

# DETROIT DIESEL



## DDEC® VI Troubleshooting

**NUMBER:** 08 DDEC VI-50   **S.M. REF.:** 59.1.1   **ENGINE:** EPA07 Series 60   **DATE:** October 2008

**SUBJECT:** SPN 651/FMI 14

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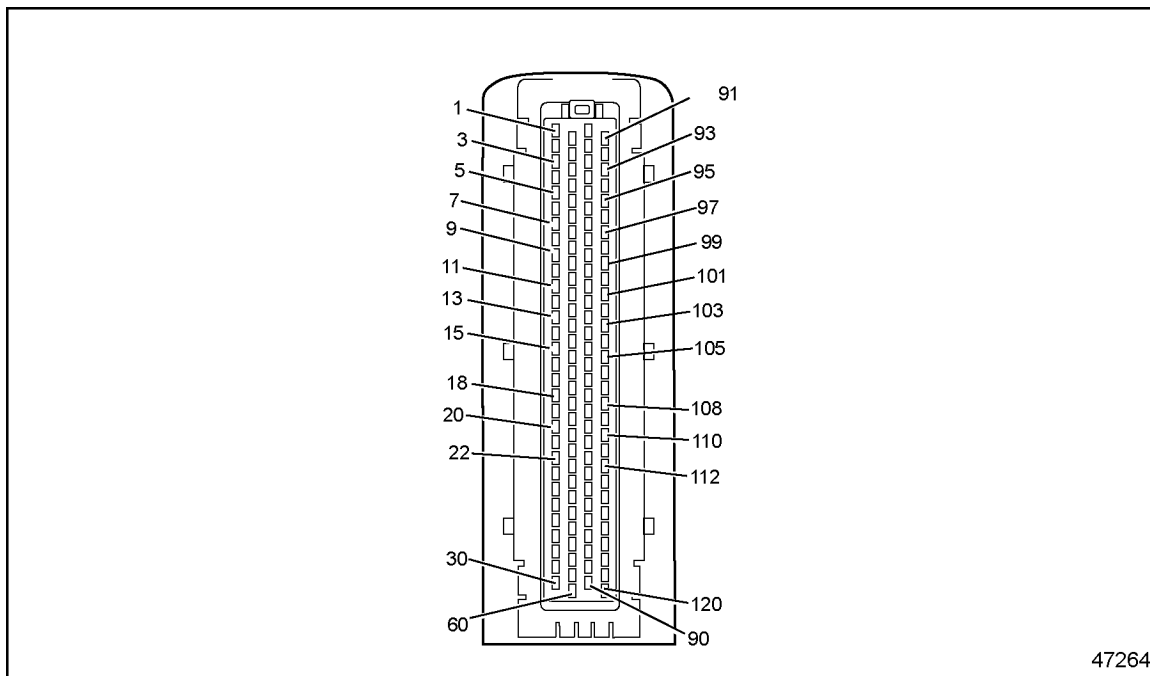
Pin 11 has been updated to pin 23 of the MCM 120-pin connector.

### 59.1.1 OPEN CIRCUIT, SHORT TO GROUND OR SHORT TO POWER CHECK

Check as follows:

1. Check for multiple codes.
  - [a] If fault code 168/1 is active in addition to other codes, service 168/1 first. Refer to section "SPN 168/FMI 1."
  - [b] If fault 652/14 and 653/14 are active in addition to 651/14, go to step 2.
  - [c] If only fault code 651/14 is active, go to step 10.
2. Turn the ignition OFF.
3. Disconnect the Front Injector Harness 12-pin connector.
4. Inspect the Front Injector Harness 12-pin connector for bent or spread pins, inspect the connector seal for damage (signs of water or oil intrusion).
  - [a] If water or oil intrusion, bent or spread pins are found, repair as necessary. Verify repairs.
  - [b] If connector shows no signs of damage, go to step 5.
5. Measure the resistance between pins 10 and 1 on the valve cover side of the Front Injector Harness. If using J-48671-10, measure between injector #1 pins 1 and 2.
  - [a] If the resistance is greater than 3  $\Omega$ , replace the under valve cover injector harness. Verify repairs.
  - [b] If the resistance is less than 3  $\Omega$ , go to step 6.
6. Disconnect the MCM 120-pin connector.
7. Measure the resistance between pin 23 of the MCM 120-pin connector and pin 10 of the Front Injector Harness 12-pin connector. See Figure 1.
  - [a] If the resistance is less than 3  $\Omega$ , go to step 8.

