CARTER BBD 2-BARREL

CARBURETOR APPLICATION

JEEP

Application	Jeep Code No. Man. Trans.	Auto. Trans.
4.2L (258")		
Federal	BBD-8309	BBD-8308
	BBD-8312	BBD-8312
California	BBD-8303	BBD-8302
	BBD-8307	BBD-8306
High Altitude	BBD-8311	BBD-8302

CARBURETOR IDENTIFICATION

Carter Carburetors are identified by a code number and build date. Both numbers are stamped on a tag attached to carburetor by an air horn screw. Each carburetor build month is coded alphabetically beginning with letter "A" (for January), and ending with "M" (for December). Letter "I" is not used. Second number on tag is year in which carburetor was built, and third and fourth are for build day. There may be a revision letter following build day numbers if needed.

DESCRIPTION

The Carter carburetor model BBD is a 2-barrel downdraft type. The carburetor incorporates three basic metering systems: The Float (Fuel Inlet) system; Idle (Low Speed) system; and the Main (High Speed) system. Accelerator pump system provides additional fuel for acceleration. It is important that the fuel inlet system maintains the correct fuel level in the float bowl as the fuel metering system is calibrated to deliver the proper mixture only at this level.

In addition to the fuel systems, the carburetor uses an automatic choke and choke diaphragm which temporarily richens the mixture while starting, but also prevents overchoking. On all models, choke is assisted by an electric heating element. This provides for shorter choke duration during warm weather. Choke diaphragm prevents overchoking by opening choke valve when engine is being cranked.

Vehicles built for California are equipped with an electronically controlled stepper motor which controls air flow through metered air bleeds located in each main fuel metering circuit. Stepper motor is activated through an on-board computer. Computer receives information from various sensors located on engine and in exhaust system. Computer then signals stepper motor to retract metering rods from air bleeds (lean) or extend metering rods farther into air bleeds (rich).

All Jeep vehicles use a vacuum and electrically operated solenoid called a solevac. It is used to keep engine idle constant when load is placed on engine, such as air conditioning or rear window defroster.

ADJUSTMENTS

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.

DASHPOT (MAN. TRANS.)

See appropriate article in TUNE-UP SERVICE PROCEDURES.

VACUUM THROTTLE POSITIONER

See appropriate article in TUNE-UP SERVICE PROCEDURES.

FLOAT LEVEL (BENCH ADJUSTMENT)

1) Remove air horn. Hold float lip gently against needle.See *Fig. 1.*

2) Using straightedge, place across float bowl to measure float level. If adjustment is needed, release float and then bend float tip to obtain correct clearance.

CAUTION — *Do not bend lip while float is resting against needle to avoid damaging synthetic rubber tip.*

3) Reinstall air horn.

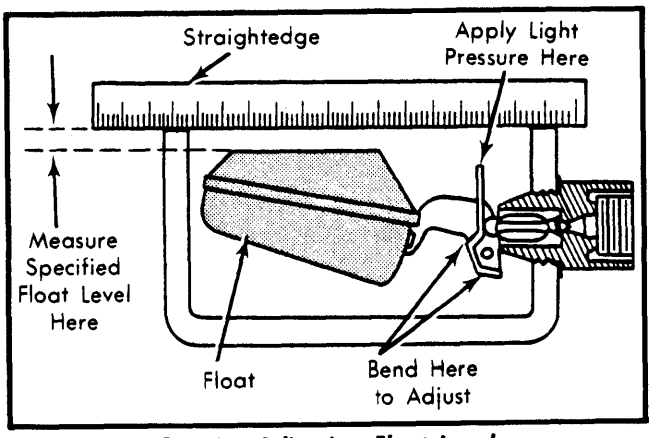

Fig. 1 Adjusting Float Level

VACUUM STEP-UP PISTON GAP QUALIFICATION

NOTE — *This adjustment is required if step-up piston is removed or if piston lifter position is changed on actuating rod. This adjustment (qualification) places piston in a centered "mean" position.*

1) Remove step-up piston cover plate and gasket. Remove lifter lock screw and remove piston step-up assembly.

2) Measure piston gap. See *Fig. 2.* If not to specification, adjust by turning Allen head screw on top of piston.

