

GO to HD10 .

HD10 CHECK THE FUEL SYSTEM FOR CONCERNS

- GO to Pinpoint Test [HC](#) and follow the pinpoint test direction.

Is a fuel system related concern present?

Yes	REPAIR as necessary. Clear the PCM DTCs. REPEAT the self-test.
No	GO to HD11 .

HD11 CHECK THE VACUUM SYSTEM**Note:** *Some vacuum leaks can be heard.*

- Visually inspect the vacuum hoses for signs of damage or deterioration. A collapsed vacuum hose may cause a restriction to one of the various actuators or sensors. If a restriction is found remove the restriction or install new parts as necessary.
- Inspect the EVAP system lines and hoses for incorrect connections or damage.

Is a concern present?

Yes	For Corsair, Edge 2.0L, Escape/Kuga 2.0L, Escape/Kuga 2.5L, Explorer 2.3L, Explorer 3.3L, F-150 2.7L, F-150 3.3L, Fusion 2.5L, Nautilus 2.0L, Ranger 2.3L, Transit 3.5L TiVCT, and Transit Connect 2.5L, GO to HD12 . For all others, GO to HD14 .
No	REPAIR the vacuum system. Clear the PCM DTCs. REPEAT the self-test.

HD12 MONITOR THE EGR SYSTEM RELATED PIDS

- Ignition ON, engine running.
- Bring the engine to normal operating temperature.
- For Corsair, Edge 2.0L, Escape/Kuga 2.0L, Escape/Kuga 2.5L, Explorer 2.3L, Explorer 3.3L, F-150 2.7L, F-150 3.3L, Fusion 2.5L, Nautilus 2.0L, Ranger 2.3L and Transit 3.5L TiVCT,
- Access the PCM and monitor the EGRVPDES (PER) PID.
- For all others,
- Access the PCM and monitor the EGRMC1F (MODE), EGRMC2F (MODE), EGRMC3F (MODE) and EGRMC4F (MODE) PIDs.
- Access the PCM and monitor the MAP (PRESS) PID.
- Record the PID values with the engine idling.
- Ignition ON, engine OFF.
- Record the PID values with the engine off.
- Compare the recorded PID values to the typical reference values in Section 6, Reference Values.

Are any values out of range?

Yes	GO to Pinpoint Test KD and DIAGNOSE the EGR system.
No	GO to HD13 .

HD13 RECREATE THE MISFIRE SYMPTOM WITH EGR SYSTEM DISABLED

Note: The PCM may store EGR system related DTCs during this procedure.

Note: To recreate the original conditions that set the DTC or caused the symptom, the vehicle may require driving.

- Ignition OFF.
- EEGR Assembly connector disconnected.
- Access the misfire freeze frame data (if available) and record the operating conditions.
- Obtain information from the customer information worksheet or any other available data from the customer.
- Recreate the misfire symptom using the freeze frame and customer information.

Can the symptom be recreated?

Yes	GO to HD14 .
No	REMOVE and INSPECT the EGR for signs of contamination, unusual wear, carbon deposits, binding or other damage. REFER to the Workshop Manual Section 303-08, Engine Emission Control for more EGR system information. REPAIR as necessary. Clear the PCM DTCs. REPEAT the self-test.

HD14 CHECK FOR BASE ENGINE CONCERNS

Note: The engine temperature may affect the results.

- This step determines if there are any base engine concerns that may have caused the misfire DTC or drive concern.
- Ignition OFF.
- Carry out the following tests in order to evaluate base engine integrity:
 - For vehicles equipped with mechanically driven cooling fans only, rotate the cooling fan by hand. The cooling fan should rotate freely, with no abnormal binding or interference. If binding or interference is present, remove any foreign materials or repair the cooling fan as necessary.
 - Refer to the Workshop Manual Section 303-05, Accessory Drive and carry out checks in the Visual Inspection Chart.
 - Refer to the Workshop Manual Section 303-00, Engine System and carry out the Compression Test and Cylinder Leakage Detection.
 - Refer to the Workshop Manual Section 303-00, Engine System and carry out the Valve Train Analysis.
 - Visually inspect the positive crankcase ventilation (PCV) valve and tube for leaks.
 - Refer to the Workshop Manual Section 303-00, Engine System and carry out Component Tests.
 - For vehicles equipped with an intake manifold runner control (IMRC) system, inspect the IMRC for any disconnected or damaged linkages. Disconnect the IMRC linkage and inspect the linkage for restriction. Spring tension in one direction is normal. Rotate the IMRC plate to fully open and to fully closed, contacting both limits.

