

AR: Misfire

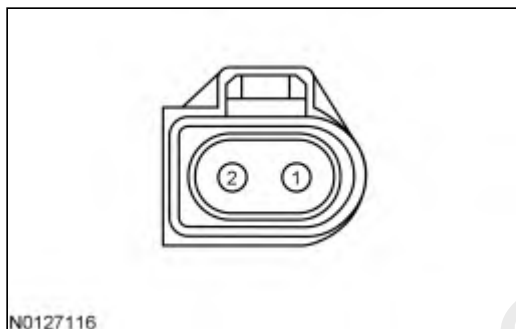
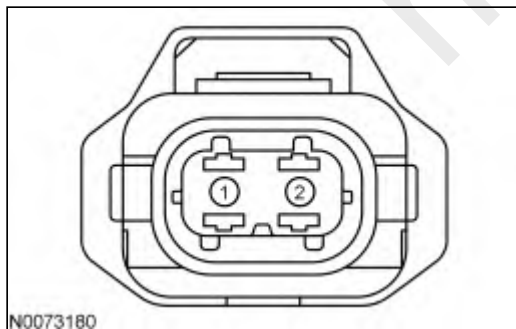
⚠ WARNING: Contact with exposed fuel injector wiring, if energized, may result in electric shock. Use care when working on or around energized fuel injector wiring. Fuel injector wiring supplies high voltage to operate the fuel injectors. Failure to follow this instruction may result in serious personal injury.

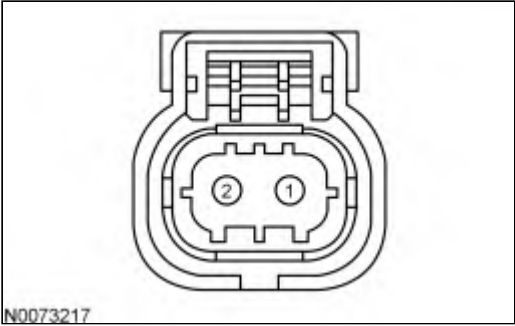
Note: Regeneration may occur during normal operation. During regeneration, diagnostic procedures may display biased values. If a regeneration occurs during diagnostic procedures, allow the process to complete before continuing diagnostics.

Note: Clearing the PCM DTCs erases any PCM recorded freeze frame data. Record any PCM freeze frame information before proceeding.

This pinpoint test is intended to diagnose the following:

- fuel injectors (9E527)

