CARTER THERMO-QUAD 4-BARREL

Jensen Interceptor III (1973)

CARBURETOR IDENTIFICATION

Carburetor model number stamped on metal tag attached to air horn.

DESCRIPTION

The 1973 Thermo-Quad carburetor is basically the same as the 1972. The primary nozzles, primary venturi, accelerator pump, step-up piston and metering rods are contained in bowl cover. Also housed there are the secondary metering jets, accelerator passage tube and the float needle valves and floats. Located in carburetor plastic fuel bowl are the primary metering jets, baffle plate and primary nozzle O-rings. The following are the major changes for 1973:

VACUUM KICK DIAPHRAGM

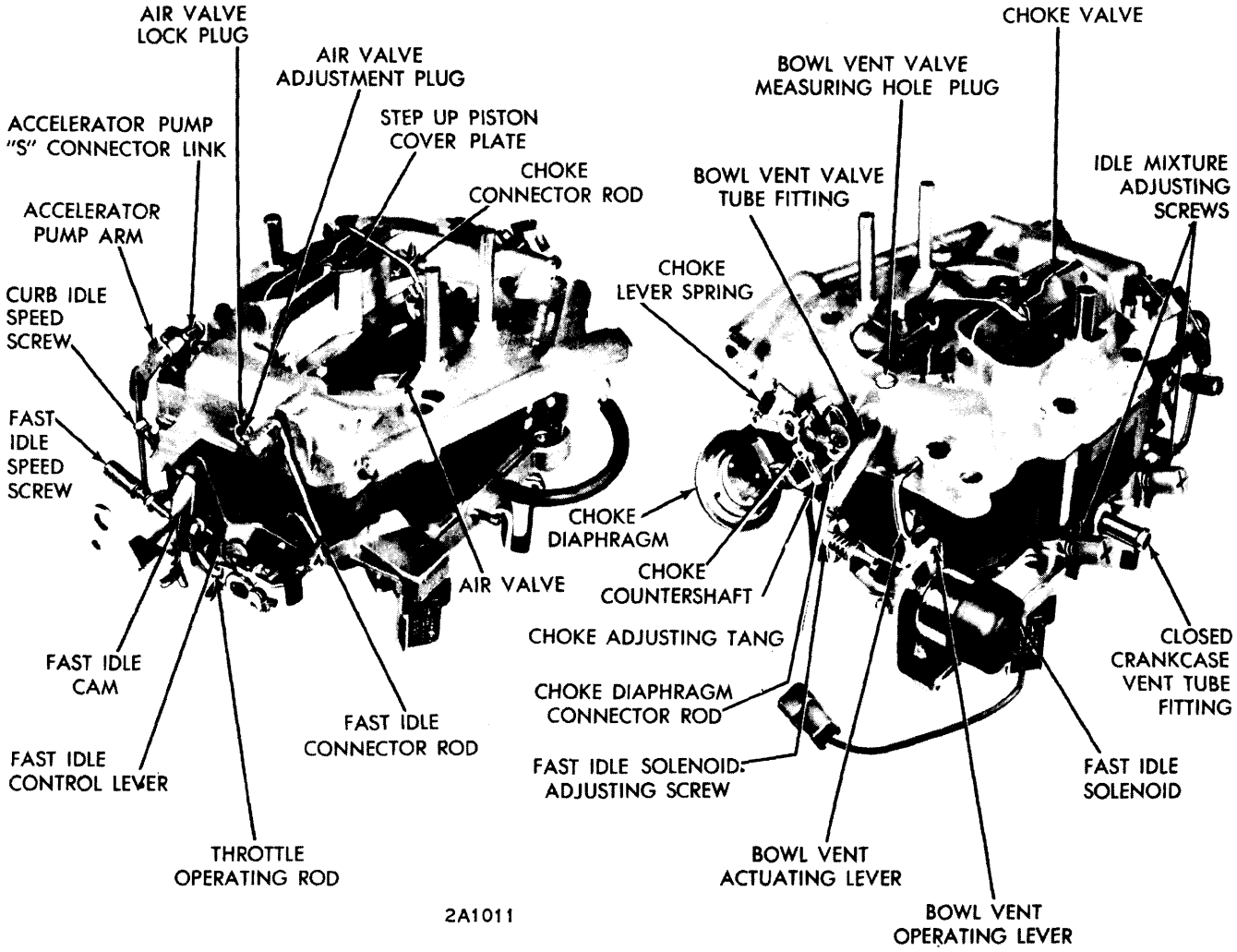
Function – Provides two separate functions. It not only still provides the kick for the choke valve, but it also controls the secondary air valve. These two functions call for two separate but interrelated adjustments which must be performed in the proper sequence (see Adjustments).

NEW VACUUM PORTS

Thermo-Quad carburetors used on vehicles with a 440" engine equipped with EGR (Exhaust Gas Recirculation) systems have an additional vacuum port and nipple. These ports function to control EGR system by signalling the EGR control valve.

