63 FLASH CODE 63 – PWM FAULT

Section **Page**

63.1 DESCRIPTION OF FLASH CODE 63

Flash Code 63 indicates that the pulse width modulation (PWM) output(s) used is either shorted to battery positive or open circuited.

63.2 SAE J1587 EQUIVALENT CODE FOR FLASH CODE 63

The SAE J1587 equivalent code for Flash Code 63 is s 057 3, or s 057 4, or s 058 3, or s 058 4, or s 059 3, s 059 4, or s 060 3, or s 060 4.

(FMI 3 = Short to Battery; FMI 4 = Open Circuit)

63.3 TROUBLESHOOTING FLASH CODE 63

The following procedure will troubleshoot Flash Code 63.

63.3.1 Determine Assignment

Perform the following steps to determine assignment.

1. Turn ignition ON.
2. Plug in the DDR.
3. Select INs/OUTs. To what is PWM assigned? Write down assignment vs cavity and code, listed in Table 63–1.

Code	PWM	Wire Location	Wire #
S057	PWM #1	J3	#908
S058	PWM #2	Y1	#909
S059	PWM #3	E2	#910
S060	PWM #4	X2	#911

Table 63–1 PWM Assignments

4. Select code display.
5. Determine Failure Mode Identifier (FMI).
   [a] If FMI 3 displays, there is a short to the battery. Refer to section 63.3.2
   [b] If FMI 4 displays, refer to step 6.
6. Verify function.
   [a] If there is a component wired to this position, refer to section 63.3.3.
   [b] If there is no component wired to this position, reprogram to eliminate the assigned function. (A change may be required to the DDC mainframe.) Refer to section 63.3.9.

63.3.2 Verify Short to Battery

Perform the following steps to verify a short to battery:

1. Turn ignition OFF.
2. Disconnect 30–pin connector: engine connector if PWM 2, 3 or 4; vehicle connector if PWM 1.
3. Measure voltage between cavity with the code and the good ground..
   [a] If the voltage measurement is greater than 3 volts, the connector is shorted to the battery. Repair. Refer to section 63.3.9.
   [b] If the voltage measurement is less than 3 volts, contact Detroit Diesel Technical Service.

63.3.3 Check Component Connections

Perform the following steps to check component connections:

1. Turn the vehicle ignition switch to the OFF position.
2. Inspect the connections of the PWM wire associated with the flash code logged at both harness connector and the item being driven.
   [a] If the connectors are damaged or broken, repair or replace the damaged terminals. Verify repairs. Refer to section 63.3.9.
   [b] If the connectors are not damaged or broken, ensure the item is connected to the pulse width modulation wire. If the item is not connected, repair or replace the connector. Verify repairs. Refer to section 63.3.9.
   [c] If the item is connected, measure the resistance. Refer to section 63.3.8.
   [d] If this is an Optimized Idle vehicle, refer to section 63.3.4.

63.3.4 Check Installation of the Starter Harness Overlay Kit

Perform the following steps to check for proper installation of the starter harness overlay kit when a Code 63 is logged and the engine does not start; see Figure 63–1:

1. Turn off ignition (Optimized Idle Applications).
2. Remove relay from relay block.
3. Measure voltage between terminal 85 on the relay block and a good ground.
   [a] If voltage measurement is less than 4 VDC, the power lead to the relay is open. Verify connection of wire #439 from the starter relay harness overlay to DDEC wire #439 in the cab.
   [b] If voltage measurement is more than 4 VDC, measure voltage between terminal 86 on the relay block and a good ground. If voltage is less than 4 VDC, the resistor built into the harness is defective. Replace the harness and verify repairs. Refer to section 63.3.5.

[c] If voltage measurement is more than 4 VDC, measure voltage between terminal 86 on the relay block and a good ground. If voltage is more than 4 VDC, the circuit between terminal 86 on the new relay and power side of Optimized Idle starter relay is open. Repair the open circuit and verify repairs. Refer to section 63.3.9.

