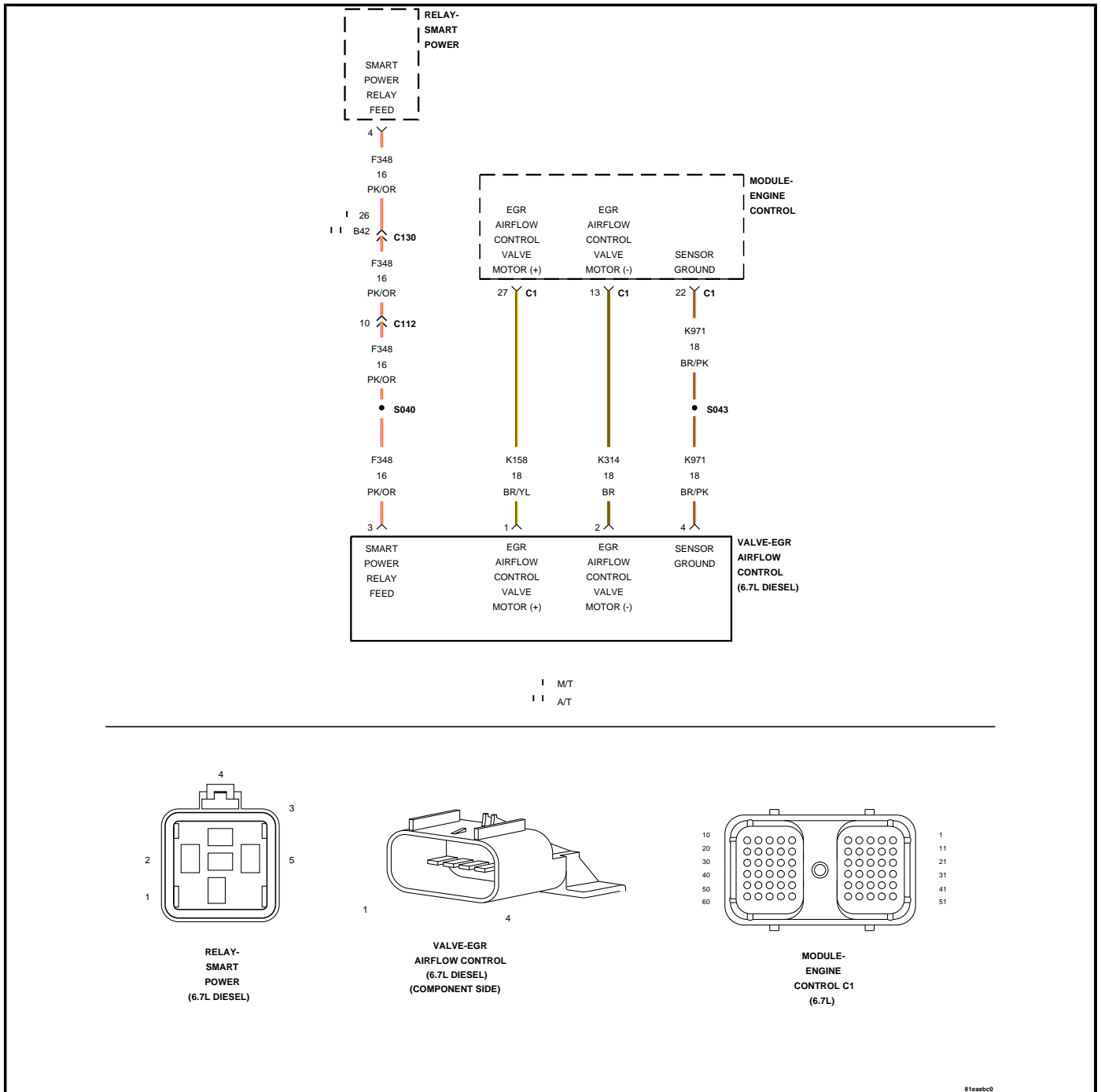


# P0488-EGR AIRFLOW THROTTLE CONTROL CIRCUIT PERFORMANCE



For a complete wiring diagram Refer to the Wiring Information.

