

# Carter 4 Barrel Carburetors 1963

## CARTER AFB 4-BARREL CARBURETORS

<b>BUICK</b>	Cart r N .
401" Engine	3503S,SA
425" Engine (Auto. Trans.)	3578S
425" Engine (Synchro-mesh)	3579S

<b>CADILLAC</b>	
Without Air Conditioning	3480S
With Air Conditioning	3481S

<b>CHEVROLET &amp; CORVETTE</b>	
327" Engine (Synchro-mesh)	3461S
327" Engine (Auto. Trans.)	3460S
409" Engine (400 HP)	3499S
409" Engine (425 HP)	(Front) 3361S, (Rear) 3362S

<b>CHRYSLER, DODGE &amp; PLYMOUTH</b>	
383" Engine C	3437S,SB
413" Engine C	3478S,SA
413" Engine C	3256S
383" & 426" Engines C	3397S
383", 413" & 426" Engines C	3559S
383" Engine C	(Front) 3258S; (Rear) 3259S
413" Engine C	(Two) 3505S,SA
426" Engine C	(Two) 3447S,SA

<b>LINCOLN CONTINENTAL</b>	
Without Air Conditioning	3521S
With Air Conditioning	3522S

<b>PONTIAC TEMPEST</b>	
326" Engine (Synchro-mesh)	3477S
326" Engine (Auto. Trans.)	3502S

<b>PONTIAC</b>	
389" Eng. (3-Spd. Auto. Trans.)	3326SA
389" Eng. (4-Spd. Auto. Trans.)	3300SA
389" Eng. (Synchro-mesh)	3479S
421" Eng. (Synchro-mesh)	3574S
421" Eng. (Auto. Trans.)	3545S,SA

<b>STUDEBAKER (EXC. AVANTI)</b>	
259" Eng. (Thunderbolt I)	3540S
289" Eng. (Thunderbolt II)	3540S
289" Eng. (Jet-Thrust)	3589S,SA
289" Eng. (Super Jet-Thrust)	3588S

<b>STUDEBAKER AVANTI</b>	
289" Eng. (Jet-Thrust)	3506S
289" Eng. (Super Jet-Thrust)	3507S

- Ⓒ - Small bore carburetor
- Ⓓ - Large bore carburetor
- Ⓔ - Runner manifold
- Ⓕ - Ram manifold

### ► CHANGES, CAUTIONS, CORRECTIONS

**DODGE & PLYMOUTH HIGH PERFORMANCE ENGINE**  
**IDLE SPEED NOTE** - Adjust idle speed to 700-800 RPM (all models)

► 1962-63 BUICK CLOGGED CHOKE HEAT PIPES AND OIL IN CHOKE THERMOSTAT HOUSING CORRECTION: Clean heat pipe and thermostat housing with a suitable cleaner, then replace right hand side rocker arm cover gasket. Make sure that no obstructions remain in pipe or housing.

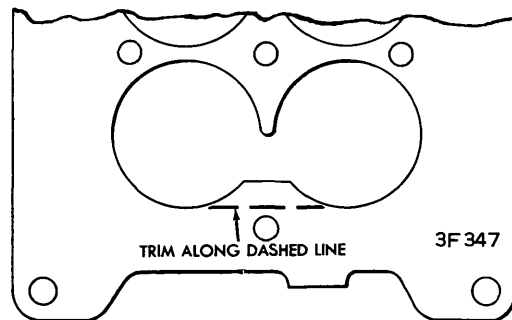
## CARBURETOR ADJUSTMENT SPECIFICATIONS

Carter Carb. No.	Idle Speed Ⓒ		Off Eng. Fast Idle Setting Ⓒ	Idle Mix. Setting Ⓒ	Float Setting Ⓒ		Accel. Pump Travel Ⓒ	Choke Setting	Unloader Setting Ⓒ
	Engine RPM				Float Level	Float Drop			
	Hot	Fast							
3256S	500 Ⓒ	1775-1825	.020"	1-2	7/32" Ⓒ	3/4"	7/16" Ⓒ	2 Rich	3/8"
3300SA Ⓒ	480-500 Ⓒ	2200	.026"	¼-2¼	21/64" Ⓒ	23/32"	31/64" Ⓒ	1 Rich	5/32"
3326SA Ⓒ	480-500 Ⓒ	2200	.026"	¼-2¼	21/64" Ⓒ	23/32"	31/64" Ⓒ	1 Rich	5/32"
3361S	750	.....	.....	1½-2	7/32" Ⓒ	3/4"	1/2"	.....	.....
3362S	750	1750	.015"	1½-2	7/32" Ⓒ	3/4"	1/2"	2 Rich	1/4"
3437S,SB	500 Ⓒ	2100	.020"	1½	7/32" Ⓒ	3/4"	7/16" Ⓒ	Index	3/8"
3447S,SA	700 Ⓒ	1400 Ⓒ	.....	1-2	9/32" Ⓒ	23/32"	7/16" Ⓒ	.....	.....
3460S	450 Ⓒ	1750	.015"	1/8-1½	7/32" Ⓒ	3/4"	1/2"	Ⓒ	1/4"
3461S	475	1750	.015"	1/8-1½	7/32" Ⓒ	3/4"	1/2"	1 Lean	1/4"
3477S Ⓒ	580-600 Ⓒ	2200	.....	1	21/64" Ⓒ	23/32"	5/16" Ⓒ	1 Rich	5/32"
3478S,SA	500 Ⓒ	2100	.020"	1-2	7/32" Ⓒ	3/4"	7/16" Ⓒ	Index	3/8"
3479S Ⓒ	480-500 Ⓒ	2200	.026"	¼-2¼	21/64" Ⓒ	23/32"	31/64" Ⓒ	1 Rich	5/32"
3480S Ⓒ	480 Ⓒ	1700-1750 Ⓒ	.022" Ⓒ	1-3½	3/8" Ⓒ	15/16"	15/32" Ⓒ	1 Rich	5/16"
3481S Ⓒ	480 Ⓒ	1700-1750 Ⓒ	.022" Ⓒ	1-3½	3/8" Ⓒ	15/16"	15/32" Ⓒ	1 Rich	5/16"
3499S	750	1750	.015"	1½-2	7/32" Ⓒ	3/4"	1/2"	2 Lean	1/4"
3502S Ⓒ	540-560 Ⓒ	2200	.....	1	21/64" Ⓒ	23/32"	5/16" Ⓒ	1 Rich	5/32"
3503S,SA	475 Ⓒ	625 Ⓒ	.....	¼-1¼	7/32" Ⓒ	3/4"	7/16" Ⓒ	Index	3/16"
3505S,SA Ⓒ	700 Ⓒ	1400 Ⓒ	.....	1-2	9/32" Ⓒ	23/32"	7/16" Ⓒ	.....	.....
3506S	650 Ⓒ	.....	.022"	.....	3/8" Ⓒ	23/32"	29/64" Ⓒ	Index	5/32"
3507S	650 Ⓒ	.....	.022"	.....	3/8" Ⓒ	23/32"	29/64" Ⓒ	Index	5/32"
3521S Ⓒ	450-475 Ⓒ	675-700 Ⓒ	.026"	1½-2½	3/16" Ⓒ	23/32"	17/32" Ⓒ	Index	1/8"
3522S Ⓒ	450-475 Ⓒ	675-700 Ⓒ	.026"	1½-2½	3/16" Ⓒ	23/32"	17/32" Ⓒ	Index	1/8"
3540S	550 Ⓒ	.....	.040-.044"	.....	9/32" Ⓒ	23/32"	27/64" Ⓒ	Index	5/32"
3545S,SA Ⓒ	640-660 Ⓒ	2500	.026"	¼-2¼	21/64" Ⓒ	23/32"	31/64" Ⓒ	1 Rich	5/32"
3559S	700-800	.....	.....	7/32" Ⓒ	23/32"	23/32"	33/64"	.....	5/32"
3574S Ⓒ	640-660 Ⓒ	2500	.026"	¼-2¼	21/64" Ⓒ	23/32"	31/64" Ⓒ	1 Rich	5/32"
3578S	475 Ⓒ	625 Ⓒ	.030"	¼-1¼	7/32" Ⓒ	3/4"	7/16" Ⓒ	Index	3/16"
3579S	475 Ⓒ	625 Ⓒ	.030"	¼-1¼	7/32" Ⓒ	3/4"	7/16" Ⓒ	Index	7/32"
3588S	650 Ⓒ	.....	.022"	.....	3/8" Ⓒ	23/32"	27/64" Ⓒ	Index	5/32"
3589S,SA	650 Ⓒ	.....	.022"	.....	3/8" Ⓒ	23/32"	27/64" Ⓒ	Index	7/32"