Is a concern present?

Yes	REPAIR as necessary. REFER to the Workshop Manual Section 303-00, Engine System. Clear the PCM DTCs. REPEAT the self-test.
No	For DTCs P0300 or P0316, GO to HD17 . For all others, GO to HD15 .

HD15 CHECK FUEL INJECTORS

Note: For vehicles without the injector disable PIDs, follow the Yes answer.

- Ignition ON, engine running.
- Access the PCM and control the suspect INJ_OFF (MODE) PID.
- Command the suspect injector OFF.

Does the engine RPM change?

Yes	GO to HD17 .
No	CHECK the suspect fuel injector connector and pins for damage, corrosion or an incorrect connection. If no concerns are present, INSTALL a new Fuel Injector. Clear the PCM DTCs. REPEAT the self-test.

HD16 CHECK THE CMP SENSOR

- Ignition ON, engine running.
- Access the PCM and monitor the SYNC (MODE) PID.

Is a concern present?

Yes	A CMP sensor that is installed out of synchronization may set a DTC. To verify the correct CMP sensor installation, REFER to the Workshop Manual Section 303-14, Electronic Engine Controls. If the CMP sensor is installed correctly, GO to HD17 .
No	GO to HD17 .

HD17 CHECK THE GENERATOR FOR EXCESSIVE ELECTRICAL NOISE

Note: If the generator/regulator is electrically noisy, the noise decreases when the B+ connector is disconnected.

- Ignition ON, engine running.
- Monitor the generator for an audible electric noise.
- Ignition OFF.
- Generator/regulator B+ connector disconnected.
- Ignition ON, engine running.
- With the engine running, determine if the generator is still noisy.

Does the noise remain constant when the B+ connector is disconnected?

Yes	GO to HD18 .
No	REFER to the Workshop Manual Section 414-00, Charging System, and DIAGNOSE the generator is noisy symptom.

HD18 CHECK THE CKP HARNESS FOR INTERMITTENT CONCERNS

Note: Damaged CKP wires or other physical damage to the harness may cause an intermittent short in the CKP circuit.

- Ignition OFF.
- Visually check for damaged CKP wires or other physical damage to the CKP harness.

Is a concern present?

Yes	REPAIR as necessary. Clear the PCM DTCs. REPEAT the self-test.
No	GO to HD19 .

HD19 CHECK THE PHYSICAL CONDITION OF THE CRANKSHAFT PULSE WHEEL

Note: DTC P0315 is set when the PCM is unable to learn and correct for the mechanical variations in the crankshaft pulse wheel tooth spacing (the allowable correction tolerances are exceeded).

- Inspect the crankshaft pulse wheel for damaged teeth.

- Inspect the crankshaft pulse wheel for wobble.
- Inspect the crank pulley for wobble.
- Check for a loose crankshaft pulse wheel.
- Check the CKP sensor for damage.

Are the CKP sensor, crankshaft pulse wheel and the crank shaft pulley OK?

Yes	GO to HD20 .
No	REPAIR as necessary. REFER to the Workshop Manual Section 303-14, Electronic Engine Controls and check for correct CKP sensor installation. RESET the keep alive memory (KAM). REFER to Section 2, Resetting The Keep Alive Memory (KAM) . CARRY OUT the Misfire Monitor Neutral Profile Correction procedure using the scan tool.

HD20 CHECK THE RECENT VEHICLE REPAIR HISTORY

Note: *Misfire Profiles stored in non-volatile memory may need to be relearned if major engine work is done.*

- Check the recent vehicle repair history to determine if any rotational components have been replaced such as:
 - crankshaft
 - crankshaft pulley
 - camshaft
 - flexplate
 - flywheel
 - pistons or connecting rods
 - front end accessory drive components

Does the vehicle repair history indicate any engine repairs for rotational components?

