

## Additional Symptom-Based Troubleshooting

### 10.14 Optimized Idle Feature Does Not Function

The following procedure will troubleshoot Optimized Idle not functioning.

#### **WARNING**

##### PERSONAL INJURY

To avoid injury from accidental engine startup, replace a defective ECM with an ECM programmed with identical inputs and outputs.

Note : If a replacement ECM is needed, replace the ECM with an ECM programmed with Optimized Idle.

#### **CAUTION** **UNEXPECTED ENGINE START**

**To avoid injury from an unexpected startup of an engine equipped with the Optimized Idle system, remove the starter relay from the relay holder.**

#### 10.14.1 Check Diagnostic Data Reader for Codes

Perform the following steps to check the DDR for codes.

1. Plug DDR into connector.
2. Turn ignition ON.
3. Check the active and inactive codes for any Optimized Idle codes.
4. Turn ignition OFF.

Note : Service any code first.

- 4.a If an Optimized Idle code 62, 63, or 74 is logged, go to the appropriate flash code section, based on Optimized Idle code logged.
- 4.b If an Optimized Idle code 62, 63 or 74 is not logged, [refer to "10.14.2 Heater and Air Conditioning Fans Do Not Function"](#) .

#### 10.14.2 Heater and Air Conditioning Fans Do Not Function

Perform the following steps to troubleshoot the heater and A/C fans.

1. Check the heater and A/C blower fuse.
2. Turn ignition ON.
3. Plug in DDR.
4. Check the vehicle power down relay switch. Select switch light status (VEH PWR DOWN).
  - 4.a If the output status reads ON, check the relay and relay connections for proper operation. [Refer to "10.14.3 Check Optimized Idle Active Light"](#) .
  - 4.b If the output status does not read ON, install a test ECM. [Refer to "10.14.11 Verify Repairs"](#) .

#### 10.14.3 Check Optimized Idle Active Light

The Optimized Idle active light should flash when all of the following occur:

1. Engine idling.
2. The transmission is in NEUTRAL and high-range, if equipped.

3. The hood is closed and the park brake is set.
4. The cruise switch is turned ON.
  - 4.a If the active light is not flashing, [refer to "10.14.4 Check Idle Condition"](#) .
  - 4.b If the light is flashing, after the engine shuts down, turn the thermostat on. When the light flashes, if the alarm turns ON and the engine starts, the system is OK.
  - 4.c If the light is flashing, after the engine shuts down, turn the thermostat on. When the light flashes, if the alarm does not turn ON and the engine does not start, [refer to "10.14.10 Oil Temperature Sensor Connection Check"](#) .

## 10.14.4 Check Idle Condition

Perform the following steps to troubleshoot Optimized Idle:

1. Check idle condition.
2. Verify the engine is at idle and not running on VSG. Optimized idle will not function if the engine is running on VSG, unless the idle timer is enabled on VSG.
  - 2.a If the engine is not at idle, turn off the ISD on the VSG. [Refer to "10.14.11 Verify Repairs"](#) .
  - 2.b If the engine is at idle, [refer to "10.14.5 Check Idle Shutdown Enabled"](#) .

## 10.14.5 Check Idle Shutdown Enabled

Perform the following steps to troubleshoot Optimized Idle:

1. Check for idle shutdown enabled.
2. Using the DDR, view the calibration.
  - 2.a If idle shutdown is not enabled, enable the idle shutdown and set a shutdown time. [Refer to "10.14.11 Verify Repairs"](#) .
  - 2.b If the idle shutdown is enabled, [refer to "10.14.6 Check Input Status"](#) .

## 10.14.6 Check Input Status

Perform the following steps to troubleshoot Optimized Idle:

1. Check for input status.
2. Using the DDR, check the park brake input status with the hood closed, the transmission in NEUTRAL (and high-range if equipped) and the park brake set.
  - 2.a If the park brake status is ON, [refer to "10.14.9 Check the Thermostat"](#) .
  - 2.b If the park brake status is not ON, [refer to "10.14.7 Check Hood Switch"](#) .

