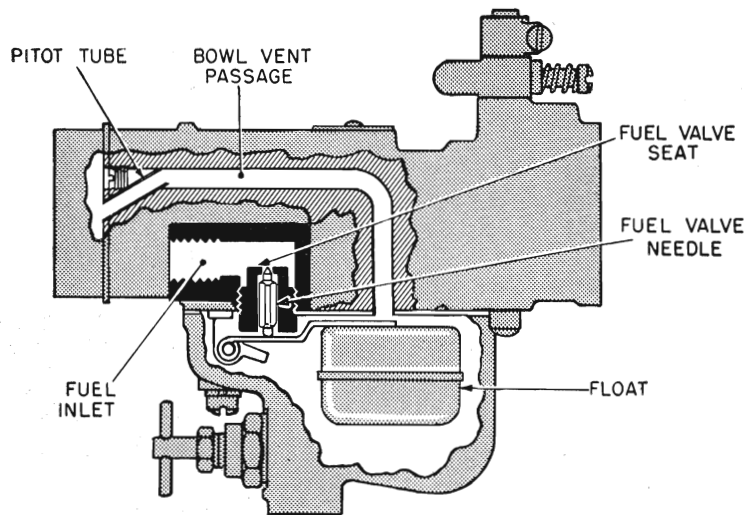


ZENITH 87-SERIES CARBURETORS

The Zenith 87-Series is a horizontal carburetor with a concentric fuel bowl. It is a "balanced" carburetor, because all air for fuel chamber and metering well ventilation and idling must come through the air cleaner. Air cleaner restrictions have a minimum influence on the fuel-air ratio when a carburetor is thus "balanced".

The main jet and discharge jet are centrally located. The metering well which completely surrounds the discharge jet is in the center of the fuel bowl assembly. This construction permits extremely high angle operation in any direction.

The venturi, which is part of the throttle body casting, measures the volume of air that passes through the carburetor. In selecting the venturi size, the smallest size that will permit full power development should be used.

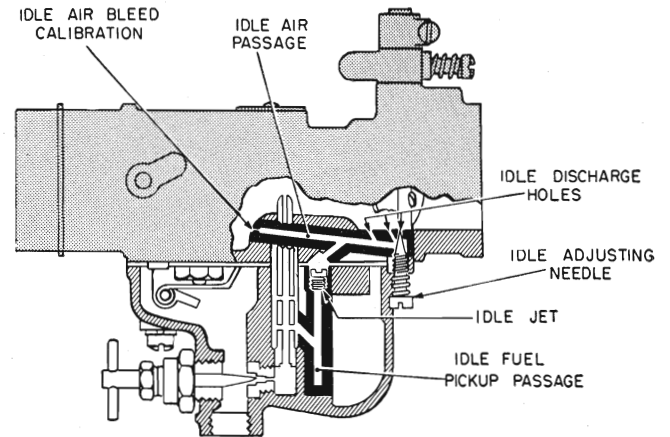


FUEL SUPPLY SYSTEM

FUEL SUPPLY SYSTEM. Fuel under normal pressure entering the float chamber through the fuel valve seat is controlled by the twin float which, moving on its axle, closes the needle valve when the fuel reaches the proper level in the bowl.

IDLING SYSTEM. At idling speeds the throttle plate is almost closed, thus a very high suction exists at the edge of the throttle plate. At this point the idle discharge orifices are located. All fuel for idling and part throttle operation is supplied through the main jet. Fuel from the float chamber flows through the main jet into the metering well. Fuel for idling is drawn from this well through the calibration, or metering orifice, in the center of the idling jet. As the fuel reaches the idling channel it is mixed with air which is admitted through a calibrated orifice in

