



# ECHLIN *Ignition* SERVICE BULLETIN

THE ECHLIN MANUFACTURING COMPANY

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## ROUGH IDLING HEI

Sometimes an HEI ignition equipped vehicle will have a rough idle even after the engine has been tuned up. Normal test procedures will generally fail to pin-point the cause for this condition.

On vehicle testing, using an oscilloscope in the same way as conventional ignition, will pin-point the problem. The oscilloscope secondary and primary wave forms can be diagnosed in the same way as a conventional ignition equipped vehicle.

The most noticeable difference is the dwell section of the HEI system when comparing it with conventional ignition.

At idle, the HEI dwell section is relatively short. As engine speed increases, the dwell section will expand indicating a system that is OK. A dwell check cannot be made since there are no factory specifications.

By slowly accelerating the engine to about 2,200 rpm, the dwell should extend in relation to the engine speed and should be relatively greater than it was at idle. If there is no increase in dwell, it is an indication of a module malfunction and the module should be replaced. Putting the scope in raster pattern and noting the dwell section on all cylinders, making sure it is the same for each cylinder, is another way to find module malfunction. A bad point close signal, (which really is a transistor on signal in one or more cylinders), means a malfunctioning module that should be replaced. This would be supported by a rough running engine. The scope would also show a bad cap-rotor condition by an arc-over, resulting in a low firing line. Available voltage tests are made in the same manner as conventional ignition except available voltage is usually between 35 and 38 KV. This is providing that no insulation breakdown or arc-over is occurring in the system.

When viewing the secondary raster patterns, a wide spark plug gap and open circuit secondary wires will cause shorter spark lines and higher than normal firing lines.

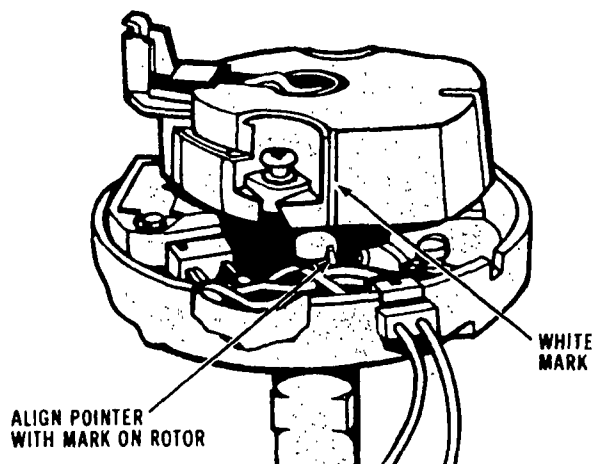
## TIMING THE '77 OLDS TORONADO

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The first step is to set the distributor position. This can be done by removing the battery terminal connector plug from the distributor cap, and then removing the distributor cap.

Crank the engine until the rotor points to the rear of the engine and the number one cylinder is on top dead center or "O" on the timing plate. To make final small adjustments, use a socket wrench on the crankshaft bolt and turn the crankshaft to obtain an exact "O" on the timing plate.

Next, look at the rotor. You will notice that it has a white mark down the left side which should be lined up with a pointer located on the inside base of the distributor. If not, loosen the distributor and adjust until the pointer is in line with the white mark on the rotor. (See Illustration)



Retighten the distributor bolt. This is the final distributor position and the distributor should not be moved or changed when setting the timing.

Now, set the reference timing. The timing should be checked with a magnetic probe timing meter. After setting the proper distributor position, connect the reference timing connector to ground with a jumper wire. The reference timing connector is taped to the wiring harness near the controller assembly. The controller assembly is mounted beneath the glove box on the inside of the automobile. (See Illustration first column next page.)

SCF-NAPA-1480

General Motors H.E.I. and E.T.S. electronic ignition systems use a silicone based bonding between the control module and the base of the distributor.

This substance is used to assure a good electrical ground between the two surfaces. It also serves as a heat sink to help keep the control module's operating temperature within a safe limit.

This silicone bonding is very similar to the silicone grease used in the electronics field and has been around for quite some time.

According to Delco, the grease is a #8101 Z5 silicone compound manufactured by the G.C. Electronics people. General Electric has a similar compound that can be used. The part numbers are G 641 and G 642.

Dow Corning's compound is #340 and #341, and of course, ECHLIN packages this grease with each control module.

When replacing the control module, (Echlin part # TP 45), in vehicles equipped with the H.E.I. and E.T.S. electronic

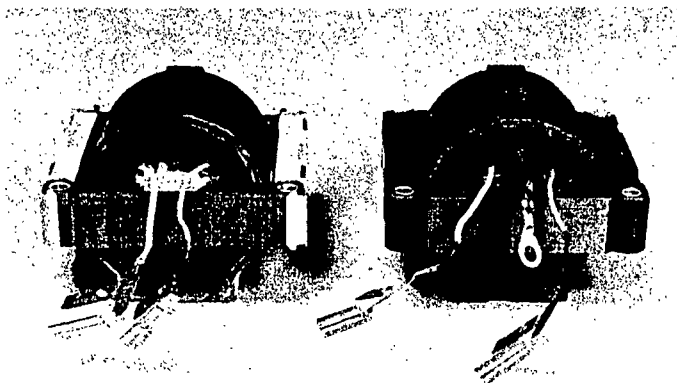
between the control module and the distributor base plate. Failure to do so can result in a very short control module life and a complete failure of the vehicle's ignition system.

## HEI COIL WIRING

Upon replacing the ignition coil in an eight cylinder General Motors vehicle equipped with the High Energy Ignition System, it is sometimes required to replace an ignition coil with two wires with an ignition coil with three wires attached.

A considerable amount of confusion has been generated in the field as some mechanics, upon their first installation, were unsure of where the extra black wire should be attached.

Because of the improvements between the two wire and three wire coil, it is now necessary to provide a "ground" when installing the newer three wire coil. The black ground wire should be attached to a coil mounting bolt closest to the black grounding wires exit from the coil. The other two wires are attached to the distributor cap connection housing in the same location that the original wires were attached.



**PRE 1975**

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