DISTRIBUTOR FIX

TOOLS REQUIRED:

Some of the tools you'll require to do this job include:

- metric sockets 8mm, 10mm & 12mm
- assorted Philips ("star") screwdrivers (large and small). Note that the "large" screwdriver should be fairly short as the battery and radiator cap thingy get in the way with longer drivers)
- very important: heatsink grease or compound (for coil and ignitor) (Radio Shack may have this)
- dielectric grease (for any plug wires you pull off)
- pliers (for fresh air duct clamp at airbox)
- timing light (optional)
- red non-permanent Loctite (242) or equivalent (for distributor screws)
- the new ignitor (Ford P/N: F32Z-12A112-BA)
- the new coil (Ford P/N: F32Z-12029-AA)
- the hardware kit, that should have accompanied the new ignitor assembly, which includes all new screws

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GAINING ACCESS:

It's first necessary to gain access to the distributor and this generally involves removing the fresh-air intake tract:

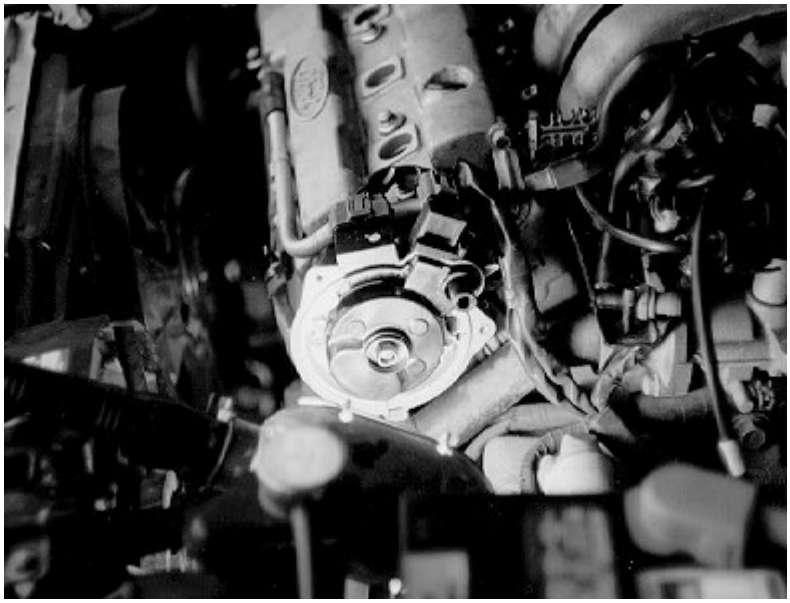
1. Disconnect the battery negative lead (if you really want to... I didn't to save the PCMs memory. It's probably a good idea though. At the very least ensure the ignition switch is OFF.)
2. The intake tract is held in place with three 10mm nuts on the radiator support. Squeeze the clamp where the duct connects to the airbox and pull it out.
3. Remove the 2 nuts and 1 bolt holding the airbox in place.
4. Loosen the air duct clamp at the throttle body. Unplug the VAF connector.
5. Unlatch the FPRC solenoid from the air box bracket.
6. Unclip the cruise control (if equipped) vacuum line from the airbox. Reach behind the air box (near the bottom on the firewall-side) and unplug the small vacuum line there.
7. At the back of the intake duct near the throttle body, pull the huge-ass breather tube from the intake duct (you'll have to work it past the throttle linkage).
8. Once all this is done, the air box, VAF and intake tube should work out. It'll require a bit of weaseling to get it out, but it'll come. Be careful with the VAF...it sounds rather fragile.
9. Disconnect the two electrical connectors at the distributor.
10. Once the airbox stuff is out, lay a shop towel over the starter motor to avoid any unintended shorts from laying tools or trouble lights down there. A short occuring here could get ugly.

REPAIRING YOUR DISTRIBUTOR:

Once you've gained access to the distributor, you can proceed with the repair.