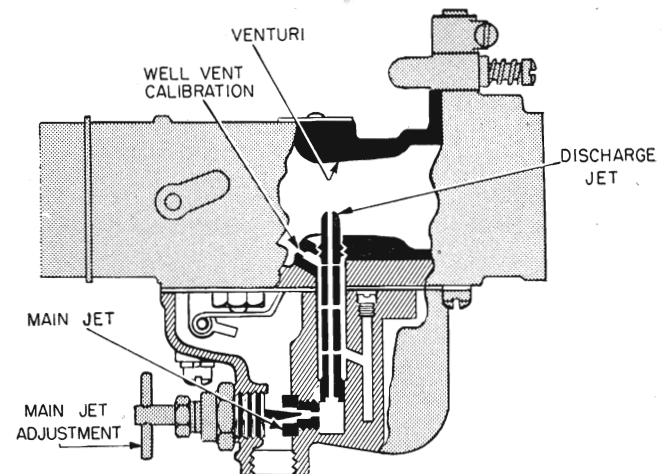
the channel from the inside of the air intake to form an emulsion. This emulsion is discharged into the air stream, to form the idling mixture, through two holes, one of which is controlled by the Idle adjusting



IDLING SYSTEM

needle. Turning the adjusting needle counter-clockwise (out) permits more of the emulsion to reach the air stream and make the idling mixture richer while turning the needle in (clockwise) cuts off the amount of the emulsion reaching the air stream and makes the mixture leaner.

HIGH SPEED SYSTEM: As the throttle is opened, the suction on the idling system diminishes, but the increased volume of air entering the engine through the venturi creates sufficient vacuum (suction) on

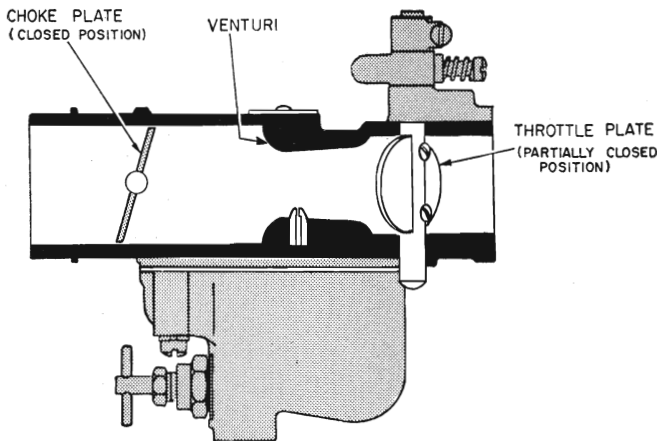


HIGH SPEED SYSTEM

the discharge jet to draw an emulsion of fuel and air from the metering well which receives its fuel from the main jet and its air from the well vent. The flow characteristics of the discharge jet are influenced by the size, location, and number of holes in the sides

of that part of the jet which is in the metering well, as well as by the sizes of the discharge jet orifice, the size of the main jet, and the size of the well vent. The well vent is located in the air intake and permits air to enter the top of the metering well around the outside of the discharge jet. The flow of fuel through the main jet is controlled by the main jet adjustment.

CHOKE SYSTEM: Starting a cold engine requires a much richer mixture of fuel and air. Moving the choke lever to close the choke plate restricts the air



CHOKE SYSTEM

entering the carburetor, except at the pitot tube to the bowl vent, and increases the suction on the idling system which makes the mixture richer.

STARTING THE ENGINE: Before cranking the engine, the carburetor throttle should be opened a little to expose both idle discharge ports to suction. The choke should be fully closed until the engine starts, then opened a little to prevent stalling from being over-choked, then when the engine is fully warmed up the choke can be returned to wide open position and the throttle closed to the idling position.

ADJUSTMENTS. Adjust the throttle stop screw to obtain the desired idling speed by turning the screw in (clockwise) to increase the speed and out (counter-clockwise) to decrease the engine speed.

Adjust the idle adjusting needle to obtain smooth idling of the engine at idling speed. Turn the needle out (counter-clockwise) to make the mixture richer, and in (clockwise) to make it leaner.

