Chrysler
ENGINE CODE BOOK

Produced by AAMCO Transmissions, Inc.
Technical Services Department

Every attempt has been made to ensure the accuracy of the information contained in this book. Due to variations in engine and transmission control systems from year to year, it is up to the technician using this book to verify the information is appropriate for the transmission he/she is working on.

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Code P0107 MAP Sensor Voltage Too Low

Theory of Operation

The Manifold Absolute Pressure (MAP) Sensor measures manifold absolute and ambient barometric pressure within the intake manifold. The sensor provides a 0 to 5 volt signal to the Powertrain Control Module (PCM). The MAP Sensor signal to the PCM increases in voltage with increased pressure (lower vacuum) in the intake manifold. A decrease in pressure (higher vacuum) in the manifold results in a lower voltage signal to the PCM. With the key on engine off the PCM senses a high voltage signal from the MAP Sensor because it detects the ambient barometric pressure. With the engine running the signal is lower because of the vacuum created inside the manifold.

Circuit Description

The MAP Sensor circuit consists of the PCM, MAP Sensor and associated wiring and connectors. The PCM supplies 5 volts and ground to the MAP Sensor for its internal circuitry. A third circuit between the MAP Sensor and PCM is used by the PCM to monitor the voltage signal from the MAP Sensor.

Conditions for Setting the Code

- The engine RPM above 416 but less than 1500.
- TPS voltage less than 1.13 volts.
- Battery voltage greater than 10.4 volts.
- The MAP Sensor signal voltage is below 0.1 of a volt for 2 seconds with the engine running.

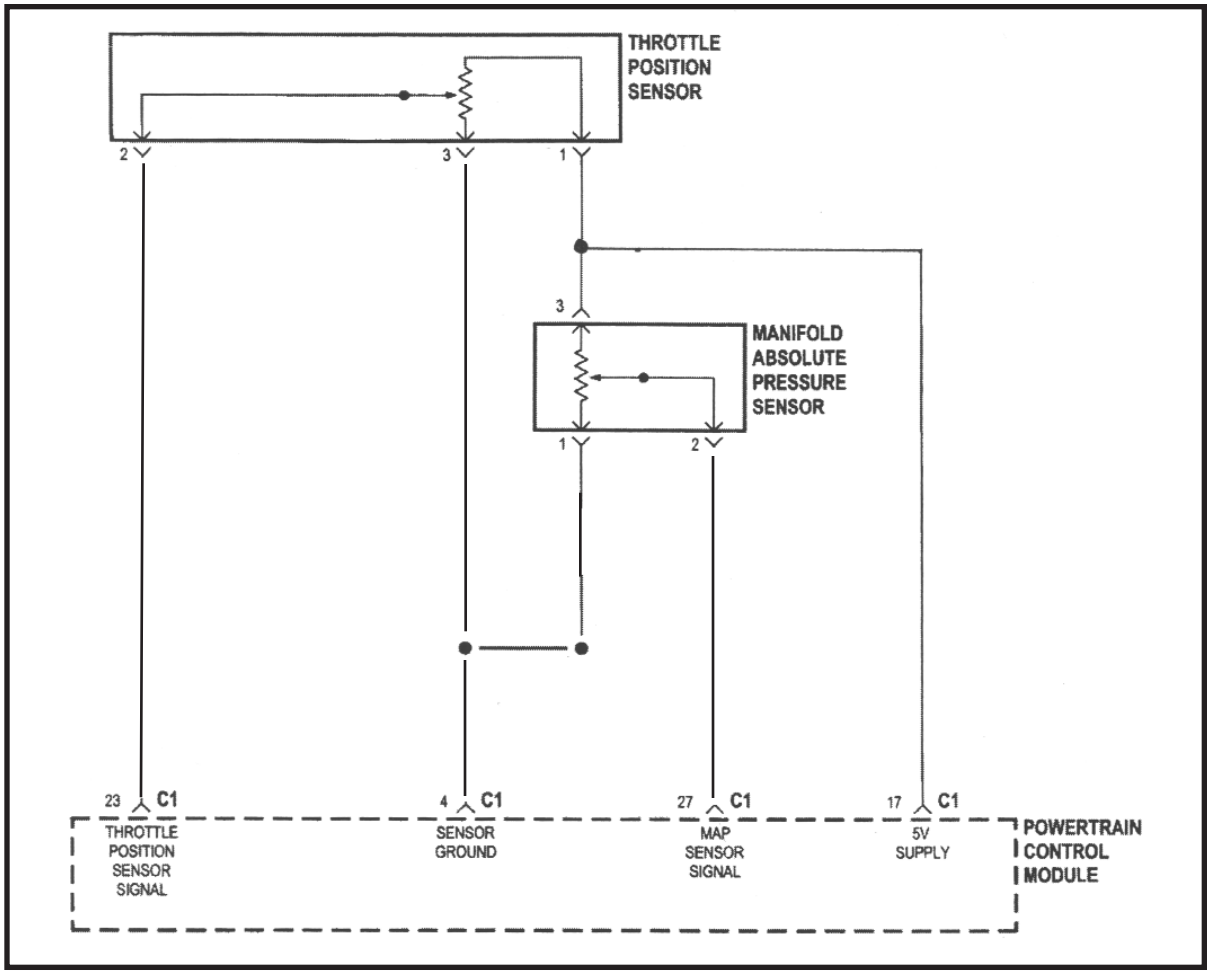
Action Taken when Code Sets

- The PCM will illuminate the malfunction indicator lamp during the second consecutive trip the conditions for setting the code have been met.
- The PCM will store the conditions, which were present when the code sets in Freeze Frame and Failure Records.

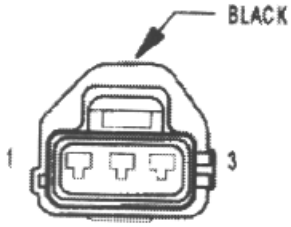
Possible Causes

- Damaged wiring or connectors in the MAP Sensor electrical circuits.
- Faulty MAP Sensor
- Faulty PCM

Wiring Diagram



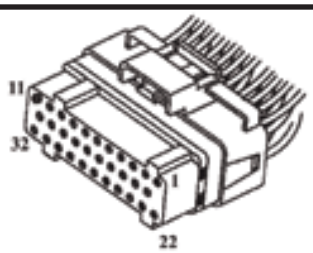
Manifold Absolute Pressure Sensor



Connector Information		
Pin	**Wire Color**	**Function**
1	BK/LB	Sensor Ground
2	DG/RD or RD/WT	MAP Sensor Signal
3	VT/WT, OR, or WT/BK	5V Supply

Figure 1

PCM Connector (A) Black



MAP Sensor Wiring Information

Vehicle	Pin	Function	Wire Color
1998-2001 Durango;	4	Sensor Ground	BK/LB
1996-1999 Dakota;	17	5 Volt Supply	VT/WT
1996-2002 Pick-up	27	MAP Sensor Signal	DG/RD
2000-2003 Dakota;	4	Sensor Ground	BK/LB
1996-2003 Dodge Van	17	5 Volt Supply	OR
	27	MAP Sensor Signal	DG/RD
1996-1998 Jeep	4	Sensor Ground	BK/LB
	17	5 Volt Supply	WT/BK
	27	MAP Sensor Signal	RD/WT

Figure 2

Diagnosis

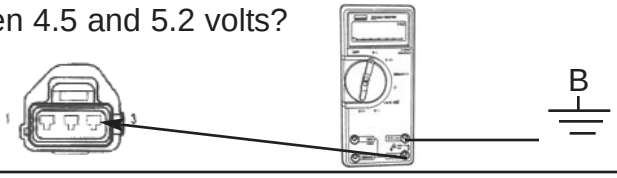
Step 1

Connect your scan tool to the vehicle. Check and record all diagnostic trouble codes, failure records and freeze frame data. Start the engine and observe the MAP Sensor voltage data parameter on scan data. Is the voltage below 0.1 of a volt?
If yes, go to step 2.
If no, the problem is intermittent. Check the following:

- With the engine running wiggle the MAP Sensor wiring and connectors while observing the MAP Sensor voltage data parameter. Look for the voltage values to change or the code to set.
- Inspect the sensor wiring harness for damaged insulation, broken, pinched or frayed wiring. Also check the harness connectors for corroded damaged or pushed out terminals.
- Review the Freeze Frame information and try to duplicate the conditions under which the code previously set.

Step 2

With the ignition key off disconnect the MAP Sensor harness connector. Inspect the sensor and harness connectors for corroded, damaged or pushed out terminals. With the ignition key on use your DVOM and measure the voltage on the MAP Sensor 5 Volt Supply circuit terminal (pin 3) of the sensor harness connector **(See Figure 1)**. Is the voltage between 4.5 and 5.2 volts?
If yes, go to step 3.
If no, go to step 6.

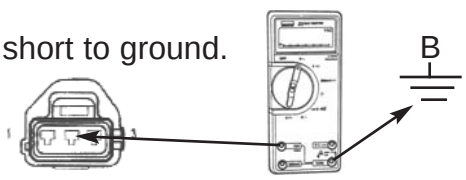


Step 3

With the ignition key off disconnect the MAP Sensor harness connector. Inspect the sensor and harness connectors for corroded, damaged or pushed out terminals. With your scan tool connected to the vehicle turn the ignition key on and observe the MAP Sensor voltage data parameter. Is the voltage above 1.2 volts?
If yes, replace the MAP Sensor.
If no, go to step 4.

Step 4

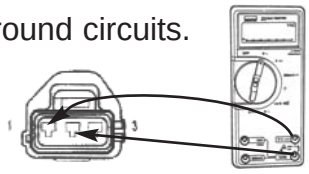
With the ignition key off disconnect the MAP Sensor and PCM harness connectors. Inspect the PCM, MAP Sensor and harness connectors for corroded, damaged or pushed out terminals. Using your DVOM measure the resistance between the MAP Sensor signal circuit terminal (pin 2) of the sensor harness connector and a good ground. Is the resistance 5 Ohms or less?
If yes, repair the MAP Sensor signal circuit for a short to ground.
If no, go to step 5.



Diagnosis Continued

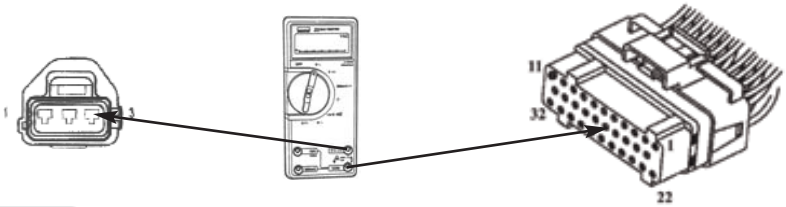
Step 5

With the ignition key off disconnect the MAP sensor and PCM harness connectors. Inspect the PCM, MAP sensor and harness connectors for corroded, damaged or pushed out terminals. Using your DVOM measure the resistance between the MAP sensor signal (pin 2) and ground (pin 1) circuit terminals of the sensor harness connector. Is the resistance 5 Ohms or less?
If yes, repair the short between the MAP sensor signal and ground circuits.
If no, replace the PCM.



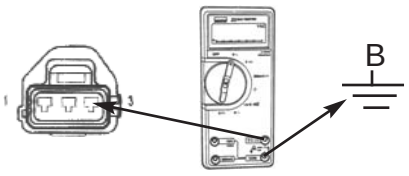
Step 6

With the ignition key off disconnect the MAP sensor and PCM harness connectors. Inspect the PCM, MAP sensor and harness connectors for corroded, damaged or pushed out terminals. Using your DVOM measure the resistance between the MAP Sensor 5-volt supply circuit terminals of the PCM (pin 17) and MAP sensor (pin 3) harness connectors **(See Figure 2)**. Is the resistance 5 Ohms or less?
If yes, go to step 7.
If no, repair the open MAP sensor 5-volt supply circuit.



Step 7

With the ignition key off disconnect the MAP sensor and PCM harness connectors. Inspect the PCM, MAP sensor and harness connectors for corroded, damaged or pushed out terminals. Using your DVOM measure the resistance between the MAP Sensor 5-volt supply circuit terminal (pin 3) of the sensor harness connector and a good ground. Is the resistance 5 Ohms or less?
If yes, repair the MAP sensor signal circuit for a short to ground.
If no, replace the PCM.



CODE P0108
Map Sensor Voltage Too High

Chrysler 3.9 LiterV6, 5.2 & 5.9 Liter V8
Code P0108 MAP Sensor Voltage Too High

Theory of Operation

The Manifold Absolute Pressure (MAP) Sensor measures manifold absolute and ambient barometric pressure within the intake manifold. The sensor provides a 0 to 5 volt signal to the Powertrain Control Module (PCM). The MAP Sensor signal to the PCM increases in voltage with increased pressure (lower vacuum) in the intake manifold. A decrease in pressure (higher vacuum) in the manifold results in a lower voltage signal to the PCM. With the key on engine off the PCM senses a high voltage signal from the MAP Sensor because it detects the ambient barometric pressure. With the engine running the signal is lower because of the vacuum created inside the manifold.

Circuit Description

The MAP Sensor circuit consists of the PCM, MAP Sensor and associated wiring and connectors. The PCM supplies 5 volts and ground to the MAP Sensor for its internal circuitry. A third circuit between the MAP Sensor and PCM is used by the PCM to monitor the voltage signal from the MAP Sensor.

Conditions for Setting the Code

- The engine RPM above 400.
- TPS voltage less than 1.13 volts.
- Battery voltage greater than 10.4 volts.
- The MAP Sensor signal voltage is higher than 4.88 volts at start up or with the engine running for 2 seconds.

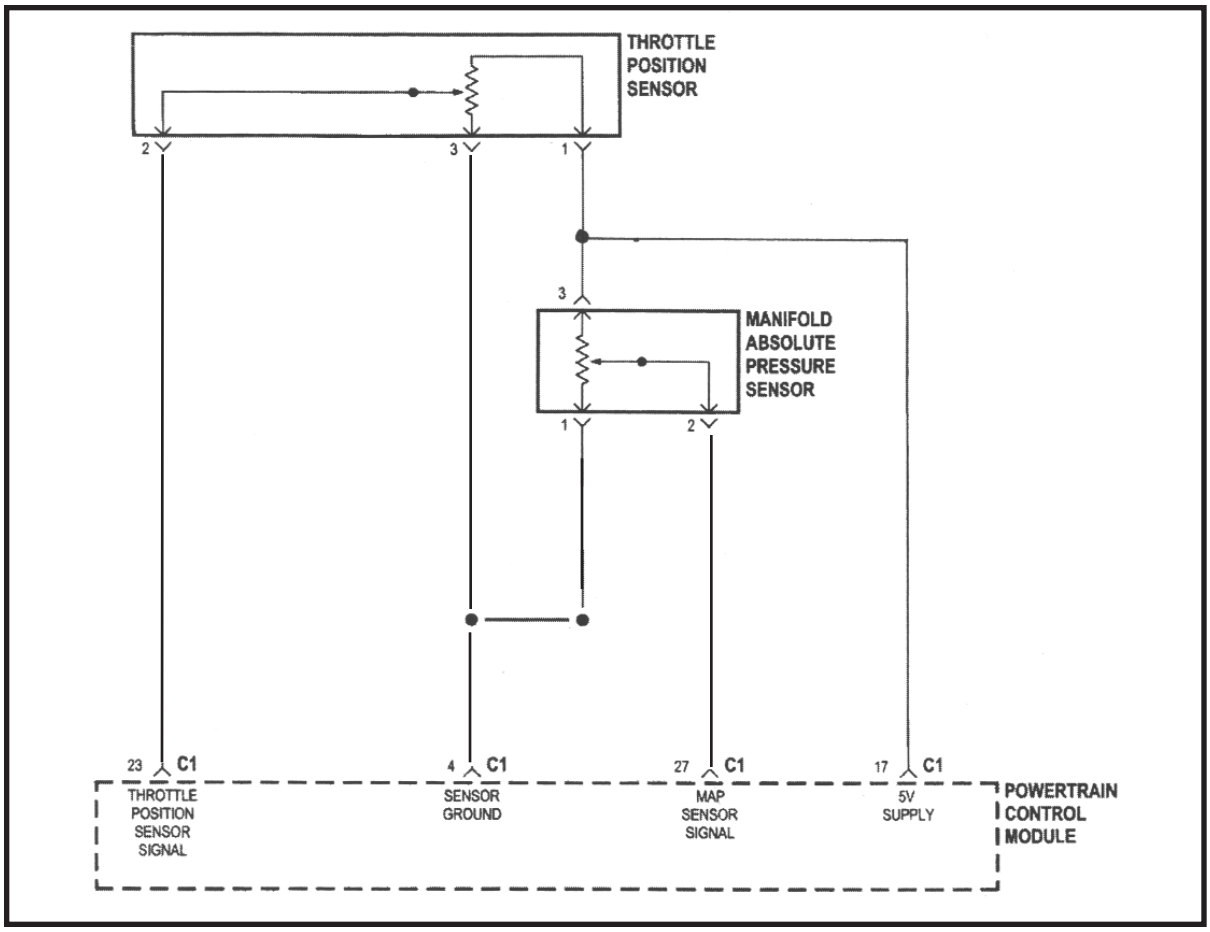
Action Taken when Code Sets

- The PCM will illuminate the malfunction indicator lamp during the second consecutive trip the conditions for setting the code have been met.
- The PCM will store the conditions, which were present when the code sets in Freeze Frame and Failure Records.

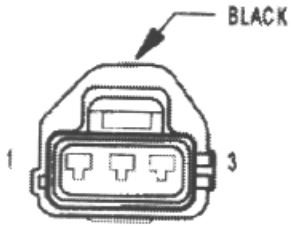
Possible Causes

- Damaged wiring or connectors in the MAP Sensor electrical circuits.
- Faulty MAP Sensor
- Faulty PCM

Wiring Diagram



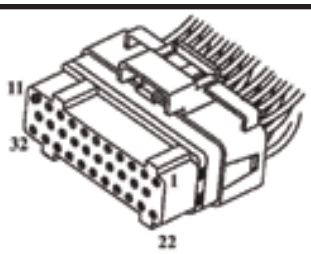
Manifold Absolute Pressure Sensor



Connector Information		
Pin	**Wire Color**	**Function**
1	BK/LB	Sensor Ground
2	DG/RD or RD/WT	MAP Sensor Signal
3	VT/WT, OR, or WT/BK	5V Supply

Figure 1

PCM Connector (A) Black



MAP Sensor Wiring Information

Vehicle	Pin	Function	Wire Color
1998-2001 Durango; **1996-1999** Dakota; **1996-2002** Pick-up	4	Sensor Ground	BK/LB
	17	5 Volt Supply	VT/WT
	27	MAP Sensor Signal	DG/RD
2000-2003 Dakota; **1996-2003** Dodge Van	4	Sensor Ground	BK/LB
	17	5 Volt Supply	OR
	27	MAP Sensor Signal	DG/RD
1996-1998 Jeep	4	Sensor Ground	BK/LB
	17	5 Volt Supply	WT/BK
	27	MAP Sensor Signal	RD/WT

Figure 2

P0108

Diagnosis

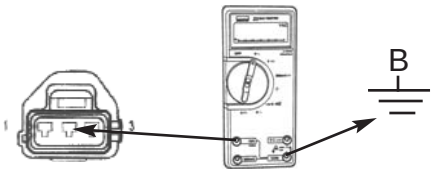
Step 1

Connect your scan tool to the vehicle. Check and record all diagnostic trouble codes, failure records and freeze frame data. Start the engine and observe the MAP Sensor voltage data parameter on scan data. Is the MAP Sensor voltage above 4.6 volts?
If yes, go to step 2.
If no, the problem is intermittent. Check the following:

- With the engine running wiggle the MAP Sensor wiring and connectors while observing the MAP Sensor voltage data parameter. Look for the voltage values to change or the code to set.
- Inspect the sensor wiring harness for damaged insulation, broken, pinched or frayed wiring. Also check the harness connectors for corroded damaged or pushed out terminals.
- Review the Freeze Frame information and try to duplicate the conditions under which the code previously set.

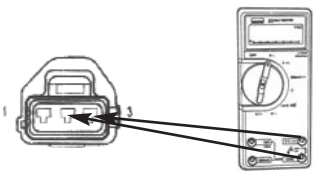
Step 2

With the ignition key off disconnect the MAP Sensor harness connector. Inspect the sensor and harness connectors for corroded, damaged or pushed out terminals.
With the ignition key on use your DVOM and measure the voltage on the MAP Sensor signal circuit terminal (pin 2) of the sensor harness connector **(See Figure 1)**. Is the voltage above 5.5 volts?
If yes, repair the MAP Sensor signal circuit for a short to battery voltage.
If no, go to step 3.



Step 3

With the ignition key off disconnect the MAP Sensor harness connector. Inspect the sensor and harness connectors for corroded, damaged or pushed out terminals.
Using your DVOM measure the resistance between the MAP Sensor signal (pin 2) and 5-volt supply (pin 3) circuit terminals of the sensor harness connector. Is the resistance 5 Ohms or less?
If yes, repair the short between the MAP Sensor signal and 5-volt supply circuits.
If no, go to step 4.

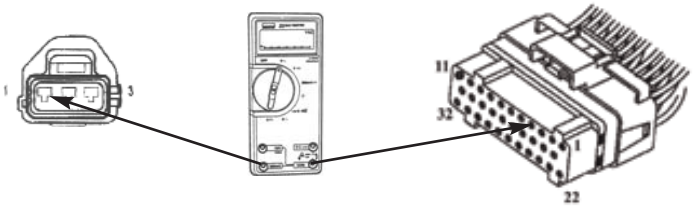


Step 4

With the ignition key off disconnect the MAP Sensor harness connector. Inspect the MAP Sensor and harness connectors for corroded, damaged or pushed out terminals. Connect a jumper wire between the MAP Sensor signal (pin 2) and ground (pin 1) circuit terminals of the sensor harness connector. Connect your scan tool to the vehicle and with the ignition key on observe the MAP Sensor voltage data parameter. Is the voltage below 1 volt?
If yes, replace the MAP Sensor.
If no, go to step 5.

Step 5

With the ignition key off disconnect the MAP Sensor and PCM harness connectors. Inspect the PCM, MAP Sensor and harness connectors for corroded, damaged or pushed out terminals. Using your DVOM measure the resistance between the MAP Sensor ground circuit terminals of the PCM (pin 4) and MAP Sensor (pin 1) harness connectors **(See Figure 2)**. Is the resistance 5 Ohms or less?
If yes, replace the PCM.
If no, repair the open MAP Sensor ground circuit.



CODE P0112
Intake Air Temperature
Sensor Low Input

Chrysler 3.9 liter V-6, 5.2, 5.9 Liter V8
Code P0112 Intake Air Temperature Sensor Low Input

Theory of Operation

The Intake Air Temperature (IAT) Sensor is a thermister that measures the temperature of the air entering the engine. The PCM supplies a 5-volt reference signal through a current limiting resistor to the IAT Sensor. When the intake air is cold the sensor resistance is high and the PCM will see a high voltage signal on IAT Sensor signal circuit. When the intake air is warm the sensor resistance is lower and the PCM will see a lower voltage signal.

Circuit Description

The sensor circuit consists of the sensor signal and signal return circuit wiring, the IAT Sensor and PCM.

Conditions for Setting the Code

- The IAT sensor circuit voltage at the PCM goes below .08 volt.

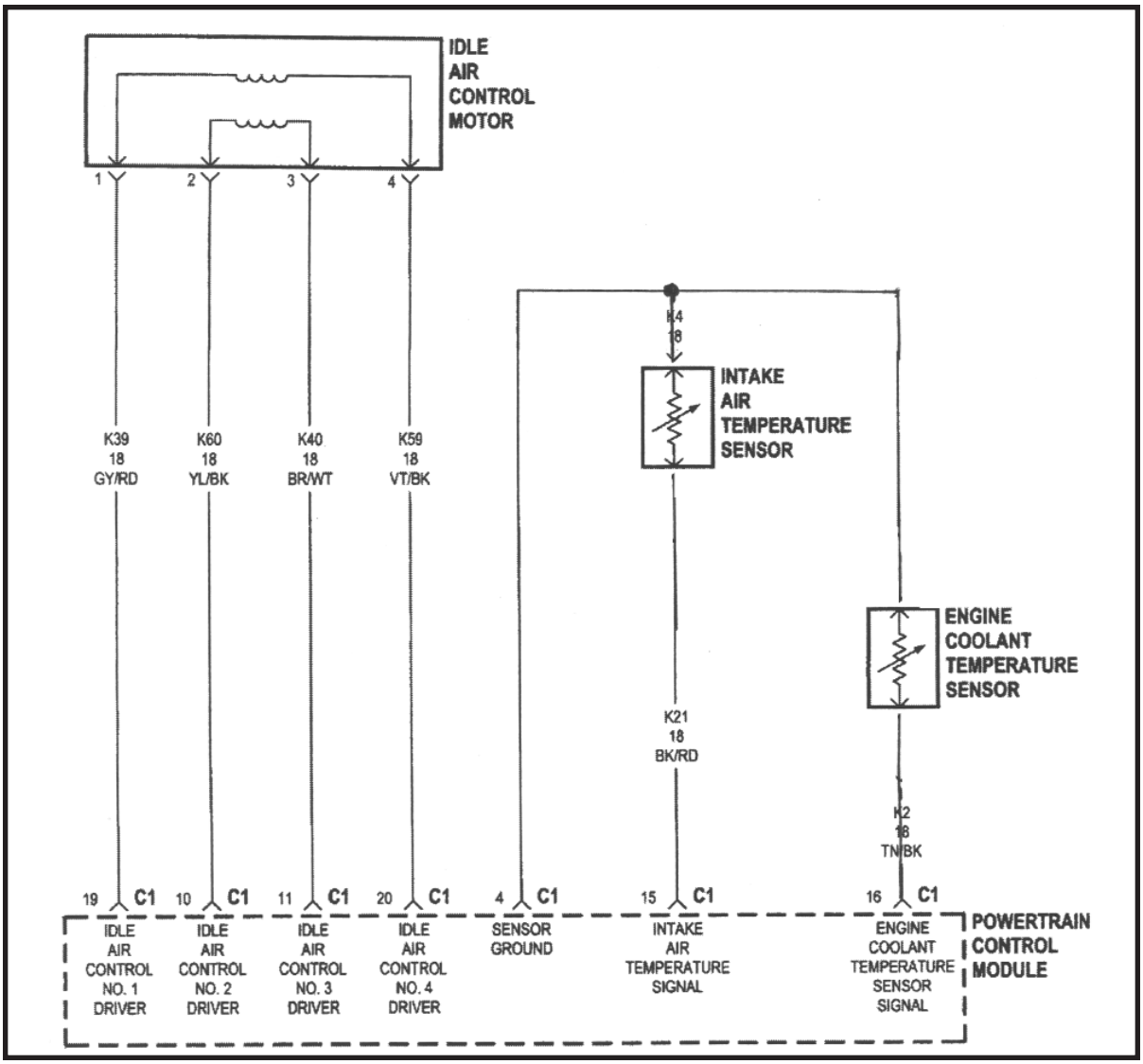
Action taken when Code Sets

- The PCM will illuminate the malfunction indicator lamp during the second consecutive trip the conditions for setting the code have been met.
- The PCM will store the conditions, which were present when the code sets in Freeze Frame and Failure Records.

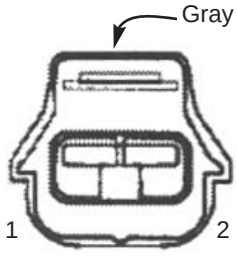
Possible Causes

- Damaged IAT Sensor wiring or harness connectors
- Defective IAT Sensor
- Defective PCM

Wiring Diagram



Intake Air Temperature (IAT) Sensor



Connector Information		
Pin	**Wire Color**	**Function**
1	BK/LB	Sensor Ground
2	BK/RD	IAT Sensor Signal

Figure 1

P0112

Diagnosis:

Step 1

Connect your scan tool to the vehicle. Check and record all diagnostic trouble codes, failure records and freeze frame data. Turn the ignition on and observe the IAT Sensor voltage data parameter on your scan tool. Does the sensor voltage show less than .8 volts?
If yes, go to step 3.
If no, go to step 2.

Step 2

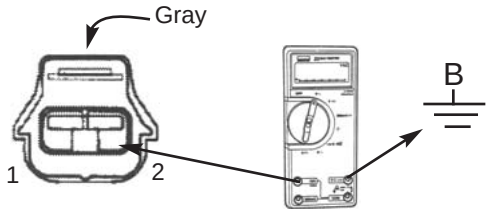
With your scan tool connected to the vehicle, start the engine and duplicate the failure record conditions present when the code previously set. Does the scanner indicate the code set during this ignition cycle?
If yes, go to step 3.
If no, the problem is intermittent. Try shaking the wiring and connectors while observing the IAT sensor voltage on the scan data. A change in the voltage displayed can indicate the location of the malfunction.
Check for:
- Damaged IAT Sensor signal circuit wiring (intermittent short to ground)
- Defective IAT Sensor

Step 3

Connect your scan tool to the vehicle. With the ignition key off disconnect the IAT Sensor harness connector. Inspect the sensor and harness connectors for corroded damaged or pushed out terminals. Turn the ignition on and observe the IAT sensor voltage data parameter on your scan tool. Does the IAT Sensor voltage show above 4.0 volts?
If yes, replace the IAT Sensor.
If no, go to step 4.

Step 4

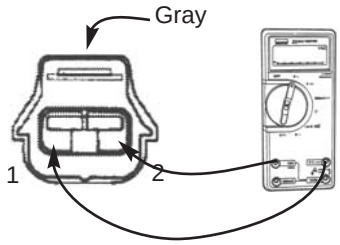
With the ignition off disconnect the IAT Sensor and PCM harness connectors. Inspect the IAT Sensor, PCM and harness connectors for corroded damaged or pushed out terminals. Using your DVOM measure the resistance between the IAT Sensor signal circuit terminal (pin 2) of the sensor harness connector and a good ground **(See Figure 1)**. Is the resistance 5 ohms or less?
If yes, repair the IAT Sensor signal circuit for a short to ground.
If no, go to step 5.



Diagnosis Continued

Step 5

With the ignition off disconnect the IAT Sensor and PCM harness connectors. Inspect the IAT Sensor, PCM and harness connectors for corroded damaged or pushed out terminals. Using your DVOM measure the resistance between the IAT Sensor signal (pin 2) and signal return (pin 1) circuit terminals of the sensor harness connector. Is the resistance 5 Ohms or less?
If yes, repair the short between the IAT sensor signal and signal return circuits.
If no, replace the PCM.



CODE P0113
Intake Air Temperature
Sensor High Input

Chrysler 3.9 Liter V6, 5.2, 5.9 Liter V8
Code P0113 Intake Air Temperature Sensor High Input

Theory of Operation
The Intake Air Temperature (IAT) Sensor is a thermister that measures the temperature of the air entering the engine. The PCM supplies a 5-volt reference signal through a current limiting resistor to the IAT Sensor. When the intake air is cold the sensor resistance is high and the PCM will see a high voltage signal on IAT Sensor signal circuit. When the intake air is warm the sensor resistance is lower and the PCM will see a lower voltage signal.

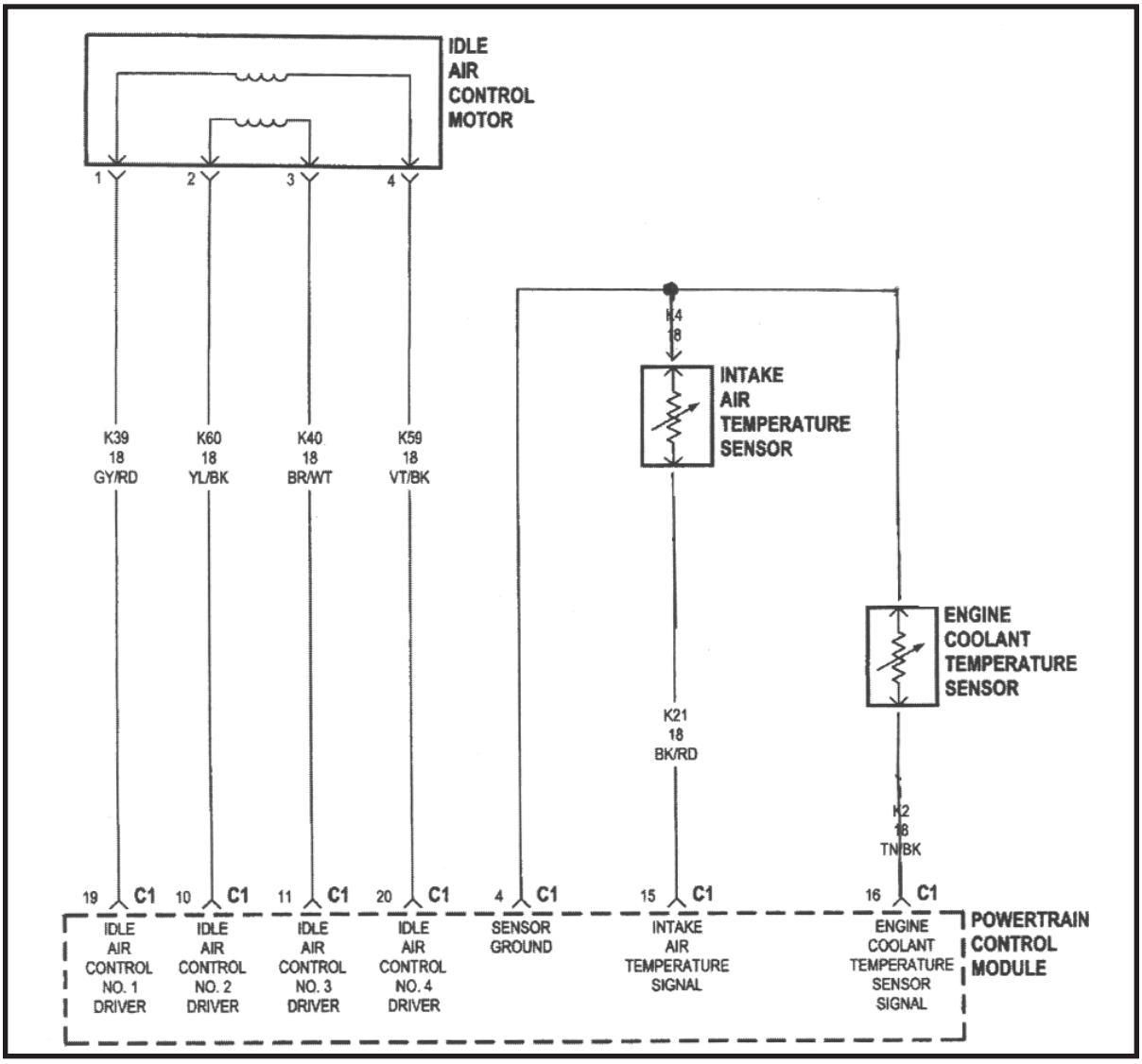
Circuit Description
The sensor circuit consists of the sensor signal and signal return circuit wiring, the IAT Sensor and PCM.

Conditions for Setting the Code
- The IAT Sensor circuit voltage at the PCM goes above 4.9 volts.

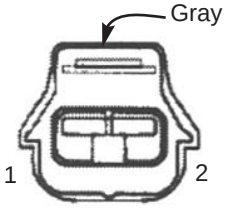
Action taken when Code Sets
- The PCM will illuminate the malfunction indicator lamp during the second consecutive trip the conditions for setting the code have been met.
- The PCM will store the conditions, which were present when the code sets in Freeze Frame and Failure Records.

Possible Causes
- Damaged IAT Sensor wiring or harness connectors
- Defective IAT Sensor
- Defective PCM

Wiring Diagram



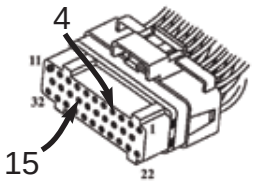
Intake Air Temperature (IAT) Sensor



Connector Information		
Pin	**Wire Color**	**Function**
1	BK/LB	Sensor Ground
2	BK/RD	IAT Sensor Signal

Figure 1

PCM Connector (A) Black



Connector Information		
Pin	**Wire Color**	**Function**
4	BK/LB	Sensor Ground
15	BK/RD	IAT Sensor Signal

Figure 2

P0113

Diagnosis:

Step 1

Connect your scan tool to the vehicle. Check and record all diagnostic trouble codes, failure records and freeze frame data. Turn the ignition on and observe the IAT Sensor voltage data parameter on your scan tool. Does the sensor voltage show above 4.9 volts?
If yes, go to step 3.
If no, go to step 2.

Step 2

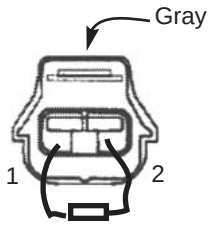
With your scan tool connected to the vehicle, start the engine and duplicate the failure record conditions present when the code previously set.
Does the scanner indicate the code set during this ignition cycle?
If yes, go to step 3.
If no, the problem is intermittent. Try shaking the wiring and connectors while observing the IAT Sensor voltage on the scan data. A change in the voltage displayed can indicate the location of the malfunction.
Check for:

- Poor harness connections at the IAT Sensor or PCM
- Damaged IAT Sensor wiring (intermittent open circuit)
- Defective IAT Sensor

Important **If the fuse in the jumper wire blows during either Step 3 or Step 4 the IAT Sensor signal circuit is shorted to voltage. Make any necessary repairs and rerun diagnostics from the beginning.**

Step 3

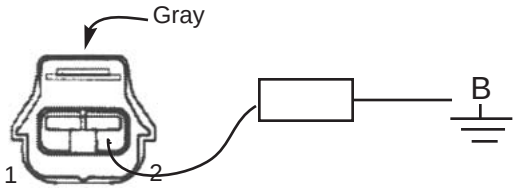
Connect your scan tool to the vehicle. With the ignition key off disconnect the IAT Sensor harness connector. Inspect the sensor and harness connectors for corroded damaged or pushed out terminals. Connect a suitable 3 amp fused jumper wire between the IAT signal (pin 2) and signal return (pin 1) circuit terminals of the sensor harness connector **(See Figure 1)**. Turn the ignition on and observe the IAT Sensor voltage data parameter on your scan tool. Does the sensor voltage show below 1.0 volt?
If yes, replace the IAT Sensor.
If no, go to step 4.



Diagnosis continued

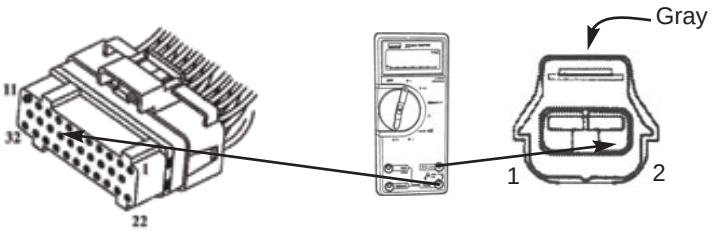
Step 4

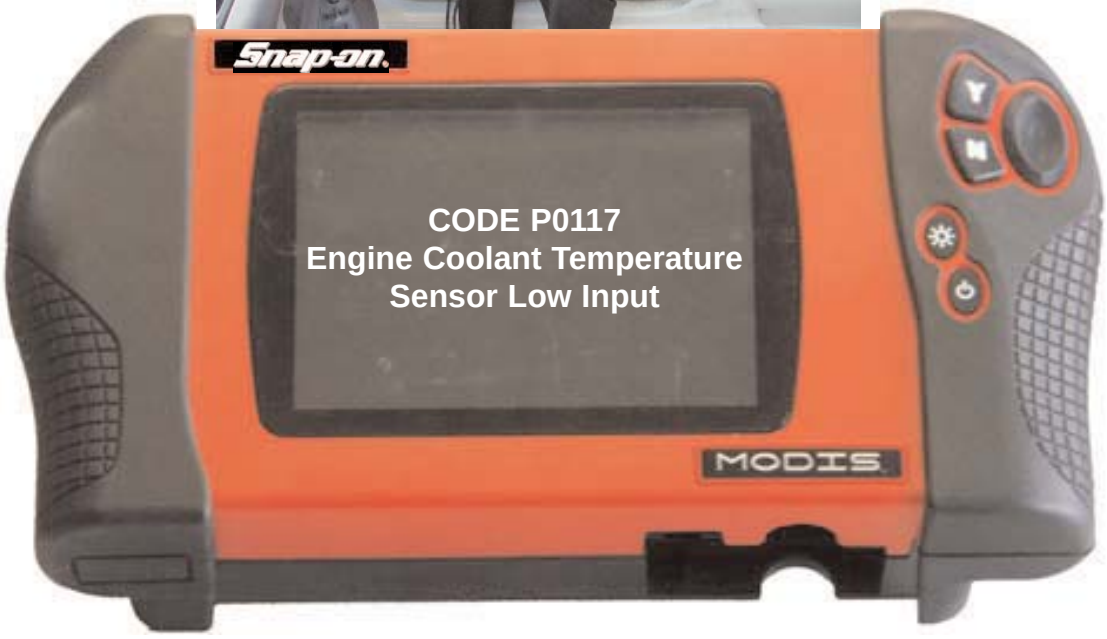
Connect your scan tool to the vehicle. With the ignition key off disconnect the IAT Sensor harness connector. Inspect the sensor and harness connectors for corroded damaged or pushed out terminals. Connect a suitable 3 amp fused jumper wire between the IAT signal circuit terminal (pin 2) of the sensor harness connector and a good ground. Turn the ignition on and observe the IAT Sensor voltage data parameter on your scan tool. Does the sensor voltage show below 1.0 volt?
If yes, repair the open IAT Sensor signal return circuit.
If no, go to step 5.