- Ⓒ - See procedure below.
- Ⓓ - Air conditioner ON.
- Ⓔ - Headlights ON.
- Ⓕ - Auto. Trans. in "D" (Drive).
- Ⓖ - 540-560 RPM with air conditioner OFF.
- Ⓗ - Air conditioner OFF.
- Ⓘ - 450 RPM with Auto. Trans. in "D" (Drive).
- Ⓚ - 525 RPM with air conditioner OFF.
- Ⓛ - 500 RPM with air conditioner ON.
- Ⓜ - Fast idle screw on second step of fast idle cam (against shoulder of highest step).
- Ⓝ - Fast idle screw on low step of cam.
- Ⓟ - Special procedure required. See below.
- Ⓠ - Idle Air Bypass System (use idle air screw for speed adjustment).
- Ⓡ - Initial setting. Turns open from a lightly seated position.
- Ⓢ - Connector rod in center hole of pump lever.
- Ⓣ - Connector rod in upper hole of pump lever
- Ⓤ - Index (Exc. Corvette); 1 Lean (Corvette).
- Ⓥ - Resilient needle valve seat.
- Ⓦ - Solid needle valve seat. If resilient type seat is used, adjust float level to 5/16".
- Ⓧ - Solid needle valve seat. If resilient type seat is used, adjust float level to 3/16"
- Ⓨ - Solid needle valve seat. If resilient type seat is used, adjust float level to 21/64".
- Ⓩ - Solid needle valve seat. If resilient type seat is used, adjust float level to 5/32".
- ⓐ - Auto. Trans. in "N" (Neutral).
- ⓑ - 640-660 RPM with Air Conditioner OFF.
- ⓓ - 690-710 with Air Conditioner OFF.

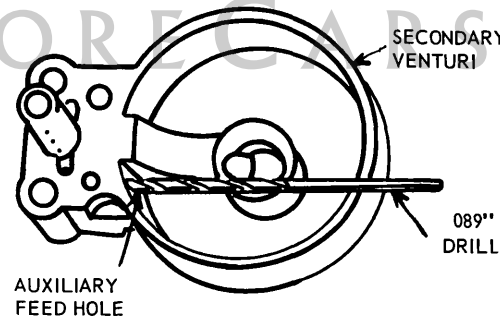
**CARTER AFB 4-BARREL CARBURETORS (C nt.)**

- ▶ **1963 CHRYSLER, DODGE, PLYMOUTH HARD COLD WEATHER STARTING CORRECTION.** This condition may be caused by choke vacuum piston sticking To correct, remove air cleaner and squirt a suitable carburetor cleaner through piston link opening while operating choke valve to flush out gum formation
- ▶ **1963 CHRYSLER, DODGE, PLYMOUTH HARD COLD STARTING CORRECTION:** If this condition is caused by insufficient choke application or by over choking it may be due to a binding condition To check, unsnap choke rod connector clip when engine is at normal operating temperature If any binding or resistance is encountered when removing choke rod from hole in arm on choke shaft, improper alignment is indicated To correct, remove choke assembly from engine and allow to cool, then disassemble (being careful to note shape and position of all parts for reassembly in original position) Correct bend at lower end of rod to exactly 90° (use a square) Reassemble choke, making sure that all parts move freely (do not lubricate), and are located in original position When installing unit, make sure choke coil housing does not contact sides of well in manifold Check operation during engine warm-up
- ▶ **1963 LINCOLN ENGINE STALLING OR STUMBLE (ON COLD DRIVE-AWAY) CORRECTION.** On early cars (before Oct 22, 1962), install carburetor spacer, Part No C3VY-9A589-B and spacer gaskets, Part No C3VY-9447-B to correct the condition **NOTE - If the new gaskets are used with an early design carburetor spacer, modify the gasket as shown in illustration.**
- ▶ **1963 PONTIAC 3300SA & 3326SA CARBURETOR CHOKE PISTON PRODUCTION CHANGE TO PREVENT LOADING AT IDLE AFTER COLD START.** Carburetors with the later type choke piston are identified by letter "A" in lower left corner of carburetor identification tag To correct a similar condition on earlier carburetors (without letter "A" on tag), install choke piston, Carter Part No 160-234
- ▶ **1963 PONTIAC & PONTIAC TEMPEST POOR THROTTLE RETURN CORRECTION:** This condition may be misaligned primary throttle valves, burr on edge of throttle valve, or by a binding primary throttle valve shaft To free a binding shaft, open and close throttle valves several times and gently tap ends of throttle shaft with valves closed



LINCOLN CARBURETOR GASKET MODIFICATION

- ▶ **1963 STUDEBAKER AVANTI, JET THRUST & SUPER JET THRUST ENGINE HARD STARTING & POOR WARM-UP IN COLD WEATHER:** Check for installation of production change modifications and use special settings (see "Studebaker V8" Car Model pages) Check carburetor choke valve for four 1/8" holes drilled (in evenly spaced formation) in short upper side of valve midway between choke valve shaft and upper edge of valve If choke valve is not drilled, remove carburetor from engine and drill the holes as described above Use care to prevent metal chips from entering carburetor assembly Adjust fast idle throttle valve clearance, automatic choke setting and engine idle speed to proper specifications (see below)
- ▶ **1963 STUDEBAKER & AVANTI SUPERCHARGED ENGINE LEAN CONDITION OR FLAT SPOT CORRECTION.** This condition which occurs when throttle is fully opened at engine speeds above 1500 RPM may be caused by the sudden opening of secondary auxiliary throttle valves, causing a lean condition To correct, remove carburetor from engine, then remove step-up rods and check the number on rods If they are Carter No 16-220, replace them with Carter No 16-263 Remove thermostatic valve assembly and the secondary venturi clusters Increase size of auxiliary feed hole (initial discharge port) located in the bore of each cluster, to .089" (see illustration for location of feed hole) Remove auxiliary throttle shaft and weight assembly and replace it with a new assembly, Carter Part No 3-1228S Check and adjust carburetor as indicated (see "Adjustment" below)
- ▶ **1963 STUDEBAKER & AVANTI (WITH JET THRUST ENGINE) LOPING OR OVER-CHOKING DURING WARM-UP CORRECTION:** Set the choke one or two notches lean as required, from the index mark



3F348

**STUDEBAKER AUXILIARY FEED HOLE ENLARGEMENT DESCRIPTION**

Four barrel downdraft type similar to design of carburetors used on corresponding previous models

**ADJUSTMENT**

**CADILLAC IDLE SPEED ADJUSTING NOTE.** Parking brake cannot be applied with transmission selector lever in "D" (Drive) position unless vacuum release is disconnected Disconnect parking brake vacuum hose at diaphragm and connect vacuum gauge to this hose Loosen transmission throttle valve rod locknuts at carburetor throttle lever trunnion

**CHRYSLER, DODGE & PLYMOUTH IDLE SPEED ADJUSTING NOTE** Turn headlights ON On models with automatic transmission (Exc 413" Eng with Ram Manifold), loosen carburetor throttle rod locknut in sliding link so stop in transmission will not interfere with carburetor throttle lever After adjusting idle speed, move throttle rod to rear against stop and tighten locknut

