SOLEX 4A1 TYPE 4-BARREL

Mercedes-Benz 280 (1973)

DESCRIPTION

Carburetor is a two barrel, downdraft design and is equipped with butterfly type choke valves on primary and secondary barrels. Choke operation is electric and automatic. Fuel cut-off solenoids are installed on both the primary and secondary systems. A diaphragm type accelerator pump provides fuel enrichment for sudden throttle opening.

Automatic Choke – Butterfly type valves installed on both primary and secondary barrels. An additional fuel enrichment is made by fuel outlet bores directly under choke valves. To prevent early re-engagement of choke when engine is shut off for a short time, choke housing is heated by warm water in addition to electric heating of choke cover.

Float Chamber – A centrally located bowl is used. The float needle seat is pressed into carburetor housing. To prevent sticking of float needle, needle is connected to a solid float.

Accelerator Pump – The diaphragm type pump supplies fuel for enrichment on both primary barrels. Fuel is supplied by lugs cast into carburetor body. Pump chamber is lined with plastic as a protection against vapor lock.

OPERATION

Automatic Choke – When engine is cold, choke is pulled closed by tension of bimetallic spring. At the same time, a stepped disc with counterweight is turned to cold start position. The throttle valve lever rests against upper stop of stepped disc and throttle valves of primary barrels are opened a small amount. Vacuum from carburetor opens choke against force of bimetallic spring.

Float Chamber – Fuel flows through open needle valve into chamber and when fuel level is reached, float needle is pressed to its seat by float lift and fuel supply is shut off. When float drops, fuel passage is opened and fuel is allowed to flow into bowl. The carburetor is provided with internal ventilation only.

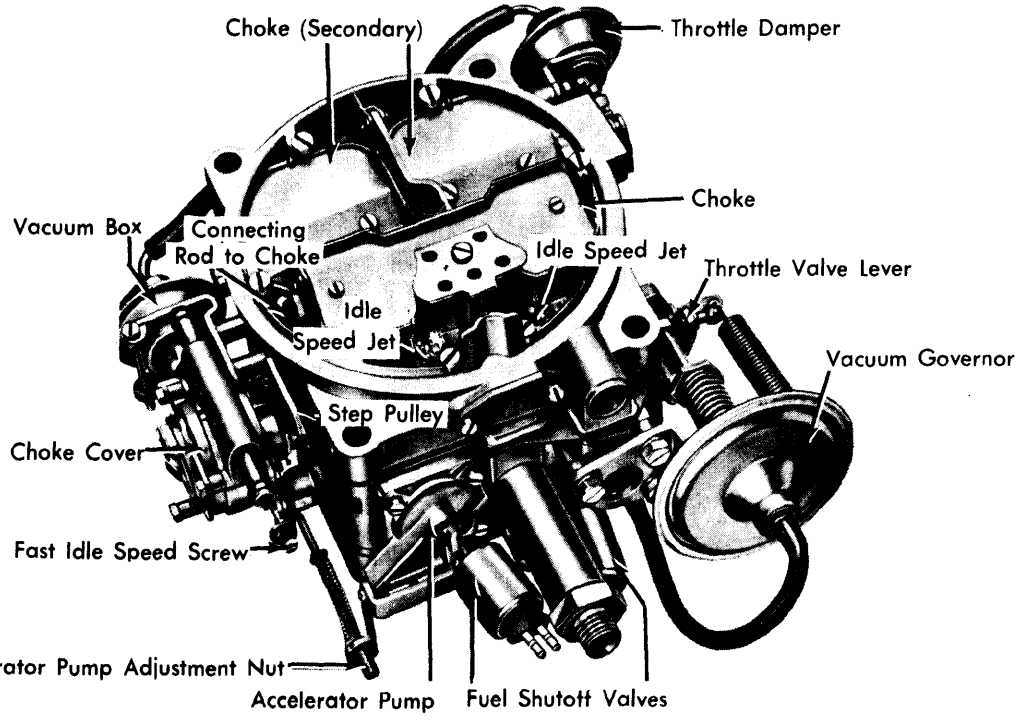
Accelerator Pump – During suction stroke of diaphragm, fuel is drawn from float chamber into pump chamber. The pump chamber is lined with a plastic shell for heat insulation. During delivery stroke, fuel is sprayed into barrels of carburetor through opening delivery valves and calibrated injection bores. Two delivery valves prevent entry of air into pump during suction stroke.

Electromagnetic Idle Shutoff Valves – To prevent engine dieseling, valves become de-energized when ignition is turned off. Spring loaded sealing cones close off supply bores. Valves are arranged so that no fuel can be drawn up either at idle mixture outlet bores or at transition bores.

Secondary Barrels Throttle Damping – The vacuum controlled damper prevents sudden opening of throttles. Damper box receives vacuum via a tapped bore. Vacuum counteracts vacuum at throttle.

