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Harley-Davidson Motor Co., Milwaukee

## Zenith Carburetor Instructions

The Zenith is a plain tube automatic type of carburetor, depending upon an arrangement of jets and air passages to provide a satisfactory fuel mixture for the various engine speeds. The operation of the carburetor is entirely automatic, with the exception of a low speed (idling) air adjusting screw, which is located on the top of the carburetor body and is readily

accessible. Turning the idler adjusting screw 2 (Illus. No. 1) outward makes for a lean mixture, and turning it inward enriches the mixture.

Once the proper combination of jets has been obtained for a certain type of motor, no further adjustments should be necessary.

### Starting the Motor

When the motor is cold, place choker lever at P (Illus. No. 1, priming position) and with the switch off, operate the starter pedal two or three times. Then move choker lever to S (starting position), turn on switch, and start the motor in the usual manner. Run the machine a few blocks with the choker lever in S (starting position) until the motor is warm; then move choker lever toward R (running position).

An intermediate position is provided which will be found very convenient during the warming up stage. Choker lever should be moved to R position as soon as practicable; running in any other position continuously will cause misfiring and will consume excessive fuel. With a warm motor, it will seldom be necessary to use choker lever.

If a motor is difficult to start, do not instantly condemn the carburetor but rather check over the spark plugs, valve tappets, and manifold joints and make certain that there is no water in the gasoline. Very often difficult starting is caused by improperly adjusted spark plugs, and poor

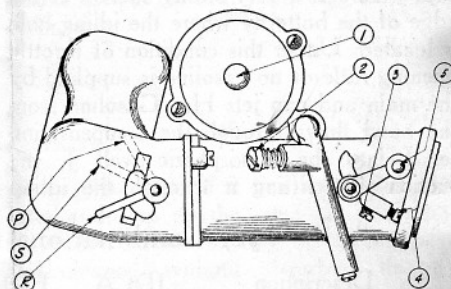


ILLUSTRATION NO. 1

- P—Priming position;
- S—Starting position;
- R—Running position;
- 1—Float needle valve cap;
- 2—Idler adjusting knurled screw;
- 3—Throttle disc control screw;
- 4—Set screw;
- 5—Throttle lever.

carburetion is blamed. Sticky or gummy exhaust or intake valve stems and guides, improper valve tappet adjustments; water in the gasoline, a poor grade of gasoline or leaky manifold joints can also affect motor starting, much the same as poor carburetion.

## Carburetor Parts and Their Functions

In case it becomes necessary to take the carburetor apart for cleaning (which may be done without disturbing a single adjustment) it would be well to know the parts and their functions.

A float chamber, or bowl A, (Illus. No. 2), and a barrel, containing a system of fuel nozzles and air passages, B, are the principal parts. Fuel from the tank enters the Union Body D, and after being strained through the filter screen E, passes into the bowl through the float needle valve seat F. From the bowl to the motor fuel flows through different channels, in various quantities and proportions, depending on the size of the nozzles, the speed of the motor, and the degree of throttle opening.

To see if there is any gasoline in the carburetor, remove float needle valve cap G. If the needle valve can be depressed with the finger, there is no gasoline in the carburetor.

When the butterfly throttle valve is nearly closed and the motor is "turned over" there is a very strong suction at the edge of the butterfly where the idling hole is located. Under this condition of throttle opening little or no gasoline is supplied by the main and cap jets H. Gasoline from the bowl flows through the compensating jet I into the atmospheric well J, the suction then lifting it through the idling

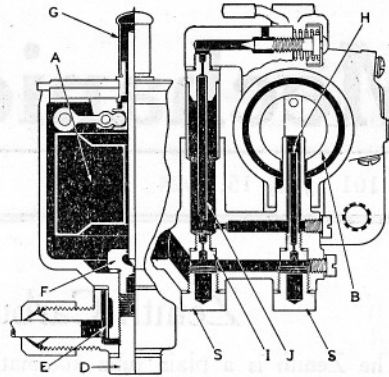


ILLUSTRATION NO. 2

- A—Bowl;
- B—Choke tube or venturi;
- D—Gasoline union body;
- E—Filter screen;
- F—Float valve seat;
- G—Float needle valve cap;
- H—Main jet;
- I—Compensating jet;
- J—Atmospheric well;
- S—Lower body plugs.

jet which has a calibrated opening at its upper end. At this point it meets a stream of air which is controlled by the knurled screw 2, (Illus. No. 1), the only adjustment which can be changed on the carburetor. The resulting mixture passes through the idling hole and on into the motor cylinders.