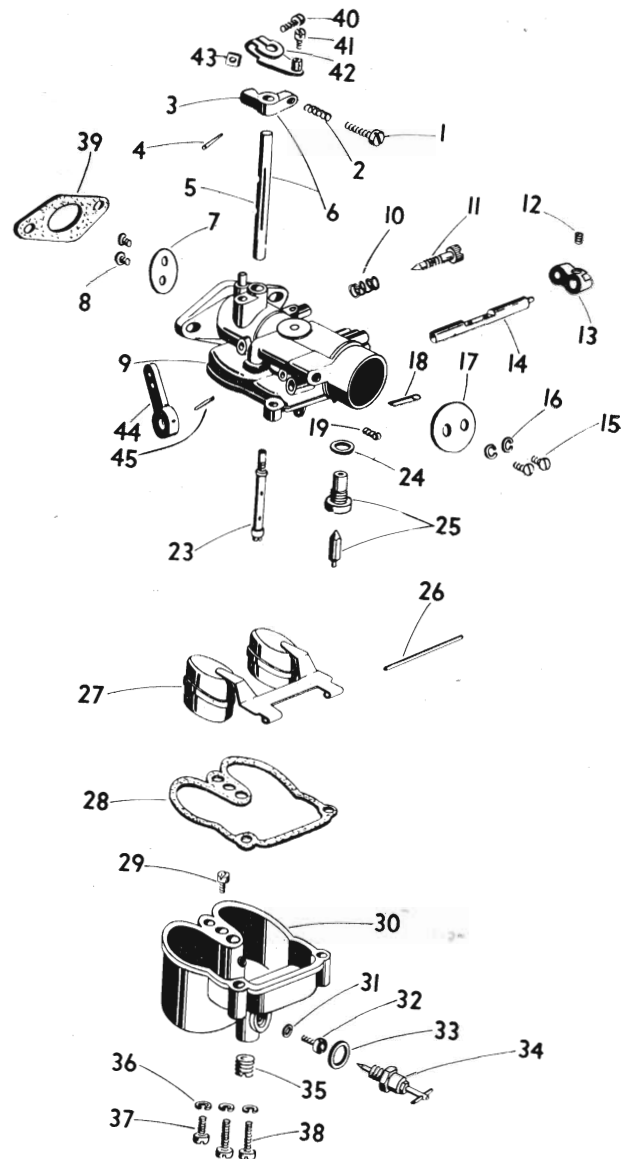
Adjust the main jet adjustment for full power of the engine while under a load. Turning the adjusting needle out (counter-clockwise) makes the mixture richer while turning the needle in (clockwise) cuts off the flow of fuel to make the mixture leaner.

NOTE: Do not try to operate on a very lean mixture, better performance and better fuel economy will be obtained if the mixture is not too lean.

DISASSEMBLY

A. IDENTIFY CARBURETOR

- Check numbers on metal identification disk riveted to top of throttle body. The inside number next to the rivet is the Zenith assembly number and the one next to the outer edge of the disk is the vehicle manufacturer's.



B. DISASSEMBLED VIEWS

- The disassembled view will identify the various component parts and show the relation to assembly. Use the disassembled view to identify and locate parts when performing the disassembly and reassembly operations.

C. SEPARATE CARBURETOR BODIES

- Remove the three bowl assembly screws (37 & 38) and lockwashers (36) and separate fuel bowl (30) from throttle body (9).

D. DISASSEMBLE FUEL BOWL

- Remove the main jet adjustment (34) and fibre washer (33), using a $\frac{3}{16}$ " open end wrench.
- Remove the main jet (32) and fibre washer (31), using Zenith Tool No. C161-83 main jet wrench.
- Remove the Idle Jet (29), using a small screwdriver.
- Remove the bowl drain plug (35).