ADJUSTMENT

NOTE – Dwell angle, ignition timing, and spark plug gap must be correct before adjusting idle. Adjustments are made with air filter installed and crankcase breather connected.

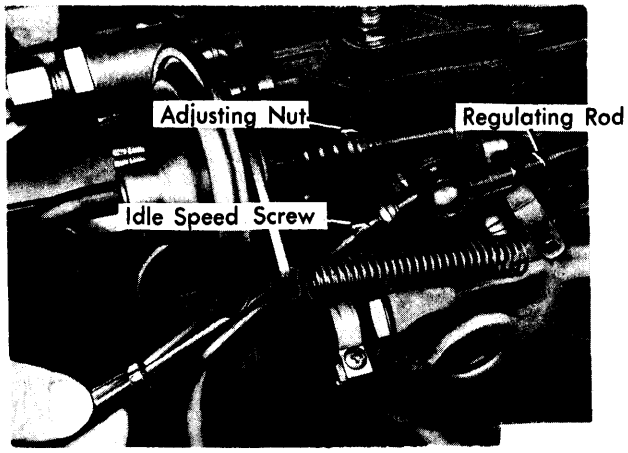


SOLEX 4A1 4-BARREL

SOLEX 4A1 TYPE 4-BARREL (Cont.)

1) Run engine until normal operating temperature (140° oil temperature) is reached. Disconnect regulating rod on carburetor and check throttle valve shaft for easy movement while increasing speed to about 3000 RPM with throttle valve lever. Release throttle valve lever. Lever should return to stop of vacuum governor.

2) Adjust speed to 750-900 RPM with idling speed adjusting screw. Check to see if idling speed stop occurs on throttle valve lever and not on vacuum governor. Loosen spring of vacuum governor, if required, by setting adjusting nut at governor.



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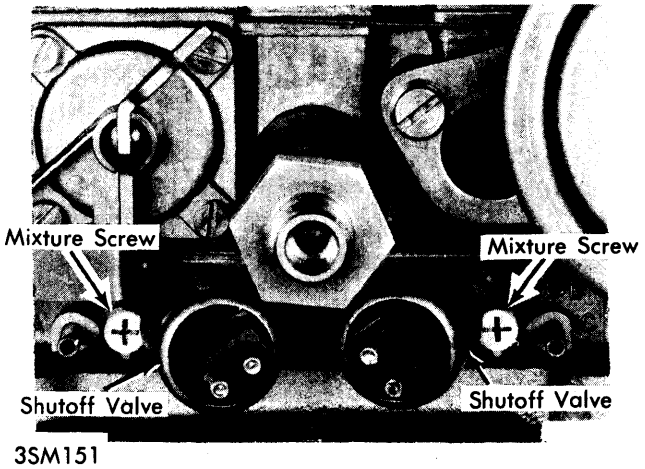
IDLE ADJUSTMENT & VACUUM GOVERNOR

3) Using CO meter, check that maximum percentage of CO is 1.5%. Turn both mixture control screws toward right against stop. Then turn both screws simultaneously to left until correct CO percentage is achieved.



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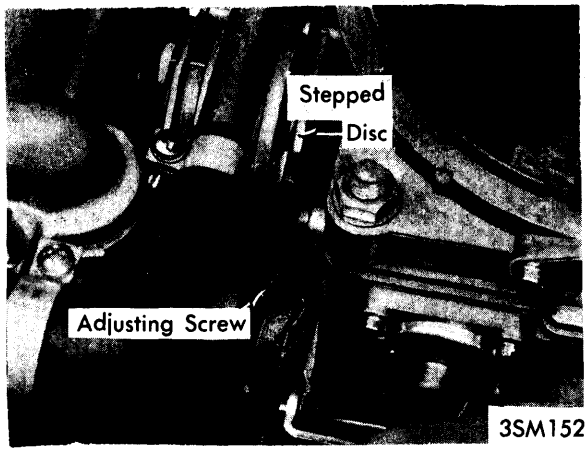
MIXTURE SCREWS & FUEL SHUTOFF VALVES

4) Check idle speed again and adjust if required. Adjustment of idle speed also requires adjustment of mixture screws and CO values.

FAST IDLE ADJUSTMENT

With idle speed set and engine at operating temperature, run engine at idle speed and raise throttle valve lever slightly and place stepped disc up against stop. Release throttle lever. Measure speed. Adjust to 2400-2600 RPM with adjusting screw (see illustration).



