

Charging System - 6.7L Power Stroke Diesel

Inspection and Verification

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices.
REFER to: Diagnostic Methods (100-00 General Information, Description and Operation).

1. Verify the customer concern by operating the charging system.
2. Before diagnosing or repairing the charging system inspect the following items:
 - Check the battery for loose, damaged or corroded connections.
 - Check the generator for loose, damaged or corroded connections.
 - Check engine and battery grounds for loose, damaged or corroded connections.
 - Check BJB for loose or corroded connections.
 - Verify fuses or fusible links.
 - Inspect wiring, terminals and connectors.
3. Inspect the FEAD system REFER to 303-05.
4. Check the battery condition and state of charge.
REFER to: Battery (414-01 Battery, Mounting and Cables, Diagnosis and Testing).
5. Check for abnormal ignition-off current drain(s).
REFER to: Battery Drain Check (414-01 Battery, Mounting and Cables, General Procedures).
6. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding.
7. Using the diagnostic scan tool, retrieve all Diagnostic Trouble Codes (DTCs). Refer to the appropriate DTC Chart in this section.

DTC Charts

BCM DTC Chart

DTC	Description	Action
All BCM DTCs	â€”	REFER to: Body Control Module (BCM) (419-10 Multifunction Electronic Modules, Diagnosis and Testing).

PCM DTC Chart

DTC	Description	Action
P0562	System Voltage Low	GO to Pinpoint Test B
P0563	System Voltage High	GO to Pinpoint Test A
P0620	Generator Control Circuit	GO to Pinpoint Test E
P0625	Generator Field Terminal Circuit Low	GO to Pinpoint Test F
P0626	Generator Field Terminal Circuit High	GO to Pinpoint Test F
P065B	Generator Control Circuit Range/performance	GO to Pinpoint Test E
P1397	System Voltage Out Of Self-Test Range	If combined with P0562, GO to Pinpoint Test B If combined with P0563, GO to Pinpoint Test A
P163A	Generator "B" Control Circuit	GO to Pinpoint Test G
P163C	Generator "B" Field Terminal Circuit Low	GO to Pinpoint Test H

DTC	Description	Action
P163D	Generator "B" Field Terminal Circuit High	GO to Pinpoint Test H
All Other DTCs	â€”	REFER to: Electronic Engine Controls (303-14B Electronic Engine Controls - 6.7L Power Stroke Diesel, Diagnosis and Testing).

Symptom Chart(s)

Symptom Chart: Charging System

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices.
REFER to: Diagnostic Methods (100-00 General Information, Description and Operation).

Symptom Chart

Condition	Possible Sources	Actions
System voltage high	Refer to the Pinpoint Test	GO to Pinpoint Test A
System voltage low or battery is discharged	Refer to the Pinpoint Test	GO to Pinpoint Test B
The generator is noisy	Refer to the Pinpoint Test	GO to Pinpoint Test C
Radio interference	Refer to the Pinpoint Test	GO to Pinpoint Test D
Charging system warning indicator is never or always on	- Wiring terminals or connectors - IPC - Generator - PCM	RETRIEVE Diagnostic Trouble Codes (DTCs) from all modules. If any Diagnostic Trouble Codes (DTCs) are found, Refer to DTC Chart in this section. If no Diagnostic Trouble Codes (DTCs) are found, REFER to: Instrumentation, Message Center and Warning Chimes (413-01 Instrumentation, Message Center and Warning Chimes, Diagnosis and Testing).

Pinpoint Tests

System Voltage High

Refer to Wiring Diagrams Cell [12](#) for schematic and connector information.

NOTE: Diagnostic Trouble Code (DTC) P0563 can be set if the vehicle has been recently jump started or the battery has been recently charged. The battery may become discharged due to excessive load(s) on the charging system from aftermarket accessories or if vehicle accessories have been operating for an extended period of time without the engine running.

Normal Operation and Fault Conditions

With the engine running, the charging system supplies voltage to the battery and the vehicle electrical system through the BJB and battery B+ cable. The voltage that is supplied to the vehicle electrical system is used for the operation of the various vehicle systems and modules. Many modules monitor this voltage and if it rises above or below their calibrated setpoints, a DTC sets.

Diagnostic Trouble Code (DTC) Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
P0563	System Voltage High	This DTC sets in the PCM when the PCM detects voltage from the charging system greater than 15.9 volts with vehicle speed above 8 km/h (5 mph).
P1397	System Voltage Out of Self-Test Range	If the voltage rises above or drops below the calibrated set point, the PCM sets this DTC. This DTC may also be set if the vehicle has been recently jump started or has had a discharged battery.

Possible Sources

- Battery
- Generator
- Engine, generator or battery ground
- PCM
- Wiring, terminals or connectors

Visual Inspection and Diagnostic Pre-checks

- Inspect High Current BJB fuse F2 (275A) MEGA.
- Inspect grounds G100, G101, G102 and G104 for loose, damaged or corroded connections.
- Inspect the BJB for loose or corroded connections.

PINPOINT TEST A : SYSTEM VOLTAGE HIGH

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.

A1 PERFORM INSPECTION AND VERIFICATION

- Perform Inspection and Verification procedure in this section.

Was an obvious cause for an observed or reported concern found?

Yes	CORRECT the cause as necessary.
No	GO to A2

A2 RETRIEVE THE PCM (POWERTRAIN CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

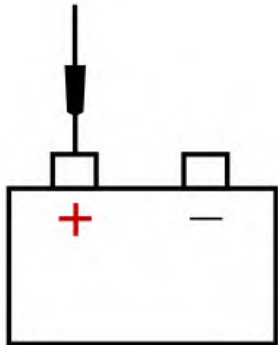
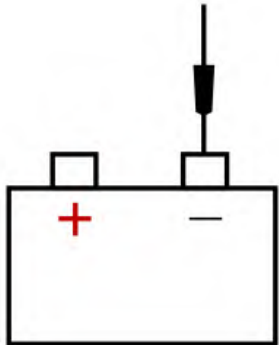
- Ignition ON.
- Using a diagnostic scan tool, perform the PCM self-test.

Is DTC P0620, P0625 or P0626 present?

Yes	For DTC P0620, GO to Pinpoint Test E For Diagnostic Trouble Codes (DTCs) P0625 and P0626, GO to Pinpoint Test F
No	GO to A3

A3 COMPARE THE GENERATOR VOLTAGE DESIRED (GENVDSD) PID (PARAMETER IDENTIFICATION) WITH BATTERY VOLTAGE

- With the engine running at idle, measure and record:

Positive Lead	Measurement / Action	Negative Lead
 E148840		 E148841

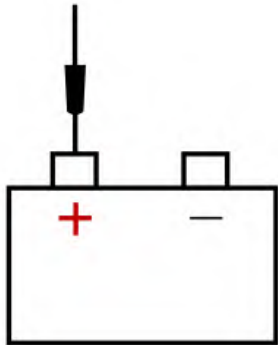
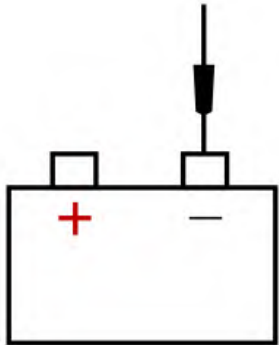
- Using a diagnostic scan tool, view the PCM PID GENVDSD.

Is the recorded battery voltage within ± 0.5 volt of the PID?

Yes	GO to A6
No	GO to A4

A4 MEASURE THE "A" SENSE VOLTAGE

- Ignition OFF.
- Disconnect Generator [C102A](#).
- Ignition ON.
- Measure and record:

Positive Lead	Measurement / Action	Negative Lead
 E148840		 E148841

- Measure:

GENERATOR	
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Positive Lead	Measurement / Action	Negative Lead
C102A-3		Ground

Is the "A" sense voltage equal to the recorded battery voltage?

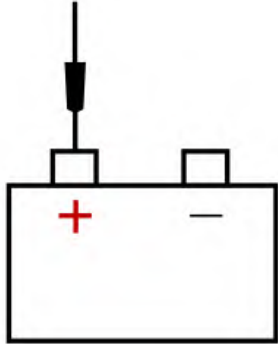
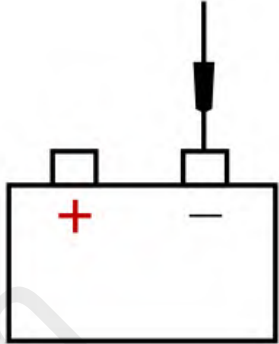
Yes	GO to A5
No	VERIFY the high current BJB fuse F2 (275A) MEGA is OK. If OK, REPAIR the circuit. If not OK, REFER to the Wiring Diagrams manual to identify the possible causes of the circuit short.

A5 "A" SENSE CIRCUIT LOAD TEST

NOTICE: The following step uses a test light to simulate normal circuit loads. Use only the test light recommended in the Special Tools table at the beginning of this section. To avoid connector terminal damage, use the Flex Probe Kit for the test light probe connection to the vehicle. Do not use the test light probe directly on any connector.

NOTE: This step puts a load on the "A" sense circuit. If there are corroded or loose connections, loading the circuit may help show the fault. A 250-350 mA incandescent 12 volt test lamp is required for this step. This circuit cannot be loaded correctly using an LED-style test lamp.

- Ignition ON.
- Measure and record:

Positive Lead	Measurement / Action	Negative Lead
 E148840		 E148841

- Connect the load to the circuit and measure:

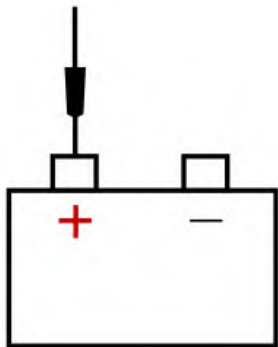
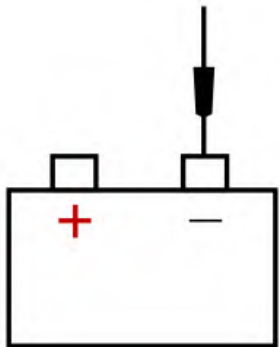
GENERATOR	
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Positive Lead	Measurement / Action	Negative Lead
C102A-3		Ground

Is the "A" sense voltage within $\hat{A}\pm0.5$ volt of the recorded battery voltage?

Yes	GO to A6
No	REPAIR the circuit.

