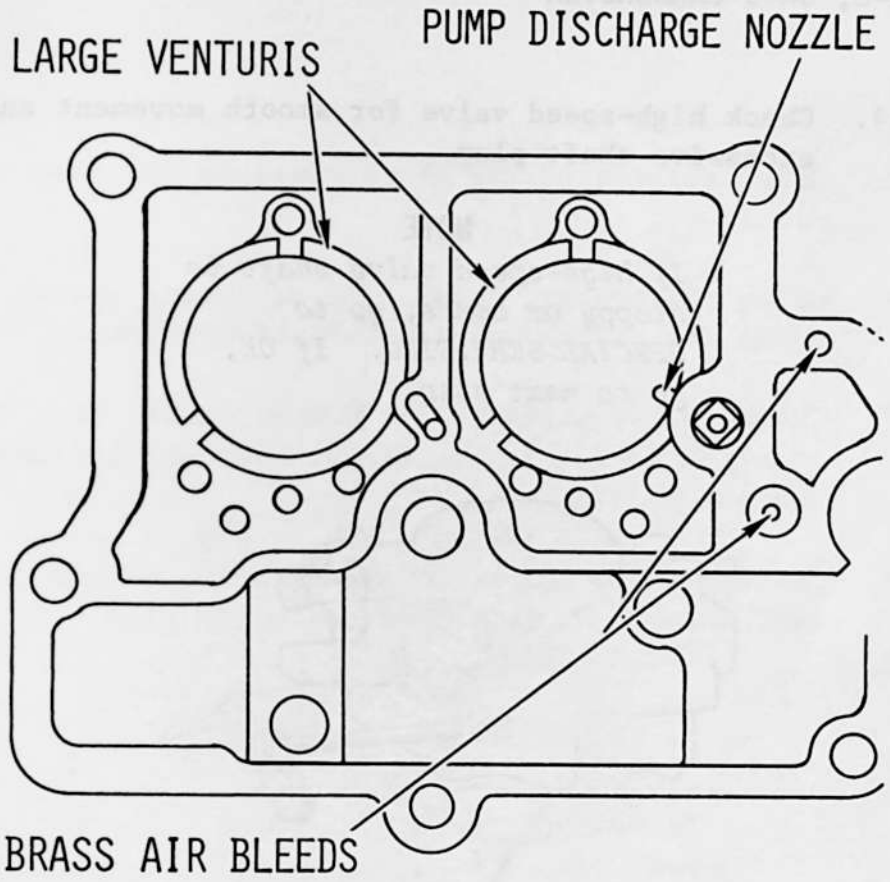
10. Check large venturis for tightness. If loose, re-stake gently with hammer and flat punch.

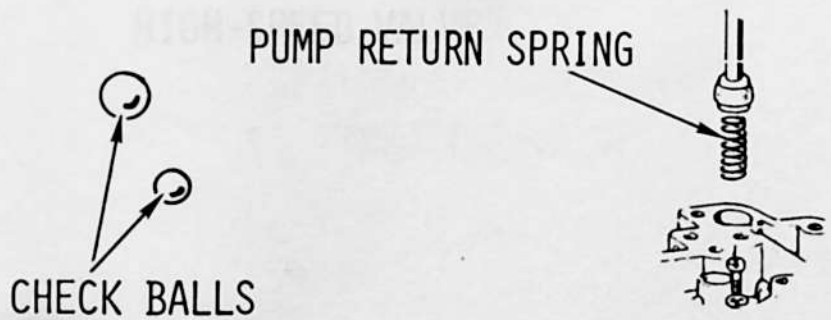
11. Check brass air bleeds and accelerator pump discharge nozzle for tightness. If loose, gently tap tight with flat punch.

12. Inspect check balls for rust, nicks, or burrs. Replace damaged parts.

13. Check pump return spring for rust and weakness. Replace if damaged.

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8055

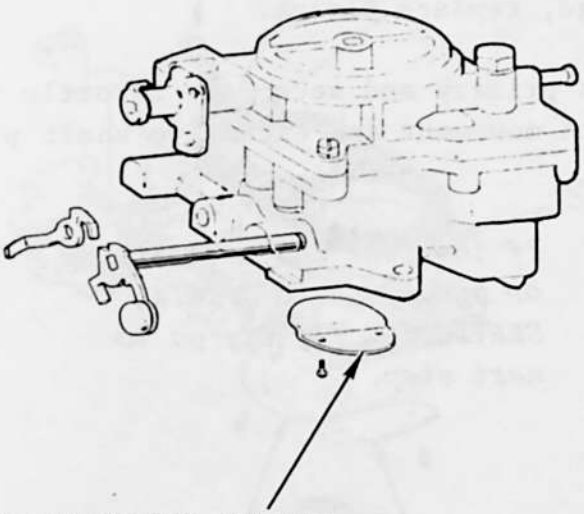
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14. Check high-speed valve for smooth movement and excessive shaft play.

NOTE

If high-speed valve shaft is sloppy or binds, go to SPECIAL SERVICING. If OK, go to next step.

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HIGH-SPEED VALVE

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K-C, 3K-C CARBURETOR

Flange

15. Using compressed air check passages for free air flow.

16. Using fingernail, check idle adjusting screw taper for smoothness and for thread damage.

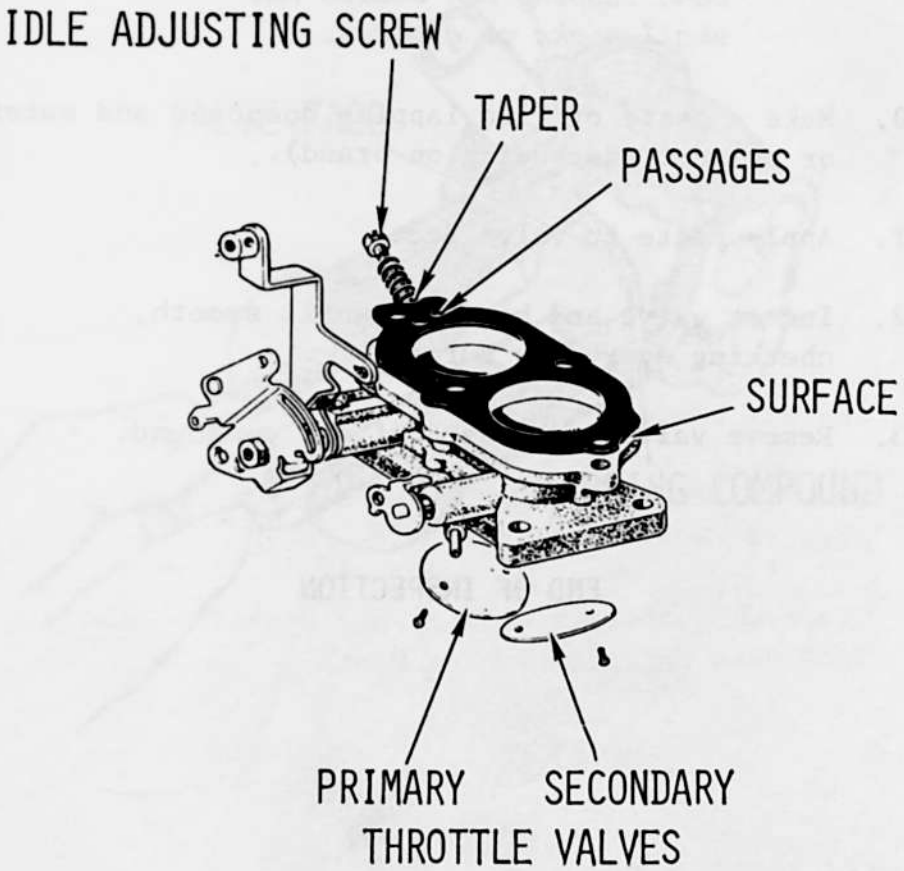
17. Check gasket surfaces for burrs, nicks, or cracks. If new gasket cannot seal off surface damage, replace flange.

18. Check primary and secondary throttle valves for smooth movement and excessive shaft play.

NOTE

If throttle shaft is sloppy or binds, go to SPECIAL SERVICING. If OK, go to next step.

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19. Check ASS valve seat and valve face for nicks or grooves. If smooth, go to ASSEMBLY.

NOTE

Hand lapping can smooth out small nicks or grooves.

20. Make a paste of fine lapping compound and water or solvent (depending on brand).

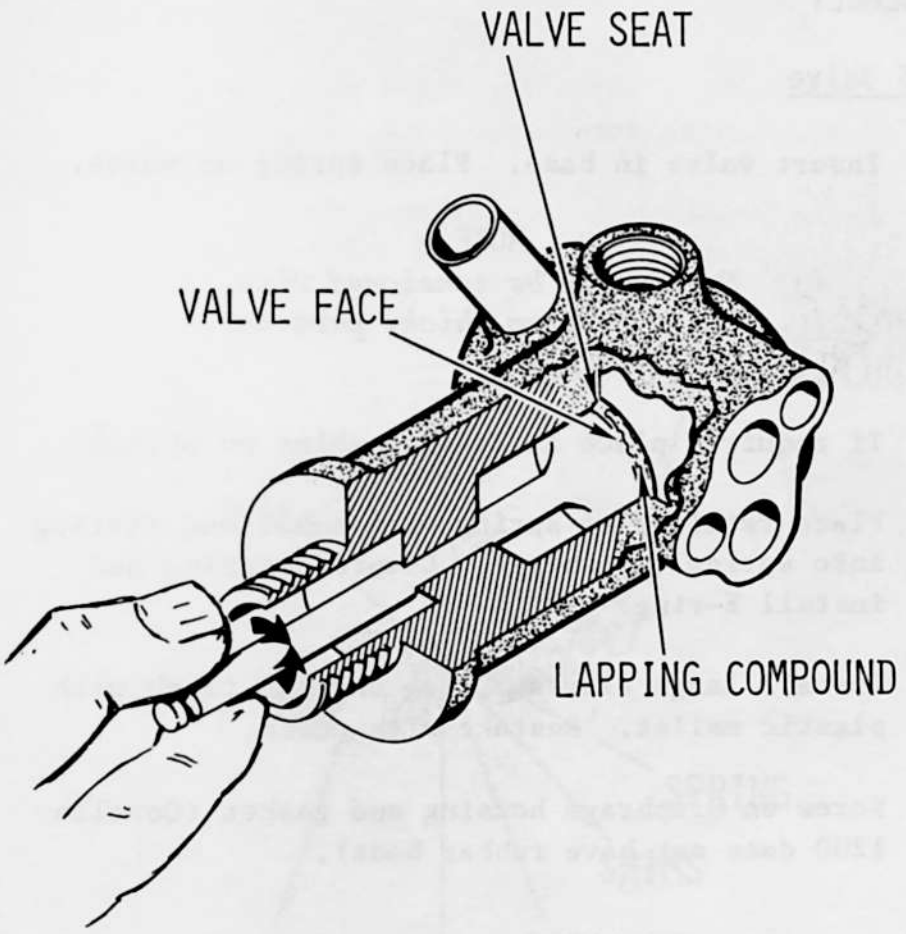
21. Apply paste to valve face.

22. Insert valve and hand lap until smooth, checking every few turns.

23. Remove valve and clean off all compound.

END OF INSPECTION

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K-C, 3K-C CARBURETOR

ASSEMBLY

ASS Valve

1. Insert valve in base. Place spring on valve.

NOTE

Spring can be tensioned with shims (0.5 mm thick, part no. 21681-42040).

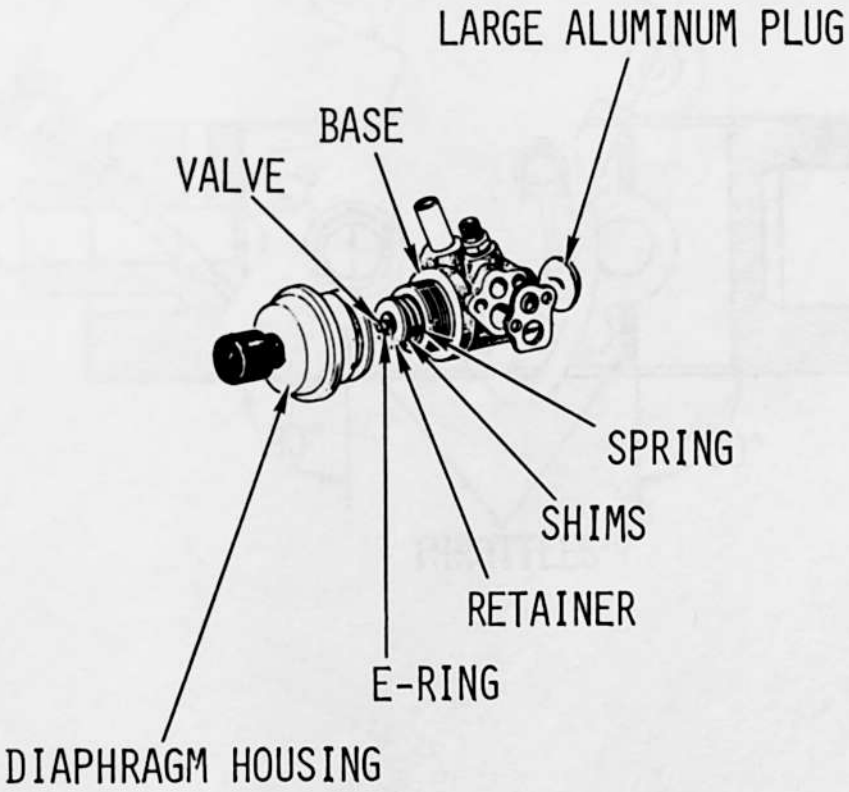
2. If required place at least 2 shims on spring.

3. Place retainer on spring with small end fitting into spring (or shims). Compress spring and install E-ring.

4. Install large aluminum plug and tap flush with plastic mallet. Restake with punch.

5. Screw on diaphragm housing and gasket (Corolla 1200 does not have rubber boot).

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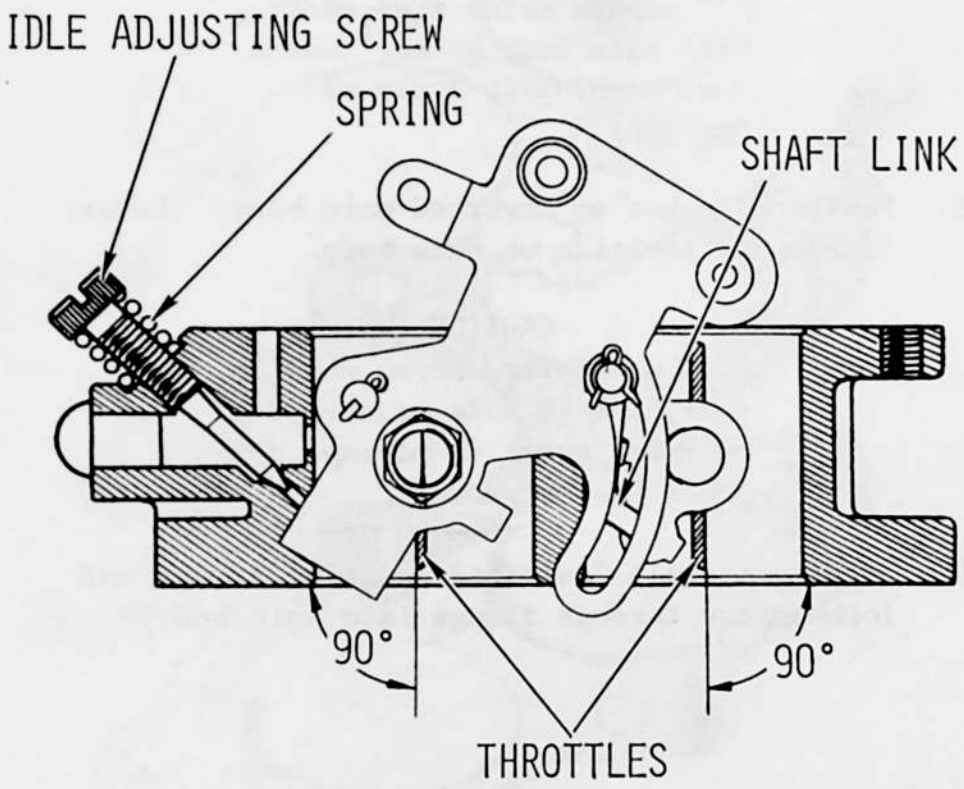
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Flange

6. Screw in idle adjusting screw and spring with fingers until it seats. Back off 2½ turns.

7. Check that both throttles open fully to 90°. Bend throttle shaft link as required to adjust.

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K-C, 3K-C CARBURETOR

Main Body

CAUTION

All gasket holes must align with main body holes. Gasket must completely cover all passages.

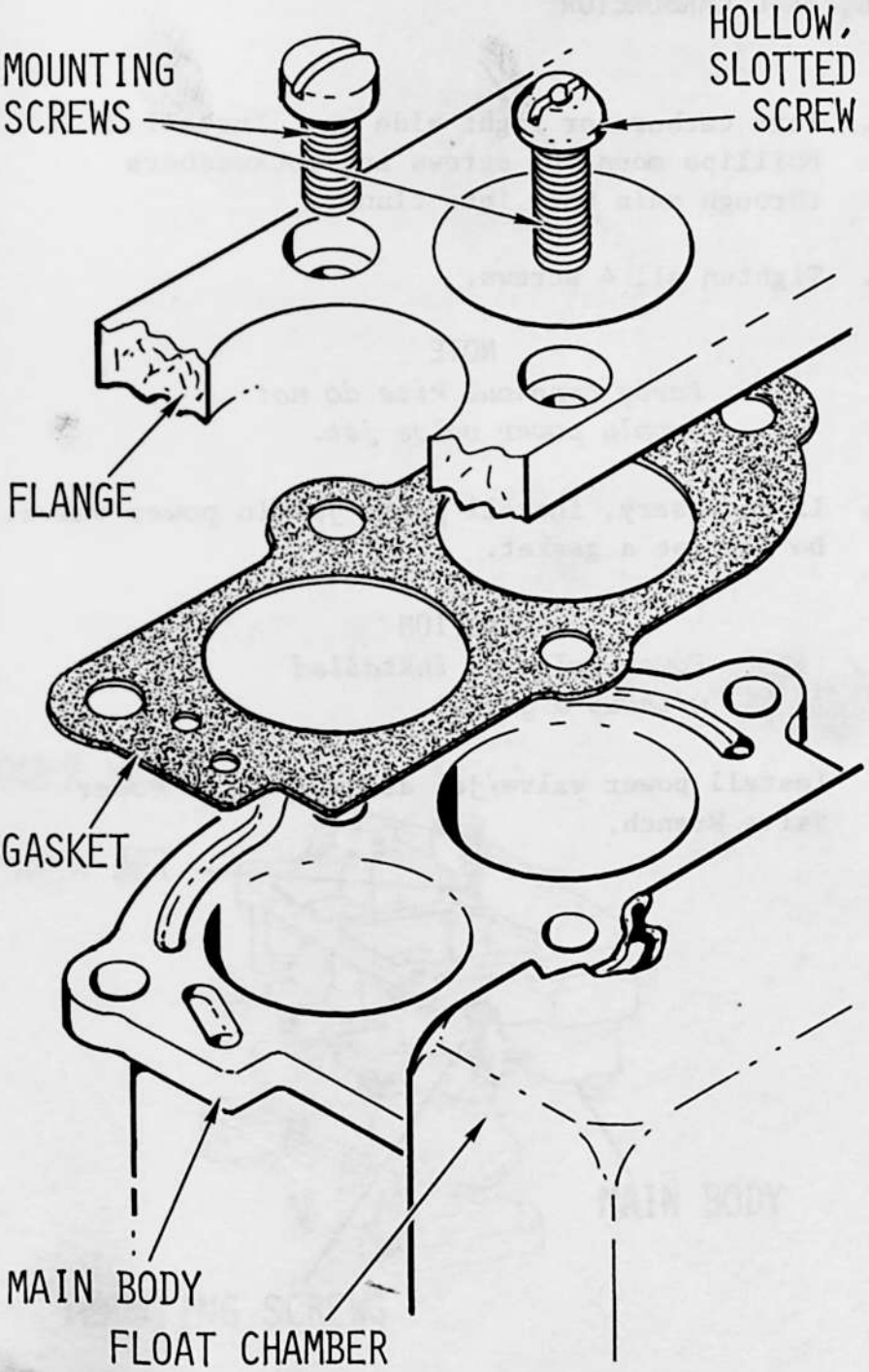
8. Position gasket on inverted main body. Invert flange and position on main body.

CAUTION

Hollow, slotted screw must be installed in hole nearer float chamber (screw is passage for power piston vacuum).

9. Loosely install 2 slotted mounting screws and lockwashers through flange into main body.

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10. Turn carburetor right side up. Install 2 Phillips mounting screws and lockwashers through main body into flange.

11. Tighten all 4 screws.

NOTE

Early overhaul kits do not supply power valve jet.

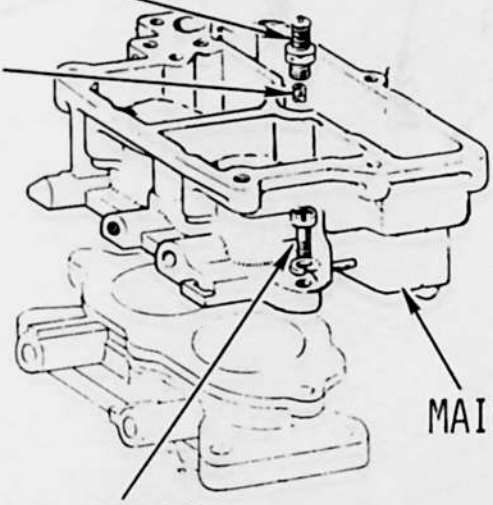
12. If necessary, install power jet in power valve. Do not use a gasket.

CAUTION

Power valve is installed without a gasket.

13. Install power valve/jet assembly with Power Valve Wrench.

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CAUTION

Primary main jet always has smaller opening (and number) than secondary main jet.

14. Install primary main jet and gasket and secondary main jet and gasket in float bowl.

CAUTION

Slow jet has no gasket.

15. Install slow jet.

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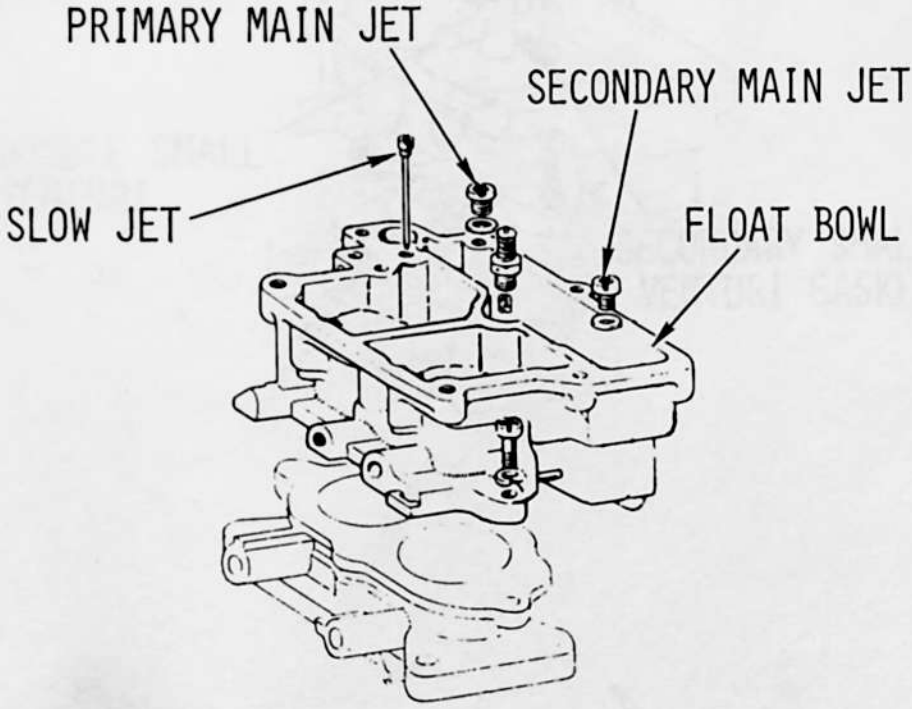
NOTE: JET NUMBERS ARE FOR EXAMPLE ONLY. SEE SPECIFICATIONS FOR CORRECT NUMBERS.

SECONDARY



PRIMARY





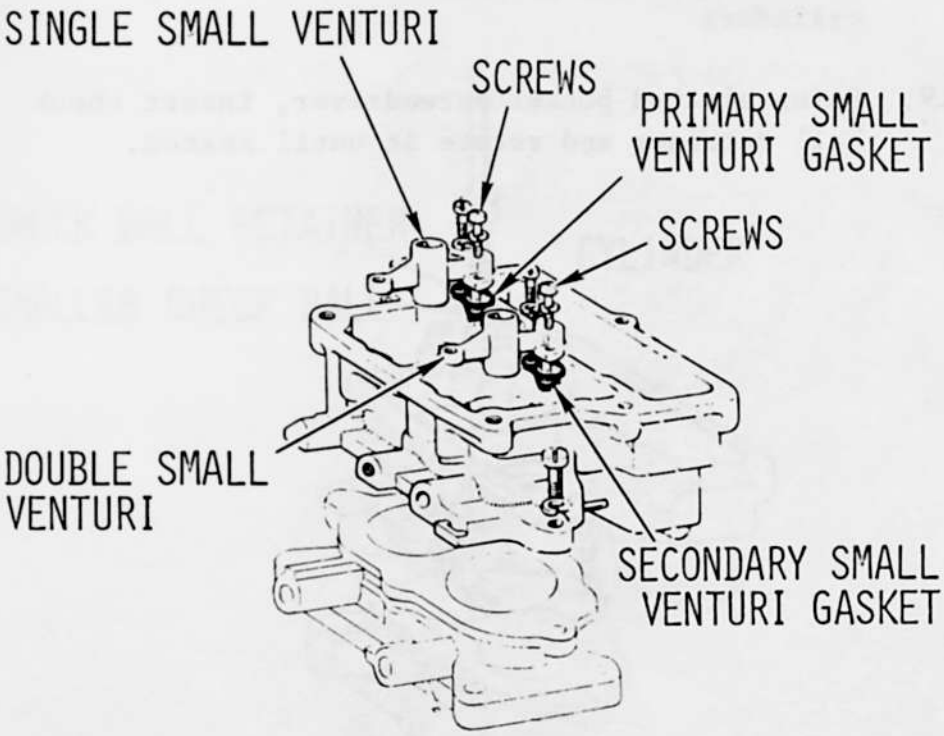
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16. Install primary small venturi gasket, then single small venturi on primary bore seat and pin. Secure with 2 screws and lockwashers.

17. Install secondary small venturi gasket, then double small venturi on secondary bore seat and pin. Secure with 2 screws and lockwashers.

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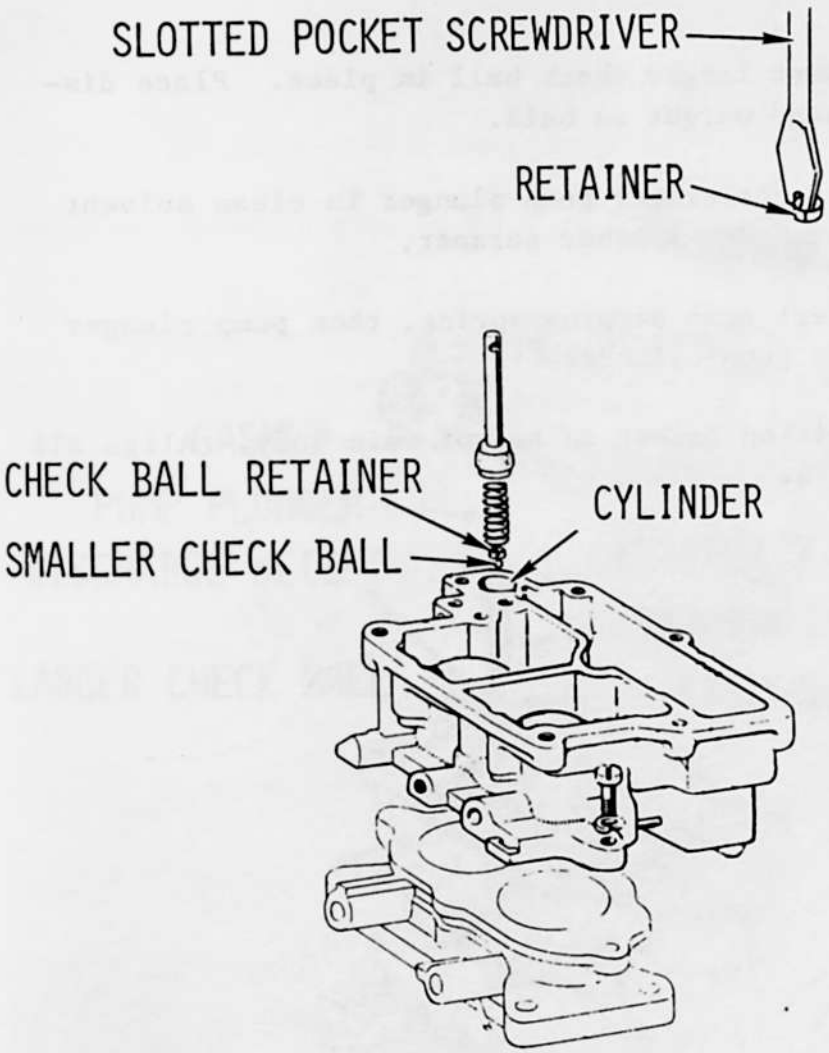
CAUTION

Smaller ball is for accelerator pump cylinder.

18. Put smaller check ball at bottom of pump cylinder.

19. Using slotted pocket screwdriver, insert check ball retainer and rotate it until seated.

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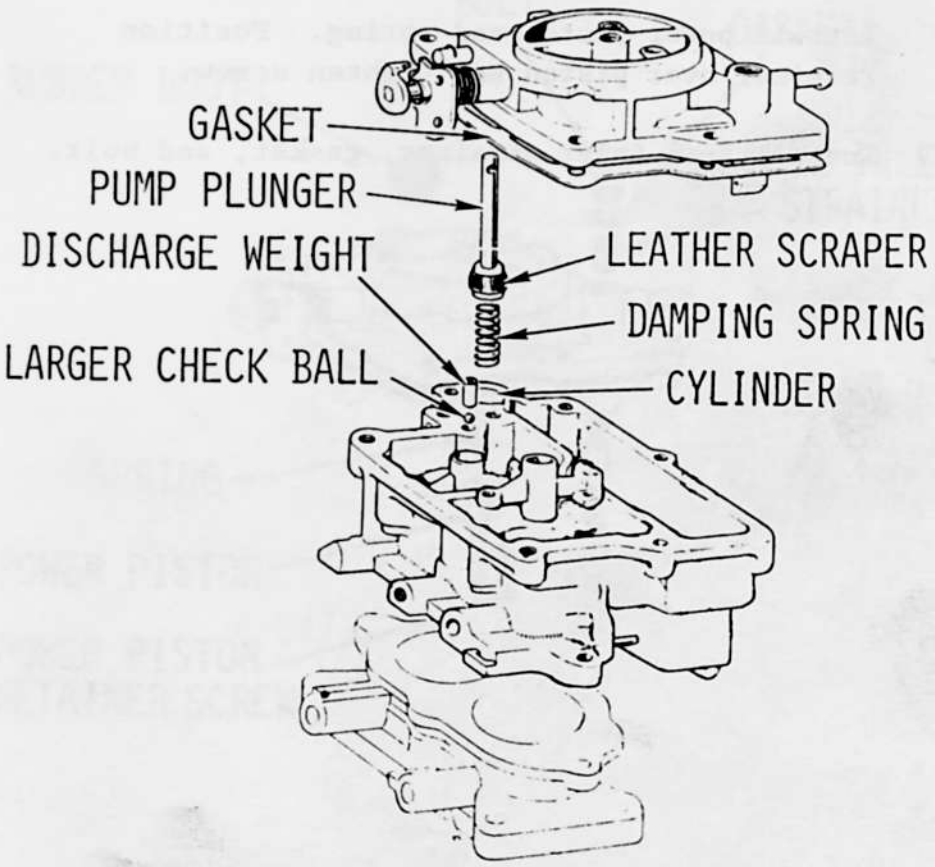
20. Insert larger check ball in place. Place discharge weight on ball.

21. Dip accelerator pump plunger in clean solvent to moisten leather scraper.

22. Insert pump damping spring, then pump plunger into pump cylinder.

23. Position gasket on top of main body. Align all holes.

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K-C, 3K-C CARBURETOR

Air Horn

24. Install accelerator pump rubber boot.

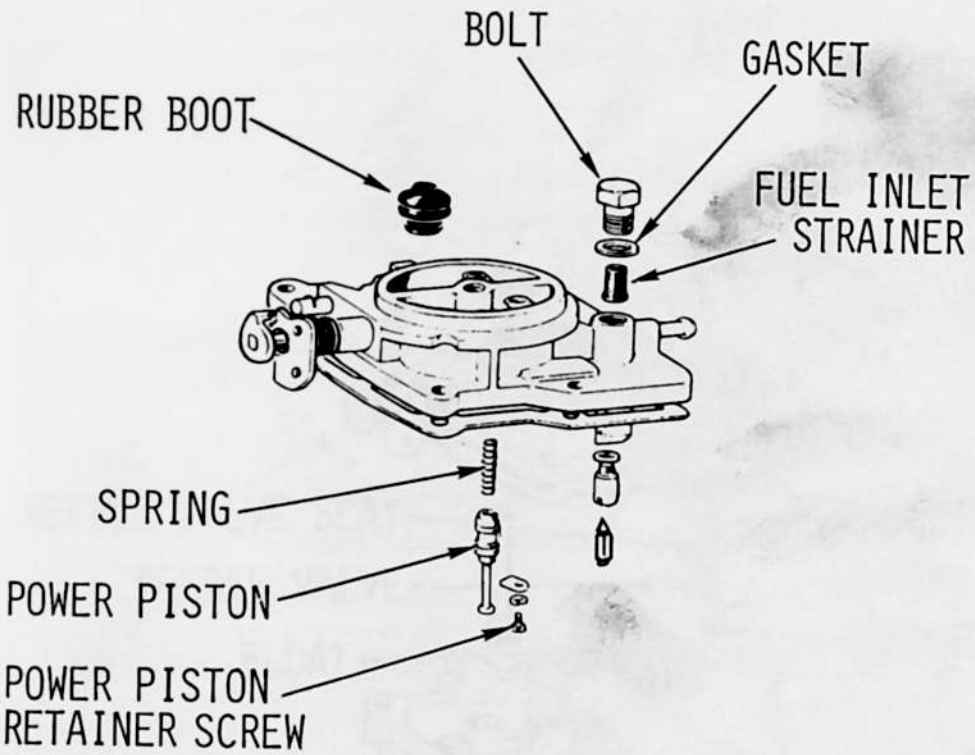
25. Invert air-horn and loosen power piston retainer screw.

26. Install power piston and spring. Position retainer over piston and tighten screw.

27. Install fuel inlet strainer, gasket, and bolt.

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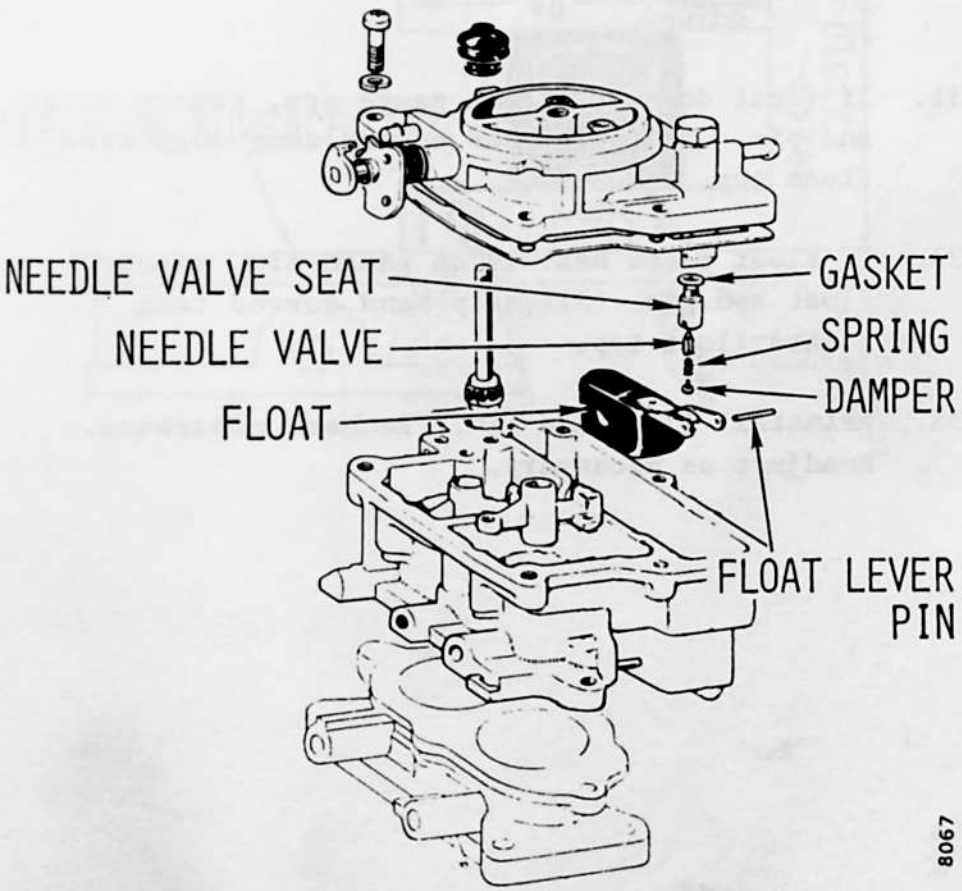


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28. Install needle valve seat and gasket. Place needle valve, spring, and damper into seat.

29. Install float with float lever pin.

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K-C, 3K-C CARBURETOR

FLOAT-RAISED ADJUSTMENT

30. Slide Float Level Gauge "6.5" arm between air-horn surface and float top.

NOTE

Float top should barely touch gauge arm (6.5 mm clearance).

CAUTION

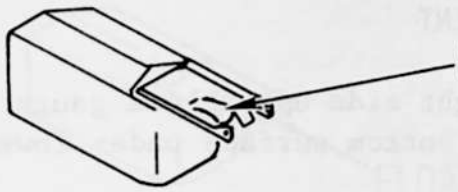
To prevent pulling lever from float, always remove float to adjust.

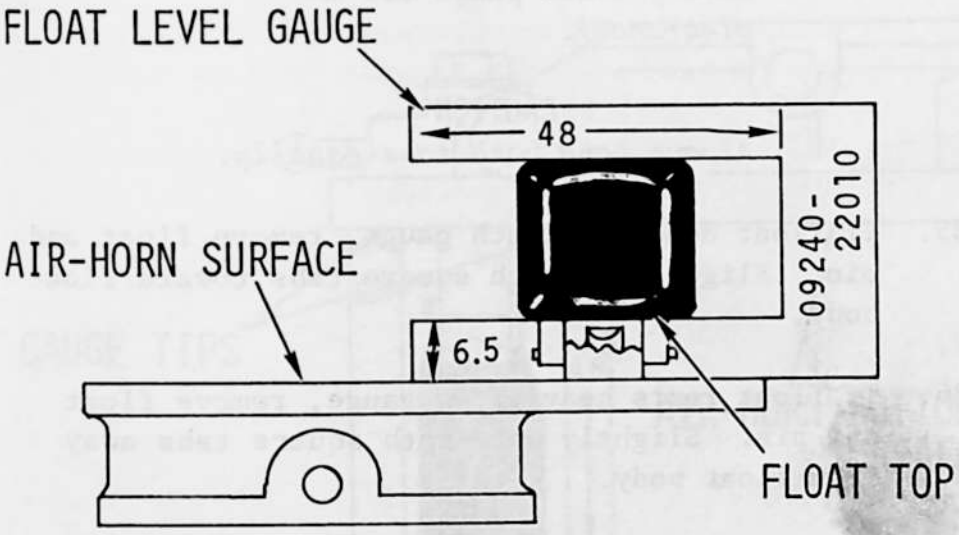
31. If float does not touch gauge arm, remove float and pin. Slightly bend curved tang away from float top.

32. If float rests heavily on gauge arm, remove float and pin. Slightly bend curved tang toward float top.

33. Reinstall float and pin. Recheck clearance. Readjust as necessary.

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K-C, 3K-C CARBURETOR

FLOAT-LOWERED ADJUSTMENT

34. Hold air-horn right side up. Place gauge tips against air-horn bottom surface under lowest float surface.

NOTE

Float lowest surface should barely touch gauge (48 mm clearance).

CAUTION

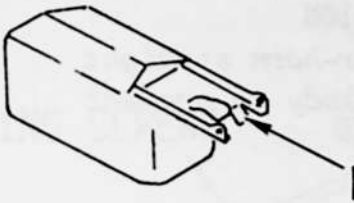
Always bend both tabs equally.

35. If float does not touch gauge, remove float and pin. Slight bend both square tabs toward float body.

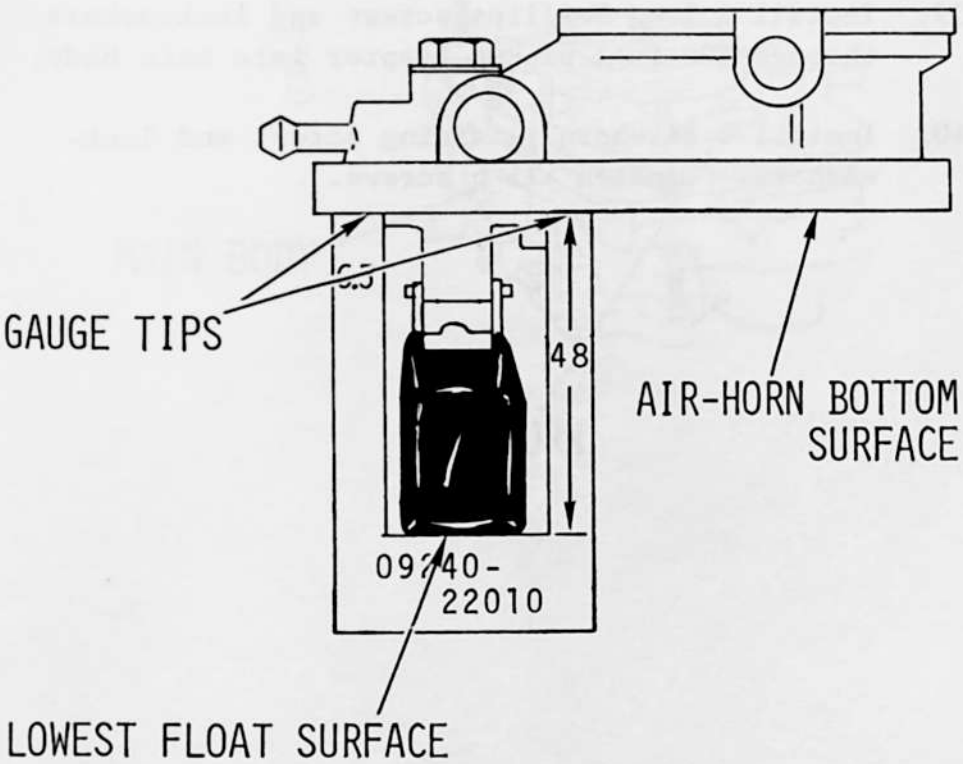
36. If float rests heavily on gauge, remove float and pin. Slightly bend both square tabs away from float body.

37. Reinstall float and pin. Recheck clearance. Readjust as necessary.

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FLOAT SQUARE TABS



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CAUTION

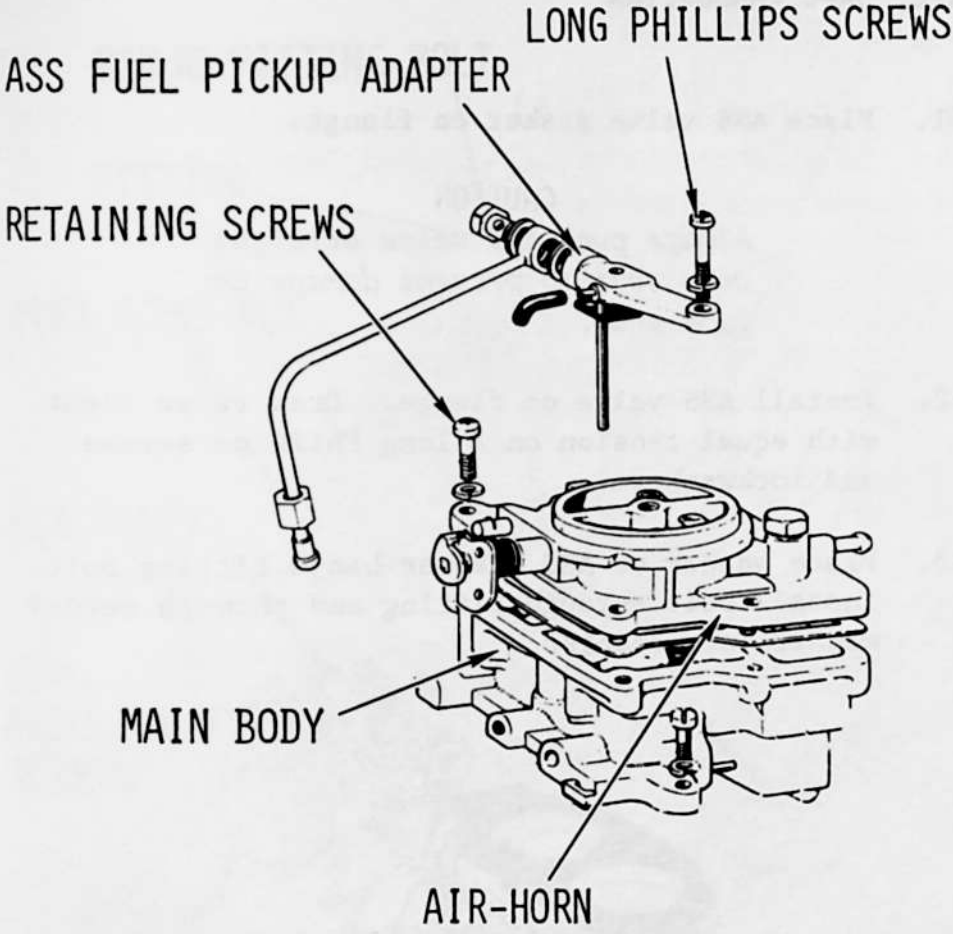
Always lower air-horn straight down onto main body to prevent float damage.

38. Position air-horn on main body and gasket. Install gasket on ASS fuel pickup adapter with all holes showing through.

39. Install 2 long Phillips screws and lockwashers through ASS fuel pickup adapter into main body.

40. Install 4 air-horn retaining screws and lockwashers. Tighten all 6 screws.

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41. Place ASS valve gasket on flange.

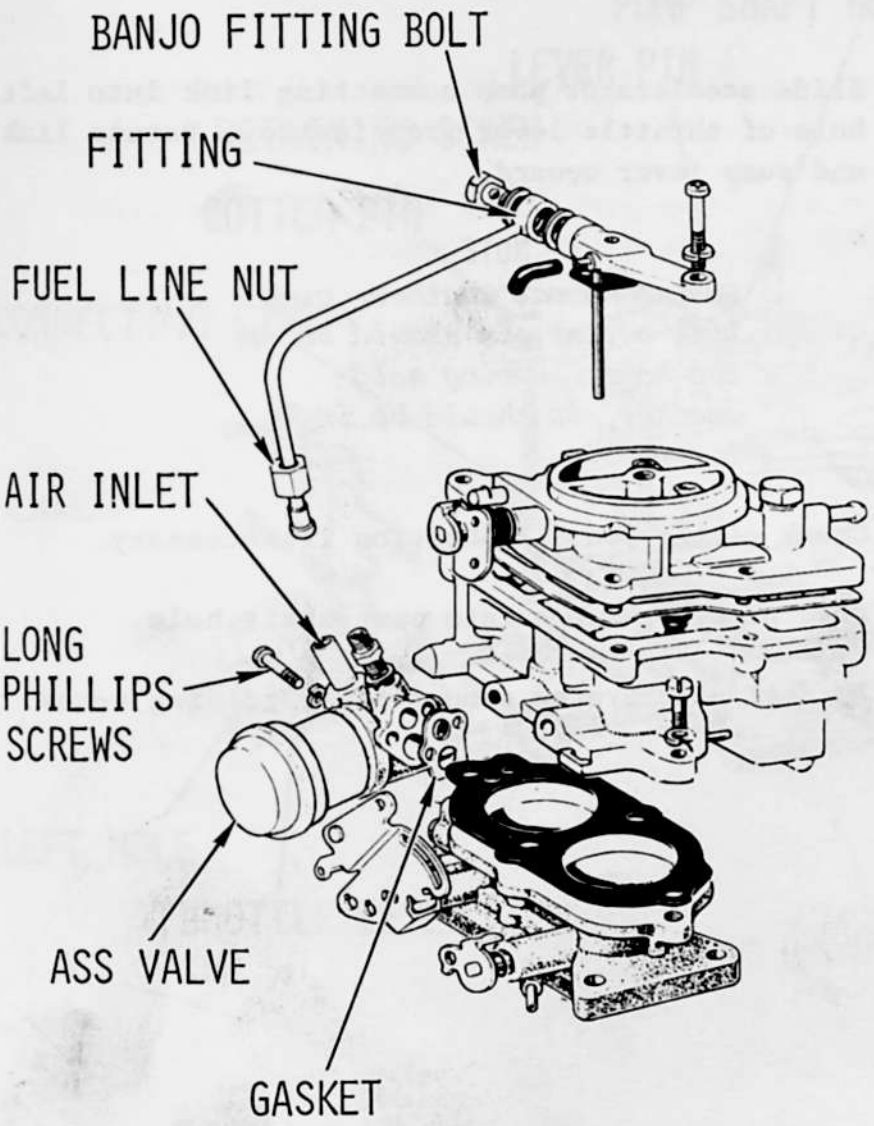
CAUTION

Always push ASS valve straight onto seat to prevent damage to tube ends.

42. Install ASS valve on flange. Draw valve tight with equal tension on 2 long Phillips screws and lockwashers.

43. Place washer on ASS adapter banjo fitting bolt. Install bolt through fitting and through second washer into adapter.

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44. Slide accelerator pump connecting link into left hole of throttle lever from inside. Rotate link and pump lever upward.

NOTE

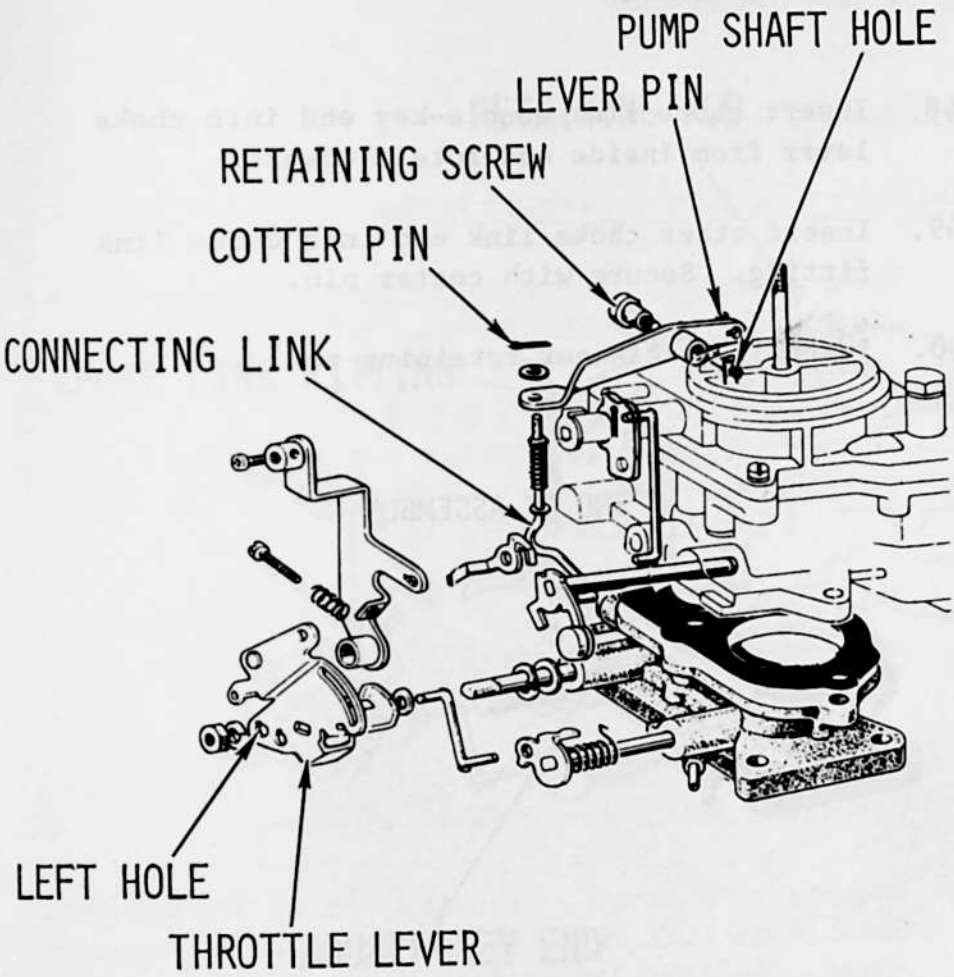
During normal weather, pump link cotter pin should be in top hole. During cold weather, it should be in lower hole.

45. Check cotter pin. Reposition if necessary.

46. Push pump lever pin into pump shaft hole.

47. Install accelerator pump lever retaining screw.

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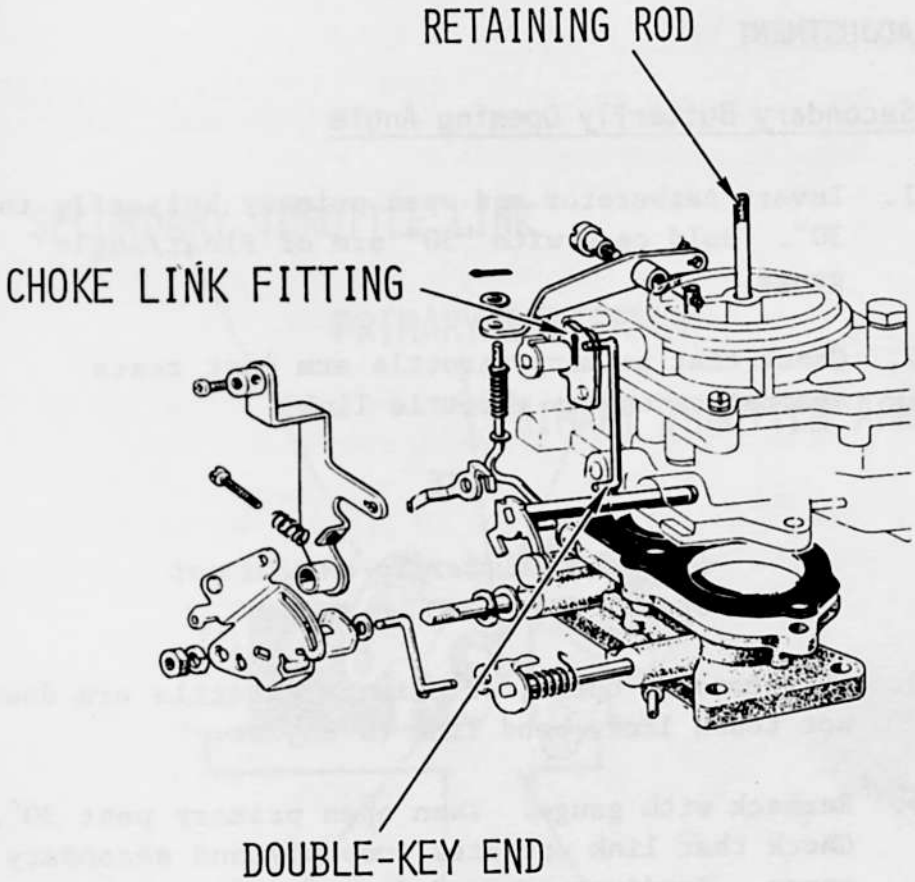
48. Insert choke link double-key end into choke lever from inside and rotate upward.

49. Insert other choke link end into choke link fitting. Secure with cotter pin.

50. Install air cleaner retaining rod.

END OF ASSEMBLY

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K-C, 3K-C CARBURETOR

ADJUSTMENT

Secondary Butterfly Opening Angle

1. Invert carburetor and open primary butterfly to 30°. Hold open with "30" arm of Float/Angle gauge.

2. Check that primary throttle arm just rests against secondary throttle link.

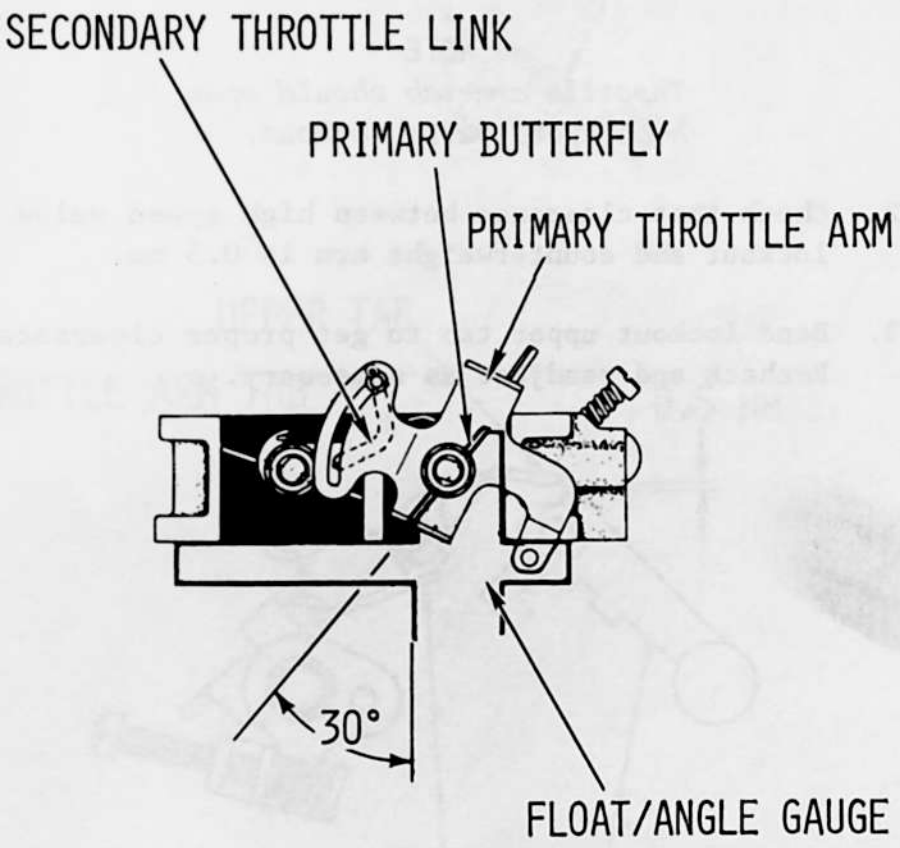
NOTE

Secondary butterfly should not open.

3. If secondary opens, or primary throttle arm does not touch link, bend link to adjust.

4. Recheck with gauge. Then open primary past 30°. Check that link operates smoothly and secondary opens. Readjust as needed.

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K-C, 3K-C CARBURETOR

High Speed Valve Lockout

1. Open primary throttle arm until it just rests against secondary link.

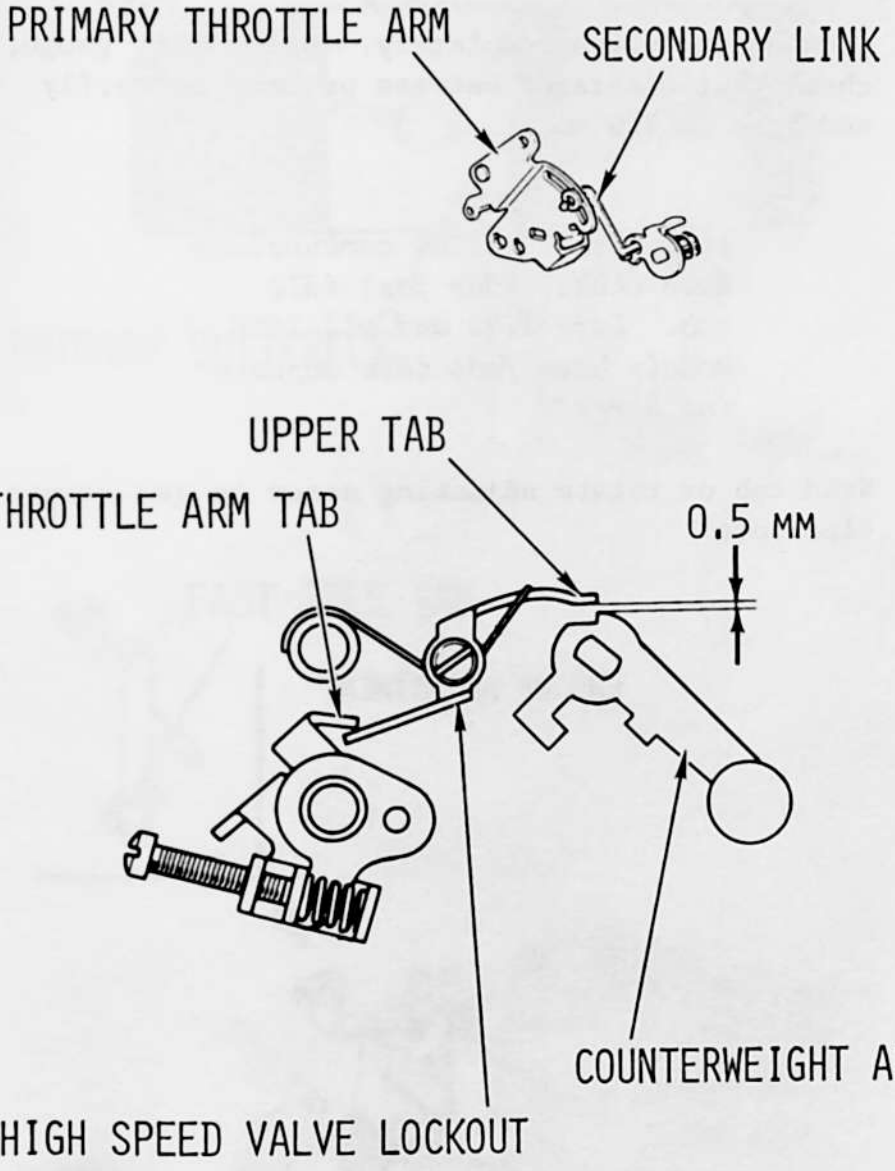
NOTE

Throttle arm tab should open high speed valve lockout.

2. Check that clearance between high speed valve lockout and counterweight arm is 0.5 mm.

3. Bend lockout upper tab to get proper clearance. Recheck and readjust as necessary.

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K-C, 3K-C CARBURETOR

Fast Idle

1. Close choke valve completely. Using wire gauge, check that clearance between primary butterfly and bore is 1.0 mm.

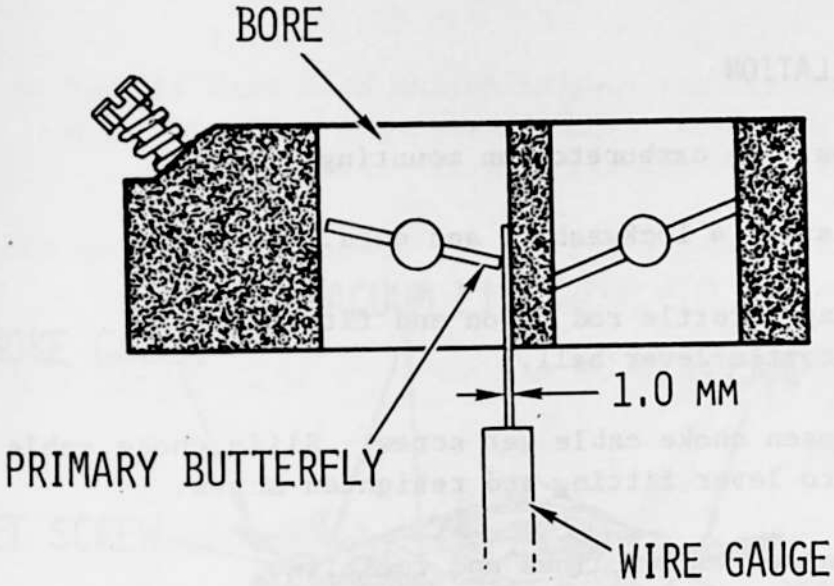
NOTE

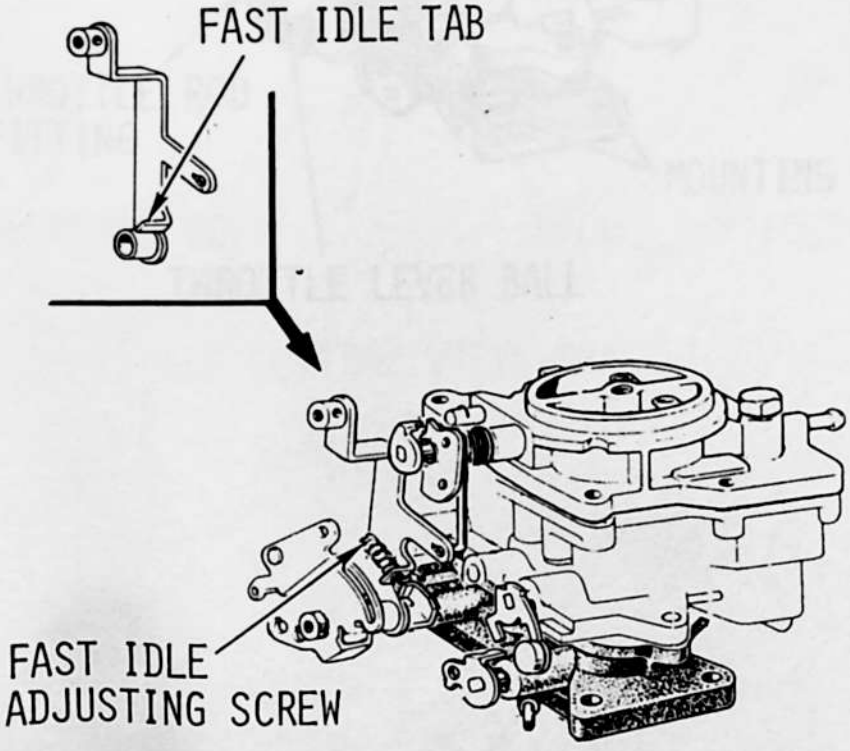
Early Corolla 1100 carburetors have choke lever fast idle tab. Late 1100 and all 1200 models have fast idle adjusting screw.

2. Bend tab or rotate adjusting screw to get proper clearance.

END OF ADJUSTMENT

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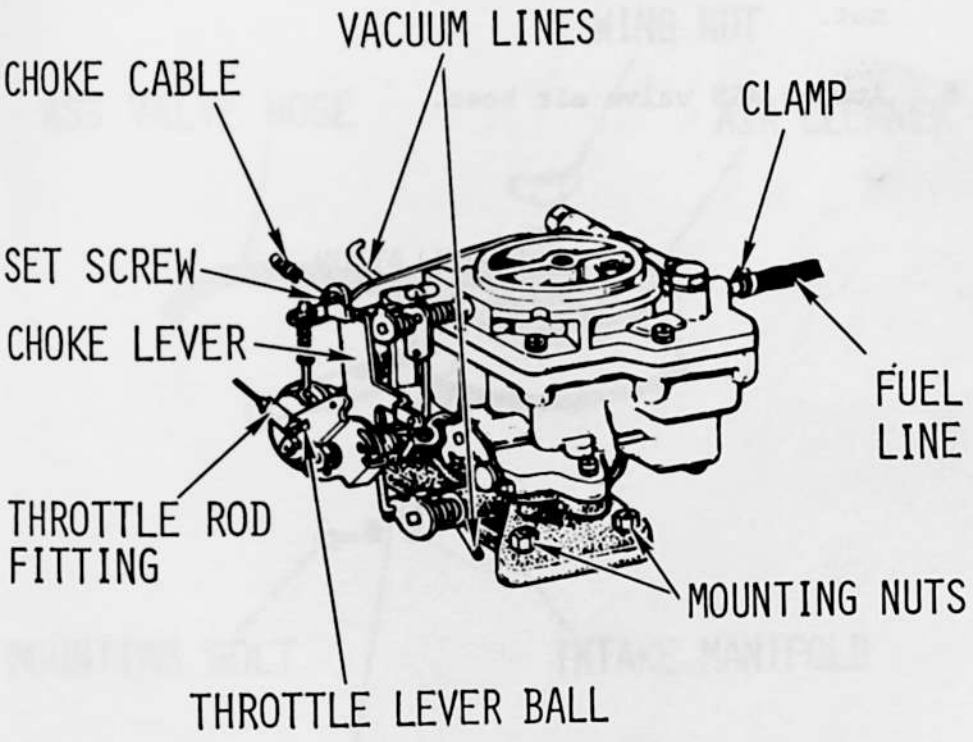
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K-C, 3K-C CARBURETOR

INSTALLATION

1. Position carburetor on mounting studs.
2. Install 4 lockwashers and nuts.
3. Snap throttle rod nylon end fitting onto throttle lever ball.
4. Loosen choke cable set screw. Slide choke cable into lever fitting and retighten screw.
5. Connect vacuum lines and fuel line.

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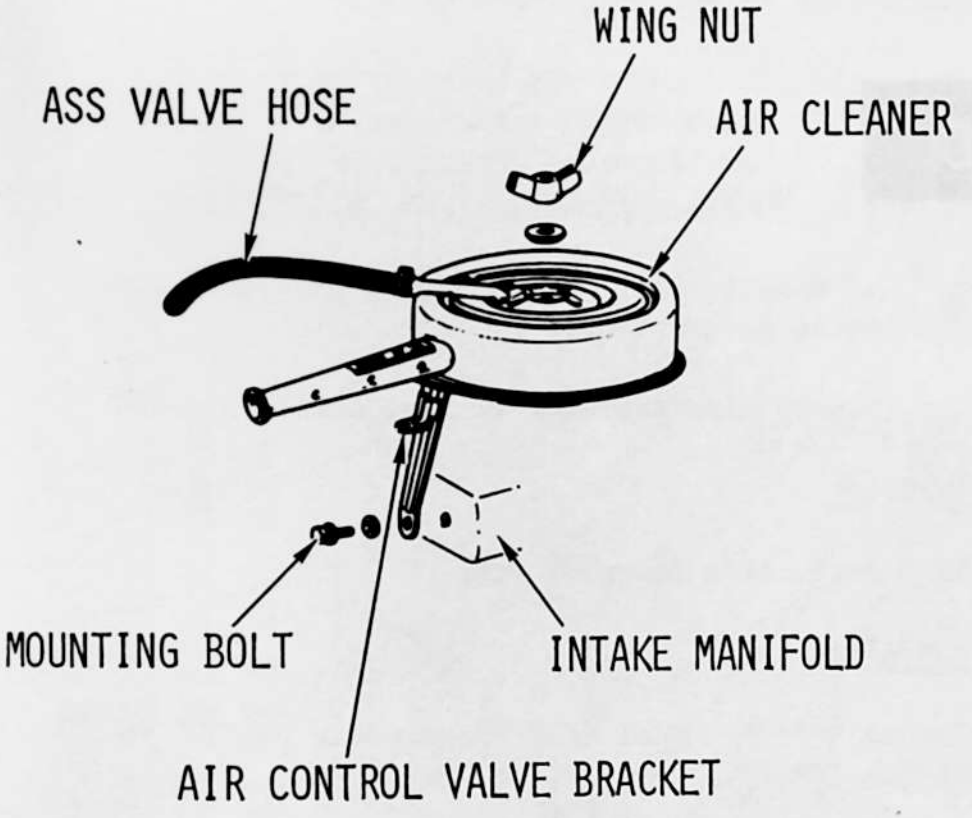
6. Install air cleaner bottom half with element on carburetor. Install mounting bolts in intake manifold and air-control valve bracket.

7. Position top half of air cleaner. Screw on wing nut.

8. Attach ASS valve air hose.

END OF INSTALLATION

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CORONA 3R-C

3

FUEL SYSTEMS MANUAL

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3R-C CARBURETOR OVERHAUL

JOB SETUP

Special Tools

Carburetor Screwdriver Set, 09860-11010.
Carburetor Adjust Kit, 09240-44010.

NOTE

To overhaul carburetor, a small pocket screwdriver must be modified.

1. Cut a slot 1/16" deep in blade tip of a small pocket screwdriver.

2. Squeeze tips together so they almost touch.

Supplies

3R-C Carburetor Overhaul Kit.

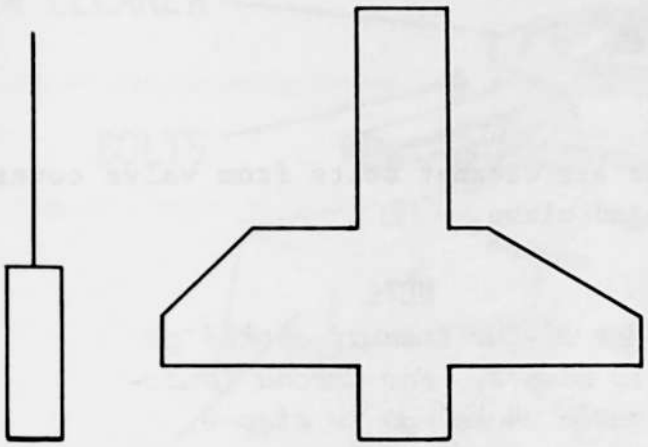
Vehicles

Corona (before model 83L) - automatic choke.
Hi-Lux (RN 11L) - manual choke.

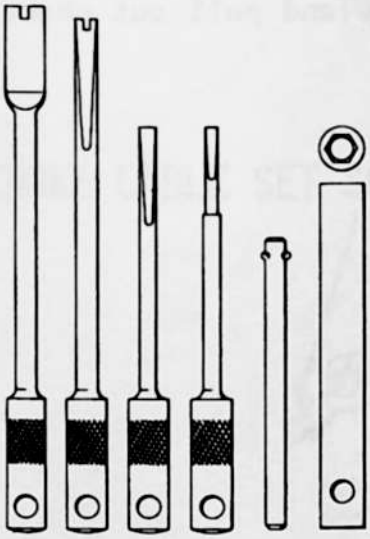
NOTE

Follow the steps in order, unless directed otherwise.

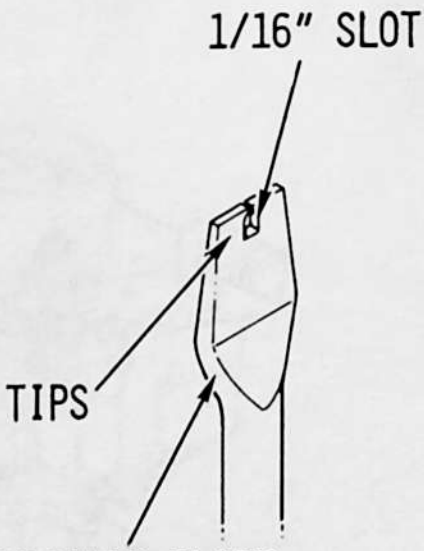
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CARBURETOR ADJUST KIT 09240-44010



SCREWDRIVER SET
09860-11010



MODIFIED SCREWDRIVER

8104

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3R-C CARBURETOR

REMOVAL

1. Unscrew 2 air cleaner bolts from valve cover. Loosen band clamp.

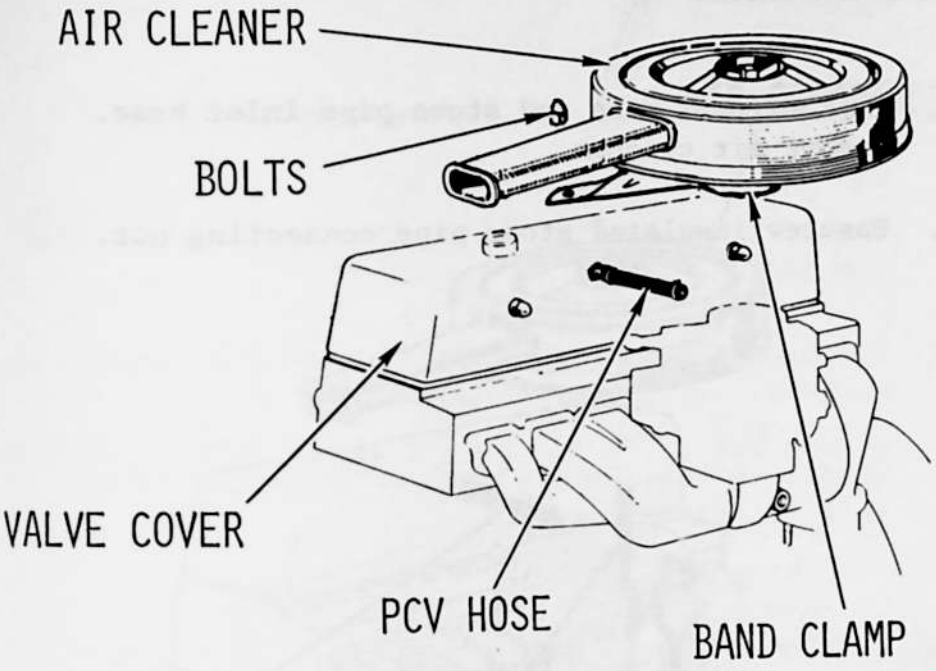
NOTE

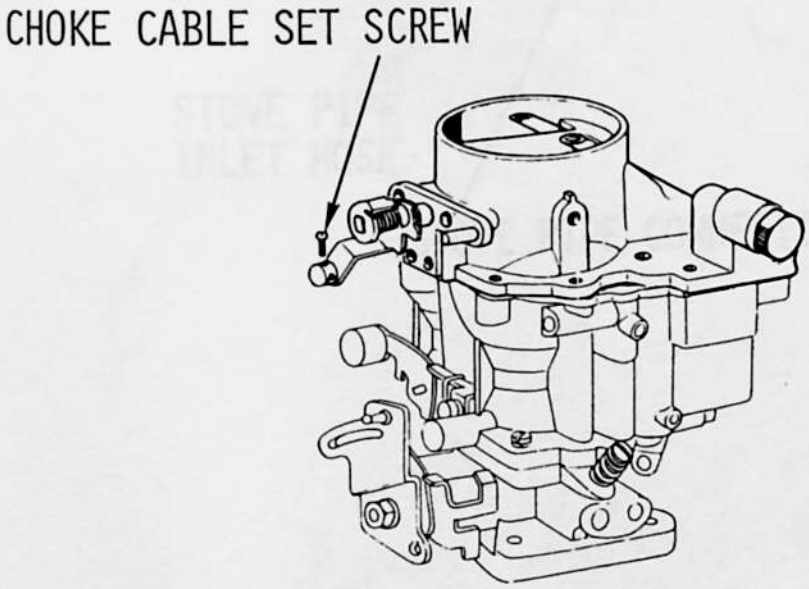
For Hi-Lux (manual choke) go to step 2. For Corona (automatic choke) go to step 4.

2. Pull off PCV hose and remove air cleaner.

3. Loosen choke cable set screw and pull out choke cable. Go to step 6.

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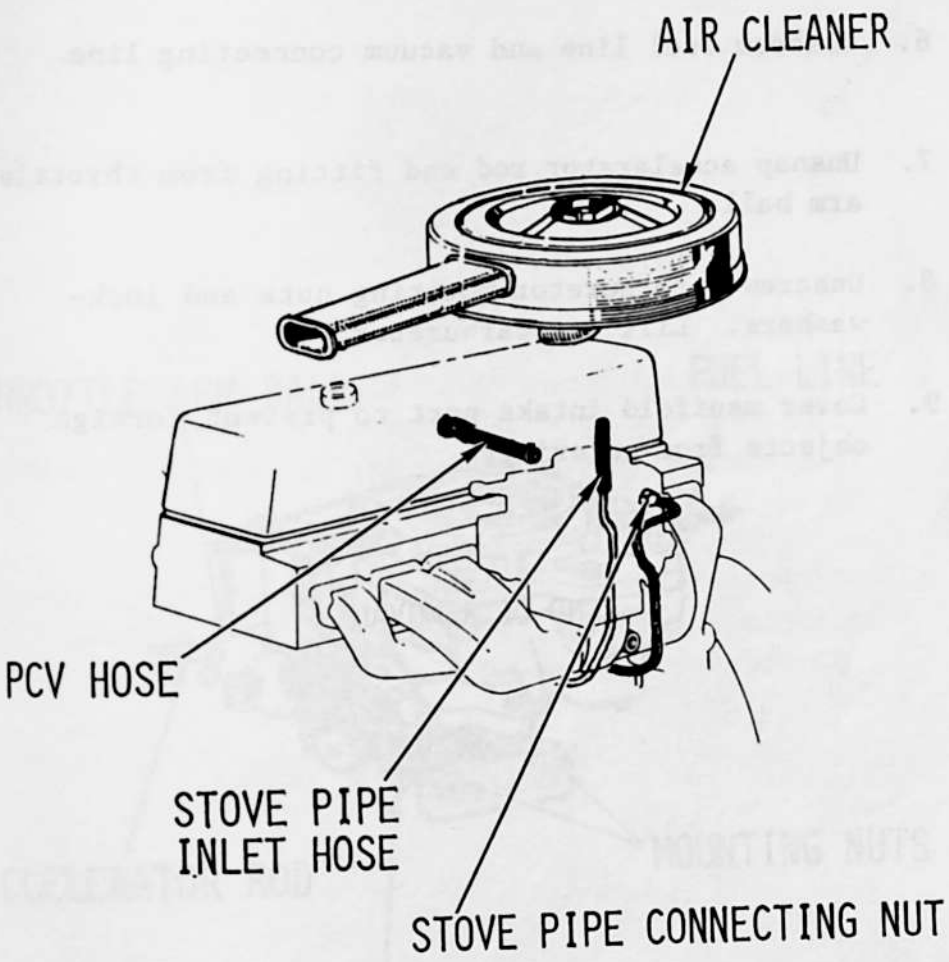
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4. Pull off PCV hose and stove pipe inlet hose. Remove air cleaner.