3) Record number of turns and direction to obtain proper dimension, or this must be reset to its original position after vacuum step-up piston adjustment has been made.

CARTER BBD 2-BARREL (Cont.)

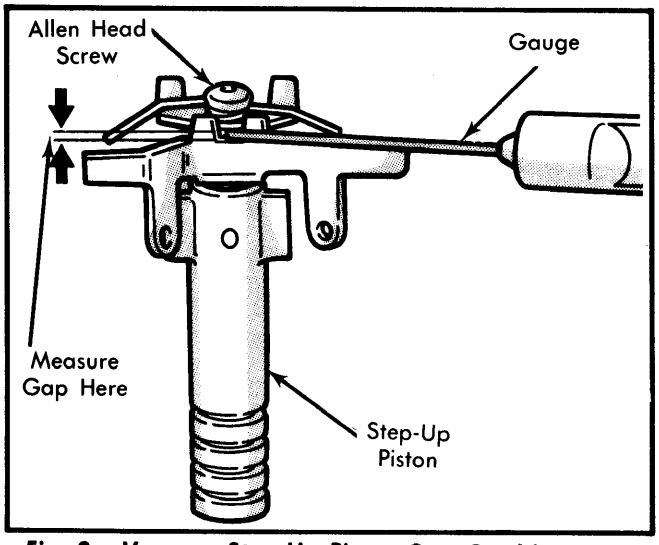

Fig. 2 Vacuum Step-Up Piston Gap Qualification

VACUUM STEP-UP PISTON ADJUSTMENT

NOTE – *Perform Vacuum Step-Up Piston Gap Qualification adjustment before adjusting vacuum step-up piston.*

1) With vacuum piston installed, back off idle speed screw until throttle valves are completely closed. Count number of turns so that screw can be returned to its original position. *See Fig. 3.*

2) Fully depress step-up piston while holding moderate pressure on rod lifter tab. While in this position, tighten rod lifter lock screw.

3) Release piston and rod lifter, then return idle speed set screw to its original position.

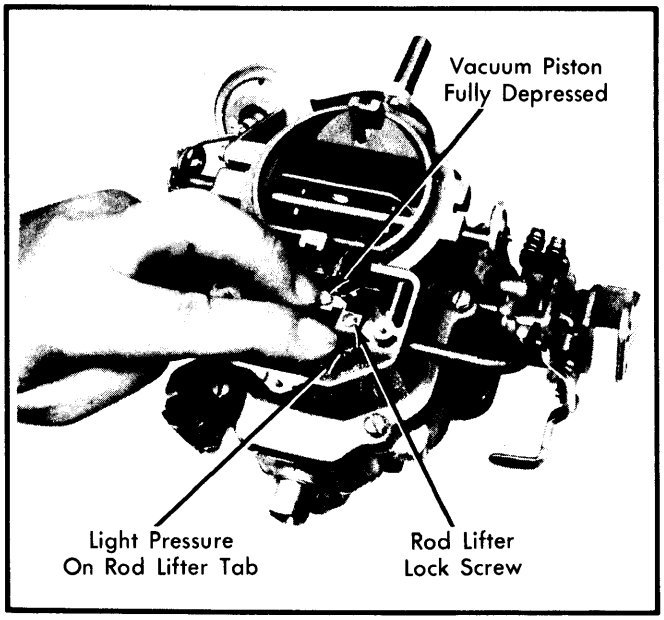

Fig. 3 Adjusting Step-Up Piston

4) Reset Allen head calibration screw on top of step-up piston to its original position as recorded under Vacuum Step-Up Piston Gap Qualification. If this adjustment is changed, the step-up piston must be requalified.

SOLEVAC ADJUSTMENT

NOTE – *Three adjustments are required on BBD carburetor solevacs, and must be made in proper order.*

1) Disconnect vacuum hose from solenoid vacuum unit and plug hose. Disconnect electric wire to solenoid and adjust normal curb idle with RPM screw.

2) Using a hand vacuum pump, apply vacuum to solenoid vacuum unit and adjust to proper RPM with screw located on the throttle lever. Remove vacuum pump.

3) Energize solenoid and adjust RPM to specifications using screw located on rear of solenoid.

