

## INTERNATIONAL



SPN: 2023

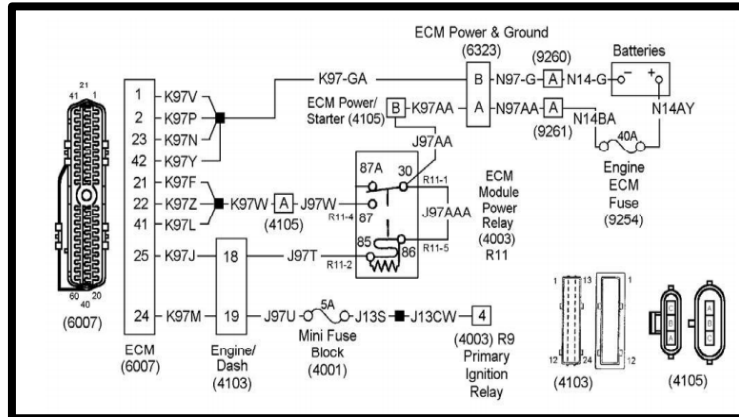
FMI: 14

BYTE 7: 150

BYTE 8: 2

HEUI ENGINES

## ENGINE CONTROLLER NOT COMMUNICATING WITH THE PRIMARY EGC (150) (EGC VERSION 9.3 AND LATER)



### ECM Power Circuits

- (4001) MINI FUSE BLOCK  
LOCATED IN ENGINE POWER DISTRIBUTION CENTER
- (4003) (R11) ECM MODULE POWER RELAY  
LOCATED IN ENGINE POWER DISTRIBUTION CENTER
- (4103) ENGINE/DASH CONNECTOR  
LOCATED NEAR WIPER MOTOR BRACKET
- (4105) ECM POWER/STARTER SOLENOID CONNECTOR  
LOCATED NEAR WIPER MOTOR BRACKET
- (6007) ENGINE ECM CONNECTOR  
LOCATED ON ENGINE ECM
- (6323) ENGINE MODULE POWER AND GROUND  
LOCATED NEAR START MOTOR
- (9254) ENGINE ECM FEED FUSE CONNECTOR  
LOCATED IN BATTERY COMPARTMENT
- (9260) BATTERY ECM NEGATIVE CONNECTOR  
LOCATED IN BATTERY COMPARTMENT
- (9261) BATTERY ECM POSITIVE CONNECTOR  
LOCATED IN BATTERY COMPARTMENT



## **ENGINE CONTROL MODULE (ECM) POWER AND GROUND**

### **Fault Detection Management**

**NOTE:** The testing method for troubleshooting the electrical systems portrayed in this manual is a basic voltage test. An alternative method of checking for voltage drops within a given circuit may be a quicker method of identifying an exact problem.

A fault in the ECM power circuits will be apparent when the engine will not start and there is no communication between the ECM and the ESC or EGC. Problems in the ECM power circuits could be attributed to a blown fuse, a short or an open circuit.

Refer to ECM Power Circuits.

## **TROUBLESHOOTING STEPS**

### **ECM POWER & GROUND CONNECTOR (6323) VOLTAGE CHECKS**

Check with (6323) disconnected.

#### **Step 1)**

- Test Point: (6323) harness to battery connector, cavity A to ground
- Spec:  $12 \pm 1.5$  volts
- Comment:
  - Positive battery feed to ECM
  - If voltage is missing, check for blown fuse (9254) and short or open in circuit N97AA.
  - A blown fuse could be the result of a short in any circuits between (6007) and the fuse.

#### **Step 2)**

- Test Point: (6323) harness to battery connector, cavity A to cavity B
- Spec:  $12 \pm 1.5$  volts
- Comment: Negative battery feed to ECM If voltage is missing, check for open in circuit N97-G.

### **ENGINE/DASH CONNECTOR (4103) VOLTAGE CHECKS**

Check with (6323) connected, ignition on, and (4103) disconnected.

#### **Step 1)**

- Test Point: (4103) Harness to dash connector, pin 19 to ground
- Spec:  $12 \pm 1.5$  volts
- Comment:
  - Ignition feed to ECM
  - If voltage is missing, check for blown fuse and short or open in circuit J97U

#### **Step 2)**

- Test Point: (4103) Harness to dash connector, pin 18 to ground
- Spec:  $12 \pm 1.5$  volts
- Comment:
  - Battery voltage through ECM power relay coil.
  - If voltage is missing check for open relay coil, open circuits or short to ground.

## **ECM POWER/STARTER SOLENOID CONNECTOR (4105) VOLTAGE CHECKS**

Check with (4103) connected, ignition on, and (4105) disconnected.

### **Step 1)**

- Test Point: (4105) Harness to dash connector, pin A to ground
- Spec:  $12 \pm 1.5$  volts
- Comment:
  - Battery feed to ECM from ECM power relay R11.
  - Check for defective ECM Module Power relay R11 (4003).

## **ECM MODULE POWER RELAY R11 (4003) VOLTAGE CHECKS**

Check with relay removed, ignition key on and engine off.

Bench check relay and replace if it has failed.

**NOTE:** Always check connectors for damage and pushed-out terminals.

### **Step 1)**

- Test Point: ECM Module Power relay R11 (4003) socket cavity 1 (relay 30) to ground.
- Spec:  $12 \pm 1.5$  volts
- Comment: If voltage is missing, check for open or shorts in circuits between relay socket and fuse.

### **Step 2)**

- Test Point: ECM Module Power relay R11 (4003) socket cavity 2 (relay 85) to ground.
- Spec:  $12 \pm 1.5$  volts
- Comment:
  - Voltage to relay coil from ESC.
  - If voltage is missing, check for open or shorts in circuits between ECM and relay socket.
  - Also insure proper voltage out of ECM connector (6007) pin 25.

**Step 3)**

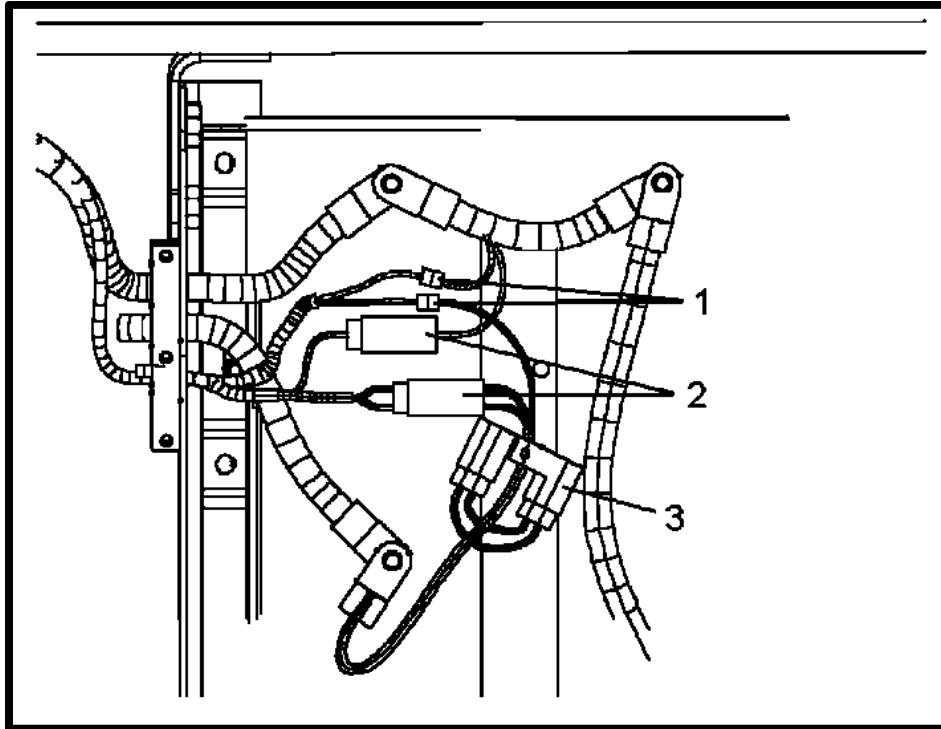
- Test Point: ECM Module Power relay R11 (4003) socket cavity 2 (relay 85) to cavity 5 (relay 86).
- Spec:  $12 \pm 1.5$  volts
- Comment:
  - Check ground to relay coil through ECM connector (6007) pin 25.
  - If voltage is missing, check for open in circuits between ground and relay socket.
  - If all voltages are good and the ECM is still not functioning, check for open circuits or shorts to ground at connector (6007).
  - ECM may have failed. Refer to the Engine Diagnostic Manual EGES-230.