Step 5

With the ignition off disconnect the IAT sensor and PCM harness connectors. Inspect the IAT Sensor, PCM and harness connectors for corroded damaged or pushed out terminals. Using your DVOM measure the resistance between the signal circuit terminals of the IAT Sensor (pin 2) and PCM (pin 15) harness connectors **(See Figure 2)**. Is the resistance 5 Ohms or less?
If yes, replace the PCM.
If no, repair the open IAT Sensor signal circuit.





CODE P0117
Engine Coolant Temperature Sensor Low Input

Ford Motor Company 3.0, 3.8, 3.9,4.2 Liter V6 & 4.6 liter V8
Code P0117 Engine Coolant Temperature Sensor Low Input

Theory of Operation

The Engine Coolant Temperature (ECT) sensor is a thermister that measures the temperature of the engine coolant. The PCM supplies a 5-volt reference signal through a current limiting resistor to the ECT sensor. When the engine coolant is cold the sensor resistance is high and the PCM will see a high voltage signal on ECT sensor signal circuit. When the engine coolant is warm the sensor resistance is lower and the PCM will see a lower voltage signal.

Circuit Description

The sensor circuit consists of the sensor signal and signal return circuit wiring, the ECT sensor and PCM.

Conditions for Setting the Code

- The ECT signal voltage is less than .2 volts (coolant temperature greater than 250°F).
- The condition is present anytime during normal vehicle operation.

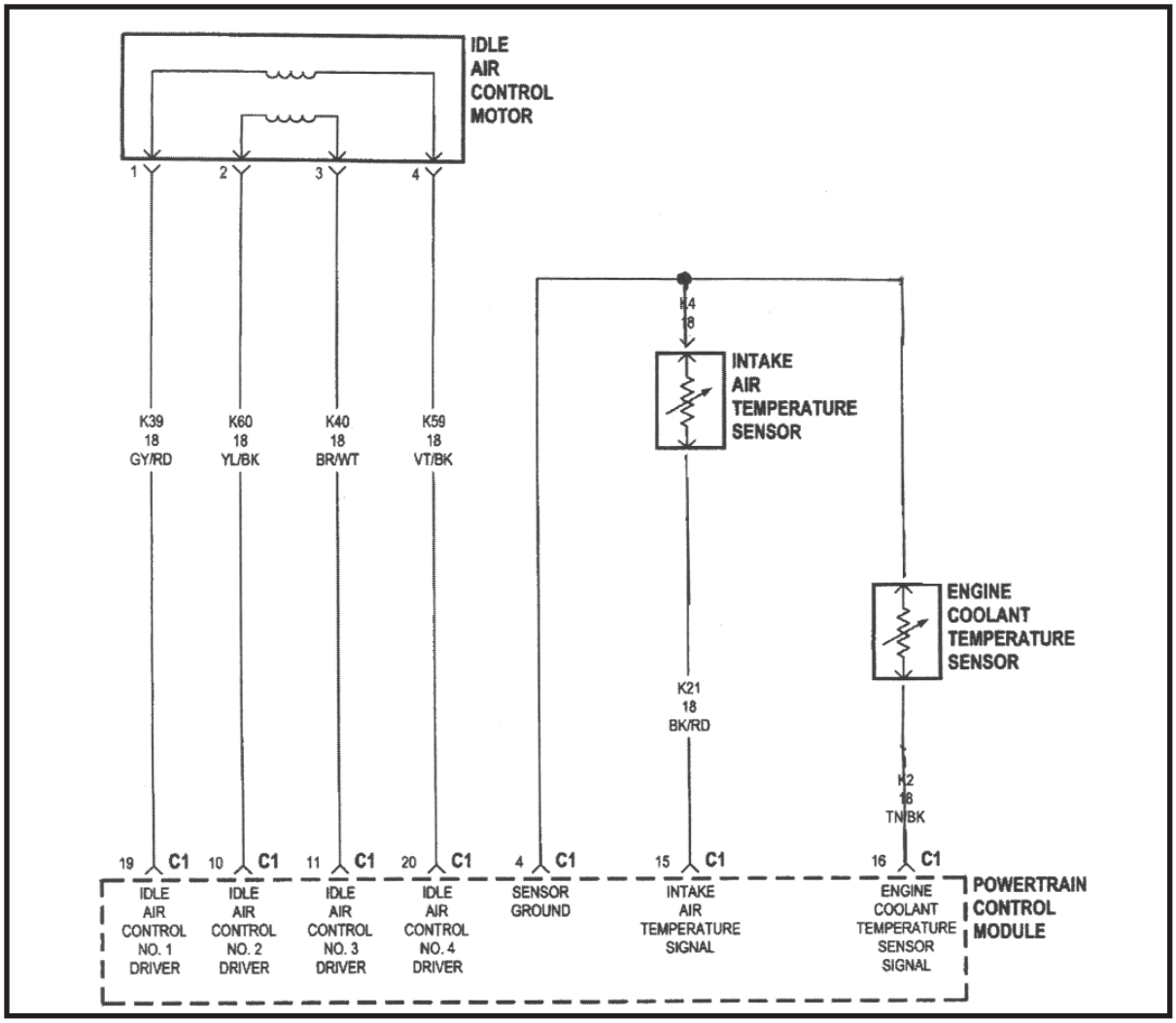
Action taken when Code Sets

- The PCM will illuminate the malfunction indicator lamp during the second consecutive trip the conditions for setting the code have been met.
- The PCM will store the conditions, which were present when the code sets in Freeze Frame and Failure Records.

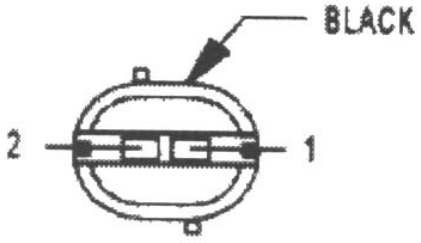
Possible Causes

- Damaged ECT sensor wiring or harness connectors
- Defective ECT sensor
- Defective PCM

Wiring Diagram



Engine Coolant Temperature (ECT) Sensor



Connector Information		
Pin	**Wire Color**	**Function**
1	BK/LB	Sensor Ground
2	TN/BK	ECT Sensor Signal

Figure 1

P0117

Diagnosis:

Step 1

Connect your scan tool to the vehicle. Check and record all diagnostic trouble codes, failure records and freeze frame data. Turn the ignition on and observe the ECT sensor voltage data parameter on your scan tool. Does the sensor voltage show below .5 volt?
If yes, go to step 3.
If no, go to step 2.

Step 2

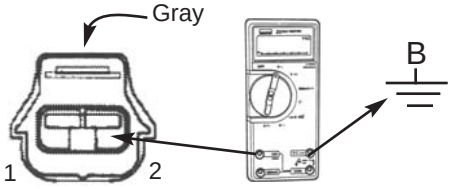
With your scan tool connected to the vehicle, start the engine and duplicate the failure record conditions present when the code previously set. Does the scanner indicate the code set during this ignition cycle?
If yes, go to step 3.
If no, the problem is intermittent. Try shaking the wiring and connectors while observing the ECT sensor voltage on the scan data. A change in the voltage displayed can indicate the location of the malfunction.
Check for:
- Damaged ECT sensor signal circuit wiring (intermittent short to ground)
- Defective ECT sensor

Step 3

Connect your scan tool to the vehicle. With the ignition key off disconnect the ECT sensor harness connector. Inspect the sensor and harness connectors for corroded damaged or pushed out terminals. Turn the ignition on and observe the IAT sensor voltage data parameter on your scan tool. Does the sensor voltage show above 4.0 volts?
If yes, replace the ECT sensor.
If no, go to step 4.

Step 4

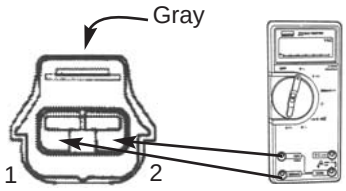
With the ignition off disconnect the ECT sensor and PCM harness connectors. Inspect the ECT sensor, PCM and harness connectors for corroded damaged or pushed out terminals. Using your DVOM measure the resistance between the ECT sensor signal circuit terminal (pin 2) of the sensor harness connector and a good ground **(See Figure 1)**. Is the resistance 5 ohms or less?
If yes, repair the ECT sensor signal circuit for a short to ground.
If no, go to step 5.



Diagnosis continued

Step 5

With the ignition off disconnect the ECT sensor and PCM harness connectors. Inspect the ECT sensor, PCM and harness connectors for corroded damaged or pushed out terminals. Using your DVOM measure the resistance between the ECT sensor signal (pin 2) and signal return (pin 1) circuit terminals of the ECT sensor harness connector. Is the resistance 5 Ohms or less?
If yes, repair the short between the ECT sensor signal and signal return circuits.
If no, replace the PCM.



CODE P0118
Engine Coolant Temperature Sensor High Input

Chrysler 3.9 Liter V6, 5.2, 5.9 Liter V8
Code P0118 Engine Coolant Temperature Sensor High Input

Theory of Operation
The Engine Coolant Temperature (ECT) sensor is a thermister that measures the temperature of the engine coolant. The PCM supplies a 5-volt reference signal through a current limiting resistor to the ECT sensor. When the coolant is cold the sensor resistance is high and the PCM will see a high voltage signal on ECT sensor signal circuit. When the engine coolant is warm the sensor resistance is lower and the PCM will see a lower voltage signal.

Circuit Description
The sensor circuit consists of the sensor signal and signal return circuit wiring, the ECT sensor and PCM.

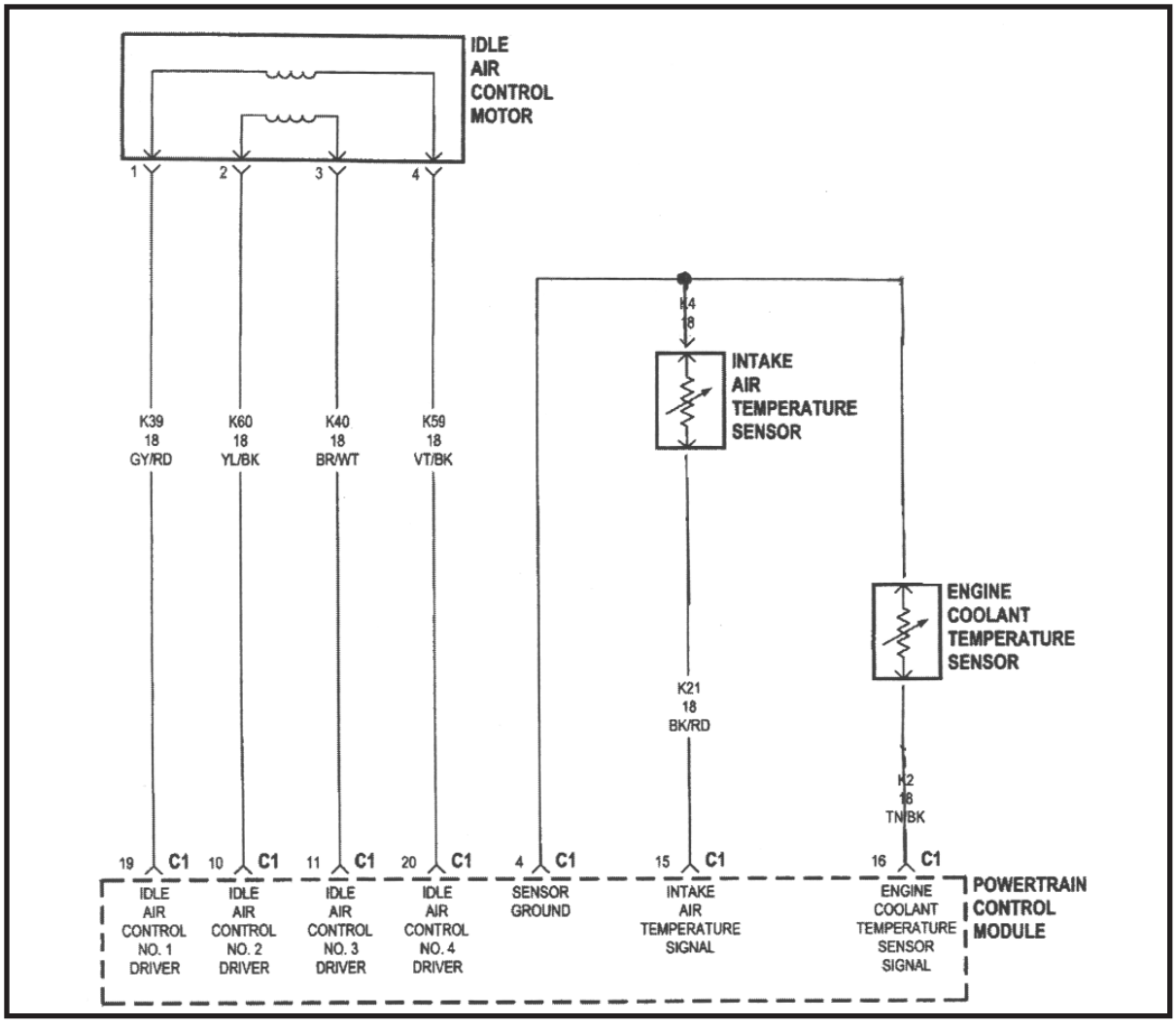
Conditions for Setting the Code
- The ECT sensor circuit voltage at the PCM goes above 4.98 volts for more than 3 seconds.

Action taken when Code Sets
- The PCM will illuminate the malfunction indicator lamp during the second consecutive trip the conditions for setting the code have been met.
- The PCM will store the conditions, which were present when the code sets in Freeze Frame and Failure Records.

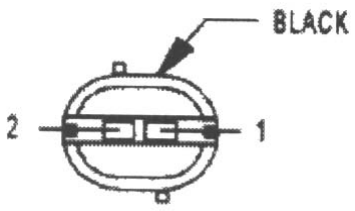
Possible Causes
- Damaged ECT sensor wiring or harness connectors
- Defective ECT sensor
- Defective PCM

P0118

Wiring Diagram



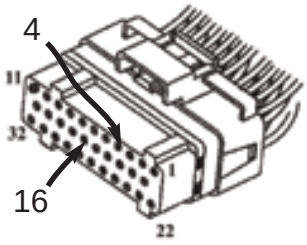
Engine Coolant Temperature (ECT) Sensor



Connector Information		
Pin	**Wire Color**	**Function**
1	BK/LB	Sensor Ground
2	TN/BK	ECT Sensor Signal

Figure 1

PCM Connector (A) Black



Connector Information		
Pin	**Wire Color**	**Function**
4	BK/LB	Sensor Ground
16	TN/BK	ECT Sensor Signal

Figure 2

P0118

Diagnosis:

Step 1

Connect your scan tool to the vehicle. Check and record all diagnostic trouble codes, failure records and freeze frame data. Turn the ignition on and observe the ECT sensor voltage data parameter on your scan tool. Does the sensor voltage show above 4.5 volts?
If yes, go to step 3.
If no, go to step 2.

Step 2

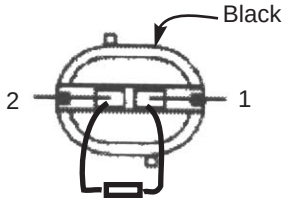
With your scan tool connected to the vehicle, start the engine and duplicate the failure record conditions present when the code previously set. Does the scanner indicate the code set during this ignition cycle?
If yes, go to step 3.
If no, the problem is intermittent. Try shaking the wiring and connectors while observing the ECT sensor voltage on the scan data. A change in the voltage displayed can indicate the location of the malfunction.
Check for:

- Poor harness connections at the ECT sensor or PCM
- Damaged ECT sensor wiring (intermittent open circuit)
- Defective ECT sensor

Important **If the fuse in the jumper wire blows during either Step 3 or Step 4 the ECT sensor signal circuit is shorted to voltage. Make any necessary repairs and rerun diagnostics from the beginning.**

Step 3

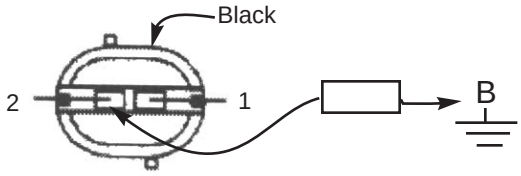
Connect your scan tool to the vehicle. With the ignition key off disconnect the ECT sensor harness connector. Inspect the sensor and harness connectors for corroded damaged or pushed out terminals. Connect a suitable 3 amp fused jumper wire between the ECT signal (pin 2) and signal return (pin 1) circuit terminals of the sensor harness connector **(See Figure 1)**. Turn the ignition on and observe the ECT sensor voltage data parameter on your scan tool. Does the sensor voltage show below 1.0 volt?
If yes, replace the ECT sensor.
If no, go to step 4.



Diagnosis Continued

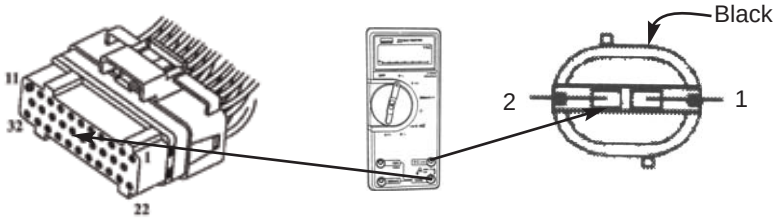
Step 4

Connect your scan tool to the vehicle. With the ignition key off disconnect the ECT sensor harness connector. Inspect the sensor and harness connectors for corroded damaged or pushed out terminals. Connect a suitable 3 amp fused jumper wire between the ECT signal circuit terminal (pin 2) of the sensor harness connector and a good ground. Turn the ignition on and observe the ECT sensor voltage data parameter on your scan tool. Does the sensor voltage show below 1.0 volt?
If yes, repair the open ECT sensor signal return circuit.
If no, go to step 5.



Step 5

With the ignition off disconnect the ECT sensor and PCM harness connectors. Inspect the ECT sensor, PCM and harness connectors for corroded damaged or pushed out terminals. Using your DVOM measure the resistance between the signal circuit terminals of the ECT sensor (pin 2) and PCM (pin 16) harness connectors **(See Figure 2)**. Is the resistance 5 Ohms or less?
If yes, replace the PCM.
If no, repair the open ECT sensor signal circuit.



CODE P0133
HO2S #1/1 Slow Response
(Bank 1, Sensor 1)

Chrysler 3.9 Liter V6 & 5.2, 5.9 Liter V8
Code P0133 Heated Oxygen Sensor Bank 1, Sensor 1 (#1/1) Slow Response

Theory of Operation

The Heated Oxygen (O2) Sensor works like a small battery. It has an operating range of about 0 to 1 volt. Its output voltage depends on the amount of oxygen in the exhaust stream. If the exhaust contains a high oxygen content the fuel/air ratio is considered lean and the output voltage of the sensor will be low (400mV or below). With a low oxygen content in the exhaust stream the air/fuel ratio is considered rich and the sensor output voltage will be high (600mV or higher). The Powertrain Control Module (PCM) constantly monitors the O2 Sensor voltage during closed loop operation and compensates for a rich or lean condition by decreasing or increasing injector pulse width as necessary.
The O2 Sensor must be hot (600F) in order for it to work properly. To get the sensor to this temperature quickly and keep it at this temperature a heater is incorporated into the sensor.

Circuit Description

The O2 Sensor signal circuit consists of the sensor; signal and a signal return circuit wiring and the PCM. The heater circuit consists of the sensor, 12-volt supply and ground circuit wiring and in some cases the PCM. Depending on the application the O2 Sensor heater supply circuit is either a fused Auto Shut Down (ASD) relay output or an O2 Sensor Relay output. The O2 Sensor heater ground may be either a PCM controlled Pulse Width Modulated (PWM) control circuit or a chassis ground.

Conditions for Setting the Code

- Engine Coolant Temperature (ECT) greater than 147° F.
- Vehicle speed above 10 MPH and throttle off idle for two minutes.
- Vehicle returns to stop and engine allowed to idle in drive
- The O2 sensor voltage is switching from below 0.27 of a volt to above 0.62 of a volt and back fewer times than required.

Action Taken when Code Sets

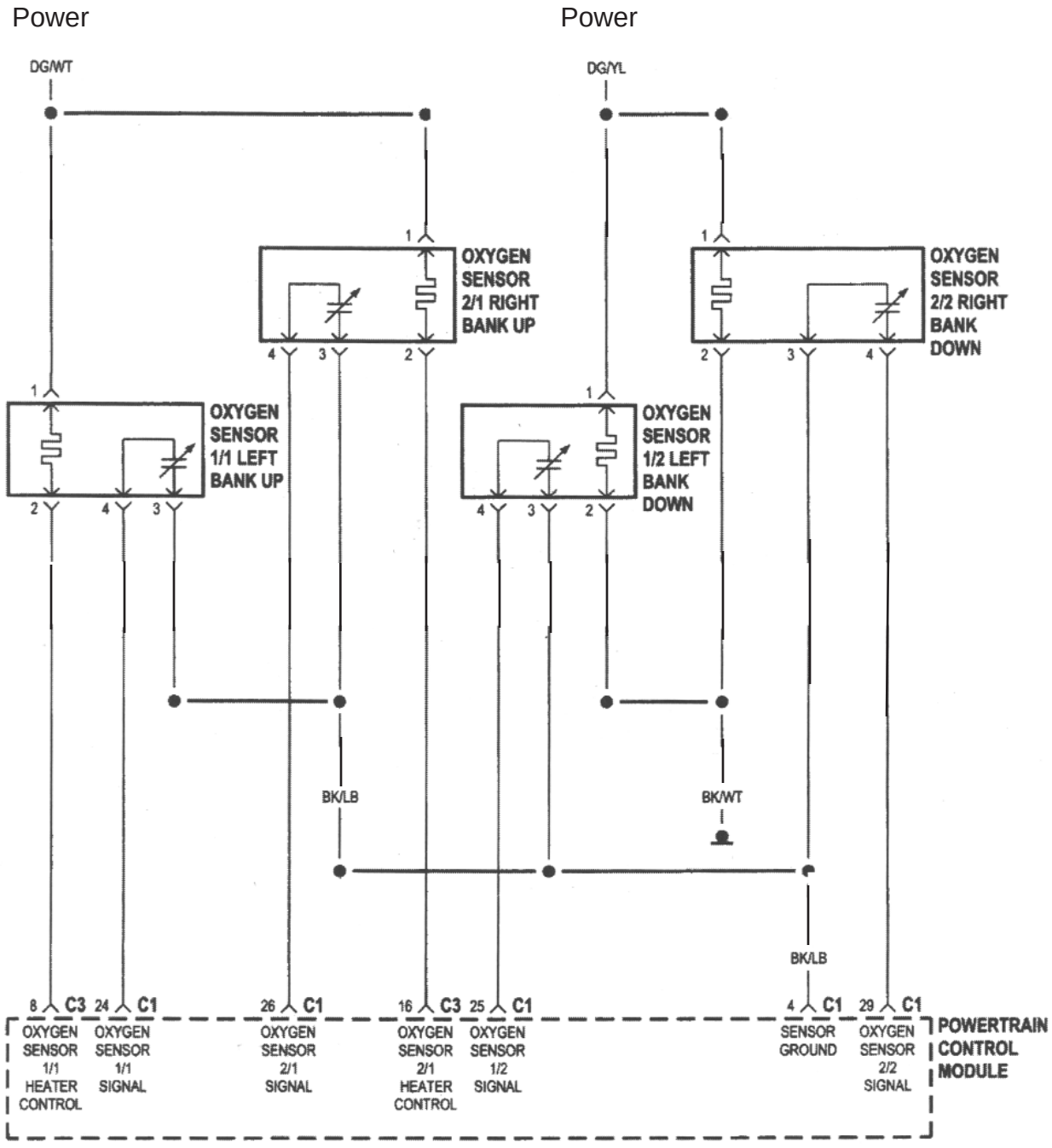
- The PCM will illuminate the malfunction indicator lamp during the second consecutive trip the conditions for setting the code have been met.
- The PCM will store the conditions, which were present when the code sets in Freeze Frame and Failure Records.

Possible Causes

- Contaminated O2 Sensor # 1/1
- Exhaust leaks
- Sensor wiring or connector problems (high resistance)
- Faulty O2 Sensor # 1/1

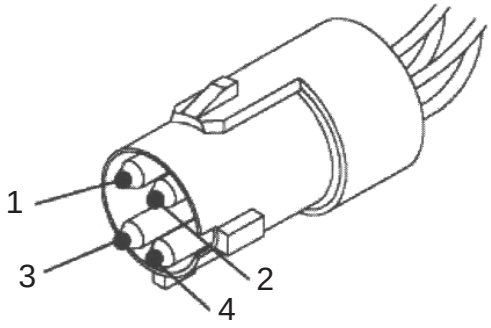
P0133

Wiring Diagram

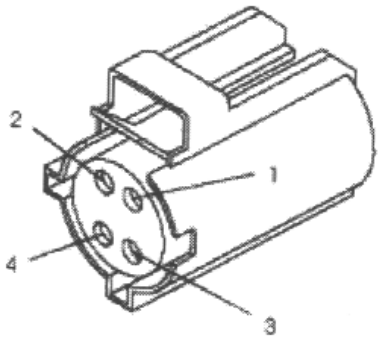


NOTE **Generic Diagram for Four Sensor System. Many vehicles will only have two. Consult specific diagram for vehicle you are working on.**

Oxygen Sensor Connector



Harness Side

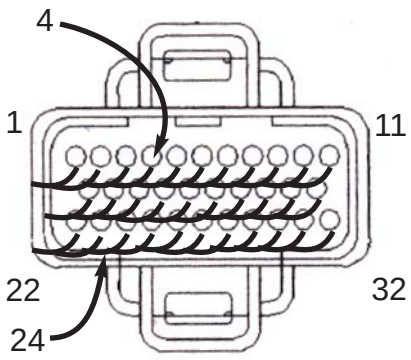


Component Side

Connector Information	
Pin	**Function**
1	Heater 12 Volt Supply
2	Heater Ground
3	Sensor Ground
4	Oxygen Sensor Signal

Figure 1*

Harness Side of PCM Connector (A) Black



Connector Information	
Pin	**Function**
4	Sensor Ground
24	O2 Sensor 1/1 Signal

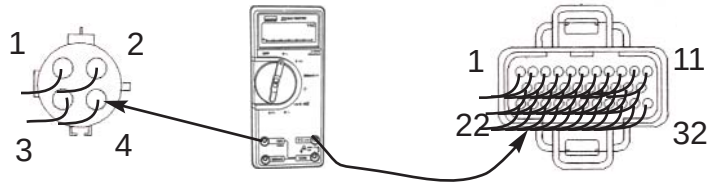
Figure 2*

***See Appendix for Wire Colors**

Diagnosis

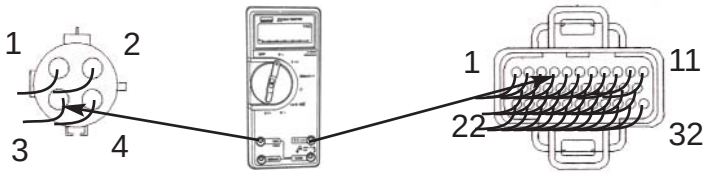
Step 1

Using your DVOM measure the voltage drop in the O2 Sensor #1/1 Signal circuit. Back probe the O2 Sensor Signal circuit at the O2 Senor #1/1 harness connector and the PCM harness connector. Connect the negative lead of your meter to the O2 Sensor harness connector (cavity 4) and the positive lead to the PCM harness connector (cavity 24) **(See Figure 1 and 2)**. Start the engine and allow it to idle. Is the voltage below 0.10 of a volt?
If yes, go to step 4.
If no, repair the high resistance in the O2 Sensor #1/1 signal circuit. Inspect the PCM, O2 Sensor and harness connectors for corroded damaged or pushed out terminals. Inspect the O2 Sensor wiring harness for damaged insulation, broken, pinched or frayed wiring.



Step 2

Using your DVOM measure the voltage drop in the O2 Sensor #1/1 Ground circuit. Back probe the O2 Sensor Ground circuit at the O2 Senor #1/1 harness connector and the PCM harness connector. Connect the positive lead of your meter to the O2 Sensor harness connector (cavity 3) and the negative lead to the PCM harness connector (cavity 4). Start the engine and allow it to idle. Is the voltage below 0.10 of a volt?
If yes, replace the O2 Sensor.
If no, repair the high resistance in the O2 Sensor #1/1 Ground circuit. Inspect the PCM, O2 Sensor and harness connectors for corroded damaged or pushed out terminals. Inspect the O2 Sensor wiring harness for damaged insulation, broken, pinched or frayed wiring.



CODE P0135
HO2S # 1/1 Heater Circuit Malfunction
(Bank 1, Sensor 1)

Chrysler 3.9 Liter V6, 5.2 & 5.9 Liter V8
Code P0135 Heated Oxygen Sensor Bank 1, Sensor 1 (#1/1) Heater Circuit Malfunction

Theory of Operation

The Heated Oxygen (O2) Sensor works like a small battery. It has an operating range of about 0 to 1 volt. Its output voltage depends on the amount of oxygen in the exhaust stream. If the exhaust contains a high oxygen content the fuel/air ratio is considered lean and the output voltage of the sensor will be low (400mV or below). With a low oxygen content in the exhaust stream the air/fuel ratio is considered rich and the sensor output voltage will be high (600mV or higher). The Powertrain Control Module (PCM) constantly monitors the O2 Sensor voltage during closed loop operation and compensates for a rich or lean condition by decreasing or increasing injector pulse width as necessary.
The O2 Sensor must be hot (600F) in order for it to work properly. To get the sensor to this temperature quickly and keep it at this temperature a heater is incorporated into the sensor.

Circuit Description

The O2 Sensor signal circuit consists of the sensor; signal and a signal return circuit wiring and the PCM. The heater circuit consists of the sensor, 12-volt supply and ground circuit wiring and in some cases the PCM. Depending on the application the O2 Sensor heater supply circuit is either a fused Auto Shut Down (ASD) relay output or an O2 Sensor Relay output. The O2 Sensor heater ground may be either a PCM controlled Pulse Width Modulated (PWM) control circuit or a chassis ground.

Conditions for Setting the Code

- Battery voltage greater than 10.5 volts at cold start.
- Engine Coolant temperature less than 147° F.
- Battery temperature equal to or less than 27° F.
- Engine at idle for at least 12 seconds.
- The O2S sensor voltage is greater than 3 volts for 30 to 90 seconds

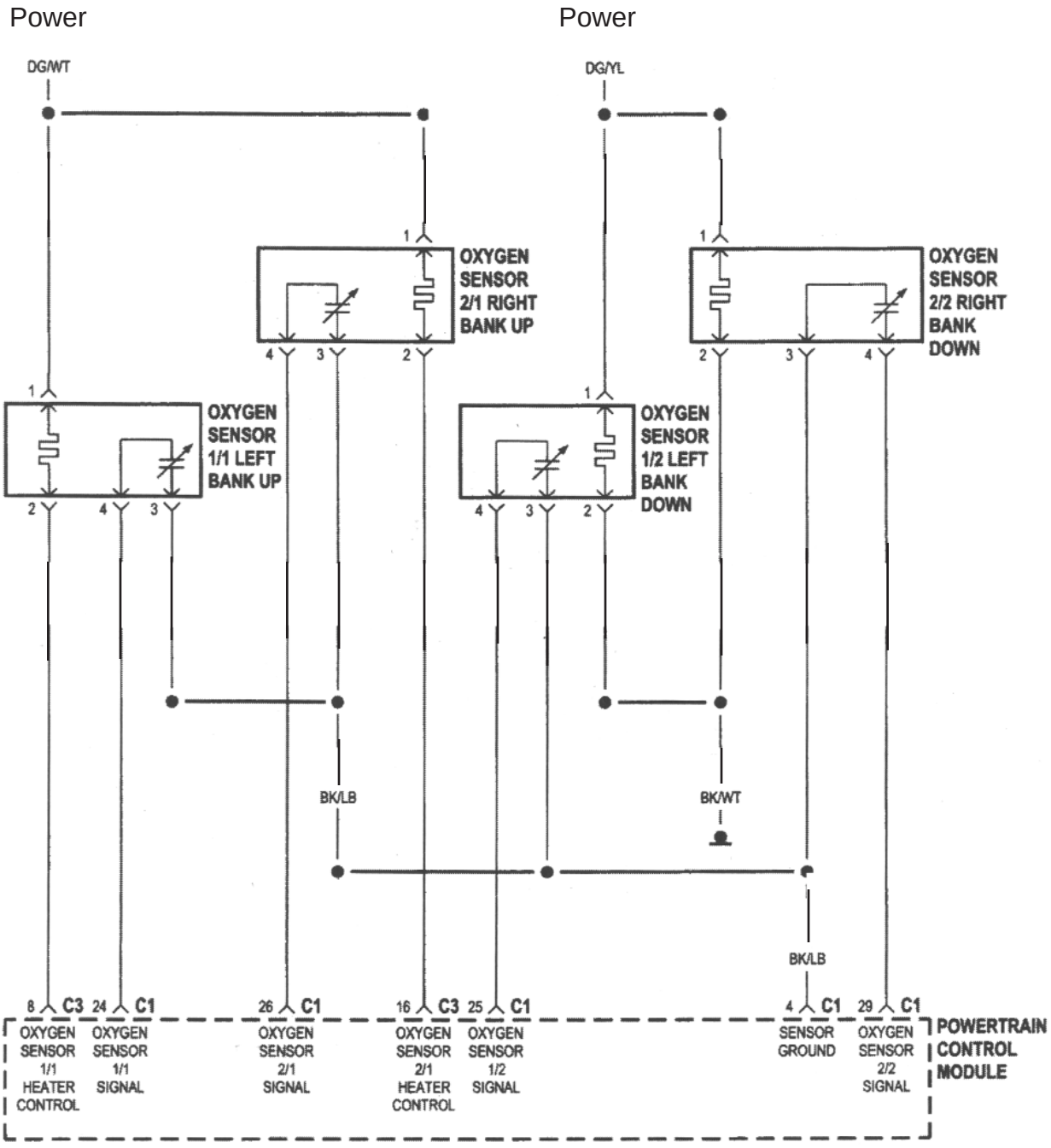
Action Taken when Code Sets

- The PCM will illuminate the malfunction indicator lamp during the second consecutive trip the conditions for setting the code have been met.
- The PCM will store the conditions, which were present when the code sets in Freeze Frame and Failure Records.

Possible Causes

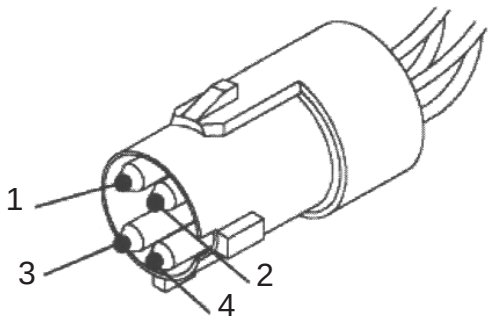
- Defective O2 Sensor heater element.
- Wiring or connector problems in the O2 Sensor heater circuit.
- Defective PCM.

Wiring Diagram

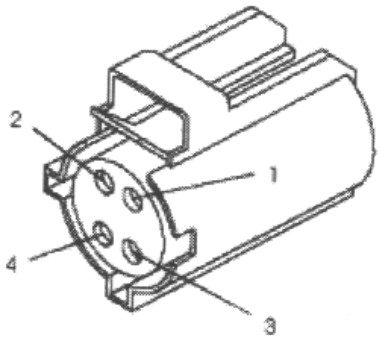


NOTE **Generic Diagram for Four Sensor System. Many vehicles will only have two. Consult specific diagram for vehicle you are working on.**

Oxygen Sensor Connector



Harness Side

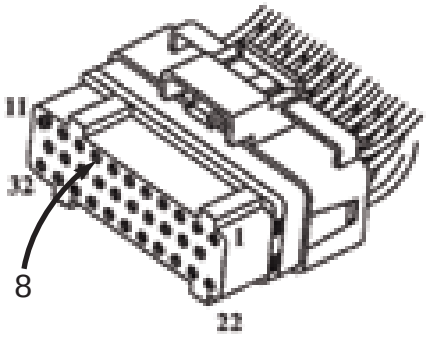


Component Side

Connector Information	
Pin	**Function**
1	Heater 12 Volt Supply
2	Heater Ground
3	Sensor Ground
4	Oxygen Sensor Signal

Figure 1*

PCM Connector (C) Gray



Connector Information	
Pin	**Function**
8	O2 Sensor 1/1 Heater Ground

Figure 2*

***See Appendix for Wire Colors**

P0135

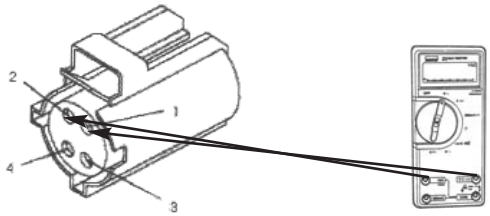
Diagnosis

Step 1

Connect your scan tool to the vehicle. Check and record all diagnostic trouble codes, failure records and freeze frame data. Clear codes and start the engine. Try to duplicate the failure record conditions present when the code previously set. Does the scanner indicate the code set during this ignition cycle?
If yes, go to step 2.
If no, the problem is intermittent. Try shaking the O2 Sensor #1/1 wiring harness and connectors to duplicate the condition. Check the sensor wiring harness for damaged insulation, broken, pinched or frayed wiring. Also check the harness connectors for corroded damaged or pushed out terminals.

Step 2

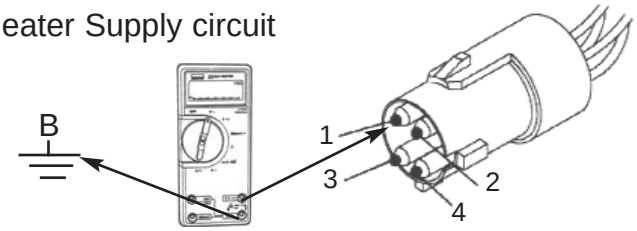
With the ignition key off disconnect O2 Sensor #1/1 harness connector. Inspect the sensor and harness connectors for corroded damaged or pushed out terminals. Using your DVOM measure the resistance between the Heater 12 V Supply (pin 1) and Heater Ground (pin 2) circuit terminals of the O2 Sensor **(See Figure 1)**. Is the resistance above 25 ohms?
If yes, replace O2 Sensor #1/1
If no, go to step 3.



