

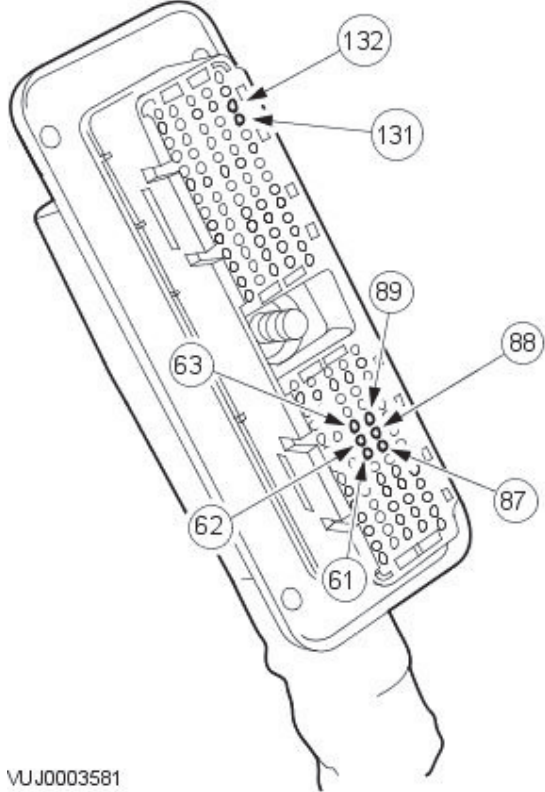
Engine Ignition - 2.0L NA V6 - AJV6/2.5L NA V6 - AJV6/3.0L NA V6 - AJ27 - Engine Ignition 2.5L NA V6 - AJV6/3.0L NA V6 - AJ27

Diagnosis and Testing

1. **1.** Verify the customer concern by operating the system.
2. **2.** Visually inspect for obvious signs of mechanical or electrical damage.
3. **3.** If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. **4.** If the concern is not visually evident, refer to the Symptom Chart.

Symptom Chart

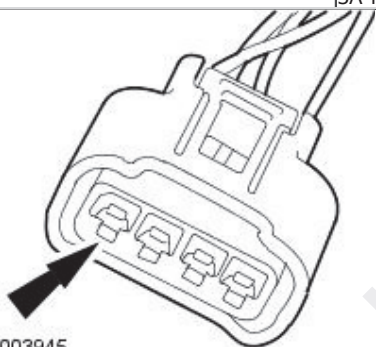
DTC	Condition	Possible Source	Action
<ul style="list-style-type: none"> ● P0300 ● P0301 ● P0302 ● P0303 ● P0304 ● P0305 ● P0306 	Random misfire detected. Misfire at cylinders 1 to 6	<ul style="list-style-type: none"> ● Poor cylinder compression. ● Damaged or worn piston rings. ● Inlet/exhaust valve stuck open/closed. ● Worn camshaft. ● Damaged cylinder head gasket. ● Spark plug fouled/damaged, incorrect gap. 	REFER to Section 303-01A Engine / 303-01B Engine .
		<ul style="list-style-type: none"> ● Fuel delivery pressure high/low. ● Faulty injector inoperative/leaking. ● Fuel injector continuously open. ● Fuel contamination. ● Fuel injector circuit fault. 	REFER to Section 303-04A Fuel Charging and Controls / 303-04B Fuel Charging and Controls / 303-04C Fuel Charging and Controls - Turbocharger .
		<ul style="list-style-type: none"> ● Damaged ignition coil. ● Damaged electrical harness/connection. ● Damaged spark plug. 	GO to Pinpoint Test A .
<ul style="list-style-type: none"> ● P0351 ● P0353 ● P0355 	Ignition coils 1A, 2A or 3A primary circuit malfunctions.	<ul style="list-style-type: none"> ● Ignition coil open/short circuit. ● Ignition coil insulation breakdown. ● Damaged harness. ● Connector pins bent or corroded. ● Ignition circuit ground fault. ● Damaged engine control module (ECM). 	GO to Pinpoint Test A .
<ul style="list-style-type: none"> ● P0352 ● P0354 ● P0356 	Ignition coils 1B, 2B or 3B primary circuit malfunctions.	<ul style="list-style-type: none"> ● Ignition coil open/short circuit. ● Ignition coil insulation breakdown. ● Damaged harness. ● Connector pins bent or corroded. ● Ignition circuit ground fault. ● Damaged ECM. 	GO to Pinpoint Test A .
P1367	Ignition amplifier group 1 fault. (Cylinders 1, 3, and 5).	<ul style="list-style-type: none"> ● Ignition coil open/short circuit. ● Ignition coil insulation breakdown. ● Damaged harness. ● Connector pins bent or corroded. ● Ignition circuit ground fault. ● Damaged ECM. 	GO to Pinpoint Test A .
P1368	Ignition amplifier group 2 fault. (Cylinders 2, 4, and 6).	<ul style="list-style-type: none"> ● Ignition coil open/short circuit. ● Ignition coil insulation breakdown. ● Damaged harness. ● Connector pins bent or corroded. ● Ignition circuit ground fault. ● Damaged ECM. 	GO to Pinpoint Test A .