Solevac Adjusting Specifications

Adjustment Step	Idle RPM
Normal Curb Idle	550
Vacuum Actuated	800
Solenoid Energized	650

ACCELERATOR PUMP STROKE ADJUSTMENT

1) Remove step-up piston cover plate and gasket. Back off curb idle screw to fully close throttle valves. Fast idle cam must be in open position. *See Fig. 4.*

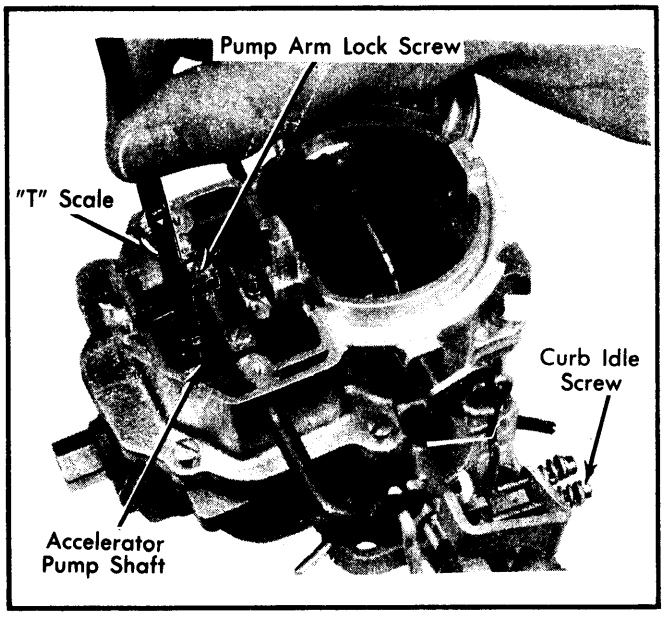

Fig. 4 Adjusting Accelerator Pump Stroke

2) Now turn curb idle screw until it just touches stop. Continue 2 more complete turns. Measure distance between surface of air horn and top of accelerator pump shaft.

3) If adjustment is needed, loosen pump arm adjusting lock screw and turn sleeve to adjust pump travel. When correct measurement is obtained, tighten lock screw. Install step-up piston cover plate and gasket.

CARTER BBD 2-BARREL (Cont.)

FAST IDLE CAM POSITION

NOTE – *To meet Federal regulations, all carburetors incorporate tamper-proof choke, choke pull-off, and idle adjusting screws. Adjustments given are for after a major carburetor overhaul, or if carburetor components are damaged.*

1) Remove torque-head screws and position choke cover ¼ turn rich. Retain with 1 straight-slot screw to hold choke cover in position. See *Fig. 5*.

2) Place fast idle adjusting screw on second step of fast idle cam. With specified drill or pin gauge, measure clearance between upper edge of choke valve and air horn wall.

3) Adjust by bending fast idle connecting rod down to increase measurement or up to decrease measurement. Loosen housing cover screw, reset choke to specified index and tighten all retaining screws.

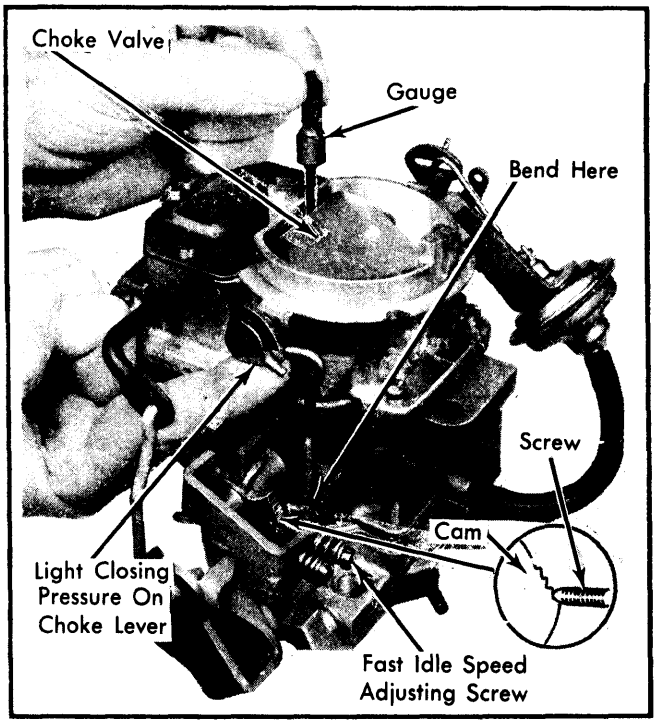

Fig. 5 Adjusting Fast Idle Cam Position

AUTOMATIC CHOKE

NOTE – *Normally, no readjustment is necessary from factory setting. Perform adjustment only after a major overhaul.*

