

X: Exhaust Pressure (EP) Sensor

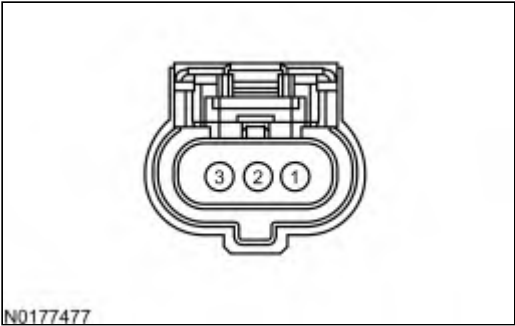
Note: Regeneration may occur during normal operation. During regeneration, diagnostic procedures may display biased values. If a regeneration occurs during diagnostic procedures, allow the process to complete before continuing diagnostics.

This pinpoint test is intended to diagnose the following:

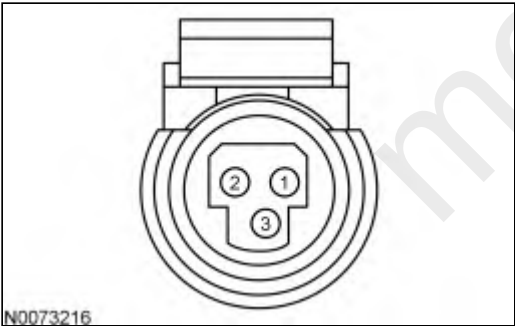
- harness circuits: EP, SIGRTN, VREF
- EP sensor (9J460)
- PCM (12A650)

Exhaust Pressure (EP) Sensor Connector

A



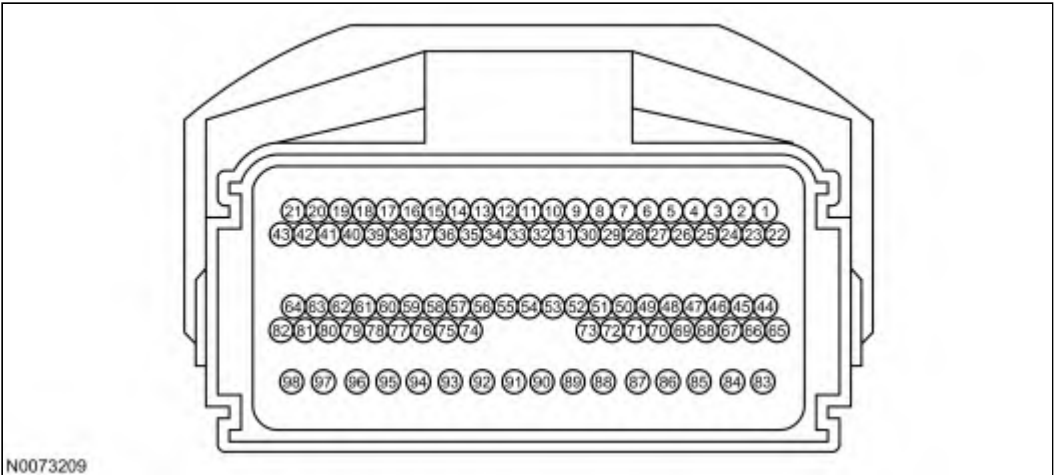
B



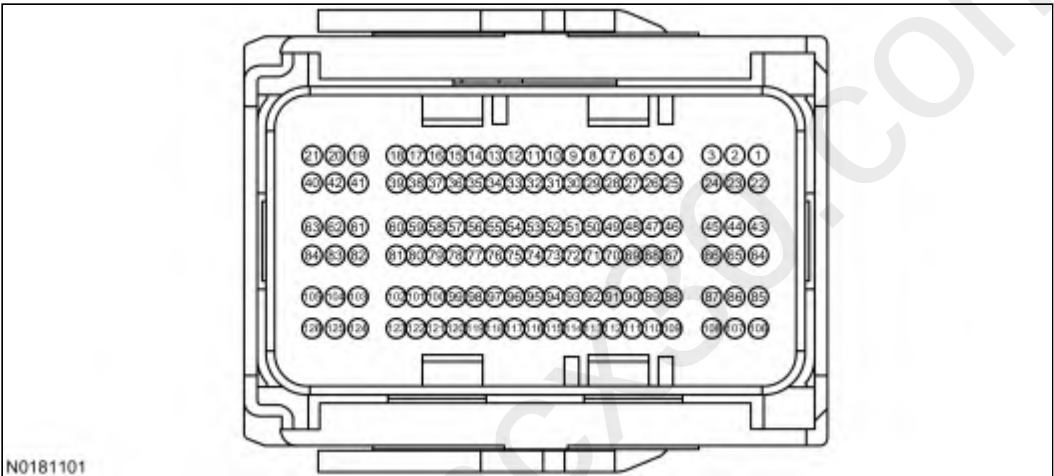
Vehicle	Connector	Pin	Circuit
F-Series Super Duty	A	1	EP
		2	SIGRTN
		3	VREF
All other vehicles	B	3	EP
		1	SIGRTN
		2	VREF

