CARTER THERMO-QUAD 4-BARREL

CARBURETOR APPLICATION

CHRYSLER CORP.

Application	Chrysler Corp. Carb. No. Man. Trans.	Auto. Trans.
318" V8		
Federal		TQ-9279S
California	TQ-9296S	TQ-9254S, 9279S
360" V8		
Federal		
Without A/C	TQ-9299S	
With A/C	TQ-9298S	TQ-9265S
High Performance		TQ-9255S
Heavy Duty		TQ-9292S
California		
Light Duty	TQ-9252S	TQ-9251S
Heavy Duty	TQ-9261S, 9281S	TQ-9261S, 9281S

INTERNATIONAL HARVESTER

Application	IHC Carb. Number	Carter Carb. Number
345" V8		
Federal	1700004C91	TQ-9203S
California	1700009C91	TQ-9205S

CARBURETOR IDENTIFICATION

Carburetor identification number is stamped on left rear foot of throttle body on vertical surface near bolt hole.

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 piston 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.

All Thermo-Quad carburetors installed on vehicles equipped with an EGR system have a venturi vacuum port on the side of the carburetor. This is the only vacuum port located in the main body. All other vacuum pickup points are located in the throttle body.

ADJUSTMENT

Thermo-quad has unique features which require extra caution during all adjustments. Many of these 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 of these 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 SERVICE PROCEDURES*.

IDLE MIXTURE

See *appropriate article in TUNE-UP SERVICE PROCEDURES*.

COLD (FAST) IDLE RPM

See *appropriate article in TUNE-UP SERVICE PROCEDURES*.

FLOAT LEVEL

1) Turn air horn upside down. Place air horn gasket in position on air horn. Make sure floats are against seated needle valve. See *Fig. 1*.

2) Measure float level specified clearance from bottom side of float to gasket surface. To adjust, bend float lever.

CAUTION – *DO NOT allow lip of float lever to press against needle when adjusting. This will damage needle and cause carburetor flooding and incorrect float level.*

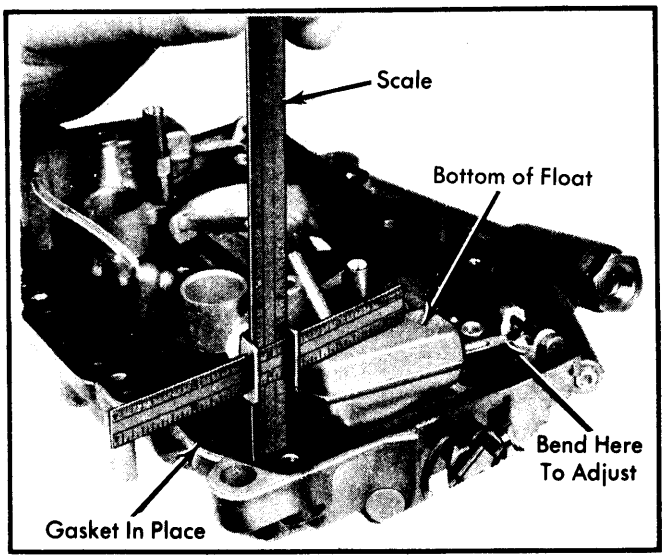

Fig. 1 Adjusting Float Level

SECONDARY THROTTLE LINKAGE

1) Hold fast idle lever in curb idle position. Turn carburetor upside down. Open throttle valves wide open. See *Fig. 2*.

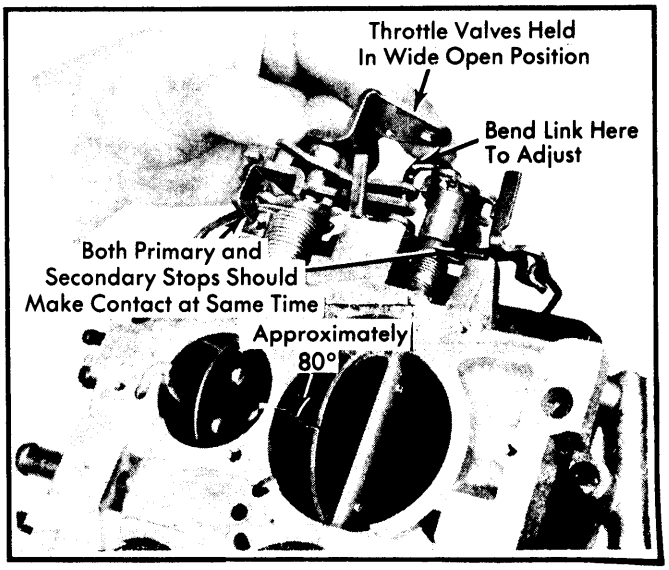

Fig. 2 Adjusting Secondary Throttle Linkage

CARTER THERMO-QUAD 4-BARREL (Cont.)

2) Primary and secondary levers should both contact stops at the same time. To adjust, bend secondary throttle operating rod at point shown in illustration.

NOTE — *Check linkage for interference and smooth movement after bending linkage rod.*

SECONDARY AIR VALVE ALIGNMENT

1) Observe carburetor from directly above. *See Fig. 3.*

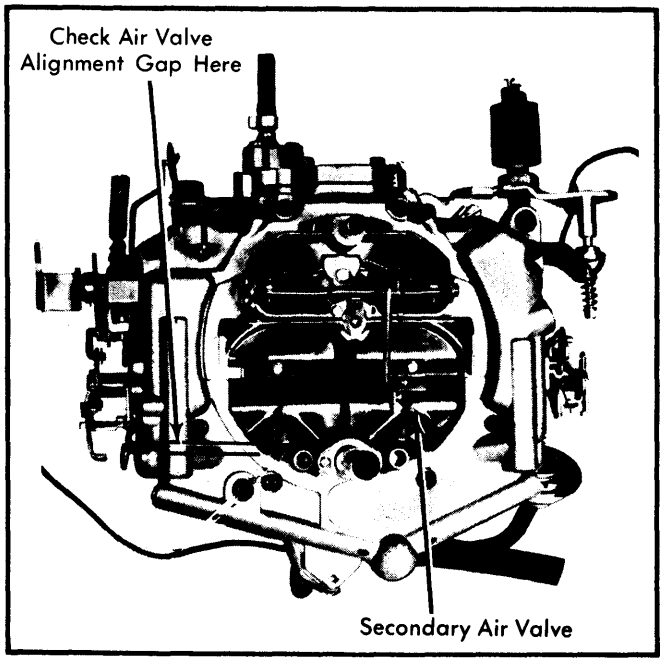

Fig. 3 Checking Secondary Air Valve Alignment

2) With air valve in closed position, gap between air valve and air horn wall must be at its maximum and parallel with air horn gasket.