440" Standard Engine – The Thermo-Quad carburetor used on these engines obtains vacuum control of the EGR system by utilizing a **Venturi Vacuum Control System.** The vacuum port is located in the side of the carburetor above the throttle valves. Because of the comparatively low vacuum obtained above the throttle valves, a "Vacuum Amplifier" is required to operate the EGR control valve.

440" Hi-Performance Engine – Thermo-Quad carburetors used on these engines use a **Ported Vacuum Control System.** This control system has a slot type port in the carburetor throttle body which is exposed to an increasing percentage of manifold vacuum as the throttle valves open. The port is connected through an external nipple directly to the EGR control valve. Vacuum flow and intensity is dependent on manifold vacuum, throttle position, and exhaust gas back pressure.



CARTER THERMO-QUAD CARBURETOR

CARTER THERMO-QUAD 4-BARREL (Cont.)

340" & 400" Engines – Thermo-Quad carburetors used on these engines do not have an additional vacuum port. The EGR system does not require vacuum control. The system is known as "Floor Jet Exhaust Gas Recirculation." *For additional information, see appropriate article in Exhaust Emission Manual.*

▶ CHANGES, CAUTIONS, CORRECTIONS

▶ *NEW ELECTRIC CHOKE ASSIST SYSTEM NOTE* – In addition to the conventional thermostatic choke coil unit, 1973 models employ an electric heating element adjacent to the thermostatic coil to shorten choke duration during warm weather operation. The choke assist gives a more rapid choke opening at temperatures above 63°F and a slower opening at temperatures below 63°F.

The choke assist heating element receives its electrical input from a choke control switch connected to the ignition system. Above 63°F the control switch will energize the choke heating element. When the control switch is warmed to 110°F by engine heat and a small electrical heater within the switch, it will de-energize the choke heater.

An electrical short in the wiring to the choke heater or within the heater will also be a short in the ignition system. Adjustment is not possible on either the choke assist or the control switch.

ADJUSTMENT

Adjustments should be made in the sequence listed below. Certain of these adjustments will be necessary only if carburetor is being overhauled or has been disassembled, and should be made with the carburetor off the car and on a bench.

1) Secondary Throttle Linkage.

2) Secondary Air Valve Opening.

3) Secondary Air Valve Spring Tension.

4) Accelerator Pump Stroke.

5) Choke Control Lever Adjustment (off or on car).

6) Choke Diaphragm Connector Rod.

7) Vacuum Kick Adjustment (off or on car).

8) Fast Idle Cam & Linkage.

9) Choke Unloader Adjustment.

10) Secondary Throttle Lockout.

11) Bowl Vent Valve Adjustment.

12) Fast Idle Speed.

13) Fast Curb Idle Solenoid Adjustment.

Idle Mixture

▶ *NOTE – Do not attempt to adjust or tamper with idle mixture screws locked in position with plastic limiter caps. If limiter caps and idle mixture screws are removed for carburetor overhaul, fuel bowl or throttle body replacement, special procedure is required to correctly readjust idle mixture screws. See appropriate Tune-Up article in Exhaust Emission Manual.*

Fast Curb Idle Speed Solenoid

With transmission in PARK or NEUTRAL and engine running at normal operating temperature, turn fast curb idle adjusting screw in or out (solenoid energized) to obtain specified fast curb idle speed (see Specifications).

Slow Curb Idle Speed

After adjusting fast curb idle (see above) and with engine still running and solenoid energized, adjust slow curb idle speed screw until end of screw just touches stop. Back

CARBURETOR ADJUSTMENT SPECIFICATIONS

Carter Carb. No. ⑤	Idle Speed (Engine RPM)		Fast Idle Cam ② Position	Vacuum Kick ②	Accel. Pump Stroke③	Choke② Unloader Setting	Float Setting	Auto. Choke ④
	Hot①	Fast						
TQ-6411S	800	1700	.110"	.160"	31/64"	.190"	1 1/16"	.....

① Solenoid energized.
② Measured at lowest edge of choke plate.
③ Second stage adjustment on Man. Trans. cars – 23/64".
④ Fixed setting. Controlled by electric assist (see "CHANGES, CAUTIONS, CORRECTIONS").
⑤ **Adjustments common to all carburetors –**
Secondary Air Valve Spring Tension ..... 1 1/4 Turns.
Choke Diaphragm Connector Rod ..... .040".
Secondary Throttle Lockout ..... .060-.090".
Bowl Vent Valve ..... .815".
Secondary Throttle Linkage .... Adjust link so that primary and secondary stops both contact at same time.
Secondary Air Valve ..... 15/32".