**EXTENDED DESCRIPTION**

When the key is switched to the ignition position, the primary ignition relay R9 in the engine compartment should energize and apply voltage through the 5 amp minifuse to ECM connector (6007) pin 24. The ECM will then apply a ground to energize the ECM power relay R11. The contacts of the relay will apply battery voltage from engine ECM 40 amp fuse (9254) to ECM connector (6007) pins 21, 22, and 41.

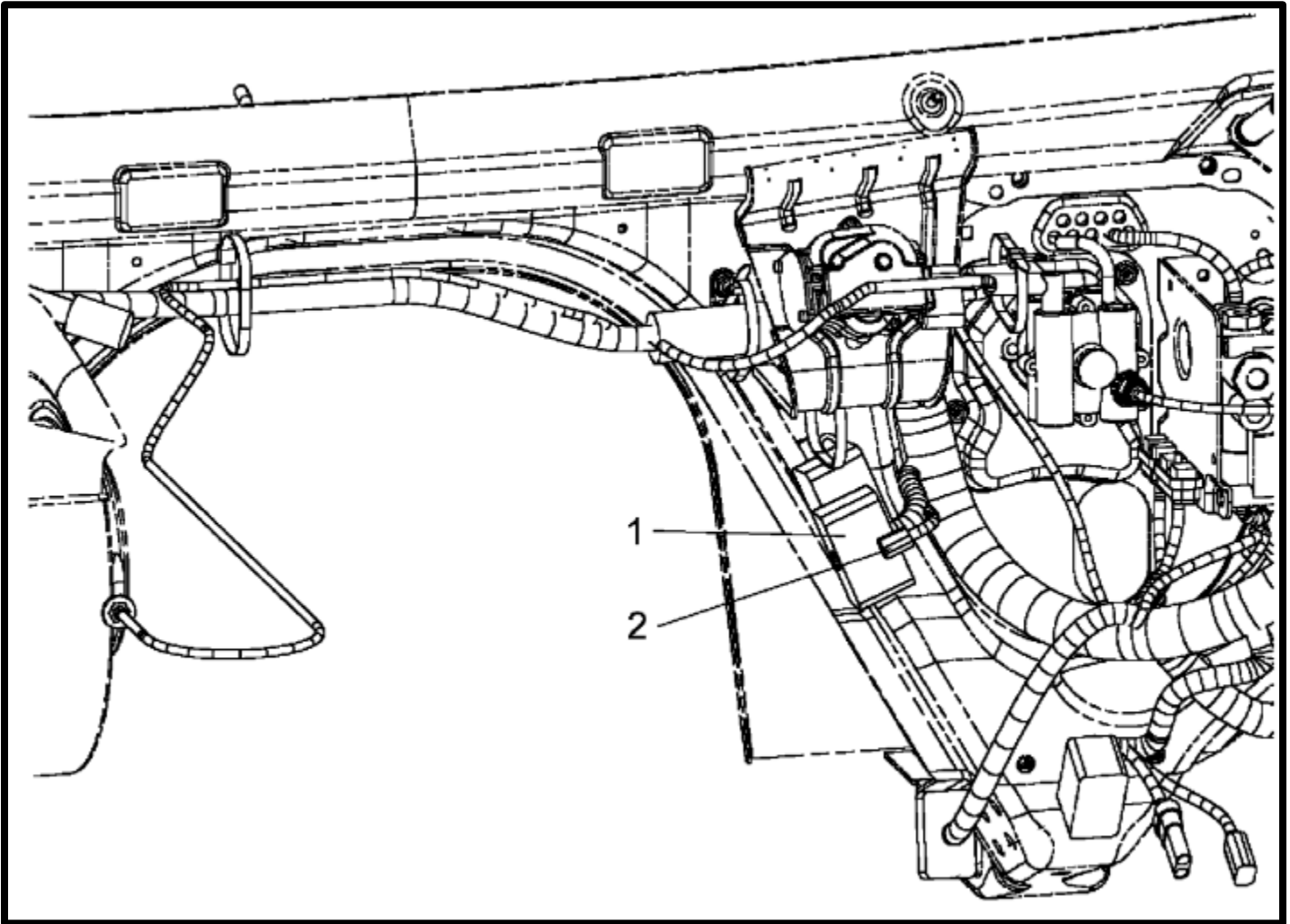
Ground for the ECM is supplied from the negative terminal of the battery to ECM ECM connector (6007) pins 1, 2, 23, and 42.

**COMPONENT LOCATIONS**



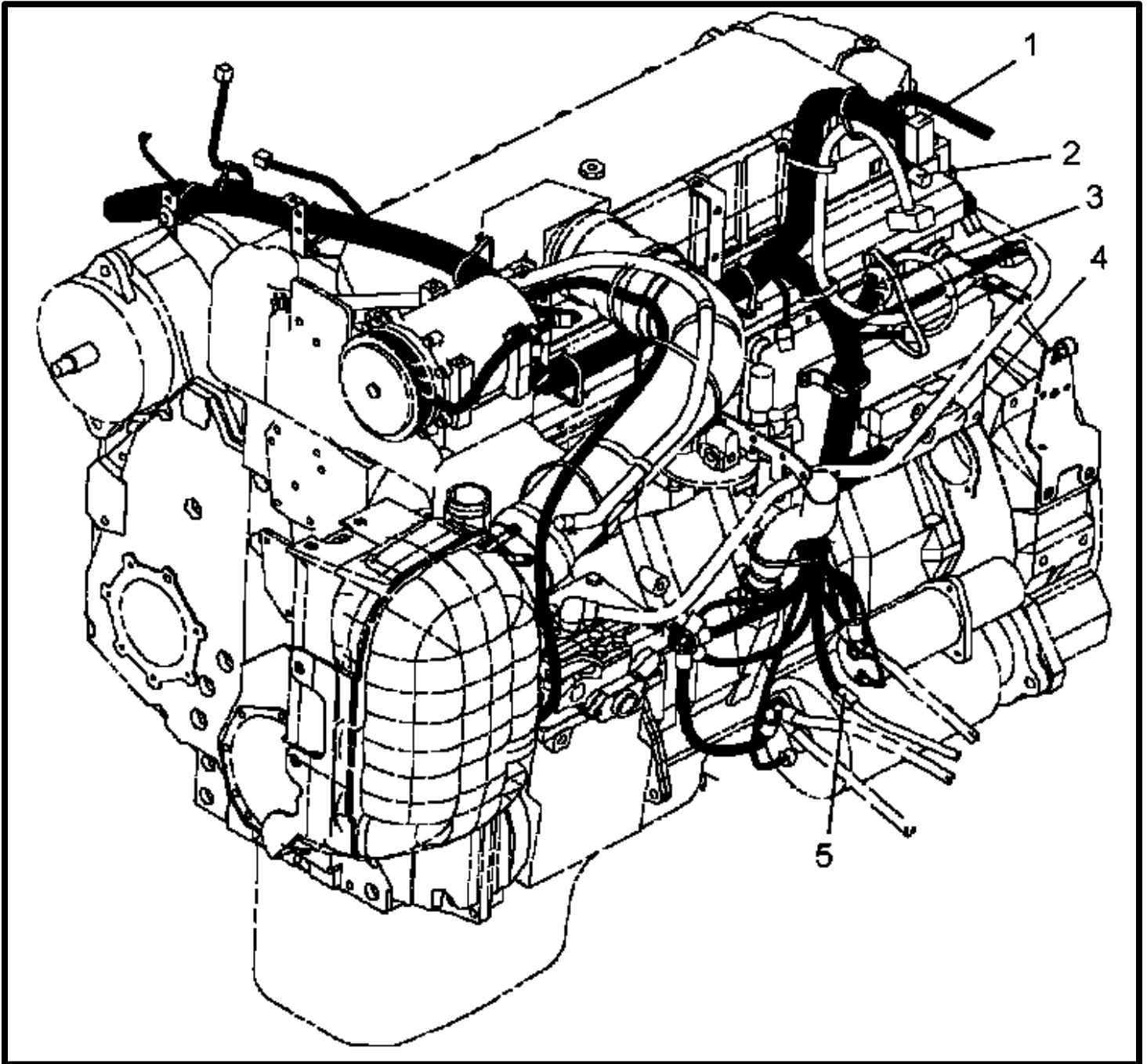
**Engine ECM Power Battery Box Connectors (Typical)**

1. 2-WAY RADIO CIRCUITS, N14HC TO POSITIVE AND N14-GD TO NEGATIVE TERMINALS ON THE BATTERY.
2. ENGINE ECM CLEAN POWER FEED.
3. 40 AMP FUSE FOR I6.