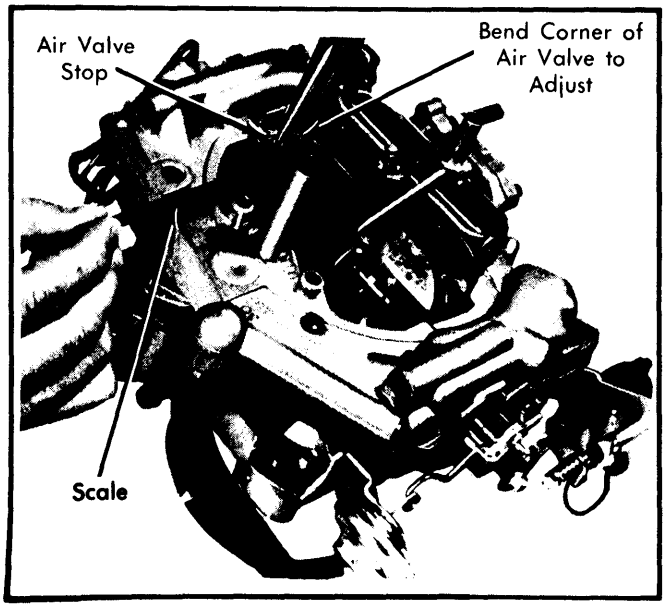

Fig. 4 Adjusting Air Valve Gap

SECONDARY AIR VALVE OPENING

1) Hold secondary air valve wide open. Measure specified gap between raised edge (short side) of air valve and air horn wall. *See Fig. 4.*

2) To adjust, bend short side of air valve with pliers until specified gap is obtained. Corner of air valve is notched to aid in adjustment.

SECONDARY AIR VALVE SPRING TENSION

CAUTION — *When performing this adjustment, hold air valve adjustment plug with screwdriver when loosening lock plug. If not, spring may snap out of position. This would require taking the carburetor apart to get the spring out.*

1) Loosen air valve lock plug. Turn air valve adjustment plug clockwise. This allows air valve to move to wide open position. *See Fig. 5.*

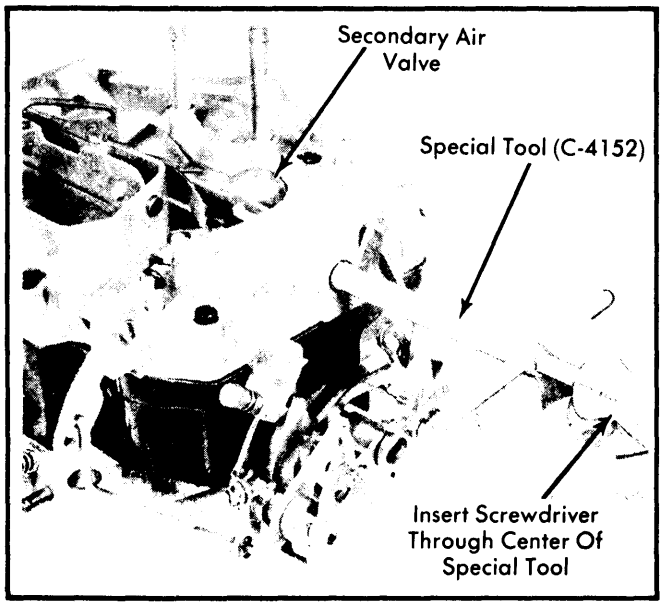

Fig. 5 Adjusting Secondary Air Valve Spring Tension

2) Insert a long slender screwdriver through center of special air valve spring adjustment tool (C-4152).

3) With special tool positioned on air valve lock plug, turn adjustment plug counterclockwise until air valve lightly touches stop.

4) Lightly press air valve against stop with finger. Now turn adjustment plug additional amount of specified turn(s) counterclockwise. Hold adjustment plug with screwdriver and tighten lock plug with special tool.

CHOKE CONTROL LEVER

NOTE — *If choke control lever adjustment is changed, vacuum kick, fast idle cam position and choke unloader adjustments must also be reset.*

CARTER THERMO-QUAD 4-BARREL (Cont.)

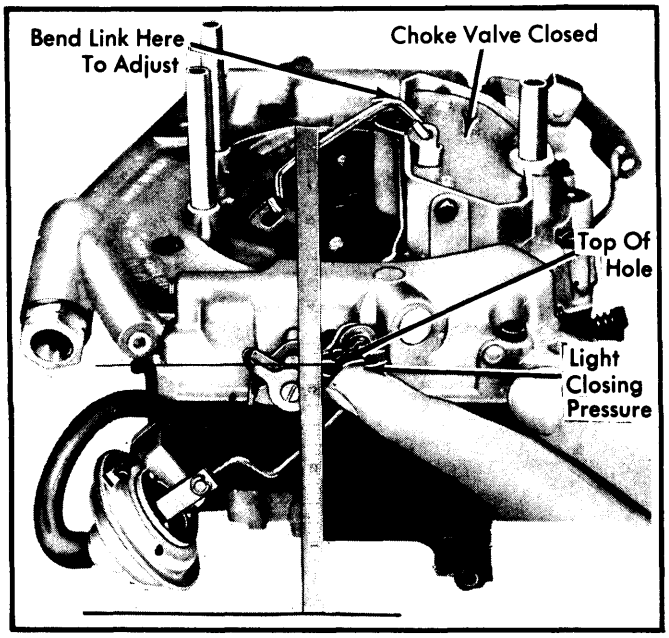

Fig. 6 Adjusting Choke Control Lever

1) Place carburetor on a flat surface. Make sure bottom of throttle body is flush with flat surface and that flat surface extends out under choke control lever. See *Fig. 6*.

2) Push on choke lever (with throttle partly open) to close choke.

