



TClinic

REBUILDING A DISTRIBUTOR by Ron Rothstein

Is your TC engine overheating? Timing checkout okay? Carbs working properly? Cleaned out the cooling system? You've answered "Yes" to all those questions and the TC's still overheating. Well then, check that DISTRIBUTOR! A problem that often occurs on TC's is worn bushings in the distributor. When these bushings (upper and lower) become worn they allow the distributor shaft to wobble. This wobble manifests itself as timing variation when the engine is running. A simple test will tell whether your distributor suffers from worn bushings.

First, remove the distributor cap and rotor from the distributor. With the hand crank turn the engine over until the distributor points just begin to open. Now hold the distributor shaft (where the rotor attaches to the shaft) and press the shaft horizontally in the direction of the distributor points. In a good distributor, the points will open some additional amount. On a distributor with worn bushings the points may open as much as .020 inch. So check that distributor. If it's okay, don't bother to read further.

If you are still reading - you must have a bad distributor. So, let's see how we can fix it. First, find a Lucas distributor (of parts) and get the bushings. They come as a set (one upper and one lower bushing) and cost about \$1.00 per set. Once you have the bushings, remove the distributor from the engine. The replacement of the distributor (and re-timing the engine) will be considerably easier if you observe the following hints. First, crank the engine by hand until the points are just opening and the rotor points so as to fire cylinder number one. Then remove the distributor. Upon replacement, the engine timing will not be disturbed drastically if the distributor is positioned so the pints are just opening to fire cylinder one. This will enable you to start the engine so that dynamic timing can be accomplished. After the distributor (minus cap) has been removed from the engine it will look like the one shown in figure 1.

The distributor shown in figure 1 is equipped with the micrometer timing adjustment. Now begin to disassemble the distributor. First pull off the rotor. Second, remove the two (2) screws that hold the breaker point assembly. After these two screws have been removed the breaker point assembly can simply be lifted out of the distributor. Third, remove the micrometer adjustment assembly. This is accomplished by slackening the clamping nut and bolt and sliding the adjustment assembly off the bottom of the distributor. Fourth, remove the pinion drive gear which is attached to the end of the distributor shaft.



figure 1

This is accomplished by using a center punch (and hammer) to drive out the pin which holds the gear onto the shaft. The gear should now be removed from the shaft along with the thrust washer. You now have the distributor disassembled except for the distributor shaft and you have something like what is shown in figure 2.

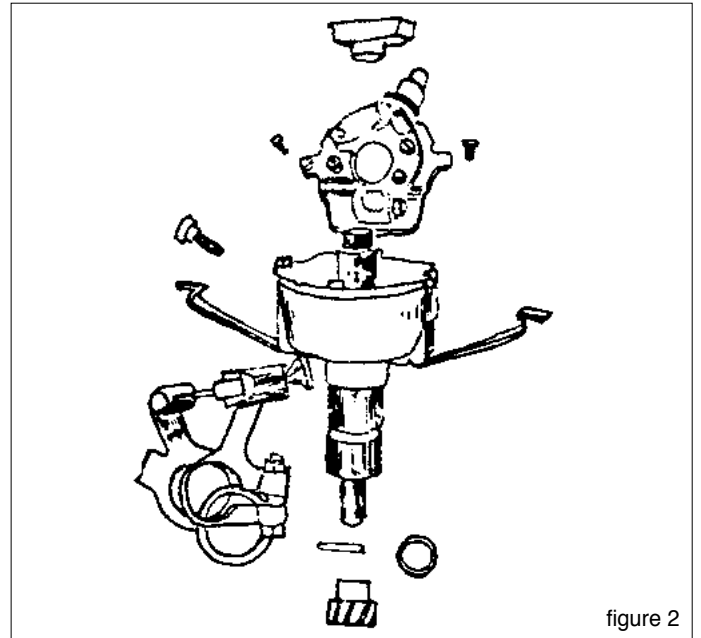


figure 2

The distributor shaft must now be removed from the distributor casing. This may be difficult as the shaft generally has small grooves created by the bushings. Don't give up. Keep twisting and turning and pulling until the shaft is removed. Of course, those bushings we wish to replace are still in the distributor. The correct method of removal calls for a hand press and some special jigs as these bushings are press fit into the distributor casing. I have found however that a small hacksaw blade can be inserted inside the bushings and used to saw through one side of each bushing. Care must be exercised so that you do not saw into the distributor casing. Once you have cut one side of each bushing it will be easy to remove them. Figure 3 shows the shaft with the bushings removed from the distributor.