## 10.14.7 Check Hood Switch

Perform the following steps to troubleshoot the hood switch:

1. Check hood switch.
2. Measure the resistance across the hood switch contacts with the hood closed. [See Figure "Optimized Idle Schematic"](#) .
  - 2.a If the resistance measures less than 100 , [refer to "10.14.8 Check Park Brake Switch"](#) .
  - 2.b If the resistance measures greater than 100 , replace or adjust the hood switch. [Refer to "10.14.11 Verify Repairs"](#) .

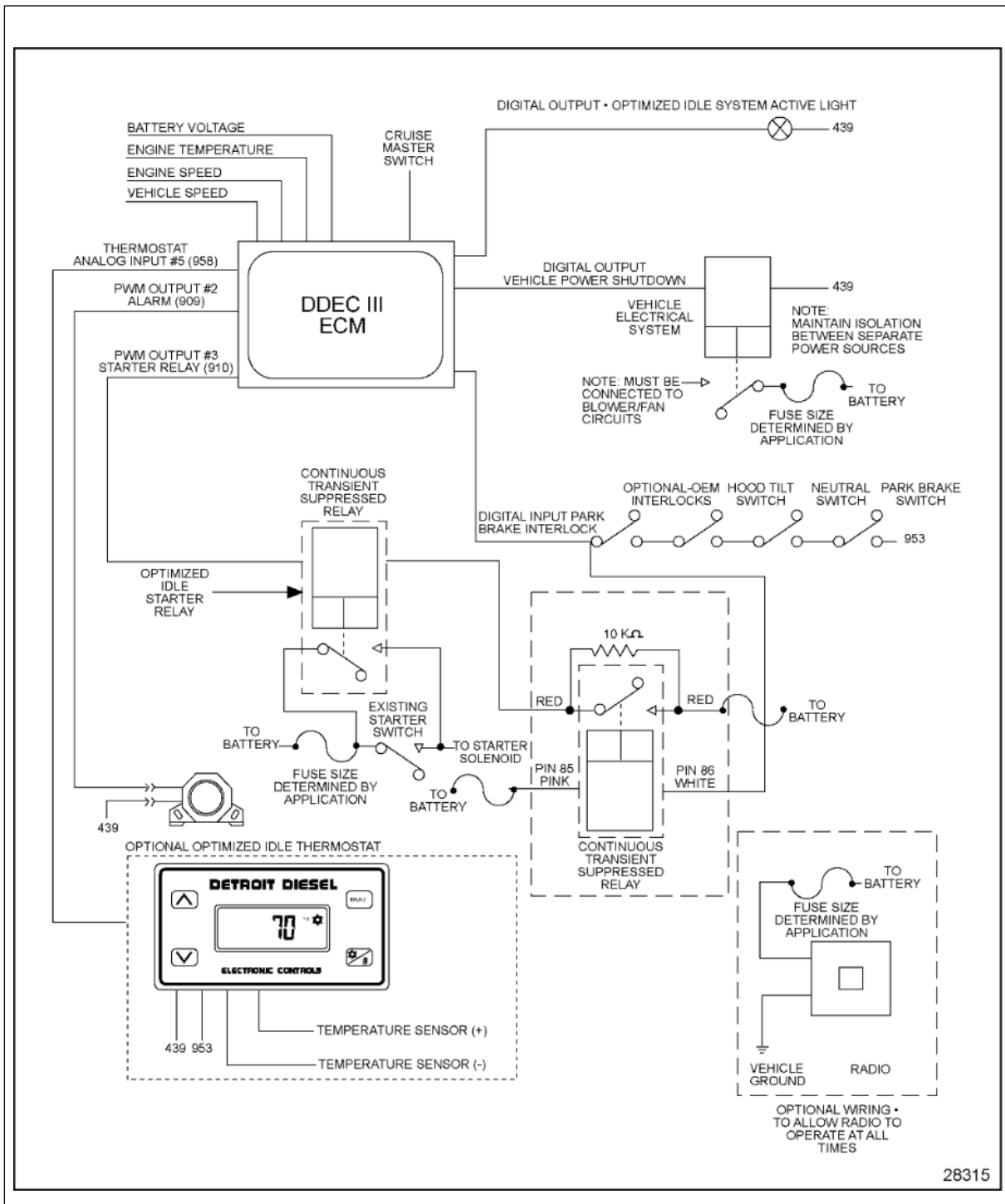


Fig 10.1, Optimized Idle Schematic

### 10.14.8 Check Park Brake Switch

Perform the following steps to troubleshoot the park brake switch and other OEM interlock devices.

1. Check the park brake switch and other OEM interlock devices (e.g. high-range switch).
2. Measure resistance across the park brake switch contacts with the park brake set.
  - 2.a If the measured resistance is less than 100 , the 953 ground wire is open somewhere between the ECM and the battery. Repair the break. [Refer to "10.14.11 Verify Repairs"](#) .

- 2.b If the measured resistance is more than 100 , replace the park brake switch or other OEM interlock devices. [Refer to "10.14.11 Verify Repairs"](#) .

## 10.14.9 Check the Thermostat

Perform the following steps to check the thermostat operation:

1. Turn ignition ON.
2. Plug in the DDR.
3. Select switch light status OPIDL T-STAT.
  - 3.a If the display reads ON with the thermostat enabled and the alarm is turned ON and the reader shows the switch status for the starter as ON after the alarm turns OFF, check the relay and starter solenoid connections. [Refer to "10.14.11 Verify Repairs"](#) .
  - 3.b If the display reads ON with the thermostat enabled and the alarm is turned ON and the reader does not show the switch status for the starter as ON after the alarm turns OFF, [refer to "10.14.10 Oil Temperature Sensor Connection Check"](#) .
  - 3.c If the display reads ON with the thermostat enabled and the alarm OFF, replace the alarm. [Refer to "10.14.11 Verify Repairs"](#) .
