
Analyzing PCM Data

Various Data Procedures

Once the fault area is identified, the circuit must be checked to determine if the wiring or component is at fault. Use any of the following methods to diagnose a suspected PCM wire circuit or device. Some methods are particular to a certain type of PCM device.

- Change Condition to Cause Response by Input
- Change Input and Verify Output Response
- Click Testing/Output Test Mode (Solenoids/Relays)
- Coil Resistance (Solenoids/Relays)
- Harness Opens
- Harness Shorts

Change Condition to Cause Response by Input

The purpose is to verify sensor receives and responds to changes.

1. Select, view and record the appropriate sensor PID(s).
2. Create condition or cause condition to change.
3. If reading changes appropriately, then it should be operating OK.

Examples:

- View EOT PID while engine warms up.
- It should change from a higher voltage (2.6V) for a cold engine, to a lower voltage as the engine warms up (0.6V).
- Move accelerator pedal, observe AP PID change.
- Press brake pedal, watch BOO PID change states.

Change Input and Verify Output Response

The purpose is to verify how the PCM and actuator circuit responds to sensor input.

1. Select, view the appropriate sensor PID(s).
2. Create condition to cause input condition to change.
3. Observe change (response) in actuator PID or actuator signal circuit measured by a measuring device.

Example:

- Increase accelerator pedal position under load, observe RPM PID and circuit change.

Click Testing/Output Test Mode (Solenoids/Relays)

The purpose is to activate solenoid or relay from PCM by entering Output Test Mode.

1. Key on.
2. Enter Output Test Mode.

3. Turn outputs on and then off.
4. Listen for relays to click on and off. If a breakout box is connected to the PCM, measure the control circuit while turning the outputs on and off.

Examples:

- IDM relay and PCM power relay.
- Glow plug relay receives on-command for 5 seconds.

Coil Resistance (Solenoids/Relays)

The purpose is to measure the correct resistance value of device.

1. Key off.
2. DLC disconnected.
3. Disconnect component from vehicle harness.
4. Using an ohmmeter and referencing the Static Resistance Value Chart in this section, measure across the component terminals in question.

Harness Opens

The purpose is to check harness for open circuits

1. Key off.
2. DLC disconnected from any diagnostic tools.
3. Disconnect component from vehicle harness.
4. Install breakout box.
5. Using an ohmmeter, isolate the circuit in question from the breakout box to the component connector signal pin.
6. Reading should be less than 5 ohms.

Harness Shorts

The purpose is to check harness for short circuits (to ground or power).

1. Key off only.
 2. DLC disconnected from any diagnostic tools.
 3. Disconnect component from vehicle harness.
 4. Using an ohmmeter, measure between the signal circuit and signal return circuit or power ground circuit or vehicle power.
 5. If reading is less than 10 kohms, then the two circuits are shorted.
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