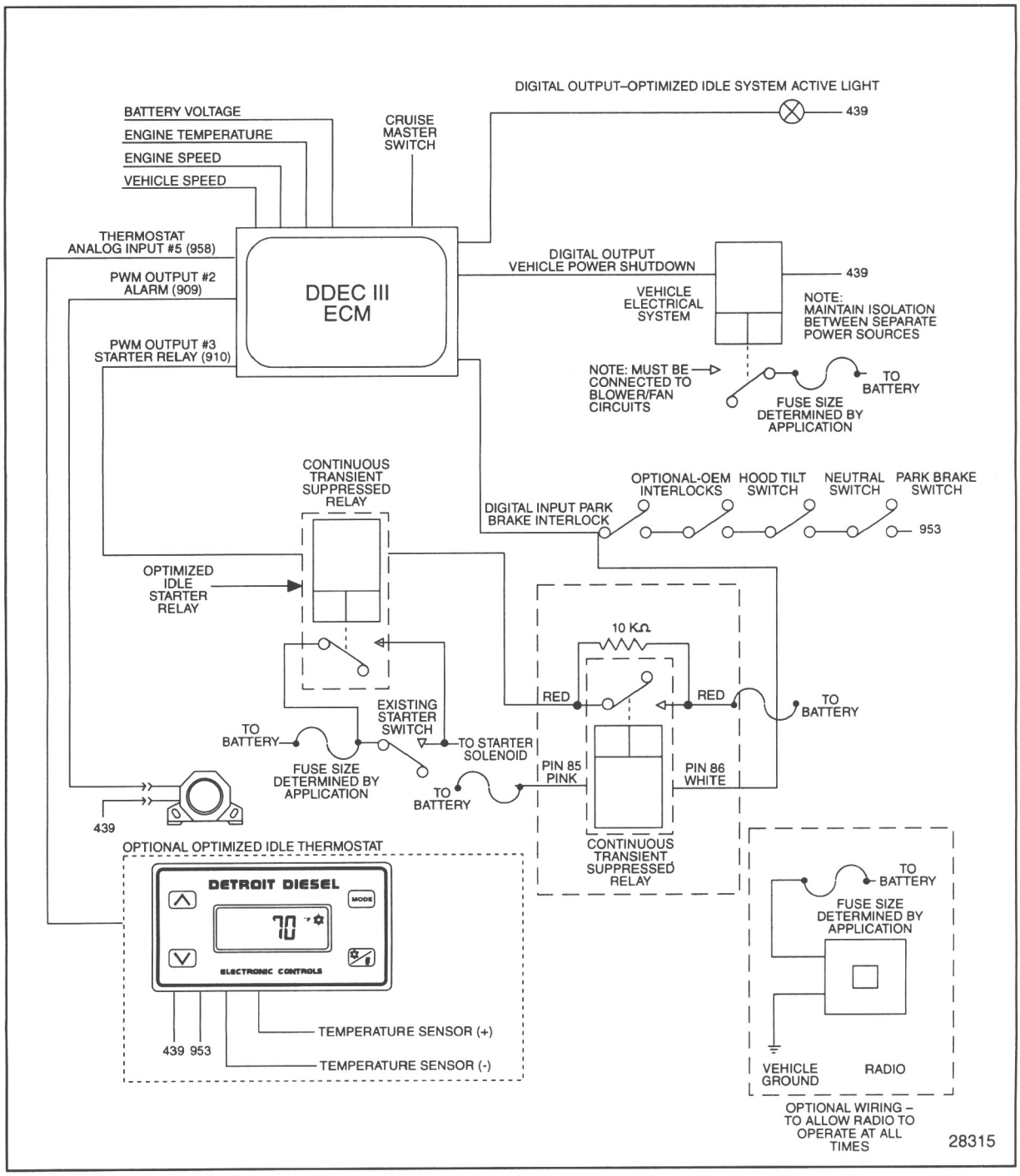

Figure 63–1 Optimized Idle Schematic

63.3.5 Verify Installation of Starter Relay Harness Overlay Service Kit

Use the following procedure to verify installation of the starter relay harness overlay service kit on Optimized Idle equipped vehicles only.

1. Turn ignition to ON position. Start engine.
2. Toggle cruise ON/OFF switch from OFF to ON. The Optimized Idle light should flash.
3. After the engine shuts down, turn the thermostat on by pressing any button.
4. Press UP or DOWN arrow until the heat or cool symbol begins to flash.
   [a] If the engine starts, the repairs are complete. Refer to section 63.3.9.
   [b] If the engine does not start, refer to section 63.3.6.

63.3.6 Engine Does Not Start in Optimized Idle Mode

Perform the following steps to start the engine.

1. Verify the hood is closed; the transmission is in neutral; the parking brake is set; and the vehicle wheels are blocked.

CAUTION:

To avoid personal injury, before starting and running the engine, be sure that the vehicle is parked on a level surface and that the wheels are properly blocked.

2. Remove the overlay relay from the relay block.
3. Measure voltage between terminal 85 and terminal 86 of the relay block.
   [a] If voltage measurement is less than 4 VDC, the white wire in the overlay harness is open. Repair the open circuit between the overlay harness and the hood/cab switch. Refer to section 63.3.5.
   [b] If voltage measurement is more than 4 VDC, the relay is inoperative. Replace the relay. Refer to section 8.6.5 of the proper engine Service Manual. Verify the repairs. Refer to section 63.3.9.
   [c] If this is a Series 55, refer to section 63.3.7.

63.3.7 Verify Harness

Perform the following steps to verify harness.

1. If this is a Series 55 engine, verify the engine harness is correct, especially PWM 3 and 4.
   [a] If the harness is not correct, replace it. Refer to section 63.3.9.
   [b] If the harness is correct, refer to section 63.3.8.

63.3.8 Measure Resistance Between Connector and the Electronic Control Module Case

Perform the following steps to measure resistance between the connector and the ECM case:

1. Turn the vehicle ignition to the OFF position.
2. Ensure connector is installed on the engine harness side or vehicle harness side..
3. Disconnect the PWM wire associated with the code logged at the component.
4. Measure the resistance between the removed connector and the ECM case.
   [a] If the resistance measurement is between 46,000 and 48,000 Ω, verify the pin assignment with wiring - view with DDR. Refer to section 63.3.9.
   [b] If the resistance measurement is not between 46,000 and 48,000 Ω, the wire is open or shorted to battery. Repair or replace the wire. Verify repairs. Refer to section 63.3.9.

63.3.9 Verify Repairs

Perform the following steps to verify repairs for flash code 63. To check Optimized Idle, refer to *Optimized Idle Manual* 6SE518.

1. Reconnect all connectors.
2. Clear all codes from the DDR.
3. Plug in the DDR.
4. Turn vehicle ignition switch to the ON position.
   [a] If flash code 63 was not logged, no further troubleshooting is required.
   [b] If flash code 63 was logged, please review this section from the first step to find the error. Refer to section 63.3.1.