Step 3

NOTE **The O2 Sensor Heater Supply circuit may be a fused ASD relay output or an O2 Sensor Relay output depending on the O2 Sensor circuit being tested. Consult vehicle specific wiring diagrams to determine which type you have.**

With the ignition key off disconnect O2 Sensor #1/1 harness connector. Inspect the sensor and harness connectors for corroded damaged or pushed out terminals. Use your DVOM to measure the voltage between the O2 Sensor Heater 12 V Supply circuit terminal (pin 1) of the sensor harness connector and battery ground **(See Figure 1)**. On a normally operating system, voltage will be present for approximately one second after turning on the ignition key. Was there 10.0 volts or higher present for approximately one second?
If yes, go to step 4.
If no, repair the open O2 Sensor #1/1 Heater Supply circuit



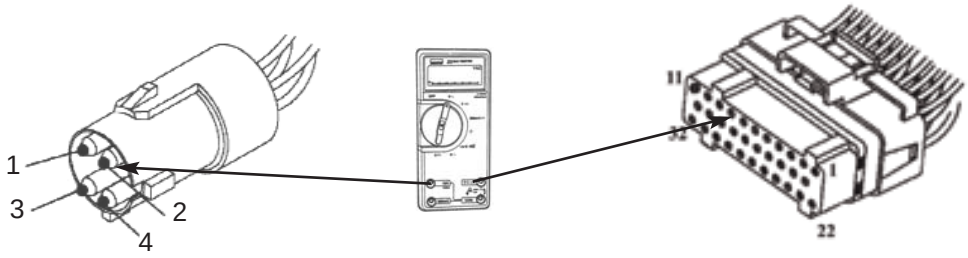
Diagnosis continued

Step 4

NOTE **There may be two types of O2 Sensor heater ground circuits used on this vehicle. Verify which type of heater ground circuit is being tested, PWM control circuit or O2 Sensor Heater relay ground circuit. Consult vehicle specific wiring diagrams to determine which type you have.**

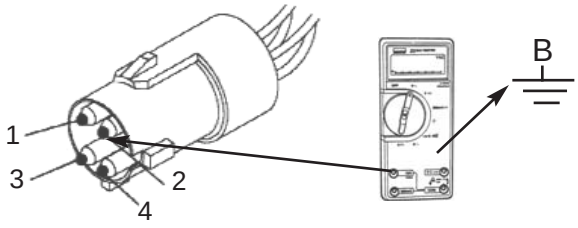
With the ignition key off disconnect the PCM and O2 Sensor #1/1 harness connectors. Inspect the PCM, O2 Sensor and harness connectors for corroded damaged or pushed out terminals. Inspect the O2 Sensor wiring harness for damaged insulation, broken, pinched or frayed wiring.

- **If you are testing a PWM controlled O2 Sensor heater ground circuit use your DVOM to measure the resistance between O2 Sensor #1/1 heater ground circuit terminals of the PCM (pin 8) and O2 Sensor (pin 2) harness connectors (See Figure 2). Is the resistance 5 ohms or less?**



- **If you are testing an O2 Sensor that uses the chassis for the heater ground use your DVOM to measure the resistance between the O2 sensor ground circuit terminal (pin 2) of the sensor harness connector and chassis ground. Is the resistance 5 ohms or less?**

If yes, go to step 5.
If no, repair the open O2 Sensor #1/1 heater ground circuit.

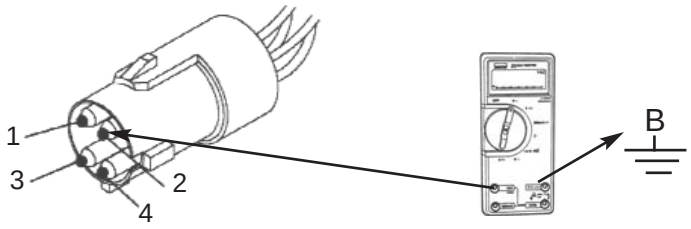


Diagnosis continued

Step 5

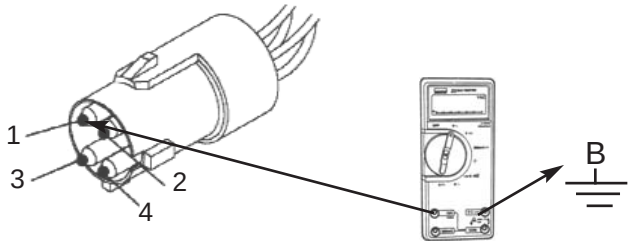
Before beginning this test, verify what type of Heated O2 Sensor is being tested. Either PWM or Heater Relay controlled O2 Sensor. With the ignition key off disconnect the PCM and O2 Sensor #1/1 harness connectors. Inspect the PCM, O2 Sensor and harness connectors for corroded damaged or pushed out terminals. Inspect the O2 Sensor wiring harness for damaged insulation, broken, pinched or frayed wiring.

- **If you are testing a PWM controlled O2 Sensor heater ground circuit use your DVOM and measure the resistance between O2 Sensor #1/1 heater ground control circuit terminal (pin 2) of the O2 Sensor harness connector and a good ground. Is the resistance 5 ohms or less?**



- **If you are testing a heater relay controlled O2 sensor heater use your DVOM and measure the resistance between the O2S #1/1 Heater 12 V Supply circuit terminal (pin 1) of the O2 Sensor harness connector and a good ground. Is the resistance 5 ohms or less?**

  If yes, repair the O2 Sensor heater control circuit for a short to ground.
  If no, replace the PCM.



CODE P0141
HO2S #1/2 Heater Circuit Malfunction
(Bank 1, Sensor, 2)

Chrysler 3.9 Liter V6, 5.2 & 5.9 Liter V8
Code P0141 Heated Oxygen Sensor Bank 1, Sensor 2 (#1/2) Heater Circuit Malfunction

Theory of Operation

The Heated Oxygen (O2) Sensor works like a small battery. It has an operating range of about 0 to 1 volt. Its output voltage depends on the amount of oxygen in the exhaust stream. If the exhaust contains a high oxygen content the fuel/air ratio is considered lean and the output voltage of the sensor will be low (400mV or below). With a low oxygen content, in the exhaust stream, the air/fuel ratio is considered rich and the sensor output voltage will be high (600mV or higher). The Powertrain Control Module (PCM) constantly monitors the O2 Sensor voltage during closed loop operation and compensates for a rich or lean condition by decreasing or increasing injector pulse width as necessary.
The O2 Sensor must be hot (600F) in order for it to work properly. To get the sensor to this temperature quickly and keep it at this temperature a heater is incorporated into the sensor.

Circuit Description

The O2 Sensor signal circuit consists of the sensor; signal and a signal return circuit wiring and the PCM. The heater circuit consists of the sensor, 12-volt supply and ground circuit wiring and in some cases the PCM. Depending on the application the O2 Sensor heater supply circuit is either a fused Auto Shut Down (ASD) relay output or an O2 Sensor Relay output. The O2 Sensor heater ground may be either a PCM controlled Pulse Width Modulated (PWM) control circuit or a chassis ground.

Conditions for Setting the Code

- Battery voltage greater than 10.5 volts at cold start.
- Engine Coolant temperature less than 147° F.
- Battery temperature equal to or less than 27° F.
- Engine at idle for at least 12 seconds.
- The O2S sensor voltage is greater than 3 volts for 60 to 240 seconds

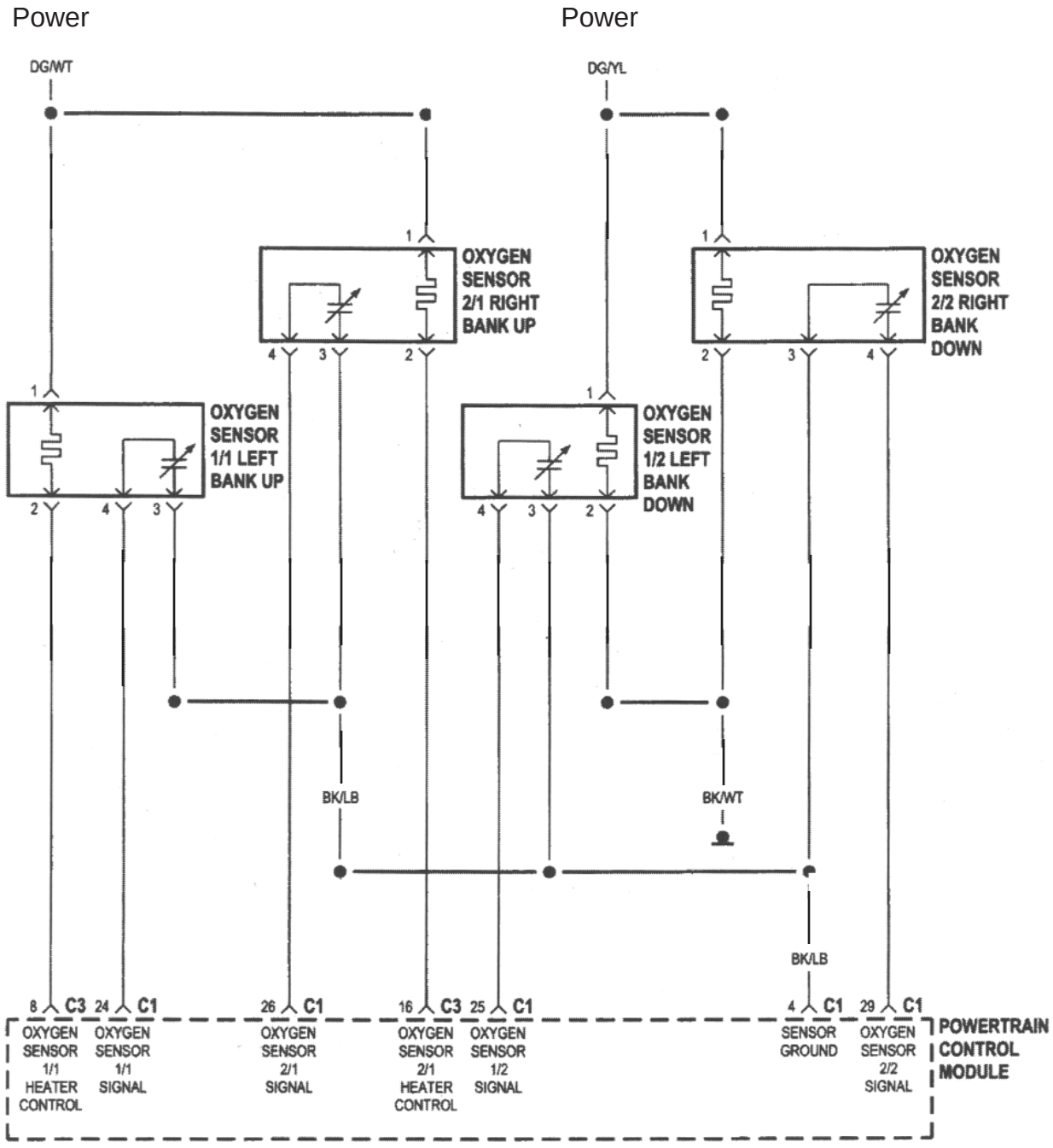
Action Taken when Code Sets

- The PCM will illuminate the malfunction indicator lamp during the second consecutive trip the conditions for setting the code have been met.
- The PCM will store the conditions, which were present when the code sets in Freeze Frame and Failure Records.

Possible Causes

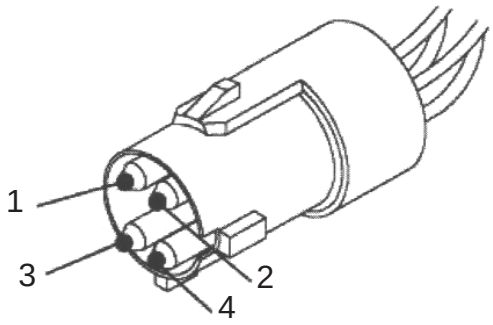
- Defective O2 Sensor heater element.
- Wiring or connector problems in the O2 Sensor heater circuit.
- Defective PCM.

Wiring Diagram

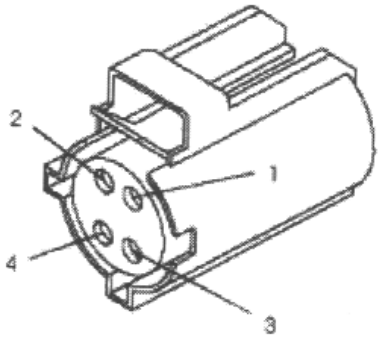


NOTE **Generic Diagram for Four Sensor System. Many vehicles will only have two. Consult specific diagram for vehicle you are working on.**

Oxygen Sensor Connector



Harness Side

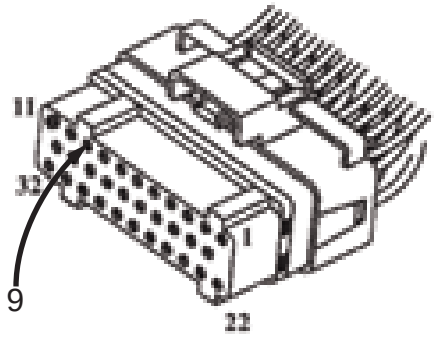


Component Side

Connector Information	
Pin	**Function**
1	Heater 12 Volt Supply
2	Heater Ground
3	Sensor Ground
4	Oxygen Sensor Signal

Figure 1*

PCM Connector (C) Gray



Connector Information	
Pin	**Function**
9	O2 Sensor 1/2 Heater Ground

Figure 2*

***See Appendix for Wire Colors**

P0141

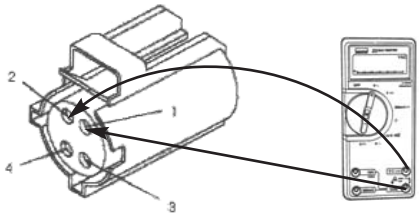
Diagnosis

Step 1

Connect your scan tool to the vehicle. Check and record all diagnostic trouble codes, failure records and freeze frame data. Clear codes and start the engine. Try to duplicate the failure record conditions present when the code previously set. Does the scanner indicate the code set during this ignition cycle?
If yes, go to step 2.
If no, the problem is intermittent. Try shaking the O2 Sensor #1/2 wiring harness and connectors to duplicate the condition. Check the sensor wiring harness for damaged insulation, broken, pinched or frayed wiring. Also check the harness connectors for corroded damaged or pushed out terminals.

Step 2

With the ignition key off disconnect O2 Sensor #1/2 harness connector. Inspect the sensor and harness connectors for corroded damaged or pushed out terminals. Using your DVOM measure the resistance between the Heater 12 V Supply (pin 1) and Heater Ground (pin 2) circuit terminals of the O2 Sensor **(See Figure 1)**. Is the resistance above 25 ohms?
If yes, replace O2 Sensor #1/2.
If no, go to step 3.

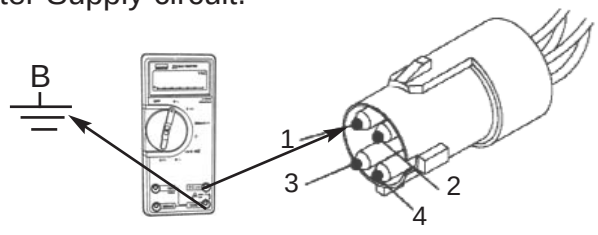


Step 3

NOTE

The O2 Sensor Heater Supply circuit may be a fused ASD relay output or an O2 Sensor Relay output depending on the O2 Sensor circuit being tested. Consult vehicle specific wiring diagrams to determine which type you have.

With the ignition key off disconnect O2 Sensor #1/2 harness connector. Inspect the sensor and harness connectors for corroded damaged or pushed out terminals. Use your DVOM to measure the voltage between the O2 Sensor Heater 12 V Supply circuit terminal (pin 1) of the sensor harness connector and battery ground **(See Figure 1)**. On a normally operating system, voltage will be present for approximately one second after turning on the ignition key. Was there 10.0 volts or higher present for approximately one second?
If yes, go to step 4.
If no, repair the open O2 Sensor #1/2 Heater Supply circuit.



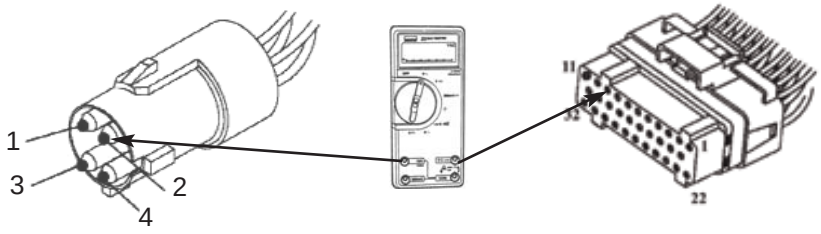
Diagnosis Continued

Step 4

NOTE **There may be two types of O2 Sensor heater ground circuits used on this vehicle. Verify which type of heater ground circuit is being tested, PWM control circuit or O2 Sensor Heater relay ground circuit. Consult vehicle specific wiring diagrams to determine which type you have.**

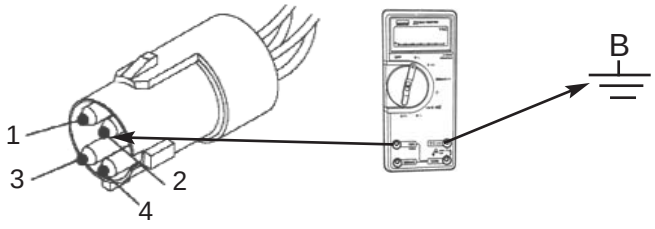
With the ignition key off disconnect the PCM and O2 Sensor #1/2 harness connectors. Inspect the PCM, O2 Sensor and harness connectors for corroded damaged or pushed out terminals. Inspect the O2 Sensor wiring harness for damaged insulation, broken, pinched or frayed wiring.

- **If you are testing a PWM controlled O2 Sensor heater ground circuit use your DVOM to measure the resistance between O2 Sensor #1/2 heater ground circuit terminals of the PCM (pin 9) and O2 Sensor (pin 2) harness connectors (See Figure 2). Is the resistance 5 ohms or less?**



- **If you are testing an O2 Sensor that uses the chassis for the heater ground use your DVOM to measure the resistance between the O2 sensor ground circuit terminal (pin 2) of the sensor harness connector and chassis ground. Is the resistance 5 ohms or less?**

If yes, go to step 5.
If no, repair the open O2 Sensor #1/2 heater ground circuit.

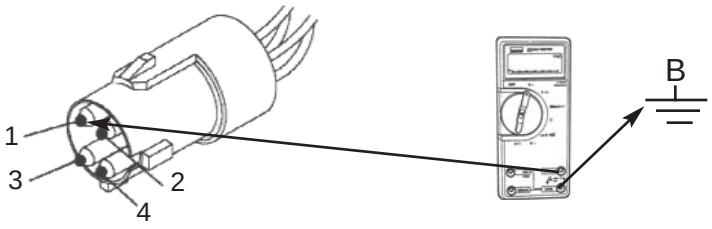


Diagnosis Continued

Step 5

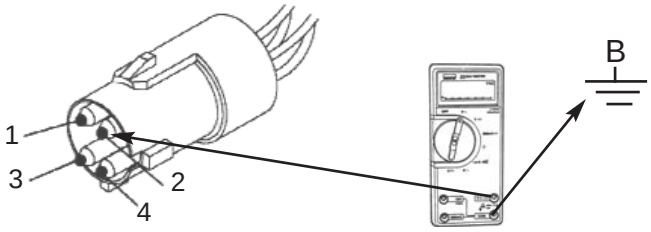
Before beginning this test, verify what type of Heated O2 Sensor is being tested. Either PWM or Heater Relay controlled O2 Sensor.
With the ignition key off disconnect the PCM and O2 Sensor #1/2 harness connectors. Inspect the PCM, O2 Sensor and harness connectors for corroded damaged or pushed out terminals. Inspect the O2 Sensor wiring harness for damaged insulation, broken, pinched or frayed wiring.

- **If you are testing a PWM controlled O2 Sensor heater ground circuit use your DVOM and measure the resistance between O2 Sensor #1/2 heater ground control circuit terminal of the O2 Sensor harness connector and a good ground. Is the resistance 5 ohms or less?**



- **If you are testing a heater relay controlled O2 sensor heater use your DVOM and measure the resistance between the O2 Sensor #1/2 Heater 12 V Supply circuit terminal (pin 1) of the O2 Sensor harness connector and a good ground. Is the resistance 5 ohms or less?**

If yes, repair the O2 Sensor heater control circuit for a short to ground.
If no, replace the PCM.




Snap-on
MODIS
CODE P0153
HO2S #2/1 Sensor
Slow Response
(Bank 2, Sensor 1)

Chrysler 3.9 Liter V6 & 5.2, 5.9 Liter V8
Code P0153 Heated Oxygen Sensor Bank 2, Sensor 1 (#2/1) Slow Response

Theory of Operation

The Heated Oxygen (O2) Sensor works like a small battery. It has an operating range of about 0 to 1 volt. Its output voltage depends on the amount of oxygen in the exhaust stream. If the exhaust contains a high oxygen content the fuel/air ratio is considered lean and the output voltage of the sensor will be low (400mV or below). With a low oxygen content in the exhaust stream the air/fuel ratio is considered rich and the sensor output voltage will be high (600mV or higher). The Powertrain Control Module (PCM) constantly monitors the O2 Sensor voltage during closed loop operation and compensates for a rich or lean condition by decreasing or increasing injector pulse width as necessary.
The O2 Sensor must be hot (600F) in order for it to work properly. To get the sensor to this temperature quickly and keep it at this temperature a heater is incorporated into the sensor.

Circuit Description

The O2 Sensor signal circuit consists of the sensor; signal and a signal return circuit wiring and the PCM. The heater circuit consists of the sensor, 12-volt supply and ground circuit wiring and in some cases the PCM. Depending on the application the O2 Sensor heater supply circuit is either a fused Auto Shut Down (ASD) relay output or an O2 Sensor Relay output. The O2 Sensor heater ground may be either a PCM controlled Pulse Width Modulated (PWM) control circuit or a chassis ground.

Conditions for Setting the Code

- Engine Coolant Temperature (ECT) greater than 147°F.
- Vehicle speed above 10 MPH and throttle off idle for two minutes.
- Vehicle returns to stop and engine allowed to idle in drive
- The O2 sensor voltage is switching from below 0.27 of a volt to above 0.62 of a volt and back fewer times than required.

Action Taken when Code Sets

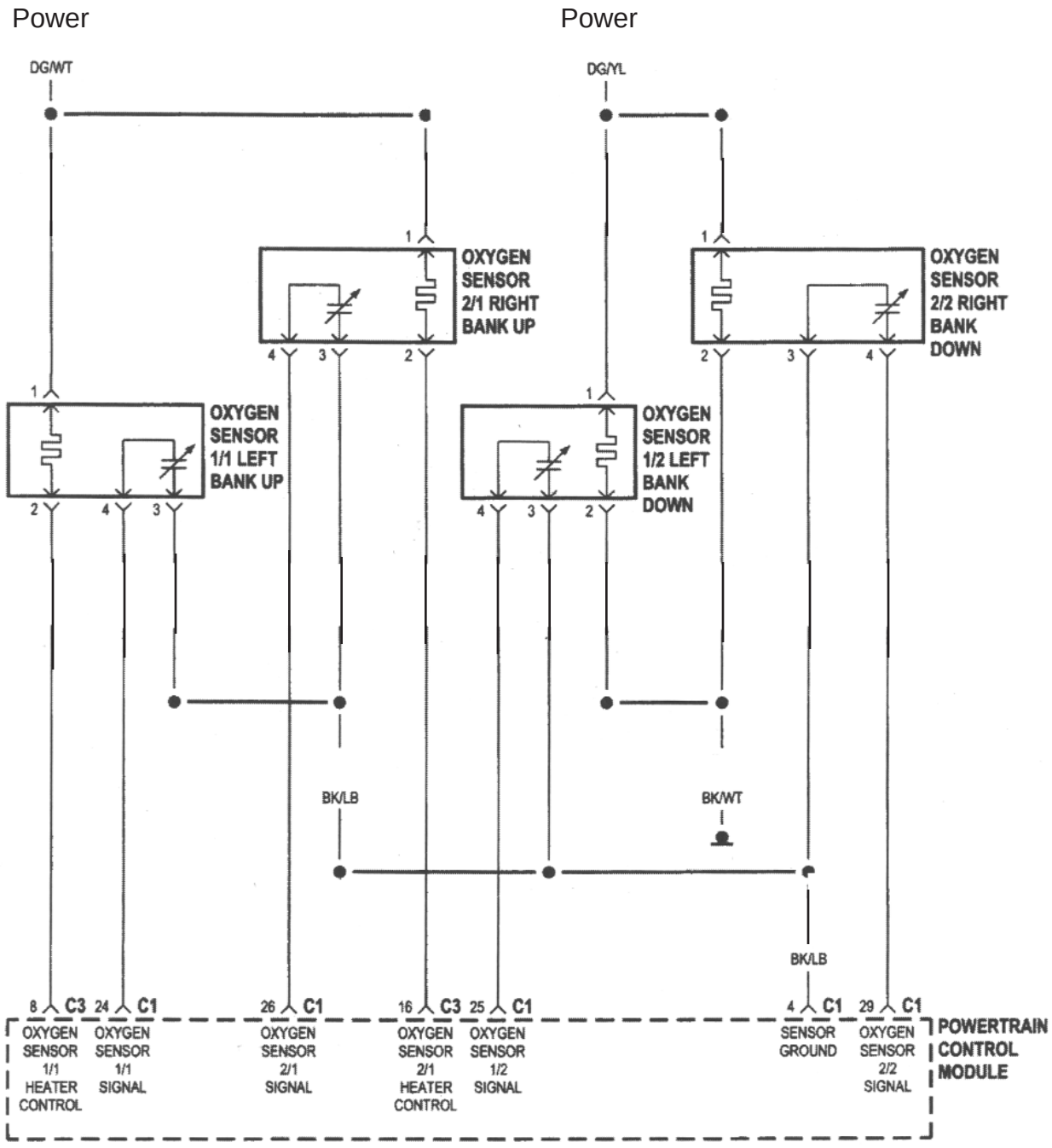
- The PCM will illuminate the malfunction indicator lamp during the second consecutive trip the conditions for setting the code have been met.
- The PCM will store the conditions, which were present when the code sets in Freeze Frame and Failure Records.

Possible Causes

- Contaminated O2 Sensor # 2/1
- Exhaust leaks
- Sensor wiring or connector problems (high resistance)
- Faulty O2 Sensor # 2/1

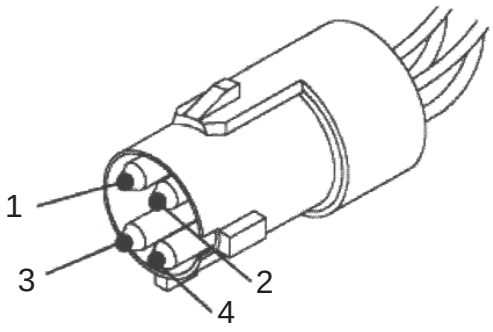
P0153

Wiring Diagram

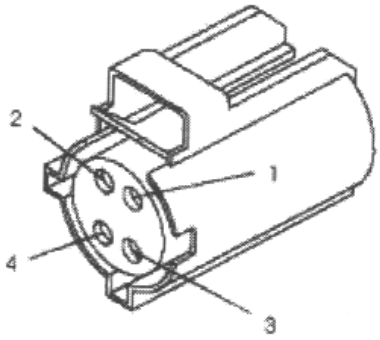


NOTE **Generic Diagram for Four Sensor System. Many vehicles will only have two. Consult specific diagram for vehicle you are working on.**

Oxygen Sensor Connector



Harness Side

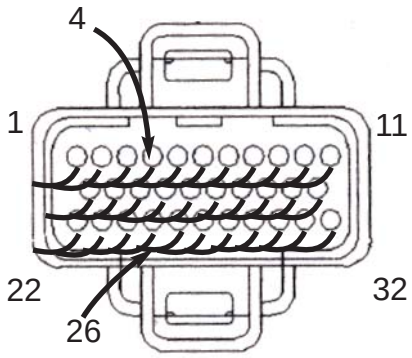


Component Side

Connector Information	
Pin	**Function**
1	Heater 12 Volt Supply
2	Heater Ground
3	Sensor Ground
4	Oxygen Sensor Signal

Figure 1*

Harness Side of PCM Connector (A) Black



Connector Information	
Pin	**Function**
4	Sensor Ground
26	O2 Sensor 2/1 Signal

Figure 2*

***See Appendix for Wire Colors**

P0153

Diagnosis:

Step 1

Connect your scan tool to the vehicle. Check and record all diagnostic trouble codes, failure records and freeze frame data. Start the engine and duplicate the failure record conditions present when the code previously set.
Does the scanner indicate the code set during this ignition cycle?
If yes, go to step 2.
If no, the problem is intermittent. Check the following:

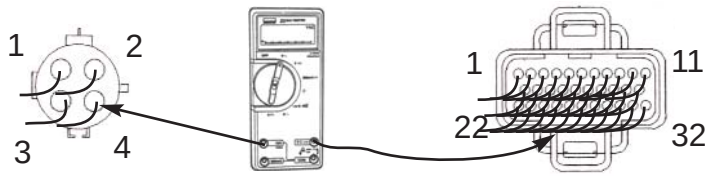
- With the engine running wiggle the O2 Sensor wiring and connectors while observing the O2 sensor data parameters. Look for the parameter values to change or the code to set.
- Inspect the sensor wiring harness for damaged insulation, broken, pinched or frayed wiring. Also check the harness connectors for corroded damaged or pushed out terminals.
- Check for contaminates such as contaminated fuel, unapproved silicone, oil and coolant that may have damaged the O2 sensor.

Step 2

Start the engine and check for any exhaust leaks between the engine and the related O2 Sensor.
Was any problem found?
If yes, make necessary repairs and rerun diagnostics.
If no, go to step 3.

Step 3

Using your DVOM measure the voltage drop in the O2 Sensor #2/1 Signal circuit. Back probe the O2 Sensor Signal circuit at the O2 Senor #2/1 harness connector and the PCM harness connector. Connect the negative lead of your meter to the O2 Sensor harness connector (cavity 4) and the positive lead to the PCM harness connector (cavity 26) **(See Figure 1 and 2)**. Start the engine and allow it to idle. Is the voltage below 0.10 of a volt?
If yes, go to step 4.
If no, repair the high resistance in the O2 Sensor #2/1 signal circuit. Inspect the PCM, O2 Sensor and harness connectors for corroded damaged or pushed out terminals. Inspect the O2 Sensor wiring harness for damaged insulation, broken, pinched or frayed wiring.



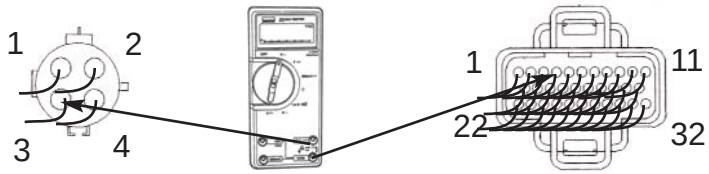
Diagnosis

Step 4

Using your DVOM measure the voltage drop in the O2 Sensor #2/1 Ground circuit. Back probe the O2 Sensor Ground circuit at the O2 Senor #2/1 harness connector and the PCM harness connector. Connect the positive lead of your meter to the O2 Sensor harness connector (cavity 3) and the negative lead to the PCM harness connector (cavity 4). Start the engine and allow it to idle. Is the voltage below 0.10 of a volt?

If yes, replace the O2 Sensor.

If no, repair the high resistance in the O2 Sensor #2/1 Ground circuit. Inspect the PCM, O2 Sensor and harness connectors for corroded damaged or pushed out terminals. Inspect the O2 Sensor wiring harness for damaged insulation, broken, pinched or frayed wiring.



CODE P0155
HO2S #2/1 Heater Circuit Malfunction
(Bank 2, Sensor 1)

Chrysler 3.9 Liter V6, 5.2 & 5.9 Liter V8
Code P0155 Heated Oxygen Sensor Bank 2, Sensor 1 (#2/1) Heater Circuit Malfunction

Theory of Operation

The Heated Oxygen (O2) Sensor works like a small battery. It has an operating range of about 0 to 1 volt. Its output voltage depends on the amount of oxygen in the exhaust stream. If the exhaust contains a high oxygen content the fuel/air ratio is considered lean and the output voltage of the sensor will be low (400mV or below). With a low oxygen content in the exhaust stream the air/fuel ratio is considered rich and the sensor output voltage will be high (600mV or higher). The Powertrain Control Module (PCM) constantly monitors the O2 Sensor voltage during closed loop operation and compensates for a rich or lean condition by decreasing or increasing injector pulse width as necessary.
The O2 Sensor must be hot (600F) in order for it to work properly. To get the sensor to this temperature quickly and keep it at this temperature a heater is incorporated into the sensor.

Circuit Description

The O2 Sensor signal circuit consists of the sensor; signal and a signal return circuit wiring and the PCM. The heater circuit consists of the sensor, 12-volt supply and ground circuit wiring and in some cases the PCM. Depending on the application the O2 Sensor heater supply circuit is either a fused Auto Shut Down (ASD) relay output or an O2 Sensor Relay output. The O2 Sensor heater ground may be either a PCM controlled Pulse Width Modulated (PWM) control circuit or a chassis ground.

Conditions for Setting the Code

- Battery voltage greater than 10.5 volts at cold start.
- Engine Coolant temperature less than 147°F.
- Battery temperature equal to or less than 27°F.
- Engine at idle for at least 12 seconds.
- The O2S sensor voltage is greater than 3 volts for 60 to 240 seconds.

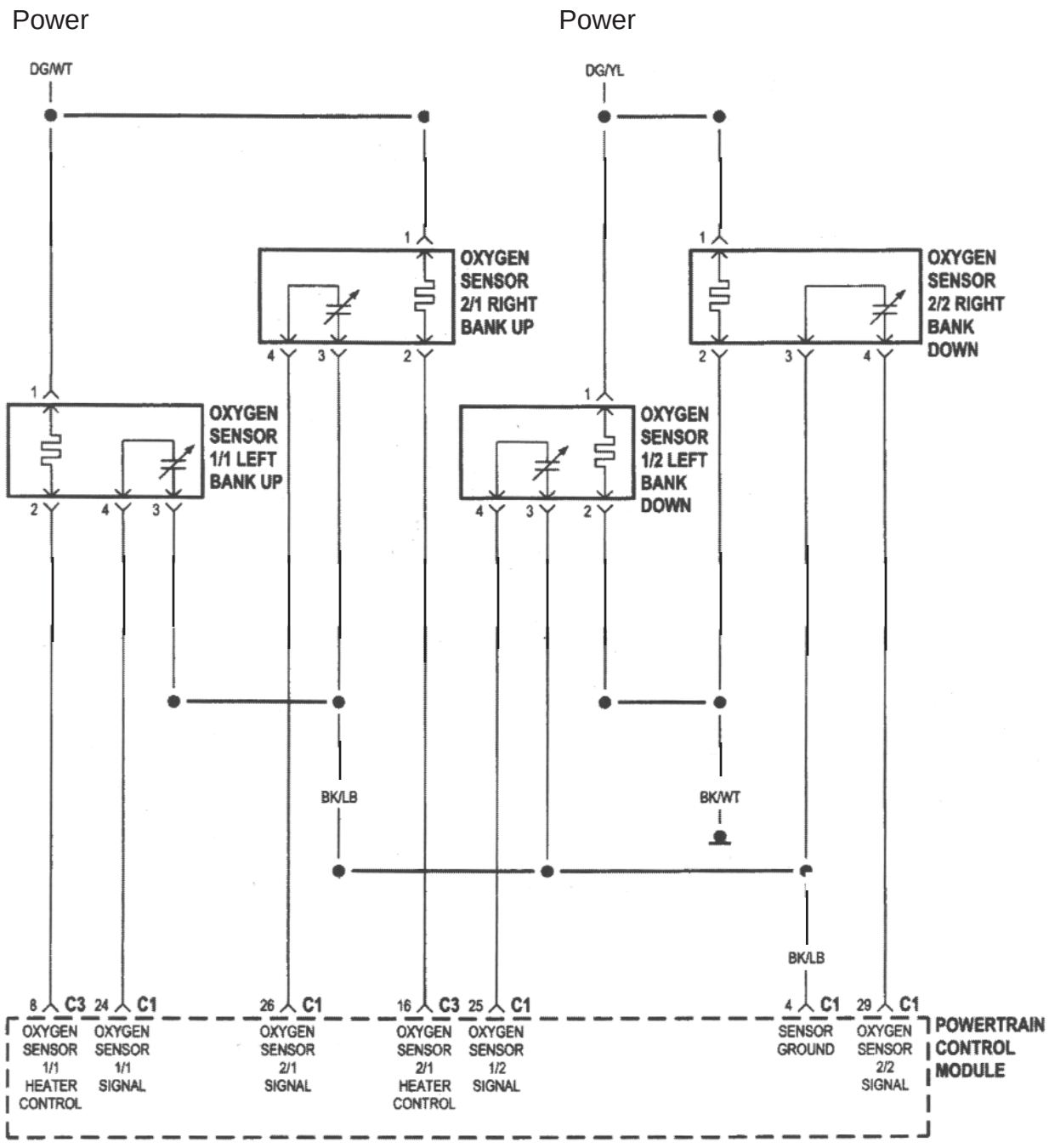
Action Taken when Code Sets

- The PCM will illuminate the malfunction indicator lamp during the second consecutive trip the conditions for setting the code have been met.
- The PCM will store the conditions, which were present when the code sets in Freeze Frame and Failure Records.

Possible Causes

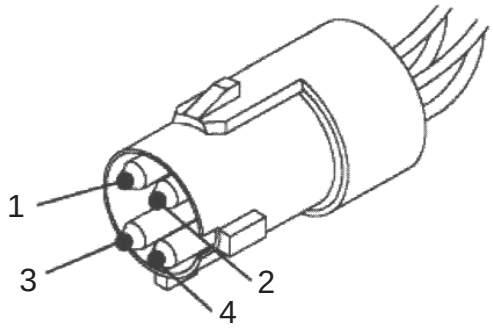
- Defective O2 Sensor heater element.
- Wiring or connector problems in the O2 Sensor heater circuit.
- Defective PCM.

Wiring Diagram

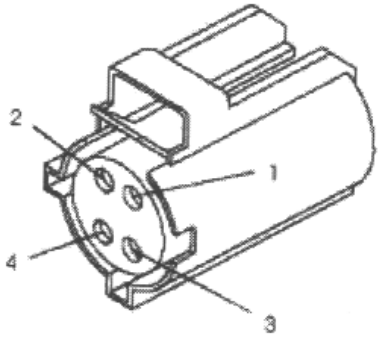


NOTE **Generic Diagram for Four Sensor System. Many vehicles will only have two. Consult specific diagram for vehicle you are working on.**

Oxygen Sensor Connector



Harness Side

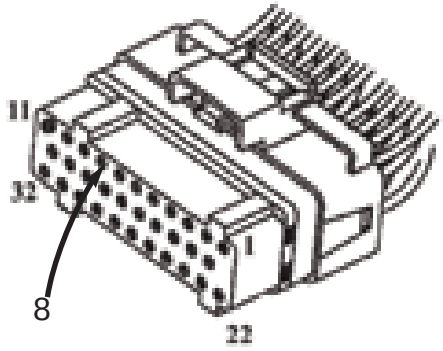


Component Side

Connector Information	
Pin	**Function**
1	Heater 12 Volt Supply
2	Heater Ground
3	Sensor Ground
4	Oxygen Sensor Signal

Figure 1*

PCM Connector (C) Gray



Connector Information	
Pin	**Function**
8	O2 Sensor 2/1 Heater Ground

Figure 2*

***See Appendix for Wire Colors**

PO155

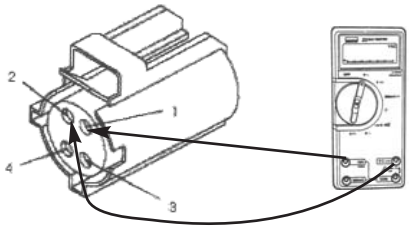
Diagnosis

Step 1

Connect your scan tool to the vehicle. Check and record all diagnostic trouble codes, failure records and freeze frame data. Clear codes and start the engine. Try to duplicate the failure record conditions present when the code previously set. Does the scanner indicate the code set during this ignition cycle?
If yes, go to step 2.
If no, the problem is intermittent. Try shaking the O2 Sensor #2/1 wiring harness and connectors to duplicate the condition. Check the sensor wiring harness for damaged insulation, broken, pinched or frayed wiring. Also check the harness connectors for corroded damaged or pushed out terminals.

