CARTER THERMO-QUAD 4-BARREL

DODGE

Application	Carter No. Man. Trans.	Auto. Trans.
1973		
440" V8 (All)		①TQ-6446S
1974		
360" V8		
California		TQ-9022S
440" V8		
Federal	TQ-6545S	TQ-9025S
California	TQ-6545S	TQ-9017S

① – Or Carburetor No. TQ-6518S.

INTERNATIONAL HARVESTER

Application	Carter No. Man. Trans.	Auto. Trans.
1974		
345" V8		
California	TQ-6591S	TQ-6550S
392" V8		
Federal	TQ-6590S	TQ-6590S
California	TQ-6592S	TQ-6551S

CARBURETOR IDENTIFICATION

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

DESCRIPTION

Carburetor has three main parts; air horn, main body, and throttle body. Air horn houses choke valve, air valve for secondaries, fuel inlet system (two floats and needle valves), accelerating pump system, primary boost venturis, vacuum controlled step-up pistion and metering rods and low and high speed fuel metering system. Main body houses primary jets and is constructed of phenolic resin (for cooler fuel temperatures). Throttle body houses throttle valves and linkage, air valve dashpot and choke linkage. Air valve dashpot operates by manifold vacuum and is connected to secondary air valve. It functions to provide vacuum kick for secondary air valve restraint and unload choke when throttles are wide open. A curb idle solenoid is mounted on choke side of carburetor. This solenoid is used to maintain high idle speed when engine is running and allows throttles to close to slow speed position when key is turned off.

ADJUSTMENTS

Thermo-quad has unique features which require extra caution during all adjustments. Many carburetor components have at least two functions. Because of the separate nature of these functions, separate but interrelated adjustments are necessary and these adjustments must be performed in their proper sequence. Certain adjustments will be necessary only if the carburetor is being overhauled or has been disassembled and should be made off the car on a bench.

HOT (SLOW) IDLE RPM

See appropriate article in TUNE-UP Section.

COLD (FAST) IDLE RPM

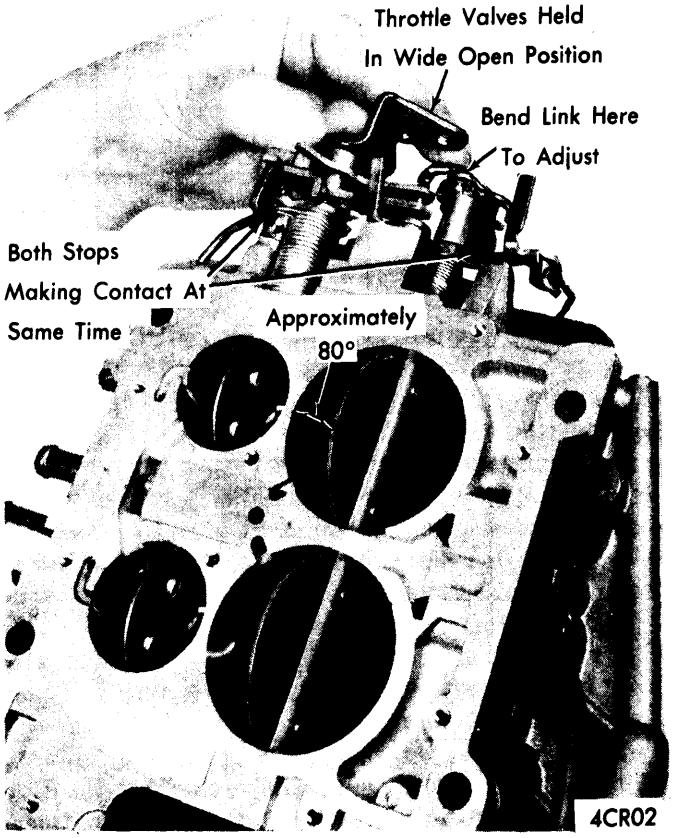
See appropriate article in TUNE-UP Section.

ACCELERATOR LINKAGE

See appropriate article in TUNE-UP Section.

SECONDARY THROTTLE LINKAGE

Block choke wide open, invert carburetor. Open primary throttle valves, until it is possible to measure specified distance between lower edge of primary valve and bore (opposite idle port). At this point, secondary throttle valves should just begin to open. If adjustment is necessary, use pliers and bend secondary throttle operating rod at angle.



CHECKING SECONDARY THROTTLE LINKAGE

International Harvester – With choke blocked open and tang on fast idle cam contacting primary wide open stop, invert carburetor. Open primary throttle valve wide open, at this point secondary throttle valve should be 9° less than vertical. If adjustment is necessary, use pliers and bend secondary throttle operating rod at angle.