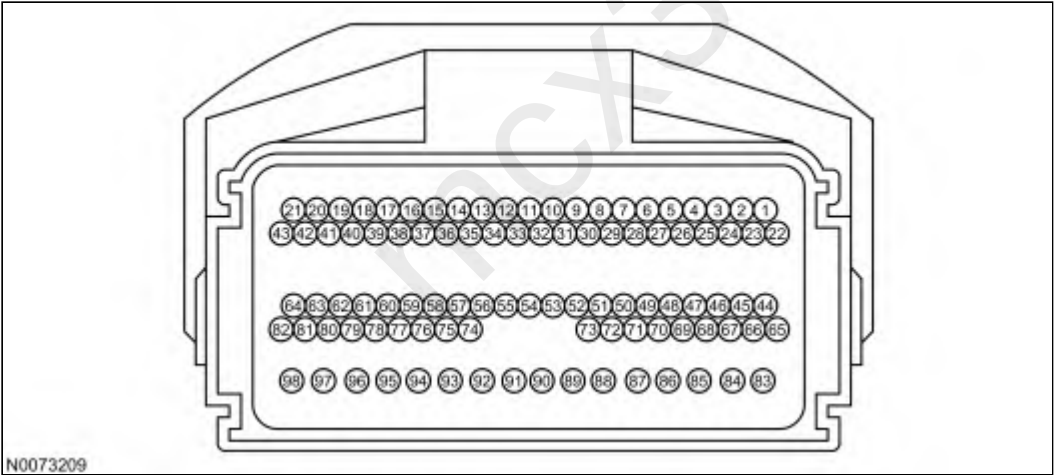
Fuel Injector Connector**A****B****C**



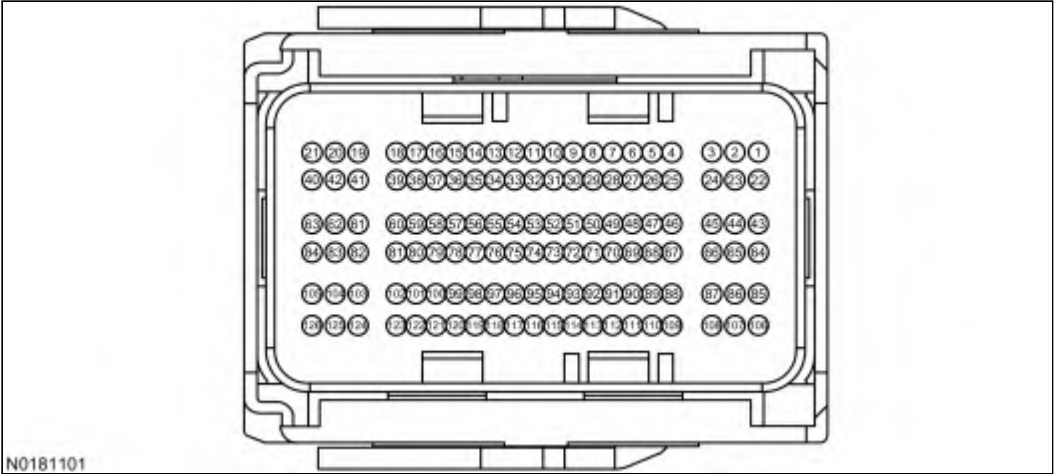
Vehicle	Connector	Pin	Circuit
Transit	A	1	INJRTN
		2	INJ
Transit Connect	B	2	INJRTN
		1	INJ
All other vehicles	C	1	INJRTN
		2	INJ