- Connect Generator [C102A](#) .
- Start the engine.
- With the engine running at idle, headlamps on and heater blower on high, measure:

Positive Lead	Measurement / Action	Negative Lead
 E148840		 E148841

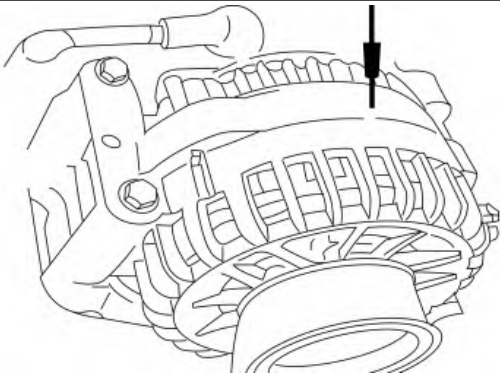
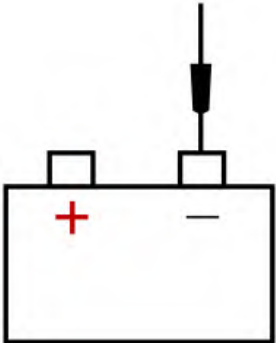
- Perform a wiggle test on the generator wiring and following connections while measuring voltage:
 - Generator [C102A](#)
 - Inline [C1046](#)

Does battery voltage change more than 0.5 volt?

Yes	INSPECT and REPAIR any corrosion in the generator B+ circuit and positive battery cable connections.
No	GO to A7

A7 CHECK THE VOLTAGE DROP IN THE VEHICLE GROUNDS

- Connect Generator [C102A](#) .
- Start the engine.
- With the engine running at idle, headlamps on and heater blower on high, measure:

Positive Lead	Measurement / Action	Negative Lead
 Generator case		 E148841

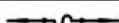
Is the voltage drop less than 0.5 volt?

Yes	GO to A8
No	INSPECT and REPAIR the engine ground, generator ground or the battery ground for corrosion.

A8 MONITOR THE GENERATOR COMMAND (GENCMD), GENERATOR MONITOR (GENMON) AND GENERATOR VOLTAGE DESIRED (GENVDSD) PARAMETER IDENTIFICATIONS (PIDS)

- Ignition OFF.
- Disconnect PCM [C1232B](#) .
- Disconnect Generator [C102A](#) .
- Connect a fused jumper wire:

GENERATOR

Positive Lead	Measurement / Action	Negative Lead
C102A-1		C102A-2

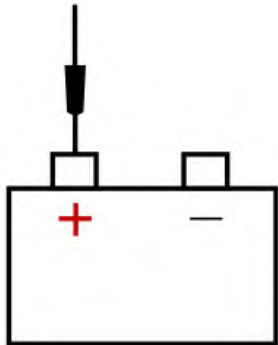
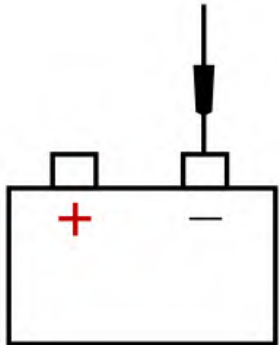
- Start the engine.
- Using a diagnostic scan tool, view PCM Parameter Identifications (PIDs).
- Using the active command, set the PID GENVDSD to 14 volts.
- Monitor the PCM Parameter Identifications (PIDs) GENMON and GENVDSD.

Do the Parameter Identifications (PIDs) read within 5% of each other for the first 3-5 seconds?

Yes	GO to A9
No	GO to A12

A9 COMPARE THE PCM (POWERTRAIN CONTROL MODULE) SUPPLY VOLTAGE PID (PARAMETER IDENTIFICATION) TO BATTERY VOLTAGE

- With the engine running at idle, measure and record:

Positive Lead	Measurement / Action	Negative Lead
 E148840		 E148841

- Using a diagnostic scan tool, view PCM Parameter Identifications (PIDs).
- Monitor the PCM PID VPWR.

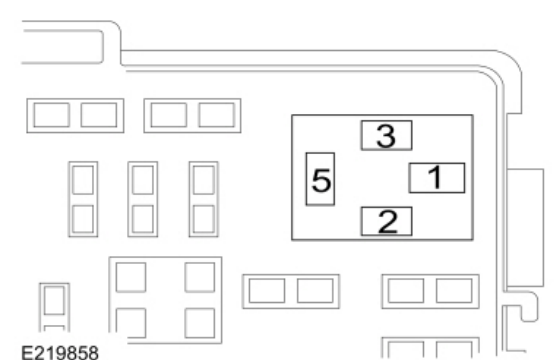
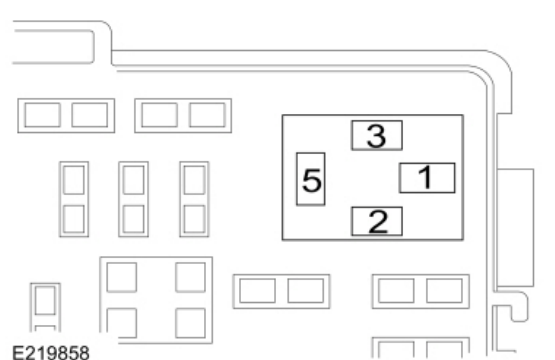
Does the PID accurately display battery voltage within $\hat{A}\pm 0.5$ volt of the recorded battery voltage?

Yes	CHECK OASIS for any applicable Technical Service Bulletins (TSBs). If a TSB exists for this concern, DISCONTINUE this test and FOLLOW the TSB instructions. If no Technical Service Bulletins (TSBs) address this concern, INSTALL a new generator. REFER to: Generator - 6.7L Power Stroke Diesel (414-02 Generator and Regulator, Removal and Installation).
No	GO to A10

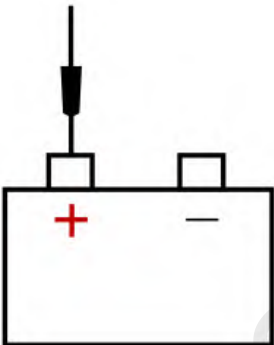
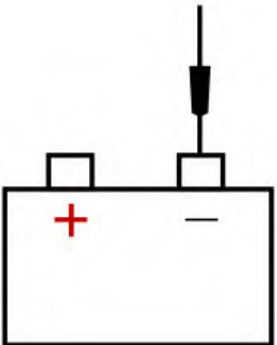
A10 CHECK PCM (POWERTRAIN CONTROL MODULE) SUPPLY VOLTAGE CIRCUITS

- Turn the headlamps and heater blower off.
- Ignition OFF.
- Remove the fused jumper wire.
- Disconnect BJB PCM power relay.
- Disconnect PCM [C1232B](#).
- Connect a fused jumper wire:

Positive Lead	Measurement / Action	Negative Lead

Positive Lead	Measurement / Action	Negative Lead
 E219858 BJB PCM Relay pin 3	 E219858 BJB PCM Relay pin 5	

- Measure and record:

Positive Lead	Measurement / Action	Negative Lead
 E148840	 E148841	 E148841

- **NOTE:** The following step will load test the circuit. A headlamp bulb would be an effective load. To avoid connector terminal damage, use the Flex Probe Kit for connector connections.

Connect the load to a suitable ground connection.

- Connect the load to each circuit and measure:

POWERTRAIN CONTROL MODULE (PCM)	
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Positive Lead	Measurement / Action	Negative Lead
C1232B-67		Ground
C1232B-68		Ground
C1232B-69		Ground

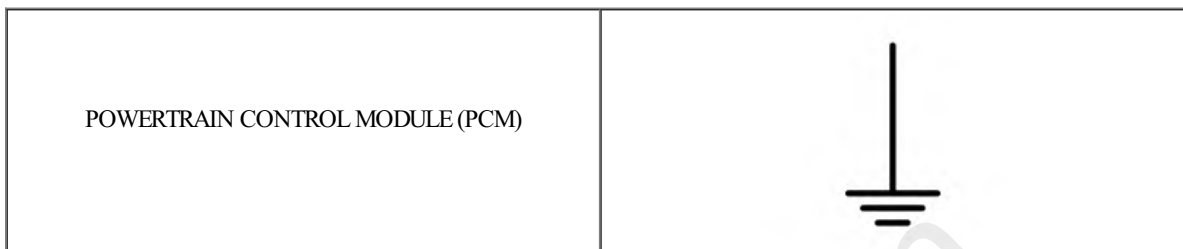
Are the voltages within 0.5 volt of the recorded battery voltage?

Yes	REMOVE the fused jumper wire and GO to A11
No	REPAIR the affected circuit(s).

A11 CHECK PCM (POWERTRAIN CONTROL MODULE) GROUND FOR HIGH RESISTANCE

NOTE: The following step will load test the circuit. A headlamp bulb would be an effective load. To avoid connector terminal damage, use the Flex Probe Kit for connector connections.

- Connect the load to a suitable 12 volt power connection.
- Connect the load to each circuit and measure:



Positive Lead	Measurement / Action	Negative Lead
C1232B-70		Ground
C1232B-71		Ground
C1232B-72		Ground
C1232B-73		Ground
C1232B-74		Ground

Is the voltage drop less than 0.5 volt?

Yes	GO to A12
No	REPAIR the affected circuit(s).

A12 CHECK FOR CORRECT PCM (POWERTRAIN CONTROL MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all PCM 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
- Connect **all** components and 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 for any applicable Technical Service Bulletins (TSBs). If a TSB exists for this concern, DISCONTINUE this test and FOLLOW the TSB instructions. If no Technical Service Bulletins (TSBs) address this concern, Click here to access Guided Routine (PCM) .
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.

System Voltage Low or Battery is Discharged

Refer to Wiring Diagrams Cell [12](#) for schematic and connector information.

Normal Operation and Fault Conditions

With the engine running, the charging system supplies voltage to the battery and the vehicle electrical system through the BJB and battery B+ cable. The PCM monitors this B+ voltage through its own voltage supply circuit.

Diagnostic Trouble Code (DTC) Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
P0562	System Voltage Low	If voltage drops 1.5 volts or more below the generator voltage desired (calculated by the PCM), this DTC sets after 30 seconds.
P1397	System Voltage Out of Self-Test Range	If the voltage rises above or drops below the calibrated set point, the PCM sets this DTC. This DTC may also be set if the vehicle has been recently jump started or has had a discharged battery.

Possible Sources

- Battery
- Fuses or fusible links
- Generator
- PCM
- BJB
- Wiring, terminals or connectors

Visual Inspection and Diagnostic Pre-checks

- Inspect for abnormal ignition-off current drain(s).
- Inspect the battery.
- Inspect the FEAD system.
- Verify high current BJB fuse F2 (275A) MEGA.
- Inspect the BJB for loose or corroded connections.

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.

B1 PERFORM INSPECTION AND VERIFICATION

- Perform Inspection and Verification procedure in this section.

Was an obvious cause for an observed or reported concern found?