METERING ROD ADJUSTMENT (INTERNATIONAL HARVESTER ONLY)

1) With throttle stop screwed out, throttle valves seated and choke valve wide open, insert screwdriver in slot of step-up piston actuating rod and press downward to bottom. Using scale in line with dimple, the dimension from top of carburetor to top of piston link (above dimple) should be to specifications.

2) Open throttle valves wide open and hold in this position. Check to be sure there is no binding between piston link and piston cover. If necessary to readjust, turn actuating rod counterclockwise to eliminate binding, with throttle valves wide open.

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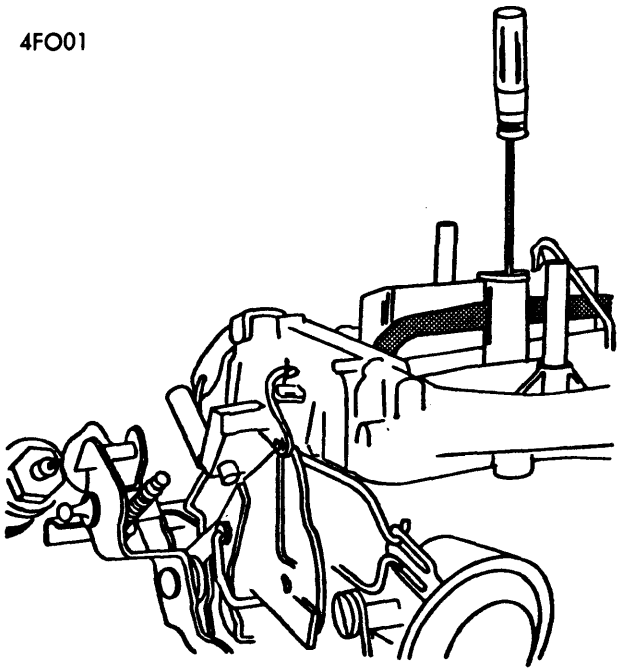
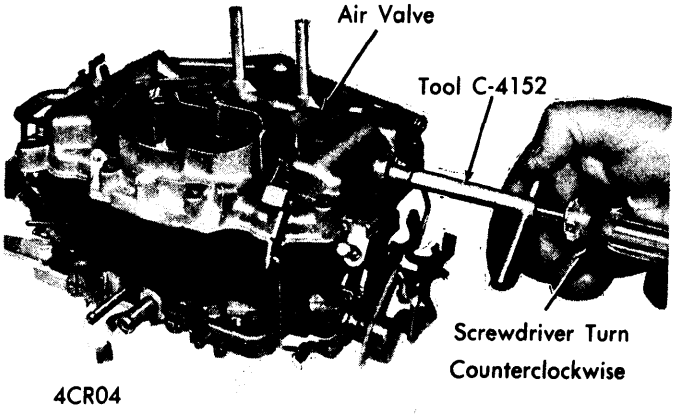


SECONDARY AIR VALVE SPRING TENSION

Using a suitable spanner wrench (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 an 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.



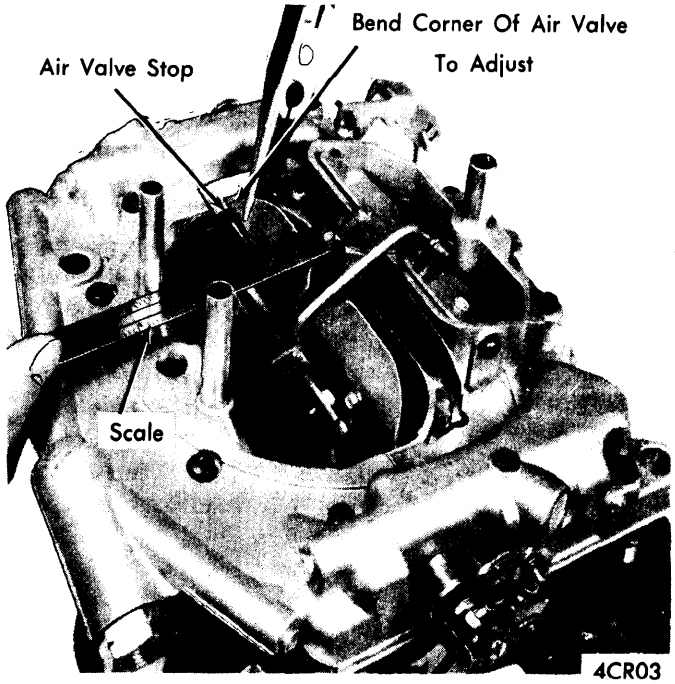
ADJUSTING AIR VALVE SPRING TENSION

METERING ROD ADJUSTMENT

SECONDARY AIR VALVE OPENING

1) With air valve in closed position, opening along air valve at long side should be at its maximum and parallel with air horn gasket surface.