3) Measure vertical distance from top of rod hole in control lever to flat surface.

4) If measurement is not to specification, adjust by bending rod connecting both choke shafts.

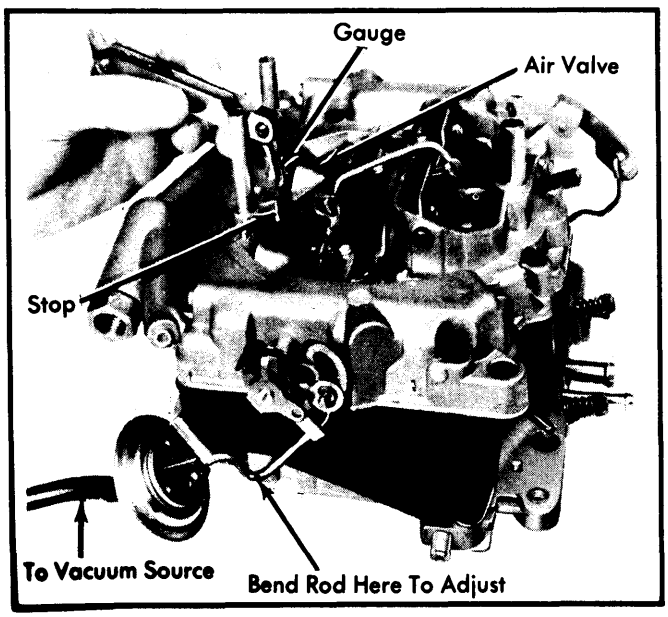

Fig. 7 Adjusting Choke Diaphragm Connector Rod

CHOKE DIAPHRAGM CONNECTOR ROD

NOTE – *If choke diaphragm connector rod adjustment is changed, vacuum kick adjustment must also be reset. On IHC models, make sure there is .002-.020" clearance between slot in the Vacuum Pull Off Diaphragm link and connecting rod before adjusting choke connector rod.*

1) Make sure diaphragm is securely mounted to carburetor. Using an outside vacuum source, apply at least 15 in. Hg of vacuum to diaphragm. Make sure diaphragm stem is fully seated. See *Fig. 7*.

2) Apply light opening (downward pressure) on secondary air valve. Measure specified clearance between air valve and stop. To adjust, bend connector rod at point shown.

CHOKE VACUUM KICK

Chrysler Corp. – 1) Open throttle and close choke. Now close throttle to trap fast idle cam at closed choke position. See *Fig. 8*.

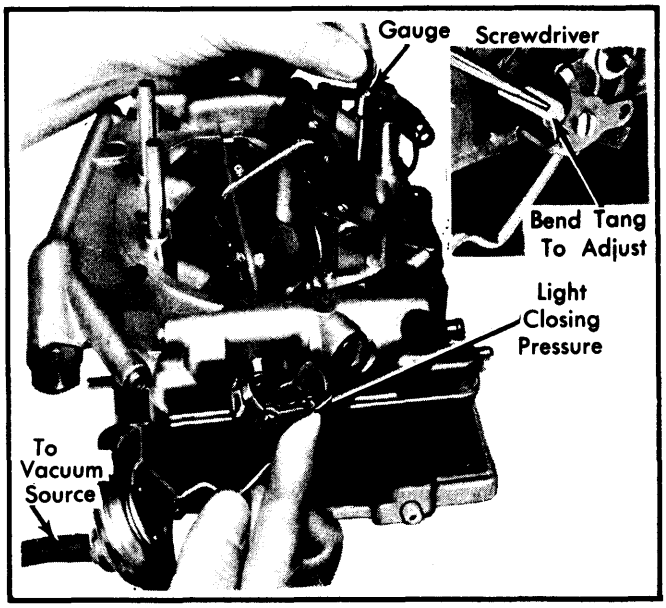

Fig. 8 Adjusting Choke Vacuum Kick (Chrysler Corp. Models)

2) Apply an outside vacuum source of at least 15 in. Hg to choke diaphragm. Apply enough closing force on choke control lever to move vacuum kick adjustment tang against stop without distorting linkage.

NOTE – *If torsion spring is weak it will easily be deflected. For correct adjustment, vacuum kick adjustment tang must be at top.*

3) Measure choke vacuum kick specified clearance between lower edge of choke valve and air horn wall at throttle lever side. Measurement can be checked using a specified drill or pin gauge.

NOTE – *Make sure clearance does not change as drill or pin gauge is inserted or removed.*

CARTER THERMO-QUAD 4-BARREL (Cont.)

4) To adjust, insert screwdriver in slot in vacuum kick tang and twist. Do not adjust diaphragm rod. Check all linkage for freedom of movement. Reconnect vacuum hose to diaphragm.

International Harvester – On International Harvester models, both a High Vacuum Kick and a Low Vacuum Kick adjustments are performed. Proceed as follows:

- **High Vacuum Kick**

1) Open throttle valves and close choke valve. Now release throttle before releasing choke. This will trap fast idle cam in closed choke position.

2) Apply an outside vacuum source of at least 15 in. Hg to choke diaphragm. Attach a small clamp to choke levers. Apply a light upward force to choke control lever. See *Fig. 9*.

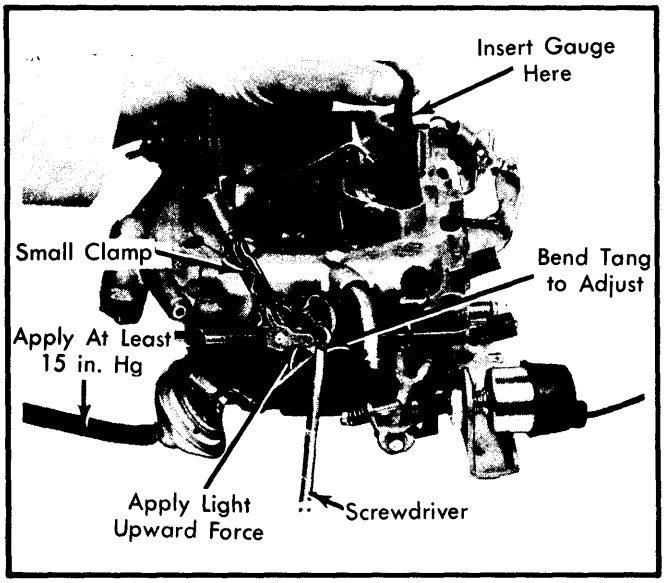

Fig. 9 Adjusting Choke High Vacuum Kick (International Harvester Models)

3) Measure high vacuum kick specified clearance between lower edge of choke valve and air horn wall. Specified clearance is .450".