Yes	CORRECT the cause as necessary.
No	GO to B2

B2 RETRIEVE DIAGNOSTIC TROUBLE CODES (DTCS)

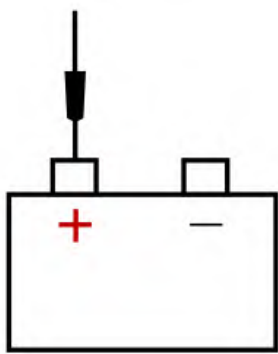
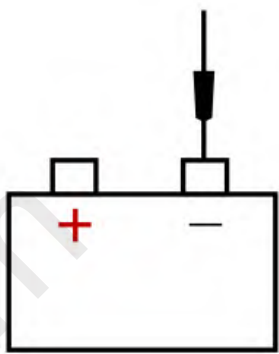
- Using a diagnostic scan tool, perform the PCM self-test.

Is DTC P0620, P0625 or P0626 present?

Yes	For DTC P0620, GO to Pinpoint Test E For DTC P0625 or P0626, GO to Pinpoint Test F
No	GO to B3

B3 CHECK THE GENERATOR CONNECTIONS

- Ignition OFF.
- Disconnect Generator [C102A](#).
- Disconnect Generator [C102B](#).
- Inspect for:
 - 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 generator connectors. Make sure they seat and latch correctly.
- Measure and record:

Positive Lead	Measurement / Action	Negative Lead
 E148840		 E148841

- Measure:

GENERATOR	
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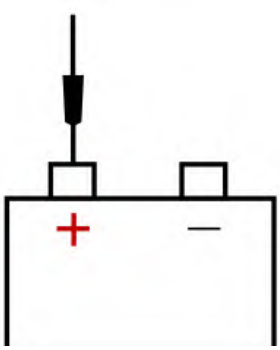
Positive Lead	Measurement / Action	Negative Lead
C102B-1		Ground

Is the voltage within 0.5 volt of the recorded battery voltage?

Yes	GO to B4
No	TIGHTEN or INSTALL a new generator B+ nut as needed. REFER to: Generator - 6.7L Power Stroke Diesel (414-02 Generator and Regulator, Removal and Installation). VERIFY high current BJB fuse F2 (275A) MEGA is OK. If OK, REPAIR the circuit. If not OK, REFER to the Wiring Diagrams manual to identify the possible causes of the circuit short.

B4 CHECK THE VOLTAGE DROP IN THE GENERATOR B+ CIRCUIT

- Start the engine.
- With the engine running at idle, headlamps on and blower on high, measure:

GENERATOR		
Positive Lead	Measurement / Action	Negative Lead
C102B-1		

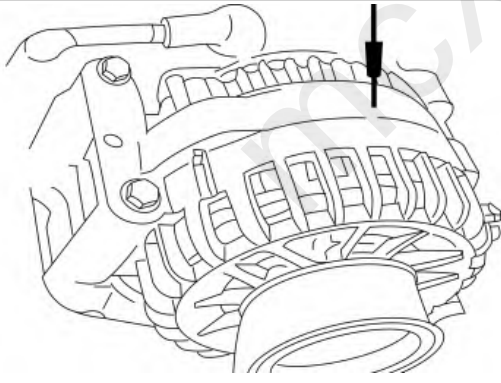
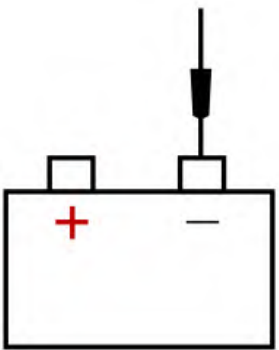
- Perform a wiggle test of the generator wiring and connections while measuring voltage drop.

Is the voltage drop less than 0.5 volt?

Yes	GO to B5
No	INSPECT and REPAIR any corrosion in the generator B+ circuit and positive battery cable connections.

B5 CHECK THE VOLTAGE DROP IN THE VEHICLE GROUNDS

- With the engine running at idle, headlamps on and heater blower on high, measure:

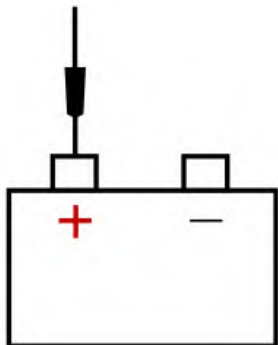
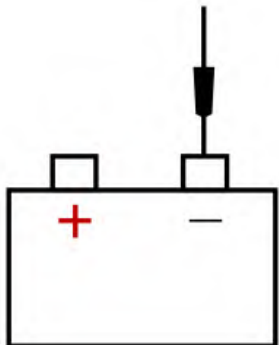
Positive Lead  Generator case	Measurement / Action 	Negative Lead  E148841
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Is the voltage drop less than 0.5 volt?

Yes	GO to B6
No	INSPECT and REPAIR the engine ground, generator ground or the battery ground for corrosion.

B6 MONITOR THE GENERATOR VOLTAGE DESIRED (GENVDS) PID (PARAMETER IDENTIFICATION) WHILE COMMANDED

- Using a diagnostic scan tool, view the PCM GENVDSD PID.
- Using a diagnostic scan tool active command, set the PCM PID GENVDSD to 14 volts.
- With the engine running at idle, measure battery and record:

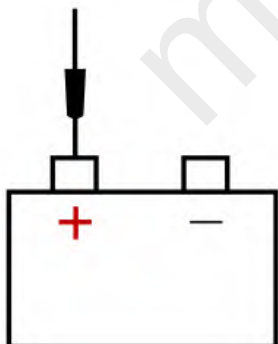
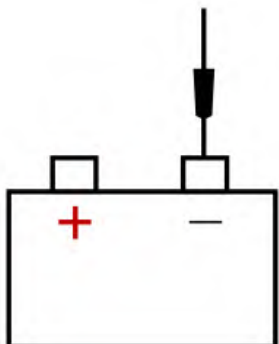
Positive Lead	Measurement / Action	Negative Lead
 E148840		 E148841

Is the recorded battery voltage within $\hat{A}\pm 0.5$ volt of the PID?

Yes	GO to B7
No	INSTALL a new generator. REFER to: Generator - 6.7L Power Stroke Diesel (414-02 Generator and Regulator, Removal and Installation).

B7 COMPARE THE PCM (POWERTRAIN CONTROL MODULE) SUPPLY VOLTAGE (VPWR) PID (PARAMETER IDENTIFICATION) TO BATTERY VOLTAGE

- With the engine running at idle, headlamps on and blower on high, measure and record:

Positive Lead	Measurement / Action	Negative Lead
 E148840		 E148841

- Using a diagnostic scan tool, view the PCM PID VPWR.

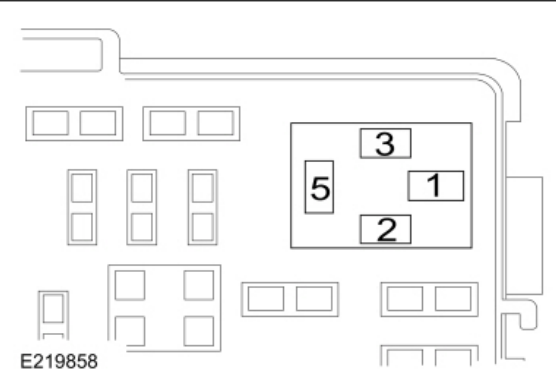
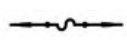
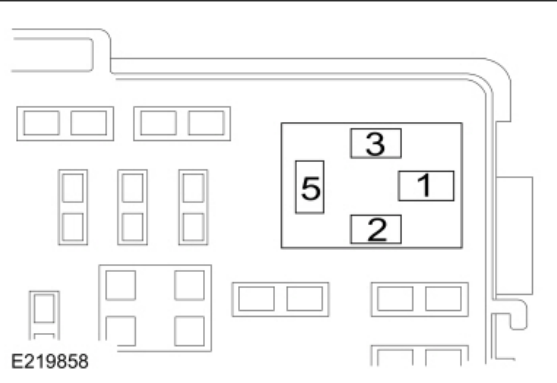
Does the PID accurately display battery voltage within $\hat{A}\pm 0.5$ volt of the recorded battery voltage?

Yes	GO to B8
No	REPAIR high resistance or loose connections in the affected PCM power circuit(s).

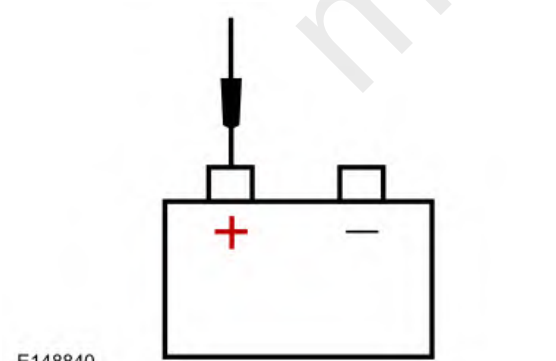
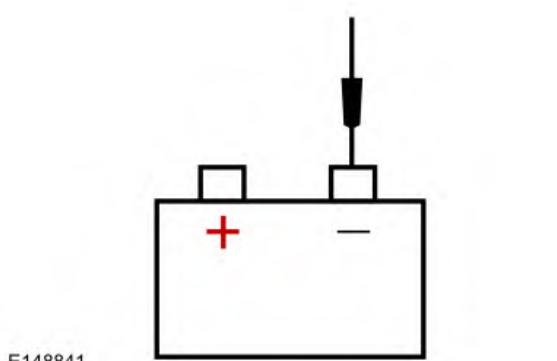
B8 CHECK PCM (POWERTRAIN CONTROL MODULE) SUPPLY VOLTAGE CIRCUITS

- Ignition OFF

- Ignition OFF.
- Disconnect BJB PCM power relay.
- Disconnect PCM [C1232B](#).
- Connect a fused jumper wire:

Positive Lead	Measurement / Action	Negative Lead
 E219858 BJB PCM Relay pin 3		 E219858 BJB PCM Relay pin 5

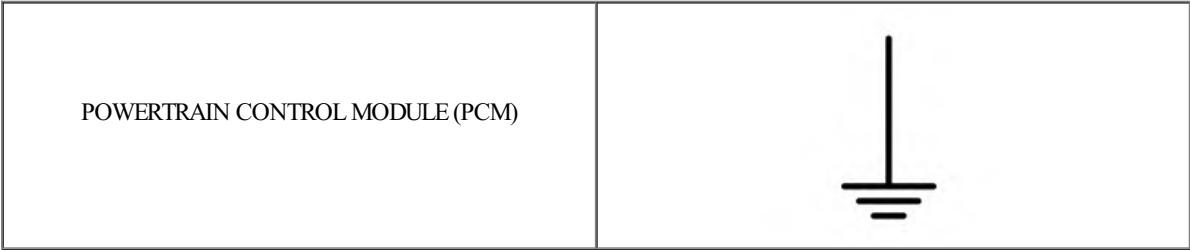
- Measure and record:

Positive Lead	Measurement / Action	Negative Lead
 E148840		 E148841

- **NOTE:** The following step will load test the circuit. A headlamp bulb would be an effective load. To avoid connector terminal damage, use the Flex Probe Kit for connector connections.