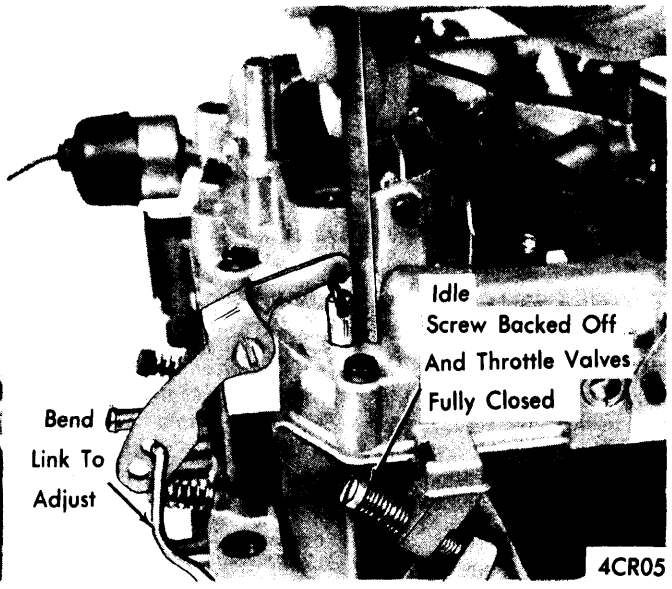
2) With air valve in open position, opening of air valve along its short side should be to specifications. Corner of air valve is notched for adjustment. Bend corner with pliers to provide proper opening.



ADJUSTING SECONDARY AIR VALVE OPENING

ACCELERATOR PUMP STROKE (PRIMARY)

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



CHECKING ACCELERATOR PUMP STROKE

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ACCELERATOR PUMP STROKE (SECONDARY)

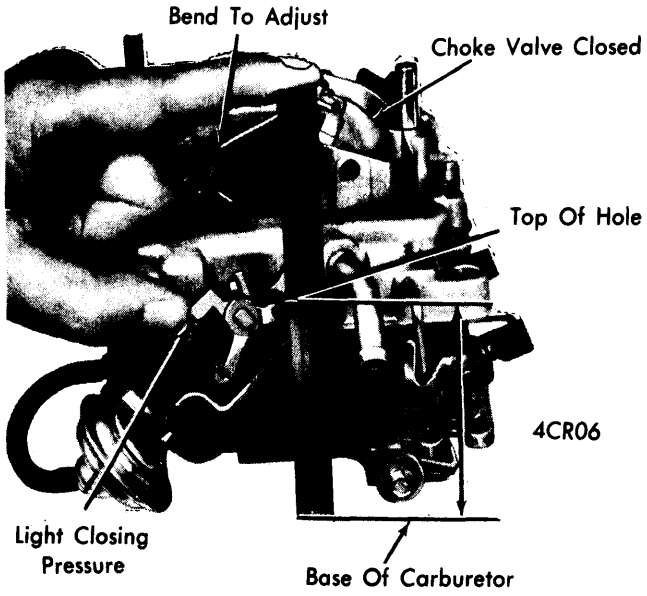
I.H. Only – With engine warm and choke wide open, curb idle solenoid energized and screw adjusted for proper RPM, move throttle lever just below secondary opening and measure accelerator pump from bottom of link to top of fuel bowl cover. Correct distance should be .120-.160". If adjustment is necessary, bend accelerator secondary pick-up tab.

CHOKE CONTROL LEVER (ON OR OFF VEHICLE)

NOTE – On 1973 Dodge, adjustment can only be performed on vehicle.

On Car – Disconnect choke rod and close choke by pushing on choke lever with throttle partly open. Measure vertical distance from top of rod hole, in choke control lever, down to clean choke surface. Scale should read 3 41/64". Adjust by bending link connecting two choke shafts.

Off Car – Place carburetor on flat object with surface flush against bottom of flange and extending out under choke control lever. Close choke by pushing on choke control lever with throttle partly open. Measure vertical distance from top of choke control rod hole down to flat surface (simulating carburetor base). Scale should read 3 3/8". Adjust by bending link connecting two choke shafts.

