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2014 FORD Mustang Convertible OEM Service and Repair Workshop Manual

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No	REPAIR the affected circuit.

G7 CHECK FOR CORRECT PCM (POWERTRAIN CONTROL MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all PCM (powertrain control module) connectors.
- Repair:
  - corrosion (install new connector or terminals – clean module pins)
  - damaged or bent pins – install new terminals/pins
  - pushed-out pins – install new pins as necessary
- Reconnect the PCM (powertrain control module) connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS (Online Automotive Service Information System) for any applicable TSB (Technical Service Bulletin) s. If a TSB (Technical Service Bulletin) exists for this concern, DISCONTINUE this test and FOLLOW the TSB (Technical Service Bulletin) instructions. If no TSB (Technical Service Bulletin) address this concern,  Guided Routine available in the on-line Workshop Manual.
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

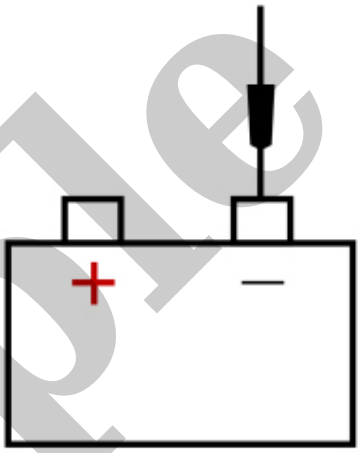
PINPOINT TEST H : LIN COMMUNICATION FAULT U012F AND U044D

Refer to Wiring Diagrams Cell 12-4for schematic and connector information.
Refer to Wiring Diagrams Cell 44-12for schematic and connector information.
Normal Operation and Fault Conditions The secondary alternator is a 24V alternator which provides current to the DC (direct current) / AC (alternating current) for the "power to the box" feature. The regulator receives 12V power from fuse F25. The PCM (powertrain control module) communicates via LIN (local

Do not have a battery charger attached during vehicle testing.

H1 CHECK VOLTAGE ON ALTERNATOR B+

- Measure / Record:

Positive Lead	Measurement / Action	Negative Lead
C1251B-1	V	

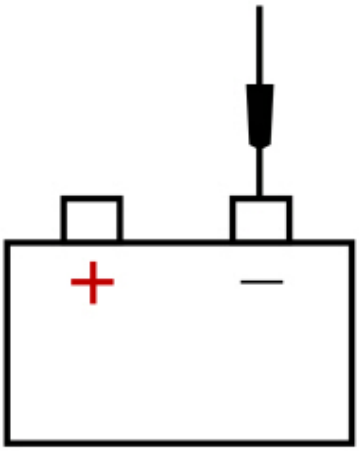
Is the voltage greater than 22V?

Yes	GO to H2

No	Repair the fuse F1 (125A) or charge auxiliary battery 1 and 2. or INSTALL a new battery as necessary. REFER to: Battery (414-01 Battery, Mounting and Cables, Diagnosis and Testing).

H2 CHECK IGNITION LINE ON REGULATOR CONNECTOR

- Ignition ON.
- Measure:

C1251A-2	Ω	

Is the resistance greater than 10,000 ohms?

Yes	GO to H4

No	REPAIR the circuit.

H4 CHECK THE ALTERNATOR LIN CIRCUIT FOR VOLTAGE

NOTE

The duty cycle on the LIN (local interconnect network) circuit should be 77%.

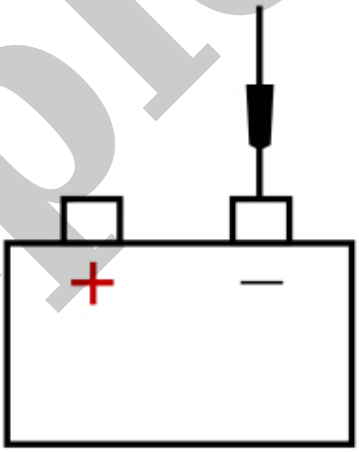
- Ignition ON.
- Measure:

Positive Lead	Measurement / Action	Negative Lead

No	Repair the circuit.

H6 CHECK DC (DIRECT CURRENT) / AC (ALTERNATING CURRENT) FOR 12V IGNITION VOLTAGE

- Ignition ON.
- Disconnect DC (direct current) / AC (alternating current) inverter C3501C .
- Measure / Record:

Positive Lead	Measurement / Action	Negative Lead
C3501C-1	Ω	

Is voltage equal to 12V main battery?

Yes	GO to H7

No	Check and replace the BCM (body control module) fuse F2 (10A) or REPAIR the wiring circuit.

H7 CHECK THE DC/AC LIN CIRCUIT FOR VOLTAGE

NOTE

C3501C-12	V	C1381B-34

Is the resistance less than 3 ohms?

Yes	GO to H9

No	Repair the circuit.

H9 CHECK INLINE CONNECTORS LIN (LOCAL INTERCONNECT NETWORK) LINE

- Ignition OFF.
- The LIN (local interconnect network) inline connector C146-8, the pin 8 should be electrically isolated to all other pins in the connector for both male and female side.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
12A581 male harness connector inline C146-8 and 14B060 female harness connector C146-8	Ω	12A581 male harness connector C146 all other pins and 14B060 female harness connector C146 All other pins

Is resistance less than 10,000 ohms to any other pin?

Yes	Repair connector/wiring harness

No	GO to H10

H10 CHECK INLINE CONNECTORS LIN LINE

- Ignition OFF.
- The LIN (local interconnect network) inline connector C265-42, pin 42 should be electrically isolated to all other pins in the connector except for pin 32 for both male and female side.