**Idle Speed & Mixture**

**One Carburetor Engine - NOTE - On carburetors with Idle Compensator, compensator valve must be held closed while adjusting idle speed. On carburetors with Idle Air Bypass system, turning the idle air bypass screw (to adjust engine idle speed) will change idle mixture setting. Readjust idle mixture setting after engine idle speed adjustment has been completed.** If an initial adjustment is required for engine warm-up, turn both idle mixture screws in until lightly seated, then back screws out the number of turns indicated in specification table On carburetors with conventional idle speed screw, turn screw in sufficiently to slightly open throttle valves On carburetors with Idle Air Bypass system, turn idle screw outward 1½-3½ turns from a lightly seated position With engine at normal operating temperature, choke valve wide open and fast idle inoperative, proceed as follows Connect vacuum gauge and tachometer, then adjust idle speed to correct engine RPM (see specifications) with throttle stopscrew (or Idle Air Bypass screw) Adjust each idle mixture screw for smooth idle at highest vacuum reading and engine RPM Recheck, and if necessary, reset the idle speed, then readjust idle mixture **NOTE - On carburetors with Idle Air Bypass system always readjust idle mixture after changing setting of idle air screw. On automatic transmission cars, check and adjust throttle linkage (see car model pages)**

**Two Carburetor Engine (Ram Manifold) - Disconnect carburetor interconnecting linkage at each carburetor** **NOTE - If an initial adjustment is required for engine warm-up, set idle mixture screws on both carburetors 1-2 turns open from a lightly seated position and set idle air bypass screws (one on each carburetor) 2 turns open from a lightly seated position.** With engine at normal operating temperature, connect a tachometer to engine and adjust idle speed to correct engine RPM (see specifications) by turning idle air bypass screw equally on each carburetor Adjust idle mixture screws on each carburetor for maximum engine RPM, then repeat idle mixture screw adjustment **NOTE - If idle speed exceeds specifications by 50 RPM during adjustment, readjust idle air bypass screws to obtain original engine RPM.** Before attaching rod at each carburetor, check and adjust throttle valve linkage on automatic transmission cars (see car model pages) Recheck and readjust carburetor synchronization after a five mile or more road test

**Two Carburetor Engine (Runner Manifold - Dodge & Plymouth) - Disconnect interconnecting linkage at rear carburetor throttle lever then start engine and run at idle speed (off fast idle)** **NOTE - If an initial adjustment is required to start engine, turn idle mixture screws 1 2 turns open and idle bypass screws 1 turn open from a lightly seated position** Adjust engine idle

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## CARTER AFB 4-BARREL CARBURETORS (Cont.)

speed to 700-800 RPM by turning idle bypass screw equally on each carburetor. Adjust idle mixture screws on front carburetor for maximum engine RPM, then repeat on rear carburetor. Readjust front carburetor if necessary. Readjust idle air bypass screws as necessary to maintain correct engine RPM. **NOTE** - Before attaching interconnecting rod at rear carburetor (on Automatic Transmission cars), check and adjust throttle linkage so that idle position is not disturbed.

**Two Carburetor Engine (Chevrolet 409" Engine)** - **NOTE** - If an initial adjustment is required for engine warm-up, set idle mixture screws on rear carburetor  $\frac{1}{4}$  turn open from a lightly seated position, then back idle speed screw off so it is just touching throttle lever. Turn the idle speed screw in  $1\frac{1}{2}$ -2 turns. With engine at normal operating temperature, air cleaner assembly removed, connect tachometer and vacuum gauge to engine. Adjust both idle speed screws equally to obtain correct engine idle speed (see specifications). Adjust idle mixture screws separately on each carburetor to obtain highest vacuum and engine RPM. **NOTE** - Readjust idle speed screws equally to maintain correct idle speed while adjusting idle mixture screws. Repeat the above adjustment. See car model pages for throttle linkage adjustment.

### Fast Idle (On Engine)

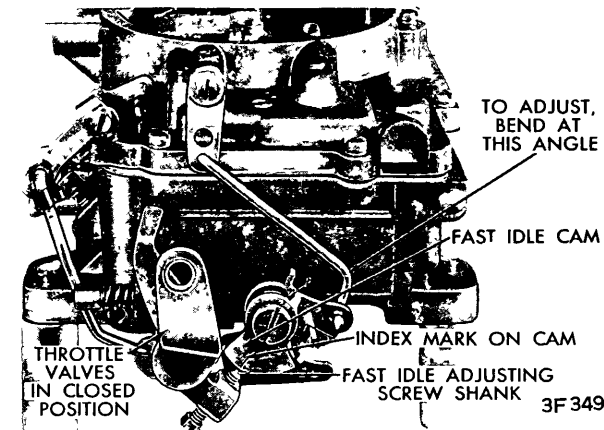
**One Carburetor Engine** - With engine at normal operating temperature and hot idle speed properly adjusted, rotate fast idle cam so that fast idle adjusting screw is in alignment with index mark on fast idle cam (except Buick, Lincoln & Cadillac); on low step of cam (Buick); on low step of cam and with transmission in "Drive" (Lincoln); on second step of cam (Cadillac). On all models, operate engine and adjust fast idle screw to obtain correct engine RPM (see specifications).

**Two Carburetor Engine (Ram Manifold)** - With engine at normal operating temperature and at normal (hot) idle speed (Air conditioner compressor OFF, if so equipped), remove air cleaners and disconnect each throttle rod at bellcrank on intake manifold. Open throttle valves of left carburetor and rotate fast idle cam to align fast idle screw with index mark on cam. **NOTE** - Right carburetor should remain at normal (hot) idle position. Adjust fast idle screw on left carburetor to obtain correct engine RPM (see specifications). Open throttle valves slightly and allow engine to return to normal (hot) idle speed. Repeat above procedure on right hand carburetor (left hand carburetor at normal idle speed). **NOTE** - Each carburetor must have identical fast idle speeds. There is no specification for engine RPM with both carburetors set simultaneously at fast idle position. **Two Carburetor Engine (Chevrolet 409" Engine)** - Fast idle speed adjustment is made on rear carburetor only. Use same procedure as for "One Carburetor Engine" above. See specifications for fast idle speed.

### Fast Idle Cam Index

**All Models (Exc. Cadillac, Lincoln, Pontiac)** - With choke valve closed, fast idle screw should align with index mark on fast idle cam. To adjust, bend fast idle

connector rod. **NOTE** - If necessary, bend stop lug on fast idle cam. **Cadillac** - With choke valve tightly closed and lug on valve outer choke shaft lever contacting stop on inner choke shaft lever, align center of fast idle screw with index mark on cam by bending fast idle connector rod.



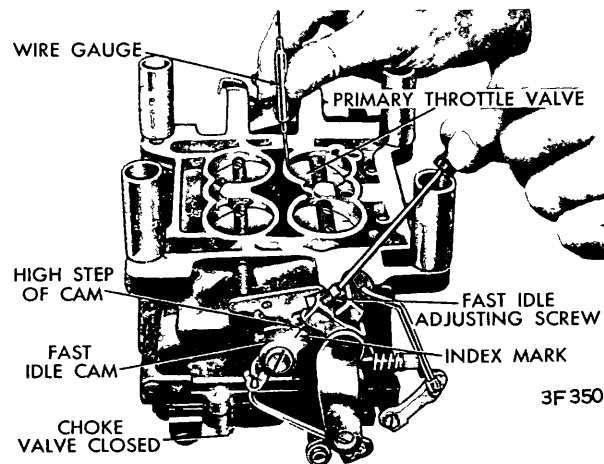
FAST IDLE CAM INDEX (TYPICAL)

**Lincoln** - With slight clearance between lug on fast idle cam and stop on flange casting, and inner countershaft lever contacting lug on outer countershaft lever, align index mark on cam with adjusting screw. To adjust, bend fast idle connector rod. **NOTE** - It may be necessary to bend stop lug on fast idle cam.