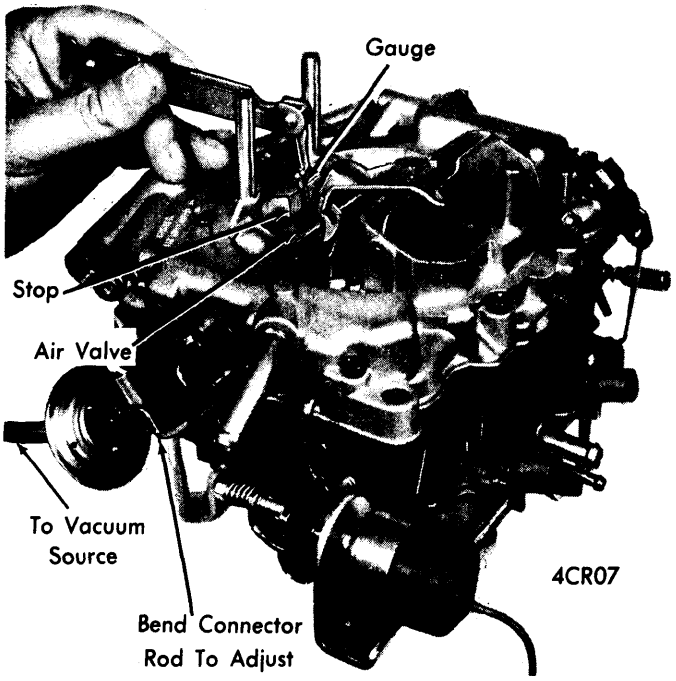


ADJUSTING CHOKE CONTROL LEVER

CHOKE DIAPHRAGM CONNECTOR ROD (SECONDARY AIR VALVE CONTROL)

NOTE – On International Harvester (California only), before performing air valve linkage adjustment on choke vacuum diaphragm, make sure there is .002-.020" clearance between choke diaphragm connector rod and slot in choke diaphragm. When measuring clearance, always close choke valve by applying light upward closing force to choke control lever.

Choke diaphragm must be fully retracted to adjust choke diaphragm connector rod. Use vehicle vacuum or auxiliary vacuum source of at least 15 in. Hg. With vacuum applied to choke diaphragm, adjust connector rod to give specified clearance.



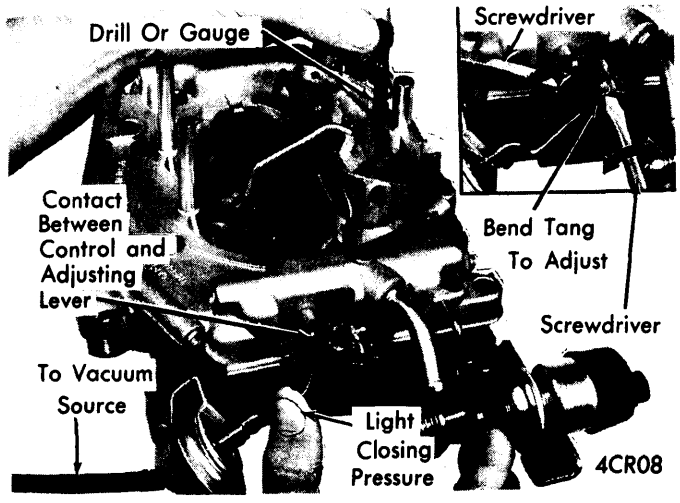
ADJUSTING CHOKE DIAPHRAGM CONNECTOR ROD (SECONDARY AIR VALVE)

VACUUM KICK ADJUSTMENT (ON OR OFF VEHICLE)

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

All Models (Off Vehicle) – 1) Open throttle valve and close choke. Hold choke closed while releasing throttle in order to trap fast idle cam in closed choke position.

2) 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).



ADJUSTING VACUUM KICK

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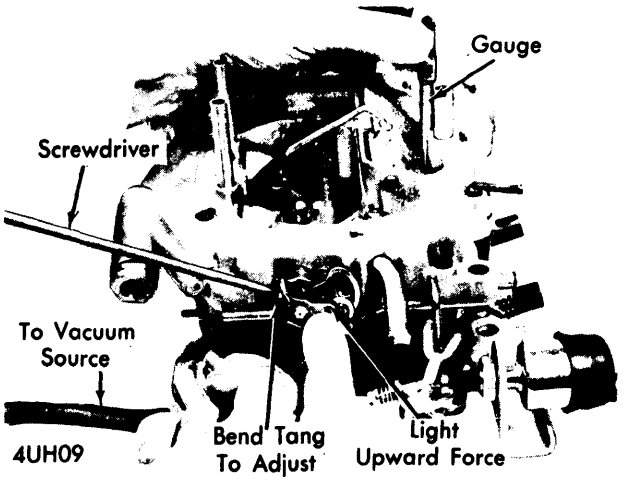
3) Insert specified drill or gauge between lower edge of choke valve and air horn. With choke control lever, close choke valve as far as possible without straining or distorting choke linkage (spring on control lever must be fully extended).

