

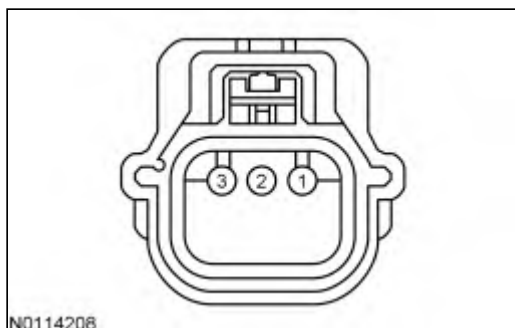
C: Crankcase Ventilation Sensor

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: CRNKCSVT, CVHC, GND, SIGRTN, VBPWR and VPWR
- crankcase ventilation sensor
- crankcase ventilation heater
- PCM (12A650)

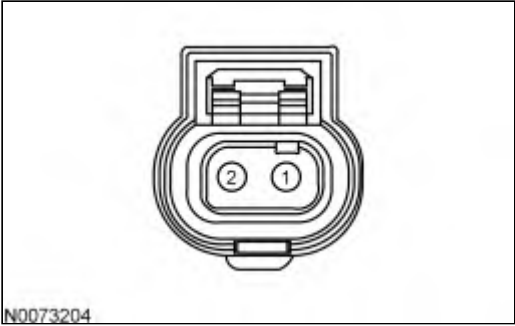
Crankcase Ventilation Sensor Connector



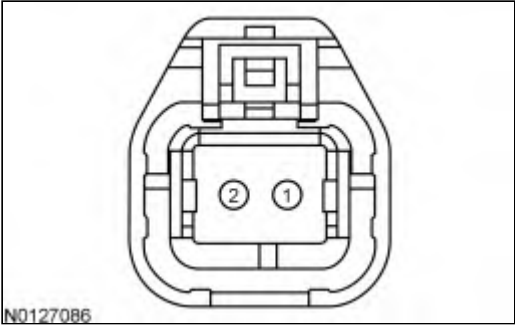
Vehicle	Connector	Pin	Circuit
Transit	A	2	CRNKCSVT
		3	GND
		1	VPWR
F-650 / F-750	A	2	CRNKCSVT
		3	SIGRTN
		1	VBPWR

