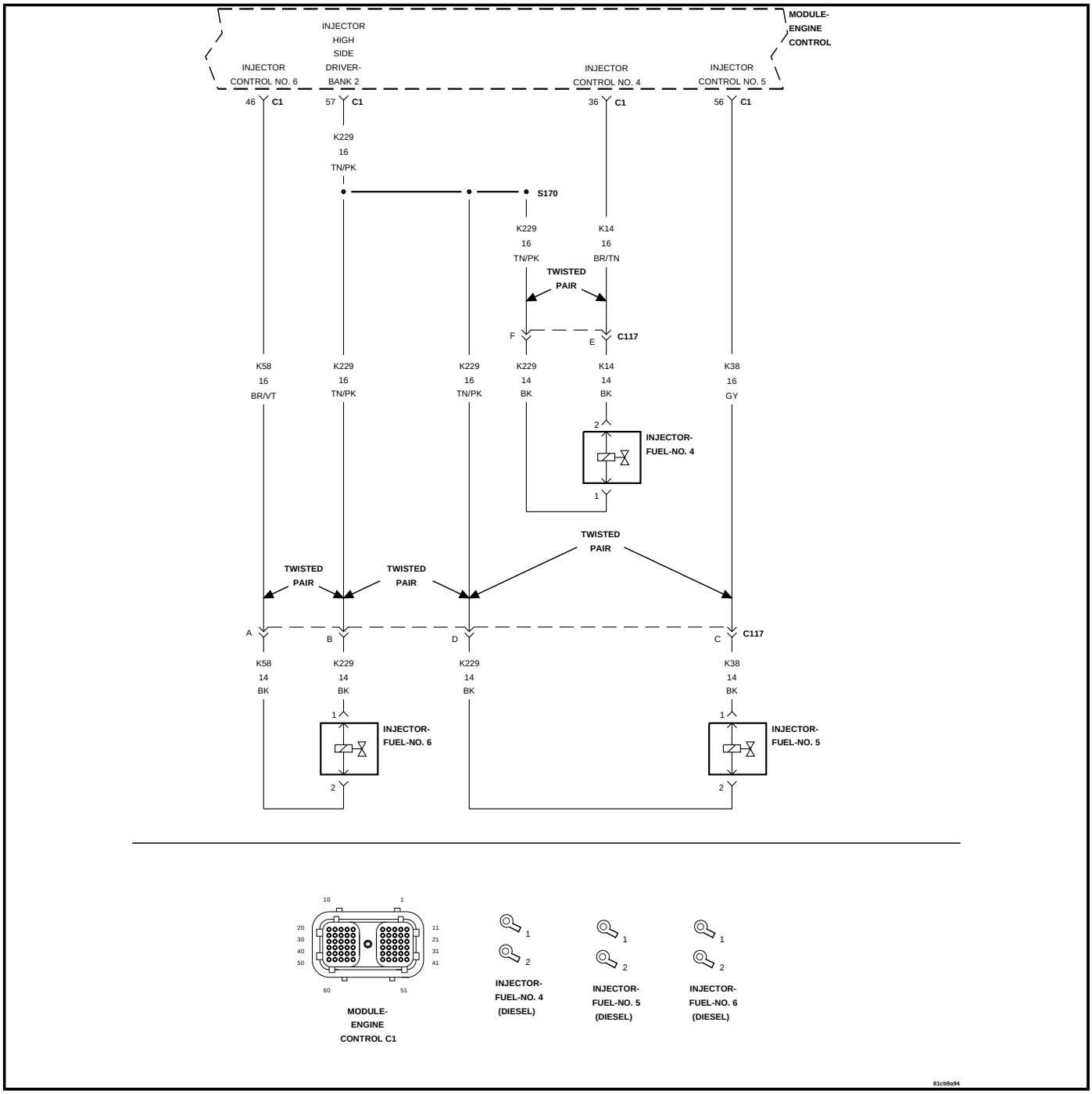
# P2149-BANK 2 (CYLINDERS 4-6) SHORTED HIGH OR LOW




For a complete wiring diagram, **refer to the Wiring Information**.

- **When Monitored:**

  While the engine is running.