**Pontiac & Tempest** - With choke valve tightly closed, and trip lever and cam arm in alignment, align center of fast idle screw with index mark on cam by bending fast idle connector rod.

### Fast Idle (Off Engine)

With choke valve closed and fast idle screw aligned with index mark on fast idle cam, adjust fast idle screw to obtain specified clearance between lower edge of throttle valve and wall of carburetor (see specifications).



FAST IDLE "OFF ENGINE" (TYPICAL)

### Anti-Stall Dashpot

See CARBURETOR on car model pages for adjustment procedure.

### Idle Speed-Up Control

See CARBURETOR on car model pages for adjustment procedure.

### Float Level

**NOTE** - Before making float adjustment, make sure floats are parallel to outer edge of air horn casting. Remove as much clearance as possible between arms of float lever and support lugs on air horn. Arms should be parallel to inner surfaces of supports and float arm should operate freely without excess clearance on hinge pin.

**FLOAT SETTING CAUTION (CARBURETORS WITH RESILIENT INLET VALVE SEAT)** - When bending float lever to adjust height, do not allow lever to contact inlet needle valve as seat can be compressed enough to cause a false setting. Check float level with weight of float only resting on needle.

Adjust both primary and secondary floats to same height. With air horn inverted, bowl cover gasket in place and needle valve seated, measure distance from top of float at outer end to air horn gasket with proper gauge (see specifications). Adjust by bending float arm. **NOTE** - On all Pontiac models, float level measurement must be made in line with center of float indentation at outer end of float.

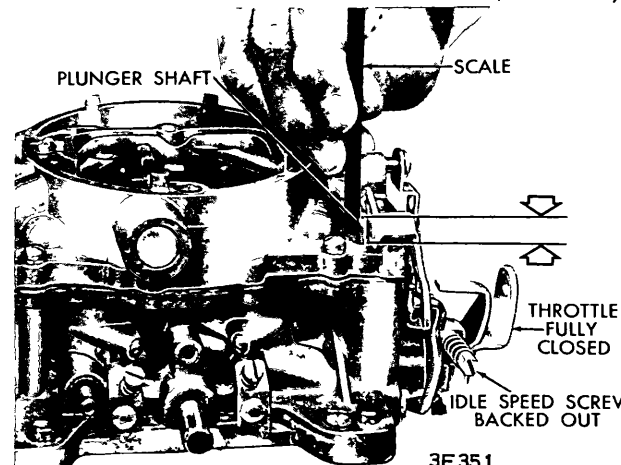
### Float Drop

With bowl cover held in upright position so that floats hang down at lower end of travel, measure distance from outer (free) end of float to bowl cover gasket. Distance should be as indicated in specifications. To adjust, bend float stop tabs on float bracket.

### Accelerating Pump

**NOTE** - This is a pump stroke (travel) adjustment and not a seasonal setting. On all models with provision for seasonal setting, make certain that pump connector rod is engaged in correct hole of pump arm (see specifications).

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ACCELERATING PUMP STROKE (TYPICAL)

## CARTER AFB 4-BARREL CARBURETORS (Cont.)

Back out throttle stopscrew (if so equipped) so that throttle valves are fully seated, then use a scale to measure distance from top surface of bowl cover to top of pump plunger stem (see specifications). If distance is not correct, adjust by bending connector rod at lower angle.

### Automatic Choke

**Integral Type** - NOTE - Adjust choke after Choke Piston Linkage has been adjusted. Adjust automatic choke thermostatic spring housing by loosening cover screws and rotating cover as required (see specifications).

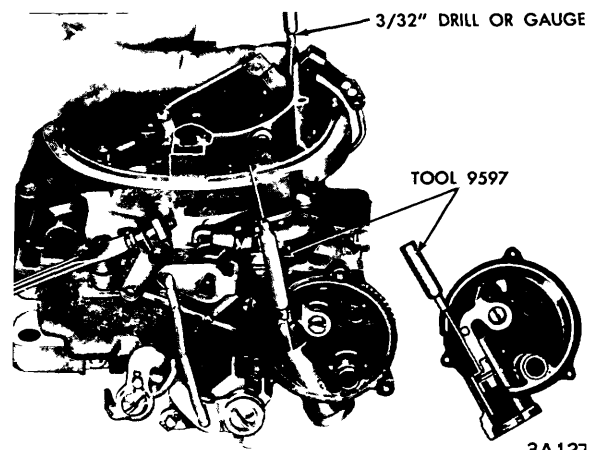
**Well Type** - See specifications above. CAUTION - This unit is serviced as a complete assembly. Do not attempt to repair unit or change the adjustment.

### Choke Piston Linkage

NOTE - This adjustment is made on carburetors with "Integral Type" choke assemblies. Remove cover and coil assembly, then proceed as follows:

**Buick, Chevrolet & Lincoln** - Bend .026" wire gauge (T109-189) at a 90° angle approximately 1/8" from end, then open choke valve and insert wire gauge so that bent portion is between top of slot in choke piston cylinder and bottom of slot in piston (see illustration). Hold wire gauge in position and close choke valve by pressing on piston lever in choke housing until resistance is felt. Clearance between top of choke valve and wall of air horn should be as indicated in table below. To adjust, bend choke connector rod (exc. Chevrolet 409" Eng.); loosen choke control shaft clamp lever screw and rotate lever on shaft, then tighten screw (Chevrolet 409" Eng.).

**Cadillac & Pontiac** - With choke valve closed, choke piston should be flush to 1/16" below top surface of piston housing. To adjust, bend choke connector rod. NOTE - Choke valve should be held closed by applying pressure to piston lever in piston housing.



CHOKE PISTON LINKAGE (TYPICAL)

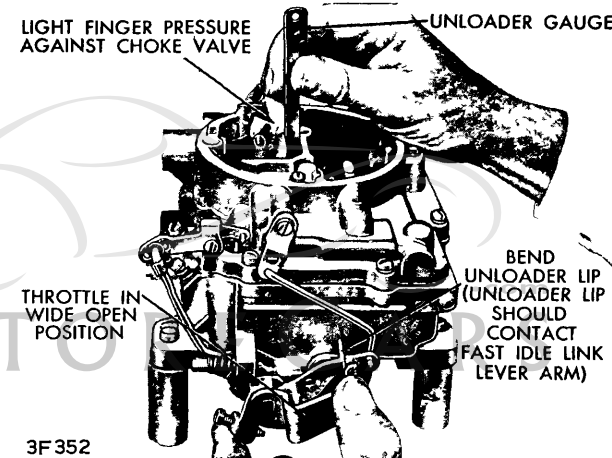
Carbur tor	Choke Pist n Linkage Setting	Piston Clearanc
3362S		.090"
3460S, 3461S		.070"
3480S, 3481S		.120"
3499S		.190"
3503S, SA		3/32"
3521S, 3522S		3/32"
3578S, 3579S		3/32"
3506S, 3507S		.062"
3540S, 3588S, 3589S, SA		.045"

### Unloader

After fast idle cam index adjustment is completed, rotate primary throttle valves to wide open position and check choke valve opening between upper edge of choke valve and wall of air horn. Clearance should be as indicated in specifications. To adjust, bend unloader lip on primary throttle lever.

### Auxiliary Throttle Valves

Velocity type valves. No adjustment required. NOTE - Auxiliary throttle valves not used on all models.



UNLOADER (TYPICAL)

### Secondary Throttle Lockout

All Models (Exc. Chrysler with Ram Manifold) - Open throttle valves slightly to clear fast idle cam, then open and close choke valve manually. Lockout tang on secondary throttle lever should freely engage notch in lockout dog. To adjust, bend tang on secondary throttle lever. NOTE - Make additional adjustment on cars indicated below.

**Cadillac** - Hold lockout dog tight against stopon flange. With secondary throttle valves slightly open, clearance between secondary throttle lever and lockout arm should be .026". To adjust, bend arm at slot on lockout dog.