## Theory of Operation

The EGR Airflow control valve is a smart device that is commanded by the ECM through a PWM signal. There are two portions to this diagnostic, a key-on portion and a performance portion. The key-on portion checks the status feedback

line from the throttle. At key-on, the ECM toggles the output line and verifies that the status line matches the command. The performance portion checks the status line for a feedback that matches the ECM output command. The diagnostic fails if the status line stays low for more than 2 seconds. The ECM will illuminate the MIL lamp after the diagnostic runs and fails in two consecutive drive cycles. During this time the ECM will not control the EGR Airflow control valve. If able, the EGR Airflow control valve will go to the default open position. This may cause active Exhaust Aftertreatment regenerations to last longer. The ECM will turn off the MIL lamp after the diagnostic runs and passes in 4 consecutive drive cycles.

- **When Monitored:**

Ignition on

- **Set Condition:**

Status line feedback voltage is outside of a calibratable range

Possible Causes
(F348) SMART POWER RELAY FEED SHORTED TO GROUND
(K158) TTVA MOTOR (-) CIRCUIT IS OPEN
(K971) SENSOR GROUND OPEN
(K158) TTVA MOTOR (-) CIRCUIT IS SHORTED TO GROUND
(K158) TTVA MOTOR (-) IS SHORTED TO VOLTAGE
EGR AIRFLOW CONTROL VALVE
ECM

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

**1. DTC P0488 ACTIVE**

1. Ignition on, engine not running.
2. With the scan tool, read DTC's.

**Is DTC P0488 active?**

**Yes** • Go To [2](#)

**No** • Refer to the INTERMITTENT CONDITION - DIESEL Symptom.(Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control (ECM) - Standard Procedure)

## 2. (F348) SMART POWER RELAY FEED

1. Turn the ignition off.
2. Disconnect the EGR Airflow Control Valve harness connector.

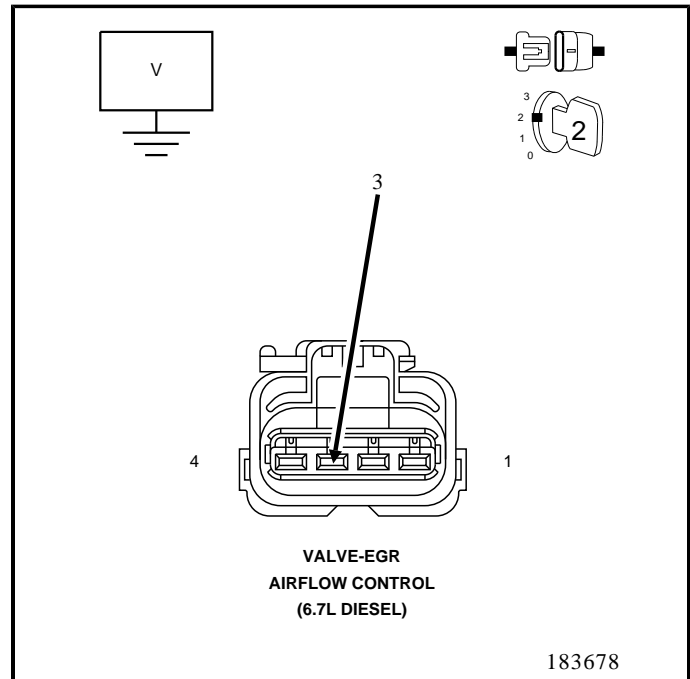
**NOTE:** Check connectors - Clean/repair as necessary.

