# The Tillotson Carburetor

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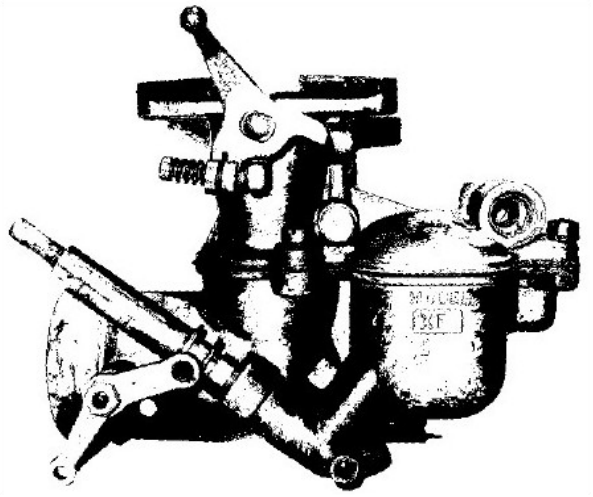
Diablo A's



Harry Tillotson formed the Tillotson Manufacturing Company in 1914 in Toledo, Ohio. The Tillotson square bowl up-draft carburetor was first built in the 1950's. This carburetor uses an air bleed style main jet that was invented by Stromberg in 1914 and is still in use today. A final production run of 3500 carburetors was made in 1981. In 1985, the company was sold and now manufactures small engine carburetors in Ireland. Of that last production run in 1981, most were delivered to Ford, hence the Model XF, most of the rest were sold directly by Tillotson to its distributors, hence the Model X, and the remaining were sold to non Tillotson distributors, the unmarked version. All 3 are identical except for the model designator.

For use on a Model A, any of these 3 Tillotson models is a direct replacement for the Zenith. This carburetor is made from a Zinc Aluminum alloy sometimes referred to as "pot metal". It doesn't rust but can warp with heat. It's a very simple carburetor with just 2 jets. It is easy to dissemble and clean. Other than the main bowl gasket, it uses 3 smaller gaskets that can't be mixed up.

It comes apart easily, the upper and lower bodies being held together by 3 screws. The venturi is cast into the upper body. It shares some parts with the Zenith carburetor, the choke driver, lever, gas adjusting assembly and the drain plug. The most troublesome part to remove is the main jet, sometimes they stick tightly in the lower body.

Once the carburetor has been cleaned externally, remove the 3 screws to separate the upper and lower body, turn the upper body upside down and

remove the float pivot pin, float and the float needle, set them aside. Using a 7/16" deep socket remove the float needle housing and the gasket beneath it, set them aside. Remove the idle air mixture screw and spring, and set aside. Usually you can leave the throttle plate and shaft installed. Look in the throttle bore, and find 2 small holes one above the throttle plate and the other below. These are the idle ports, the top one is .025 id and the lower one is .033. Check that both are open with the correct size cleaning wire, don't enlarge them. They flow from the center of 3 holes seen when the upper body is turned upside down. The hole on the right allows air to be mixed with the gas using the idle air adjusting screw. The hole on the left is for air to be mixed with gas in the main jet (the air bleed design). Toward the fuel inlet is a bowl vent to atmosphere. Make sure all these passages are clear using compressed air.

On the lower body, clean the fuel bowl if necessary, then remove the choke driver and gas adjusting assembly, you need a 13/32" opened end wrench or use an adjustable wrench carefully, set these parts aside. The lower body has 2 removal jets; the one in the base of the bowl is the jet that meters fuel to main jet, its id is .040". Try to remove this jet if possible but don't force it, it can be probed with a cleaning wire if needed. Turn the body over and remove the drain plug and using a good fitting straight blade screw driver, remove the main jet, make sure the gasket for the main jet is also removed. Like the throttle, the choke plate and shaft can be left installed. If the interior is extremely dirty, soak both halves in solvent for a day or more. Then blow dry with compressed air and check that the various passages are clear.

The main jet has a number of small .030 holes through the wall of the jet; this allows air to mix with the gas to provide better atomization (the air bleed jet design). The main jet id is .112. There is a hole in the bowl toward the front of the body, this supplies gas to the gas adjusting valve. Between the bowl and the venturi are 3 holes that line up with the 3 in the upper body. The one on the left is the air port to the idle air adjusting screw. The middle hole is the idle circuit. Gas is drawn from the main jet area to the 2 idle ports near the throttle plate. The hole on the right provides air to be mixed with gas in the main jet (the air bleed design). The main jet area has 4 passages that enter it, make sure these passages are open and clear. Use cleaning wire to verify they are clear.

Check that the threads in the mounting flange (5/16-18) are OK, if not they can be repaired by installing a Heli-coil insert. Also check that the mounting flange is flat, if not place fine sand paper on a smooth flat surface (like glass) and side the flange surface in a figure 8 pattern. Remove just enough material to get it flat. Turn over and check the gasket seating area for flatness. If a gap is seen, typically in the bowl area, use a half round mill file to carefully remove material. The critical sealing area is area between the bowl and the venturi.

Next check the lower body for flatness; with the main jet removed you can use the sand paper on glass technique to make the gasket sealing area flat. After the sanding and filing is finished, blow out both upper and lower bodies, checking that the 3 holes between the bowl and venturi are clean and free of fine particles. Once all the passageways are clear, we can start the reassembly process. Main jet thread size is 3/8-24.

To reassemble, start with the upper body, place a new seal in the recess for the float needle. Install the float needle body and tighten. Install needle, if new, place the upper body on a vise, and using a small hammer, tap the valve into the seat to coin the needle to the seat. Install the float and pivot pin. Check the float level, hold the upper body with float up, measure from the sealing flange to the top of the float, this measurement should be 1". Bend the float to get this distance. Install the idle air adjusting screw and spring. Fully seat the screw and back out 1 ½ turns. This should work as the initial setting. Set the upper body aside.

In the lower body, install the small jet in the bowl, if removed. Turn up side down, place a seal over the end of the main jet and thread in completely, snug up the jet. Install the last seal on the drain plug and tighten the drain plug. Thread the gas adjusting assembly into the lower body. Install the choke driver, choke lever and nut, check choke operation by pulling up on the choke driver. Turn the gas adjustment needle until it seats and turn out ½ turn. This should work as the initial setting. Place the main gasket over the lower body, pick up the upper body right side up and gently lower into the lower body. Install the 3 screws and lock washers, tighten the 2 screws on either side of the venturi, then tight the remaining screw by the gas inlet. The carburetor is now ready to install on the motor.