



# Technical Service Information

## CHRYSLER FWD CARS & VANS

### 41TE & 42LE 1993 & LATER VSS SYSTEM DIAGNOSIS

**COMPLAINT:** The vehicle may have a complaint of, no speedometer operation and may possibly have all the PRNODL lamps illuminated. When attempting to scan the TCM, the scan tool indicates, in the “Modules Responding” screen, that the TCM is not responding.  
A scan of the PCM may reveal zero miles per hour and a code P0500 for “Loss Of Vehicle Speed” may be stored.

**CAUSE:** A Faulty Output Speed Sensor or it's circuit, A loss of power to the TCM at terminal 11, A TCM that has not had the “Pinion Factor” flashed, A faulty TCM, A faulty PCM or a fault in the Electronic Analog Instrument Cluster.

#### ***PRINCIPLES OF OPERATION:***

The example used here is a 1997 Dodge Caravan with 3.8L engine and 41TE transmission. Referring to the wire diagram in Figure 1, The PCM provides a 5 volt signal from terminal 66 of the PCM to terminal 58 of the TCM. As the vehicle begins to move, the TCM provides a square wave signal, using it's internal buffer, to the PCM that is proportional to vehicle speed by pulsing the 5 volt voltage supply between ground and 5 volts. The PCM monitors and interprets this pulse into miles per hour. It is then broadcasted by the PCM over the communication network to all other modules requiring this signal.

**CORRECTION:** Check the Output Speed Sensor signal at TCM terminals 13 and 14 at the TCM with your meter set on HERTZ (Hz) or with a scope. You should see approximately 2.3Hz @ 10 mph to about 800Hz @ 40 mph, or scan other modules to see if they display vehicle speed.  
This would mean the speed sensor and the TCM are not the cause of the problem.  
The 5 volt circuit at TCM terminal 58 can also be checked for the toggle between 5 volts and zero. Be sure to turn the wheels very slowly when checking this signal, or the meter display will freeze, leading to an incorrect diagnosis.

Only on vehicles equipped with a Transmission Range Sensor and the TCM being the cause of the loss of VSS signal, all the PRNODL lamps may be illuminated as shown in Figure 2. Before condemning the TCM, supply a direct 12 volt jumper lead to TCM terminal 11. If this cures the problem, replace the ignition switch. **DO NOT** leave the jumper lead installed and remove the jumper lead **BEFORE** turning the ignition off when this test is complete.

Check to see that the correct pinion factor is installed.

At this point the PCM or the Electronic Analog Instrument cluster may be at fault, diagnostics for these systems are continued on the following page.



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**CORRECTION** Verify power and grounds at the PCM, then perform the self diagnostic routines for the Electronic Analog Instrument Cluster. If code 940 comes up during the instrument cluster tests, the PCM is the probable cause of the previously mentioned complaints.  
*continued:*

*Electronic Analog Instrument Cluster Self Diagnostic Tests (Refer to Figure 2):*

**Code Retrieval:**

- 1. Have the ignition "OFF".*
- 2. Press and hold the TRIP and RESET buttons simultaneously.*
- 3. While holding the TRIP and RESET buttons down, turn the ignition "ON".*
- 4. Continue to hold the TRIP and RESET buttons down until the odometer window displays the word "CODE".*

If no problem has been detected, a "999" will appear in the odometer window. If a fault is detected, the following is a list of codes that would be displayed in the odometer window:

- 110 = Cluster Memory Fault*  
*111 = Cluster Calibration Fault*  
*905 = No CCD Bus Message from TCM*  
*921 = Odometer Fault from BCM*  
*940 = No CCD Bus Message from PCM*

*After the codes have been displayed, the instrument cluster will enter the following 4 sequential test modes:*

- CHEC - 0 = Dim Test (The instrument cluster lights should dim)*  
*CHEC - 1 = Calibration Test (See Chart Below)*  
*CHEC - 2 = Odometer Test (Each digit should illuminate)*  
*CHEC - 3 = Electronic Transmission Range Indicator Segment Test (Each segment of each digit should illuminate)*

**CHEC - 1 Calibration Test:**

**Speedometer**

- |        |        |
|--------|--------|
| 1..... | 0 MPH  |
| 2..... | 20 MPH |
| 3..... | 55 MPH |
| 4..... | 75 MPH |

**Tachometer**

- |        |          |
|--------|----------|
| 1..... | 0 RPM    |
| 2..... | 1000 RPM |
| 3..... | 3000 RPM |
| 4..... | 6000 RPM |



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CORRECTION *Fuel Gauge*  
*continued:*

- 1.....*Empty*
- 2.....*1/8 Full*
- 3.....*1/4 Full*
- 4.....*Full*

*Temperature Gauge*

- 1.....*Cool*
- 2.....*Low Normal*
- 3.....*High Normal*
- 4.....*Hot*

These checks only determine if the instrument cluster needs to be replaced.