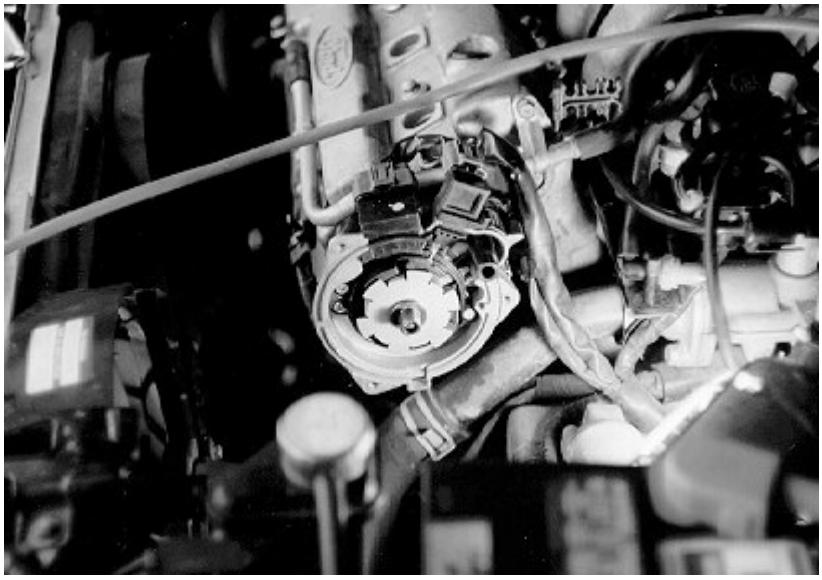
1. Remove the distributor cap and rotor.
2. Remove the ignitor cover.
3. Remove the interrupter wheel and spacers.
4. Remove the old igniter.
5. Remove the old coil.
6. Remove the distributor.
7. The little @#$%^& screw
8. Comparison of old and new igniters.
9. A look at the interrupter wheels.
10. Installing the new coil.
11. Installing the new igniter.
12. Installing the interrupter assembly.
13. Buttoning up.

STEP 1: REMOVE THE CAP AND ROTOR



After removing the cap (3 screws) and rotor (it just pulls off), what you'll see is this. Be careful when pulling the cap off: pull it straight off until the high-voltage probe in the cap clears the coil extension. Also use extreme care when pulling the cap off not to damage the very fragile gasket that seals the cap against the distributor body. I busted the one on mine.

STEP 2: REMOVE THE IGNITER COVER



Remove the two screws holding the plastic igniter cover in place.

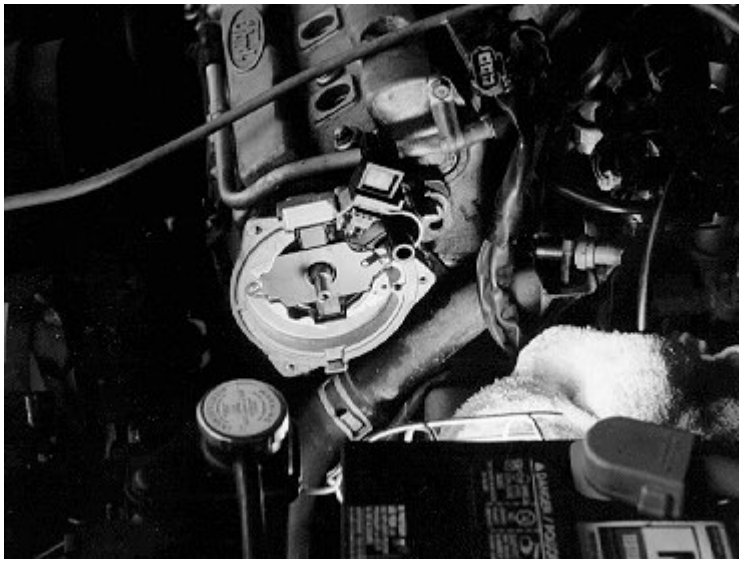
When the igniter cover is off, you'll see the NE1 interrupter wheel. This device rotates as the camshaft does and the vanes on it pass by Hall effect sensors located on the igniter. These interruptions generate the NE1 signal. Under it is a second interrupter that generates the SFI phasing signal 'G'.

STEP 3: REMOVE THE NE1 & G INTERRUPTER WHEEL

Remove the Philips screw in the center of the distributor shaft and remove the rotor support piece from the shaft. The interrupter assembly is a snug fit on the shaft so it might take some wiggling to get it off. Once the interrupter wheel assembly is off, pull out the wheel spacer behind it.

When the interrupter assembly is off, you'll see the igniter assembly.

