JEEP & DODGE TRUCKS
TPS CODE P0123 STORED

COMPLAINT: The vehicle comes in with a complaint of no upshift or a loss of fourth gear with no TCC application. Code retrieval results in code P0123 being stored indicating the TPS signal voltage is too high. The scan tool data list parameter for the TPS signal voltage displays 5 volts at closed throttle, yet when the TPS signal voltage is checked at the TPS signal wire with a voltmeter, the closed throttle voltage is normal.
In some instances a P1596 is also stored which indicates the Speed (Cruise) Control Switch voltage is always high.

NOTE: In order to better understand the cause of the above complaints one must know how the Chrysler JTEC PCM functions.
There are more PCM inputs than there are available microprocessor internal input pins. To accommodate all the required inputs, the microprocessor may receive inputs from two circuits on one pin by using multiplexing. The microprocessor keeps track of which input is being received by the discharging of a capacitor controlled by the PCM's internal clock. If there is a problem that does not allow the capacitor to discharge (for example, an input shorted to voltage), the PCM may set a DTC for the companion input.
What this means is that when one of the two circuits sharing the same capacitor is shorted to power, it has a malfunctioning affect to the PCM internally with both circuits. This would explain why the computer thinks the TPS is at 5 volts yet when you check it with a volt meter at the TPS it works perfectly. This often is diagnosed as a faulty PCM the replacement of which will not cure the above complaints.

CAUSE: ***Scenario #1: Jeep with AW4 Transmission...No Upshift Out of 1st Gear***
The chart in Figure 1 shows which inputs are paired with the same capacitor, this is why one affects the other. Notice the top pair, the TPS and Cruise Control inputs share a common capacitor. So if there is a short to power with the cruise control sense wire it will have an affect on the TPS signal wire as is the case with this scenario.
Using an EASE scan tool in the graphing mode (Figure 2), a screen capture was taken of both the TPS and Cruise Control Switch Sense voltage revealing that as far as the computer is concerned, both are pegged at approximately 5 volts. Figure 3 shows a different scan tool displaying the TPS signal voltage being pegged at 5 volts yet with an actual meter on the TPS signal wire, a normal 1.161 volts at closed throttle is seen. This indicates that the companion sensor could be shorted to power preventing the internal capacitor from discharging. Checking the Cruise Control Sense wire at the PCM with a volt meter reveals that 12 volts are present confirming a short to power (Figure 4).
One common reason for this condition is the horn's 12 volt clockspring circuit shorting to the Cruise Control Switch Sense wire circuit. Since the cruise switch sense and the TPS signal share the same internal capacitor, the voltages on both are driven high yet only 5 volts are seen in the scan tool display. The reason for this is that the computer was never programmed to see more than 5 volts on these circuits.
Looking at the wiring in Figure 5, there are several connectors that could allow a short to power from the horn's circuit into the cruise control circuit (C1, C200 and C106). With the C1 connector being located under the steering column, it was the easiest to unplug and when it was, the 12 volts at the Cruise Control Switch Sense circuit disappeared and the TPS Signal voltage went back to normal on the scan tool.

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1999 AND LATER JTEC MULTIPLEXED INPUTS

NAME	COMMENTS	JTEC PIN #
TPS	(All applicable models)	*A23*
Cruise MPX		*C32*
02S UpStream Left Bank	(All applicable models)	A24
MAP		A27
02S UpSteam Right Bank	(5.9L HD 8.0L HD)	A26
Fuel Temperature	CNG	A28
02S DownStream Left Bank	(All LD) (8.0L MD)	*A25*
Trans Press		*B29*
02S DownStream Right Bank	(8.0L MD)	A29
Spare		A13
Spare		A30
Fuel Level		A14

Figure 1

JEEP & DODGE TRUCKS
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Tps signal voltage @ 5 volts on scan tool