- [b] If the resistance is greater than  $3\ \Omega$ , repair the open between pin 23 of the MCM 120-pin connector and pin 10 of the Front Injector Harness 12-pin connector. Verify repairs.
8. Disconnect the negative battery cable.
9. Measure the resistance between the positive battery post and pin 23 of the MCM 120-pin connector.
- [a] If the resistance is greater than  $3\ \Omega$ , contact the Detroit Diesel Customer Support Center at 313-592-5800 for MCM replacement authorization.
- [b] If the resistance is less than  $3\ \Omega$ , repair the short to power between battery positive and pin 23 of the MCM 120-pin connector. See Figure 1. Verify repairs.



**Figure 1 120-pin MCM Connector**

10. Turn the ignition OFF.

11. Disconnect the Front Injector Harness 12-pin connector.
12. Measure the resistance between pin 10 and pin 1 on the valve cover side of the injector harness.
  - [a] If the resistance is greater than 3  $\Omega$ , go to step 13.
  - [b] If the resistance is less than 3  $\Omega$ , go to step 18.
13. Remove the upper valve cover.
14. Disconnect injector #1.
15. Measure the resistance between pin 10 and pin 1 on the valve cover side of the injector harness and pin 1 of the injector #1 harness connector.
  - [a] If the resistance is greater than 3  $\Omega$ , replace the under valve cover injector harness. Verify repairs.
  - [b] If the resistance is less than 3  $\Omega$ , go to step 16.
16. Measure the resistance between pin 1 on the valve cover side of the injector harness and pin 2 of the injector #1 harness connector.
  - [a] If the resistance is less than 3  $\Omega$ , go to step 17.
  - [b] If the resistance is greater than 3  $\Omega$ , replace the under valve cover injector harness. Verify repairs.
17. Measure the resistance between pin 1 on the valve cover side of the injector harness and ground.
  - [a] If the resistance is less than 3  $\Omega$ , replace the under valve cover injector harness. Verify repairs.
  - [b] If the resistance is greater than 3  $\Omega$ , replace injector #1. Verify repairs.
18. Measure the resistance between pin 1 on the valve cover side of the injector harness and ground. If using J-48671-10, measure between injector #1 pin 1 and ground.
  - [a] If the resistance is less than 3  $\Omega$ , go to step 19.
  - [b] If the resistance is greater than 3  $\Omega$ , go to step 22.
19. Remove the upper valve cover.
20. Disconnect the injector #1 connector.
21. Measure the resistance between pin 1 on the valve cover side of the injector harness and ground. If using J-48671-10, measure between injector #1 pin 1 and ground.

- [a] If the resistance is less than 3  $\Omega$ , replace the under valve cover injector harness. Verify repairs.
  - [b] If the resistance is greater than 3  $\Omega$ , replace injector #1. Verify repairs.
22. Disconnect the MCM.
23. Measure the resistance between pin 1 on the MCM side of the injector harness connector and pin 26 of the 120-pin MCM connector.
- [a] If the resistance is greater than 3  $\Omega$ , repair the open circuit between pin 1 of the Front Injector Harness 12-pin connector and pin 26 of the 120-pin MCM connector. Verify repairs.
  - [b] If the resistance is less than 3  $\Omega$ , repair the short to ground between pin 1 of the Front Injector Harness 12-pin connector and pin 26 of the 120-pin MCM connector. Verify repairs.



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## **ADDITIONAL SERVICE INFORMATION**

Additional service information is available in one of the DDEC VI troubleshooting guides.

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