Connect the load to a suitable ground connection.

- Connect the load to each circuit and measure:



Positive Lead	Measurement / Action	Negative Lead
C1232B-67		Ground
C1232B-68		Ground
C1232B-69		Ground

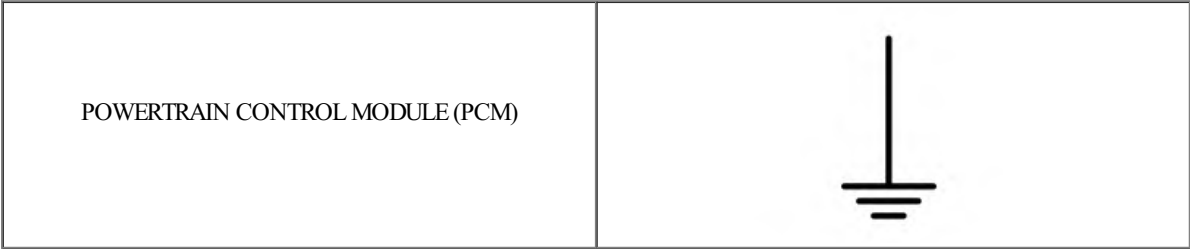
Are the voltages within 0.5 volt of the recorded battery voltage?

Yes	REMOVE the fused jumper wire. GO to B9
No	REPAIR the affected circuit(s).

B9 CHECK PCM (POWERTRAIN CONTROL MODULE) GROUND FOR HIGH RESISTANCE

NOTE: The following step will load test the circuit. A headlamp bulb would be an effective load. To avoid connector terminal damage, use the Flex Probe Kit for connector connections.

- Connect the load to a suitable 12 volt power connection.
- Connect the load to each circuit and measure:



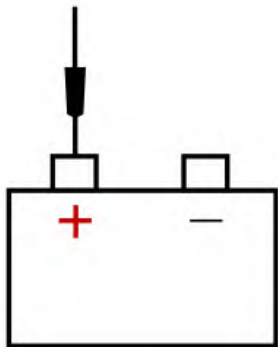
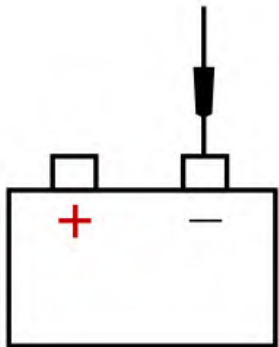
Positive Lead	Measurement / Action	Negative Lead
C1232B-70		Ground
C1232B-71		Ground
C1232B-72		Ground
C1232B-73		Ground
C1232B-74		Ground

Is the voltage drop less than 0.5 volt?

Yes	GO to B10
No	REPAIR the affected circuit(s).

B10 COMPARE THE BCM VOLTAGE SUPPLY CIRCUITS

- Ignition OFF.
- Disconnect all of the BCM connectors.
- Measure and record:

Positive Lead	Measurement / Action	Negative Lead
 E148840		 E148841

- **NOTE:** The following step will load test the circuit. A headlamp bulb would be an effective load. To avoid connector terminal damage, use the Flex Probe Kit for connector connections.

Connect the load to a suitable ground connection.

- Connect the load to each circuit and measure:

BODY CONTROL MODULE (BCM)	
---------------------------	---

Positive Lead	Measurement / Action	Negative Lead
C2280H-1		Ground
C2280G-17		Ground
C2280G-21		Ground
C2280G-22		Ground

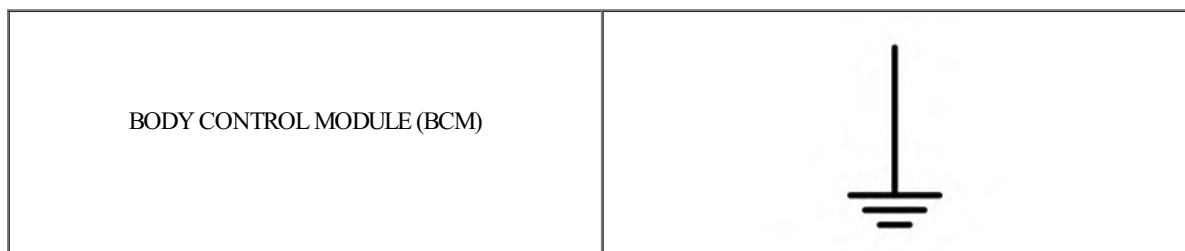
Are the voltages within 0.5 volt of the recorded battery voltage?

Yes	GO to B11
No	REPAIR the affected circuit(s).

B11 CHECK BCM GROUND FOR HIGH RESISTANCE

NOTE: The following step will load test the circuit. A headlamp bulb would be an effective load. To avoid connector terminal damage, use the Flex Probe Kit for connector connections.

- Connect the load to a suitable 12 volt power connection.
- Connect the load to each circuit and measure:



Positive Lead	Measurement / Action	Negative Lead
C2280C-6	  	Ground
C2280C-7	  	Ground

Is the voltage drop less than 0.5 volt?

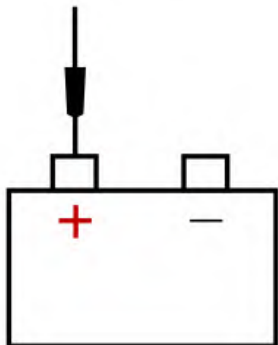
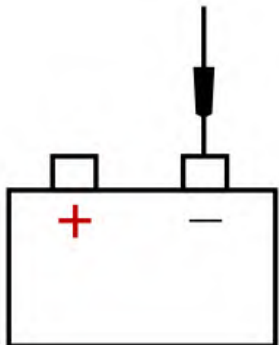
Yes	GO to B12
No	REPAIR the affected circuit(s).

B12 MONITOR THE SUPPLY VOLTAGE (VPWR) PID (PARAMETER IDENTIFICATION)

- **NOTE:** Measure battery voltage at the battery.

With the engine running at idle, turn off all accessory loads.

- Measure and record:

Positive Lead	Measurement / Action	Negative Lead
 E148840		 E148841

- Using a diagnostic scan tool, view PCM PID VPWR and record.
- Momentarily accelerate the engine to Wide Open Throttle (WOT) and release. Repeat this step 4-5 times while continuing to monitor the PID

Does the PID stay within 0.5 volt of the recorded battery voltage when the engine Revolutions Per Minute (RPM) are increased?

Yes	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. INSPECT and REPAIR any connector or pin issues found. If no connector or pin issues are found, Perform the battery drain test. REFER to: Battery Drain Check (414-01 Battery, Mounting and Cables, General Procedures).
No	GO to B13

B13 CHECK FOR CORRECT PCM (POWERTRAIN CONTROL MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all PCM 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
- Connect **all** components and 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 for any applicable Technical Service Bulletins (TSBs). If a TSB exists for this concern, DISCONTINUE this test and FOLLOW the TSB instructions. If no Technical Service Bulletins (TSBs) address this concern, Click here to access Guided Routine (PCM) .
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ADDRESS the root cause of any connector or pin issues.

Generator Noise or Mechanical Performance

Normal Operation and Fault Conditions

The generator is belt-driven by the engine FEAD 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 belt
- Loose bolts/brackets
- Generator/pulleys

Visual Inspection and Diagnostic Pre-checks

- Inspect the FEAD belt.
- Inspect for loose bolts/brackets.
- Inspect the generator and pulley.

PINPOINT TEST C : GENERATOR NOISE OR MECHANICAL PERFORMANCE

C1 CHECK FOR ACCESSORY DRIVE BELT NOISE AND LOOSE MOUNTING BRACKETS

- Ignition OFF.
- Check the FEAD belt and tensioner for damage and correct installation.
REFER to: Accessory Drive (303-05B Accessory Drive - 6.7L Power Stroke Diesel, Diagnosis and Testing).

Is the accessory drive OK?

Yes	GO to C2
No	REPAIR as necessary.

C2 CHECK THE GENERATOR MOUNTING

- Check the generator mounting for loose bolts or misalignment.

Is the generator mounted correctly?

Yes	GO to C3
No	REPAIR as necessary.

C3 CHECK THE GENERATOR FOR NOISE

- Start the engine.
- With the engine running, use a stethoscope or equivalent listening device to probe the generator and the accessory drive area for unusual mechanical noise.

Is the generator the noise source?

Yes	INSTALL a new generator. REFER to: Generator - 6.7L Power Stroke Diesel (414-02 Generator and Regulator, Removal and Installation).
No	Diagnose the source of the engine noise. REFER to: Engine (303-00 Engine System - General Information, Diagnosis and Testing).

Radio Interference

Refer to Wiring Diagrams Cell [12](#) for schematic and connector information.

Normal Operation and Fault Conditions

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

NOTE: If the Original Equipment Manufacturer (OEM) Audio Control Module (ACM) has been replaced with an aftermarket unit, the vehicle may not pass this test. Return the vehicle to Original Equipment Manufacturer (OEM) condition before following this pinpoint test.

NOTE: If the engine is operated at greater than 2,000 Revolutions Per Minute (RPM) momentarily, the generator self-excites. Make sure when the generator is disconnected the engine rpm stays below 2,000 Revolutions Per Minute (RPM). If it rises above 2,000 Revolutions Per Minute (RPM), turn the ignition to the OFF position and start the test over again.

NOTE: Inspect for any aftermarket accessories that have been added to the vehicle. Check the wiring for these accessories and be sure they have not been attached to the generator circuits and are positioned away from the generator wiring.

Possible Sources

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

Visual Inspection and Diagnostic Pre-checks

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

PINPOINT TEST D : RADIO INTERFERENCE

D1 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](#).
- Disconnect Generator [C102B](#).
- Start the engine.
- Allow the engine to idle.

Is the interference present with the generator disconnected?

Yes	CONTINUE diagnosis, REFER to: Information and Entertainment System (415-00 Information and Entertainment System - General Information, Diagnosis and Testing).
No	INSTALL a new generator. REFER to: Generator - 6.7L Power Stroke Diesel (414-02 Generator and Regulator, Removal and Installation).

DTC P0620, P065B

Refer to Wiring Diagrams Cell [12](#) for schematic and connector information.

Normal Operation and Fault Conditions

The PCM monitors the generator output via the generator monitor (GENMON) circuit. The PCM uses the generator command (GENCOM) circuit to command the generator to either increase or decrease output. If the GENCOM circuit (generator control circuit) or the "A" sense circuit are open or shorted to ground, the PCM will not be able to control the generator output. When the engine speed is greater than 2,000 rpm, the generator defaults to a steady voltage output of 13.5 volts and the PCM sends a request to the IPC to illuminate the charging system warning indicator. A GENCOM circuit fault can be confirmed by viewing the PCM PID generator command line fault (GENCMD_LF) (YES status indicator fault).