### Secondary Throttle Lever

NOTE - This adjustment is required to insure correct action of primary and secondary throttle valves. Block choke valve wide open, then open throttle valves until clearance between lower edge of primary throttle valves and bore on side opposite idle ports is as specified in table below. Secondary throttle valves should just start to open at this point. To adjust,

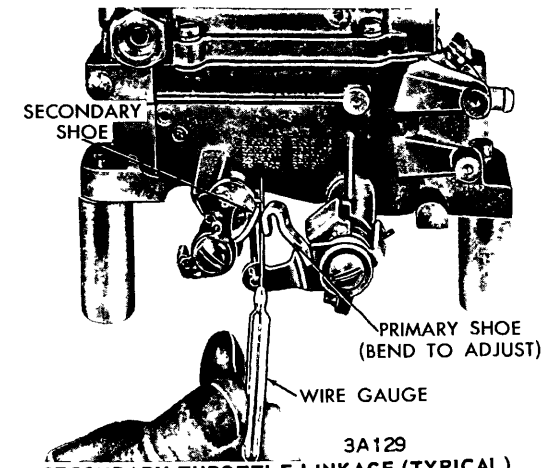
bend throttle operating rod. NOTE - Secondary throttle valves will be a few degrees from wide open when primary valves are wide open (Cadillac, Buick & Chevrolet); are past wide open (Chrysler 3505S & Pontiac). On all other models, primary and secondary throttle valves will be vertical at wide open throttle. On all models, if necessary, bend stop lug on secondary throttle lever to prevent secondary throttle valves from going past wide open. With primary and secondary throttle valves tightly closed, there should be .010-.030" clearance between positive closing shoes on primary and secondary throttle levers. To adjust, bend shoe on secondary lever.

### Secondary Throttle Lever Setting

Car Model	Primary Thr ttl Op ning
Buick	23/64"
Cadillac	23/64"
Chevrolet	15/32"
Chrysler (Ram Manifold)	29/64"
Chrysler (exc. Ram Manifold)	3/8"
Dodge & Plymouth	3/8"
Lincoln	29/64"
Pontiac	7/16"
Pontiac Tempest	7/16"
Studebaker (All Models)	7/16"

### OVERHAUL

See 1958 Final Data, Page 240, or later Manual edition for overhaul procedure.



SECONDARY THROTTLE LINKAGE (TYPICAL)

### Carter Carburetor Gauge s

Adjustment	Dimension	Carter Tool No.
Float Level & Unloader	1/8"	T109-36
Float Level & Unloader	5/32"	T109-154
Float Level & Unloader	3/16"	T109-28
Float Level & Unloader	7/32"	T109-106
Float Level & Unloader	1/4"	T109-31
Float Level & Unloader	9/32"	T109-126
Float Level & Unloader	5/16"	T109-107
Float Level & Unloader	21/64"	T109-294
Float Level & Unloader	3/8"	T109-80
Wire Gauge	.015" & .018"	T109-44
Wire Gauge	.020" & .030"	T109-29
Wire Gauge	.023" & .026"	T109-189
Wire Gauge	.067" & .080"	T109-234

## CARTER WCFB 4-BARREL CARBURETORS

### CHEVROLET 327" ENGINE

Pass. Cars & Corvette (Auto. Trans.)  
Pass. Cars & Corvette (Synchro-mesh)

Carter No.

3500S  
3501S

### DESCRIPTION

4-barrel downdraft type of same design as used on previous models. Velocity type auxiliary throttle valves are controlled by counterweight on shaft and are not operated by linkage. These auxiliary throttle valves are locked out when choke is operating.

### ADJUSTMENTS

#### Idle Speed & Mixture

With engine at normal operating temperature, connect a vacuum gauge and a tachometer to engine and adjust idle speed to correct engine RPM (see "Specification Table"). Adjust each idle mixture screw for highest engine RPM and vacuum reading, then readjust engine idle speed to correct RPM.

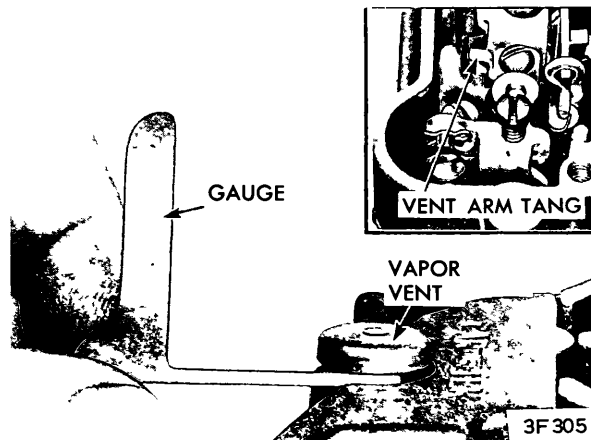
#### Accelerating Pump

**NOTE - This is a linkage adjustment and not a seasonal change specification.**

Remove dust cover and place pump connector link in correct hole of pump shaft lever (see "Specification Table"), then back out idle speed adjustment screw. With a straightedge across top of dust cover boss at pump arm, flat on top of pump arm should be parallel to straightedge. To adjust, bend connector rod at lower angle.

#### Metering Rod

Back out throttle lever stopscrew so throttle valves are fully seated in bores, then loosen metering rod arm clampscrew. With metering rods in place, press down on vacuumer link until metering rods bottom in carburetor body casting. Hold rods in downward position (throttle valves fully seated), then rotate metering rod arm until finger on arm contacts lip of vacuumer link. Hold in position and tighten clampscrew.



BOWL VAPOR VENT ADJUSTMENT

CARBURETOR ADJUSTMENT SPECIFICATIONS										
Carter Carb. No.	Idle Speed (Eng. RPM)	Initial Idle Mixture ②	Fast Idle (Off Eng.) ③	Float Level		Bowl Vent	Unloader	Choke Piston	Accel. Pump	Auto. Choke
				Primary	Secondary					
3500S	450 ①	½-2¼	020"	3/16" ④	1/4" ⑤	3/32"	3/16"	.060"	Outer	Centered
3501S	475	½-2¼	020"	3/16" ④	1/4" ⑤	3/32"	3/16"	.035"	Outer	Centered

① - Transmission in "D" (Drive).

② - Turns open from a lightly seated position.

③ - "On Engine" fast idle adjustment not required.

④ - With resilient needle seat. Set to 7/32" with solid needle seat.

⑤ - With resilient needle seat. Set to 9/32" with solid needle seat.

#### Bowl Vapor Vent

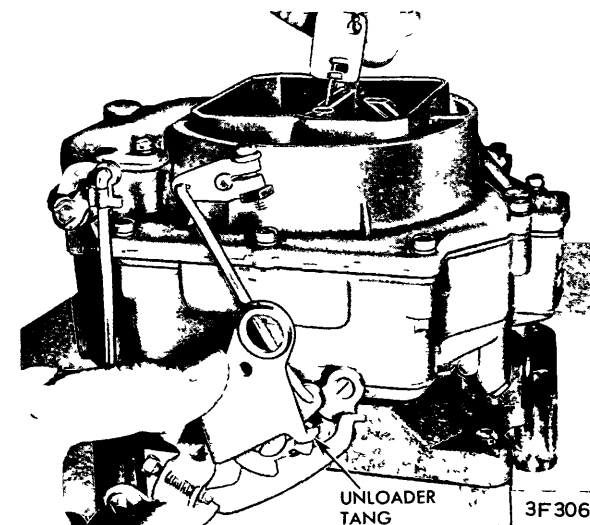
**NOTE - This adjustment should be made after completing pump and metering rod adjustments.** With dust cover and gasket installed, back out throttle lever stopscrew so that throttle valves are seated in bores, then measure distance between lower edge of vent and well in dust cover. This measurement should be as indicated in "Specification Table". To adjust, bend vapor vent arm as required.

#### Unloader

With throttle valves held in wide open position, the distance between upper edge of choke valve and inner wall of air horn should be as indicated in "Specification Table". To adjust, bend unloader lip on throttle shaft lever.