5. Unscrew insulated stove pipe connecting nut.

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6. Unscrew fuel line and vacuum connecting line.

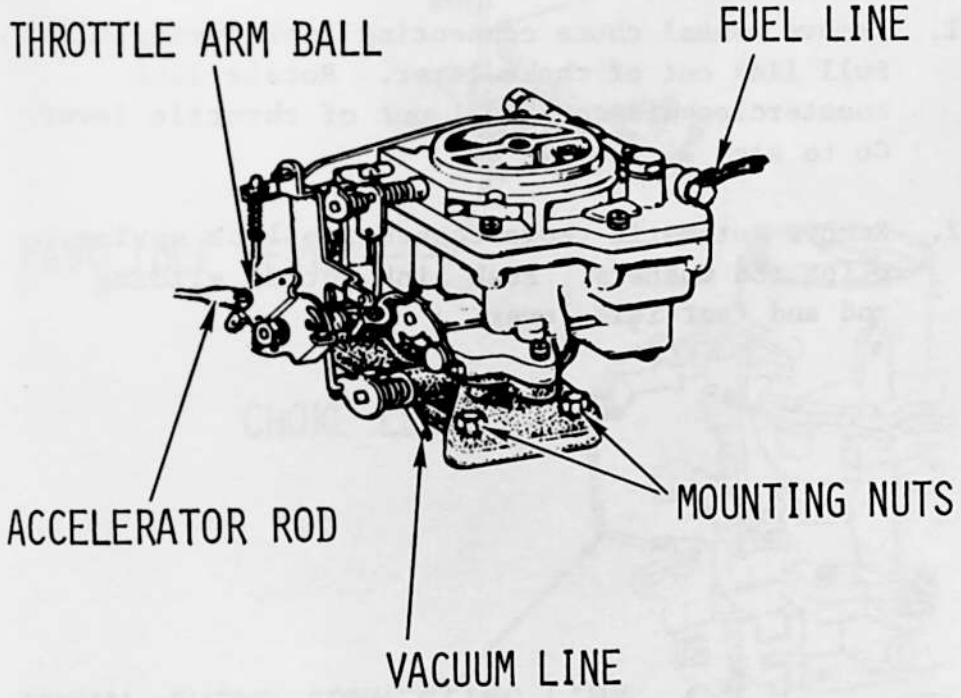
7. Unsnap accelerator rod end fitting from throttle arm ball.

8. Unscrew 4 carburetor mounting nuts and lock-washers. Lift off carburetor.

9. Cover manifold intake port to prevent foreign objects from entering.

END OF REMOVAL

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3R-C CARBURETOR

DISASSEMBLY

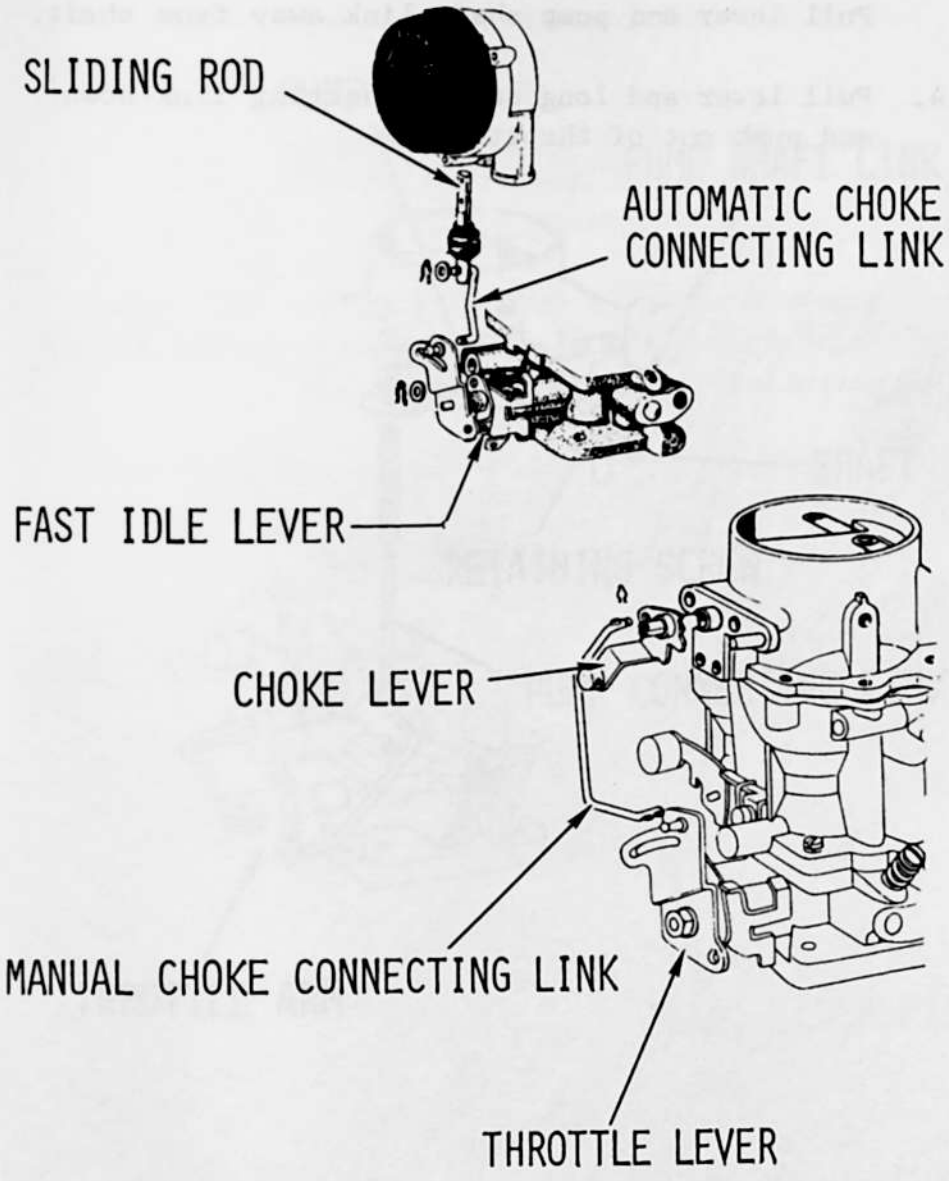
NOTE

For Hi-Lux (manual choke), start with step 1. For Corona (automatic choke), start with step 2.

1. Remove manual choke connecting link spring clip. Pull link out of choke lever. Rotate link counterclockwise and pull out of throttle lever. Go to step 3.

2. Remove automatic choke connecting link spring clips and washers. Push link out of sliding rod and fast idle lever.

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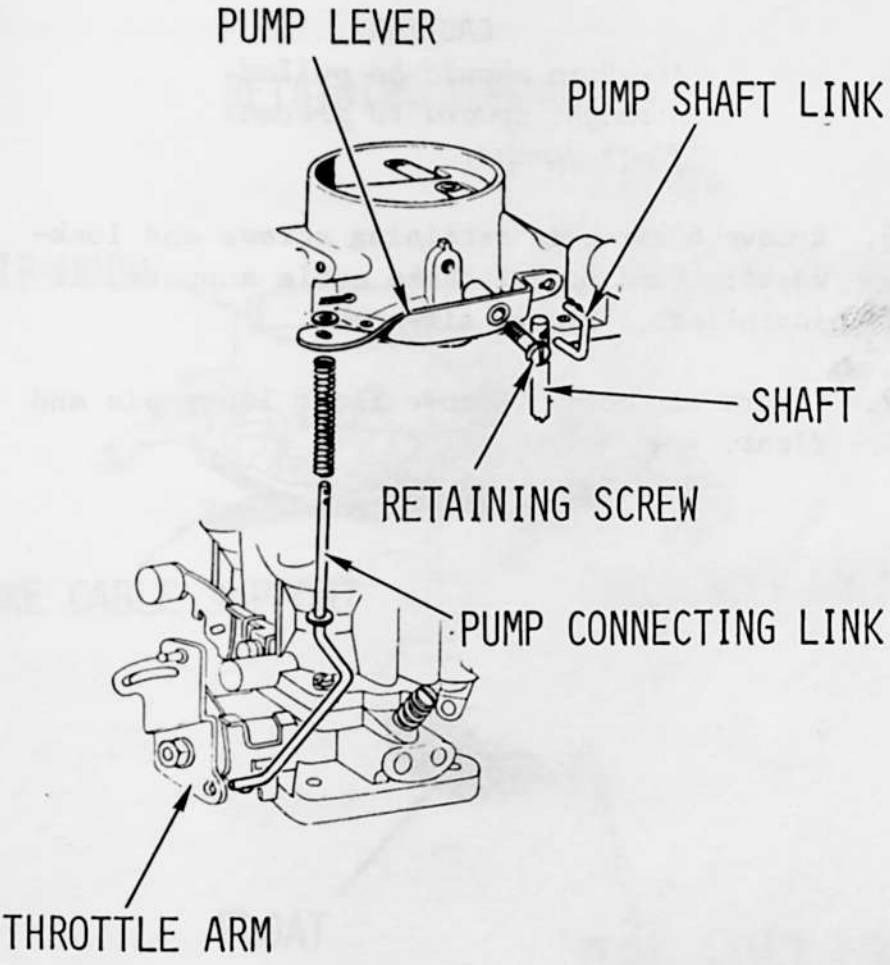


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3. Unscrew accelerator pump lever retaining screw. Pull lever and pump shaft link away from shaft.

4. Pull lever and long pump connecting link down and push out of throttle arm.

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5. Unscrew fuel inlet bolt, 2 gaskets, fuel banjo fitting, and strainer (soldered to bolt).

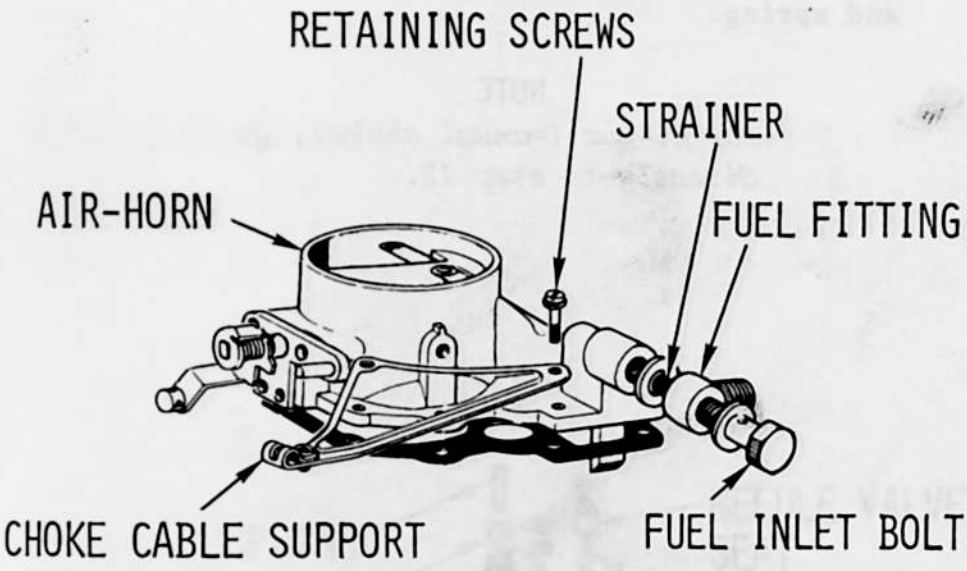
CAUTION

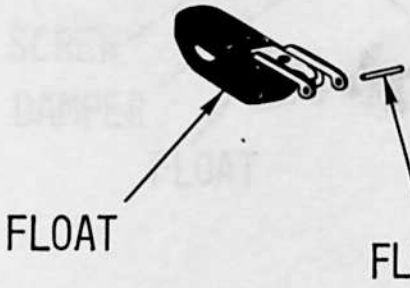
Air-Horn should be pulled straight upward to prevent float damage.

6. Remove 6 air-horn retaining screws and lock-washers (and manual choke cable support, if installed). Remove air-horn.

7. Invert air-horn. Remove float lever pin and float.

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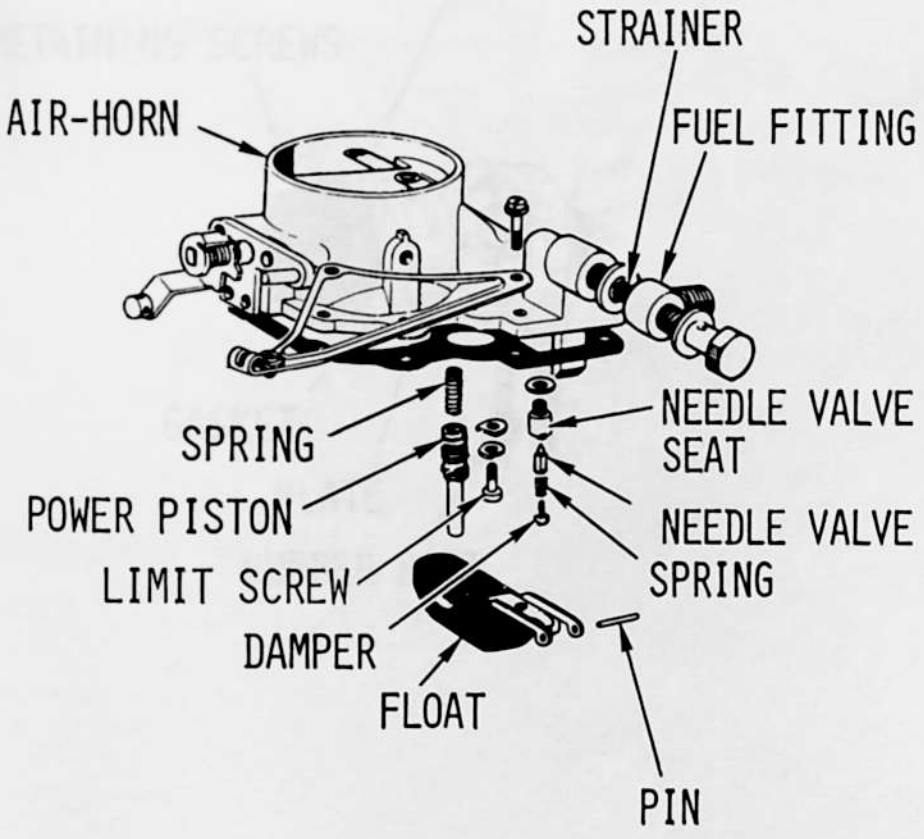
8. Remove needle valve, damper, and spring. Unscrew needle valve seat and gasket.

9. Loosen power piston limit screw. Remove piston and spring.

NOTE

For Hi-Lux (manual choke), go directly to step 12.

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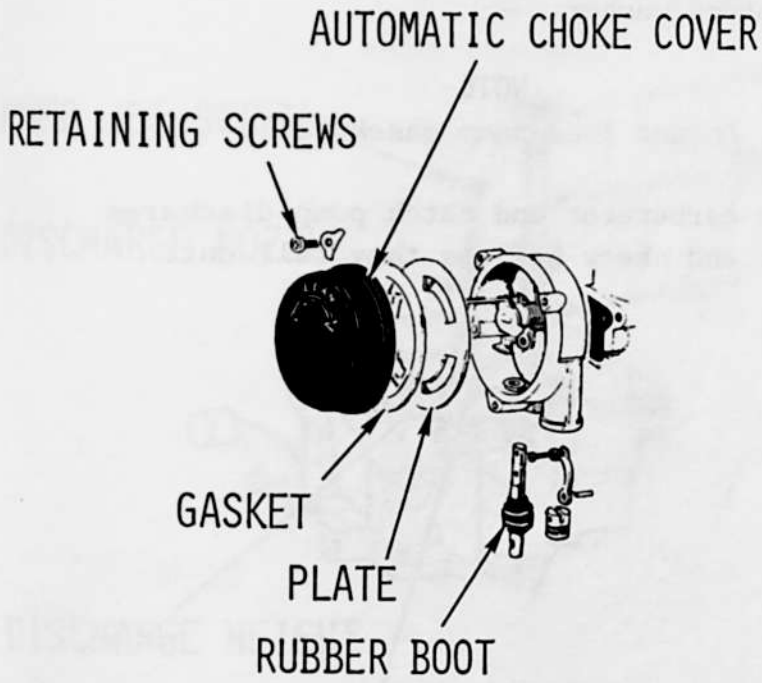


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10. Remove automatic choke cover, retaining screws and tabs. Remove cover, gasket, and plate.

11. Remove rubber boot.

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12. Pull accelerator pump shaft, guide, and spring from main body.

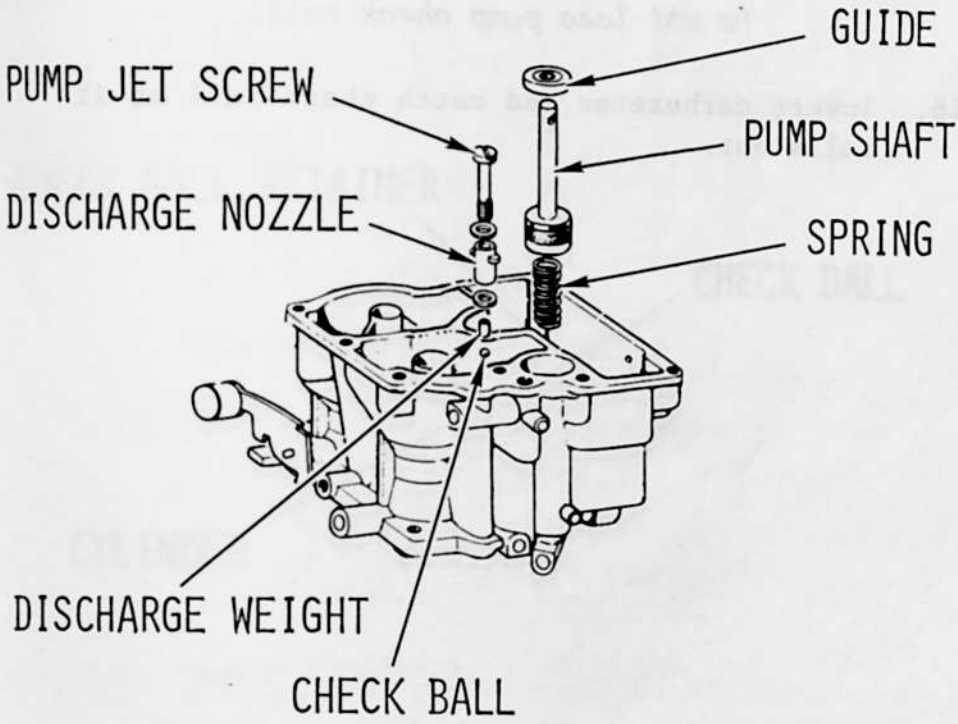
13. Remove pump jet screw, washer, discharge nozzle and second washer.

NOTE

Do not lose pump check ball.

14. Invert carburetor and catch pump discharge weight and check ball as they fall out.

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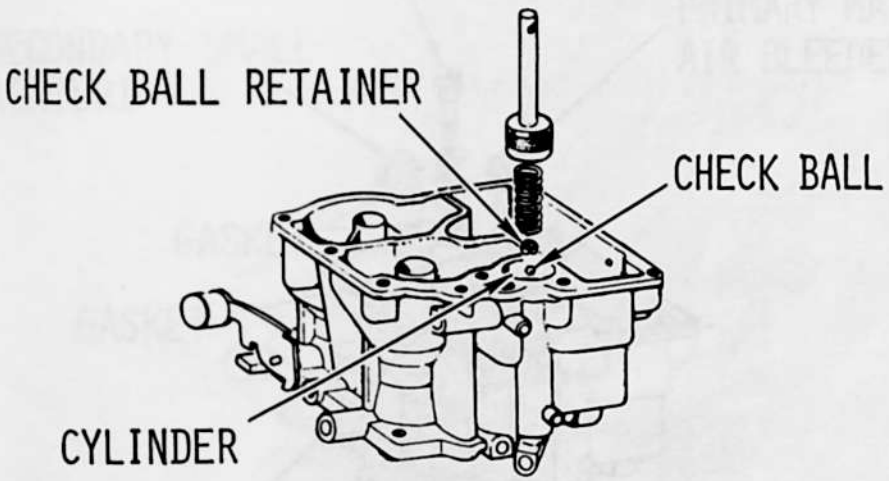
15. Grasp check ball retainer in pump cylinder with slotted screwdriver. Rotate screwdriver to compress retainer and pull retainer out.

NOTE

Do not lose pump check ball.

16. Invert carburetor and catch check ball as it falls out.

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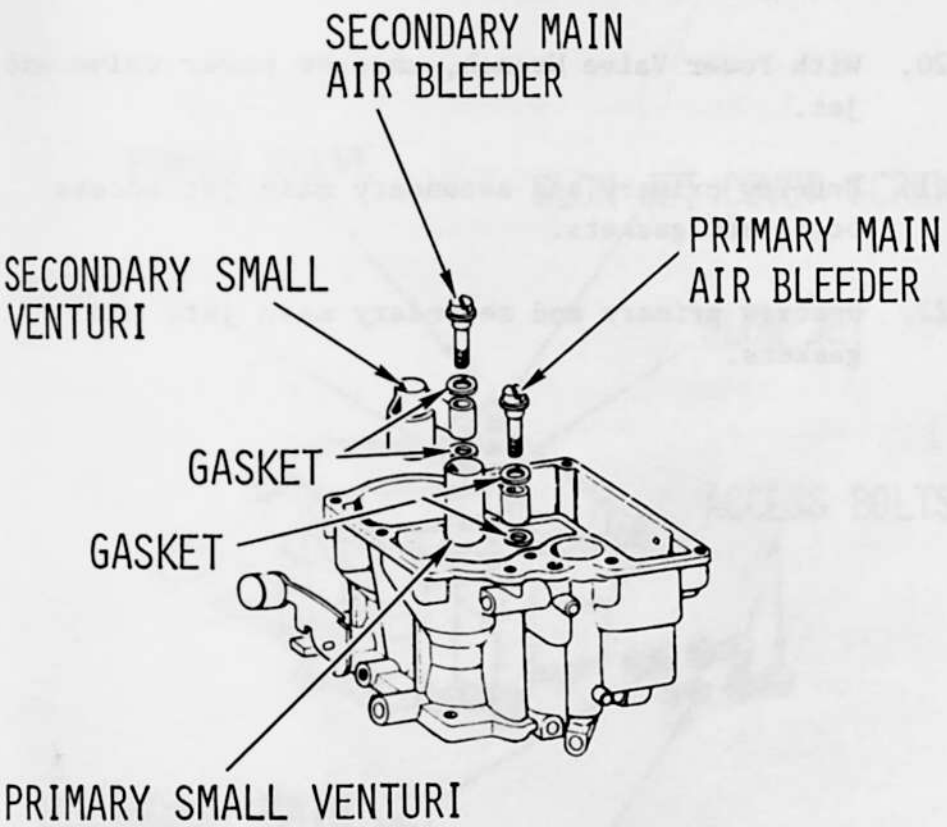
8093

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17. Unscrew primary main air bleeder with gasket, primary small venturi, and second gasket.

18. Unscrew secondary main air bleeder with gasket, secondary small venturi, and second gasket.

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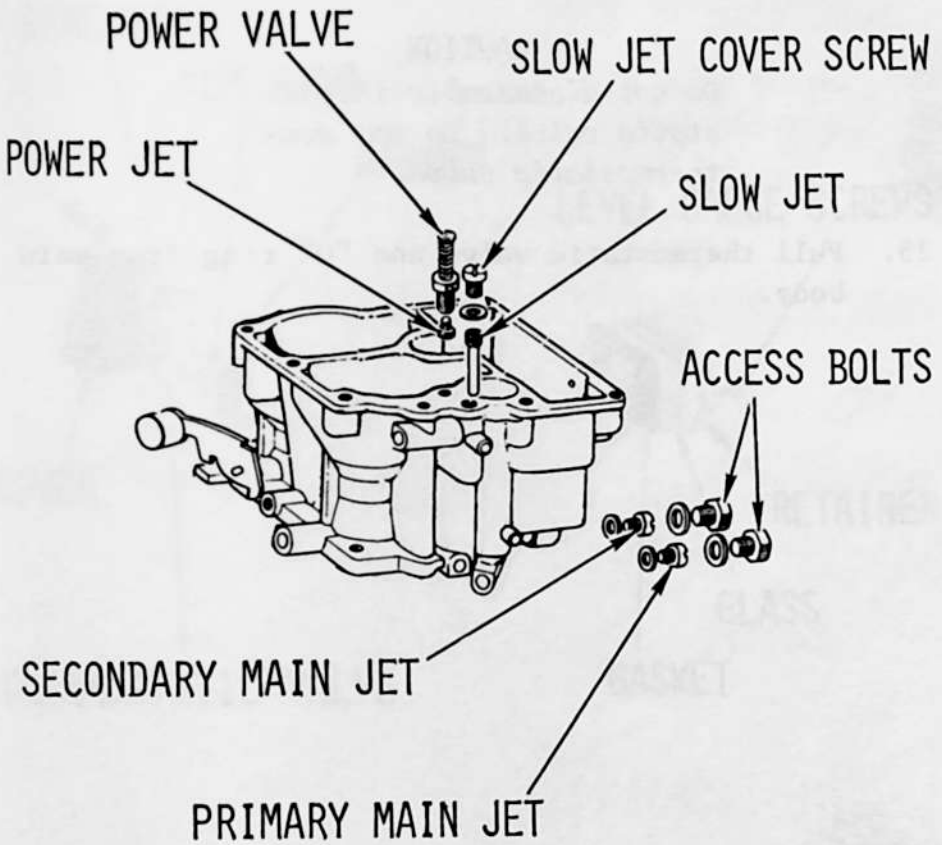
19. Remove slow jet cover screw and washer. Unscrew slow jet.

20. With Power Valve Wrench, unscrew power valve and jet.

21. Unscrew primary and secondary main jet access bolts and gaskets.

22. Unscrew primary and secondary main jets and gaskets.

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23. Remove fuel level gauge retainer screws. Remove retainer, glass, and gasket.

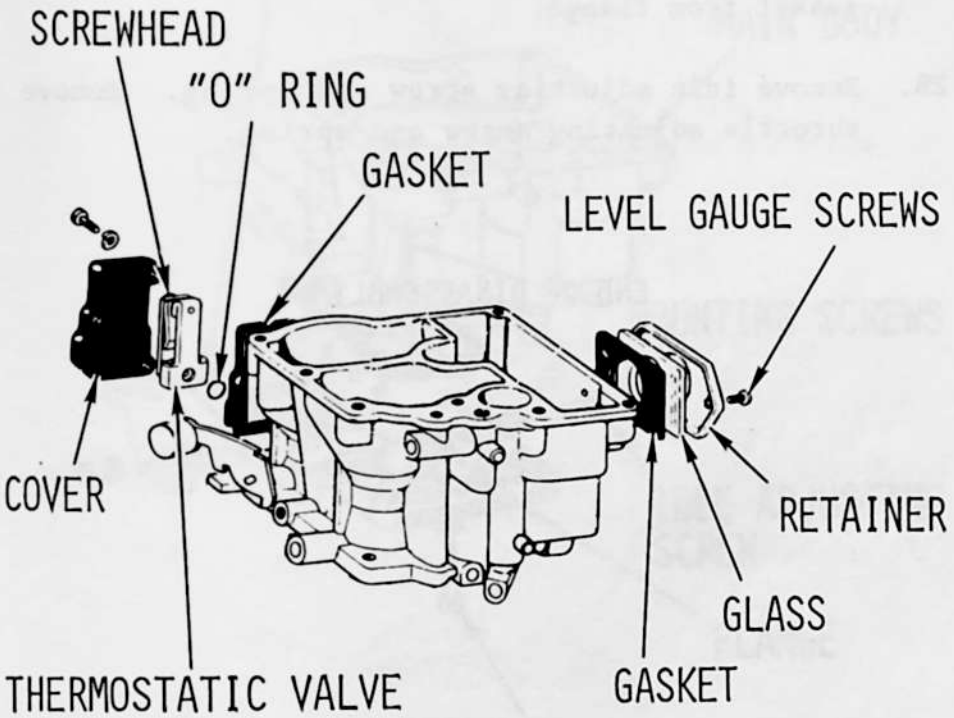
24. Remove thermostatic valve cover retaining screws and lockwashers. Remove cover and gasket.

CAUTION

Do not disassemble thermostatic valve. Do not soak thermostatic valve.

25. Pull thermostatic valve and "O" ring from main body.

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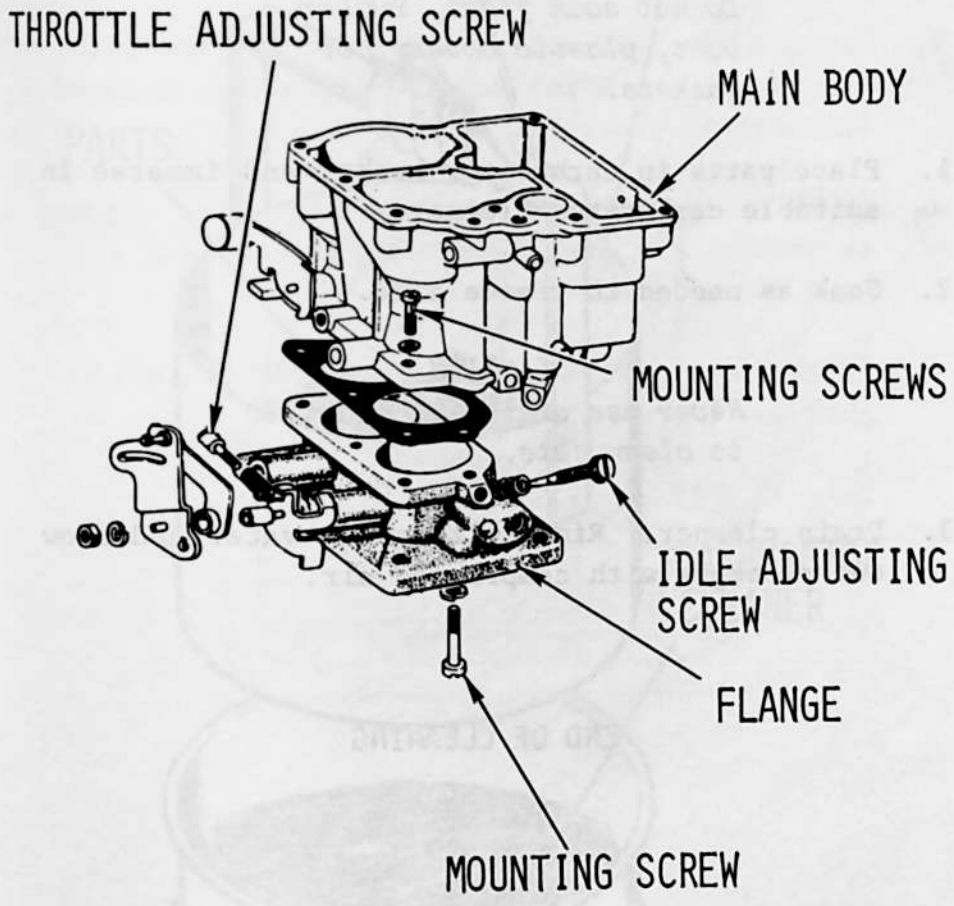
26. Remove 2 main body mounting screws and lockwashers.

27. Invert carburetor and remove main body mounting screw and lockwasher. Separate main body and gasket from flange.

28. Remove idle adjusting screw and spring. Remove throttle adjusting screw and spring.

END OF DISASSEMBLY

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3R-C CARBURETOR

CLEANING

CAUTION

Do not soak float, rubber boot, plastic covers, or gaskets.

1. Place parts in carburetor basket and immerse in suitable carburetor cleaner.

2. Soak as needed to remove dirt.

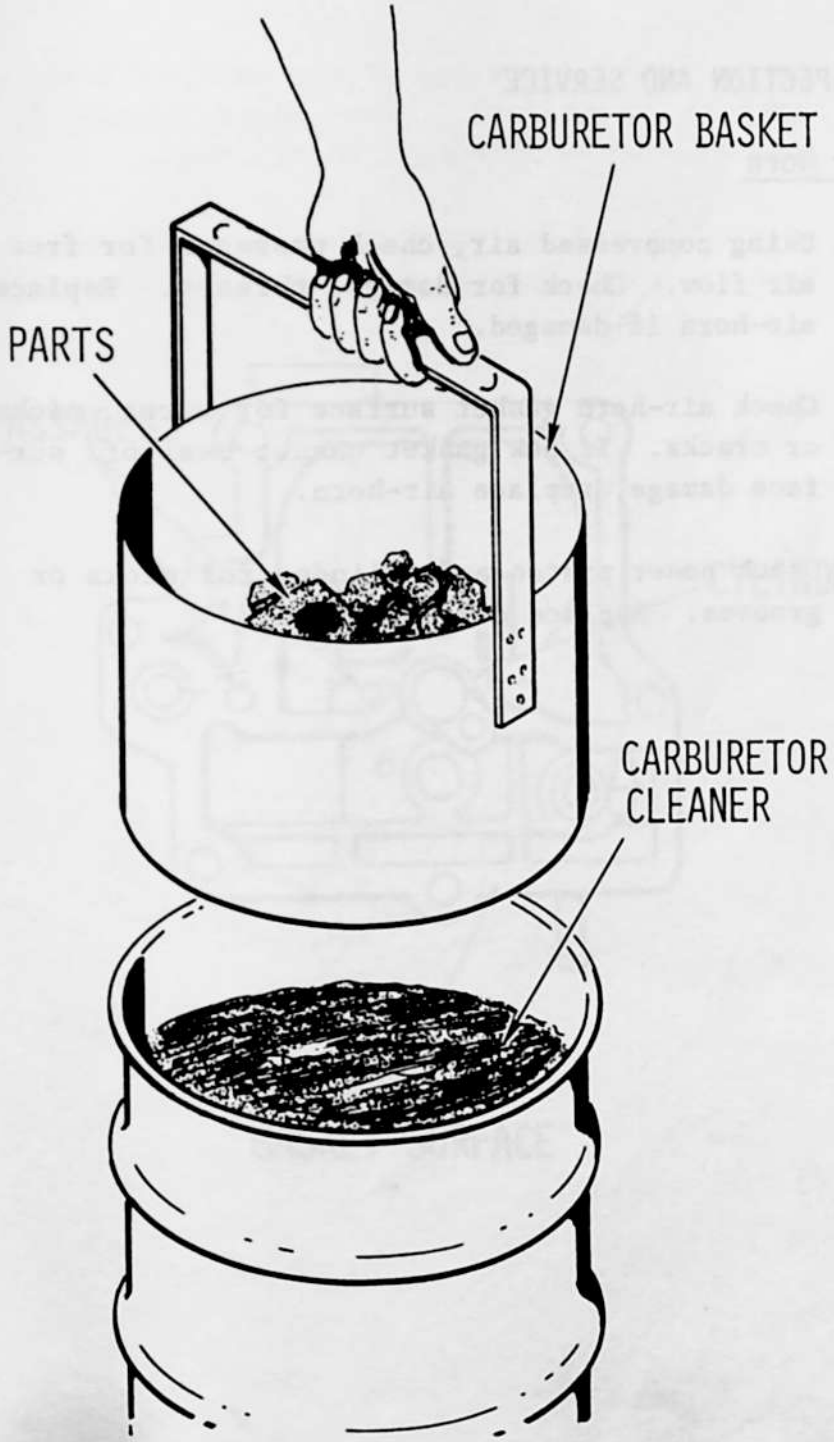
CAUTION

Never use a wire or a drill to clean jets.

3. Drain cleaner. Rinse with clean water and blow out passages with compressed air.

END OF CLEANING

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3R-C CARBURETOR

INSPECTION AND SERVICE

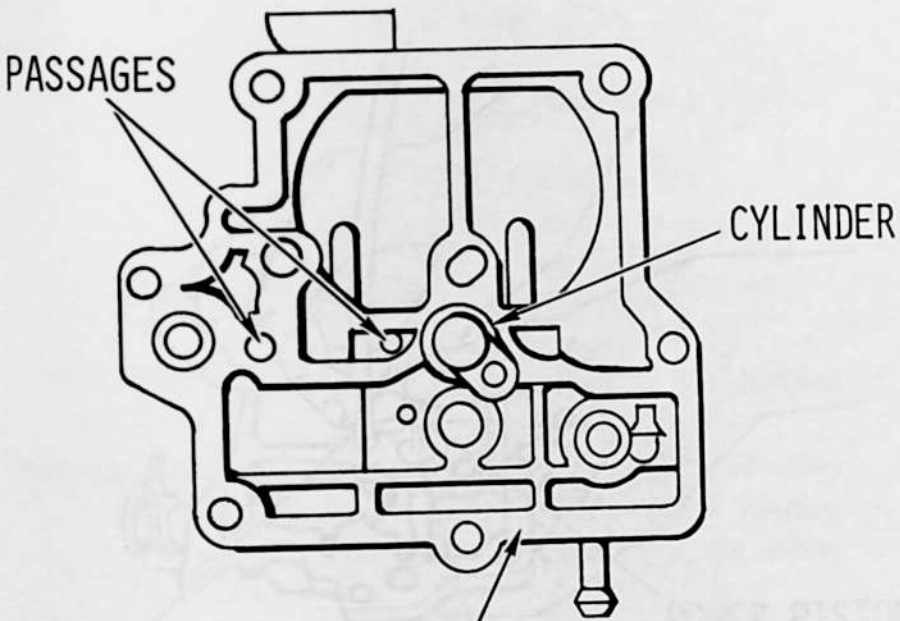
Air Horn

1. Using compressed air, check passages for free air flow. Check for damaged threads. Replace air-horn if damaged.

2. Check air-horn gasket surface for burrs, nicks or cracks. If new gasket cannot seal off surface damage, replace air-horn.

3. Check power piston and cylinder for nicks or grooves. Replace damaged parts.

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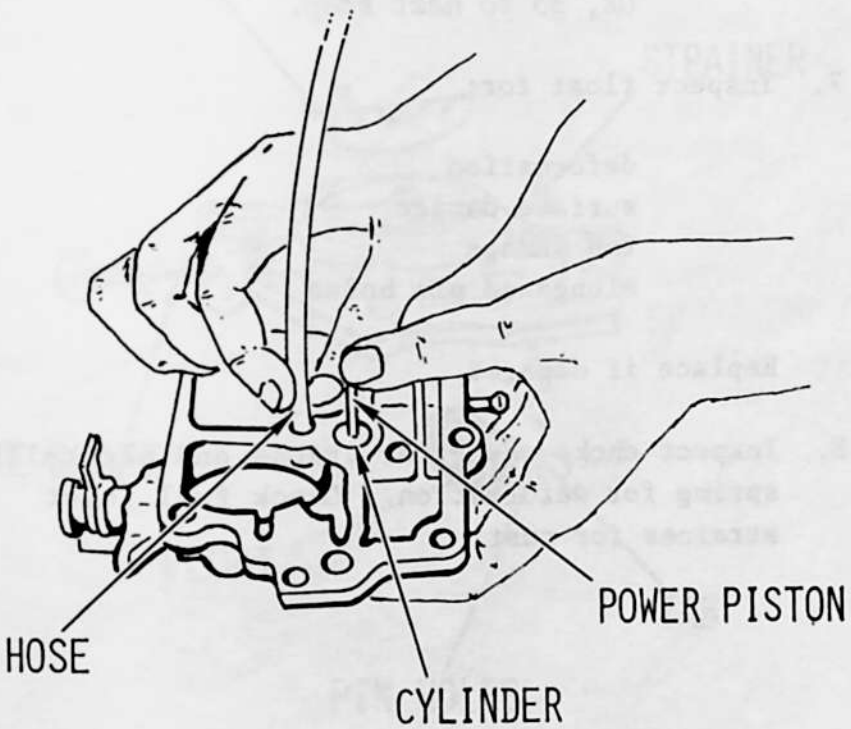
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4. Insert power piston and spring into cylinder and tighten retainer. Place short length of hose over small hole next to cylinder.

5. Breathe in and out through hose. Check air leak and smooth piston movement against spring.

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6. Inspect choke butterfly for deformation. Check valve for smooth movement and excessive shaft play in bore.

NOTE

If shaft is sloppy or binds, go to SPECIAL SERVICING. If OK, go to next step.

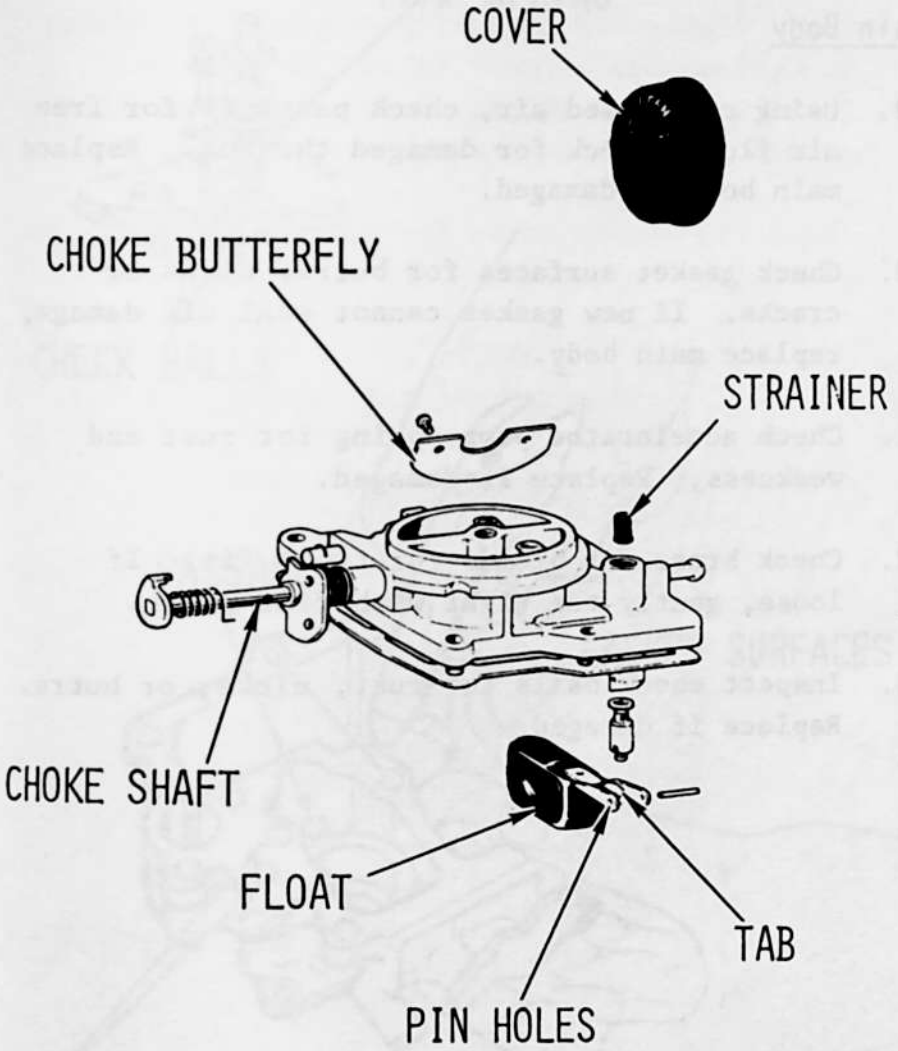
7. Inspect float for:

deformation
surface damage
tab damage
elongated pin holes

Replace if damaged.

8. Inspect choke cover for cracks and bimetallic spring for deformation. Check fuel inlet strainer for rust.

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3R-C CARBURETOR

Main Body

9. Using compressed air, check passages for free air flow. Check for damaged threads. Replace main body if damaged.

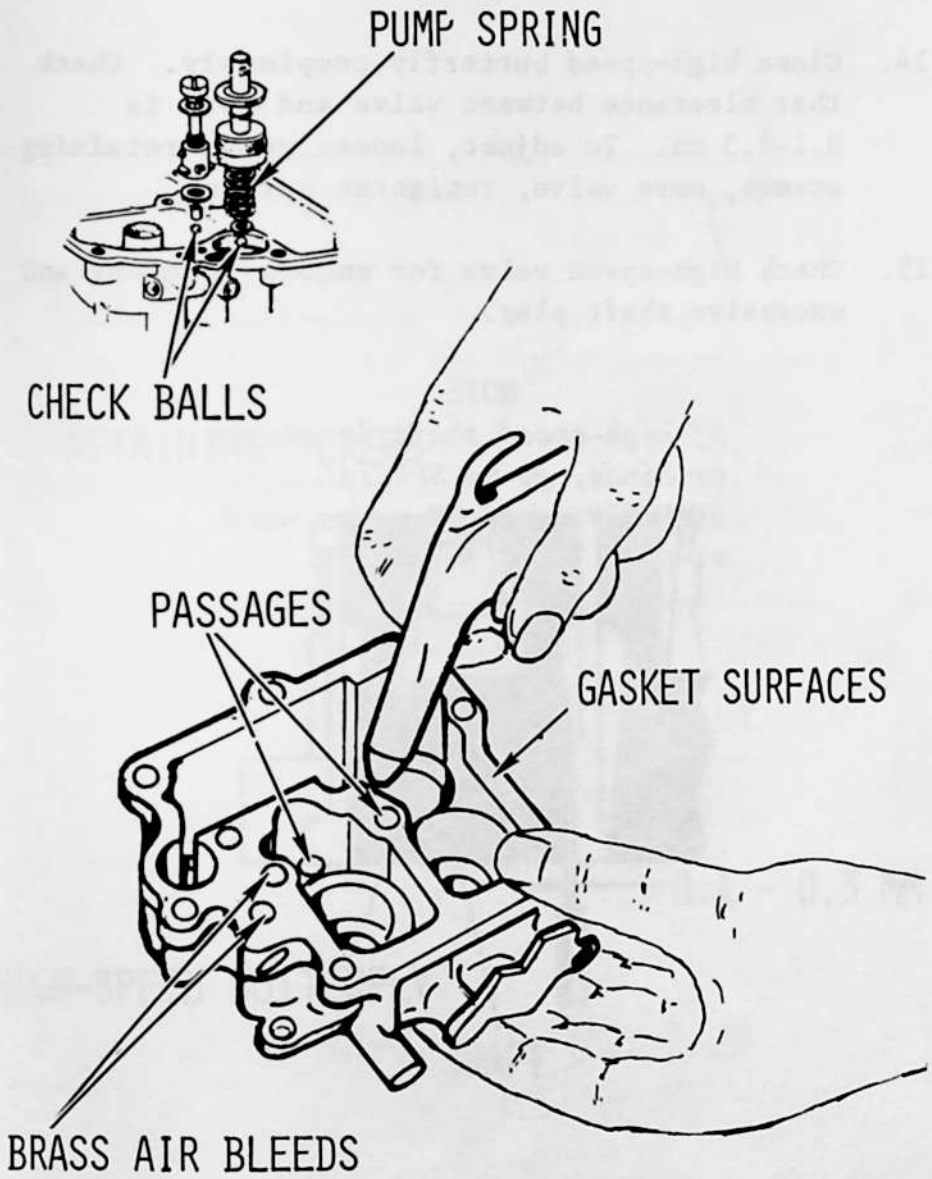
10. Check gasket surfaces for burrs, nicks or cracks. If new gasket cannot seal off damage, replace main body.

11. Check accelerator pump spring for rust and weakness. Replace if damaged.

12. Check brass air bleeds for tight fit. If loose, gently tap tight with flat punch.

13. Inspect check balls for rust, nicks, or burrs. Replace if damaged.

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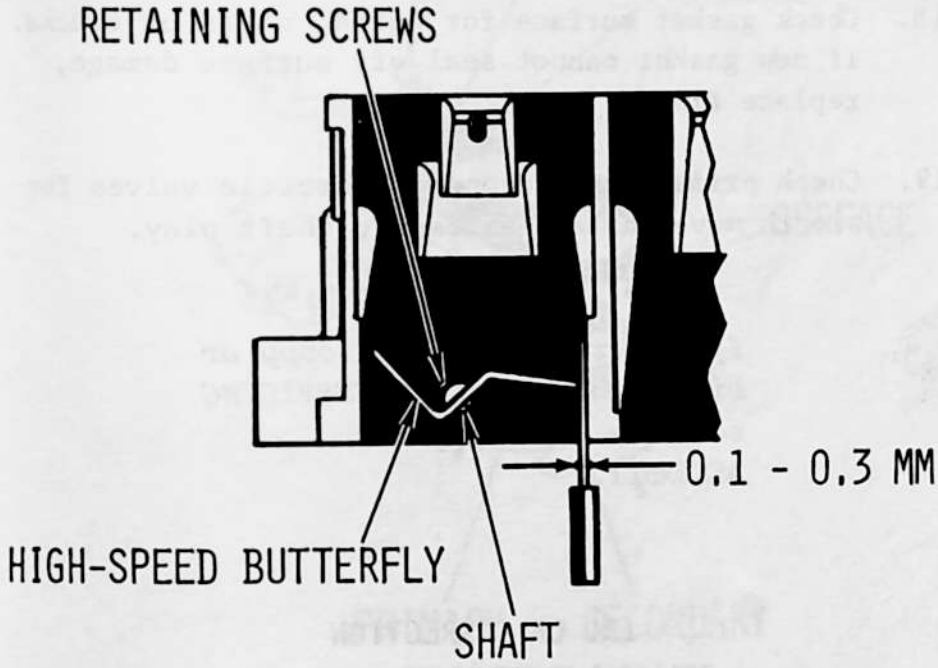
14. Close high-speed butterfly completely. Check that clearance between valve and bore is 0.1-0.3 mm. To adjust, loosen valve retaining screws, move valve, retighten screws.

15. Check high-speed valve for smooth movement and excessive shaft play.

NOTE

If high-speed shaft is sloppy or binds, go to SPECIAL SERVICING. If OK go to next step.

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Flange

16. Using compressed air, check passages for free air flow. Check for damaged threads. Replace flange if damaged.

17. Using fingernail, check idle adjusting screw taper for smoothness and for thread damage.

18. Check gasket surface for burrs, nicks or cracks. If new gasket cannot seal off surface damage, replace flange.

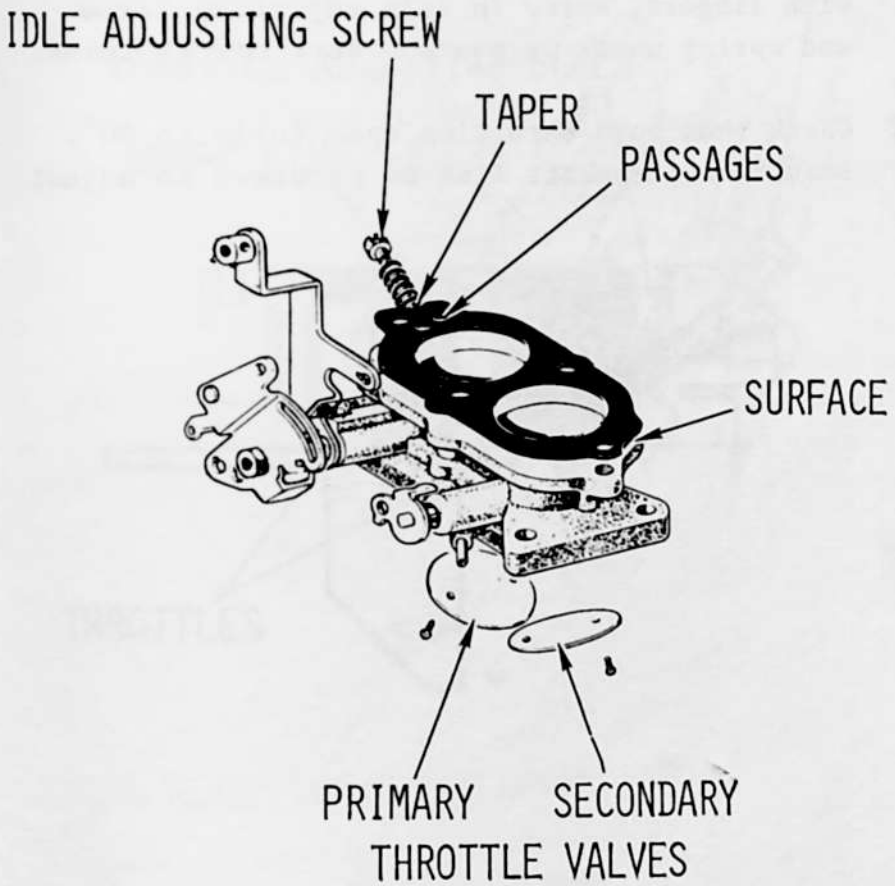
19. Check primary and secondary throttle valves for smooth movement and excessive shaft play.

NOTE

If throttle shaft is sloppy or binds, go to SPECIAL SERVICING section. If OK, go to ASSEMBLY.

END OF INSPECTION

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3R-C CARBURETOR

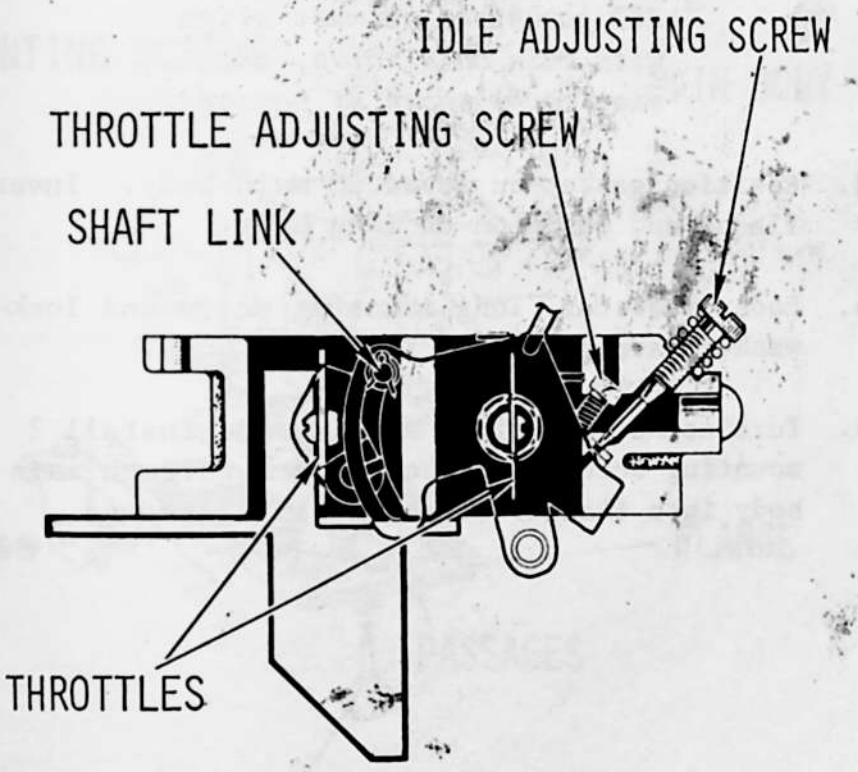
ASSEMBLY

Flange

1. Screw in throttle adjusting screw and spring. With fingers, screw in idle adjusting screw and spring until it seats. Back off 2½ turns.

2. Check that both throttles open fully to 90°. Bend throttle shaft link as required to adjust.

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3R-C CARBURETOR

Main Body

CAUTION

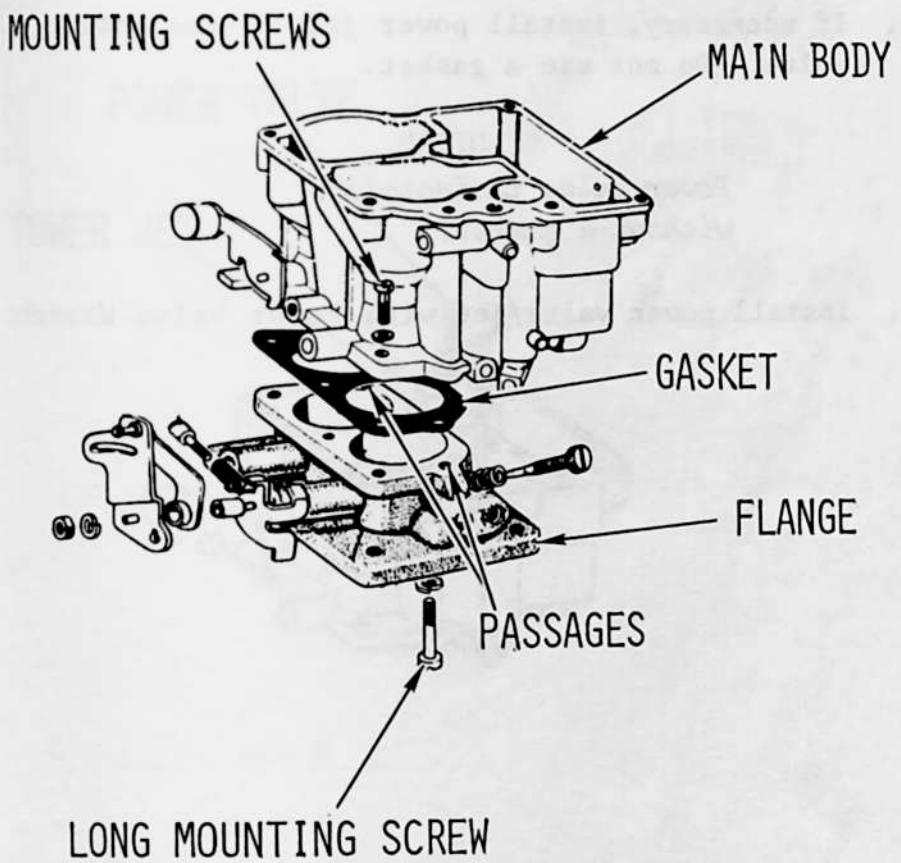
All gasket holes must align with main body holes, and must cover edges of passages.

3. Position gasket on inverted main body. Invert flange and position on main body.

4. Loosely install long mounting screw and lockwasher through flange into main body.

5. Turn carburetor right side up and install 2 mounting screws and lockwashers through main body into flange. Tighten all 3 screws.

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NOTE

Early overhaul kits do not supply power valve jet.

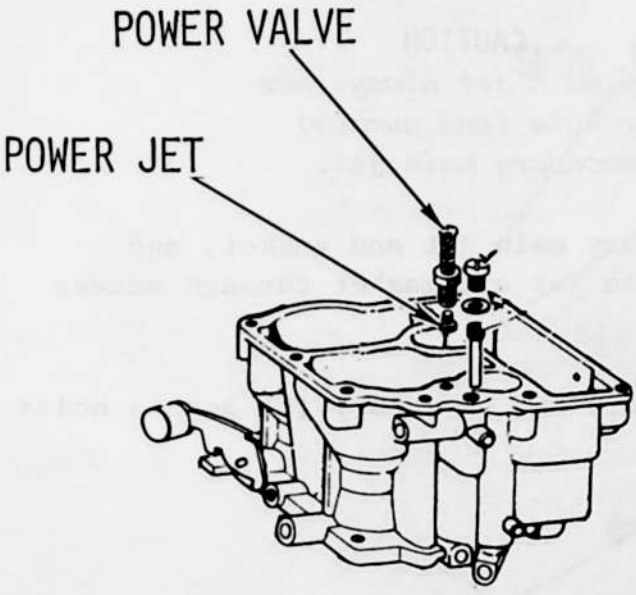
6. If necessary, install power jet in new power valve. Do not use a gasket.

CAUTION

Power valve is installed without a gasket.

7. Install power valve/jet with Power Valve Wrench.

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CAUTION

Slow jet is installed without a gasket.

8. Install slow jet.

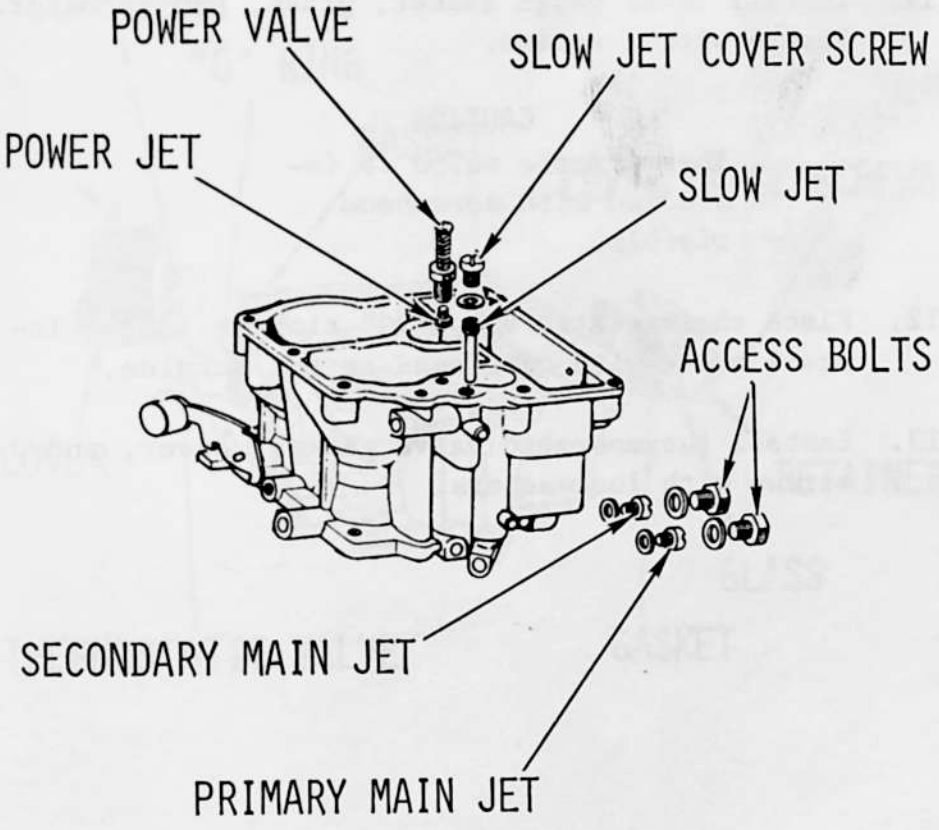
CAUTION

Primary main jet always has smaller hole (and number) than secondary main jet.

9. Install primary main jet and gasket, and secondary main jet and gasket through access holes.

10. Install primary and secondary jet access bolts and gaskets.

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NOTE

Level glass is installed with bubble out and with level line horizontal.

11. Install level gauge gasket, glass, and retainer. Secure with 2 screws.

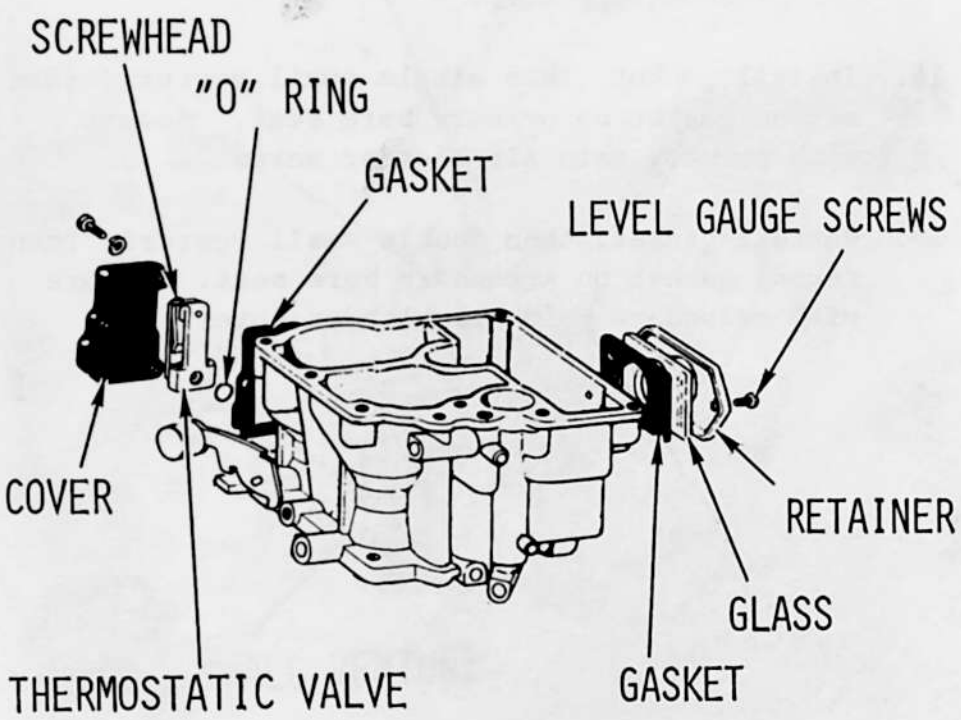
CAUTION

Thermostatic valve is installed with screwhead visible.

12. Place thermostatic valve "O" ring in seat. Install valve with screwhead at top outside.

13. Install thermostatic valve gasket, cover, and 3 screws with lockwashers.

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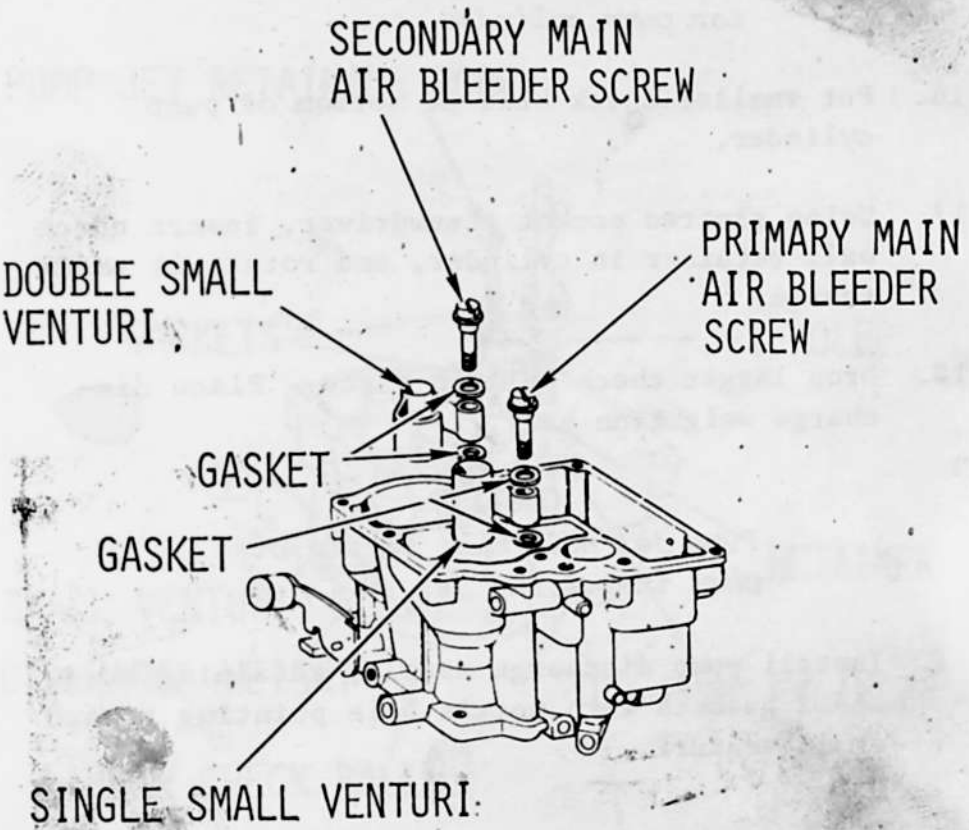
NOTE

Single small venturi is installed in primary bore, and double small venturi in secondary bore.

14. Install gasket, then single small venturi; then second gasket on primary bore seat. Secure with primary main air bleeder screw.

15. Install gasket, then double small venturi, then second gasket on secondary bore seat. Secure with secondary main air bleeder screw.

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CAUTION

Smaller ball is for accelerator pump cylinder.

16. Put smaller check ball at bottom of pump cylinder.

17. Using slotted pocket screwdriver, insert check ball retainer in cylinder, and rotate it until seated.

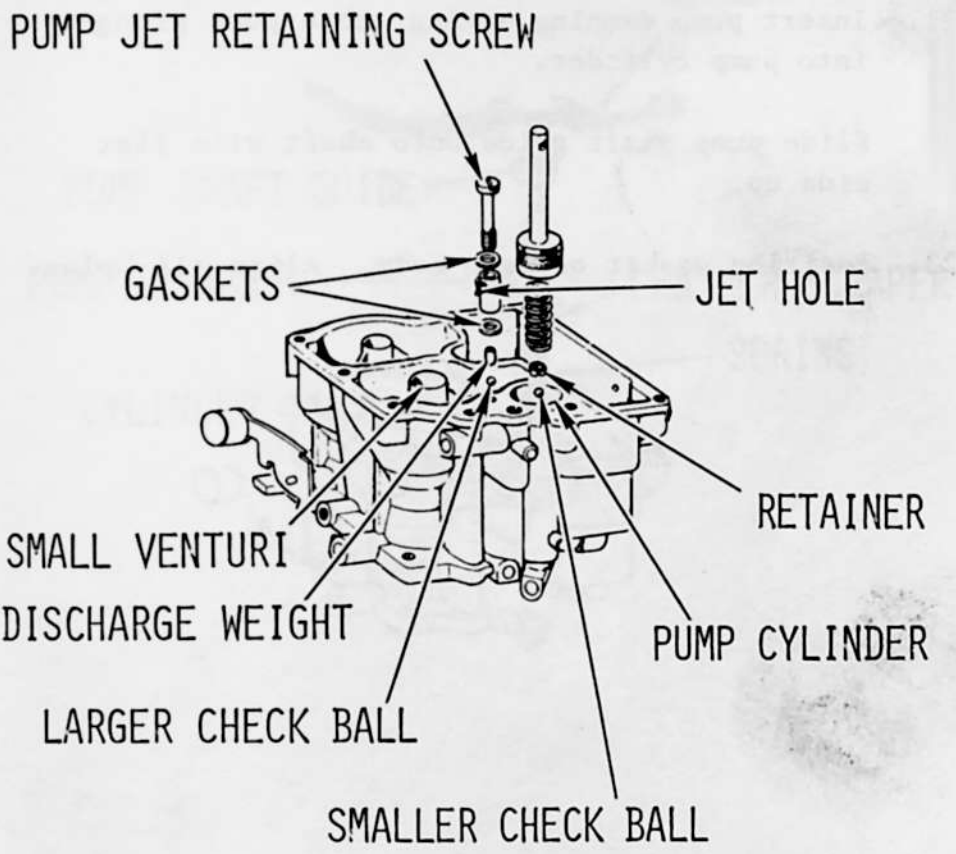
18. Drop larger check ball in place. Place discharge weight on ball.

CAUTION

Pump jet hole must be visible when installing jet.

19. Install pump discharge nozzle, retaining screw, and 2 gaskets with nozzle hole pointing toward small venturi.

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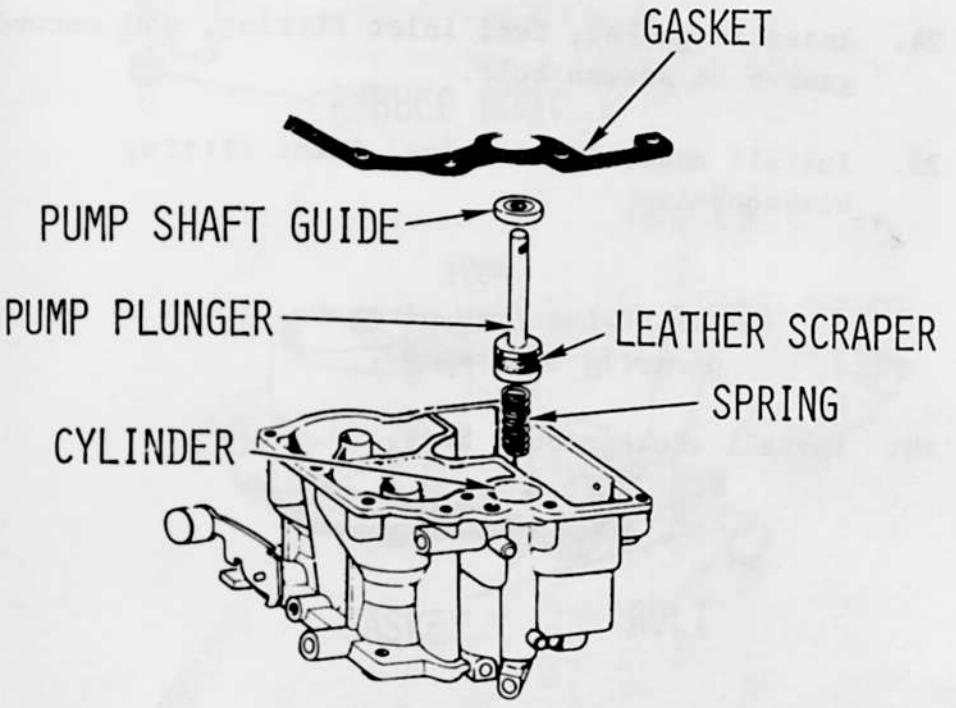
20. Dip accelerator pump plunger in clean solvent to moisten leather scraper.

21. Insert pump damping spring, then pump plunger into pump cylinder.

22. Slide pump shaft guide onto shaft with flat side up.

23. Position gasket on main body. Align all holes.

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3R-C CARBURETOR

Air Horn

24. Assemble gasket, fuel inlet fitting, and second gasket on screen bolt.

25. Install assembly with fuel inlet fitting horizontal.

NOTE

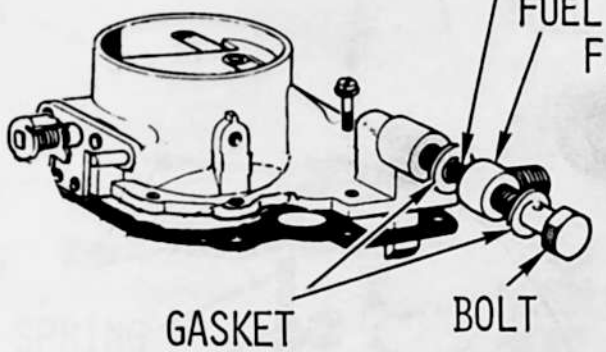
For Hi-Lux (manual choke) go directly to step 27.

26. Install choke rubber boot.

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RUBBER BOOT



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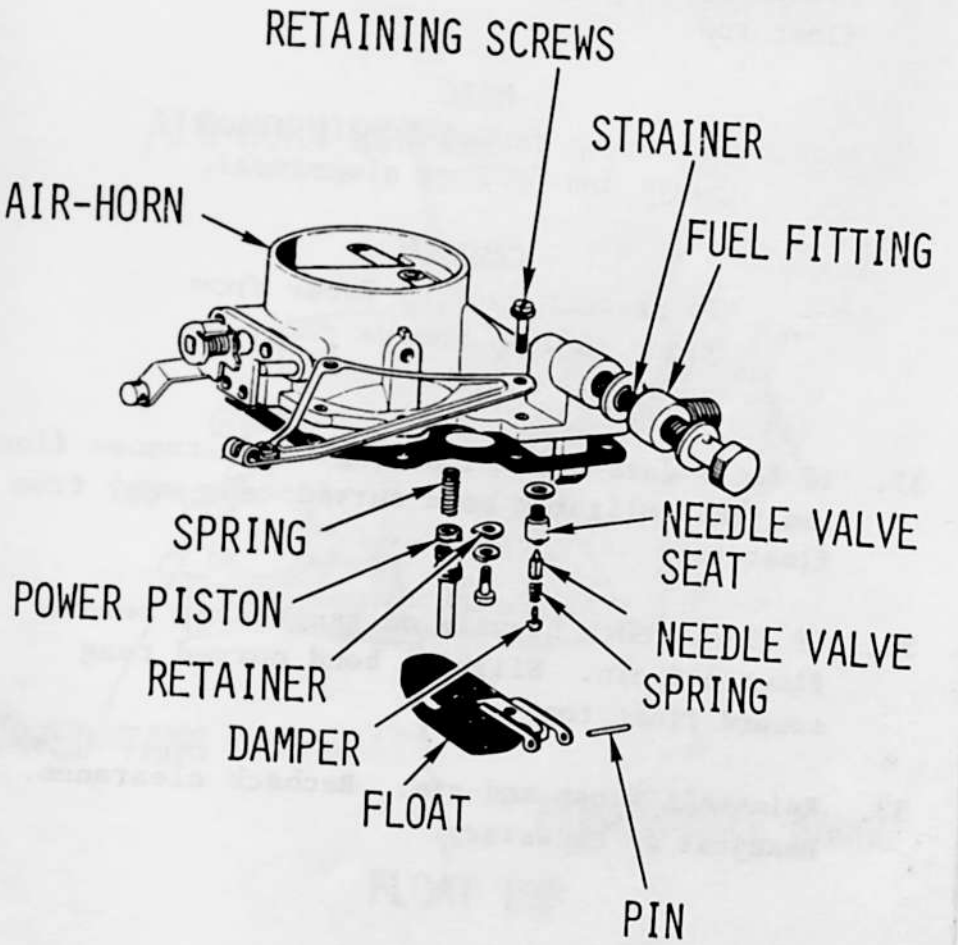
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27. Invert air-horn and loosen power piston retainer screw. Install piston and spring. Slide retainer over piston and tighten screw.

28. Screw in needle valve seat and gasket. Install needle valve, spring, and damper.

29. Install float with float lever pin.

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3R-C CARBURETOR

FLOAT-RAISED ADJUSTMENT

30. With air-horn upside down, slide long arm of Float/Angle Gauge between air-horn surface and float top.

NOTE

Float top should barely touch gauge arm (9.3 mm clearance).

CAUTION

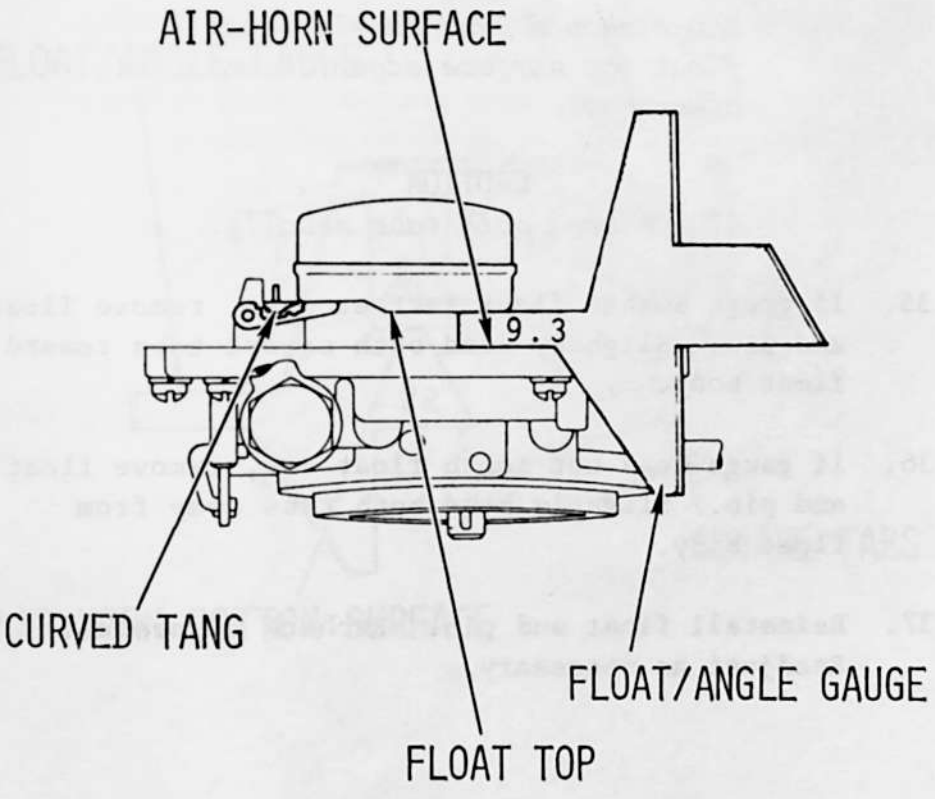
To prevent pulling lever from float, always remove float to adjust.

31. If float does not touch gauge arm, remove float and pin. Slightly bend curved tang away from float top.

32. If float rests heavily on gauge arm, remove float and pin. Slightly bend curved tang toward float top.

33. Reinstall float and pin. Recheck clearance. Readjust as necessary.

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3R-C CARBURETOR

FLOAT-LOWERED ADJUSTMENT

34. Hold air-horn right side up. Slide Float/Angle Gauge "22" arm between air-horn bottom surface and end of float top surface.

NOTE

Gauge should just barely touch float top surface edge (22 mm clearance).

CAUTION

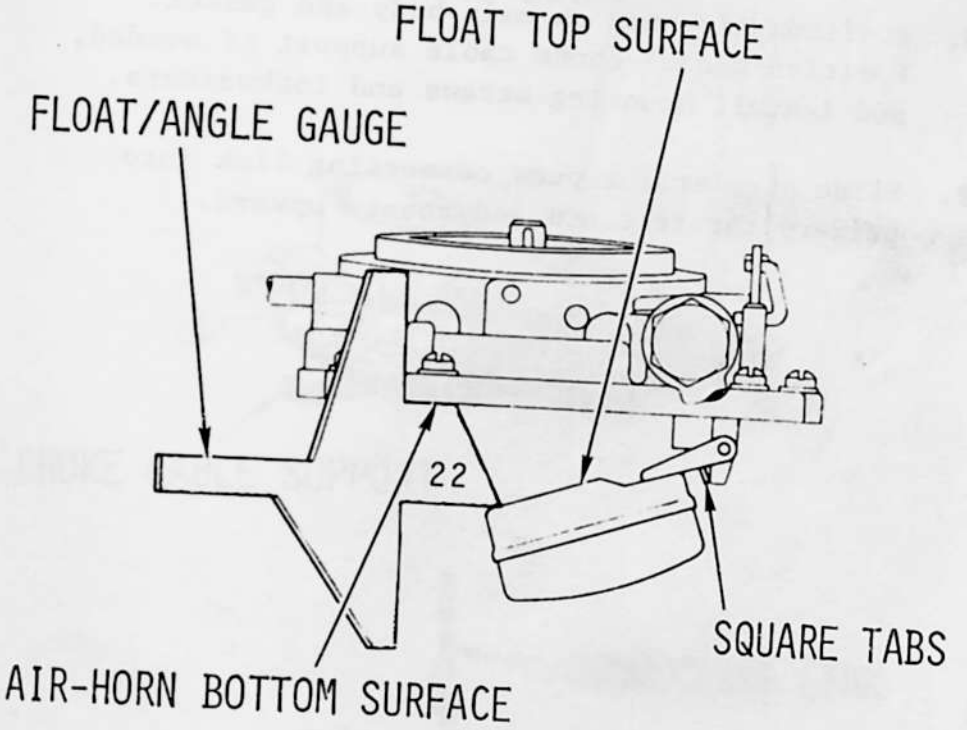
Always bend both tabs equally.