- **Set Condition:**

A misfire detected at cylinders 4, 5, or 6 or any combination of cylinders 4, 5, or 6.

| Possible Causes |
| --- |
| OTHER DTCS |
| HIGH SIDE DRIVER CIRCUIT OPEN |
| LOW SIDE DRIVER CIRCUIT OPEN |
| HIGH SIDE DRIVER SHORTED TO LOW SIDE DRIVER |
| HIGH SIDE DRIVERS SHORTED LOW |
| LOW SIDE DRIVER CIRCUIT SHORTED OTHER LOW SIDE DRIVER CIRCUIT |
| LOW SIDE DRIVERS SHORTED LOW |
| HIGH SIDE DRIVER SHORTED TO VOLTAGE |
| LOW SIDE DRIVER SHORTED TO VOLTAGE |
| LOW SIDE DRIVER CIRCUIT SHORTED IN INJECTOR HARNESS |
| INJECTOR |
| INJECTOR HARNESS |
| ENGINE CONTROL MODULE (ECM) |

**Always perform the Pre-Diagnostic Troubleshooting procedure before proceeding. (Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control (ECM) - Standard Procedure).**

### 1. OTHER DTCS

1. With the scan tool, read DTCs.

**Do you have any combination of DTCs P0204, P0205, or P0206?**

**Yes**
- Repair other DTCs first.
- Perform the POWERTRAIN VERIFICATION TEST - 5.9L. (Refer to 28 - DTC-Based Diagnostics/ MODULE, Engine Control (ECM) - Standard Procedure).

**No**
- Go To 2

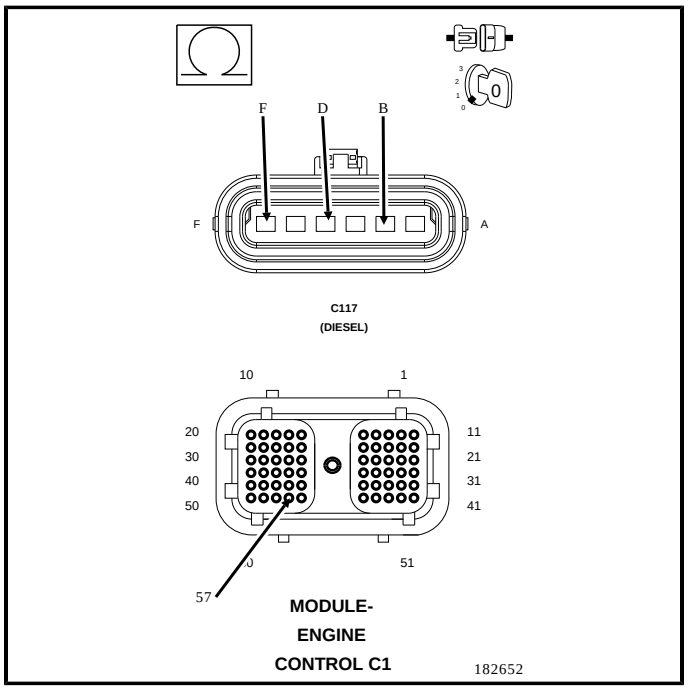
## 2. LOW SIDE DRIVER CIRCUIT SHORTED IN INJECTOR HARNESS

1. Reconnect the disconnected injector harness connector.
2. Measure the resistance of each of the Bank 2 low side driver circuit to all other Bank 2 low side driver circuit at the ECM harness connector.

**Is the resistance greater than 100k Ohms?**

**Yes** • Go To 3

**No** • Replace the injector harness.
• Perform the POWERTRAIN VERIFICATION TEST - 5.9L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control (ECM) - Standard Procedure).




