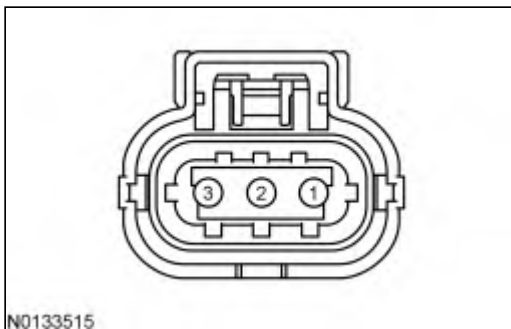
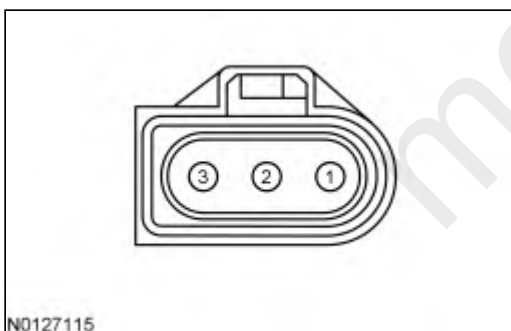
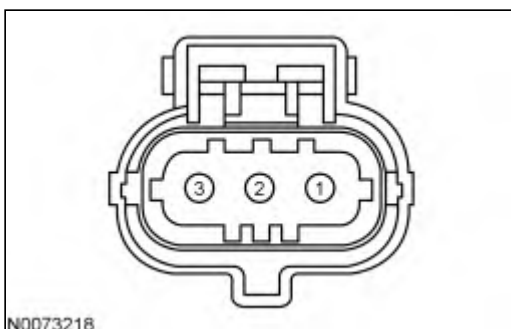


MB: Fuel Rail Pressure (FRP) Sensor

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.

This pinpoint test is intended to diagnose the following:

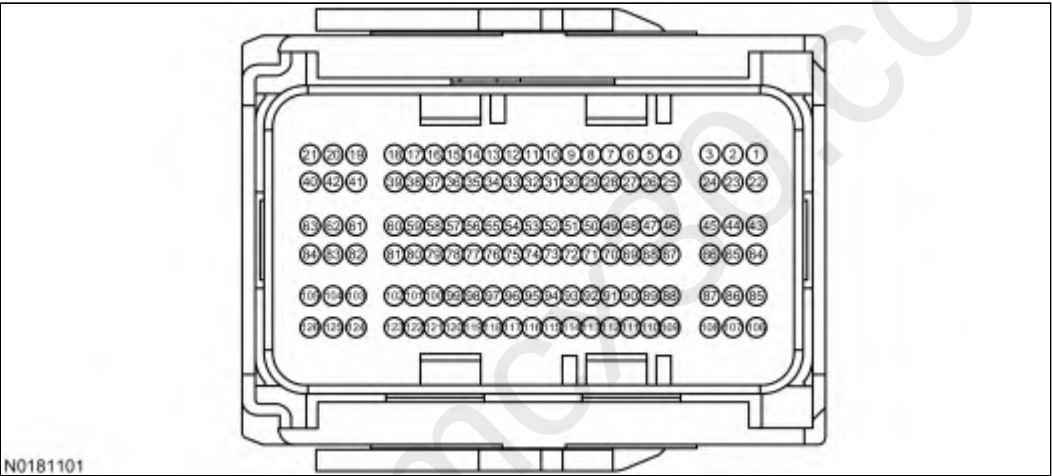
- harness circuits: FRP, VREF and SIGRTN
- FRP sensor (9F838)
- PCM (12A650)