Diagnostic Trouble Code (DTC) Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
P0620	Generator Control Circuit	The PCM sets this DTC if the GENCOM circuit, "A" sense circuit, or B+ circuit is open or shorted to ground.

DTC	Description	Fault Trigger Conditions
P065B	Generator Control Circuit Range/performance	The PCM sets this DTC when the generator reports an internal regulator failure.

Possible Sources

- Fuses
- Generator
- PCM
- Wiring, terminals or connectors

Visual Inspection and Diagnostic Pre-checks

- Verify high current BJB fuse F2 (275A) MEGA.
- Inspect the BJB for loose or corroded connections.

PINPOINT TEST E : DTC P0620, P065B

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.

E1 PERFORM INSPECTION AND VERIFICATION

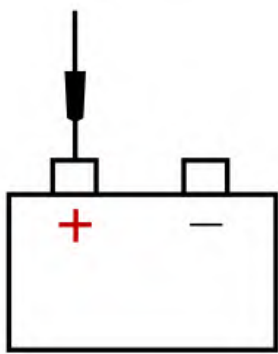
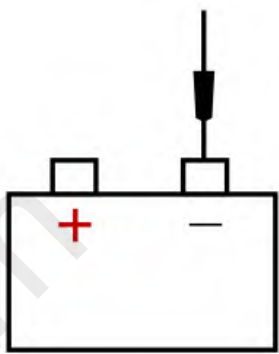
- Perform Inspection and Verification procedure in this section.

Was an obvious cause for an observed or reported concern found?

Yes	CORRECT the cause as necessary.
No	GO to E2

E2 CHECK THE GENERATOR CONNECTIONS

- Ignition OFF.
- Disconnect Generator [C102A](#).
- Disconnect Generator [C102B](#).
- Inspect for:
 - corrosion (install new connector or terminals â€” clean module pins)
 - damaged or bent pins â€” install new terminals/pins
 - pushed-out pins â€” install new pins as necessary
- Reconnect the generator connectors. Make sure they seat and latch correctly.
- Measure and record:

Positive Lead	Measurement / Action	Negative Lead
 E148840		 E148841

- Measure:

GENERATOR	
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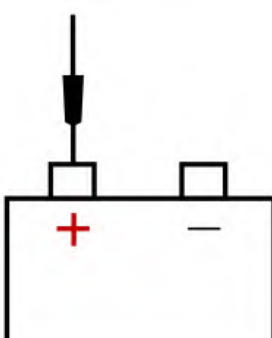
Positive Lead	Measurement / Action	Negative Lead
C102B-1		Ground

Is the voltage within 0.5 volt of the recorded battery voltage?

Yes	GO to E3
No	TIGHTEN or INSTALL a new generator B+ nut as needed. REFER to: Generator - 6.7L Power Stroke Diesel (414-02 Generator and Regulator, Removal and Installation). VERIFY high current BJB fuse F2 (275A) MEGA is OK. If OK, REPAIR the circuit. If not OK, REFER to the Wiring Diagrams manual to identify the possible causes of the circuit short.

E3 CHECK THE VOLTAGE DROP IN THE GENERATOR B+ CIRCUIT

- Start the engine.
- With the engine running at idle, headlamps on and blower on high, measure:

GENERATOR		
Positive Lead	Measurement / Action	Negative Lead
C102B-1		

- Perform a wiggle test of the generator wiring and connections while measuring voltage drop.

Is the voltage drop less than 0.5 volt?

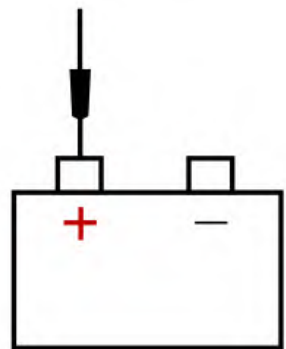
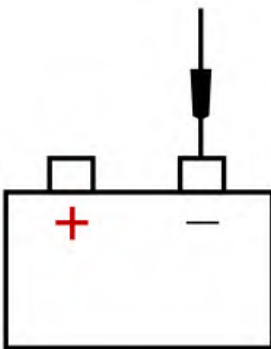
Yes	GO to E4
No	INSPECT and REPAIR any corrosion in the generator B+ circuit and positive battery cable connections.

E4 "A" SENSE CIRCUIT LOAD TEST

NOTICE: The following step uses a test light to simulate normal circuit loads. Use only the test light recommended in the Special Tools table at the beginning of this section. To avoid connector terminal damage, use the Flex Probe Kit for the test light probe connection to the vehicle. Do not use the test light probe directly on any connector.

NOTE: This step puts a load on the "A" sense circuit. If there are corroded or loose connections, loading the circuit may help show the fault. A 250-350 mA incandescent 12 volt test lamp is required for this step. This circuit cannot be loaded correctly using an LED-style test lamp.

- Ignition OFF.
- Disconnect Generator [C102A](#).
- Ignition ON.
- Measure and record:

Positive Lead	Measurement / Action	Negative Lead
		
E148840		E148841

- Install a test lamp between:

GENERATOR	
-----------	---

Positive Lead	Measurement / Action	Negative Lead
C102A-3		Ground

- Perform a wiggle test on the generator wiring and measure:

GENERATOR	
-----------	---

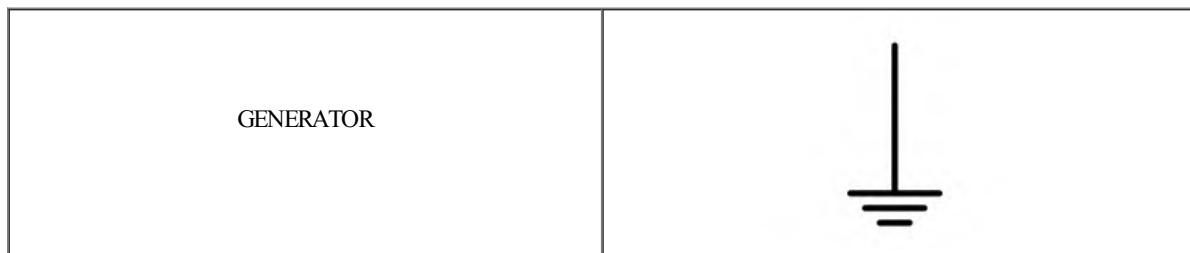
Positive Lead	Measurement / Action	Negative Lead
C102A-3		Ground

Is the "A" sense voltage within $\hat{A} \pm 0.5$ volt of the recorded battery voltage?

Yes	GO to E5
No	VERIFY the high current BJB fuse F2 (275A) MEGA is OK. If OK, REPAIR the circuit. If not OK, REFER to the Wiring Diagrams manual to identify the possible causes of the circuit short.

E5 CHECK THE GENERATOR COMMAND CIRCUIT FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect PCM [C1232B](#).
- Ignition ON.
- Perform a wiggle test on the generator wiring and measure:



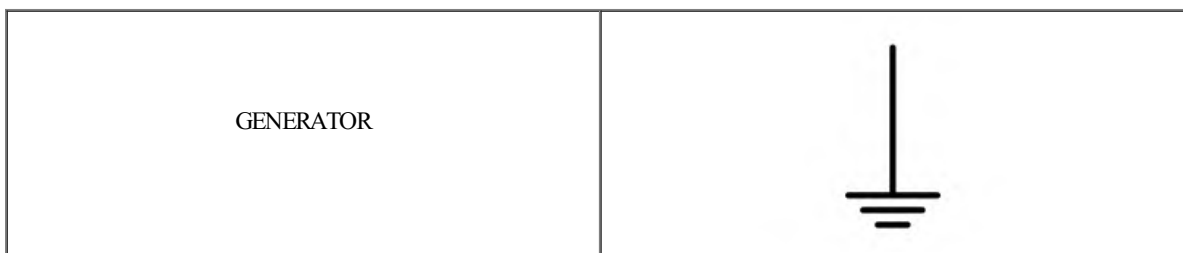
Positive Lead	Measurement / Action	Negative Lead
C102A-2		Ground

Is any voltage present?

Yes	REPAIR the circuit.
No	GO to E6

E6 CHECK THE GENERATOR COMMAND CIRCUIT FOR A SHORT TO GROUND

- Ignition OFF.
- Ignition ON.
- Perform a wiggle test on the generator wiring and measure:



Positive Lead	Measurement / Action	Negative Lead
C102A-2	Ω	Ground

Is the resistance greater than 10,000 ohms?

Yes	GO to E7
No	REPAIR the circuit.

E7 CHECK THE GENERATOR COMMAND CIRCUIT FOR AN OPEN

- Perform a wiggle test on the generator wiring and measure:



Positive Lead	Measurement / Action	Negative Lead
C1232B-68	Ω	C102A-2

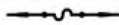
Is the resistance less than 3 ohms?

Yes	GO to E8
No	REPAIR the circuit.

E8 COMPARE THE GENERATOR MONITOR (GENMON) AND GENERATOR COMMAND (GENCMD) PARAMETER IDENTIFICATIONS (PIDS)

- Ignition OFF.
- Connect PCM [C1232B](#).
- Connect a fused jumper wire:

GENERATOR

Positive Lead	Measurement / Action	Negative Lead
C102A-1		C102A-2

- Start the engine.
- Using a diagnostic scan tool, view PCM Parameter Identifications (PIDs).
- Monitor the PCM Parameter Identifications (PIDs) GENMON and GENCMD.
- Perform a wiggle test of the generator wiring and connections.

Do the Parameter Identifications (PIDs) read within 5% of each other for the first 3-5 seconds?

Yes	REMOVE the fused jumper wire. INSTALL a new generator. REFER to: Generator - 6.7L Power Stroke Diesel (414-02 Generator and Regulator, Removal and Installation).
No	REMOVE the fused jumper wire. GO to E9

E9 CHECK FOR CORRECT PCM (POWERTRAIN CONTROL MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all PCM 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
- Connect **all** 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 for any applicable Technical Service Bulletins (TSBs). If a TSB exists for this concern, DISCONTINUE this test and FOLLOW the TSB instructions. If no Technical Service Bulletins (TSBs) address this concern, Click here to access Guided Routine (PCM) .
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.

DTC P0625, P0626

Refer to Wiring Diagrams Cell [12](#) for schematic and connector information.

Normal Operation and Fault Conditions

The PCM monitors the generator output via the generator monitor (GENMON) circuit (generator field terminal circuit). If the PCM cannot read the GENMON circuit due to an open or short to ground, when the engine speed is greater than 2,000 rpm, the generator defaults to a steady voltage of 13.5 volts and the PCM sends a request to the IPC to illuminate the charging system warning indicator. A GENMON duty cycle of 3% or less indicates a short to ground fault is present and results in DTC P0625 setting in the PCM. A GENMON duty cycle of 98% or more indicates an open or short to voltage fault is present and results in DTC P0626 setting in the PCM.