4) If clearance is not to specifications, adjust choke lever tang as shown in illustration.

- **Low Vacuum Kick**

1) Remove clamp installed in High Vacuum Kick adjustment. Make sure at least 15 in. Hg is still applied to diaphragm. Apply light upward force to choke control lever to make sure fast idle speed screw is on top step of cam. See *Fig. 10*.

2) Measure low vacuum kick specified clearance between lower edge of choke valve and air horn wall. Specified clearance is .245".

3) If clearance is not to specification, bend tang on end of choke lever as shown in illustration.

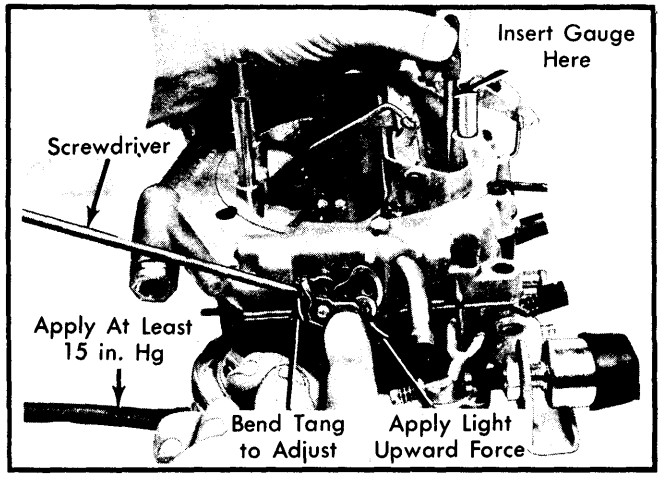

Fig. 10 Adjusting Choke Low Vacuum Kick (International Harvester Models)

CHOKE VACUUM PULL OFF CONTROL (INTERNATIONAL HARVESTER ONLY)

1) Apply an outside vacuum source of at least 15 in. Hg to choke vacuum pull off diaphragm. Apply a light upward force on choke lever. See *Fig. 11*.

2) Measure choke vacuum pull off specified clearance between lower edge of choke valve and air horn wall. Specified clearance is .860".

3) If clearance is not to specifications, bend choke vacuum pull off diaphragm rod at point shown in illustration.

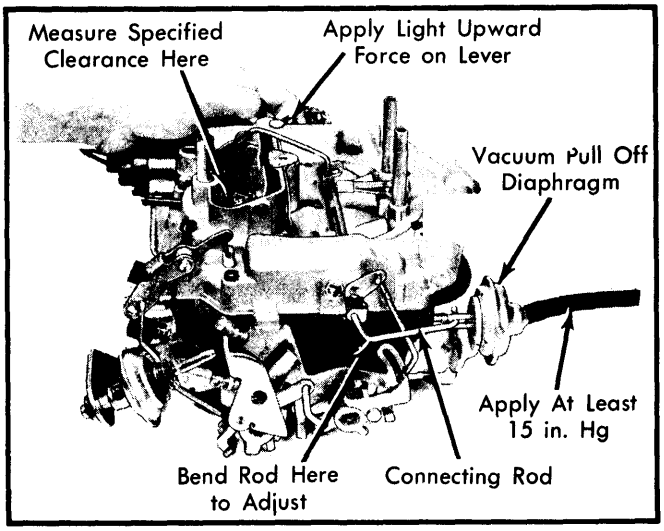

Fig. 11 Adjusting Choke Vacuum Pull Off Control (International Harvester Only)

FAST IDLE CAM POSITION

NOTE – *If fast idle cam position adjustment is changed, choke unloader and secondary throttle lockout adjustments must also be reset.*

CARTER THERMO-QUAD 4-BARREL (Cont.)

1) Position fast idle speed screw on second step of fast idle cam. Close choke valve by applying light closing pressure on fast idle cam lever. See *Fig. 12.*

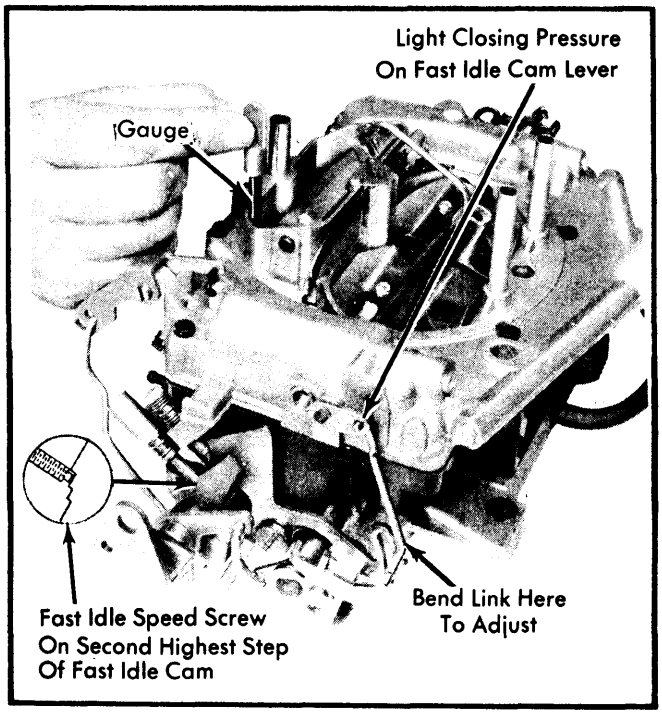

Fig. 12 Adjusting Fast Idle Cam Position

2) Measure fast idle cam specified clearance between lower edge of choke valve and air horn wall. Measurement can be checked using a specified drill or pin gauge.