Notice that the bushing set contains one long and one short bushing. The short bushing goes at the top of the distributor shaft nearest to the rotor. The longer bushing should be placed at the bottom of the distributor shaft nearest the pinion drive gear.

Of course you must now insert the new bushings. Again, this usually requires a hand press. I have found the following procedure works successfully. First, soak the bushings in oil for an hour or two to make sure they contain oil. Bushings are quite porous and oil should be absorbed by the bushing before it is installed. If this is not done, the bushings will wear considerably when the engine is first started. Now, place the bushings in the freezer part of your refrigerator. This will shrink them slightly. After a half hour or so, remove the bushings from the freezer and use a hand torch to heat up the distributor casing where the bushings is to be inserted. The heat will expand the bore into which the cold bushing is to be

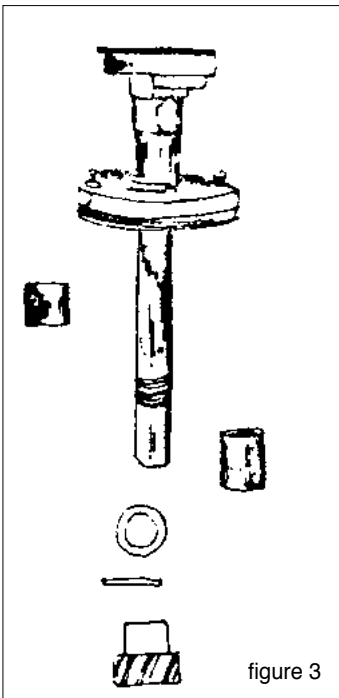


figure 3

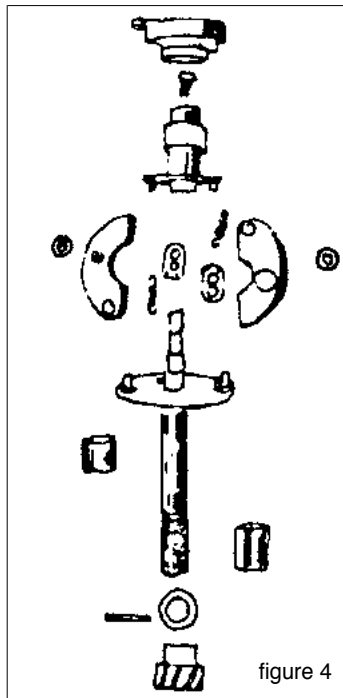


figure 4

placed. Using a hammer and wooden dowel, the bushing can be tapped into the distributor housing. This operation is repeated for the second bushing.

Figure 4 shows the relative position of all parts associated with the distributor shaft and timing advancement weights.

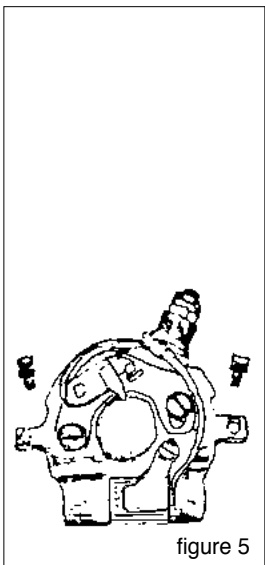


figure 5

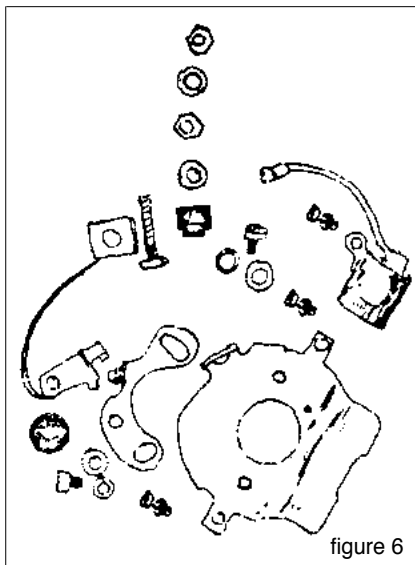


figure 6

While you have that distributor apart, why not clean up the rest of the parts too? Figure 5 shows the breaker points assembly as removed from the distributor. Figure 6 shows the relative position of all parts associated with the breaker point assembly.

