

Zama Newsletter

Volume 1, Issue 3

April 2021

INSIDE THIS ISSUE

1 Rotary Carburetors

2 Rotary Disassembly & Service

3 Principles of Operation

Rotary Carburetors

In this issue I would like to provide some general information about the rotary carburetor as there seems to be a lot of misinformation or a lack of understanding about Zama's rotary carburetor. Also in this issue I will provide information on the proper way to inspect your rotary carburetor and how it actually operates.

One of the most common pieces of misinformation I hear from technicians/customers is the rotary carburetor does not have adjustment needles or only has the H needle. The majority of Zama rotary carburetors have both the L and H needle. There are a few rotary carburetors that do not have an H needle however all rotary carburetors have an L needle for idle. In these carburetors without an H needle they will have a fixed jet for the wide open throttle that does not require any type of adjustment so this is the reason for no H needle on certain carburetors.

The H needle used to adjust your wide open throttle will be located between the fuel line connections and cannot be removed due to a brass retainer.

The L needle is located down the center of barrel on the black plastic rotor cover and may be plugged either with a brass or black plastic cap. If you see the carburetor has a brass cap over the L needle then it is not intended to be adjusted per the manufacturer of the unit. If your carburetor has black plastic plug installed, I cannot discuss how to remove the black plastic plug due EPA regulations however I can say it is pressed into the carburetor.

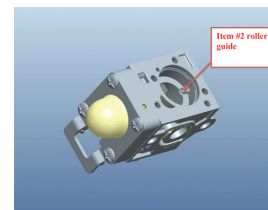
Please Keep in mind by law all plugs and limiter caps must be installed after adjustment of the carburetor.

The larger connector on rotary carburetors is usually your inlet connector and the fuel line with your filter will attach to this connector. The rotary carburetor contains no standard check valves therefore if your rotary carburetor should fail to prime it will most likely be due to the primer base assembly or the pump flap on your pump diaphragm sticking to the carburetor.

One other common problem I see is when a customer pulls the rotor cover off and loses the tiny roller guide. A carburetor that is missing the roller guide will not operate correctly.

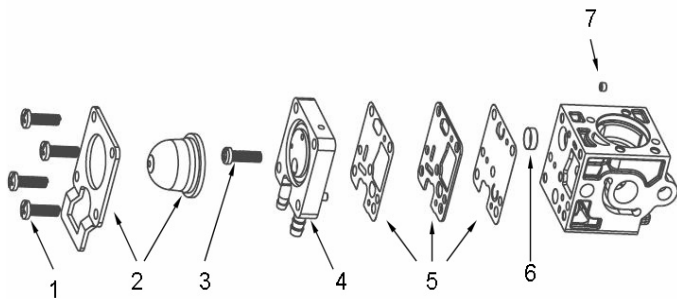
ROLLER GUIDE INSTALLATION

The roller guide (item # 2) is assembled on to the post that is located inside the body of the RB carb. It contacts the ramp on the rotor (barrel). See the schematic showing the location. This part must be installed for proper function of the carburetor.

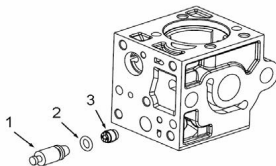


RB ROTARY DISASSEMBLY AND SERVICE

FUEL PUMP

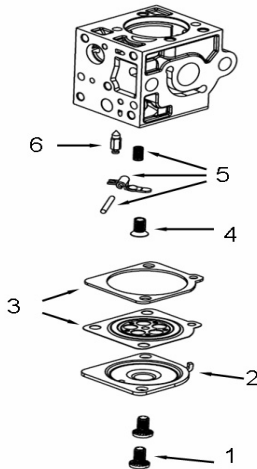


1. Remove four syringe retainer screws.
2. Remove syringe retainer and syringe.
3. Remove base primer screw. Remove base primer. Replace if primer does not function.
4. Remove surge diaphragm, pump gasket, and pump diaphragm.
5. Inspect pump diaphragms and gasket, replace if they show any signs of wear, wrinkles, curling or tears.
6. Remove fuel strainer installed in the carburetor body. Inspect for dirt and foreign matter. Replace if necessary.



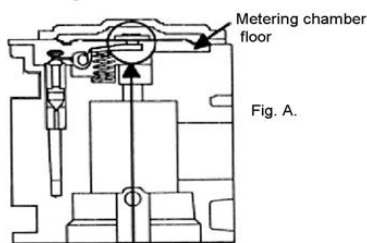
1. Remove plastic nozzle plug.
2. Inspect nozzle plug and o-ring. Replace if they show any signs of wear.
3. Remove jet. Inspect for damage. **Do not** run drill or wire through jet for cleaning.

METERING DIAPHRAGM AND INLET NEEDLE VALVE

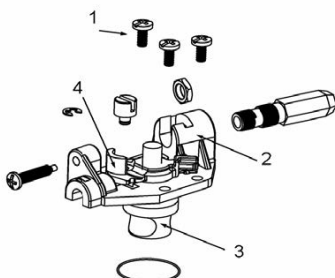


1. Remove two metering cover screws.
2. Remove metering chamber cover.
3. Remove metering diaphragm assembly and metering cover gasket. Inspect metering diaphragm for dirt and foreign matter, replace if they show any signs of wear, wrinkles, curling or tears.
4. Remove metering lever screw.
5. Remove the metering lever, pin and spring. Inspect the metering lever; it should not be worn where it contacts the inlet needle valve or pin. Replace if necessary.
6. Remove and inspect the inlet needle valve. The tip should not be deformed where it contacts the seat. A ring on the needle tip is normal. When you run your thumbnail across the surface of the tip you should not feel groove. Replace it if necessary.

Adjustment of metering lever for RB models



Free end of metering lever is about flush with the gasket flange of the carburetor body.