Step 2

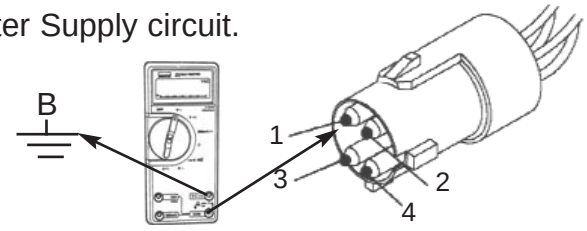
With the ignition key off disconnect O2 Sensor #2/1 harness connector. Inspect the sensor and harness connectors for corroded damaged or pushed out terminals. Using your DVOM measure the resistance between the Heater Supply (pin 1) and Heater Ground (pin 2) circuit terminals of the O2 Sensor **(See Figure 1)**. Is the resistance above 25 ohms?
If yes, replace O2 Sensor #2/1
If no, go to step 3.



Step 3

NOTE **The O2 Sensor Heater Supply circuit may be a fused ASD relay output or an O2 Sensor Relay output depending on the O2 Sensor circuit being tested. Consult vehicle specific wiring diagrams to determine which type you have.**

With the ignition key off disconnect O2 Sensor #2/1 harness connector. Inspect the sensor and harness connectors for corroded damaged or pushed out terminals. Use your DVOM to measure the voltage between the O2 Sensor #2/1 Heater 12 V Supply terminal (pin 1) of the sensor harness connector and battery ground **(See Figure 1)**. On a normally operating system, voltage will be present for approximately one second after turning on the ignition key. Was there 10.0 volts or higher present for approximately one second?
If yes, go to step 4.
If no, repair the open O2 Sensor #2/1 Heater Supply circuit.



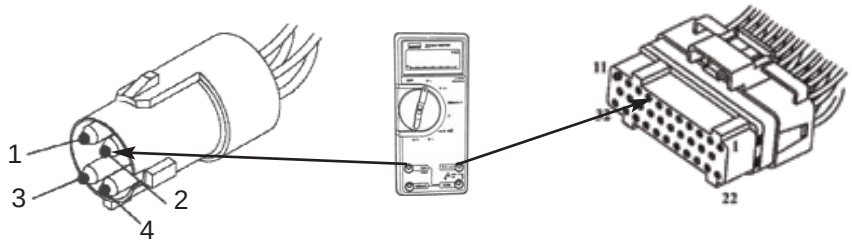
Diagnosis continued

Step 4

NOTE **There may be two types of O2 Sensor heater ground circuits used on this vehicle. Verify which type of heater ground circuit is being tested, PWM control circuit or O2 Sensor Heater relay ground circuit. Consult vehicle specific wiring diagrams to determine which type you have.**

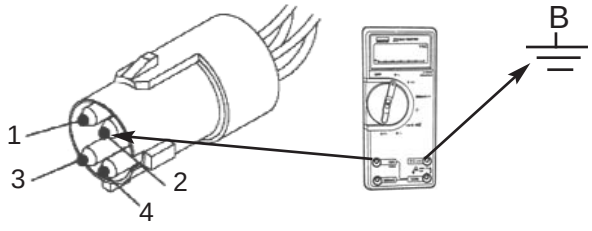
With the ignition key off disconnect the PCM and O2 Sensor #2/1 harness connectors. Inspect the PCM, O2 Sensor and harness connectors for corroded damaged or pushed out terminals. Inspect the O2 Sensor wiring harness for damaged insulation, broken, pinched or frayed wiring.

- **If you are testing a PWM controlled O2 Sensor heater ground circuit use your DVOM to measure the resistance between O2 Sensor #2/1 heater ground circuit terminals of the PCM (pin 8) and O2 Sensor (pin 2) harness connectors (See Figure 2). Is the resistance 5 ohms or less?**



- **If you are testing an O2 Sensor that uses the chassis for the heater ground use your DVOM to measure the resistance between the O2 sensor ground circuit terminal of the sensor harness connector and chassis ground. Is the resistance 5 ohms or less?**

If yes, go to step 5.
If no, repair the open O2 Sensor #2/1 heater ground circuit.

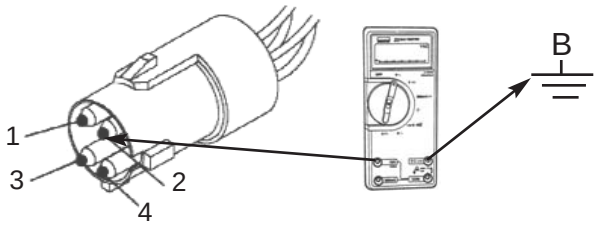


Step 5

Before beginning this test, verify what type of Heated O2 Sensor is being tested. Either PWM or Heater Relay controlled O2 Sensor.

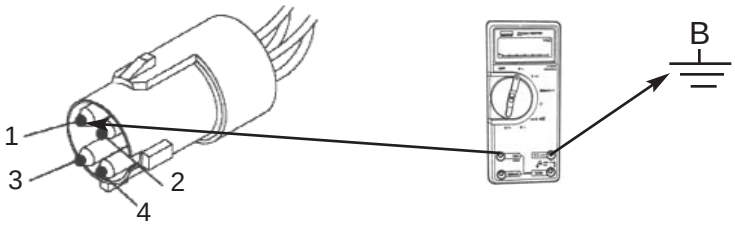
With the ignition key off disconnect the PCM and O2 Sensor #2/1 harness connectors. Inspect the PCM, O2 Sensor and harness connectors for corroded damaged or pushed out terminals. Inspect the O2 Sensor wiring harness for damaged insulation, broken, pinched or frayed wiring.

- **If you are testing a PWM controlled O2 Sensor heater ground circuit use your DVOM and measure the resistance between O2 Sensor #2/1 heater ground control circuit terminal (pin 2) of the O2 Sensor harness connector and a good ground. Is the resistance 5 ohms or less?**



- **If you are testing a heater relay controlled O2 sensor heater use your DVOM and measure the resistance between the O2S #2/1 Heater 12 V Supply circuit terminal (pin 1) of the O2 Sensor #2/1 harness connector and a good ground. Is the resistance 5 ohms or less?**

  If yes, repair the O2 Sensor heater control circuit for a short to ground.
  If no, replace the PCM.



CODE P0161
HO2S #2/2 Heater Circuit Malfunction
(Bank 2, Sensor 2)

Chrysler 3.9 Liter V6, 5.2 & 5.9 Liter V8
Code P0161 Heated Oxygen Sensor Bank 2, Sensor 2 (#2/2) Heater Circuit Malfunction

Theory of Operation

The Heated Oxygen (O2) Sensor works like a small battery. It has an operating range of about 0 to 1 volt. Its output voltage depends on the amount of oxygen in the exhaust stream. If the exhaust contains a high oxygen content the fuel/air ratio is considered lean and the output voltage of the sensor will be low (400mV or below). With a low oxygen content in the exhaust stream the air/fuel ratio is considered rich and the sensor output voltage will be high (600mV or higher). The Powertrain Control Module (PCM) constantly monitors the O2 Sensor voltage during closed loop operation and compensates for a rich or lean condition by decreasing or increasing injector pulse width as necessary.
The O2 Sensor must be hot (600F) in order for it to work properly. To get the sensor to this temperature quickly and keep it at this temperature a heater is incorporated into the sensor.

Circuit Description

The O2 Sensor signal circuit consists of the sensor; signal and a signal return circuit wiring and the PCM. The heater circuit consists of the sensor, 12-volt supply and ground circuit wiring and in some cases the PCM. Depending on the application the O2 Sensor heater supply circuit is either a fused Auto Shut Down (ASD) relay output or an O2 Sensor Relay output. The O2 Sensor heater ground may be either a PCM controlled Pulse Width Modulated (PWM) control circuit or a chassis ground.

Conditions for Setting the Code

- Battery voltage greater than 10.5 volts at cold start.
- Engine Coolant temperature less than 147°F.
- Battery temperature equal to or less than 27°F.
- Engine at idle for at least 12 seconds.
- The O2S sensor voltage is greater than 3 volts for 60 to 240 seconds

Action Taken when Code Sets

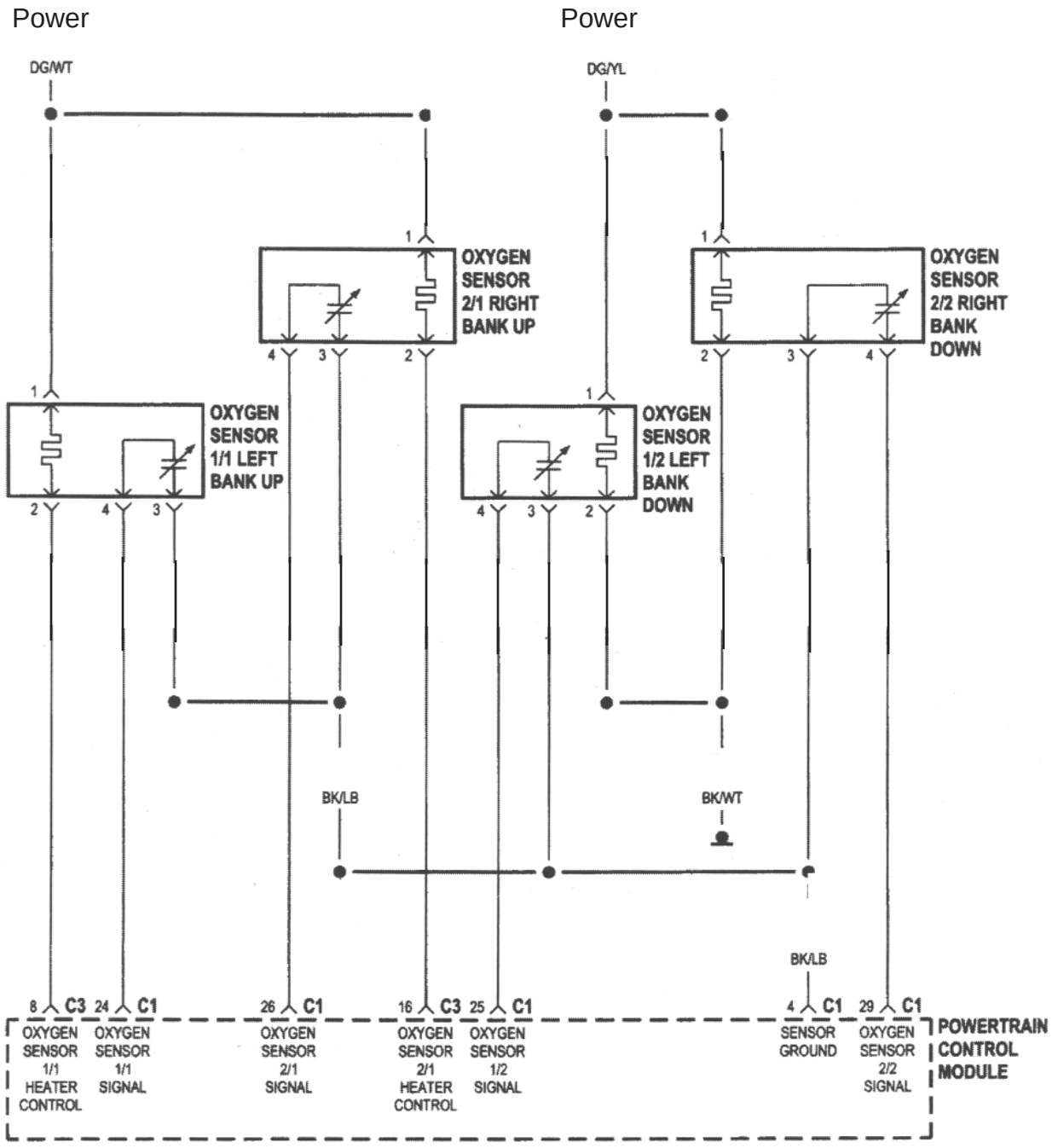
- The PCM will illuminate the malfunction indicator lamp during the second consecutive trip the conditions for setting the code have been met.
- The PCM will store the conditions, which were present when the code sets in Freeze Frame and Failure Records.

Possible Causes

- Defective O2 Sensor heater element.
- Wiring or connector problems in the O2 Sensor heater circuit.
- Defective PCM.

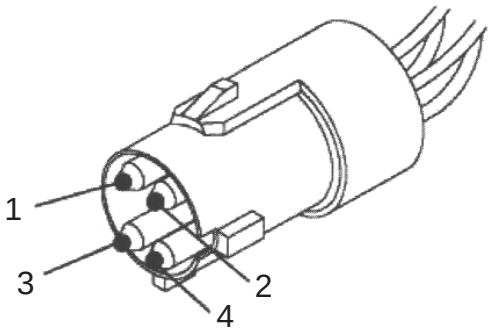
PO161

Wiring Diagram

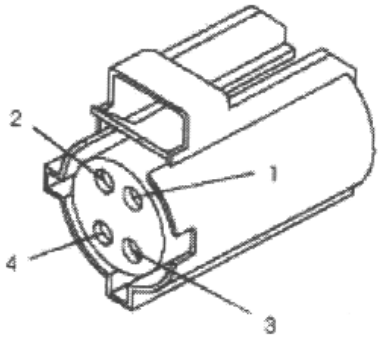


NOTE **Generic Diagram for Four Sensor System. Many vehicles will only have two. Consult specific diagram for vehicle you are working on.**

Oxygen Sensor Connector



Harness Side

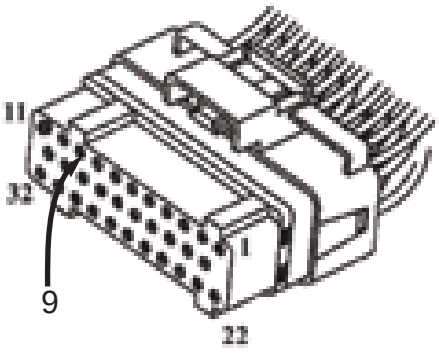


Component Side

Connector Information	
Pin	**Function**
1	Heater 12 Volt Supply
2	Heater Ground
3	Sensor Ground
4	Oxygen Sensor Signal

Figure 1*

PCM Connector (C) Gray



Connector Information	
Pin	**Function**
9	O2 Sensor 2/2 Heater Ground

Figure 2*

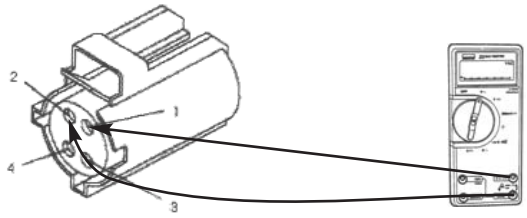
***See Appendix for Wire Colors**

Step 1

Connect your scan tool to the vehicle. Check and record all diagnostic trouble codes, failure records and freeze frame data. Clear codes and start the engine. Try to duplicate the failure, record conditions present when the code previously set. Does the scanner indicate the code set during this ignition cycle?
If yes, go to step 2.
If no, the problem is intermittent. Try shaking the O2 Sensor #2/2 wiring harness and connectors to duplicate the condition. Check the sensor wiring harness for damaged insulation, broken, pinched or frayed wiring. Also check the harness connectors for corroded damaged or pushed out terminals.

Step 2

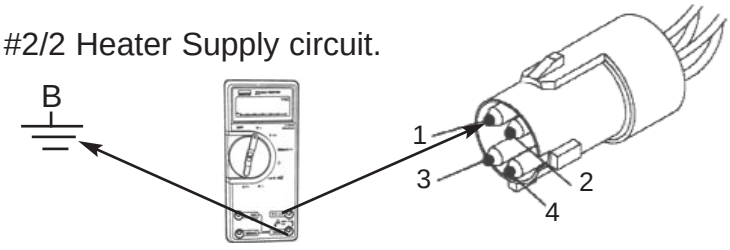
With the ignition key off disconnect O2 Sensor #2/2 harness connector. Inspect the sensor and harness connectors for corroded damaged or pushed out terminals. Using your DVOM measure the resistance between the Heater 12 V Supply (pin 1) and Heater Ground (pin 2) circuit terminals of the O2 Sensor **(See Figure 1)**. Is the resistance above 25 ohms?
If yes, replace O2 Sensor #2/2.
If no, go to step 3.



Step 3

NOTE **The O2 Sensor Heater Supply circuit may be a fused ASD relay output or an O2 Sensor Relay output depending on the O2 Sensor circuit being tested. Consult vehicle specific wiring diagrams to determine which type you have.**

With the ignition key off disconnect O2 Sensor #2/2 harness connector. Inspect the sensor and harness connectors for corroded damaged or pushed out terminals. Use your DVOM to measure the voltage between the O2 Sensor #2/2 Heater 12 V Supply circuit terminal (pin 1) of the sensor harness connector and battery ground **(See Figure 1)**. On a normally operating system voltage will be present for approximately one second after turning on the ignition key. Was there 10.0 volts or higher present for approximately one second?
If yes, go to step 4.
If no, repair the open O2 Sensor #2/2 Heater Supply circuit.



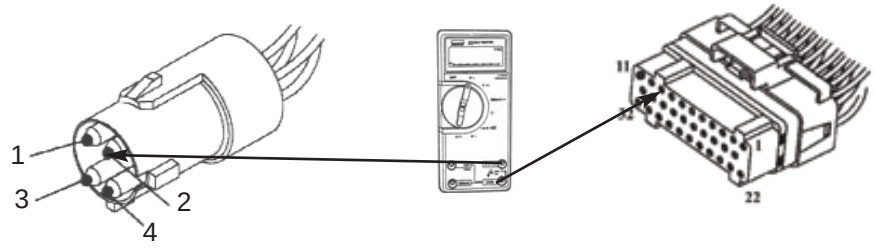
Diagnosis continued

Step 4

NOTE **There may be two types of O2 Sensor heater ground circuits used on this vehicle. Verify which type of heater ground circuit is being tested, PWM control circuit or O2 Sensor Heater relay ground circuit. Consult vehicle specific wiring diagrams to determine which type you have.**

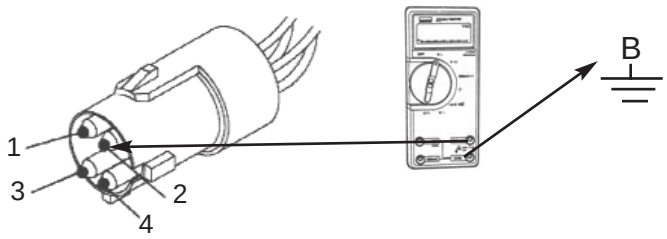
With the ignition key off disconnect the PCM and O2 Sensor #2/2 harness connectors. Inspect the PCM, O2 Sensor and harness connectors for corroded damaged or pushed out terminals. Inspect the O2 Sensor wiring harness for damaged insulation, broken, pinched or frayed wiring.

- **If you are testing a PWM controlled O2 Sensor heater ground circuit use your DVOM to measure the resistance between O2 Sensor #2/2 heater ground circuit terminals of the PCM (pin 9) and O2 Sensor (pin 2) harness connectors (See Figure 2). Is the resistance 5 ohms or less?**



- **If you are testing an O2 Sensor that uses the chassis for the heater ground use your DVOM to measure the resistance between the O2 Sensor Heater ground circuit terminal (pin 2) of the sensor harness connector and chassis ground. Is the resistance 5 ohms or less?**

If yes, go to step 5.
If no, repair the open O2 Sensor #2/2 heater ground circuit.

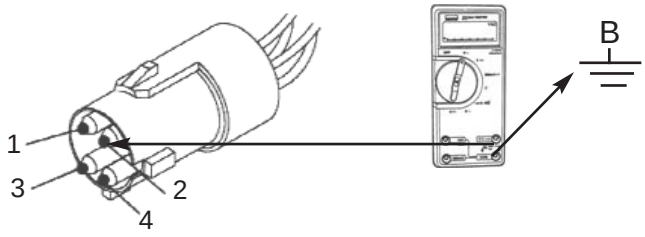


Diagnosis continued

Step 5

Before beginning this test, verify what type of Heated O2 Sensor is being tested. Either PWM or Heater Relay controlled O2 Sensor.
With the ignition key off disconnect the PCM and O2 Sensor #2/2 harness connectors. Inspect the PCM, O2 Sensor and harness connectors for corroded damaged or pushed out terminals. Inspect the O2 Sensor wiring harness for damaged insulation, broken, pinched or frayed wiring.

- **If you are testing a PWM controlled O2 Sensor heater ground circuit use your DVOM and measure the resistance between O2 Sensor Heater ground control circuit terminal (pin 2) of the O2 Sensor harness connector and a good ground. Is the resistance 5 ohms or less?**



- **If you are testing a heater relay controlled O2 sensor heater use your DVOM and measure the resistance between the O2 Sensor Heater 12 V Supply circuit terminal of the O2 Sensor harness connector and a good ground. Is the resistance 5 ohms or less?**

If yes, repair the O2 Sensor heater control circuit for a short to ground.
If no, replace the PCM.

CODE P0320 3.9
No Crank Reference Signal
@ PCM

Chrysler 3.9 Liter V6
Code P0320 No Crank Reference Signal at PCM

Theory of Operation

The Crankshaft Position (CKP) sensor provides the engine speed and crankshaft position inputs to the Powertrain Control Module (PCM). The PCM uses this along with other inputs to determine injector sequence and ignition timing. The CKP is a hall-effect type sensor combined with an internal magnet. The magnet makes the sensor sensitive to steel which passes within a certain distance of it. The CKP sensor is bolted to the cylinder block near the right cylinder head. The sensor detects notches around the outside of the flywheel (manual transmission or flex plate (automatic transmission). On six cylinder engines there are three sets of double notches and three sets of single notches. The notches cause a pulse to be generated when they pass under the sensor. There are six pulses generated for each engine revolution. The pulses are the input to the PCM. The engine will not run if the PCM does not receive a CKP sensor input.

Circuit Description

The CKP sensor circuit consists of 3 wires, which connect the sensor directly to the PCM. They are the 5V supply, sensor ground and CKP sensor signal circuits.

Conditions for Setting Code

- No signal from the CKP sensor is present during engine cranking and at least three cam position signals have occurred.

Action Taken when Code Sets

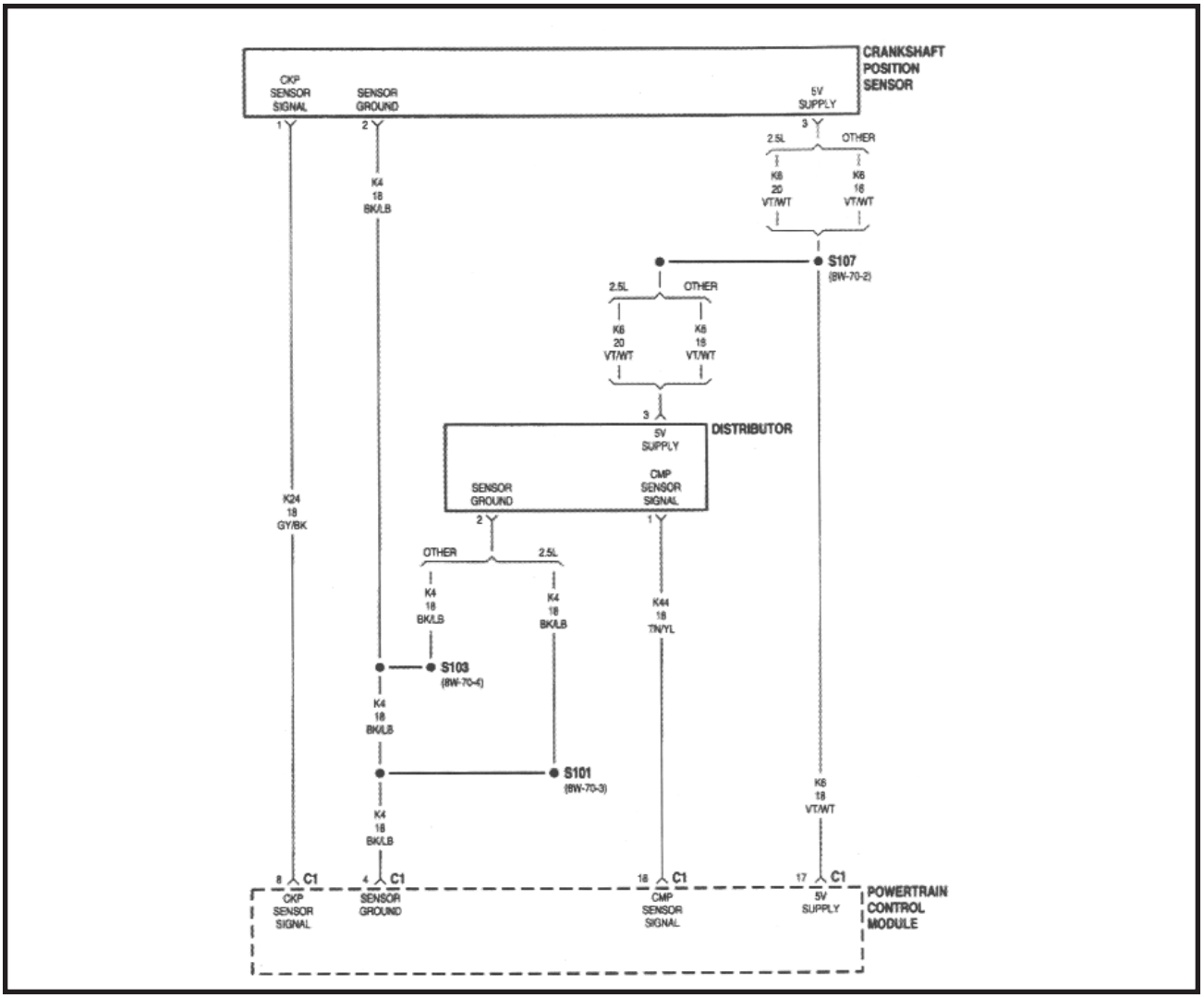
- The PCM will illuminate the malfunction indicator lamp during the first trip the conditions for setting the code have been met.
- The PCM will store the conditions, which were present when the code sets in Freeze Frame and Failure Records.

Possible Causes

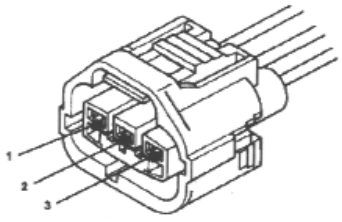
- Damaged wiring or connectors in the CKP sensor electrical circuits
- Excessive clearance between the sensor and flywheel
- Damaged flywheel
- Faulty CKP sensor
- Faulty PCM

PO320 3.9

Wiring Diagram



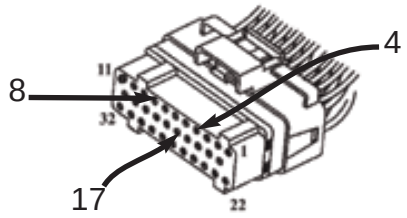
Crankshaft Position (CKP)Sensor



Connector Information		
Pin	**Wire Color**	**Function**
1	GY/BK	CKP Sensor Signal
2	BK/LB	Sensor Ground
3	VT/WT or OR	5-Volt Supply

Figure 1

PCM Connector (C) Gray



Connector Information		
Pin	**Wire Color**	**Function**
4	BK/LB	Sensor Ground
8	GY/BK	CKP Sensor Signal
17	VT/WT or OR	5-Volt Supply

Figure 2

Diagnosis

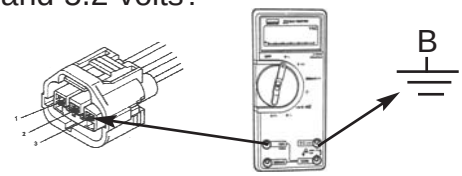
Step 1

Connect your scan tool to the vehicle. Check and record all diagnostic trouble codes, failure records and freeze frame data. Clear codes and attempt to start the engine. Does the engine start?
If yes, the problem is intermittent:

- Check for damaged wiring or connectors in the CKP sensor to PCM wiring harness.
- With engine idling tap the sensor and wiggle the wiring and connectors. If the engine dies out repair the circuit where wiggling caused the engine to die.
  If no, go to step 2.

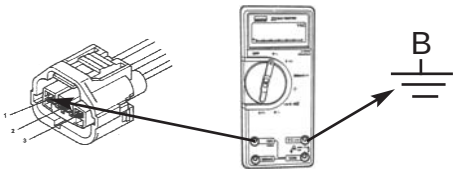
Step 2

With the ignition key off disconnect the CKP sensor harness connector. Inspect the sensor and harness connectors for corroded, damaged or pushed out terminals. With the ignition key on use your DVOM and measure the voltage on the CKP sensor 5 Volt Supply circuit terminal (pin 3) of the sensor harness connector **(See Figure 1)**. Is the voltage between 4.8 and 5.2 volts?
If yes go to step 3.
If no, go to step 6.



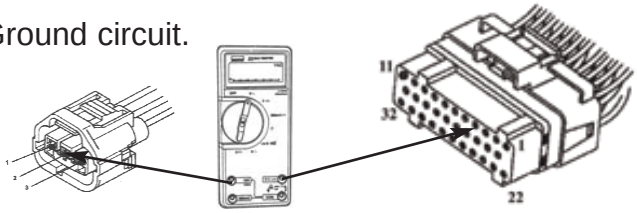
Step 3

With the ignition key off disconnect the CKP sensor harness connector. Inspect the sensor and harness connectors for corroded, damaged or pushed out terminals. With the ignition key on use your DVOM and measure the voltage on the CKP sensor Signal circuit terminal (pin 1) of the sensor harness connector. Is the voltage between 4.5 and 5.0 volts?
If yes go to step 4.
If no, go to step 9.



Step 4

With the ignition key off disconnect the CKP sensor and PCM harness connectors. Inspect the PCM, CKP sensor and harness connectors for corroded, damaged or pushed out terminals. Using your DVOM measure the resistance between the CKP sensor Ground circuit terminals of the PCM (pin 4) and CKP sensor (pin 2) harness connectors **(See Figure 2)**. Is the resistance 5 Ohms or less?
If yes, go to step 5.
If no, repair the open CKP sensor Ground circuit.



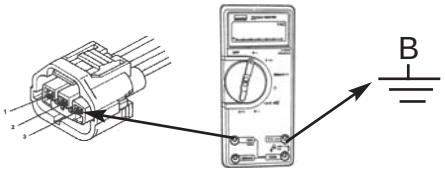
Diagnosis continued

Step 5

Inspect the slots on the flywheel/flex plate for damage. Was any problem found?
If yes repair flywheel/flex plate and rerun diagnostics.
If no, replace CKP sensor.

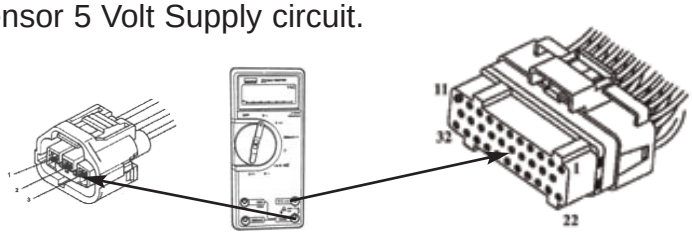
Step 6

With the ignition key off disconnect the CKP sensor harness connector. Inspect the sensor and harness connectors for corroded, damaged or pushed out terminals. With the ignition key on use your DVOM and measure the voltage on the CKP sensor 5 Volt Supply circuit terminal (pin 3) of the sensor harness connector. Is the voltage above 5.3 volts?
If yes, repair the CKP sensor 5 Volt Supply circuit for a short to battery voltage.
If no, go to step 7.



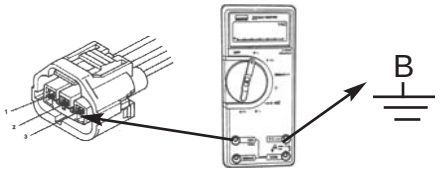
Step 7

With the ignition key off disconnect the CKP sensor and PCM harness connectors. Inspect the PCM, CKP sensor and harness connectors for corroded, damaged or pushed out terminals. Using your DVOM measure the resistance between the CKP sensor 5 Volt Supply circuit terminals of the PCM (pin 17) and CKP sensor (pin 3) harness connectors **(See Figure 2)**. Is the resistance 5 Ohms or less?
If yes, go to step 8.
If no, repair the open CKP sensor 5 Volt Supply circuit.



Step 8

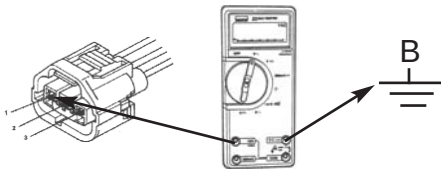
With the ignition key off disconnect the CKP sensor and PCM harness connectors. Inspect the PCM, CKP sensor and harness connectors for corroded, damaged or pushed out terminals. Using your DVOM measure the resistance between the CKP sensor 5 Volt Supply circuit terminal (pin 3) of the sensor harness connector and a good ground. Is the resistance 5 Ohms or less?
If yes, repair the CKP sensor 5 Volt Supply Circuit for a short to ground.
If no, replace the PCM.



Diagnosis continued

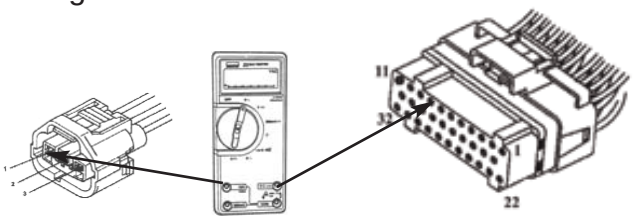
Step 9

With the ignition key off disconnect the CKP sensor harness connector. Inspect the sensor and harness connectors for corroded, damaged or pushed out terminals. With the ignition key on use your DVOM and measure the voltage on the CKP sensor Signal circuit terminal (pin 1) of the sensor harness connector. Is the voltage above 5.3 volts?
If yes, repair the CKP sensor Signal circuit for a short to battery voltage.
If no, go to step 10.



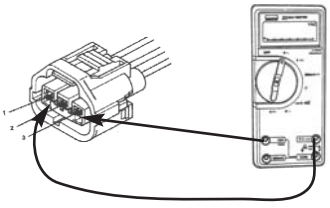
Step 10

With the ignition key off disconnect the CKP sensor and PCM harness connectors. Inspect the PCM, CKP sensor and harness connectors for corroded, damaged or pushed out terminals. Using your DVOM measure the resistance between the CKP sensor Signal circuit terminals of the PCM (pin 8) and CKP sensor (pin 1) harness connectors **(See Figure 2)**. Is the resistance 5 Ohms or less?
If yes, go to step 11.
If no, repair the open CKP sensor Signal circuit.



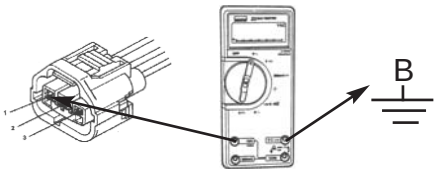
Step 11

With the ignition key off disconnect the CKP sensor and PCM harness connectors. Inspect the PCM, CKP sensor and harness connectors for corroded, damaged or pushed out terminals. Using your DVOM measure the resistance between the CKP sensor Signal (pin 1) and 5 Volt Supply (pin 3) circuit terminals of the sensor harness connector. Is the resistance 5 ohms or less?
If yes, repair the short between the CKP sensor 5 Volt Supply and Signal circuits.
If no, go to step 12.



Step 12

With the ignition key off disconnect the CKP sensor and PCM harness connectors. Inspect the PCM, CKP sensor and harness connectors for corroded, damaged or pushed out terminals. Using your DVOM measure the resistance between the CKP sensor Signal circuit terminal (pin 1) of the sensor harness connector and a good ground. Is the resistance 5 Ohms or less?
If yes, repair the CKP sensor Signal circuit for a short to ground.
If no, replace the PCM.



CODE P0320 5.2, 5.9
No Crank Reference Signal
at PCM

Chrysler 5.2 & 5.9 Liter V8
Code P0320 No Crank Reference Signal at PCM

Theory of Operation

The Crankshaft Position (CKP) sensor provides the engine speed and crankshaft position inputs to the Powertrain Control Module (PCM). The PCM uses this along with other inputs to determine injector sequence and ignition timing. The CKP is a hall-effect type sensor combined with an internal magnet. The magnet makes the sensor sensitive to steel which passes within a certain distance of it. The CKP sensor is bolted to the cylinder block near the right cylinder head. The sensor detects notches around the outside of the flywheel (manual transmission or flex plate (automatic transmission). On eight cylinder engines there are eight single notches, spaced every 45 degrees. The notches cause a pulse to be generated when they pass under the sensor. There are eight pulses generated for each engine revolution. The pulses are the input to the PCM. The engine will not run if the PCM does not receive a CKP sensor input.

Circuit Description

The CKP sensor circuit consists of 3 wires, which connect the sensor directly to the PCM. They are the 5V supply, sensor ground and CKP sensor signal circuits.

Conditions for Setting Code

- No signal from the CKP sensor is present during engine cranking and at least three cam position signals have occurred.

Action Taken when Code Sets

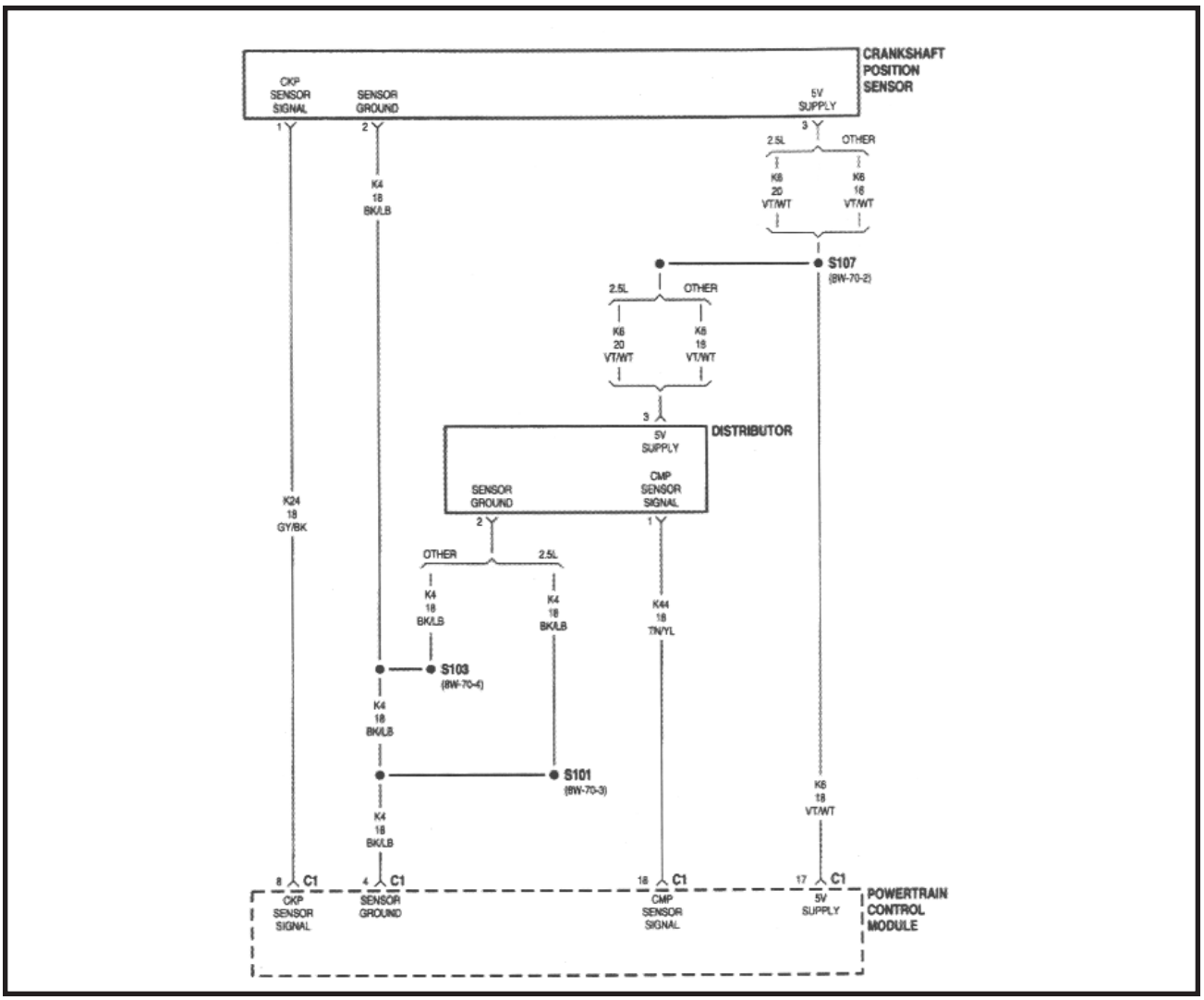
- The PCM will illuminate the malfunction indicator lamp during the first trip the conditions for setting the code have been met.
- The PCM will store the conditions, which were present when the code sets in Freeze Frame and Failure Records.