## 3. HIGH SIDE DRIVER CIRCUIT OPEN

1. Disconnect the Injector 4-6 harness connector.

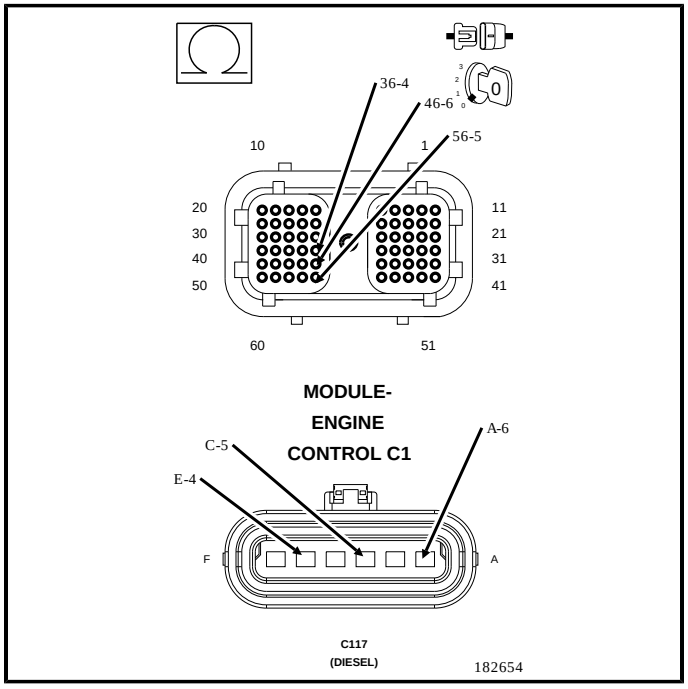
NOTE: Check connectors - Clean/repair as necessary.

2. Measure the resistance of the injector high side driver circuit between the Bank 2 high side driver circuit in the ECM harness connector and the high side driver circuit in the injector harness connectors for cylinders 4-6.

**Is the resistance less than 10 Ohms?**

**Yes** • Go To 4

**No** • Repair the open high side driver circuit from ECM harness connector to the Injector harness connector.
• Perform the POWERTRAIN VERIFICATION TEST - 5.9L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control (ECM) - Standard Procedure).



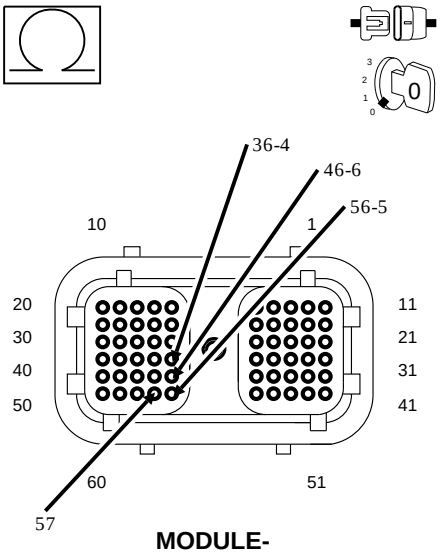
## 4. LOW SIDE DRIVER CIRCUIT OPEN

1. Measure the resistance of the 4, 5, and 6 injector low side driver circuits between the ECM harness connector and the injector harness connectors.

**Is the resistance less than 10 Ohms?**

**Yes** • Go To 5

**No** • Repair the open low side driver circuit.
• Perform the POWERTRAIN VERIFICATION TEST - 5.9L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control (ECM) - Standard Procedure).




**MODULE-**
**ENGINE**
**CONTROL C1**

182656

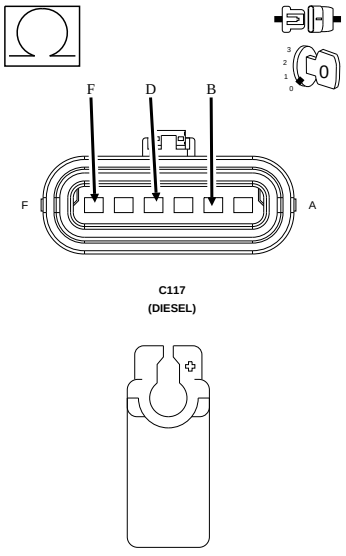
## 5. HIGH SIDE DRIVER SHORTED TO LOW SIDE DRIVER

1. Measure the resistance between the Bank 2 high side driver circuit at the ECM harness connector and the low side driver circuit for injectors 4-6 at the ECM harness connector.

**Is the resistance more than 100k Ohms?**

**Yes** • Go To 6

**No** • Repair the High side circuit shorted to the low side circuit.
• Perform the POWERTRAIN VERIFICATION TEST - 5.9L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control (ECM) - Standard Procedure).