### Engine Connector Locations

1. ENGINE/DASH CONNECTOR (4103)
2. ECM POWER/STARTER CONNECTOR (4105)



### Engine ECM Location

1. ENGINE/DASH CONNECTOR (4103)
2. ECM POWER/STARTER (4105)
3. DRIVETRAIN 1939 DATALINK "Y" CONNECTOR
4. ECM CONNECTOR (6007)
5. ENGINE MODULE POWER AND GROUND (6323)



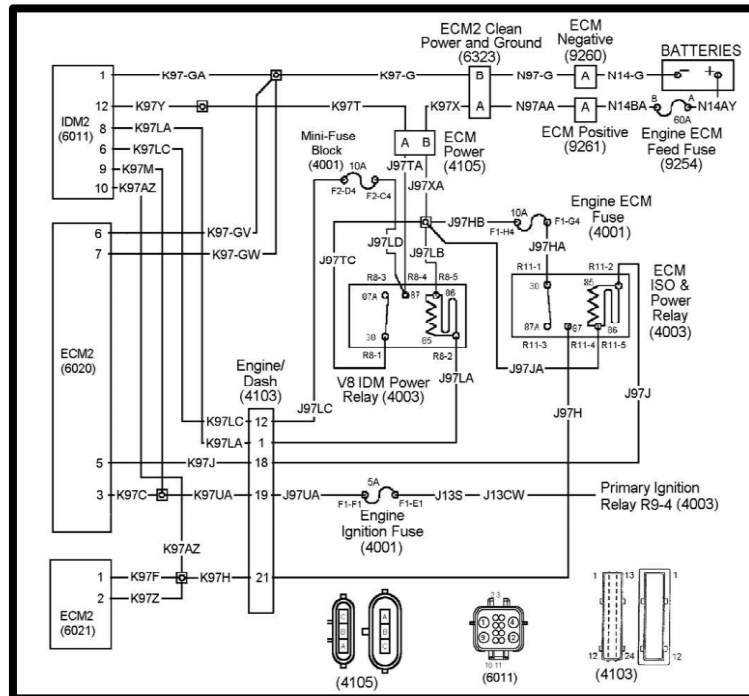
# INTERNATIONAL

## ENGINE CONTROLLER NOT COMMUNICATING WITH THE PRIMARY EGC (150)



SPN: 2023  
FMI: 14  
BYTE 7: 150  
BYTE 8: 2

V8-AVNT ENGINES



### ECM Power Circuits

- (4001) MINI FUSE BLOCK  
LOCATED IN ENGINE POWER DISTRIBUTION CENTER
- (4003) (R8) V8 IDM POWER AND (R11) ECM ISO & POWER RELAYS  
LOCATED IN ENGINE POWER DISTRIBUTION CENTER
- (4103) ENGINE/DASH CONNECTOR  
LOCATED NEAR WIPER MOTOR BRACKET
- (4105) ECM POWER/STARTER SOLENOID CONNECTOR  
LOCATED NEAR WIPER MOTOR BRACKET
- (6011) IDM2, (6020) ECM2 AND (6021) ECM2 ENGINE ECM CONNECTORS  
LOCATED ON ENGINE ECM



- (6323) ENGINE MODULE POWER AND GROUND  
LOCATED NEAR START MOTOR
- (9254) ENGINE ECM FEED FUSE CONNECTOR  
LOCATED IN BATTERY COMPARTMENT
- (9260) BATTERY ECM NEGATIVE CONNECTOR  
LOCATED IN BATTERY COMPARTMENT
- (9261) BATTERY ECM POSITIVE CONNECTOR  
LOCATED IN BATTERY COMPARTMENT

### **ENGINE CONTROL MODULE (ECM) POWER AND GROUND**

#### **Fault Detection Management**

**NOTE:** The testing method for troubleshooting the electrical systems portrayed in this manual is a basic voltage test. An alternative method of checking for voltage drops within a given circuit may be a quicker method of identifying an exact problem.

A fault in the ECM power circuits will be apparent when the engine will not start and there is no communication between the ECM and the ESC or EGC. Problems in the ECM power circuits could be attributed to a blown fuse, a short or an open circuit.

Refer to ECM Power Circuits.

## **TROUBLESHOOTING STEPS**

### **ECM POWER & GROUND CONNECTOR (6323) VOLTAGE CHECKS**

Check with (6323) disconnected.

#### **Step 1)**

- Test Point: (6323) harness to battery connector, cavity A to ground
- Spec:  $12 \pm 1.5$  volts
- Comment:
  - Positive battery feed to ECM
  - If voltage is missing, check for blown fuse (9254) and short or open in circuit N97AA.
  - A blown fuse could be the result of a short in any circuits between (6011) and the fuse.

#### **Step 2)**

- Test Point: (6323) harness to battery connector, cavity A to cavity B
- Spec:  $12 \pm 1.5$  volts
- Comment:
  - Negative battery feed to ECM
  - If voltage is missing, check for open in circuit N97-G.

### **ENGINE/DASH CONNECTOR (4103) VOLTAGE CHECKS**

Check with (6323) connected, ignition on, and (4103) disconnected.

#### **Step 1)**

- Test Point: (4103) Harness to dash connector, pin 19 to ground
- Spec:  $12 \pm 1.5$  volts
- Comment:
  - Ignition feed to ECM
  - If voltage is missing, check for blown fuse and short or open in circuit J97UA.

### Step 2)

- Test Point: (4103) Harness to dash connector, pin 18 to ground
- Spec:  $12 \pm 1.5$  volts
- Comment:
  - Battery voltage through ECM power relay coil R11.
  - If voltage is missing check for open relay coil, open circuits or short to ground.

### Step 3)

- Test Point: (4103) Harness to dash connector, pin 1 to ground
- Spec:  $12 \pm 1.5$  volts
- Comment:
  - Battery voltage through IDM power relay coil R8.
  - If voltage is missing check for open relay coil, open circuits or short to ground.

### Step 4)

- Test Point: (4103) Harness to dash connector, pin 12 to ground
- Spec:  $12 \pm 1.5$  volts
- Comment:
  - IDM2 feed from mini-fuse block (4001).
  - If voltage is missing, check for blown fuse and short or open in circuit J97LC, J97LD.

## **ECM POWER/STARTER SOLENOID CONNECTOR (4105) VOLTAGE CHECKS**

Check with (4103) connected, ignition on, and (4105) disconnected.

### Step 1)

- Test Point: (4105) Harness to dash connector, pin B to ground
- Spec:  $12 \pm 1.5$  volts
- Comment:
  - Battery feed to IDM2 and ECM power relays R8 and R11.
  - Check for defective Power relay R8 or R11(4003).

## **IDM POWER RELAY R8 AND ECM POWER RELAY R11 (4003) VOLTAGE CHECKS**

Check with relays removed, ignition key on and engine off.

Bench check relay and replace if it has failed.

**NOTE:** Always check connectors for damage and pushed-out terminals.

### **Step 1)**

- Test Point: Power relays R8 and R11 (4003) socket cavity 1 (relay 30) to ground.
- Spec:  $12 \pm 1.5$  volts
- Comment: If voltage is missing, check for open or shorts in circuits between relay socket and fuse.

### **Step 2)**

- Test Point: Power relays R8 and R11 (4003) socket cavity 2 (relay 85) to ground.
- Spec:  $12 \pm 1.5$  volts
- Comment:
  - Voltage to relay coil from ESC.
  - If voltage is missing, check for open or shorts in circuits between ECM and relay socket.
  - Also insure proper voltage out of ECM connector (6011).