3. Turn the ignition on.
4. Measure the voltage on the (F348) smart power relay feed to ground.

### Is voltage within one volt of battery?

**Yes** • Go To 5

**No** • Go To 3



## 3. (F348) SMART POWER RELAY FEED SHORTED TO GROUND

1. Ignition on, engine not running.
2. With the scan tool, read DTC's.

### Are there any Mass Airflow or Turbocharger DTCs?

**Yes**

- Repair the (F348) smart power relay feed circuit.
- Perform POWERTRAIN VERIFICATION TEST - 6.7L.(Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control (ECM) - Standard Procedure)

**No** • Go To 4

#### 4. (K971) SENSOR GROUND OPEN

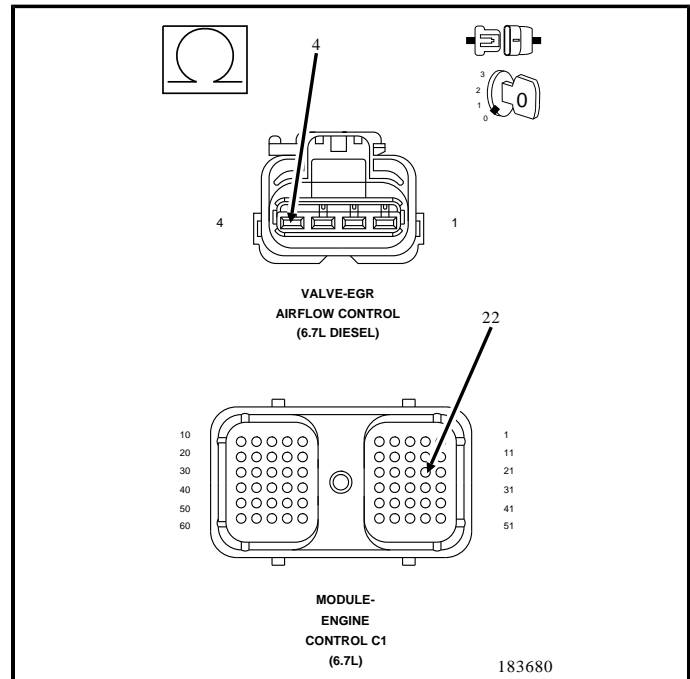
1. Turn the ignition off.
2. Disconnect the ECM harness connector.

**NOTE:** Check connectors - Clean/repair as necessary.

3. Measure the resistance of the (K971) sensor ground circuit from the EGR Airflow Control Valve harness connector to the ECM harness connector.

#### **Is the resistance less than 10 ohms?**

- Yes**
- Repair open harness from 10 position crossover connector to EGR Airflow Control Valve.
  - Perform POWERTRAIN VERIFICATION TEST - 6.7L.(Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control (ECM) - Standard Procedure)
- No**
- Repair or replace the open harness. Perform POWERTRAIN VERIFICATION TEST - 6.7L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control (ECM) - Standard Procedure)



#### 5. DTC P0487 ACTIVE

1. Reconnect the ECM harness connector.
2. Disconnect EGR Airflow Control Valve harness connector.
3. Ignition on, engine not running.
4. With the scan tool, read DTC's.

#### **Does DTC P0487 become active?**

**Yes** • Go To 8

**No** • Go To 6

## 6. OPEN AIRFLOW CONTROL VALVE TTVA MOTOR (-) CIRCUIT

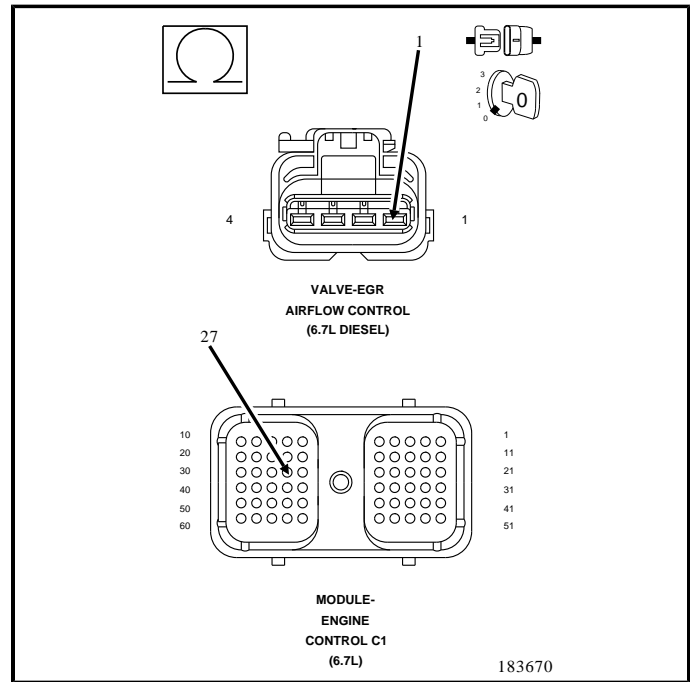
1. Turn the ignition off.
2. Disconnect the ECM harness connector.