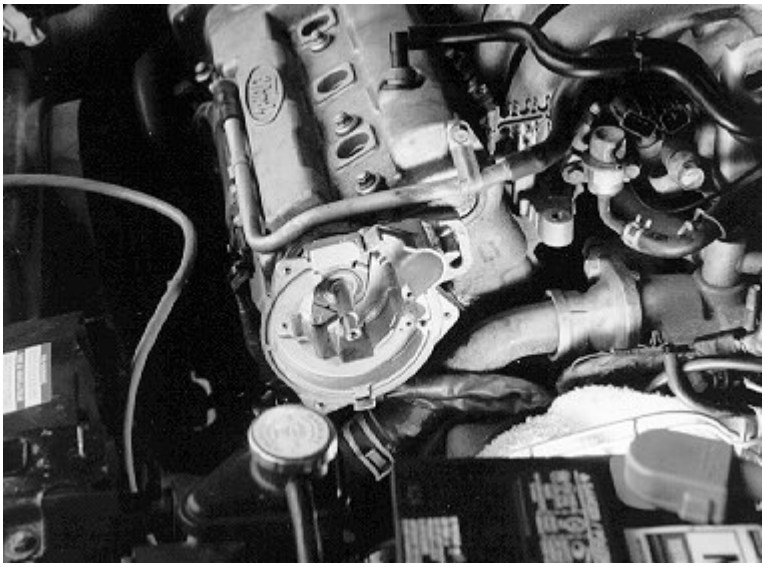
STEP 4: REMOVE THE OLD IGNITER



Remove the tiny Philips screw that connects the coil to the igniter and carefully bend the contact lead up out of the way. The screws that retained the igniter cover (step 3) also retained the igniter so at this point, the igniter should come out with some wiggling.

When the igniter is out, the coil retainer plate and the coil under it are visible.

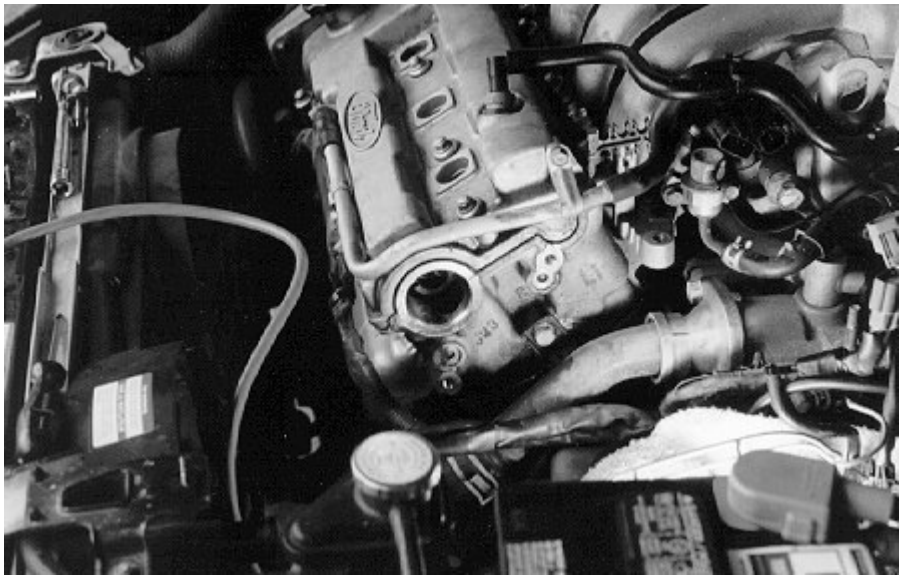
STEP 5: REMOVE THE OLD COIL



Remove the two Philips screws that retain the plate and pull the retainer out. On the outside of the distributor is a condenser (capacitor) that is retained by a small screw. I had a lot of trouble getting the one on mine out so I had to remove the distributor (see step 6). If you manage to get your screw out, the distributor doesn't have to come out. Once the condenser is out, the coil can be removed.

When the coil is out, the distributor case is pretty much empty.

STEP 6: REMOVE THE DISTRIBUTOR (OPTIONAL)



If you need to, remove the distributor. Clean the area at the base of the distributor of any grime or dirt. Use a screwdriver and scribe mating surface as a reference. Remove the two mounting bolts and gently pull the distributor from the head. There's no concern of any shiny bits falling out of the head but it's a good idea to stuff a rag into the hole to prevent dirty stuff getting *into* the head.

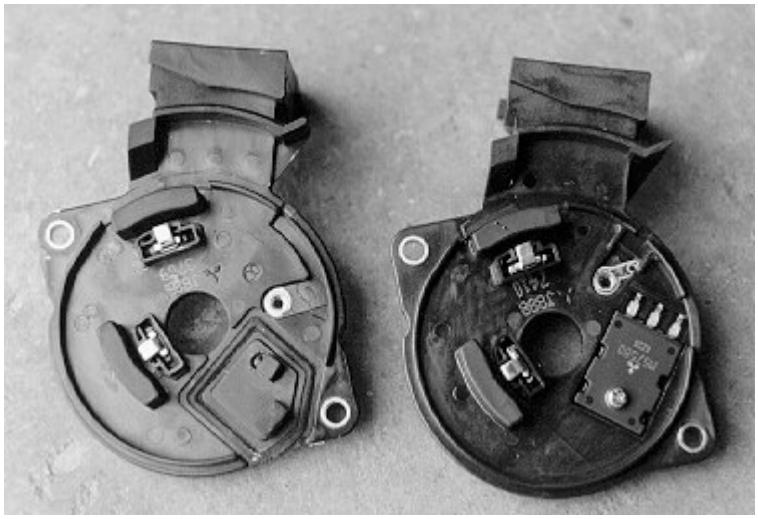
When the distributor is out, the exhaust camshaft is visible in the head.