**C117**
**(DIESEL)**

**BATTERY-**
**POSITIVE**
**(DIESEL LEFT BATTERY)**

182658

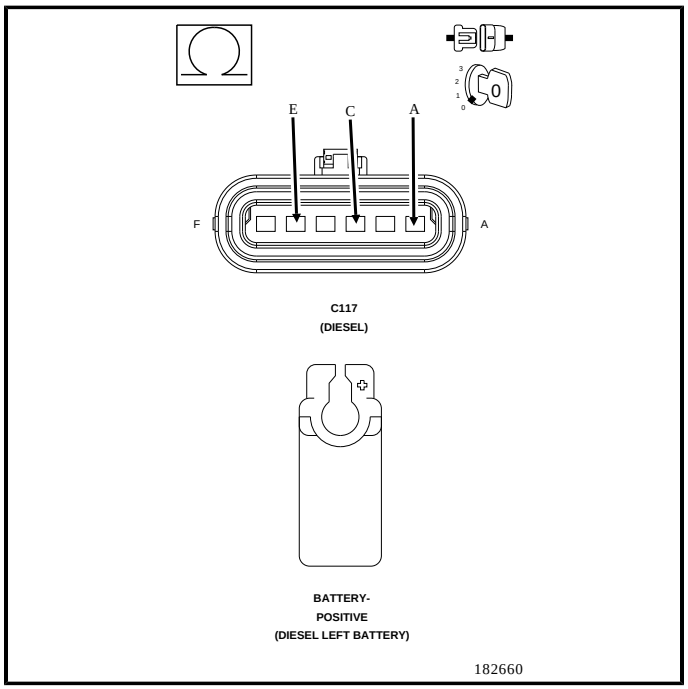
## 6. HIGH SIDE DRIVERS SHORTED LOW

1. Measure the resistance of the injector harness connector high side driver circuits to battery negative for injectors 4-6.

**Is the resistance more than 100k Ohms?**

**Yes**
- Go To 7

**No**
- Repair the High side driver shorted low in the harness.
- Perform the POWERTRAIN VERIFICATION TEST - 5.9L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control (ECM) - Standard Procedure).



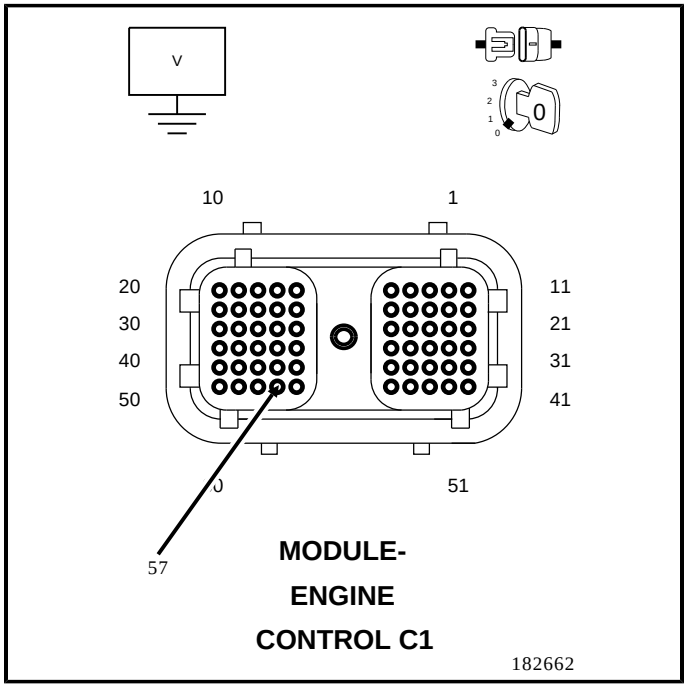

## 7. LOW SIDE DRIVERS SHORTED LOW

1. Measure the resistance of the injector harness connector Low side driver circuits to battery negative for injectors 4-6.

**Is the resistance more than 100k Ohms?**

**Yes**
- Go To 8

**No**
- Repair the Low side driver shorted low in the harness.
- Perform the POWERTRAIN VERIFICATION TEST - 5.9L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control (ECM) - Standard Procedure).