Powertrain Control Module-E (PCM-E) Connector

A



B



Vehicle	Connector	Pin	Circuit
F-650 / F-750	A	58	EP
F-Series Super Duty	B	94	EP

X1 PRELIMINARY DIAGNOSIS

Is DTC P0470, P0471, P0472, P0473, P0474 or U0691 present?

Yes	For DTC P0471, GO to X7 . For all others, GO to X2 .
No	For symptoms without DTCs, GO to X7 . For all others, RETURN to Section 3, Symptom Charts for further direction.

X2 CHECK FOR VOLTAGE AT THE SENSOR

- Ignition OFF.
- EP Sensor connector disconnected.

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

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

Is the voltage between 4.5 - 5.5 V?

Yes	GO to X3 .
No	GO to Pinpoint Test B .

X3 CHECK FOR AN OPEN

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

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

Is the resistance less than 5 ohms?

Yes	GO to X4 .
No	REPAIR the open circuit. Clear the PCM DTCs. REPEAT the self-test.

X4 CHECK FOR A SHORT BETWEEN CIRCUITS

- Measure the resistance between:

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

- Measure the resistance between:

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

Are the resistances greater than 10K ohms?

Yes	GO to X5 .
No	REPAIR the short circuit. Clear the PCM DTCs. REPEAT the self-test.

X5 CHECK FOR A SHORT TO VOLTAGE

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

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

Is any voltage present?

Yes	REPAIR the short circuit. Clear the PCM DTCs. REPEAT the self-test.
No	GO to X6 .

X6 INTERMITTENT CHECK

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

Is a concern present?

Yes	REPAIR as necessary. Clear the PCM DTCs. REPEAT the self-test.
No	For F-150 with DTC P0474, GO to Pinpoint Test AK . For all others with DTC P0474, GO to Pinpoint Test ZZ . For all others, INSTALL a new EP sensor. REFER to the Workshop Manual Section 303-14, Electronic Engine Controls. Clear the PCM DTCs. REPEAT the self-test.

X7 CHECK THE SENSOR FOR BIAS

- Ignition ON, engine OFF.
- Access the PCM and monitor the BARO (PRESS), EBP (PRESS) and MAP (PRESS) PIDs.

Is the EBP PID value within 7.5 kPa (1.09 psi) of the MAP_A and BARO PID values?

Yes	GO to X8 .
No	INSTALL a new EP sensor. REFER to the Workshop Manual Section 303-14B, Electronic Engine Controls. Clear the PCM DTCs. REPEAT the self-test.

X8 CHECK THE SENSOR PERFORMANCE

- Ignition ON, engine running.
- Access the PCM and monitor the EBP (PRESS) PID.
- Record the EBP PID reading at idle.
- Access the PCM and control the EGRVPDES (PER) PID.
- Command EGRVPDES to the minimum value.
- Access the PCM and control the VGTDC (PER) PID.

- Increase the commanded VGTDC duty cycle to 100%.
- Access the PCM and control the RPMDSD (RPM) PID.
- Increase the commanded engine speed to 1,500 RPM.

Does the EBP pressure increase greater than 206.8 kPa (30 psi) from the EBP pressure at idle?

Yes	CHECK the EP sensor and tube for blockage or restrictions. REPAIR as necessary. REFER to Section 3, No Diagnostic Trouble Codes (DTCs) Present Symptom Chart Index if a driveability concern exists.
No	CHECK the EP sensor and tube for blockage or restrictions. REPAIR as necessary. If no concern is present, INSTALL a new EP sensor. REFER to the Workshop Manual Section 303-14, Electronic Engine Controls. Clear the PCM DTCs. REPEAT the self-test.