CARTER AVS 4-BARREL

CHEVY II, CHEVELLE, & CHEVROLET — **Carter No.**

1966 327" 275 HP V8 Engine

Synchro-mesh	4027S, SA
Auto. Trans.	4028S, SA

►CHANGES, CAUTIONS, CORRECTIONS

►*HARD STARTING WHEN HOT CORRECTION (With Carter AVS 4027SA & 4028SA Carbs.):* Increase Idle Vent Valve Setting to .065" (superseding .030"). This change applies to above carburetors only. *See ADJUSTMENTS.*

►*LOADING ON DRIVEAWAY CORRECTION (With Carter AVS 4028SA Carb.):* Increase Vacuum Break Setting to .160" (superseding .120"). *See ADJUSTMENTS.*

CARBURETOR IDENTIFICATION

Carter carburetor number is stamped on tag attached to carburetor by one air horn attaching screw. Do not remove tag.

DESCRIPTION

These "AVS" (air valve secondary) carburetors are 4-barrel downdraft models similar in design to Carter AFB carburetors with the special features listed below. Carburetors have external Vacuum Break Diaphragm and are used with separate well type automatic choke.

Secondary Air Valve - Spring-loaded velocity type valve is located in air horn adjacent to choke valve to provide smooth response when secondary throttle valves operated. See Adjustments. Auxiliary throttle valves are not used.

Secondary Fuel Nozzles - Nozzles are pressed in secondary side of fuel bowl (used instead of secondary venturi clusters) to reduce secondary side restrictions and increase air capacity in the power range.

Fuel Inlet Filter - Located in carburetor fuel inlet.

ADJUSTMENT

►*AUTOMATIC LEVEL CONTROL EQUIPPED CAR CAUTION:* Idle adjustment must be made exactly as follows to prevent rough idle when compressor operating: Adjust level control reservoir pressure to 70 lbs. (use Schrader valve on compressor), adjust idle mixture with compressor operating, then with compressor off (crimp hose or disconnect hose and block vacuum source), check idle speed and adjust as necessary, finally readjust idle mixture for best compromise between compressor operating and compressor not operating conditions.

Idle Speed & Mixture

NOTE - If initial adjustment required to warm up engine, turn both idle mixture screws out 1½ turns from a lightly seated position, turn throttle stopscrew in ½ turn from point where it contacts throttle lever. Make idle adjustments with Automatic Transmission in Drive and Air Conditioner ON. Proceed as follows:

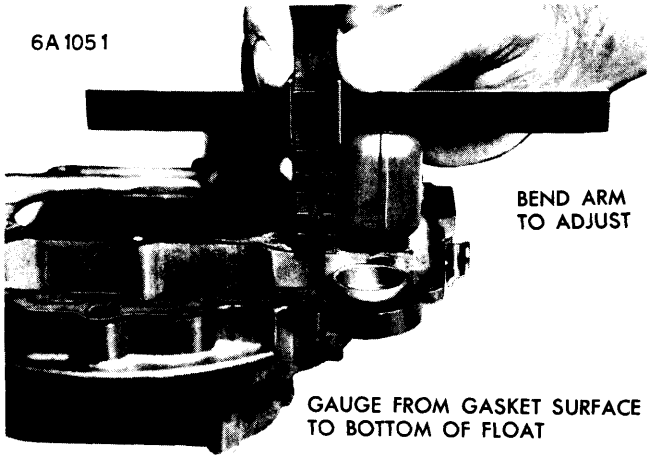
With engine at normal operating temperature (choke valve wide open and fast idle inoperative), attach tachometer and vacuum gauge, adjust engine idle speed to correct engine RPM (see Specifications), then adjust each idle mixture screw for smooth idle at highest steady vacuum and highest engine RPM *(CAUTION - Hot idle compensator in air horn must be held closed while making this adjustment).* Recheck engine idle speed. If necessary to readjust idle speed, repeat idle mixture adjustment.

Fast Idle Speed (On Engine)

With engine at normal operating temperature, open throttle and position fast idle screw on high step of fast idle cam (aligned with index mark on cam). Turn screw in or out for correct engine fast idle RPM (see Specifications).