Cruise control switch sense voltage @ 5 volts on scan tool

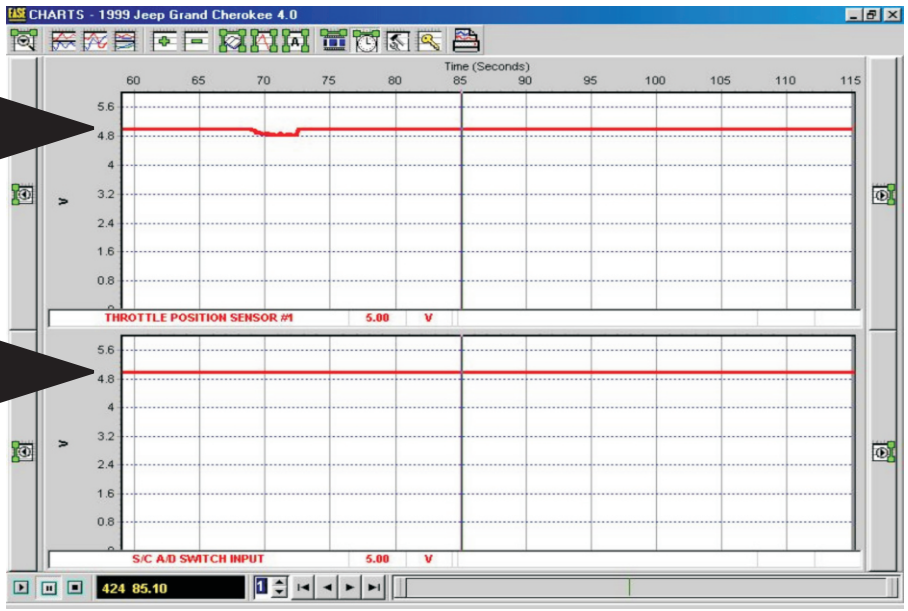
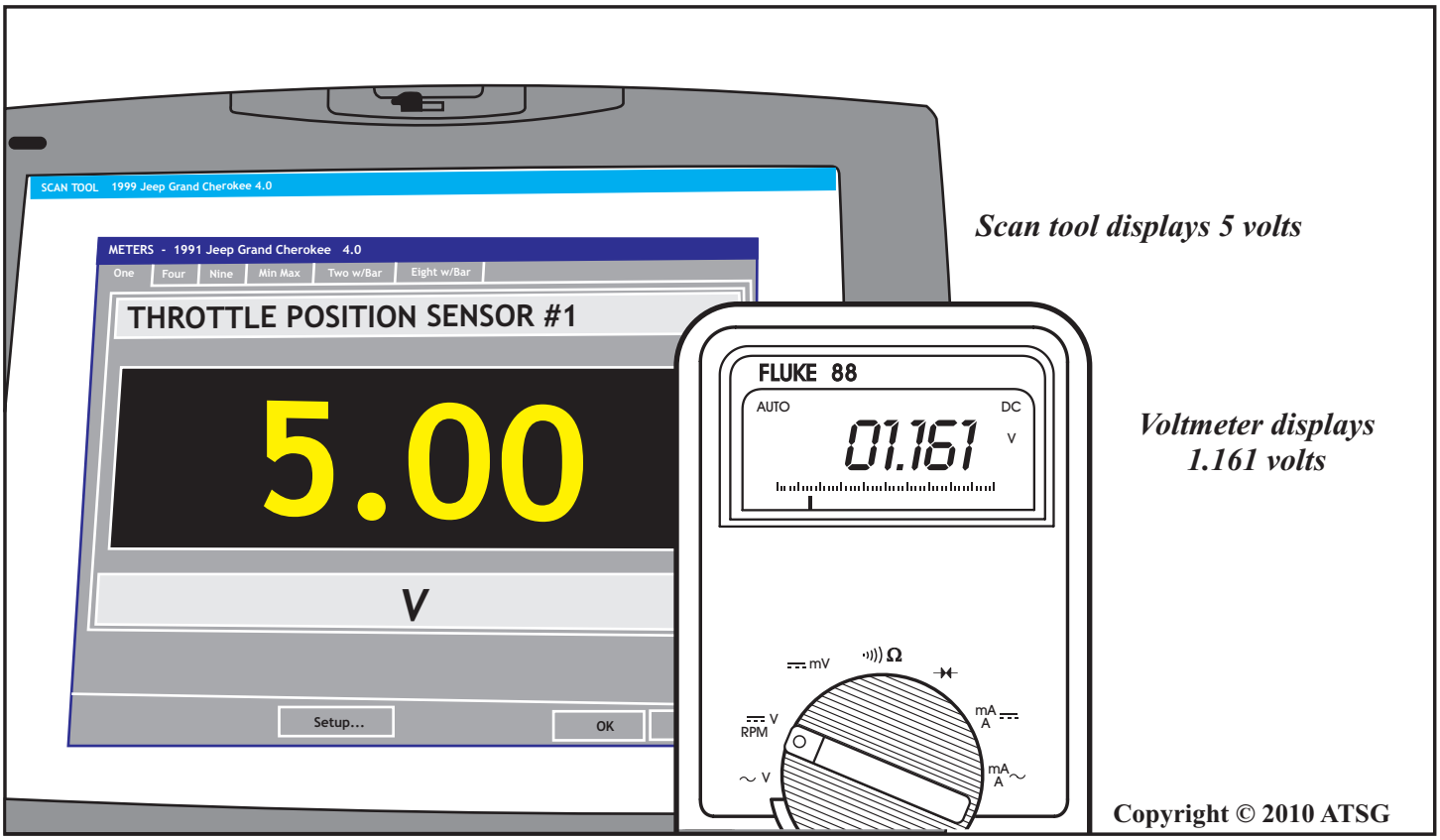