### **Step 3)**

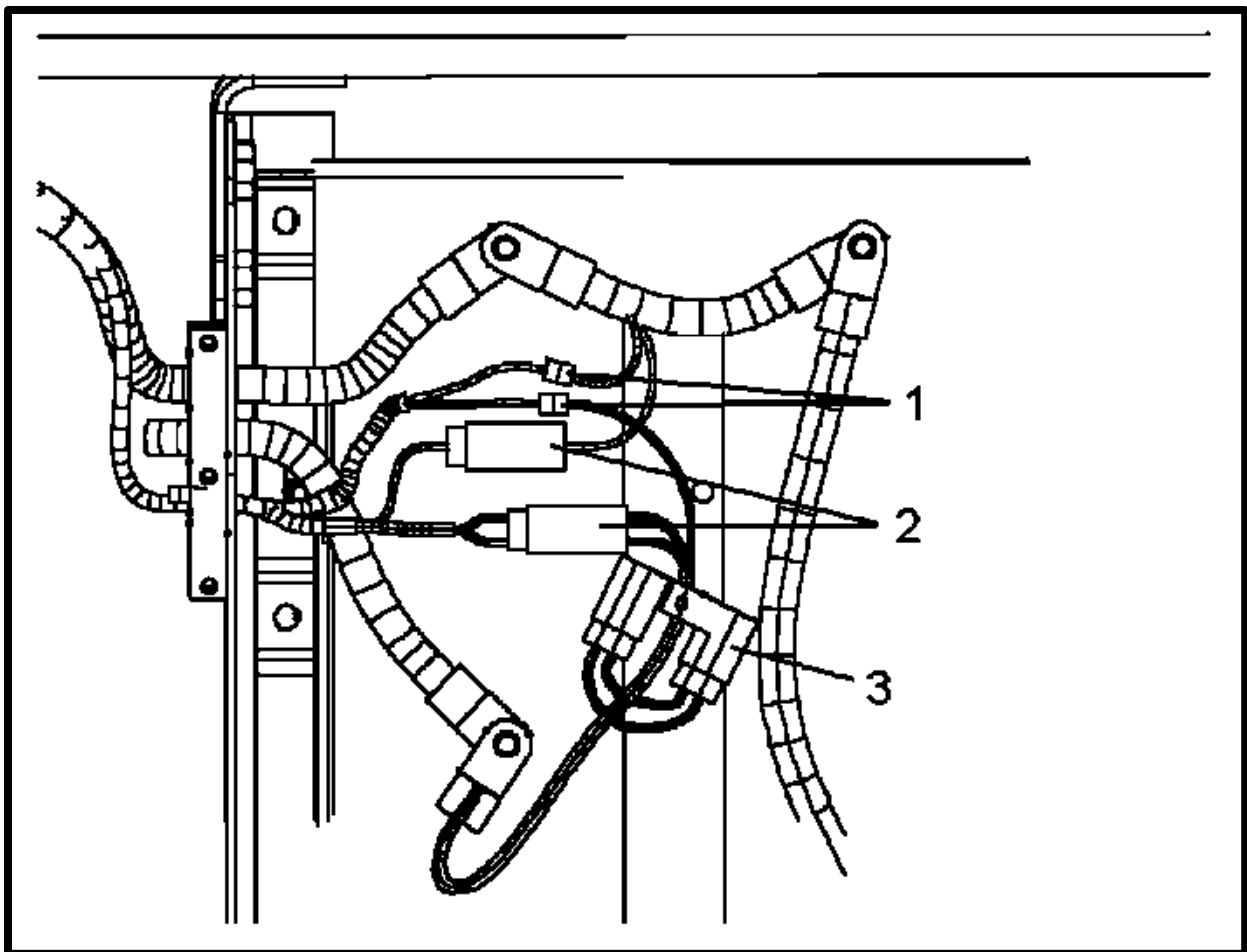
- Test Point: Power relays R8 and R11 (4003) socket cavity 2 (relay 85) to cavity 5 (relay 86).
- Spec:  $12 \pm 1.5$  volts
- Comment:
  - Check ground to relay coil through ECM connector (6011).
  - If voltage is missing, check for open in circuits between ground and relay socket.
  - If all voltages are good and the ECM is still not functioning, check for open circuits or shorts to ground at connector (6011).
  - ECM may have failed. Refer to the Engine Diagnostic Manual EGES-190.

## EXTENDED DESCRIPTION

When the key is switched to the ignition position, the primary ignition relay R9 in the engine compartment should energize and apply voltage through the 5 amp minifuse to ECM connector (6011) pin 9. The ECM will then apply a ground to energize the ECM power relay R11. The contacts of the relay will apply battery voltage from engine ECM 60 amp fuse (9254) to IDM2 and ECM2 connectors (6011), (6020) and (6021).

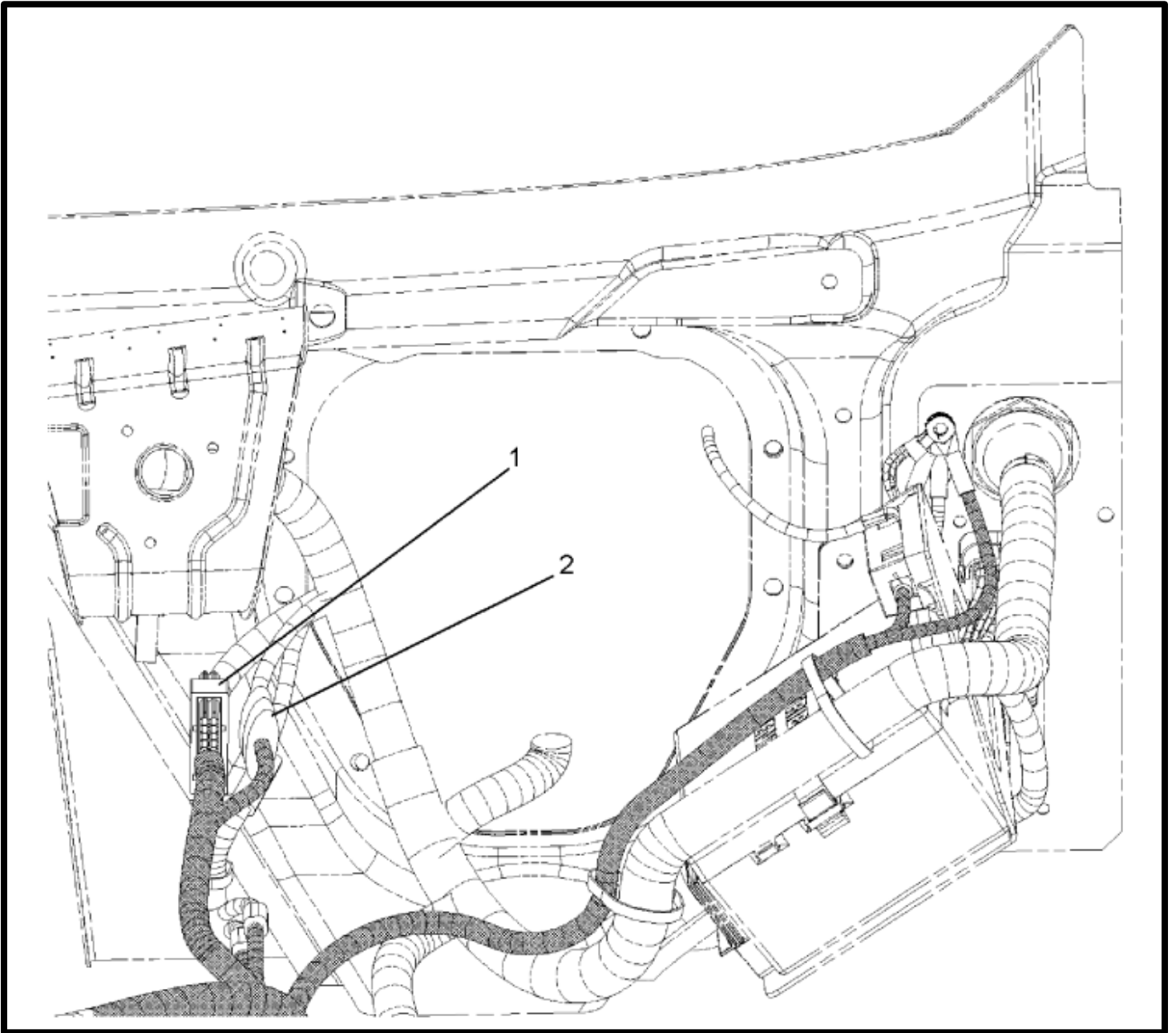
Ground for the ECM is supplied from the negative terminal of the battery to ECM ECM connector (6011) pin 1 and (6011) pins 6 and 7.

## COMPONENT LOCATIONS



### **Engine ECM Power Battery Box Connectors (Typical)**

1. 2-WAY RADIO CIRCUITS, N14HC TO POSITIVE AND N14-GD TO NEGATIVE TERMINALS ON THE BATTERY.
2. ENGINE ECM CLEAN POWER FEED.
3. 60 AMP FUSE FOR V8.