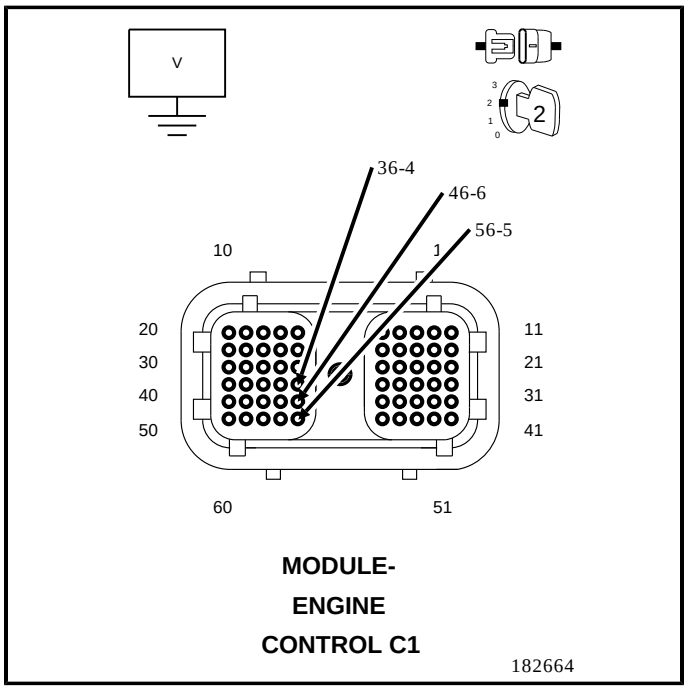
## 8. HIGH SIDE DRIVER SHORTED TO VOLTAGE

1. Turn Ignition on, engine off.
2. Measure the voltage between the high side driver circuit in the engine harness and battery negative.

**Is the voltage less than 1 volt?**

**Yes**
- Go To 9

**No**
- Repair the high side driver shorted to voltage.
- Perform the POWERTRAIN VERIFICATION TEST - 5.9L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control (ECM) - Standard Procedure).



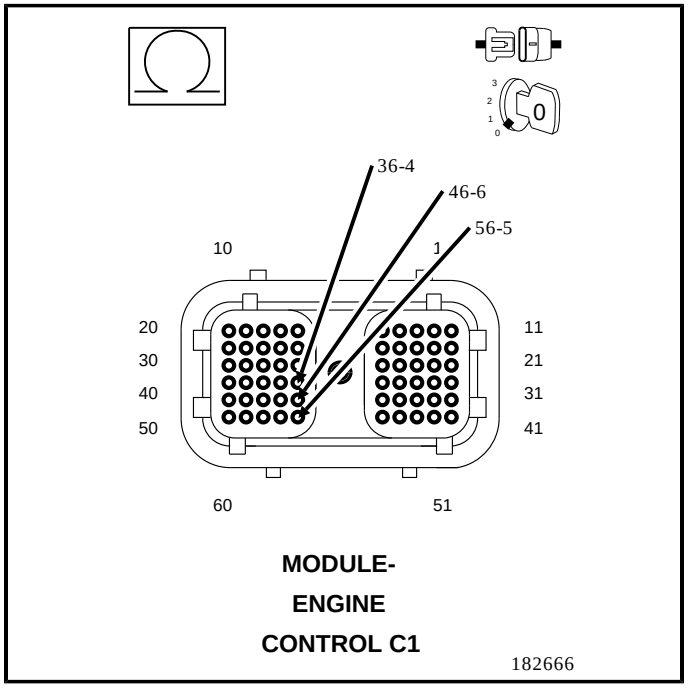

## 9. LOW SIDE DRIVER SHORTED TO VOLTAGE

1. Measure the voltage between the low side driver circuit in the engine harness and battery negative for cylinders 4-6.

**Is the voltage less than 1 volt?**

**Yes**
- Go To 10

**No**
- Repair the low side driver shorted to voltage.
- Perform the POWERTRAIN VERIFICATION TEST - 5.9L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control (ECM) - Standard Procedure).