Figure 2



Scan tool displays 5 volts

Voltmeter displays 1.161 volts

Figure 3

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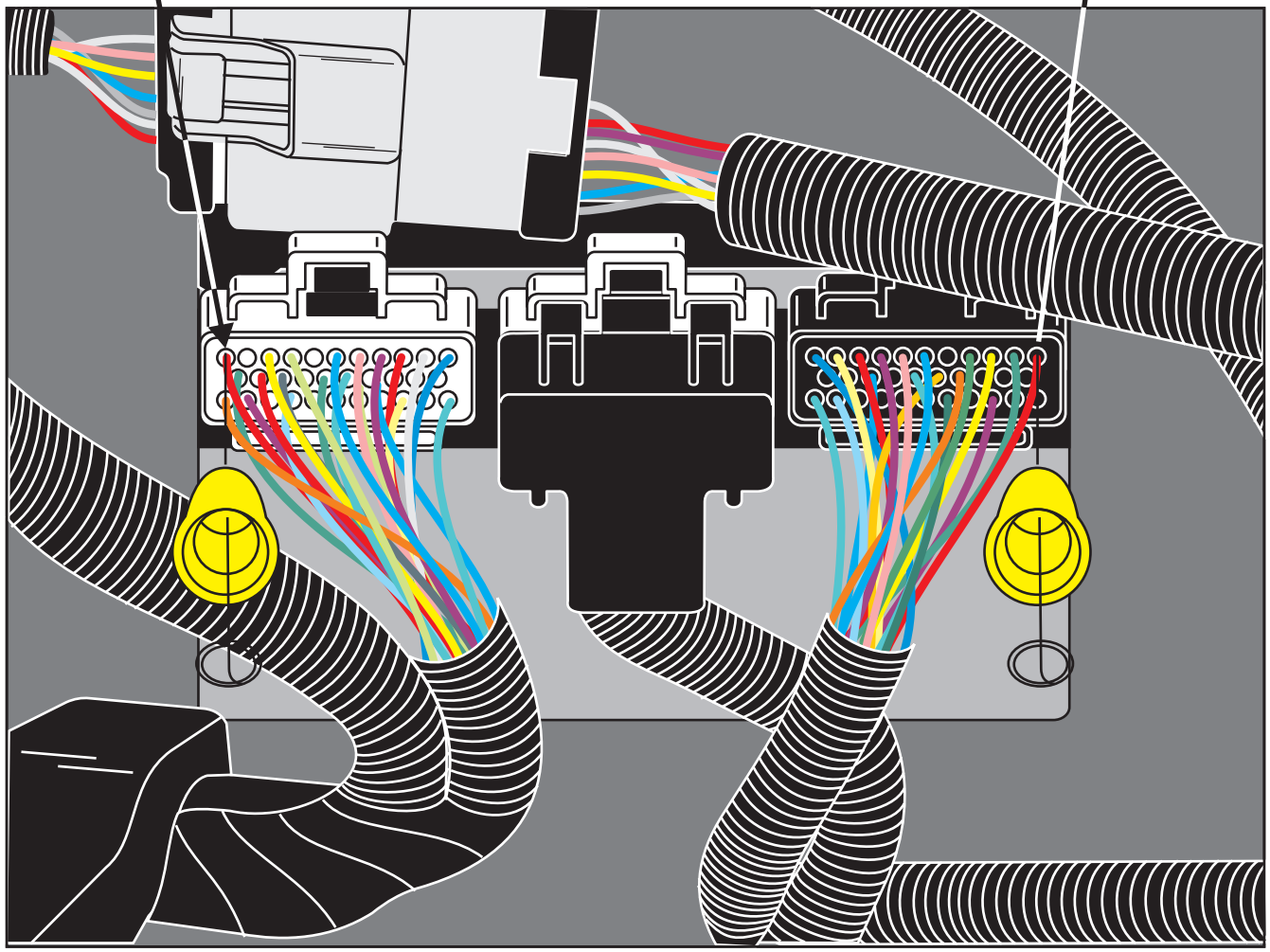