4) If slight drag is not felt as drill is withdrawn, bend tang as necessary. *NOTE — 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.*

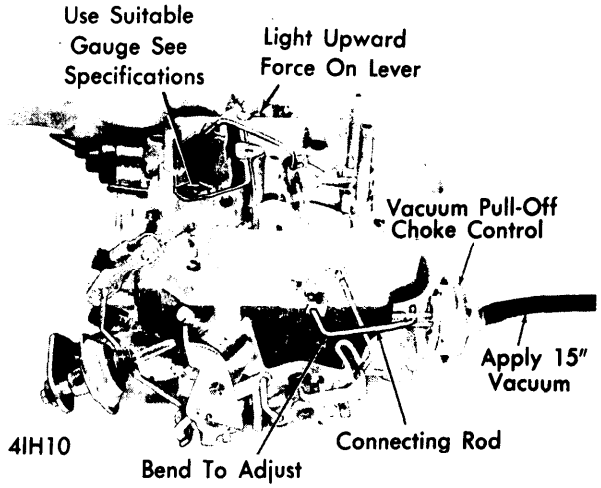
All Models (On Vehicle) — With engine running, back off fast idle speed screw until choke can be closed to the kick position at curb idle (note number of screw turns required so that fast idle can be returned to original adjustment). To complete checking and adjustment, follow procedures given in steps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

I.H. Only (All States) — With diaphragm fully retracted by 15 in. Hg and light upward closing force on choke control lever, make sure that fast idle screw is on top step of fast idle cam. Insert specified gauge between lower edge of choke valve and air horn wall. Correct clearance should be .250-.270". Adjustment will be necessary if slight drag is not felt as gauge is withdrawn. Adjust tang on lever to obtain specified clearance.



ADJUSTING VACUUM KICK (LOW BREAK)

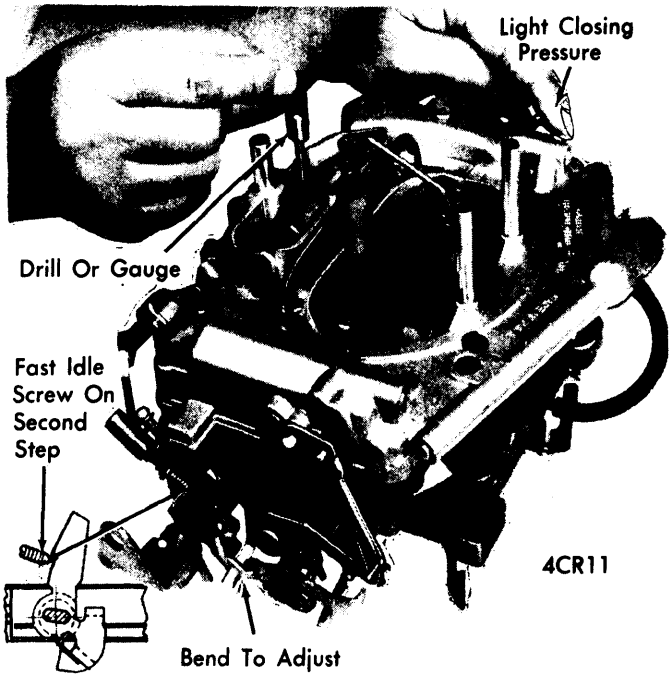
Checking Vacuum Pull-Off Control (I.H. California Only) — On carburetors utilizing vacuum pull-off choke, the unit should be set by applying light upward closing force on choke control lever. Diaphragm should be fully retracted by 15 in. Hg. Clearance between choke valve and air horn wall should be .840-.880". If proper clearance is not obtained, check clearance between choke vacuum diaphragm connector rod and slot in choke diaphragm (.002-.020").



ADJUSTING VACUUM PULL-OFF CONTROL

FAST IDLE CAM LINKAGE (ON OR OFF VEHICLE)

With fast idle speed adjusting screw contacting second highest step of fast idle cam, move choke valve toward closed position with light closing pressure on choke control lever. Insert specified gauge between choke valve and air horn wall. An adjustment will be necessary if slight drag is not felt as gauge is withdrawn. Bend fast idle connector rod at angle until correct valve opening is obtained.