35. If gauge pushes float farther down, remove float and pin. Slightly bend both square tabs toward float body.

36. If gauge does not touch float end, remove float and pin. Slightly bend both tabs away from float body.

37. Reinstall float and pin. Recheck clearance. Readjust as necessary.

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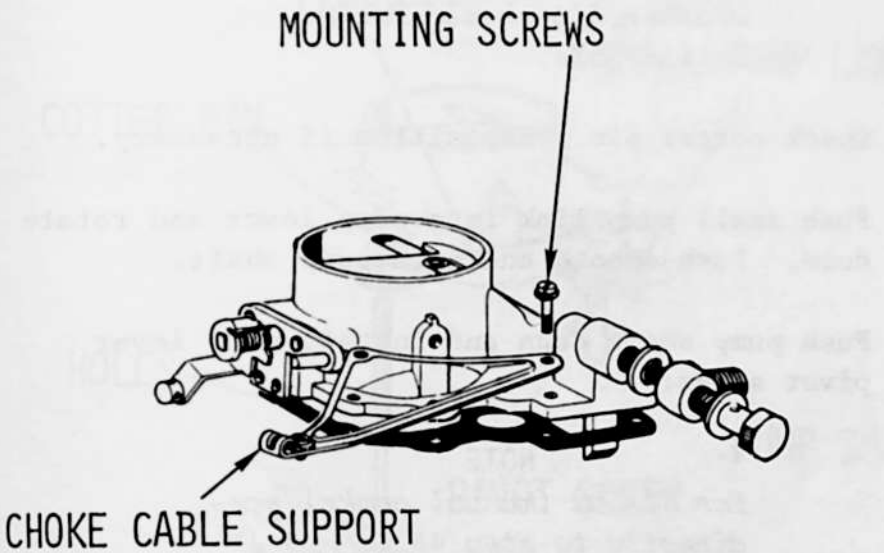
CAUTION

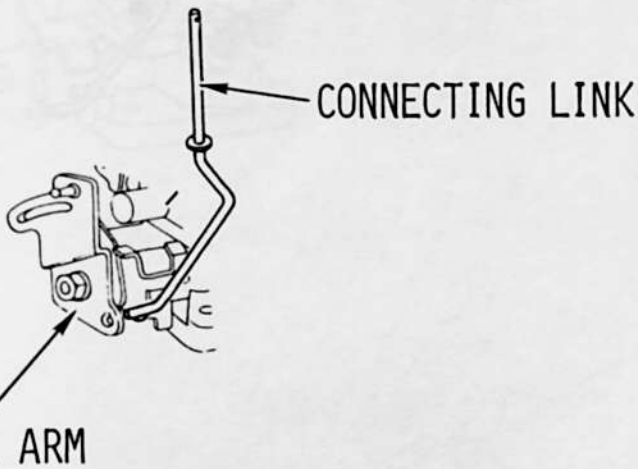
Always lower air-horn straight down onto main body to prevent float damage.

38. Position air-horn on main body and gasket. Position manual choke cable support if needed, and install mounting screws and lockwashers.

39. Slide accelerator pump connecting link into primary throttle arm and rotate upward.

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NOTE

During normal weather, pump link cotter pin should be in top hole. During cold weather, it should be in bottom hole.

40. Check cotter pin. Reposition if necessary.

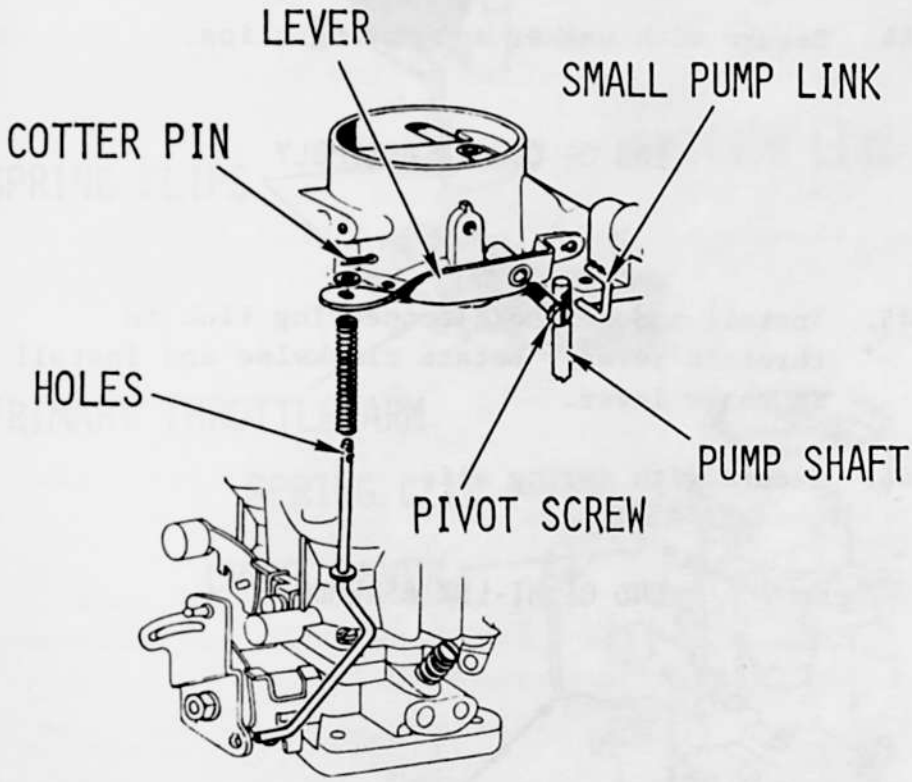
41. Push small pump link into pump lever and rotate down. Push smooth end into pump shaft.

42. Push pump shaft down and install pump lever pivot screw.

NOTE

For Hi-Lux (manual choke) go directly to step 45.

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43. Install automatic choke connector link with long end in sliding rod and short end in primary throttle arm.

44. Secure with washer and spring clips.

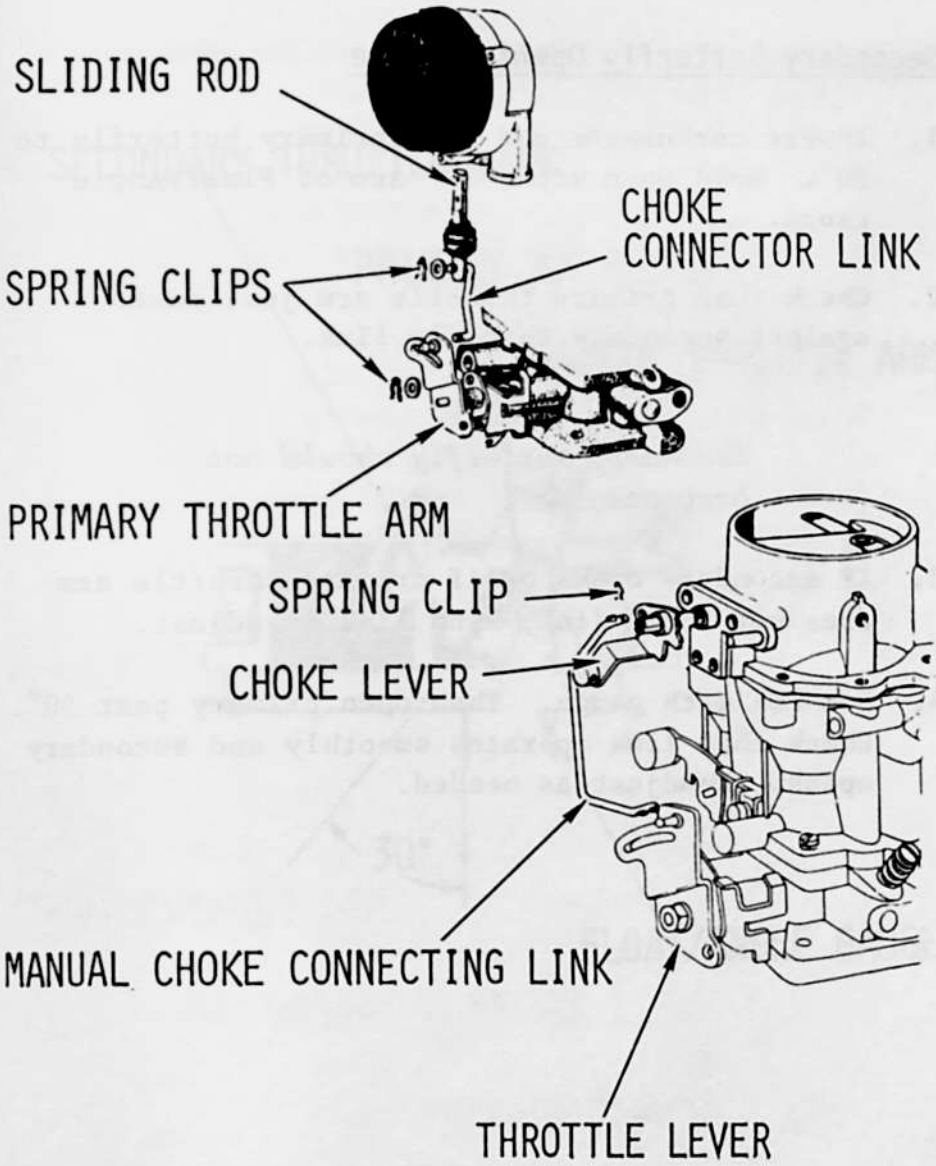
END OF CORONA ASSEMBLY

45. Install manual choke connecting link in throttle lever. Rotate clockwise and install in choke lever.

46. Secure with spring clip.

END OF HI-LUX ASSEMBLY

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3R-C CARBURETOR

ADJUSTMENT

Secondary Butterfly Opening Angle

1. Invert carburetor and open primary butterfly to 30°. Hold open with "30" arm of Float/Angle gauge.

2. Check that primary throttle arm just rests against secondary throttle link.

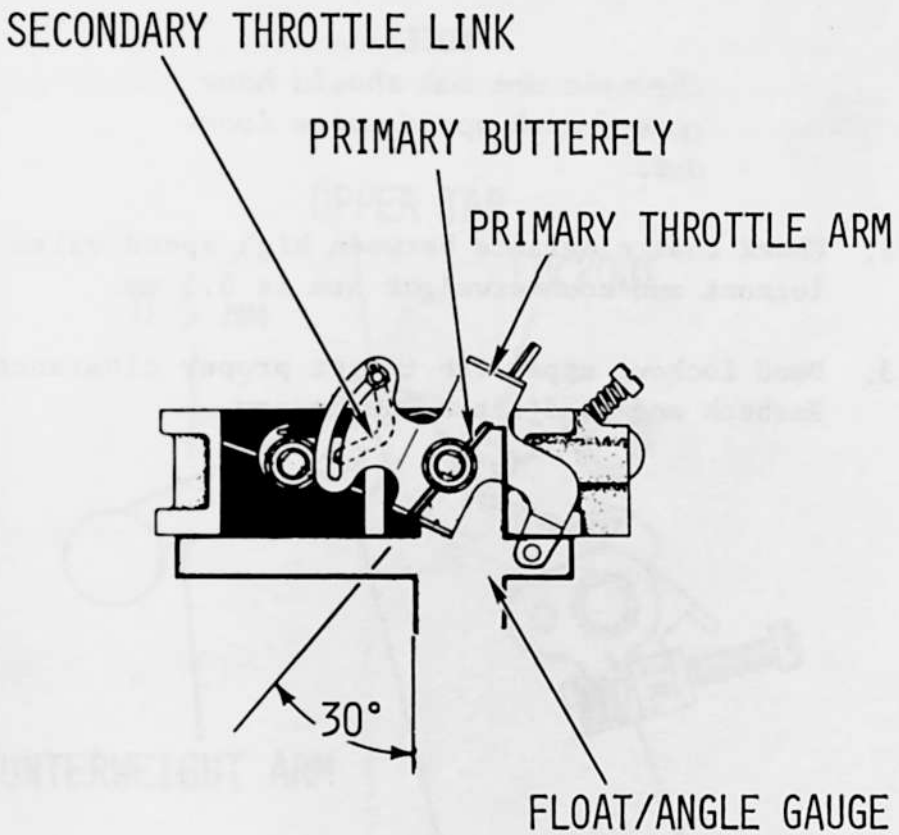
NOTE

Secondary butterfly should not have opened.

3. If secondary opens or if primary throttle arm does not touch link, bend link to adjust.

4. Recheck with gauge. Then open primary past 30°. Check that link operates smoothly and secondary opens. Readjust as needed.

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High Speed Valve Lockout

1. Open primary throttle arm until it just rests against secondary throttle link.

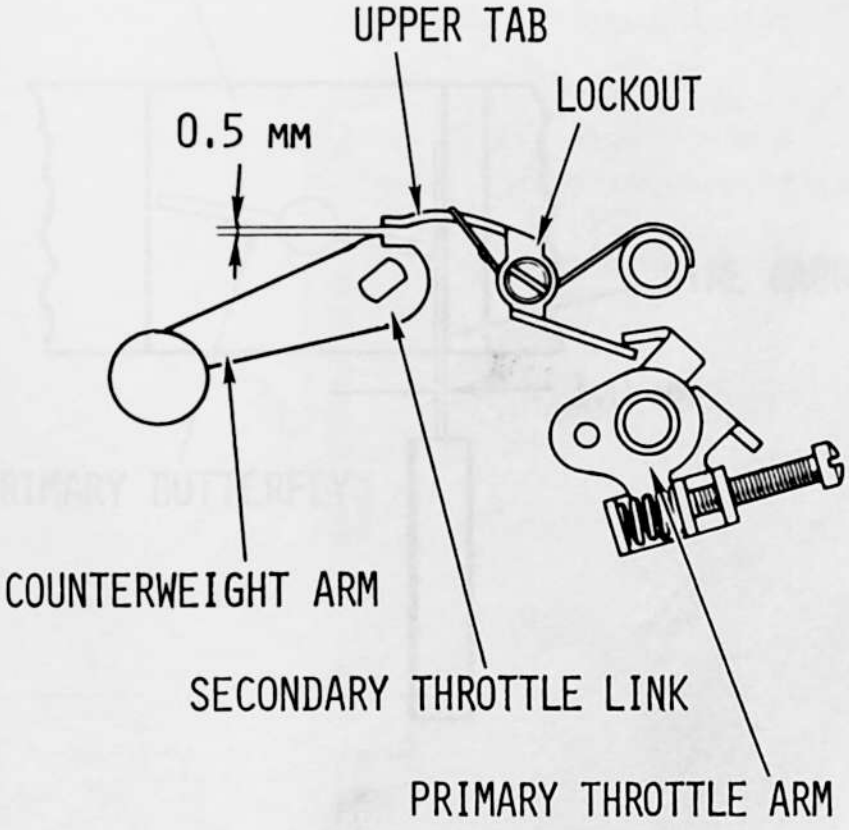
NOTE

Throttle arm tab should have opened high speed valve lockout.

2. Check that clearance between high speed valve lockout and counterweight arm is 0.5 mm.

3. Bend lockout upper tab to get proper clearance. Recheck and readjust as necessary.

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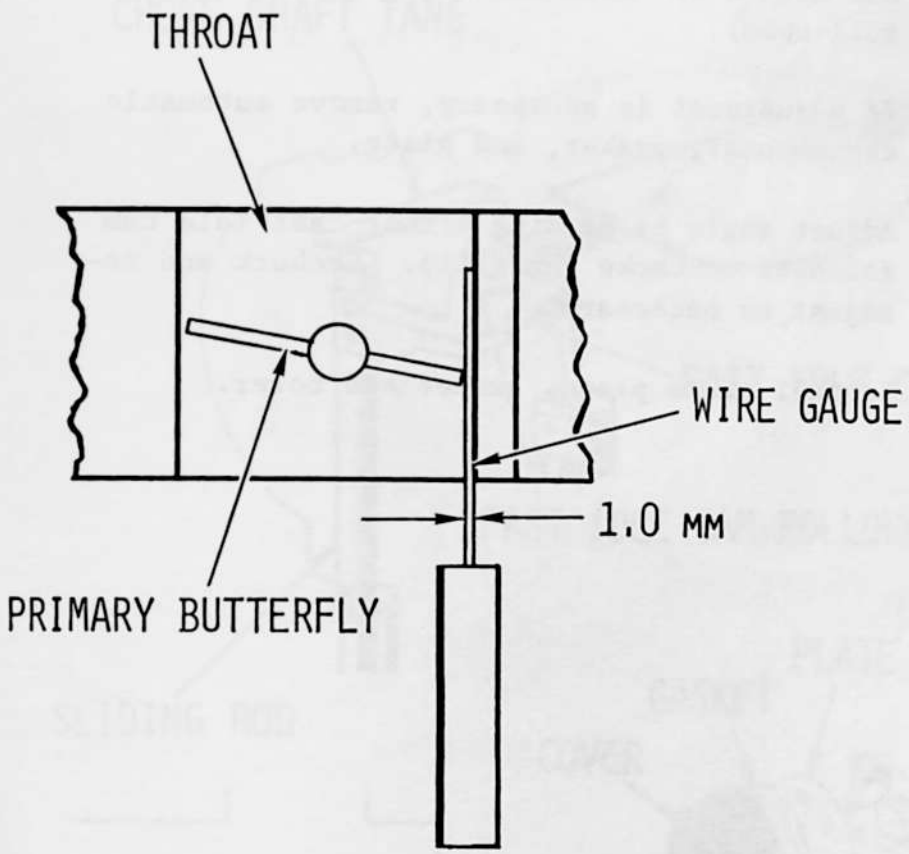
3R-C CARBURETOR

Fast Idle

1. Completely close choke butterfly and invert carburetor.

2. Adjust fast idle screw to provide 1.0 mm clearance between primary butterfly and throat. Check clearance with wire gauge.

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3R-C CARBURETOR

Unloader (Corona Only)

1. Hold primary butterfly completely open.

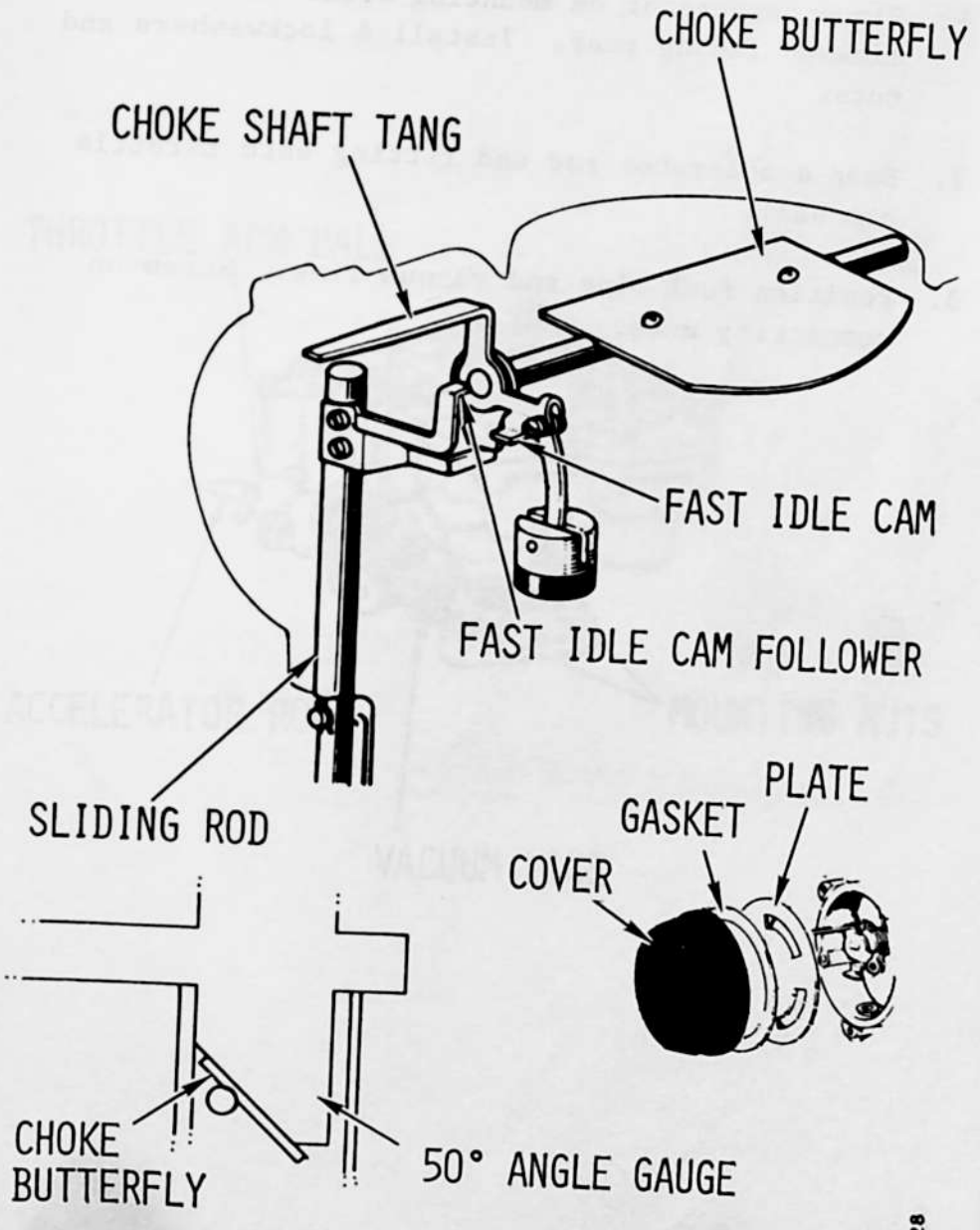
2. With 50° Angle Gauge, check that choke butterfly has opened 20° from closed position (is 50° from full-open).

3. If adjustment is necessary, remove automatic choke cover, gasket, and plate.

4. Adjust angle by bending either fast idle cam follower or choke shaft lip. Recheck and re-adjust as necessary.

5. Install choke plate, gasket and cover.

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3R-C CARBURETOR

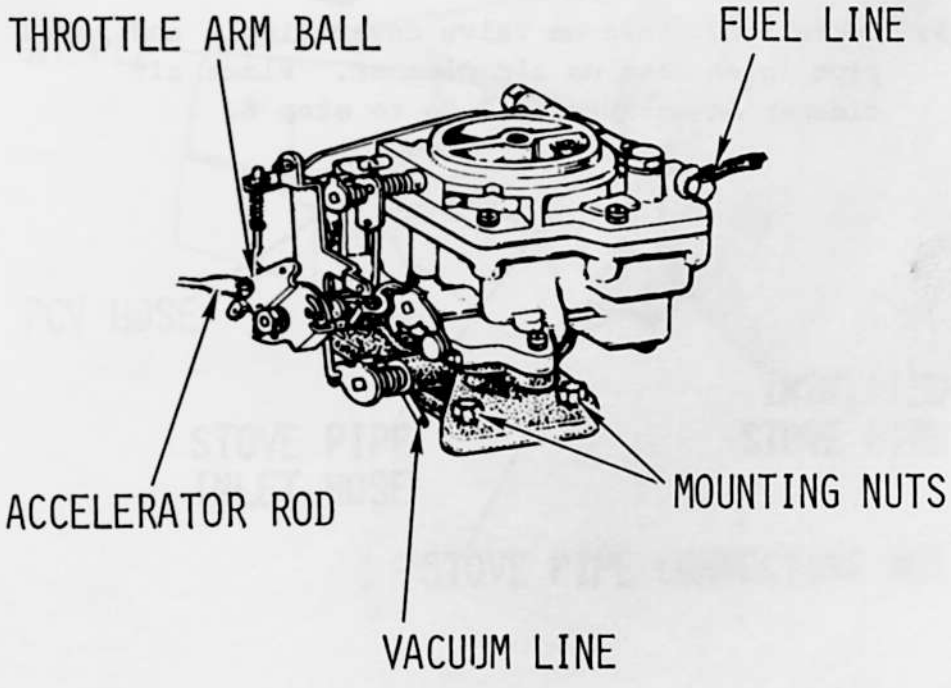
INSTALLATION

1. Place carburetor on mounting studs with throttle linkage facing rear. Install 4 lockwashers and nuts.

2. Snap accelerator rod end fitting onto throttle arm ball.

3. Position fuel line and vacuum line. Screw on connecting nuts.

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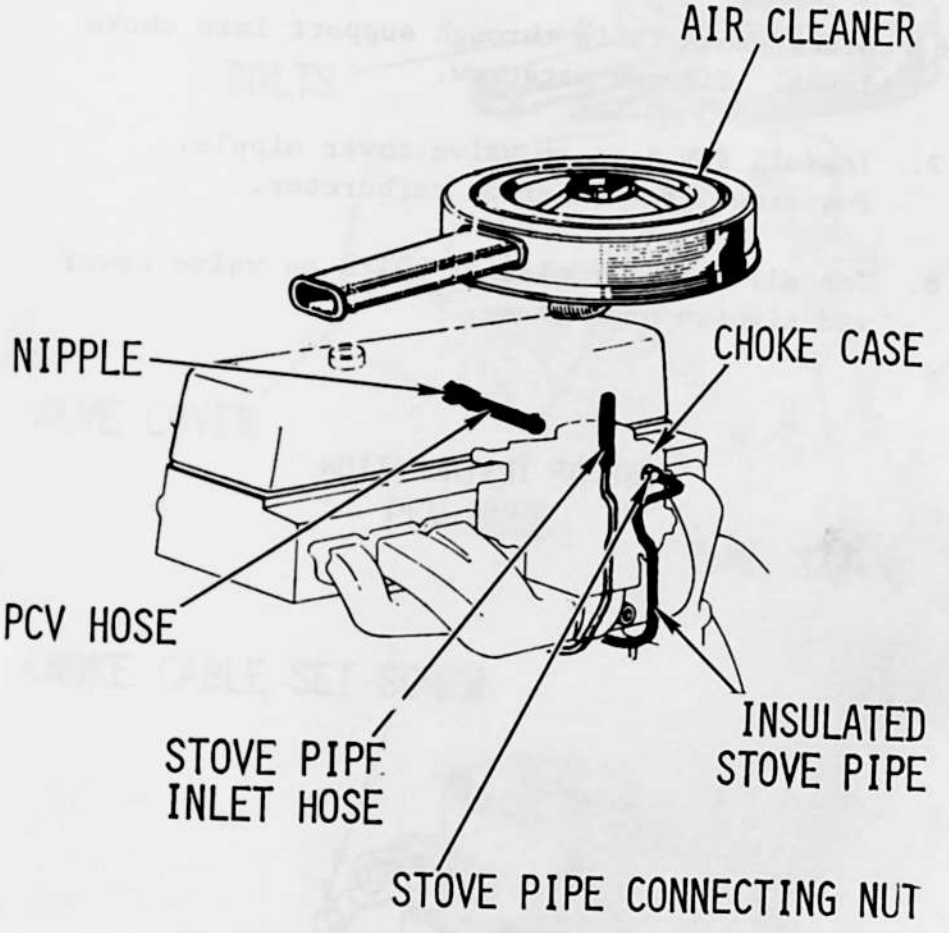
NOTE

For Corona (automatic choke), go to step 4. For Hi-Lux (manual choke), go to step 6.

4. Position insulated stove pipe on choke case and screw on connecting nut.

5. Install PCV hose on valve cover nipple and stove pipe inlet hose on air cleaner. Place air cleaner on carburetor. Go to step 8.

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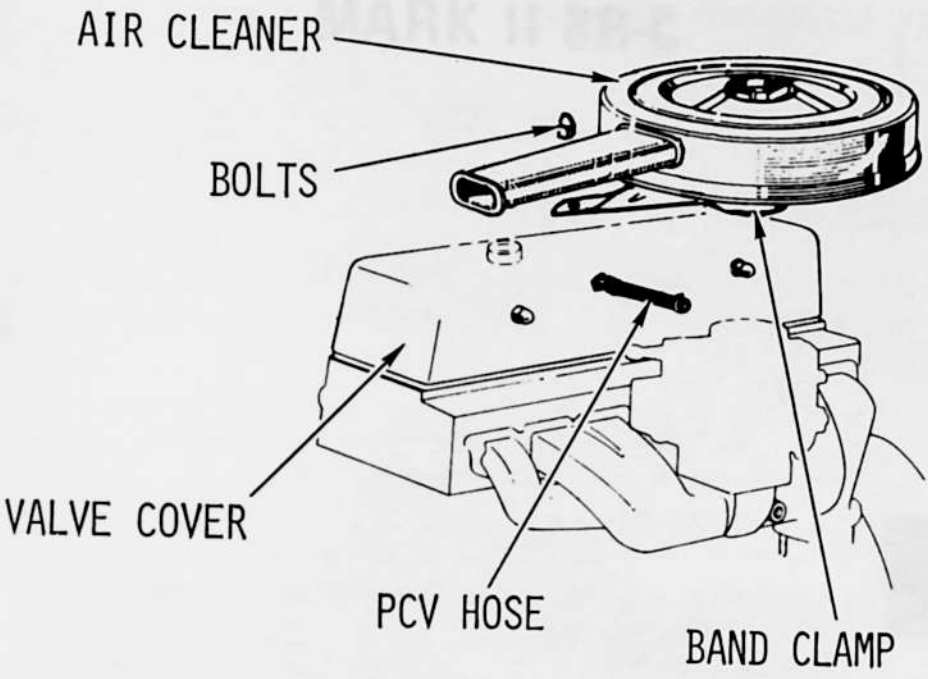
6. Slide choke cable through support into choke lever. Tighten setscrew.

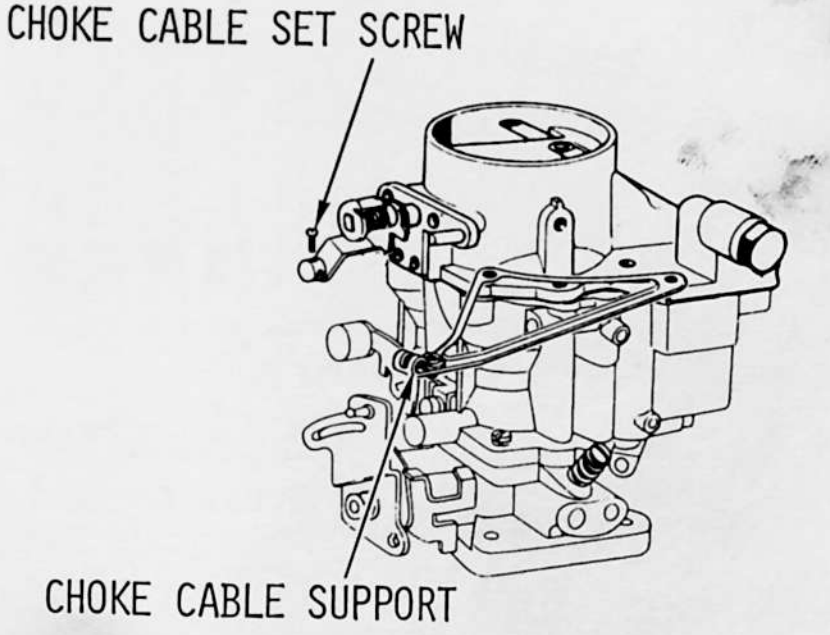
7. Install PCV hose on valve cover nipple. Position air cleaner on carburetor.

8. Install both air cleaner bolts on valve cover and tighten band clamp.

END OF INSTALLATION

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MARK II 8R-C

4

FUEL SYSTEMS MANUAL

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8R-C CARBURETOR OVERHAUL

JOB SETUP

Special Tools:

Carburetor Screwdriver Set, 09860-11010
Carburetor Adjust Kit, 09240-34010

NOTE

To overhaul carburetor, a small pocket screwdriver must be modified.

1. Cut a slot 1/16" deep in blade tip of small pocket screwdriver.

2. Squeeze tips together so they almost touch.

Supplies:

8R-C Carburetor Overhaul Kit

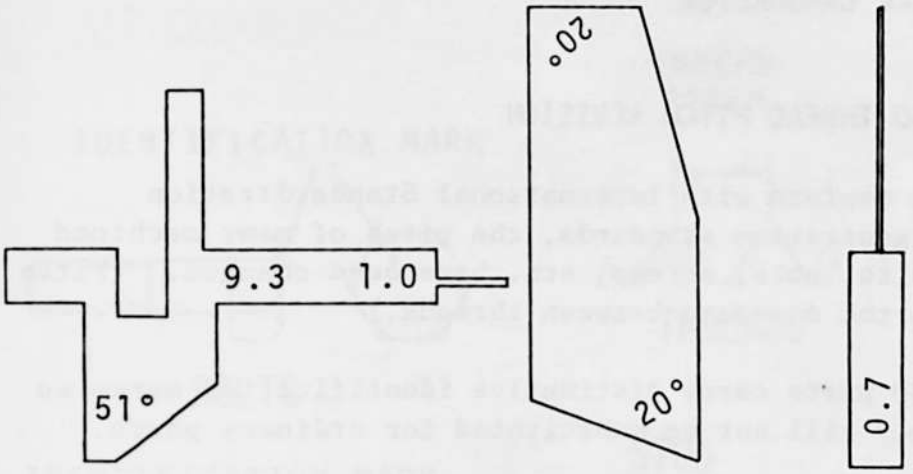
Vehicles:

Mark II -- automatic choke
Corona (model 83L onward) -- automatic choke
Hi-Lux (model RN12L) -- manual choke

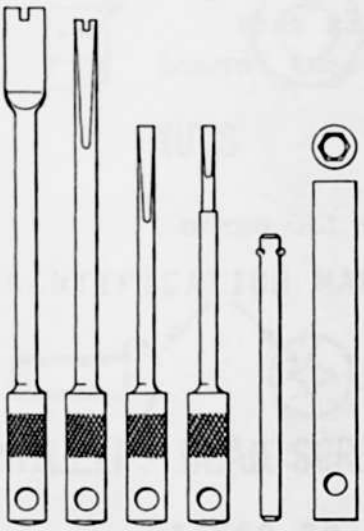
NOTE

Follow the steps in order, unless directed otherwise.

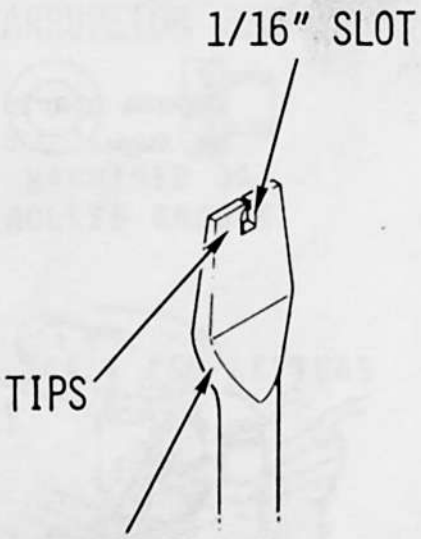
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8R-C CARBURETOR ADJUST KIT
09240-34010



SCREWDRIVER SET
09860-11010



MODIFIED SCREWDRIVER

8241

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8R-C CARBURETOR

ISO THREAD PITCH REVISION

To conform with International Standardization Organization standards, the pitch of many machined bolts, nuts, screws, etc. have been changed. (Pitch is the distance between threads.)

ISO parts carry distinctive identification marks so they will not be substituted for ordinary parts.

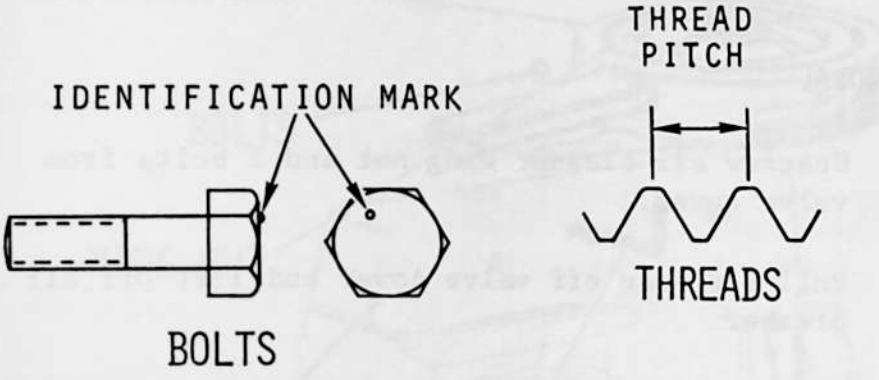
CAUTION

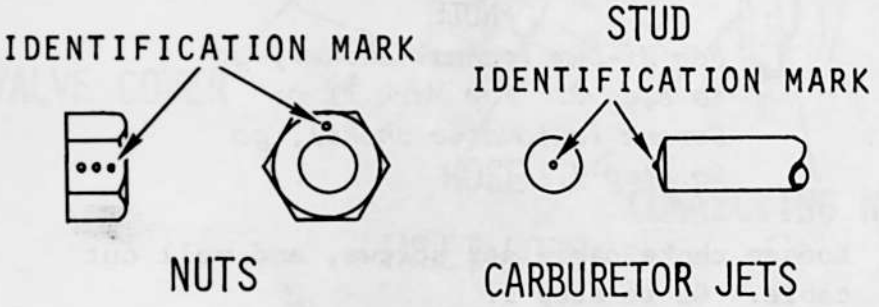
Do not install ordinary nuts, screws, bolts, etc. in this ISO carburetor. Serious thread damage will result.

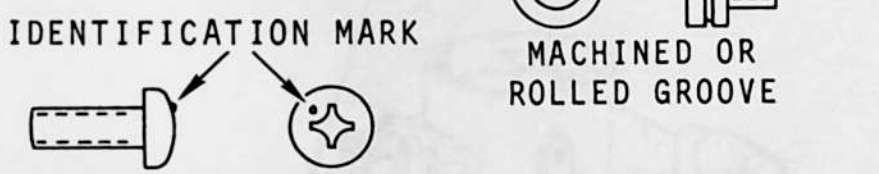
NOTE

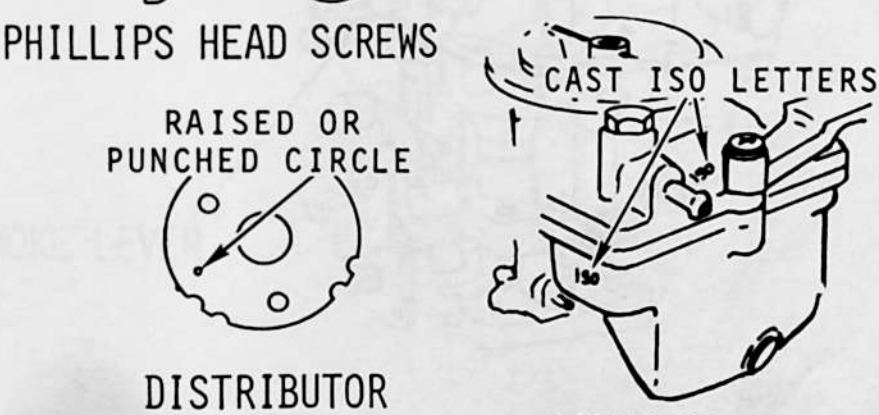
Toyota started using ISO parts in August 1968.

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8R-C CARBURETOR

REMOVAL

1. Unscrew air cleaner wing nut and 2 bolts from valve cover.

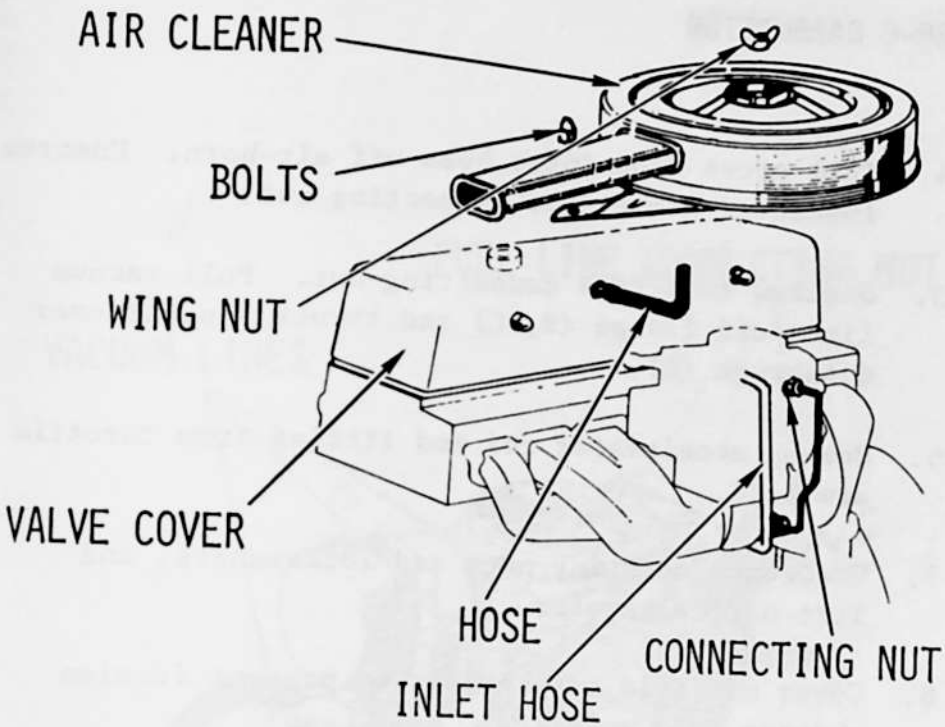
2. Pull air hose off valve cover and lift off air cleaner.

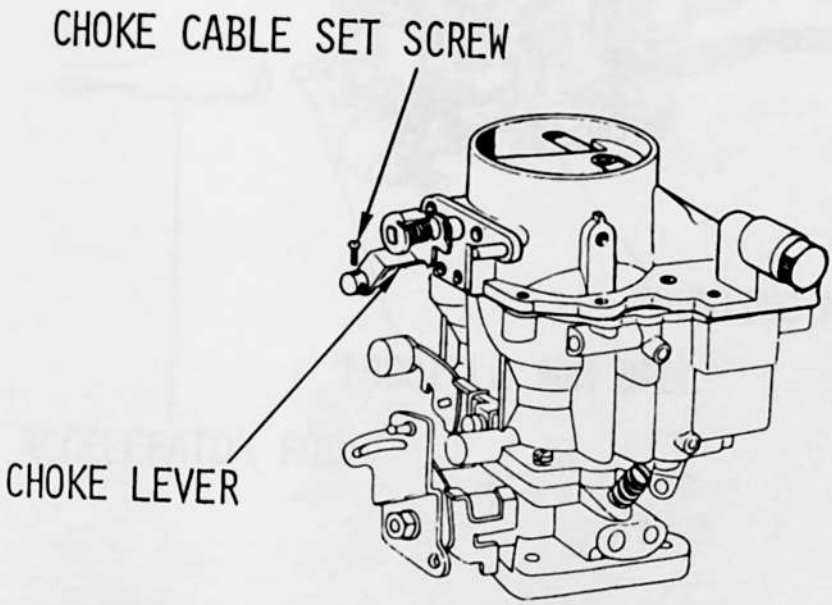
NOTE

For Hi-Lux (manual choke), go to step 3. For Mark II or Corona (automatic choke), go to step 4.

3. Loosen choke cable set screws, and pull out cable. Go to step 5.

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4. Pull stove pipe inlet hose off air-horn. Unscrew insulated stove pipe connecting nut.

5. Unscrew fuel line connecting nut. Pull vacuum lines off flange (B, C) and throttle positioner diaphragm (D).

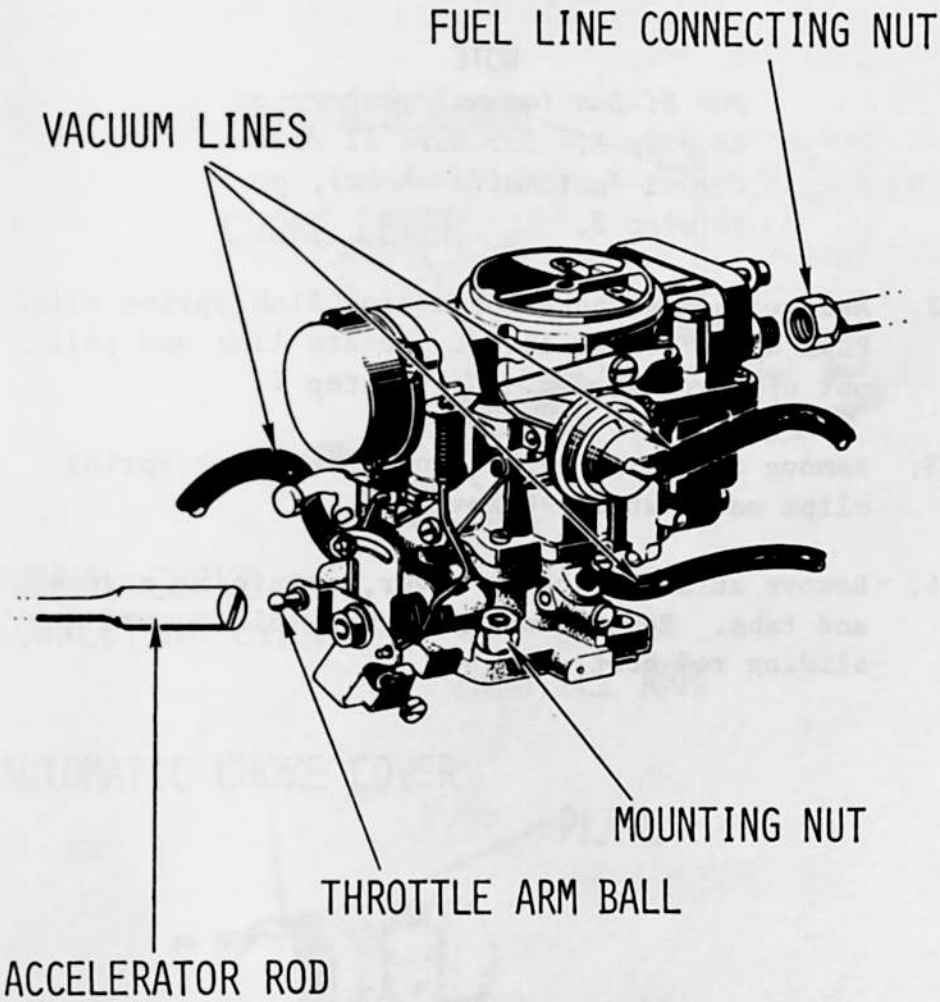
6. Unsnap accelerator rod end fitting from throttle arm ball.

7. Unscrew 4 mounting nuts and lockwashers, and lift off carburetor.

8. Cover manifold intake port to prevent foreign objects from entering.

END OF REMOVAL

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8R-C CARBURETOR

DISASSEMBLY

1. Unscrew air cleaner retainer rod.

NOTE

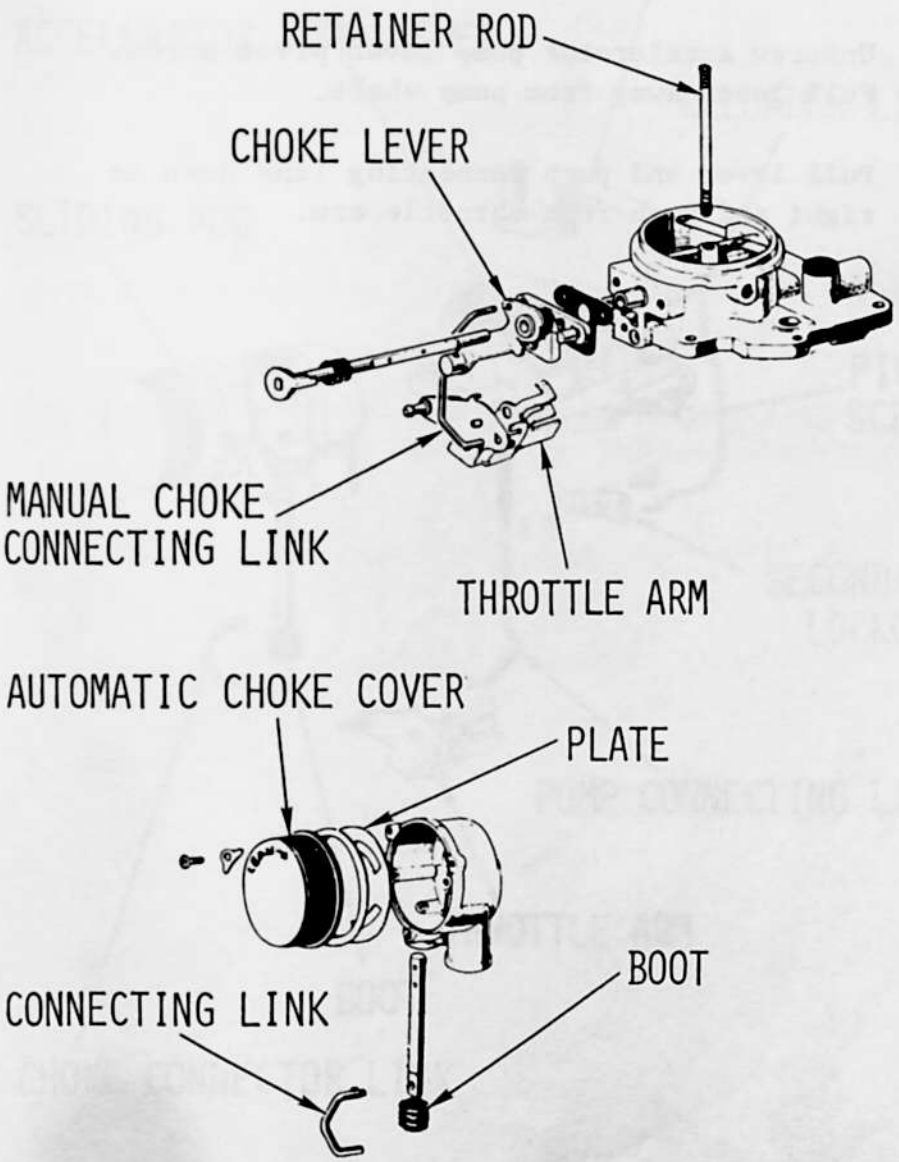
For Hi-Lux (manual choke), go to step 2. For Mark II or Corona (automatic choke), go to step 3.

2. Remove manual choke connecting link spring clip. Pull out of choke lever. Rotate link and pull out of throttle arm. Go to step 7.

3. Remove automatic choke connecting link spring clips and washer. Remove link.

4. Remove automatic choke cover, retaining screws and tabs. Remove cover, gasket, plate, and sliding rod boot.

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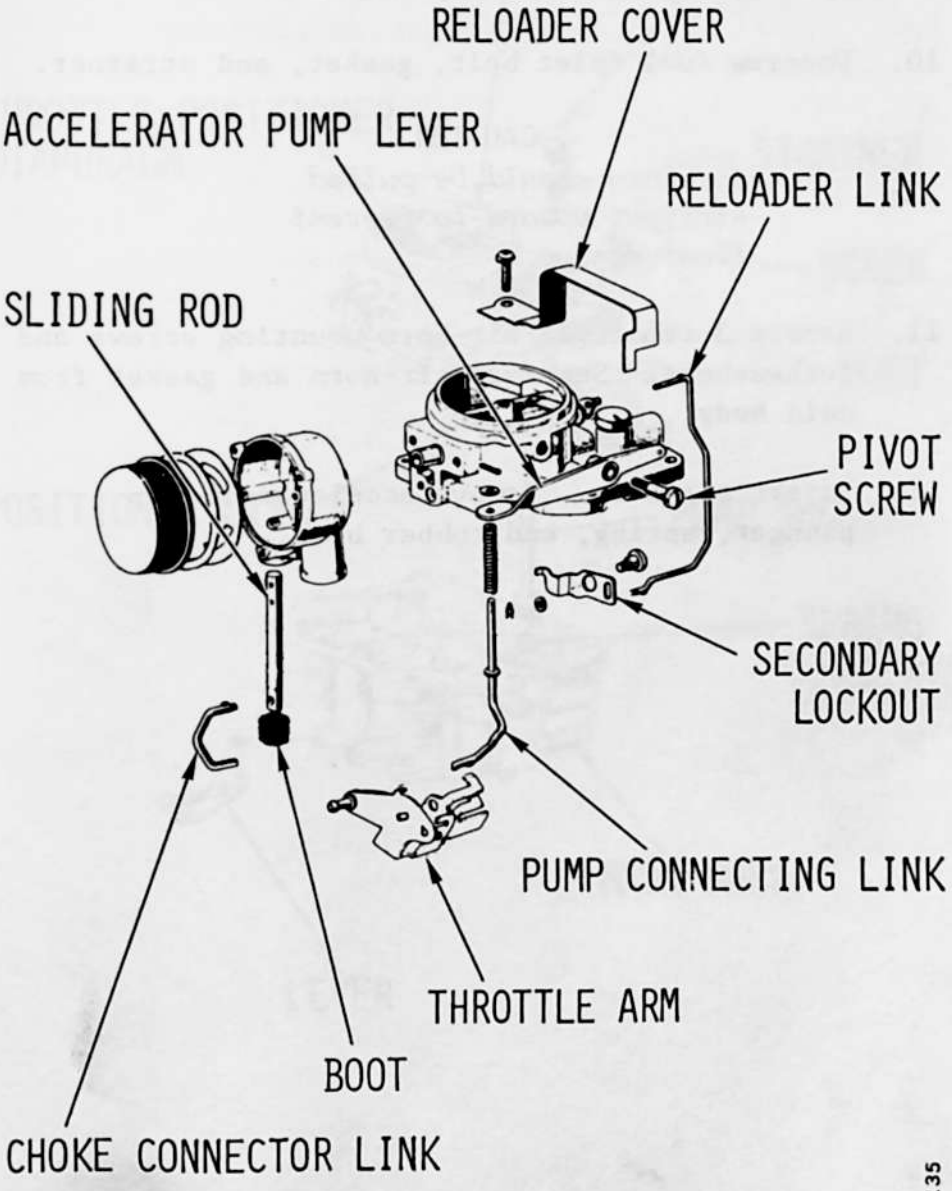
5. Remove reloader cover mounting screw and lock-washer. Remove cover.

6. Remove reloader link spring clips and washers. Pull link away.

7. Unscrew accelerator pump lever pivot screw. Pull lever away from pump shaft.

8. Pull lever and pump connecting link down to right and push from throttle arm.

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9. Remove throttle positioner diaphragm mounting screws and lockwashers. Remove positioner link spring clip and remove positioner.

10. Unscrew fuel inlet bolt, gasket, and strainer.

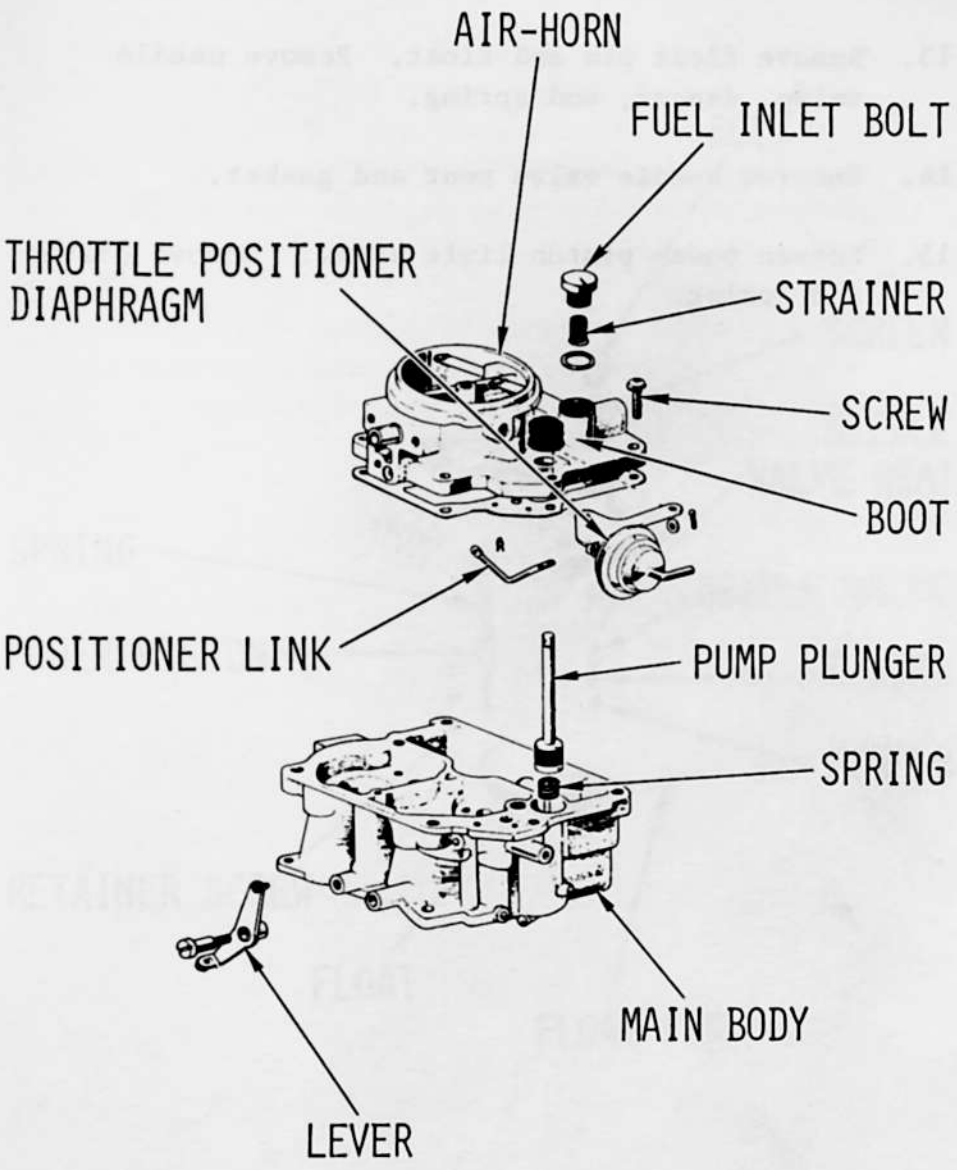
CAUTION

Air-horn should be pulled straight upward to prevent float damage.

11. Remove 3 remaining air-horn mounting screws and lockwashers. Separate air-horn and gasket from main body.

12. Invert air-horn. Remove accelerator pump plunger, spring, and rubber boot.

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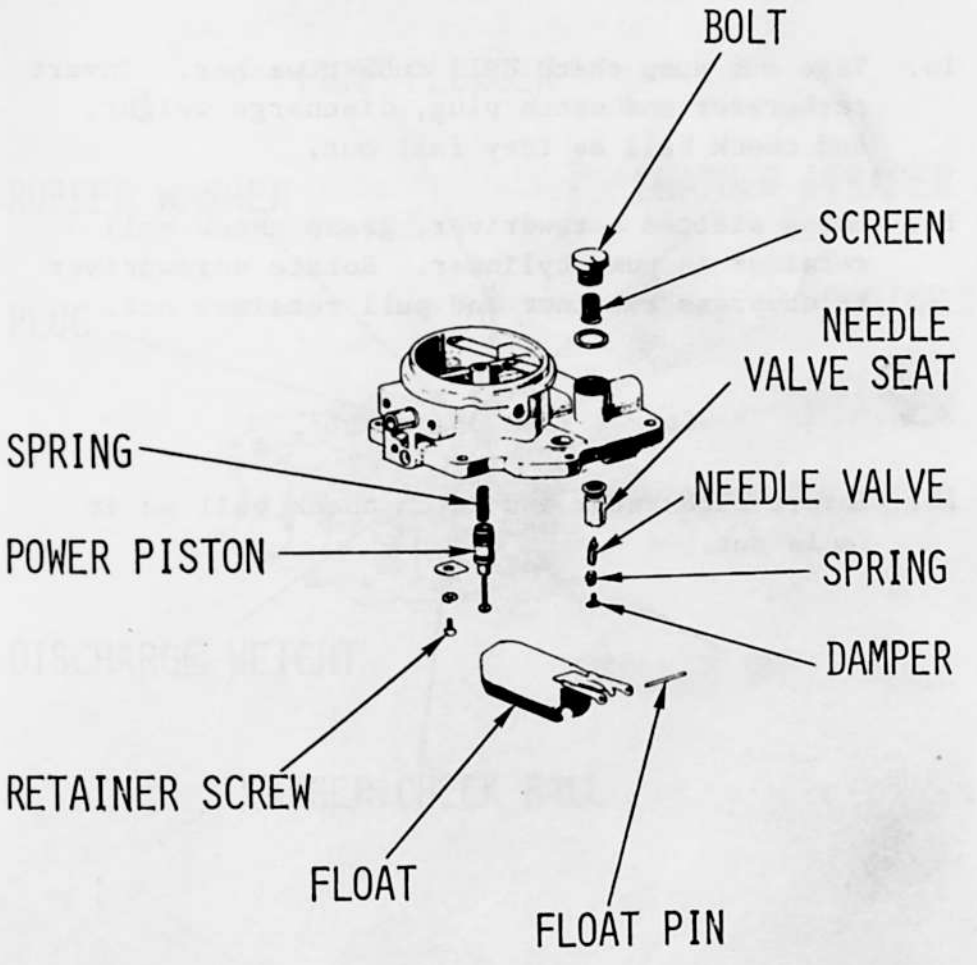
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13. Remove float pin and float. Remove needle valve, damper, and spring.

14. Unscrew needle valve seat and gasket.

15. Loosen power piston limit screw. Remove piston and spring.

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NOTE

Do not lose check ball.

16. Take out pump check ball rubber washer. Invert carburetor and catch plug, discharge weight, and check ball as they fall out.

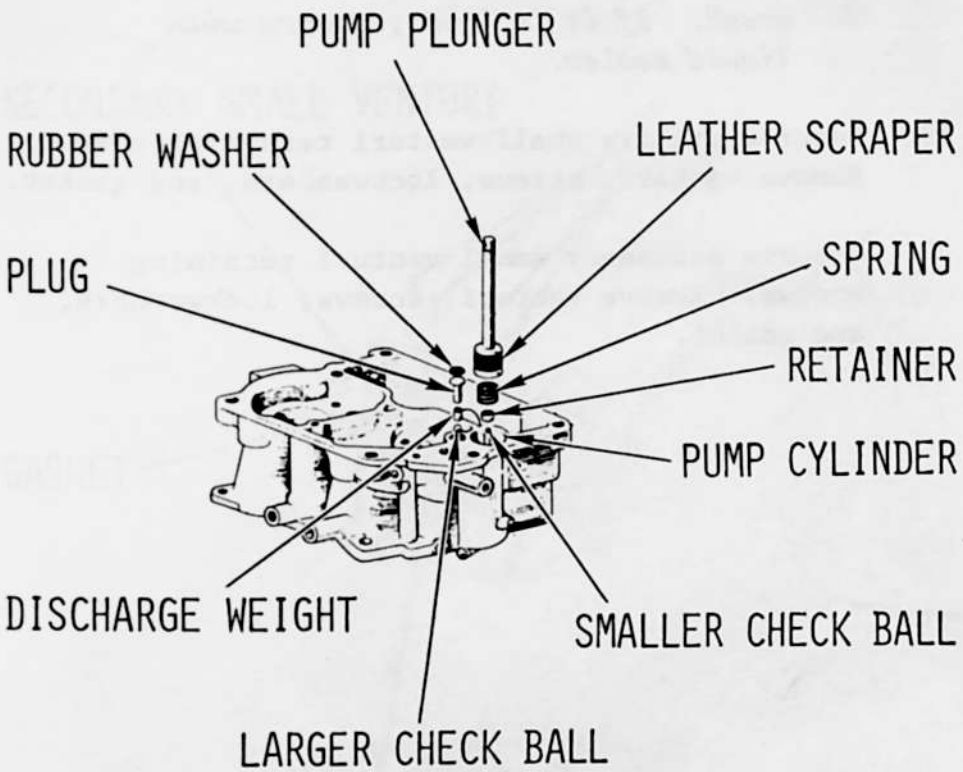
17. Using slotted screwdriver, grasp check ball retainer in pump cylinder. Rotate screwdriver to compress retainer and pull retainer out.

NOTE

Do not lose check ball.

18. Invert carburetor and catch check ball as it falls out.

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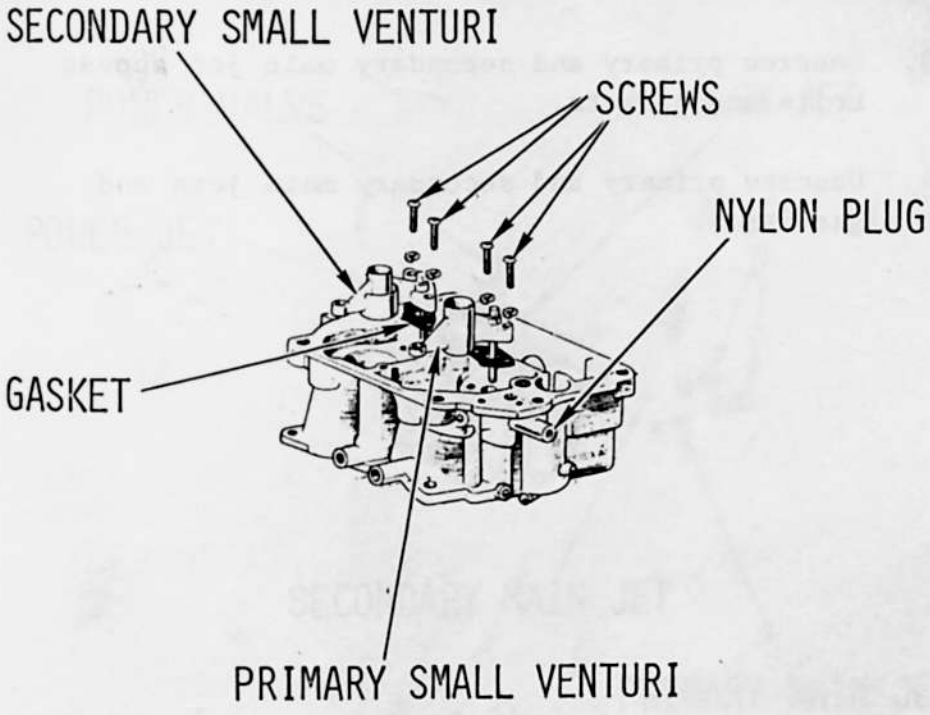
CAUTION

Nylon plug which closes off primary air bleeder no. 2 should not be removed. If it is loose, secure with liquid sealer.

19. Unscrew primary small venturi retaining screws. Remove venturi, screws, lockwashers, and gasket.

20. Unscrew secondary small venturi retaining screws. Remove venturi, screws, lockwashers, and gasket.

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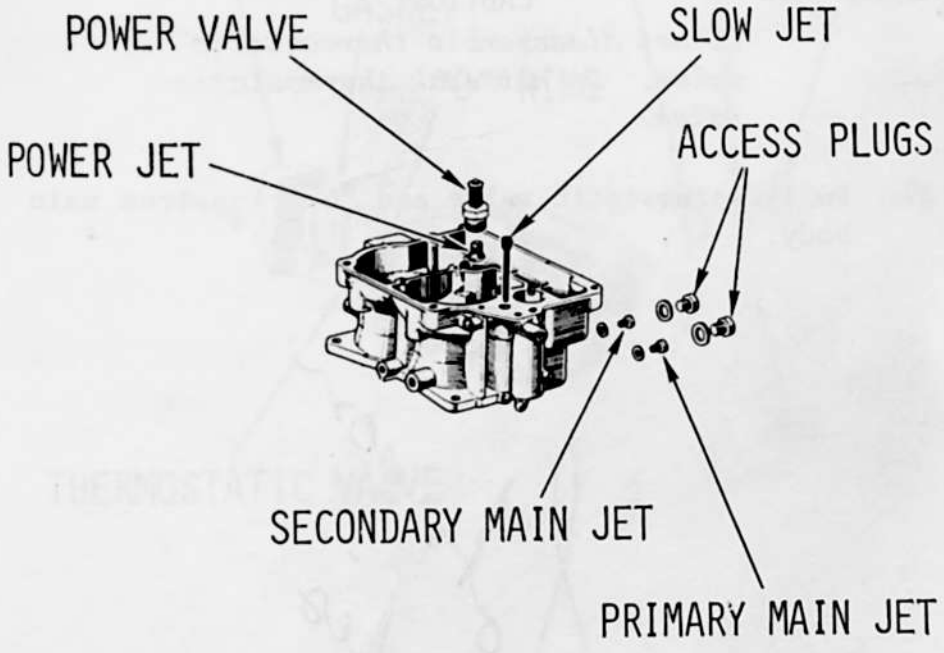
21. Unscrew slow jet. Invert carburetor and catch slow jet as it falls out.

22. With Power Valve Wrench, unscrew power valve and jet.

23. Unscrew primary and secondary main jet access bolts and gaskets.

24. Unscrew primary and secondary main jets and gaskets.

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25. Remove fuel level gauge retainer screws. Remove retainer, glass, and gasket.

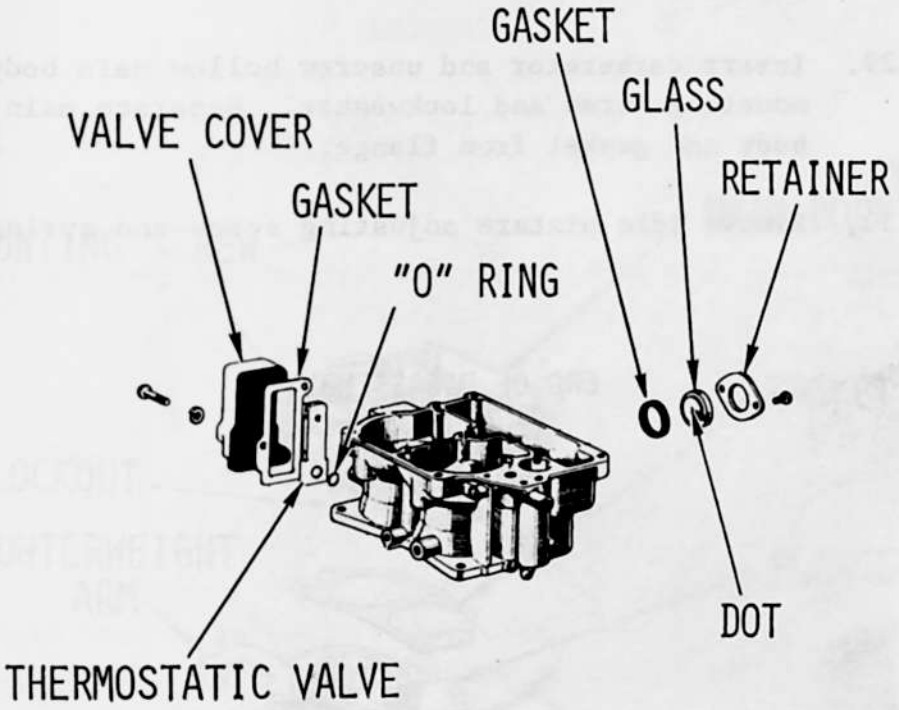
26. Remove thermostatic valve cover retaining screws and lockwasher. Remove cover and gasket.

CAUTION

Do not disassemble thermostatic valve. Do not soak thermostatic valve.

27. Pull thermostatic valve and "O" ring from main body.

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8R-C CARBURETOR

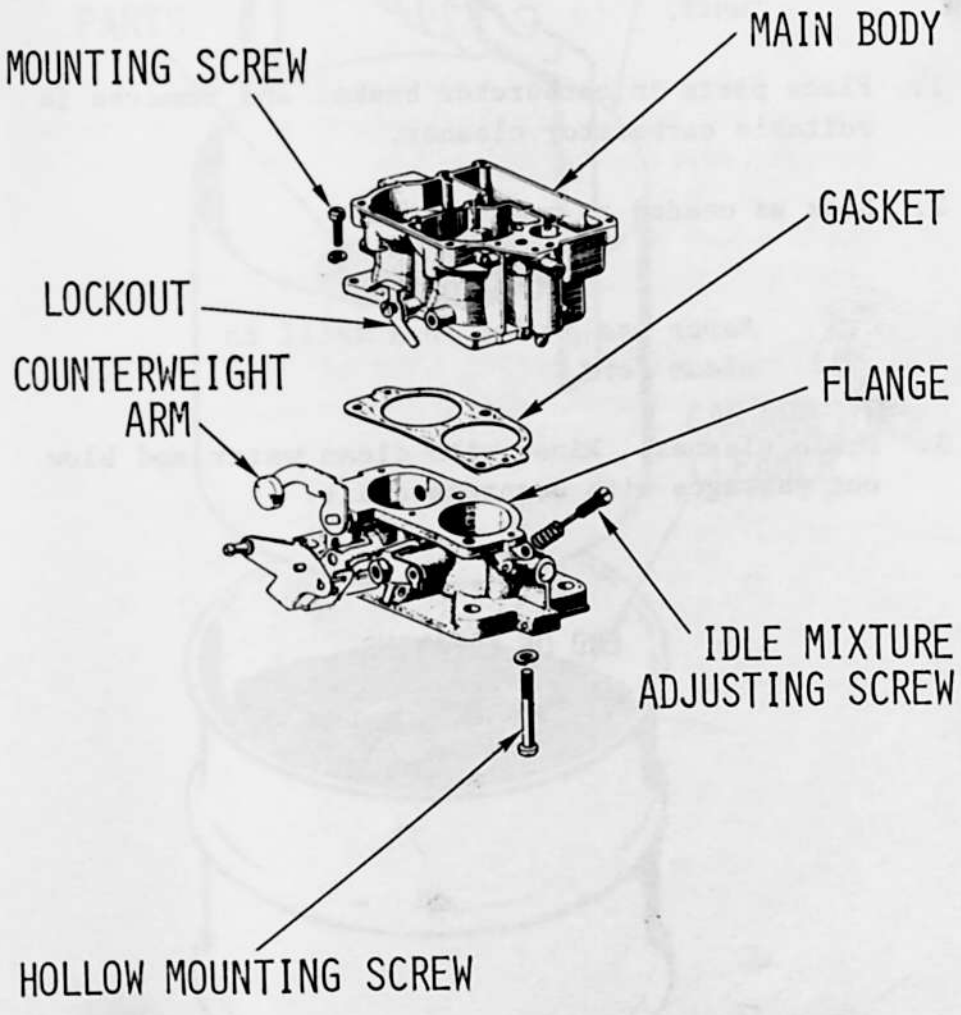
28. Unscrew 2 main body mounting screws and lockwashers.

29. Invert carburetor and unscrew hollow main body mounting screw and lockwasher. Separate main body and gasket from flange.

30. Remove idle mixture adjusting screw and spring.

END OF DISASSEMBLY

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8R-C CARBURETOR

CLEANING

CAUTION

Do not soak float, rubber boots, plastic parts, gaskets, or throttle positioner diaphragm unit.

1. Place parts in carburetor basket and immerse in suitable carburetor cleaner.

2. Soak as needed to remove dirt.

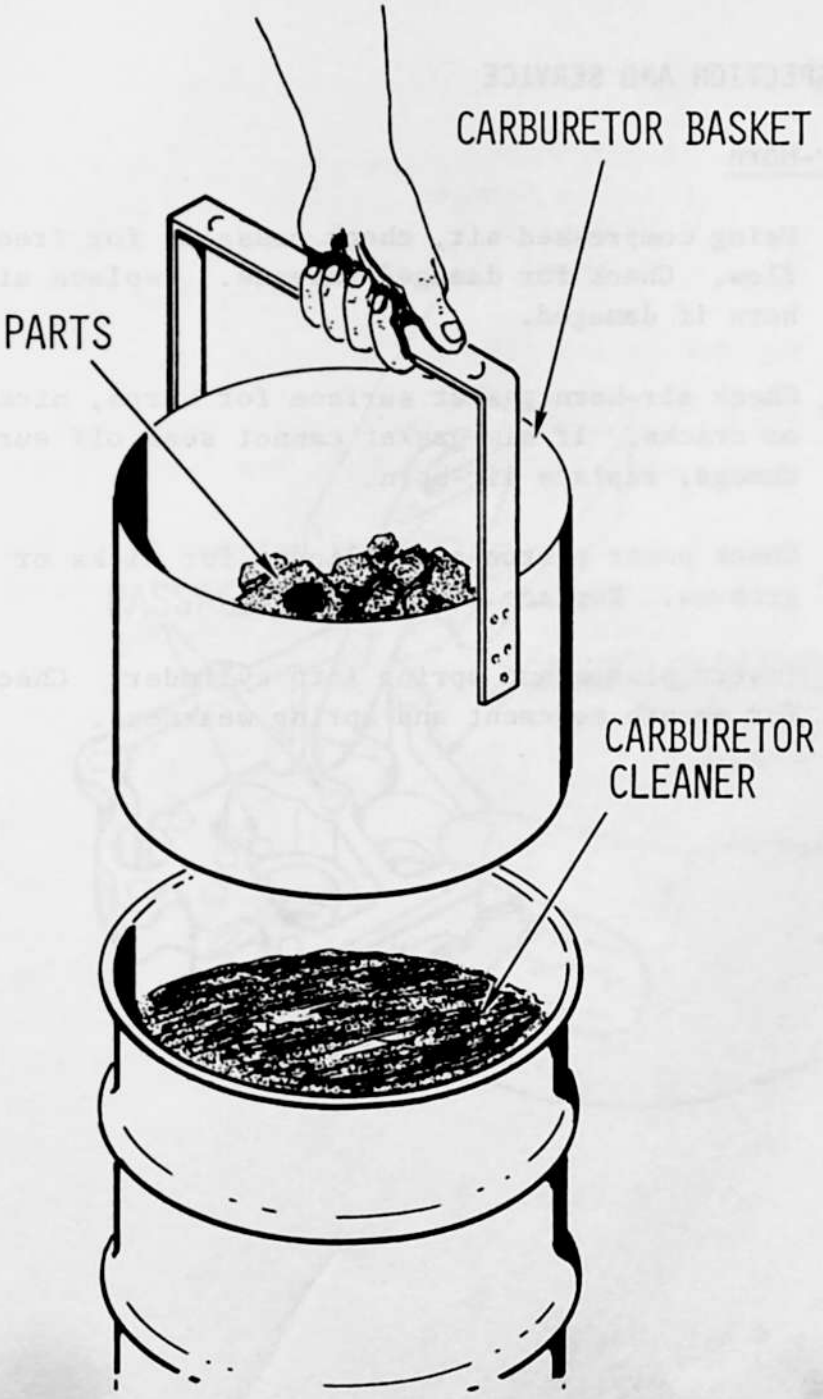
CAUTION

Never use a wire or a drill to clean jets.

3. Drain cleaner. Rinse with clean water and blow out passages with compressed air.

END OF CLEANING

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8R-C CARBURETOR

INSPECTION AND SERVICE

Air-Horn

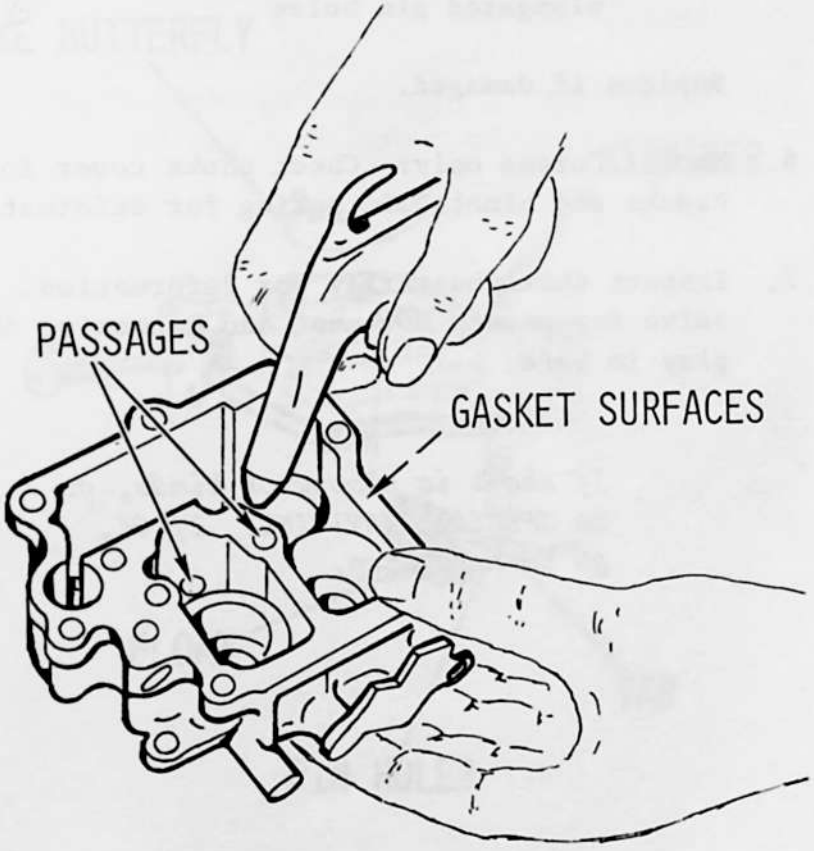
1. Using compressed air, check passages for free air flow. Check for damaged threads. Replace air-horn if damaged.

2. Check air-horn gasket surface for burrs, nicks, or cracks. If new gasket cannot seal off surface damage, replace air-horn.

3. Check power piston and cylinder for nicks or grooves. Replace damaged parts.

4. Insert piston and spring into cylinder. Check for smooth movement and spring weakness.

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5. Inspect float for:

   deformation
   surface damage
   tab damage
   elongated pin holes

   Replace if damaged.