#### Secondary Throttle Lever

Block choke valve wide open and back throttle stop-screw out so primary throttle valves are seated in bores. With primary valves open 7/32", secondary valves should just start to open. To adjust, bend throttle operating rod. **NOTE - Secondary valves will be a few degrees from wide open when primary valves**

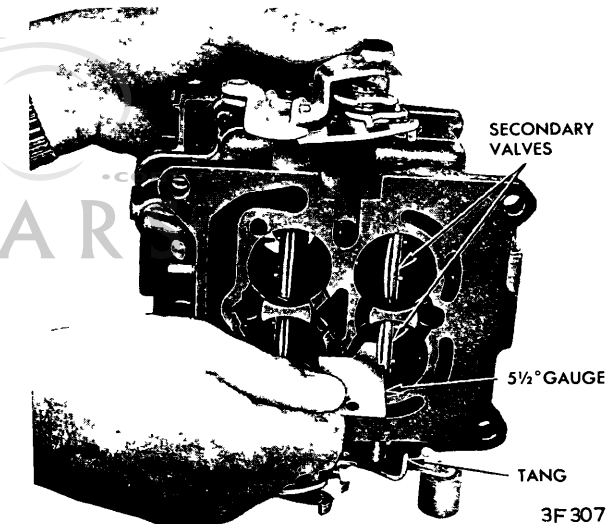


UNLOADER ADJUSTMENT

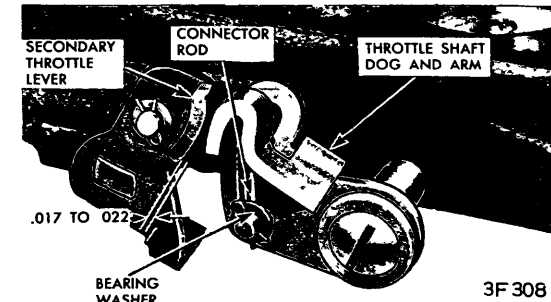
are wide open. With primary and secondary valves tightly closed, there should be .017-.022" clearance between positive closing shoes on primary and secondary throttle levers. To adjust, bend shoe on secondary throttle lever.

#### Auxiliary Throttle Lockout

Crack throttle valves and manually open and close choke valve. Tang on lockout arm should freely engage in notch of auxiliary throttle shaft dog. To adjust, bend tang on lockout arm. (Continued)



#### SECONDARY THROTTLE LEVER ADJUSTMENT

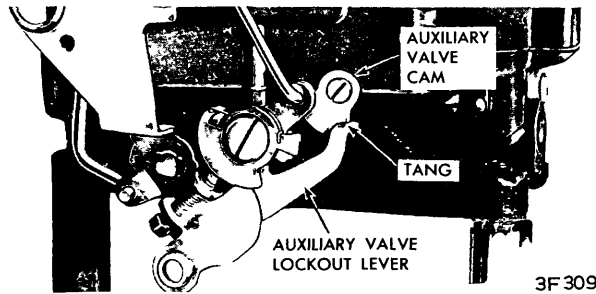


SECONDARY THROTTLE LEVER CLEARANCE

**CARTER WCFB 4-BARREL CARBURETORS (Cont.)**

**Automatic Choke**

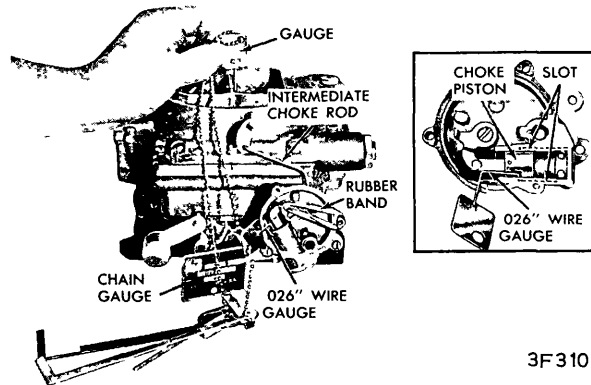
Loosen choke cover retaining screws and rotate cover assembly so index mark on cover aligns with correct mark on housing. See "Specification Table".



**AUXILIARY THROTTLE LOCKOUT ADJUSTMENT**

**Choke Piston Lever**

Bend a .026" wire gauge at a 90° angle approximately 1/8" from its end, then remove choke cover assembly, gasket, and baffle. Block throttle valve about half open so fast idle cam does not touch its adjusting screw, then open choke valve and insert the wire gauge so that bent part is between top of slot in choke piston cylinder and bottom of slot in piston. Hold wire in position and close choke valve by pressing on piston lever in choke housing until resistance is felt. Clearance between top of choke valve and wall of air horn should be as indicated in "Specification Table". To adjust, bend choke connector rod.



**CHOKE PISTON LEVER ADJUSTMENT**

**Float Level**

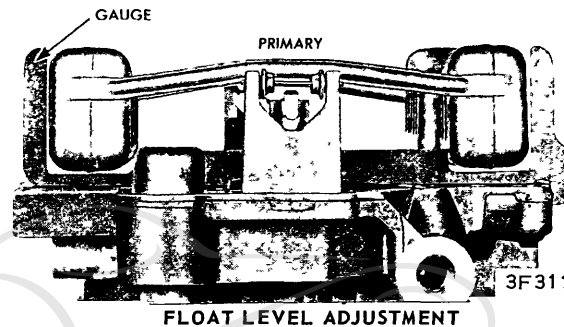
**NOTE** - Primary and secondary floats must be checked and adjusted separately and both float level and float drop must be checked for each assembly.

**FLOAT LEVEL SETTING NOTE** - When bending float lever to adjust height on carburetors with resilient type inlet valve seats, do not allow float lever to contact inlet needle as seat can be compressed enough

to cause a false setting. Check float level with weight of float only resting on needle. Float level setting specifications are different for carburetors with resilient type inlet valve seats (see "Specification Table").

**Lateral Adjustment**- With bowl cover assembly inverted, gasket removed and float resting on seated needle, place float gauge (see "Specification Table") directly under center of floats with notched portion of gauge fitted over edge of casting. Sides of floats should just clear vertical uprights of gauge. Bend float arms to adjust.

**Vertical Adjustment** - With bowl gasket removed, install proper gauge (see "Specification Table") on bowl cover under center of floats. Both floats should just clear horizontal section of gauge. To adjust, bend float arms.



**FLOAT LEVEL ADJUSTMENT**

**Float Drop**

With bowl cover held in upright position, bowl cover gasket removed, measure distance between free end of floats and bowl cover. Distance should be as indicated in "Specification Table". To adjust, bend stop tabs on float brackets.

**Fast Idle (Off Engine)**

Loosen choke lever clamp screw on choke shaft and insert a wire gauge of correct thickness (see "Specification Table") between lip of fast idle cam and boss of throttle body casting. Hold choke valve tightly closed and pull choke shaft lever upward to eliminate all slack, then tighten clamp screw

**Fast Idle (On Engine)**

No adjustment required. Fast idle speed will be correct when normal idle speed is properly adjusted.