Diagnostic Trouble Code (DTC) Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
P0625	Generator Field Terminal Circuit Low	The PCM sets this DTC if the GENMON circuit is shorted to ground, the "A" sense circuit is open or the B+ circuit is open. This DTC also sets by a faulted PCM or generator.
P0626	Generator Field Terminal Circuit High	The PCM sets this DTC if the GENMON circuit is open or shorted to power. This DTC can also be set by a faulted PCM or generator.

Possible Sources

- Battery
- Fuses or Fusible Links
- Generator
- PCM
- Wiring, terminals or connectors

Visual Inspection and Diagnostic Pre-checks

- Inspect for abnormal ignition-off current drain(s).
- Inspect the BJB for loose or corroded connections.

PINPOINT TEST F : DTC P0625, P0626

F1 PERFORM INSPECTION AND VERIFICATION

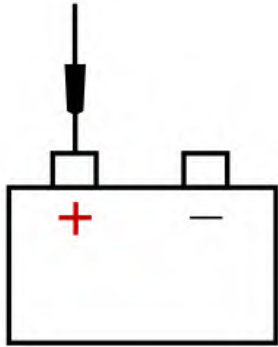
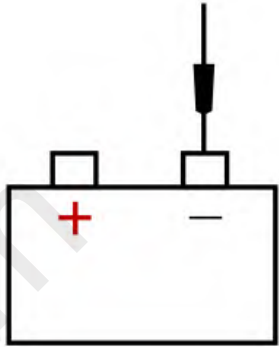
- Perform Inspection and Verification procedure in this section.

Was an obvious cause for an observed or reported concern found?

Yes	CORRECT the cause as necessary.
No	GO to F2

F2 CHECK THE GENERATOR CONNECTIONS

- Ignition OFF.
- Disconnect Generator [C102A](#).
- Disconnect Generator [C102B](#).
- Inspect for:
 - 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 generator connectors. Make sure they seat and latch correctly.
- Measure and record:

Positive Lead	Measurement / Action	Negative Lead
 E148840		 E148841

- Measure:

GENERATOR	
-----------	---

Positive Lead	Measurement / Action	Negative Lead
C102B-1		Ground

Is the voltage within 0.5 volt of the recorded battery voltage?

Yes	GO to F3
No	TIGHTEN or INSTALL a new generator B+ nut as needed. REFER to: Generator - 6.7L Power Stroke Diesel (414-02 Generator and Regulator, Removal and Installation). VERIFY high current BJB fuse F2 (275A) MEGA is OK. If OK, REPAIR the circuit. If not OK, REFER to the Wiring Diagrams manual to identify the possible causes of the circuit short.

F3 CHECK THE VOLTAGE DROP IN THE GENERATOR B+ CIRCUIT

- Start the engine.
- With the engine running at idle, headlamps on and blower on high, measure:

GENERATOR

Positive Lead	Measurement / Action	Negative Lead
C102B-1		

- Perform a wiggle test of the generator wiring and connections while measuring voltage drop.

Is the voltage drop less than 0.5 volt?

Yes	For DTC P0625, GO to F4 For DTC P0626, GO to F5
No	INSPECT and REPAIR any corrosion in the generator B+ circuit and positive battery cable connections.

F4 "A" SENSE CIRCUIT LOAD TEST

NOTICE: The following step uses a test light to simulate normal circuit loads. Use only the test light recommended in the Special Tools table at the beginning of this section. To avoid connector terminal damage, use the Flex Probe Kit for the test light probe connection to the vehicle. Do not use the test light probe directly on any connector.

NOTE: This step puts a load on the "A" sense circuit. If there are corroded or loose connections, loading the circuit may help show the fault. A 250-350 mA incandescent 12 volt test lamp is required for this step. This circuit cannot be loaded correctly using an LED-style test lamp.

- Ignition OFF.
- Disconnect Generator [C102A](#) .
- Ignition ON.
- Measure and record:

Positive Lead	Measurement / Action	Negative Lead
E148840		E148841

- Install a test lamp between:

GENERATOR	
-----------	---

Positive Lead	Measurement / Action	Negative Lead
C102A-3		Ground

- Perform a wiggle test on the generator wiring and measure:

GENERATOR	
-----------	---

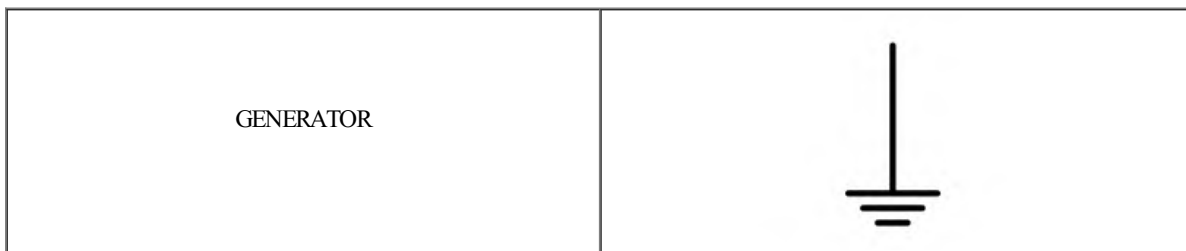
Positive Lead	Measurement / Action	Negative Lead
C102A-3		Ground

Is the "A" sense voltage within $\hat{A} \pm 0.5$ volt of the recorded battery voltage?

Yes	GO to F5
No	VERIFY the high current BJB fuse F2 (275A) MEGA is OK. If OK, REPAIR the circuit. If not OK, REFER to the Wiring Diagrams manual to identify the possible causes of the circuit short.

F5 CHECK THE GENERATOR MONITOR CIRCUIT FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect PCM [C1232B](#).
- Ignition ON.
- Perform a wiggle test on the generator wiring and measure:



Positive Lead	Measurement / Action	Negative Lead
C102A-1		Ground

Is any voltage present?

Yes	REPAIR the circuit.
No	GO to F6

F6 CHECK THE GENERATOR MONITOR CIRCUIT FOR A SHORT TO GROUND

- Ignition OFF.
- Perform a wiggle test on the generator wiring and measure:



Positive Lead	Measurement / Action	Negative Lead
C102A-1		Ground

Is the resistance greater than 10,000 ohms?

Yes	GO to F7
No	REPAIR the circuit.

F7 CHECK THE GENERATOR MONITOR CIRCUIT FOR AN OPEN

- Perform a wiggle test on the generator wiring and measure:

POWERTRAIN CONTROL MODULE (PCM)	GENERATOR
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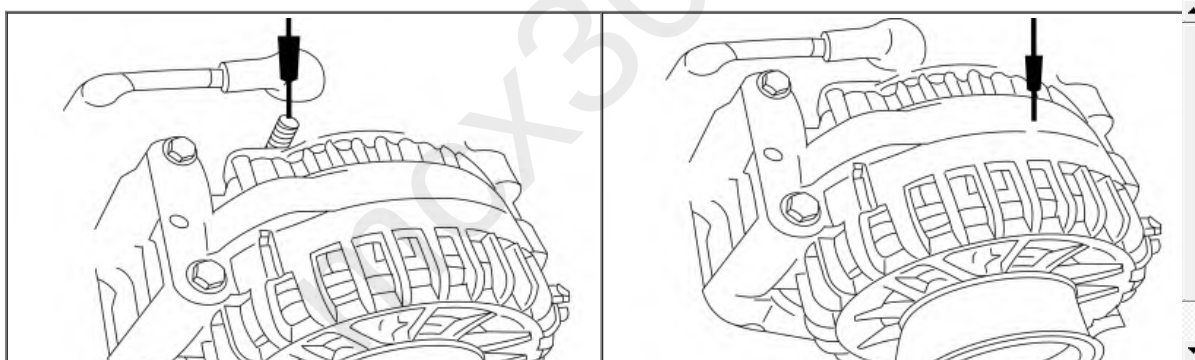
Positive Lead	Measurement / Action	Negative Lead
C1232B-49	Ω	C102A-1

Is the resistance less than 3 ohms?

Yes	GO to F8
No	REPAIR the circuit.

F8 CHECK THE GENERATOR B+ INTERNAL RESISTANCE

- Disconnect Generator [C102A](#).
- Disconnect Generator [C102B](#).
- Measure:



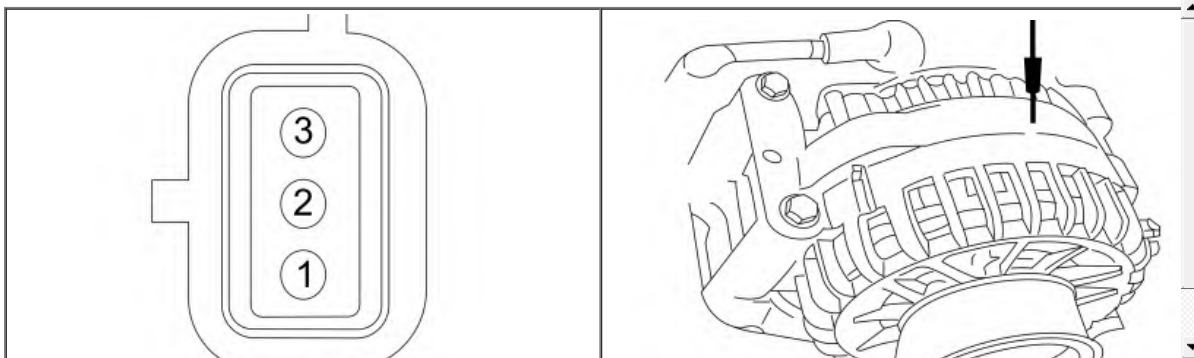
Positive Lead	Measurement / Action	Negative Lead
Generator B+ Terminal	Ω	Generator case

Is the resistance greater than 25K ohms?

Yes	GO to F9
No	INSTALL a new generator. REFER to: Generator - 6.7L Power Stroke Diesel (414-02 Generator and Regulator, Removal and Installation).

F9 CHECK THE RESISTANCE OF THE VOLTAGE REGULATOR INTERNAL CIRCUITS

- Measure:



Positive Lead	Measurement / Action	Negative Lead
Generator pin 1 (Component Side)	Ω	Generator case
Generator pin 2 (Component Side)	Ω	Generator case
Generator pin 3 (Component Side)	Ω	Generator case

Are the resistances greater than 10,000 ohms?

Yes	GO to F10
No	INSTALL a new generator. REFER to: Generator - 6.7L Power Stroke Diesel (414-02 Generator and Regulator, Removal and Installation).