Possible Causes

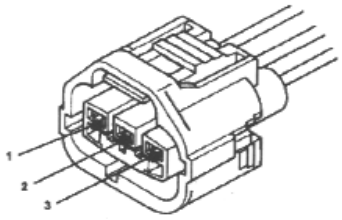
- Damaged wiring or connectors in the CKP sensor electrical circuits.
- Excessive clearance between the sensor and flywheel
- Damaged flywheel
- Faulty CKP sensor
- Faulty PCM

PO320 5.2, 5.9

Wiring Diagram



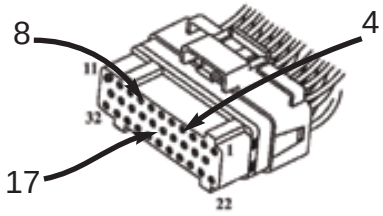
Crankshaft Position (CKP)Sensor



Connector Information		
Pin	**Wire Color**	**Function**
1	GY/BK or RD/LG	CKP Sensor Signal
2	BK/LB	Sensor Ground
3	VT/WT or OR	5-Volt Supply

Figure 1

PCM Connector (A) Black



Connector Information		
Pin	**Wire Color**	**Function**
4	BK/LB	Sensor Ground
8	GY/BK or RD/LG	CKP Sensor Signal
17	VT/WT or OR	5-Volt Supply

Figure 2

PO320 5.2, 5.9

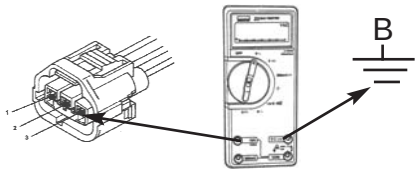
Step 1

Connect your scan tool to the vehicle. Check and record all diagnostic trouble codes, failure records and freeze frame data. Clear codes and attempt to start the engine. Does the engine start?
If yes, the problem is intermittent:

- Check for damaged wiring or connectors in the CKP sensor to PCM wiring harness.
- With engine idling tap the sensor and wiggle the wiring and connectors. If the engine dies out repair the circuit where wiggling caused the engine to die.
  If no, go to step 2.

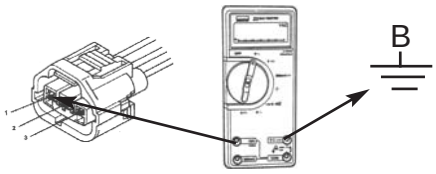
Step 2

With the ignition key off disconnect the CKP sensor harness connector. Inspect the sensor and harness connectors for corroded, damaged or pushed out terminals. With the ignition key on use your DVOM and measure the voltage on the CKP sensor 5 Volt Supply circuit terminal (pin 3) of the sensor harness connector **(See Figure 1)**. Is the voltage between 4.8 and 5.2 volts?
If yes, go to step 3.
If no, go to step 6.



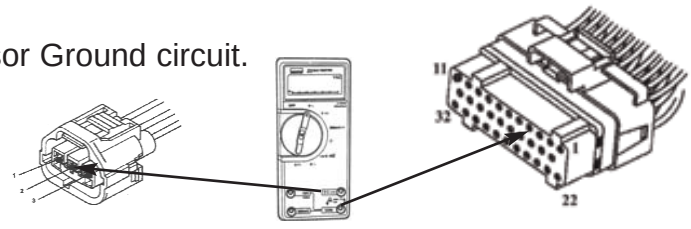
Step 3

With the ignition key off disconnect the CKP sensor harness connector. Inspect the sensor and harness connectors for corroded, damaged or pushed out terminals. With the ignition key on use your DVOM and measure the voltage on the CKP sensor Signal circuit terminal (pin 1) of the sensor harness connector. Is the voltage between 4.5 and 5.0 volts?
If yes go to step 4.
If no, go to step 9.



Step 4

With the ignition key off disconnect the CKP sensor and PCM harness connectors. Inspect the PCM, CKP sensor and harness connectors for corroded, damaged or pushed out terminals. Using your DVOM measure the resistance between the CKP sensor Ground circuit terminals of the PCM (pin 4) and CKP sensor (pin 2) harness connectors **(See Figure 2)**. Is the resistance 5 Ohms or less?
If yes, go to step 5.
If no, repair the open CKP sensor Ground circuit.



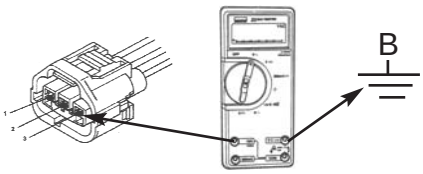
Diagnosis continued

Step 5

Inspect the slots on the flywheel/flex plate for damage. Was any problem found?
If yes repair flywheel/flex plate and rerun diagnostics.
If no, replace CKP sensor.

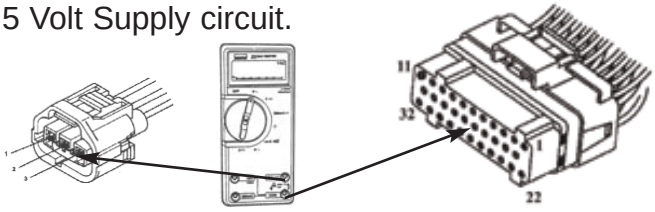
Step 6

With the ignition key off disconnect the CKP sensor harness connector. Inspect the sensor and harness connectors for corroded, damaged or pushed out terminals. With the ignition key on use your DVOM and measure the voltage on the CKP sensor 5 Volt Supply circuit terminal (pin 3) of the sensor harness connector. Is the voltage above 5.3 volts?
If yes, repair the CKP sensor 5 Volt Supply circuit for a short to battery voltage.
If no, go to step 7.



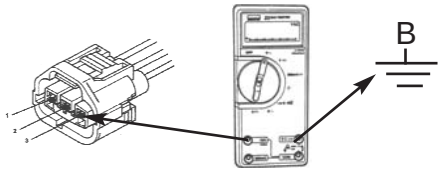
Step 7

With the ignition key off disconnect the CKP sensor and PCM harness connectors. Inspect the PCM, CKP sensor and harness connectors for corroded, damaged or pushed out terminals. Using your DVOM measure the resistance between the CKP sensor 5 Volt Supply circuit terminals of the PCM (pin 17) and CKP sensor (pin 3) harness connectors **(See Figure 2)**. Is the resistance 5 Ohms or less?
If yes, go to step 8.
If no, repair the open CKP sensor 5 Volt Supply circuit.



Step 8

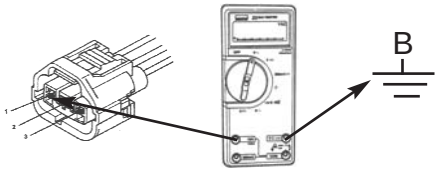
With the ignition key off disconnect the CKP sensor and PCM harness connectors. Inspect the PCM, CKP sensor and harness connectors for corroded, damaged or pushed out terminals. Using your DVOM measure the resistance between the CKP sensor 5 Volt Supply circuit terminal (pin 3) of the sensor harness connector and a good ground. Is the resistance 5 Ohms or less?
If yes, repair the CKP sensor 5 Volt Supply Circuit for a short to ground.
If no, replace the PCM.



Diagnosis continued

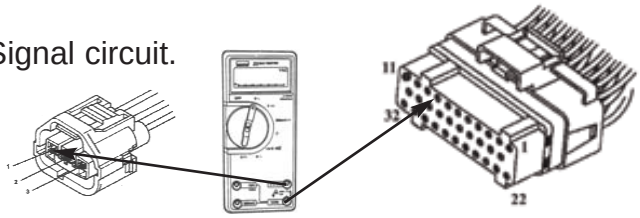
Step 9

With the ignition key off disconnect the CKP sensor harness connector. Inspect the sensor and harness connectors for corroded, damaged or pushed out terminals. With the ignition key on use your DVOM and measure the voltage on the CKP sensor Signal circuit terminal (pin 1) of the sensor harness connector. Is the voltage above 5.3 volts?
If yes, repair the CKP sensor Signal circuit for a short to battery voltage.
If no, go to step 10.



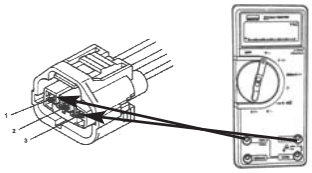
Step 10

With the ignition key off disconnect the CKP sensor and PCM harness connectors. Inspect the PCM, CKP sensor and harness connectors for corroded, damaged or pushed out terminals. Using your DVOM measure the resistance between the CKP sensor Signal circuit terminals of the PCM (pin 8) and CKP sensor (pin 1) harness connectors **(See Figure 2)**. Is the resistance 5 Ohms or less?
If yes, go to step 11.
If no, repair the open CKP sensor Signal circuit.



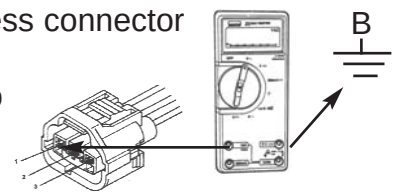
Step 11

With the ignition key off disconnect the CKP sensor and PCM harness connectors. Inspect the PCM, CKP sensor and harness connectors for corroded, damaged or pushed out terminals. Using your DVOM measure the resistance between the CKP sensor Signal (pin 1) and 5 Volt Supply (pin 3) circuit terminals of the sensor harness connector. Is the resistance 5 ohms or less?
If yes, repair the short between the CKP sensor 5 Volt Supply and Signal circuits.
If no, go to step 12.



Step 12

With the ignition key off disconnect the CMP sensor and PCM harness connectors. Inspect the PCM, CMP sensor and harness connectors for corroded, damaged or pushed out terminals. Using your DVOM measure the resistance between the CMP sensor Signal circuit terminal (pin 1) of the sensor harness connector and a good ground. Is the resistance 5 Ohms or less?
If yes, repair the CMP sensor Signal circuit for a short to ground.
If no, replace the PCM.



CODE P0340
No Cam Signal at PCM

Chrysler Code P0340 No Cam Signal at PCM

Theory of Operation

The Camshaft Position (CMP) sensor is located in the distributor. The sensor contains a hall-effect device called a sync signal generator. The sync signal generator detects a rotating pulse ring (shutter) on the distributor shaft. The pulse ring rotates 180 degrees through the signal generator. When the pulse ring is in front of the signal generators magnetic field the signal voltage is switched high and a sync signal of approximately 5 volts results. Once the pulse ring is past the signal generator the sensors magnetic field is restored and the sync signal voltage switches low to 0 volts. The sync signal is used in conjunction with the Crankshaft Position (CKP) sensor to differentiate between fuel injection and spark events. It is also used to synchronize the fuel injectors with their respective cylinders.

Circuit Description

The CMP sensor circuit consists of 3 wires, which connect the sensor directly to the PCM. They are the 5V supply, sensor ground and CMP sensor signal circuits.

Conditions for Setting Code

- No signal from the CMP sensor is detected by the PCM for at least 5 seconds with Crankshaft Position Sensor signals present.

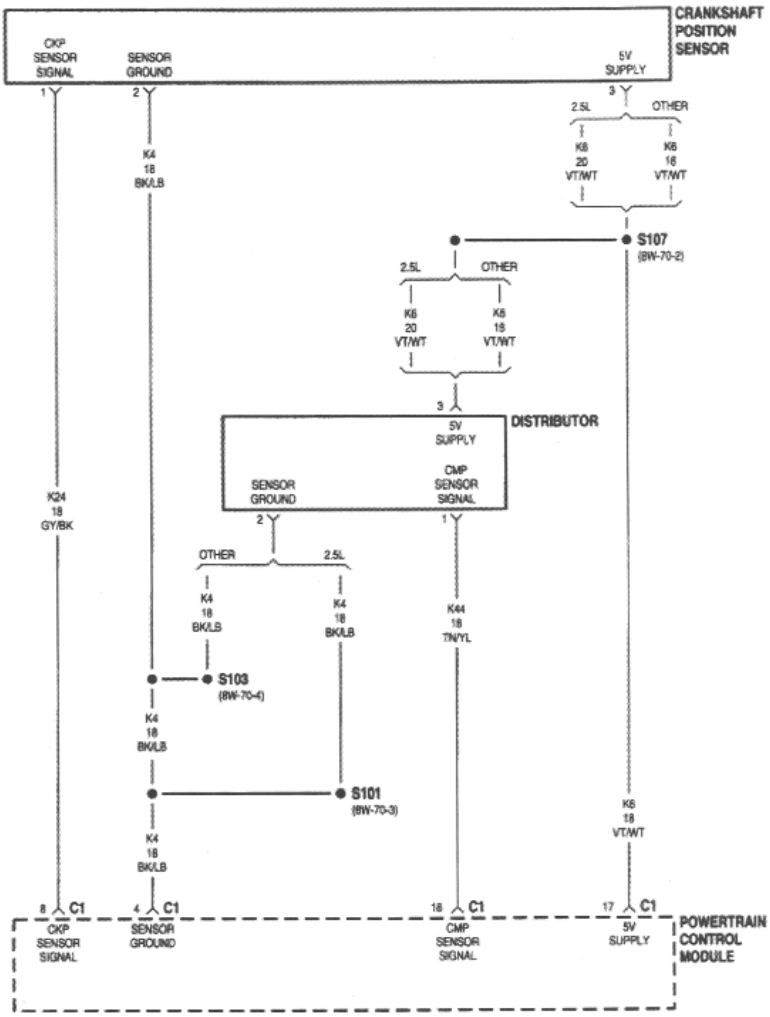
Action Taken when Code Sets

- The PCM will illuminate the malfunction indicator lamp during the first trip the conditions for setting the code have been met.
- The PCM will store the conditions, which were present when the code sets in Freeze Frame and Failure Records.

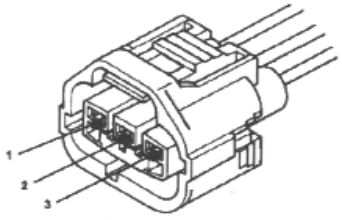
Possible Causes

- Damaged wiring or connectors in the CMP sensor electrical circuit.
- Damaged pulse ring
- Faulty CMP sensor
- Faulty PCM

Wiring Diagram



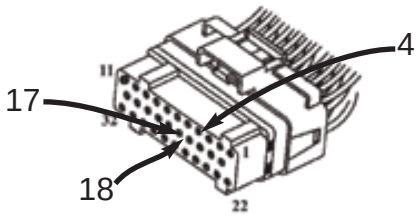
Camshaft Position (CMP)Sensor



Connector Information		
Pin	**Wire Color**	**Function**
1	TN/YL or GY/BK	CMP Sensor Signal
2	BK/LB	Sensor Ground
3	VT/WT	5-Volt Supply

Figure 1

PCM Connector (A) Black



Connector Information		
Pin	**Wire Color**	**Function**
4	BK/LB	Sensor Ground
17	VT/WT	5-Volt Supply
18	TN/YL or GY/BK	CMP Sensor Signal

Figure 2

P0340

Diagnosis

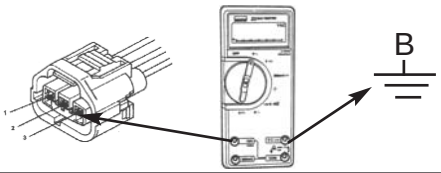
Step 1

Connect your scan tool to the vehicle. Check and record all diagnostic trouble codes, failure records and freeze frame data. Clear codes and start the engine. Does code P0340 return?
If yes, go to step 2
If no, the problem is intermittent:

- Check for damaged wiring or connectors in the CMP sensor to PCM wiring harness.
- With engine idling tap the sensor and wiggle the wiring and connectors while observing the CMP sensor count on scan data. If the sensor count drops out or the code resets repair the circuit where wiggling caused the problem to occur.

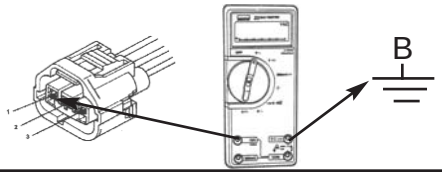
Step 2

With the ignition key off disconnect the CMP sensor harness connector. Inspect the sensor and harness connectors for corroded, damaged or pushed out terminals. With the ignition key on use your DVOM and measure the voltage on the CMP sensor 5 Volt Supply circuit terminal (pin 3) of the sensor harness connector **(See Figure 1)**. Is the voltage between 4.8 and 5.2 volts?
If yes go to step 3.
If no, go to step 6.



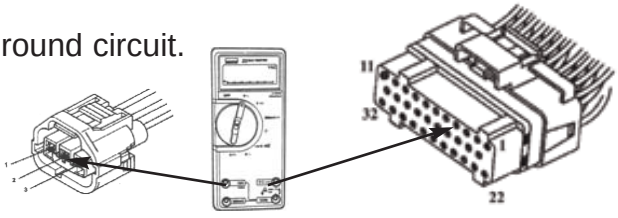
Step 3

With the ignition key off disconnect the CMP sensor harness connector. Inspect the sensor and harness connectors for corroded, damaged or pushed out terminals. With the ignition key on use your DVOM and measure the voltage on the CMP sensor Signal circuit terminal (pin 1) of the sensor harness connector. Is the voltage between 4.5 and 5.0 volts?
If yes go to step 4.
If no, go to step 9.



Step 4

With the ignition key off disconnect the CMP sensor and PCM harness connectors. Inspect the PCM, CMP sensor and harness connectors for corroded, damaged or pushed out terminals. Using your DVOM measure the resistance between the CKP sensor Ground circuit terminals of the PCM (pin 4) and CMP sensor (pin 2) harness connectors **(See Figure 2)**. Is the resistance 5 Ohms or less?
If yes, go to step 5.
If no, repair the open CMP sensor Ground circuit.



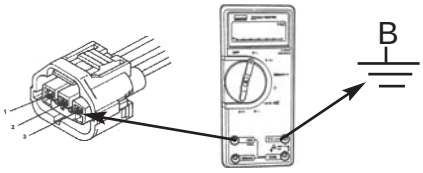
Diagnosis

Step 5

Remove the distributor cap and inspect the pulse ring (shutter) for damage. Crank over the engine and make sure the distributor turns. Was any problem found?
If yes make necessary repairs and rerun diagnostics.
If no, replace CMP sensor.

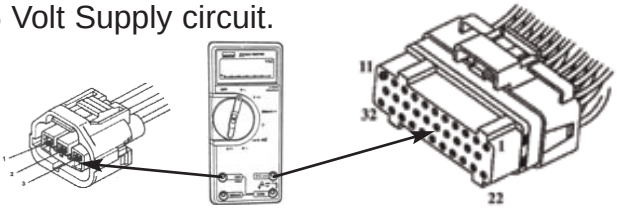
Step 6

With the ignition key off disconnect the CMP sensor harness connector. Inspect the sensor and harness connectors for corroded, damaged or pushed out terminals. With the ignition key on use your DVOM and measure the voltage on the CMP sensor 5 Volt Supply circuit terminal (pin 3) of the sensor harness connector. Is the voltage above 5.3 volts?
If yes, repair the CMP sensor 5 Volt Supply circuit for a short to battery voltage.
If no, go to step 7.



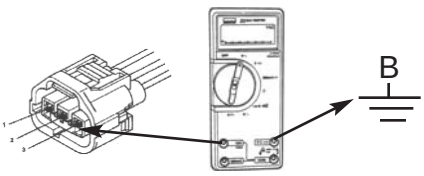
Step 7

With the ignition key off disconnect the CMP sensor and PCM harness connectors. Inspect the PCM, CMP sensor and harness connectors for corroded, damaged or pushed out terminals. Using your DVOM measure the resistance between the CMP sensor 5 Volt Supply circuit terminals of the PCM (pin 17) and CMP sensor (pin 3) harness connectors **(See Figure 2)**. Is the resistance 5 Ohms or less?
If yes, go to step 8.
If no, repair the open CMP sensor 5 Volt Supply circuit.



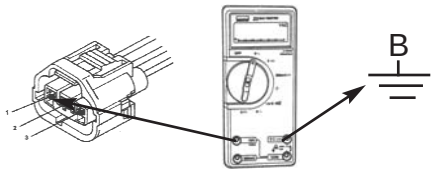
Step 8

With the ignition key off disconnect the CMP sensor and PCM harness connectors. Inspect the PCM, CMP sensor and harness connectors for corroded, damaged or pushed out terminals. Using your DVOM measure the resistance between the CMP sensor 5 Volt Supply circuit terminal (pin 3) of the sensor harness connector and a good ground. Is the resistance 5 Ohms or less?
If yes, repair the CMP sensor 5 Volt Supply Circuit for a short to ground.
If no, replace the PCM.



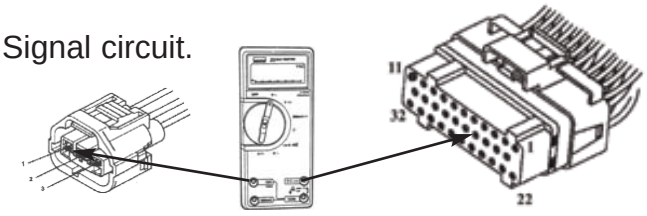
Step 9

With the ignition key off disconnect the CMP sensor harness connector. Inspect the sensor and harness connectors for corroded, damaged or pushed out terminals. With the ignition key on use your DVOM and measure the voltage on the CMP sensor Signal circuit terminal (pin 1) of the sensor harness connector. Is the voltage above 5.3 volts?
If yes, repair the CMP sensor Signal circuit for a short to battery voltage.
If no, go to step 10.



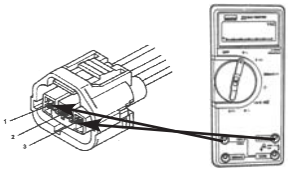
Step 10

With the ignition key off disconnect the MKP sensor and PCM harness connectors. Inspect the PCM, CMP sensor and harness connectors for corroded, damaged or pushed out terminals. Using your DVOM measure the resistance between the CMP sensor Signal circuit terminals of the PCM (pin 18) and CMP sensor (pin 1) harness connectors **(See Figure 2)**. Is the resistance 5 Ohms or less?
If yes, go to step 11.
If no, repair the open CMP sensor Signal circuit.



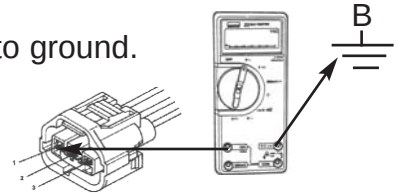
Step 11

With the ignition key off disconnect the CMP sensor and PCM harness connectors. Inspect the PCM, CMP sensor and harness connectors for corroded, damaged or pushed out terminals. Using your DVOM measure the resistance between the CMP sensor Signal (pin 1) and 5 Volt Supply (pin 3) circuit terminals of the sensor harness connector. Is the resistance 5 ohms or less?
If yes, repair the short between the CMP sensor 5 Volt Supply and Signal circuits.
If no, go to step 12.



Step 12

With the ignition key off disconnect the CMP sensor and PCM harness connectors. Inspect the PCM, CMP sensor and harness connectors for corroded, damaged or pushed out terminals. Using your DVOM measure the resistance between the CMP sensor Signal circuit terminal (pin 1) of the sensor harness connector and a good ground. Is the resistance 5 Ohms or less?
If yes, repair the CMP sensor Signal circuit for a short to ground.
If no, replace the PCM.



APPENDIX
42/46/47RE

Color Abbreviation Key

BK = Black

BL = Blue

BR = Brown

DB = Dark Blue

DG = Dark Green

GR = Green

GY = Gray

LB = Light Blue

LG = Light Green

OR = Orange

PK = Pink

PL = Purple

RD = Red

TN = Tan

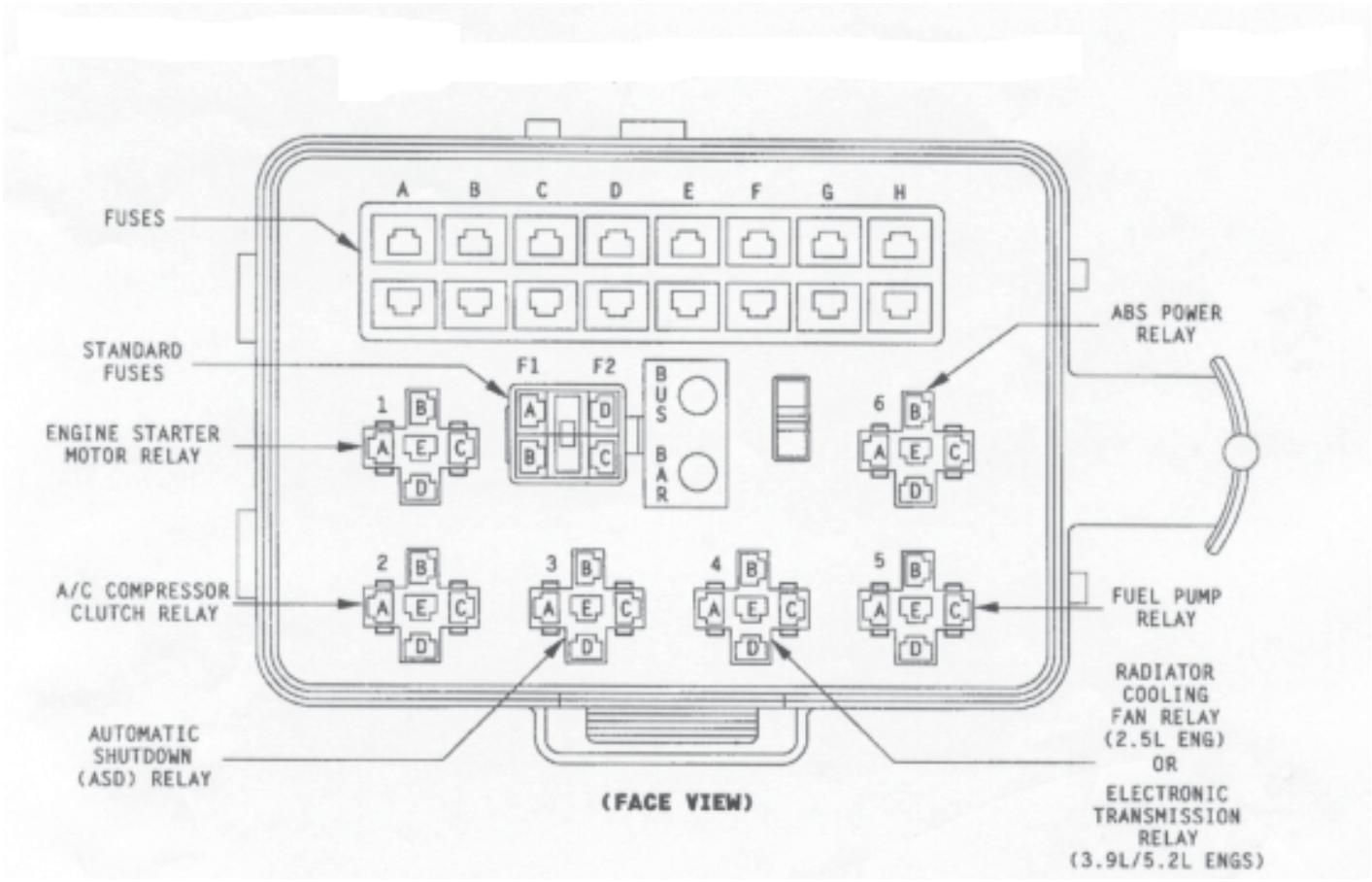
VT = Violet

WT = White

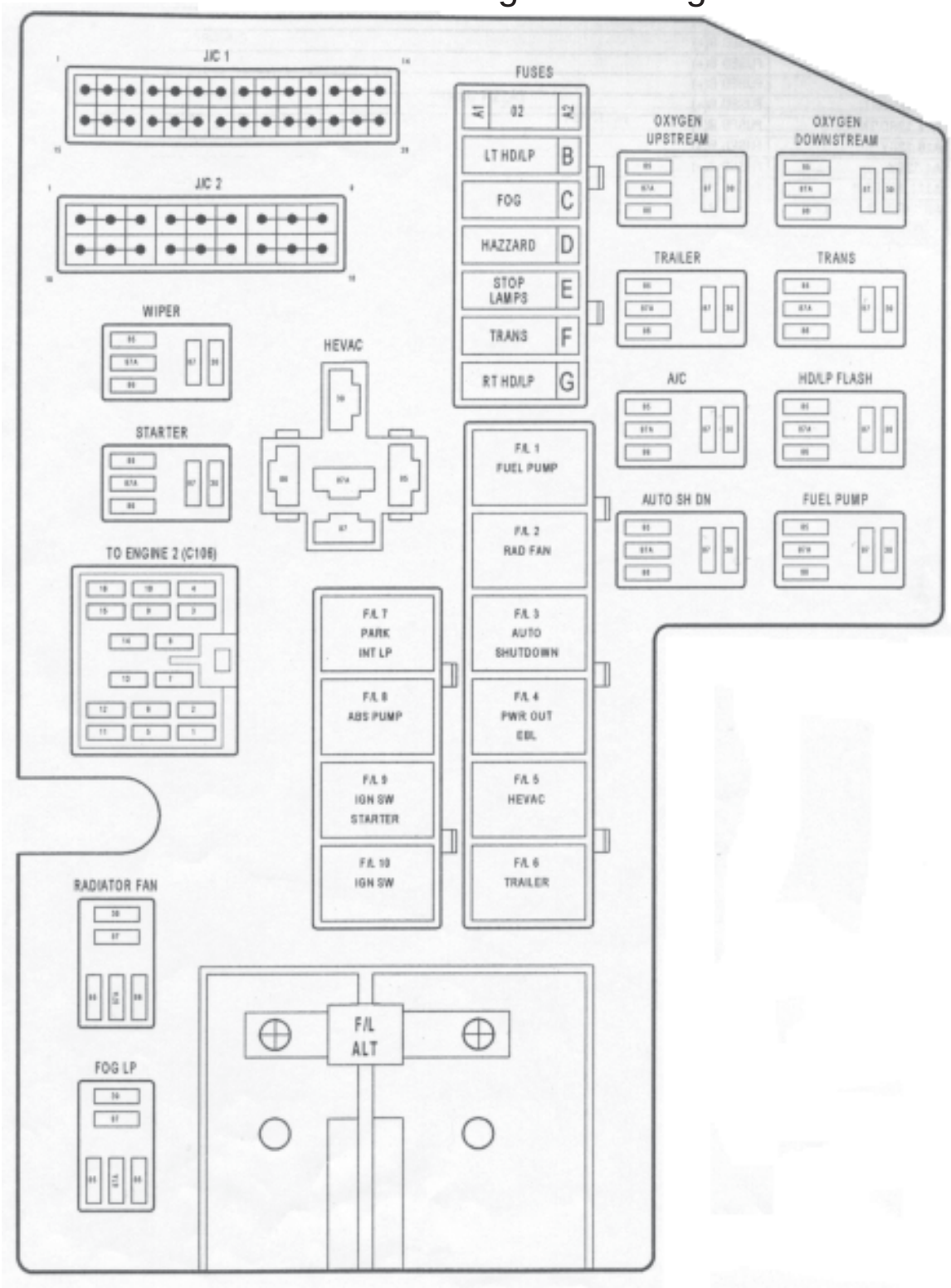
YL = Yellow

NOTE If two colors are listed, the first color is the dominant color. The second color represents the stripe within the first color. In the following example, “LG/BK” (LG = light green, BK = black), “LG” is the dominant or main wire color, and “BK” is the stripe that runs the length of the same wire.

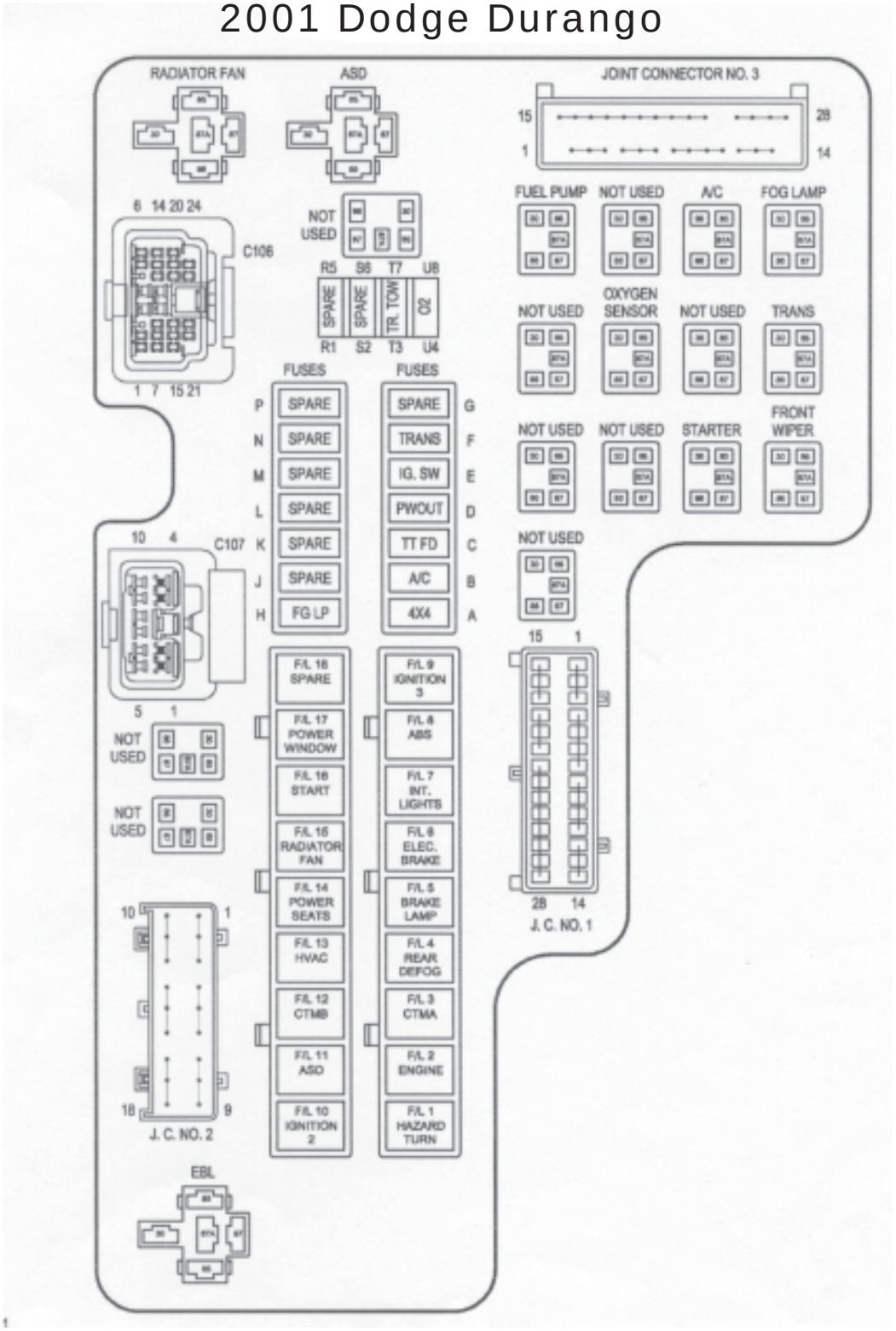
Underhood
Power Distribution Center
1996 Dodge Dakota



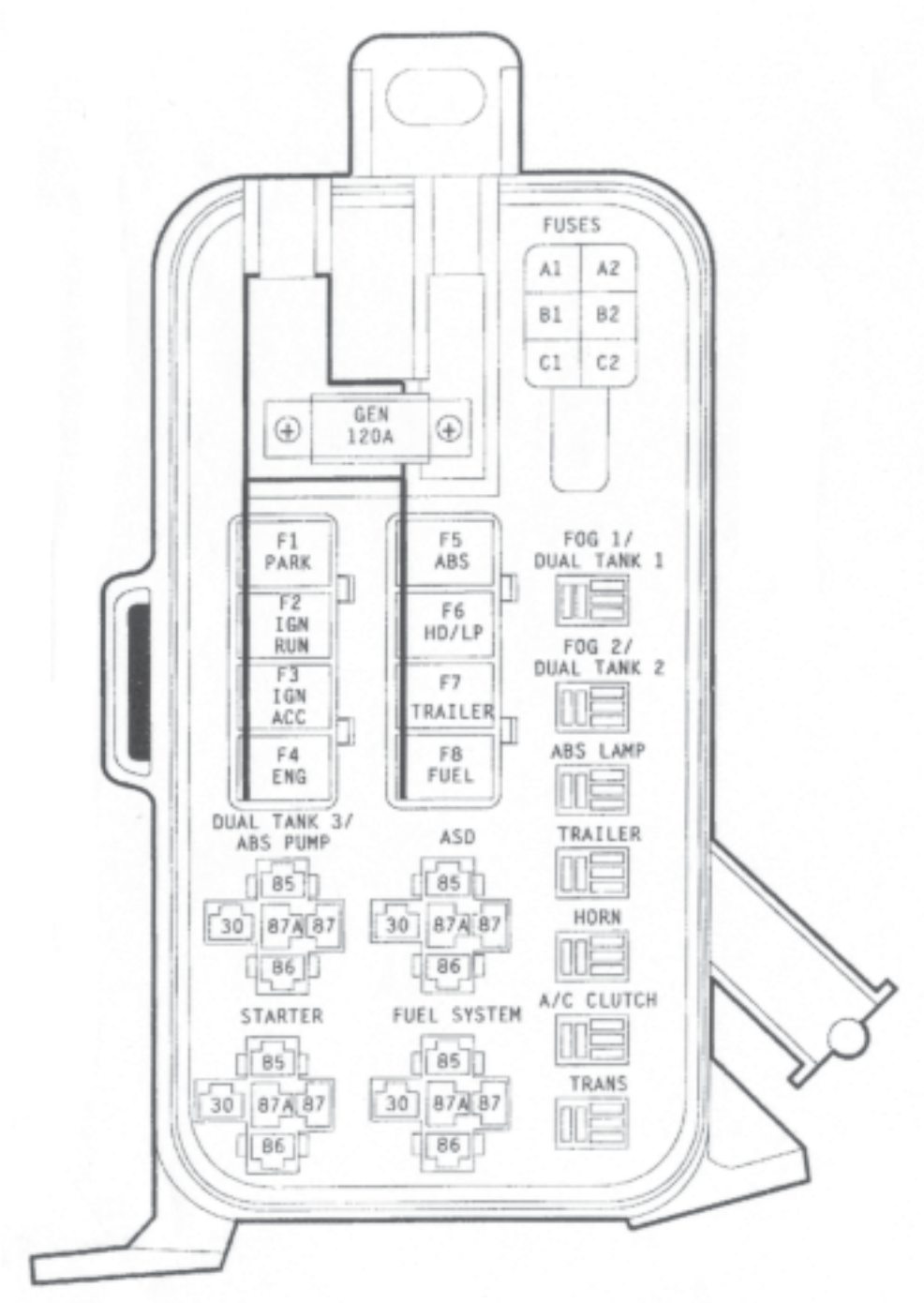
Underhood
Power Distribution Center
1997-2000 Dodge Dakota
1998-2000 Dodge Durango