Fuel Rail Pressure (FRP) Sensor Connector**A****B****C**

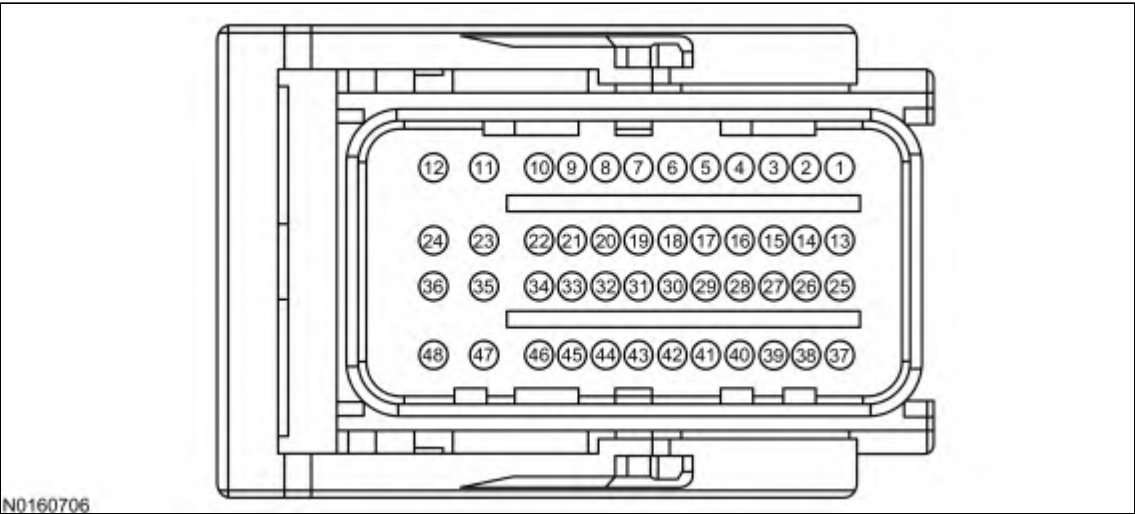
Vehicle	Connector	Pin	Circuit
F-Series Super Duty	A	2	FRP
		3	SIGRTN
		1	VREF
Transit	B	2	FRP
		1	SIGRTN
		3	VREF
All other vehicles	C	2	FRP
		3	SIGRTN
		1	VREF

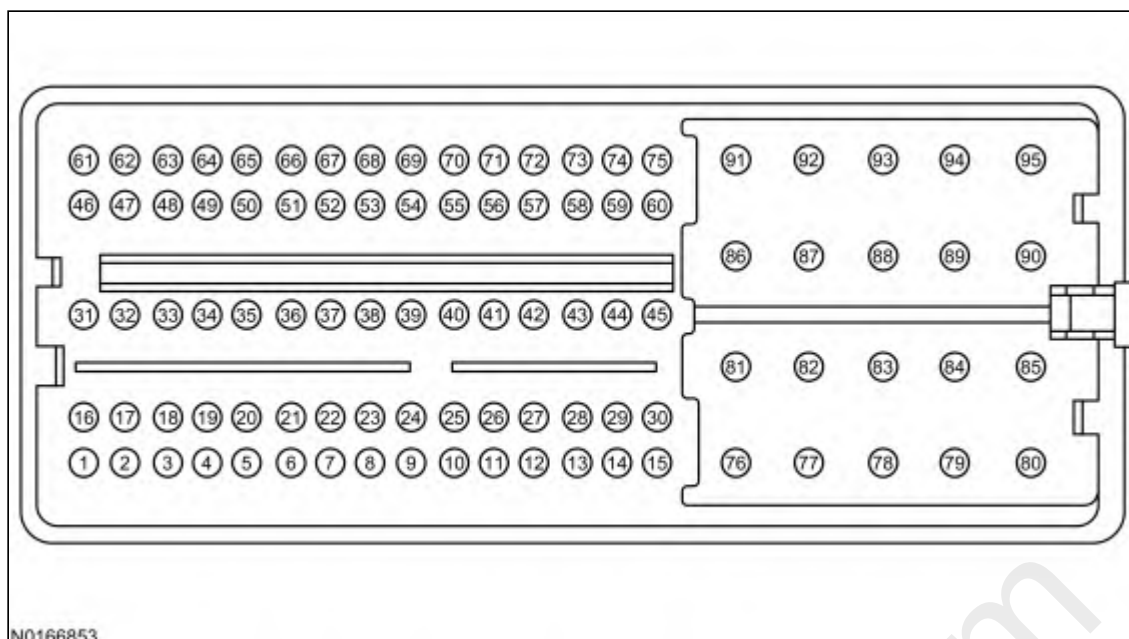
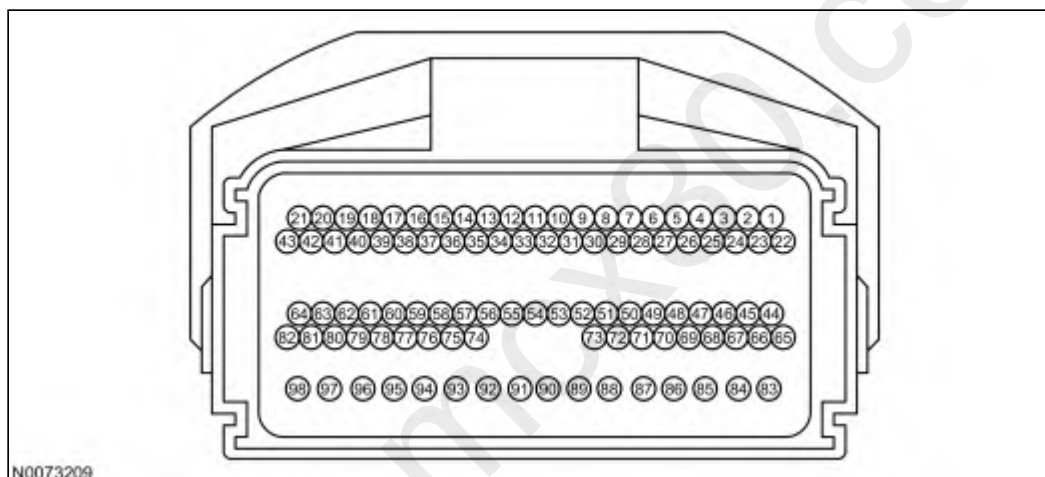
Powertrain Control Module-E (PCM-E) Connector