E. DISASSEMBLE THROTTLE BODY

- (a) Remove the float axle (26) by pressing against the end with the blade of a screwdriver.
- (b) Remove the float (27).
- (c) Remove the fuel valve needle (25), using the fingers.
- (d) Remove the fuel bowl to throttle body gasket (28).
- (e) Remove the main discharge jet (23), using a small screwdriver.
- (f) Remove the fuel valve seat (25) and fibre washer (24), using Zenith Tool No. C161-85.
- (g) Remove the idle adjusting needle (11) and spring (10).

CLEAN AND INSPECT PARTS

A. CLEAN PARTS

- (a) Clean all metal parts thoroughly with cleaning solution and rinse in solvent.
- (b) Blow out all passages in the air intake assembly, fuel bowl assembly and throttle body. **NOTE:** Be sure all carbon deposits have been removed from throttle bore and idle Discharge holes. It is advisable to reverse flow of compressed air in all passages to insure all dirt has been removed. Never use a wire or drill to clean out jets.

B. INSPECT PARTS

- (a) **Float Assembly.** Replace float assembly if loaded with gasoline, damaged, or if float axle bearing is worn excessively. Inspect top side of float lever for wear where it contacts fuel valve needle.
- (b) **Float Axle.** Replace if any wear can be visually detected on the bearing surface.
- (c) **Fuel Valve Seat & Needle Assembly.** Replace fuel valve seat and needle because both parts wear and may cause improper float level.
- (d) **Idling Adjusting Needle and Spring.** Inspect point of needle. This must be smooth and free of ridges.
- (e) **Gaskets and Fibre Washers.** Replace all gaskets and fibre washers every time the carburetor is disassembled.
- (f) **Check Specifications.** Verify the correctness of the following parts. Numbers will be found on the parts. Venturi; Main Jet; Idling Jet; and Fuel Valve Seat.

REASSEMBLY

A. REASSEMBLE THROTTLE BODY.

- (a) Install the fuel valve seat (25) and fibre washer (24), using Zenith Tool No. C161-85.

- (b) Install the main discharge jet (23), using a small screwdriver.
- (c) Install fuel valve needle (25) in seat (25), followed by float (27) and float axle (26). **NOTE:** Insert tapered end of float axle (26) into float bracket on side opposite slot and push through the other side. Press float axle (26) into slotted side until the axle is centered in bracket.
- (d) **Fuel Level.** Check position of float assembly (27) for correct measurement to obtain proper fuel level using a depth gage. **NOTE: Do not bend, twist, or apply pressure on the float body (27).**
- (e) With bowl cover assembly (9) in an inverted position, viewed from free end of float (27), the float body must be centered and at right angles to the machined surface. The float setting is measured from the machined surface (no gasket) of float bowl cover (9) to top side of float body (27) at highest point. This measurement should be $3\frac{1}{32}$ " plus or minus $\frac{1}{32}$ ".
- (f) **Bending Float Lever.** To increase or decrease distance between float body (27) and machined surface (9) use long nosed pliers and bend lever close to float body. **NOTE:** Replace with new float if position is off more than $\frac{1}{16}$ ".
- (g) Install throttle body to fuel bowl assembly gasket (29) on machined surface of throttle body (9).
- (h) Install the idle adjusting needle (11) and spring (10).

B. REASSEMBLE FUEL BOWL

- (a) Install the main jet (32) and fibre washer (31), using Zenith Tool No. C161-83 main jet wrench.
- (b) Install the main jet adjustment (34) and fibre washer (33), using a $\frac{9}{16}$ " open end wrench.
- (c) Install the idle jet (29), using a small screwdriver.
- (d) Install the bowl drain plug (35).

C. REASSEMBLE CARBURETOR BODIES

- (a) Install the three bowl assembly screws (38) and lock-washers (36) through the fuel bowl and into the throttle body and draw down firmly and evenly.

SPECIAL TOOLS

The special tools recommended for the 87-Series carburetors are:

1. C161-83 Main Jet Wrench.
2. C161-85 Fuel Valve Seat Wrench.



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