Float Level

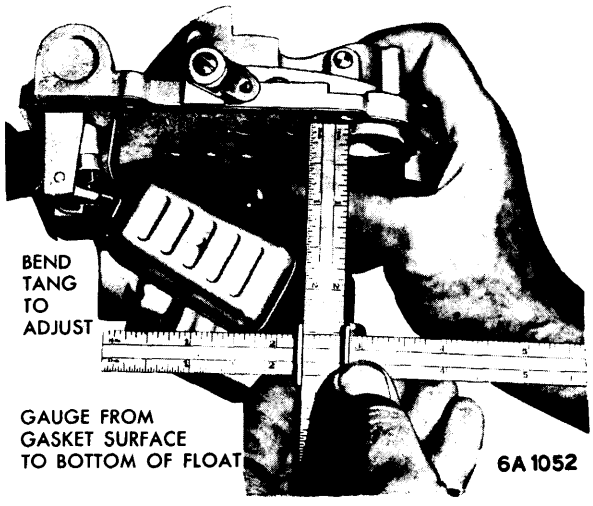
With air horn and float assembly inverted so that weight of float is on seated needle (air horn gasket must be in place), first check float alignment. Sides of floats must be parallel with sides of air horn. Align floats by bending float lever and remove any excess clearance between float lever arms and air horn lugs by bending float lever arms as necessary. Check measurement from bottom of each float to air horn gasket surface (see illustration). If float level not correct (see Specifications), adjust by bending float lever as necessary. *NOTE* - If float level measurement made to top of float at free end, see Specifications Table footnote for correct setting.



FLOAT LEVEL ADJUSTMENT

Float Drop

Hold air horn upright with floats hanging freely (air horn gasket must be in place). Measure distance from gasket surface to bottom of float at free end (see illustration). If float drop not correct (see Specifications), adjust by bending float arm tang as necessary. *NOTE* - If float drop measurement made to top of float at free end, see Specifications Table footnote for correct setting.



FLOAT DROP ADJUSTMENT

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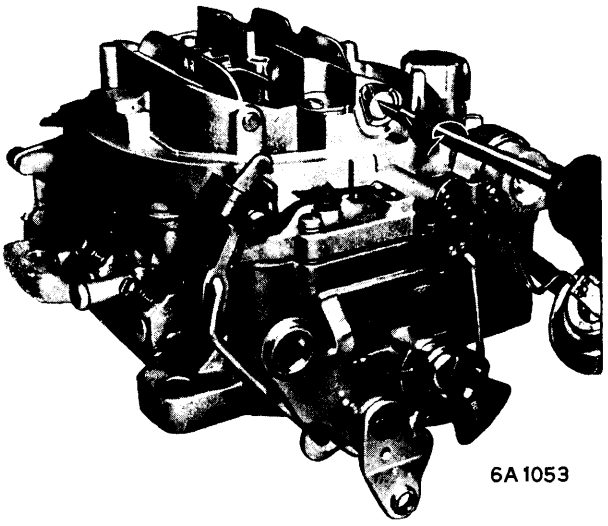
Secondary Air Valve

With air valve bearing retainer loosened so that air valve falls open freely, turn air valve bearing screw counterclockwise until air valve just starts to close (see illustration), then turn screw an additional 2 1/8 turns to wind-up spring, hold screw in this position while tightening retainer.



