

# Distributor Techniques

2002 (revised 2010)

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## Distributor Restoration:

Numerous articles have been written concerning the rebuilding of the Model A Ford distributor. Just about any one of them will get you through the rebuilding process. The intent of this article is to provide some tips to help you do the job better.

## A crack in the housing:

The distributor housing is prone to cracking around the top bushing. This is because the material is very thin in this area. On a fully assembled distributor the crack is not visible. You have to remove the large shaft screw and the point cam (part number A12210) in order to inspect for cracks. Often a crack is induced during the rebuilding process, either when pushing out the old bushing, or when pressing in the new bushings. If the housing is cracked I would not use it.

## Bushing removal:

A bushing removal and installation tool can be made on a lathe from some round stock. However to prevent cracking the housing it is recommended that the tool not be used to remove the bushings. If the bushings are extremely worn the tool can slip past them and the exerted pressure will crack the housing. There is also a line of crud that usually forms between the two bushings. In an attempt to push the bushings out with a tool the crud will try to compact and the pressure will crack the housing. My recommendation is to split both bushings with a hack saw blade. Use a pick made from flattening and grinding a common nail to a flat bladed point and pry the sides of the bushing away from the wall of the housing. Pick the bushing out with a pair of long nose pliers in a twisting motion.

## Bushing installation:

Both bushings should be installed from the bottom toward the top. It is important that when the housing is placed upside down on the press, a spacer, with a hole in it, be placed under the housing right under the area where the top bushing seats. This will help with the "please don't crack" effort. Before installing either bushing, chamfer the leading edge of the bushing on a grinding wheel. Lubricate the bushing and the housing before proceeding. By pressing the top bushing in from the bottom, the bushing will begin to move in at a straight line where the casting is at its thickest. This will minimize the possibility of cracking. Removing and installing new bushings without cracking the housing is the most difficult aspect of the rebuilding process and one that should be done with extreme care.

## Clean up:

Soaking the housing in a can of lacquer thinner will remove the old paint and much of the accumulated grease and crud. Prior to painting, it is a good idea to have the housing bead blasted. If that service is not available, a good wire wheeling is recommended. It is extremely important that the oil valve on the side of the housing be removed and a drill bit pushed in through the hole in the housing. You might be surprised to find that the hole is completely plugged with eighty years of accumulated crud. A new oil valve comes with Bratton's kit. The oil valve can be removed by pulling the spring loaded cover back and gripping it with a small pair of channel lock pliers. With a twisting motion the oiler will usually come out, and many times undamaged.

## Painting:

Most any kind of black enamel found in a spray can will do the job. I like the new industrial grade Rustoleum. Before painting, it is a good idea to spend some time masking off the housing. I mask off the bottom part that installs down into the engine, including the round surface boss and the locating pin on the bottom that sits flush against the engine head. The purpose is to provide a good electrical grounding. I also mask off the grooved area that the top plate rotates in by pushing a length of #16 insulated wire into the groove. This is also an area of

electrical grounding and should not be painted. The groove should be lubricated with a light coat of grease after painting. The threaded boss that the ignition cable screws into should also not be painted for reasons of electrical grounding. A 3/8 pipe thread plug obtained from a local hardware store for about 50¢ fits the threads and will mask it off. I also plug the three screw holes and the oil valve hole with small pieces of paper towel so as not to get paint down into the holes.

### **The kit:**

Bratton's Antique Auto sells a complete rebuild kit under part number A12350 (\$49.95 2002 catalog). I highly recommend the use of this kit if you desire to install everything new. It is a cost savings over ordering the parts individually. The kit also incorporates some nice modification features such as a cross- drilled shaft and oil hole for lubricating the top bushing. I have found the kit to be of very good quality. The cam is very well machined and in tolerance. The points and condenser are also very good quality. The kit is complete in every detail for the rebuilding of a bare housing, and it includes all the proper shims, screws, nuts, and washers. However, many of the existing parts found in a distributor core are serviceable and they can be reused. In this case it is prudent to order only those parts that need to be replaced. However, in just about every case, both the shaft and both bushings should be replaced as most will be found worn.

### **Illustrated parts list:**

Howard Barnes' drawing in the Bratton catalog is a complete illustrated assembly diagram that shows the correct order of assembly of each part of the distributor. This is a very helpful reference if you are not familiar with the assembly of a distributor.

### **Fitting the shaft:**

The new bushings, once installed, will have to be reamed to fit the new shaft. Bratton's sells the correct bushing reamer under part number A12132R. Once the bushings have been reamed and you are satisfied that the shaft fits smoothly, it is necessary to install it such that there is little or no thrust clearance, and the shaft is not bound up due to the complete absence of thrust clearance. The assembly calls for the installation of a .015 metal shim (part number A12180, included in the kit) at the top of the shaft, under the machined edge. A fiber shim (part number A12194, included in the kit) is installed at the bottom of the shaft. A distributor shaft sleeve and roll pin (part number A12195) are also included with the kit. After installing the two shims, slide the sleeve onto the shaft and tap the roll pin into place. You will probably discover that the shaft is bound up. Remove the roll pin and sleeve and grind or file some material off the top end of the sleeve. This will be a trial and error effort until you have removed enough material to give you a nice snug fit without binding up. Occasionally you may find a distributor housing where someone has machined either end of the shaft hole and it may become necessary to shim up the extra space with more of the .015 shims. These shims are available individually from Bratton's under part number A12180.

### **Re-assembly:**

The assembly of all the other parts is fairly easy and straightforward. However, the area where most hobbyist have a problem is at the electrical connection of the wire from the lower plate to the stud on the bottom of the point assembly. It is extremely important that the routing of the wire is correct and that there is no short circuit after the assembly is complete. The Bratton's kit supplies a lower plate with the **correct fine stranded wire** already attached to the lower plate, and with a spade lug already attached to the other end for connecting to the point stud. I usually add one extra part in this area that is not provided with the kit. The part is a very thin fiber washer with a #8 hole size to fit over the point stud threads. The outer diameter is about 5/8 inch. These washers can be obtained at a local hardware or electronics store. The washer is installed right under the wire lug on the end of the point stud. It may be necessary to cut off a portion of one side of the circumference from the washer once it is installed. The purpose of the washer is to afford another degree of short circuit prevention. After tightening the nut on the point stud, bend the lug so that it is at a 90° angle to the plate. This is done to prevent it from shorting against the housing. It will also lock the nut in place and prevent it from coming loose.

**Testing:**

Once the distributor is fully assembled and ready for service, a simple test will determine if it is shorted out or not. Place the distributor in a vice and slip a business card between the points so that they are open. Place one probe of an ohmmeter on the buss bar just inside the 3/8 pipe thread, where the ignition cable screws in. Place the other ohmmeter probe on an unpainted surface of the distributor housing. Rotate the spark advance lever; the meter should read open. If it doesn't, it means there is a short somewhere, probably at the point stud where the wire from the lower plate attaches. Locate and correct the short before proceeding. Next remove the business card so the points are closed and check it again. The meter should read continuity. Set the points at .020, put a little cam grease on the cam, fill the oil valve as well as the oil hole in the top of the shaft with oil, and the distributor is ready for service.

**100 miles later:**

Check the point gap after about 100 miles of service. You may find that the points have closed up and are no longer set at .020. You will have to reset them back to .020. The reason the points closed up is because on a new set of points the fiber rubbing block has a tendency to wear down some until a glaze is built up on it. After that the wear factor is reduced. For optimum performance you should clean and reset the points at 1000-mile intervals.☺