CARTER THERMO-QUAD 4-BARREL (Cont.)

screw off one full turn and check slow curb idle speed by disconnecting solenoid wire momentarily at connector. *NOTE – Solenoid will not advance throttle when reconnected. Throttle must be manually advanced to attain fast curb idle speed.*

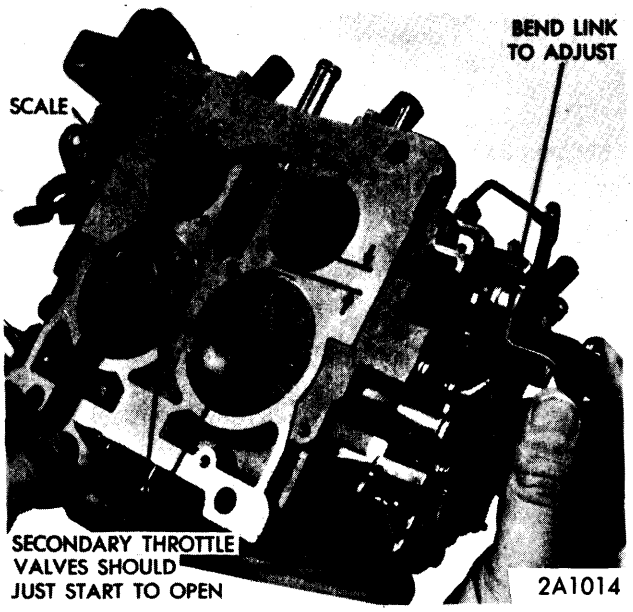
Cold Fast Idle Speed

NOTE – Timing and curb idle speed and mixture must be correctly adjusted before adjusting fast idle speed.

1) With engine not running and transmission in PARK or NEUTRAL, open throttle slightly.

2) Close choke valve until fast idle screw can be positioned on second step of cam against shoulder of first step.

3) Start engine, determine stabilized RPM. Turn fast idle screw in or out to obtain specified RPM (see Specifications).



SECONDARY THROTTLE ADJUSTMENT

4) Reposition fast idle speed screw on cam after each speed adjustment to provide correct throttle closing torque.

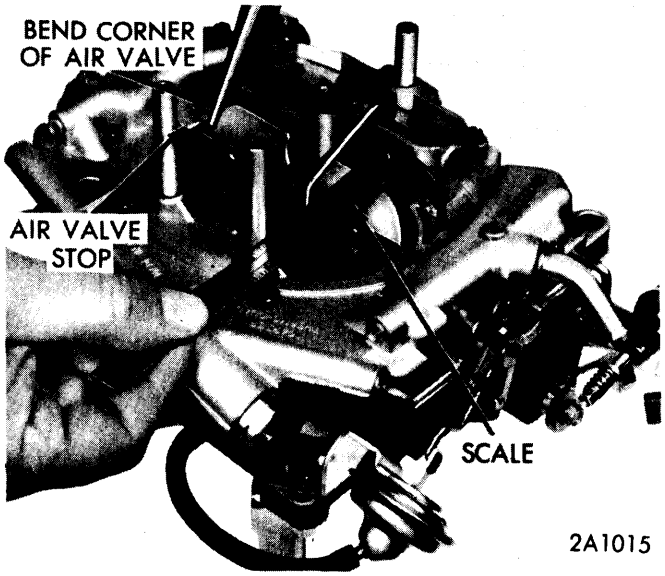
Secondary Throttle Linkage

Block choke valve wide open, invert carburetor. Open primary throttle valves until specified drill gauge can be inserted between lower edge of primary valve and bore opposite idle port. Secondary valves should just be starting to open. Bend secondary throttle rod at existing bend if adjustment required. See Specifications.

Secondary Air Valve Opening

Closed Position – Opening along air valve at long side to be at its maximum and parallel with air horn gasket surface.

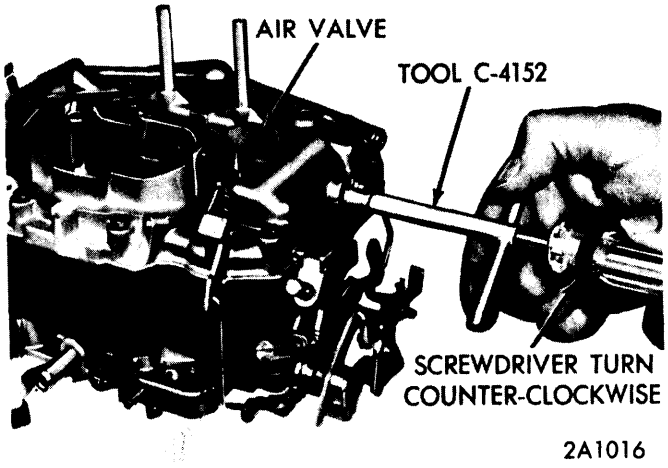
Open Position – See Specifications for clearance between air valve (short side) and air horn. Corner of air valve is notched for adjustment. Bend at this point if adjustment required.