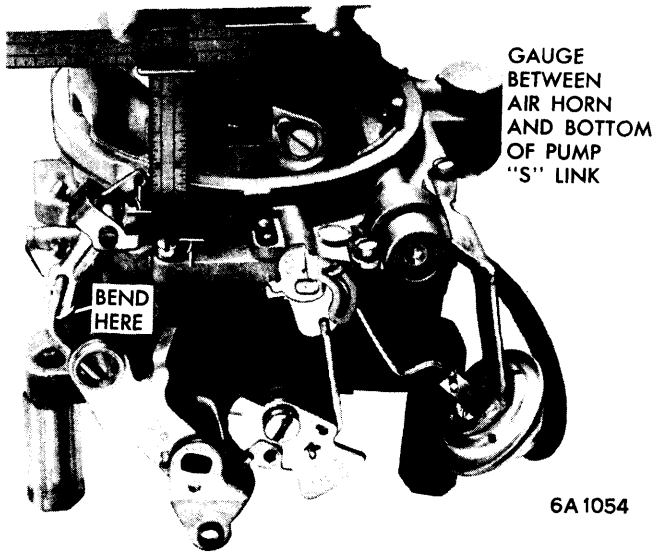
SECONDARY AIR VALVE ADJUSTMENT

Accelerating Pump

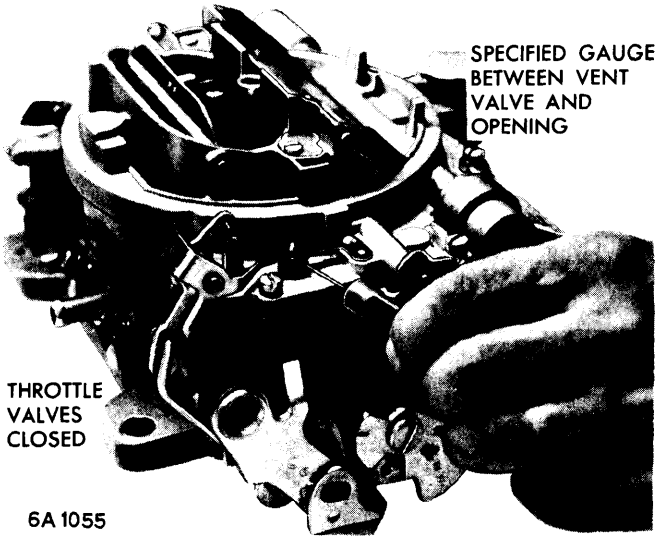
This is a pump stroke adjustment and is not a seasonal adjustment. Back out throttle stopscrew and rotate fast idle cam out of engagement so that throttle valves are tightly closed. Measure distance from top surface of air horn to bottom of "S" link in pump shaft hole (see illustration). If this distance not correct (see Specifications), adjust by bending pump rod at offset bend.

Idle Vent

After accelerating pump adjusted, open choke valve fully. With throttle valves fully closed, use gauge or drill rod to check vent valve opening or clearance between lower side of valve and valve seat on bowl cover (see illustration). If clearance not correct (see Specifications), adjust by bending vent valve lever.



ACCELERATING PUMP ADJUSTMENT



IDLE VENT ADJUSTMENT

CARBURETOR ADJUSTMENT SPECIFICATIONS

Carter Carb. No.	Idle Speed (Engine RPM) Hot ①	Idle Speed (Engine RPM) Fast	Float Level Setting	Float Drop Setting	Idle Vent Setting	Accel. Pump Setting	Unloader Setting	Vacuum Break Setting	Air Valve Setting
4027S, SA	450-500 ②	2200	1 15/32" ④	2" ⑤	.030" ⑦	11/32" ⑥	11/64"	.160"	2 1/8 turns
4028S, SA	450-500 ③	2200	1 15/32" ④	2" ⑤	.030" ⑦	11/32" ⑥	11/64"	.120" ⑧	2 1/8 turns

① - On Auto. Trans. cars set idle speed as low as possible for smooth idle to prevent creep in Drive or harsh shifts in operation.

② - Std. Engines only (with Air Cond. ON). A.I.R. Engines - 700 RPM (Air Cond. OFF).

③ - Std. Engines only (with Air Cond. ON). A.I.R. Engines - 600 RPM (Air Cond. OFF).

④ - To bottom of float. Measurement to top of float should be 15/64" (solid seat), 13/64" (resilient seat).

⑤ - To bottom of float. Measurement to top of float should be 23/32".

⑥ - To bottom of "S" link in pump shaft hole. Measurement to top of pump shaft should be 33/64" with rod in inner hole of pump arm.

⑦ - Set at .065" (On "SA" Carbs. only) to correct Hard Starting When Hot. See *"Changes, Cautions, Corrections"*.

⑧ - Set at .160" (On "SA" Carb. only) to correct Loading on Driveaway. See *"Changes, Cautions, Corrections"*.