VUJ0003581

Engine Control Module (ECM) Harness Connector

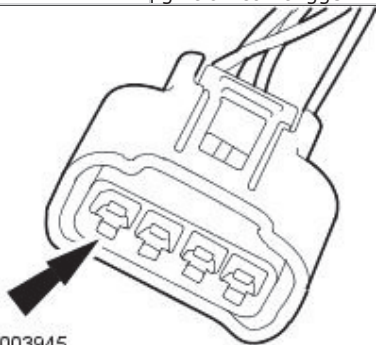
Pin Number	Circuit Function	Circuit Color
61	1B ignition coil trigger	Green/Blue
62	2B ignition coil trigger	Green/white
63	3B ignition coil trigger	Green/red
87	1A ignition coil trigger	Green/Blue
88	2A ignition coil trigger	Green/white
89	3A ignition coil trigger	Green/red



VUJ0003945

1A, 2A, 3A Ignition Coil Harness Connectors

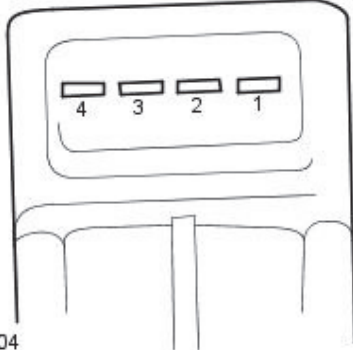
Pin Number	Circuit Function	Circuit Color
1	Ignition coil voltage supply	Red/white
2	Ignition coil diagnostic signal	Yellow/green
3	Ignition coil ground supply	Black
4	Ignition coil trigger	1A - Green/blue, 2A - Green/white, 3A - Green/red



VUJ0003945

1B, 2B, 3B Ignition Coil Harness Connectors

Pin Number	Circuit Function	Circuit Color
1	Ignition coil voltage supply	Red/white
2	Ignition coil diagnostic signal	Yellow/green
3	Ignition coil ground supply	Black
4	Ignition coil trigger	1B - Green/blue, 2B - Green/white, 3B - Green/red



VUJ0003704

1A, 2A, 3A, 1B, 2B, 3B Ignition Coils

Pin Number	Circuit Function
1	Ignition coil voltage supply
2	Ignition coil diagnostic signal
3	Ignition coil ground supply
4	Ignition coil trigger

PINPOINT TEST A : IGNITION COILS – P0351, P0352, P0353, P0354, P0355, P0356, P1367, P1368

• NOTE: Unless multiple cylinder misfires are apparent, only one circuit will normally need to be tested. The DTC set will indicate which cylinder is misfiring.

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
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A1: CHECK COIL FUNCTION BY SUBSTITUTION

1	Swap suspect coil for known good unit.
2	CLEAR the DTC. TEST the system for normal operation.
	Does the same DTC reoccur? The DTC will indicate if the same cylinder is misfiring.
Yes	GO to A2.
No	CLEAR the DTC. TEST the system for normal operation.