A



B



C**D**

Vehicle	Connector	Pin	Circuit
F-Series Super Duty	A	73	FRP
Transit	B	7	FRP
Transit Connect	C	14	FRP
All other vehicles	D	15	FRP

MB1 CHECK FOR DTCS

Are DTCS P0192, P0193 or P0194 present?

Yes	GO to MB2 .
No	If sent here from Pinpoint Test M, GO to MB2 . For symptoms without DTCS, GO to MB2 .

For all others, RETURN to Section 3, Symptom Charts for further direction.
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MB2 INTERMITTENT CHECK

- Ignition ON, engine OFF.
- Access the PCM and monitor the FRP (VOLT) PID.
- While observing the PID, carry out the following:
 - Wiggle all accessible harness from the FRP sensor to the PCM and lightly tap on the sensor.
 - Wiggle the FRP sensor connector.
 - Look for sudden changes in the voltage when the harness and connector are wiggled or when the FRP sensor is tapped.

Is a concern present?

Yes	REPAIR as necessary. Clear the PCM DTCs. REPEAT the self-test.
No	GO to MB3 .

MB3 CHECK FOR VREF VOLTAGE AT THE FRP SENSOR

- Ignition OFF.
- FRP Sensor connector disconnected.
- Ignition ON, engine OFF.
- Measure the voltage between:

(+) FRP Sensor Connector, Harness Side	(-) FRP Sensor Connector, Harness Side
VREF	SIGRTN

Is the voltage between 4.5 - 5.5 V?

Yes	GO to MB4 .
No	GO to Pinpoint Test B .

MB4 CHECK THE FRP CIRCUIT FOR AN OPEN

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

(+) FRP Sensor Connector, Harness Side	(-) PCM-E Connector, Harness Side
FRP	FRP

Is the resistance less than 5 ohms?

Yes	GO to MB5 .
No	REPAIR the open circuit. Clear the PCM DTCs. REPEAT the self-test.

MB5 CHECK THE FRP CIRCUIT FOR A SHORT

- Measure the resistance between:

(+) FRP Sensor Connector, Harness Side	(-)
FRP	Ground

- Measure the resistance between:

(+) FRP Sensor Connector, Harness Side	(-) FRP Sensor Connector, Harness Side
FRP	VREF
FRP	SIGRTN

Are the resistances greater than 10K ohms?

Yes	GO to MB6 .
No	REPAIR the short circuit. Clear the PCM DTCs. REPEAT the self-test.

MB6 CHECK THE FRP CIRCUIT FOR A SHORT TO VOLTAGE

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

(+) FRP Sensor Connector, Harness Side	(-)
FRP	Ground

Is any voltage present?

Yes	REPAIR the short circuit. Clear the PCM DTCs. REPEAT the self-test.
No	For Transit, GO to MB7 . For all others, INSTALL a new FRP sensor. REFER to the Workshop Manual Section 303-14, Electronic Engine Controls. Clear the PCM DTCs. REPEAT the self-test.

MB7 CHECK THE FUNCTIONALITY OF THE FRP SENSOR

- Ignition OFF.
- PCM-E connector connected.
- Ignition ON, engine running.
- Access the PCM and monitor the FRP (VOLT) PID.
- Access the PCM and control the RPMDSD (RPM) PID.
- Increase the engine speed to 1,400 RPM.
- Access the PCM and control the FRP_DSD (PRESS) PID.
- Increase the FRP_DSD PID to 180 MPa (26,106 psi) and monitor the FRP voltage.
- Decrease the FRP_DSD PID pressure to 40 MPa (5,801 psi) and monitor the FRP voltage.

Does the FRP voltage increase and decrease when the FRP_DSD PID pressure is increased and decreased during each step?

Yes	The test is complete and no concerns are present. Clear the PCM DTCs. REPEAT the self-test.
No	INSTALL a new FRP sensor.

REFER to the Workshop Manual Section 303-14, Electronic Engine Controls.
Clear the PCM DTCs. REPEAT the self-test.

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