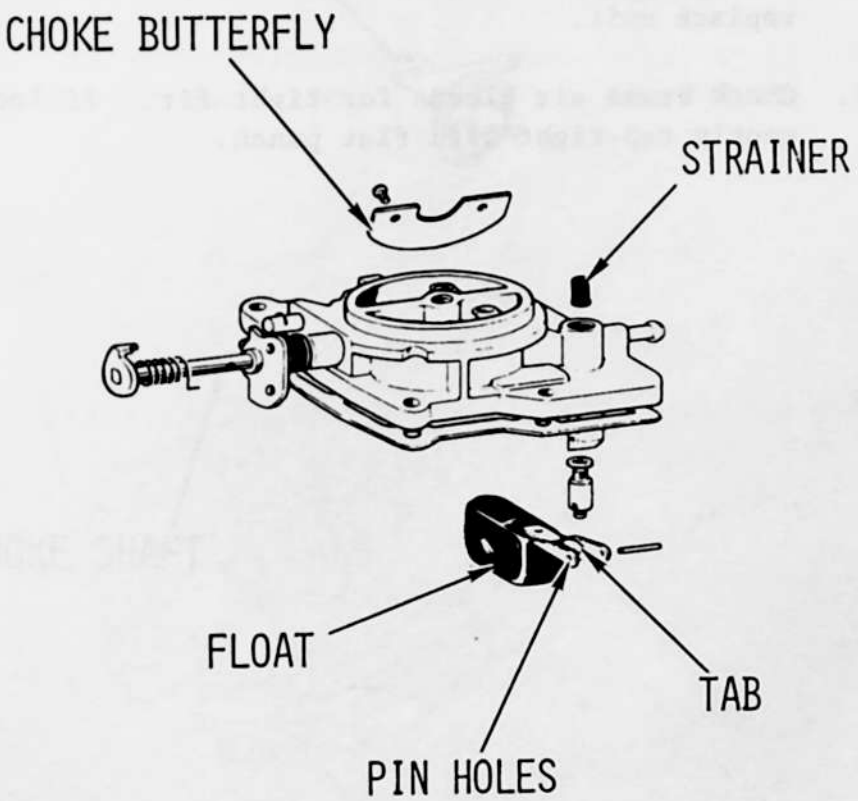
6. MarkII/Corona only: Check choke cover for cracks and bimetallic spring for deformation.

7. Inspect choke butterfly for deformation. Check valve for smooth movement and excessive shaft play in bore.

   NOTE

   If shaft is sloppy or binds, go to SPECIAL SERVICING. If OK, go to next step.

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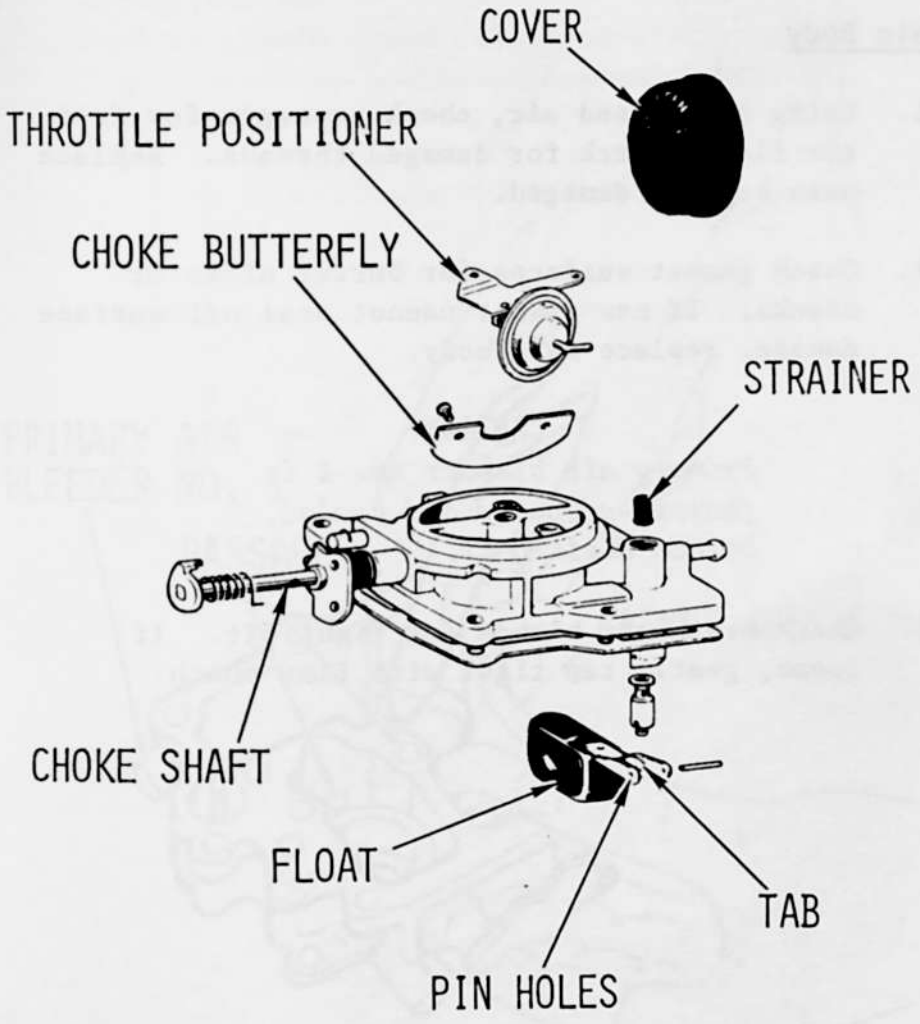
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8. Check fuel inlet strainer for rust.

9. Check throttle positioner diaphragm by breathing in and out on fitting. Arm should travel smoothly. If not, diaphragm is ruptured; replace unit.

10. Check brass air bleeds for tight fit. If loose, gently tap tight with flat punch.

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8R-C CARBURETOR

Main Body

11. Using compressed air, check passages for free air flow. Check for damaged threads. Replace main body if damaged.

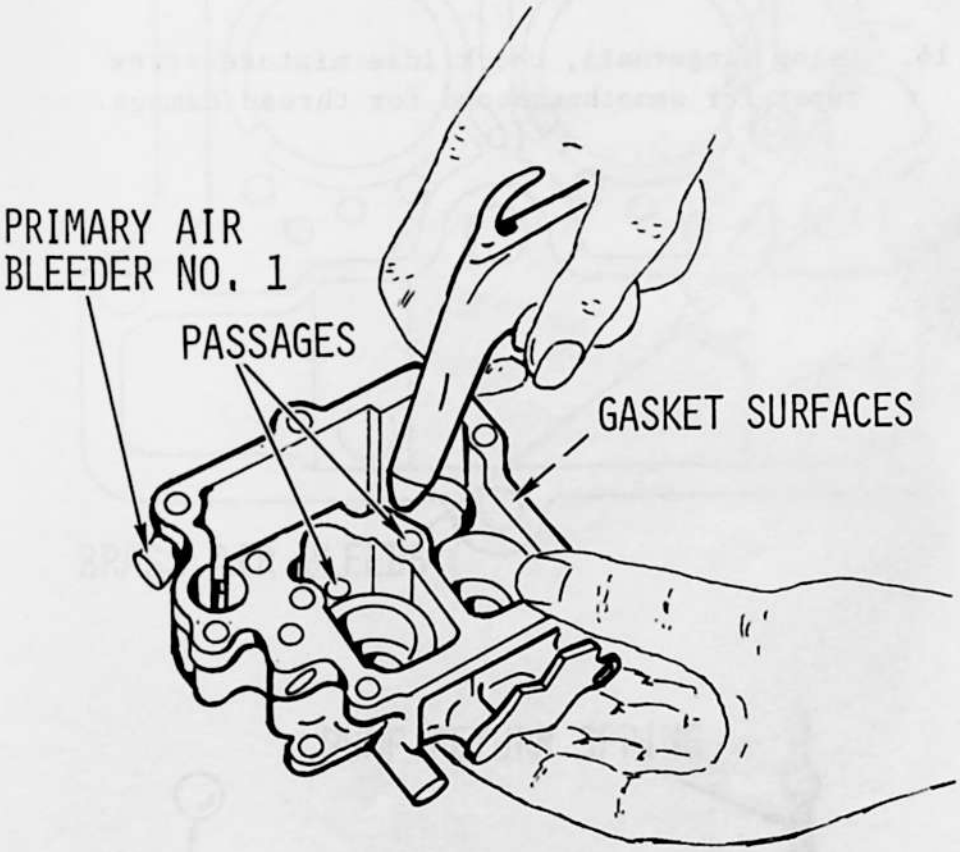
12. Check gasket surfaces for burrs, nicks or cracks. If new gasket cannot seal off surface damage, replace main body.

CAUTION

Primary air bleeder no. 1 is factory-adjusted and sealed. Do not disturb it.

13. Check brass air bleeds for tight fit. If loose, gently tap tight with flat punch.

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8144

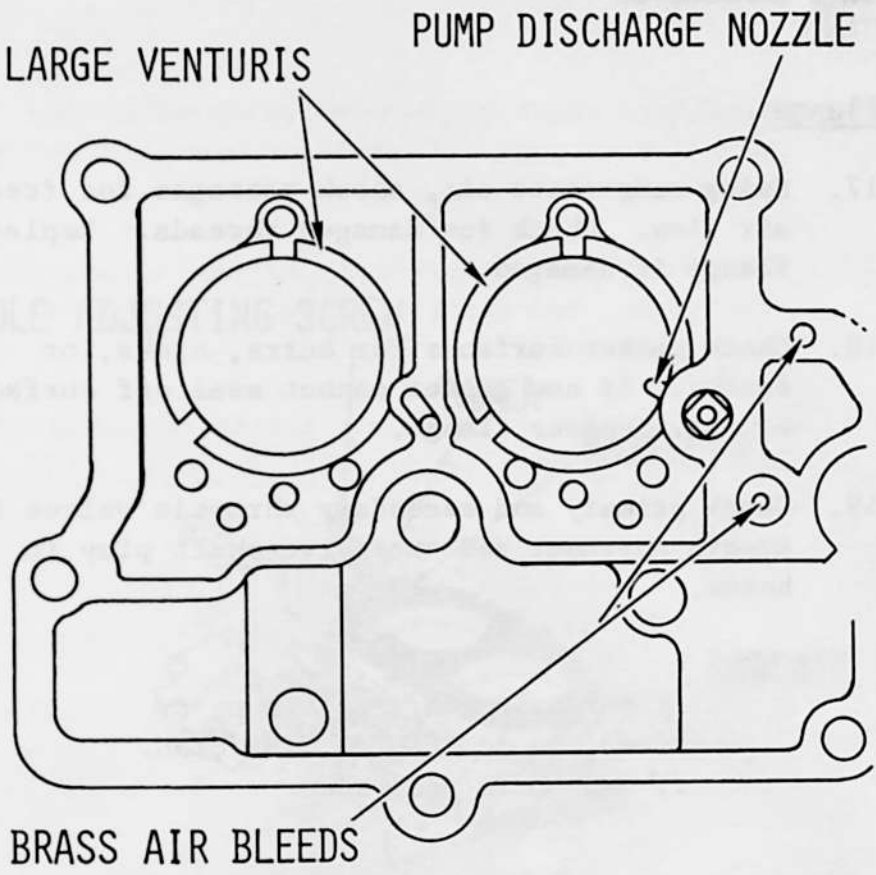
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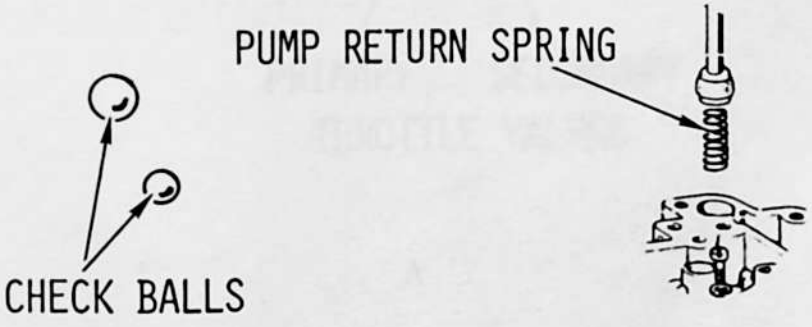
14. Inspect check balls for rust, nicks, or burrs. Replace if damaged.

15. Check accelerator pump spring for rust and weakness. Replace if damaged.

16. Using fingernail, check idle mixture screw taper for smoothness and for thread damage.

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Flange

17. Using compressed air, check passages for free air flow. Check for damaged threads. Replace flange if damaged.

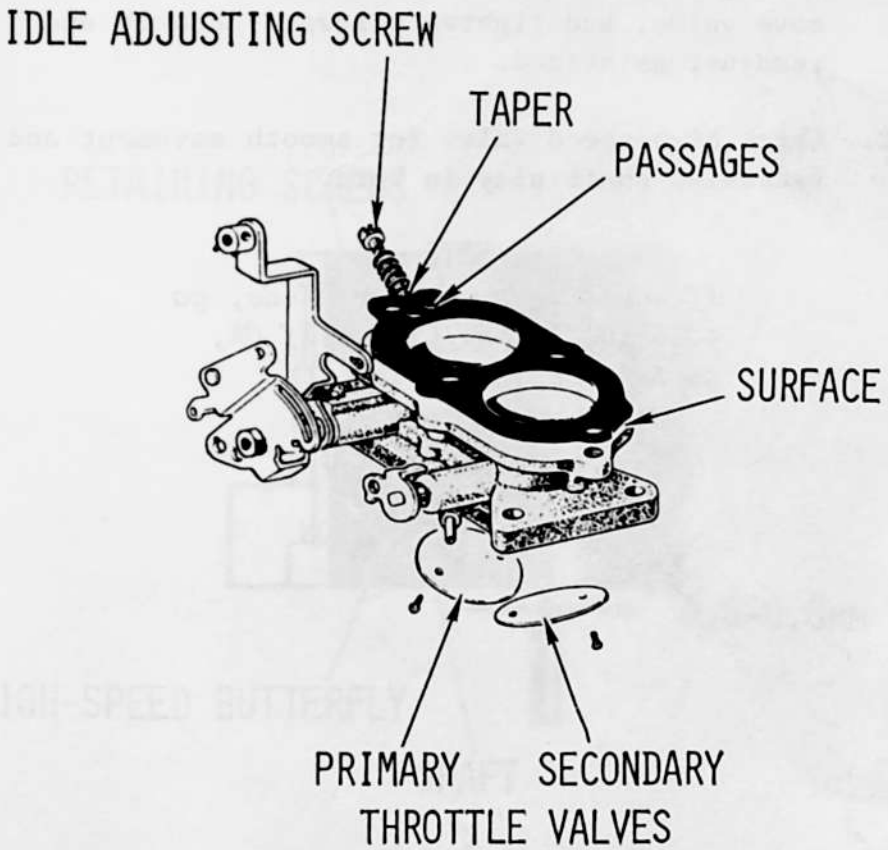
18. Check gasket surfaces for burrs, nicks, or cracks. If new gasket cannot seal off surface damage, replace flange.

19. Check primary and secondary throttle valves for smooth movement and excessive shaft play in bores.

NOTE

If throttle shaft is sloppy or binds, go to SPECIAL SERVICING. If OK, go to next step.

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20. Completely close high-speed valve with Wire Gauge; check that clearance between butterfly and bore is 0.6-0.8 mm.

21. To adjust, loosen butterfly retaining screws, move valve, and tighten screws. Recheck and readjust as needed.

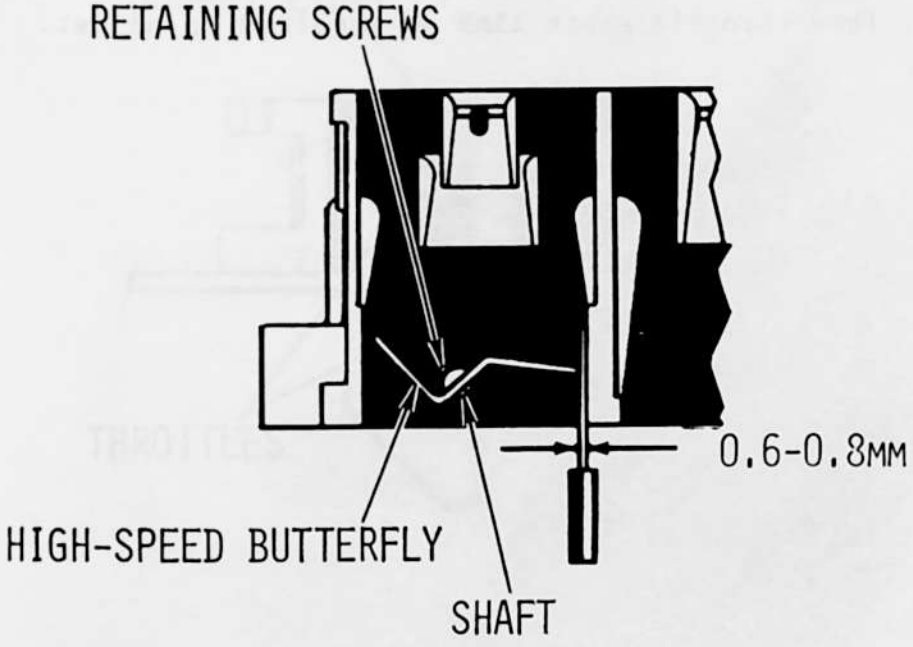
22. Check high-speed valve for smooth movement and excessive shaft play in bore.

NOTE

If shaft is sloppy or binds, go to SPECIAL SERVICING. If OK, go to ASSEMBLY.

END OF INSPECTION

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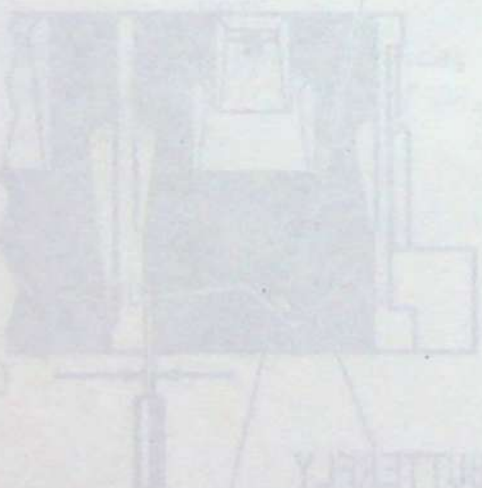
8R-C CARBURETOR

ASSEMBLY

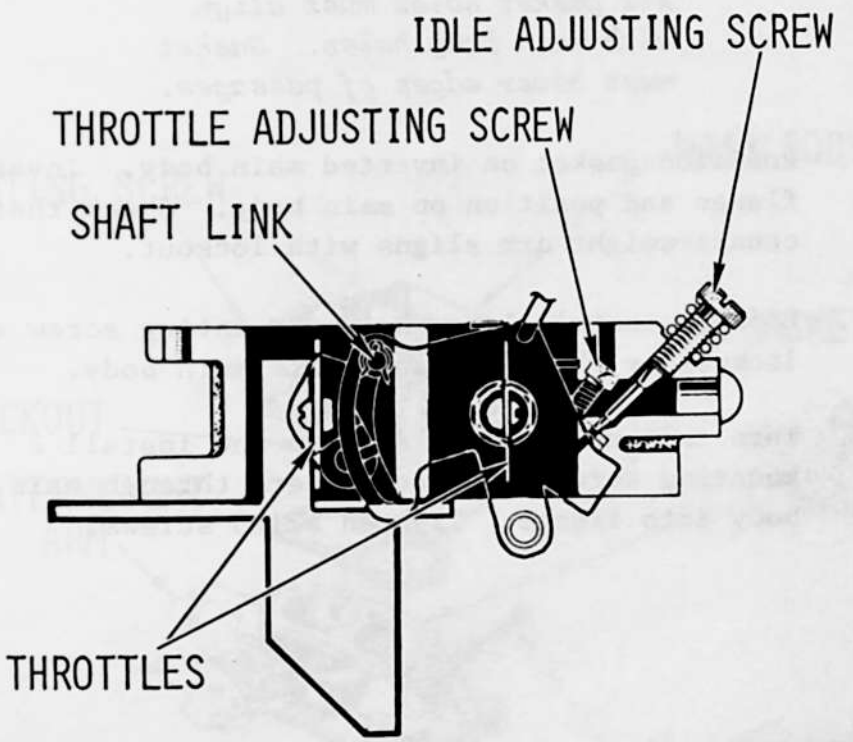
Flange

1. With fingers, screw in idle mixture adjusting screw and spring until it seats. Back off 2 turns.

2. Check that throttle valves open fully to 90°. Bend throttle shaft link as required to adjust.



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8R-C CARBURETOR

Main Body

CAUTION

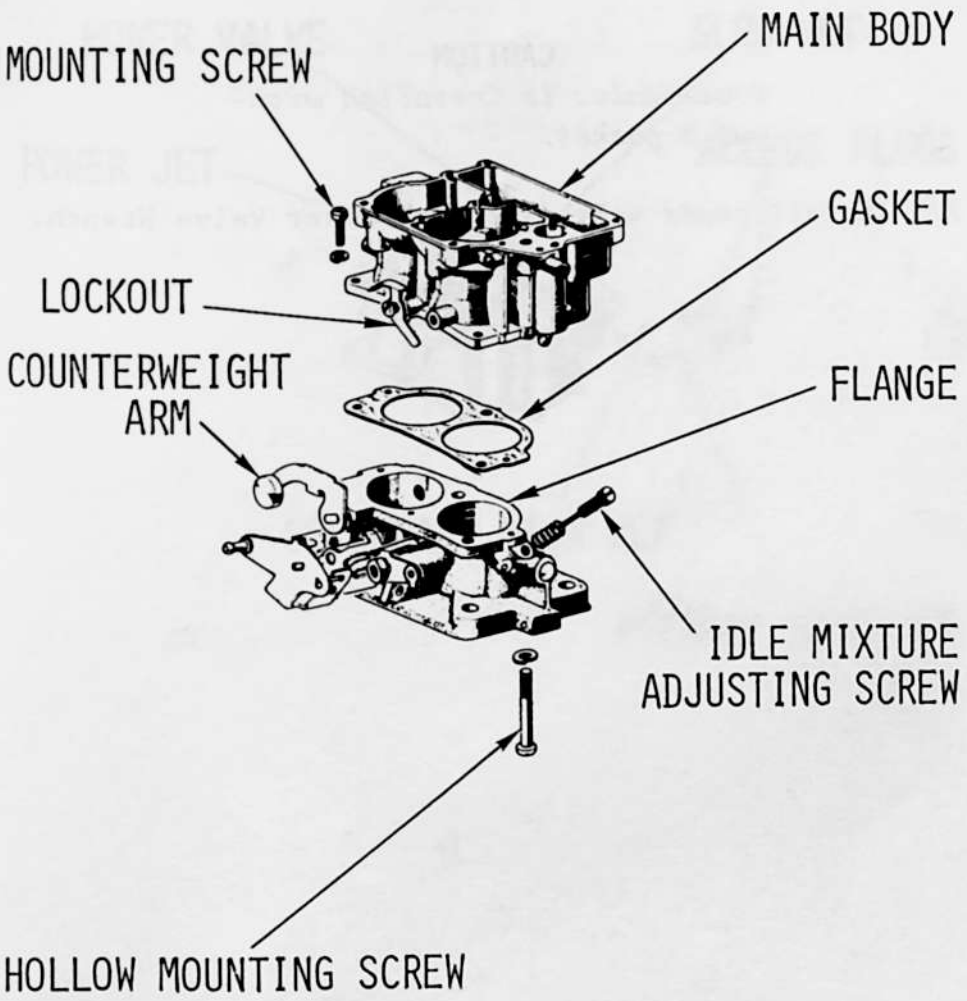
All gasket holes must align with main body holes. Gasket must cover edges of passages.

3. Position gasket on inverted main body. Invert flange and position on main body. Check that counterweight arm aligns with lockout.

4. Loosely install long, hollow mounting screw and lockwasher through flange into main body.

5. Turn carburetor right side up and install 2 mounting screws and lockwashers through main body into flange. Tighten all 3 screws.

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NOTE

Early overhaul kits do not supply power valve jet.

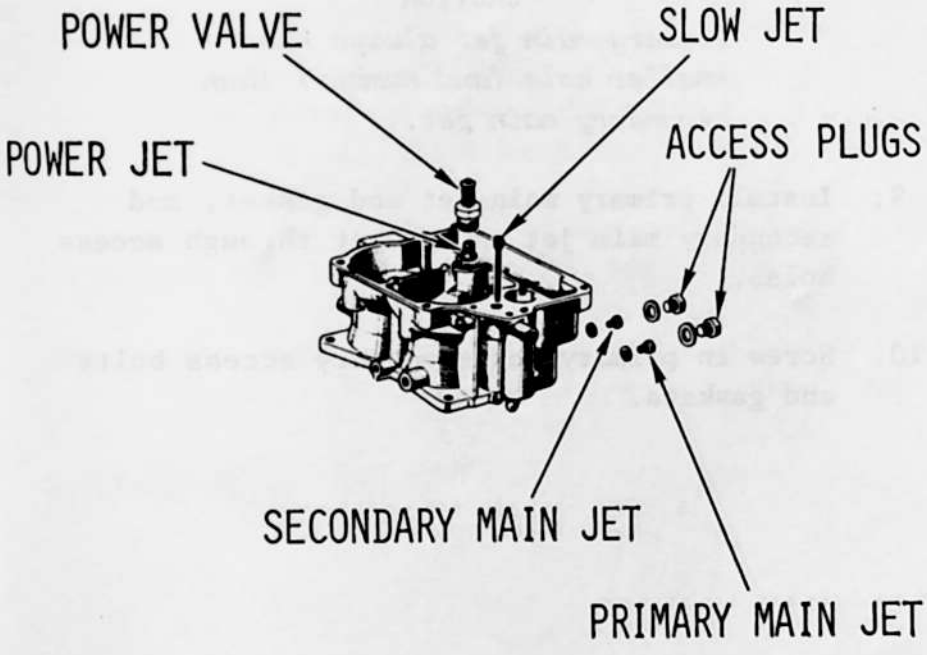
6. If necessary, install power jet in new power valve. Do not use a gasket.

CAUTION

Power valve is installed without a gasket.

7. Install power valve/jet with Power Valve Wrench.

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CAUTION

Slow jet is installed without a gasket.

8. Install slow jet.

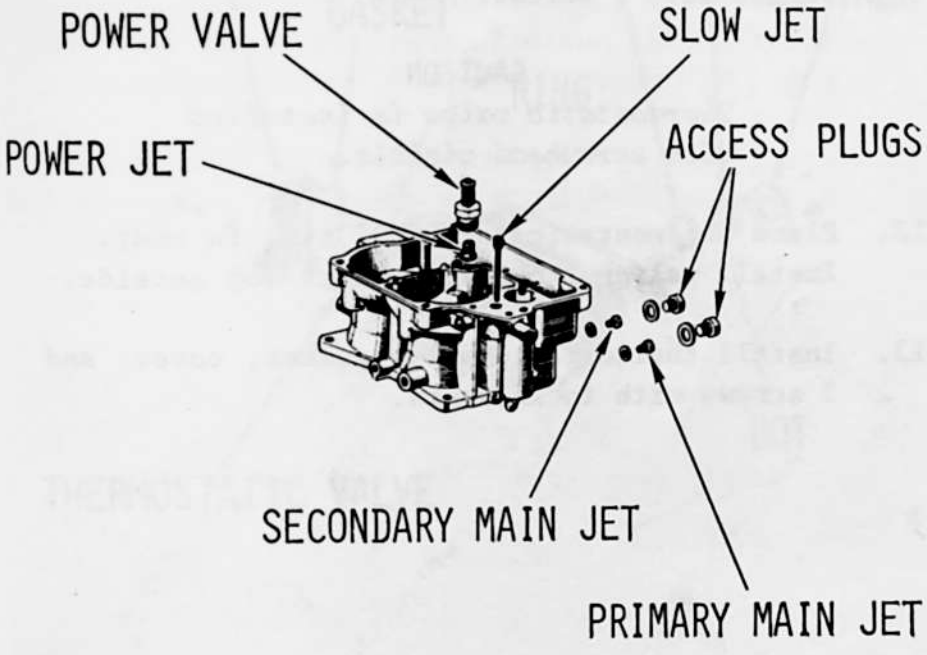
CAUTION

Primary main jet always has smaller hole (and number) than secondary main jet.

9. Install primary main jet and gasket, and secondary main jet and gasket through access holes.

10. Screw in primary and secondary access bolts and gaskets.

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NOTE

Level glass is installed with dot inside and thicker bubble outside.

11. Install level gauge gasket, glass, and retainer. Secure with 2 screws.

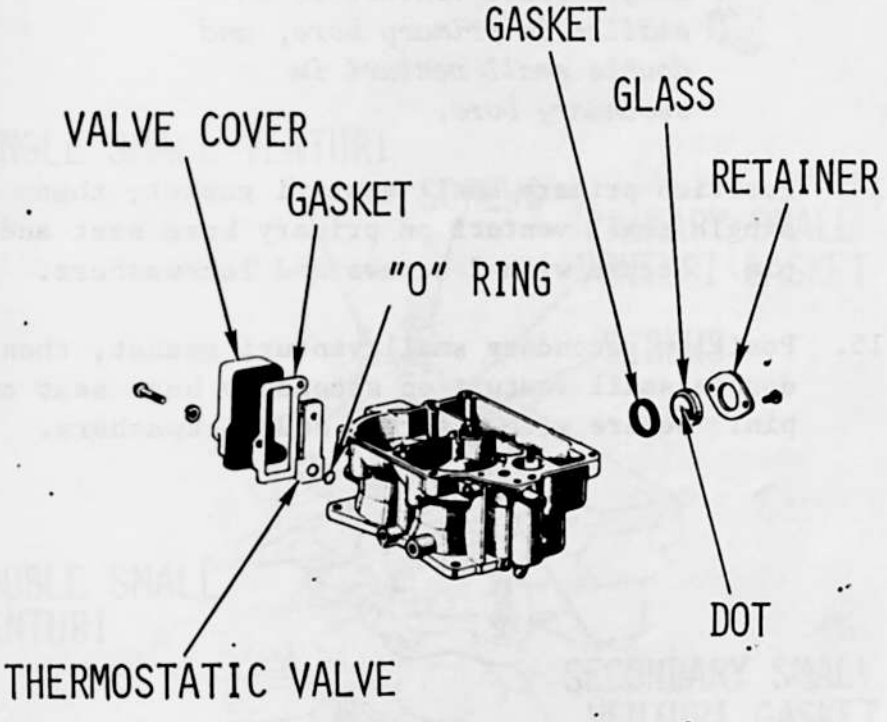
CAUTION

Thermostatic valve is installed with screwhead visible.

12. Place thermostatic valve "O" ring in seat. Install valve with screwhead at top outside.

13. Install thermostatic valve gasket, cover, and 3 screws with lockwashers.

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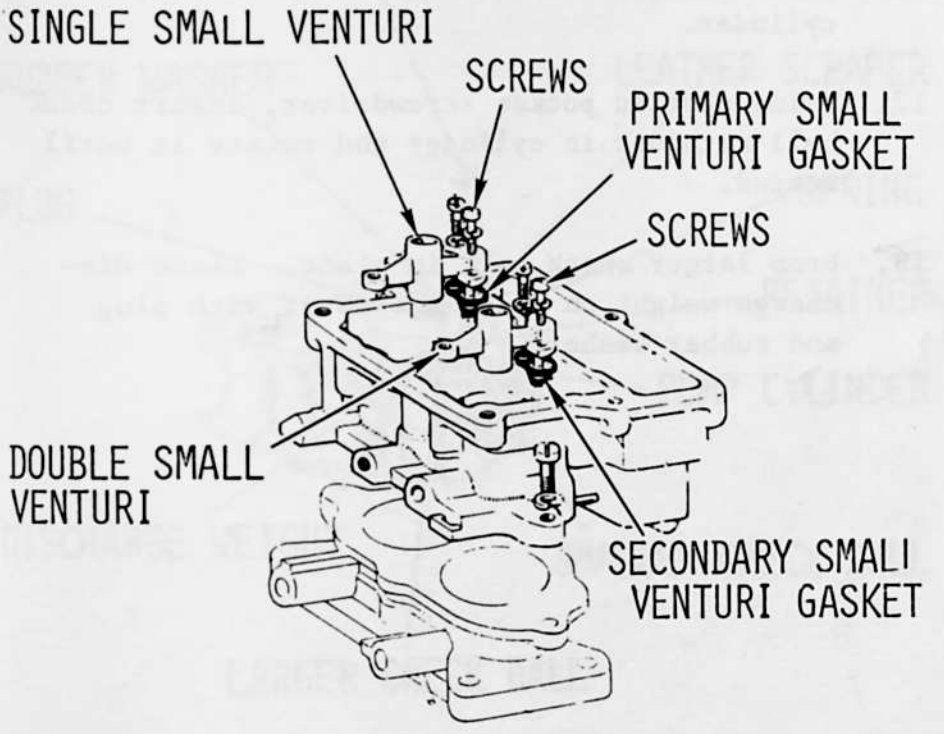
NOTE

Single small venturi is installed in primary bore, and double small venturi in secondary bore.

14. Position primary small venturi gasket, then single small venturi on primary bore seat and pin. Secure with 2 screws and lockwashers.

15. Position secondary small venturi gasket, then double small venturi on secondary bore seat and pin. Secure with 2 screws and lockwashers.

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CAUTION

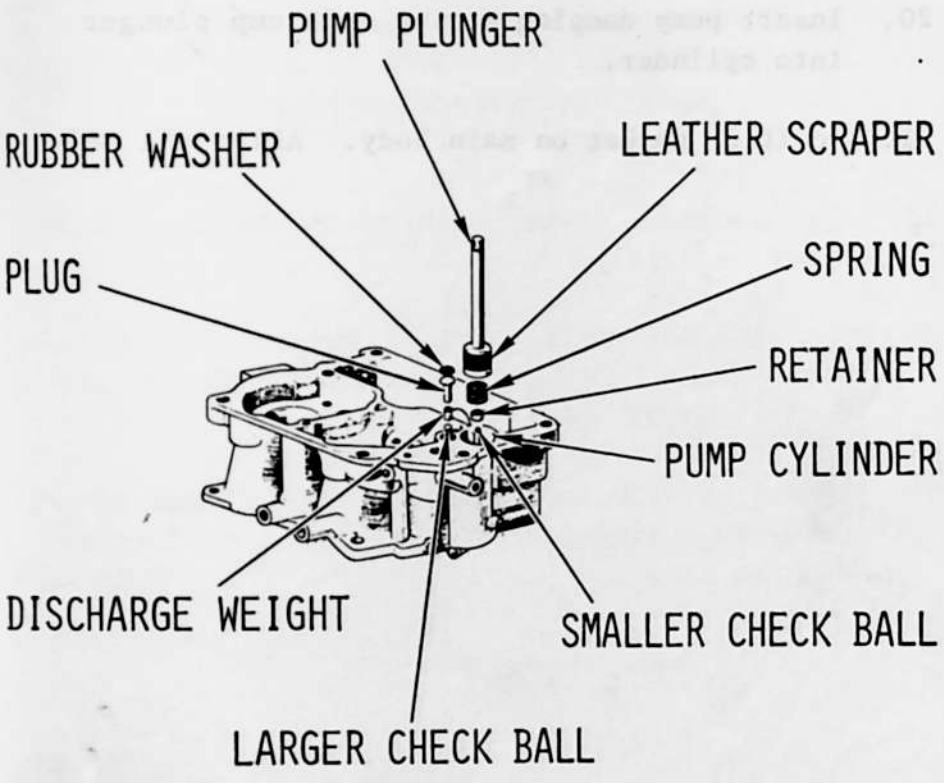
Smaller ball is for accelerator pump cylinder.

16. Put smaller check ball in bottom of pump cylinder.

17. Using slotted pocket screwdriver, insert check ball retainer in cylinder and rotate it until seated.

18. Drop larger check ball in place. Place discharge weight on ball, and cover with plug and rubber washer.

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8138

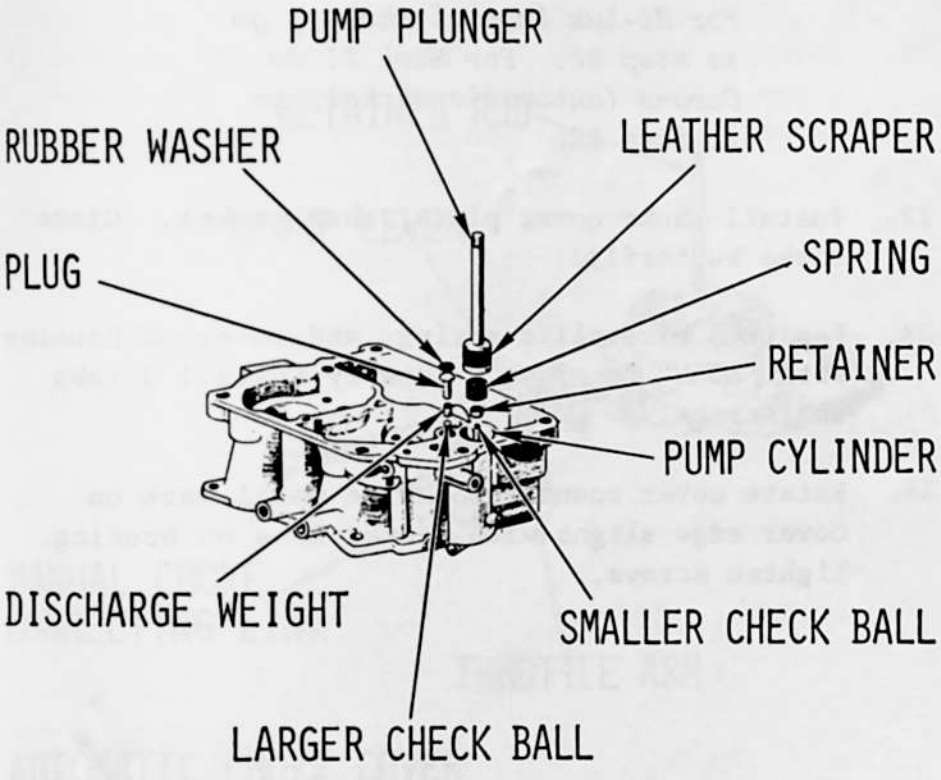
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19. Dip accelerator pump plunger in clean solvent to moisten leather scraper.

20. Insert pump damping spring and pump plunger into cylinder.

21. Position gasket on main body. Align all holes.

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8R-C CARBURETOR

Air-Horn

NOTE

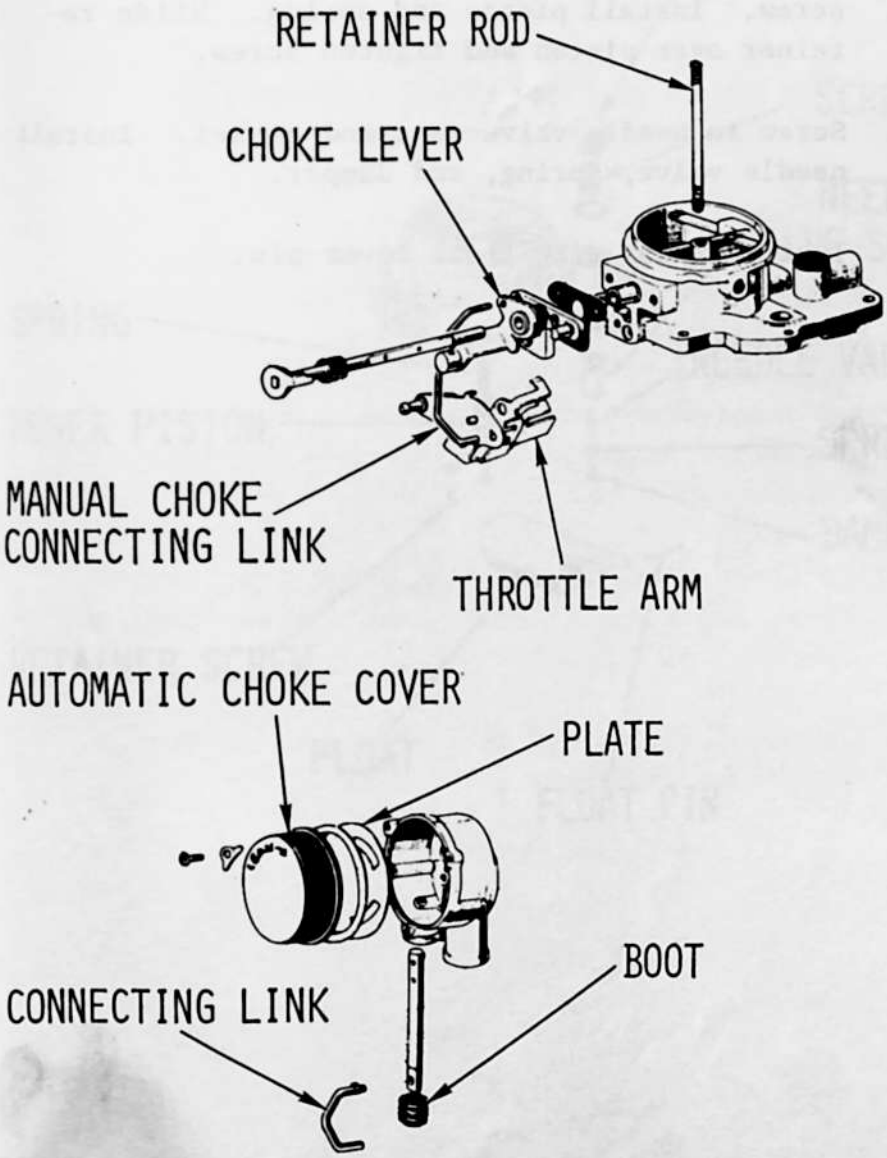
For Hi-Lux (manual choke), go to step 25. For Mark II or Corona (automatic choke), go to step 22.

22. Install choke cover plate, then gasket. Close choke butterfly.

23. Position bimetallic spring, and cover on housing with "LEAN" on right. Loosely install 3 tabs and screws.

24. Rotate cover counterclockwise until mark on cover edge aligns with center line on housing. Tighten screws.

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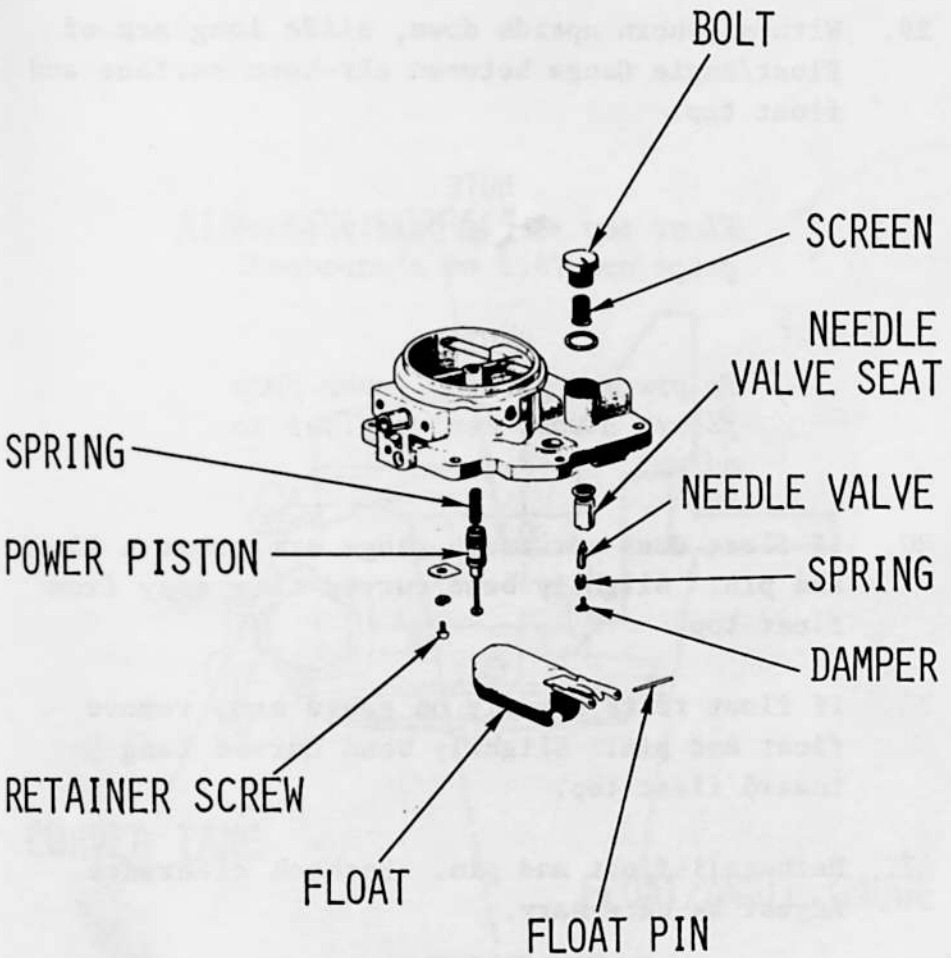
25. Insert fuel inlet screen tapered end into bolt. Install screen, gasket, and bolt in top of fuel inlet.

26. Invert air-horn and loosen power piston retainer screw. Install piston and spring. Slide retainer over piston and tighten screw.

27. Screw in needle valve seat and gasket. Install needle valve, spring, and damper.

28. Install float with float lever pin.

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Float-Raised Adjustment

29. With air-horn upside down, slide long arm of Float/Angle Gauge between air-horn surface and float top.

NOTE

Float top should barely touch gauge arm (9.3 mm clearance).

CAUTION

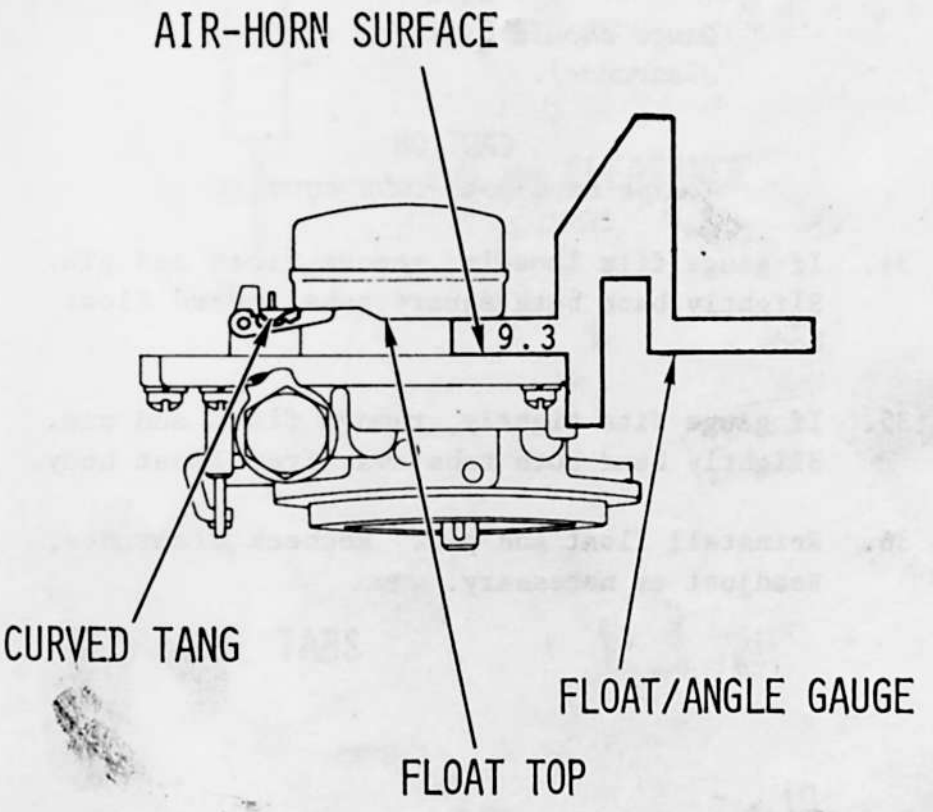
To prevent pulling lever from float, always remove float to adjust.

30. If float does not touch gauge arm, remove float and pin. Slightly bend curved tang away from float top.

31. If float rests heavily on gauge arm, remove float and pin. Slightly bend curved tang toward float top.

32. Reinstall float and pin. Recheck clearance. Adjust as necessary.

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8R-C CARBURETOR

Float-Lowered Adjustment

33. With air-horn upside down, raise float all the way. Slide 1.0 mm Wire Gauge between float square tabs and pillar.

NOTE

Gauge should just fit (1.0 mm clearance).

CAUTION

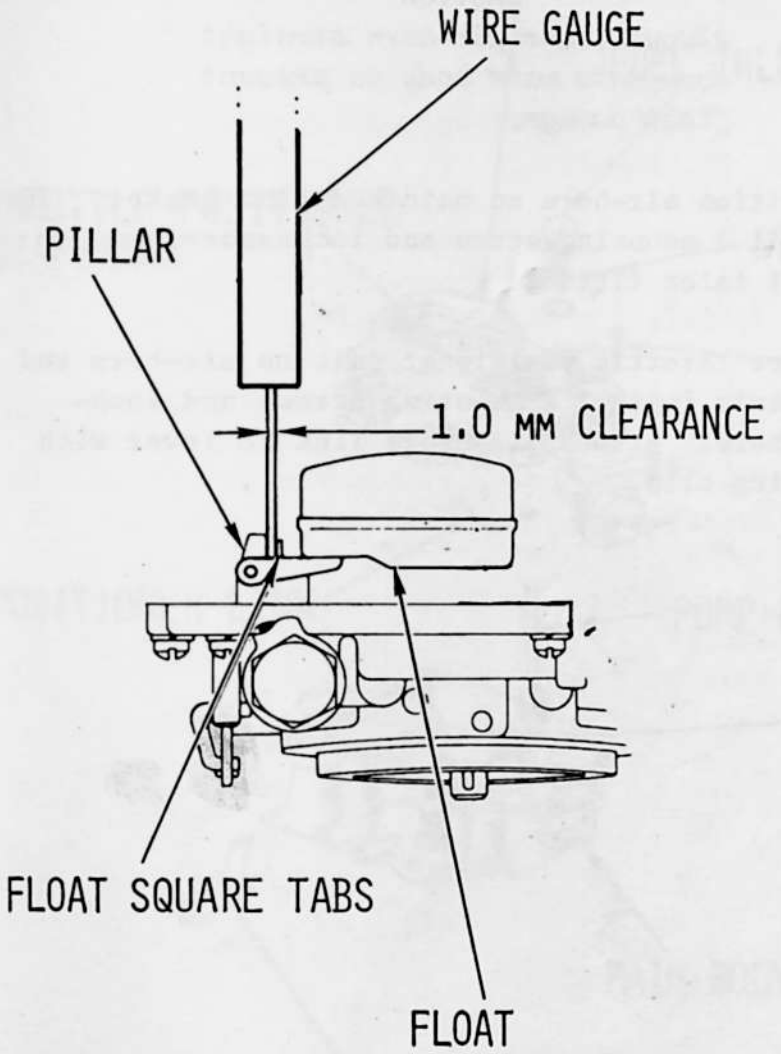
Always bend both tabs equally

34. If gauge fits loosely, remove float and pin. Slightly bend both square tabs toward float body.

35. If gauge fits tightly, remove float and pin. Slightly bend both tabs away from float body.

36. Reinstall float and pin. Recheck clearance, Readjust as necessary.

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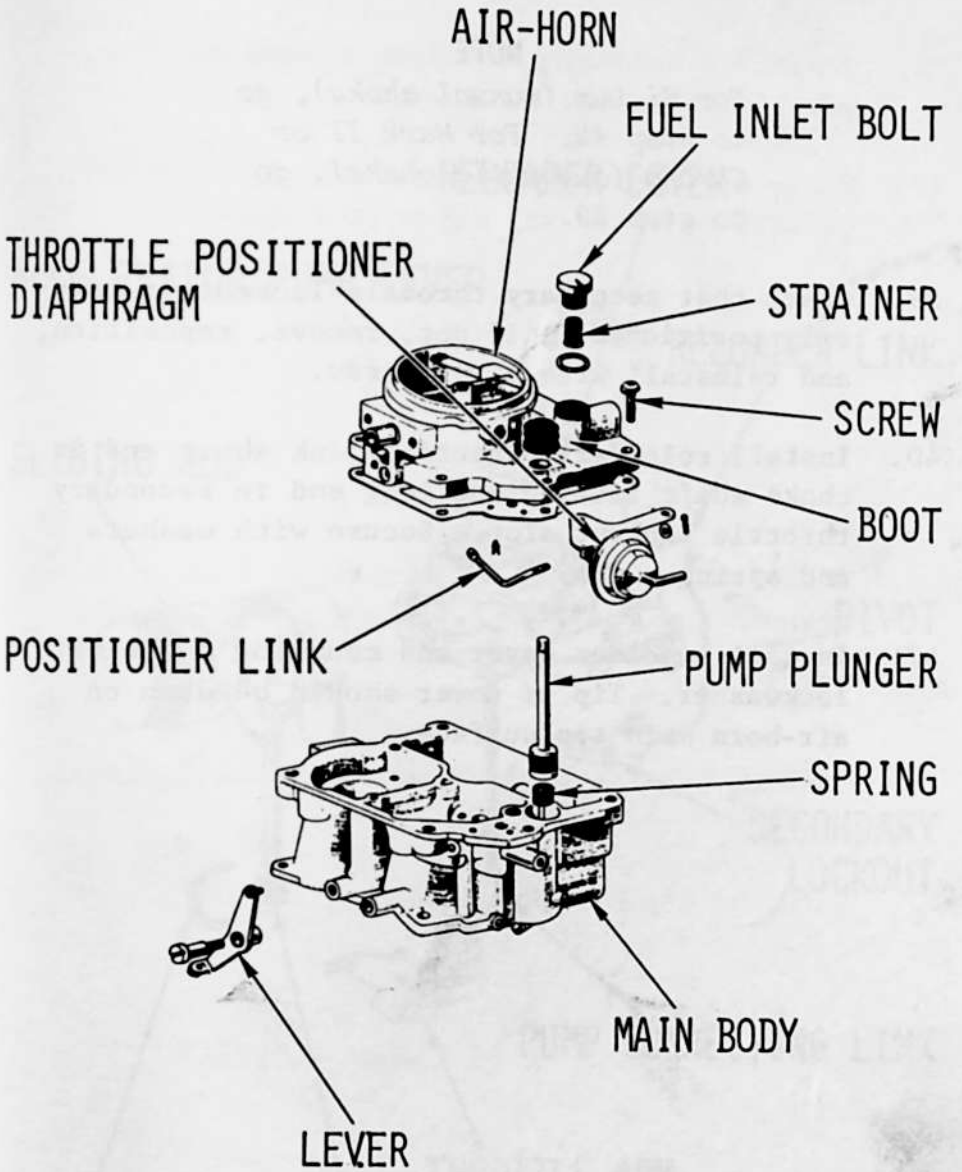
CAUTION

Always lower air-horn straight down onto main body to prevent float damage.

37. Position air-horn on main body and gasket. Install 1 mounting screw and lockwasher next to fuel inlet fitting.

38. Place throttle positioner unit on air-horn and loosely install 2 mounting screws and lockwashers. Attach diaphragm link to lever with spring clip.

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NOTE

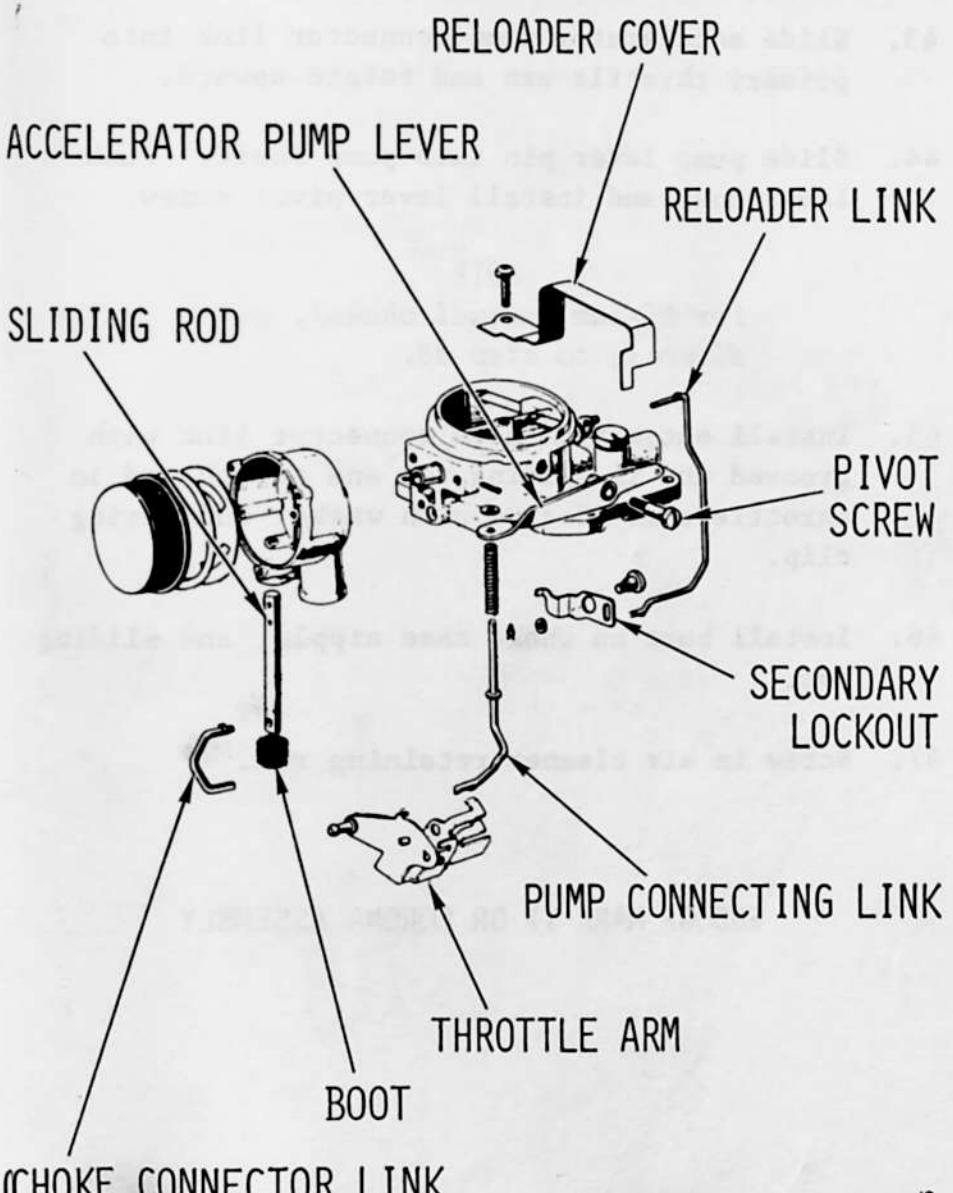
For Hi-Lux (manual choke), go to step 42. For Mark II or Corona (automatic choke), go to step 39.

39. Check that secondary throttle lockout is properly positioned. If not, remove, reposition, and reinstall with pivot screw.

40. Install reloader connecting link short end in choke shaft fitting and long end in secondary throttle lockout slot. Secure with washers and spring clips.

41. Install reloader cover and mounting screw with lockwasher. Tip of cover should be down on air-horn main top surface.

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42. Install 2 remaining mounting screws and lockwashers. Tighten all screws.

43. Slide accelerator pump connector link into primary throttle arm and rotate upward.

44. Slide pump lever pin into pump shaft. Push lever down and install lever pivot screw.

NOTE

For Hi-Lux (manual choke), go directly to step 48.

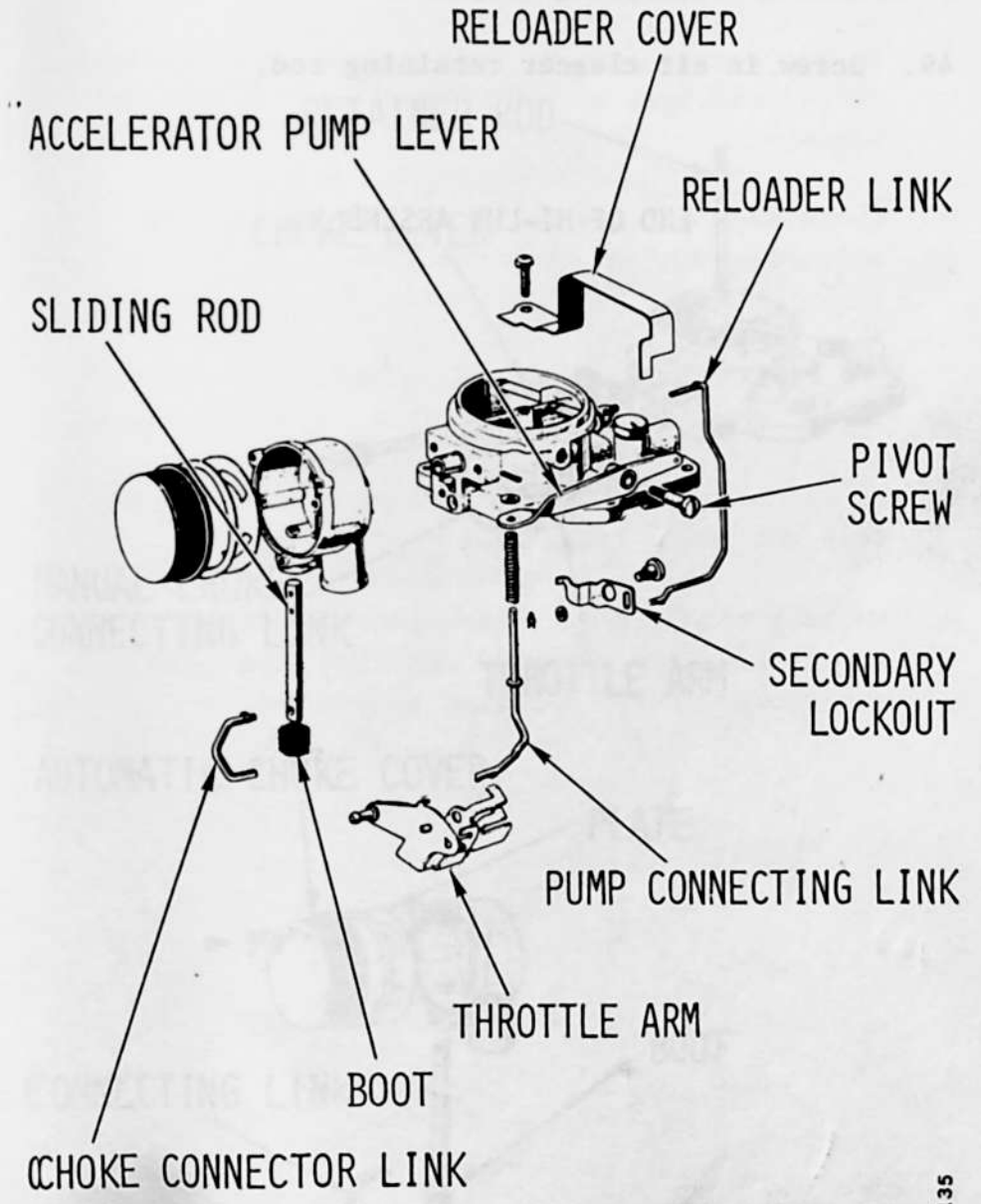
45. Install automatic choke connector link with grooved end in sliding rod and smooth end in throttle arm. Secure with washer and spring clip.

46. Install boot on choke case nipple, and sliding rod.

47. Screw in air cleaner retaining rod.

END OF MARK II OR CORONA ASSEMBLY

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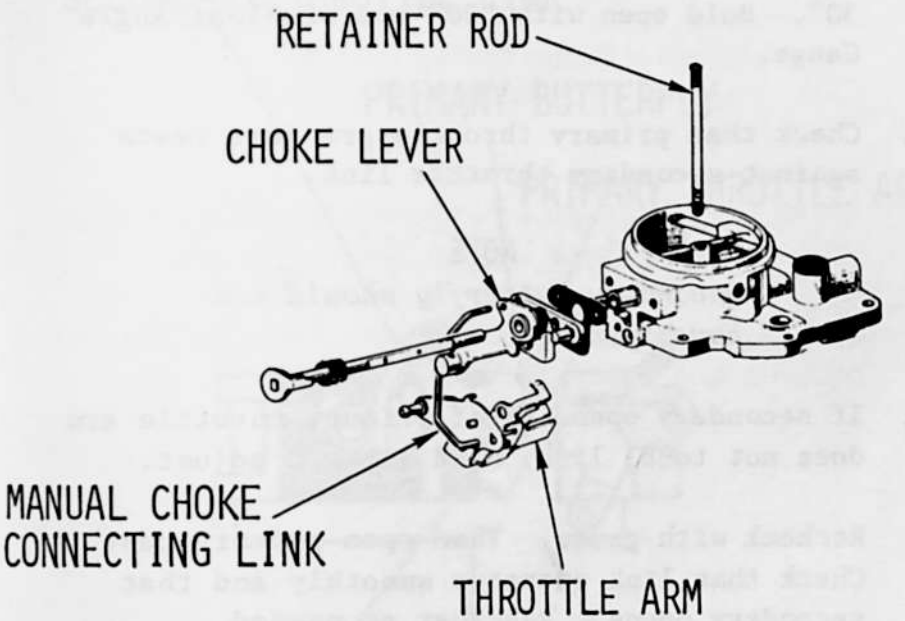
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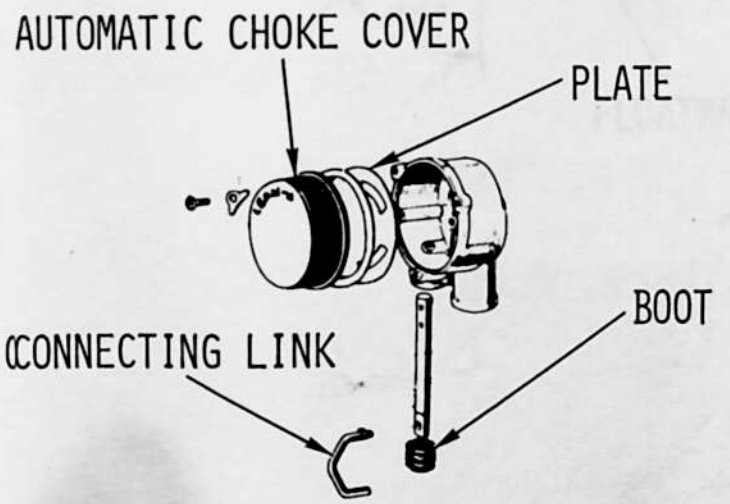
48. Install manual choke connector link in throttle arm. Rotate upward and push into choke lever. Secure with spring clip.

49. Screw in air cleaner retaining rod.

END OF HI-LUX ASSEMBLY

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8R-C CARBURETOR

ADJUSTMENT

Secondary Butterfly Opening Angle

1. Invert carburetor and open primary butterfly to 30°. Hold open with "30" arm of Float/Angle Gauge.

2. Check that primary throttle arm just rests against secondary throttle link.

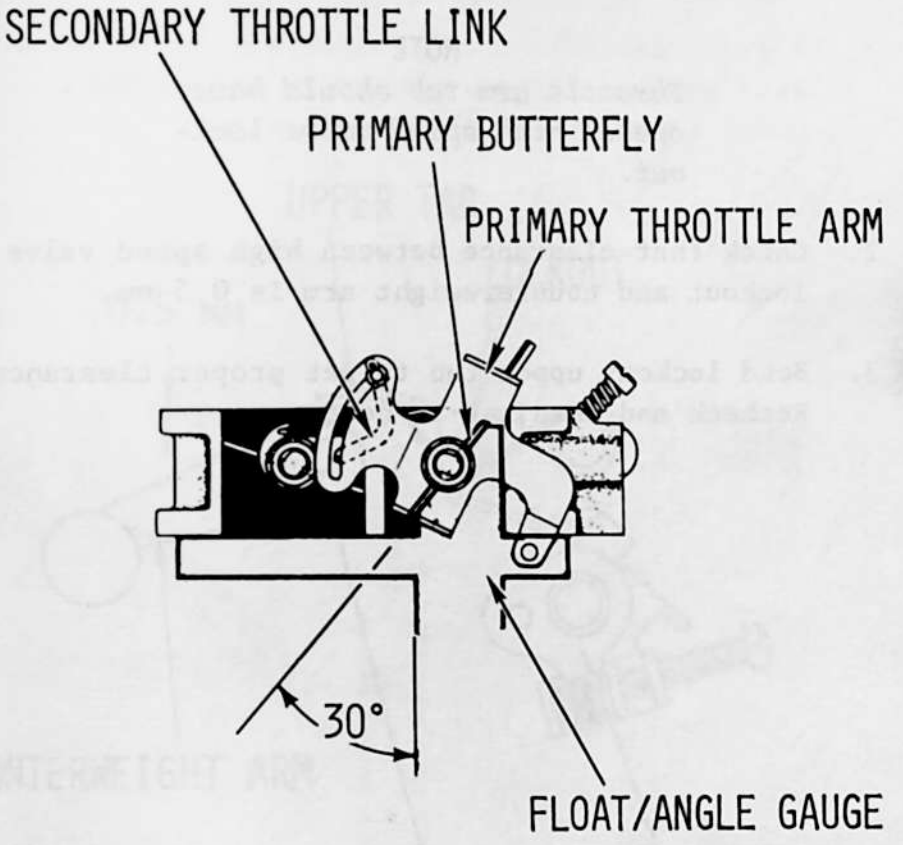
NOTE

Secondary butterfly should not have opened.

3. If secondary opens or if primary throttle arm does not touch link, bend link to adjust.

4. Recheck with gauge. Then open primary past 30°. Check that link operates smoothly and that secondary opens. Readjust as needed.

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8R-C CARBURETOR

High Speed Valve Lockout

1. Open primary throttle arm until it just rests against secondary throttle link.

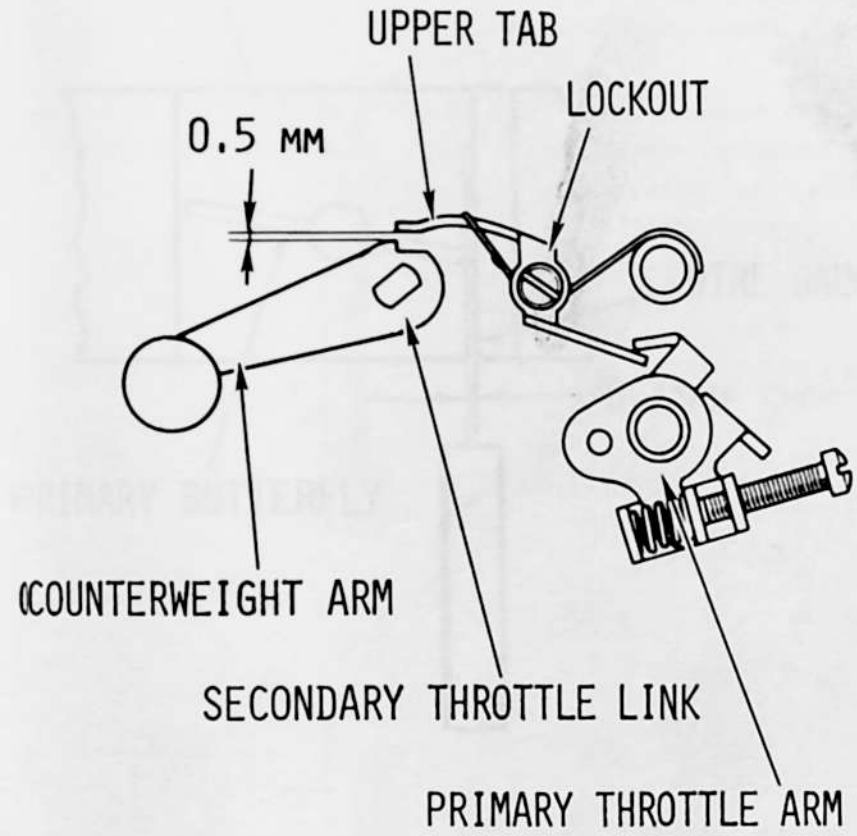
NOTE

Throttle arm tab should have opened high speed valve lock-out.

2. Check that clearance between high speed valve lockout and counterweight arm is 0.5 mm.

3. Bend lockout upper tab to get proper clearance. Recheck and readjust as necessary.

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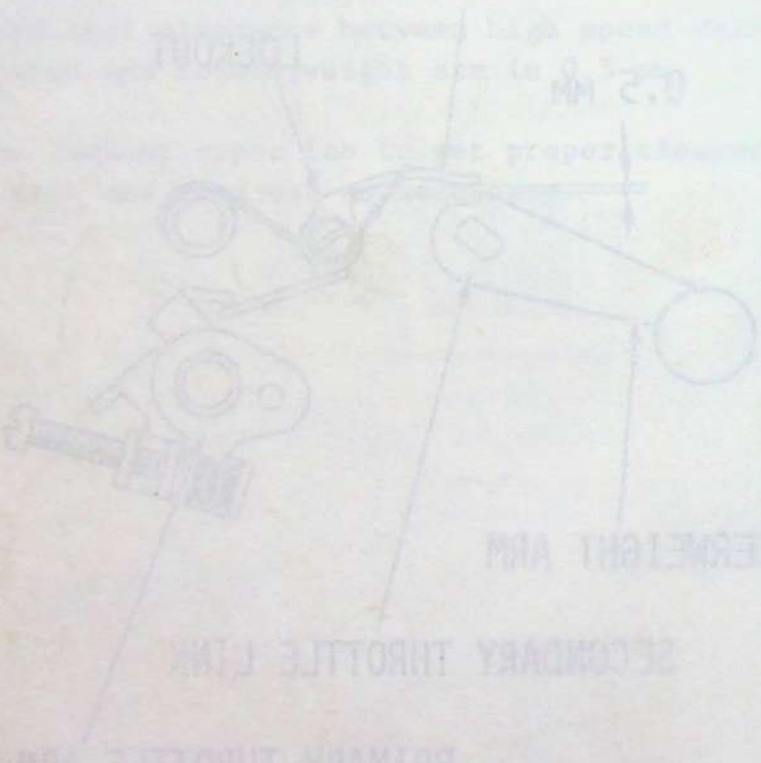
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8R-C CARBURETOR

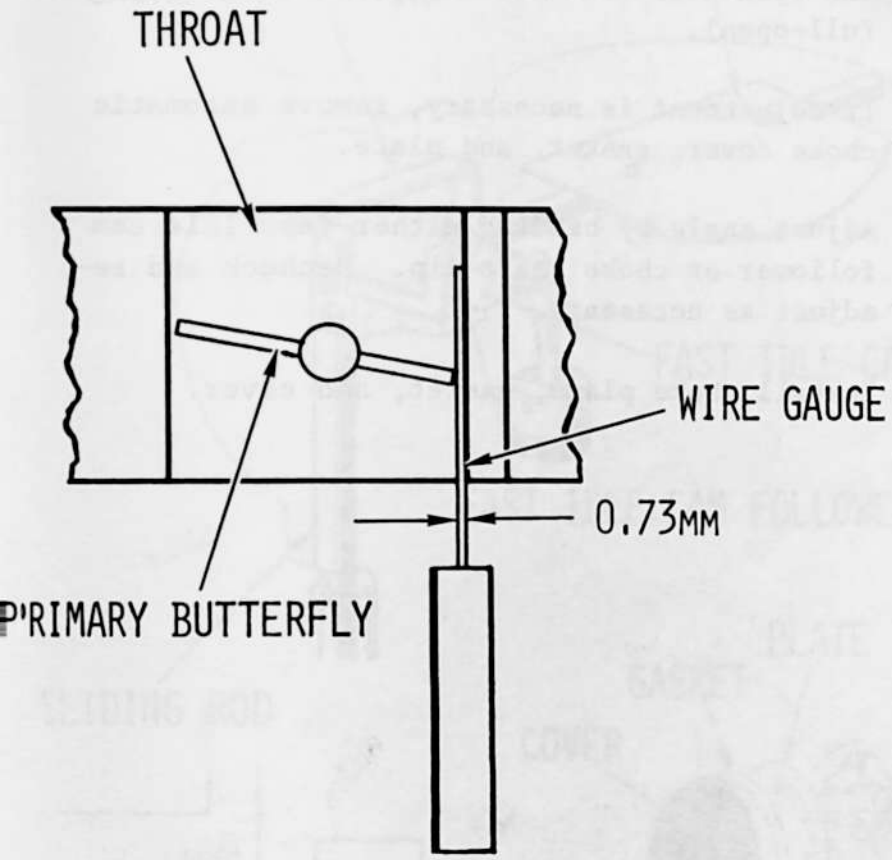
Fast Idle

1. Completely close choke butterfly and invert carburetor.

2. Adjust fast idle screw to provide 0.73 mm clearance between primary butterfly and throat. Check clearance with wire gauge.



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Unloader

1. Hold primary butterfly completely open.

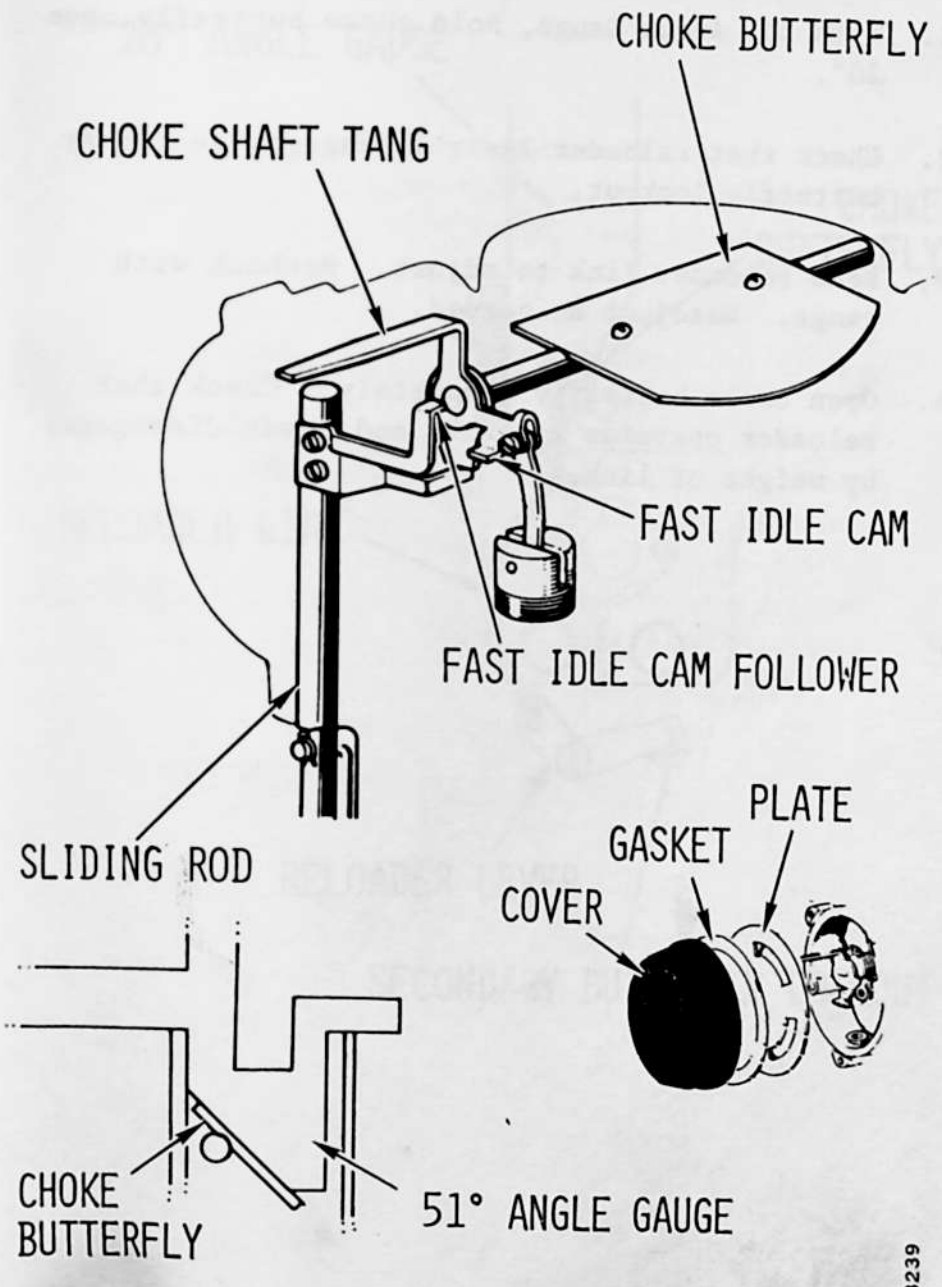
2. With 51° Angle Gauge, check that choke butterfly has opened 19° from closed position (is 51° from full-open).

3. If adjustment is necessary, remove automatic choke cover, gasket, and plate.

4. Adjust angle by bending either fast idle cam follower or choke shaft lip. Recheck and re-adjust as necessary.

5. Install choke plate, gasket, and cover.

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8R-C CARBURETOR

Reloader (Automatic choke only)

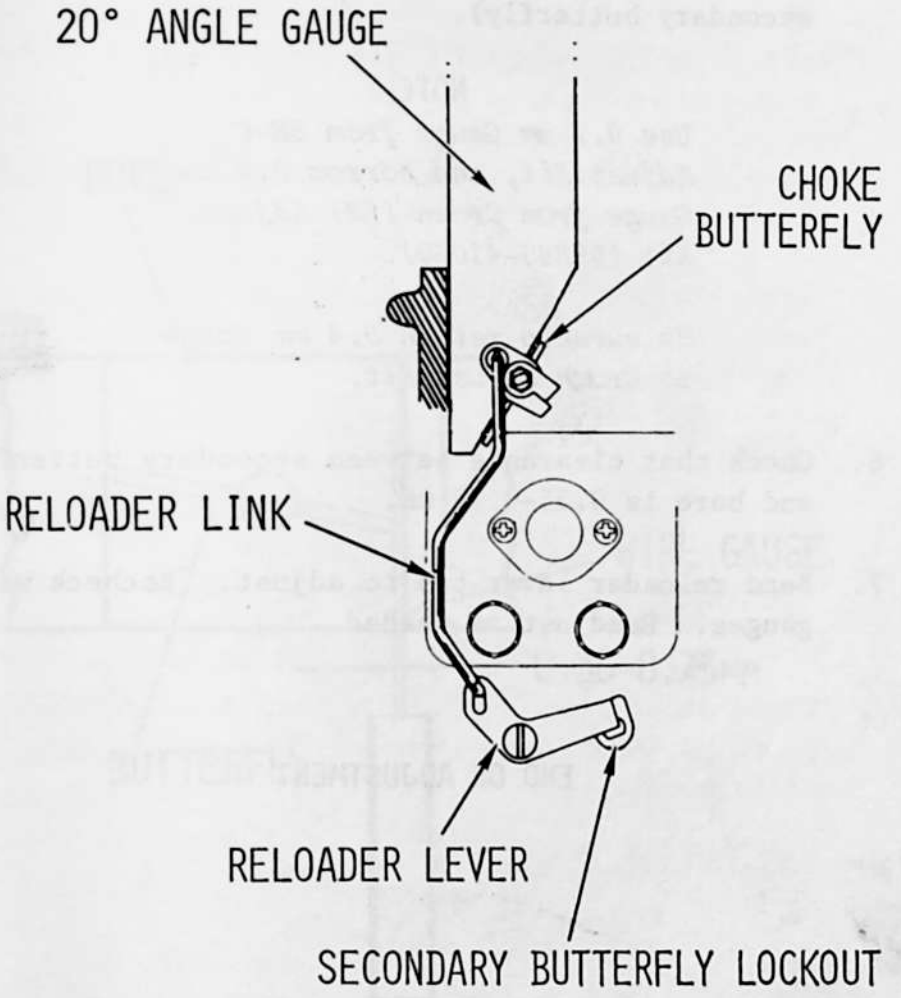
1. With 20° Angle Gauge, hold choke butterfly open 20°.