SECONDARY AIR VALVE ADJUSTMENT

Secondary Air Valve Spring Tension

Using hollow-handle spanner (Tool C-4152) loosen air valve lock plug. Use long handle screwdriver through handle of spanner to turn plug counterclockwise until air valve contacts stop lightly, then turn and additional 1¼ turn. Hold adjustment plug with screwdriver and tighten lock plug with spanner, making sure adjustment does not move. Test valve for freedom of movement.



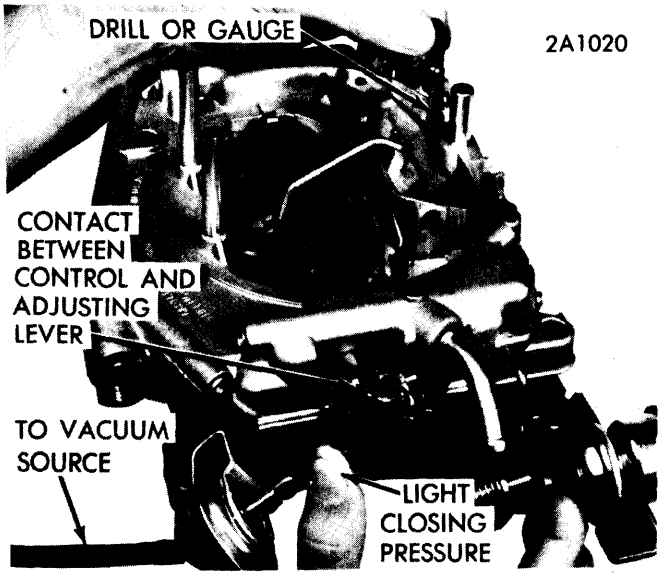
AIR VALVE SPRING TENSION ADJUSTMENT

3) If slight drag is not felt as drill is withdrawn, bend tang (see illustration) as necessary. *Do not adjust diaphragm rod. Apply counter force to adjustment lever while bending tang. Do not apply any load or strain on link connecting the two choke shafts while bending tang. Distortion of link will change choke qualification. With no vacuum applied, choke valve must move freely.*

On Car – With engine running, back off fast idle speed screw until choke can be closed to the kick position at curb idle (note number of screw turns required so that fast idle can be returned to original adjustment). To complete checking and adjustment, follow procedures given in steps

CARTER THERMO-QUAD 4-BARREL (Cont.)

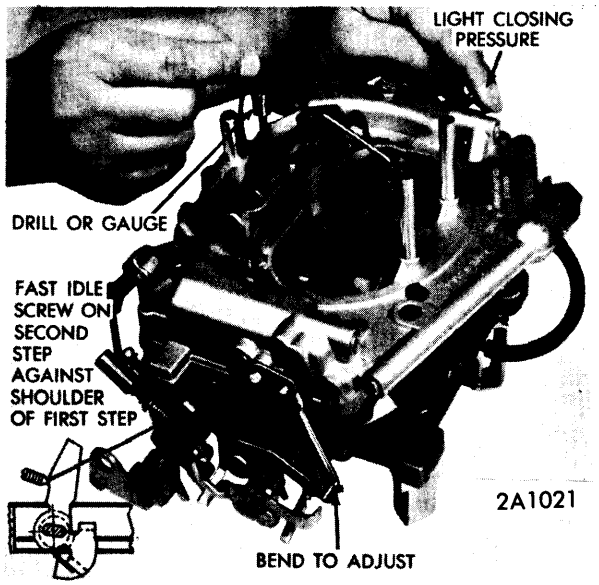
2 and 3 of "Off Car" instructions. *After checking or adjustment, choke valve should move freely between open and closed positions (without vacuum applied to diaphragm).*



VACUUM KICK ADJUSTMENT

Fast Idle Cam & Linkage

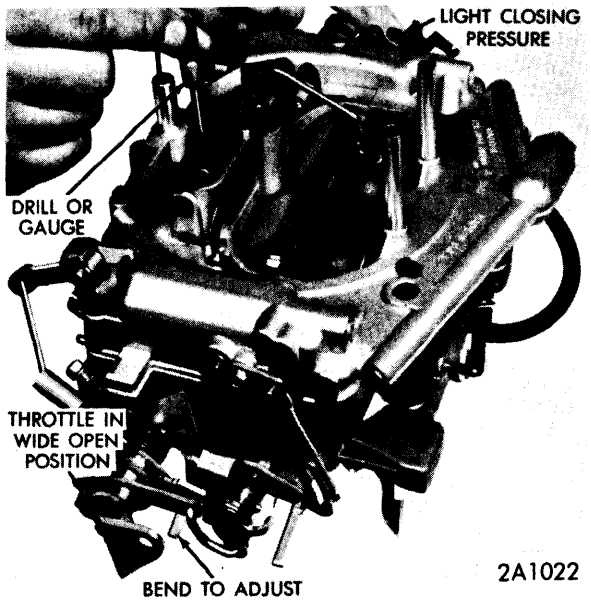
Place fast idle screw on second step of cam against shoulder of first step. Adjust connector rod to obtain specified clearance between lower edge of choke valve and air horn (see illustration).