Crankcase Ventilation Heater Assembly Connector

A



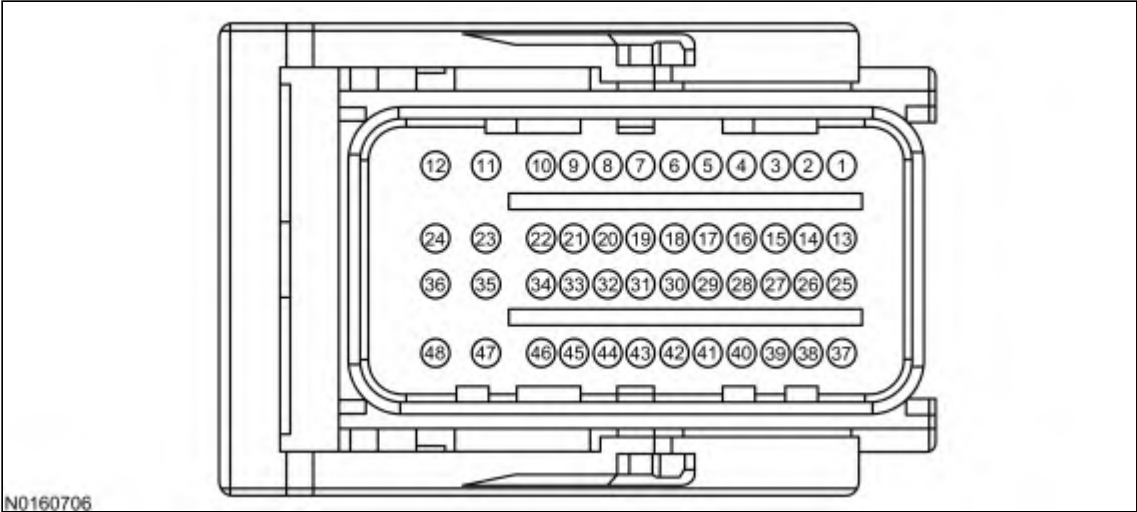
B



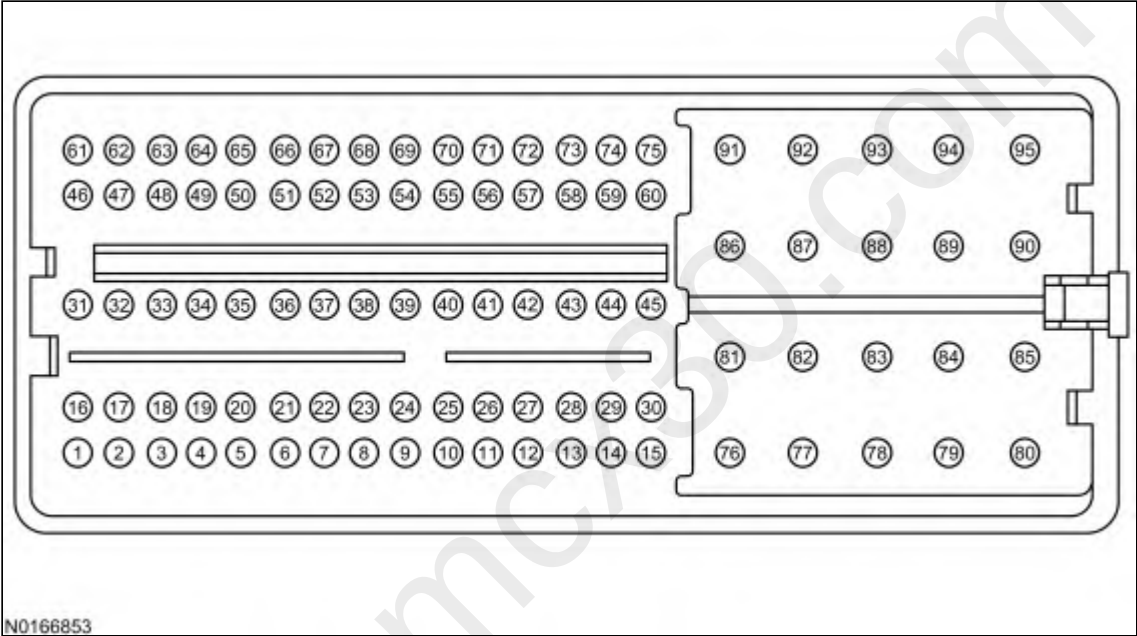
Vehicle	Connector	Pin	Circuit
Transit	A	2	VPWR
		1	GND
F-150	A	2	VPWR
		1	CVHC
Transit Connect	B	1	GND
		2	CVHC