2. Check that reloader lever disengages secondary butterfly lockout.

3. Bend reloader link to adjust. Recheck with gauge. Readjust as needed.

4. Open choke butterfly completely. Check that reloader operates smoothly and lever disengages by weight of link.

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5. Invert carburetor and completely open primary butterfly (reloader lever should be locking out secondary butterfly).

NOTE

Use 0.7 mm Gauge from 8R-C Adjust Kit, and borrow 0.4 mm Gauge from Crown (2M) Adjust Kit (09240-41030).

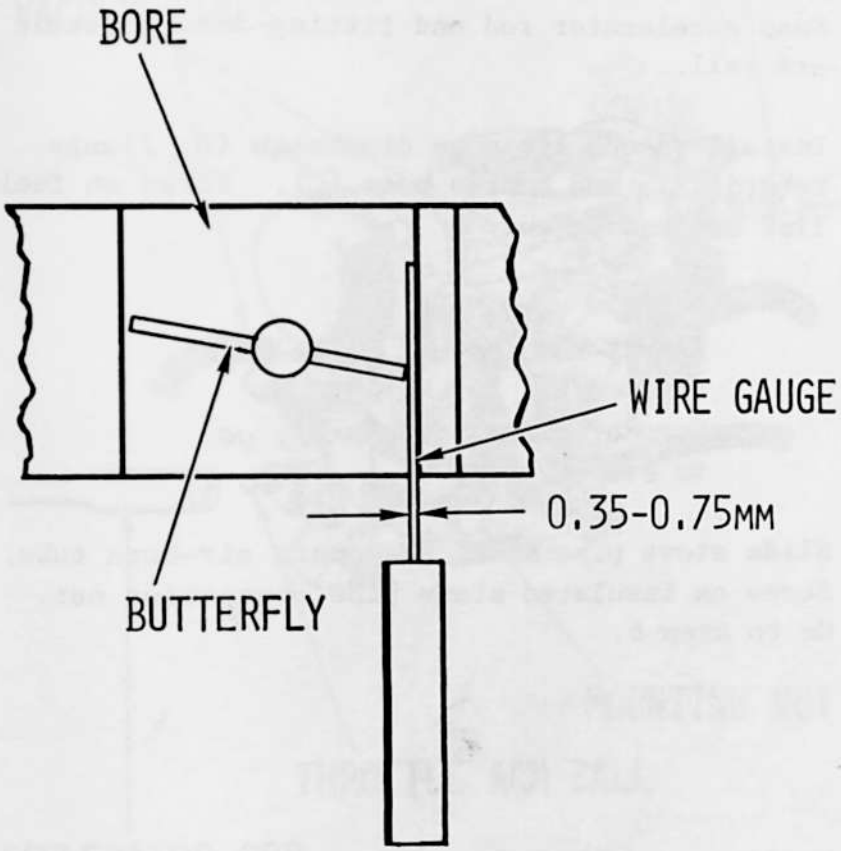
Be sure to return 0.4 mm Gauge to Crown Adjust Kit.

6. Check that clearance between secondary butterfly and bore is 0.35-0.75 mm.

7. Bend reloader lever tab to adjust. Recheck with gauges. Readjust as needed.

END OF ADJUSTMENT

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8R-C CARBURETOR

INSTALLATION

1. Position carburetor on mounting studs with throttle linkage facing rear. Install 4 lock-washers and nuts.

2. Snap accelerator rod end fitting onto throttle arm ball.

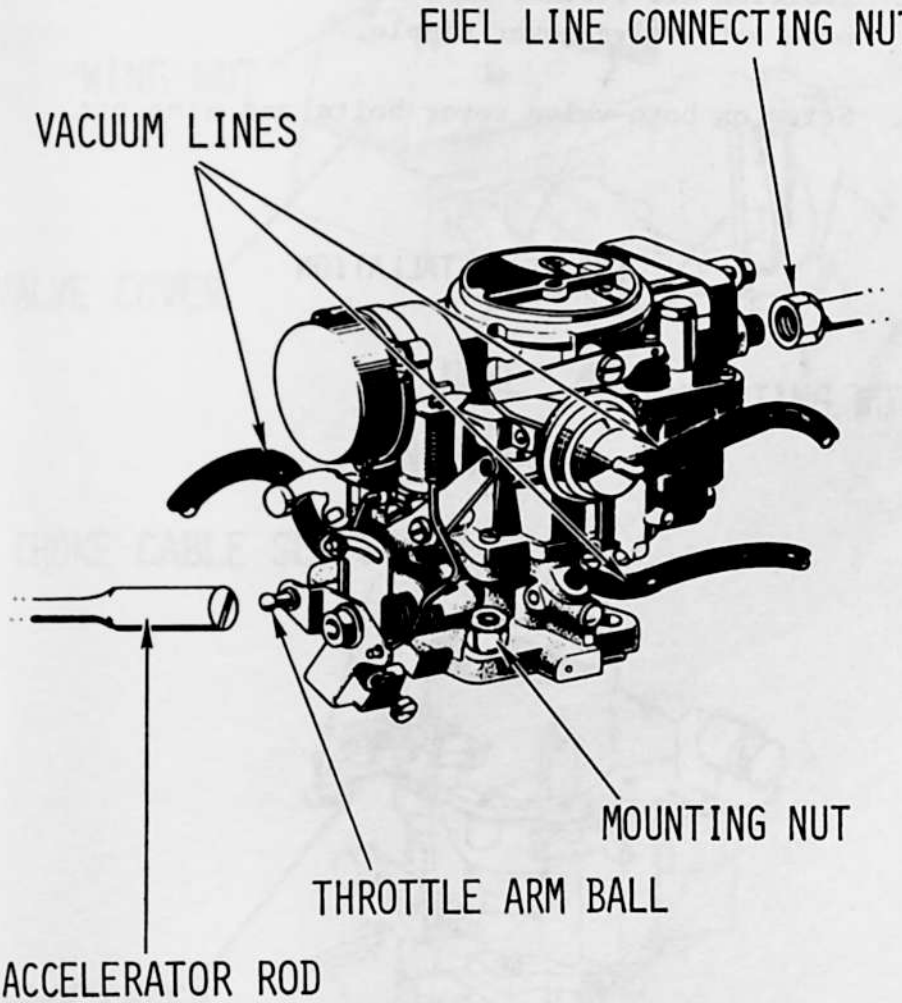
3. Install vacuum lines on diaphragm (D), flange retard (B), and source hose (C). Screw on fuel line connecting nut.

NOTE

For Hi-Lux (manual choke), go to step 5. For Mark II or Corona (automatic choke), go to step 4.

4. Slide stove pipe inlet hose onto air-horn tube. Screw on insulated stove pipe connecting nut. Go to step 6.

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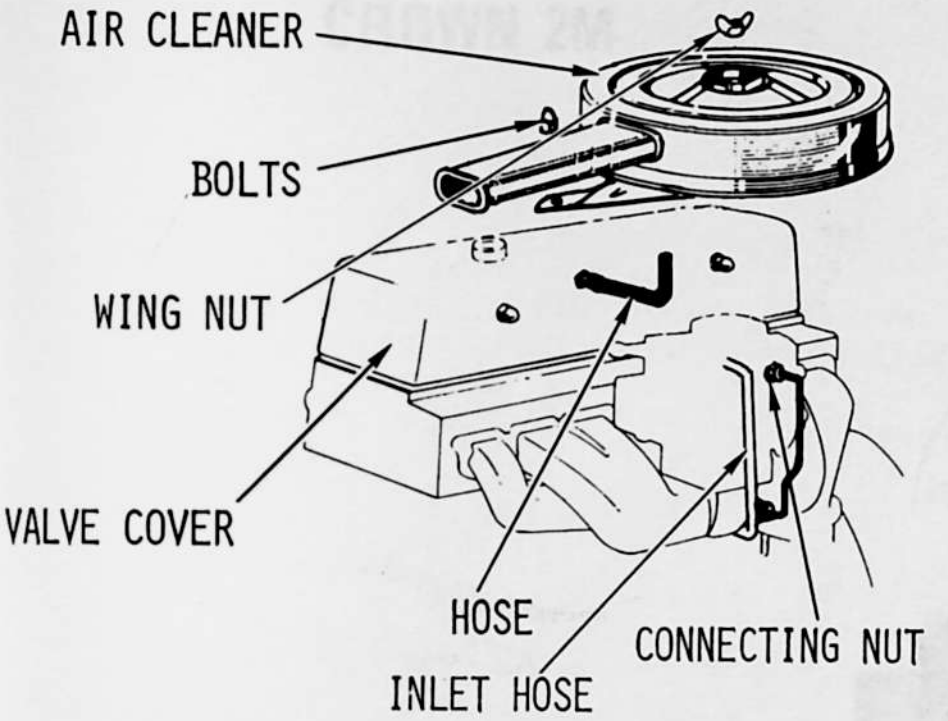
5. Slide choke cable through support into choke lever. Tighten setscrews.

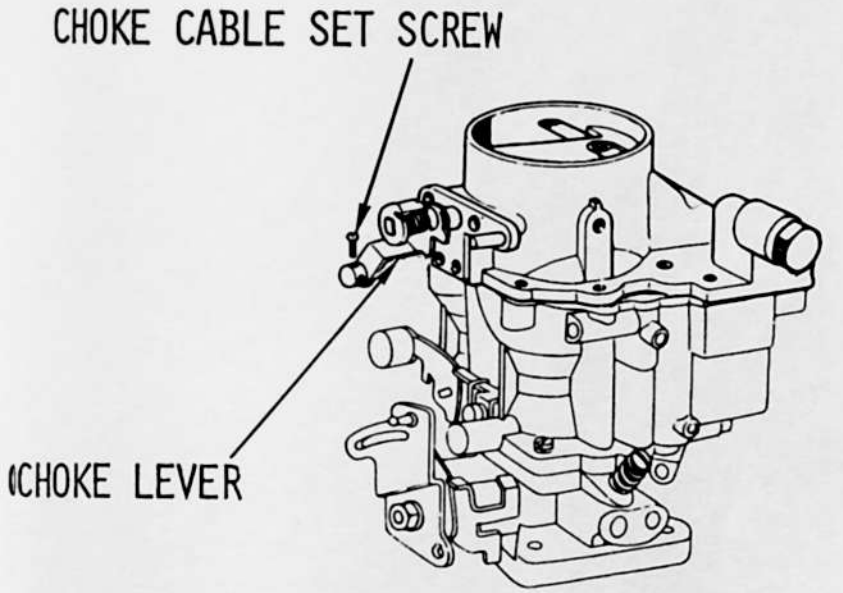
6. Position air-cleaner on carburetor. Slide air hose onto valve cover nipple.

7. Screw on both valve cover bolts and wing nut.

END OF INSTALLATION

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CROWN 2M

5

FUEL SYSTEMS MANUAL

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2M CARBURETOR OVERHAUL

JOB SETUP

Special Tools

Carburetor Screwdriver Set, 09860-11010.
Carburetor Adjust Kit, 09240-41030.

Supplies

2M Carburetor Overhaul Kit.

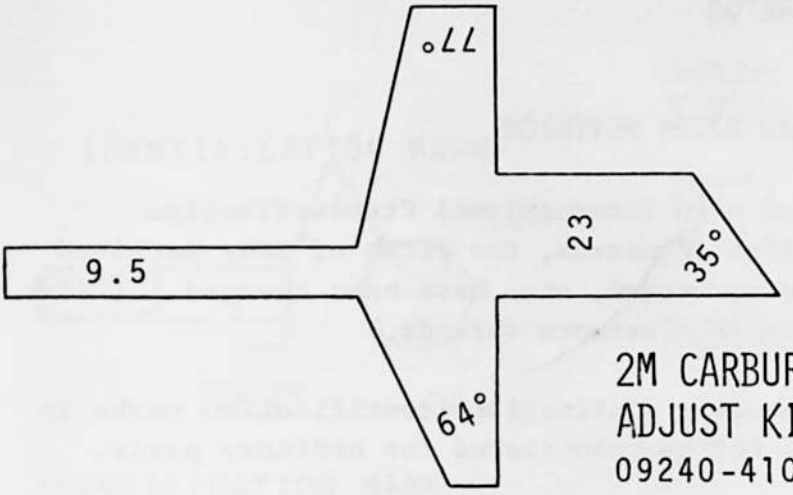
Vehicles

Crown (with and without ASS valve).

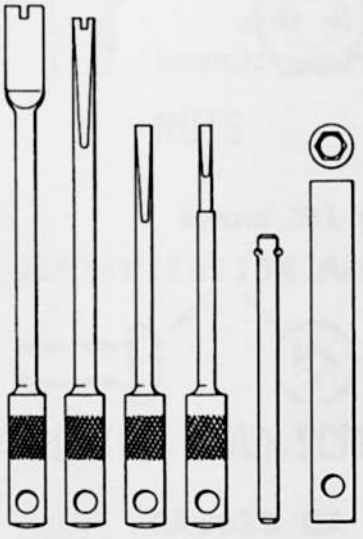
NOTE

Follow the steps in order, unless directed otherwise.

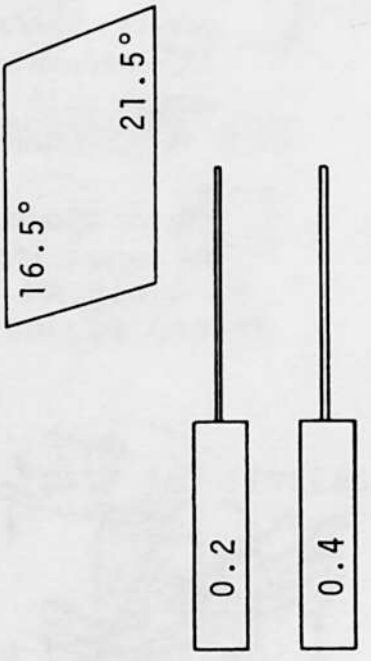
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2M CARBURETOR
ADJUST KIT
09240-41030



SCREWDRIVER SET
09860-11010



8242

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2M CARBURETOR

ISO THREAD PITCH REVISION

To conform with International Standardization Organization standards, the pitch of many machined bolts, nuts, screws, etc. have been changed. (Pitch is the distance between threads.)

ISO parts carry distinctive identification marks so they will not be substituted for ordinary parts.

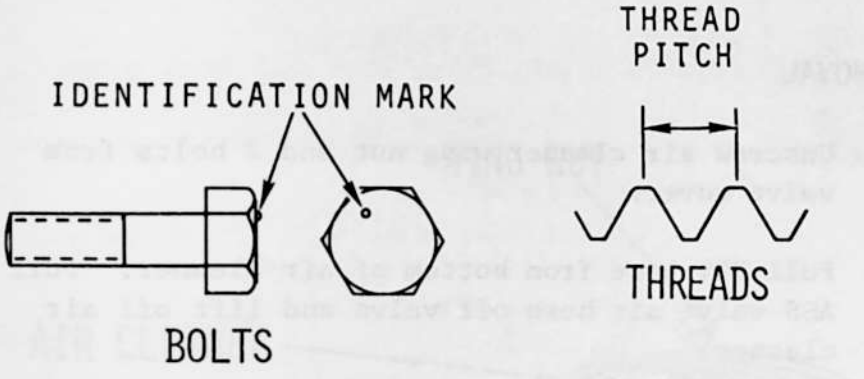
CAUTION

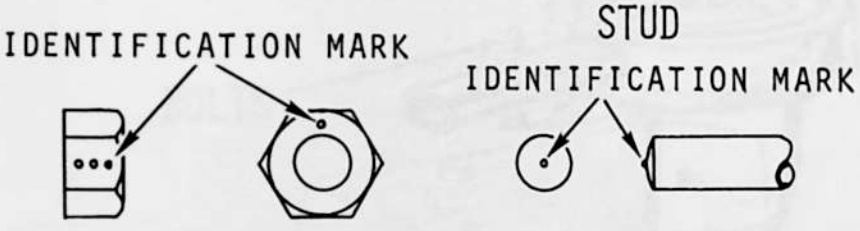
Do not install ordinary nuts, screws, bolts, etc. in this ISO carburetor. Serious thread damage will result.

NOTE

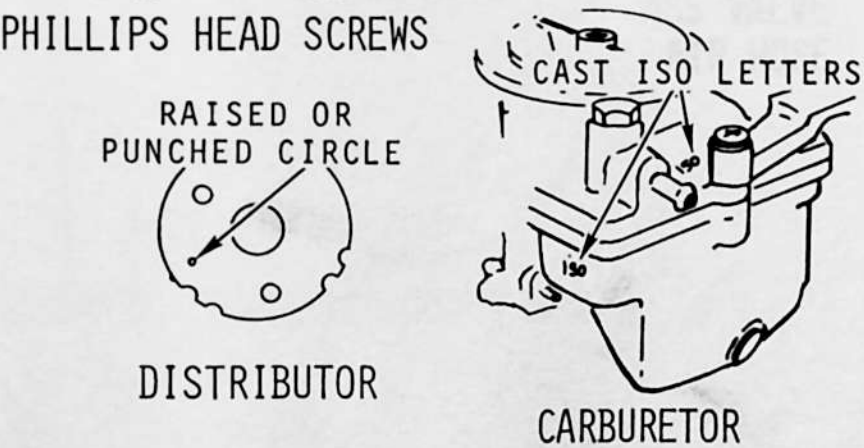
Toyota started using ISO parts in August 1968.

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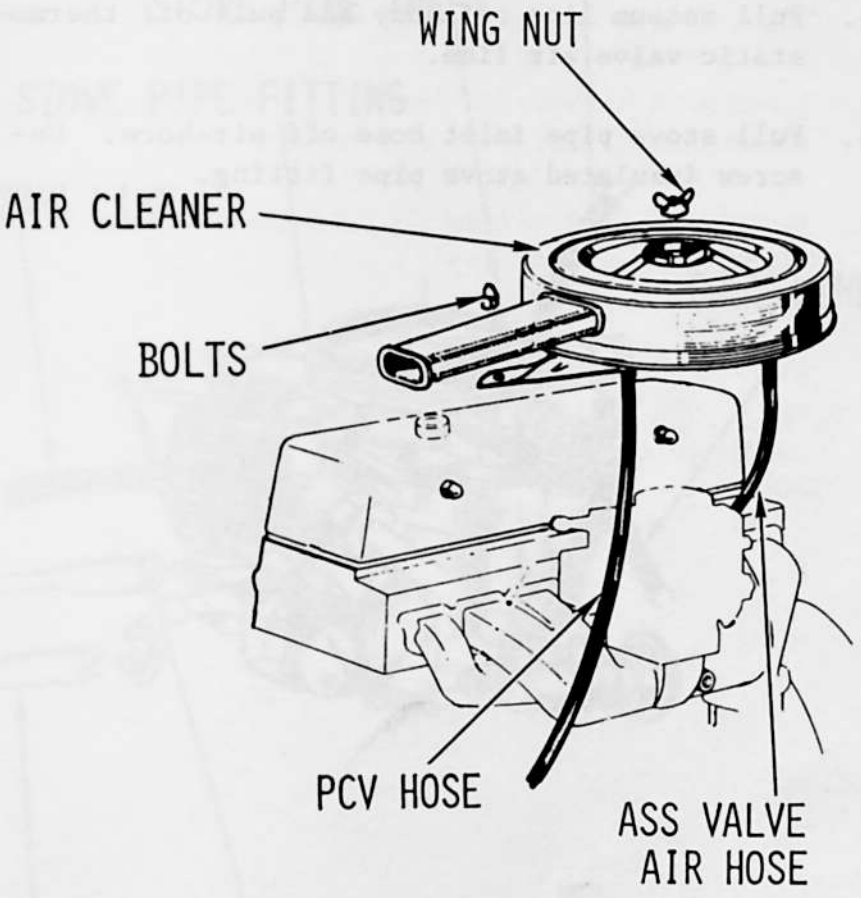
2M CARBURETOR

REMOVAL

1. Unscrew air cleaner wing nut and 2 bolts from valve cover.

2. Pull PCV hose from bottom of air cleaner. Pull ASS valve air hose off valve and lift off air cleaner.

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2M CARBURETOR

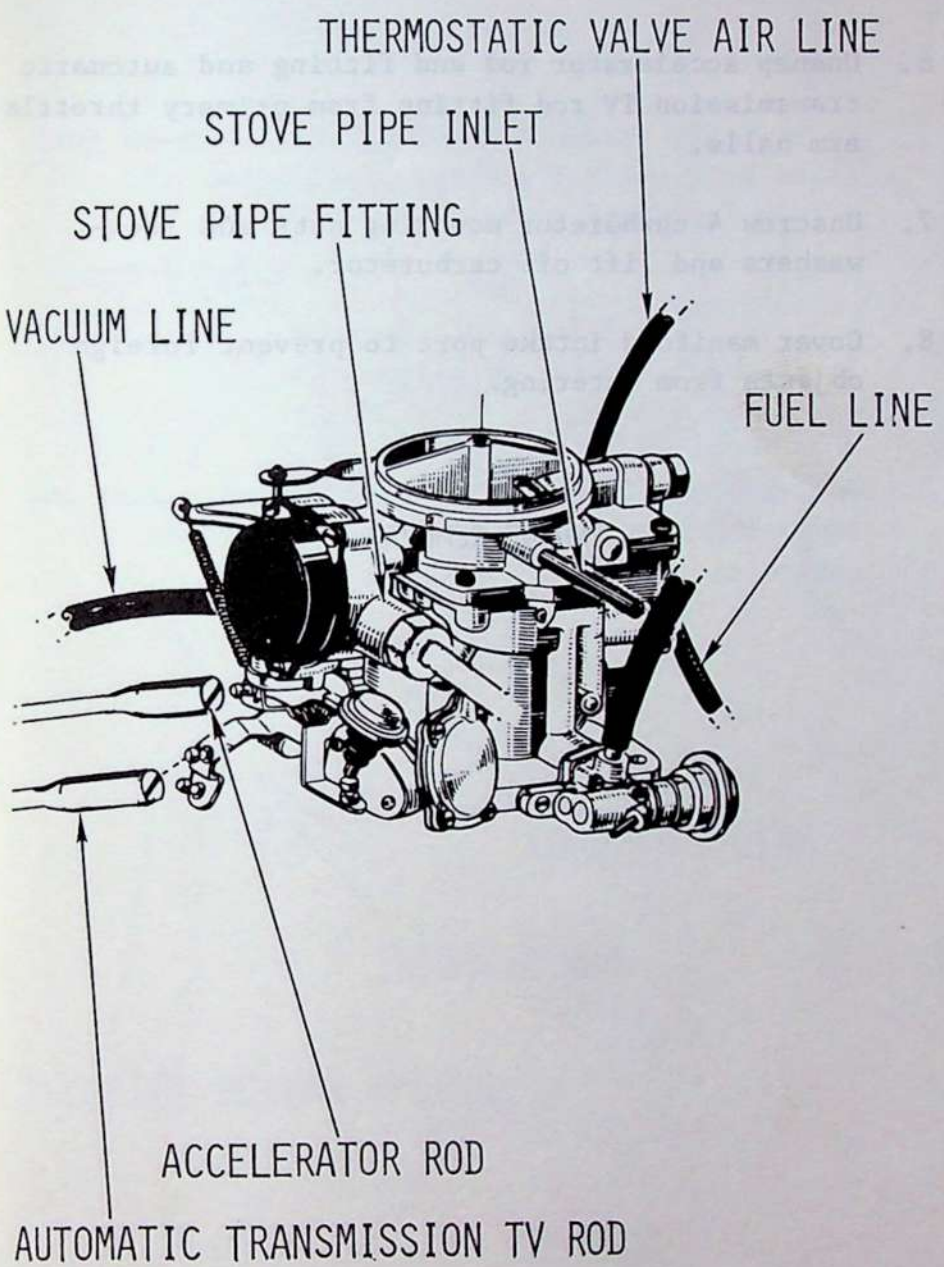
3. Open clamp and pull fuel line off fuel pump.

4. Pull vacuum line off body and pull off thermostatic valve air line.

5. Pull stove pipe inlet hose off air-horn. Unscrew insulated stove pipe fitting.



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2M CARBURETOR

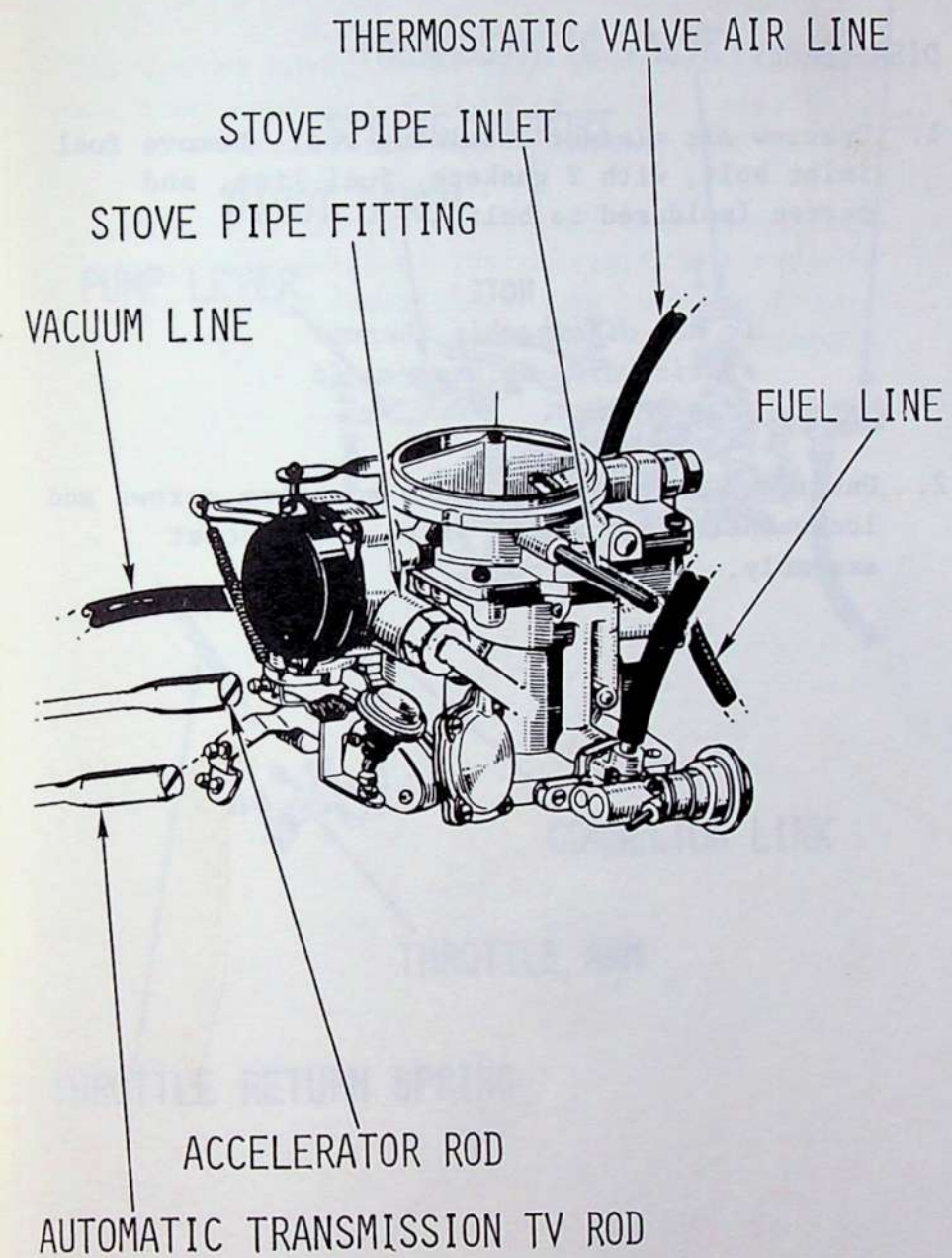
6. Unsnap accelerator rod end fitting and automatic transmission TV rod fitting from primary throttle arm balls.

7. Unscrew 4 carburetor mounting nuts and lock-washers and lift off carburetor.

8. Cover manifold intake port to prevent foreign objects from entering.

END OF REMOVAL

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2M CARBURETOR

DISASSEMBLY

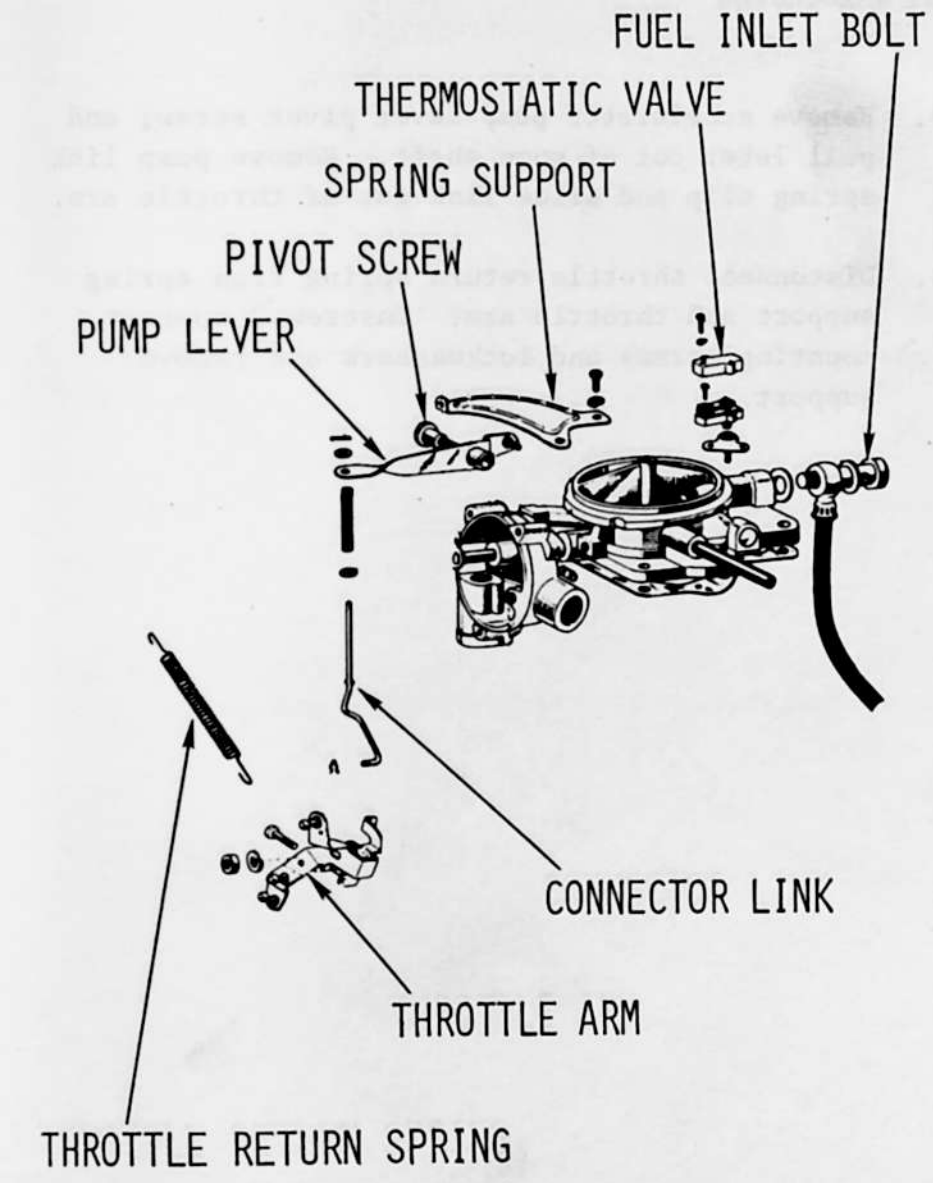
1. Unscrew air cleaner retaining rod. Remove fuel inlet bolt, with 2 gaskets, fuel line, and screen (soldered to bolt).

NOTE

Do not disassemble thermostatic valve or unscrew it from bracket.

2. Unscrew 2 thermostatic valve mounting screws and lockwashers, and remove valve and bracket assembly.

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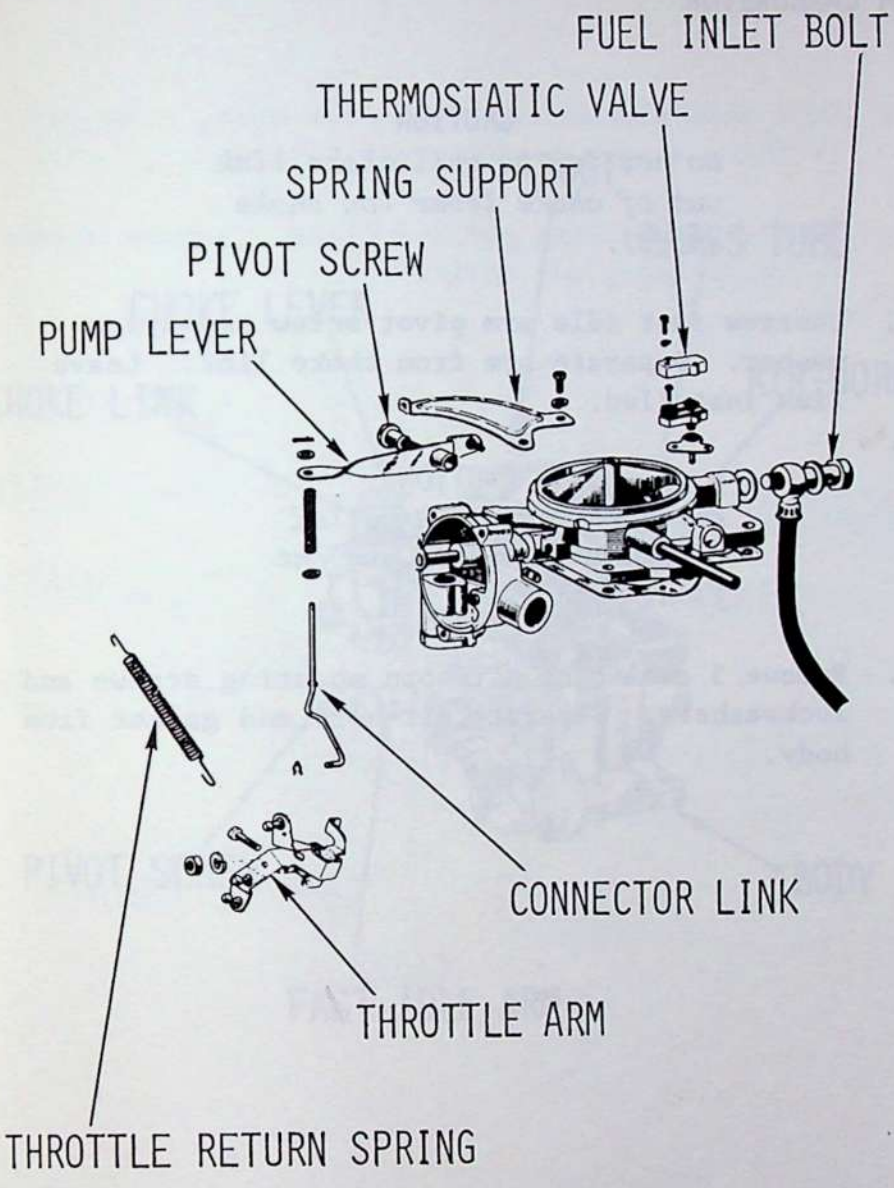
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2M CARBURETOR

3. Remove accelerator pump lever pivot screw, and pull lever out of pump shaft. Remove pump link spring clip and slide link out of throttle arm.

4. Disconnect throttle return spring from spring support and throttle arm. Unscrew 2 support mounting screws and lockwashers and remove support.

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2M CARBURETOR

CAUTION

Do not try to pull choke link out of choke lever (on choke shaft).

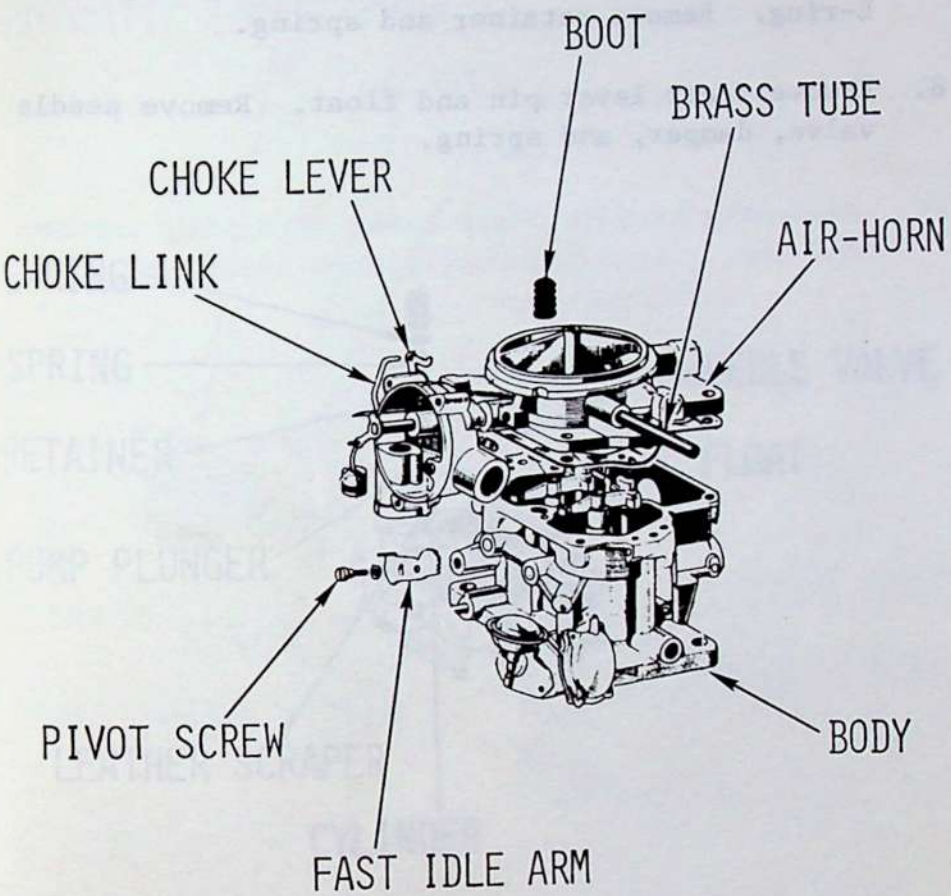
5. Unscrew fast idle arm pivot screw and nylon washer. Separate arm from choke link. Leave link installed.

CAUTION

Air-horn should be pulled straight upward to prevent float damage.

6. Remove 3 remaining air-horn mounting screws and lockwashers. Separate air-horn and gasket from body.

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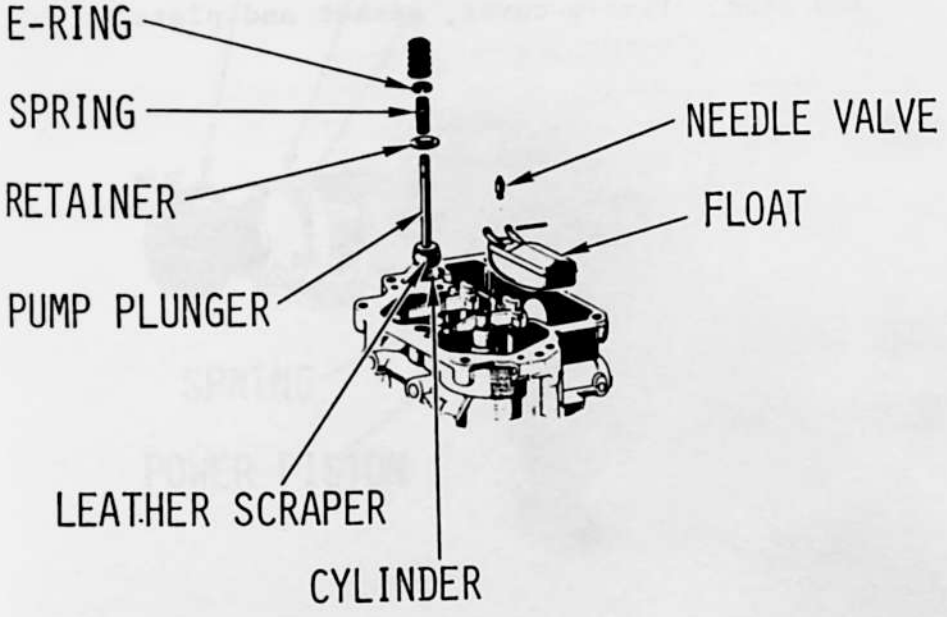
8278

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7. Pull pump plunger out of rubber boot. Pry off E-ring. Remove retainer and spring.

8. Remove float lever pin and float. Remove needle valve, damper, and spring.

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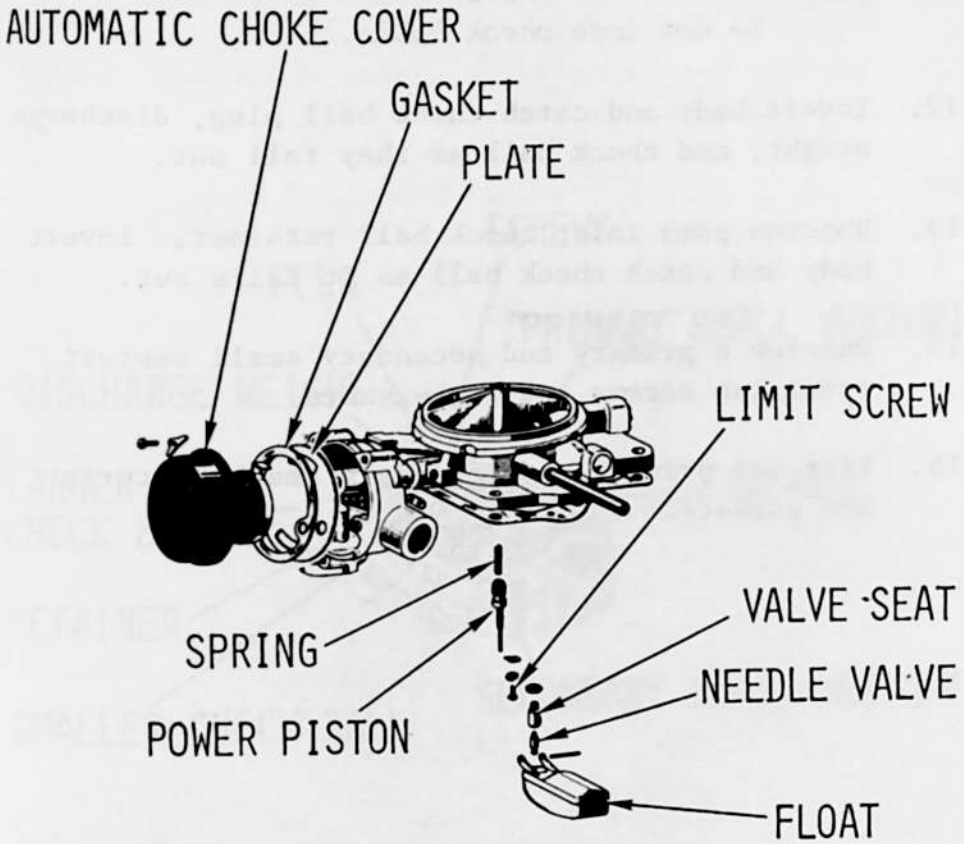
2M CARBURETOR

9. Unscrew needle valve seat and gasket. Remove rubber boot from air-horn.

10. Loosen power piston limit screw. Remove piston and spring.

11. Unscrew automatic choke cover retaining screws and tabs. Remove cover, gasket and plate.

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NOTE

Do not lose check balls.

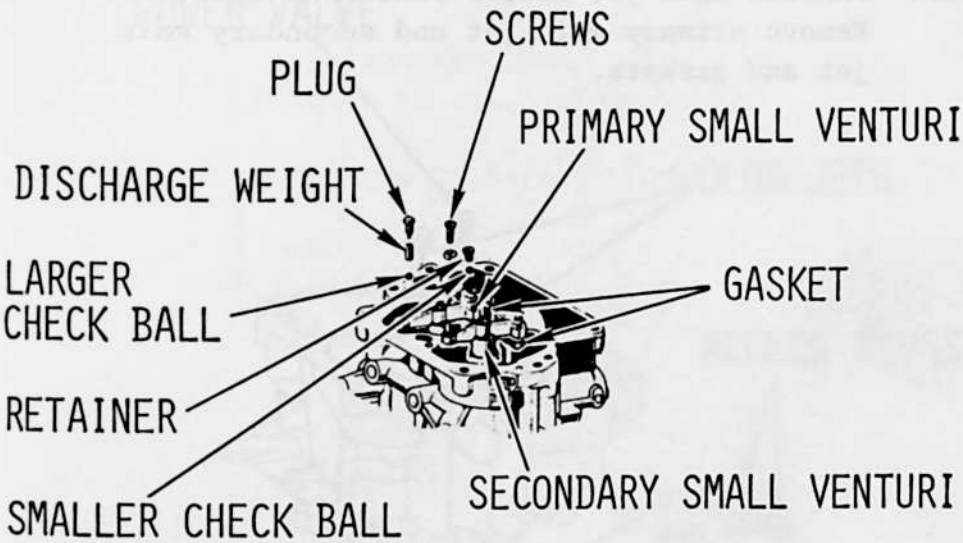
12. Invert body and catch check ball plug, discharge weight, and check ball as they fall out.

13. Unscrew pump inlet check ball retainer. Invert body and catch check ball as it falls out.

14. Unscrew 6 primary and secondary small venturi retaining screws and lockwashers.

15. Lift out primary and secondary small venturis and gaskets.

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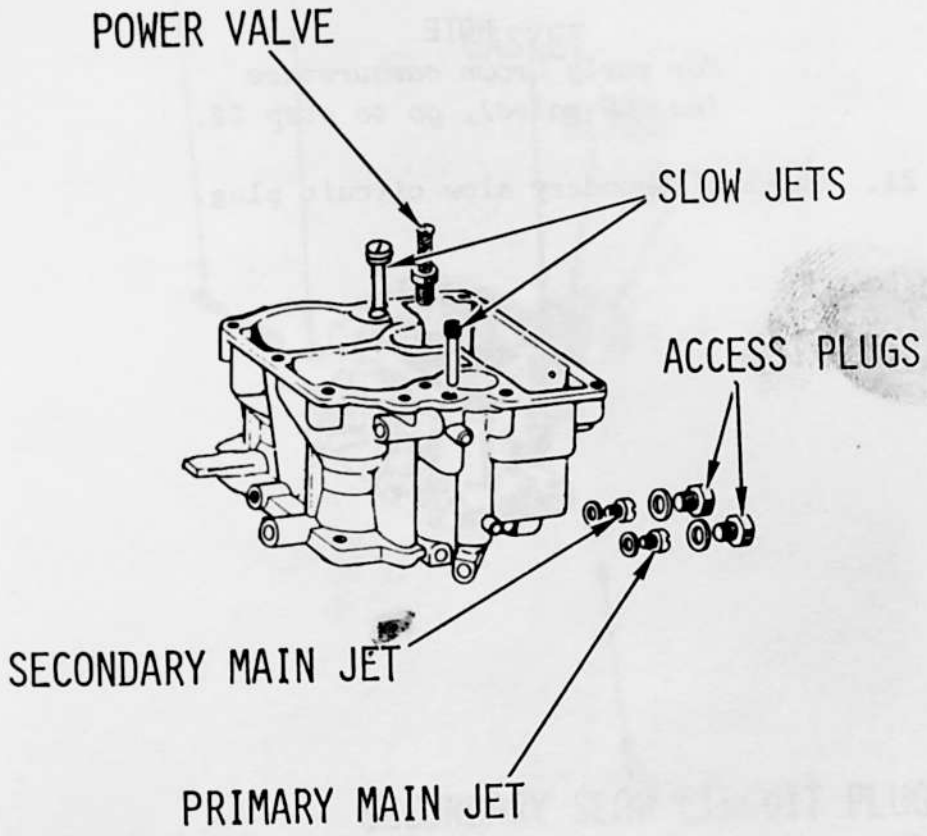
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16. Unscrew power valve with Power Valve wrench.

17. Unscrew both slow jets. Invert body and catch them as they fall out.

18. Unscrew main jet access bolts and gaskets. Remove primary main jet and secondary main jet and gaskets.

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2M CARBURETOR

19. Remove fuel level gauge retainer screws. Remove retainer, glass, and gasket.

20. Unscrew idle mixture adjusting screw and spring. Unscrew primary slow circuit plug.

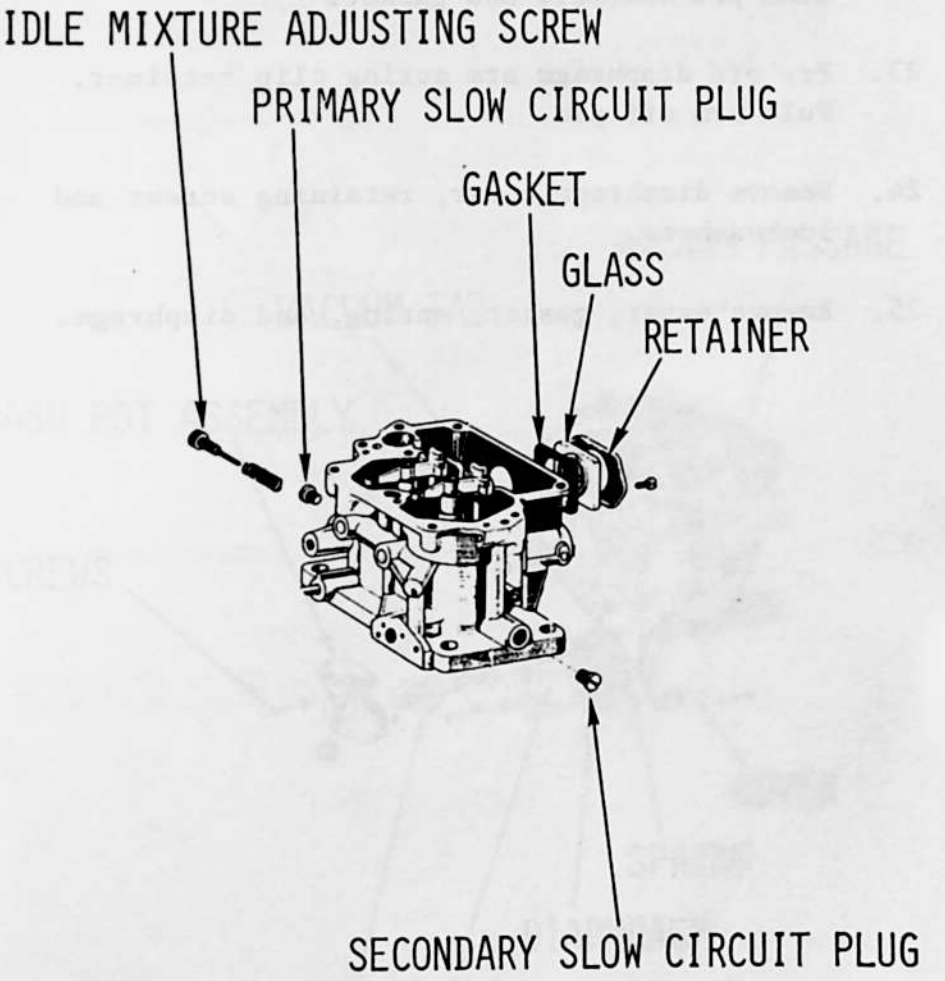
NOTE

For early Crown carburetors (no ASS valve), go to step 22.

21. Unscrew secondary slow circuit plug.



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2M CARBURETOR

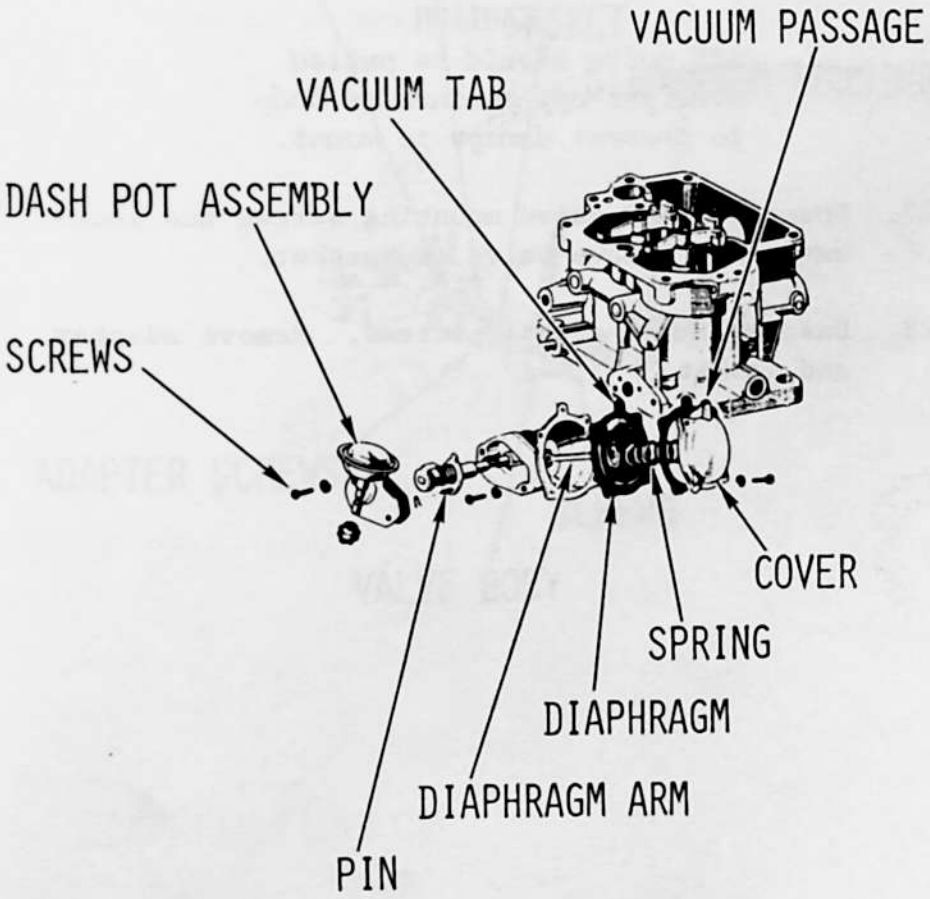
22. Unscrew dash pot screws and lockwashers. Remove dash pot assembly and gasket.

23. Pry off diaphragm arm spring clip retainer. Pull arm off pin.

24. Remove diaphragm cover, retaining screws and lockwashers.

25. Remove cover, gasket, spring, and diaphragm.

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2M CARBURETOR

NOTE

For early Crown carburetors (no ASS valve), go to CLEANING.

26. Loosen ASS diaphragm housing from valve body. Do not unscrew completely.

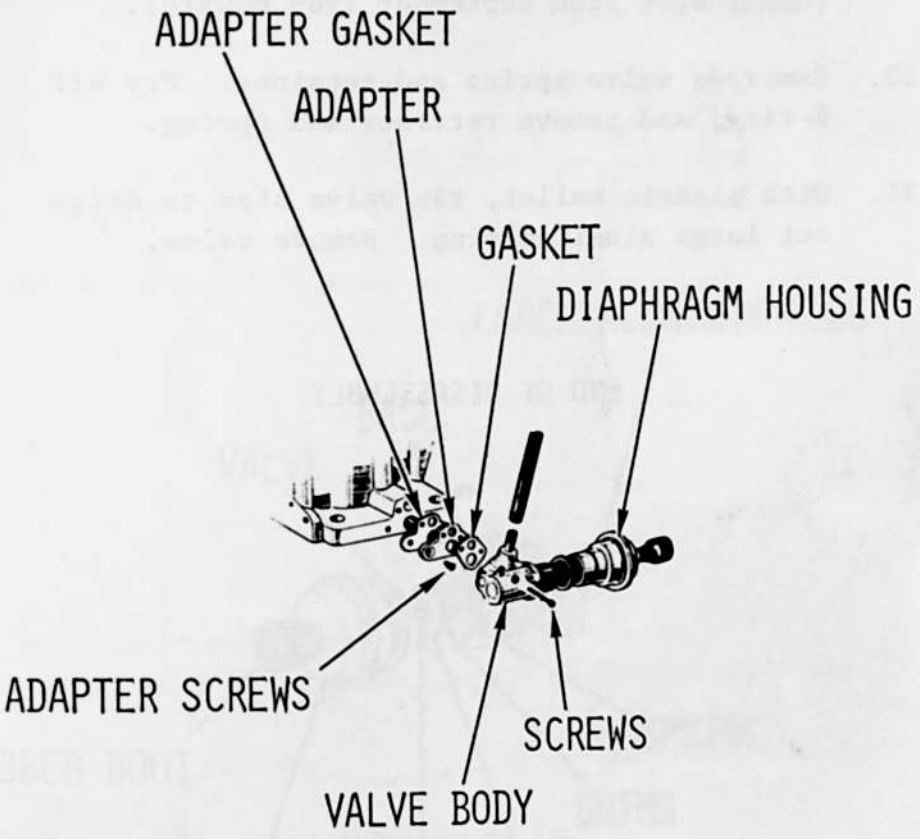
CAUTION

ASS valve should be pulled straight off carburetor body to prevent damage to mount.

27. Unscrew 2 ASS valve mounting screws and lock-washers. Remove valve and gasket.

28. Unscrew 2 ASS adapter screws. Remove adapter and gasket.

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2M CARBURETOR

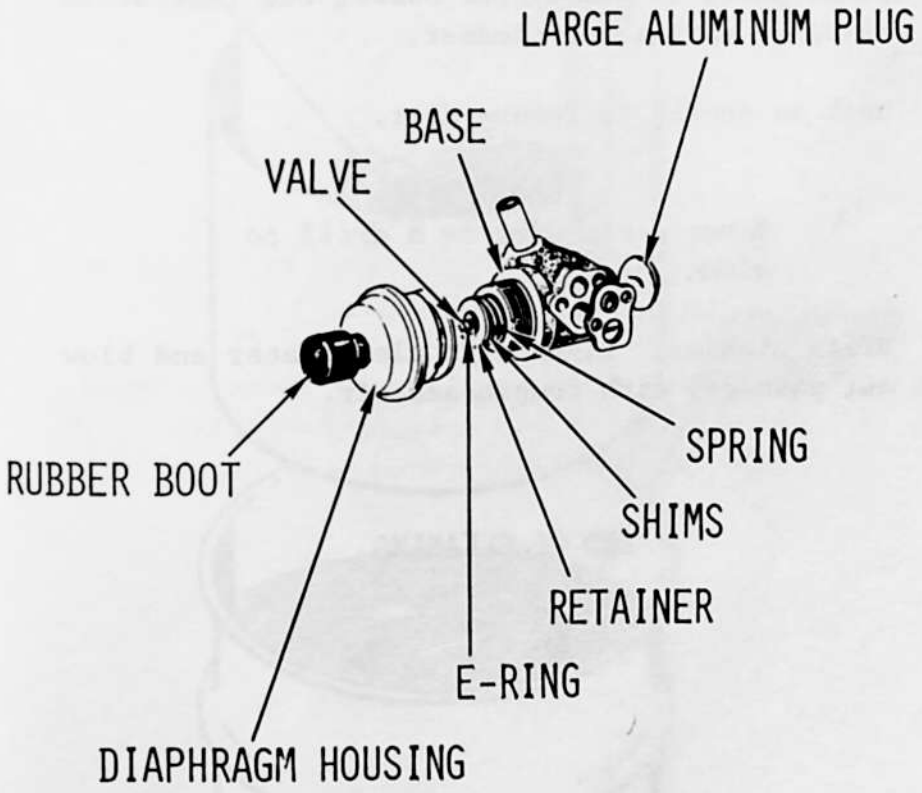
29. Unscrew ASS diaphragm housing and gasket (no rubber boot from September 1969 onward).

30. Compress valve spring and retainer. Pry off E-ring, and remove retainer and spring.

31. With plastic mallet, tap valve stem to drive out large aluminum plug. Remove valve.

END OF DISASSEMBLY

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2M CARBURETOR

CLEANING

CAUTION

Do not soak ASS diaphragm housing, float, secondary diaphragm, gaskets, or rubber or plastic parts.

1. Place parts in carburetor basket and immerse in suitable carburetor cleaner.

2. Soak as needed to remove dirt.

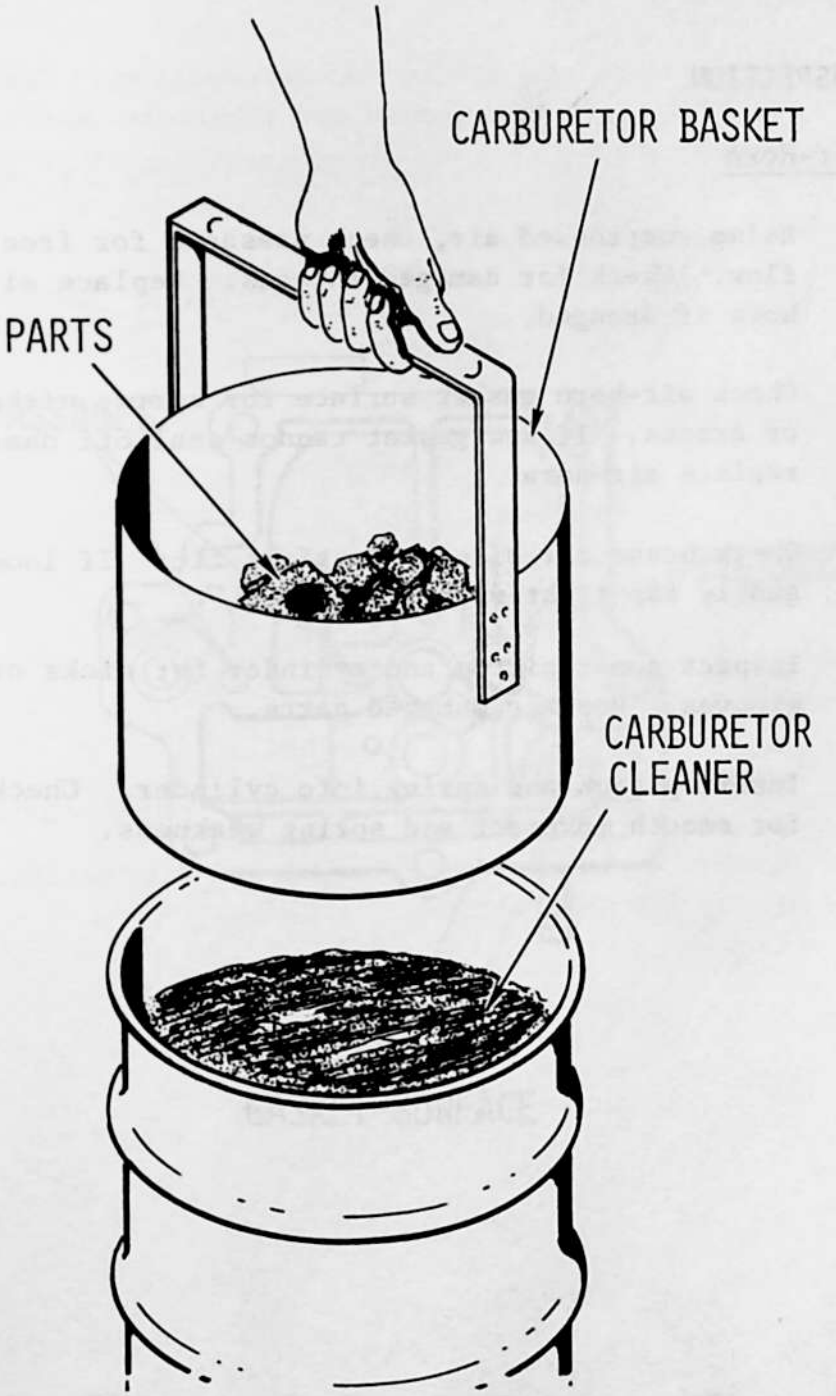
CAUTION

Never use a wire or a drill to clean jets.

3. Drain cleaner. Rinse with clean water and blow out passages with compressed air.

END OF CLEANING

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2M CARBURETOR

INSPECTION

Air-Horn

1. Using compressed air, check passages for free air flow. Check for damaged threads. Replace air-horn if damaged.

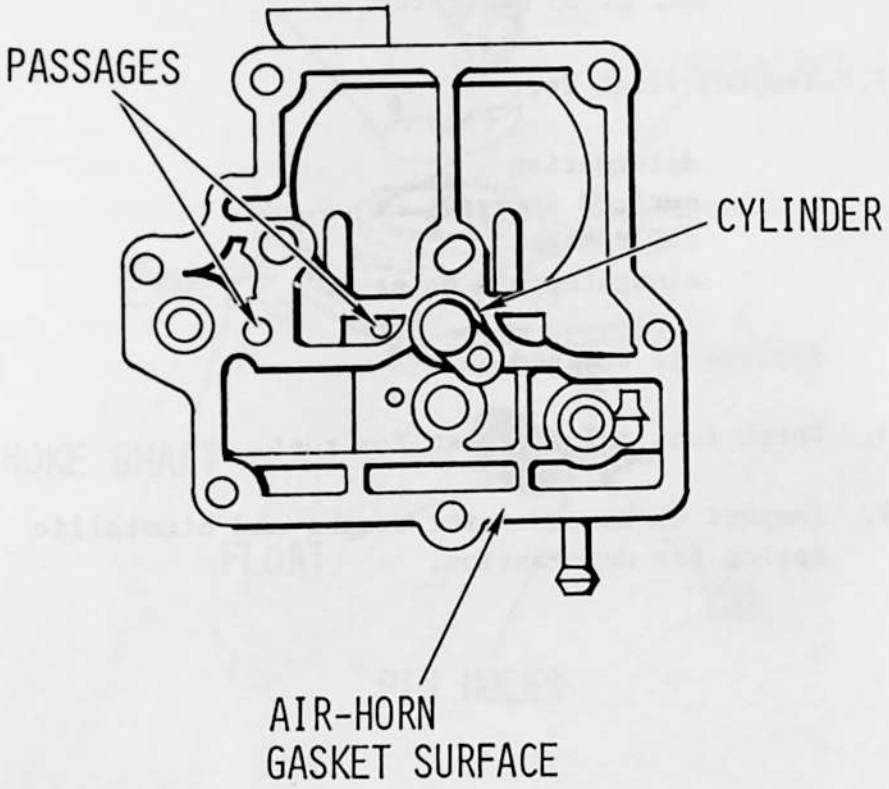
2. Check air-horn gasket surface for burrs, nicks, or cracks. If new gasket cannot seal off damage, replace air-horn.

3. Check brass air bleeds for tight fit. If loose, gently tap tight with flat punch.

4. Inspect power piston and cylinder for nicks or grooves. Replace damaged parts.

5. Insert piston and spring into cylinder. Check for smooth movement and spring weakness.

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6. Inspect choke butterfly for deformation. Check valve for smooth movement and excessive shaft play in bore.

NOTE

If shaft is sloppy or binds, go to SPECIAL SERVICING. If OK, go to next step.

7. Inspect float for:

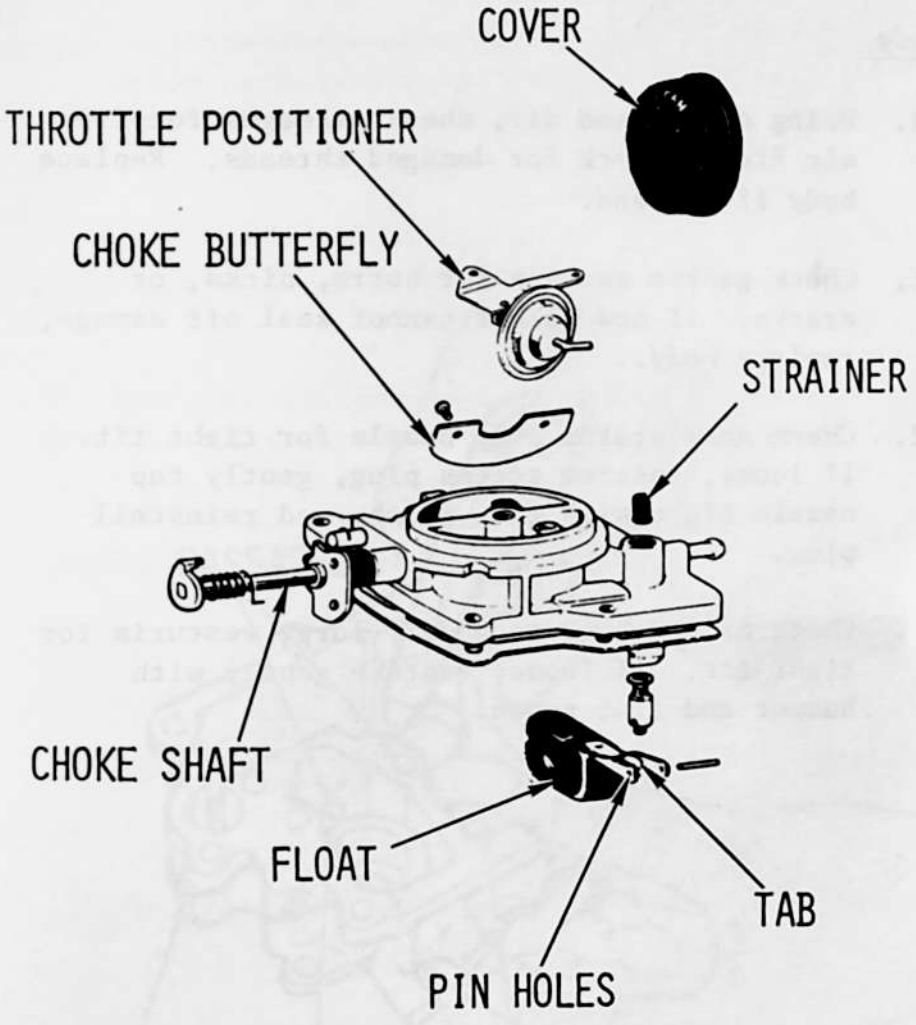
deformation
surface damage
tab damage
elongated pin holes

Replace if damaged.

8. Check fuel inlet screen for rust.

9. Inspect choke cover for cracks and bimetallic spring for deformation.

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2M CARBURETOR

Body

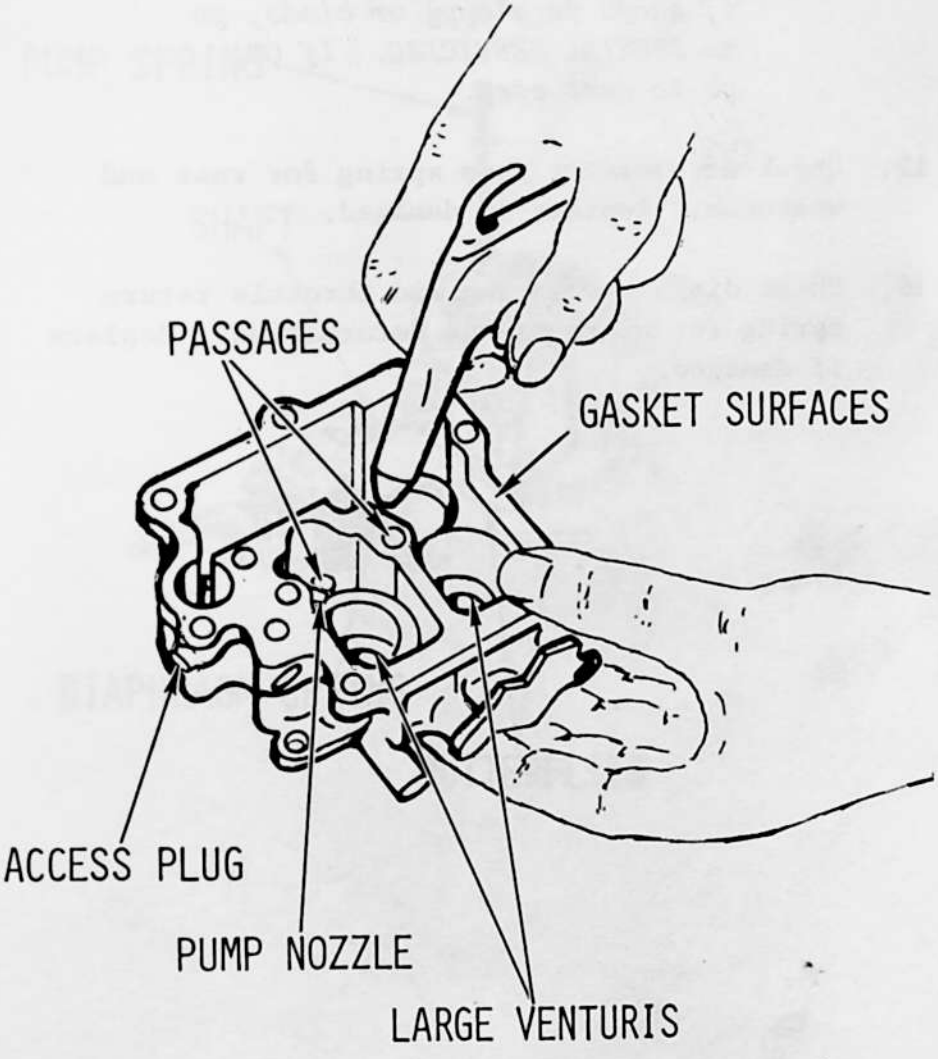
10. Using compressed air, check passages for free air flow. Check for damaged threads. Replace body if damaged.

11. Check gasket surface for burrs, nicks, or cracks. If new gasket cannot seal off damage, replace body.

12. Check accelerator pump nozzle for tight fit. If loose, unscrew access plug, gently tap nozzle tight with flat punch, and reinstall plug.

13. Check primary and secondary large venturis for tight fit. If loose, restake gently with hammer and flat punch.

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14. Inspect primary and secondary butterflies for deformation. Check both valves for smooth movement and excessive shaft play in bore.

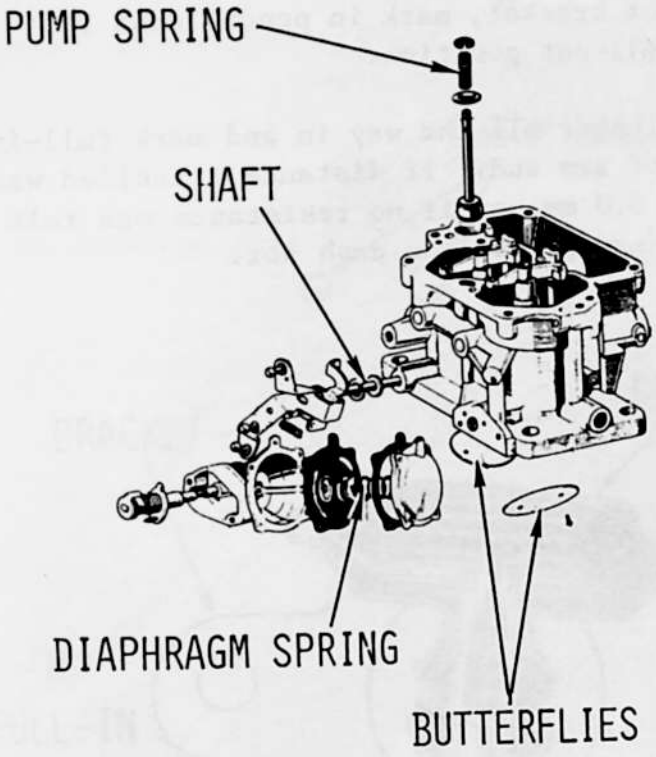
NOTE

If shaft is sloppy or binds, go to SPECIAL SERVICING. If OK, go to next step.

15. Check accelerator pump spring for rust and weakness. Replace if damaged.

16. Check diaphragm spring and throttle return spring for weakness and deformation. Replace if damaged.

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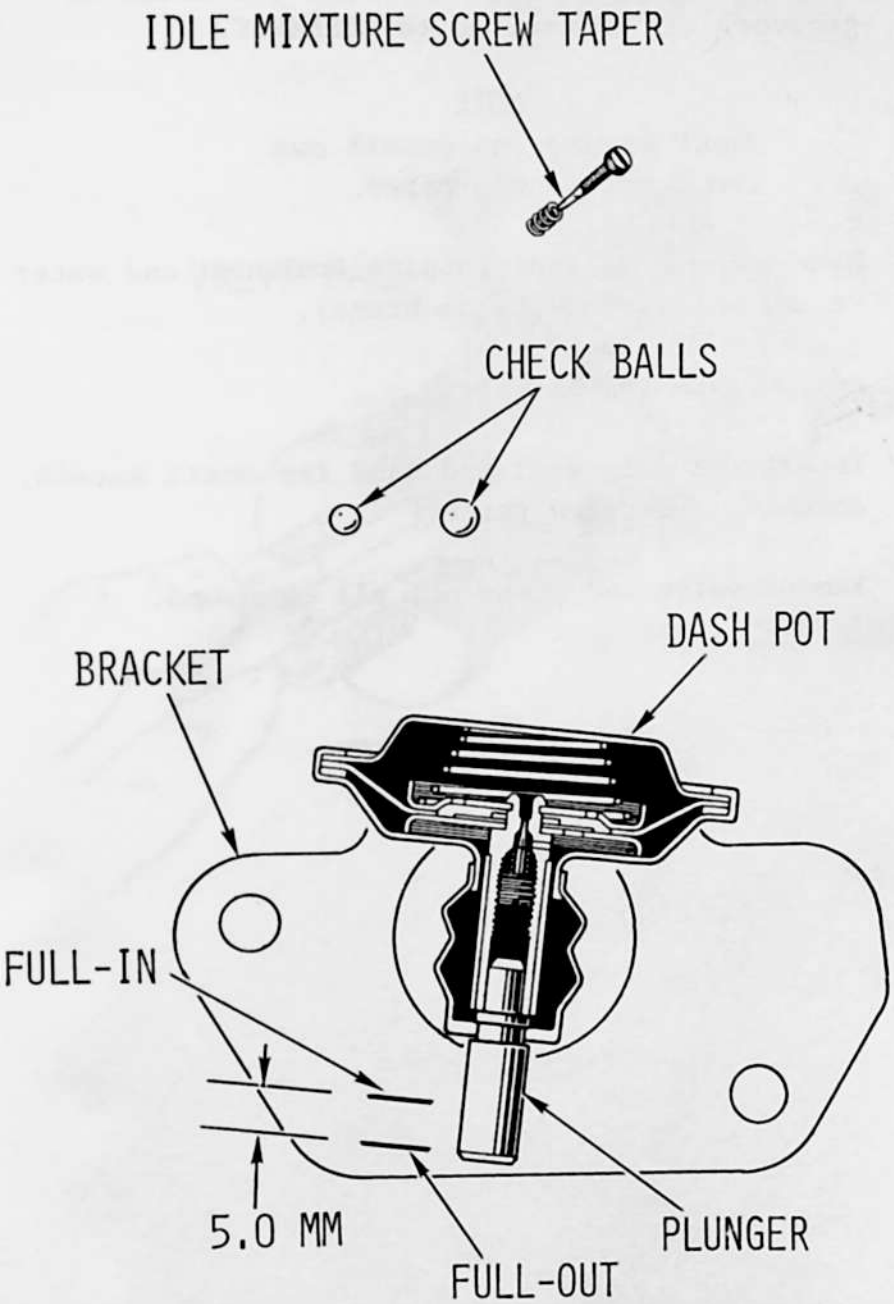
17. With fingernail, check idle mixture screw taper for smoothness and for thread damage.

18. Inspect check balls for rust, nicks, or burrs. Replace if damaged.

19. On dash pot bracket, mark in pencil dash pot plunger full-out position.

20. Squeeze plunger all the way in and mark full-in position of arm end. If distance travelled was less than 5.0 mm, or if no resistance was felt while squeezing, replace dash pot.

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21. Inspect ASS valve face and seat for nicks or grooves. If smooth, go to ASSEMBLY.

NOTE

Hand lapping can smooth out small nicks or grooves.