NOTE – *Make sure clearance does not change as drill or pin gauge is inserted or removed.*

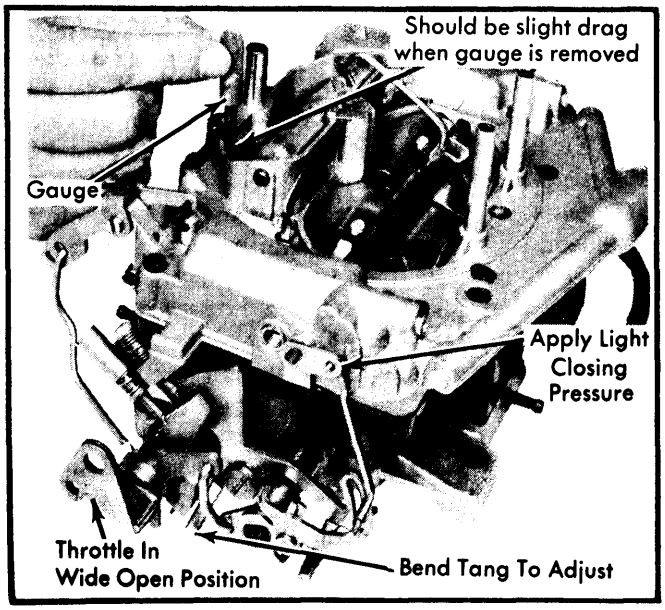

Fig. 13 Adjusting Choke Unloader

3) To adjust, bend fast idle cam connector rod at point shown until specified clearance is obtained.

CHOKE UNLOADER

1) Open throttle valves wide open. Apply light closing pressure on fast idle cam lever to close choke valve. See *Fig. 13.*

2) Measure specified clearance between lower edge of choke valve and air horn wall. Measurement can be checked using a specified drill or pin gauge.

NOTE – *Make sure clearance does not change as drill or pin gauge is inserted or removed.*

3) To adjust, bend tang on fast idle lever until specified clearance is obtained.

SECONDARY THROTTLE LOCKOUT

1) Move fast idle control lever to wide open choke position. Measure specified clearance between lockout lever and stop. Clearance can be checked using a specified drill or pin gauge. See *Fig. 14.*

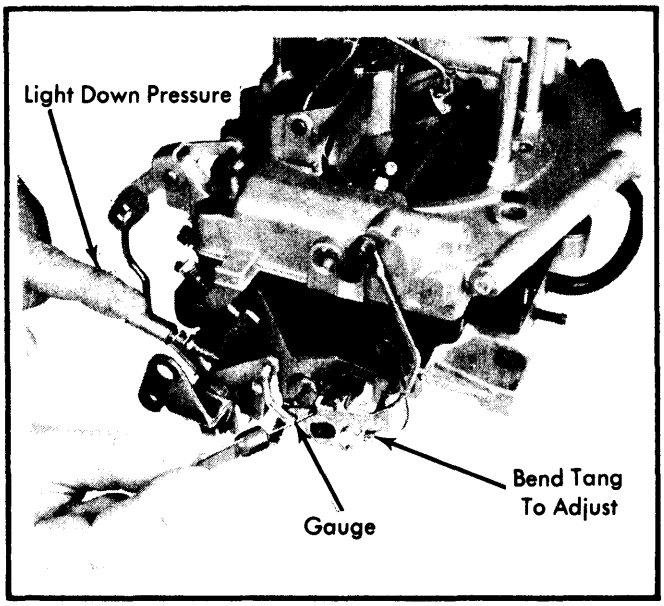

Fig. 14 Adjusting Secondary Throttle Lockout

2) To adjust, bend tang on lower end of fast idle control lever until specified clearance is obtained.

ACCELERATOR PUMP STROKE

NOTE – *Accelerator pump stroke is determined by measurement of accelerator pump plunger height above air horn surface AT CURB IDLE. Thermo-Quad carburetors with staged pump systems require a second height measurement at a throttle position related to the secondary throttle lockout*

CARTER THERMO-QUAD 4-BARREL (Cont.)

First Stage – 1) Be sure throttle connector rod is in correct hole of 3-hole pump arm (or 2-hole pump arm). See *Fig. 15.*

2) Use scale to measure height of accelerator pump plunger with linkage at curb idle position.

3) If adjustment is needed, bend throttle connector rod at angled area.

Second Stage – 1) This adjustment is for staged accelerator pump systems only. Carburetors so equipped are specified in the Specification Table. See *Fig. 15.*

2) Manually open choke.

3) Open throttle until secondary lockout latch is JUST BARELY applied.

NOTE – *Pump plunger travel stops at this point.*

4) Measure accelerator pump plunger height with scale. Refer to specifications.

5) If adjustment is needed, bend tang as shown.

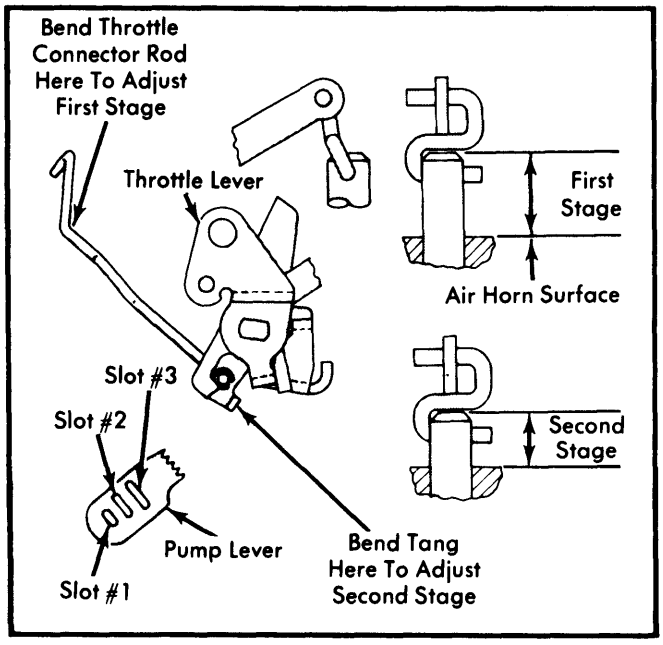

Fig. 15 Adjusting Accelerator Pump Stroke (First and Second Stage)

METERING RODS (INTERNATIONAL HARVESTER ONLY)

1) Back throttle stop screw out completely to make sure throttle valves are fully closed. Open choke valve wide open. Insert a small screwdriver in slot of step-up piston and press piston down to stop. See *Fig. 16.*

2) Position a scale as shown in illustration with edge of scale in line with dimple in metering rod arm. Measure metering rod specified distance from top of carburetor to top of piston link.