ADJUSTING FAST IDLE CAM AND LINKAGE

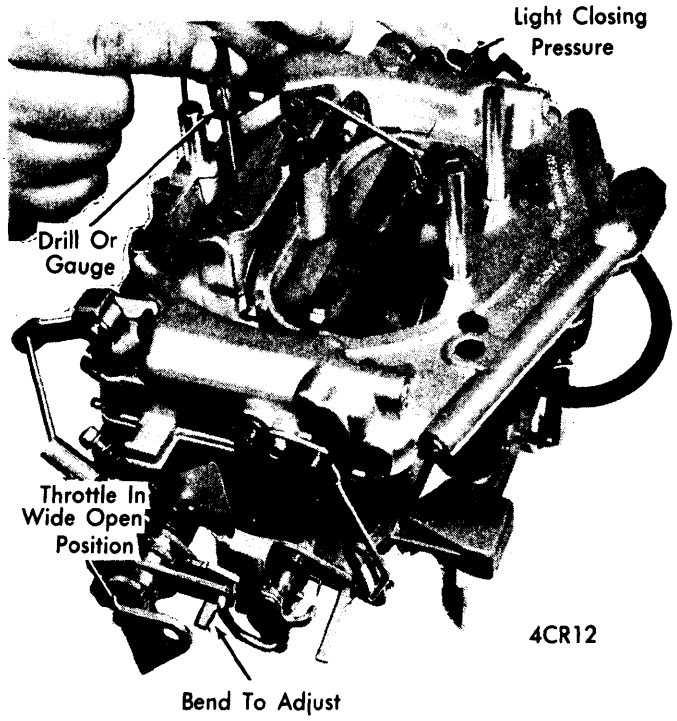
CHOKE UNLOADER

NOTE — On I.H. only, fast idle screw should be on top step of fast idle cam.

Hold throttle valves in wide open position. With specified gauge inserted between lower edge of choke valve and air

CARTER THERMO-QUAD 4-BARREL (Cont.)

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 if adjustment required.



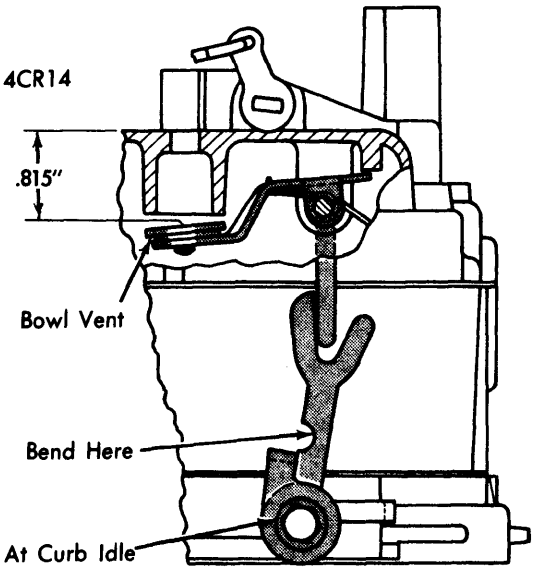
ADJUSTING CHOKE UNLOADER

SECONDARY THROTTLE LOCKOUT

NOTE — Adjustment is known as lock-in on International Harvester.

Secondary throttle operation is eliminated during choke cycle by use of a latch, which is triggered by fast idle system. Adjust as follows:

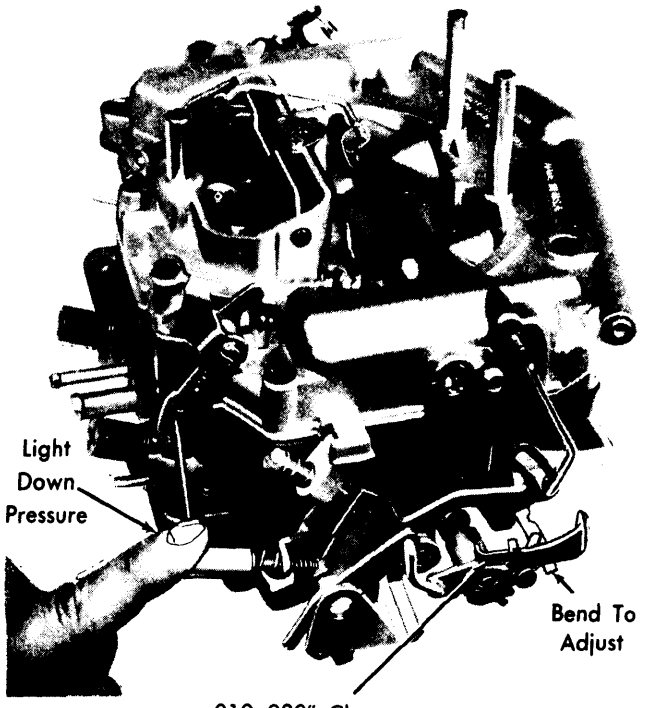
Open choke valve, using choke control lever. Measure clearance between lockout lever and stop. Bend tang on fast idle control lever if adjustment necessary.