22. Make a paste of fine lapping compound and water or solvent (depending on brand).

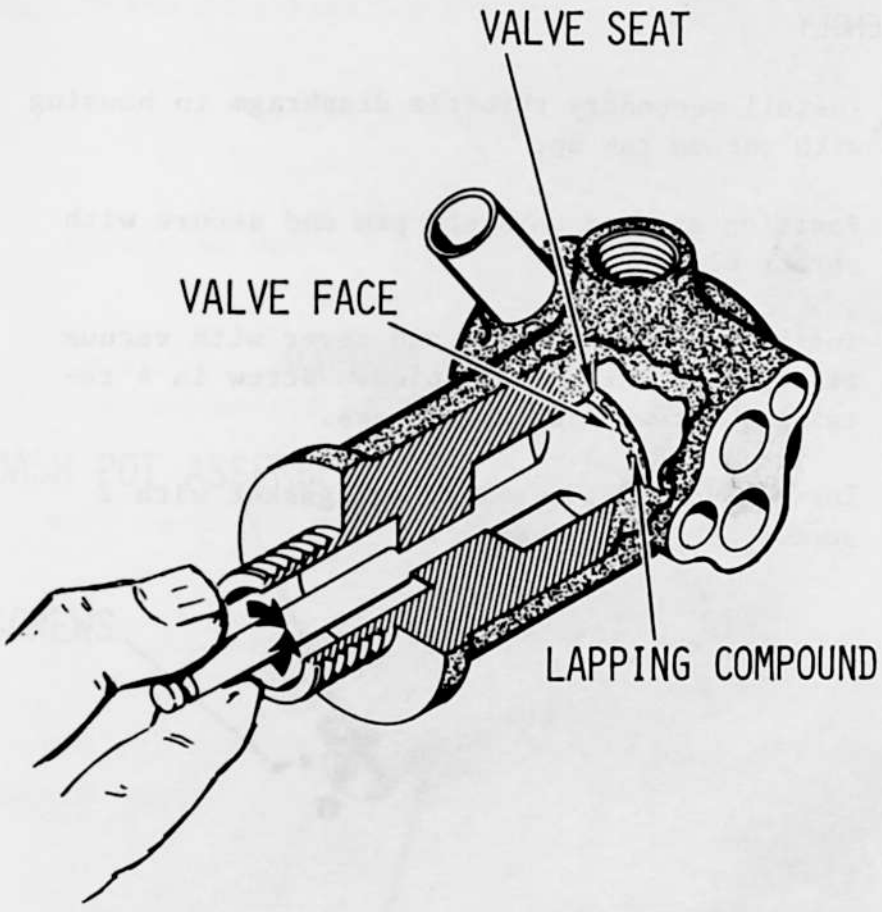
23. Apply paste to valve face.

24. Insert valve in seat and hand lap until smooth, checking every few turns.

25. Remove valve and clean off all compound.

END OF INSPECTION

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2M CARBURETOR

ASSEMBLY

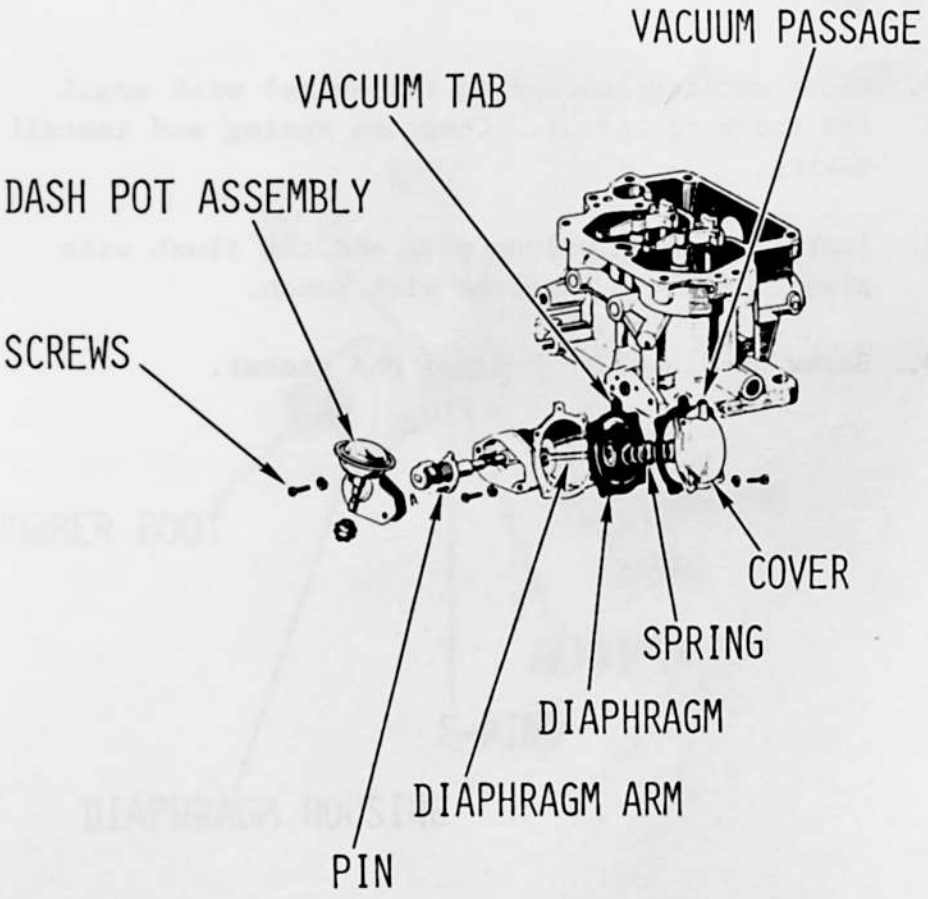
1. Install secondary throttle diaphragm in housing with vacuum tab up.

2. Position arm end on shaft pin and secure with spring clip.

3. Install spring, gasket, and cover with vacuum passage up. Align all holes. Screw in 4 retaining screws and lockwashers.

4. Install dash pot assembly and gasket with 2 screws and lockwashers.

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5. Insert ASS valve in base and spring on valve.

NOTE

Spring can be tensioned with 0.5 mm shims, no. 21681-42040.

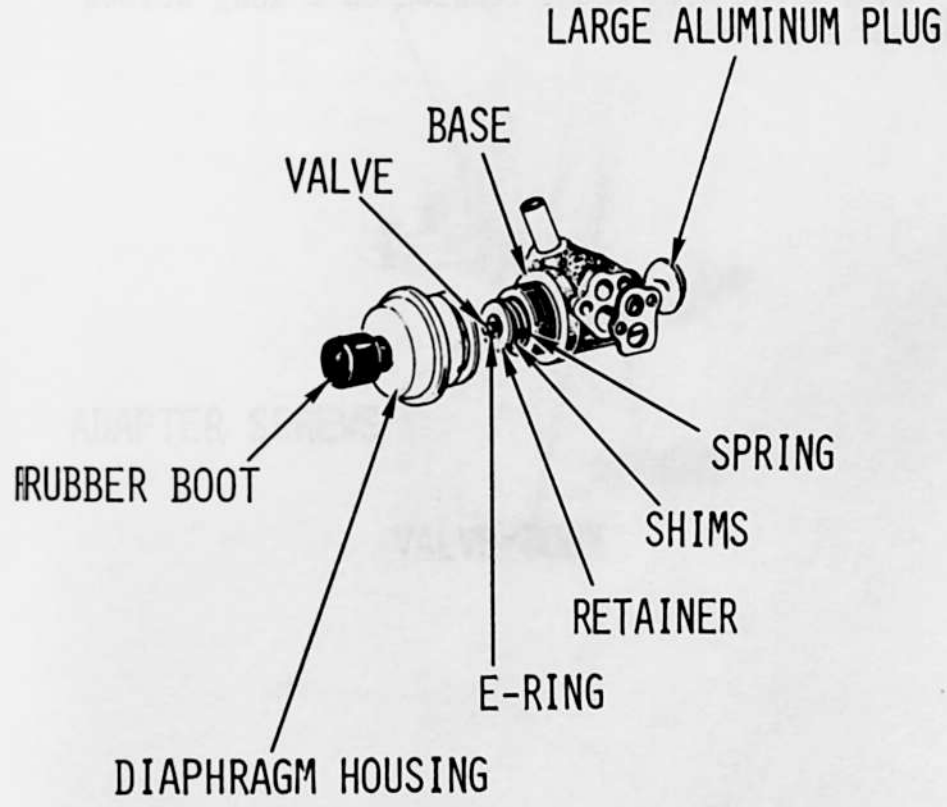
6. If required, place at least 2 shims on spring end.

7. Place retainer on spring (or shims) with small end touching spring. Compress spring and install E-ring.

8. Install large aluminum plug and tap flush with plastic mallet. Restake with punch.

9. Screw on diaphragm housing and gasket.

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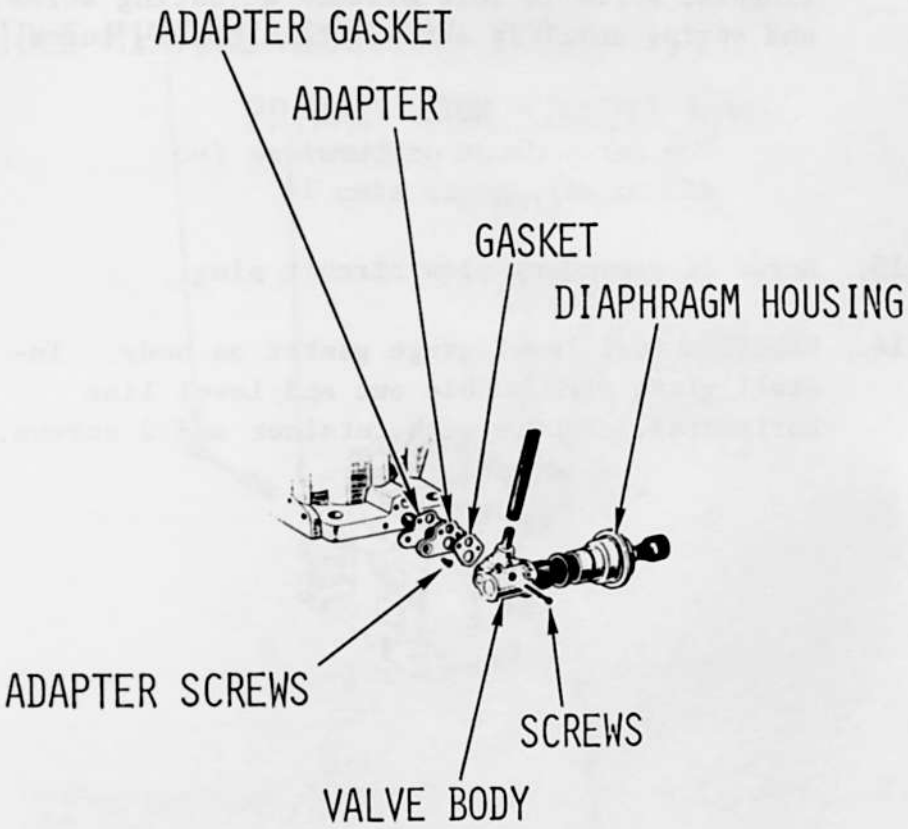
10. Position ASS adapter gasket and adapter on body. Install 2 flathead screws.

CAUTION

Push ASS valve straight onto seat to prevent tube damage.

11. Install ASS valve gasket and valve on body. Draw tight with equal tension on 2 long screws and lockwashers.

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2M CARBURETOR

12. Screw in primary slow circuit plug. With fingers, screw in idle mixture adjusting screw and spring until it seats. Back off 1½ turns.

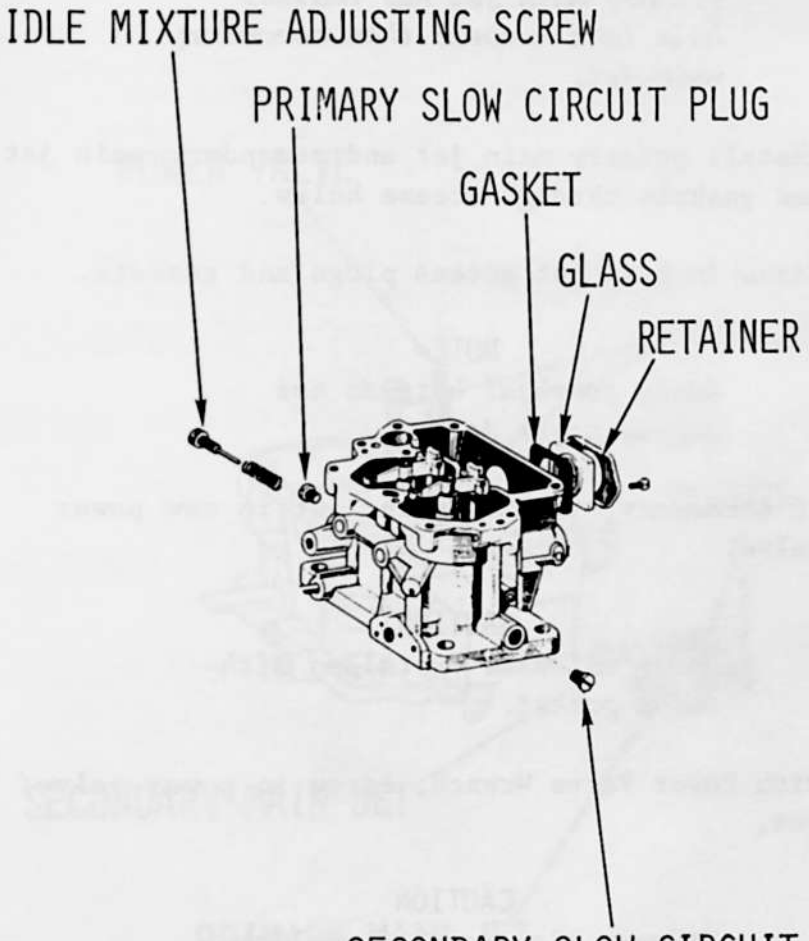
NOTE

For early Crown carburetors (no ASS valve), go to step 14.

13. Screw in secondary slow circuit plug.

14. Position fuel level gauge gasket on body. Install glass with bubble out and level line horizontal. Secure with retainer and 2 screws.

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2M CARBURETOR

NOTE

Primary main jet has smaller hole (and number) than secondary main jet.

15. Install primary main jet and secondary main jet and gaskets through access holes.

16. Screw in main jet access plugs and gaskets.

NOTE

Early overhaul kits do not supply power jet.

17. If necessary, install power jet in new power valve.

CAUTION

Power valve is installed without a gasket.

18. With Power Valve Wrench, screw in power valve/jet.

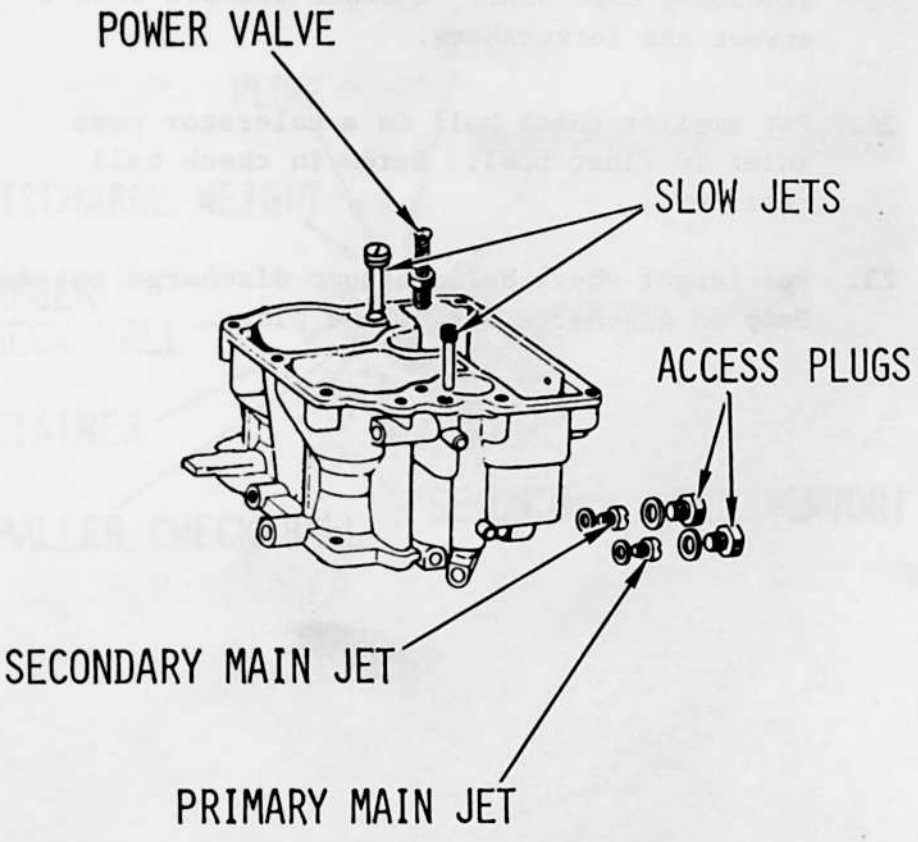
CAUTION

Primary slow jet has smaller hole (and number) than secondary slow jet.

Slow jets are installed without gaskets.

19. Install primary and secondary slow jets.

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2M CARBURETOR

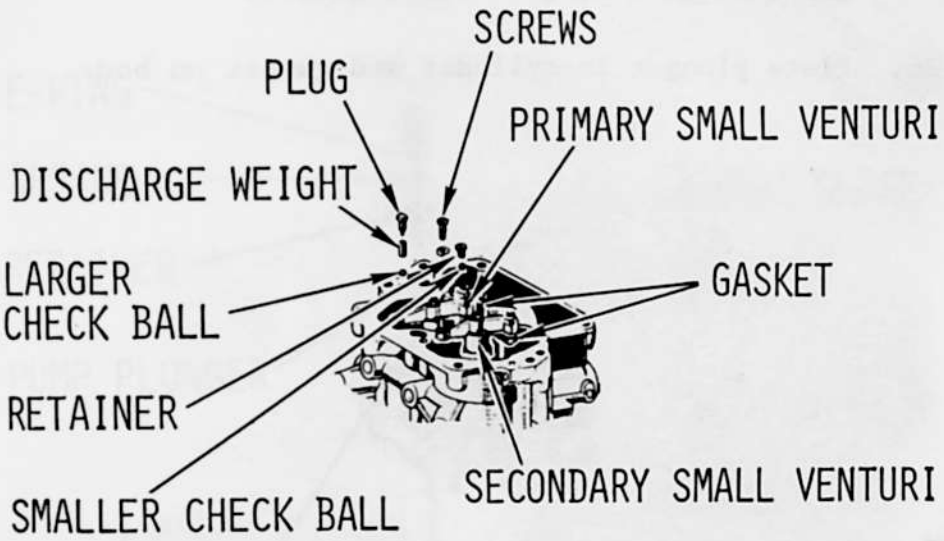
20. Place primary small venturi gasket on primary bore seat. Install venturi with 3 screws and lockwashers.

21. Place secondary small venturi gasket on secondary bore seat. Install venturi with 3 screws and lockwashers.

22. Put smaller check ball in accelerator pump inlet in float bowl. Screw in check ball retainer.

23. Put larger check ball in pump discharge passage. Drop in discharge weight and plug.

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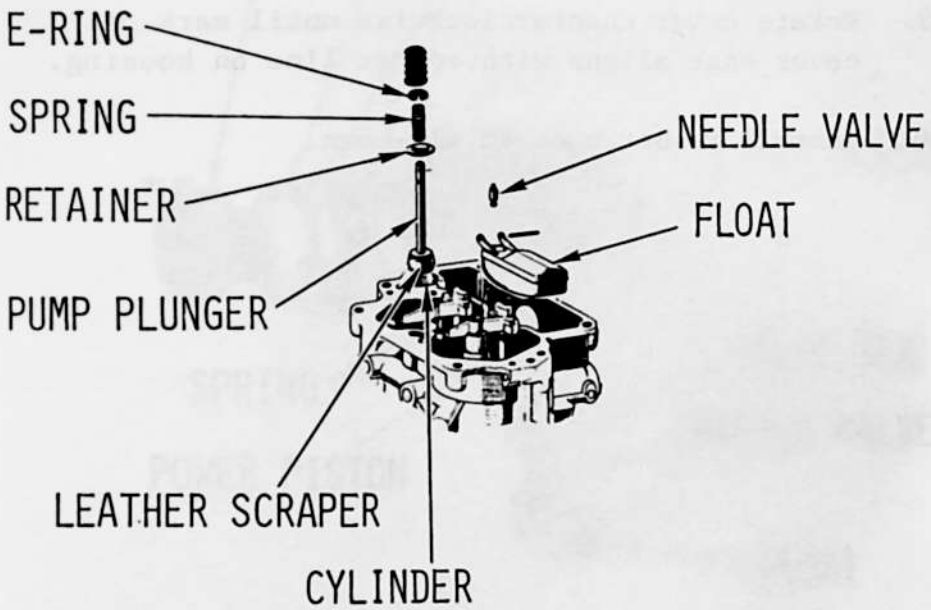
2M CARBURETOR

24. Dip accelerator pump plunger in clean solvent to moisten leather scraper.

25. Slide spring retainer on plunger with raised ridge toward leather. Slide spring on plunger and install E-ring in lower groove.

26. Place plunger in cylinder and gasket on body.

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2M CARBURETOR

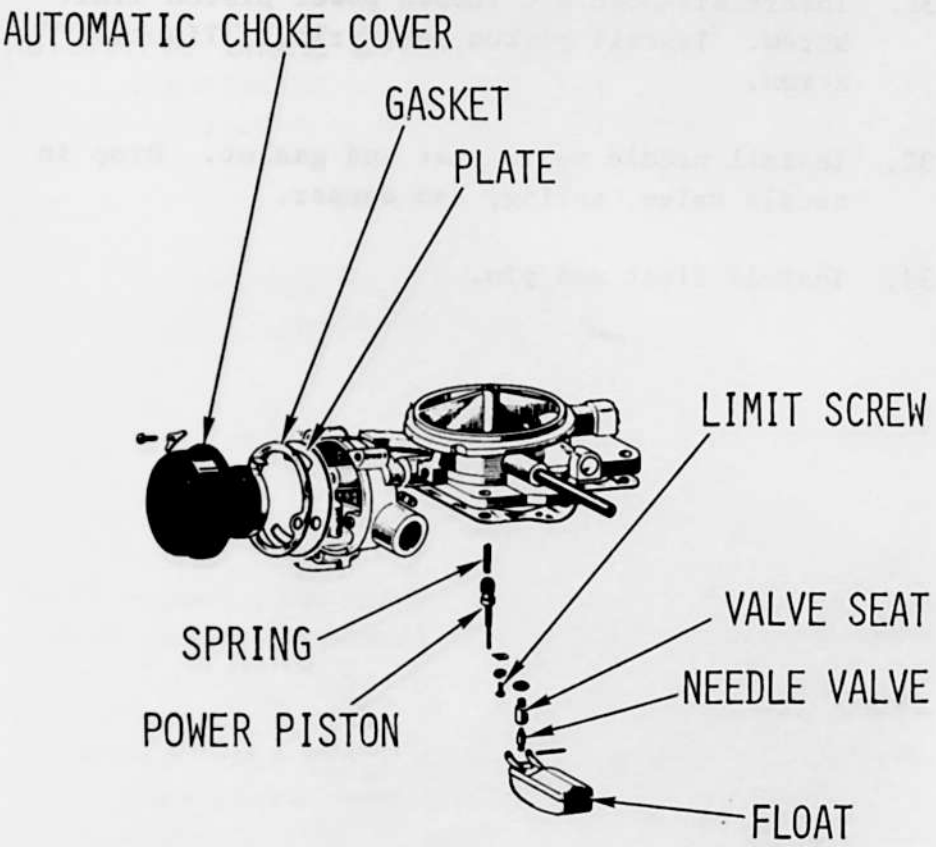
27. Install automatic choke cover plate, then gasket. Close choke butterfly.

28. Position bimetallic spring and cover on housing with "LEAN" at top. Loosely install 3 screws and tabs.

29. Rotate cover counterclockwise until mark on cover edge aligns with center line on housing.

30. Install rubber boot in air-horn.

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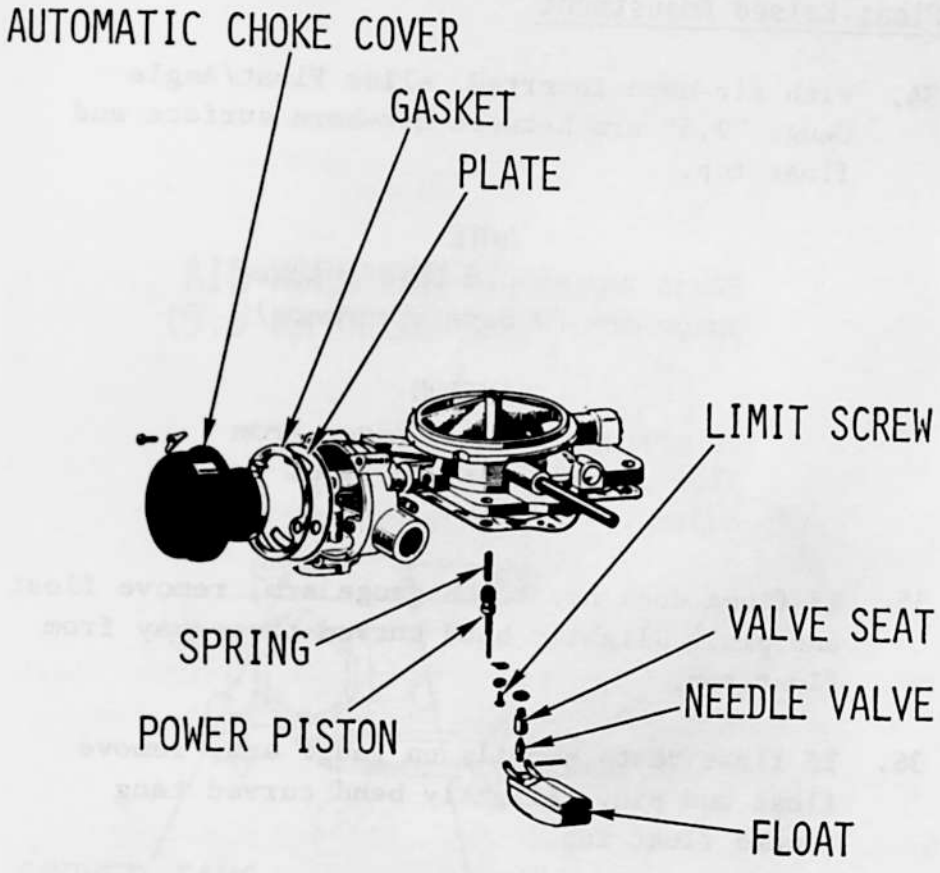
2M CARBURETOR

31. Invert air-horn and loosen power piston limit screw. Install piston and spring. Tighten screw.

32. Install needle valve seat and gasket. Drop in needle valve, spring, and damper.

33. Install float and pin.

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2M CARBURETOR

Float-Raised Adjustment

34. With air-horn inverted, slide Float/Angle Gauge "9.5" arm between air-horn surface and float top.

NOTE

Float top should barely touch gauge arm (9.5 mm clearance).

CAUTION

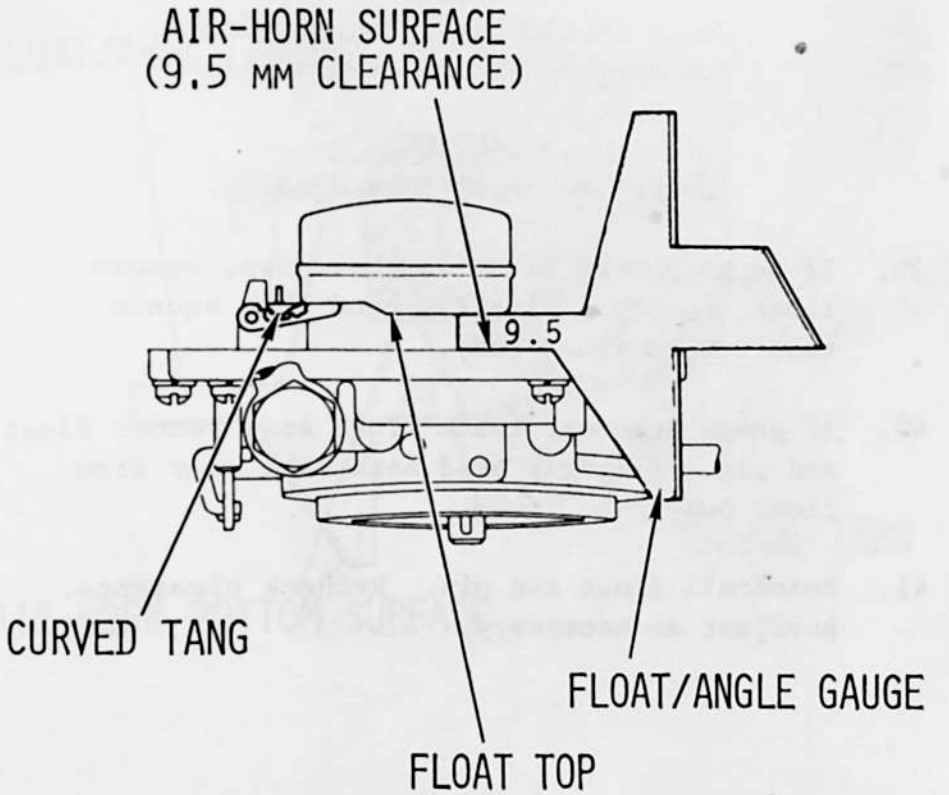
To prevent pulling lever from float, always remove float to adjust.

35. If float does not touch gauge arm, remove float and pin. Slightly bend curved tang away from float top.

36. If float rests heavily on gauge arm, remove float and pin. Slightly bend curved tang toward float top.

37. Reinstall float and pin. Recheck clearance. Readjust as necessary.

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Float-Lowered Adjustment

38. Hold air-horn right side up. Insert Float/ Angle gauge "23" arm between air-horn bottom surface and end of float top surface.

NOTE

Gauge should barely touch float top surface (23 mm clearance).

CAUTION

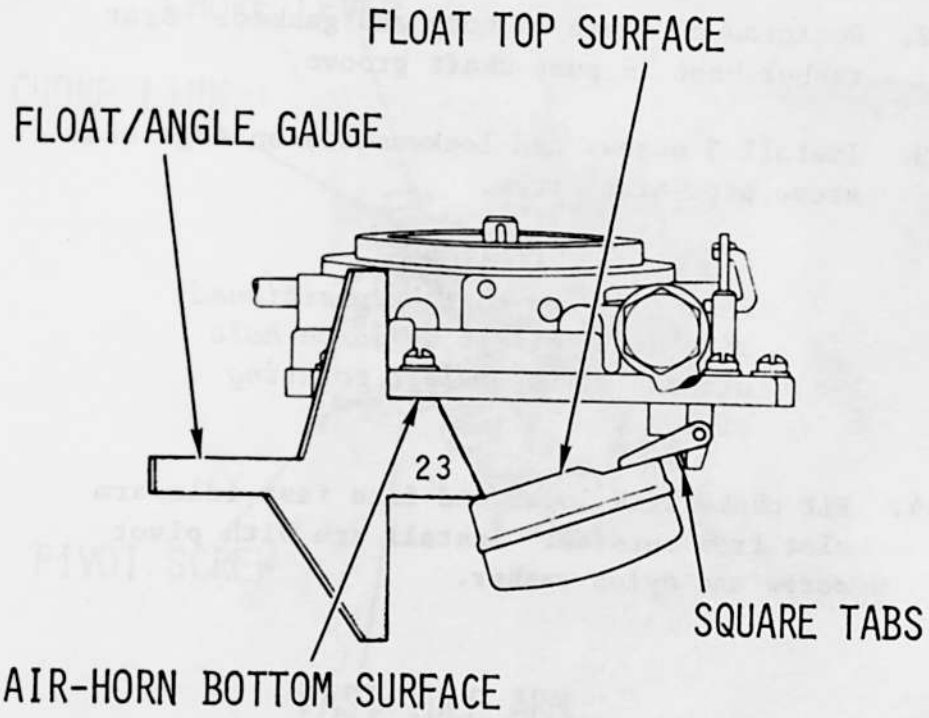
Always bend both tabs equally.

39. If gauge pushes float farther down, remove float and pin. Slightly bend both square tabs toward float body.

40. If gauge does not touch float end, remove float and pin. Slightly bend both tabs away from float body.

41. Reinstall float and pin. Recheck clearance. Readjust as necessary.

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2M CARBURETOR

CAUTION

Always lower air-horn straight down onto body to prevent float damage.

42. Position air-horn on body and gasket. Seat rubber boot in pump shaft groove.

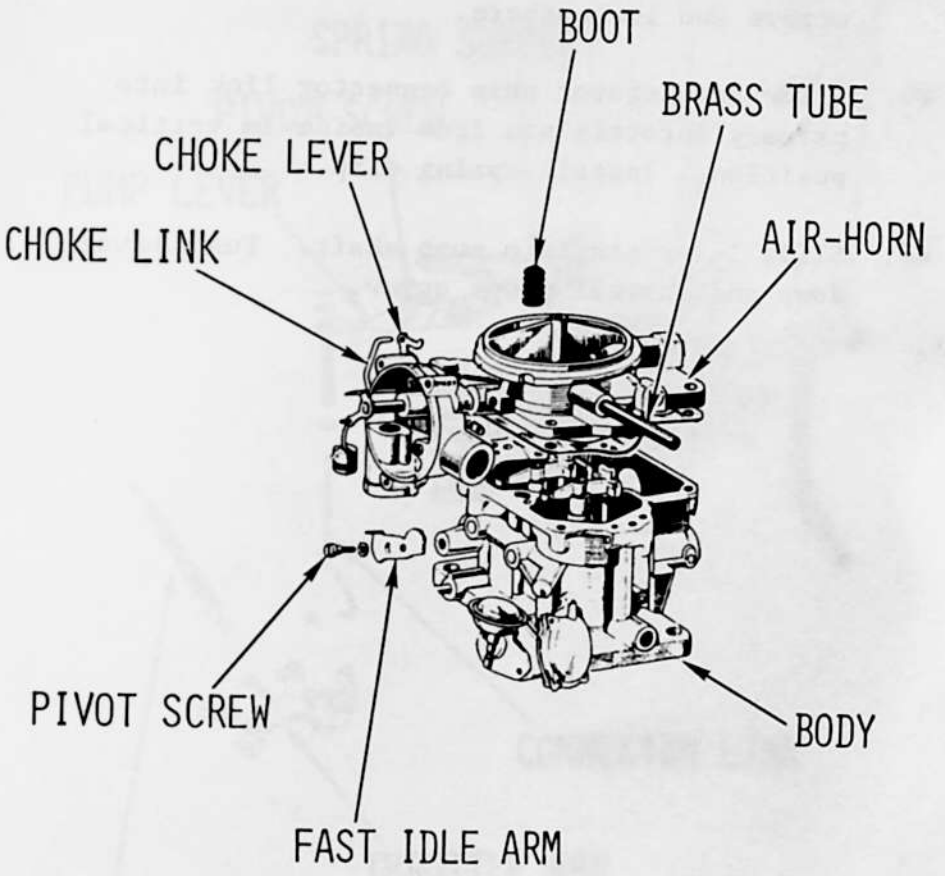
43. Install 3 screws and lockwashers on edge near stove pipe brass tube.

CAUTION

Fast idle arm must be positioned with slot to left of large hole and tab at upper left pointing out.

44. Fit choke link lower end into fast idle arm slot from outside. Install arm with pivot screw and nylon washer.

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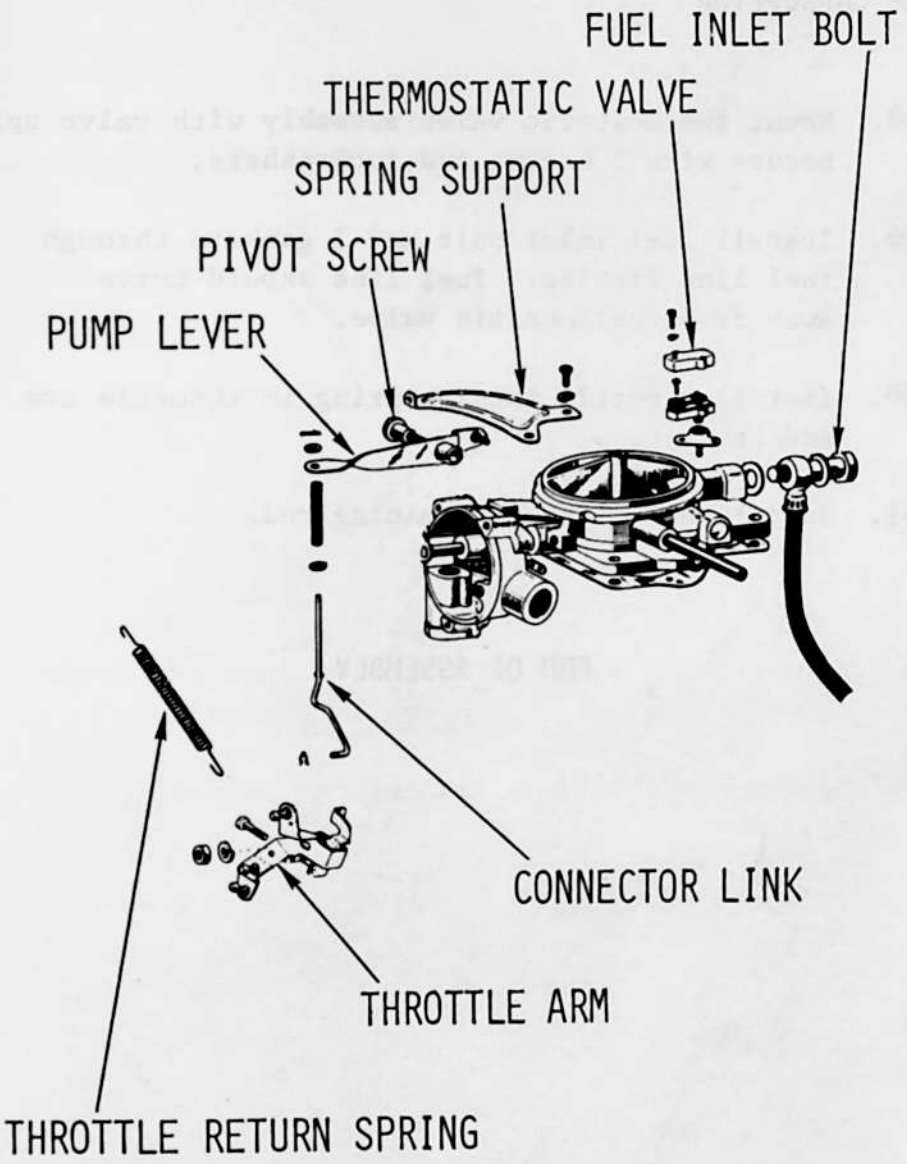
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45. Install throttle return spring bracket with 2 screws and lockwashers.

46. Slide accelerator pump connector link into primary throttle arm from inside in vertical position. Install spring clip.

47. Slide lever pin into pump shaft. Push lever down and install pivot screw.

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2M CARBURETOR

48. Mount thermostatic valve assembly with valve up. Secure with 2 screws and lockwashers.

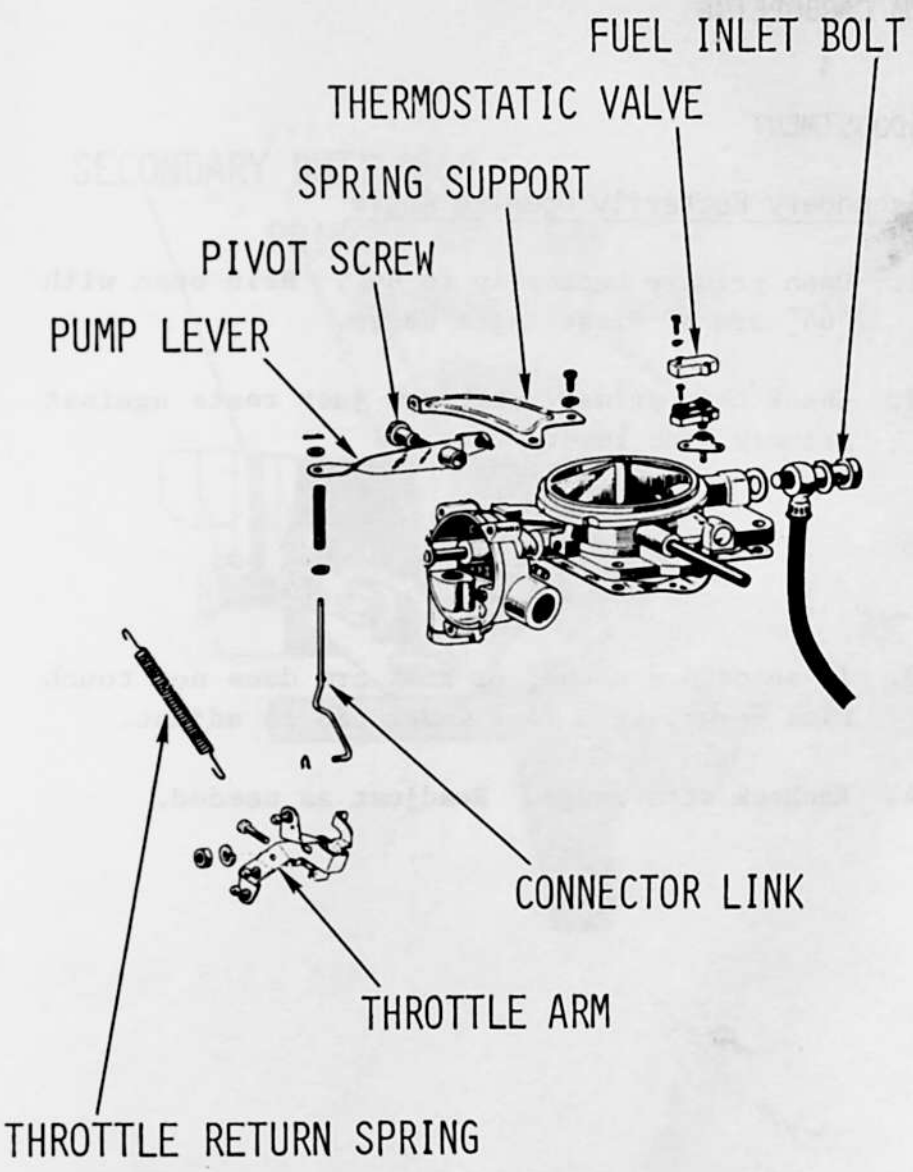
49. Install fuel inlet bolt and 2 gaskets through fuel line fitting. Fuel line should curve away from thermostatic valve.

50. Install throttle return spring in throttle arm and bracket.

51. Install air cleaner retaining rod.

END OF ASSEMBLY

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2M CARBURETOR

ADJUSTMENT

Secondary Butterfly Opening Angle

1. Open primary butterfly to 64°. Hold open with "64" arm of Float/Angle Gauge.

2. Check that primary kick arm just rests against primary kick lever.

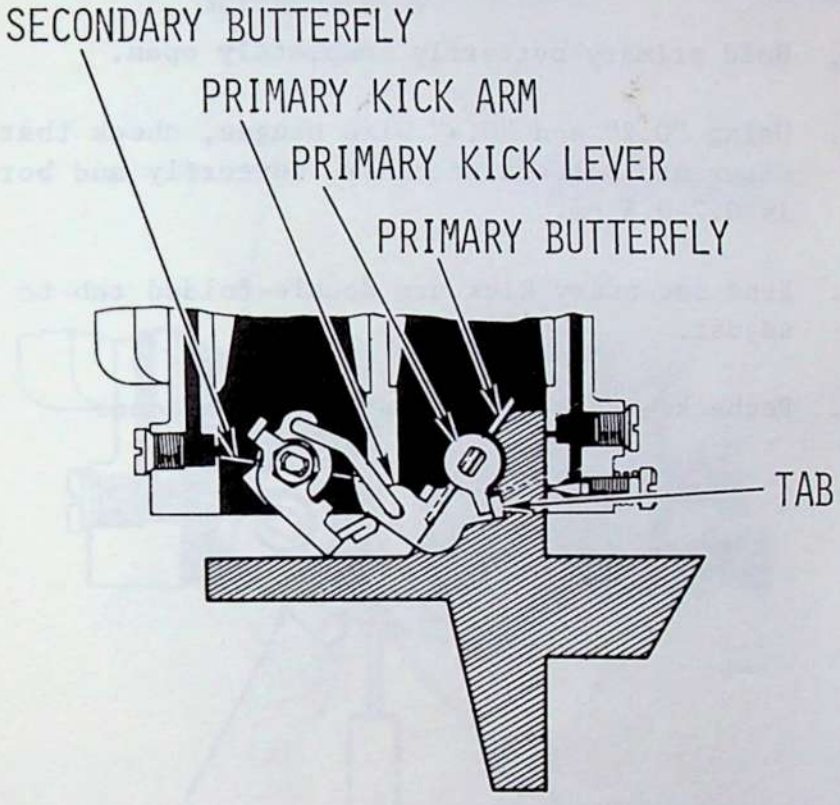
NOTE

Secondary butterfly should not have opened.

3. If secondary opens, or kick arm does not touch kick lever, bend kick lever tab to adjust.

4. Recheck with gauge. Readjust as needed.

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2M CARBURETOR

Kick Up

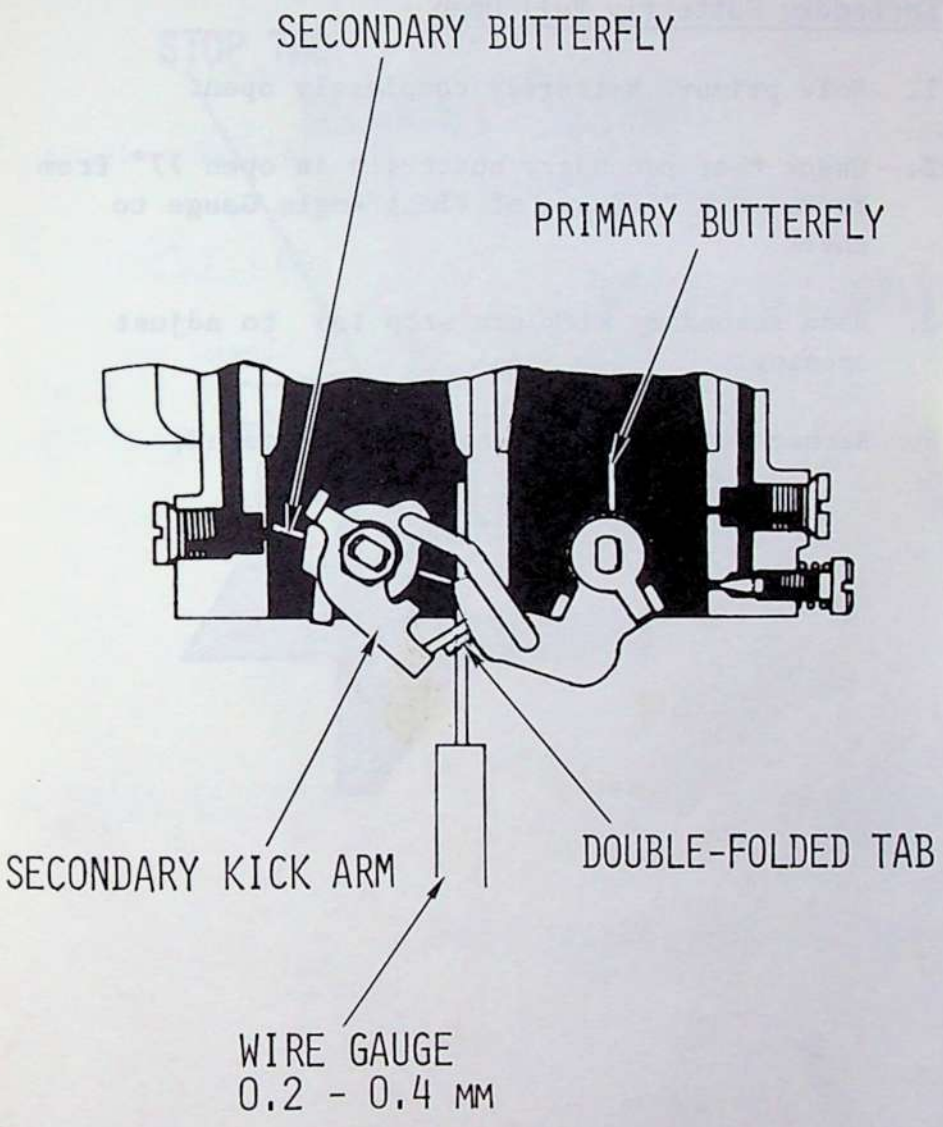
1. Hold primary butterfly completely open.

2. Using "0.2" and "0.4" Wire Gauges, check that clearance between secondary butterfly and bore is 0.2-0.4 mm.

3. Bend secondary kick arm double-folded tab to adjust.

4. Recheck with gauge. Readjust as needed.

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8297

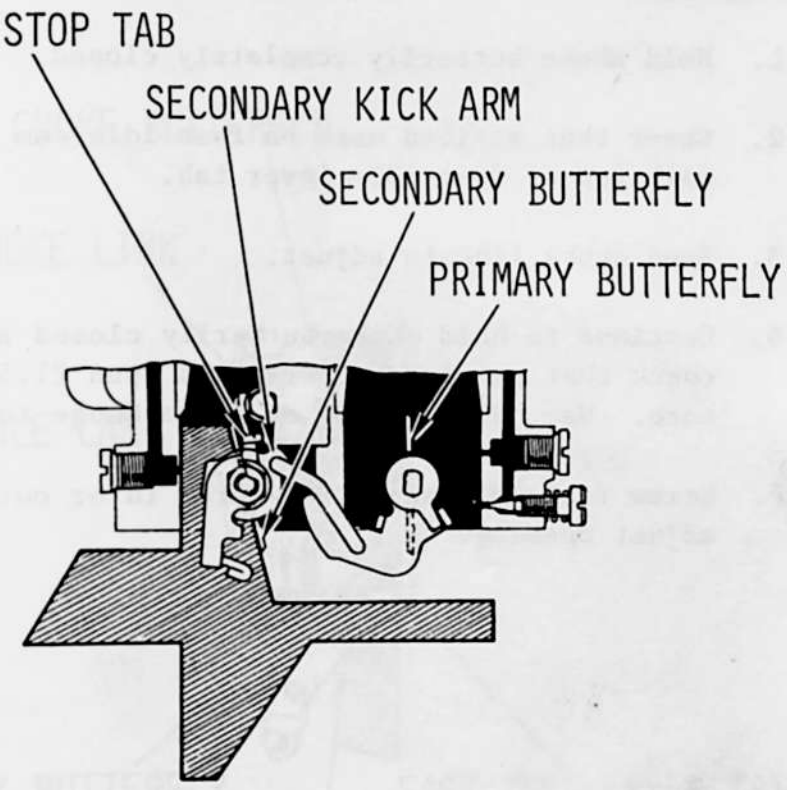
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2M CARBURETOR

Secondary Butterfly Full Open

1. Hold primary butterfly completely open.
2. Check that secondary butterfly is open 77° from bore. Use "77" arm of Float/Angle Gauge to check.
3. Bend secondary kick arm stop tab to adjust opening.
4. Recheck with gauge. Readjust as needed.

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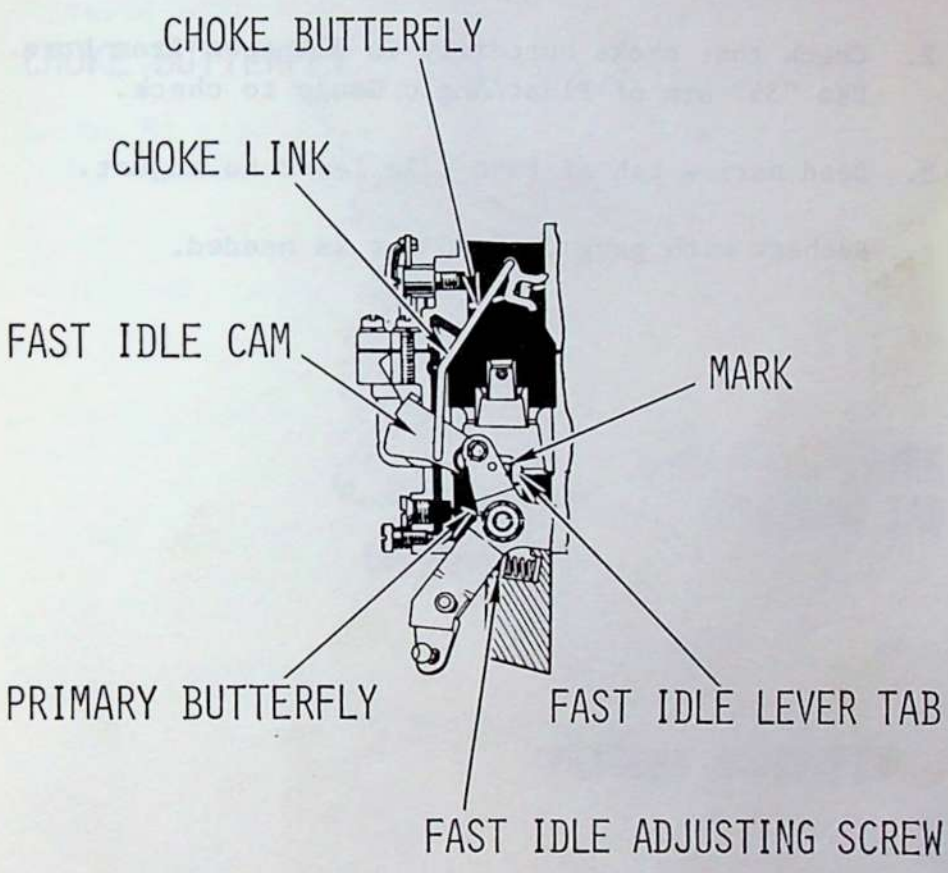
8298

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Fast Idle

1. Hold choke butterfly completely closed.
2. Check that scribed mark on fast idle cam aligns with top of fast idle lever tab.
3. Bend choke link to adjust.
4. Continue to hold choke butterfly closed and check that primary butterfly is open 21.5° from bore. Use "21.5" angle of Angle Gauge to check.
5. Screw fast idle adjusting screw in or out to adjust opening.

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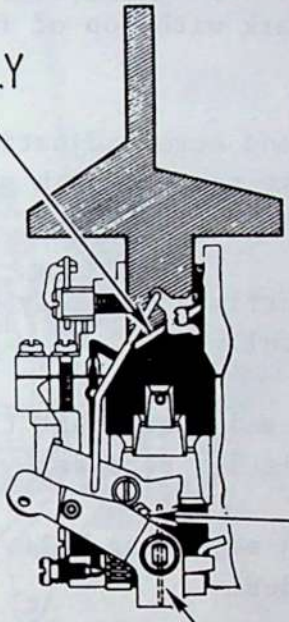
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2M CARBURETOR

Unloader

1. Hold primary butterfly completely open.
2. Check that choke butterfly is 35° open from bore. Use "35" arm of Float/Angle Gauge to check.
3. Bend narrow tab of fast idle lever to adjust.
4. Recheck with gauge. Readjust as needed.

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2M CARBURETOR

Dash Pot

1. Hold choke butterfly completely closed to align fast idle cam mark with top of fast idle lever tab.

2. Loosen locknut and screw adjusting bolt in or out so bolt head just touches dash pot plunger end. Tighten nut.

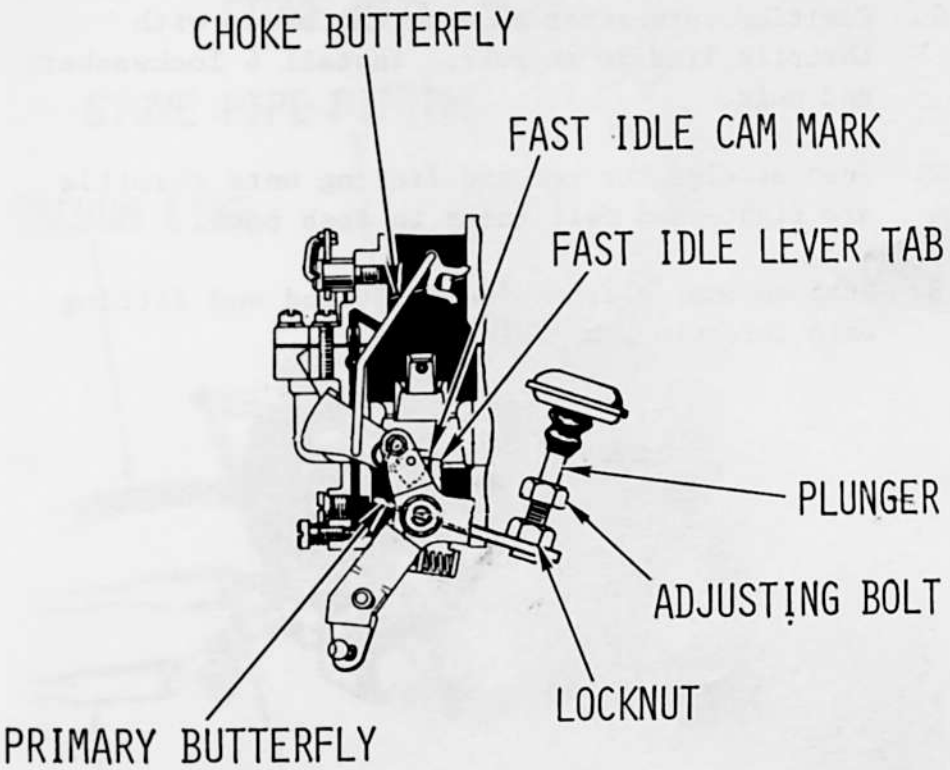
3. Hold choke butterfly completely open. Open primary butterfly fully.

4. Release primary and check that time for primary to fully close is 5-7 seconds.

5. Adjust time with adjusting bolt. Recheck and readjust as needed.

END OF ADJUSTMENT

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2M CARBURETOR

INSTALLATION

1. Position carburetor on mounting studs with throttle linkage at rear. Install 4 lockwashers and nuts.

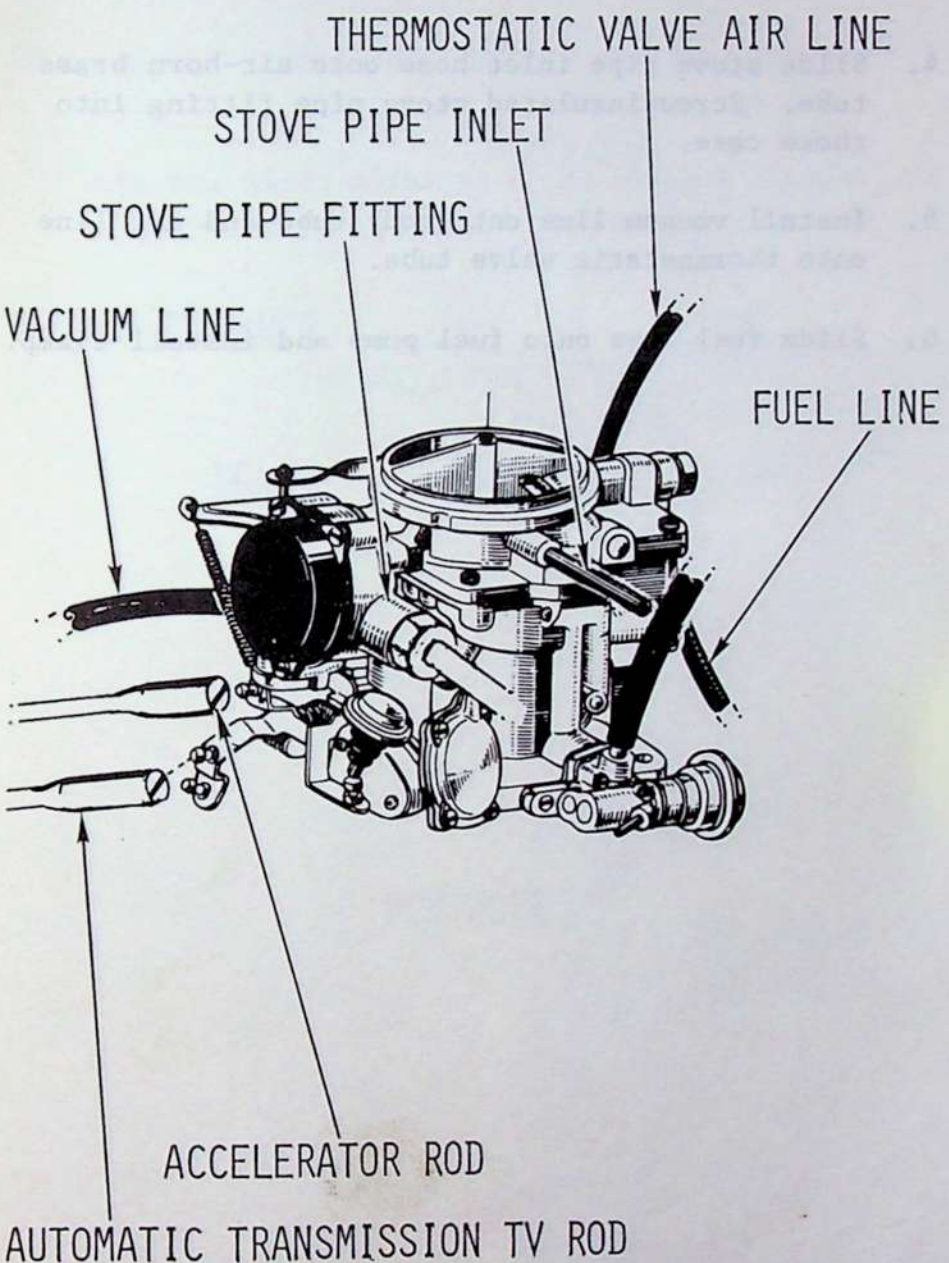
2. Snap accelerator rod end fitting onto throttle arm right-hand ball (next to dash pot).

3. Snap automatic transmission TV rod end fitting onto throttle arm center ball.

NOTE

Left-hand ball is not used.

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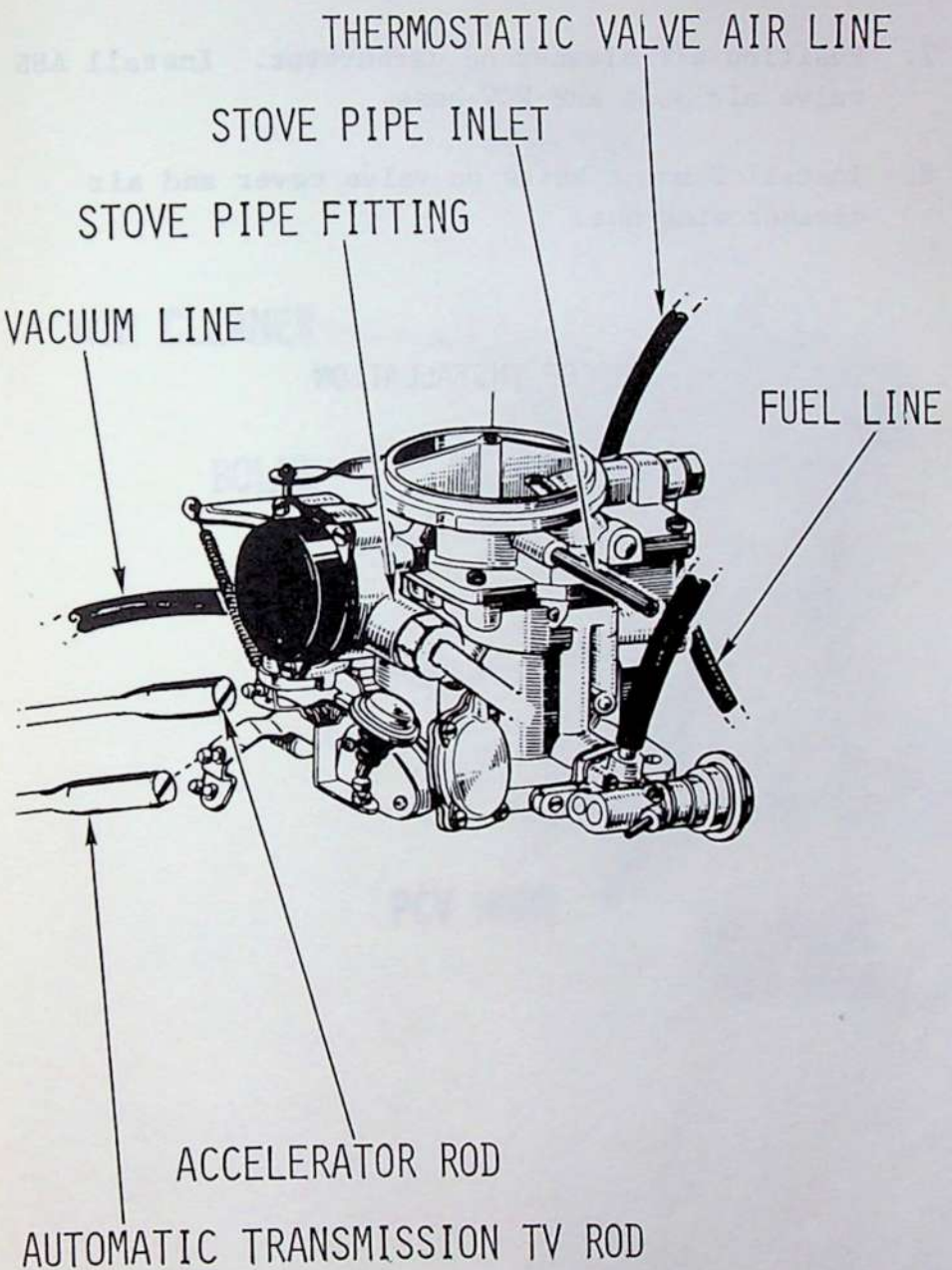
2M CARBURETOR

4. Slide stove pipe inlet hose onto air-horn brass tube. Screw insulated stove pipe fitting into choke case.

5. Install vacuum line onto body tube and air line onto thermostatic valve tube.

6. Slide fuel line onto fuel pump and install clamp.

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2M CARBURETOR

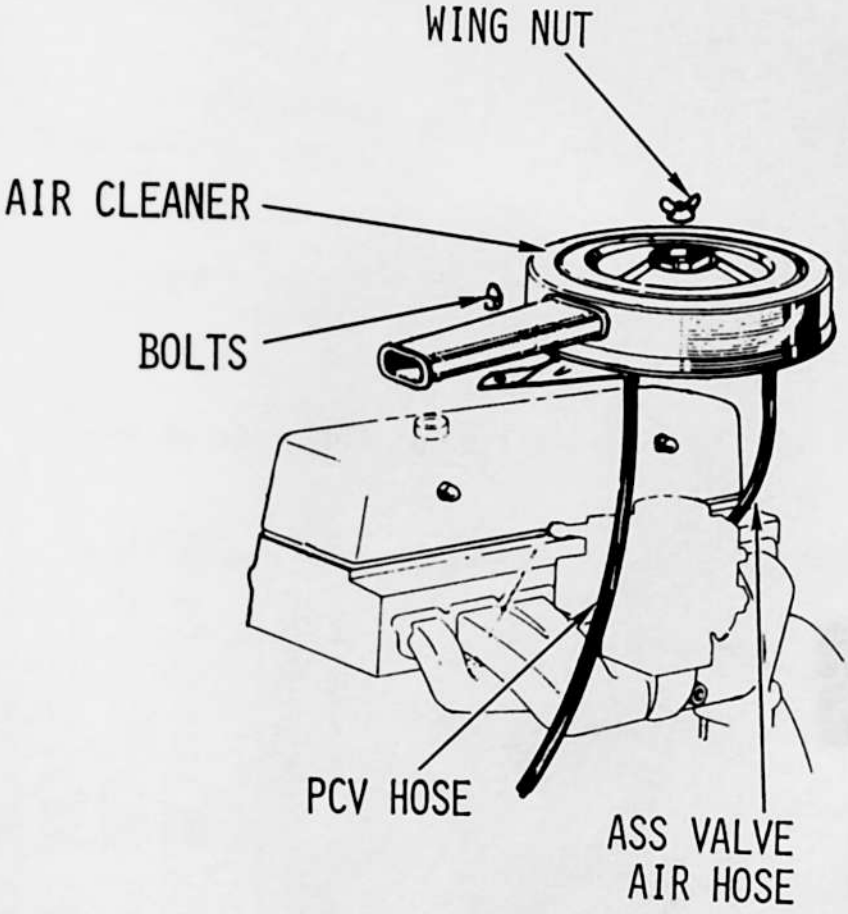
7. Position air cleaner on carburetor. Install ASS valve air hose and PCV hose.

8. Install 2 mount bolts on valve cover and air cleaner wing nut.

END OF INSTALLATION



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LAND CRUISER F

6

FUEL SYSTEMS MANUAL

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F CARBURETOR OVERHAUL

JOB SETUP

Special Tools

Carburetor Screwdriver Set, 09860-11010.
Carburetor Adjust Kit, 09240-60050.

NOTE

To overhaul carburetor, a small pocket screwdriver must be modified.

1. Cut a slot 1/16" deep in blade tip of small pocket screwdriver.

2. Squeeze tips together so they almost touch.

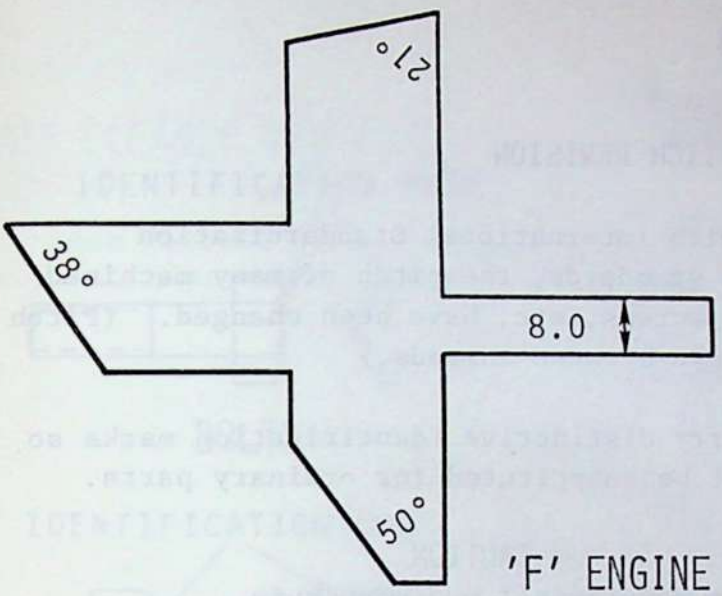
Supplies

F Carburetor Overhaul Kit.

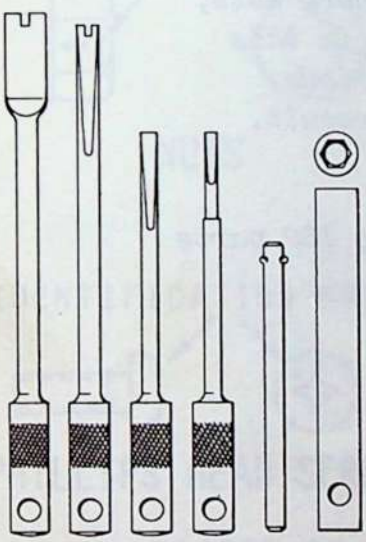
Vehicles

Land Cruiser.

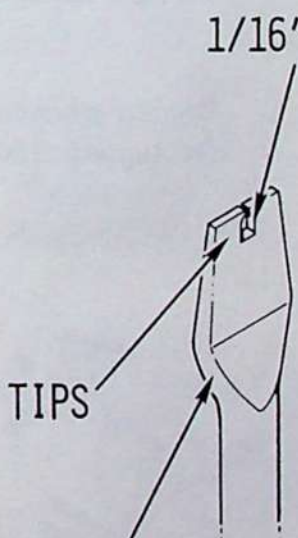
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'F' ENGINE CARBURETOR
ADJUST KIT
09240-60050



SCREWDRIVER SET
09860-11010



MODIFIED SCREWDRIVER

8240

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F CARBURETOR

ISO THREAD PITCH REVISION

To conform with International Standardization Organization standards, the pitch of many machined bolts, nuts, screws, etc. have been changed. (Pitch is the distance between threads.)

ISO parts carry distinctive identification marks so they will not be substituted for ordinary parts.

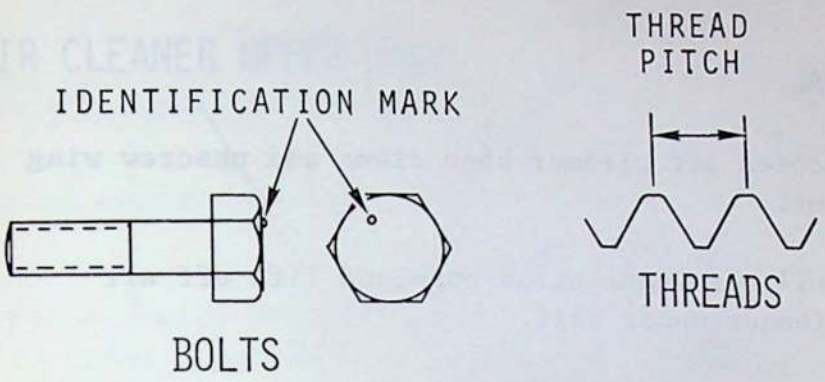
CAUTION

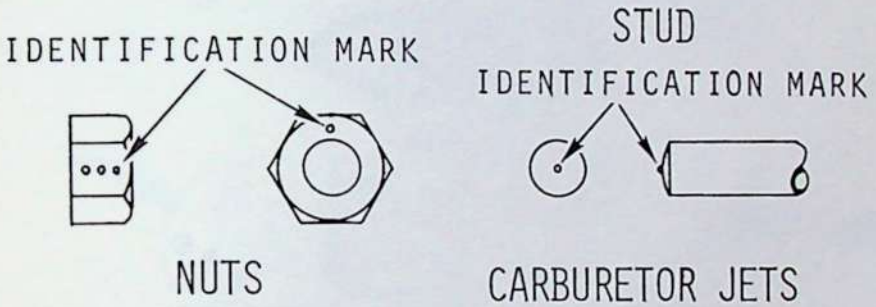
Do not install ordinary nuts, screws, bolts, etc. in this ISO carburetor. Serious thread damage will result.

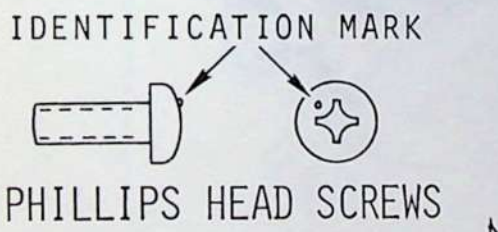
NOTE

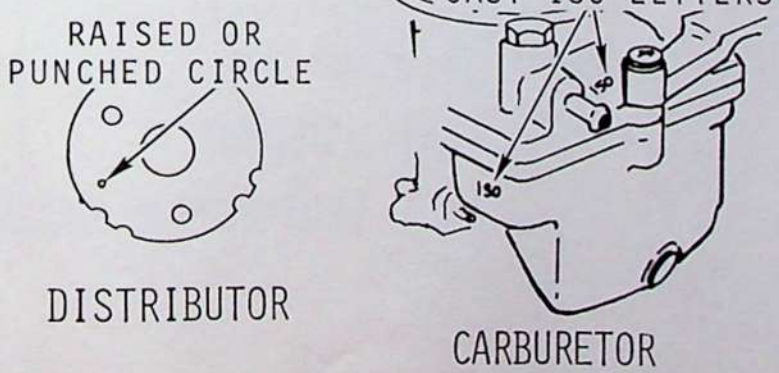
Toyota started using ISO parts in August 1968.

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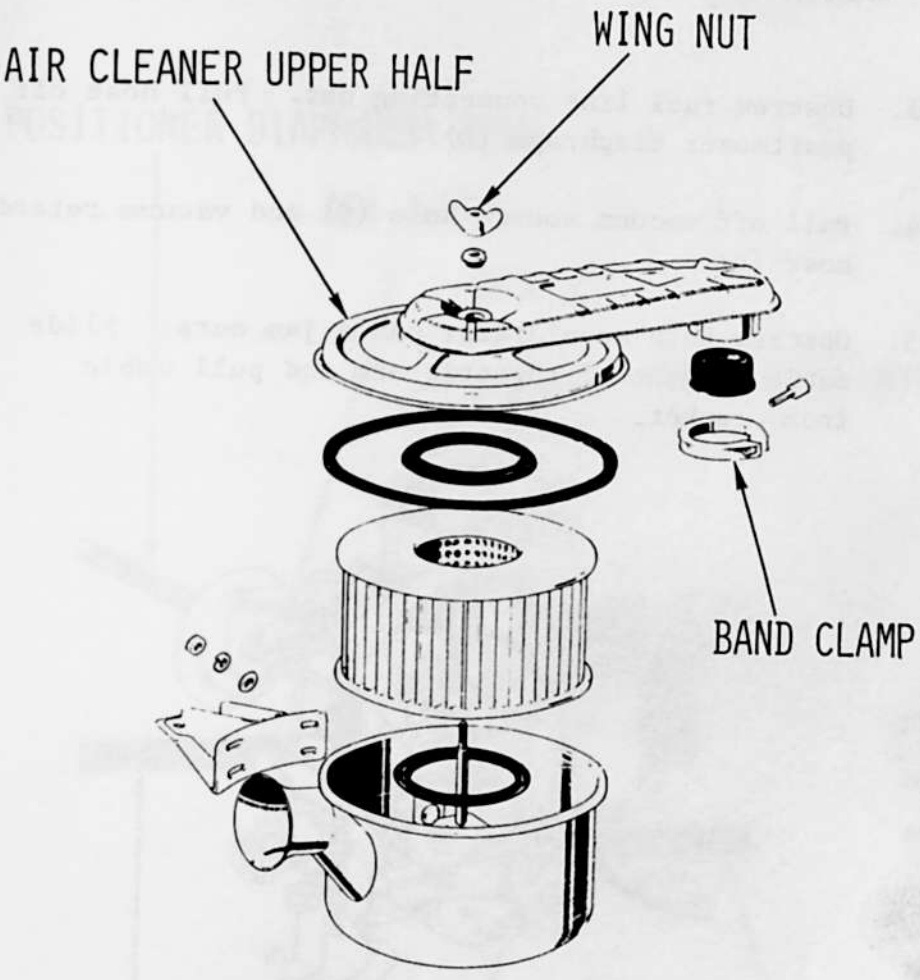
F CARBURETOR

REMOVAL

1. Loosen air cleaner band clamp and unscrew wing nut.
2. Pull off ventilation hose and lift off air cleaner upper half.



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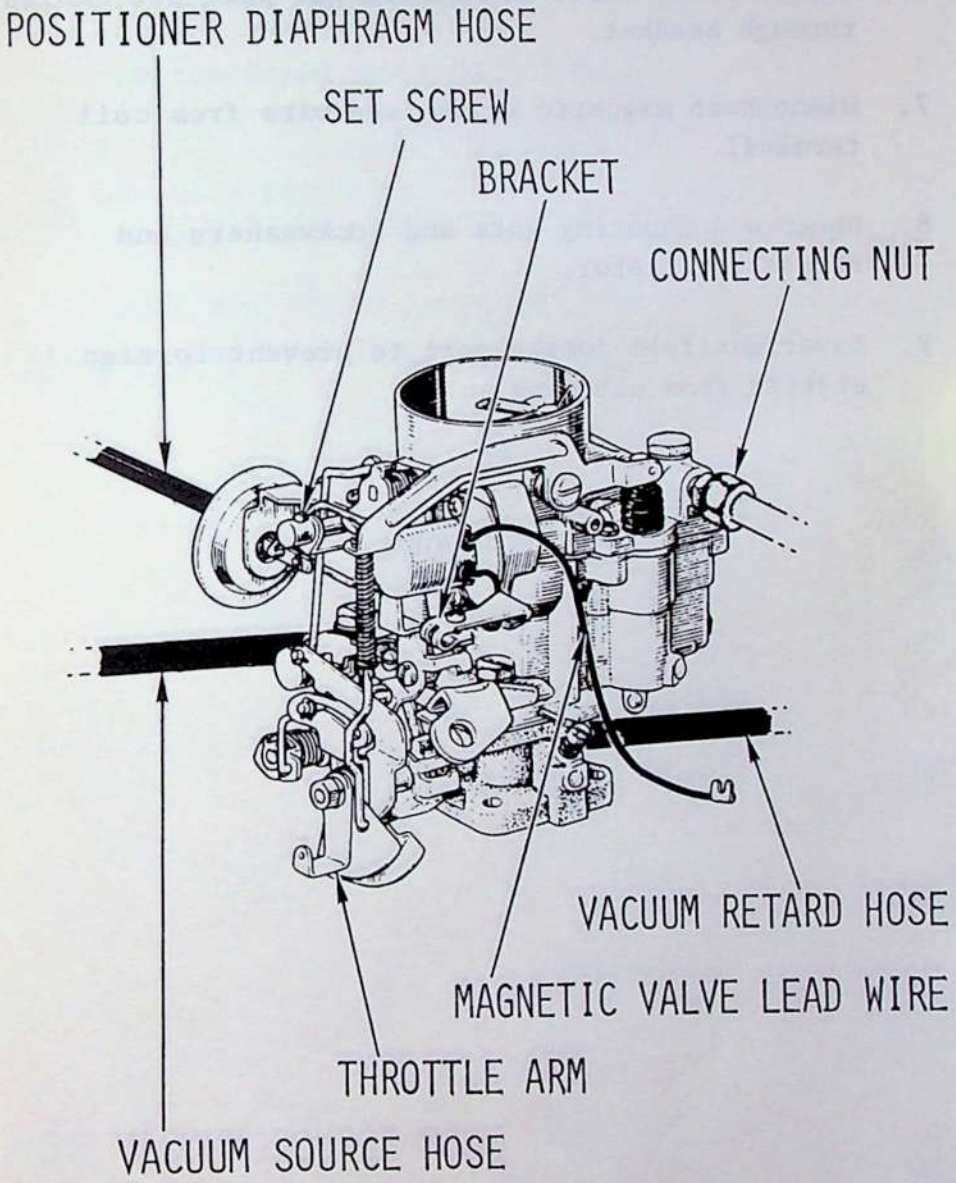
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3. Unscrew fuel line connecting nut. Pull hose off positioner diaphragm (D).

4. Pull off vacuum source hose (C) and vacuum retard hose (B).

5. Unscrew both accelerator cable jam nuts. Slide cable end out of throttle arm and pull cable from bracket.

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6. Loosen choke cable set screws and pull out cables through bracket.