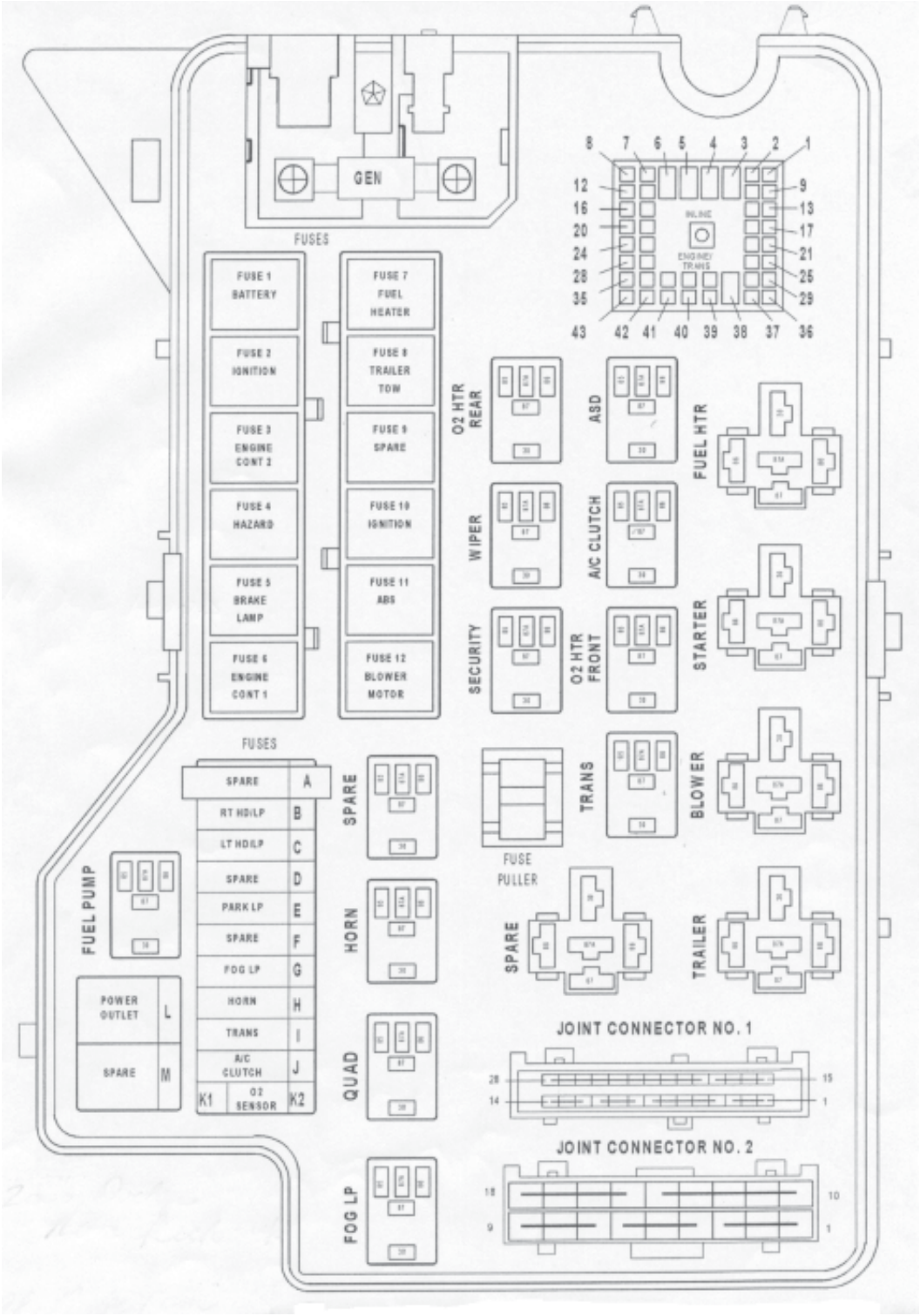
Underhood
Power Distribution Center
2001-2002 Dodge Dakota
2001 Dodge Durango



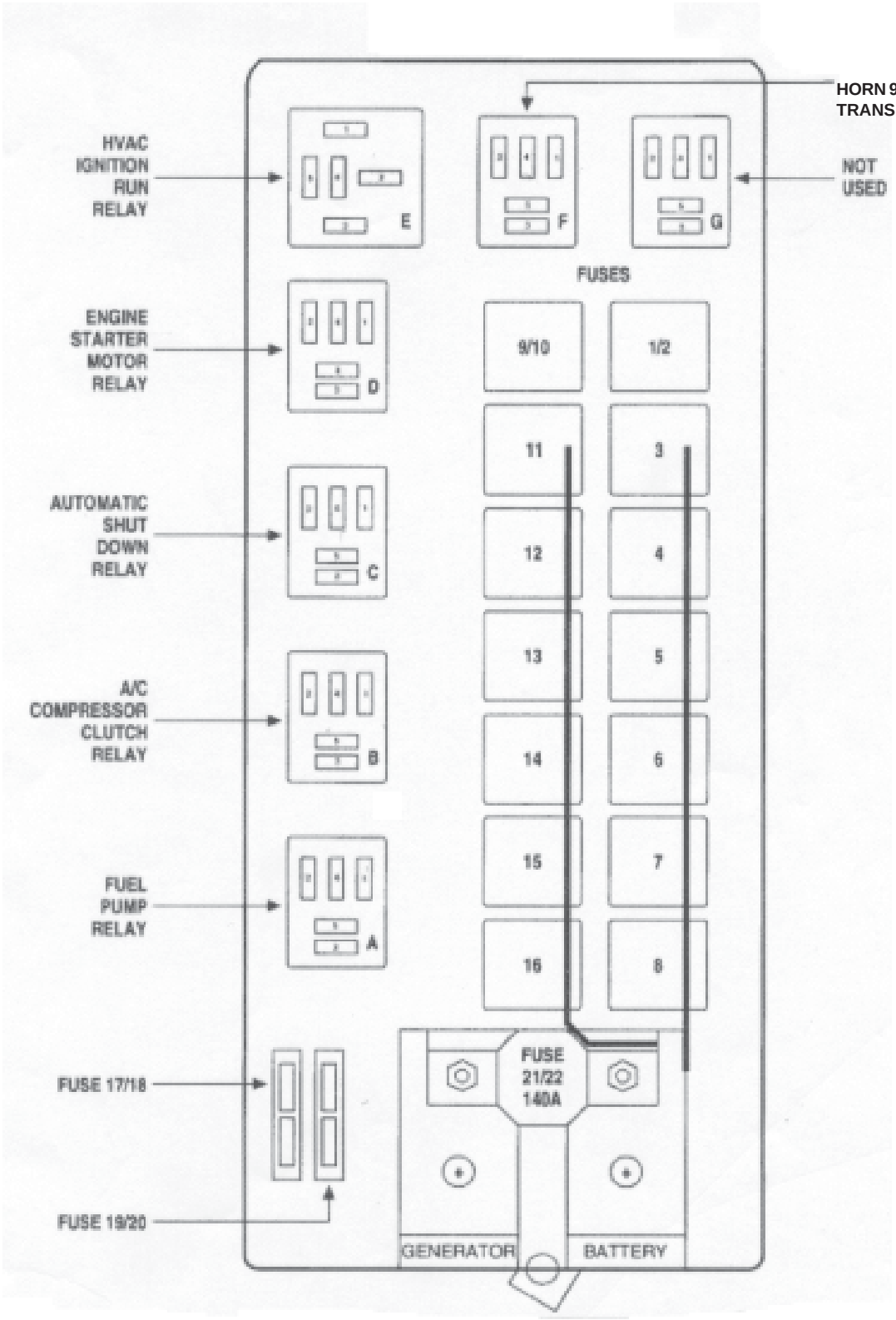
Underhood
Power Distribution Center
1996-1997 Dodge Pick-up



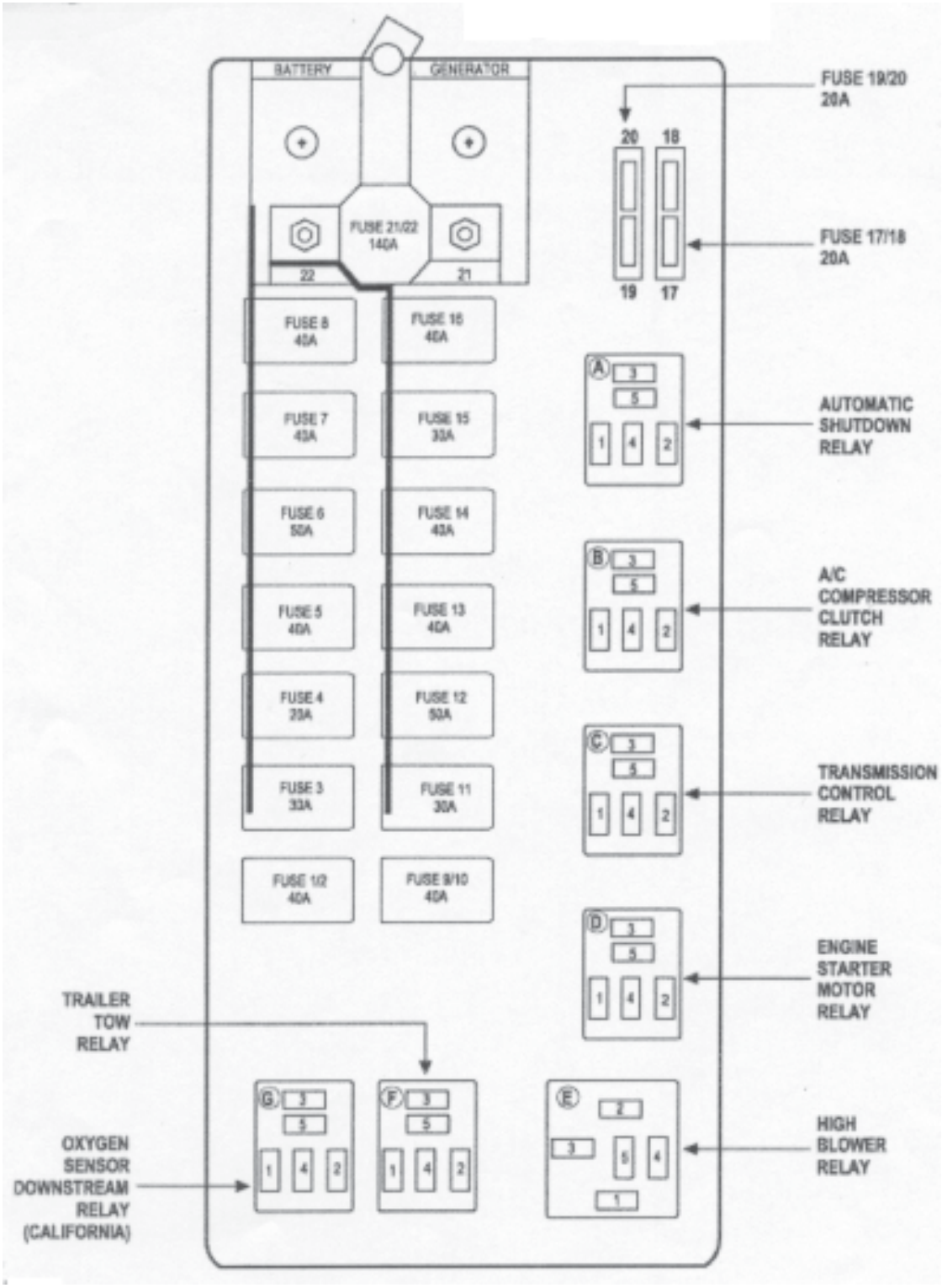
Underhood
Power Distribution Center
1998-2002 Dodge Pick-up



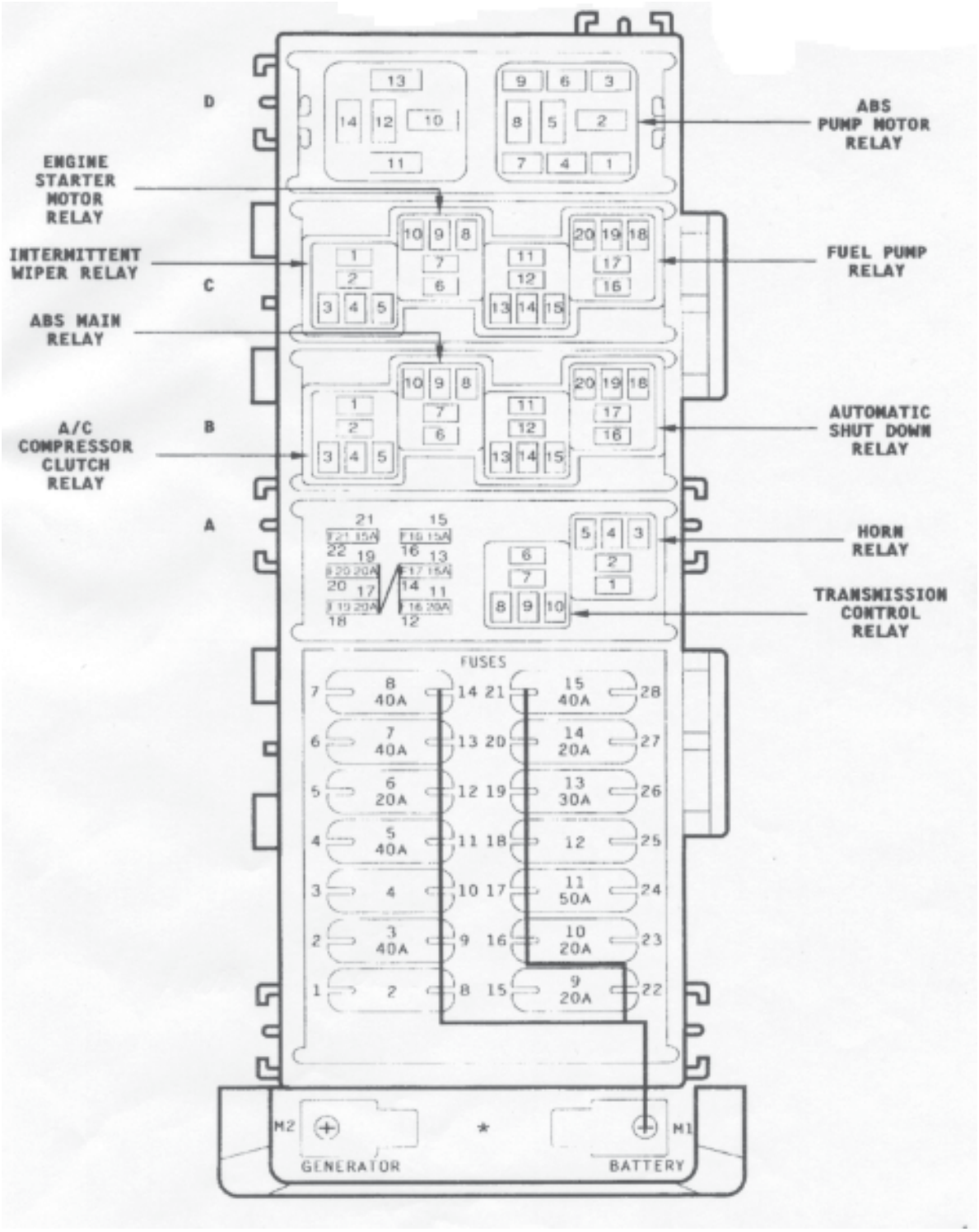
Underhood
Power Distribution Center
1996-1999 Dodge Van



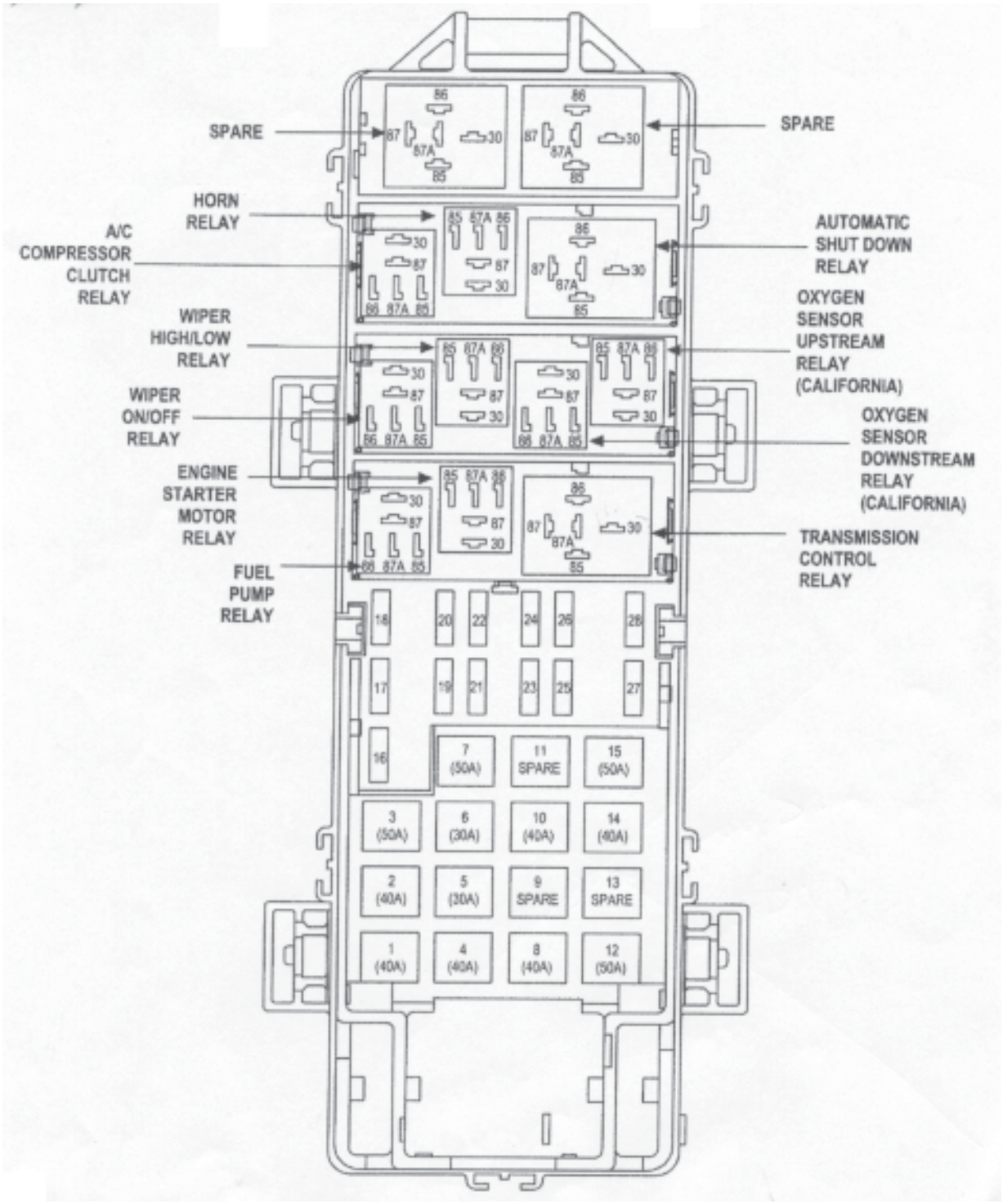
Underhood
Power Distribution Center
2000-2002 Dodge Van



Underhood
Power Distribution Center
1996-1998 Jeep Grand Cherokee

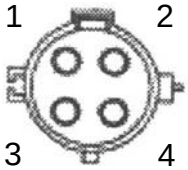


Underhood
Power Distribution Center
1999-2002 Jeep Grand Cherokee

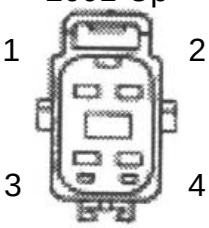


Heated Oxygen Sensor Connectors

1996-2000



2001-Up



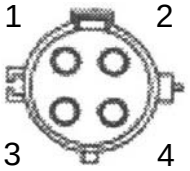
1998 - 2000 Durango 3.9, 5.2, 5.9L					
Sensor 1/1			Sensor 1/2		
Terminal	Function	Color	Terminal	Function	Color
1	Heater Power	OR/DG	1	Heater Power	OR/DG
2	Heater Ground	BK	2	Heater Ground	BK
3	Signal Return	BK/LB	3	Signal Return	BK/LB
4	Signal	TN/WT	4	Signal	OR/BK

2001 Durango 5.9L (Federal)					
Sensor 1/1			Sensor 1/2		
Terminal	Function	Color	Terminal	Function	Color
1	Heater Power	OR/DG	1	Heater Power	OR/DG
2	Heater Control	PL/WT	2	Heater Control	PL/OR
3	Signal Return	BK/LB	3	Signal Return	BK/LB
4	Signal	BK/DG	4	Signal	TN/WT

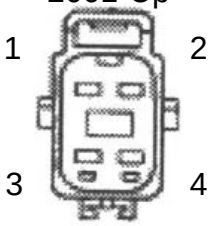
2001 Durango 5.9L (California)					
Sensor 1/1			Sensor 1/2		
Terminal	Function	Color	Terminal	Function	Color
1	Heater Power	OR/DG	1	Heater Power	DG/PK
2	Heater Control	PL/WT	2	Heater Ground	BK
3	Signal Return	BK/LB	3	Signal Return	BK/LB
4	Signal	BK/DG	4	Signal	TN/WT

Heated Oxygen Sensor Connectors

1996-2000



2001-Up



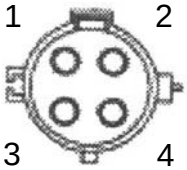
2001 Durango 5.9L (California)					
Sensor 2/1			Sensor 2/2		
Terminal	Function	Color	Terminal	Function	Color
1	Heater Power	OR/DG	1	Heater Power	DG/PK
2	Heater Control	PL/OR	2	Heater Ground	BK
3	Signal Return	BK/LB	3	Signal Return	BK/LB
4	Signal	LG/RD	4	Signal	TN/WT

1996 Dakota 3.9, 5.2, 5.9L					
Sensor 1/1			Sensor 1/2		
Terminal	Function	Color	Terminal	Function	Color
1	Heater Power	DG/OR	1	Heater Power	DG/OR
2	Heater Ground	BK	2	Heater Ground	BK
3	Signal Return	BK/LB	3	Signal Return	BK/LB
4	Signal	TN/WT	4	Signal	TN/PK

1997-1998 Dakota 3.9, 5.2, 5.9L					
Sensor 1/1			Sensor 1/2		
Terminal	Function	Color	Terminal	Function	Color
1	Heater Power	DG/PK	1	Heater Power	DG/PK
2	Heater Ground	BK	2	Heater Ground	BK
3	Signal Return	BK/LB	3	Signal Return	BK/LB
4	Signal	OR/TN	4	Signal	OR/BK

Heated Oxygen Sensor Connectors

1996-2000

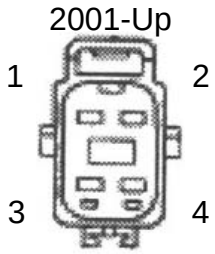


1999 Dakota 3.9, 5.2L					
Sensor 1/1			Sensor 1/2		
Terminal	Function	Color	Terminal	Function	Color
1	Heater Power	DG/PK	1	Heater Power	DG/PK
2	Heater Ground	BK	2	Heater Ground	BK
3	Signal Return	BK/LB	3	Signal Return	BK/LB
4	Signal	OR/TN	4	Signal	OR/BK

1999 Dakota 5.9L					
Sensor 1/1			Sensor 1/2		
Terminal	Function	Color	Terminal	Function	Color
1	Heater Power	DG/PK	1	Heater Power	DG/PK
2	Heater Ground	BK	2	Heater Ground	BK
3	Signal Return	BK/LB	3	Signal Return	BK/LB
4	Signal	LG/RD	4	Signal	OR/BK

2000 Dakota 3.9, 5.9L					
Sensor 1/1			Sensor 1/2		
Terminal	Function	Color	Terminal	Function	Color
1	Heater Power	OR/DG	1	Heater Power	OR/DG
2	Heater Ground	BK	2	Heater Ground	BK
3	Signal Return	BK/LB	3	Signal Return	BK/LB
4	Signal	TN/WT	4	Signal	OR/BK

Heated Oxygen Sensor Connectors



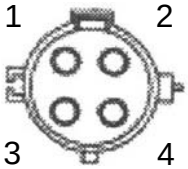
2001 Dakota 3.9, 5.9L					
Sensor 1/1			Sensor 1/2		
Terminal	Function	Color	Terminal	Function	Color
1	Heater Power	OR/DG	1	Heater Power	DG/PK
2	Heater Control	PL/WT	2	Heater Ground	BK/WT
3	Signal Return	BK/LB	3	Signal Return	BK/LB
4	Signal	BK/DG	4	Signal	TN/WT

2001 Dakota 3.9, 5.9L					
Sensor 2/1			Sensor 2/2		
Terminal	Function	Color	Terminal	Function	Color
1	Heater Power	OR/DG	1	Heater Power	DG/PK
2	Heater Control	PL/WT	2	Heater Ground	BK/WT
3	Signal Return	BK/LB	3	Signal Return	BK/LB
4	Signal	LG/RD	4	Signal	TN/WT

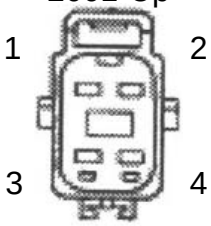
2002 - 2003 Dakota 3.9, 5.9L (Federal)					
Sensor 1/1			Sensor 1/2		
Terminal	Function	Color	Terminal	Function	Color
1	Heater Power	OR/DG	1	Heater Power	OR/DG
2	Heater Control	PL/WT	2	Heater Control	PL/OR
3	Signal Return	BK/LB	3	Signal Return	BK/LB
4	Signal	BK/DG	4	Signal	TN/WT

Heated Oxygen Sensor Connectors

1996-2000



2001-Up



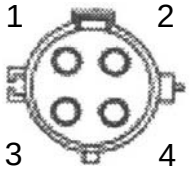
2002-2003 Dakota 3.9, 5.9L (California)					
Sensor 1/1			Sensor 1/2		
Terminal	Function	Color	Terminal	Function	Color
1	Heater Power	OR/DG	1	Heater Power	OR/DG
2	Heater Control	PL/WT	2	Heater Ground	BK/WT
3	Signal Return	BK/LB	3	Signal Return	BK/LB
4	Signal	BK/OR	4	Signal	TN/WT

2002-2003 Dakota 3.9, 5.9L (California)					
Sensor 2/1			Sensor 2/2		
Terminal	Function	Color	Terminal	Function	Color
1	Heater Power	OR/DG	1	Heater Power	DG/PK
2	Heater Control	PL/OR	2	Heater Ground	BK
3	Signal Return	BK/LB	3	Signal Return	BK/LB
4	Signal	LG/RD	4	Signal	BK/WT

1996-1997 Dodge Pickup 3.9, 5.2, 5.9L					
Sensor 1/1			Sensor 1/2		
Terminal	Function	Color	Terminal	Function	Color
1	Heater Power	DG/OR	1	Heater Power	DG/OR
2	Heater Ground	BK/WT	2	Heater Ground	BK/WT
3	Signal Return	BK/LB	3	Signal Return	BK/LB
4	Signal	BK/DG or TN/WT	4	Signal	BK/DG or OR/BK

Heated Oxygen Sensor Connectors

1996-2000



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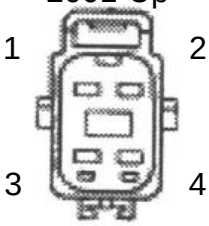


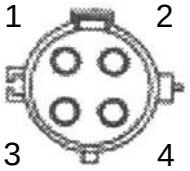
1998-2001 Dodge Pickup 3.9L					
Sensor 1/1			Sensor 1/2		
Terminal	Function	Color	Terminal	Function	Color
1	Heater Power	DG/WT	1	Heater Power	DG/WT
2	Heater Ground	BK/WT	2	Heater Ground	BK/WT
3	Signal Return	BK/LB	3	Signal Return	BK/LB
4	Signal	TN/WT	4	Signal	OR/BK

1998-2000 Dodge Pickup 5.2, 5.9L								
Sensor 1/1			Sensor 1/2			Sensor 2/1 (HD Only)		
Terminal	Function	Color	Terminal	Function	Color	Terminal	Function	Color
1	Heater Power	DG/WT	1	Heater Power	DG/WT	1	Heater Power	DG/WT
2	Heater Ground	BK/WT	2	Heater Ground	BK/WT	2	Heater Ground	BK/WT
3	Signal Return	BK/LB	3	Signal Return	BK/LB	3	Signal Return	BK/LB
4	Signal	TN/WT or BK/DG	4	Signal	OR/BK	4	Signal	LG/RD

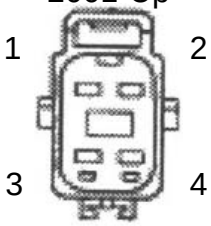
2001-2002 Dodge Pickup 5.2, 5.9L (Federal)								
Sensor 1/1			Sensor 1/2			Sensor 2/1 (HD Only)		
Terminal	Function	Color	Terminal	Function	Color	Terminal	Function	Color
1	Heater Power	DG/WT	1	Heater Power	DG/WT	1	Heater Power	DG/WT
2	Heater Control	BR/PL	2	Heater Control	BR/WT	2	Heater Control	BR/WT
3	Signal Return	BK/LB	3	Signal Return	BK/LB	3	Signal Return	BK/LB
4	Signal	BK/DG or PL/WT	4	Signal	TN/WT or OR/BK	4	Signal	LG/RD

Heated Oxygen Sensor Connectors

1996-2000



2001-Up



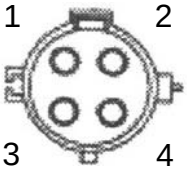
2001-2002 Dodge Pickup 5.2, 5.9L (California)					
Sensor 1/1			Sensor 1/2		
Terminal	Function	Color	Terminal	Function	Color
1	Heater Power	DG/WT	1	Heater Power	DG/OR or DG/YL
2	Heater Control	BR/PL	2	Heater Ground	BK/WT
3	Signal Return	BK/LB	3	Signal Return	BK/LB
4	Signal	BK/DG or TN/WT	4	Signal	TN/WT or OR/BK

2001-2002 Dodge Pickup 5.2, 5.9L (California)					
Sensor 2/1			Sensor 2/2		
Terminal	Function	Color	Terminal	Function	Color
1	Heater Power	DG/WT	1	Heater Power	DG/OR or DG/YL
2	Heater Control	BR/WT	2	Heater Ground	BK/WT
3	Signal Return	BK/LB	3	Signal Return	BK/LB
4	Signal	LG/RD	4	Signal	TN/WT or OR/TN

1996 Dodge Van 3.9, 5.2, 5.9L					
Sensor 1/1			Sensor 1/2		
Terminal	Function	Color	Terminal	Function	Color
1	Heater Power	DG/OR	1	Heater Power	DG/OR
2	Heater Ground	BK	2	Heater Ground	BK
3	Signal Return	BK/LB	3	Signal Return	BK/LB
4	Signal	BK/DG	4	Signal	TN/WT

Heated Oxygen Sensor Connectors

1996-2000



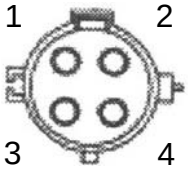
1997 Dodge Van 3.9, 5.2, 5.9L					
Sensor 1/1			Sensor 1/2		
Terminal	Function	Color	Terminal	Function	Color
1	Heater Power	DG/OR	1	Heater Power	DG/OR
2	Heater Ground	BK	2	Heater Ground	BK
3	Signal Return	BK/LB	3	Signal Return	BK/LB
4	Signal	LG/RD	4	Signal	PK/WT

1998 Dodge Van 3.9, 5.2, 5.9L					
Sensor 1/1			Sensor 1/2		
Terminal	Function	Color	Terminal	Function	Color
1	Heater Power	DG/OR	1	Heater Power	DG/OR
2	Heater Ground	BK	2	Heater Ground	BK
3	Signal Return	BK/LB	3	Signal Return	BK/LB
4	Signal	TN/WT	4	Signal	BK/DG

1999 Dodge Van 3.9, 5.2, 5.9L					
Sensor 1/1			Sensor 1/2		
Terminal	Function	Color	Terminal	Function	Color
1	Heater Power	DG	1	Heater Power	DG
2	Heater Ground	BK	2	Heater Ground	BK
3	Signal Return	BK/LB	3	Signal Return	BK/LB
4	Signal	TN/WT	4	Signal	BK/DG

Heated Oxygen Sensor Connectors

1996-2000



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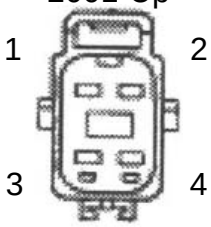
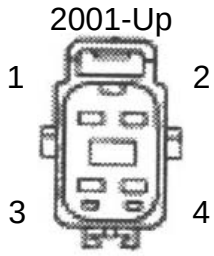


2000 Dodge Van 3.9, 5.2, 5.9L					
Sensor 1/1			Sensor 1/2		
Terminal	Function	Color	Terminal	Function	Color
1	Heater Power	PL/OR	1	Heater Power	PL/OR
2	Heater Ground	BK	2	Heater Ground	BK
3	Signal Return	BK/LB	3	Signal Return	BK/LB
4	Signal	BK/DG	4	Signal	TN/WT

2001-2003 Dodge Van 3.9, 5.2, 5.9L (Federal)					
Sensor 1/1			Sensor 1/2		
Terminal	Function	Color	Terminal	Function	Color
1	Heater Power	PL/OR	1	Heater Power	PL/OR
2	Heater Ground	OR/RD	2	Heater Ground	PL/TN
3	Signal Return	BK/LB	3	Signal Return	BK/LB
4	Signal	BK/DG	4	Signal	TN/WT

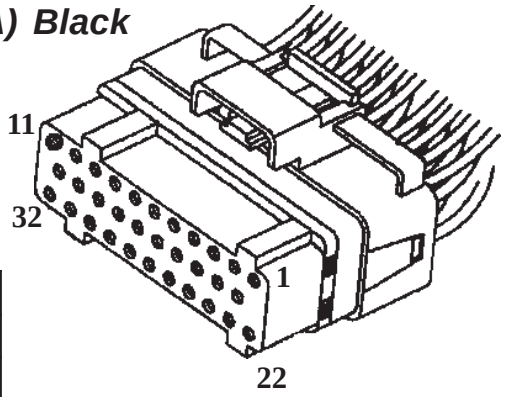
Heated Oxygen Sensor Connectors



2001-2002 Dodge Van 3.9, 5.2, 5.9L (California)					
Sensor 1/1			Sensor 1/2		
Terminal	Function	Color	Terminal	Function	Color
1	Heater Power	PL/OR	1	Heater Power	OR/DG
2	Heater Control	OR/RD	2	Heater Ground	BK
3	Signal Return	BK/LB	3	Signal Return	BK/LB
4	Signal	BK/DG	4	Signal	TN/WT

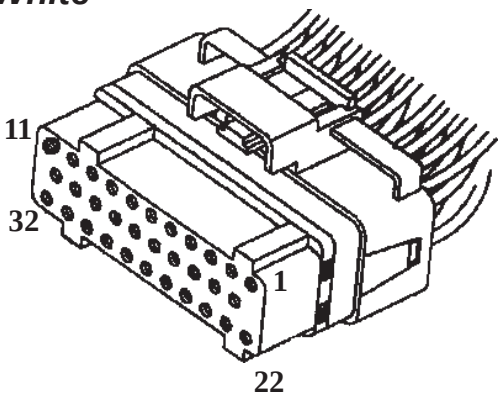
2001-2002 Dodge Van 3.9, 5.2, 5.9L (California)					
Sensor 2/1			Sensor 2/2		
Terminal	Sensor 2/1	Color	Terminal	Sensor 2/2	Color
1	Heater Power	PL/OR	1	Heater Power	OR/DG
2	Heater Control	PL/TN	2	Heater Ground	BK
3	Signal Return	BK/LB	3	Signal Return	BK/LB
4	Signal	LG/PK	4	Signal	PK/WT

Powertrain Control Module Connector - (A) Black
1998 Dodge Durango 3.9L, 5.2L, 5.9L



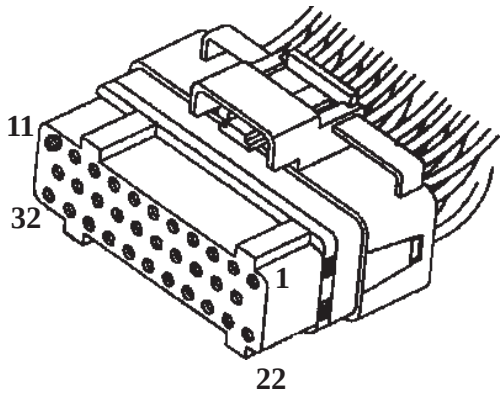
Cav	Color	Function
A1	-	-
A2	LG/BK	FUSED IGNITION SWITCH OUTPUT
A3	-	-
A4	BK/LB	SENSOR GROUND
A5	-	-
A6	BR/OR	P/N POSITION SWITCH SENSE
A7	GY	IGNITION COIL DRIVER #1
A8	GY/BK	CRANK POSITION SENSOR SIGNAL
A9	-	-
A10	YL/BK	IDLE AIR CONTROL #2 DRIVER
A11	BR/WT	IDLE AIR CONTROL #3 DRIVER
A12	-	-
A13	-	-
A14	-	-
A15	BK/RD	INTAKE AIR TEMP SENSOR SIGNAL
A16	TN/BK	ECT SENSOR SIGNAL
A17	VT/WT	5-VOLT SUPPLY (PRIMARY)
A18	TN/YL	CAMSHAFT POSITION SENSOR SIG
A19	GY/RD	IDLE AIR CONTROL #1 DRIVER
A20	VT/BK	IDLE AIR CONTROL #4 DRIVER
A21	-	-
A22	RD/WT	FUSED B(+)
A23	OR/DB	THROTTLE POSITION SENSOR SIGNAL
A24	TN/WT	O2 SENSOR 1/1 SIGNAL
A25	PK/WT	O2 SENSOR 1/2 SIGNAL
A26	-	-
A27	DG/RD	MAP SENSOR SIGNAL
A28	-	-
A29	-	-
A30	-	-
A31	BK/TN	GROUND
A32	BK/TN	GROUND

Powertrain Control Module Connector - (B) White
1998 Dodge Durango 3.9L, 5.2L, 5.9L



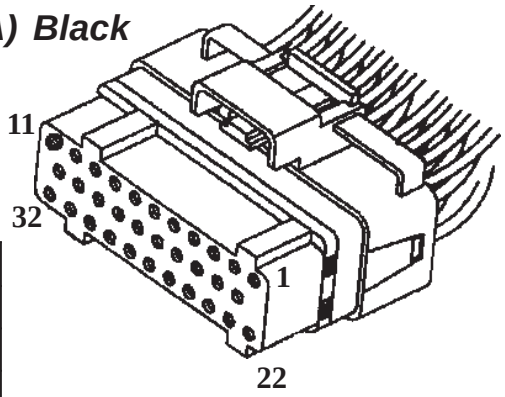
Cav	Color	Function
B1	GY/BK	TRANS TEMP SENSOR SIGNAL
B2	VT	INJECTOR #7 DRIVER (5.2L/5.9L)
B3	-	-
B4	WT/DB	INJECTOR #1 DRIVER
B5	YL/WT	INJECTOR #3 DRIVER
B6	GY	INJECTOR #5 DRIVER
B7	-	-
B8	VT/WT	GOVERNOR PRESSURE SOLENOID CONTROL
B9	-	-
B10	DG/WT	GENERATOR FIELD DRIVER
B11	OR/BK	TCC SOLENOID CONTROL
B12	BR/DB	INJECTOR #6 DRIVER
B13	GY/LB	INJECTOR #8 DRIVER (5.2L/5.9L)
B14	-	-
B15	TN	INJECTOR #2 DRIVER
B16	LB/BR	INJECTOR #4 DRIVER
B17	-	-
B18	-	-
B19	-	-
B20	-	-
B21	BR	OVERDRIVE SOLENOID CONTROL
B22	-	-
B23	GY/YL	ENGINE OIL PRESSURE SENSOR SIGNAL
B24	-	-
B25	DB/BK	OUTPUT SHAFT SPEED SENSOR GROUND (-).
B26	-	-
B27	WT/OR	VEHICLE SPEED SENSOR SIGNAL
B28	LG/WT	OUTPUT SHAFT SPEED SENSOR SIGNAL
B29	LG/RD	GOVERNOR PRESSURE SIGNAL
B30	PK	TRANSMISSION RELAY CONTROL
B31	OR	5-VOLT SUPPLY (SECONDARY)
B32	-	-

Powertrain Control Module Connector - (C) Gray
1998 Dodge Durango 3.9L, 5.2L, 5.9L