Powertrain Control Module-E (PCM-E) Connector

A

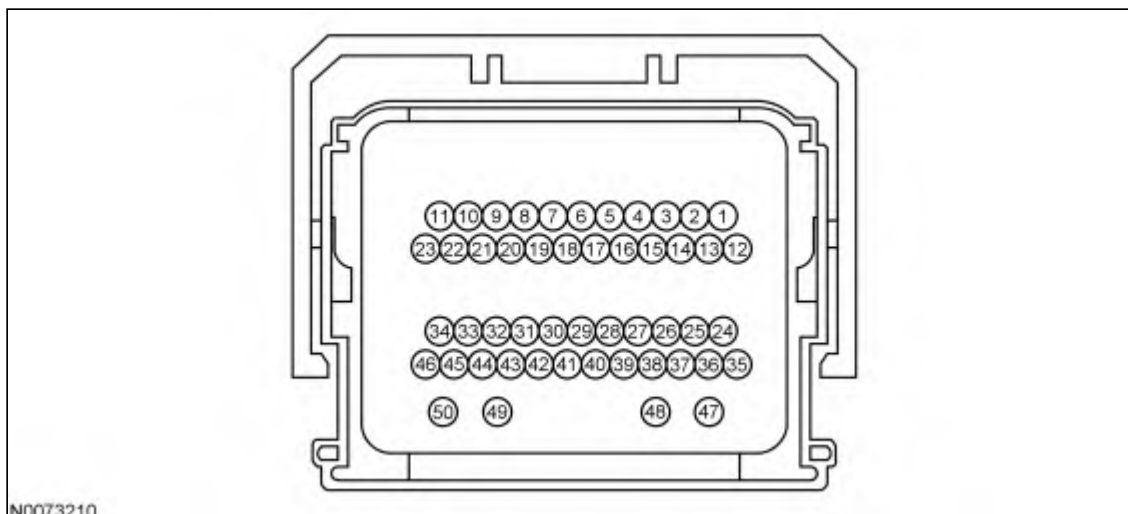


B



Vehicle	Connector	Pin	Circuit
Transit	A	27	CRNKCSV
Transit Connect	B	61	CVHC

Powertrain Control Module-T (PCM-T) Connector



N0073210

Pin	Circuit
22	CVHC (Crankcase Ventilation Heater Control)

C1 CHECK FOR DTCS

Are DTCs P04DB, P04E2, P04E3, P053A, P053B or P053C present?

Yes	For DTCs P053A, P053B or P053C. GO to C13 . For all others, GO to C2 .
No	For F-150, Transit and Transit Connect Crankcase Ventilation Heater, GO to C11 . For all others, RETURN to Section 3, Symptom Charts for further direction.

C2 CHECK THE CRANKCASE VENTILATION SENSOR FOR DAMAGE

- Ignition OFF.
- Inspect the crankcase ventilation sensor connector for damaged or corroded pins.
- Inspect the crankcase ventilation sensor for misalignment and incorrect installation.
- Inspect the crankcase ventilation sensor for damage.
- Inspect the turbocharger inlet surface for debris, or dirt that could cause an incorrect connection.

Is a concern present?

Yes	REPAIR as necessary. REFER to the Workshop Manual Section 303-08, Engine Emission Control. CLEAR the DTCs. REPEAT the self-test.
No	GO to C3 .

C3 CHECK THE VOLTAGE TO THE CRANKCASE VENTILATION SENSOR

- Crankcase Ventilation Sensor connector disconnected.
- Ignition ON, engine OFF.
- For Transit,
- Measure the voltage between:

(+) Crankcase Ventilation Sensor Connector, Harness Side	(-)
VPWR	Ground

- For all others,
- Measure the voltage between:

(+) Crankcase Ventilation Sensor Connector, Harness Side	(-)
VBPWR	Ground

Is the voltage greater than 10.5 V?

Yes	For Transit, GO to C4 . For all others, GO to C7 .
No	For Transit, REPAIR the open circuit. Clear the PCM DTCs. REPEAT the self-test. For all others, GO to C4 .

C4 CHECK FOR AN OPEN

- Ignition OFF.
- For Transit,
- Measure the resistance between:

(+) Crankcase Ventilation Sensor Connector, Harness Side	(-)
GND	Ground

- For Transit Connect,
- Measure the resistance between:

(+) Crankcase Ventilation Heater Assembly Connector, Harness Side	(-) PCM-E Connector, Harness Side
CVHC	CVHC

- Measure the resistance between:

(+) Crankcase Ventilation Heater Assembly Connector, Harness Side	(-)
GND	Ground

- For all others,
- PCM-E connector disconnected.
- Measure the resistance between:

(+) Crankcase Ventilation Sensor Connector, Harness Side	(-) PCM-E Connector, Harness Side
VBPWR	VBPWR
SIGRTN	SIGRTN

Are the resistances less than 5 ohms?