**OVERHAUL**

**Disassembly**

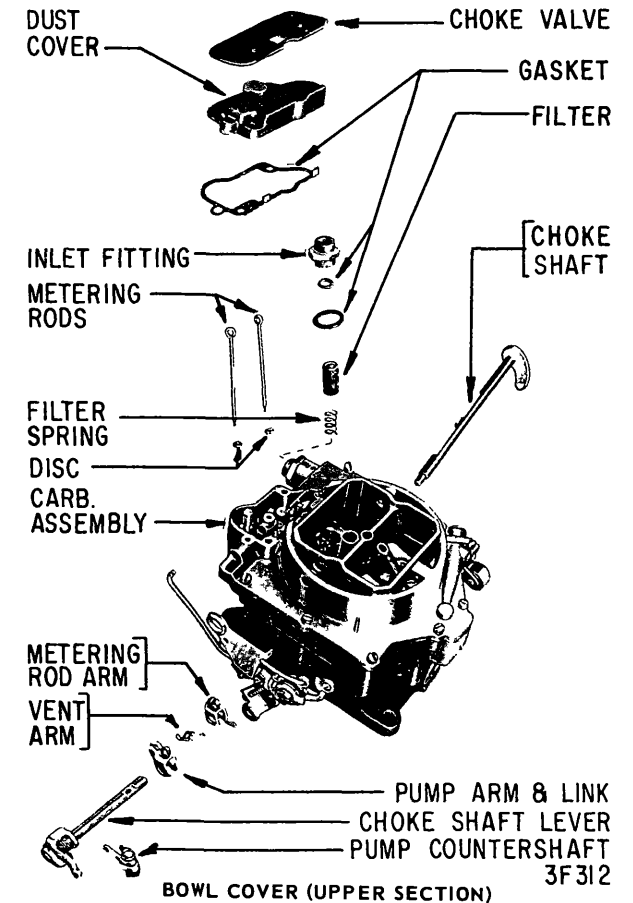
**Bowl Cover (Upper Section)** - Remove inlet nut and gasket, then remove filter inlet well in primary side of carburetor (do not remove fuel from bowl). Disconnect choke connector rod and intermediate choke rod at choke valve shaft levers, then disconnect throttle rod from lever on pump countershaft. Remove metering rod dust cover, then remove vapor vent arm. Loosen, but do not remove screws securing pump operating arm

and metering rod arm to countershaft and pull countershaft out of bowl cover. Remove metering rod arm from well. Push connecting link out of pump shaft and remove arm and link. Rotate each metering rod one-half turn and remove from hanger (do not lose rod discs). If further disassembly is required, remove choke valve screws, choke valve, and choke shaft.

**Bowl Cover (Lower Section)** - Remove bowl cover, then remove primary and secondary float assemblies. **NOTE** - Mark both floats for installation in same location. Remove primary and secondary float needles, seats and gaskets (keeping each group of parts separated to prevent intermixing parts). Remove pump plunger assembly from bowl cover and return spring from main body and place plunger in gasoline or kerosene. Rotate vacuum piston 90° to disconnect from vacuum piston link and remove link, then remove bowl cover gasket.

**Main Body (Fuel Bowl)** - Remove the vacuum piston spring. Drain the fuel bowl. Remove the pump jet cluster and gasket, then invert the carburetor and remove small brass pump discharge needle. Remove pump inlet ball retainer and check ball from bottom of pump cylinder well by prying the retainer sideways with a 5/16" six point socket. Remove both primary metering

(Continued)



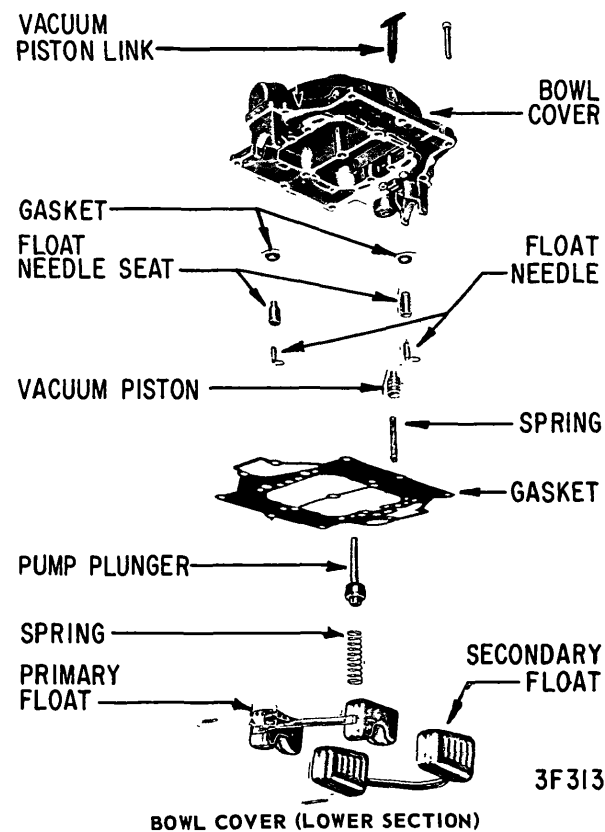
**BOWL COVER (UPPER SECTION)**

3F312

## CARTER WCFB 4-BARREL CARBURETORS (C nt.)

rod jets (on pump side of carburetor), then remove both secondary main jets. DO NOT mix metering rod jets and secondary main jets (openings are different size). **NOTE - Low speed jets are installed at slight angle (do not remove). Anti-percolator plugs and bushings, and main discharge nozzles are pressed in and should not be removed.** Separate throttle flange from main body and remove gasket. If necessary to remove auxiliary throttle valves, file off staked ends of screws, then remove screws and valves and pull out shaft.

**Throttle Body** - Remove idle mixture screws, throttle lever stop screw, washer and spring. **NOTE** - Further disassembly not required except to replace parts. If necessary, proceed as follows: Remove fast idle cam retaining screw, fast idle cam assembly and lockout arm. Remove primary to secondary connector rod pin, springs and washers, then remove rod. Remove primary throttle levers, then unhook secondary throttle return spring. File off staked ends of throttle valve retaining screws and remove throttle valves and throttle shafts. Remove choke cover, gasket and baffle plate. Remove



choke housing mounting screws and housing. Remove "O" ring seal from vacuum opening of housing mounting boss. Remove choke piston lever screw and disassemble piston and levers.

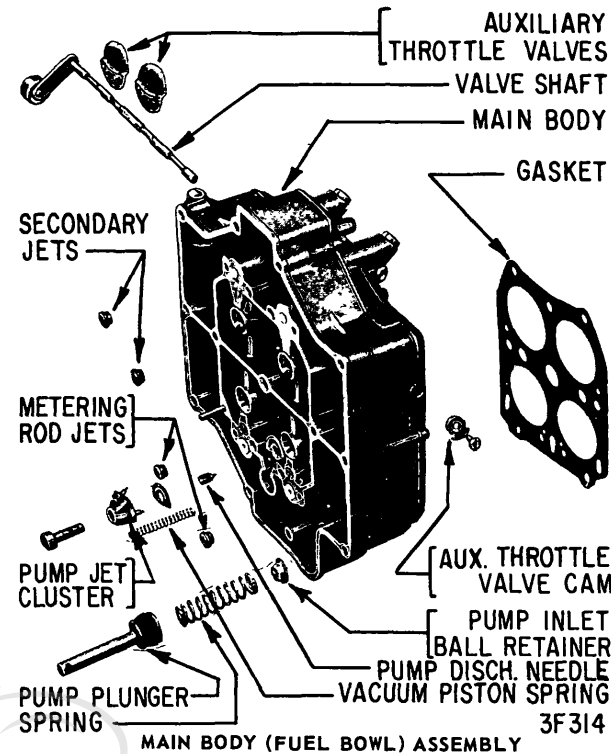
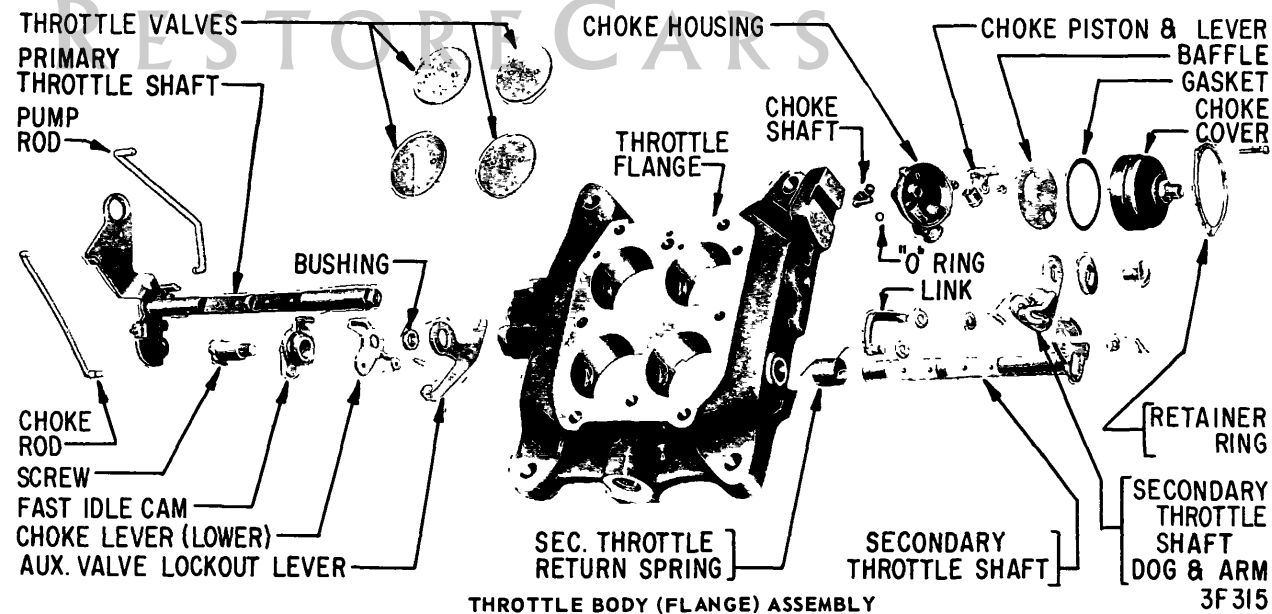
### Cleaning & Inspection