3) Specified distance is $^{15}/_{32}$". If clearance is not to specification turn adjustment screw with screwdriver until specified distance is obtained.

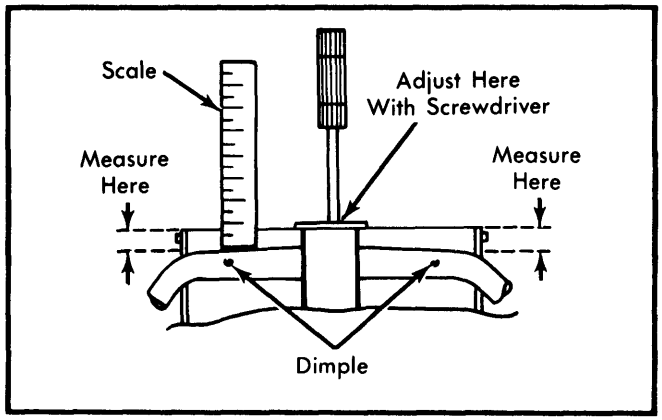

Fig. 16 Adjusting Metering Rods (International Harvester Only)

AUTOMATIC CHOKE (INTERNATIONAL HARVESTER ONLY)

1) Disconnect choke rod from choke shaft lever. Remove cover from choke thermostatic coil housing. See *Fig. 17.*

2) Open throttle and hold choke valve closed by pushing up on choke lever. Close throttle. Allow choke thermostatic spring to assume its free position. Lightly hold upper end of choke rod against choke shaft lever.

3) Measure specified distance from top of hole in choke shaft lever to top of choke rod. Specified distance is .250".

4) If distance is not to specification, adjust by loosening lock nut on thermostatic spring choke shaft. Adjust screw to obtain specified distance. Tighten lock nut.

5) Install choke cover. Reconnect choke rod to choke shaft lever.

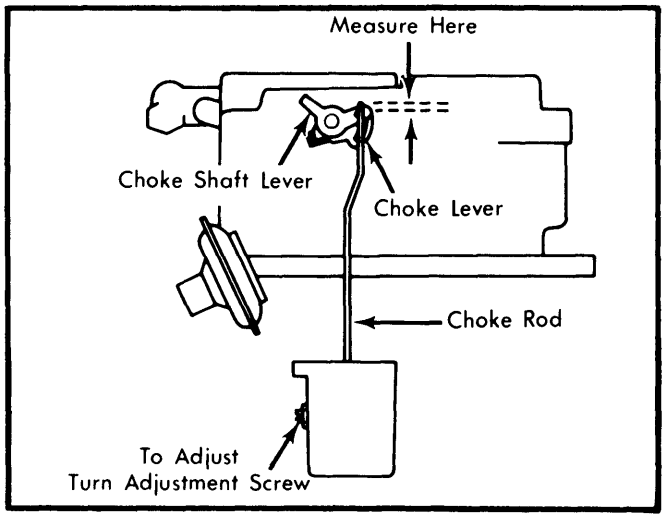

Fig. 17 Adjusting Automatic Choke (International Harvester Models)

CARTER THERMO-QUAD 4-BARREL (Cont.)

SOLENOID BOWL VENT VALVE TEST (CHRYSLER CORP. MODELS ONLY)

1) Remove air cleaner assembly.

2) Disconnect hose to solenoid bowl vent diaphragm.

3) Connect outside vacuum source and apply at least 15 in. Hg to diaphragm.

4) Look down through air horn vent tube and observe valve movement.

5) Turn ignition switch ON.

6) Remove outside vacuum source from diaphragm. Valve should remain in down position until ignition switch is turned OFF.

7) If valve does not move with applied vacuum, diaphragm is leaking and must be replaced.

8) If valve does not remain in down position when ignition switch is turned ON and vacuum source is removed, solenoid or its related wiring is faulty.

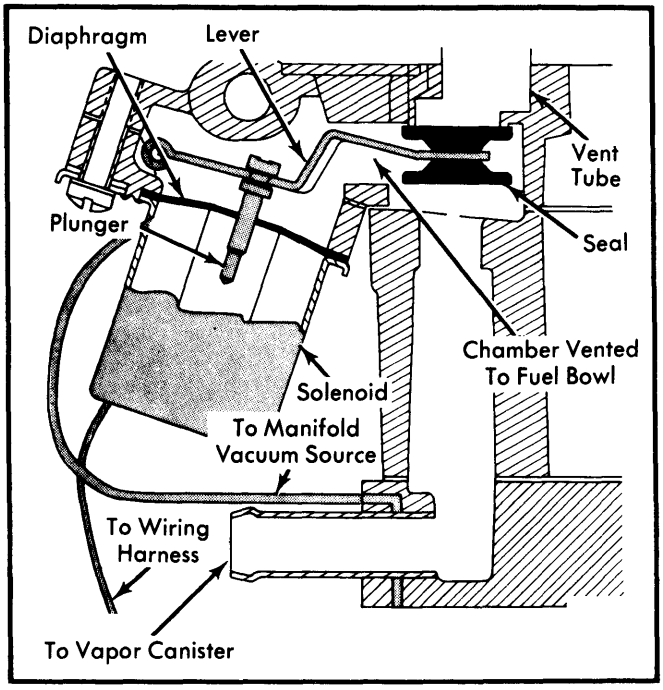

Fig. 18 Cutaway View of Solenoid Vent Valve for Checking Vent Valve Operation

MECHANICAL BOWL VENT VALVE (INTERNATIONAL HARVESTER MODELS ONLY)

1) Make sure curb idle speed is adjusted first. Remove the idle vent plug from the top of the fuel bowl. *See Fig. 19.*

2) Using a scale, measure bowl vent valve specified clearance from top of fuel bowl cover casting to bowl vent valve.

3) Specified clearance is .815". To adjust, bend operating lever. Install plug in fuel bowl cover.