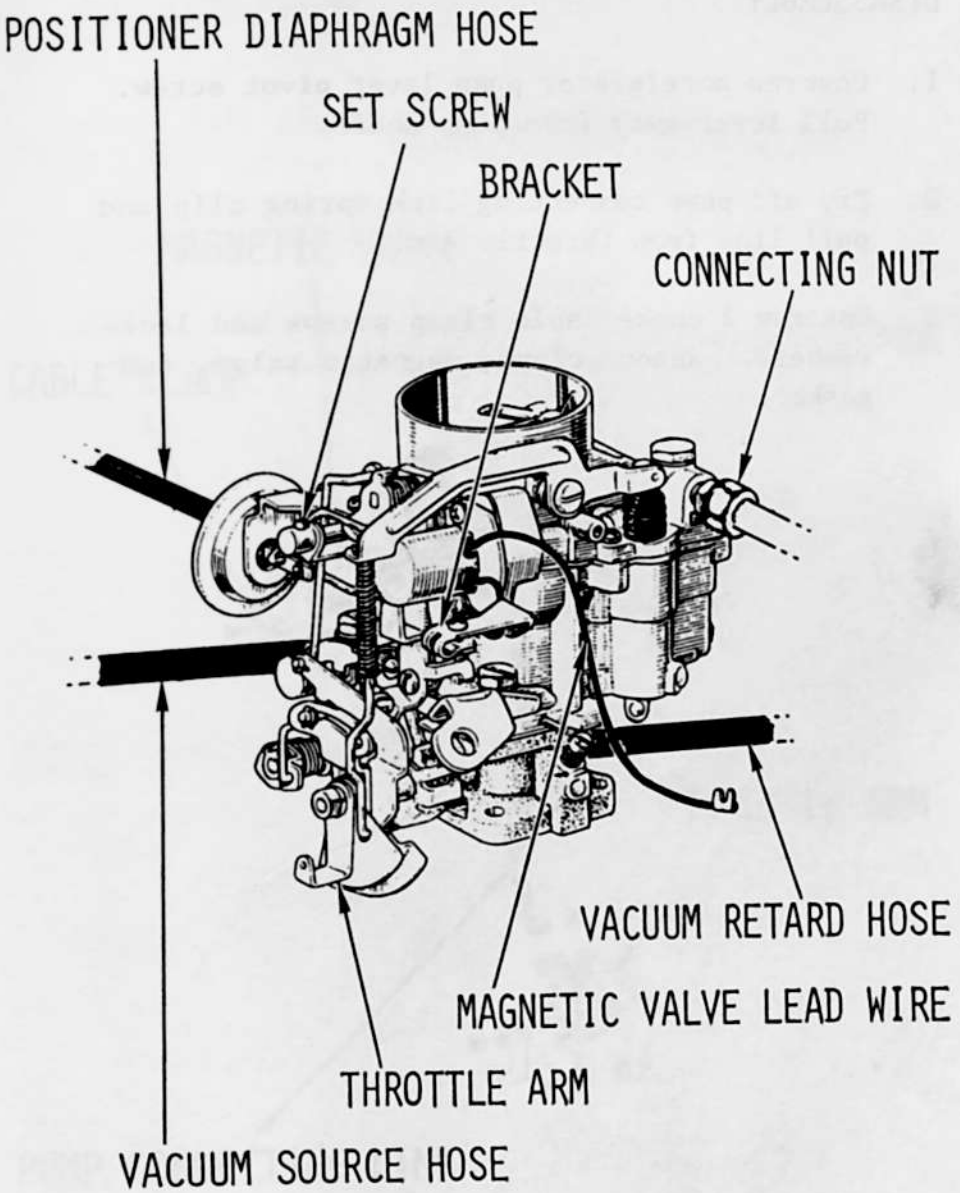
7. Disconnect magnetic valve lead wire from coil terminal.

8. Unscrew 4 mounting nuts and lockwashers and remove carburetor.

9. Cover manifold intake port to prevent foreign objects from entering.

END OF REMOVAL

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F CARBURETOR

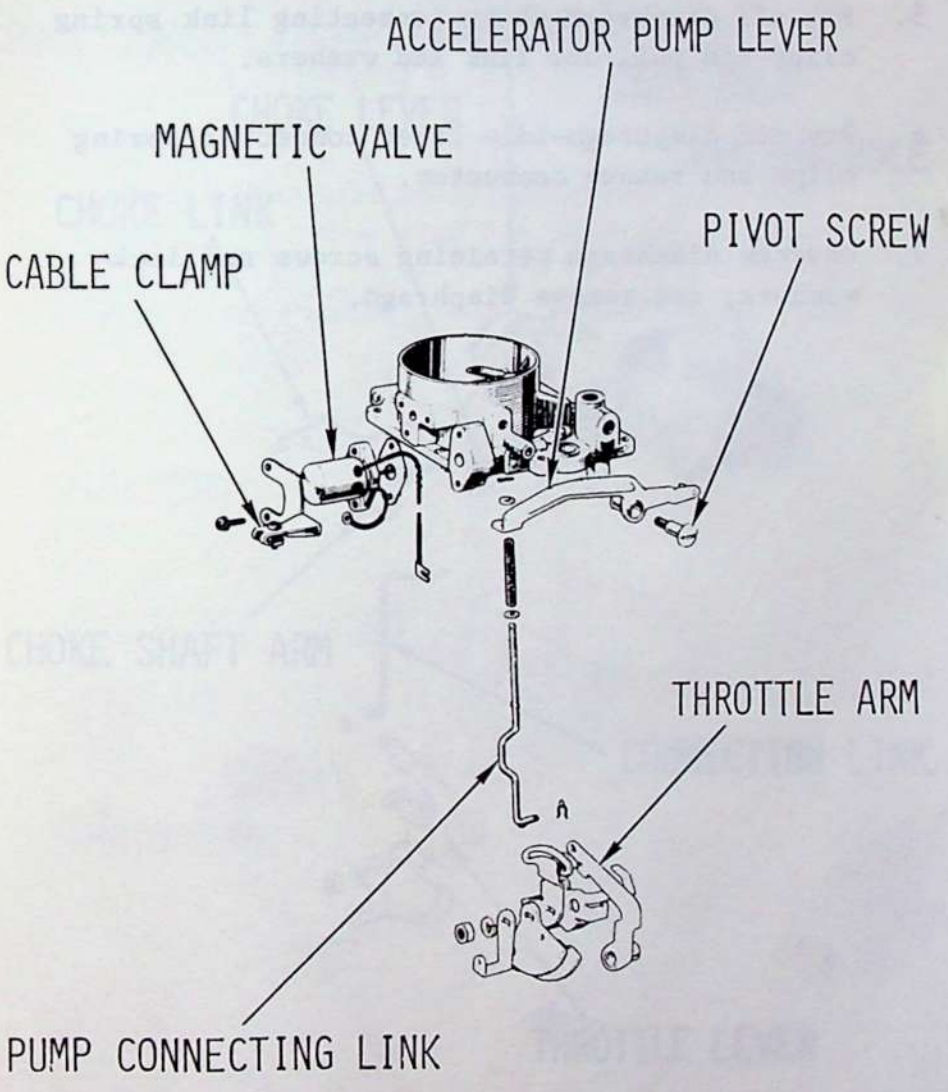
DISASSEMBLY

1. Unscrew accelerator pump lever pivot screw. Pull lever away from pump shaft.

2. Pry off pump connecting link spring clip and pull link from throttle arm.

3. Unscrew 2 choke cable clamp screws and lock-washers. Remove clamp, magnetic valve, and gasket.

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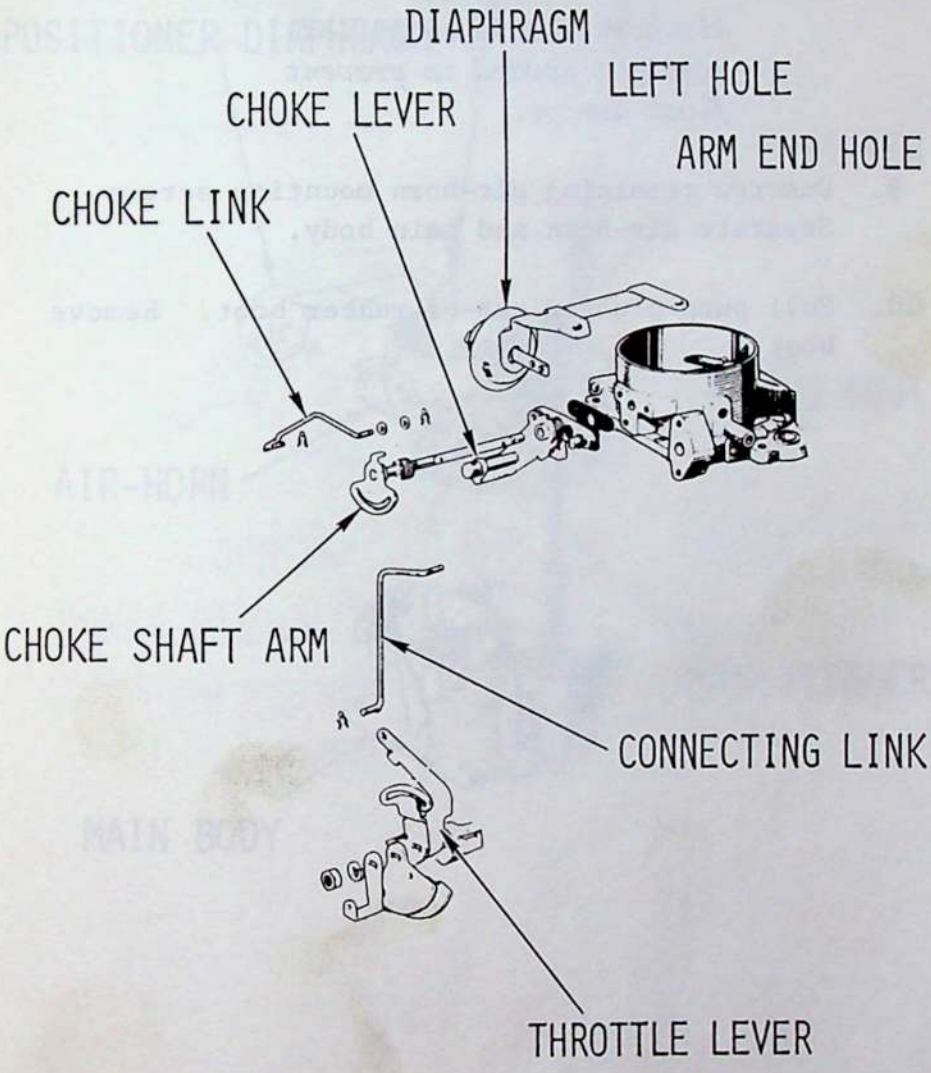
4. Pry off choke link spring clips and pull link away.

5. Pry off diaphragm-choke connecting link spring clips and pull out link and washers.

6. Pry off diaphragm-idle lever connector spring clips and remove connector.

7. Unscrew diaphragm retaining screws and lock-washers, and remove diaphragm.

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8. Unscrew fuel inlet bolt, gasket, and strainer.

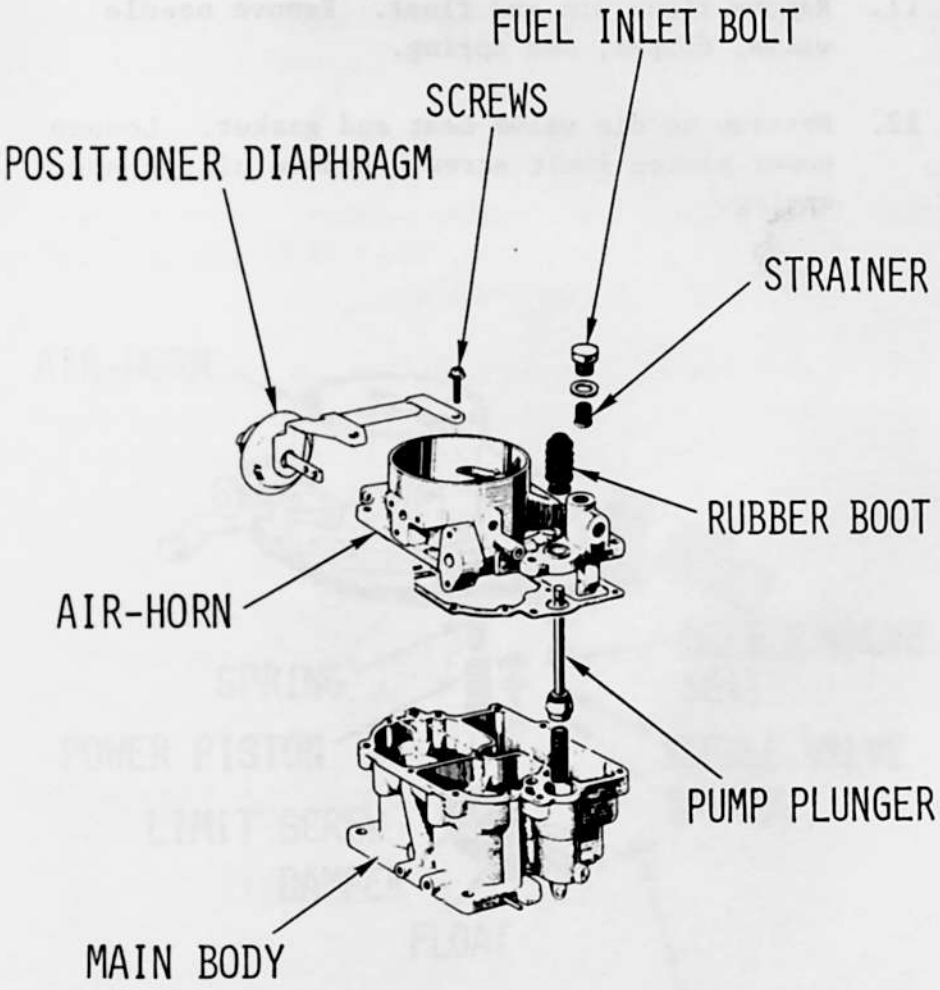
CAUTION

Air-horn should be pulled straight upward to prevent float damage.

9. Unscrew remaining air-horn mounting screws. Separate air-horn and main body.

10. Pull pump plunger out of rubber boot. Remove boot.

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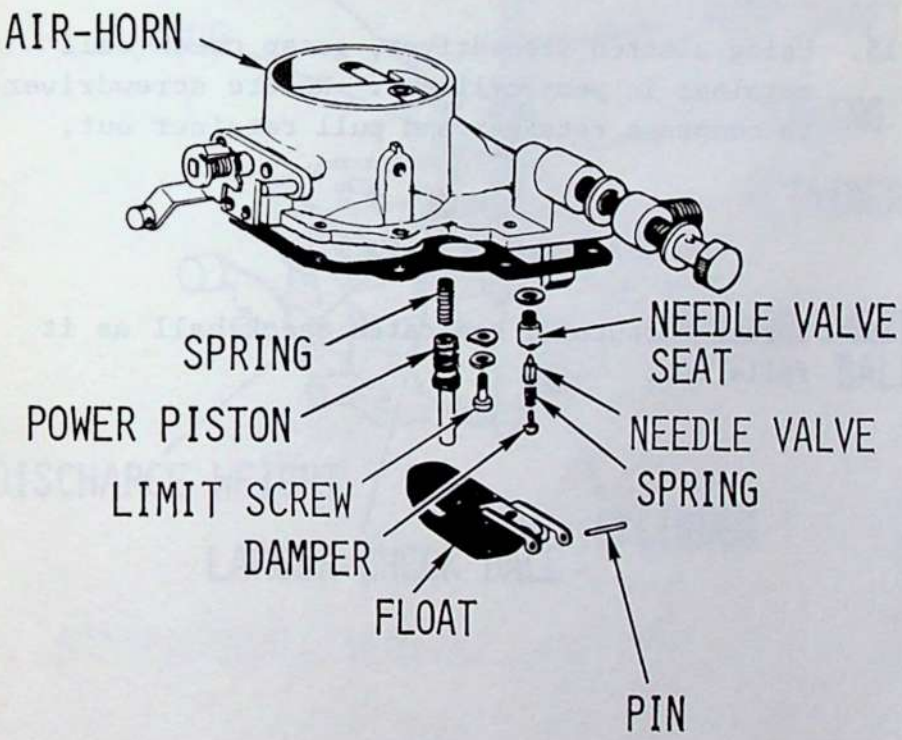
F CARBURETOR

11. Remove float pin and float. Remove needle valve, damper, and spring.

12. Unscrew needle valve seat and gasket. Loosen power piston limit screw. Remove piston and spring.



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13. Remove pump spring from cylinder.

NOTE

Do not lose check ball.

14. Remove check ball rubber washer. Invert carburetor and catch plug, discharge weight, and check ball as they fall out.

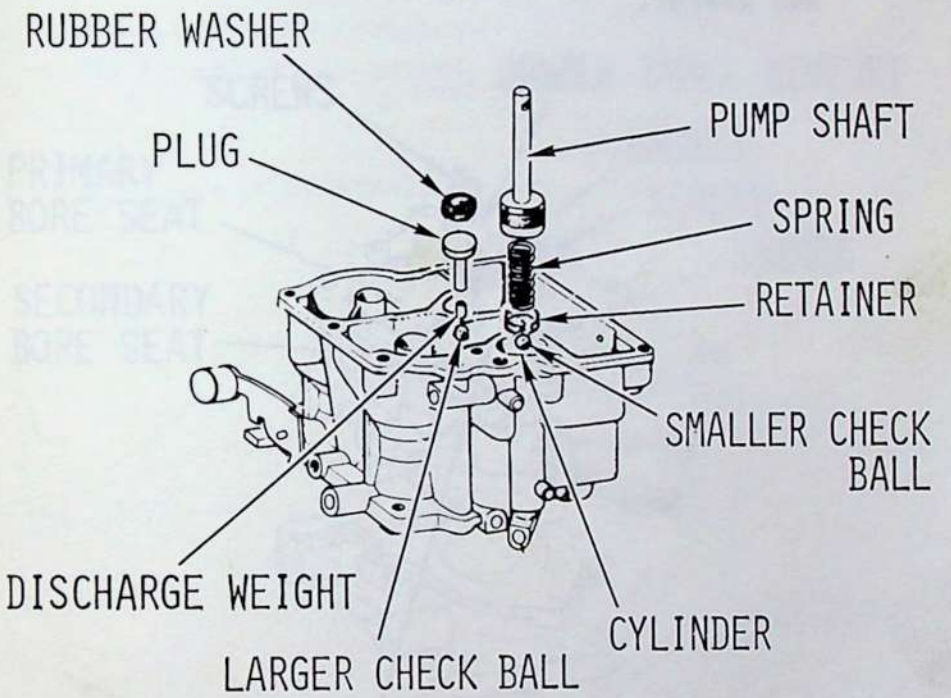
15. Using slotted screwdriver, grasp check ball retainer in pump cylinder. Rotate screwdriver to compress retainer and pull retainer out.

NOTE

Do not lose check ball.

16. Invert carburetor and catch check ball as it falls out.

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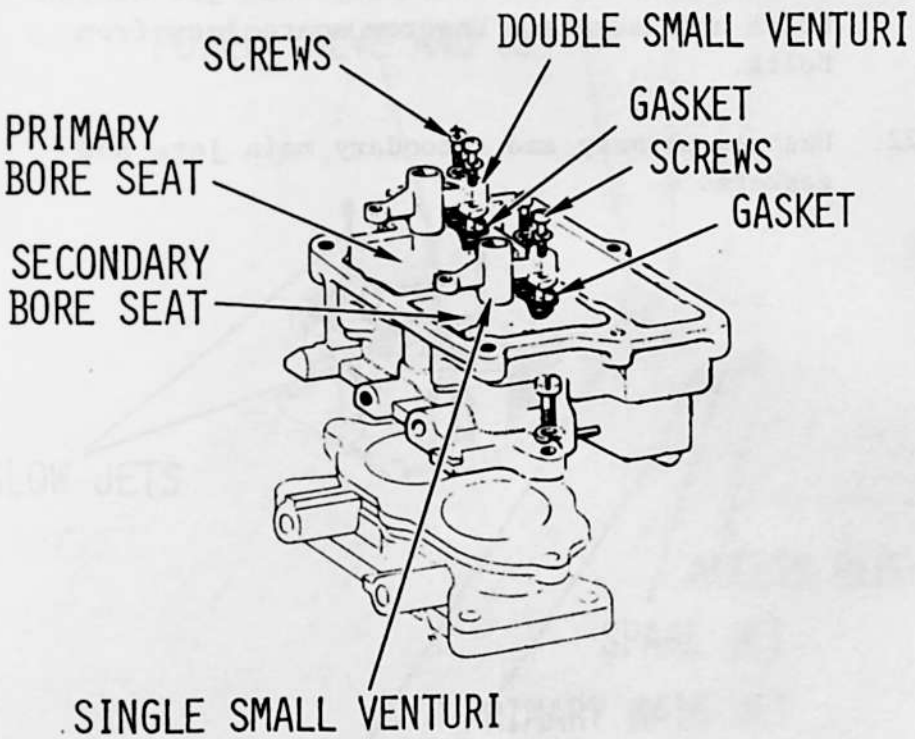
8250

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17. Unscrew primary small venturi retaining screws. Remove venturi, screws, lockwashers, and gasket.

18. Unscrew secondary small venturi retaining screws. Remove venturi, screws, lockwashers, and gasket.

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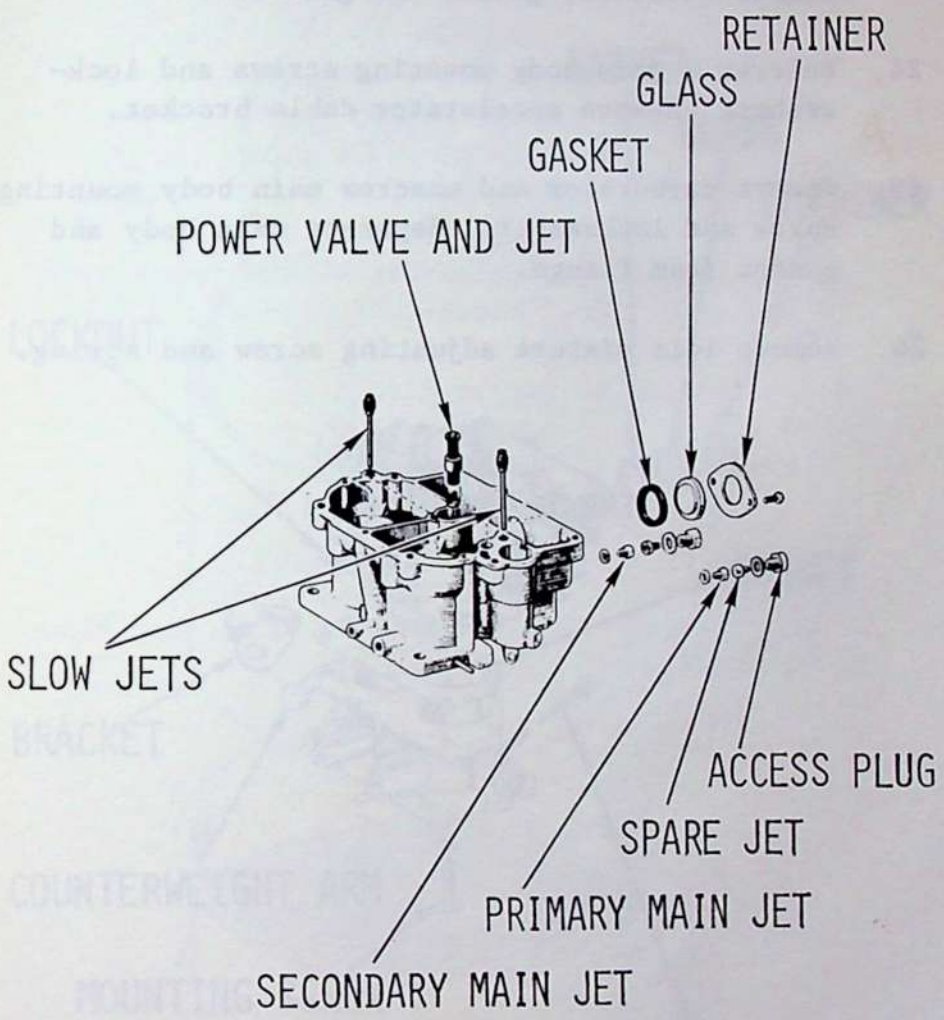
19. Unscrew both slow jets. Invert carburetor and catch them as they fall out.

20. Using Power Valve Wrench, remove power valve and jet.

21. Unscrew primary and secondary main jet access bolts and gaskets. Unscrew spare jets from bolts.

22. Unscrew primary and secondary main jets and gaskets.

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23. Remove fuel level gauge retainer screws. Remove retainer, glass, and gasket.

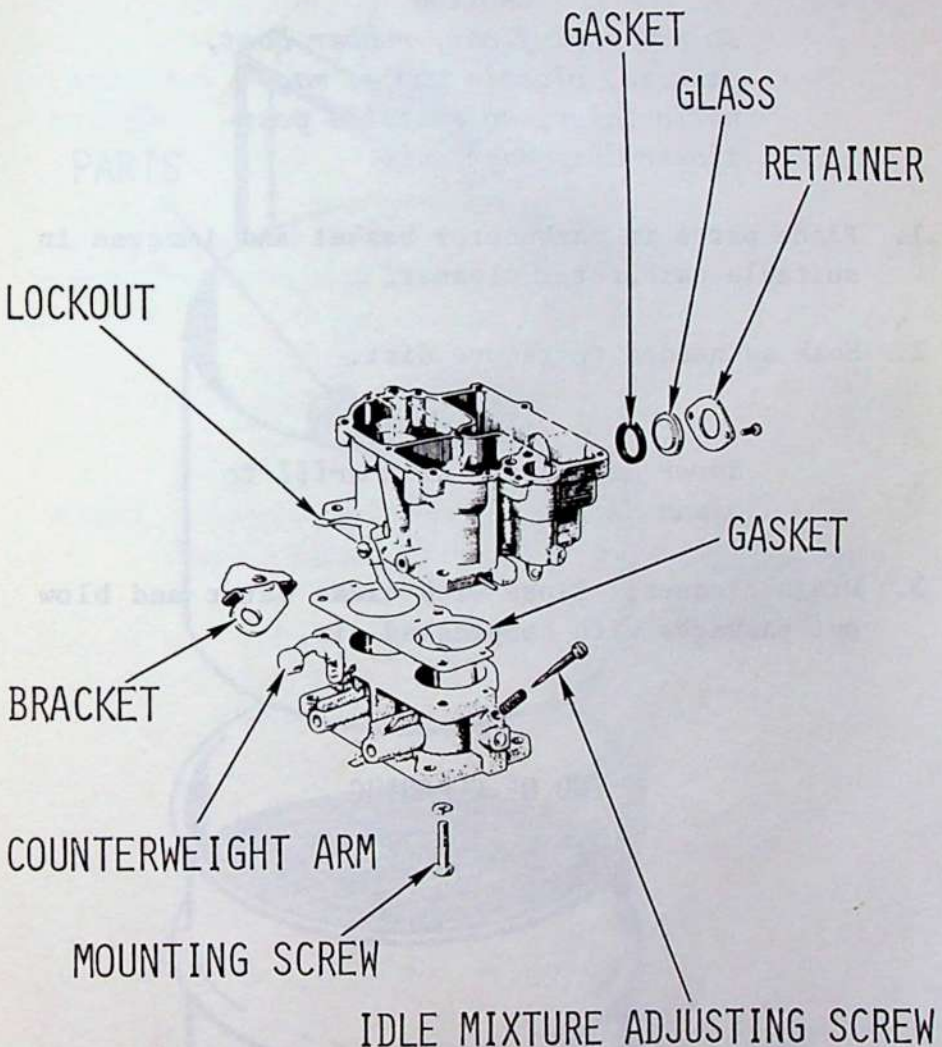
24. Unscrew 2 main body mounting screws and lockwasher. Remove accelerator cable bracket.

25. Invert carburetor and unscrew main body mounting screw and lockwasher. Separate main body and gasket from flange.

26. Remove idle mixture adjusting screw and spring.

END OF DISASSEMBLY

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F CARBURETOR

CLEANING

CAUTION

Do not soak float, rubber boot, gaskets, plastic parts, magnetic valve, or throttle positioner diaphragm unit.

1. Place parts in carburetor basket and immerse in suitable carburetor cleaner.

2. Soak as needed to remove dirt.

CAUTION

Never use a wire or a drill to clean jets.

3. Drain cleaner, Rinse with clean water and blow out passages with compressed air.

END OF CLEANING

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F CARBURETOR

INSPECTION

Air-Horn

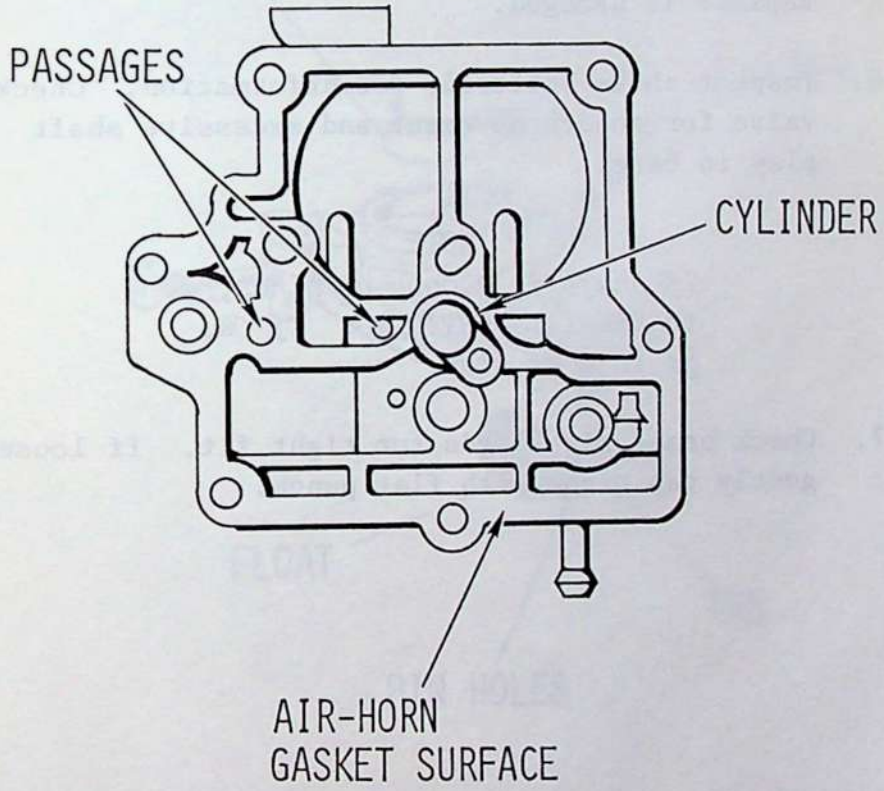
1. Using compressed air, check passages for free air flow. Check for damaged threads. Replace air-horn if damaged.

2. Check air-horn gasket surface for burrs, nicks, or cracks. If new gasket cannot seal off surface damage, replace air-horn.

3. Check power piston and cylinder for nicks or grooves. Replace damaged parts.

4. Insert piston and spring into cylinder. Check for smooth movement and spring weakness.

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5. Inspect float for:

   deformation
   surface damage
   tab damage
   elongated pin holes

   Replace if damaged.

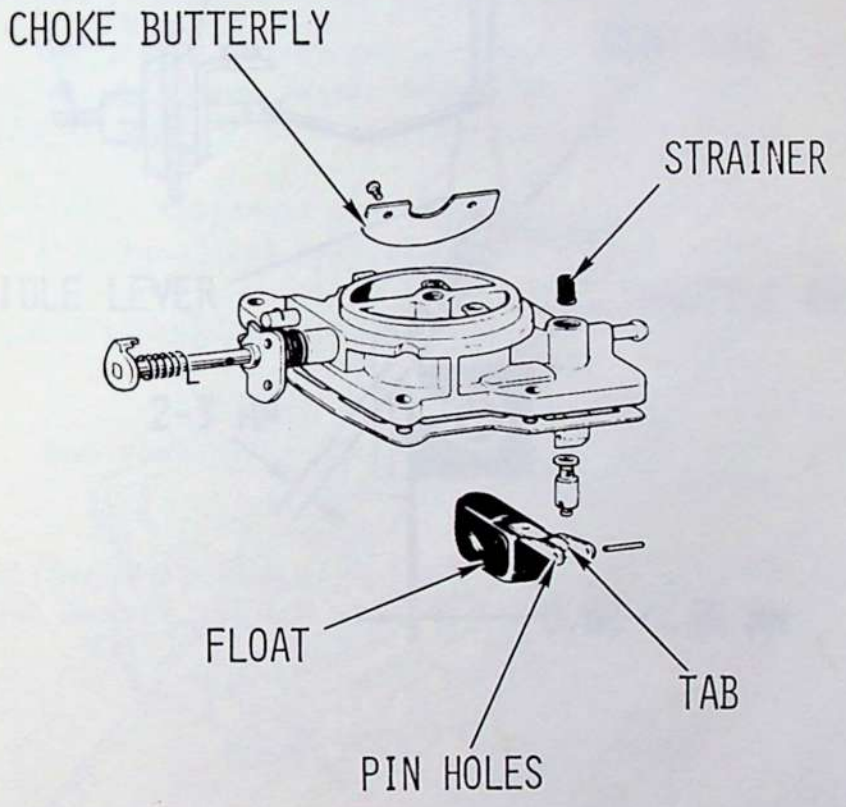
6. Inspect choke butterfly for deformation. Check valve for smooth movement and excessive shaft play in bore.

   NOTE

   If shaft is sloppy or binds, go to SPECIAL SERVICING. If OK, go to next step.

7. Check brass air bleeds for tight fit. If loose, gently tap tight with flat punch.

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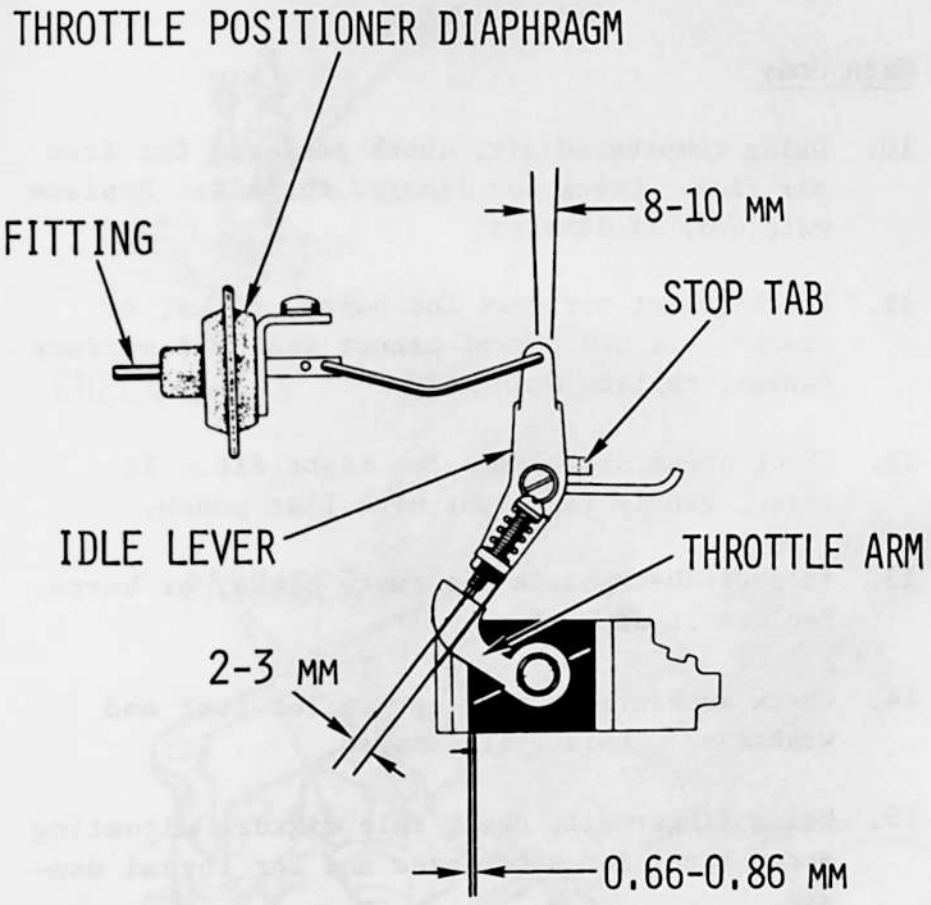
8053

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8. Check fuel inlet strainer for rust.

9. Check throttle positioner diaphragm by breathing in and out on fitting. Arm should travel 8-10mm. If not, diaphragm is ruptured; replace unit.

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F CARBURETOR

Main Body

10. Using compressed air, check passages for free air flow. Check for damaged threads. Replace main body if damaged.

11. Check gasket surfaces for burrs, nicks, or cracks. If new gasket cannot seal off surface damage, replace main body.

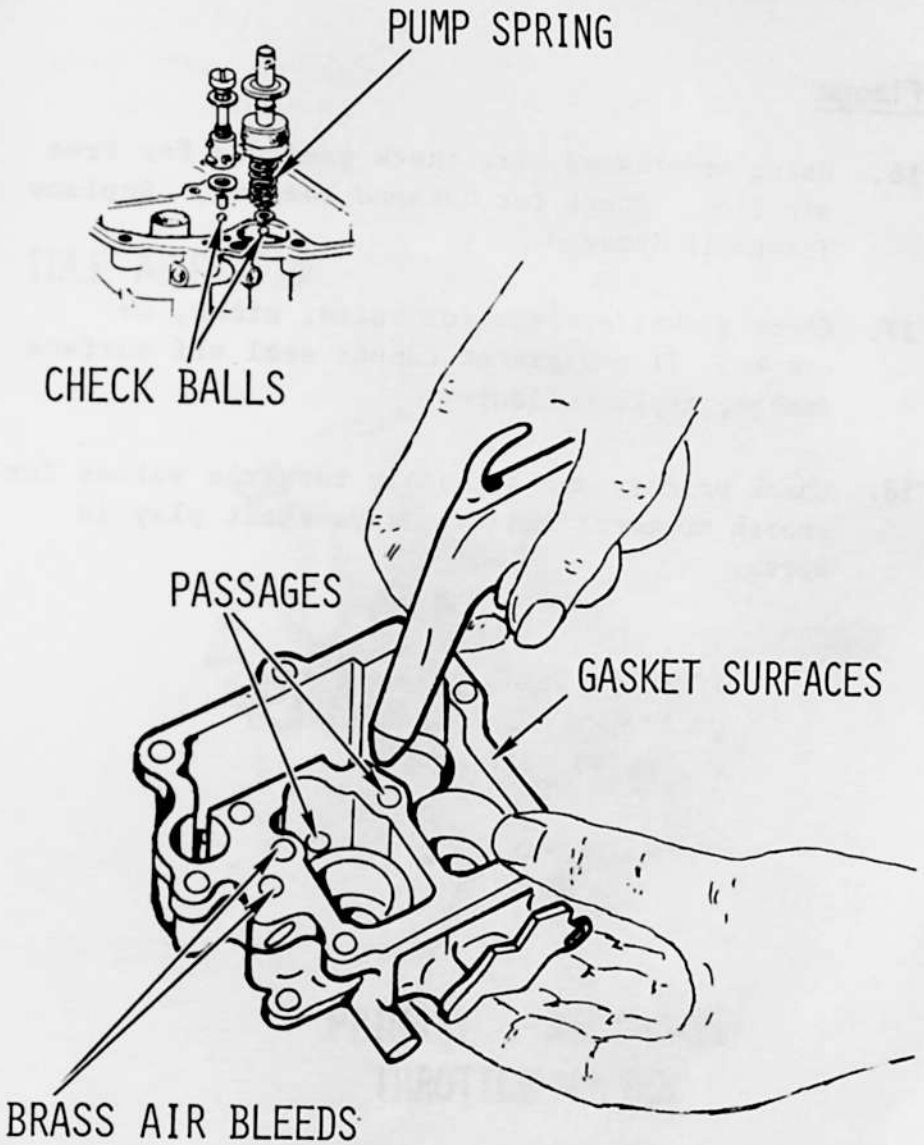
12. Check brass air bleeds for tight fit. If loose, gently tap tight with flat punch.

13. Inspect check balls for rust, nicks, or burrs. Replace if damaged.

14. Check accelerator pump spring for rust and weakness. Replace if damaged.

15. Using fingernail, check idle mixture adjusting screw taper for smoothness and for thread damage.

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F CARBURETOR

Flange

16. Using compressed air, check passages for free air flow. Check for damaged threads. Replace flange if damaged.

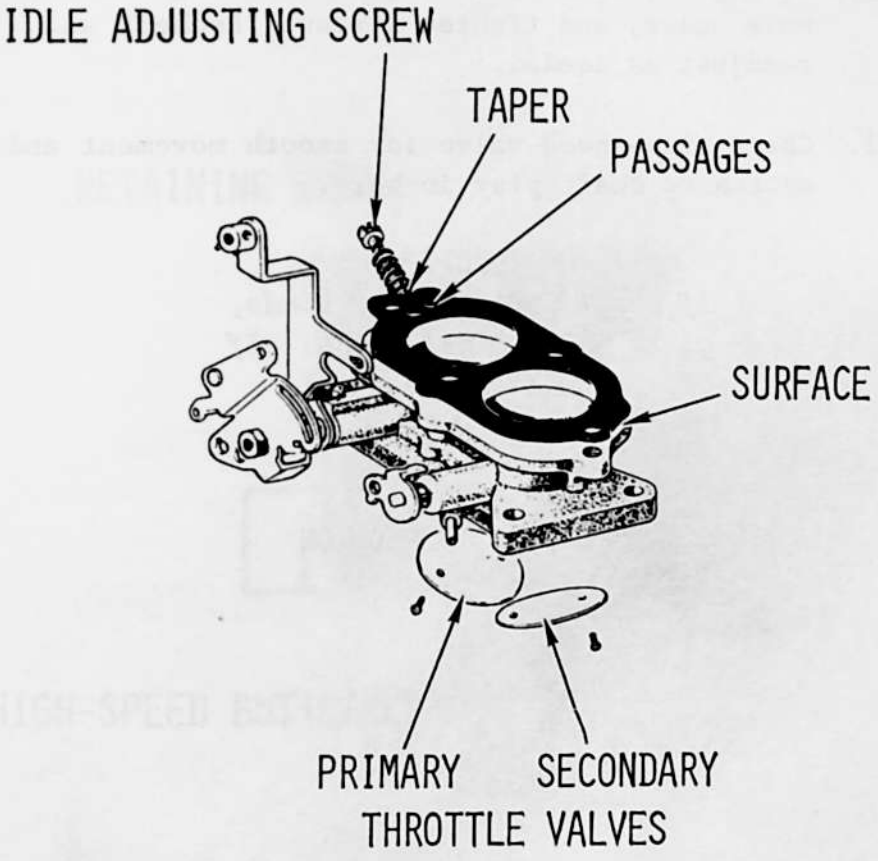
17. Check gasket surface for burrs, nicks, or cracks. If new gasket cannot seal off surface damage, replace flange.

18. Check primary and secondary throttle valves for smooth movement and excessive shaft play in bores.

NOTE

If shaft is sloppy or binds, go to SPECIAL SERVICING. If OK, go to next step.

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19. Completely close high-speed valve. With Wire Gauge, check that clearance between butterfly and bore is 1.0 mm.

20. To adjust, loosen butterfly retaining screws, move valve, and tighten screws. Recheck and readjust as needed.

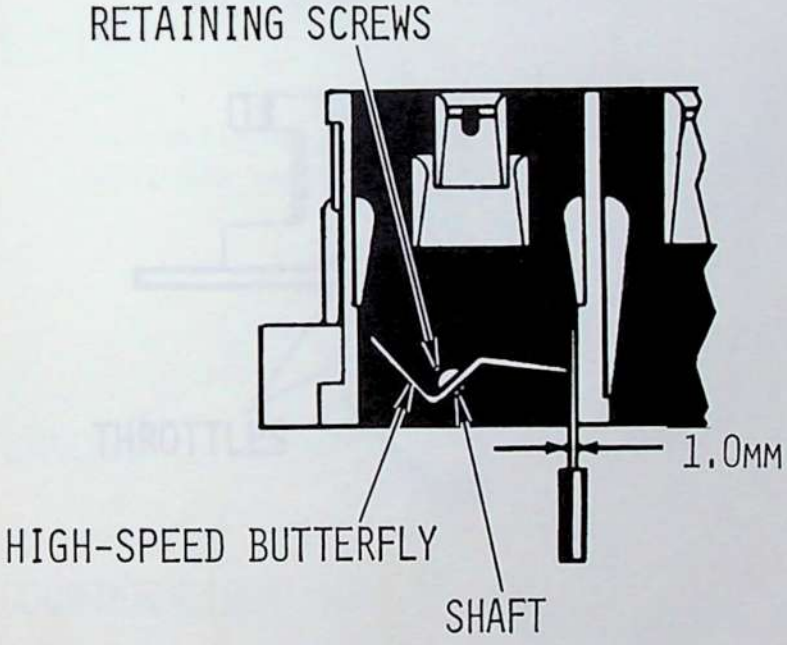
21. Check high-speed valve for smooth movement and excessive shaft play in bore.

NOTE

If shaft is sloppy or binds, go to SPECIAL SERVICING. If OK, go to ASSEMBLY.

END OF INSPECTION

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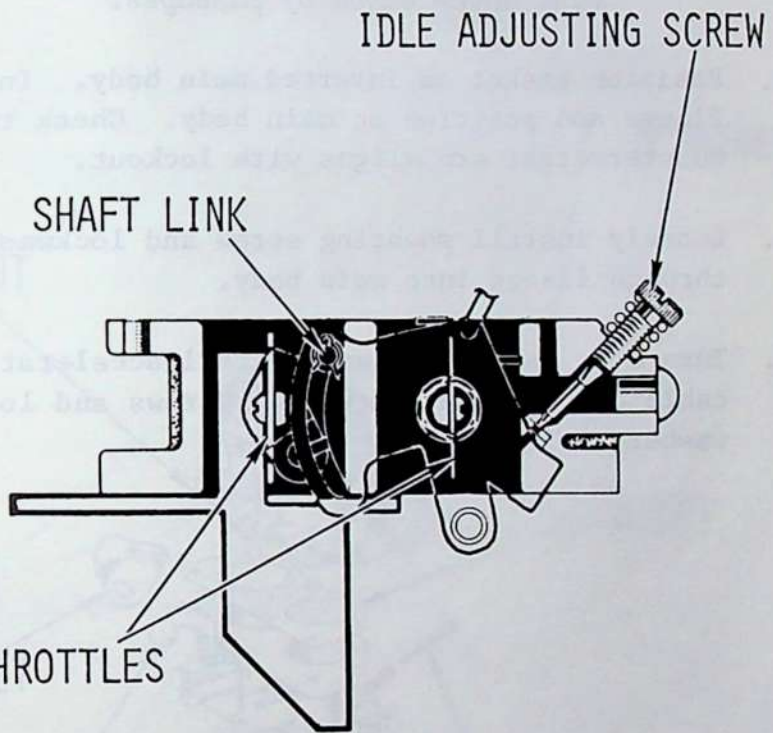
F CARBURETOR

ASSEMBLY

1. With fingers, screw in idle mixture adjusting screw and spring until it seats. Back off 1¼ turns.

2. Check that throttle valves open fully to 90°. Bend throttle shaft link as required to adjust.

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CAUTION

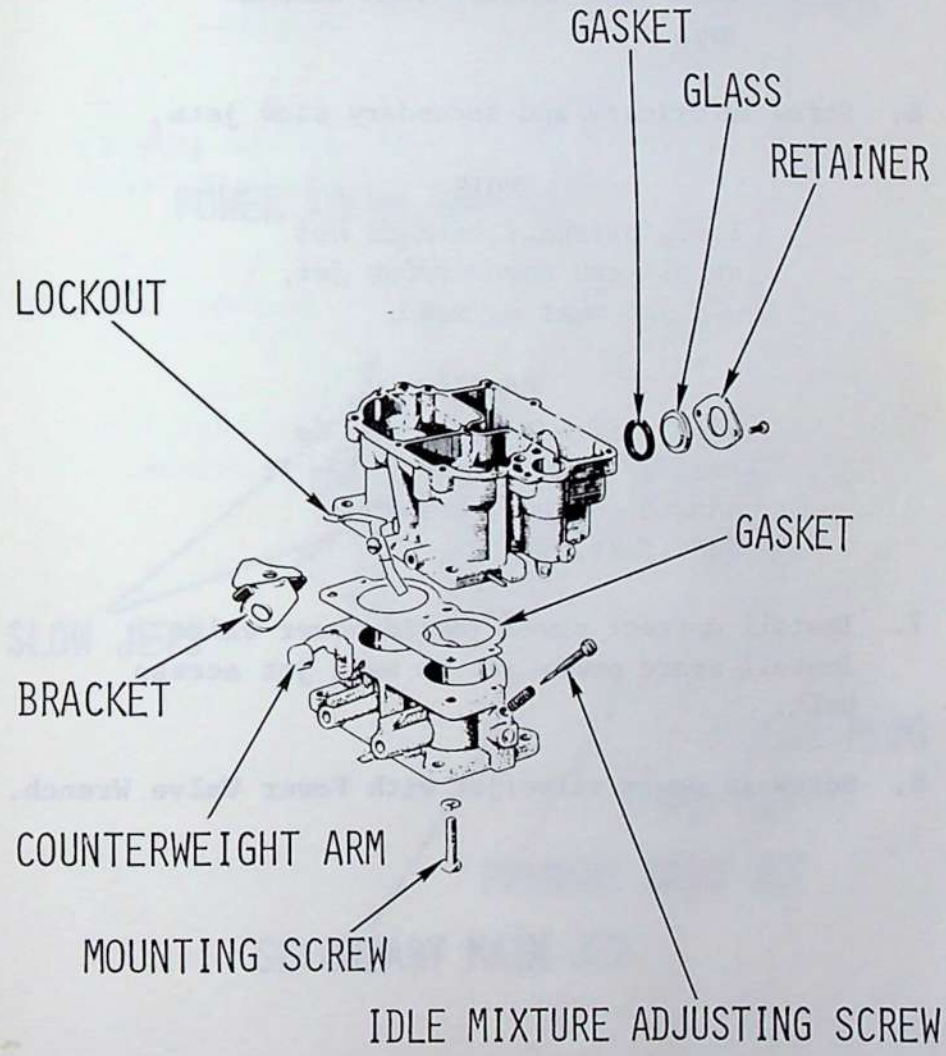
All gasket holes must align with main body holes. Gasket must cover edges of passages.

3. Position gasket on inverted main body. Invert flange and position on main body. Check that counterweight arm aligns with lockout.

4. Loosely install mounting screw and lockwasher through flange into main body.

5. Turn over carburetor and install accelerator cable bracket and 2 mounting screws and lockwashers. Tighten all screws.

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F CARBURETOR

NOTE

Primary slow jet has smaller hole (and number) than secondary.

6. Screw in primary and secondary slow jets.

NOTE

Early overhaul kits do not supply new power valve jet. Old jet must be used.

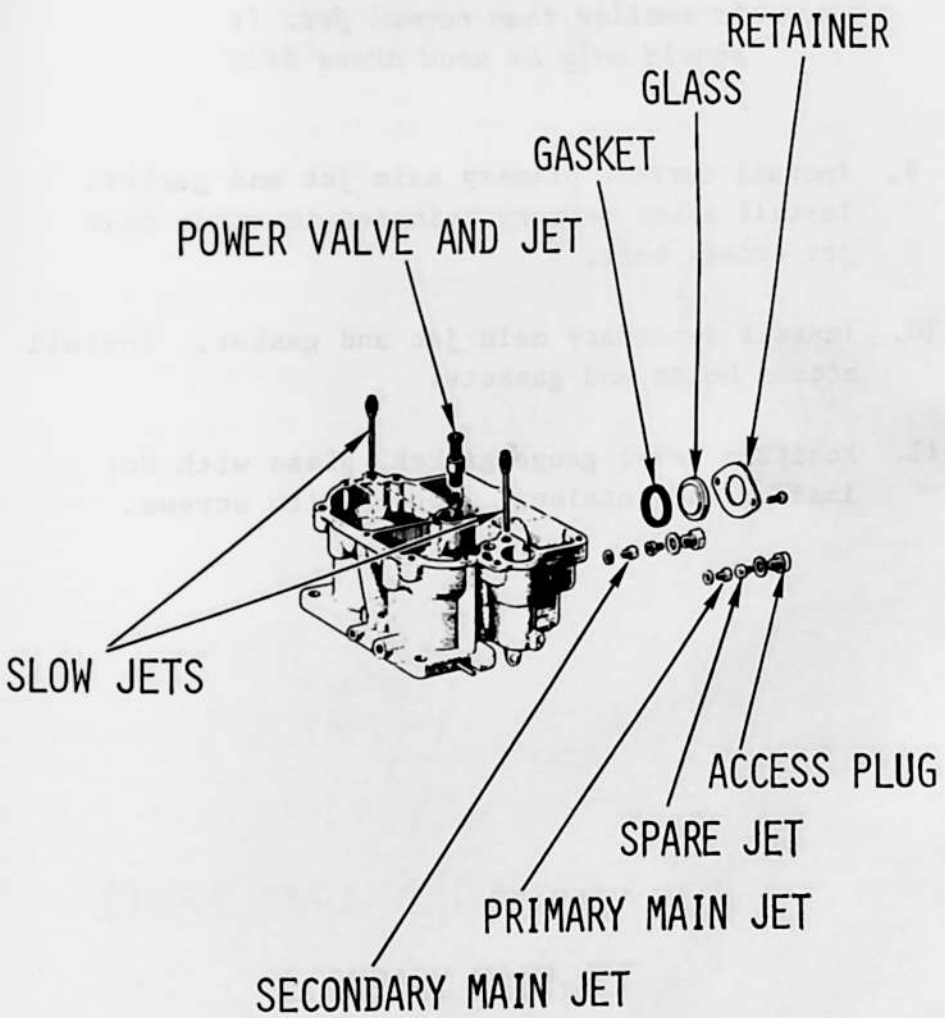
CAUTION

High altitude power jet is smaller than normal jet. It should only be used above 6600 feet.

7. Install correct power jet in power valve. Install spare power jet in main jet access bolt.

8. Screw in power valve/jet with Power Valve Wrench.

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CAUTION

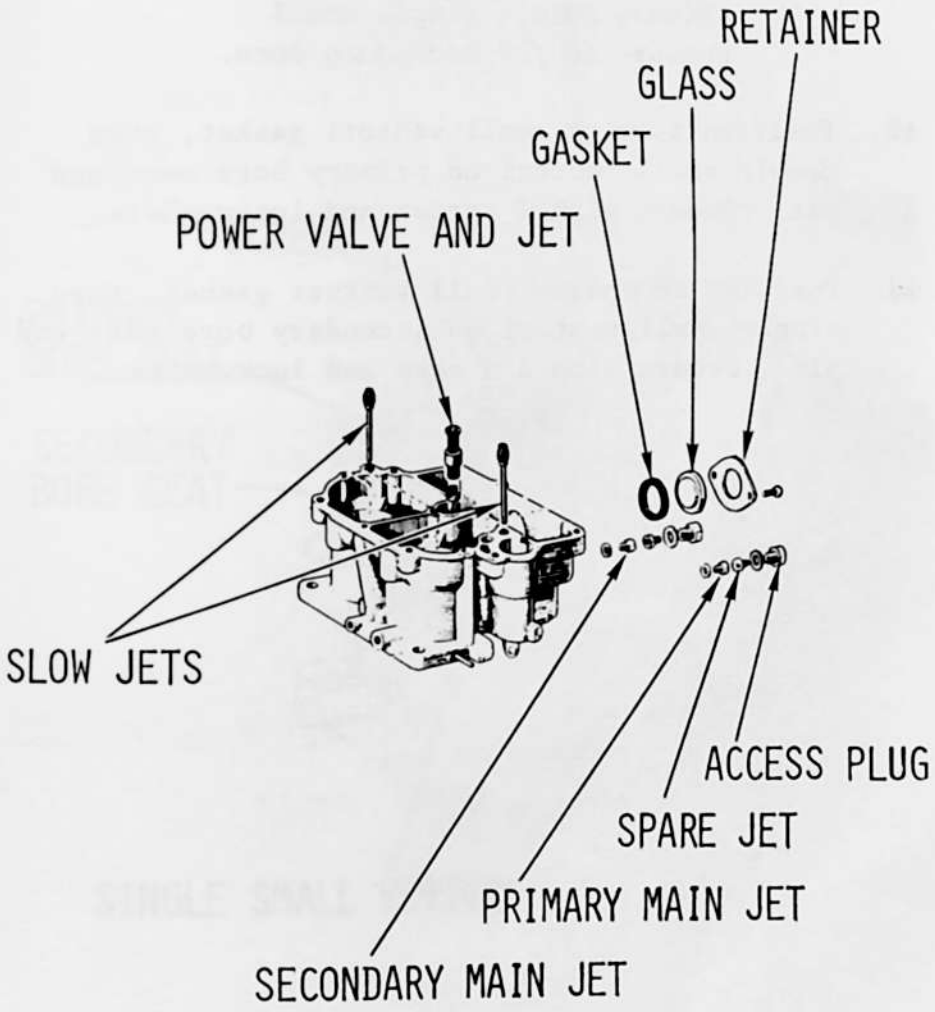
High altitude primary main jet is smaller than normal jet. It should only be used above 6600 feet.

9. Install correct primary main jet and gasket. Install spare primary main jet in other main jet access bolt.

10. Install secondary main jet and gasket. Install access bolts and gaskets.

11. Position level gauge gasket, glass with dot inside, and retainer. Secure with screws.

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F CARBURETOR

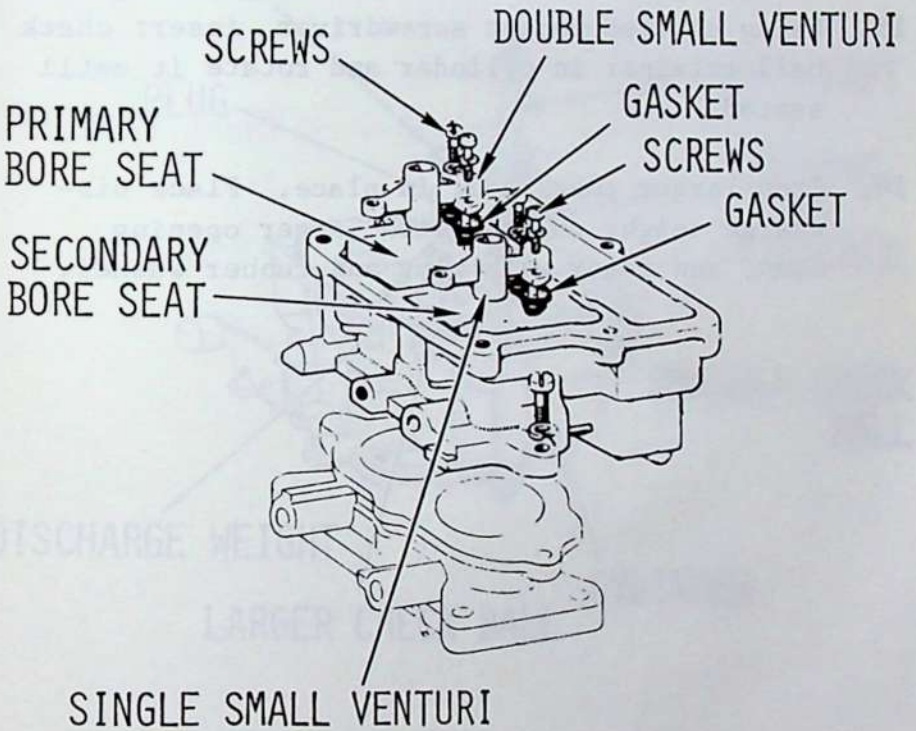
CAUTION

Double small venturi is for primary bore. Single small venturi is for secondary bore.

12. Position primary small venturi gasket, then double small venturi on primary bore seat and pin. Secure with 2 screws and lockwashers.

13. Position secondary small venturi gasket, then single small venturi on secondary bore seat and pin. Secure with 2 screws and lockwashers.

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CAUTION

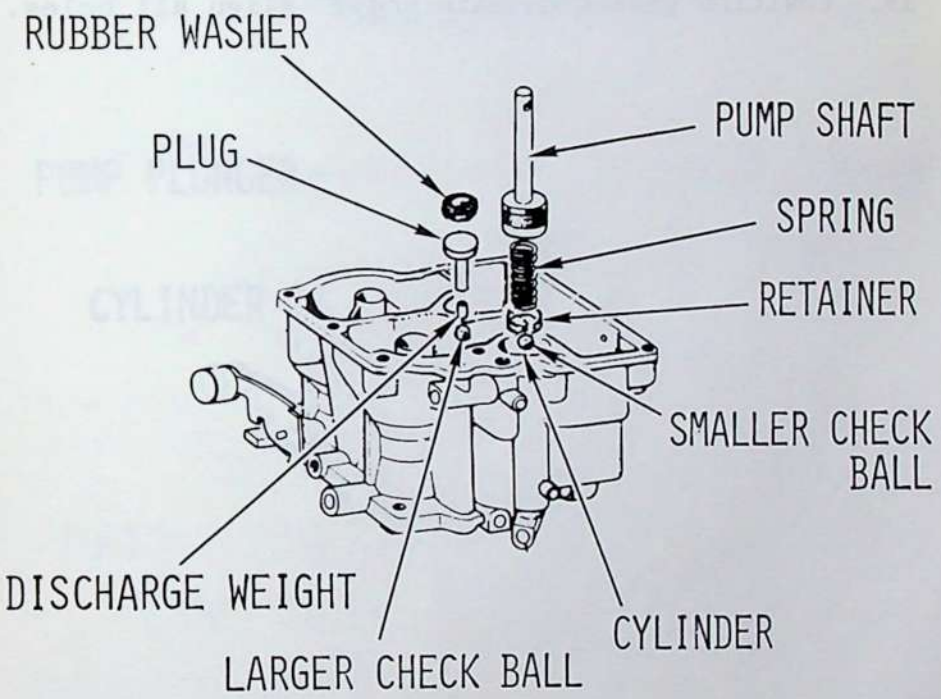
Smaller check ball is for accelerator pump cylinder.

14. Put smaller check ball in bottom of pump cylinder.

15. Using slotted pocket screwdriver, insert check ball retainer in cylinder and rotate it until seated.

16. Drop larger check ball in place. Place discharge weight on ball with larger opening down, and cover with plug and rubber washer.

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8250

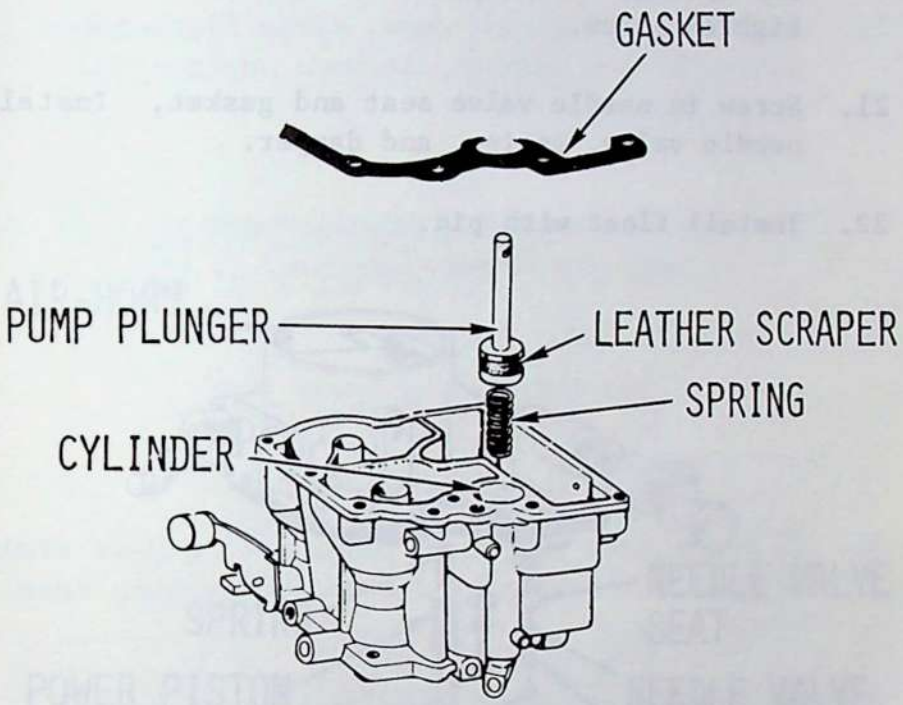
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17. Dip accelerator pump plunger in clean solvent to moisten leather scraper.

18. Insert pump spring and plunger into cylinder.

19. Position gasket on main body. Align all holes.

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8260

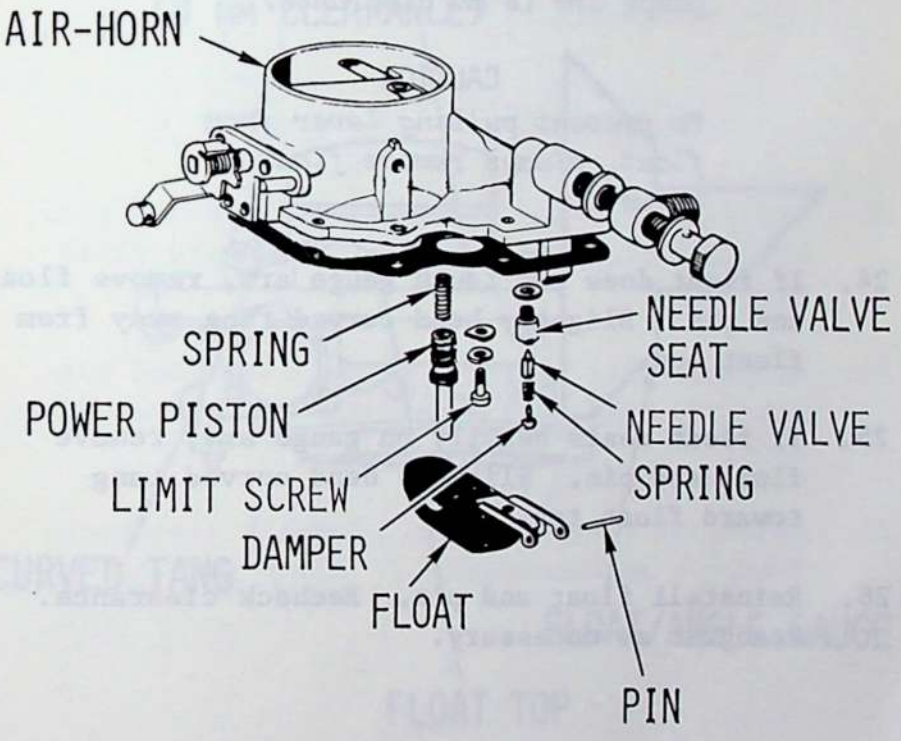
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20. Loosen power piston limit screw. Install piston and spring. Cover piston with retainer and tighten screw.

21. Screw in needle valve seat and gasket. Install needle valve, spring, and damper.

22. Install float with pin.

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Float-Raised Adjustment

23. With air-horn upside down, slide Float/Angle Gauge "8" arm between air-horn surface and float top.

NOTE

Float top should barely touch gauge arm (8 mm clearance).

CAUTION

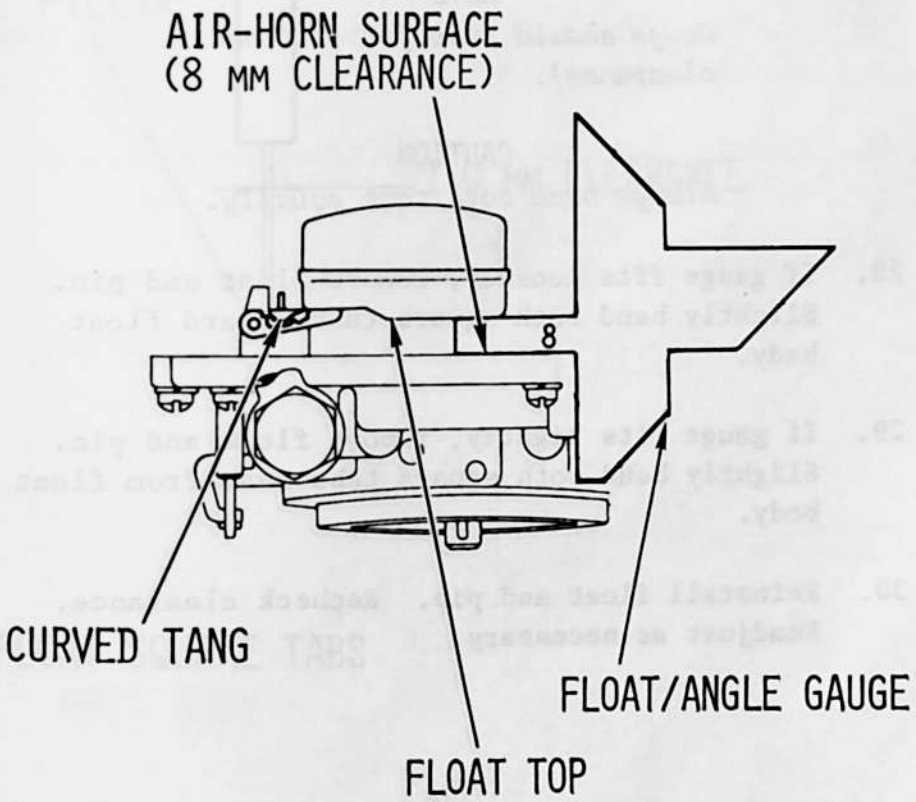
To prevent pulling lever from float, always remove float to adjust.

24. If float does not touch gauge arm, remove float and pin. Slightly bend curved tang away from float top.

25. If float rests heavily on gauge arm, remove float and pin. Slightly bend curved tang toward float top.

26. Reinstall float and pin. Recheck clearance. Readjust as necessary.

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Float-Lowered Adjustment

27. With air-horn upside down, raise float all the way. Slide 1.0 mm Wire Gauge between float square tabs and pillar.

NOTE

Gauge should just fit (1.0 mm clearance).

CAUTION

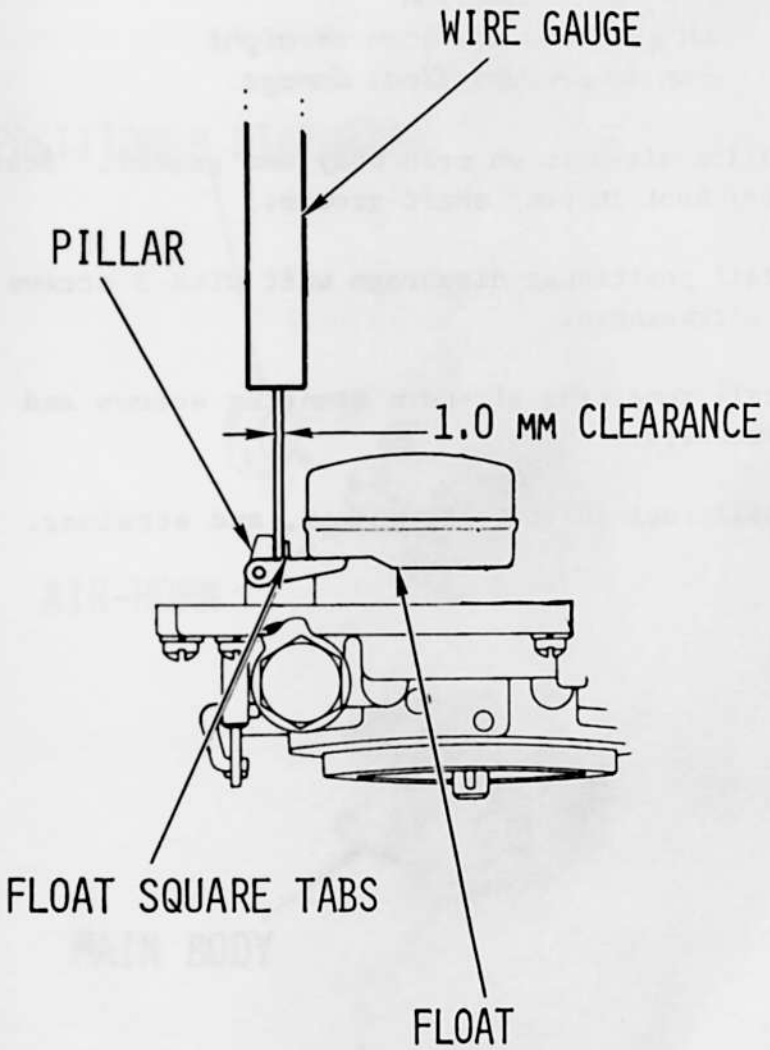
Always bend both tabs equally.

28. If gauge fits loosely, remove float and pin. Slightly bend both square tabs toward float body.

29. If gauge fits tightly, remove float and pin. Slightly bend both square tabs away from float body.

30. Reinstall float and pin. Recheck clearance. Readjust as necessary.

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CAUTION

Always lower air-horn straight down to prevent float damage.

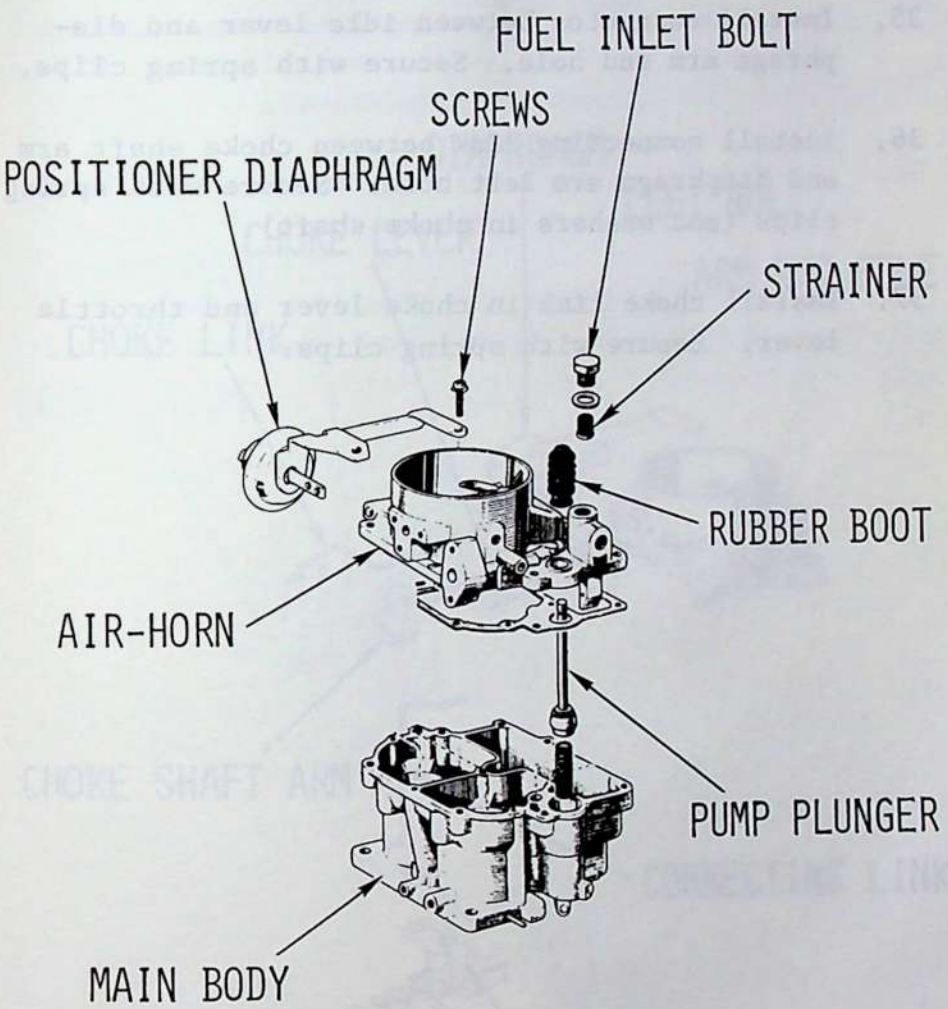
31. Position air-horn on main body and gasket. Seat rubber boot in pump shaft groove.

32. Install positioner diaphragm unit with 2 screws and lockwashers.

33. Install remaining air-horn mounting screws and lockwashers.

34. Install fuel inlet bolt, gasket, and strainer.

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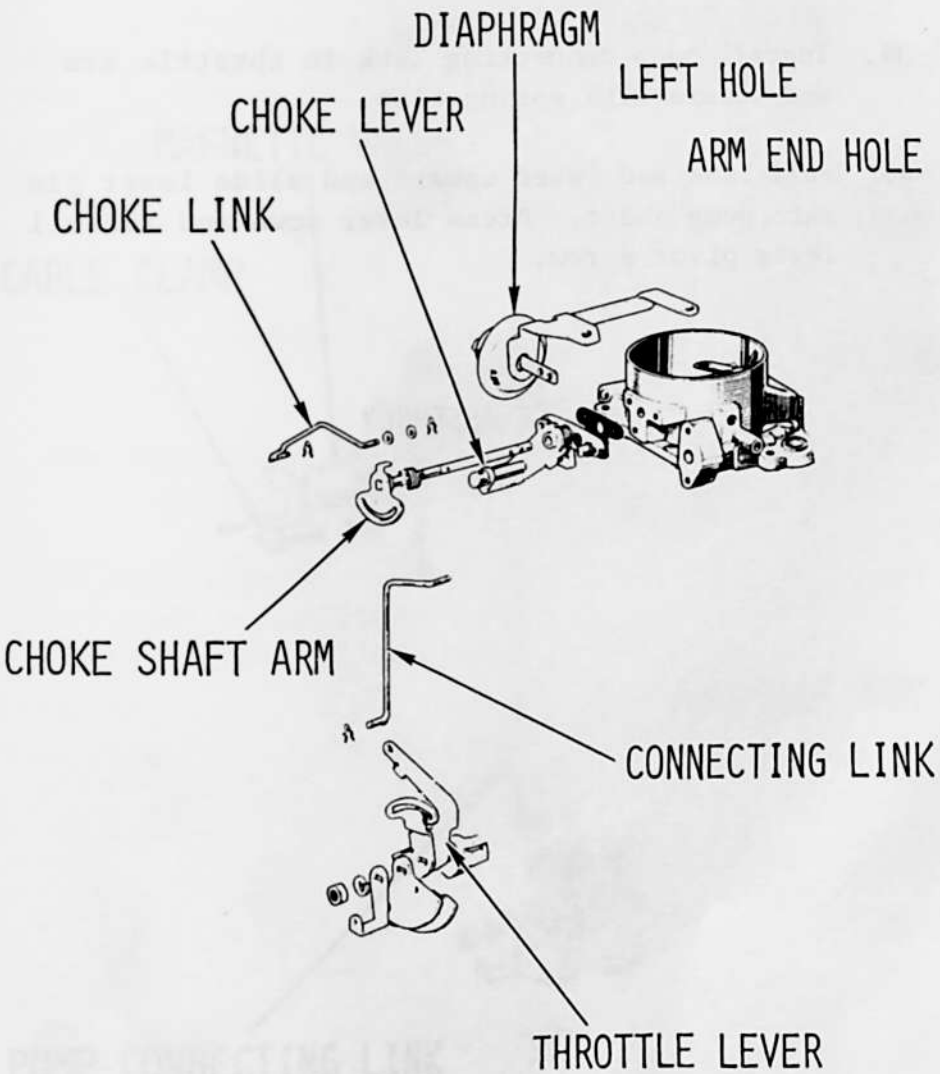
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35. Install connector between idle lever and diaphragm arm end hole. Secure with spring clips.

36. Install connecting link between choke shaft arm and diaphragm arm left hole. Secure with spring clips (and washers in choke shaft).

37. Install choke link in choke lever and throttle lever. Secure with spring clips.

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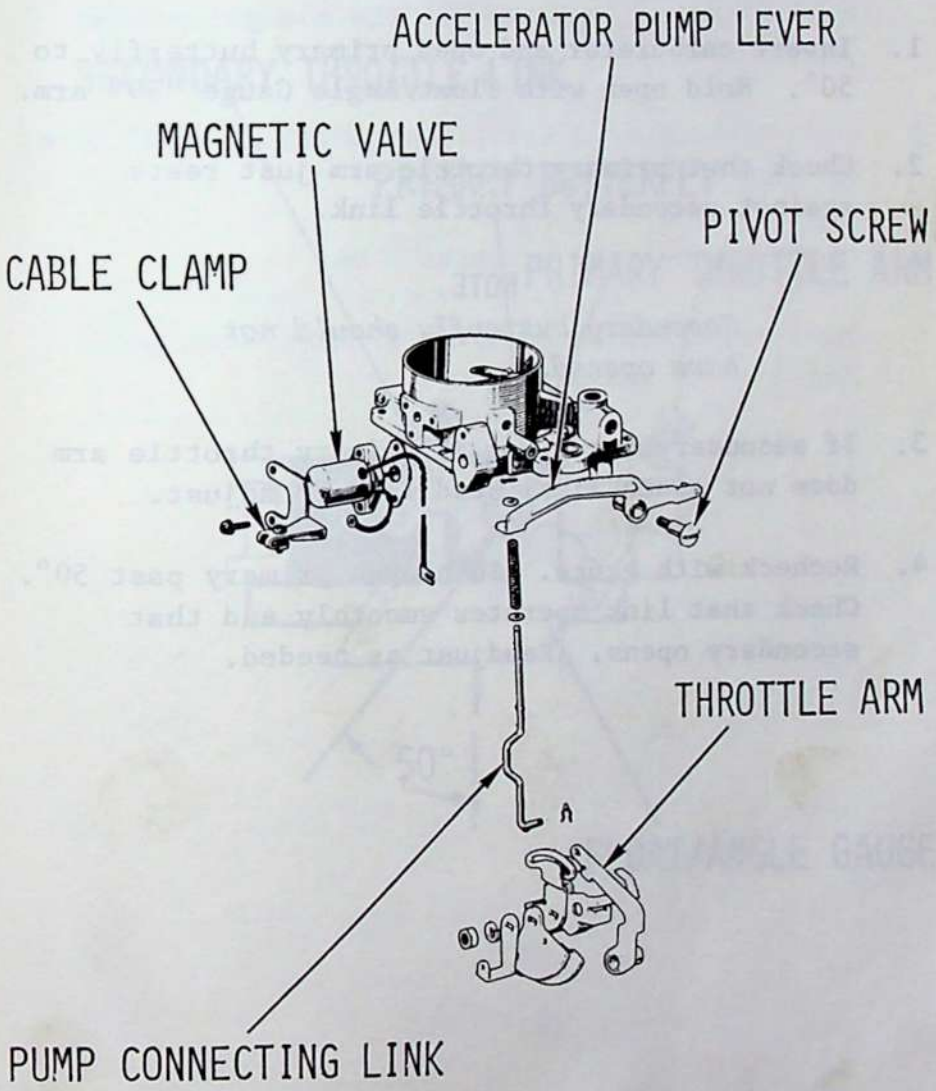
38. Position magnetic valve and gasket on air-horn with wires on right side. Install choke cable clamp with screws and lockwashers.