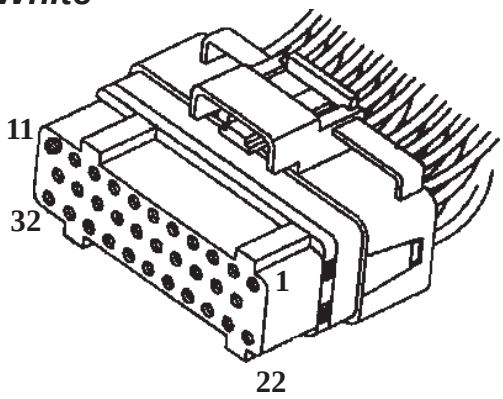
Cav	Color	Function
C1	DB/OR	A/C COMP CLUTCH RELAY CONTROL
C2	-	-
C3	DB/YL	AUTO SHUTDOWN RELAY CONTROL
C4	TN/RD	SPEED CONTROL VACUUM SOLENOID CONTROL
C5	LG/RD	SPEED CONTROL VENT SOLENOID CONTROL
C6	LG/OR	OVERDRIVE OFF LAMP DRIVER
C7	-	-
C8	-	-
C9	-	-
C10	WT/DG	LPD SWITCH SENSE
C11	YL/RD	SPEED CONTROL POWER SUPPLY
C12	DG/OR	AUTO SHUTDOWN RELAY OUTPUT
C13	OR/WT	OVERDRIVE OFF SWITCH SENSE
C14	OR	LDP SWITCH SENSE
C15	PK/YL	BATTERY TEMP SENSOR SIGNAL
C16	-	-
C17	-	-
C18	-	-
C19	DB/WT	FUEL PUMP RELAY CONTROL
C20	PK/BK	DUTY CYCLE PURGE SOLENOID CONTROL
C21	-	-
C22	BR	A/C REQUEST SIGNAL
C23	LG/WT	A/C SELECT SIGNAL
C24	WT/PK	BRAKE SWITCH SENSE
C25	WT/DB	GENERATOR FIELD SOURCE (+)
C26	DB	LOW FUEL SENSE
C27	PK	SCI TRANSMIT
C28	WT/BK	CCD BUS (-)
C29	VT/WT	SCI RECEIVE
C30	VT/BR	CCD BUS (+)
C31	-	-
C32	BR/YL	SPEED SONTROL SWITCH SIGNAL

Powertrain Control Module Connector - (A) Black
1999 Dodge Durango 3.9L, 5.2L, 5.9L
2000 Dodge Durango 5.2L, 5.9L
2001 Dodge Durango 5.9L



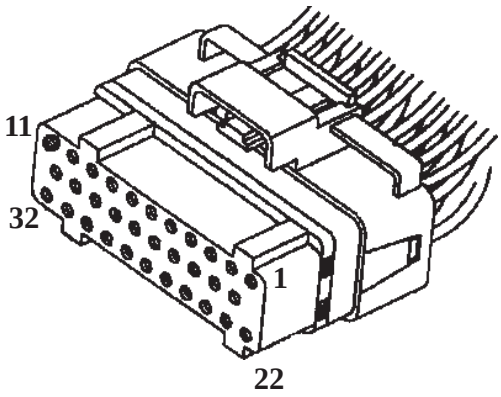
Cav	Color	Function
A1	-	-
A2	LG/BK	FUSED IGNITION SWITCH OUTPUT
A3	-	-
A4	BK/LB	SENSOR GROUND
A5	-	-
A6	BK/WT	P/N POSITION SWITCH SENSE
A7	BK/GY	IGNITION COIL DRIVER #1
A8	GY/BK	CRANK POSITION SENSOR SIGNAL
A9	-	-
A10	YL/BK	IDLE AIR CONTROL #2 DRIVER
A11	BR/WT	IDLE AIR CONTROL #3 DRIVER
A12	-	-
A13	-	-
A14	-	-
A15	BK/RD	INTAKE AIR TEMP SENSOR SIGNAL
A16	TN/BK	ECT SENSOR SIGNAL
A17	VT/WT	5-VOLT SUPPLY (PRIMARY)
A18	TN/YL	CAMSHAFT POSITION SENSOR SIG
A19	GY/RD	IDLE AIR CONTROL #1 DRIVER
A20	VT/BK	IDLE AIR CONTROL #4 DRIVER
A21	-	-
A22	RD/WT	FUSED B(+)
A23	OR/DB	THROTTLE POSITION SENSOR SIGNAL
A24	TN/WT	O2 SENSOR 1/1 SIGNAL
A25	OR/BK	O2 SENSOR 1/2 SIGNAL
A26	LG/RD	O2 SENSOR 2/1 SIGNAL (2001)
A27	DG/RD	MAP SENSOR SIGNAL
A28	-	-
A29	TN/WT	O2 SENSOR 2/2 SIGNAL (2001)
A30	-	-
A31	BK/TN	GROUND
A32	BK/TN	GROUND

Powertrain Control Module Connector - (B) White
1999 Dodge Durango 3.9L, 5.2L, 5.9L
2000 Dodge Durango 5.2L, 5.9L
2001 Dodge Durango 5.9L



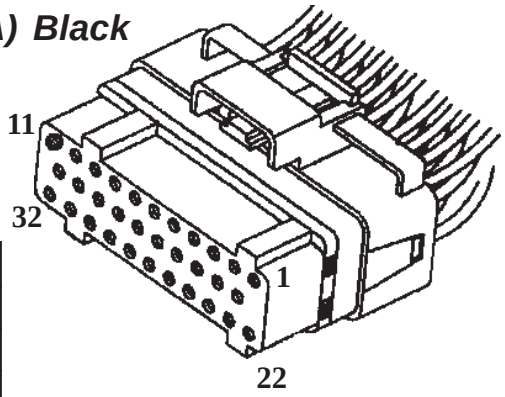
Cav	Color	Function
B1	GY/BK	TRANS TEMP SENSOR SIGNAL
B2	VT	INJECTOR #7 DRIVER (5.2L/5.9L)
B3	-	-
B4	WT/DB	INJECTOR #1 DRIVER
B5	YL/WT	INJECTOR #3 DRIVER
B6	GY	INJECTOR #5 DRIVER
B7	-	-
B8	VT/WT	GOVERNOR PRESSURE SOLENOID CONTROL
B9	-	-
B10	DG	GENERATOR FIELD DRIVER
B11	OR/BK	TCC SOLENOID CONTROL
B12	BR/DB	INJECTOR #6 DRIVER
B13	GY/LB	INJECTOR #8 DRIVER (5.2L/5.9L)
B14	-	-
B15	TN	INJECTOR #2 DRIVER
B16	LB/BR	INJECTOR #4 DRIVER
B17	-	-
B18	-	-
B19	-	-
B20	-	-
B21	BR	OVERDRIVE SOLENOID CONTROL
B22	-	-
B23	GY/YL	ENGINE OIL PRESSURE SENSOR SIGNAL
B24	-	-
B25	DB/BK	OUTPUT SHAFT SPEED SENSOR GROUND (-).
B26	-	-
B27	WT/OR	VEHICLE SPEED SENSOR SIGNAL
B28	LG/WT	OUTPUT SHAFT SPEED SENSOR SIGNAL
B29	LG/RD	GOVERNOR PRESSURE SIGNAL
B30	PK	TRANSMISSION RELAY CONTROL
B31	OR	5-VOLT SUPPLY (SECONDARY)
B32	-	-

Powertrain Control Module Connector - (C) Gray
1999 Dodge Durango 3.9L, 5.2L, 5.9L
2000 Dodge Durango 5.2L, 5.9L
2001 Dodge Durango 5.9L



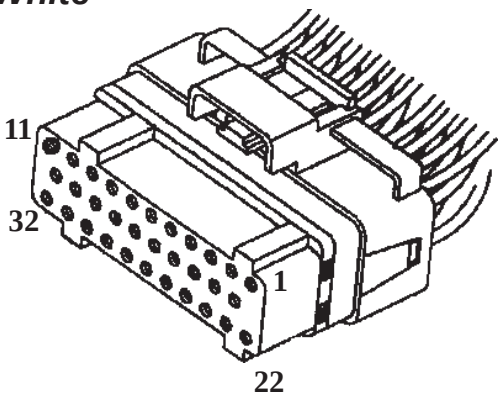
Cav	Color	Function
C1	DB/OR	A/C COMP CLUTCH RELAY CONTROL
C2	-	-
C3	DB/YL	AUTO SHUTDOWN RELAY CONTROL
C4	TN/RD	SPEED CONTROL VACUUM SOLENOID CONTROL
C5	LG/RD	SPEED CONTROL VENT SOLENOID CONTROL
C6	-	-
C7	-	-
C8	-	-
C9	-	-
C10	WT/DG	LPD SWITCH SENSE
C11	YL/RD	SPEED CONTROL POWER SUPPLY
C12	DG/OR	AUTO SHUTDOWN RELAY OUTPUT
C13	OR/WT	OVERDRIVE OFF SWITCH SENSE
C14	OR	LDP SWITCH SENSE
C15	PK/YL	BATTERY TEMP SENSOR SIGNAL
C16	-	-
C17	-	-
C18	-	-
C19	DB/WT	FUEL PUMP RELAY CONTROL
C20	PK/BK	DUTY CYCLE PURGE SOLENOID CONTROL
C21	-	-
C22	BR	A/C REQUEST SIGNAL
C23	LG/WT	A/C SELECT SIGNAL
C24	WT/PK	BRAKE SWITCH SENSE
C25	WT/DB	GENERATOR FIELD SOURCE (+)
C26	DB	LOW FUEL SENSE
C27	PK	SCI TRANSMIT
C28	WT/BK	CCD BUS (-)
C29	VT/WT	SCI RECEIVE
C30	VT/BR	CCD BUS (+)
C31	-	-
C32	RD/LG	SPEED SONTROL SWITCH SIGNAL

Powertrain Control Module Connector - (A) Black
1996-1998 Dodge Dakota 3.9L, 5.2L, 5.9L



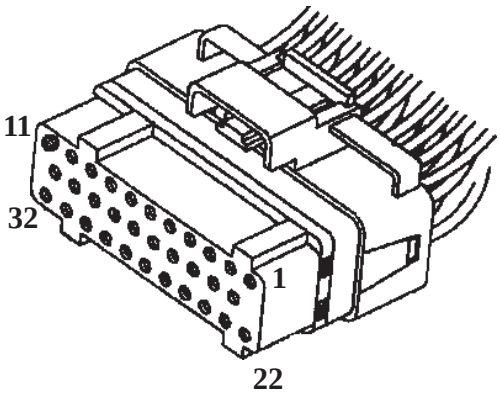
Cav	Color	Function
A1	-	-
A2	DB	FUSED IGNITION SWITCH OUTPUT
A3	-	-
A4	BK/LB	SENSOR GROUND
A5	-	-
A6	BR/YL	P/N POSITION SWITCH SENSE
A7	GY	IGNITION COIL DRIVER #1
A8	GY/BK	CRANK POSITION SENSOR SIGNAL
A9	-	-
A10	YL/BK	IDLE AIR CONTROL #2 DRIVER
A11	BR/WT	IDLE AIR CONTROL #3 DRIVER
A12	-	-
A13	-	-
A14	-	-
A15	BK/RD	INTAKE AIR TEMP SENSOR SIGNAL
A16	TN/BK	ECT SENSOR SIGNAL
A17	VT/WT	5-VOLT SUPPLY (PRIMARY)
A18	TN/YL	CAMSHAFT POSITION SENSOR SIG
A19	GY/RD	IDLE AIR CONTROL #1 DRIVER
A20	VT/BK	IDLE AIR CONTROL #4 DRIVER
A21	-	-
A22	RD/WT	FUSED B(+)
A23	OR/DB	THROTTLE POSITION SENSOR SIGNAL
A24	TN/WT	O2 SENSOR 1/1 SIGNAL
A25	TN/PK	O2 SENSOR 1/2 SIGNAL
A26	-	-
A27	DG/RD	MAP SENSOR SIGNAL
A28	DG/LB	FUEL PRESSURE SENSOR SIGNAL
A29	-	-
A30	-	-
A31	BK/TN	GROUND
A32	BK/TN	GROUND

Powertrain Control Module Connector - (B) White
1996-1998 Dodge Dakota 3.9L, 5.2L, 5.9L



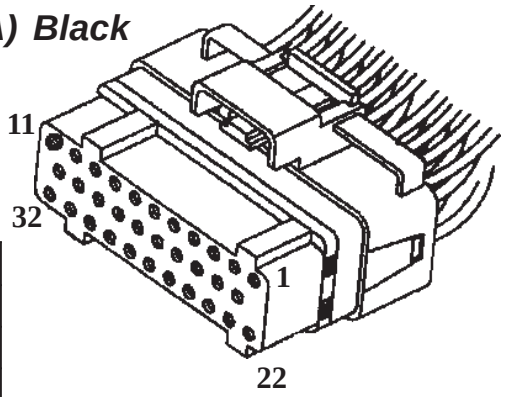
Cav	Color	Function
B1	VT	TRANS TEMP SENSOR SIGNAL
B2	DB	INJECTOR #7 DRIVER (5.2L/5.9L)
B3	-	-
B4	WT/DB	INJECTOR #1 DRIVER
B5	YL/WT	INJECTOR #3 DRIVER
B6	GY	INJECTOR #5 DRIVER
B7	-	-
B8	PK	GOVERNOR PRESSURE SOLENOID CONTROL
B9	-	-
B10	DG	GENERATOR FIELD DRIVER
B11	OR/BK	TCC SOLENOID CONTROL
B12	BR/DB	INJECTOR #6 DRIVER
B13	GY/LB	INJECTOR #8 DRIVER (5.2L/5.9L)
B14	-	-
B15	TN	INJECTOR #2 DRIVER
B16	LB/BR	INJECTOR #4 DRIVER
B17	-	-
B18	-	-
B19	-	-
B20	-	-
B21	BR	OVERDRIVE SOLENOID CONTROL
B22	TN/PK	FUEL TEMPERATURE SENSOR SIGNAL
B23	-	-
B24	-	-
B25	DB/BK	OUTPUT SHAFT SPEED SENSOR GROUND (-).
B26	-	-
B27	WT/OR	VEHICLE SPEED SENSOR SIGNAL
B28	LG/WT	OUTPUT SHAFT SPEED SENSOR SIGNAL
B29	LG/RD	GOVERNOR PRESSURE SIGNAL
B30	VT/LB	TRANSMISSION RELAY CONTROL
B31	RD/YL	5-VOLT SUPPLY (SECONDARY)
B32	-	-

Powertrain Control Module Connector - (C) Gray
1996-1998 Dodge Dakota 3.9L, 5.2L, 5.9L



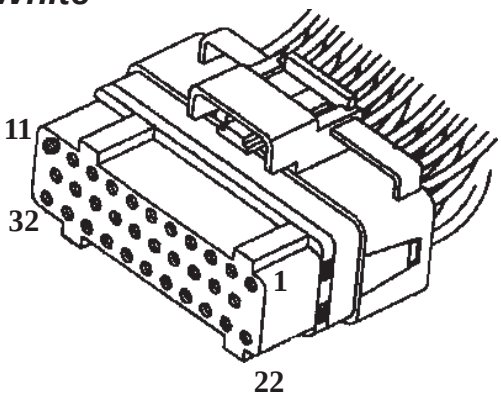
Cav	Color	Function
C1	DB/OR	A/C COMP CLUTCH RELAY CONTROL
C2	DB/PK	RADIATOR FAN RELAY CONTROL
C3	DB/YL	AUTO SHUTDOWN RELAY CONTROL
C4	TN/RD	SPEED CONTROL VACUUM SOLENOID CONTROL
C5	LG/RD	SPEED CONTROL VENT SOLENOID CONTROL
C6	LG/OR	OVERDRIVE OFF LAMP DRIVER
C7	PK/BK	TRANS TEMP LAMP DRIVER
C8	-	-
C9	-	-
C10	-	-
C11	YL/RD	SPEED CONTROL POWER SUPPLY
C12	DG/OR	AUTO SHUTDOWN RELAY OUTPUT
C13	OR/WT	OVERDRIVE OFF SWITCH SENSE
C14	-	-
C15	PK/YL	BATTERY TEMP SENSOR SIGNAL
C16	DG/YL	GERNERATOR LAMP DRIVER
C17	PK/BK	MIL LAMP DRIVER
C18	-	-
C19	BR	FUEL PUMP RELAY CONTROL
C20	PK/BK	DUTY CYCLE PURGE SOLENOID CONTROL
C21	-	-
C22	BR	A/C REQUEST SIGNAL
C23	LG	A/C SELECT SIGNAL
C24	WT/PK	BRAKE SWITCH SENSE
C25	-	-
C26	LB/BK	LOW FUEL SENSE
C27	PK	SCI TRANSMIT
C28	WT/PK	CCD BUS (-)
C29	LG	SCI RECEIVE
C30	VT/BR	CCD BUS (+)
C31	GY/LB	TACHOMETER SIGNAL
C32	WT/LG	SPEED SONTROL SWITCH SIGNAL

Powertrain Control Module Connector - (A) Black
1999 Dodge Dakota 3.9L, 5.2L, 5.9L



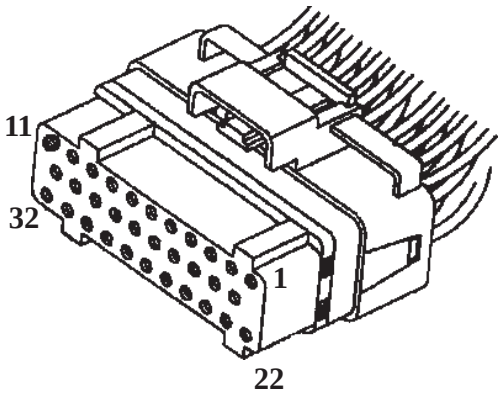
Cav	Color	Function
A1	-	-
A2	LG/BK	FUSED IGNITION SWITCH OUTPUT
A3	-	-
A4	BK/LB	SENSOR GROUND
A5	-	-
A6	BK/WT	P/N POSITION SWITCH SENSE
A7	BK/GY	IGNITION COIL DRIVER #1
A8	GY/BK	CRANK POSITION SENSOR SIGNAL
A9	-	-
A10	YL/BK	IDLE AIR CONTROL #2 DRIVER
A11	BR/WT	IDLE AIR CONTROL #3 DRIVER
A12	-	-
A13	-	-
A14	-	-
A15	BK/RD	INTAKE AIR TEMP SENSOR SIGNAL
A16	TN/BK	ECT SENSOR SIGNAL
A17	VT/WT	5-VOLT SUPPLY (PRIMARY)
A18	TN/YL	CAMSHAFT POSITION SENSOR SIG
A19	GY/RD	IDLE AIR CONTROL #1 DRIVER
A20	VT/BK	IDLE AIR CONTROL #4 DRIVER
A21	-	-
A22	RD/WT	FUSED B(+)
A23	OR/DB	THROTTLE POSITION SENSOR SIGNAL
A24	OR/TN LG/RD	O2 SENSOR 1/1 SIGNAL (3.9L, 5.2L) O2 SENSOR 1/1 SIGNAL (5.9L)
A25	OR/BK	O2 SENSOR 1/2 SIGNAL
A26	-	-
A27	DG/RD	MAP SENSOR SIGNAL
A28	-	-
A29	TN/WT	O2 SENSOR 1/3 SIGNAL (5.9L)
A30	-	-
A31	BK/TN	GROUND
A32	BK/TN	GROUND

Powertrain Control Module Connector - (B) White
1999 Dodge Dakota 3.9L, 5.2L, 5.9L



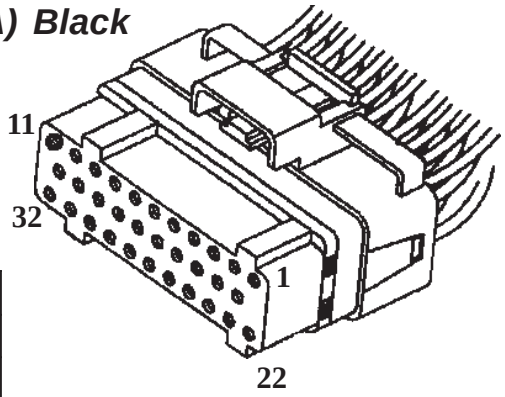
Cav	Color	Function
B1	VT	TRANS TEMP SENSOR SIGNAL
B2	VT/WT	INJECTOR #7 DRIVER (5.2L/5.9L)
B3	-	-
B4	WT/DB	INJECTOR #1 DRIVER
B5	YL/WT	INJECTOR #3 DRIVER
B6	GY	INJECTOR #5 DRIVER
B7	-	-
B8	PK	GOVERNOR PRESSURE SOLENOID CONTROL
B9	-	-
B10	DG	GENERATOR FIELD DRIVER
B11	OR/BK	TCC SOLENOID CONTROL
B12	BR/DB	INJECTOR #6 DRIVER
B13	GY/LB	INJECTOR #8 DRIVER (5.2L/5.9L)
B14	-	-
B15	TN	INJECTOR #2 DRIVER
B16	LB/BR	INJECTOR #4 DRIVER
B17	-	-
B18	-	-
B19	-	-
B20	-	-
B21	BR	OVERDRIVE SOLENOID CONTROL
B22	-	-
B23	GY/YL	ENGINE OIL PRESSURE SENSOR SIGNAL
B24	-	-
B25	DB/BK	OUTPUT SHAFT SPEED SENSOR GROUND (-).
B26	-	-
B27	WT/OR	VEHICLE SPEED SENSOR SIGNAL
B28	LG/WT	OUTPUT SHAFT SPEED SENSOR SIGNAL
B29	LG/RD	GOVERNOR PRESSURE SIGNAL
B30	PK/BK	TRANSMISSION RELAY CONTROL
B31	OR	5-VOLT SUPPLY (SECONDARY)
B32	RD/LG	SPEED CONTROL SIGNAL

Powertrain Control Module Connector - (C) Gray
1999 Dodge Dakota 3.9L, 5.2L, 5.9L



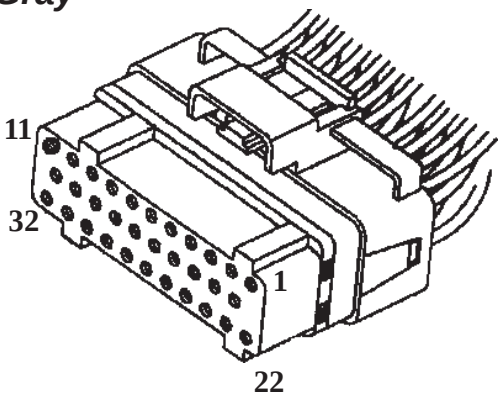
Cav	Color	Function
C1	DB/OR	A/C COMP CLUTCH RELAY CONTROL
C2	-	-
C3	DB/YL	AUTO SHUTDOWN RELAY CONTROL
C4	TN/RD	SPEED CONTROL VACUUM SOLENOID CONTROL
C5	LG/RD	SPEED CONTROL VENT SOLENOID CONTROL
C6	-	-
C7	-	-
C8	-	-
C9	-	-
C10	YL/DG	LDP SWITCH SENSE
C11	YL/RD	SPEED CONTROL POWER SUPPLY
C12	DG/OR	AUTO SHUTDOWN RELAY OUTPUT
C13	OR/WT	OVERDRIVE OFF SWITCH SENSE
C14	YL/WT	LDP SWITCH SENSE
C15	PK/YL	BATTERY TEMP SENSOR SIGNAL
C16	-	-
C17	-	-
C18	-	-
C19	LB/OR	LOW IDLE POSITION SWITCH
C20	PK/BK	DUTY CYCLE PURGE SOLENOID CONTROL
C21	-	-
C22	BR	A/C REQUEST SIGNAL
C23	LG/WT	A/C SELECT SIGNAL
C24	WT/PK	BRAKE SWITCH SENSE
C25	DG/BK	GENERATOR FIELD SOURCE (+)
C26	DB	LOW FUEL SENSE
C27	PK	SCI TRANSMIT
C28	WT/BK	CCD BUS (-)
C29	LG	SCI RECEIVE
C30	VT/BR	CCD BUS (+)
C31	-	-
C32	RD/LG	SPEED SONTROL SWITCH SIGNAL

Powertrain Control Module Connector - (A) Black
2000 Dodge Dakota 3.9L, 5.9L



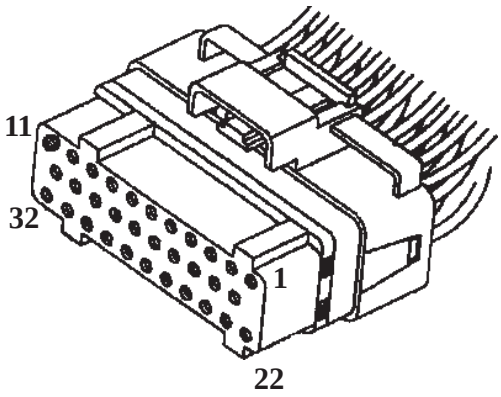
Cav	Color	Function
A1	-	-
A2	LG/BK	FUSED IGNITION SWITCH OUTPUT
A3	-	-
A4	BK/LB	SENSOR GROUND
A5	-	-
A6	BK/WT	P/N POSITION SWITCH SENSE
A7	BK/GY	IGNITION COIL DRIVER #1
A8	GY/BK	CRANK POSITION SENSOR SIGNAL
A9	-	-
A10	YL/BK	IDLE AIR CONTROL #2 DRIVER
A11	BR/WT	IDLE AIR CONTROL #3 DRIVER
A12	-	-
A13	-	-
A14	-	-
A15	BK/RD	INTAKE AIR TEMP SENSOR SIGNAL
A16	TN/BK	ECT SENSOR SIGNAL
A17	OR	5-VOLT SUPPLY (PRIMARY)
A18	TN/YL	CAMSHAFT POSITION SENSOR SIG
A19	GY/RD	IDLE AIR CONTROL #1 DRIVER
A20	VT/BK	IDLE AIR CONTROL #4 DRIVER
A21	-	-
A22	RD/WT	FUSED B(+)
A23	OR/DB	THROTTLE POSITION SENSOR SIGNAL
A24	TN/WT	O2 SENSOR 1/1 SIGNAL
A25	OR/BK	O2 SENSOR 1/2 SIGNAL
A26	-	-
A27	DG/RD	MAP SENSOR SIGNAL
A28	-	-
A29	-	-
A30	-	-
A31	BK/TN	GROUND
A32	BK/TN	GROUND

Powertrain Control Module Connector - (B) Gray
2000 Dodge Dakota 3.9L, 5.9L



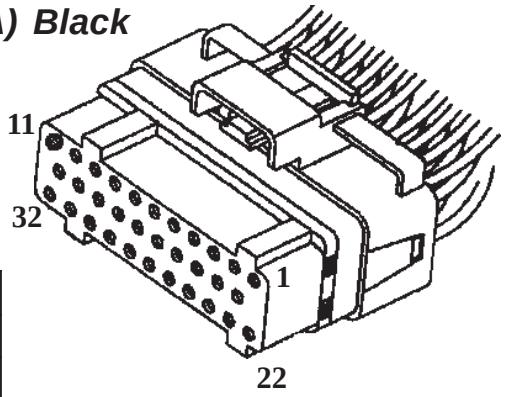
Cav	Color	Function
B1	VT	TRANS TEMP SENSOR SIGNAL
B2	VT	INJECTOR #7 DRIVER (5.9L)
B3	-	-
B4	WT/DB	INJECTOR #1 DRIVER
B5	YL/WT	INJECTOR #3 DRIVER
B6	GY	INJECTOR #5 DRIVER
B7	-	-
B8	PK	GOVERNOR PRESSURE SOLENOID CONTROL
B9	-	-
B10	DG	GENERATOR FIELD DRIVER
B11	OR/BK	TCC SOLENOID CONTROL
B12	BR/DB	INJECTOR #6 DRIVER
B13	GY/LB	INJECTOR #8 DRIVER (5.9L)
B14	-	-
B15	TN	INJECTOR #2 DRIVER
B16	LB/BR	INJECTOR #4 DRIVER
B17	DB/PK	RADIATOR FAN RELAY CONTROL
B18	-	-
B19	-	-
B20	-	-
B21	BR	OVERDRIVE SOLENOID CONTROL
B22	-	-
B23	GY/YL	ENGINE OIL PRESSURE SENSOR SIGNAL
B24	-	-
B25	DB/BK	OUTPUT SHAFT SPEED SENSOR GROUND (-).
B26	-	-
B27	WT/OR	VEHICLE SPEED SENSOR SIGNAL
B28	LG/WT	OUTPUT SHAFT SPEED SENSOR SIGNAL
B29	LG/RD	GOVERNOR PRESSURE SIGNAL
B30	PK	TRANSMISSION RELAY CONTROL
B31	VT/WT	5-VOLT SUPPLY (SECONDARY)
B32	-	-

Powertrain Control Module Connector - (C) Black
2000 Dodge Dakota 3.9L, 5.9L



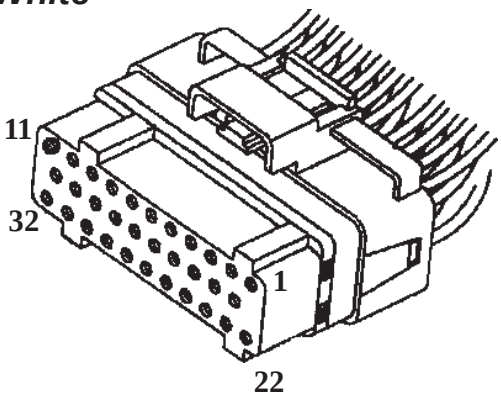
Cav	Color	Function
C1	DB/OR	A/C COMP CLUTCH RELAY CONTROL
C2	-	-
C3	DB/YL	AUTO SHUTDOWN RELAY CONTROL
C4	TN/RD	SPEED CONTROL VACUUM SOLENOID CONTROL
C5	LG/RD	SPEED CONTROL VENT SOLENOID CONTROL
C6	-	-
C7	-	-
C8	DG/WT	O2 SENSOR UPSTREAM HEATER CNTRL (CAILF)
C9	DG/BK	O2 SENSOR DOWNSTREAM HTR CNTRL (CALIF)
C10	WT/DG	LPD SWITCH SENSE
C11	YL/RD	SPEED CONTROL POWER SUPPLY
C12	DG/OR	AUTO SHUTDOWN RELAY OUTPUT
C13	OR/WT	OVERDRIVE OFF SWITCH SENSE
C14	OR	LDP SWITCH SENSE
C15	PK/YL	BATTERY TEMP SENSOR SIGNAL
C16	-	-
C17	-	-
C18	-	-
C19	LB/OR	FUEL PUMP RELAY CONTROL
C20	PK/BK	DUTY CYCLE PURGE SOLENOID CONTROL
C21	-	-
C22	BR	A/C REQUEST SIGNAL
C23	LG/WT	A/C SELECT SIGNAL
C24	WT/PK	BRAKE SWITCH SENSE
C25	WT/DB	GENERATOR FIELD SOURCE (+)
C26	DB	LOW FUEL SENSE
C27	PK/DB	SCI TRANSMIT
C28	WT/BK	CCD BUS (-)
C29	LG	SCI RECEIVE
C30	VT/BR	CCD BUS (+)
C31	-	-
C32	BR/YL	SPEED SONTROL SWITCH SIGNAL

Powertrain Control Module Connector - (A) Black
2001-2003 Dodge Dakota 3.9L, 5.9L



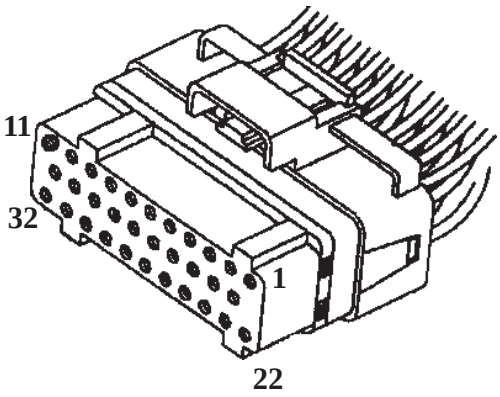
Cav	Color	Function
A1	-	-
A2	LG/BK	FUSED IGNITION SWITCH OUTPUT
A3	-	-
A4	BK/LB	SENSOR GROUND
A5	-	-
A6	BK/WT	P/N POSITION SWITCH SENSE
A7	BK/GY	IGNITION COIL DRIVER #1
A8	GY/BK	CRANK POSITION SENSOR SIGNAL
A9	-	-
A10	YL/BK	IDLE AIR CONTROL #2 DRIVER
A11	BR/WT	IDLE AIR CONTROL #3 DRIVER
A12	-	-
A13	-	-
A14	-	-
A15	BK/RD	INTAKE AIR TEMP SENSOR SIGNAL
A16	TN/BK	ECT SENSOR SIGNAL
A17	OR	5-VOLT SUPPLY (PRIMARY)
A18	TN/YL	CAMSHAFT POSITION SENSOR SIG
A19	GY/RD	IDLE AIR CONTROL #1 DRIVER
A20	VT/BK	IDLE AIR CONTROL #4 DRIVER
A21	-	-
A22	RD/WT	FUSED B(+)
A23	OR/DB	THROTTLE POSITION SENSOR SIGNAL
A24	BK/DG	O2 SENSOR 1/1 SIGNAL
A25	TN/WT	O2 SENSOR 1/2 SIGNAL
A26	LG/RD	O2 SENSOR 2/1 SIGNAL
A27	DG/RD	MAP SENSOR SIGNAL
A28	-	-
A29	TN/WT	O2 SENSOR 2/2 SIGNAL
A30	-	-
A31	BK/TN	GROUND
A32	BK/TN	GROUND

Powertrain Control Module Connector - (B) White
2001-2003 Dodge Dakota 3.9L, 5.9L



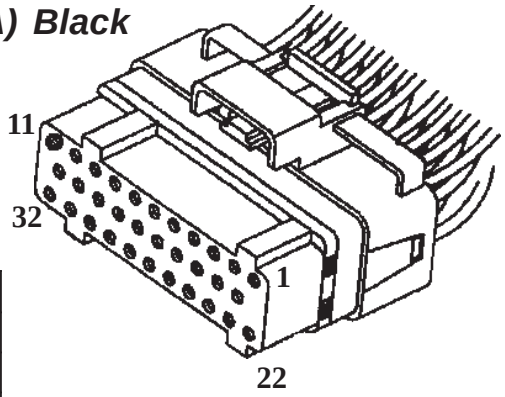
Cav	Color	Function
B1	GY/BK	TRANS TEMP SENSOR SIGNAL
B2	VT	INJECTOR #7 DRIVER (5.9L)
B3	-	-
B4	WT/DB	INJECTOR #1 DRIVER
B5	YL/WT	INJECTOR #3 DRIVER
B6	GY	INJECTOR #5 DRIVER
B7	-	-
B8	VT/WT	GOVERNOR PRESSURE SOLENOID CONTROL
B9	-	-
B10	DB	GENERATOR FIELD DRIVER
B11	OR/BK	TCC SOLENOID CONTROL
B12	BR/DB	INJECTOR #6 DRIVER
B13	GY/LB	INJECTOR #8 DRIVER (5.9L)
B14	-	-
B15	TN	INJECTOR #2 DRIVER
B16	LB/BR	INJECTOR #4 DRIVER
B17	DB/PK	RADIATOR FAN CONTROL
B18	-	-
B19	DB	A/C PRESSURE SIGNAL
B20	-	-
B21	BR	OVERDRIVE SOLENOID CONTROL
B22	-	-
B23	GY/YL	ENGINE OIL PRESSURE SENSOR SIGNAL
B24	-	-
B25	DB/BK	OUTPUT SHAFT SPEED SENSOR GROUND (-).
B26	-	-
B27	DB	VEHICLE SPEED SENSOR SIGNAL
B28	LG/WT	OUTPUT SHAFT SPEED SENSOR SIGNAL
B29	LG/RD	GOVERNOR PRESSURE SIGNAL
B30	PK	TRANSMISSION RELAY CONTROL
B31	VT/WT	5-VOLT SUPPLY (SECONDARY)
B32	-	-

Powertrain Control Module Connector - (C) Gray
2001-2003 Dodge Dakota 3.9L, 5.9L



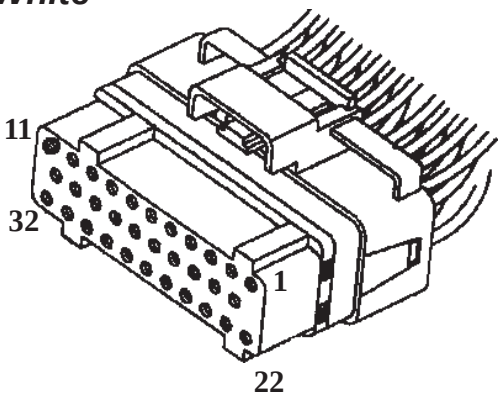
Cav	Color	Function
C1	DB/OR	A/C COMP CLUTCH RELAY CONTROL
C2	-	-
C3	DB/YL	AUTO SHUTDOWN RELAY CONTROL
C4	TN/RD	SPEED CONTROL VACUUM SOLENOID CONTROL
C5	LG/RD	SPEED CONTROL VENT SOLENOID CONTROL
C6	-	-
C7	-	-
C8	VT/WT	O2 SENSOR UPSTREAM HEATER CONTROL
C9	DG/BK	O2 SENSOR DOWNSTREAM HEATER CONTROL
C10	WT/DG	LPD SWITCH SENSE
C11	YL/RD	SPEED CONTROL POWER SUPPLY
C12	DG/OR	AUTO SHUTDOWN RELAY OUTPUT
C13	OR/WT	OVERDRIVE OFF SWITCH SENSE
C14	OR	LDP SWITCH SENSE
C15	PK/YL	BATTERY TEMP SENSOR SIGNAL
C16	VT/OR	O2 SENSOR RELAY DRIVER
C17	-	-
C18	-	-
C19	BR	FUEL PUMP RELAY CONTROL
C20	PK/BK	DUTY CYCLE PURGE SOLENOID CONTROL
C21	-	-
C22	BR	A/C REQUEST SIGNAL
C23	LG/WT	A/C SELECT SIGNAL
C24	WT/PK	BRAKE SWITCH SENSE
C25	WT/DB	GENERATOR FIELD SOURCE (+)
C26	DB/WT	FUEL PUMP RELAY CONTROL
C27	PK	SCI TRANSMIT
C28	-	-
C29	LG	SCI RECEIVE
C30	VT/YL	PC 1 BUS (+)
C31	-	-
C32	RD/LG	SPEED SONTROL SWITCH SIGNAL

Powertrain Control Module Connector - (A) Black
1996-2002 Dodge Pickup 3.9L, 5.2L, 5.9L



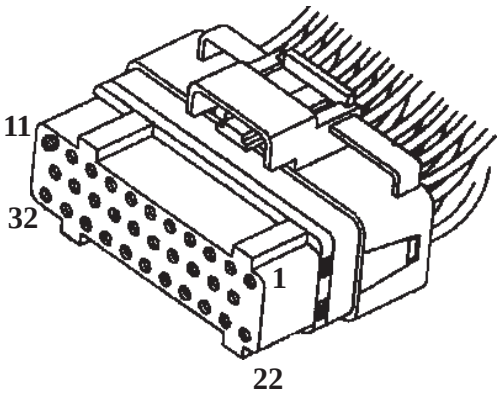
Cav	Color	Function
A1	-	-
A2	LG/BK	FUSED IGNITION SWITCH OUTPUT
A3	-	-
A4	BK/LB	SENSOR GROUND
A5	-	-
A6	BK/WT	P/N POSITION SWITCH SENSE
A7	BK/GY	IGNITION COIL DRIVER #1
A8	GY/BK	CRANK POSITION SENSOR SIGNAL
A9	-	-
A10	YL/BK	IDLE AIR CONTROL #2 DRIVER
A11	BR/WT	IDLE AIR CONTROL #3 DRIVER
A12	-	-
A13	OR	PTO SWITCH SENSE
A14	-	-
A15	BK/RD	INTAKE AIR TEMP SENSOR SIGNAL
A16	TN/BK	ECT SENSOR SIGNAL
A17	VT/WT	5-VOLT SUPPLY (PRIMARY)
A18	TN/YL	CAMSHAFT POSITION SENSOR SIG
A19	GY/RD	IDLE AIR CONTROL #1 DRIVER
A20	VT/BK	IDLE AIR CONTROL #4 DRIVER
A21	-	-
A22	RD/WT	FUSED B(+)
A23	OR/DB	THROTTLE POSITION SENSOR SIGNAL
A24	TN/WT or BK/DG	O2 SENSOR 1/1 SIGNAL
A25	OR/BK	O2 SENSOR 1/3 SIGNAL
A26	LG/RD OR BK/DG	O2 SENSOR 2/1 SIGNAL
A27	DG/RD	MAP SENSOR SIGNAL
A28	-	-
A29	OR/TN OR TN/RD	O2 SENSOR 1/2 SIGNAL
A30	-	-
A31	BK/TN	GROUND
A32	BK/TN	GROUND