**Engine Connector Locations**

1. ENGINE/DASH CONNECTOR (4103)
2. ECM POWER/STARTER (4105)

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## INTERNATIONAL

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SPN: 2023

FMI: 14

BYTE 7: 250

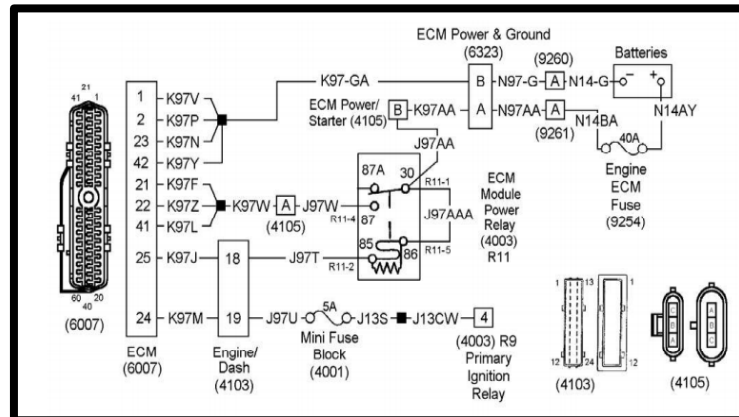
BYTE 8: 2

HEUI ENGINES

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## ENGINE CONTROLLER NOT COMMUNICATING WITH SECONDARY EGC (250) (EGC VERSION 9.3 AND LATER)

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### ECM Power Circuits

- (4001) MINI FUSE BLOCK  
LOCATED IN ENGINE POWER DISTRIBUTION CENTER
- (4003) (R11) ECM MODULE POWER RELAY  
LOCATED IN ENGINE POWER DISTRIBUTION CENTER
- (4103) ENGINE/DASH CONNECTOR  
LOCATED NEAR WIPER MOTOR BRACKET
- (4105) ECM POWER/STARTER SOLENOID CONNECTOR  
LOCATED NEAR WIPER MOTOR BRACKET
- (6007) ENGINE ECM CONNECTOR  
LOCATED ON ENGINE ECM
- (6323) ENGINE MODULE POWER AND GROUND  
LOCATED NEAR START MOTOR
- (9254) ENGINE ECM FEED FUSE CONNECTOR  
LOCATED IN BATTERY COMPARTMENT
- (9260) BATTERY ECM NEGATIVE CONNECTOR  
LOCATED IN BATTERY COMPARTMENT
- (9261) BATTERY ECM POSITIVE CONNECTOR  
LOCATED IN BATTERY COMPARTMENT





## **ENGINE CONTROL MODULE (ECM) POWER AND GROUND**

### **Fault Detection Management**

**NOTE:** The testing method for troubleshooting the electrical systems portrayed in this manual is a basic voltage test. An alternative method of checking for voltage drops within a given circuit may be a quicker method of identifying an exact problem.

A fault in the ECM power circuits will be apparent when the engine will not start and there is no communication between the ECM and the ESC or EGC. Problems in the ECM power circuits could be attributed to a blown fuse, a short or an open circuit.

Refer to ECM Power Circuits.

## **TROUBLESHOOTING STEPS**

### **ECM POWER & GROUND CONNECTOR (6323) VOLTAGE CHECKS**

Check with (6323) disconnected.

#### **Step 1)**

- Test Point: (6323) harness to battery connector, cavity A to ground
- Spec:  $12 \pm 1.5$  volts
- Comment:
  - Positive battery feed to ECM
  - If voltage is missing, check for blown fuse (9254) and short or open in circuit N97AA.
  - A blown fuse could be the result of a short in any circuits between (6007) and the fuse.

#### **Step 2)**

- Test Point: (6323) harness to battery connector, cavity A to cavity B
- Spec:  $12 \pm 1.5$  volts
- Comment: Negative battery feed to ECM If voltage is missing, check for open in circuit N97-G.

### **ENGINE/DASH CONNECTOR (4103) VOLTAGE CHECKS**

Check with (6323) connected, ignition on, and (4103) disconnected.

#### **Step 1)**

- Test Point: (4103) Harness to dash connector, pin 19 to ground
- Spec:  $12 \pm 1.5$  volts
- Comment:
  - Ignition feed to ECM
  - If voltage is missing, check for blown fuse and short or open in circuit J97U

#### **Step 2)**

- Test Point: (4103) Harness to dash connector, pin 18 to ground
- Spec:  $12 \pm 1.5$  volts
- Comment:
  - Battery voltage through ECM power relay coil.
  - If voltage is missing check for open relay coil, open circuits or short to ground.

## **ECM POWER/STARTER SOLENOID CONNECTOR (4105) VOLTAGE CHECKS**

Check with (4103) connected, ignition on, and (4105) disconnected.

### **Step 1)**

- Test Point: (4105) Harness to dash connector, pin A to ground
- Spec:  $12 \pm 1.5$  volts
- Comment:
  - Battery feed to ECM from ECM power relay R11.
  - Check for defective ECM Module Power relay R11 (4003).

## **ECM MODULE POWER RELAY R11 (4003) VOLTAGE CHECKS**

Check with relay removed, ignition key on and engine off.

Bench check relay and replace if it has failed.

**NOTE:** Always check connectors for damage and pushed-out terminals.

### **Step 1)**

- Test Point: ECM Module Power relay R11 (4003) socket cavity 1 (relay 30) to ground.
- Spec:  $12 \pm 1.5$  volts
- Comment: If voltage is missing, check for open or shorts in circuits between relay socket and fuse.

### **Step 2)**

- Test Point: ECM Module Power relay R11 (4003) socket cavity 2 (relay 85) to ground.
- Spec:  $12 \pm 1.5$  volts
- Comment:
  - Voltage to relay coil from ESC.
  - If voltage is missing, check for open or shorts in circuits between ECM and relay socket.
  - Also insure proper voltage out of ECM connector (6007) pin 25.

**Step 3)**

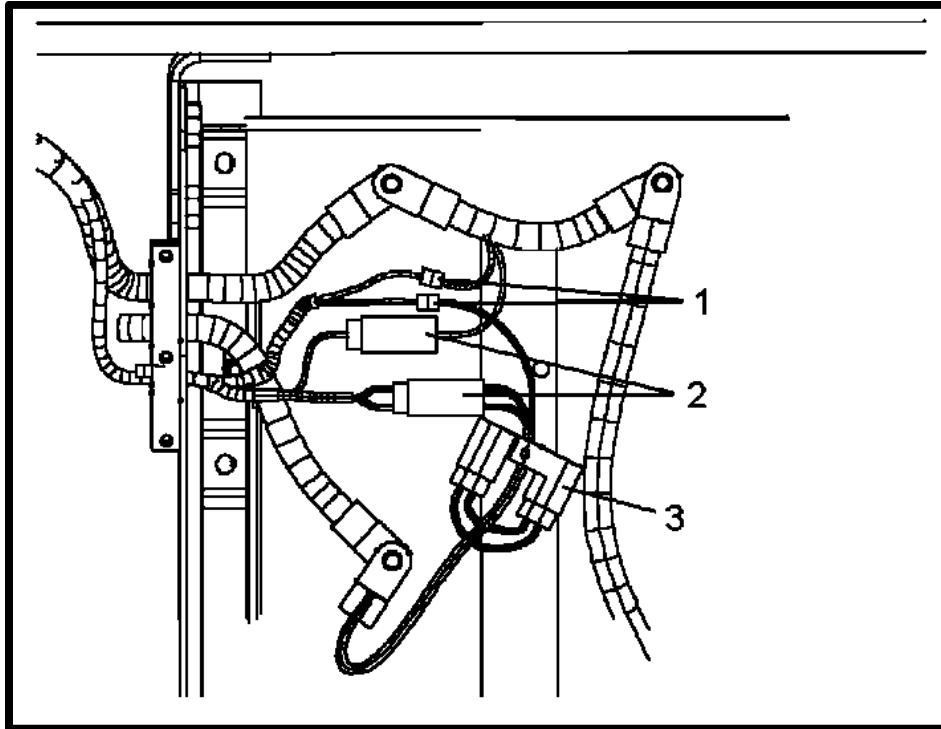
- Test Point: ECM Module Power relay R11 (4003) socket cavity 2 (relay 85) to cavity 5 (relay 86).
- Spec:  $12 \pm 1.5$  volts
- Comment:
  - Check ground to relay coil through ECM connector (6007) pin 25.
  - If voltage is missing, check for open in circuits between ground and relay socket.
  - If all voltages are good and the ECM is still not functioning, check for open circuits or shorts to ground at connector (6007).
  - ECM may have failed. Refer to the Engine Diagnostic Manual EGES-230.