STEP 7: THE LITTLE @#$%^& SCREW

For your reference, this is the screw that necessitated the removal of my distributor. When the distributor is mounted in the car, this screw is tricky to get at and, of course, I buggered it up trying.

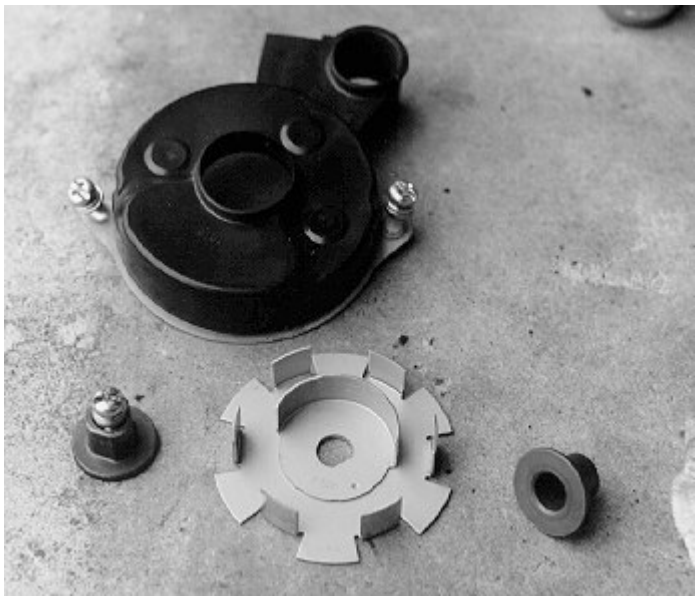
Once removed, the condenser and coil are free to come out.

STEP 8: COMPARISON OF OLD AND NEW IGNITERS



For your reference, this is how the old and new igniters compare. The new unit (right) has a beefy power transistor visible while the old (left) igniter's transistor is potted in. This transistor is what switches the coil current on and off firing the coil. It's this part that fails.
Also visible are the small Hall-effect sensors used for NE1 and G.

STEP 9: THE INTERRUPTER WHEELS



One more little reference point is the interrupter wheels and the support. In this image, we see (left to right):

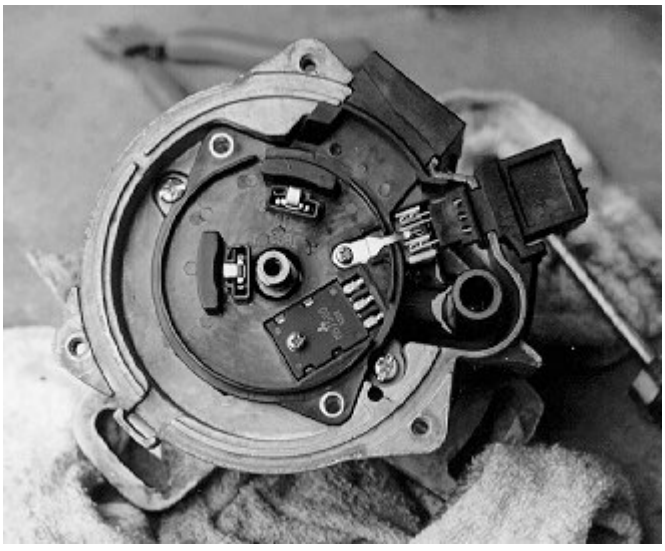
1. The rotor support and the mounting screw
2. The interrupter wheel (note the 6 vanes pointing up that produce the 'NE1' signal and the smaller center interrupter that generates the 'G' signal)
3. The interrupter spacer

The igniter cover and screws are visible at the top.
If you look closely, you can make out the 'D' shape of the hole in the interrupter wheel that's used to key the wheel to the distributor shaft.