## 10. LOW SIDE DRIVER CIRCUIT SHORTED OTHER LOW SIDE DRIVER CIRCUIT

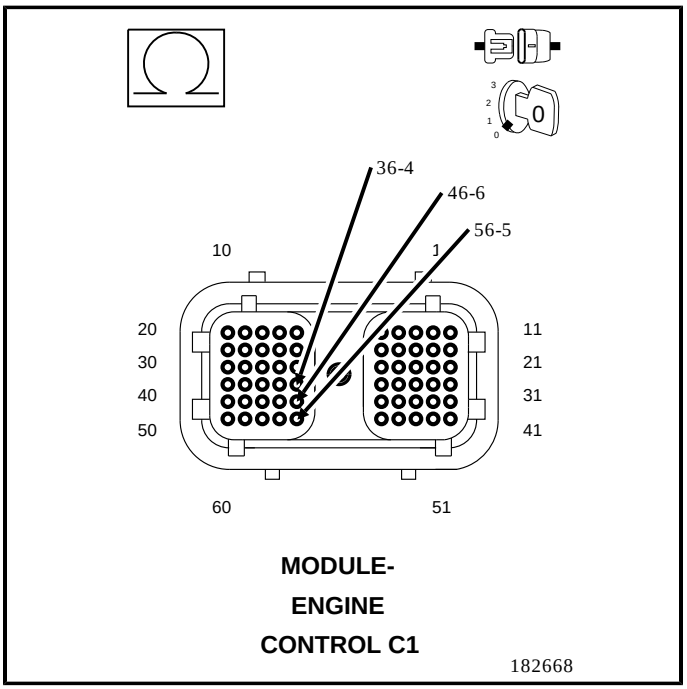
1. Measure the resistance of each of the Bank 2 low side driver circuit to all other Bank 2 low side driver circuits at the ECM harness connector.

**Is the resistance greater than 100k Ohms?**

**Yes** • Go To 11

**No** • Repair Low side driver circuit shorted to other Low side driver circuit.

• Perform the POWERTRAIN VERIFICATION TEST - 5.9L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control (ECM) - Standard Procedure).




## 11. INJECTOR CIRCUITS SHORTED INSIDE ENGINE

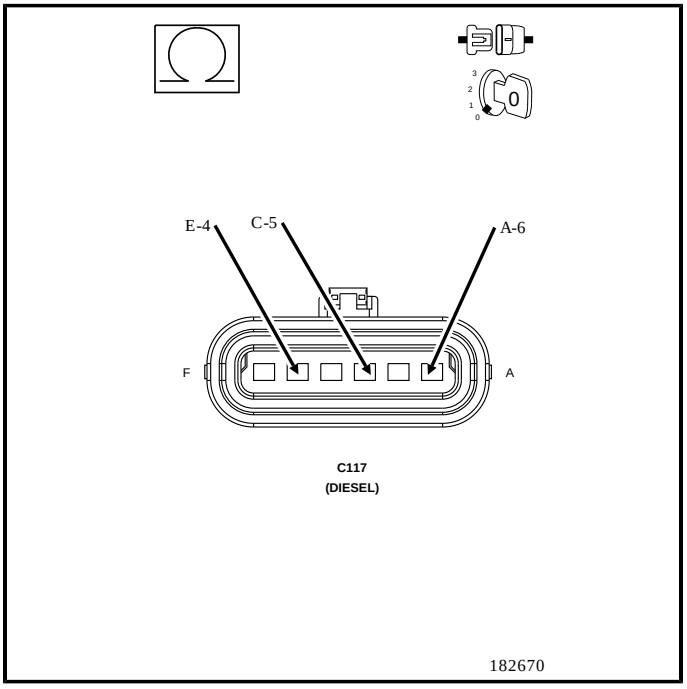
1. Measure the resistance of each injector from the through head connector.

NOTE: Be sure to zero the Ohm meter prior to checking the injector circuit.

**Is the resistance greater than zero and less than 1 Ohm?**

**Yes** • Go To 12

**No** • Go To 15



## 12. INJECTOR HARNESS

1. Disconnect the pigtail nuts from injectors 4-6.

NOTE: Check connectors - Clean/repair as necessary.