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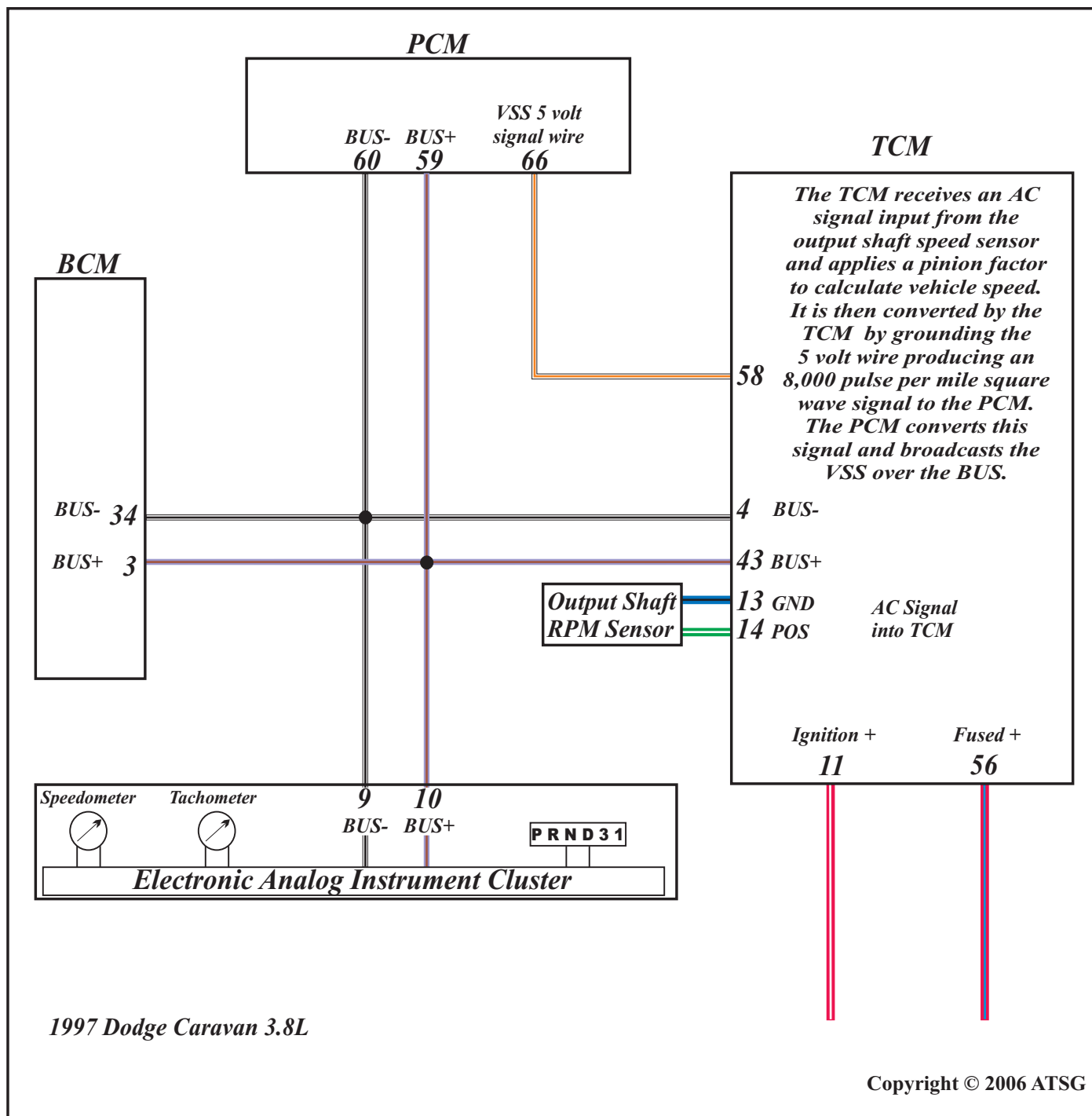