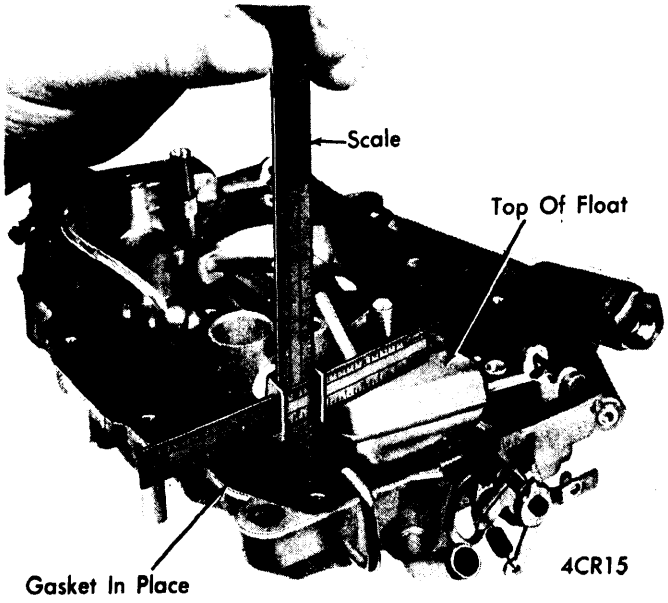
ADJUSTING BOWL VENT

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, bend bowl vent operating lever at point of notch on lever.



ADJUSTING SECONDARY THROTTLE LOCK-OUT



CHECKING FLOAT HEIGHT

CARTER THERMO-QUAD 4-BARREL (Cont.)

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 as required. *NOTE — Do not allow lip of float to press on needle while making adjustment.*

UNIVERSAL CARBURETOR ADJUSTMENTS

Application	Specification
Bowl Vent Valve	
Dodge (1973)	.815"
Dodge (1974)	.812"
I.H.	800-.830"
Choke Diaphragm Connector Rod	
Dodge	.040"
I.H.	.020-.060"
Secondary Air Valve Opening	
Dodge (1973)	15/32"
Dodge (1974)	1/2"
I.H.	31/64"
Secondary Air Valve Spring Tension	
Dodge & I.H.	①1¼ Turns
Secondary Throttle Lockout	
Dodge & I.H.	.060-.090"
Secondary Throttle Linkage	
Dodge & I.H.	②
Metering Rod	
I.H. (Only)	15/32 ± 1/32"

① — From Contact.
② — Adjust so that primary and secondary contact stops at same time.

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 ten screws, two ot 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.*