Wash all parts in carburetor cleaning solvent except pump plunger assembly, thermostatic coil and cover assembly, and choke housing gasket (clean these parts in gasoline). Clean and blow out all passages with compressed air, then remove all gum and carbon deposits. Make certain all calibrated restrictions are clean but DO NOT use drills to clean these passages. Inspect floats for dents and leaks. Check choke and throttle shafts for excessive wear, inspect pump plunger leather and replace plunger if cracked or cased. See that choke piston operates freely in cylinder. If there is carbon or dirt in slots of piston and cylinder, remove welch plug in housing and clean, then install a new welch plug, making sure that it is tight.

### Reassembly

Use all new gaskets. Install all parts by reversing disassembly procedure and note the following:

**Throttle Valves** - Use new screws when installing valves. Install throttle valves as follows. Before tightening screws, shift valves to provide closest possible fit in barrel in closed position (short end of auxiliary valves should have a good bearing on stop bosses), then tighten screws securely and stake ends lightly. **CAUTION** - Support shaft on steel block while staking screws. Install retaining washer on end of primary shaft with prongs outward, then press washer in on shaft just far enough to obtain a snug fit without endplay in shaft.



# CARTER 4-BARREL CARBURETOR JET SPECIFICATIONS

## CARTER AFB 4-BARREL CARBURETORS

Carter Carb. No.	Metering Jet Size	Step-Up Rod No.	Venturi Assembly			Pump Jet Assy. Size	Pump Jet Assy. No.
			Low Spd. Jet	Part No. ①	Part No. ②		
3256S Pri	089" 120-252	16-160	032"	58-556S	58-557S	031"	48-258S
3256S Sec	065" 120-226			58-232S	58-233S		
3300SA Pri	0935" 120-166	16-126	033"			028"	48-270S
3300SA Sec	0785" 120-194						
3326SA Pri	0935" 120-166	16-126	033"			028"	48-270S
3326SA Sec	0785" 120-194						
3437S Pri	089" 120-194	16-217	035"			031"	48-258S
3437S Sec	0689" 120-228						
3437SB Pri	089" 120-252	16-217	035"			031"	48-258S
3437SB Sec	0689" 120-228						
3447S Pri	098" 120-163	16-51	035"			028"	48-270S
3447S Sec	082" 120-158						
3447SA Pri	098" 120-163	16-51	035"			028"	48-270S
3447SA Sec	082" 120-158						
3460S Pri	104" 120-161	16-204	035"			028"	48-264S
3460S Sec	0635" 120-176						
3461S Pri	104" 120-161	16-205	035"			028"	48-264S
3461S Sec	070" 120-222						
3477S Pri	0935" 120-166	16-260	038"			028"	48-270S
3477S Sec	081" 120-233						
3478S Pri	089" 120-252	16-217	035"			031"	48-258S
3478S Sec	0689" 120-228						
3478SA Pri	089" 120-252	16-217	035"			031"	48-258S
3478SA Sec	0689" 120-228						
3479S Pri	0935" 120-166	16-122	038"			028"	48-270S
3479S Sec	076" 120-177						
3480S Pri	098" 120-163	16-226	032"	58-612	58-613	028"	48-270S
3480S Sec	082" 120-158			58-270	58-271		
3481S Pri	098" 120-163	16-226	032"	58-612	58-613	028"	48-270S
3481S Sec	082" 120-158			58-270	58-271		
3499S Pri	1015" 120-162	16-202	040"			028"	48-264S
3499S Sec	0846" 120-257						
3502S Pri	0935" 120-166	16-260	035"			028"	48-270S
3502S Sec	0785" 120-194						
3503S Pri	092" 120-256	16-219	035"			028"	48-264S
3503S Sec	082" 120-158						
3503SA Pri	092" 120-256	16-219	035"			028"	48-264S
3503SA Sec	082" 120-158						
3505S Pri	089" 120-159	16-118	035"			028"	48-270S
3505S Sec	082" 120-158						

Carter Carb. No.	Metering Jet Size	Step-Up Rod No.	Venturi Ass m bly			Pump J t Assy. Siz	Pump J t Assy. N .
			Low Spd. Jet	Part N . ①	Part N . ②		
3505SA Pri	089" 120-159	16-118	035"			028"	48-270S
3505SA Sec	082" 120-158						
3506S Pri	089" 120-159	16-99	035"			028"	48-270S
3506S Sec	076" 120-177						
3507S Pri	1015" 120-162	16-263	033"			028"	48-270S
3507S Sec	089" 120-159						
3521S Pri	0945" 120-164	16-225	033"			033"	48-255S
3521S Sec	086" 120-165						
3522S Pri	0945" 120-164	16-225	033"			033"	48-255S
3522S Sec	086" 120-165						
3540S Pri	089" 120-159	16-240S	035"			025"	48-269S
3540S Sec	057" 120-193						
3545S Pri	0935" 120-166	16-126	038"			028"	48-270S
3545S Sec							
3545SA Pri	091" 120-155	16-126	038"			028"	48-270S
3545SA Sec	081" 120-233						
3559S Pri	1015" 120-162	16-211	040"	58-607S	58-608S	028"	48-264S
3559S Sec	098" 120-163			58-151S	58-152S		
3574S Pri	0935" 120-166	16-122	038"			028"	48-270S
3574S Sec	076" 120-177						
3578S Pri	092" 120-256	16-232	031"			028"	48-264S
3578S Sec	089" 120-159						
3579S Pri	092" 120-256	16-250	031"			028"	48-264S
3579S Sec	086" 120-165						
3588S Pri	1015" 120-162	16-263	033"			028"	48-270S
3588S Sec	089" 120-159						
3589S Pri	089" 120-159	16-99	035"			028"	48-270S
3589S Sec	076" 120-177						
3589SA Pri	089" 120-159	16-99	035"			028"	48-270S
3589SA Sec	076" 120-159						

## CARTER WCFB 4-BARREL CARBURETORS

Carter Carb. No.	Metering Jet Size	Metering Rods	Low Speed Jet Size	Pump Jet Siz	Pump Jet N .
3500S Pri	086" 120-165	75-1586	028"	024"	48-288S
3500S Sec	070" 120-222				
3501S Pri	086" 120-165	75-1586	028"	024"	48-288S
3501S Sec	070" 120-222				

① - Choke side of carburetor      ② - Pump side of carburetor