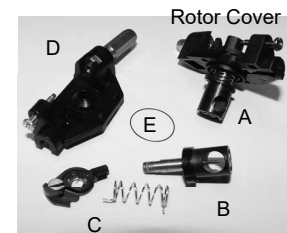


NOZZLE

- Nozzle Assembly cannot be removed.
- Clean with aerosol cleaner.

ROTOR

1. Remove the three to four rotor cover screws.
2. Remove rotor cover carefully.
3. Inspect rotor for damage. Rotor assembly should not be broken or worn. Areas to look for wear are:
 - A) rotor
 - B) jet needle
 - C) return spring
 - D) boot
 - E) O-ring.
4. Remove Rotor guide carefully. The steel guide must be smooth and free from cracks or chipped edges.
5. Inspect and clean Roller guide. Pay attention when disassembling carb to remove the roller guide and set aside so that it is not misplaced when cleaning the body.

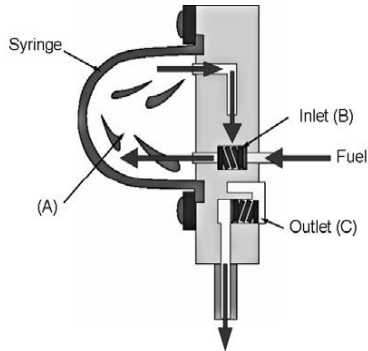


CARBURETOR BODY

- Clean the carburetor body. Channels can be cleaned with aerosol cleaner. **Do not** use wires or drills to clean the orifices. Inspect the operation of the throttle valve and lever.

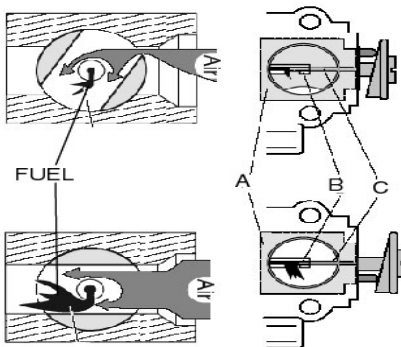
PRINCIPLES OF OPERATION

PRIMER PURGE PUMP



- The purge pump is comprised of purge bulb (A), inlet check valve (B) and outlet check valve (C).
- When the purge bulb (A) is depressed, the outlet check valve (C) opens and air or fuel is forced through the outlet check valve (C) to the fuel return hose fitting.
- When the purge bulb (A) is released, the outlet check valve (C) closes and the inlet check valve (B) opens to draw fuel from the metering chamber.
- Vacuum created by the expanding bulb draws fuel from the fuel tank through the fuel passages of the carburetor into the purge bulb (A).

THROTTLE BODY



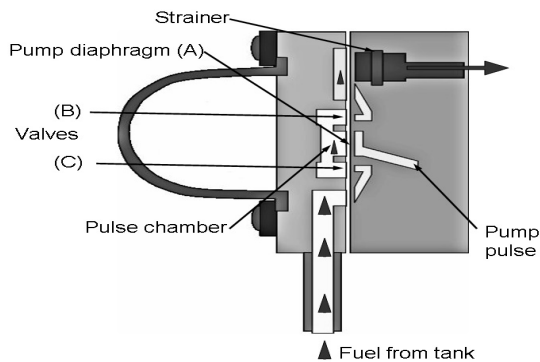
The throttle valve (A) is a hollow barrel. Rotation of the throttle valve controls the opening of the throttle and also controls the air volume.

The main nozzle (B) has a slot port to discharge and is located in the center of the throttle valve for maximum air velocity. The throttle valve needle (C) is installed into the main nozzle to control fuel volume. The throttle valve needle moves upward by cam action of the throttle valve, proportionate to the opening of the throttle valve.

At idle the throttle valve is slightly open. The valve needle is at its lowest position, the main nozzle only slightly open.

As the throttle is opened, the opening of the valve enlarges to allow more airflow into the valve and simultaneously raises the throttle valve to increase fuel flow from the main nozzle.

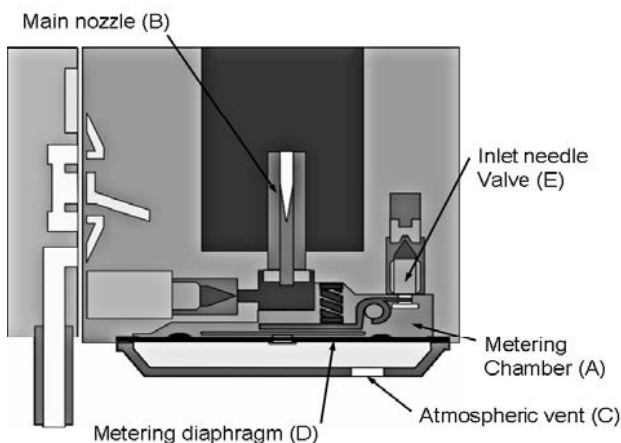
FUEL PUMP



The diaphragm (A) is operated by alternating positive pressure and negative pressure pulses generated in the crankcase.

The valve (B) and (C) open and close alternately to direct the fuel flow from the fuel tank to the inlet needle valve. Fuel is filtered by the strainer prior to entering the metering chamber.

METERING CHAMBER AND INLET NEEDLE



The metering chamber (A) functions as a reservoir for fuel.

As the engine rotates, air is drawn into the throttle valve by crankcase vacuum. This creates depression in the area of the main nozzle (B).

Atmospheric pressure acting through the atmospheric vent (C) depresses the metering diaphragm (D) forcing fuel from the main nozzle (B) and simultaneously opening the inlet needle valve (E) to allow fuel into the metering chamber (A).

The metering diaphragm controls the amount of fuel in the metering chamber.