Figure 1



# Technical Service Information

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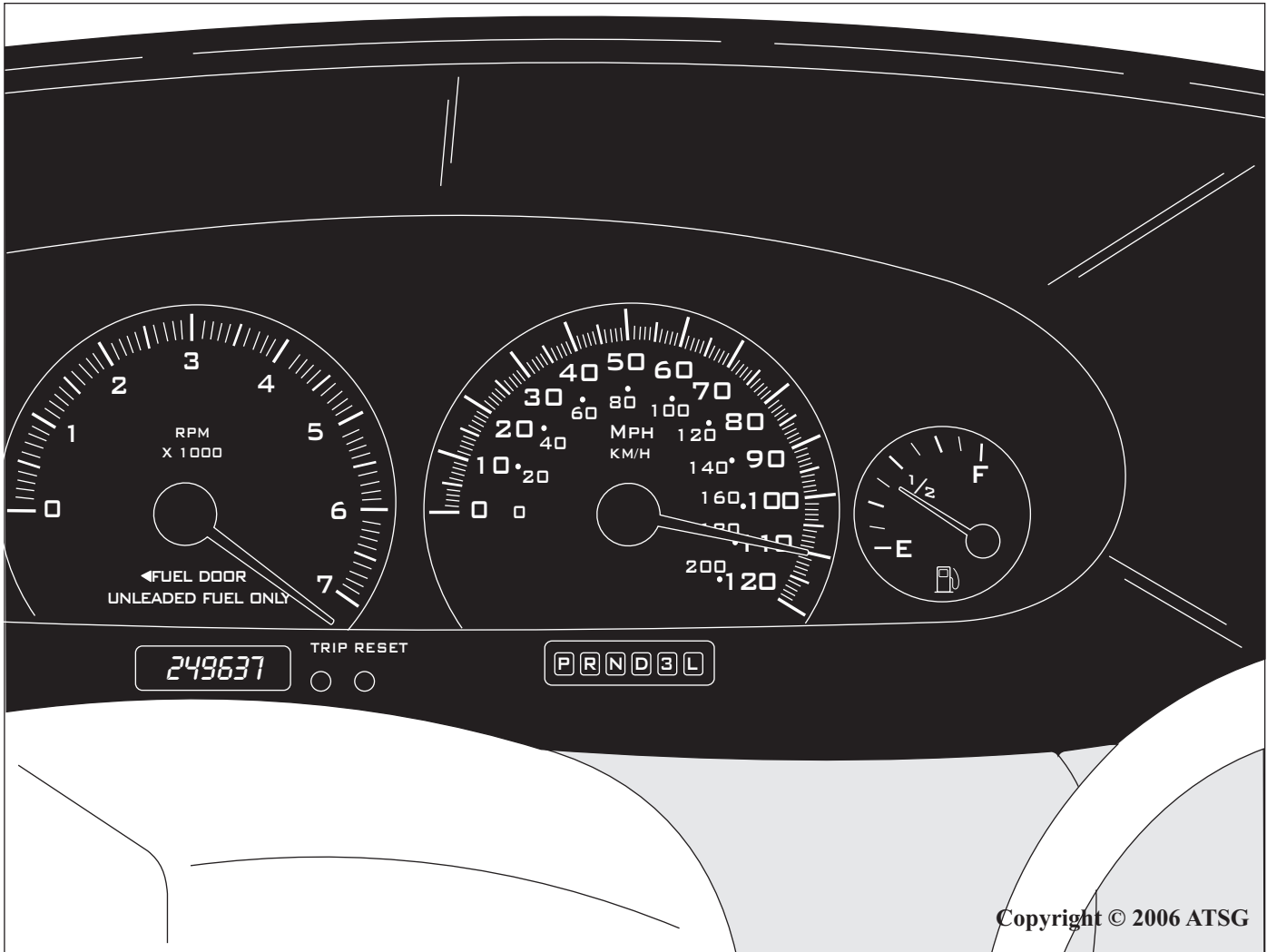


Figure 2

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