A2: CHECK THE IGNITION COIL SUPPLY VOLTAGE CIRCUIT

1	Disconnect the relevant A bank ignition coil electrical connector(s).
2	Turn the ignition switch to the ON position.
3	Measure the voltage between: <ul style="list-style-type: none"> ● Cyl A1. EN051 pin 1, (RW) and GROUND. ● Cyl A2. EN052 pin 1, (RW) and GROUND. ● Cyl A3. EN053 pin 1, (RW) and GROUND.
4	Disconnect the relevant B bank ignition coil electrical connector(s).
5	Measure the voltage between: <ul style="list-style-type: none"> ● Cyl B1. EN054 pin 1, (RW) and GROUND. ● Cyl B2. EN055 pin 1, (RW) and GROUND. ● Cyl B3. EN056 pin 1, (RW) and GROUND.
	Is the voltage greater than 10.5 Volts?
Yes	GO to A3.
No	REPAIR the relevant ignition coil supply voltage circuit. For additional information, refer to wiring diagrams. CLEAR the DTCs. TEST the system for normal operation.

A3: CHECK THE IGNITION COIL GROUND CIRCUIT

1	Switch the ignition to the OFF position.
2	Disconnect the relevant A bank ignition coil electrical connector(s).
3	Measure the resistance between: <ul style="list-style-type: none"> ● Cyl A1. EN051 pin 3, (B) and GROUND. ● Cyl A2. EN052 pin 3, (B) and GROUND. ● Cyl A3. EN053 pin 3, (B) and GROUND.
4	Disconnect the relevant B bank ignition coil electrical connector(s).
5	Measure the resistance between: <ul style="list-style-type: none"> ● Cyl B1. EN054 pin 3, (B) and GROUND. ● Cyl B2. EN055 pin 3, (B) and GROUND. ● Cyl B3. EN056 pin 3, (B) and GROUND.
	Is the resistance less than 5 ohms?
Yes	GO to A4.
No	REPAIR the relevant ignition coil ground circuit. For additional information, refer to wiring diagrams. CLEAR the DTCs. TEST the system for normal operation.

A4: CHECK THE CONTINUITY OF THE IGNITION COIL TRIGGER SUPPLY CIRCUIT

1	Disconnect the ECM electrical connector EN016.
2	Check the continuity of the ignition coil trigger supply circuit between the relevant ignition coil electrical connector(s) and the ECM electrical connector: <ul style="list-style-type: none"> ● Cyl A1. EN051 pin 4, (GU) and EN016 pin 87, (GU) ● Cyl A2. EN052 pin 4, (GW) and EN016 pin 88, (GW) ● Cyl A3. EN053 pin 4, (GR) and EN016 pin 89, (GR) ● Cyl B1. EN054 pin 4, (GU) and EN016 pin 61, (GU)

- Cyl B2. EN055 pin 4, (GW) and EN016 pin 62, (GW)
- Cyl B3. EN056 pin 4, (GR) and EN016 pin 63, (GR)

Is the resistance less than 5 ohms?

Yes

[GO to A5.](#)

No

REPAIR the ignition coil trigger supply circuit between the relevant ignition coil electrical connector(s) and the ECM electrical connector. CLEAR the DTCs. TEST the system for normal operation.

A5: CHECK THE CONTINUITY BETWEEN THE IGNITION COIL AND THE ECM

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Check the continuity of the ignition coil diagnostic signal circuit, between the ignition coil electrical connector(s) and the ECM electrical connector:

- Cyl A1. EN051 pin 2, (YG) and EN016 pin 131, (YG)
- Cyl A2. EN052 pin 2, (YG) and EN016 pin 131, (YG)
- Cyl A3. EN053 pin 2, (YG) and EN016 pin 131, (YG)
- Cyl B1. EN054 pin 2, (YG) and EN016 pin 132, (YG)
- Cyl B2. EN055 pin 2, (YG) and EN016 pin 132, (YG)
- Cyl B3. EN056 pin 2, (YG) and EN016 pin 132, (YG)

Is the resistance less than 5 Ohms?

Yes

INSTALL a new ECM. For additional information refer to Section [303-14A Electronic Engine Controls](#) Section [303-14B Electronic Engine Controls](#) Before replacing a ECM, contact Dealer technical support. CLEAR the DTCs. TEST the system for normal operation.

No

REPAIR the circuit between the ignition coil electrical connector(s) and the ECM electrical connector. CLEAR the DTCs. TEST the system for normal operation.

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