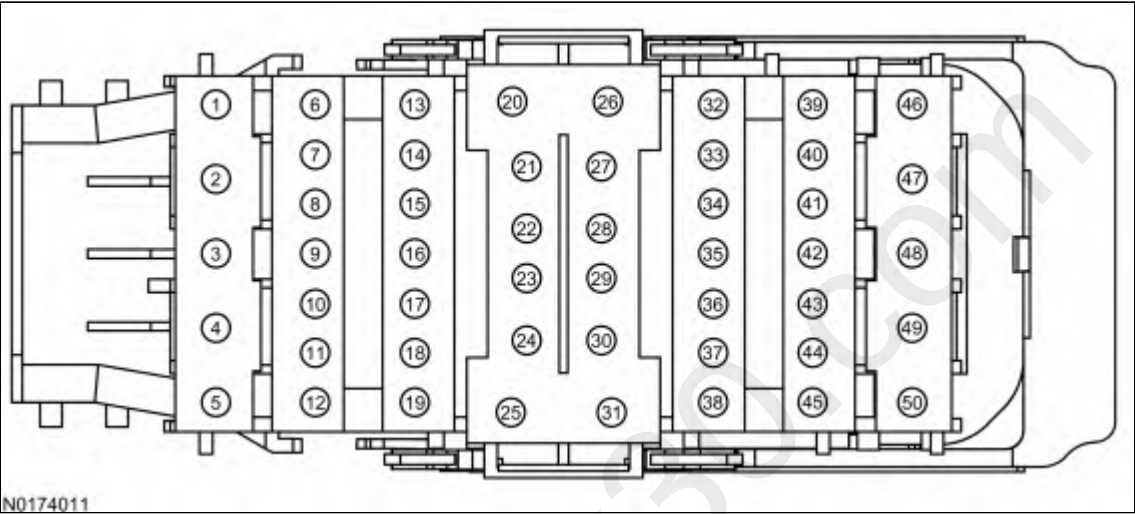


KN: Variable Speed Electric Cooling Fan Motor

This pinpoint test is intended to diagnose the following:

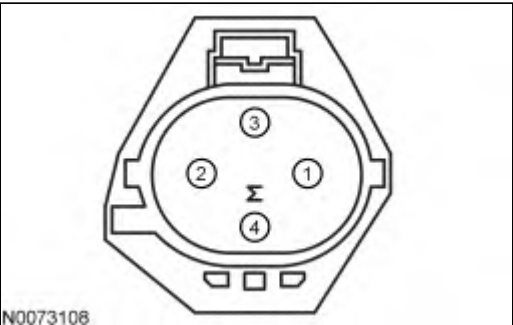
- cooling fan (CF) module (8B658)
- cooling fan assembly (8C607)
- harness circuits: FCV, FANPWR and GND
- PCM (12A650)

Battery Junction Box-A (BJB-A) Connector



Pin	Circuit
20	FANPWR (Fan Power)
1	GND (Ground)

Cooling Fan (CF) Module Connector

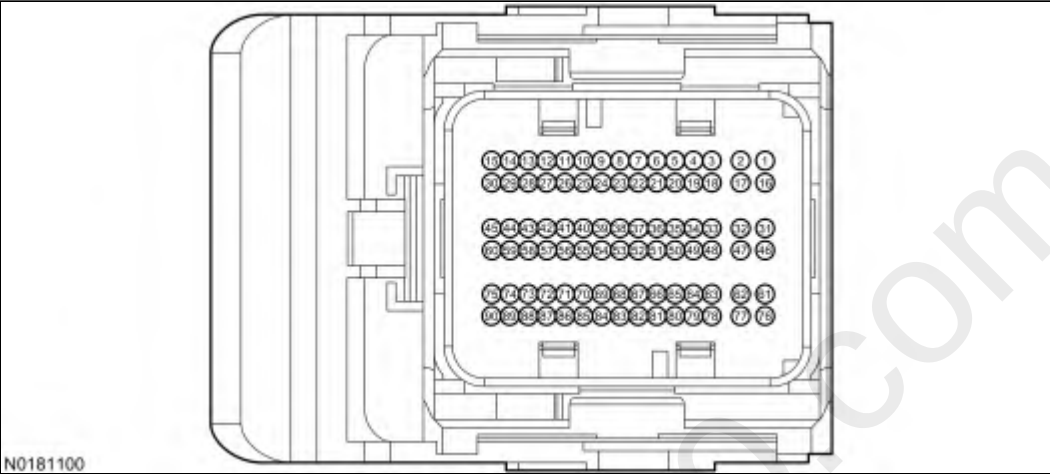


Pin	Circuit
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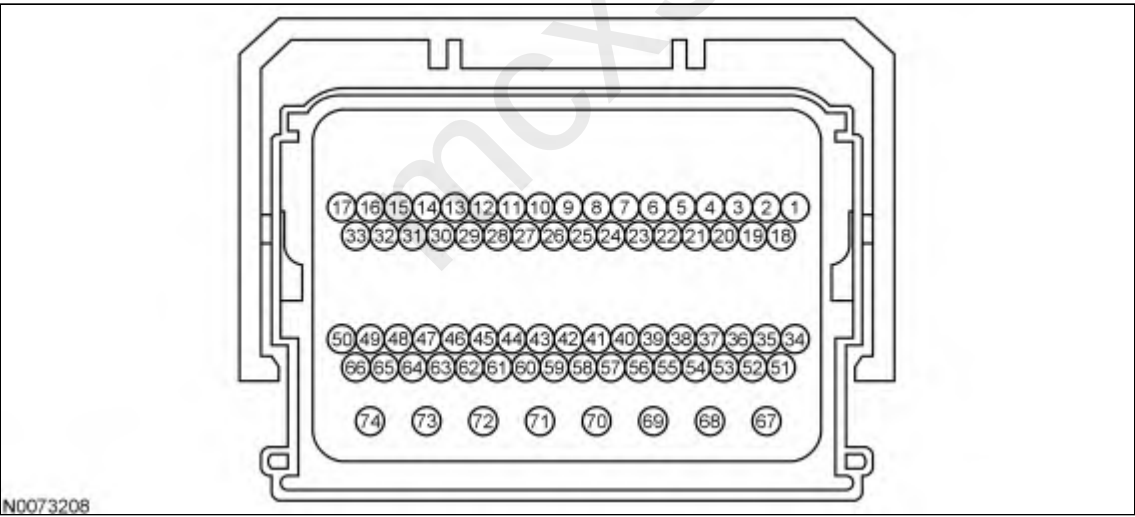
Pin	Circuit
4	FCV (Fan Control Variable)
2	GND (Ground)
1	FANPWR (Fan Power)