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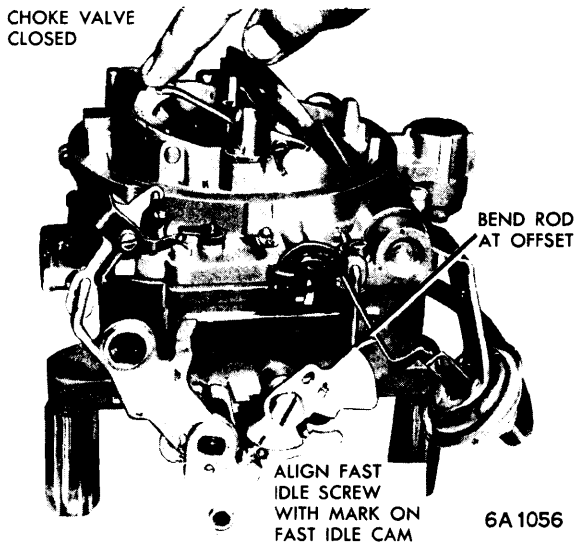
CARTER AVS 4-BARREL (Continued)

Fast Idle Cam Index (Choke Rod)

With choke valve held closed, index mark on fast idle cam should be aligned with fast idle adjusting screw. Adjust by bending fast idle cam connector rod (choke rod) at lower angle.



FAST IDLE (CHOKE ROD) ADJUSTMENT

Fast Idle Throttle Valve Clearance (Off Engine)

With fast idle screw aligned with index mark on fast idle cam, adjust fast idle screw for throttle opening or clearance between lower edge of primary throttle valves and carburetor wall of .015". *NOTE - After carburetor installed on engine, adjust fast idle screw for correct fast idle speed.*

Unloader

Hold throttle valve wide open, and move choke valve toward closed position as far as possible (rubber bands can be used to hold valves in these positions). Measure clearance between upper edge of choke valve and air horn wall using gauge or drill rod of correct size (see Specifications). If clearance not correct, adjust by bending unloader tang on throttle shaft lever as necessary (see illustration).

Vacuum Break Diaphragm Linkage

Hold vacuum break diaphragm plunger in against its stop, move choke valve toward closed position as far as possible (rubber band can be used to hold choke valve in this position), measure clearance between upper edge of choke valve and air horn wall using gauge or drill rod of correct size (see Specifications). If clearance not correct, adjust by bending vacuum break diaphragm link at the angle (see illustration).

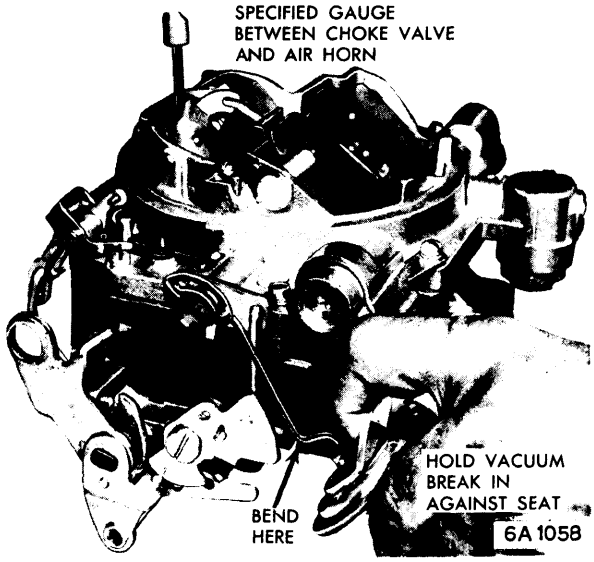
Automatic Choke

***This adjustment** must be made with carburetor installed on **engine**.* Make certain that choke valve and rod move freely, disconnect rod at choke lever. Hold choke valve closed and push rod down against its stop on thermostat bracket. At this point, top of rod should be ½-1 rod diameter below top of hole in lever. Adjust as necessary by bending rod at offset bend. *CAUTION* - After adjustment, rod end must be square and enter hole in choke lever freely.