F10 COMPARE THE GENMON PID (PARAMETER IDENTIFICATION) AND THE GENCMD PID (PARAMETER IDENTIFICATION)

- Connect PCM [C1232B](#).
- Connect a fused jumper wire:

GENERATOR

Positive Lead	Measurement / Action	Negative Lead
C102A-1		C102A-2

- Start the engine.
- Using a diagnostic scan tool, view PCM Parameter Identifications (PIDs).
- Using the active command, set the PID GENVDSD to 14 volts.
- Monitor the PCM Parameter Identifications (PIDs) GENMON and GENCMD.
- Perform a wiggle test of the generator wiring and connections.

Do the Parameter Identifications (PIDs) read within 5% of each other for the first 3-5 seconds?

Yes	REMOVE the fused jumper wire. INSTALL a new generator. REFER to: Generator - 6.7L Power Stroke Diesel (414-02 Generator and Regulator, Removal and Installation).
No	REMOVE the fused jumper wire. GO to F11

F11 CHECK FOR CORRECT PCM (POWERTRAIN CONTROL MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all PCM 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
- Connect **all** 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 for any applicable Technical Service Bulletins (TSBs). If a TSB exists for this concern, DISCONTINUE this test and FOLLOW the TSB instructions. If no Technical Service Bulletins (TSBs) address this concern, Click here to access Guided Routine (PCM) .
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.

Refer to Wiring Diagrams Cell [12](#) for schematic and connector information.

Normal Operation and Fault Conditions

The PCM monitors the generator output via the generator monitor (GENMON2) circuit. The PCM uses the generator command (GENCOM2) circuit to command the generator to either increase or decrease output. If the GENCOM2 circuit (generator control circuit) or the "A" sense circuit are open or shorted to ground, the PCM will not be able to control the generator output. When the engine speed is greater than 2,000 rpm, the generator defaults to a steady voltage output of 13.5 volts and the PCM sends a request to the IPC to illuminate the charging system warning indicator. A GENCOM circuit fault can be confirmed by viewing the PCM PID generator command line fault (GENCMD_LF2) (YES status indicator fault).

Diagnostic Trouble Code (DTC) Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
P163A	Generator "B" Control Circuit	The PCM sets this DTC if the secondary generator GENCOM circuit, "A" sense circuit, or B+ circuit is open or shorted to ground.

Possible Sources

- Fuses
- Secondary Generator
- PCM
- Wiring, terminals or connectors

Visual Inspection and Diagnostic Pre-checks

- Verify high current BJB fuse F2 (275A) MEGA .
- Inspect the BJB for loose or corroded connections.

PINPOINT TEST G : P163A

G1 PERFORM INSPECTION AND VERIFICATION

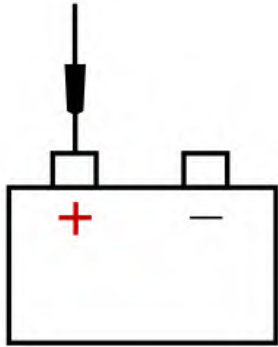
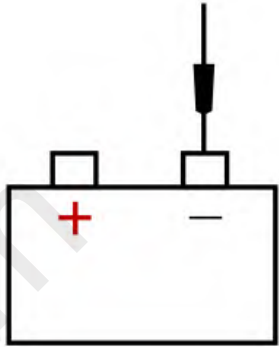
- Perform Inspection and Verification procedure in this section.

Was an obvious cause for an observed or reported concern found?

Yes	CORRECT the cause as necessary.
No	GO to G2

G2 CHECK THE SECONDARY GENERATOR CONNECTIONS

- Ignition OFF.
- Disconnect Secondary Generator [C1251A](#) .
- Disconnect Secondary Generator [C1251B](#) .
- Inspect for:
 - 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 generator connectors. Make sure they seat and latch correctly.
- Measure and record:

Positive Lead	Measurement / Action	Negative Lead
 E148840		 E148841

- Measure:

GENERATOR, SECONDARY	
----------------------	---

Positive Lead	Measurement / Action	Negative Lead
C1251B-1		Ground

Is the voltage within 0.5 volt of the recorded battery voltage?

Yes	GO to G3
No	TIGHTEN or INSTALL a new secondary generator B+ nut as needed. REFER to: Generator - 6.7L Power Stroke Diesel (414-02 Generator and Regulator, Removal and Installation). VERIFY high current BJB fuse F2 (275A) MEGA is OK. If OK, REPAIR the circuit. If not OK, REFER to the Wiring Diagrams manual to identify the possible causes of the circuit short.

G3 CHECK THE VOLTAGE DROP IN THE SECONDARY GENERATOR B+ CIRCUIT

- Start the engine.
- With the engine running at idle, headlamps on and blower on high, measure:

GENERATOR, SECONDARY

Positive Lead	Measurement / Action	Negative Lead
C1251B-1		

- Perform a wiggle test of the generator wiring and connections while measuring voltage drop.

Is the voltage drop less than 0.5 volt?

Yes	GO to G4
No	INSPECT and REPAIR any corrosion in the generator B+ circuit and positive battery cable connections.

G4 SECONDARY GENERATOR "A" SENSE CIRCUIT LOAD TEST

NOTICE: The following step uses a test light to simulate normal circuit loads. Use only the test light recommended in the Special Tools table at the beginning of this section. To avoid connector terminal damage, use the Flex Probe Kit for the test light probe connection to the vehicle. Do not use the test light probe directly on any connector.

NOTE: This step puts a load on the "A" sense circuit. If there are corroded or loose connections, loading the circuit may help show the fault. A 250-350 mA incandescent 12 volt test lamp is required for this step. This circuit cannot be loaded correctly using an LED-style test lamp.

- Ignition OFF.
- Disconnect Secondary Generator [C1251A](#) .
- Ignition ON.
- Measure and record:

Positive Lead	Measurement / Action	Negative Lead
E148840		E148841

- Install a test lamp between:

GENERATOR, SECONDARY	
----------------------	---

Positive Lead	Measurement / Action	Negative Lead
C1251A-3		Ground

- Perform a wiggle test on the generator wiring and measure:

GENERATOR, SECONDARY	
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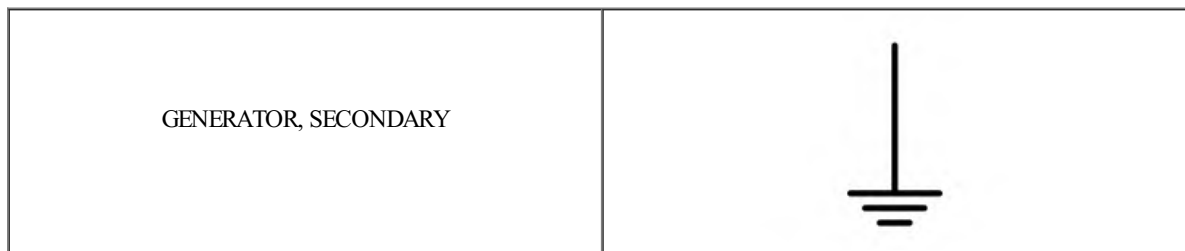
Positive Lead	Measurement / Action	Negative Lead
C1251A-3		Ground

Is the "A" sense voltage within $\hat{A} \pm 0.5$ volt of the recorded battery voltage?

Yes	GO to G5
No	VERIFY the high current BJB fuse 208 (200A) is OK. If OK, REPAIR the circuit. If not OK, REFER to the Wiring Diagrams manual to identify the possible causes of the circuit short.

G5 CHECK THE SECONDARY GENERATOR COMMAND CIRCUIT FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect PCM [C1232B](#).
- Ignition ON.
- Perform a wiggle test on the generator wiring and measure:



Positive Lead	Measurement / Action	Negative Lead
C1251A-2		Ground

Is any voltage present?

Yes	REPAIR the circuit.
No	GO to G6

G6 CHECK THE SECONDARY GENERATOR COMMAND CIRCUIT FOR A SHORT TO GROUND

- Ignition OFF.
- Ignition ON.
- Perform a wiggle test on the generator wiring and measure:



Positive Lead	Measurement / Action	Negative Lead
C1251A-2	Ω	Ground

Is the resistance greater than 10,000 ohms?

Yes	GO to G7
No	REPAIR the circuit.

G7 CHECK THE SECONDARY GENERATOR COMMAND CIRCUIT FOR AN OPEN

- Perform a wiggle test on the generator wiring and measure:

POWERTRAIN CONTROL MODULE (PCM)	GENERATOR, SECONDARY
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Positive Lead	Measurement / Action	Negative Lead
C1232B-74	Ω	C1251A-2

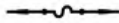
Is the resistance less than 3 ohms?

Yes	GO to G8
No	REPAIR the circuit.

G8 COMPARE THE SECONDARY GENERATOR MONITOR (GENMON2) AND GENERATOR COMMAND (GENCMD2) PARAMETER IDENTIFICATIONS (PIDS)

- Ignition OFF.
- Connect PCM [C1232B](#).
- Connect a fused jumper wire:

GENERATOR, SECONDARY

Positive Lead	Measurement / Action	Negative Lead
C1251A-1		C1251A-2

- Start the engine.
- Using a diagnostic scan tool, view PCM Parameter Identifications (PIDs).
- Monitor the PCM Parameter Identifications (PIDs) GENMON2 and GENCMD2.
- Perform a wiggle test of the generator wiring and connections.

Do the Parameter Identifications (PIDs) read within 5% of each other for the first 3-5 seconds?

Yes	REMOVE the fused jumper wire. INSTALL a new secondary generator. REFER to: Generator - 6.7L Power Stroke Diesel (414-02 Generator and Regulator, Removal and Installation).
No	REMOVE the fused jumper wire. GO to G9

G9 CHECK FOR CORRECT PCM (POWERTRAIN CONTROL MODULE) OPERATION

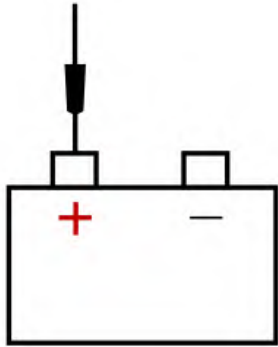
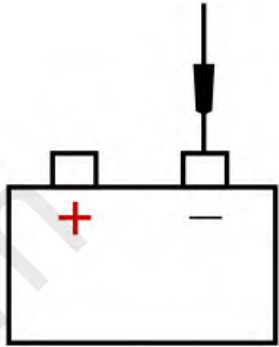
- Ignition OFF.
- Disconnect and inspect all PCM connectors.
- Repair:
 - corrosion (install new connector or terminals & clean module pins)
 - damaged or bent pins & install new terminals/pins
 - pushed-out pins & install new pins as necessary
- Connect **all** connectors. Make sure they seat and latch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

Is the concern still present?

