



# TECH TIPS

SERVICE TIPS FOR THE AUTOMOTIVE TECHNICIAN

## ALTERNATIVE CODE RETRIEVAL PROCEDURE FOR FORD EEC IV SYSTEMS

The Ford EEC IV system is used on Ford vehicles starting with the 1984 model year. Unfortunately, the "Check Engine" light was not used until 1988. So, unlike the earlier models that did not have the light, these models give a visual indication of when the ECM detects a problem. In addition to alerting the vehicle operator, the "Check Engine" light can be used to retrieve EEC IV fault codes. This can be done without the use of a scan tool and is a convenient way to perform Ford's "Key-on, engine off" (KOEO), and "Key-on, engine running" (KOER) tests. For those of you that are working on a 1984-87 vehicle without the light, we will give you an alternative to perform the same tests. Before we do that, let's review Ford's self-diagnostic strategy.

**NOTE:** These tests should be performed on an engine that is at operating temperature, otherwise, false fault codes may be set. Also, make sure that all switches, including the air conditioner and defroster, are in the off position.

**KOEO test:** This is a static test of major sensors and actuators used by the EEC IV system. During this test, the sensors and wiring are being tested for open circuits, short circuits, or, for being out of the prescribed range of operation. If a sensor performs out of the expected range, or, an actuator does not perform as

expected, an "On Demand" fault code is generated. This terminology is used to define that the ECM presently sees a problem in the system. An "On Demand" code can only be cleared by repairing or replacing the faulty part of the circuit. Once the fault is no longer present, the ECM will no longer set that particular "On Demand" code. On some systems, depending on the fault code, the ECM will not allow you to perform any other tests until these faults are corrected.

**Continuous Memory Codes:** Although this is not a test in itself, it is the second part of the KOEO test. Whenever the engine is running, the ECM continuously monitors its inputs and outputs. If a sensor or actuator does not perform as expected, a fault code is stored in memory. Codes that are stored in Continuous Memory indicate that at one time the ECM had detected a problem or problems in the system, even though that problem may not currently exist as indicated by a lack of an "On Demand" code. These codes may also cause the "Check Engine" light to illuminate during engine operation.

**KOER test:**

This is a dynamic test performed with the engine running. During this test, sensor response will be monitored when the ECM alters the air/fuel mixture and actuates various outputs such as solenoids and actuators.

During this test it will request the technician to snap the throttle, apply the brakes, turn the steering wheel, and toggle the overdrive switch. Codes generated during this test indicate that a sensor or actuator did not respond as expected by the ECM. Remember, some systems will not allow this test if there are any On Demand codes that have not been fixed.

Now that we have explained the test strategy, we will explain how to run these tests without the use of a scan tool.

The KOEO test is the place to initiate this procedure. First, locate the diagnostic connectors which are usually placed in the engine compartment (see diagram #1). The single wire connector is designated as the STI or Self Test Input terminal. If you connect this terminal to a good ground, and turn the ignition to the "ON" position, you will notice several events that will take place. The "Check Engine" light (if equipped) will turn off, the fuel pump will run briefly, the cooling fan(s) will run briefly (if controlled by the ECM), and all of the other ECM-controlled actuators will be switched on and off