FAST IDLE CAM & LINKAGE ADJUSTMENT

Choke Unloader

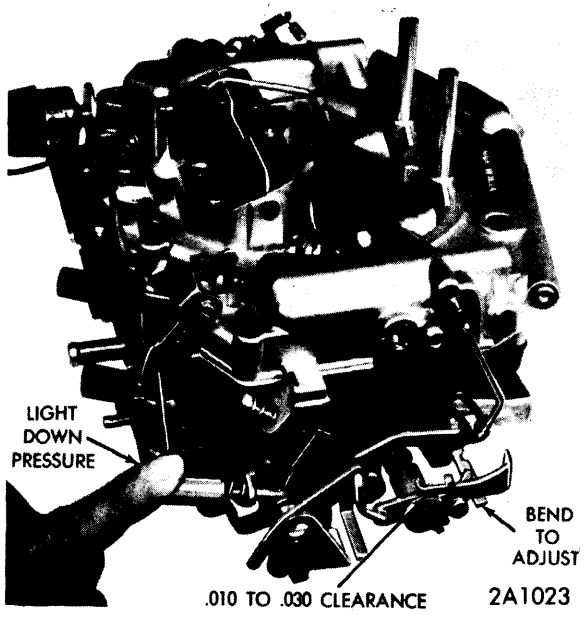
Hold throttle valves in wide open position. With specified drill (see Specifications) inserted between lower edge of choke valve and air horn and with a slight finger pressure on the choke control lever, a slight drag should be felt as drill is withdrawn. Bend tang on fast idle control lever (see illustration) if adjustment required.



CHOKE UNLOADER ADJUSTMENT

SECONDARY THROTTLE LOCKOUT

Open choke valve, using choke control lever. Measure clearance between lockout lever and stop (see Specifications). Bend tang on fast idle control lever if adjustment necessary (see illustration).



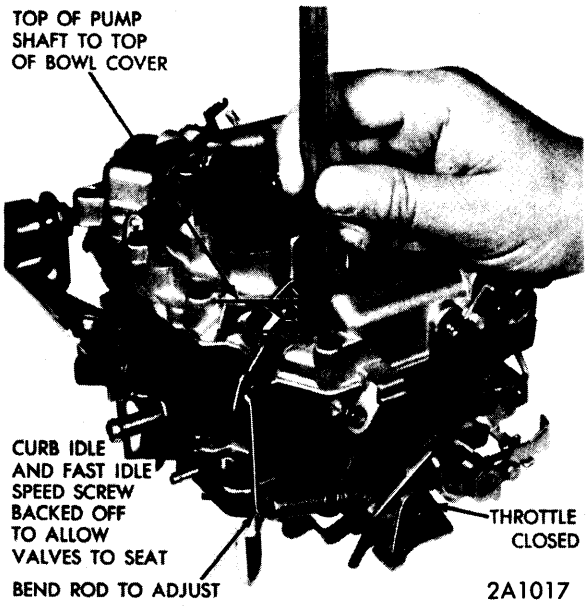
SECONDARY THROTTLE LOCKOUT ADJUSTMENT

ACCELERATOR PUMP STROKE

Release fast idle cam by opening choke wide open and back off slow curb idle speed adjust screw until throttle valves seat in bore. With throttle valves closed tightly and with throttle connector rod installed in center hole of pump arm, distance between top of bowl cover and the under side of "S" link that goes through pump plunger should be as specified (see

CARTER THERMO-QUAD 4-BARREL (Cont.)

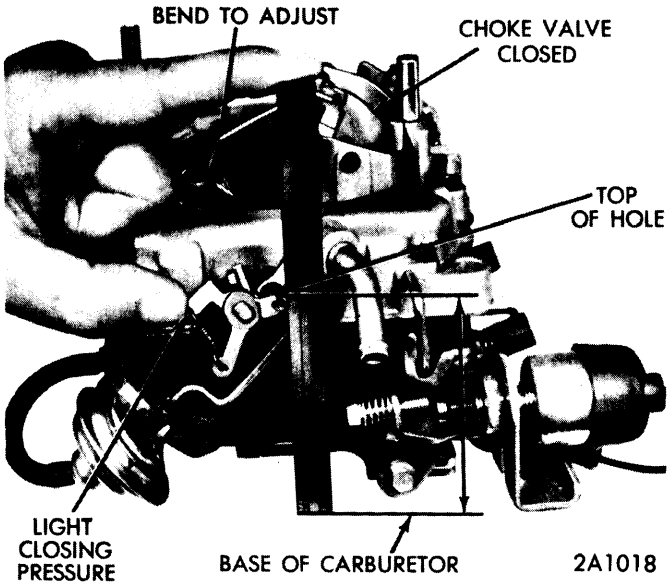
Specifications). If adjustment required, bend throttle rod at lower angle. For second stage adjustment on manual transmission models, bend second stage stop lever.