1) Loosen choke thermostat cover retaining screws.

2) Rotate cover in "Rich" or "Lean" direction to align reference mark on cover with specified scale graduation on choke housing. Tighten retaining screws.

INITIAL CHOKE VALVE CLEARANCE

NOTE – *To meet Federal regulations, all carburetors incorporate tamper-proof choke, choke pull-off, and idle adjusting screws. Adjustments given are for after a major overhaul, or if carburetor components have been damaged.*

1) Grind off torque-head screw heads and remove remaining portions of screws by turning counterclockwise with locking pliers. Turn choke cover ¼ turn rich. Retain in this position with 1 straight slot screw.

2) Open throttle valve slightly to place fast idle screw on high step of cam. See *Fig. 6*.

3) Using a vacuum source that holds at least 19 in. Hg. vacuum, pull in diaphragm against stop. Measure clearance between choke plate and air horn wall.

4) Adjust clearance by bending diaphragm connecting link. Remove straight slot screw and adjust cover index to specified notch. Install replacement torque-head screws.

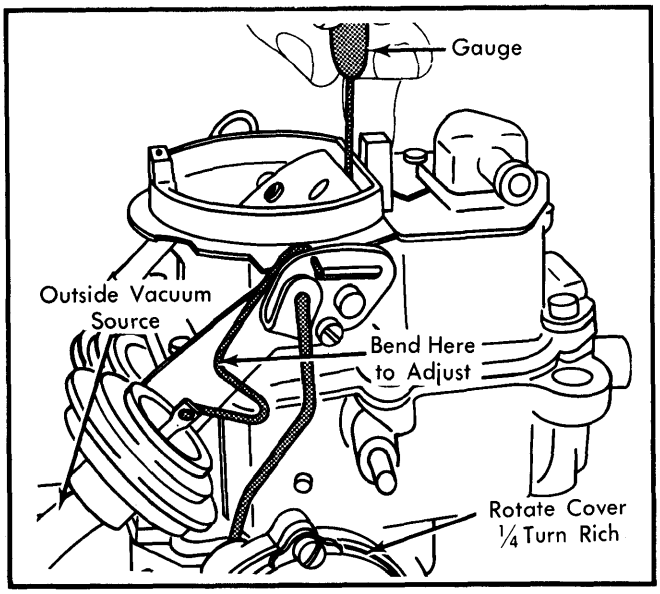

Fig. 6 Adjusting Choke Diaphragm (Initial Choke Valve Clearance)

CHOKE UNLOADER

1) Hold throttle valves wide open. Apply light closing pressure to choke valve lever. See *Fig. 7*.

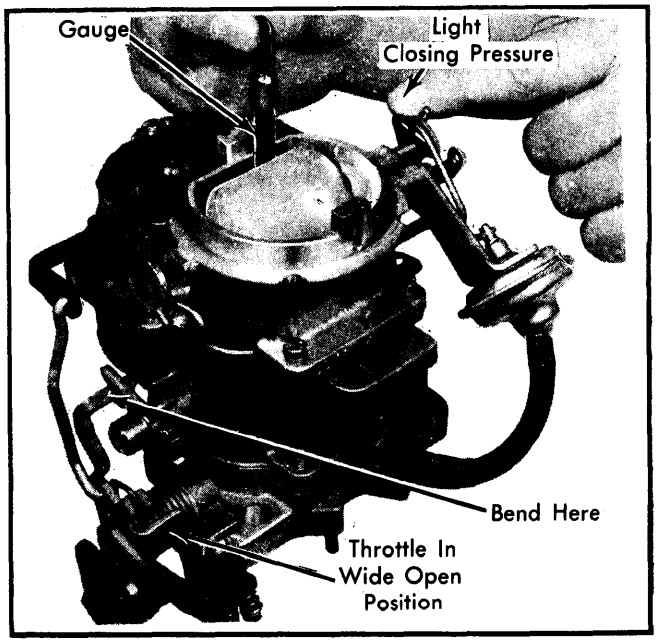

Fig. 7 Adjusting Choke Unloader

CARTER BBD 2-BARREL (Cont.)