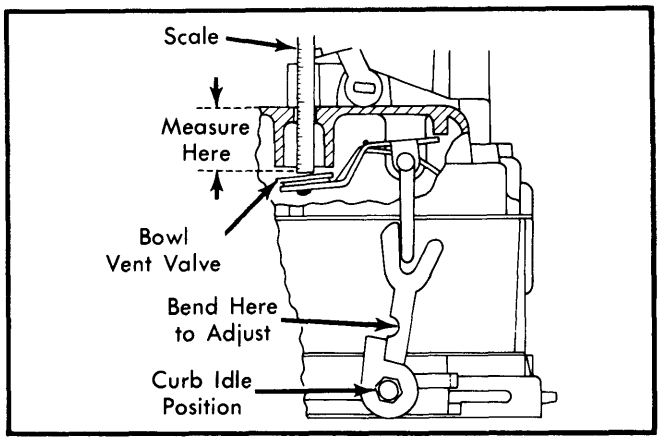

Fig. 19 Adjusting Mechanical Bowl Vent Valve (International Harvester Models Only)

IDLE ENRICHMENT VALVE TEST (CHRYSLER CORP. MODELS ONLY)

1) Start engine and warm to normal operating temperature.

2) Turn engine OFF and remove air cleaner.

3) Install jumper wire from carburetor idle stop switch to ground.

4) Connect tachometer to engine.

5) Disconnect hose to idle enrichment system diaphragm at plastic connector.

NOTE – *Remove connector from carburetor hose before proceeding.*

6) Start engine.

7) Place fast idle speed screw on setting (slowest speed) step of fast idle cam.

8) Attach outside vacuum source to enrichment diaphragm with 3 or 4 feet of hose.

9) Apply at least 15 in. Hg and note any engine RPM change.

10) If speed can be controlled by vacuum, system is working properly.

11) If not, block inlet air passage and note engine RPM change. If speed can be controlled in this manner, diaphragm is leaking and/or air valve is stuck open.

12) If speed cannot be controlled, air valve is stuck closed.

13) Clean air valve and repeat steps **9)** and **10)**.

14) If speed cannot be controlled, replace the enrichment diaphragm.

CARTER THERMO-QUAD 4-BARREL (Cont.)

OVERHAUL

DISASSEMBLY

1) Place carburetor on a suitable repair stand. Remove altitude compensator, if equipped.

2) Remove idle enrichment vacuum diaphragm assembly. Remove throttle connector rod from accelerator pump arm and throttle lever.

3) Remove accelerator pump arm screw, disengage pump arm from "S" link and remove pump arm. Leave "S" link connected to pump rod.

4) Remove retainers and washers holding choke diaphragm connecter rod to vacuum diaphragm and air valve lever. Remove retainer holding rod to choke countershaft.

5) Remove step-up piston cover plate and metering rod cover plates. Remove step-up piston and link assembly with step-up rods. Remove step-up piston spring.

6) Remove discharge pump nozzle housing and gasket. Invert carburetor and remove discharge check needle. Needle should drop out when carburetor is inverted.

7) Remove 10 air horn (bowl cover) screws. Two of these screws are located between choke valve and air horn wall. Remove air horn with floats. Remove float bowl from throttle body.

Bowl Cover Disassembly – 1) Remove float lever pins and lift out float assembly.

NOTE – *Mark floats so they can be installed in original locations.*

2) Remove 2 needle valves from seats, marking them for reassembly location.

3) Remove needle valve seats (use wide blade screwdriver).

NOTE – *Be sure to match original needle to its seat for reassembly.*

4) Remove secondary metering jets.

5) Remove plastic accelerator pump passage tube.

6) Remove bowl cover gasket.

7) Remove pump rod "S" link.

8) Carefully remove accelerator pump plunger assembly. Care must be taken not to damage plunger shaft hole in cover. Catch intake check seat, plunger and spring.

NOTE – *Always install a new check seat and plunger when carburetor is reassembled.*

9) Remove "L" shaped fuel inlet hose. Remove inlet fitting and gasket. Remove solenoid bowl vent valve assembly.

Throttle Body Disassembly – 1) Remove step-up actuating lever.

2) Remove choke diaphragm and bracket assembly with hose. Do not place this assembly in carburetor cleaning solvent.

NOTE – *The carburetor vacuum fitting contains a small vacuum passage restriction. Clean with compressed air only.*

3) Remove (carefully) idle limiter caps.

4) Remove idle mixture screws and springs.

CAUTION – *Manufacturer does not recommend removal of throttle shafts or valves unless absolutely necessary. These parts are precisely adjusted at factory. The slightest misalignment upon reassembly would adversely affect carburetor operation between curb idle and about 30 mph.*

Main Body Disassembly – 1) Remove primary "O" ring seals and discard.

2) Remove primary metering jets.

3) It is not necessary to remove baffle plate from main body.

CAUTION – *No further disassembly is recommended. Do not leave main body in carburetor solvent for a prolonged period of time.*

CLEANING & INSPECTION

- Do not soak choke diaphragm or plastic parts in solvent. Do not leave main body in solvent for too long a time.
- Rinse parts with HOT water after using solvent. Blow dry with compressed air.
- Do not use wire, drill or any hard parts to clean passages.
- Be sure gasket holes match up and all parts are clean and ready for installation.

REASSEMBLY

To reassemble carburetor, reverse disassembly procedures, using new gaskets and seals. Make sure gaskets fit correctly and that all holes are punched through and correctly located. Also, note the following:

1) Install pump discharge check needle with point toward base of carburetor.

2) Install upper pump plunger spring in cylinder with large end first. Lubricate and install plunger, pushing stem through hole in casting. Install "S" link with lower open end toward choke valve. Install pump arm and screw before installing pump intake check valve assembly.

3) When installing bowl cover, be sure bowl vent operating lever engages bowl vent actuating fork. Install 10 bowl cover screws and tighten, in steps, to 35 INCH lbs.

CARTER THERMO-QUAD 4-BARREL (Cont.)