ACCELERATOR PUMP STROKE ADJUSTMENT

CHOKE CONTROL LEVER (OFF OR ON CAR)

1) **Off Car**, place carburetor on flat surface with surface extending out under choke control lever. **On Car**, disconnect choke rod.



CHOKE CONTROL LEVER ADJUSTMENT

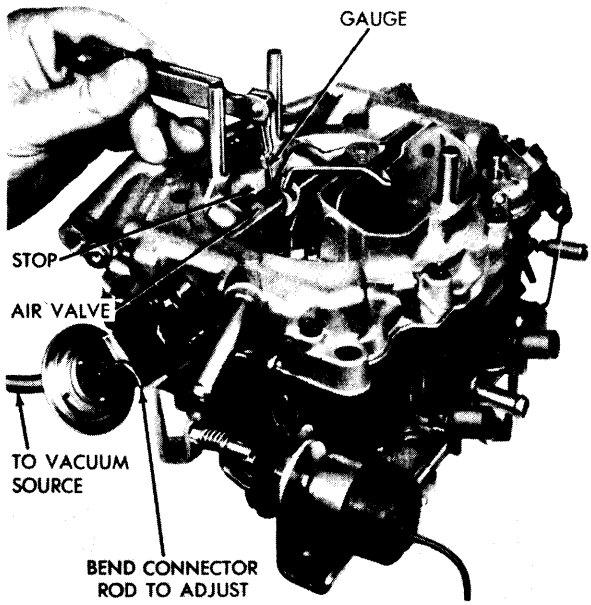
2) Fully close choke and measure vertical distance from top of rod hole in control lever down to flat surface (**off car**) or down to clean choke pad surface (**on car**).

3) **Off Car**, distance should be 3 3/8". **On Car**, distance should be 3 41/64". Adjust by bending the link connecting the two choke shafts (see illustration).

CHOKE DIAPHRAGM CONNECTOR ROD (SECONDARY AIR VALVE CONTROL)

NOTE — Make this adjustment before Vacuum Kick adjustment.

Use vehicle vacuum (or exterior source if carburetor off car) to apply a minimum of 15 inches Hg to diaphragm. Bend connector rod to obtain specified clearance between air valve and stop on bowl cover (see illustration).



CHOKE DIAPHRAGM CONNECTOR ROD ADJUSTMENT

Vacuum Kick Adjustment (Off Or On Car)

NOTE – This adjustment should not be made until Choke Control Lever and Choke Diaphragm Connector Rod adjustments have been tested or adjusted.

Off Car – Open throttle valve and close choke. Hold choke closed while releasing throttle in order to trap fast idle cam in closed choke position. Proceed as follows:

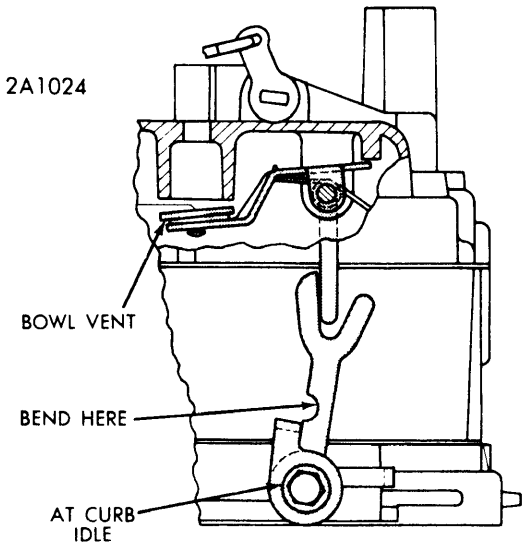
1) From an exterior source (such as a distributor test machine) apply a minimum of 10 inches of Hg to vacuum diaphragm (care must be taken not to damage diaphragm in removal of vehicle vacuum hose, and diaphragm must be securely mounted on carburetor).

2) Insert specified drill or gauge between lower edge of choke valve and air horn and with choke control lever close choke valve as far as possible without straining or distorting choke linkage (spring on control lever must be fully extended).

CARTER THERMO-QUAD 4-BBL. (Cont.)