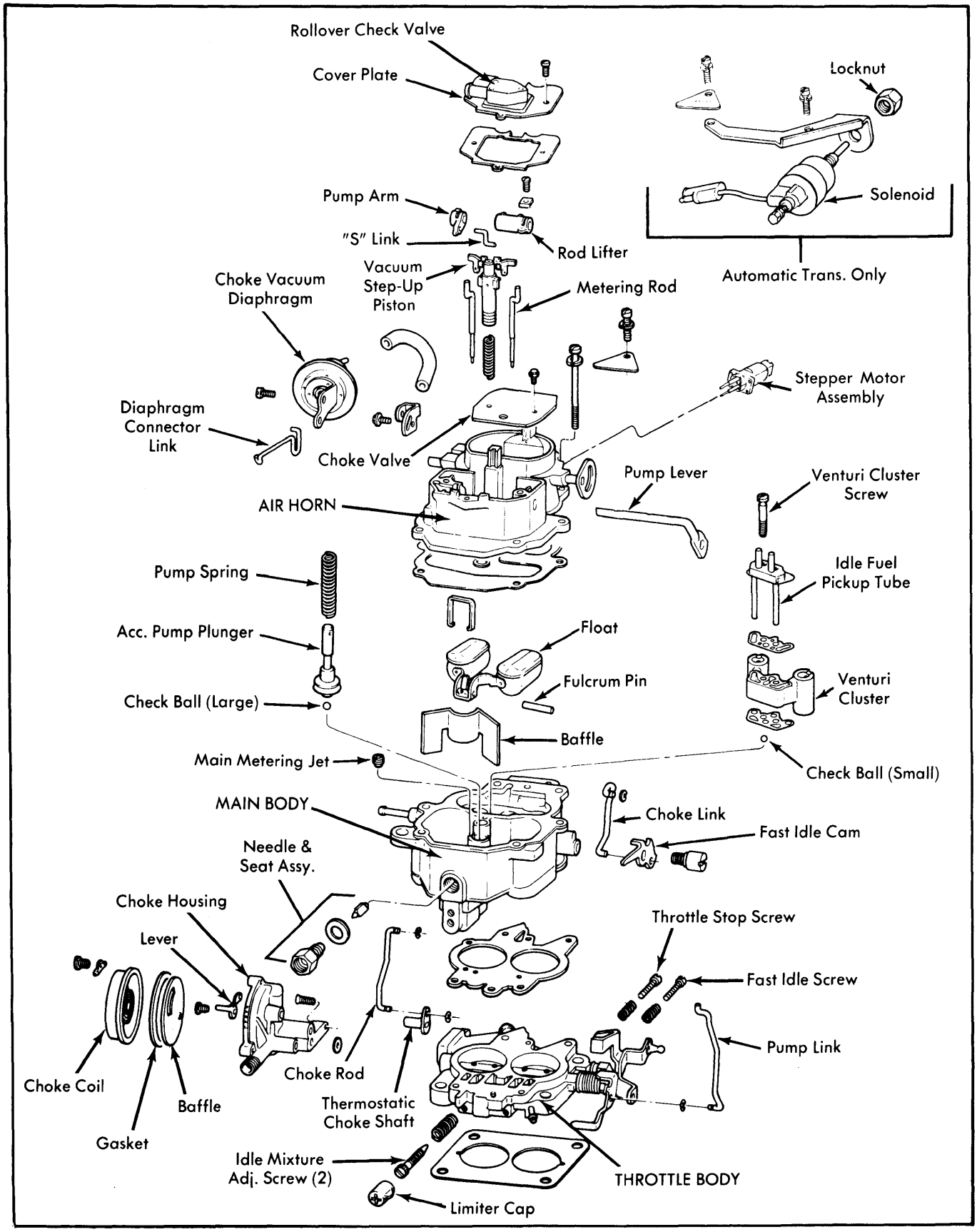

Fig. 8 Exploded View of Carter Model BBD 2-Barrel Carburetor

CARTER BBD 2-BARREL (Cont.)