Yes	For Transit, GO to C7 . For all others, GO to C5 .
No	REPAIR the open circuit. Clear the PCM DTCs. REPEAT the self-test.

C5 CHECK THE CIRCUITS FOR A SHORT TO GROUND

- Ignition OFF.
- Measure the resistance between:

(+) Crankcase Ventilation Sensor Connector, Harness Side	(-)
VBPWR	Ground
SIGRTN	Ground

Are the resistances greater than 10K ohms?

Yes	GO to C10 .
No	REPAIR the short circuit. Clear the PCM DTCs. REPEAT the self-test.

C6 CHECK FOR A SHORT TO VOLTAGE

- Measure the voltage between:

(+) Crankcase Ventilation Sensor Connector, Harness Side	(-)
VBPWR	Ground
SIGRTN	Ground

Is any voltage present?

Yes	REPAIR the short circuit. Clear the PCM DTCs. REPEAT the self-test.
No	GO to C10 .

C7 CHECK THE CRNKCSVT CIRCUIT FOR AN OPEN

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

(+) Crankcase Ventilation Sensor Connector, Harness Side	(-) PCM-E Connector, Harness Side
CRNKCSVT	CRNKCSVT

Is the resistance less than 5 ohms?

Yes	GO to C8 .
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No	REPAIR the open circuit. Clear the PCM DTCs. REPEAT the self-test.
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C8 CHECK THE CRNKCSVT CIRCUIT FOR A SHORT TO GROUND

- Measure the resistance between:

(+) Crankcase Ventilation Sensor Connector, Harness Side	(-)
CRNKCSVT	Ground

Is the resistance greater than 10K ohms?

Yes	GO to C9 .
No	REPAIR the short circuit. Clear the PCM DTCs. REPEAT the self-test.

C9 CHECK THE CRNKCSVT CIRCUIT FOR A SHORT TO VOLTAGE

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

(+) Crankcase Ventilation Sensor Connector, Harness Side	(-)
CRNKCSVT	Ground

Is any voltage present?

Yes	REPAIR the short circuit. Clear the PCM DTCs. REPEAT the self-test.
No	GO to C10 .

C10 CHECK THE CRANKCASE VENTILATION SENSOR FOR CORRECT OPERATION

- Ignition OFF.
- Crankcase Ventilation Sensor connector connected.
- PCM-E connector connected.
- Ignition ON, engine OFF.
- Clear the PCM DTCs. REPEAT the self-test.

Are DTCs P04DB, P04E2 or P04E3 present?

Yes	INSTALL a new Crankcase Ventilation sensor. REFER to the Workshop Manual Section 303-08, Engine Emission Control. Clear the PCM DTCs. REPEAT the self-test.
No	Unable to duplicate or identify the concern at this time. The concern may have been caused by a loose or corroded connector.

C11 CHECK FOR AN OPEN GND CIRCUIT

- Crankcase Ventilation Heater Assembly connector disconnected.
- Measure the resistance between:

(+) Crankcase Ventilation Heater Assembly Connector, Harness Side	(-)

(+) Crankcase Ventilation Heater Assembly Connector, Harness Side	(-)
GND	Ground

Is the resistance less than 5 ohms?

Yes	GO to C12 .
No	REPAIR the open circuit. Clear the PCM DTCs. REPEAT the self-test.

C12 CHECK THE VOLTAGE TO THE CRANKCASE VENTILATION HEATER

- Ignition ON, engine OFF.
- For F-150 and Transit,
- Measure the voltage between:

(+) Crankcase Ventilation Heater Assembly Connector, Harness Side	(-)
VPWR	Ground

- For Transit Connect,
- Measure the voltage between:

(+) Crankcase Ventilation Heater Assembly Connector, Harness Side	(-)
CVHC	Ground

Is the voltage greater than 10.5 V?