Bowl Vent Valve

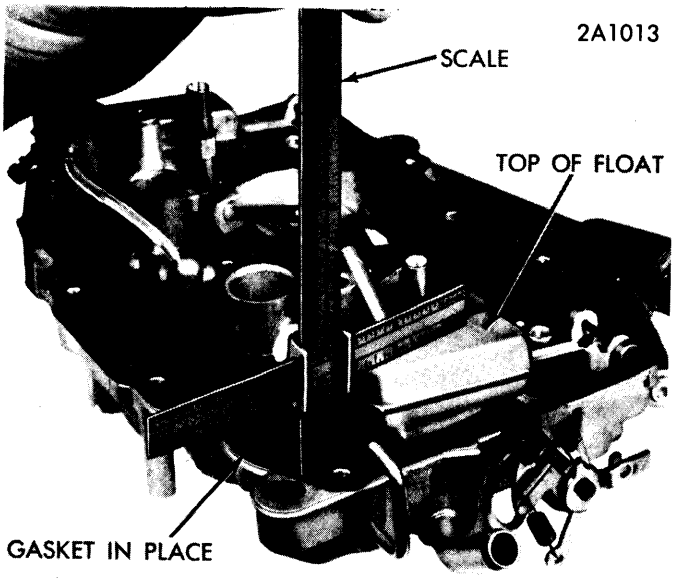
Remove vent valve hole plug and insert a narrow ruler in hole to rest on top of valve. Measurement of distance from top of valve to top of bowl cover should be to specification when throttle valves are at curb idle position. If adjustment required (see Specifications), bend bowl vent operating lever at point of notch on lever.



ADJUSTING BOWL VENT

Float Level

With bowl cover inverted, gasket installed, and floats resting on seated needle, measure distance from bowl cover gasket to bottom of float. If measurement not correct (see Specifications) bend float lever (see illustration) as required. *NOTE – Do not allow lip of float to press on needle while making adjustment.*



CHECKING FLOAT HEIGHT

OVERHAUL

Disassembly

1) Remove rod retainers holding throttle connector rod to accelerator pump arm and throttle lever, remove rod from carburetor. Remove accelerator pump arm screw and disengage from pump rod "S" link (leave "S" link connected to pump rod) and remove lever. Disengage lever from countershaft, then swing fast idle connector rod at an arc until it can be freed from fast idle operating lever.

2) Remove rod retainers and washer holding choke diaphragm connector rod to choke vacuum diaphragm and air valve lever, then remove lever. Remove rod retainer holding choke connector rod to choke countershaft, then disengage rod and swing rod at an arc to free choke shaft lever assembly.

3) Remove step-up piston cover plate attaching screw and cover plate, then remove step-up piston and link assembly with step-up rods. Remove step-up piston spring. Remove pump jet housing screw, housing with gasket, and then invert carburetor and remove discharge check needle. Remove (10) screws, two of the bowl cover screws are located between choke valve and wall of bowl cover, remove bowl cover and invert on bench to protect floats.

Bowl Cover – 1) Remove float lever pins and lift out float assemblies, mark float removed from pump side so that floats may be reinstalled in their respective positions. Remove two needle valves from their locations, mark needle valve removed from pump side to aid in reassembly, then using a wide blade screwdriver, remove needle valve seats. Be sure each needle valve is returned to its original seat at reassembly.

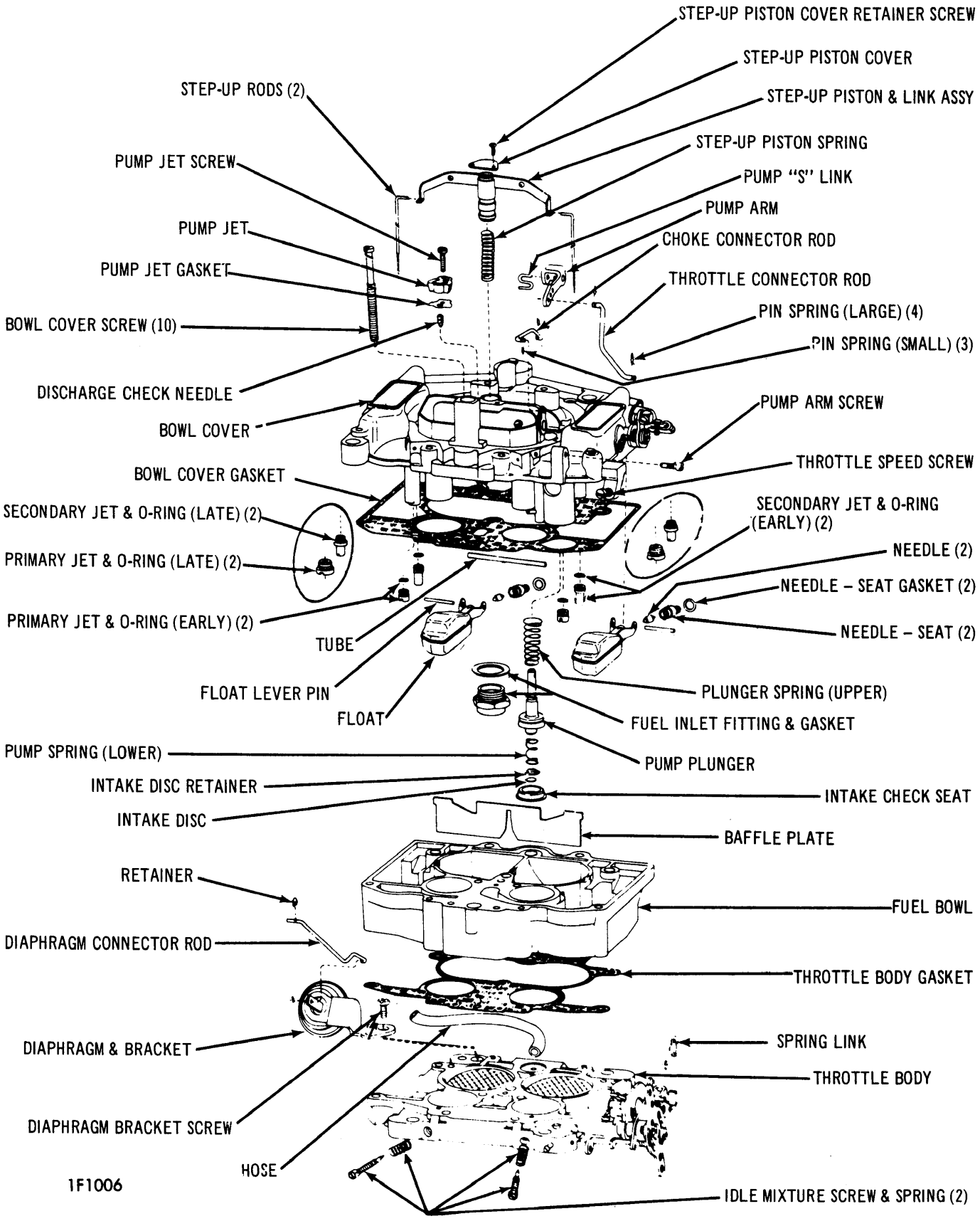
2) Remove primary jets (large screwdriver slots) and secondary jets (small screwdriver slots). Remove acceleration pump passage tube (plastic) and bowl cover gasket. Remove accelerator pump rod "S" link, using a small rod placed on upper end of plunger shaft and tapping lightly with a small hammer. *CAUTION – Use care not to damage plunger shaft hole in bowl cover, place fingers under lower portion of pump cylinder in order to catch intake check seat, disc, disc retainer, spring (light) and spring (heavy).*