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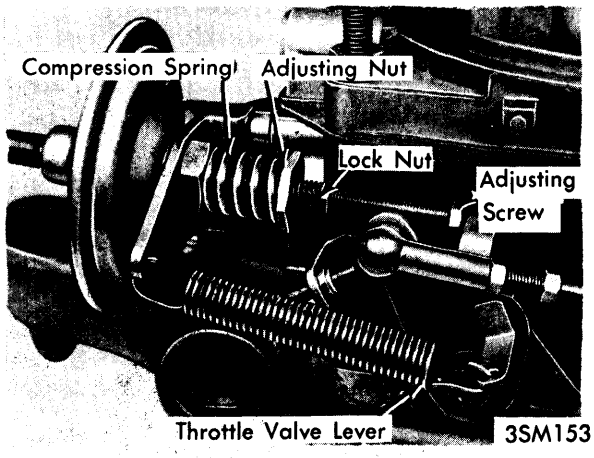
FAST IDLE ADJUSTMENT

VACUUM GOVERNOR ADJUSTMENT

1) With idle speed adjusted and engine at normal operating temperature. Pull vacuum hose from governor, then set speed to 1200-1400 RPM by means of adjusting screw and replace vacuum hose. *NOTE — Loosen lock nut before setting adjusting screw. Hold diaphragm rod with open end wrench at machined flats. When rod not held in place, diaphragm in vacuum box will be damaged.*



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VACUUM GOVERNOR ADJUSTMENT

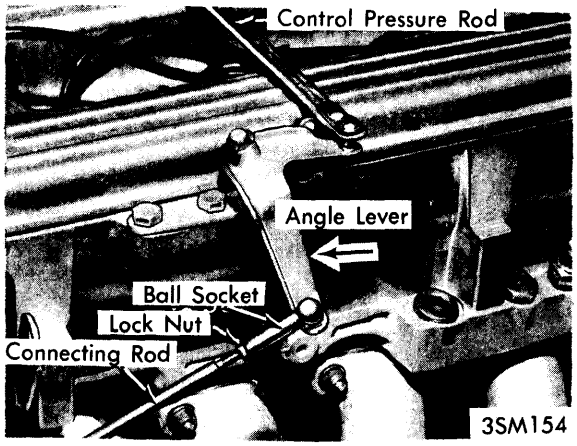
2) Adjust compression spring and place transmission in gear. Speed should be 600-700 RPM. If required, set compression spring to this speed by turning adjusting nut.

3) To test, turn power steering to full lock, switch on air conditioning. Engine should keep running. Adjust speed again if required.

SOLEX 4A1 TYPE 4-BARREL (Cont.)

REGULATING LINKAGE ADJUSTMENT

1) Attach control rod and run engine at idle. Disconnect control pressure rod from automatic transmission and push slide rod together. Push angle lever toward rear. Push control pressure rod toward rear against stop and attach ball socket. Adjust if required.



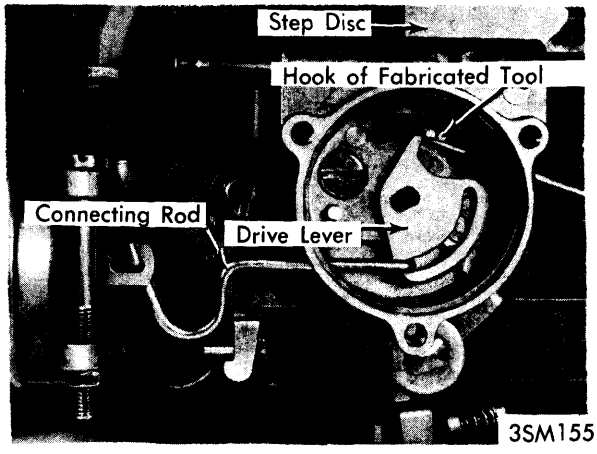
REGULATING LINKAGE ADJUSTMENT

2) Basic adjustment of control rod and connecting rod is determined by length in relation to angle lever. Control rod should be 4.72" long, connecting rod should be 12.17" when measured from center to center of ball head.

CHOKE GAP ADJUSTMENT

1) Run engine at idle speed until vacuum has pulled diaphragm in vacuum box completely back against stop. Clamp vacuum hose closed with a clamp to disconnect vacuum.

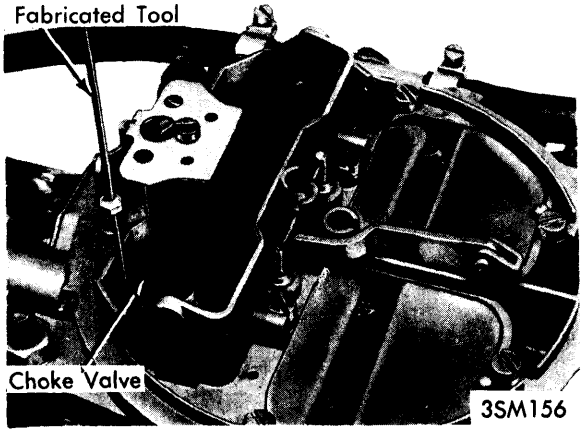
2) Stop engine and check if diaphragm is completely resting against stop. Slightly raise throttle valve lever and position stepped disc completely up against top stop and release throttle valve lever.