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 is grooved or ridged, a

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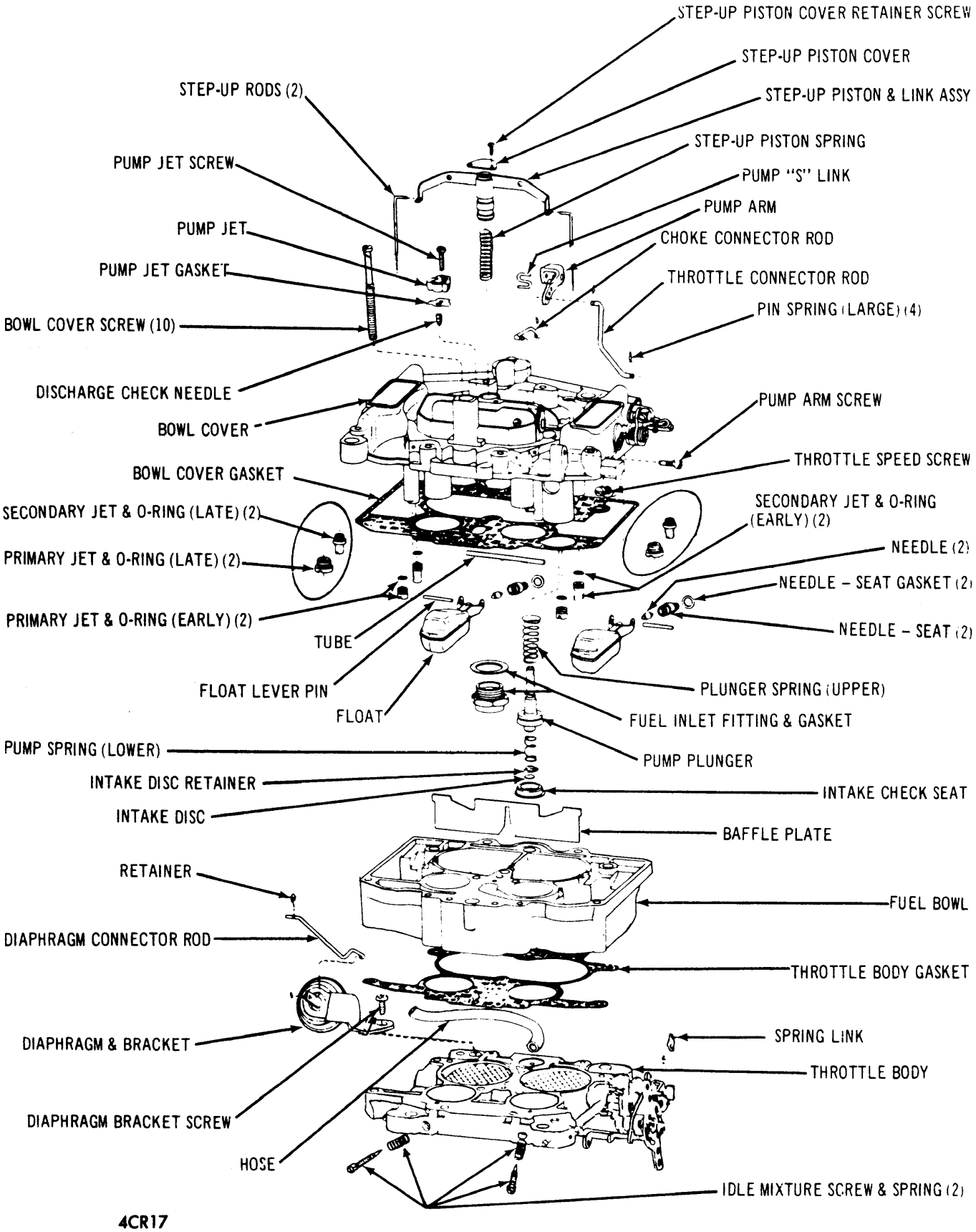

CARTER THERMO-QUAD CARBURETOR ASSEMBLY

CARTER THERMO-QUAD 4-BARREL (Cont.)

new screw must be installed. *NOTE — 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. *NOTE — 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.

CARBURETOR ADJUSTMENT SPECIFICATIONS

Carter Carb. No.	Idle Speed (Engine RPM)		Fast Idle Cam Position	Vacuum Kick ②	Accel. Pump Stroke③	Choke Unloader Setting	Float Setting ①	Auto. Choke
	Hot	Fast						
Dodge								
TQ-6446	700	1800	.110"	.160"	31/64"	.190"	①1"	Fixed
TQ-6518	700	1800	.110"	.160"	31/64"	.190"	①1"	Fixed
TQ-6545	700	1800	.100"	.160"	31/64"	.310"	①1"	Fixed
TQ-6546S	700	1800	.100"	.160"	31/64"	.310"	①1"	Fixed
TQ-9017S	700	1800	.100"	.160"	15/32"	.310"	①1"	Fixed
TQ-9022S	700	1800	.100"	.210"	35/64"	.310"	①1"	Fixed
TQ-9025S	700	1800	.100"	.160"	31/64"	.310"	①1"	Fixed
I.H.								
TQ-6550S	800±25	1575±25	.100"	.345"	.345"	.300"	1.06±.015"	1-Rich
TQ-6551S	700±25	1575±25	.100"	.345"	.345"	.300"	1.06±.015"	1-Rich
TQ-6590S	700±25	1575±25	.100"	.345"	.345"	.300"	1.06±.015"	1-Rich
TQ-6591S	800±25	1575±25	.100"	.345"	.345"	.300"	1.06±.015"	1-Rich
TQ-6592S	700±25	1575±25	.100"	.345"	.345"	.300"	1.06±.015"	1-Rich

① — Specifications given is for brass float. Specifications for cellular float is 29/32".
② — Specifications given is for "High Break" on International Harvester.
③ — Specifications given is for primary.