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

3) To adjust, bend choke unloader tang. Make sure tang does not interfere with other components after it is adjusted.

OVERHAUL

DISASSEMBLY

All Models – 1) Place carburetor on a suitable repair stand, and remove stepper motor if equipped. Remove retaining clip from accelerator pump arm link and remove link.

2) Remove cover and gasket from top of air horn. Remove screws and locks from accelerator pump arm and vacuum piston rod lifter. Slide pump lever out of air horn. Remove pump arm and rod lifter.

3) Lift vacuum piston and step-up rods up and out of air horn as an assembly. Remove the vacuum piston spring. Remove choke vacuum diaphragm hose. Disconnect clips and remove link from choke housing lever and choke lever.

4) Remove screw and lever from choke shaft. Remove choke diaphragm, linkage, and bracket assembly. Remove fast idle cam retaining screw. Remove fast idle cam, choke link, and clip. Grind heads off of torque-head screws and remove choke cover assembly and housing from throttle body. Remove remaining portion of screws with locking pliers.

5) Remove screws securing air horn and lift air horn up and away from main body. Discard gasket. Turn air horn upside-down and compress accelerator pump drive spring. Remove "S" link from pump shaft. Remove pump assembly.

6) Remove fuel inlet needle valve, seat and gasket from main body. Carefully lift out float fulcrum pin retainer and baffle. Lift out floats and fulcrum pin. Remove the main metering jets.

7) Remove venturi cluster screws. Lift cluster and gaskets away from main body and discard gaskets. DO NOT remove idle orifice tubes or main vent tubes from cluster as they can be cleaned with solvent and dried with compressed air while assembled.

8) Turn carburetor upside-down and catch accelerator pump discharge and intake check balls as they fall out.

9) Turn idle limiter caps to stop. Remove plastic caps from idle air mixture screws. Be sure to count number of turns it takes to seat screws to ease reassembly adjustment. Remove screws and springs from throttle body.

10) Remove screws and separate throttle body from main body. Discard gasket. Check choke plate in air horn for freedom of movement. If any sticking or binding is evident, clean thoroughly.

CLEANING & INSPECTION

NOTE – *Do not apply compressed air to diaphragm. Do not use wire or drill to clean jets or passageways.*

- Use a regular carburetor cleaning solution. Soak components long enough to thoroughly clean all surfaces and passages of foreign matter.
- Do not soak any components containing rubber, leather or plastic.
- Remove any residue after cleaning by rinsing components in a suitable solvent.
- Blow out all passages with dry compressed air.

REASSEMBLY

Use all new gaskets and reverse disassembly procedures while noting the following;

Idle Mixture Screw & Limiter Cap Installation – 1) Install idle mixture screws and springs in body. Tapered portion must be straight and smooth. If tapered portion is grooved or ridged, use a new screw. DO NOT use a screwdriver for installation.

2) Turn screws lightly against their seats with fingers. Back off number of turns counted at disassembly and install new plastic caps with tab against stop.

Accelerator Pump Check Ball Installation – Accelerator pump intake and discharge check balls are different sizes. Make sure large check ball is installed in float bowl. *See Fig. 9.*

Accelerator Pump Assembly – 1) Check operation as follows: Pour clean unleaded gasoline into carburetor bowl approximately ½" deep. Operate accelerator pump plunger several times to expel air from pump passage. Using a small brass rod, hold discharge check ball down firmly on its seat. *See Fig. 10.*

2) Again raise plunger and press downward. No fuel should be emitted from either intake or discharge passage. If fuel does escape from either passage, check that ball seat is not damaged or dirty. Clean passages and retest.

3) If leakage is still present, attempt to form a new seat. This is accomplished by installing a new discharge check ball in leaking seat. Place a piece of drill rod on top of check ball and tap it lightly with a hammer to form a new seat. Remove check ball and discard. Install a new check ball and retest as described above. If service does not correct problem, carburetor replacement is necessary.