**EXTENDED DESCRIPTION**

When the key is switched to the ignition position, the primary ignition relay R9 in the engine compartment should energize and apply voltage through the 5 amp minifuse to ECM connector (6007) pin 24. The ECM will then apply a ground to energize the ECM power relay R11. The contacts of the relay will apply battery voltage from engine ECM 40 amp fuse (9254) to ECM connector (6007) pins 21, 22, and 41.

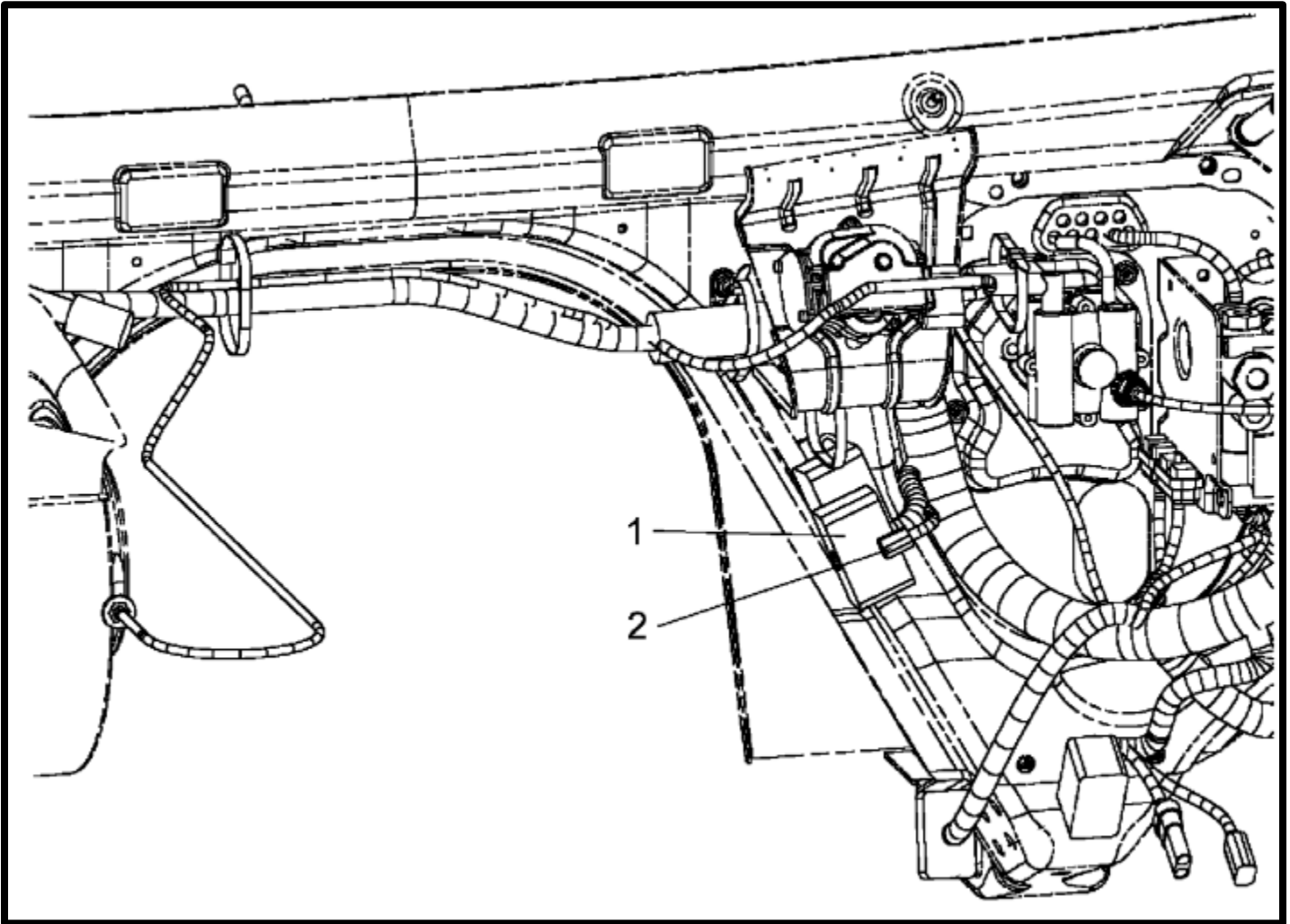
Ground for the ECM is supplied from the negative terminal of the battery to ECM ECM connector (6007) pins 1, 2, 23, and 42.

**COMPONENT LOCATIONS**



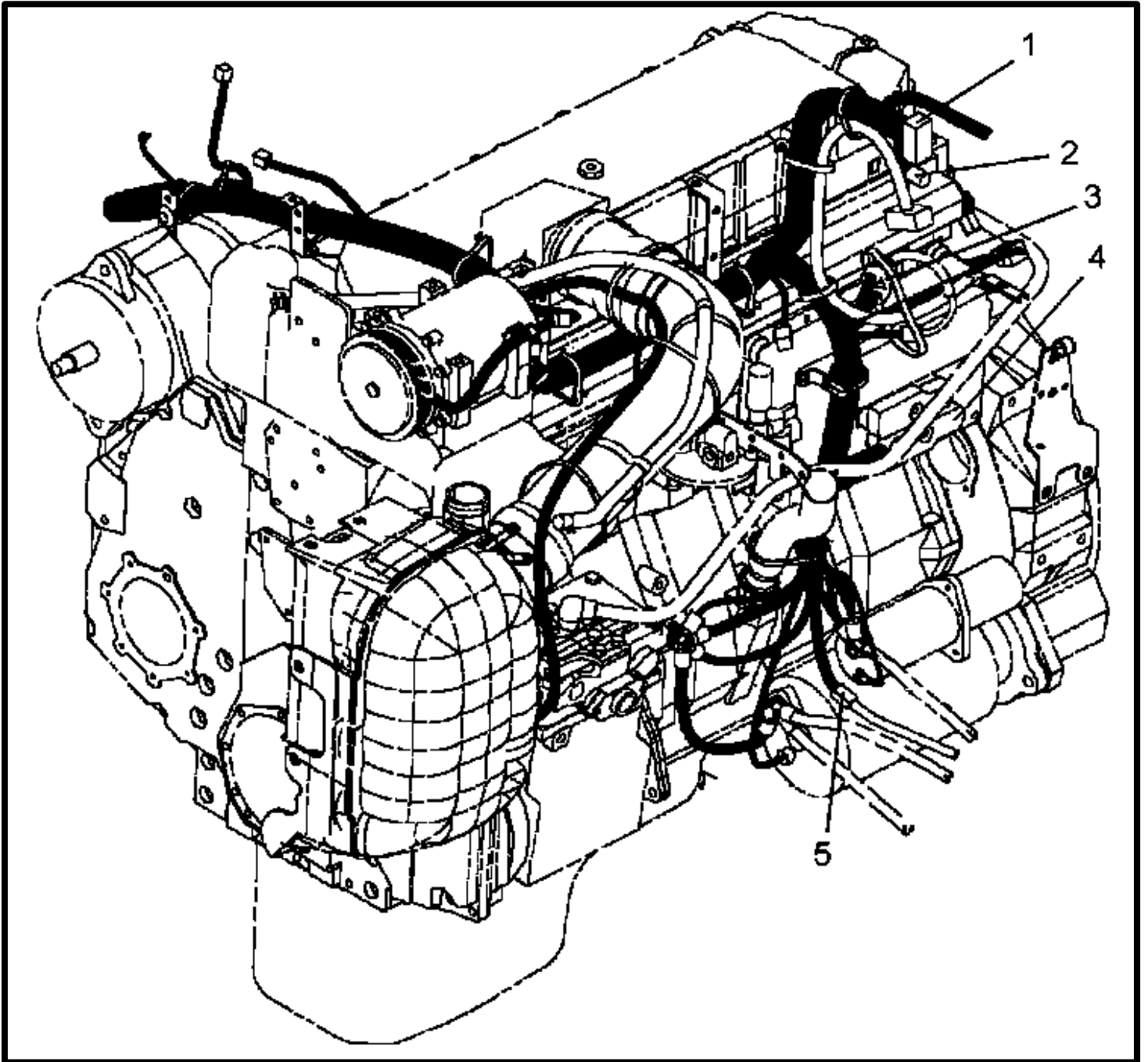
**Engine ECM Power Battery Box Connectors (Typical)**

1. 2-WAY RADIO CIRCUITS, N14HC TO POSITIVE AND N14-GD TO NEGATIVE TERMINALS ON THE BATTERY.
2. ENGINE ECM CLEAN POWER FEED.
3. 40 AMP FUSE FOR I6.