39. Install pump connecting link in throttle arm and secure with spring clip.

40. Pull link and lever upward and slide lever pin into pump shaft. Press lever down and install lever pivot screw.

END OF ASSEMBLY

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F CARBURETOR

ADJUSTMENT

Secondary Butterfly Opening Angle

1. Invert carburetor and open primary butterfly to 50°. Hold open with Float/Angle Gauge "50" arm.

2. Check that primary throttle arm just rests against secondary throttle link.

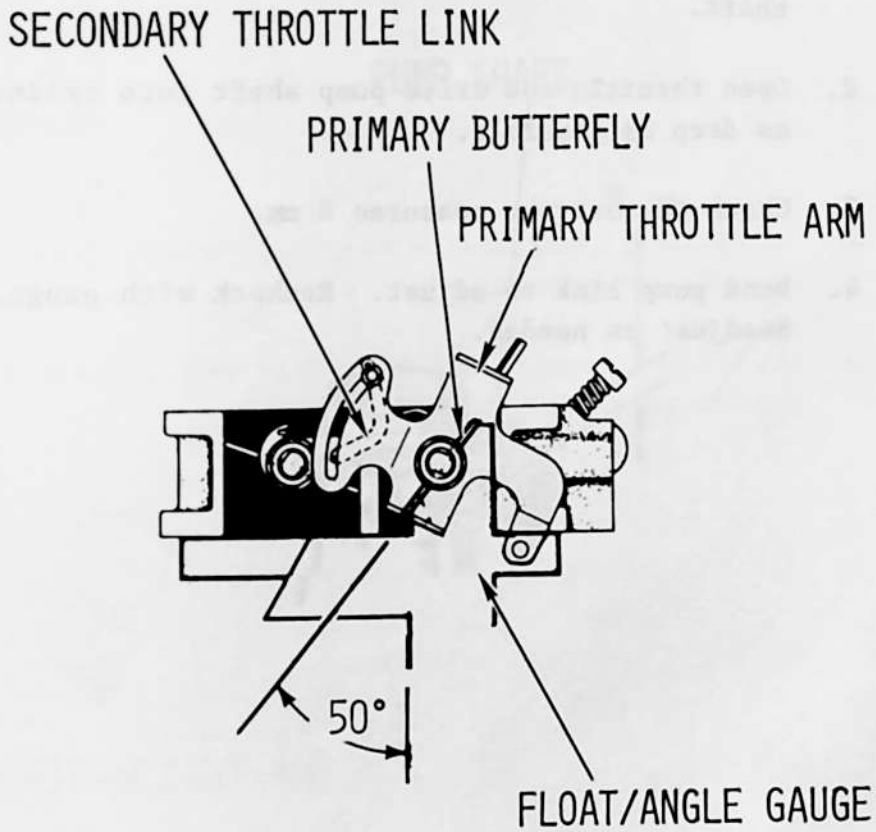
NOTE

Secondary butterfly should not have opened.

3. If secondary opens, or if primary throttle arm does not touch link, bend link to adjust.

4. Recheck with gauge. Then open primary past 50°. Check that link operates smoothly and that secondary opens. Readjust as needed.

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Acceleration Pump Stroke

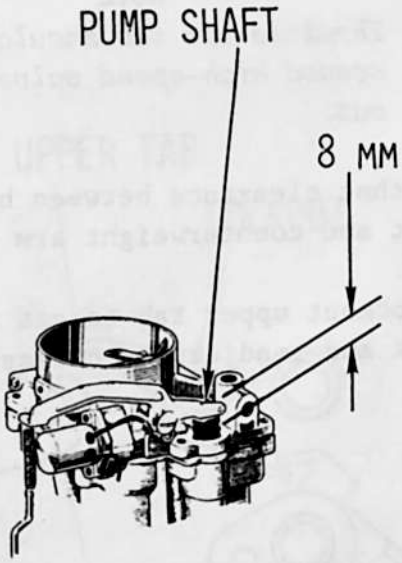
1. Place carburetor on its side with pump lever up. Hold Float/Angle Gauge "8" arm alongside pump shaft.

2. Open throttle and drive pump shaft into cylinder as deep as possible.

3. Check that stroke measures 8 mm.

4. Bend pump link to adjust. Recheck with gauge. Readjust as needed.

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High-Speed Valve Lockout

1. Open primary throttle arm until it just rests against secondary throttle link.

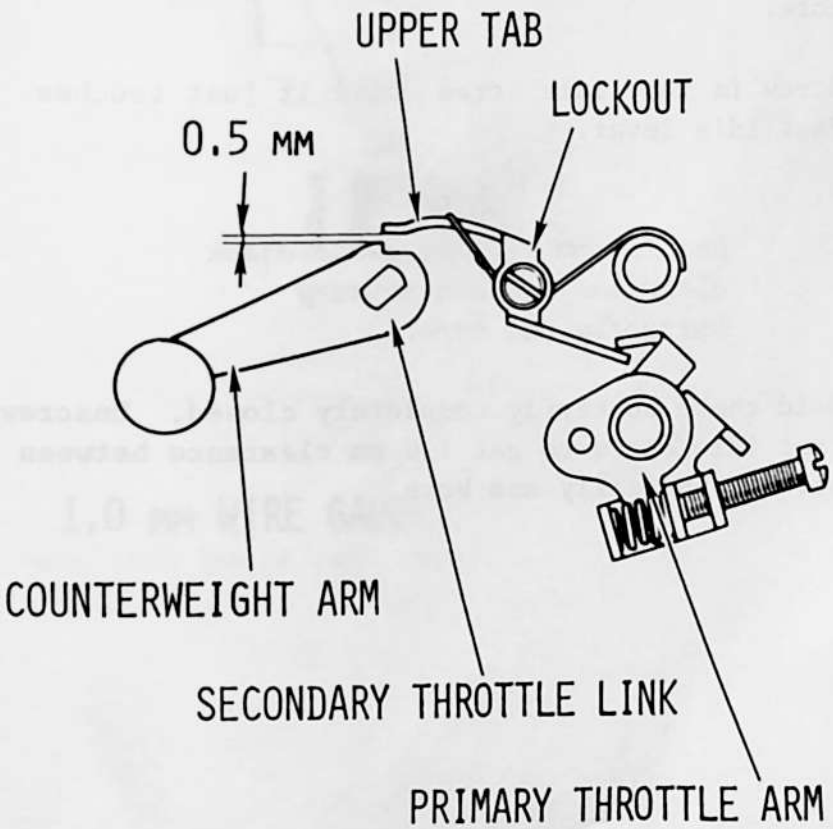
NOTE

Throttle arm tab should have opened high-speed valve lock-out.

2. Check that clearance between high-speed valve lockout and counterweight arm is 0.5 mm.

3. Bend lockout upper tab to get proper clearance. Recheck and readjust as necessary.

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F CARBURETOR

Primary Idle Opening Angle

CAUTION

Perform this adjustment before adjusting throttle positioner.

1. Screw in throttle adjusting screw until it just touches throttle arm. Now screw it in ½ turn more.

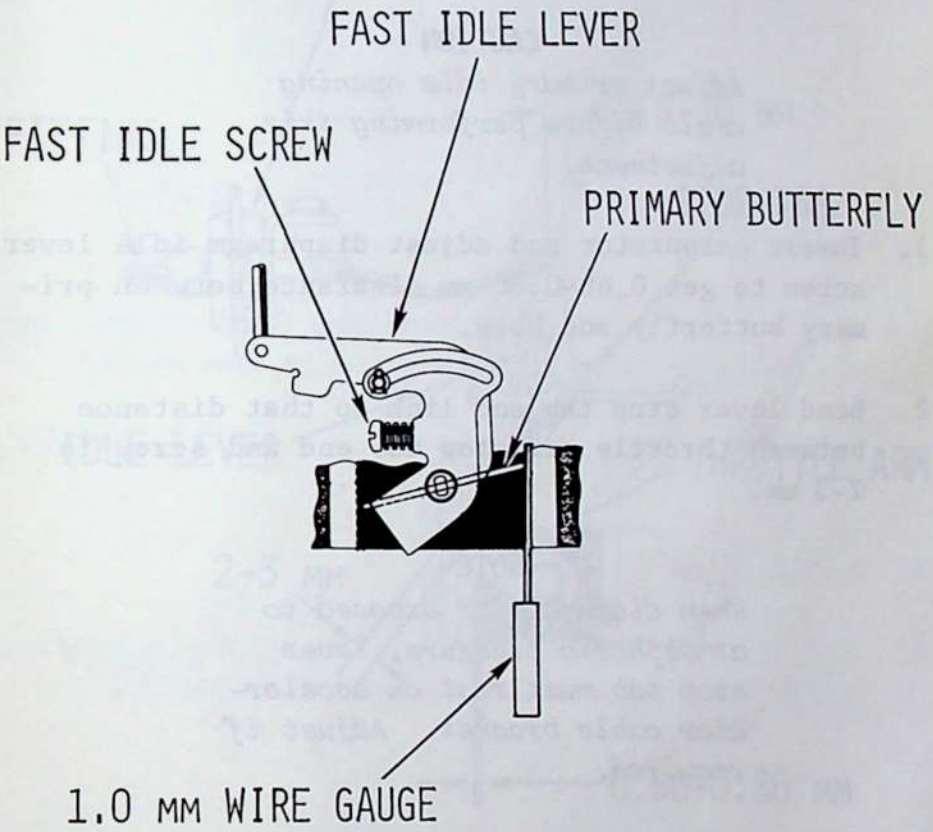
2. Screw in fast idle screw until it just touches fast idle lever.

NOTE

Use 1.0 mm Wire Gauge to check clearance between primary butterfly and bore.

3. Hold choke butterfly completely closed. Unscrew fast idle screw to get 1.0 mm clearance between primary butterfly and bore.

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Throttle Positioner Diaphragm

CAUTION

Adjust primary idle opening angle before performing this adjustment.

1. Invert carburetor and adjust diaphragm idle lever screw to get 0.66-0.86 mm clearance between primary butterfly and bore.

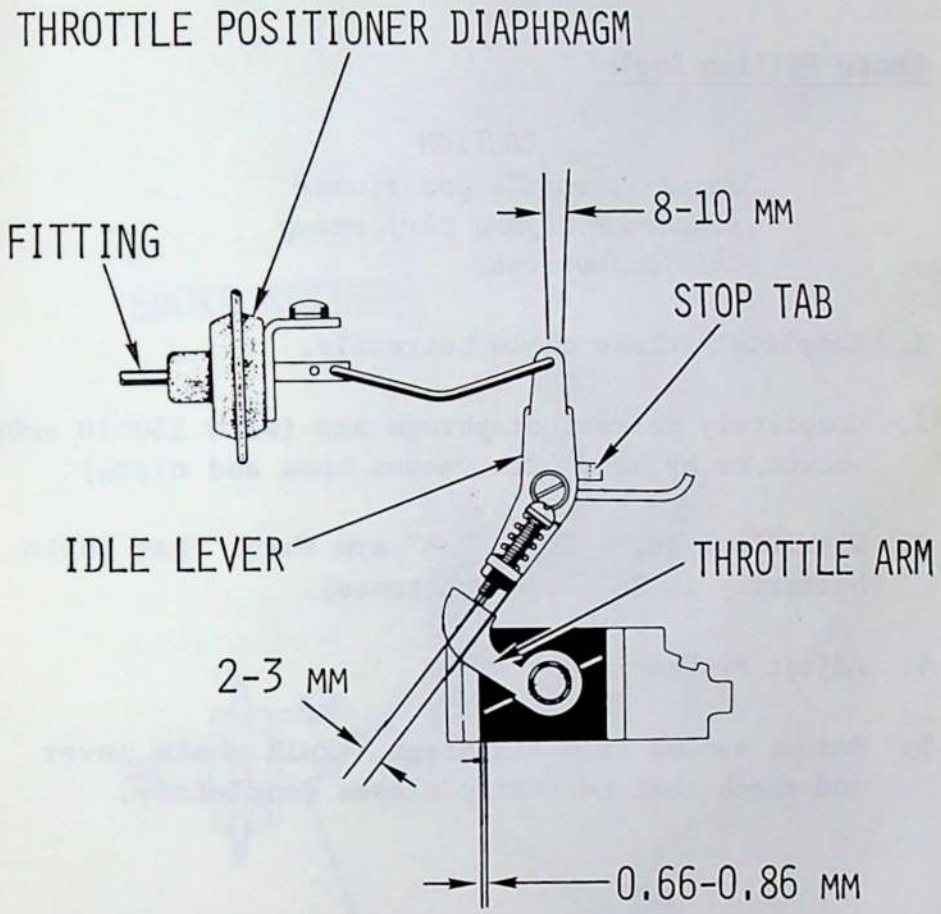
2. Bend lever stop tab and link so that distance between throttle arm stop tab end and screw is 2-3 mm.

NOTE

When diaphragm is exposed to atmospheric pressure, lever stop tab must rest on accelerator cable bracket. Adjust if required.

3. Push diaphragm link. Check that screw completely disengages from throttle arm.

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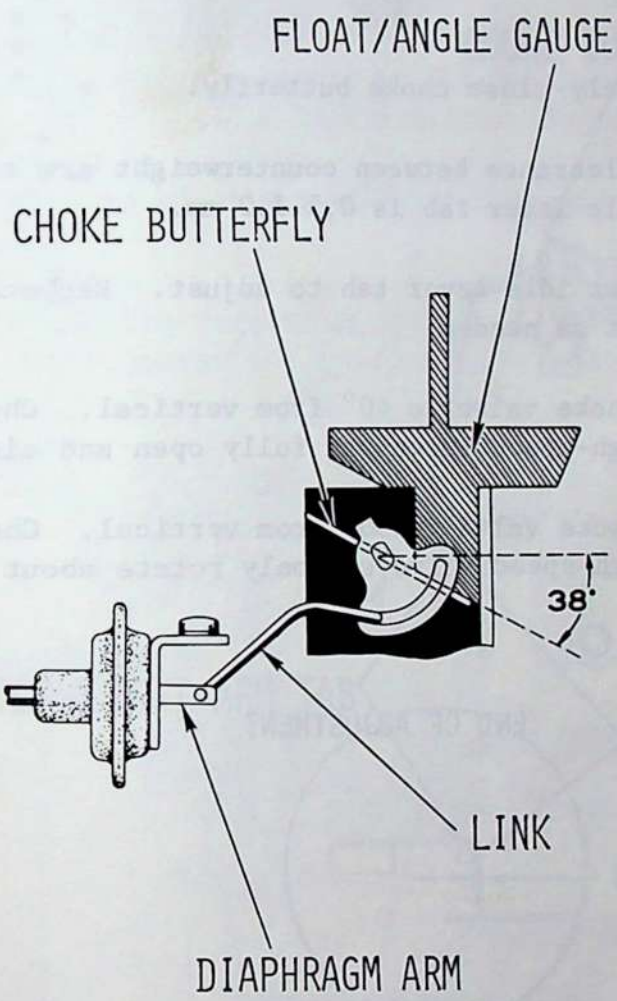
Choke Pulling Angle

CAUTION

Adjust throttle positioner diaphragm before performing this adjustment.

1. Completely close choke butterfly.
2. Completely retract diaphragm arm (with 130±10 mmHg vacuum or by hand with vacuum hose and clamp).
3. With Float/Angle Gauge "38" arm check that choke butterfly is 38° from horizontal.
4. Adjust by bending link.
5. Remove vacuum from diaphragm. Pull choke lever and check that butterfly closes completely.

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F CARBURETOR

Reloader

1. Completely close choke butterfly.

2. Check clearance between counterweight arm tab and fast idle lever tab is 0.5-1.0 mm.

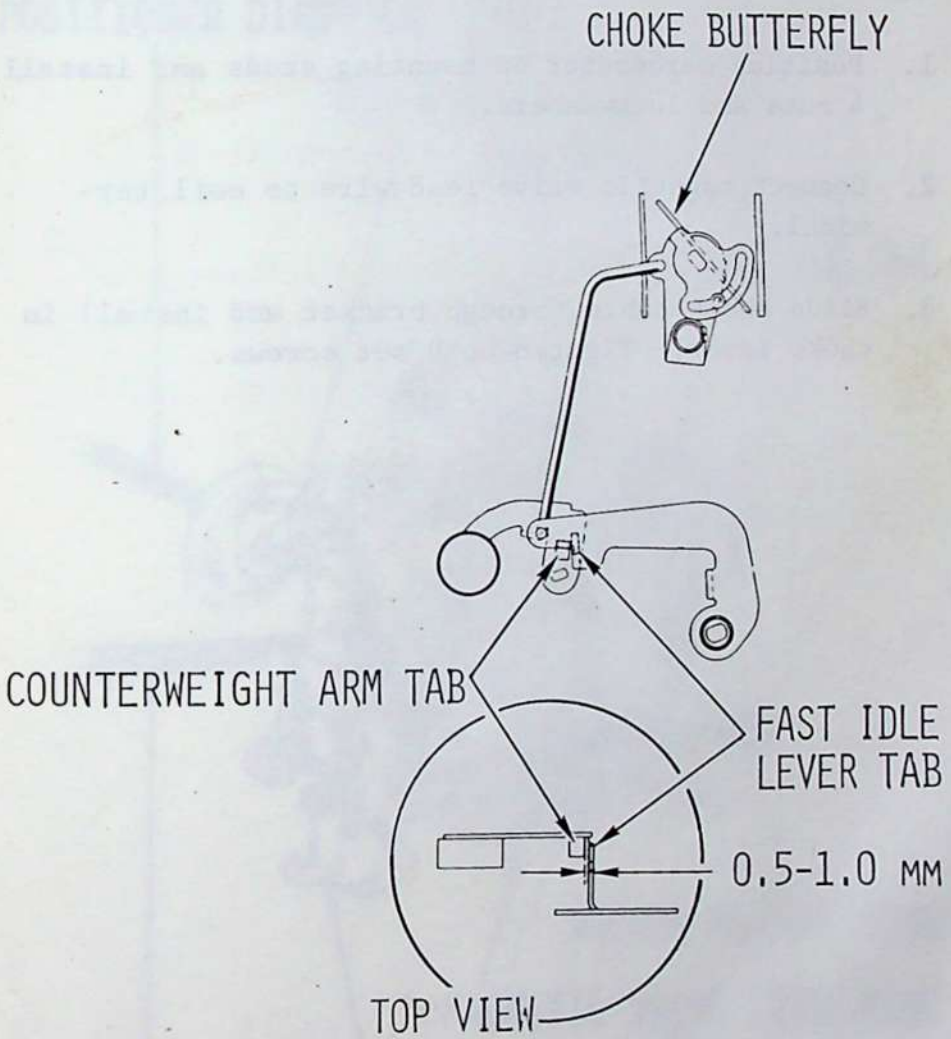
3. Bend fast idle lever tab to adjust. Recheck and readjust as needed.

4. Close choke valve to 40° from vertical. Check that high-speed valve can fully open and close.

5. Close choke valve to 50° from vertical. Check that high-speed valve can only rotate about 20°.

END OF ADJUSTMENT

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F CARBURETOR

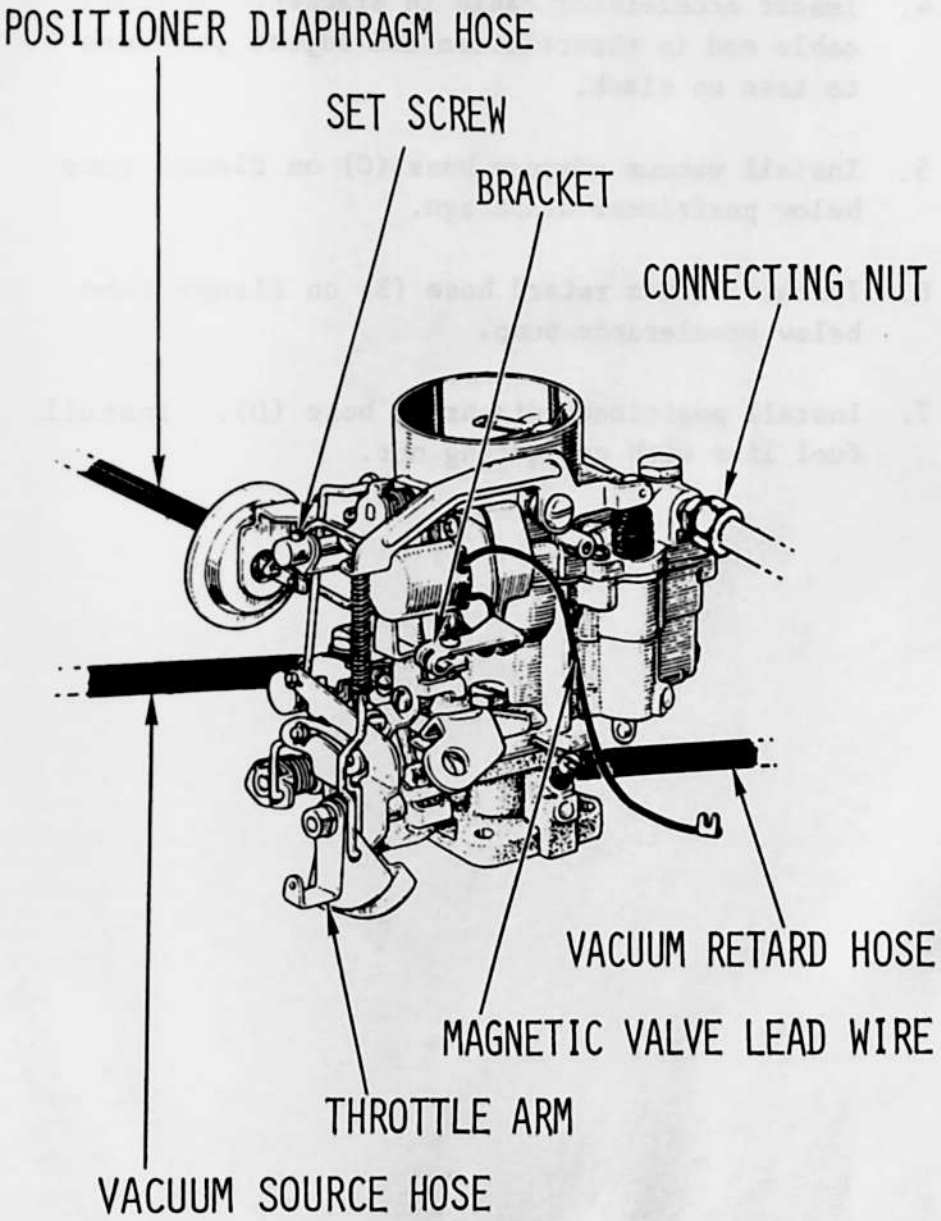
INSTALLATION

1. Position carburetor on mounting studs and install 4 nuts and lockwashers.

2. Connect magnetic valve lead wire to coil terminal.

3. Slide choke cable through bracket and install in choke lever. Tighten both set screws.

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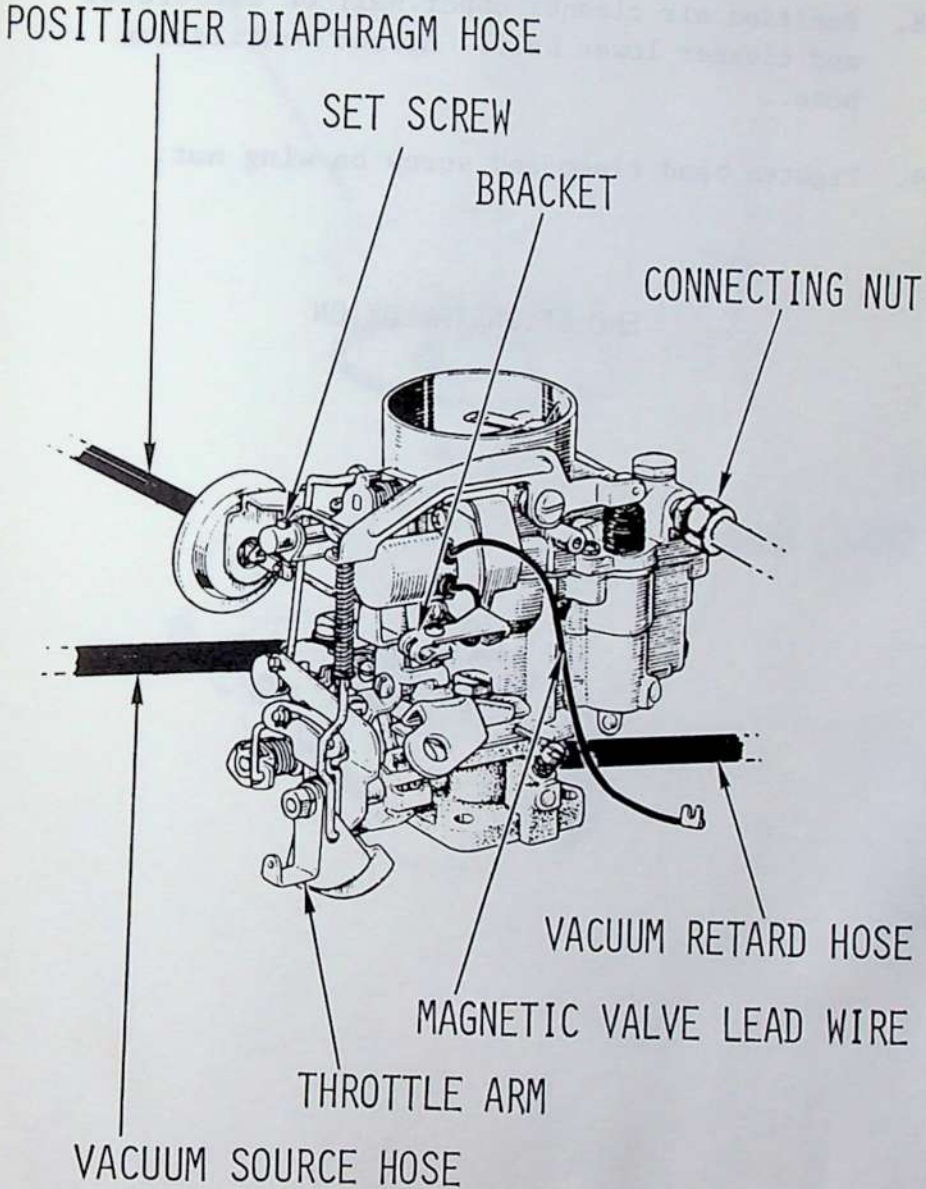
4. Insert accelerator cable in bracket. Install cable end in throttle arm and adjust jam nuts to take up slack.

5. Install vacuum advance hose (C) on flange tube below positioner diaphragm.

6. Install vacuum retard hose (B) on flange tube below accelerator pump.

7. Install positioner diaphragm hose (D). Install fuel line with connecting nut.

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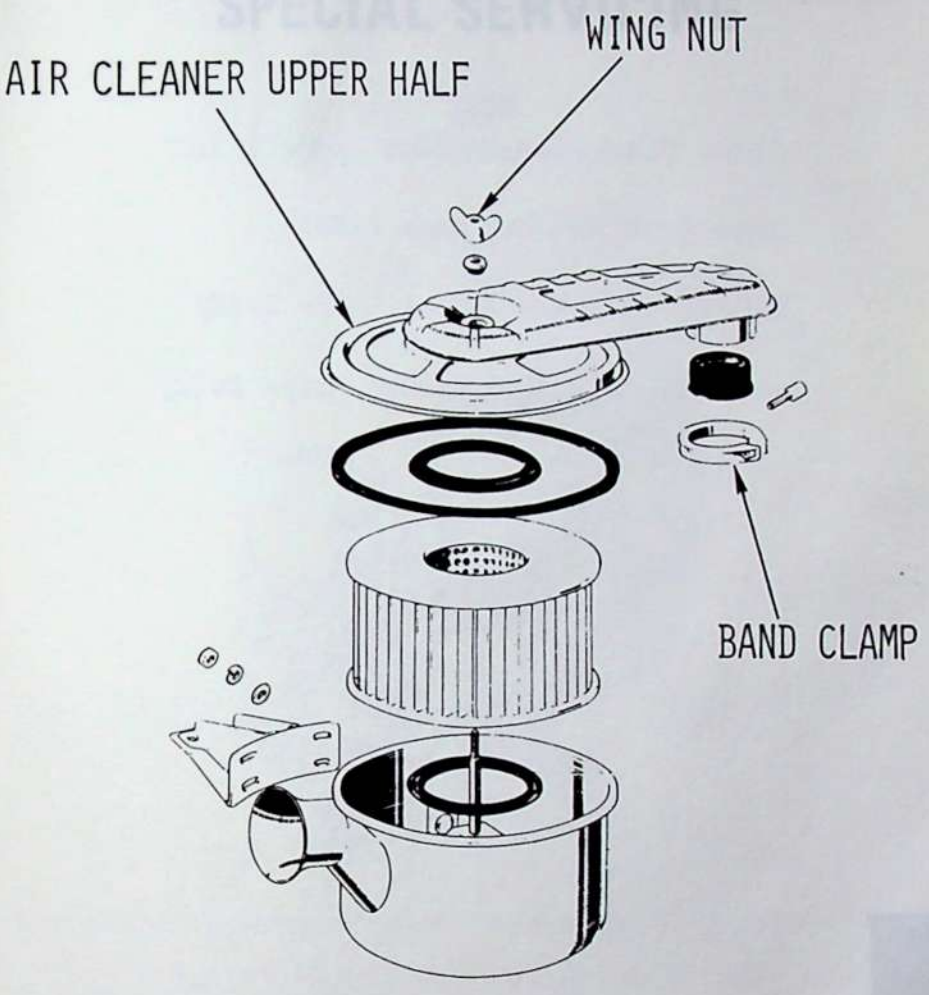
F CARBURETOR

8. Position air cleaner upper half on carburetor and cleaner lower half. Attach ventilation hose.

9. Tighten band clamp and screw on wing nut.

END OF INSTALLATION

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SPECIAL SERVICING

7

FUEL SYSTEMS MANUAL

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CARBURETOR SPECIAL SERVICING

NOTE

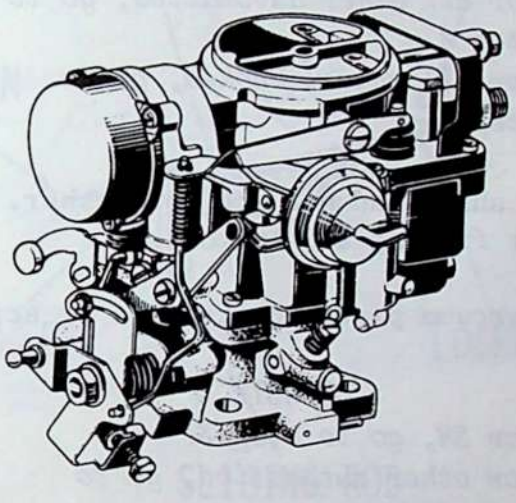
Choke Valve Disassembly: page 2-227

High-Speed Valve: page 2-233

Primary Throttle Valve: page 2-236

Secondary Throttle Valve: page 2-240

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SPECIAL SERVICING

CHOKE VALVE

Disassembly

NOTE

For 8R-C (automatic choke), start on step 1.
For all other automatics, go to step 2.
For all manual chokes, go to step 5.

1. Unscrew shaft end nut and lockwasher. Pull off reloader fitting and lockout.

2. Remove vacuum piston cotter pin or screw.

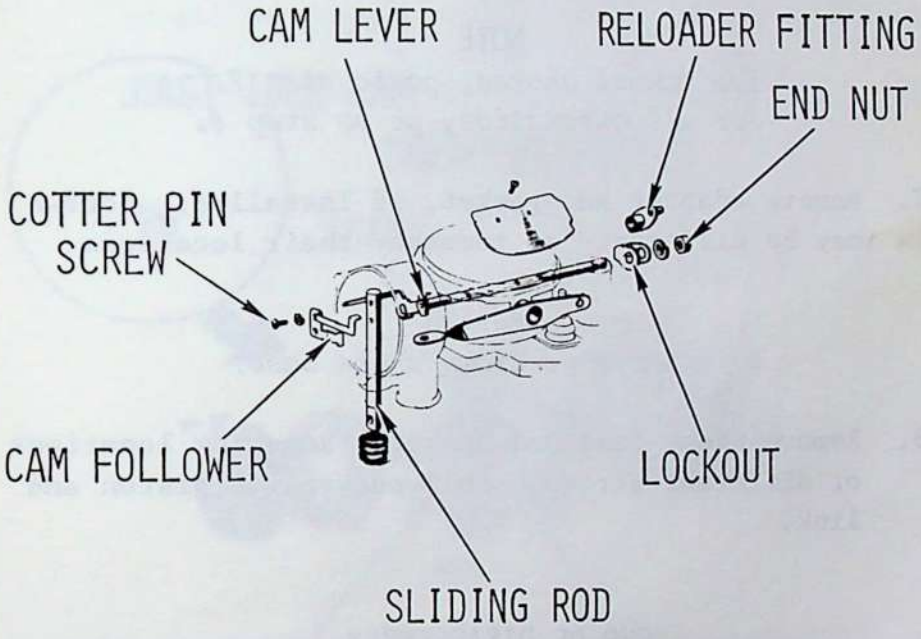
NOTE

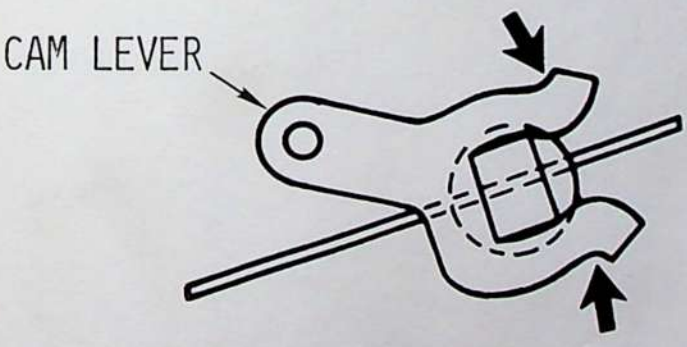
For 2M, go to step 3.
For other automatics, go to step 4.

3. With snap ring pliers, spread cam lever and remove lever and link from shaft. Go to step 5.

4. Remove cam follower from sliding rod. Pull out rod and rubber boot.

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5. Unscrew choke butterfly screws and remove butterfly from shaft. De-burr screw ends.

6. Pull out shaft assembly.

NOTE

For manual chokes, go to step 7.
For all automatics, go to step 8.

7. Remove adapter and gasket, if installed. Screws may be different, so remember their locations.

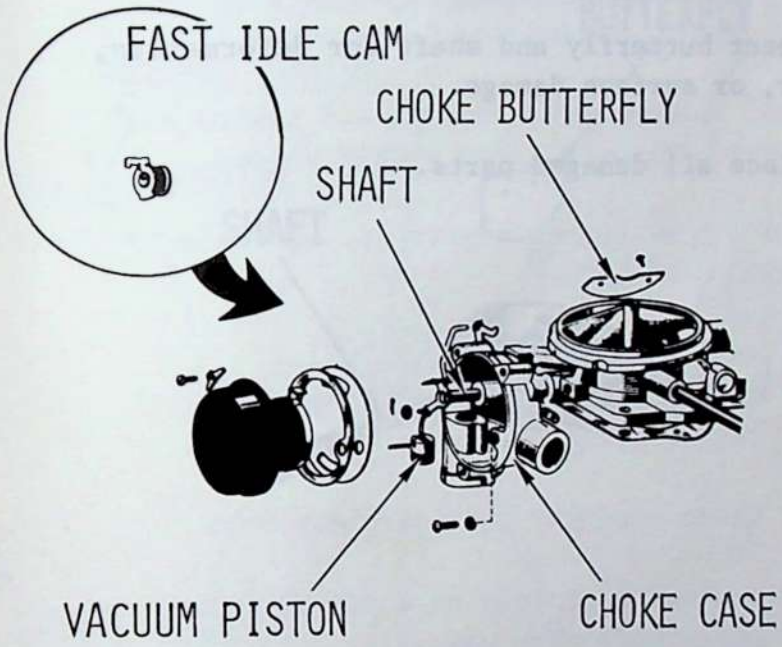
CAUTION

Do not remove Crown choke case.

8. Remove choke case and gasket. Remember locations of different screws. Pull out vacuum piston and link.

END OF DISASSEMBLY

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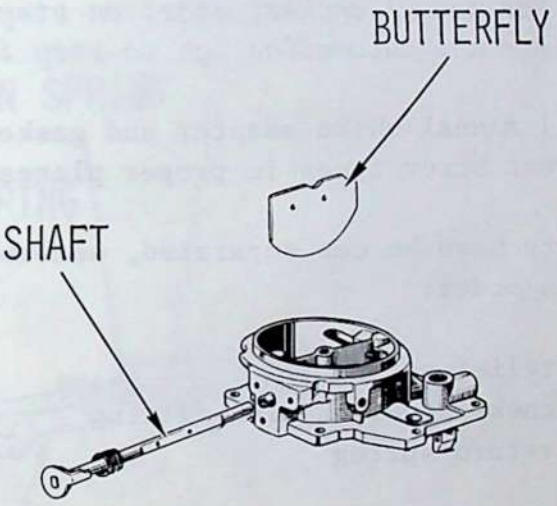
SPECIAL SERVICING

CHOKE VALVE

Inspection

1. Inspect air-horn bore for grooves or cracks.
2. Inspect butterfly and shaft for deformation, wear, or surface damage.
3. Replace all damaged parts.

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SPECIAL SERVICING

CHOKE VALVE

Assembly

NOTE

For manual chokes, start on step 1.
For all automatics, go to step 5.

1. Install manual choke adapter and gasket with different screw types in proper places.

2. If parts have become separated, assemble on shaft in this order:

   relief spring
   choke lever or link fitting
   return spring

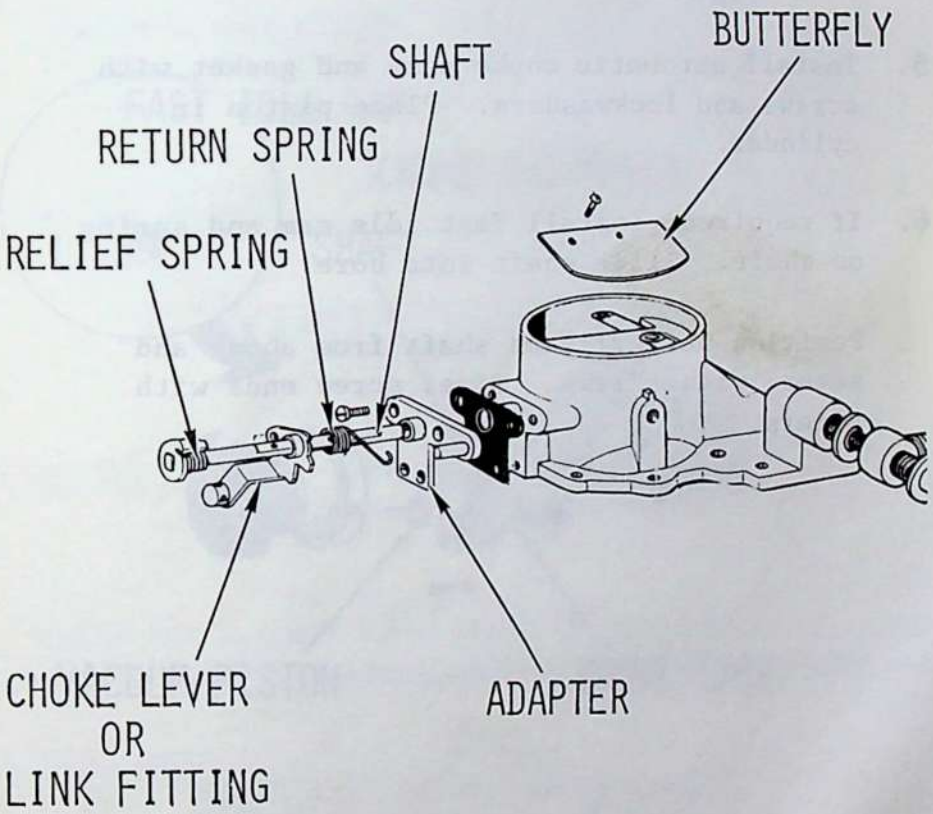
3. Slide shaft assembly into air-horn bore.

4. Install choke butterfly on shaft with screws. Rivet screw ends with pliers.

NOTE

Return to carburetor INSPECTION.

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SPECIAL SERVICING

NOTE

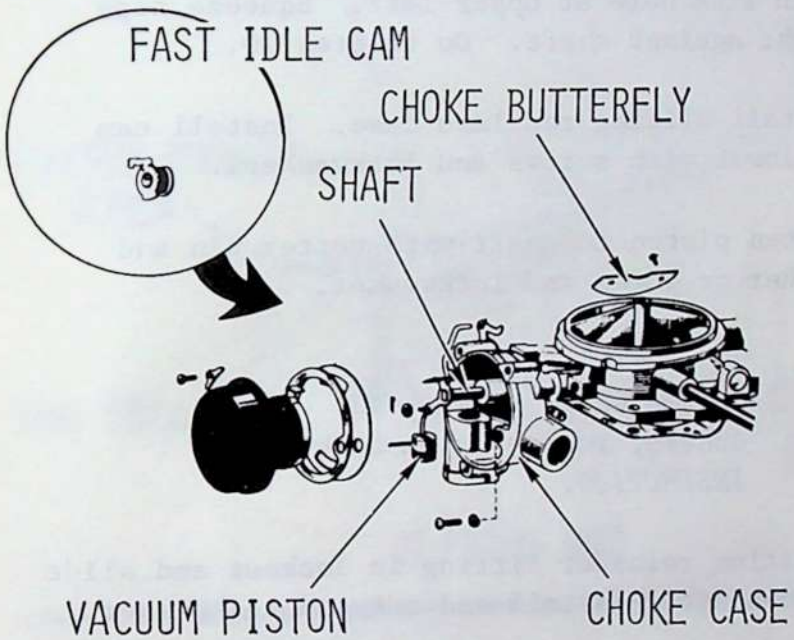
If required, install flathead screw above vacuum piston cylinder.

5. Install automatic choke case and gasket with screws and lockwashers. Place piston in cylinder.

6. If required, install fast idle cam and spring on shaft. Slide shaft into bore.

7. Position butterfly on shaft from above and secure with screws. Rivet screw ends with pliers.

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SPECIAL SERVICING

NOTE

For 2M, go to step 8. For other automatics, go to step 9.

8. Close butterfly. Position cam lever on shaft with link hole at upper left. Squeeze tips tight against shaft. Go to step 10.

9. Install sliding rod into case. Install cam follower with screws and lockwashers.

10. Fasten piston to shaft with cotter pin and washer or screw and lockwasher.

NOTE

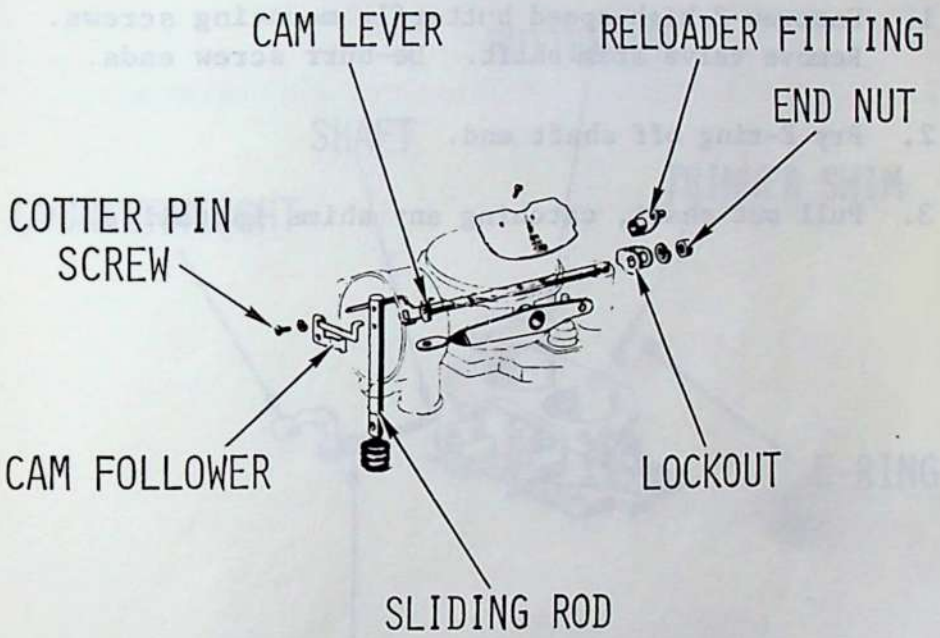
For 8R-C, go to step 11. For others, return to carburetor INSPECTION.

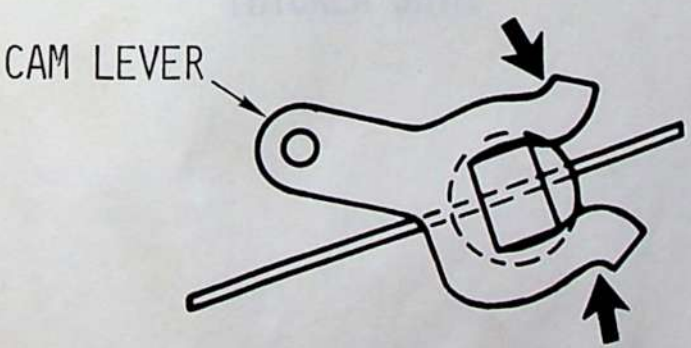
11. Position reloader fitting in lockout and slide onto shaft. Install end nut and lockwasher.

NOTE

Return to carburetor INSPECTION.

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SPECIAL SERVICING

HIGH-SPEED VALVE

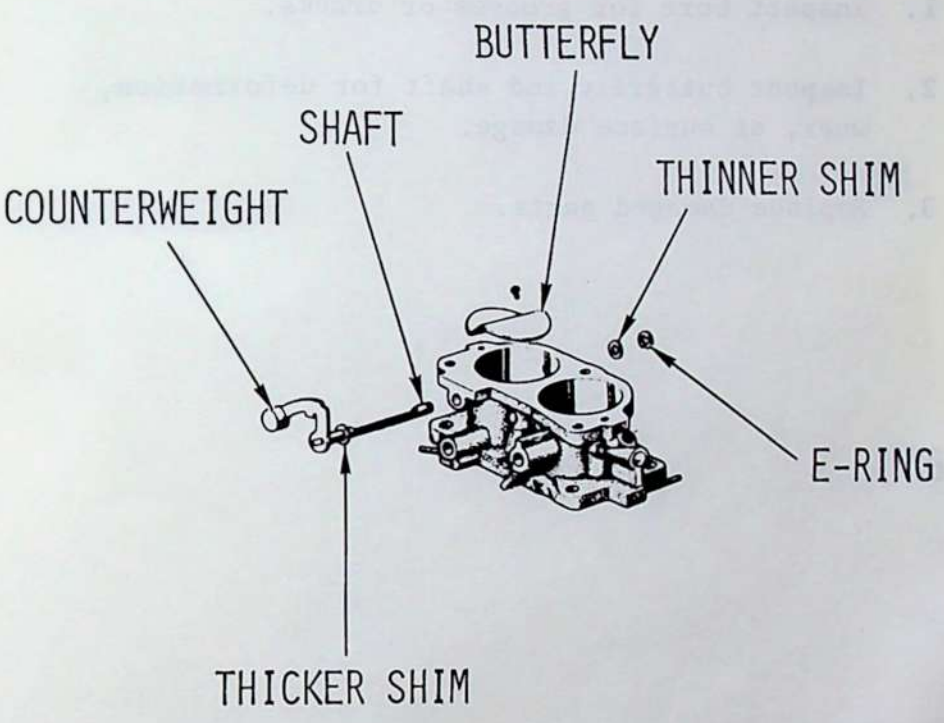
Disassembly

1. Unscrew 2 high-speed butterfly mounting screws. Remove valve from shaft. De-burr screw ends.

2. Pry E-ring off shaft end.

3. Pull out shaft, catching any shims installed.

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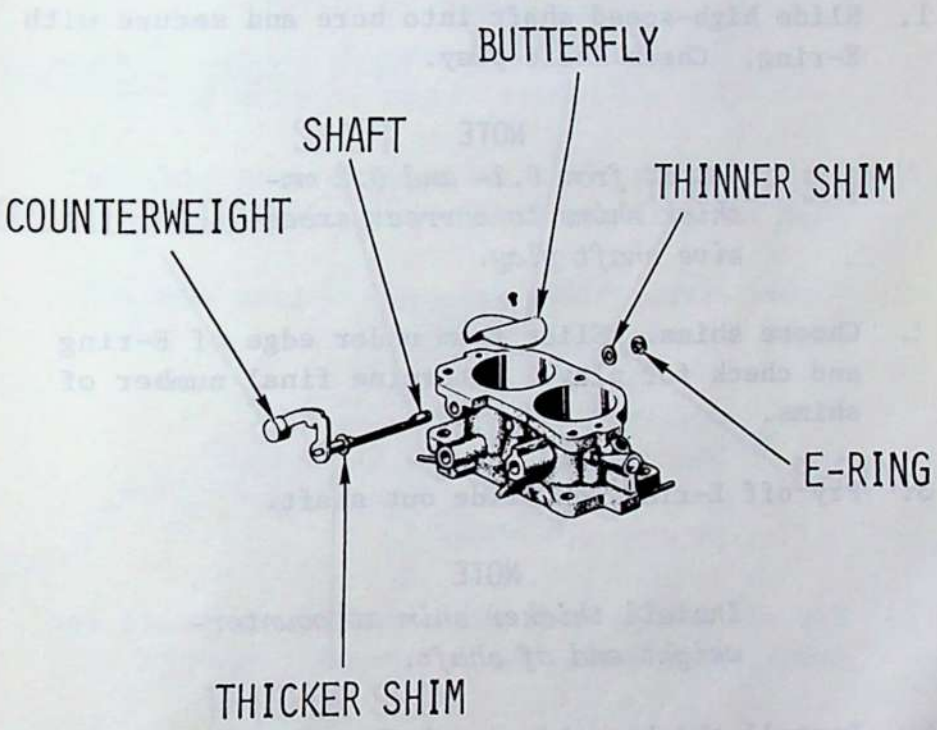
SPECIAL SERVICING

HIGH-SPEED VALVE

Inspection

1. Inspect bore for grooves or cracks.
2. Inspect butterfly and shaft for deformation, wear, or surface damage.
3. Replace damaged parts.

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SPECIAL SERVICING

HIGH-SPEED VALVE

Assembly

1. Slide high-speed shaft into bore and secure with E-ring. Check shaft play.

NOTE

Select from 0.1- and 0.2 mm-thick shims to correct excessive shaft play.

2. Choose shims. Slide them under edge of E-ring and check for play. Determine final number of shims.

3. Pry off E-ring and slide out shaft.

NOTE

Install thicker shim at counterweight end of shaft.

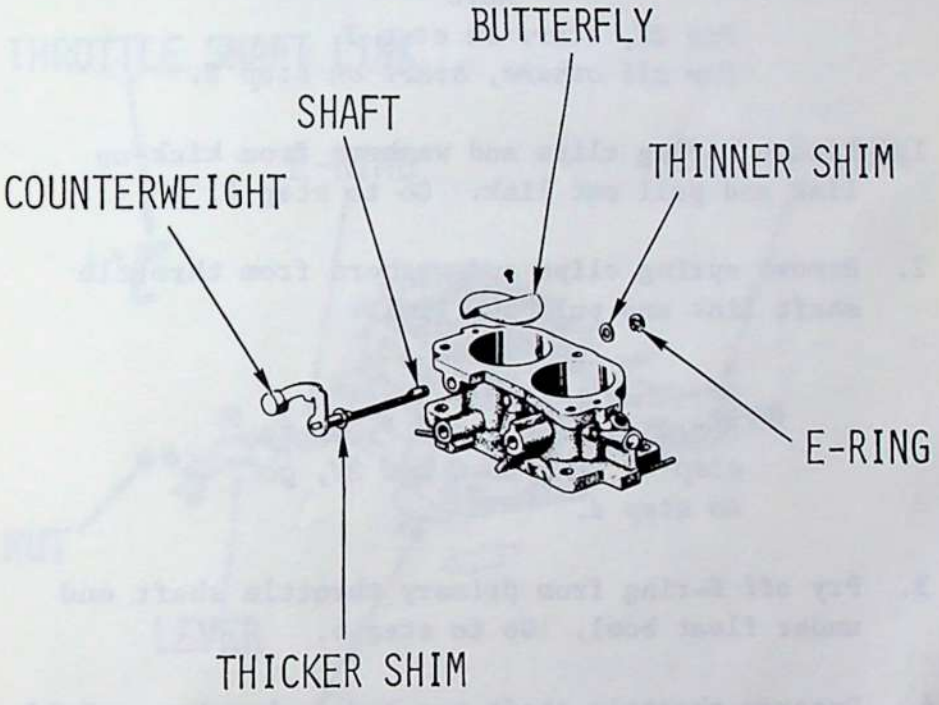
4. Install thicker shim on shaft and slide in shaft. Install thinner shim and E-ring.

5. Install butterfly on shaft with screws from above in flange (8R-C and F) or from below in main body (3K-C and 3R-C).

NOTE

Return to carburetor INSPECTION.

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SPECIAL SERVICING

PRIMARY THROTTLE VALVE

Disassembly

NOTE

For 2M, start on step 1.
For all others, start on step 2.

1. Remove spring clips and washers from kick-up link and pull out link. Go to step 4.

2. Remove spring clips and washers from throttle shaft link and pull out link.

NOTE

For 3K-C, 8R-C, and F, go to step 3. For 3R-C and 2M, go to step 4.

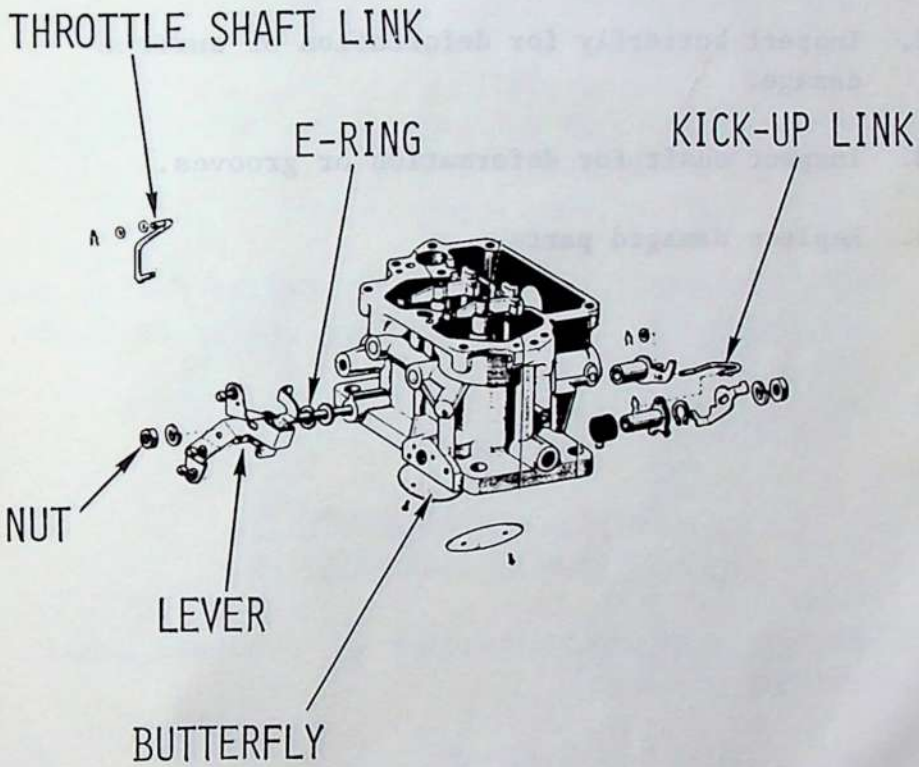
3. Pry off E-ring from primary throttle shaft end under float bowl. Go to step 6.

4. Unscrew throttle shaft nut and lockwasher. Pull off levers.

5. Pry off shaft E-ring.

6. Unscrew butterfly screws and remove butterfly. De-burr screw ends. Slide out shaft.

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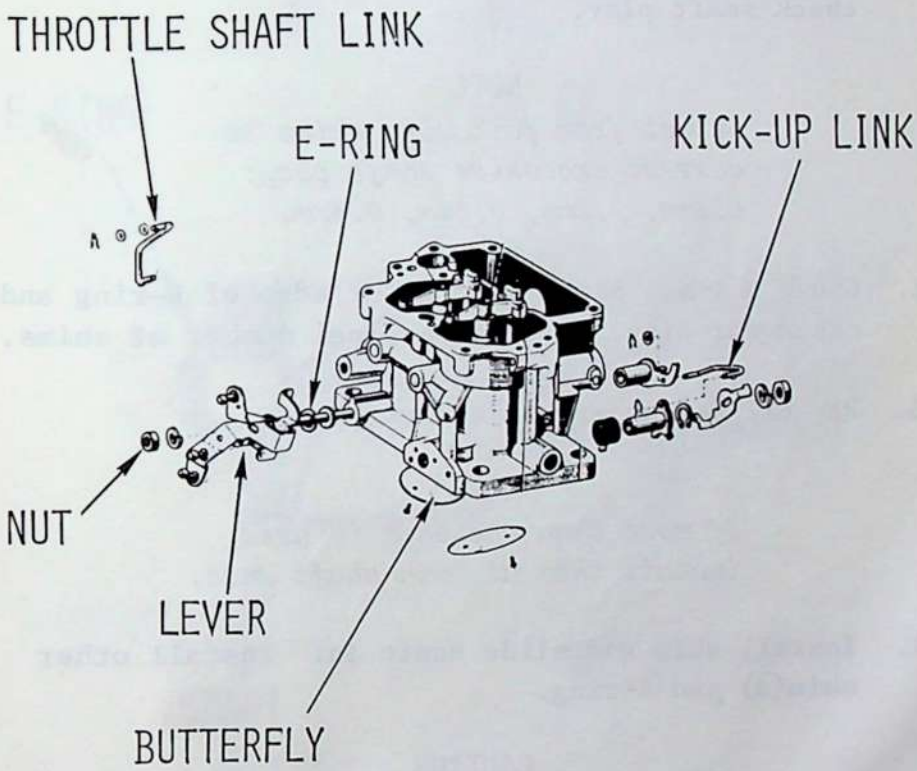
SPECIAL SERVICING

PRIMARY THROTTLE VALVE

Inspection

1. Inspect bore for grooves or cracks.
2. Inspect butterfly for deformation or surface damage.
3. Inspect shaft for deformation or grooves.
4. Replace damaged parts.

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SPECIAL SERVICING

PRIMARY THROTTLE VALVE

Assembly

1. Slide shaft into flange bore. Install E-ring and check shaft play.

NOTE

Select from following shims to correct excessive shaft play: 0.1mm, 0.2mm, 0.3mm, 0.4mm.

2. Chose shims. Slide them under edge of E-ring and check for play. Determine final number of shims.

3. Pry off E-ring and slide out shaft.

NOTE

If more than one shim is used, install them at both shaft ends.

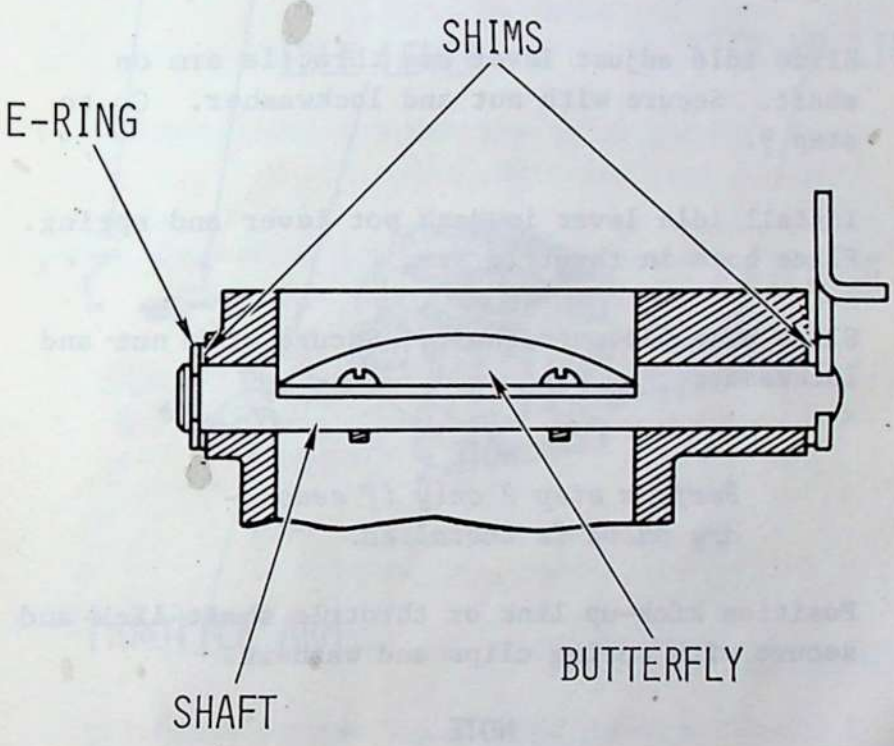
4. Install shim and slide shaft in. Install other shim(s) and E-ring.

CAUTION

Primary butterfly is thinner than secondary.

5. Invert flange and install primary butterfly with 2 screws.

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SPECIAL SERVICING

NOTE

For 3R-C, go to step 6.
For 2M, go to step 7.
For 3K-C, 8R-C, and F, go to step 9.

6. Slide idle adjust lever and throttle arm on shaft. Secure with nut and lockwasher. Go to step 9.

7. Install idle lever in dash pot lever and spring. Place both in throttle arm.

8. Slide assembly onto shaft. Secure with nut and lockwasher.

NOTE

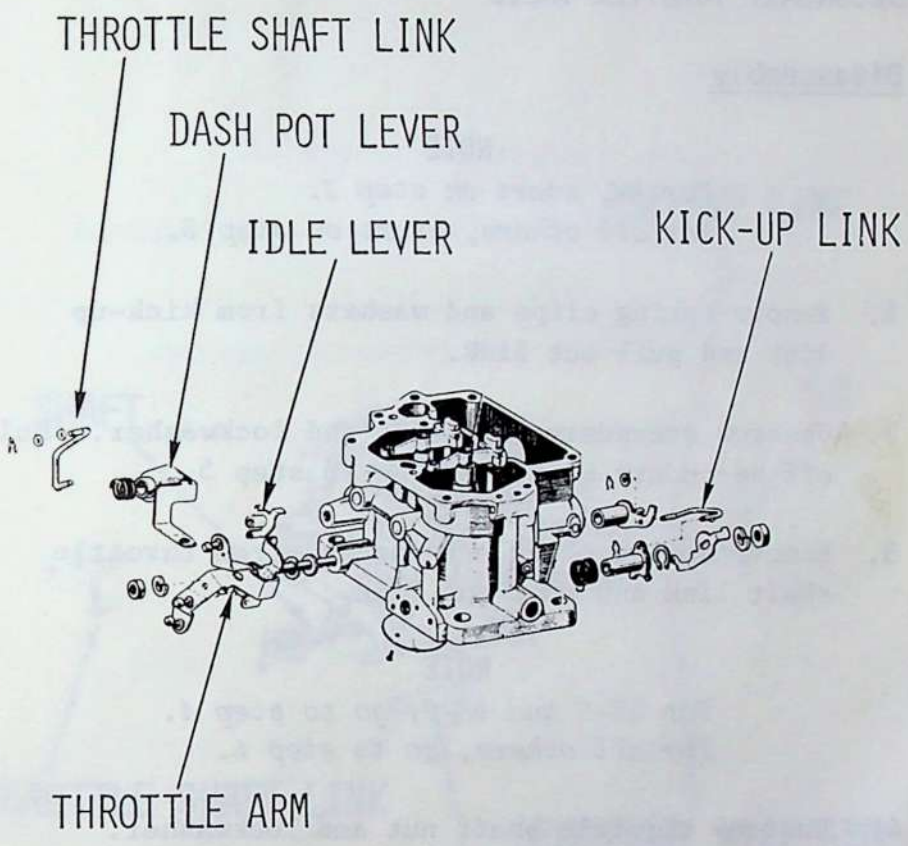
Perform step 9 only if secondary valve is installed.

9. Position kick-up link or throttle shaft link and secure with spring clips and washers.

NOTE

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SPECIAL SERVICING

SECONDARY THROTTLE VALVE

Disassembly

NOTE

For 2M, start on step 1.
For all others, start on step 3.

1. Remove spring clips and washers from kick-up link and pull out link.

2. Unscrew secondary shaft nut and lockwasher. Pull off secondary kick arm. Go to step 5.

3. Remove spring clips and washers from throttle shaft link and pull out link.

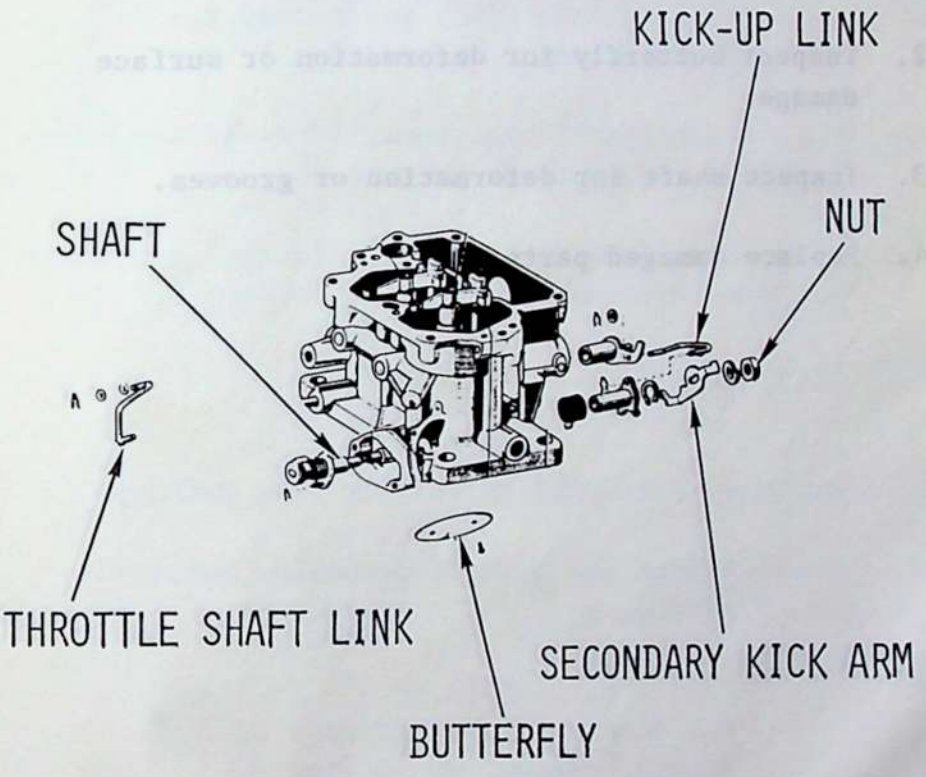
NOTE

For 3R-C and 8R-C, go to step 4.
For all others, go to step 5.

4. Unscrew throttle shaft nut and lockwasher.

5. Unscrew butterfly screws and remove butterfly. De-burr screw ends. Slide out shaft.

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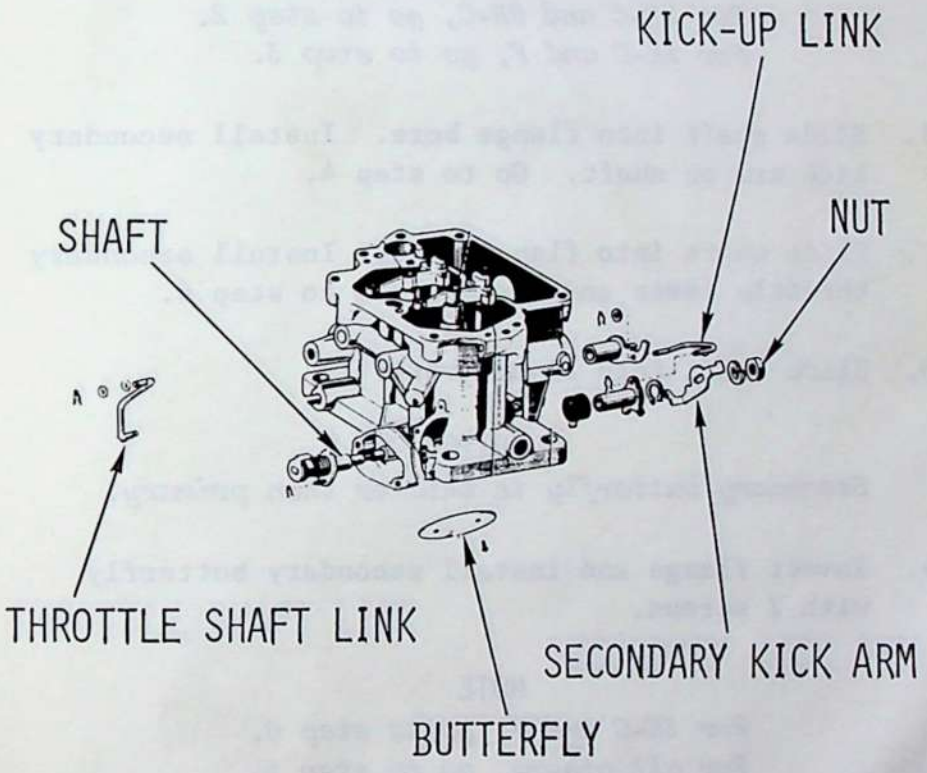
SPECIAL SERVICING

SECONDARY THROTTLE VALVE

Inspection

1. Inspect bore for grooves or cracks.
2. Inspect butterfly for deformation or surface damage.
3. Inspect shaft for deformation or grooves.
4. Replace damaged parts.

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SPECIAL SERVICING

SECONDARY THROTTLE VALVE

Assembly

NOTE

For 2M, start on step 1.
For 3R-C and 8R-C, go to step 2.
For 3K-C and F, go to step 3.

1. Slide shaft into flange bore. Install secondary kick arm on shaft. Go to step 4.

2. Slide shaft into flange bore. Install secondary throttle lever and spring. Go to step 4.

3. Slide shaft into flange bore.

CAUTION

Secondary butterfly is thicker than primary.

4. Invert flange and install secondary butterfly with 2 screws.

NOTE

For 3K-C and F, go to step 6.
For all others, go to step 5.

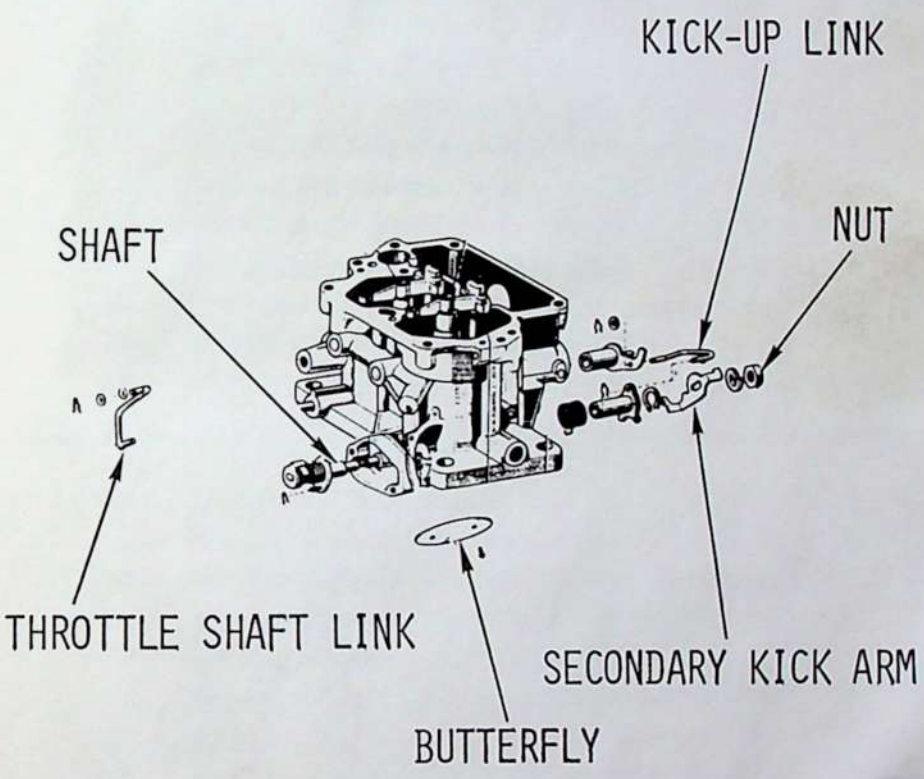
5. Install nut and lockwasher on shaft.

6. If primary valve is already installed, position kick-up link or throttle shaft link. Secure with washers and spring clips.

NOTE

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TROUBLE SHOOTING

8

FUEL SYSTEMS MANUAL

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CARBURETION

Poor Acceleration

	Probable Cause
1.	Improper acceleration pump linkage
2.	Clogged diaphragm hose (2M)
3.	Kick-up out of adjustment (2M)
4.	Reloader out of adjustment (8R-C)
5.	Low float level
6.	Ruptured secondary diaphragm (2M)
7.	Defective pump plunger
8.	Plugged pump discharge nozzle
9.	Bad discharge check valve operation
10.	Check balls in opposite holes
11.	Improper power piston operation
12.	Defective power valve
13.	Clogged power jet
14.	Improper throttle opening

Stalling

1.	Incorrect float level
2.	Defective air-horn gasket
3.	Improper power piston operation
4.	Defective power valve
5.	Plugged main jets
6.	Defective flange gasket
7.	Improper throttle opening
8.	Worn throttle shaft

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REMEDY

1. Adjust linkage/replace bad parts
2. Clean or replace vacuum hose (2M)
3. Adjust kick-up linkage (2M)
4. Adjust reloader linkage (8R-C)
5. Adjust float level
6. Replace diaphragm
7. Replace plunger
8. Clean or replace nozzle
9. Replace parts
10. Reverse check ball installation
11. Replace piston or spring
12. Replace power valve
13. Clean or replace power jet
14. Adjust throttle valve

---

1. Adjust float level
2. Replace gasket
3. Replace piston or spring
4. Replace power valve
5. Clean or replace main jets
6. Replace gasket
7. Adjust throttle valve
8. Replace throttle shaft

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CARBURETION

PROBABLE CAUSE

POOR COLD ENGINE START

1. Improper manual choke operation
2. Auto choke out of adjustment
3. Wrong unloader operation
4. Improper fast idle
5. Defective accelerator pump

ROUGH IDLING

1. Loose distributor vacuum hose(s)
2. Incorrect idle mixture
3. Defective idle mixture screw
4. Bad slow passage seal
5. Defective magnetic valve (F)
6. Defective air-horn gasket
7. Defective flange gasket
8. Defective secondary blade closing
9. Improper slow jet seating
10. Plugged slow jet
11. Plugged idle and slow passage and port
12. Plugged economizer jet
13. Worn primary throttle shaft

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REMEDY

1. Adjust linkage/replace bad parts
2. Adjust automatic choke
3. Adjust unloader
4. Adjust fast idle
5. Inspect/replace pump plunger

---

1. Tighten hose connections
2. Adjust idle mixture screw
3. Replace idle mixture screw
4. Tighten plug or replace seal
5. Replace magnetic valve (F)
6. Replace air-horn gasket
7. Replace flange gasket
8. Adjust or replace blade
9. Tighten or replace slow jet
10. Clean or replace slow jet
11. Clean passage and port
12. Clean economizer jet
13. Replace shaft

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CARBURETION

	Probable Cause
High Fuel Consumption	1. Improper choke valve operation 2. Wrong reloader operation (8R-C) 3. High float level 4. Defective air-horn gasket 5. Power piston vacuum leak 6. Plugged air bleeder 7. Loose plugs or jets 8. Defective power valve 9. Defective flange gasket
Flooding	1. Incorrect float level 2. Damaged float or tab 3. Bad needle valve or seating 4. Defective air-horn gasket 5. Fuel pump overpressure

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REMEDY

1. Adjust linkage/replace bad parts
2. Adjust linkage/replace bad parts
3. Adjust float level
4. Replace gasket
5. Inspect piston and cylinder
6. Clean or replace bleeder
7. Tighten plugs or jets
8. Replace power valve
9. Replace gasket

---

1. Adjust float level
2. Replace float
3. Replace needle valve parts and seat
4. Replace gasket
5. Check fuel pump

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SPECIFICATIONS

9

FUEL SYSTEMS MANUAL

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3K-C CARBURETOR SPECS

Float-raised clearance	6.5 mm
Float-lowered clearance	48 mm
Primary butterfly full open	90°
Secondary butterfly full open	90°
Secondary opening (primary setting)	30°
High-speed lockout clearance	0.5 mm
High-speed butterfly clearance	---
Fast idle (primary clearance)	1.0 mm
Idle mixture screw (# turns out)	2-1/2

3K-C TUNE UP SPECS

Basic ignition timing	
with Automatic in drive	5° ATC @ 650 rpm
with Manual in neutral	5° ATC @ 650 rpm
Idle speed	
with Automatic in drive	650 rpm
with Manual in neutral	650 rpm
Idle mixture (trans.in neutral)	1/4 turn richer than best idle
Distributor point gap	0.016" - 0.020"
Distributor dwell angle	52°
Spark plug gap	0.031"
Valve clearance (Hot) - Intake	0.008"
Exhaust	0.014"

3R-C CARBURETOR SPECS

Float-raised clearance	9.3 mm
Float-lowered clearance	22 mm
Primary butterfly full open	90°
Secondary butterfly full open	90°
Secondary opening (primary setting)	30°
High-speed lockout clearance	0.5 mm
High-speed valve clearance	0.1 - 0.3 mm
Fast idle (primary clearance)	1.0 mm
Idle mixture screw (# turns out)	2-1/2
Unloader	50°

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3R-C TUNE UP SPECS

Basic ignition timing	
with Automatic in drive	5° BTC @ 650 rpm
with Manual in neutral	TDC @ 750 rpm
Idle speed	
with Automatic in drive	650 rpm
with Manual in neutral	750 rpm
Idle mixture (trans.in neutral)	-20 mm Hg(-0.8 in Hg) Rich dropoff from best idle
Distributor point gap	0.016" - 0.020"
Distributor dwell angle	52°
Spark plug gap	0.031"
Valve clearance (Hot) - Intake	0.008"
Exhaust	0.014"

8R-C CARBURETOR SPECS

Float-raised clearance	9.3 mm
Float-lowered clearance	1.0 mm
Primary butterfly full open	90°
Secondary butterfly full open	90°
Secondary opening (primary setting)	30°
High-speed lockout clearance	0.5 mm
High-speed valve clearance	0.6 - 0.8 mm
Fast idle (primary clearance)	0.73 mm
Idle mixture screw (# turns out)	2
Unloader	51°
Reloader (choke open)	20°
Reloader (secondary clearance)	0.35 - 0.75 mm

8R-C TUNE UP SPECS

Basic ignition timing	
with Automatic in drive	TDC @ 650 rpm
with Manual in neutral	TDC @ 650 rpm
Idle speed	
with Automatic in drive	650 rpm
with Manual in neutral	650 rpm
Idle mixture (trans.in neutral)	1/4 turn leaner from best idle (CO 2-3%)
Distributor point gap	0.016" - 0.020"
Distributor dwell angle	52°
Spark plug gap	0.031"
Valve clearance (Hot) - Intake	0.008"
Exhaust	0.014"
EMS positioner setting (trans. in neutral)	1400 rpm

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2M CARBURETOR SPECS

Float-raised clearance	9.5 mm
Float-lowered clearance	23 mm
Primary butterfly full open	---
Secondary butterfly full open	77°
Secondary opening (primary setting)	64°
Fast idle (primary setting)	21.5°
Idle mixture screw (# turns out)	1-1/2
Unloader	35°
Dash pot (stroke)	5 mm
Dash pot (return time)	5 - 7 sec
Kick up (secondary clearance)	0.2 - 0.4 mm

2M TUNE UP SPECS

Basic ignition timing	
with Automatic in drive	TDC @ 650 rpm
with Manual in neutral	TDC @ 650 rpm
Idle speed	
with Automatic in drive	650 rpm
with Manual in neutral	650 rpm
Idle mixture (trans.in neutral)	Lean best idle
Distributor point gap	0.016: - 0.020"
Distributor dwell angle	41°
Spark plug gap	0.031"
Valve clearance (Hot) - Intake	0.007"
Exhaust	0.010"

F CARBURETOR SPECS

Float-raised clearance	8 mm
Float-lowered clearance	1.0 mm
Primary butterfly full open	90°
Secondary butterfly full open	90°
Secondary opening (primary setting)	50°
High-speed lockout clearance	0.5 mm
High-speed butterfly clearance	1.0 mm
Fast idle (Primary clearance)	1.0 mm
Choke pulling angle	38°
Idle mixture screw (# turns out)	1-1/4
Reloader (choke opening)	40°,50°
Reloader (counterwieght and fast idle clearance)	0.5-1.0 mm
Positioner diaphragm (stroke)	8-10 mm
Positioner (primary clearance)	0.66-0.86 mm
Positioner (screw & lever clearance)	2-3 mm

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F TUNE UP SPECS

Basic ignition timing		7° BTC @ 600 rpm
Idle speed		600 rpm
Idle mixture (trans.in neutral)		Lean best idle
Distributor point gap		0.016" - 0.020"
Distributor dwell angle		41°
Spark plug gap		0.031"
Valve clearance (Hot) -	Intake	0.008"
	Exhaust	0.014"
EMS positioner setting (trans. in neutral)		1000 rpm

Notes:

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NOTES

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