### Jet Combinations for Various Motors

Description	JDCA		Factory No.	Price	JD		Factory No.	Price
	JDCB				JE			
Main jet, H, (Illus. No. 2) Standard . . . . .	21		MX1728D	.50	20		MX1728C	.50
Main jet, optional as explained below . . . . .	20		MX1728C	.50	19		MX1728B	.50
Atmospheric well or idling jet, J, (Illus. No. 2) . . . .	45		MX1724	.45	45		MX1724	.45
Compensating jet, I, (Illus. No. 2) Standard . . .	22		MX1729D	.35	20		MX1729B	.35
Compensating jet, optional, as explained below . . . . .	21		MX1729C	.35	19		MX1729A	.35
Choke or venturi . . . . .	23		MX1733A	1.50	21		MX1733	1.50
Float needle valve seat, F, (Illus. No. 2) . . . . .	38		MX1720	.35	38		MX1720	.35
Identification mark on carburetor . . . . .	CA				JD			

It will be noted that the two types of carburetors are not interchangeable without changing jets and venturi. Any of these parts can be ordered from us in the regular way.

For special occasions or to meet with the characteristics of certain motors, the jet combinations can be changed as follows:

If a motor tends to overload at moderate speeds or to consume too much gasoline, a No. 20 main jet can be fitted in the CA model, or a No. 19 main jet in the JD or JE model. If overloading is found at low speeds, it can in practically all cases, be eliminated by proper use of the idling adjustment.

The low speed (idling) adjusting screw 2 (Illus. No. 1) is to be used for varying the quality of the mixture; that is, turning it out makes the mixture leaner, while turning it in makes the mixture richer. If the screw is turned all the way in and the mixture is still too lean, the trouble undoubtedly is caused by air leaks in the manifold or inlet housings. This screw cannot be used to vary the idling speed of the motor.

The throttle valve or disc control screw 3 (Illus. No. 1) is used for this purpose.

### Care of the Carburetor

Keeping the carburetor free from dirt and water is the only care necessary. This should be done periodically by removing the Union Body D (Illus. No. 2), filter screen E, and lower plugs S, and cleaning the openings with gasoline, compressed air, or a straw. Do not use a wire or drill. It is very important that the filter screen be replaced and that it be in good condition. If it is dirty it will shut off

Turning it in makes the motor run faster; turning it out slows the motor down. This screw may be termed a quantity adjustment. These screws should be used in conjunction with each other. In an extreme case of loading at low speeds, a No. 21 compensating jet may also be tried for the CA model, or a No. 19 compensating jet for the JD or JE model. This jet makes for a smoother running motor at low speeds, but is not quite as good for acceleration or hill climbing. See that the idling jet is a 45. Some of the earlier carburetors were fitted with size 50 jets which had a slight tendency to overload.

All jets are plainly marked and through the aid of illustration No. 2 with the foregoing descriptive matter, the various jets and working members should be located without difficulty.

If you should happen to have a Zenith carburetor not functioning properly on one of your motors, we suggest that it be checked over. The jet sizes should correspond with the standard settings as mentioned above, for that particular model of carburetor.

the gasoline, and if it has holes, dirt can enter and stop up the jets. If necessary the entire carburetor can be taken apart and cleaned, without disturbing its adjustment; each part has its place and can go in no other. If, after a considerable period, the carburetor should not idle well, inspect and clear the atmospheric or idling well, which may be clogged from dust.