Step-Up Piston & Rod Assembly – Be sure step-up rods move freely each side of vertical position. Carefully guide step-up rods into main metering jets.

CARTER BBD 2-BARREL (Cont.)

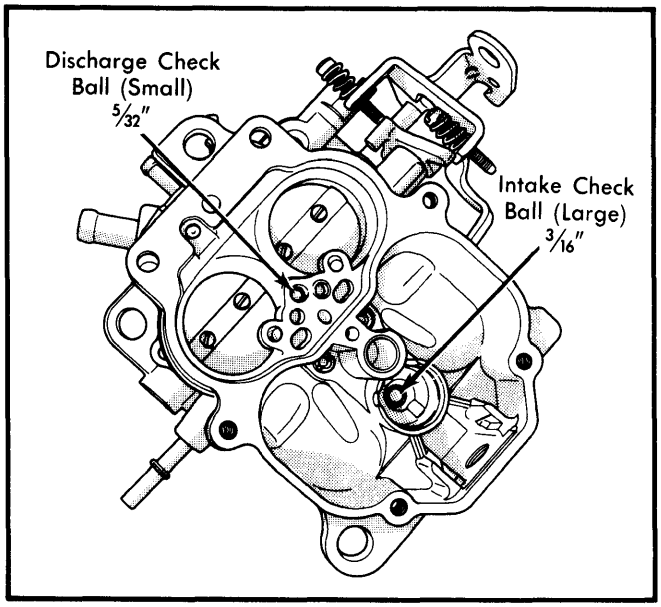

Fig. 9 Installing Accelerator Pump Intake and Discharge Check Balls

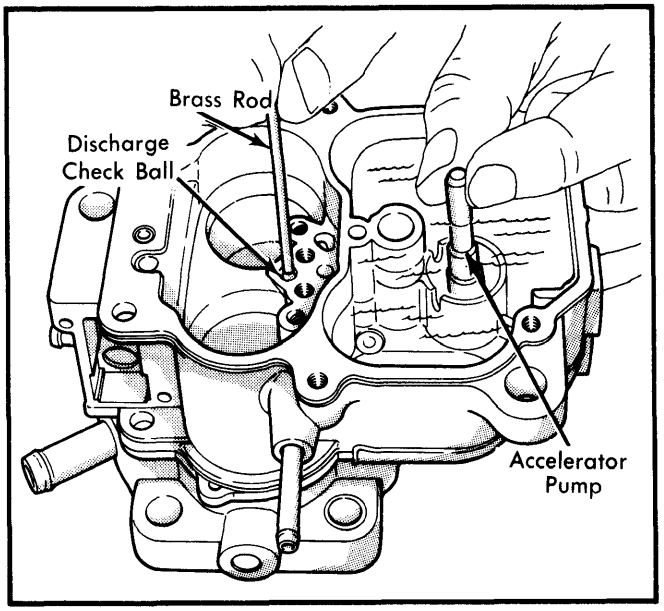

Fig. 10 Testing Accelerator Pump Intake and Discharge

CARBURETOR ADJUSTMENT SPECIFICATIONS

Application	Float Level Setting	Vacuum Piston Gap Setting	Accel. Pump Stroke Setting	Fast Idle Cam Setting	Choke Vacuum Kick Setting	Choke Unloader Setting	Auto. Choke Setting
BBD-8302	.25″	.035″	.520″	.095″	.140″	.280″	1 Rich
BBD-8303	.25″	.035″	.520″	.095″	.140″	.280″	1 Rich
BBD-8306	.25″	.035″	.520″	.095″	.140″	.280″	1 Rich
BBD-8307	.25″	.035″	.520″	.095″	.140″	.280″	1 Rich
BBD-8308	.25″	.025″	.500″	.095″	.128″	.280″	2 Rich
BBD-8309	.25″	.035″	.520″	.093″	.128″	.280″	2 Rich
BBD-8311	.25″	.035″	.520″	.085″	.120″	.280″	1 Rich
BBD-8312	.25″	.035″	.500″	.095″	.140″	.280″	1 Rich