

C: Reference Voltage

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C1 CHECK VEHICLE BATTERY POWER CIRCUIT

- Install breakout box; connect PCM to breakout box.
- Key on, engine off.
- Measure voltage between PCM Power Test Pins 55, 71 and 97 and PCM Ground Test Pins 25, 51, 76 (E-Series only), 77 and 103. Note voltage.
- Measure voltage across battery terminals. Note voltage.

Are both voltages greater than 10.5 volts, and are both voltages within 1.0 volt of each other?

Yes	No
GO to C2 .	GO to A1 .

C2 CHECK VREF VOLTAGE

- Measure voltage between PCM Test Pins 90 and 91.

Was voltage between 4.0 volts and 6.0 volts?

Yes	No
GO to C3 .	Less than 4.0 volts, GO to C5 . Greater than 6.0 volts, GO to C4 .

C3 CHECK VREF AND SIG RTN CIRCUITS FOR CONTINUITY

- Key off.
- Disconnect faulty sensor.
- Disconnect PCM from breakout box.
- Measure resistance between PCM Test Pin 90 and VREF circuit at harness connector of the sensor that sent you here.
- Measure resistance between PCM Test Pin 91 and SIG RTN circuit at harness connector of the sensor that sent you here.

Is each resistance less than 5.0 ohms?

Yes	No
RESTORE vehicle. CLEAR DTCs and RETEST.	REPAIR open in VREF or SIG RTN circuits. RESTORE vehicle. CLEAR DTCs and RETEST.

C4 CHECK FOR EXCESS VOLTAGE ON VREF CIRCUIT

- Disconnect PCM from breakout box.

- Key on, engine off.
- Measure voltage between PCM Test Pin 90 and battery ground.

Is voltage less than 0.5 volts?

Yes	No
REPLACE PCM. RESTORE vehicle. CLEAR DTCs and RETEST.	REPAIR short to power in harness. RESTORE vehicle. CLEAR DTCs and RETEST.

C5 CHECK FOR SHORTED ACCELERATOR PEDAL (AP) SENSOR

- Disconnect AP sensor harness connector.
- Key on, engine off.
- Measure voltage between PCM Test Pins 90 and 91.
- Key off.

Was voltage less than 4.0 volts?

Yes	No
GO to C6 .	REPLACE AP sensor. RESTORE vehicle. CLEAR DTCs and RETEST.

C6 CHECK FOR SHORTED CAMSHAFT POSITION (CMP) SENSOR

- Disconnect CMP sensor harness connector.
- Key on, engine off.
- Measure voltage between PCM Test Pins 90 and 91.
- Key off.

Was voltage less than 4.0 volts?

Yes	No
GO to C7 .	REPLACE CMP sensor. RESTORE vehicle.

C7 CHECK FOR SHORTED INJECTION CONTROL PRESSURE (ICP) SENSOR

- Disconnect ICP sensor harness connector.
- Key on, engine off.
- Measure voltage between PCM Test Pins 90 and 91.
- Key off.

Was voltage less than 4.0 volts?

Yes	No
GO to C8 .	REPLACE ICP sensor. RESTORE vehicle.

C8 CHECK FOR SHORTED EXHAUST BACK PRESSURE (EBP) SENSOR

- Disconnect EBP sensor harness connector.
- Key on, engine off.
- Measure voltage between PCM Test Pins 90 and 91.
- Key off.

Was voltage less than 4.0 volts?

Yes	No
GO to C9 .	REPLACE EBP sensor. RESTORE vehicle.

C9 CHECK FOR SHORTED MANIFOLD ABSOLUTE PRESSURE MAP SENSOR

- Disconnect MAP sensor harness connector.
- Key on, engine off.
- Measure voltage between PCM Test Pin 90 and 91.
- Key off.

Was voltage less than 4.0 volts?

Yes	No
Leave MAP sensor disconnected. GO to C10 .	REPLACE MAP sensor. RESTORE vehicle.

C10 SIG RTN CIRCUIT CHECK

- Measure resistance between PCM Test Pin 91 and PCM Test Pins 25, 51, 76 (E-Series only), 77 and 103.

Is each resistance less than 5 ohms?

Yes	No
GO to C11 .	REPLACE PCM. RESTORE vehicle.

C11 CHECK VREF CIRCUIT FOR SHORT TO GROUND

- Disconnect PCM from breakout box.
- AP, CMP, ICP, EBP, MAP and BARO disconnected.
- Measure resistance between PCM Test Pin 90 and PCM Test Pins 25, 51, 76 (E-Series only), 77, 91 and 103.

Are all resistances greater than 10,000 ohms?

Yes	No
REPLACE PCM. RESTORE vehicle. RERUN Scan Tool Diagnostic Test.	REPAIR short to ground. RESTORE vehicle. CLEAR DTCs and RETEST.