  - 3.d If the display does not read ON with the thermostat enabled, the thermostat input wire #958 is open between the thermostat and the ECM. Repair the open circuit. [Refer to "10.14.11 Verify Repairs"](#) .

## 10.14.10 Oil Temperature Sensor Connection Check

Perform the following steps to troubleshoot the OTS connection:

1. Check the OTS connection.
  - 1.a If the OTS connector is plugged into the oil temperature sensor, reprogram the ECM. [Refer to "10.14.11 Verify Repairs"](#) .
  - 1.b If the OTS connector is not plugged into the OTS, plug in the OTS connector. [Refer to "10.14.11 Verify Repairs"](#) .

## 10.14.11 Verify Repairs

Perform the following steps to verify repairs:

1. Turn ignition OFF.
2. Reconnect all connectors.
3. Close the hood; set the park brake; put the transmission in NEUTRAL and the high-range, if equipped.
4. Start the engine.
5. Turn the cruise master switch to the ON position. If it was on before the vehicle started, turn the switch to OFF and then to ON.
6. Wait for the engine to shut down. After the idle timer expires, the engine will either shutdown or continue to run to charge the battery or keep the oil temperature between 60°F (16°C) and 104°F (40°C).
7. Turn the thermostat on, if installed. Change the set point and heating/cooling mode until the thermostat requires the engine to start. The icons will flash. If the thermostat is not installed, wait for the lube oil temperature to fall below 60°F (16°C).
8. The alarm will sound and the engine will start. Vehicle power (blower fans) will turn on approximately 30 seconds after the engine starts, due to the thermostat.
  - 8.a If Optimized Idle operates properly, troubleshooting is complete.
  - 8.b If Optimized Idle does not operate properly, troubleshooting is complete. Review this section from the first step to find the error. [Refer to "10.14.1 Check Diagnostic Data Reader for Codes"](#) .