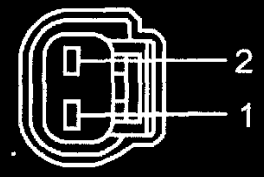
Computers and Control Systems: Pinpoint Tests
Test JF: Integrated Ignition Coil on Plug Coil A Through J Failure
PINPOINT TEST JF: INTEGRATED IGNITION COIL ON PLUG COIL A THROUGH J FAILURE

Integrated Ignition Coil On Plug Coil A Through J Failure	JF

This pinpoint test is intended to diagnose the following:

- ignition coils (12A366)
- ignition coil harness
- powertrain control module (PCM) (12A650)

Coil On Plug (COP) Connector



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Vehicle	Connector	Pin	Circuit
Escape, Five Hundred, Focus, Ford GT, Freestyle, Fusion, LS, Mariner, Milan, Montego, Zephyr	A	1 2	COP IGN START/RUN
All other vehicles	A	2 1	COP IGN START/RUN

IGNITION COIL TO CYLINDER CORRELATION

Vehicle	Related DTC	Cylinder Number	Ignition Coil	Coil Driver (CD)	PCM Pin
4-Cylinder Applications	P0351	1	A	A	E1
	P0352	2	B	D	E12
	P0353	3	C	B	E24

(Continued)

Coil On Plug (COP) Connector And Table

Integrated Ignition Coil On Plug Coil A Through J Failure

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IGNITION COIL TO CYLINDER CORRELATION

Vehicle	Related DTC	Cylinder Number	Ignition Coil	Coil Driver (CD)	PCM Pin
	P0354	4	D	C	E35
Fusion, Milan, 2.3L	P0351	1	A	A	E17
	P0352	2	B	D	E11
	P0353	3	C	B	E12
	P0354	4	D	C	E16
Five Hundred, Freestyle, Montego	P0351	1	A	A	E1
	P0352	2	B	C	E12
	P0353	3	C	E	E24
	P0354	4	D	B	E35
	P0355	5	E	D	E38
	P0356	6	F	F	E39
Fusion, Milan, Zephyr, 3.0L	P0351	1	A	A	E17
	P0352	2	B	C	E16
	P0353	3	C	E	E15
	P0354	4	D	B	E12
	P0355	5	E	D	E11
	P0356	6	F	F	E10
Escape 3.0L, Mariner	P0351	1	A	A	E1
	P0352	2	B	C	E12
	P0353	3	C	E	E24
	P0354	4	D	B	E35
	P0355	5	E	D	E36
	P0356	6	F	F	E22
Taurus	P0351	1	A	A	26
	P0352	2	B	C	78
	P0353	3	C	E	79
	P0354	4	D	B	52
	P0355	5	E	D	2
	P0356	6	F	F	82
LS	P0351	1	A	A	E58
	P0352	2	B	D	E59
	P0353	3	C	F	E60
	P0354	4	D	C	E48
	P0355	5	E	B	E12
	P0356	6	F	E	E22
	P0357	7	G	G	E30
	P0358	8	H	H	E38

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Table

Integrated Ignition Coil On Plug Coil A Through J Failure

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IGNITION COIL TO CYLINDER CORRELATION

Vehicle	Related DTC	Cylinder Number	Ignition Coil	Coil Driver (CD)	PCM Pin
Explorer, Mountaineer 4.6L, Crown Victoria, Grand Marquis	P0351	1	A	A	E1
	P0352	2	B	D	E12
	P0353	3	C	B	E24
	P0354	4	D	G	E35
	P0355	5	E	F	E38
	P0356	6	F	E	E39
	P0357	7	G	C	E42
	P0358	8	H	H	E43
F-150, Mark LT	P0351	1	A	A	E17
	P0352	2	B	D	E11
	P0353	3	C	B	E12
	P0354	4	D	G	E14
	P0355	5	E	F	E10
	P0356	6	F	E	E15
	P0357	7	G	C	E16
	P0358	8	H	H	E9
Expedition, Navigator, E-Series, Mustang 4.6L, F-Super Duty 5.4L	P0351	1	A	A	E35
	P0352	2	B	D	E1
	P0353	3	C	B	E24
	P0354	4	D	G	E23
	P0355	5	E	F	E34
	P0356	6	F	E	E46
	P0357	7	G	C	E12
	P0358	8	H	H	E11
Ford GT	P0351	1	A	A	75
	P0352	2	B	D	101
	P0353	3	C	B	74
	P0354	4	D	G	100
	P0355	5	E	F	73
	P0356	6	F	E	99
	P0357	7	G	C	72
	P0358	8	H	H	98
E-Series, F-Superduty 6.8L	P0351	1	A	A	E17
	P0352	2	B	E	E11
	P0353	3	C	G	E12
	P0354	4	D	I	E14

(Continued)

Table

Integrated Ignition Coil On Plug Coil A Through J Failure

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IGNITION COIL TO CYLINDER CORRELATION