No	If DTC (diagnostic trouble code) U044D is present the issue is most likely an intermittent wiring connection If DTC (diagnostic trouble code) U012F present without U044D. The cause could be defective Alternator, PCM (powertrain control module) or intermittent wiring issue. CHECK OASIS (Online Automotive Service Information System) for any applicable TSB (Technical Service Bulletin) s. If a TSB (Technical Service Bulletin) exists for this concern, DISCONTINUE this test and FOLLOW the TSB (Technical Service Bulletin) instructions.

PINPOINT TEST I : GENERATOR CLUTCH COMPONENT TEST

Normal Operation and Fault Conditions

The generator clutch allows the generator rotor to continue to rotate when the engine or FEAD (front end accessory drive) system slows. The clutch should slip freely and smoothly in a clockwise direction. It should not rotate freely in the counterclockwise direction. A loose FEAD (front end accessory drive) belt or a weak or binding tensioner can cause the pulley to overheat. REFER to: Charging System - 3.3L Duratec-V6/5.0L 32V Ti-VCT - System Operation and Component Description(414-00 Charging System - General Information, Description and Operation).

The generator is belt-driven by the engine FEAD (front end accessory drive) system. There are several sources of generator noise which include bearing noise, electrical fault noise, generator or belt pulley misalignment. A generator with certain types of diode or stator failures can also produce an audible noise.

Possible Sources

- FEAD (front end accessory drive) belt
- Loose bolts/brackets
- Generator/pulleys

Visual Inspection and Pre-checks

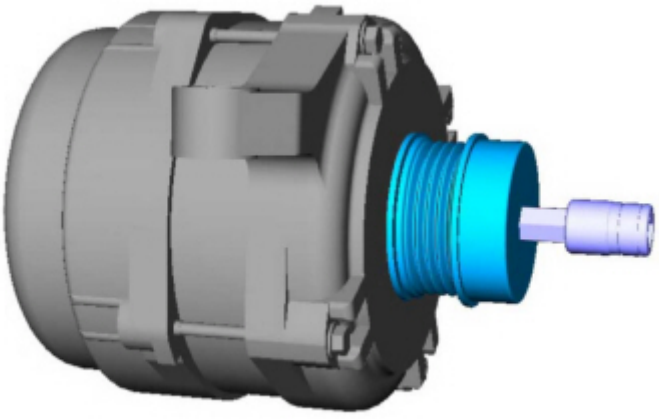
- Inspect the FEAD (front end accessory drive) belt.
- Inspect for loose bolts/brackets.
- Inspect the generator/pulley.

I1 INSPECT THE GENERATOR CLUTCH

- Remove the generator.
  REFER to: Generator - 3.3L Duratec-V6(414-02 Generator and Regulator, Removal and Installation).
  REFER to: Generator - 5.0L 32V Ti-VCT(414-02 Generator and Regulator, Removal and Installation).
- Inspect the generator clutch for heat damage.

Is there evidence of heat damage?

Yes	INSTALL a new generator clutch. REFER to: Generator Pulley

- 

E152689

- While holding the clutch pulley firmly by hand, turn the clutch shaft clockwise. The clutch shaft should rotate smoothly and freely.

Does the clutch shaft rotation feel rough or seized?

Yes	INSTALL a new generator clutch (If equipped). REFER to: Generator Pulley (414-02 Generator and Regulator, Removal and Installation).
No	GO to I3

I3 CHECK FOR REVERSE ROTATION RESISTANCE

- While holding the clutch pulley firmly by hand, turn the clutch shaft counterclockwise.

Is there some resistance (a spring feel)?

Yes	GO to I4
No	INSTALL a new generator clutch (If equipped). REFER to: Generator Pulley (414-02 Generator and Regulator, Removal and Installation).

The generator radio suppression equipment reduces interference transmitted through the speakers by the vehicle electrical system.

Possible Sources

- Generator
- In-vehicle entertainment system
- Wiring, terminals or connectors

Visual Inspection and Pre-checks

- Inspect the generator.
- Inspect the in-vehicle entertainment system.

J1 VERIFY THE GENERATOR IS THE SOURCE OF THE AUDIO SYSTEM INTERFERENCE

- Start the engine.
- Allow the engine to idle.
- Tune the audio system to a station where interference is present.
- Ignition OFF.
- Disconnect Generator C102A .
- Start the engine.
- Allow the engine to idle.

Is the interference present with the generator disconnected?

Yes	DIAGNOSE the audio system. Refer to the appropriate section in Group 415for the procedure.

No	INSTALL a new generator. REFER to: Generator - 3.3L Duratec-V6 (414-02 Generator and Regulator, Removal and Installation). REFER to: Generator - 5.0L 32V Ti-VCT (414-02 Generator and Regulator, Removal and Installation).

PINPOINT TEST K : BATTERY MONITORING SENSOR FAULTS

Refer to Wiring Diagrams Cell 12for schematic and connector information.

Normal Operation and Fault Conditions The BCM (body control module) monitors the battery state of charge using the battery monitoring sensor attached to the negative battery cable. Battery voltage is hardwired to the battery monitoring sensor and data is transferred from the battery monitoring sensor to the BCM (body control module) via a LIN (local interconnect network) circuit. **DTC Fault Trigger Conditions**

NOTE

Make sure battery voltage is greater than 12.2 volts prior to and during this pinpoint test.

NOTE

Do not have a battery charger attached during vehicle testing.

K1 CHECK ELECTRICAL CONNECTOR CONDITION

- Disconnect battery monitoring sensor C1689 .
- Check the Battery Monitoring Sensor electrical connections for security, damage and corrosion.
- Check the battery cable connections.
- Connect battery monitoring sensor C1689 .

Are all connectors clean and connected properly?

Yes	GO to K2
No	REPAIR any corrosion in the battery cable connections. REPAIR any damaged, bent or pushed-out pins.

K2 RETRIEVE BCM (BODY CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)