### Engine Connector Locations

1. ENGINE/DASH CONNECTOR (4103)
2. ECM POWER/STARTER CONNECTOR (4105)



### Engine ECM Location

1. ENGINE/DASH CONNECTOR (4103)
2. ECM POWER/STARTER (4105)
3. DRIVETRAIN 1939 DATALINK "Y" CONNECTOR
4. ECM CONNECTOR (6007)
5. ENGINE MODULE POWER AND GROUND (6323)

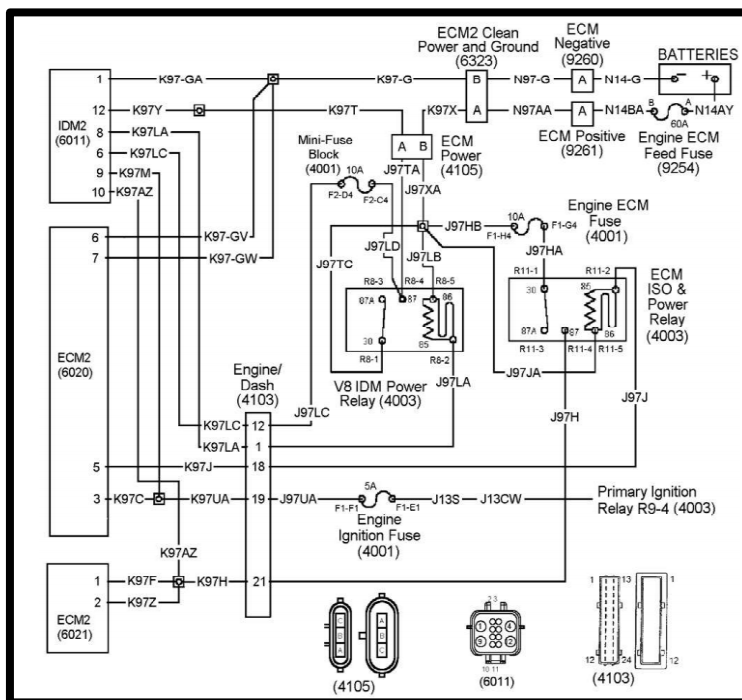
# INTERNATIONAL

## ENGINE CONTROLLER NOT COMMUNICATING WITH SECONDARY EGC (250)



SPN: 2023  
FMI: 14  
BYTE 7: 250  
BYTE 8: 2

V8-AVNT ENGINES



### ECM Power Circuits

- (4001) MINI FUSE BLOCK  
LOCATED IN ENGINE POWER DISTRIBUTION CENTER
- (4003) (R8) V8 IDM POWER AND (R11) ECM ISO & POWER RELAYS  
LOCATED IN ENGINE POWER DISTRIBUTION CENTER
- (4103) ENGINE/DASH CONNECTOR  
LOCATED NEAR WIPER MOTOR BRACKET
- (4105) ECM POWER/STARTER SOLENOID CONNECTOR  
LOCATED NEAR WIPER MOTOR BRACKET
- (6011) IDM2, (6020) ECM2 AND (6021) ECM2 ENGINE ECM CONNECTORS  
LOCATED ON ENGINE ECM





- (6323) ENGINE MODULE POWER AND GROUND  
LOCATED NEAR START MOTOR
- (9254) ENGINE ECM FEED FUSE CONNECTOR  
LOCATED IN BATTERY COMPARTMENT
- (9260) BATTERY ECM NEGATIVE CONNECTOR  
LOCATED IN BATTERY COMPARTMENT
- (9261) BATTERY ECM POSITIVE CONNECTOR  
LOCATED IN BATTERY COMPARTMENT

### **ENGINE CONTROL MODULE (ECM) POWER AND GROUND**

#### **Fault Detection Management**

**NOTE:** The testing method for troubleshooting the electrical systems portrayed in this manual is a basic voltage test. An alternative method of checking for voltage drops within a given circuit may be a quicker method of identifying an exact problem.

A fault in the ECM power circuits will be apparent when the engine will not start and there is no communication between the ECM and the ESC or EGC. Problems in the ECM power circuits could be attributed to a blown fuse, a short or an open circuit.

Refer to ECM Power Circuits.

## **TROUBLESHOOTING STEPS**

### **ECM POWER & GROUND CONNECTOR (6323) VOLTAGE CHECKS**

Check with (6323) disconnected.

#### **Step 1)**

- Test Point: (6323) harness to battery connector, cavity A to ground
- Spec:  $12 \pm 1.5$  volts
- Comment:
  - Positive battery feed to ECM
  - If voltage is missing, check for blown fuse (9254) and short or open in circuit N97AA.
  - A blown fuse could be the result of a short in any circuits between (6011) and the fuse.

#### **Step 2)**

- Test Point: (6323) harness to battery connector, cavity A to cavity B
- Spec:  $12 \pm 1.5$  volts
- Comment:
  - Negative battery feed to ECM
  - If voltage is missing, check for open in circuit N97-G.

### **ENGINE/DASH CONNECTOR (4103) VOLTAGE CHECKS**

Check with (6323) connected, ignition on, and (4103) disconnected.

#### **Step 1)**

- Test Point: (4103) Harness to dash connector, pin 19 to ground
- Spec:  $12 \pm 1.5$  volts
- Comment:
  - Ignition feed to ECM
  - If voltage is missing, check for blown fuse and short or open in circuit J97UA.

### Step 2)

- Test Point: (4103) Harness to dash connector, pin 18 to ground
- Spec:  $12 \pm 1.5$  volts
- Comment:
  - Battery voltage through ECM power relay coil R11.
  - If voltage is missing check for open relay coil, open circuits or short to ground.

### Step 3)

- Test Point: (4103) Harness to dash connector, pin 1 to ground
- Spec:  $12 \pm 1.5$  volts
- Comment:
  - Battery voltage through IDM power relay coil R8.
  - If voltage is missing check for open relay coil, open circuits or short to ground.

### Step 4)

- Test Point: (4103) Harness to dash connector, pin 12 to ground
- Spec:  $12 \pm 1.5$  volts
- Comment:
  - IDM2 feed from mini-fuse block (4001).
  - If voltage is missing, check for blown fuse and short or open in circuit J97LC, J97LD.

## **ECM POWER/STARTER SOLENOID CONNECTOR (4105) VOLTAGE CHECKS**

Check with (4103) connected, ignition on, and (4105) disconnected.

### Step 1)

- Test Point: (4105) Harness to dash connector, pin B to ground
- Spec:  $12 \pm 1.5$  volts
- Comment:
  - Battery feed to IDM2 and ECM power relays R8 and R11.
  - Check for defective Power relay R8 or R11(4003).

## **IDM POWER RELAY R8 AND ECM POWER RELAY R11 (4003) VOLTAGE CHECKS**

Check with relays removed, ignition key on and engine off.

Bench check relay and replace if it has failed.

**NOTE:** Always check connectors for damage and pushed-out terminals.

### **Step 1)**

- Test Point: Power relays R8 and R11 (4003) socket cavity 1 (relay 30) to ground.
- Spec:  $12 \pm 1.5$  volts
- Comment: If voltage is missing, check for open or shorts in circuits between relay socket and fuse.

### **Step 2)**

- Test Point: Power relays R8 and R11 (4003) socket cavity 2 (relay 85) to ground.
- Spec:  $12 \pm 1.5$  volts
- Comment:
  - Voltage to relay coil from ESC.
  - If voltage is missing, check for open or shorts in circuits between ECM and relay socket.
  - Also insure proper voltage out of ECM connector (6011).