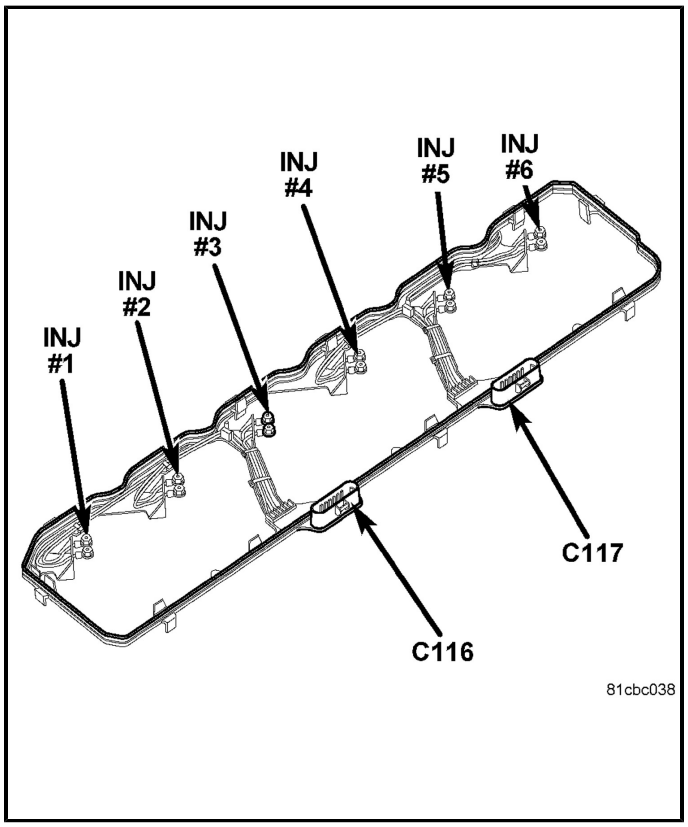
NOTE: Be sure to zero the ohm meter prior to checking the injector circuit.

2. Measure resistance of each circuit in the injector harness from pigtail side to injector harness connector.

**Is resistance above 1 ohm?**

**Yes**
- Replace the injector harness.
- Perform the POWERTRAIN VERIFICATION TEST - 5.9L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control (ECM) - Standard Procedure).

**No**
- Go To 13



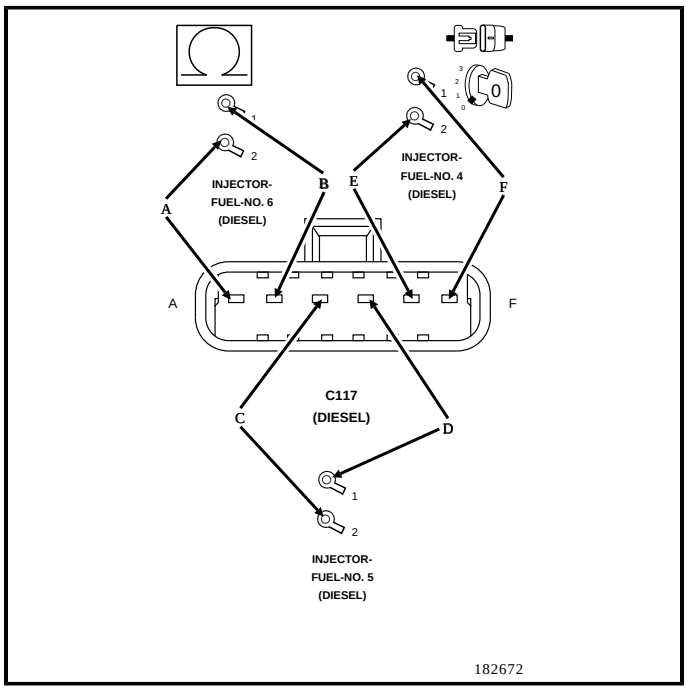

## 13. INJECTOR

1. Measure the resistance between the solenoid posts of each injector.

**Is the resistance less than 1 Ohm and greater than 0 Ohms?**

**Yes**
- Go To 14

**No**
- Replace the fuel injector or injectors.
- Perform the POWERTRAIN VERIFICATION TEST - 5.9L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control (ECM) - Standard Procedure).




## 14. INJECTOR

1. Measure the resistance between a solenoid post and battery negative.

NOTE: Be sure to zero the ohm meter prior to checking the injector circuit.

**Yes**
- Go To 15

**No**
- Replace the fuel injector or injectors.
- Perform the POWERTRAIN VERIFICATION TEST - 5.9L. (Refer to 28 - DTC-Based Diagnostics/ MODULE, Engine Control (ECM) - Standard Procedure).

**15. ENGINE CONTROL MODULE (ECM)**

1. Reconnect all the injector pig tail harness connectors to the Injectors.
2. Reconnect the ECM harness connector.
3. Reconnect the Injector harness connector.
4. Start the engine.
5. With the scan tool, read DTCs.

**Did the DTC return?**

**Yes**
- Replace and program the ECM in accordance with the Service Information.
- Perform the POWERTRAIN VERIFICATION TEST - 5.9L. (Refer to 28 - DTC-Based Diagnostics/ MODULE, Engine Control (ECM) - Standard Procedure).

**No**
- Test Complete.