Yes	INSTALL a new Crankcase Ventilation Heater assembly. Clear the PCM DTCs. REPEAT the self-test.
No	REPAIR the open circuit. Clear the PCM DTCs. REPEAT the self-test.

C13 CHECK THE HARNESS VOLTAGE TO THE PCM CONTROLLED CRANKCASE VENTILATION HEATER

- Crankcase Ventilation Heater Assembly connector disconnected.
- Ignition ON, engine OFF.
- For Transit Connect,
- Measure the voltage between:

(+) Crankcase Ventilation Heater Assembly Connector, Harness Side	(-)
CVHC	Ground

- For all others,
- Measure the voltage between:

(+) Crankcase Ventilation Heater Assembly Connector, Harness Side	(-)
VPWR	Ground

Is the voltage greater than 10.5 V?

Yes	GO to C14 .
No	REPAIR the open circuit. Clear the PCM DTCs. REPEAT the self-test.

C14 CHECK THE HARNESS CIRCUIT TO THE PCM CONTROLLED CRANKCASE VENTILATION HEATER

- For F-150 and Transit,
- PCM-T connector disconnected.
- Measure the resistance between:

(+) PCM-T Connector, Harness Side	(-) Crankcase Ventilation Heater Assembly Connector, Harness Side
CVHC - Pin 22	CVHC

- For Transit Connect,
- PCM-E connector disconnected.
- Measure the resistance between:

(+) PCM-E Connector, Harness Side	(-) Crankcase Ventilation Heater Assembly Connector, Harness Side
CVHC	CVHC

Is the resistance less than 5 ohms?

Yes	GO to C15 .
No	REPAIR the open circuit. Clear the PCM DTCs. REPEAT the self-test.

C15 CHECK THE SUSPECT CRANKCASE VENTILATION HEATER CIRCUIT FOR A SHORT TO GROUND

- Measure the resistance between:

(+) Crankcase Ventilation Heater Assembly Connector, Harness Side	(-)
CVHC	Ground

Is the resistance greater than 10K ohms?

Yes	For Transit Connect, GO to C17 . For all others, GO to C16 .
No	REPAIR the short circuit. Clear the PCM DTCs. REPEAT the self-test.

C16 CHECK THE SUSPECT CVHC CIRCUIT FOR A SHORT TO VOLTAGE

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

(+) Crankcase Ventilation Heater Assembly Connector, Harness Side	(-)

(+) Crankcase Ventilation Heater Assembly Connector, Harness Side	(-)
CVHC	Ground

Is any voltage present?

Yes	REPAIR the short circuit. Clear the PCM DTCs. REPEAT the self-test.
No	GO to C17 .

C17 CHECK THE RESISTANCE OF THE PCM CONTROLLED SUSPECT CRANKCASE VENTILATION HEATER

- For Transit Connect,
- Measure the resistance between:

(+) Crankcase Ventilation Heater Assembly Connector, Component Side	(-) Crankcase Ventilation Heater Assembly Connector, Component Side
CVHC	GND

- For all others,
- Measure the resistance between:

(+) Crankcase Ventilation Heater Assembly Connector, Component Side	(-) PCM-E Connector, Component Side
CVHC	VBPWR

Is the resistance between 5 - 25 ohms?

Yes	GO to C18 .
No	INSTALL a new Crankcase Ventilation Heater assembly. Clear the PCM DTCs. REPEAT the self-test.

C18 CHECK FOR CORRECT PCM OPERATION

- Disconnect all the PCM connectors.
- Visually inspect for:
 - pushed out pins.
 - corrosion.
- Connect all the PCM connectors and make sure they seat correctly.
- Carry out the PCM self-test.
- Verify the concern is still present.

Is the concern still present?

Yes	INSTALL a new PCM. REFER to Section 2, Flash Electrically Erasable Programmable Read Only Memory (EEPROM) .
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.

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