JF: Integrated Ignition Coil On Plug Coils A Through J Failure

JF: Introduction

JF1 DETERMINE WHICH COIL IS NOT FIRING PROPERLY

Note: Electronic ignition engine timing is entirely controlled by the PCM. Electronic ignition timing is NOT adjustable. Do not attempt to check base timing. You will receive false readings.

- Determine which coil is not firing properly using the information from Pinpoint Test JB or a DTC and the table at the beginning of this pinpoint test.
- Record the suspect cylinder, coil and PCM pin number from the table.

Is the suspect cylinder number, coil driver and PCM pin number recorded?

Yes	No
GO to JF2.	REPEAT the test step to obtain the required information.

JF2 CHECK THE FUNCTIONALITY OF THE SUSPECT COIL DRIVER CIRCUIT

- Ignition OFF.
- Suspect coil connector disconnected.
- Remove the fuel pump fuse to disable the fuel pump.
- Connect a non-powered test lamp between the IGN START/RUN and suspect coil driver, harness side.
- Observe the test lamp while cranking the engine.

Is the test lamp blinking consistently?

Yes	No
GO to JF3.	GO to JF4.

JF3 CHECK THE FUNCTIONALITY OF THE SUSPECT COIL

- Ignition OFF.
- Carry out a visual inspection. Closely inspect the coil case and boot for carbon tracking, cracks and torn or improperly installed boots.
- Remove the suspect COP from the spark plug.
- Connect the Air Gap Spark Tester 303-DO37 (D81P-6666-A) or equivalent.
- Suspect coil connector connected.
- Crank the engine.
- Observe the spark tester while cranking the engine.

Is a bluish-white spark present?

Yes	No
	INSTALL a new suspect coil. If necessary, INSTALL a new spark plug. REFER to the Workshop Manual Section 303-07, Engine

GO to Pinpoint Test Z .	Ignition. CLEAR the DTCs. REPEAT the self-test.

JF4 CHECK THE IGNITION START/RUN SUPPLY TO THE SUSPECT COIL

- Ignition ON, engine OFF.
- Suspect coil connector disconnected.
- Measure the voltage between:

(+) COP Connector, Harness Side	(-) Vehicle Battery
IGN START/RUN	Negative terminal

Is the voltage greater than 10 V?

Yes	No
GO to JF5 .	For Crown Victoria, Grand Marquis, and Town Car, GO to JF9 . For all others, REPAIR the open circuit. CLEAR the DTCs. REPEAT the self-test.

JF5 CHECK THE SUSPECT COIL DRIVER CIRCUIT FOR AN OPEN IN THE HARNESS

- Ignition OFF.
- PCM connector disconnected.
- Suspect coil connector disconnected.
- Measure the resistance between:

(+) PCM Connector, Harness Side	(-) COP Connector, Harness Side
Suspect coil driver	COP

Is the resistance less than 5 ohms?

Yes	No
GO to JF6 .	REPAIR the open circuit. CLEAR the DTCs. REPEAT the self-test.

JF6 CHECK THE SUSPECT COIL DRIVER CIRCUIT FOR A SHORT TO VOLTAGE IN THE HARNESS

- Ignition ON, engine OFF.
- Measure the voltage between:

(+) PCM Connector, Harness Side	(-) Vehicle Battery
Suspect coil driver	Negative terminal

Is the voltage less than 1 V?

Yes	No
GO to JF7 .	REPAIR the short circuit. CLEAR the DTCs. REPEAT the self-test.

JF7 CHECK THE SUSPECT COIL DRIVER CIRCUIT FOR A SHORT TO GROUND IN THE HARNESS

- Ignition OFF.
- Measure the resistance between:

(+) PCM Connector, Harness Side	(-) Vehicle Battery
Suspect coil driver	Negative terminal

Is the resistance greater than 10K ohms?

Yes	No
GO to JF14 .	REPAIR the short circuit. CLEAR the DTCs. REPEAT the self-test. If the concern or DTC is still present, GO to JF8 .

JF8 CHECK THE SUSPECT COIL FOR DAMAGE

- PCM connector connected.
- Connect the Air Gap Spark Tester 303-D037 (D81P-6666-A) or equivalent to the suspect coil.
- Crank the engine.
- Observe the spark tester while cranking the engine.

Is a bluish-white spark present?

Yes	No
If necessary, INSTALL a new spark plug. REFER to the Workshop Manual Section 303-07, Engine Ignition. CLEAR the DTCs. REPEAT the self-test.	INSTALL a new suspect coil. REFER to the Workshop Manual Section 303-07, Engine Ignition. CLEAR the DTCs. REPEAT the self-test.

JF9 CHECK VPWR CIRCUIT CONTINUITY BETWEEN THE SUSPECT COIL AND IGNITION COILS RELAY

- Ignition OFF.
- Ignition Coils Relay connector disconnected.
- Measure the resistance between:

(+) Ignition Coils Relay Connector, Harness Side	(-) Suspect coil Connector, Harness Side
VPWR - Pin 3	IGN START/RUN

Is the resistance less than 5 ohms?

Yes	No
GO to JF10 .	REPAIR the open circuit. The open is between the splice and the ignition coils relay. CLEAR the DTCs. REPEAT the self-test.

JF10 CHECK THE B+ AND IGN START/RUN VOLTAGE TO IGNITION COILS RELAY

- Ignition ON, engine OFF.
- Measure the voltage between:

(+) Ignition Coils Relay Connector, Harness Side	(-)
B+ - Pin 5	Ground
IGN START/RUN - Pin 2	Ground

Are the voltages greater than 10 V?

Yes	No
GO to JF11 .	REPAIR the open circuit. CLEAR the DTCs. REPEAT the self-test.

JF11 CHECK THE IGNITION COILS RELAY GND CIRCUIT FOR AN OPEN IN THE HARNESS

- Measure the voltage between:

(+) Ignition Coils Relay Connector, Harness Side	(-) Ignition Coils Relay Connector, Harness Side
B+ - Pin 5	GND - Pin 1

Is the voltage greater than 10 V?

Yes	No
GO to JF12 .	REPAIR the open circuit. CLEAR the DTCs. REPEAT the self-test.

JF12 CHECK THE IGNITION COILS RELAY

- Carry out the ignition coils relay component test. Refer to the Wiring Diagrams Cell 149 Component Testing.

Is a concern present?

Yes	No
INSTALL a new Ignition Coils relay. CLEAR the DTCs. REPEAT the self-test.	GO to JF13 .

JF13 TEST DIRECTION FOR PINPOINT TEST A

Were you directed to this pinpoint test from pinpoint test step A8?

Yes	No
GO to A9 .	GO to JF14 .

JF14 CHECK FOR CORRECT PCM OPERATION

- Disconnect all the PCM connectors.
- Visually inspect for:
  - pushed out pins
  - corrosion
- Connect all the PCM connectors and make sure they seat correctly.
- Carry out the PCM self-test and verify the concern is still present.

Is the concern still present?

Yes	No
INSTALL a new PCM. REFER to Section 2, Flash Electrically Erasable Programmable Read Only Memory (EEPROM) , Programming the VID Block for a Replacement PCM.	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.