Powertrain Control Module-B (PCM-B) Connector

A



B



Vehicle	Connector	Pin	Circuit
F-Series Super Duty	A	70	FCV
All other vehicles	B	34	FCV

Is DTC P0480 present?

Yes	GO to KN4 .
No	For symptoms without DTCs, GO to KN2 . For all others, RETURN to Section 3, Symptom Charts for further direction.

KN2 VERIFY A/C STATUS

- Verify the A/C system is OFF.
- Ignition ON, engine running.
- Access the PCM and monitor the AC_REQ (MODE) PID.

Is A/C being requested?

Yes	REFER to the Workshop Manual Section 412-00, Climate Control System, to diagnose the A/C system.
No	For electric cooling fan(s) always on, GO to KN3 . For all others, GO to KN4 .

KN3 CHECK THE AIR CONDITIONING PRESSURE TRANSDUCER SENSOR

- Ignition OFF.
- ACP Sensor connector disconnected.
- Ignition ON, engine running.

Does the cooling fan turn off?

Yes	REFER to the Workshop Manual Section 412-00, Climate Control System, to diagnose the Air Conditioning Pressure (ACP) Sensor.
No	GO to KN4 .

KN4 COMMAND THE COOLING FAN ON TO CHECK OPERATION

Note: Some vehicles have more than one cooling fan. Make sure both cooling fans operate correctly.

- Ignition ON, engine OFF.
- Access the PCM and control the FAN_DSD (PER) PID.
- Command the fan to full ON.

Does the cooling fan operate when commanded ON?

Yes	The concern is elsewhere. RETURN to Section 3, No Diagnostic Trouble Codes (DTCs) Present Symptom Chart Index for further direction.
No	GO to KN5 .

KN5 CHECK THE VOLTAGE TO THE COOLING FAN

- Ignition OFF.
- CF Module connector disconnected.
- Ignition ON, engine OFF.
- Measure the voltage between:

(+) CF Module Connector, Harness Side	(-)
FANPWR - Pin 1	Ground

Is the voltage greater than 10.5 V?

Yes	GO to KN7 .
No	GO to KN6 .

KN6 CHECK THE RELAY GROUND CIRCUIT

- Ignition OFF.
- BJB-A connector disconnected.
- Measure the resistance between:

(+) BJB-A Connector, Harness Side	(-)
GND - Pin 1	Ground

Is the resistance less than 5 ohms?

Yes	GO to KN7 .
No	REPAIR the open circuit. Clear the PCM DTCs. REPEAT the self-test.

KN7 CHECK FOR AN OPEN

- Ignition OFF.
- BJB-A connector disconnected.
- Measure the resistance between:

(+) CF Module Connector, Harness Side	(-)
GND - Pin 2	Ground

- Measure the resistance between:

(+) CF Module Connector, Harness Side	(-) PCM-B Connector, Harness Side
FCV - Pin 4	FCV

- Measure the resistance between:

(+) CF Module Connector, Harness Side	(-) BJB-A Connector, Harness Side
FANPWR - Pin 1	FANPWR - Pin 20

Are the resistances less than 5 ohms?

Yes	GO to KN8 .
No	REPAIR the open circuit. Clear the PCM DTCs. REPEAT the self-test.

KN8 CHECK THE FCV FOR A SHORT TO GROUND

- Measure the resistance between:

(+) CF Module Connector, Harness Side	(-)
FCV - Pin 4	Ground

Are the resistances greater than 10k ohms?

Yes	GO to KN9 .
No	REPAIR the short circuit. Clear the PCM DTCs. REPEAT the self-test.

KN9 CHECK THE FCV FOR A SHORT TO VOLTAGE

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

(+) CF Module Connector, Harness Side	(-)
FCV - Pin 4	Ground

Is any voltage present?

Yes	REPAIR the short circuit. Clear the PCM DTCs. REPEAT the self-test.
No	GO to KN10 .

KN10 CHECK THE FCV FOR INTERMITTENT CONCERNS

- Ignition OFF.
- BJB-A connector disconnected.
- CF Module connector disconnected.
- Visually inspect all connectors for:
 - pushed out pins
 - corrosion
- BJB-A connector connected.
- CF Module connector connected.
- Ignition RUN Engine RUN.
- Access the PCM and control the FAN_DSD (PER) PID.
- Command the fan to full ON.
- While observing the fan, wiggle, shake, and bend small sections of the wiring harness while working from the cooling fan to the PCM.

Is a concern present?

Yes	REPAIR as necessary. If a wiring concern is not present, INSTALL a new cooling fan. REFER to the Workshop Manual Section 303-03, Engine Cooling. Clear the PCM DTCs. REPEAT the self-test.
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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