Yes	CHECK OASIS for any applicable Technical Service Bulletins (TSBs). If a TSB exists for this concern, DISCONTINUE this test and FOLLOW the TSB instructions. If no Technical Service Bulletins (TSBs) address this concern, Click here to access Guided Routine (PCM) .
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.

H2 CHECK THE SECONDARY GENERATOR CONNECTIONS

- Ignition OFF.
- Disconnect Secondary Generator [C1251A](#).
- Disconnect Secondary Generator [C1251B](#).
- Inspect for:
 - 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 generator connectors. Make sure they seat and latch correctly.
- Measure and record:

Positive Lead	Measurement / Action	Negative Lead
 E148840		 E148841

- Measure:

GENERATOR, SECONDARY	
----------------------	---

Positive Lead	Measurement / Action	Negative Lead
C1251B-1		Ground

Is the voltage within 0.5 volt of the recorded battery voltage?

Yes	GO to H3
No	TIGHTEN or INSTALL a new secondary generator B+ nut as needed. REFER to: Generator - 6.7L Power Stroke Diesel (414-02 Generator and Regulator, Removal and Installation). VERIFY high current BJB fuse F2 (275A) MEGA is OK. If OK, REPAIR the circuit. If not OK, REFER to the Wiring Diagrams manual to identify the possible causes of the circuit short.

H3 CHECK THE VOLTAGE DROP IN THE SECONDARY GENERATOR B+ CIRCUIT

- Start the engine.
- With the engine running at idle, headlamps on and blower on high, measure:

GENERATOR, SECONDARY

Positive Lead	Measurement / Action	Negative Lead
C1251B-1		

- Perform a wiggle test of the generator wiring and connections while measuring voltage drop.

Is the voltage drop less than 0.5 volt?

Yes	For DTC P163C, GO to H4 For DTC P163D, GO to H5
No	INSPECT and REPAIR any corrosion in the generator B+ circuit and positive battery cable connections.

H4 SECONDARY GENERATOR "A" SENSE CIRCUIT LOAD TEST

NOTICE: The following step uses a test light to simulate normal circuit loads. Use only the test light recommended in the Special Tools table at the beginning of this section. To avoid connector terminal damage, use the Flex Probe Kit for the test light probe connection to the vehicle. Do not use the test light probe directly on any connector.

NOTE: This step puts a load on the "A" sense circuit. If there are corroded or loose connections, loading the circuit may help show the fault. A 250-350 mA incandescent 12 volt test lamp is required for this step. This circuit cannot be loaded correctly using an LED-style test lamp.

- Ignition OFF.
- Disconnect Secondary Generator [C1251A](#) .
- Ignition ON.
- Measure and record:

Positive Lead	Measurement / Action	Negative Lead
E148840		E148841

- Install a test lamp between:

GENERATOR, SECONDARY	
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Positive Lead	Measurement / Action	Negative Lead
C1251A-3		Ground

- Perform a wiggle test on the generator wiring and measure:

GENERATOR, SECONDARY	
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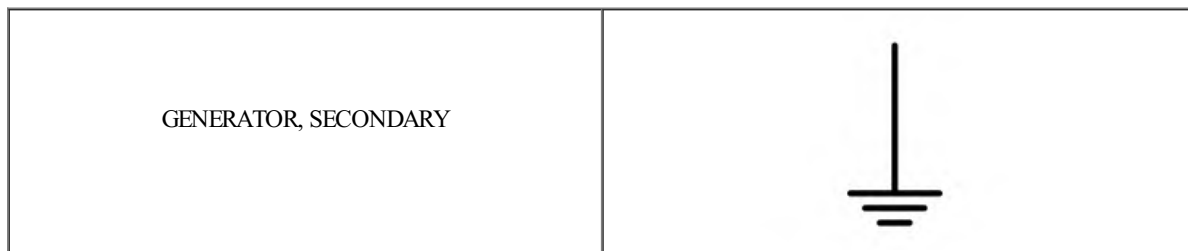
Positive Lead	Measurement / Action	Negative Lead
C1251A-3		Ground

Is the "A" sense voltage within $\hat{A} \pm 0.5$ volt of the recorded battery voltage?

Yes	GO to H5
No	VERIFY the high current BJB fuse 208 (227A) MEGA is OK. If OK, REPAIR the circuit. If not OK, REFER to the Wiring Diagrams manual to identify the possible causes of the circuit short.

H5 CHECK THE SECONDARY GENERATOR MONITOR CIRCUIT FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect PCM [C1232B](#).
- Ignition ON.
- Perform a wiggle test on the generator wiring and measure:



Positive Lead	Measurement / Action	Negative Lead
C1251A-1		Ground

Is any voltage present?

Yes	REPAIR the circuit.
No	GO to H6

H6 CHECK THE SECONDARY GENERATOR MONITOR CIRCUIT FOR A SHORT TO GROUND

- Ignition OFF.
- Perform a wiggle test on the generator wiring and measure:



Positive Lead	Measurement / Action	Negative Lead
C1251A-1		Ground

Is the resistance greater than 10,000 ohms?

Yes	GO to H7
No	REPAIR the circuit.

H7 CHECK THE GENMON2 CIRCUIT FOR AN OPEN

- Perform a wiggle test on the generator wiring and measure:

POWERTRAIN CONTROL MODULE (PCM)	GENERATOR, SECONDARY
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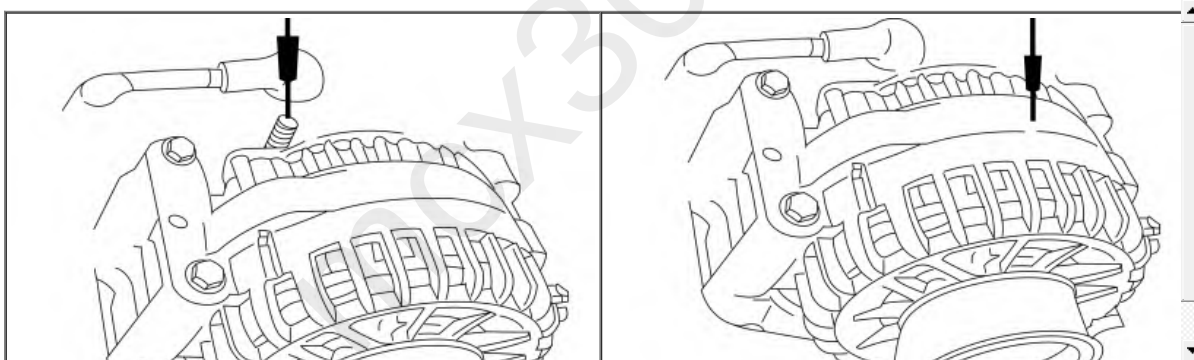
Positive Lead	Measurement / Action	Negative Lead
C1232B-15	Ω	C1251A-1

Is the resistance less than 3 ohms?

Yes	GO to H8
No	REPAIR the circuit.

H8 CHECK THE SECONDARY GENERATOR B+ INTERNAL RESISTANCE

- Disconnect Secondary Generator [C1251A](#) .
- Disconnect Secondary Generator [C1251B](#) .
- Measure:



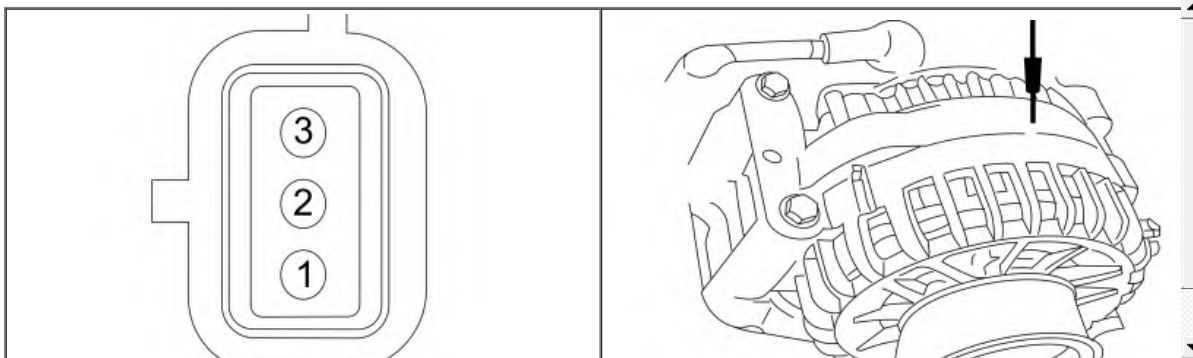
Positive Lead	Measurement / Action	Negative Lead
Generator B+ Terminal	Ω	Generator case

Is the resistance greater than 25K ohms?

Yes	GO to H9
No	INSTALL a new secondary generator. REFER to: Generator - 6.7L Power Stroke Diesel (414-02 Generator and Regulator, Removal and Installation).

H9 CHECK THE RESISTANCE OF THE SECONDARY GENERATOR VOLTAGE REGULATOR INTERNAL CIRCUITS

- Measure:



Positive Lead	Measurement / Action	Negative Lead
Generator pin 1 (Component Side)	Ω	Generator case
Generator pin 2 (Component Side)	Ω	Generator case
Generator pin 3 (Component Side)	Ω	Generator case

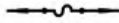
Are the resistances greater than 10,000 ohms?

Yes	GO to H10
No	INSTALL a new secondary generator. REFER to: Generator - 6.7L Power Stroke Diesel (414-02 Generator and Regulator, Removal and Installation).

H10 COMPARE THE GENMON2 PID (PARAMETER IDENTIFICATION) AND THE GENCMD2 PID (PARAMETER IDENTIFICATION)

- Connect PCM [C1232B](#).
- Connect a fused jumper wire:

GENERATOR, SECONDARY

Positive Lead	Measurement / Action	Negative Lead
C1251A-1		C1251A-2

- Start the engine.
- Using a diagnostic scan tool, view PCM Parameter Identifications (PIDs).
- Using the active command, set the PID GENVDSD2 to 14 volts.
- Monitor the PCM Parameter Identifications (PIDs) GENMON2 and GENCMD2.
- Perform a wiggle test of the generator wiring and connections.

Do the Parameter Identifications (PIDs) read within 5% of each other for the first 3-5 seconds?

Yes	REMOVE the fused jumper wire. INSTALL a new secondary generator. REFER to: Generator - 6.7L Power Stroke Diesel (414-02 Generator and Regulator, Removal and Installation).
No	REMOVE the fused jumper wire. GO to H11

H11 CHECK FOR CORRECT PCM (POWERTRAIN CONTROL MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all PCM 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
- Connect **all** 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 for any applicable Technical Service Bulletins (TSBs). If a TSB exists for this concern, DISCONTINUE this test and FOLLOW the TSB instructions. If no Technical Service Bulletins (TSBs) address this concern, Click here to access Guided Routine (PCM) . Click here to access Guided Routine (PCM) .
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.