STEP 10: PUTTING THE (NEW) COIL BACK IN

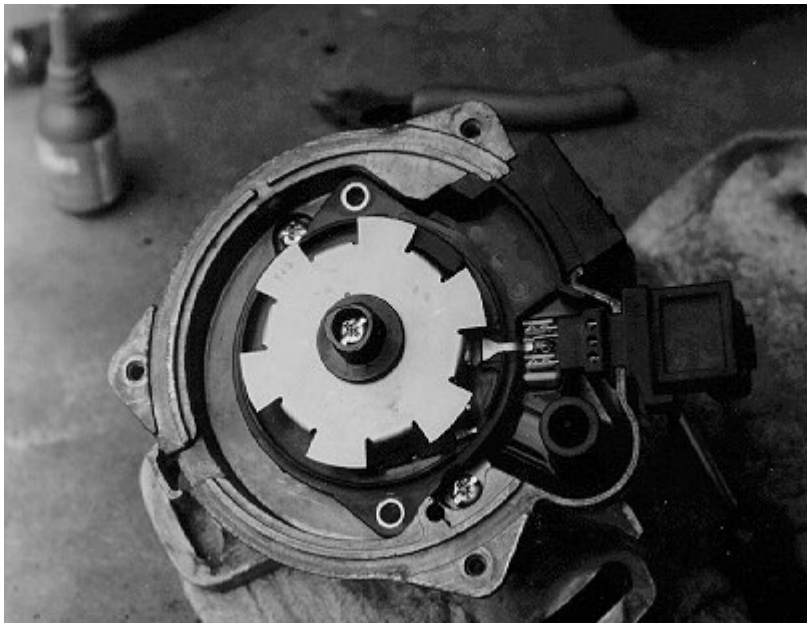
Assembly is basically the reverse of assembly. Make sure the distributor housing is clean. Smear a small amount of heatsink compound on the coil and place it in the housing as shown. Don't overdo the compound - too much is worse than not enough.
Place the retainer plate on the coil with the convex side facing the coil. Place some Loctite on the screws, install and tighten fully. Install the condensor and route the wire through the passage provided in the distributor housing. Plug the 3-pin connector into the coil and make sure it seats properly on the distributor housing.

STEP 11: PUTTING THE NEW IGNITER BACK IN



Smear a little heatsink grease onto the back of the igniter where it contacts the distributor housing. Try not to get any into the mounting holes.
Install the igniter into the housing. Carefully bend the coil contact lead as little as possible and install the small screw with Loctite. Make sure the contact sits very flat on the igniter or it may touch the spinning interrupter wheels. If needed, press it flat to make sure it's out of the way. Note that the mounting scews do NOT go in yet...let it just sit there in the bottom of the housing.

STEP 12: RE-INSTALLING THE INTERRUPTER WHEEL



Slip the interrupter support over the distributor shaft, followed by the interrupter wheel. Make sure the 'D' key in the wheel aligns with the shaft properly.
Install the rotor support over the interrupter wheel and install the retainer screw with a dab of Loctite.

STEP 13: FINISHING UP

The remainder of the assembly process is the reverse of the removal process. Some notes:

1. Install the igniter cover with the last two large screws (with Loctite of course).
2. If the distributor is out of the car, spin it by hand to ensure there's no binding. If it's in the car, inspect as best you can.
3. Again, if the distributor was removed, install it now:
    1. Clean the shaft with a rag.
    2. Oil the O-ring with motor oil.
    3. Remove the rag from the cylinder head.
    4. Line up the drive key on the distributor shaft with the exhaust camshaft (it only goes one way properly) and slide the distributor into the head. It should seat fully on the head - if it doesn't, re-check the alignment of the drive key.
    5. Install the two mounting bolts and line up the scribe marks. Tighten the bolts.
4. Reconnect all electrical connections to the distributor.
5. Re-install the rotor by sliding it onto the shaft. Re-install the cap and make sure the wires are routed well.
6. Reinstall the airbox and VAF and make sure to route all vacuum lines properly. Don't forget the small "vacuum" line at the bottom firewall-side of the airbox. Make sure when you install the cruise control vacuum line onto the airbox that the connection at the cruise servo doesn't come off (it did on mine). Reconnect the VAF harness and the fat breather tube at the throttle body. The car will start without the huge-honkin' tube plugged in but it won't idle worth a sh*t (don't ask me how I know this...)
7. Put the FPRC solenoid back onto the airbox bracket. Make sure all vacuum and electrical connections are properly made.
8. Once everything short of the fresh air duct is installed, reconnect the battery negative cable and start the engine. Let it run until hot. With the engine running, ground the TEN terminal in the "Diagnostic" box behind the driver's headlight. Set the timing to spec (or about 10 degrees or so) and fully tighten the distributor mounting bolts. Re-check the timing and if satisfied, remove the TEN jumper and shut it off.
9. Reinstall the fresh air duct.
10. You're finished. It's probably a good idea to go back in a few days and re-check to make sure all connections are tight and secure and that the O-ring seal on the distributor isn't leaking.