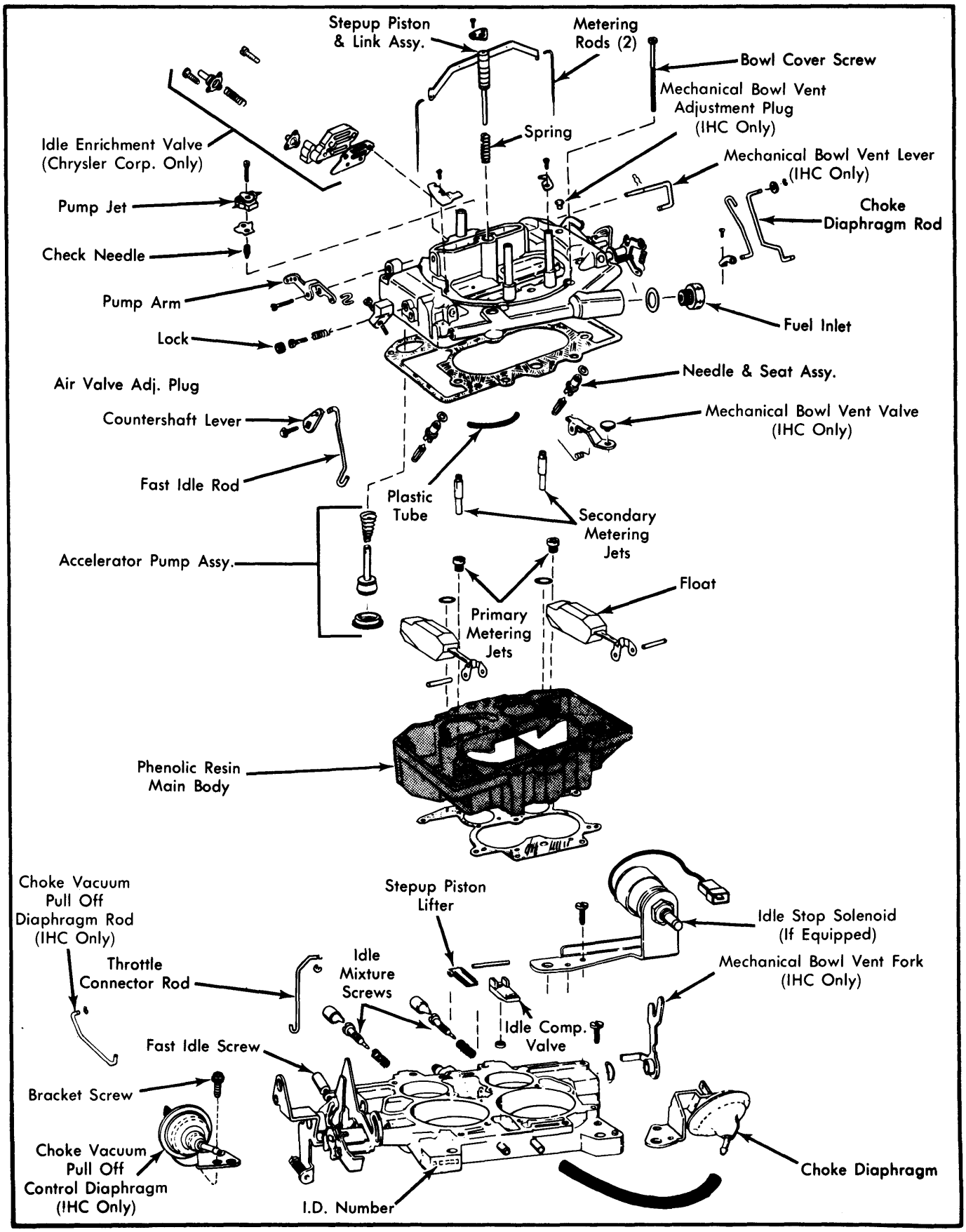

Fig. 20 Exploded View of Carter Thermo-Quad 4-Barrel Carburetor

1980 Carter Carburetors

CARTER THERMO-QUAD 4-BARREL (Cont.)

CARBURETOR ADJUSTMENT SPECIFICATIONS

Application	Float Level Setting	Secondary Air Valve		Choke Lever Setting	Choke Diaphragm Rod Setting	Choke Vacuum Kick	Fast Idle Cam Setting	Choke Unloader Setting	Secondary Throttle Lockout	Accelerator Pump		
		Opening Setting	Spring Tension①							Hole Setting	1st Stage Setting	2nd Stage Setting
Chrysler Corp.												
TQ-9251S	29/32″	7/16″	2	3-3/8″	.040″	.150″	.120″	.310″	.075″	②	.340″	.190″
TQ-9252S	29/32″	7/16″	2	3-3/8″	.040″	.150″	.120″	310″	.075″	②	.340″	.190″
TQ-9254S	29/32″	7/16″	2	3-3/8″	.040″	.150″	.100″	.310″	.075″	②	.340″	.190″
TQ-9255S	29/32″	3/8″	2	3-5/16″	.040″	.120″	.100″	.310″	.075″	②	.340″	.190″
TQ-9261S	29/32″	7/16″	2	3-3/8″	.040″	.130″	.130″	.310″	.075″	②	.340″	.190″
TQ-9265S	29/32″	7/16″	2	3-3/8″	.040″	.150″	.100″	.310″	.075″	②	.340″	.140″
TQ-9279S	29/32″	3/8″	2	3-3/8″	.040″	.130″	.130″	.310″	.075″	②	.340″	.190″
TQ-9281S	29/32″	3/8″	2	3-3/8″	.040″	.180″	.130″	.310″	.075″	②	.340″	.190″
TQ-9292S	29/32″	7/16″	2	3-3/8″	.040″	.130″	.130″	.310″	.075″	②	.340″	.190″
TQ-9296S	29/32″	3/8″	2	3-3/8″	.040″	.110″	.100″	.310″	.075″	②	.340″	.140″
TQ-9298S	29/32″	7/16″	2	3-3/8″	.040″	.150″	.100″	.310″	.075″	②	.340″	.140″
TQ-9299S	29/32″	7/32″	2	3-3/8″	.040″	.150″	.100″	.310″	.075″	②	.340″	.140″
IHC												
TQ-9203S	29/32″	1/2″	1 1/2	3-3/8″	.040″	③	.099″	.300″	.075″	②	.343″	.140″
TQ-9205S	29/32″	1/2″	1 1/2	3-3/8″	.040″	③	.099″	.300″	.075″	②	.343″	.140″

① – Specification is amount of turns clockwise.
② – Place rod in center hole on 3 hole levers and in inner hole on 2 hole levers.
③ – See adjustment procedure.