Powertrain Control Module Connector - (B) White
1996-2002 Dodge Pickup 3.9L, 5.2L, 5.9L



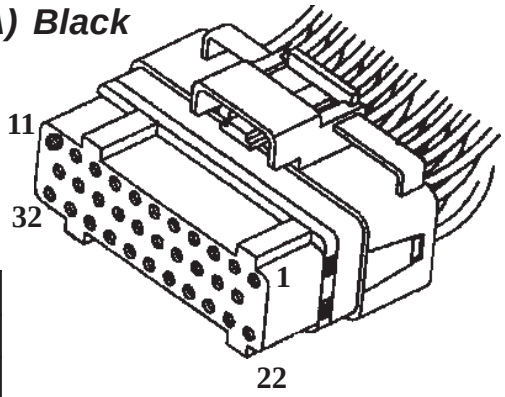
Cav	Color	Function
B1	VT	TRANS TEMP SENSOR SIGNAL
B2	VT/TN	INJECTOR #7 DRIVER (5.2L/5.9L)
B3	-	-
B4	WT/DB	INJECTOR #1 DRIVER
B5	YL/WT	INJECTOR #3 DRIVER
B6	GY	INJECTOR #5 DRIVER
B7	-	-
B8	VT/WT	GOVERNOR PRESSURE SOLENOID CONTROL
B9	-	-
B10	DG	GENERATOR FIELD DRIVER
B11	OR/BK	TCC SOLENOID CONTROL
B12	BR/DB	INJECTOR #6 DRIVER
B13	GY/LB	INJECTOR #8 DRIVER (5.2L/5.9L)
B14	-	-
B15	TN	INJECTOR #2 DRIVER
B16	LB/BR	INJECTOR #4 DRIVER
B17	-	-
B18	-	-
B19	-	-
B20	-	-
B21	BR	OVERDRIVE SOLENOID CONTROL
B22	TN/PK	FUEL TEMPERATURE SENSOR SIGNAL (96-97)
B23	GY/OR	ENGINE OIL PRESSURE SENSOR SIGNAL (98-UP)
B24	-	-
B25	DB/BK	OUTPUT SHAFT SPEED SENSOR GROUND (-).
B26	-	-
B27	WT/OR	VEHICLE SPEED SENSOR SIGNAL
B28	LG/BK	OUTPUT SHAFT SPEED SENSOR SIGNAL
B29	LG/WT	GOVERNOR PRESSURE SIGNAL
B30	PK	TRANSMISSION RELAY CONTROL
B31	OR	5-VOLT SUPPLY (SECONDARY)
B32	GY/YL	EGR SOLENOID CONTROL (5.2L, 5.9L) (96-97)

Powertrain Control Module Connector - (C) Gray
1996-2002 Dodge Pickup 3.9L, 5.2L, 5.9L



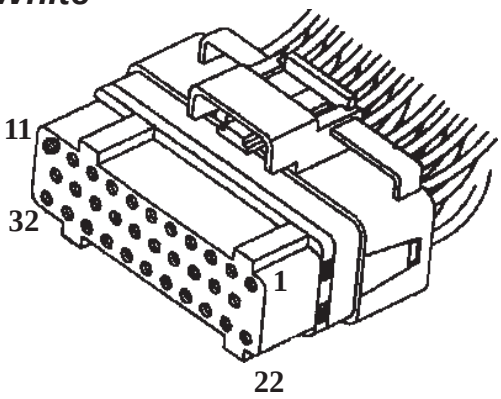
Cav	Color	Function
C1	DB/OR	A/C COMP CLUTCH RELAY CONTROL
C2	-	-
C3	DB/YL	AUTO SHUTDOWN RELAY CONTROL
C4	TN/RD	SPEED CONTROL VACUUM SOLENOID CONTROL
C5	LG/RD	SPEED CONTROL VENT SOLENOID CONTROL
C6	LG/OR	OVERDRIVE OFF LAMP DRIVER (96-98)
C7	PK/BK	TRANSMISSION TEMPERATURE LAMP DRIVER (96-97)
C8	BR/VT	O2 SENSOR HEATER CONTROL (2000-UP CALIF.)
C9	DG/PK	O2 SENSOR HEATER CONTROL (2000-UP CALIF.)
C10	WT/DG	LPD SWITCH SENSE (98-UP)
C11	YL/RD	SPEED CONTROL POWER SUPPLY
C12	DG/OR	AUTO SHUTDOWN RELAY OUTPUT
C13	OR/WT	OVERDRIVE OFF SWITCH SENSE
C14	OR	LDP SWITCH SENSE (98-UP)
C15	PK/YL	BATTERY TEMP SENSOR SIGNAL
C16	TN/YL	GENERATOR LAMP DRIVER (96-97)
C17	BK/PK	MALFUNCTION INDICATOR LAMP DRIVER (96-97)
C18	GY/PK	SERVICE REMINDER INDICATOR LAMP DRIVER (96-97)
C19	BR/WT	FUEL PUMP RELAY CONTROL
C20	PK OR PK/WT	DUTY CYCLE PURGE SOLENOID CONTROL
C21	-	-
C22	BR	A/C REQUEST SIGNAL
C23	LG OR LG/WT	A/C SELECT SIGNAL
C24	WT/PK	BRAKE SWITCH SENSE
C25	WT/DB OR DB	GENERATOR FIELD SOURCE (+)
C26	DB/WT	LOW FUEL SENSE
C27	PK/DB	SCI TRANSMIT
C28	WT/BK	CCD BUS (-) (98-UP)
C29	DG	SCI RECEIVE
C30	VT/BR	CCD BUS (+) (98-UP)
C31	GY/LB	TACHOMETER SIGNAL (96-97)
C32	RD/LG	SPEED SONTROL SWITCH SIGNAL

Powertrain Control Module Connector - (A) Black
1996 -1998 Dodge Van 3.9L, 5.2L, 5.9L



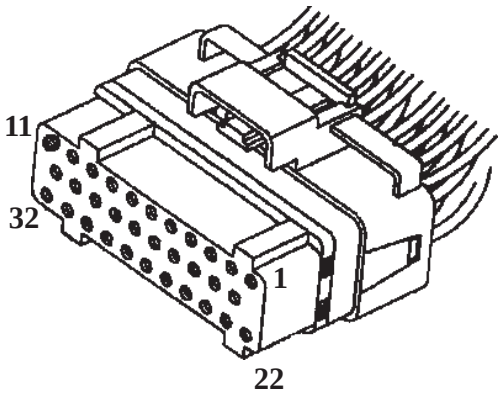
Cav	Color	Function
A1	-	-
A2	LG/BK	FUSED IGNITION SWITCH OUTPUT
A3	-	-
A4	BK/LB	SENSOR GROUND
A5	-	-
A6	BR/YL	P/N POSITION SWITCH SENSE
A7	GY	IGNITION COIL DRIVER #1
A8	GY/BK	CRANK POSITION SENSOR SIGNAL
A9	-	-
A10	YL/BK	IDLE AIR CONTROL #2 DRIVER
A11	BR/WT	IDLE AIR CONTROL #3 DRIVER
A12	-	-
A13	-	-
A14	-	-
A15	BK/RD	INTAKE AIR TEMP SENSOR SIGNAL
A16	TN/BK	ECT SENSOR SIGNAL
A17	OR	5-VOLT SUPPLY (PRIMARY)
A18	TN/YL	CAMSHAFT POSITION SENSOR SIG
A19	GY/RD	IDLE AIR CONTROL #1 DRIVER
A20	VT/BK	IDLE AIR CONTROL #4 DRIVER
A21	-	-
A22	RD/WT	FUSED B(+)
A23	OR/DB	THROTTLE POSITION SENSOR SIGNAL
A24	TN/WT	O2 SENSOR 1/1 SIGNAL
A25	BK/DG	O2 SENSOR 1/2 SIGNAL
A26	-	-
A27	DG/RD	MAP SENSOR SIGNAL
A28	-	-
A29	-	-
A30	-	-
A31	BK/TN	GROUND
A32	BK/TN	GROUND

Powertrain Control Module Connector - (B) White
1996-1998 Dodge Van 3.9L, 5.2L, 5.9L



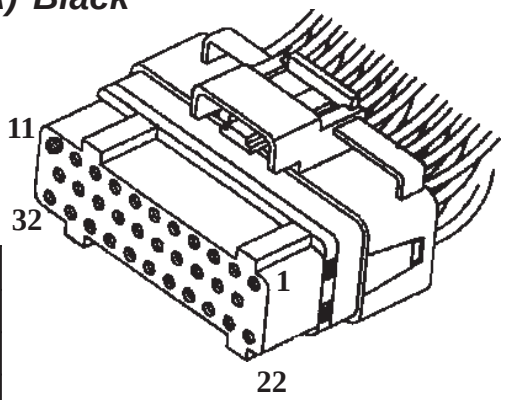
Cav	Color	Function
B1	GY/BK	TRANS TEMP SENSOR SIGNAL
B2	VT	INJECTOR #7 DRIVER (5.2L/5.9L)
B3	-	-
B4	WT/DB	INJECTOR #1 DRIVER
B5	YL/WT	INJECTOR #3 DRIVER
B6	GY	INJECTOR #5 DRIVER
B7	-	-
B8	PK	GOVERNOR PRESSURE SOLENOID CONTROL
B9	-	-
B10	DG/WT	GENERATOR FIELD DRIVER
B11	OR/BK	TCC SOLENOID CONTROL
B12	BR/DB	INJECTOR #6 DRIVER
B13	GY/LB	INJECTOR #8 DRIVER (5.2L/5.9L)
B14	-	-
B15	TN	INJECTOR #2 DRIVER
B16	LB/BR	INJECTOR #4 DRIVER
B17	-	-
B18	-	-
B19	-	-
B20	-	-
B21	OR/WT	OVERDRIVE SOLENOID CONTROL
B22	-	-
B23	GY	ENGINE OIL PRESSURE SENSOR SIGNAL
B24	-	-
B25	DB/BK	OUTPUT SHAFT SPEED SENSOR GROUND (-).
B26	-	-
B27	WT/OR	VEHICLE SPEED SENSOR SIGNAL
B28	LG/WT	OUTPUT SHAFT SPEED SENSOR SIGNAL
B29	LG/RD	GOVERNOR PRESSURE SIGNAL
B30	VT/LB	TRANSMISSION RELAY CONTROL
B31	VT/WT	5-VOLT SUPPLY (SECONDARY)
B32	-	-

Powertrain Control Module Connector - (C) Gray
1996-1998 Dodge Van 3.9L, 5.2L, 5.9L



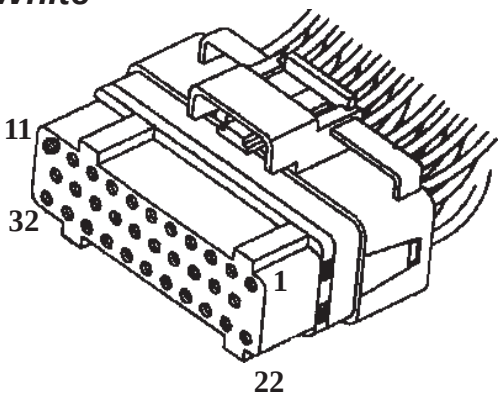
Cav	Color	Function
C1	DB/OR	A/C COMP CLUTCH RELAY CONTROL
C2	-	-
C3	DB/YL	AUTO SHUTDOWN RELAY CONTROL
C4	TN/RD	SPEED CONTROL VACUUM SOLENOID CONTROL
C5	LG/RD	SPEED CONTROL VENT SOLENOID CONTROL
C6	LG/OR	OVERDRIVE OFF LAMP DRIVER
C7	-	-
C8	-	-
C9	-	-
C10	WT/DG	LPD SWITCH SENSE
C11	YL/RD	SPEED CONTROL POWER SUPPLY
C12	DG/OR	AUTO SHUTDOWN RELAY OUTPUT
C13	OR/WT	OVERDRIVE OFF SWITCH SENSE
C14	OR	LDP SWITCH SENSE
C15	PK/YL	BATTERY TEMP SENSOR SIGNAL
C16	-	-
C17	-	-
C18	-	-
C19	BR	FUEL PUMP RELAY CONTROL
C20	PK/BK	DUTY CYCLE PURGE SOLENOID CONTROL
C21	-	-
C22	DB	A/C REQUEST SIGNAL
C23	LG/GY	A/C SELECT SIGNAL
C24	WT/PK	BRAKE SWITCH SENSE
C25	OR/DG	GENERATOR FIELD SOURCE (+)
C26	LB/BK	LOW FUEL SENSE
C27	PK	SCI TRANSMIT
C28	WT/BK	CCD BUS (-)
C29	LG	SCI RECEIVE
C30	VT/BR	CCD BUS (+)
C31	-	-
C32	WT/LG	SPEED SONTROL SWITCH SIGNAL

Powertrain Control Module Connector - (A) Black
1999-2002 Dodge Van 3.9L, 5.2L, 5.9L



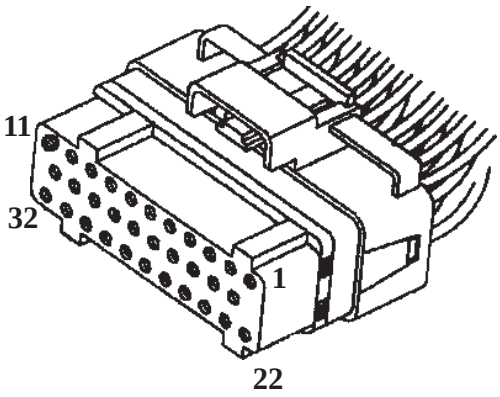
Cav	Color	Function
A1	-	-
A2	LG/BK	FUSED IGNITION SWITCH OUTPUT
A3	-	-
A4	BK/LB	SENSOR GROUND
A5	-	-
A6	BR/YL	P/N POSITION SWITCH SENSE
A7	GY	IGNITION COIL DRIVER #1
A8	GY/BK	CRANK POSITION SENSOR SIGNAL
A9	-	-
A10	YL/BK	IDLE AIR CONTROL #2 DRIVER
A11	BR/WT	IDLE AIR CONTROL #3 DRIVER
A12	-	-
A13	-	-
A14	-	-
A15	BK/RD	INTAKE AIR TEMP SENSOR SIGNAL
A16	TN/BK	ECT SENSOR SIGNAL
A17	OR	5-VOLT SUPPLY (PRIMARY)
A18	TN/YL	CAMSHAFT POSITION SENSOR SIG
A19	GY/RD	IDLE AIR CONTROL #1 DRIVER
A20	VT/BK	IDLE AIR CONTROL #4 DRIVER
A21	-	-
A22	DG/BK	FUSED B(+)
A23	OR/DB	THROTTLE POSITION SENSOR SIGNAL
A24	BK/DG	O2 SENSOR 1/1 SIGNAL
A25	TN/WT	O2 SENSOR 1/2 SIGNAL
A26	LG/PK	02 SENSOR 2/1 SIGNAL (CALIFORNIA)
A27	DG/RD	MAP SENSOR SIGNAL
A28	DB	FUEL TEMP SENSOR (CNG)
A29	PK/WT	02 SENSOR 2/2 SIGNAL (CALIFORNIA)
A30	-	-
A31	BK/TN	GROUND
A32	BK/TN	GROUND

Powertrain Control Module Connector - (B) White
1999-2002 Dodge Van 3.9L, 5.2L, 5.9L



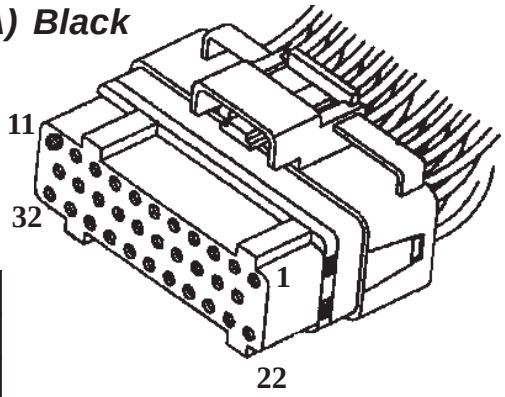
Cav	Color	Function
B1	GY/BK	TRANS TEMP SENSOR SIGNAL
B2	VT	INJECTOR #7 DRIVER (5.2L/5.9L)
B3	-	-
B4	WT/DB	INJECTOR #1 DRIVER
B5	YL/WT	INJECTOR #3 DRIVER
B6	GY	INJECTOR #5 DRIVER
B7	-	-
B8	VT/BK	GOVERNOR PRESSURE SOLENOID CONTROL
B9	-	-
B10	DG/WT	GENERATOR FIELD DRIVER
B11	OR/BK	TCC SOLENOID CONTROL
B12	BR/DB	INJECTOR #6 DRIVER
B13	GY/LB	INJECTOR #8 DRIVER (5.2L/5.9L)
B14	-	-
B15	TN	INJECTOR #2 DRIVER
B16	LB/BR	INJECTOR #4 DRIVER
B17	-	-
B18	-	-
B19	-	-
B20	-	-
B21	BR	OVERDRIVE SOLENOID CONTROL
B22	TN/PK	FUEL TEMPERATURE SENSOR SIGNAL (CNG)
B23	GY/YL	ENGINE OIL PRESSURE SENSOR SIGNAL
B24	-	-
B25	DB/BK	OUTPUT SHAFT SPEED SENSOR GROUND (-).
B26	-	-
B27	WT/OR	VEHICLE SPEED SENSOR SIGNAL
B28	LG/WT	OUTPUT SHAFT SPEED SENSOR SIGNAL
B29	LG/RD	GOVERNOR PRESSURE SIGNAL
B30	PK	TRANSMISSION RELAY CONTROL
B31	VT/WT	5-VOLT SUPPLY (SECONDARY)
B32	-	-

Powertrain Control Module Connector - (C) Gray
1999-2002 Dodge Van 3.9L, 5.2L, 5.9L



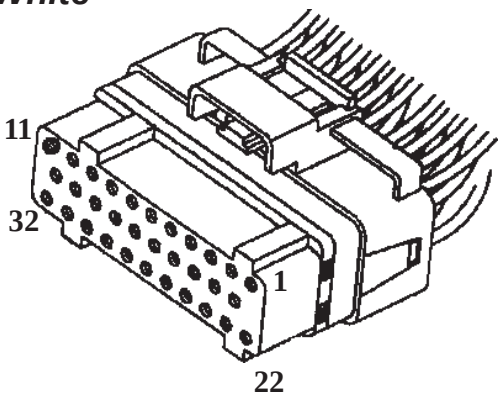
Cav	Color	Function
C1	DB/OR	A/C COMP CLUTCH RELAY CONTROL
C2	-	-
C3	DB/YL	AUTO SHUTDOWN RELAY CONTROL
C4	TN/RD	SPEED CONTROL VACUUM SOLENOID CONTROL
C5	LG/RD	SPEED CONTROL VENT SOLENOID CONTROL
C6	-	-
C7	-	-
C8	OR/RD	O2 SENSOR UPSTREAM HEATER CONTROL
C9	BK/OR	O2 SENSOR DOWNSTREAM HEATER CONTROL (CALIFORNIA)
C10	WT/DG	LPD SWITCH SENSE
C11	YL/RD	SPEED CONTROL POWER SUPPLY
C12	DG/OR	AUTO SHUTDOWN RELAY OUTPUT
C13	OR/WT	OVERDRIVE OFF SWITCH SENSE
C14	OR	LDP SWITCH SENSE
C15	PK/YL	BATTERY TEMP SENSOR SIGNAL
C16	VT/TN	O2 SENSOR 2/1 HEATER CONTROL
C17	-	-
C18	-	-
C19	BR	FUEL PUMP RELAY CONTROL
C20	PK/BK	DUTY CYCLE PURGE SOLENOID CONTROL
C21	-	-
C22	DB	A/C REQUEST SIGNAL
C23	LG/GY	A/C SELECT SIGNAL
C24	WT/PK	BRAKE SWITCH SENSE
C25	WT/DB	GENERATOR FIELD SOURCE (+)
C26	LB/BK	LOW FUEL SENSE
C27	PK	SCI TRANSMIT
C28	WT/BK	CCD BUS (-)
C29	LG	SCI RECEIVE
C30	VT/BR	CCD BUS (+)
C31	-	-
C32	WT/LG	SPEED SONTROL SWITCH SIGNAL

Powertrain Control Module Connector - (A) Black
1996-1998 Jeep Grand Cherokee 4.0L



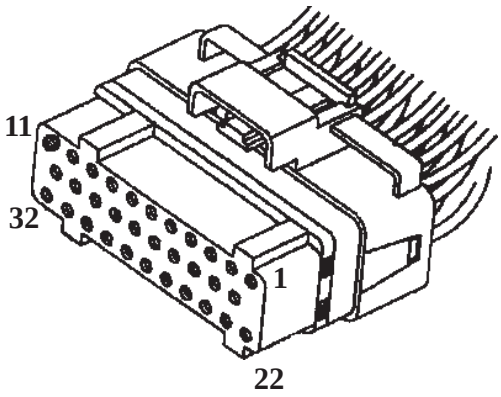
Cav	Color	Function
A1	-	-
A2	OR	FUSED IGNITION SWITCH OUTPUT
A3	-	-
A4	BK/LB	SENSOR GROUND
A5	-	-
A6	BK/WT	P/N POSITION SWITCH SENSE
A7	GY/WT	IGNITION COIL DRIVER #1
A8	RD/LG	CRANK POSITION SENSOR SIGNAL
A9	-	-
A10	VT/BK	IDLE AIR CONTROL #2 DRIVER
A11	BR/WT	IDLE AIR CONTROL #3 DRIVER
A12	-	-
A13	-	-
A14	-	-
A15	BK/RD	INTAKE AIR TEMP SENSOR SIGNAL
A16	TN/BK	ECT SENSOR SIGNAL
A17	WT/BK	5-VOLT SUPPLY (PRIMARY)
A18	GY/BK	CAMSHAFT POSITION SENSOR SIG
A19	YL/BK	IDLE AIR CONTROL #1 DRIVER
A20	GY/RD	IDLE AIR CONTROL #4 DRIVER
A21	-	-
A22	RD/YL	FUSED B(+)
A23	OR/DB	THROTTLE POSITION SENSOR SIGNAL
A24	BK/OR	O2 SENSOR 1/1 SIGNAL
A25	BK/PK	O2 SENSOR 1/2 SIGNAL
A26	-	-
A27	RD/WT	MAP SENSOR SIGNAL
A28	-	-
A29	-	-
A30	-	-
A31	BK/TN	GROUND
A32	BK/TN	GROUND

Powertrain Control Module Connector - (B) White
1996-1998 Jeep Grand Cherokee 4.0L



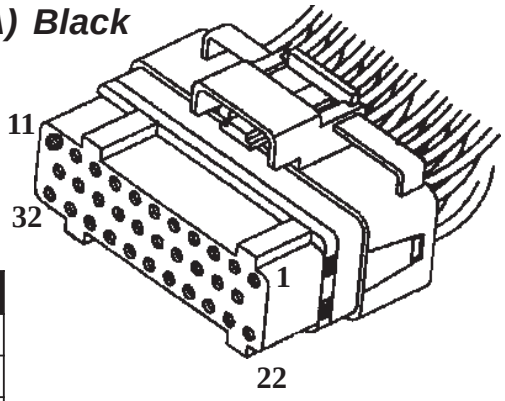
Cav	Color	Function
B1	VT	TRANS TEMP SENSOR SIGNAL
B2	-	-
B3	-	-
B4	WT/DB	INJECTOR #1 DRIVER
B5	YL/WT	INJECTOR #3 DRIVER
B6	GY	INJECTOR #5 DRIVER
B7	-	-
B8	PK	GOVERNOR PRESSURE SOLENOID CONTROL
B9	-	-
B10	DG	GENERATOR FIELD DRIVER
B11	DG/LB	TCC SOLENOID CONTROL
B12	BR/YL	INJECTOR #6 DRIVER
B13	-	-
B14	-	-
B15	TN	INJECTOR #2 DRIVER
B16	LB/BR	INJECTOR #4 DRIVER
B17	-	-
B18	-	-
B19	-	-
B20	-	-
B21	BR	OVERDRIVE SOLENOID CONTROL
B22	-	-
B23	GY/WT	ENGINE OIL PRESSURE SENSOR SIGNAL
B24	-	-
B25	DB/BK	OUTPUT SHAFT SPEED SENSOR GROUND (-).
B26	-	-
B27	WT/OR	VEHICLE SPEED SENSOR SIGNAL
B28	LG/WT	OUTPUT SHAFT SPEED SENSOR SIGNAL
B29	LG	GOVERNOR PRESSURE SIGNAL
B30	BR/OR	TRANSMISSION RELAY CONTROL
B31	VT/WT	5-VOLT SUPPLY (SECONDARY)
B32	-	-

Powertrain Control Module Connector - (C) Gray
1996-1998 Jeep Grand Cherokee 4.0L



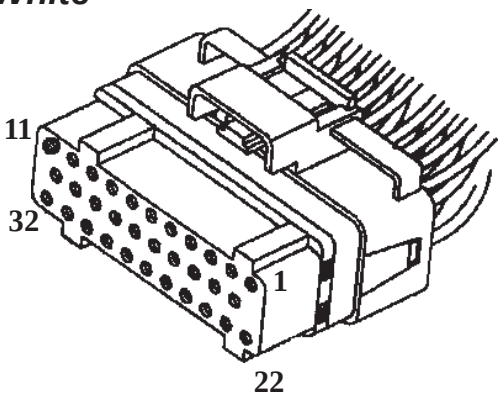
Cav	Color	Function
C1	DB/RD	A/C COMP CLUTCH RELAY CONTROL
C2	-	-
C3	PK/WT	AUTO SHUTDOWN RELAY CONTROL
C4	TN/RD	SPEED CONTROL VACUUM SOLENOID CONTROL
C5	LG/RD	SPEED CONTROL VENT SOLENOID CONTROL
C6	BR/YL	OVERDRIVE OFF LAMP DRIVER
C7	-	-
C8	-	-
C9	-	-
C10	DG/RD	LPD SWITCH SENSE
C11	YL/RD	SPEED CONTROL POWER SUPPLY
C12	DG/OR	AUTO SHUTDOWN RELAY OUTPUT
C13	OR	OVERDRIVE OFF SWITCH SENSE
C14	VT/RD	LDP SWITCH SENSE
C15	YL/RD	BATTERY TEMP SENSOR SIGNAL
C16	-	-
C17	-	-
C18	-	-
C19	DB	FUEL PUMP RELAY CONTROL
C20	PK/BK	DUTY CYCLE PURGE SOLENOID CONTROL
C21	-	-
C22	DB/BK	A/C REQUEST SIGNAL
C23	-	-
C24	BR	BRAKE SWITCH SENSE
C25	DG/VT	GENERATOR FIELD SOURCE (+) (97-98)
C26	LB/BK	LOW FUEL SENSE
C27	BK/PK	SCI TRANSMIT
C28	WT/BK	CCD BUS (-)
C29	BK/WT	SCI RECEIVE
C30	VT/BR	CCD BUS (+)
C31	-	-
C32	PK	SPEED SONTROL SWITCH SIGNAL

Powertrain Control Module Connector - (A) Black
1999-2002 Jeep Grand Cherokee 4.0L



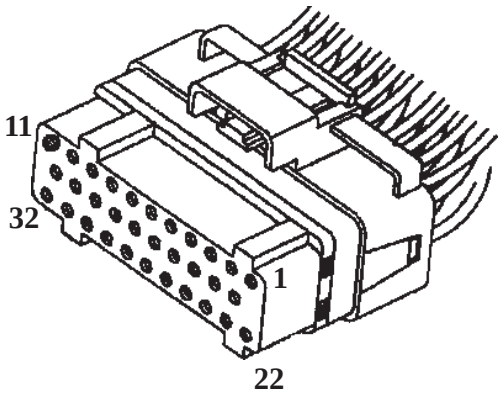
Cav	Color	Function
A1	TN/OR	COIL DRIVER
A2	OR/DB	FUSED IGNITION SWITCH OUTPUT
A3	-	-
A4	BK/LB	SENSOR GROUND
A5	-	-
A6	BR/OR OR BK/WT	P/N POSITION SWITCH SENSE
A7	TN/RD	COIL DRIVER
A8	GY/BK	CRANK POSITION SENSOR SIGNAL
A9	-	-
A10	YL/BK	IDLE AIR CONTROL #2 DRIVER
A11	BR/WT	IDLE AIR CONTROL #3 DRIVER
A12	-	-
A13	-	-
A14	LG/BK	TRANSFER CASE POSITION SWITCH
A15	BK/RD	INTAKE AIR TEMP SENSOR SIGNAL
A16	TN/BK	ECT SENSOR SIGNAL
A17	OR	5-VOLT SUPPLY (PRIMARY)
A18	TN/YL	CAMSHAFT POSITION SENSOR SIG
A19	GY/RD	IDLE AIR CONTROL #1 DRIVER
A20	VT/BK	IDLE AIR CONTROL #4 DRIVER
A21	-	-
A22	RD/BK	FUSED B(+)
A23	OR/RD	THROTTLE POSITION SENSOR SIGNAL
A24	BR/DG	O2 SENSOR 1/1 SIGNAL
A25	BR/DG	O2 SENSOR 1/2 SIGNAL
A26	-	-
A27	DG/OR	MAP SENSOR SIGNAL
A28	-	-
A29	-	-
A30	-	-
A31	BK/WT	GROUND
A32	BK/TN	GROUND

Powertrain Control Module Connector - (B) White
1999-2002 Jeep Grand Cherokee 4.0L



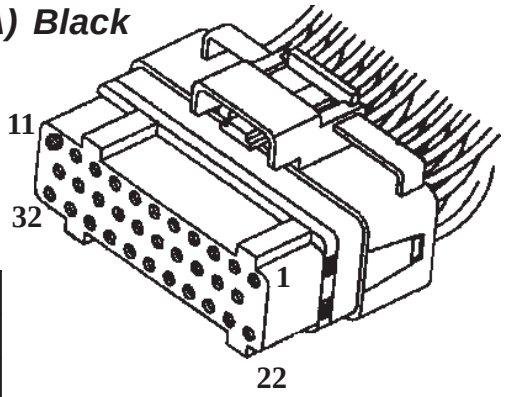
Cav	Color	Function
B1	VT	TRANS TEMP SENSOR SIGNAL
B2	-	-
B3	-	-
B4	WT/DB	INJECTOR #1 DRIVER
B5	YL/WT	INJECTOR #3 DRIVER
B6	GY	INJECTOR #5 DRIVER
B7	-	-
B8	PK	GOVERNOR PRESSURE SOLENOID CONTROL
B9	-	-
B10	DG	GENERATOR FIELD DRIVER
B11	DG/LB	TCC SOLENOID CONTROL
B12	BR/DB	INJECTOR #6 DRIVER
B13	-	-
B14	-	-
B15	TN	INJECTOR #2 DRIVER
B16	LB/BR	INJECTOR #4 DRIVER
B17	DB/PK	RADIATOR FAN CONTROL
B18	-	-
B19	-	-
B20	-	-
B21	BR/WT	OVERDRIVE SOLENOID CONTROL
B22	-	-
B23	GY/YL	ENGINE OIL PRESSURE SENSOR SIGNAL
B24	-	-
B25	DB/BK	OUTPUT SHAFT SPEED SENSOR GROUND (-).
B26	-	-
B27	WT/OR	VEHICLE SPEED SENSOR SIGNAL
B28	LG/WT	OUTPUT SHAFT SPEED SENSOR SIGNAL
B29	LG/RD	GOVERNOR PRESSURE SIGNAL
B30	PK/YL	TRANSMISSION RELAY CONTROL
B31	VT/WT	5-VOLT SUPPLY (SECONDARY)
B32	-	-

Powertrain Control Module Connector - (C) Gray
1999-2002 Jeep Grand Cherokee 4.0L



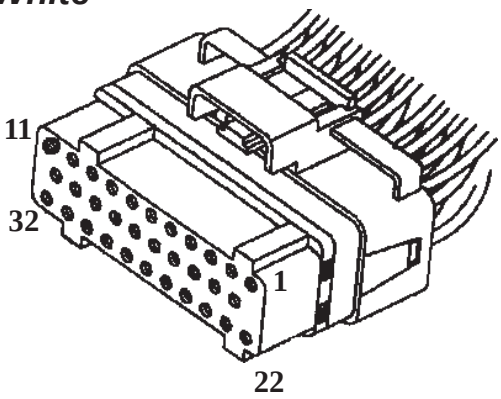
Cav	Color	Function
C1	DB/OR	A/C COMP CLUTCH RELAY CONTROL
C2	-	-
C3	DB/YL	AUTO SHUTDOWN RELAY CONTROL
C4	TN/RD	SPEED CONTROL VACUUM SOLENOID CONTROL
C5	LG/RD	SPEED CONTROL VENT SOLENOID CONTROL
C6	-	-
C7	-	-
C8	-	-
C9	-	-
C10	WT/DG	LPD SWITCH SENSE
C11	OR/DG	SPEED CONTROL POWER SUPPLY
C12	DG/LG	AUTO SHUTDOWN RELAY OUTPUT
C13	OR/YL	OVERDRIVE OFF SWITCH SENSE
C14	OR/PK	LDP SWITCH SENSE
C15	VT/LG	BATTERY TEMP SENSOR SIGNAL
C16	-	-
C17	-	-
C18	-	-
C19	BR	FUEL PUMP RELAY CONTROL
C20	PK/BK	DUTY CYCLE PURGE SOLENOID CONTROL
C21	-	-
C22	DB	A/C REQUEST SIGNAL
C23	-	-
C24	WT/PK	BRAKE SWITCH SENSE
C25	LB/RD	GENERATOR FIELD SOURCE (+)
C26	LB/YL	LOW FUEL SENSE
C27	PK	SCI TRANSMIT
C28	-	-
C29	LG/DG	SCI RECEIVE
C30	YL/VT	CCD BUS (+)
C31	-	-
C32	RD/LG	SPEED SONTROL SWITCH SIGNAL

Powertrain Control Module Connector - (A) Black
1996-1998 Jeep Grand Cherokee 5.2L



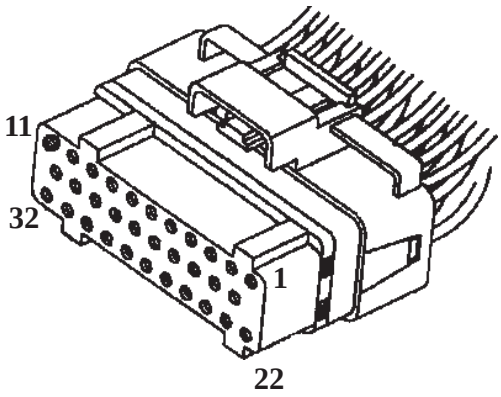
Cav	Color	Function
A1	-	-
A2	OR	FUSED IGNITION SWITCH OUTPUT
A3	-	-
A4	BK/LB	SENSOR GROUND
A5	-	-
A6	BK/WT	P/N POSITION SWITCH SENSE
A7	GY/WT	IGNITION COIL DRIVER #1
A8	RD/LG	CRANK POSITION SENSOR SIGNAL
A9	-	-
A10	YL/BK	IDLE AIR CONTROL #2 DRIVER
A11	BR/WT	IDLE AIR CONTROL #3 DRIVER
A12	-	-
A13	-	-
A14	-	-
A15	BK/RD	INTAKE AIR TEMP SENSOR SIGNAL
A16	TN/BK	ECT SENSOR SIGNAL
A17	WT/BK	5-VOLT SUPPLY (PRIMARY)
A18	GY/BK	CAMSHAFT POSITION SENSOR SIG
A19	YL/BK	IDLE AIR CONTROL #1 DRIVER
A20	GY/RD	IDLE AIR CONTROL #4 DRIVER
A21	-	-
A22	RD/YL	FUSED B(+)
A23	OR/DB	THROTTLE POSITION SENSOR SIGNAL
A24	BK/OR	O2 SENSOR 1/1 SIGNAL
A25	BK/PK	O2 SENSOR 1/2 SIGNAL
A26	-	-
A27	RD/WT	MAP SENSOR SIGNAL
A28	-	-
A29	-	-
A30	-	-
A31	BK/TN	GROUND
A32	BK/TN	GROUND

Powertrain Control Module Connector - (B) White
1996-1998 Jeep Grand Cherokee 5.2L



Cav	Color	Function
B1	VT	TRANS TEMP SENSOR SIGNAL
B2	DB/WT	INJECTOR #7 DRIVER
B3	-	-
B4	WT/DB	INJECTOR #1 DRIVER
B5	YL/WT	INJECTOR #3 DRIVER
B6	GY	INJECTOR #5 DRIVER
B7	-	-
B8	PK	GOVERNOR PRESSURE SOLENOID CONTROL
B9	-	-
B10	DG	GENERATOR FIELD DRIVER
B11	DG/LB	TCC SOLENOID CONTROL
B12	BR/YL	INJECTOR #6 DRIVER
B13	DB/YL	INJECTOR #8 DRIVER
B14	-	-
B15	TN	INJECTOR #2 DRIVER
B16	LB/BR	INJECTOR #4 DRIVER
B17	-	-
B18	-	-
B19	-	-
B20	-	-
B21	BR	OVERDRIVE SOLENOID CONTROL
B22	-	-
B23	GY/WT	ENGINE OIL PRESSURE SENSOR SIGNAL
B24	-	-
B25	DB/BK	OUTPUT SHAFT SPEED SENSOR GROUND (-).
B26	-	-
B27	WT/OR	VEHICLE SPEED SENSOR SIGNAL
B28	LG/WT	OUTPUT SHAFT SPEED SENSOR SIGNAL
B29	LG	GOVERNOR PRESSURE SIGNAL
B30	BR/OR	TRANSMISSION RELAY CONTROL
B31	VT/WT	5-VOLT SUPPLY (SECONDARY)
B32	-	-

Powertrain Control Module Connector - (C) Gray
1996-1998 Jeep Grand Cherokee 5.2L



Cav	Color	Function
C1	DB/RD	A/C COMP CLUTCH RELAY CONTROL
C2	-	-
C3	PK/WT	AUTO SHUTDOWN RELAY CONTROL
C4	TN/RD	SPEED CONTROL VACUUM SOLENOID CONTROL
C5	LG/RD	SPEED CONTROL VENT SOLENOID CONTROL
C6	BR/YL	OVERDRIVE OFF LAMP DRIVER
C7	-	-
C8	-	-
C9	-	-
C10	DG/RD	LPD SWITCH SENSE
C11	YL/RD	SPEED CONTROL POWER SUPPLY
C12	DG/OR	AUTO SHUTDOWN RELAY OUTPUT
C13	OR	OVERDRIVE OFF SWITCH SENSE
C14	VT/RD	LDP SWITCH SENSE
C15	YL/RD	BATTERY TEMP SENSOR SIGNAL
C16	-	-
C17	-	-
C18	-	-
C19	PK	FUEL PUMP RELAY CONTROL
C20	PK/BK	DUTY CYCLE PURGE SOLENOID CONTROL
C21	-	-
C22	DB/BK	A/C REQUEST SIGNAL
C23	-	-
C24	BR	BRAKE SWITCH SENSE
C25	DG/VT	GENERATOR FIELD SOURCE (+) (97-98)
C26	LB/BK	LOW FUEL SENSE
C27	BK/PK	SCI TRANSMIT
C28	WT/BK	CCD BUS (-)
C29	BK/WT	SCI RECEIVE
C30	VT/BR	CCD BUS (+)
C31	-	-
C32	PK	SPEED SONTROL SWITCH SIGNAL