### **Step 3)**

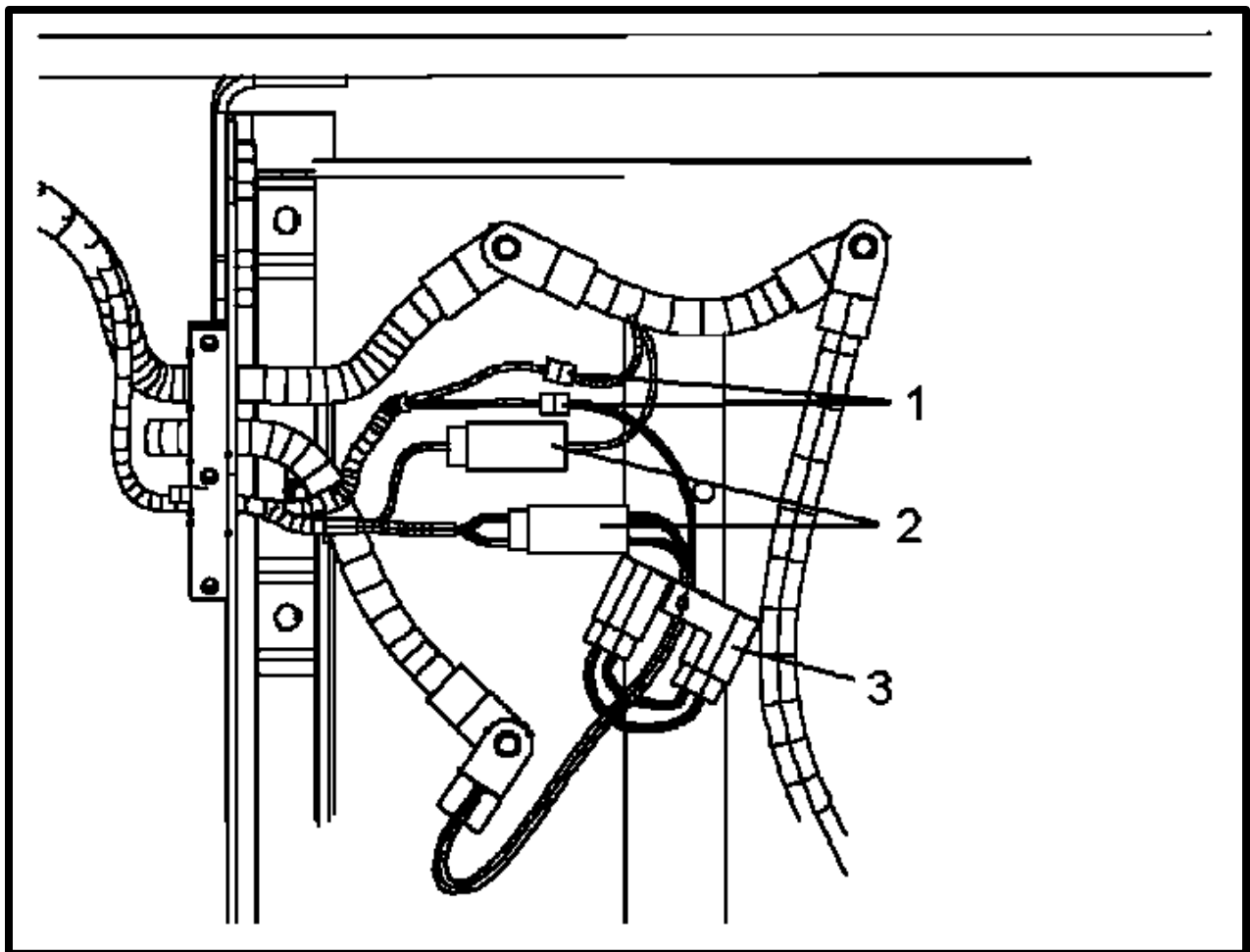
- Test Point: Power relays R8 and R11 (4003) socket cavity 2 (relay 85) to cavity 5 (relay 86).
- Spec:  $12 \pm 1.5$  volts
- Comment:
  - Check ground to relay coil through ECM connector (6011).
  - If voltage is missing, check for open in circuits between ground and relay socket.
  - If all voltages are good and the ECM is still not functioning, check for open circuits or shorts to ground at connector (6011).
  - ECM may have failed. Refer to the Engine Diagnostic Manual EGES-190.

## EXTENDED DESCRIPTION

When the key is switched to the ignition position, the primary ignition relay R9 in the engine compartment should energize and apply voltage through the 5 amp minifuse to ECM connector (6011) pin 9. The ECM will then apply a ground to energize the ECM power relay R11. The contacts of the relay will apply battery voltage from engine ECM 60 amp fuse (9254) to IDM2 and ECM2 connectors (6011), (6020) and (6021).

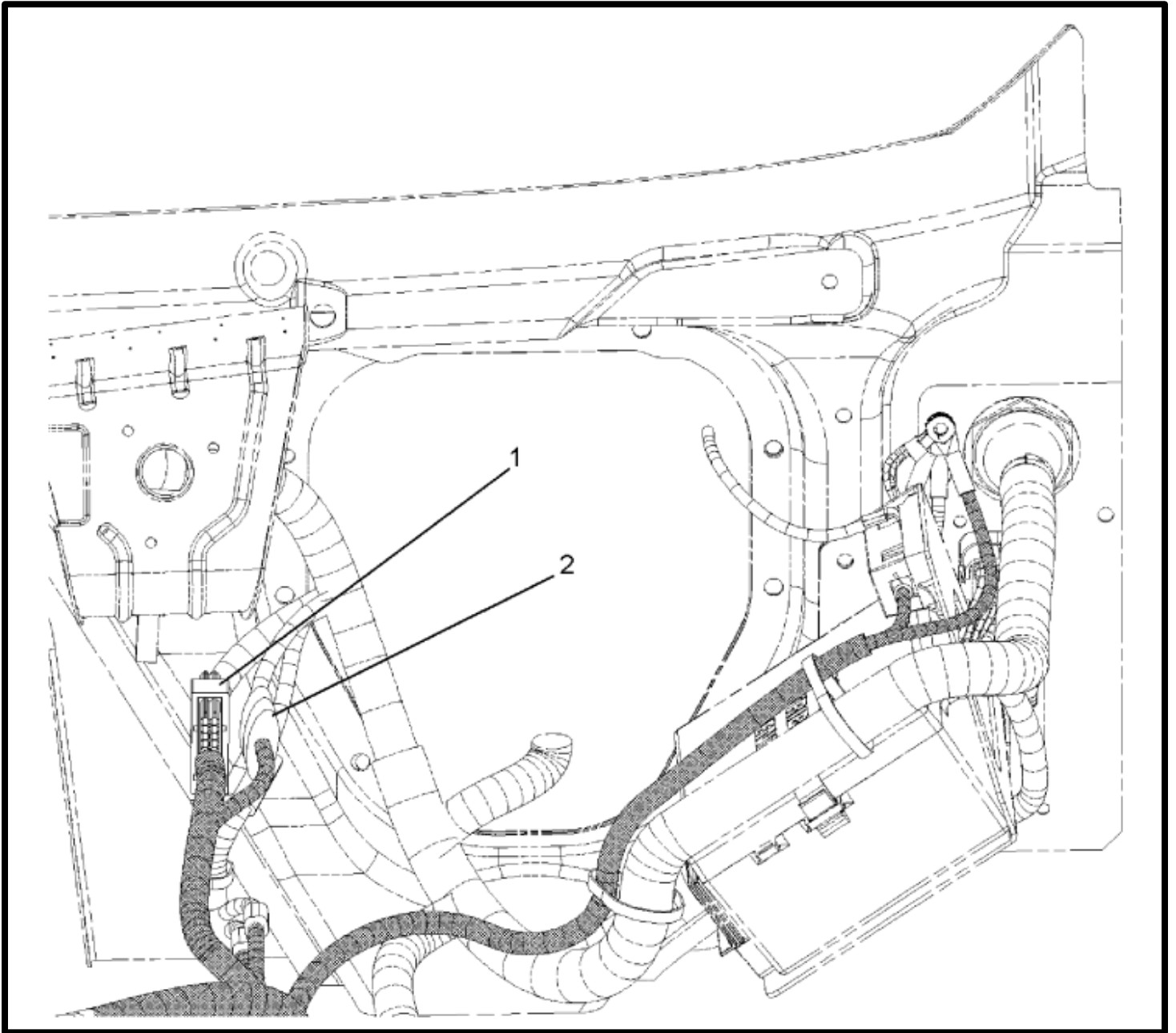
Ground for the ECM is supplied from the negative terminal of the battery to ECM ECM connector (6011) pin 1 and (6011) pins 6 and 7.

## COMPONENT LOCATIONS



### **Engine ECM Power Battery Box Connectors (Typical)**

1. 2-WAY RADIO CIRCUITS, N14HC TO POSITIVE AND N14-GD TO NEGATIVE TERMINALS ON THE BATTERY.
2. ENGINE ECM CLEAN POWER FEED.
3. 60 AMP FUSE FOR V8.



**Engine Connector Locations**

1. ENGINE/DASH CONNECTOR (4103)
2. ECM POWER/STARTER (4105)