3) If plunger can be reused, place in a jar of clean gasoline or kerosene to prevent leather from drying out. Note position of bowl vent connector rod and arm spring before removing retainer clip from connector rod, then remove rod from bowl vent operating arm. Remove grommet seal from operating arm, then remove fuel inlet fitting and gasket.

Throttle Body – 1) Remove choke diaphragm and bracket assembly, with hose, and place aside for special cleaning (liquid cleaners may damage diaphragm material). *NOTE – Carburetor vacuum fitting hides a very small vacuum passage restriction, clean passage only with compressed air.*

2) Remove hot idle compensator valve and gasket. Remove plastic limiter caps from idle air mixture screws, being sure to count the number of turns to seat screws (from stop), as the same number of turns must be maintained at reassembly. Remove idle mixture screws and springs. *NOTE – It is not recommended that throttle shafts or valves be removed unless wear or damage necessitates the installation of new parts.*

CARTER THERMO-QUAD 4-BARREL (Cont.)



CARTER THERMO-QUAD CARBURETOR ASSEMBLY

CARTER THERMO-QUAD 4-BBL. (Cont.)

Cleaning & Inspection

Check all parts for wear or damage, replace as necessary. Check all passages for restrictions. Be sure choke and throttle shafts are not bent or scored, replace any broken or distorted springs. Clean all parts in a suitable solution, but do not immerse main body for prolonged periods of time.

Reassembly

Using all new gaskets, reverse disassembly procedures and note the following:

Valve Installation – Slide new throttle valves in position on throttle shaft with the valve number on the bottom (flange side) and opposite the vacuum port. Install new screws, but do not tighten. Be sure idle speed adjusting screw is backed out. Hold valves in place with fingers (hold high side of valves), then tap valves lightly with screwdriver, tighten screws securely and stake screws, being sure to support shaft when staking.

Idle Mixture Screws & Limiter Cap Installation – Install idle mixture screws and springs, tapered portion must be straight and smooth; if tapered portion grooved or ridged, a new screw must be installed. **Do not use a screwdriver when installing,** turn screws lightly against their seats with fingers, then back off the same number of turns counted at disassembly. **Do not reinstall limiter caps until carburetor has been installed on engine and idle mixture is correct.**

Choke Vacuum Diaphragm (Also Air Valve Dashpot) – Leak test diaphragm by depressing diaphragm stem, then placing finger over fitting to seal opening. Release stem; if stem moves more than 1/16" in ten seconds, leakage is excessive and assembly must be replaced.

Accelerator Pump – Pour clean gasoline into main body (½" deep), and lower bowl down on main body. Raise plunger and press lightly on plunger shaft to expel air from passage. Install accelerator pump discharge check needle, then using a small rod, hold discharge check needle firmly on its seat. Raise plunger and press downward, no fuel should be emitted from the passage. Fuel leakage from passage indicates the presence of dirt or a damaged check needle.