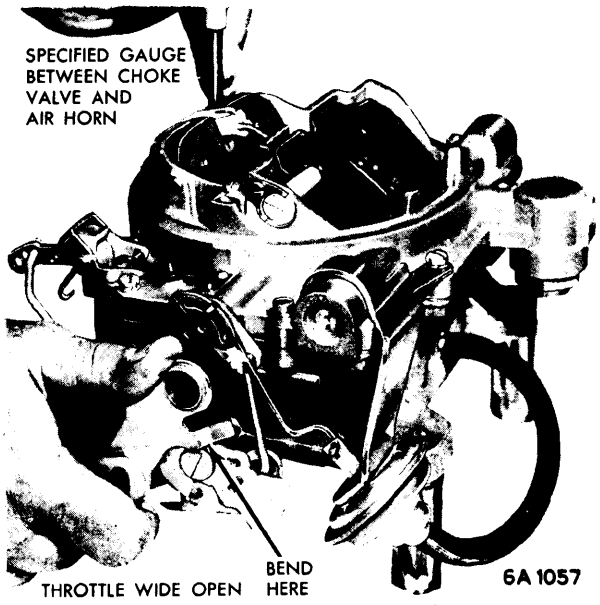
Secondary Throttle Lever

1) Block choke valve wide open. Open primary throttle valves until distance from lower edge of valves to carburetor wall on side opposite idle ports is exactly 15/64". Secondary throttle valves should begin to open at this point. Adjust by bending secondary throttle operating rod.

2) With primary throttle valves wide open, secondary throttle valves should be a few degrees from wide open. Adjust by bending stop lug on secondary throttle valve as necessary to prevent secondary throttle valves from going past wide open position.



VACUUM BREAK DIAPHRAGM ADJUSTMENT



UNLOADER ADJUSTMENT

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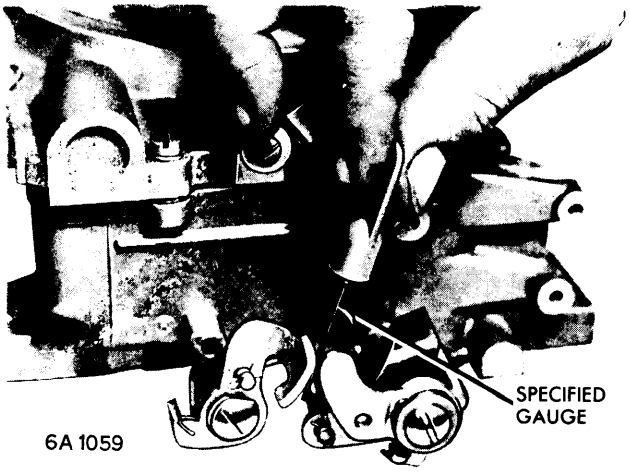
CARTER AVS 4-BARREL (Continued)

Throttle Valve Closing Shoe Clearance

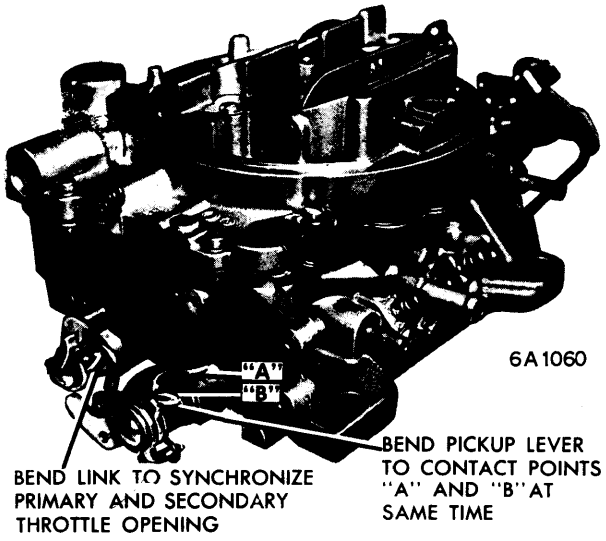
With primary and secondary throttle valves fully closed, use gauge to measure clearance between positive closing shoes on throttle levers. Clearance should be .020" (.010-.030"). Adjust by bending secondary closing shoe as required.