Figures 7 and 8 show the assembled and disassembled micrometer adjustment device respectively.

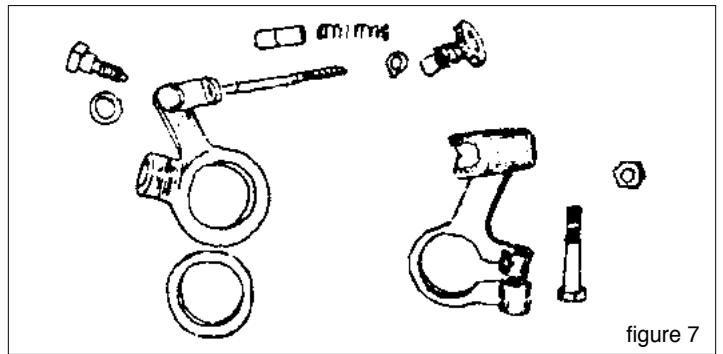


figure 7

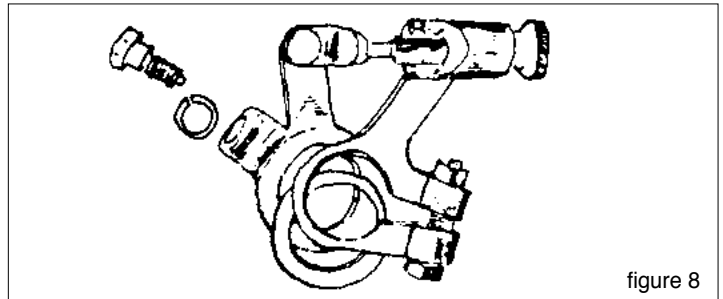


figure 8

Just in case you can't remember where a part goes, figure 9 shows all parts associated with the distributor. It is recommended however that you disassemble only a single section of the distributor at a time. This will minimize problems of lost parts, etc.

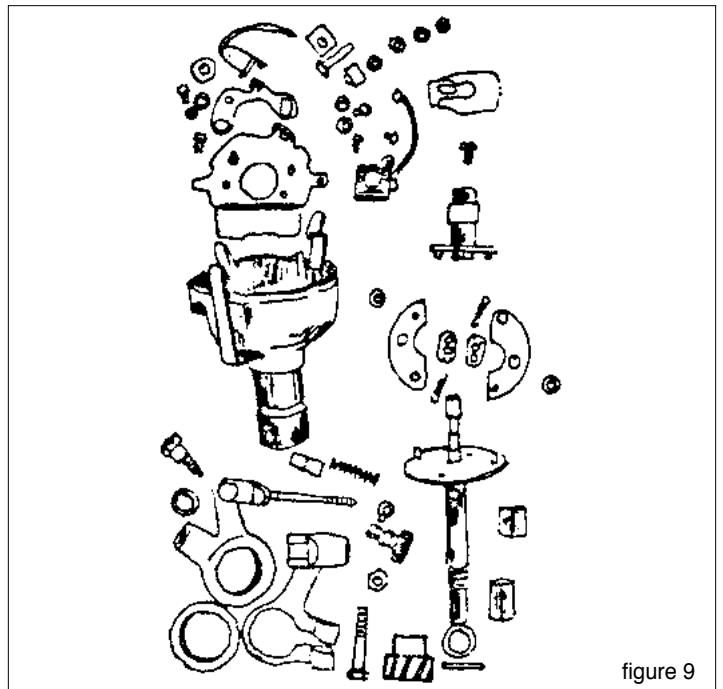


figure 9

Once the distributor is reassembled it should be replaced in the engine. Position the rotor at the same angle as when the distributor was removed from the engine. This means that the points should be just breaking and the rotor should be positioned so as to fire cylinder one. This will effectively time the engine statically the same as it was before you started the job. Of course dynamic timing (with a timing light) is recommended.

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2002 Update

\$1.00 for a pair of Lucas bushings? That is just a little out of date. Expect to pay a bit more now.

One item that was not mentioned was that you should check the end play on the shaft. Any more than .004 inch and oil may work up into the distributor.

Reference to setting the timing dynamically should be clarified. This should be done at cranking speed as even at idle the weights may be advancing the spark.

Electronic ignition modules are available now by Pertronix. One nice thing about it is that timing is not affected by horizontal shaft play. That should not be an excuse to ignore bushing wear though.