Yes	CARRY OUT the Misfire Monitor Neutral Profile Correction procedure using the scan tool. To verify the repair, RECREATE the original conditions that set the misfire DTC or caused the symptom using the freeze frame data and customer information. MONITOR the cylinder misfire data in Mode 6 - On Board Test Results and VERIFY the misfire count is below 10. REFER to the scan tool manufacturers manual for specific information on the Mode 6 - On Board Test Results.
No	GO to Pinpoint Test Z .

A: No Start

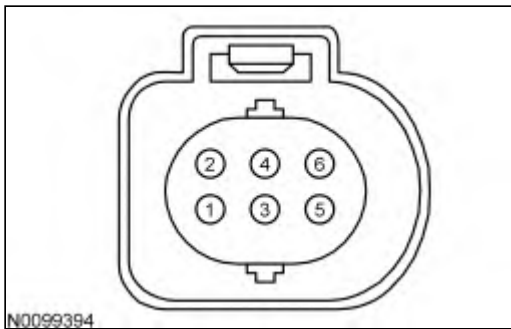
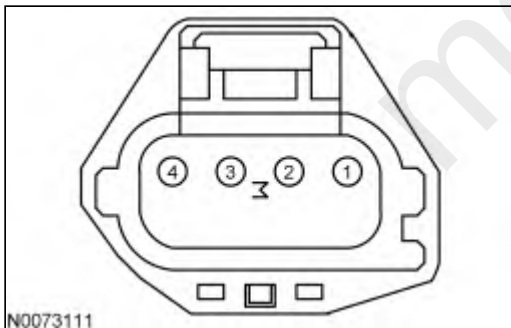
⚠ WARNING: Stop this test at the first sign of a fuel leak and repair as required.

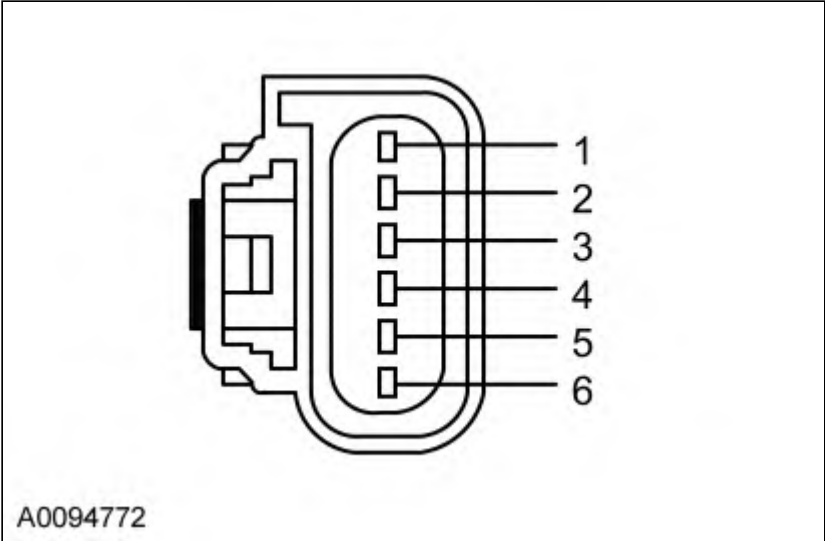
No open flame. No smoking during fuel delivery checks.

Failure to follow these instructions may result in personal injury.

This pinpoint test is intended to diagnose the following:

- spark (as related to electronic engine control)
- PCM (12A650)

Electronic Throttle Body Throttle Position Sensor (ETBTPS) Connector**A****B****C**



Vehicle	Connector	Pin	Circuit
EcoSport 1.5L, EcoSport 1.0L, Escape/Kuga 1.5L, Fusion 1.5L, KA, Transit Connect 1.0L	A	3 1	ETCRTN ETCREF
F-650 / F-750, Flex GTDI 3.5L	B	3 2	ETCRTN ETCREF
All other vehicles	C	4 5	ETCRTN ETCREF

Data Link Connector (DLC)