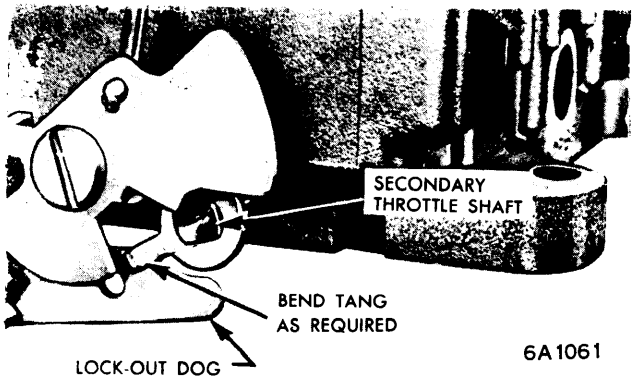
THROTTLE VALVE CLOSING SHOE CLEARANCE

Secondary Throttle Locknut

With choke valve closed, lockout tang on secondary throttle lever must engage lockout dog (see illustration). With choke valve open, lockout dog should swing free of lock-out tang. Adjust by bending lockout tang as necessary.



SECONDARY THROTTLE OPENING ADJUSTMENT



SECONDARY THROTTLE LOCKOUT ADJUSTMENT

OVERHAUL

Disassembly

Air Horn - 1) Disconnect pump rod from pump lever and choke rod from choke kick lever on choke shaft.

2) Disconnect vacuum break hose at carburetor, remove vacuum break diaphragm attaching screws and remove vacuum break assembly. Disconnect vacuum break link from lever by rotating the assembly.

3) Remove two power piston and metering rod cover plates on air horn, remove power pistons, metering rods, and power piston springs.

4) Take out air horn screws, carefully lift air horn off body to avoid damage to floats and pump plunger. Remove fuel inlet fitting, fuel filter, spring, and gaskets. Remove float lever pins, remove floats, inlet needles and seats, and gaskets. Keep parts for each float separate.

5) Take out pump lever screw and remove lever, disconnect "S" link and remove pump plunger. Place pump plunger in kerosene or gasoline to prevent plunger leather drying out.

6) *Do not remove air valve or choke valve unless damage or wear noted which requires replacement of parts.* To remove air valve, remove air valve retainer and spring, remove valve and slide shaft and bushing out of air horn. To remove choke valve, remove lever from choke control shaft, remove link lever screw, slide control shaft out of air horn. Remove staking from choke valve screws by filing screw ends level with shaft, remove screws and choke valve, slide choke shaft out of air horn.

Carburetor Body - 1) Lift out accelerating pump return spring and fuel bowl splash shields. Remove pump nozzle and gasket, then invert carburetor to drop out pump discharge ball.

2) Remove venturi clusters *(CAUTION - Keep clusters separate so they can be reassembled in same positions).* Remove hot idle compensator from secondary bore. Remove four metering jets *(CAUTION - Primary metering jets are larger and jets must be installed in same positions).* Remove pump intake check ball and seat assembly.

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3) *Do not remove throttle linkage or throttle valves unless damage or wear noted which requires replacement of parts.* To remove throttle valves, first remove fast idle screw, fast idle cam, lockout dog, secondary connecting link, then take out throttle dog lever screws and remove levers and springs from throttle shafts. File off staked ends of throttle valve attaching screws, remove screws and throttle valves, slide throttle shafts out of carburetor body.

Cleaning & Inspection

Clean all parts except vacuum diaphragm assembly and pump plunger in carburetor cleaning solution. Inspect all parts for wear or damage, replace parts as necessary. Inspect mating surfaces of castings for burrs, gouges, or other irregularities which might cause leaks.

Pump System Check - Pour ½" of gasoline into carburetor bowl, install pump inlet check ball and seat and pump discharge check ball in body and install pump plunger in cylinder. Fill pump cylinder with gasoline by raising plunger, press lightly on shaft to expel air from passages, then hold discharge ball down on seat by pressing firmly on ball with small brass rod. Press plunger downward. No fuel should be emitted from either intake or discharge passages. If discharge noted, clean passages thoroughly, and install new check balls if necessary.

Reassembly

Reverse disassembly procedure and note the following:

Secondary Throttle Shaft Dog Lever & Spring - Spring should have a one-turn wind-up when installed.

Throttle Valve Installation - Install valves with part number identification down toward carburetor mounting flange, install new screws loosely, hold valve closed and tap lightly to centralize them in bore, then tighten screws securely. Check valves for free operation.