Vehicle	Related DTC	Cylinder Number	Ignition Coil	Coil Driver (CD)	PCM Pin
	P0355	5	E	C	E10
	P0356	6	F	B	E15
	P0357	7	G	F	E16
	P0358	8	H	H	E9
	P0359	9	I	J	E13
	P0360	10	J	D	E8
Town Car	P0351	1	A	A	E1
	P0352	2	B	D	E12
	P0353	3	C	B	E24
	P0354	4	D	G	E35
	P0355	5	E	F	E38
	P0356	6	F	E	E39
	P0357	7	G	C	E42
	P0358	8	H	H	E43

Test Step		Results / Action to Take
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** GO to **JF2**. **No** REPEAT the test step to obtain the required information.
JF2	**CHECK THE FUNCTIONALITY OF THE SUSPECT COIL DRIVER CIRCUIT**	
	• Suspect coil connector disconnected. • Connect a non-powered test lamp between the IGN START/RUN and suspect coil driver, harness side. • Disable the fuel pump by disconnecting the inertia fuel shutoff switch. • Observe the test lamp while cranking the engine. • **Is the test lamp blinking consistently?**	**Yes** GO to **JF3**. **No** GO to **JF4**.

Table And JF1-JF2

Integrated Ignition Coil On Plug Coil A Through J Failure

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Test Step	Results / Action to Take
JF3 CHECK THE FUNCTIONALITY OF THE SUSPECT COIL • Key in OFF position. • 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 its equivalent in series between the suspect coil tower and the spark plug wire. • Suspect coil connector connected. • Observe the spark tester while cranking the engine. • **Is a bluish-white spark present?**	**Yes** GO to Pinpoint Test Z. **No** INSTALL a new suspect coil. If necessary, INSTALL a new spark plug. CLEAR the DTCs. REPEAT the self-test.
JF4 CHECK THE IGN START/RUN VOLTAGE TO THE SUSPECT COIL • Key ON, engine OFF. • Suspect coil connector disconnected. • Measure the voltage between: (+) COP Connector, Harness Side: IGN START/RUN (-) Vehicle Battery: Negative terminal • **Is the voltage greater than 10 V?**	**Yes** GO to **JF6**. **No** GO to **JF5**.
JF5 DETERMINE THE VEHICLE BEING DIAGNOSED • **Are you diagnosing an LS, Crown Victoria, Grand Marquis, Mustang or Town Car?**	**Yes** GO to **B8**. **No** REPAIR the open circuit. CLEAR the DTCs. REPEAT the self-test.
JF6 CHECK THE SUSPECT COIL DRIVER CIRCUIT FOR AN OPEN IN THE HARNESS • Key in OFF position. • PCM connector disconnected. • Suspect coil connector disconnected. • Measure the resistance between: (+) PCM Connector, Harness Side: Suspect coil driver (-) COP Connector, Harness Side: COP • **Is the resistance less than 5 ohms?**	**Yes** GO to **JF7**. **No** REPAIR the open circuit. CLEAR the DTCs. REPEAT the self-test.

Integrated Ignition Coil On Plug Coil A Through J Failure

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Test Step	Results / Action to Take
JF7 CHECK THE SUSPECT COIL DRIVER CIRCUIT FOR A SHORT TO VOLTAGE IN THE HARNESS • Key ON, engine OFF. • Measure the voltage between: (+) PCM Connector, Harness Side: Suspect coil driver (-) Vehicle Battery: Negative terminal • **Is the voltage less than 1 V?**	**Yes** GO to **JF8**. **No** REPAIR the short circuit to PWR. CLEAR the DTCs. REPEAT the self-test.
JF8 CHECK THE SUSPECT COIL DRIVER CIRCUIT FOR A SHORT TO GROUND IN THE HARNESS • Key in OFF position. • Measure the resistance between: (+) PCM Connector, Harness Side: Suspect coil driver (-) Vehicle Battery: Negative terminal • **Is the resistance greater than 10K ohms?**	**Yes** GO to **JF10**. **No** REPAIR the short circuit to GND. CLEAR the DTCs. REPEAT the self-test. If the concern or DTC is still present, GO to **JF9**.
JF9 CHECK THE SUSPECT COIL FOR DAMAGE • PCM connector connected. • Connect the Air Gap spark tester 303-DO37 (D81P-6666-A) or its equivalent in series between the suspect coil tower and the spark plug wire. • Locate and activate the fuel inertia switch to disable fuel pump. • Observe the spark tester while cranking the engine. • **Is a bluish-white spark present?**	**Yes** If necessary, INSTALL a new spark plug. CLEAR the DTCs. REPEAT the self-test. **No** INSTALL a new suspect coil. CLEAR the DTCs. REPEAT the self-test.
JF10 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** INSTALL a new PCM. REFER to Diagnostic Methods, Flash Electrically Erasable Programmable Read Only Memory (EEPROM). **No** The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.