PUSHING DRIVE LEVER TO STOP

3) Push drive lever of bimetallic spring until reaching stop. Use a hook inserted through slot in choke housing. *NOTE — Connecting rod will rest against its stop in slot of drive lever but drive lever should not be pushed too heavily against stop since this will pull back diaphragm.*

4) Measure choke gap with a .049" drill placed between downward opening choke flap and carburetor wall. If choke gap requires adjustment, pull rear cooling water hose from starting device. *NOTE — Cover starter housing with a clean rag placed under warm water connection. Also, the pressure of cooling system must be lowered by loosening of radiator cap.*

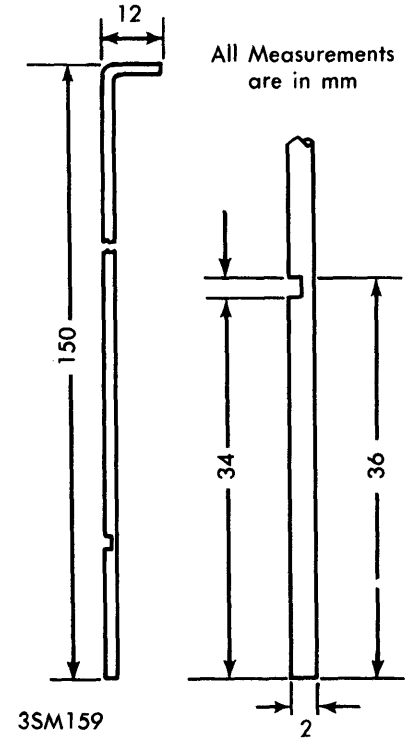


SETTING CHOKE GAP

5) Hold connecting rod with screwdriver and use a second screwdriver to bend connecting rod as required. *NOTE — Check to see if diaphragm is completely against stop. If not, diaphragm or vacuum hose are leaking and parts must be replaced.*

FUEL LEVEL CHECKING & ADJUSTMENT

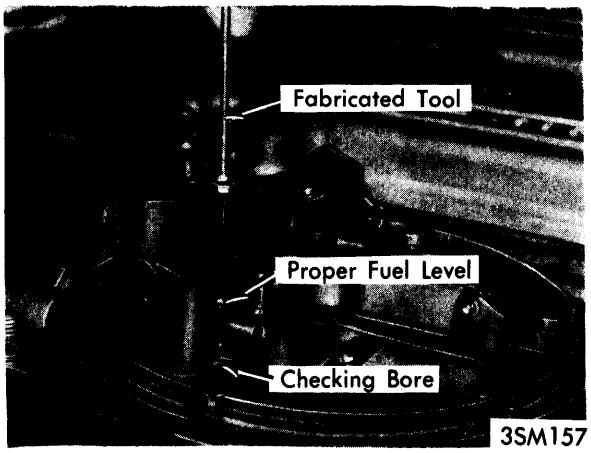
NOTE — A special tool must be fabricated to measure fuel level. Tool should be fabricated to dimensions shown in illustration.



SELF FABRICATED TOOL

SOLEX 4A1 TYPE 4-BARREL (Cont.)

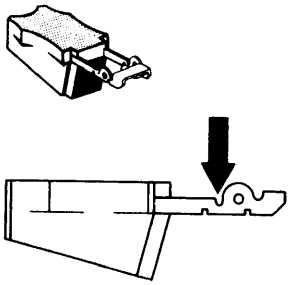
1) Run engine for a short time at high idle speed. Shut off engine. Guide measuring gauge through bore in carburetor cover as far as it will go.



CHECKING FUEL LEVEL

2) To facilitate reading, mark gauge with chalk in measurement area. After gauge has been inserted, remove gauge and read fuel level. If level is correct, reading should be within notched area of tool.

3) To adjust, remove carburetor cover and adjust float by bending float arm upward to raise level, or downward to lower level as shown in illustration.



FLOAT LEVEL ADJUSTMENT

OVERHAUL

DISASSEMBLY

1) With carburetor removed from vehicle, remove clip and disconnect choke valve connecting rod. Remove retaining screws securing upper portion of carburetor to main carburetor body and remove upper carburetor body.

2) Remove accelerator pump cover and diaphragm. Remove float hold down clip and remove float with needle valve. Remove main jets and plugs for idle speed fuel ducts.

CLEANING

Clean all components in a suitable carburetor cleaning solution. Blow dry all components and passages of carburetor with compressed air. *NOTE — Do not use drills or wire to clean jets or passages in carburetor.*

ASSEMBLY

To assemble carburetor, use new gaskets and reverse disassembly procedure.