Choke Valve Installation - Install choke valve with markings upward, install new screws loosely. Align valve by moving choke shaft endwise while holding valve closed, then tighten screws securely and stake the screws. Check valve for uniform clearance and freedom from binding. Valve should fall open of its own weight.

Air Valve Installation - Install air valve shaft and bushing, then install valve spring, bearing and retainer. Install valve so that cut-out in valve provides clearance for choke valve operating link. Adjust air valve spring (see Adjustments).

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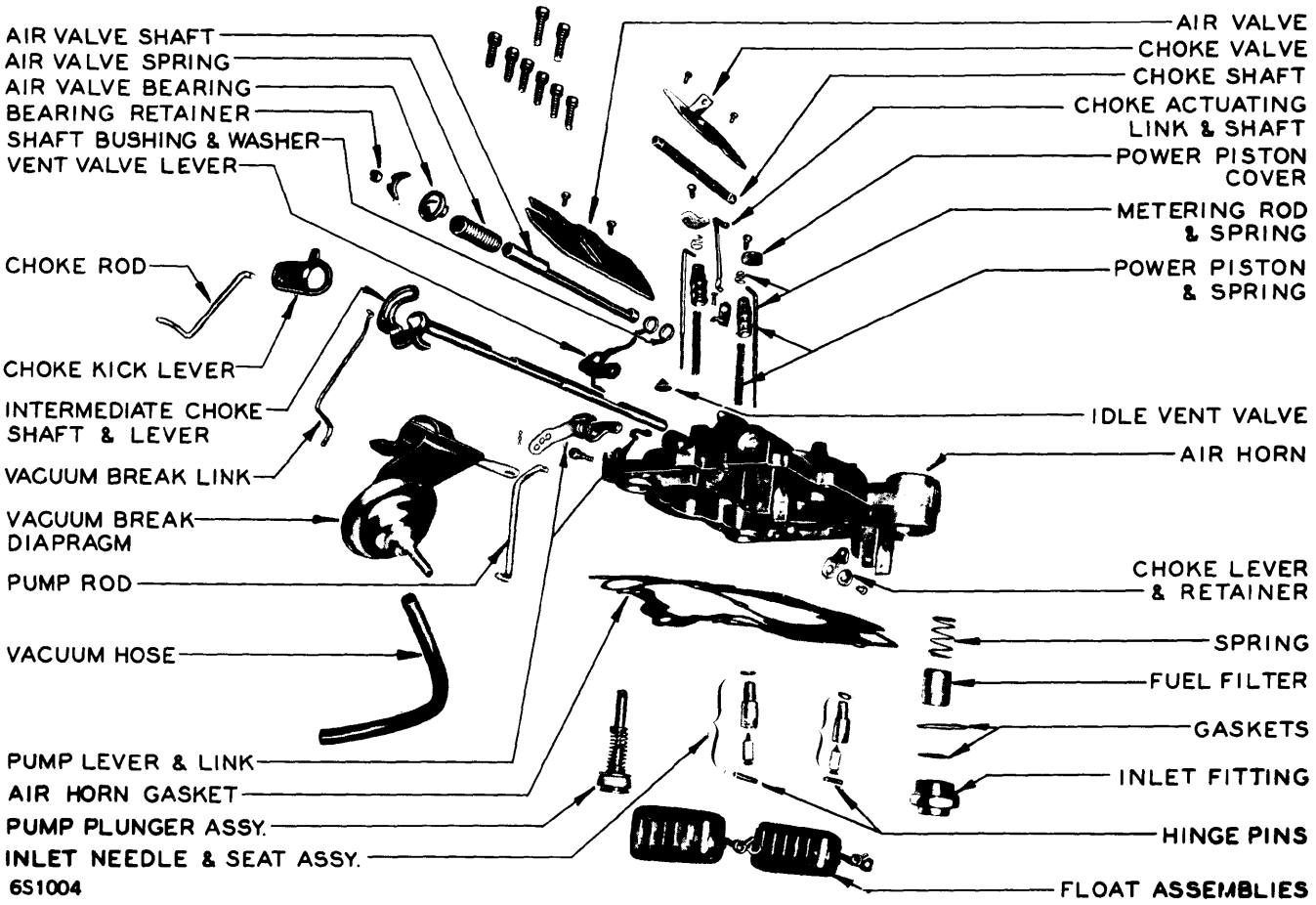