**NOTE:** Check connectors - Clean/repair as necessary.

3. Measure the resistance of the (K158) TTVA motor (-) circuit from the EGR Airflow Control Valve harness connector to the ECM harness connector.

### **Is the measured resistance less than 10 ohms?**

- Yes**
- Go To 7
- No**
- Repair/replace open circuit in the engine harness.
  - Perform POWERTRAIN VERIFICATION TEST - 6.7L.(Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control (ECM) - Standard Procedure)

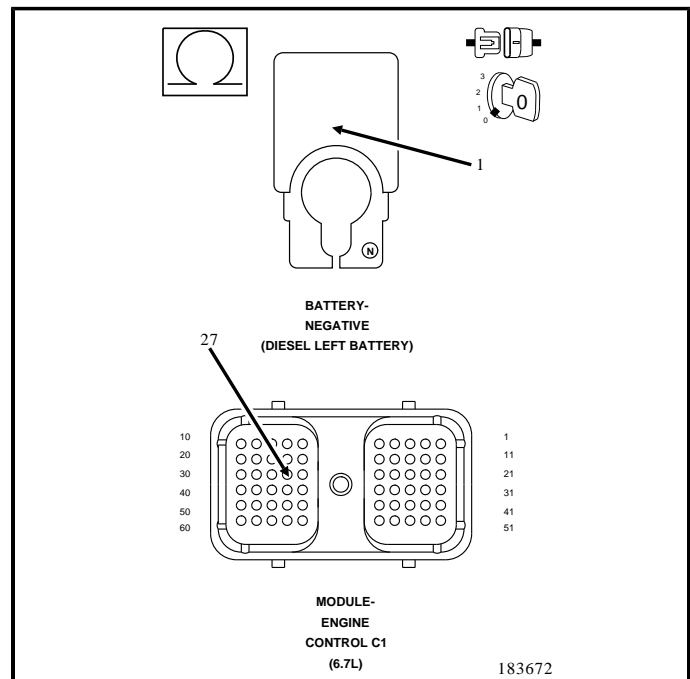


## 7. SHORTED AIRFLOW CONTROL VALVE (K158) TTVA MOTOR (-) CIRCUIT

1. Measure the resistance between the EGR Airflow Control Valve (K158) TTVA motor (-) circuit at the ECM harness connector and ground

### **Is the resistance greater than 100k ohms?**

- Yes**
- Go To 8
- No**
- Repair/replace short circuit to ground in the engine harness.
  - Perform POWERTRAIN VERIFICATION TEST - 6.7L.(Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control (ECM) - Standard Procedure)



## 8. DTC P0488 ACTIVE

1. Turn the ignition off.
2. Reconnect the ECM harness connector.
3. Reconnect the EGR Airflow Control Valve harness connector.
4. Ignition on, engine not running.

5. With the scan tool, read DTC's.

**Is DTC P0488 active?**

**Yes** • Go To 9

**No** • Repair complete. The removal/installation of the harness connectors cleared the condition.  
• Perform POWERTRAIN VERIFICATION TEST - 6.7L.(Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control (ECM) - Standard Procedure)

**9. ECM**

1. Turn the ignition off.
2. Disconnect the EGR Airflow Control Valve harness connector.
3. Ignition on, engine not running.
4. With the scan tool, read DTC's.

**Is P0487 active?**

**Yes** • Replace the EGR Airflow Control Valve .  
• Perform POWERTRAIN VERIFICATION TEST - 6.7L.(Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control (ECM) - Standard Procedure)

**No** • Replace the ECM.  
• Perform POWERTRAIN VERIFICATION TEST - 6.7L.(Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control (ECM) - Standard Procedure)