Powertrain Control Module-E (PCM-E) Connector

A

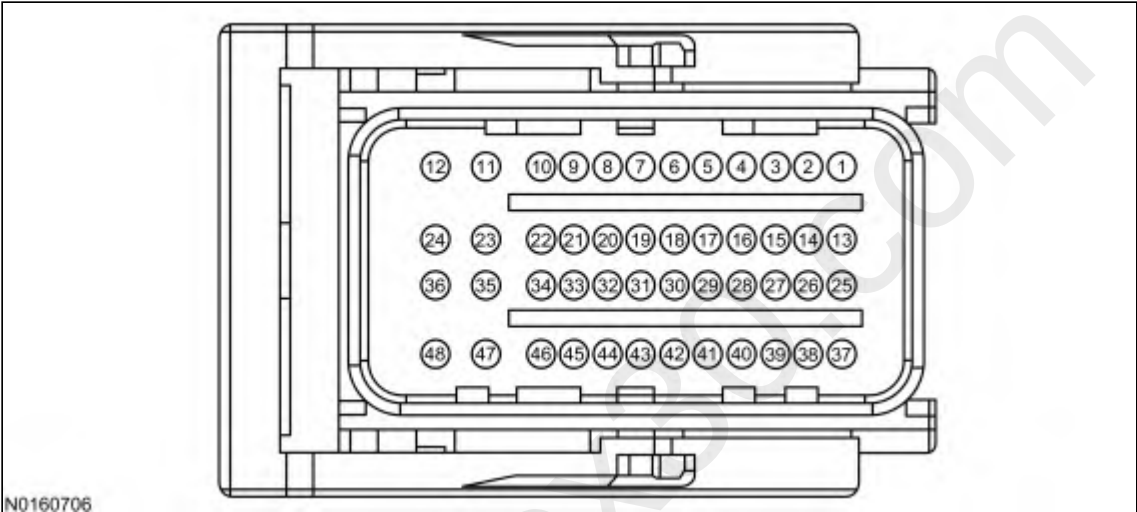


B



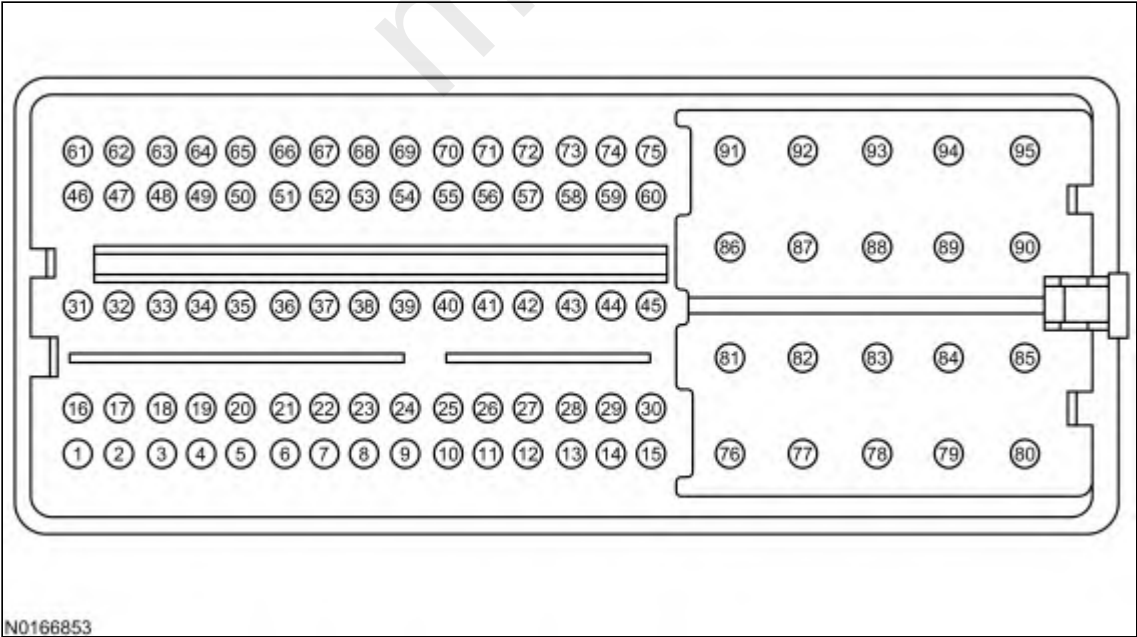
N0181101

C



N0160706

D



N0166853

Vehicle	Connector	Pin	Circuit
F-650 / F-750	A	90	INJ8RTN
		89	INJ8
		98	INJ7RTN
		97	INJ7
		95	INJ6RTN
		96	INJ6
		87	INJ5RTN
		88	INJ5
		94	INJ4RTN
		93	INJ4
		86	INJ3RTN
		85	INJ3
		83	INJ2RTN
		84	INJ2
		91	INJ1RTN
		92	INJ1
F-Series Super Duty	B	82	INJ8RTN
		61	INJ8
		41	INJ7RTN
		20	INJ7
		83	INJ6RTN
		62	INJ6
		40	INJ5RTN
		19	INJ5
		124	INJ4RTN
		103	INJ4
		84	INJ3RTN
		63	INJ3
		126	INJ2RTN
		105	INJ2
		125	INJ1RTN
		104	INJ1
Transit	C	11	INJ5RTN
		12	INJ5
		23	INJ4RTN
		24	INJ4
		23	INJ3RTN
		47	INJ3
		11	INJ2RTN
		36	INJ2
		35	INJ1RTN
		48	INJ1

Vehicle	Connector	Pin	Circuit
Transit Connect	D	80 85 90 95 89 94 79 84	INJ4RTN INJ4 INJ3RTN INJ3 INJ2RTN INJ2 INJ1RTN INJ1
All other vehicles	A	87 88 86 85 83 84 95 96 94 93 91 92	INJ6RTN INJ6 INJ5RTN INJ5 INJ4RTN INJ4 INJ3RTN INJ3 INJ2RTN INJ2 INJ1RTN INJ1

AR1 CHECK FOR DTCS

Are DTCS P0300, P0301, P0302, P0303, P0304, P0305, P0306, P0307 or P0308 present?

Yes	GO to AR3 .
No	GO to AR2 .

AR2 RECREATE THE MISFIRE SYMPTOM USING FREEZE FRAME AND CUSTOMER INFORMATION

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

- 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 AR3 .
No	Unable to duplicate or identify the concern at this time. REFER to Section 3, No Diagnostic Trouble Codes (DTCs) Present Symptom Chart Index , if a driveability concern exists.

AR3 CHECK FOR OTHER NON-MISFIRE CONTINUOUS MEMORY DTCS

Are there any non-misfire continuous memory DTCS present?

Yes	DISREGARD the current diagnostic trouble code (DTC) at this time. DIAGNOSE the next DTC. GO to Section 4, Diagnostic Trouble Code (DTC) Charts and Descriptions .
No	GO to AR4 .