CARTER AVS 4-BARREL CARBURETOR AIR HORN ASSEMBLY

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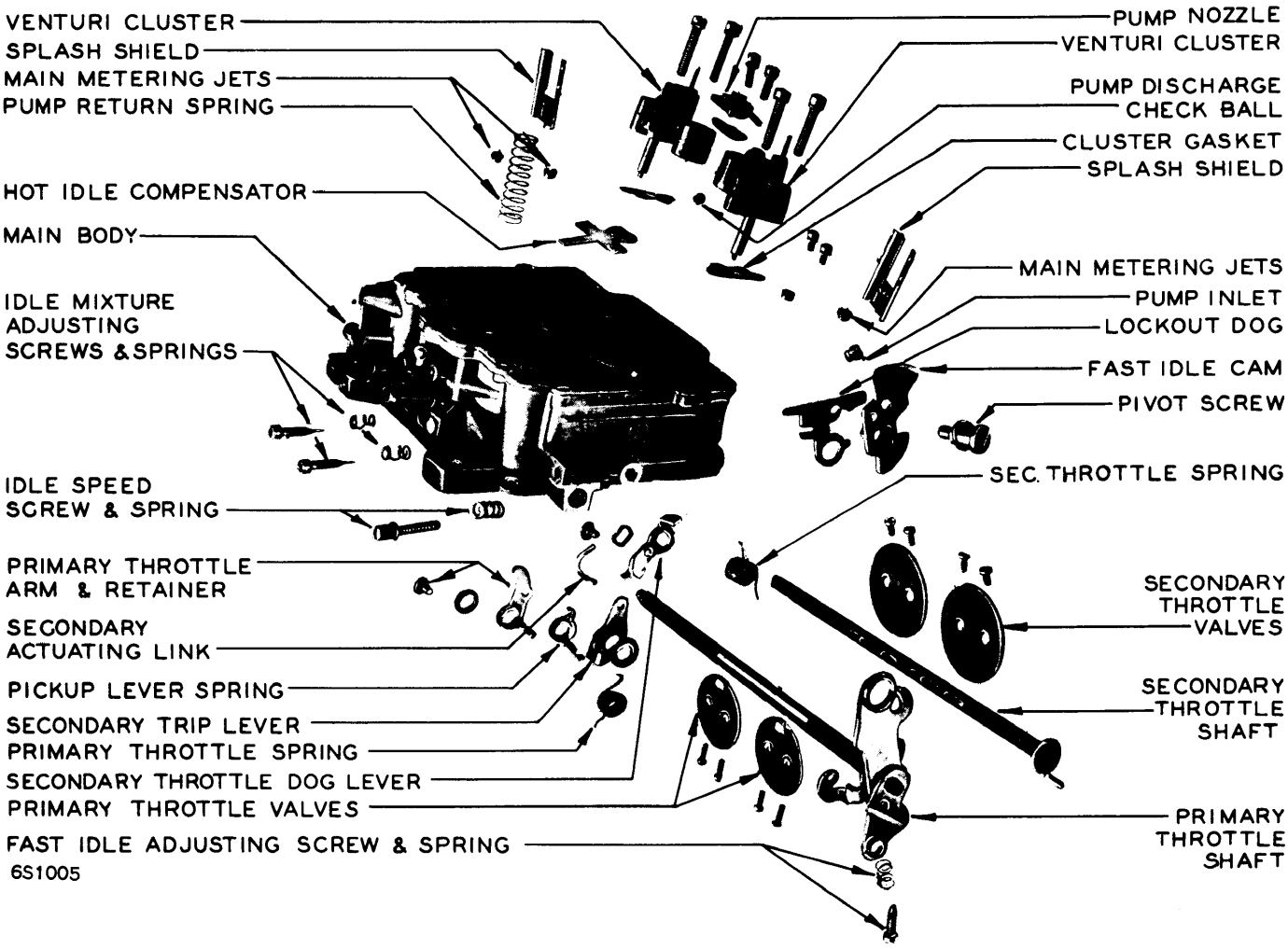

CARTER AVS 4-BARREL CARBURETOR MAIN BODY ASSEMBLY

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