AR4 CHECK FOR DTCS

- For F-Series Super Duty,
- Carry out the PCM self-test.
- For all others,
- Carry out the PCM KOEO self-test.
- Carry out the PCM KOER self-test.

Are any DTCs present other than P0300, P0301, P0302, P0303, P0304 P0305, P0306, P0307 or P0308?

Yes	DISREGARD the current diagnostic trouble code (DTC) at this time. DIAGNOSE the next DTC. GO to Section 4, Diagnostic Trouble Code (DTC) Charts and Descriptions .
No	GO to AR5 .

AR5 CHECK THE LOW PRESSURE FUEL SYSTEM

Note: The fuel pump runs for 30 seconds then shuts off at ignition ON, engine OFF.

Note: On some vehicles, the FP PID may not turn off the fuel pump. Cycle the ignition from ON to OFF to command the fuel pump OFF.

- Ignition ON, engine OFF.
- For F-650 / F-750,
- Access the PCM and monitor the FLP (PRESS) PID.
- Access the PCM and control the FPL_CMD (MODE) PID.
- Command the fuel pump ON then OFF.
- For Transit,
- Access the PCM and monitor the LP_FUEL_SW (MODE) PID.
- Access the PCM and control the FP (MODE) PID.
- Command the fuel pump ON then OFF.
- For all others,
- Access the PCM and monitor the FLP (PRESS) PID.
- Access the PCM and control the FP (MODE) PID.
- Command the fuel pump ON then OFF.

Does the LP_FUEL_SW PID state cycle from Low to Not Low (Transit) or is the FLP PID greater than 379 kPa (55 psi) (all others)?

Yes	GO to AR6 .
No	GO to Pinpoint Test MA .

AR6 RELATIVE COMPRESSION TEST

- Carry out the Relative Compression Test. Refer to the scan tool manufacturer's manual for specific information on the scan tool setup, operation, and specific cables and adapters required.

Do all cylinders pass the test?

Yes	GO to AR7 .
No	GO to AR9 .

AR7 CYLINDER POWER BALANCE CHECK

- Carry out the Power Balance Test. Refer to the scan tool manufacturer's manual for specific information on the scan tool setup, operation, and specific cables and adapters required.

Are all cylinders contributing correctly during the power balance test?

Yes	GO to Pinpoint Test M .
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No	GO to AR8 .
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AR8 CHECK THE SUSPECT FUEL INJECTOR RESISTANCE AT THE FUEL INJECTOR

Note: Only diagnose the fuel injectors for the cylinders identified as weak during the power balance test.

- Suspect Fuel Injector connector disconnected.
- Measure the resistance between:

(+) Suspect Fuel Injector Connector, Component Side	(-) Suspect Fuel Injector Connector, Component Side
INJ	INJRTN

Is the resistance between 150K - 210K ohms?

Yes	GO to AR9 .
No	GO to Pinpoint Test P .

AR9 CARRY OUT A CYLINDER COMPRESSION TEST ON THE SUSPECT CYLINDER

- Carry out a cylinder compression test on the suspect cylinder. Refer to the Workshop Manual Section 303-01, Engine.

Are any concerns present?

Yes	REPAIR as necessary. Refer to the Workshop Manual Section 303-01, Engine. Clear the PCM DTCs. REPEAT the self-test.
No	GO to AR10 .

AR10 CHECK FOR A LEAKING FUEL INJECTOR

- Disconnect all the fuel injector electrical connectors.
- Remove the glow plug from the suspect cylinder.
- Crank the engine.
- Observe the glow plug hole for a fuel mist.

Is there any fuel mist from the glow plug hole?

Yes	For Transit, INSTALL a new Fuel Injector. REFER to the Workshop Manual Section 303-04, Fuel Charging and Controls. CARRY OUT the Reset And Clear The Specified Function Reset Minimum Fuel Mass Adaptions For Cylinder X on the scan tool for the affected cylinder. REFER to Section 2, Clear The Continuous Diagnostic Trouble Codes (DTCs) And Reset The Emission Monitors Information in The Powertrain Control Module (PCM). Clear the PCM DTCs. REPEAT the self-test. For all others, INSTALL a new Fuel Injector. REFER to the Workshop Manual Section 303-04, Fuel Charging and Controls. Clear the PCM DTCs. REPEAT the self-test.
No	GO to Pinpoint Test M .

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