Figure 4

JEEP & DODGE TRUCKS

TPS CODE P0123 STORED

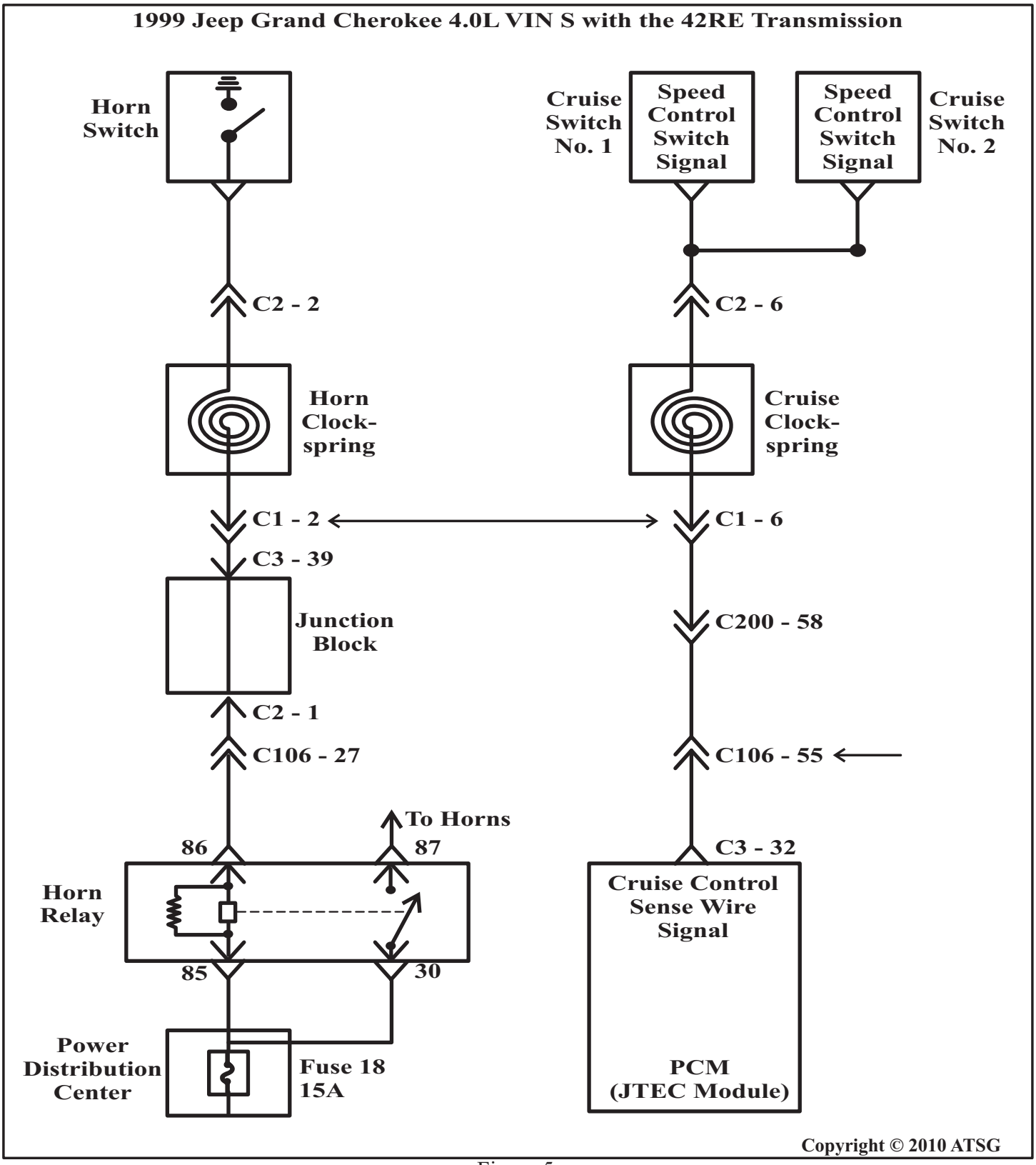

Figure 5

JEEP & DODGE TRUCKS

TPS CODE P0123 STORED

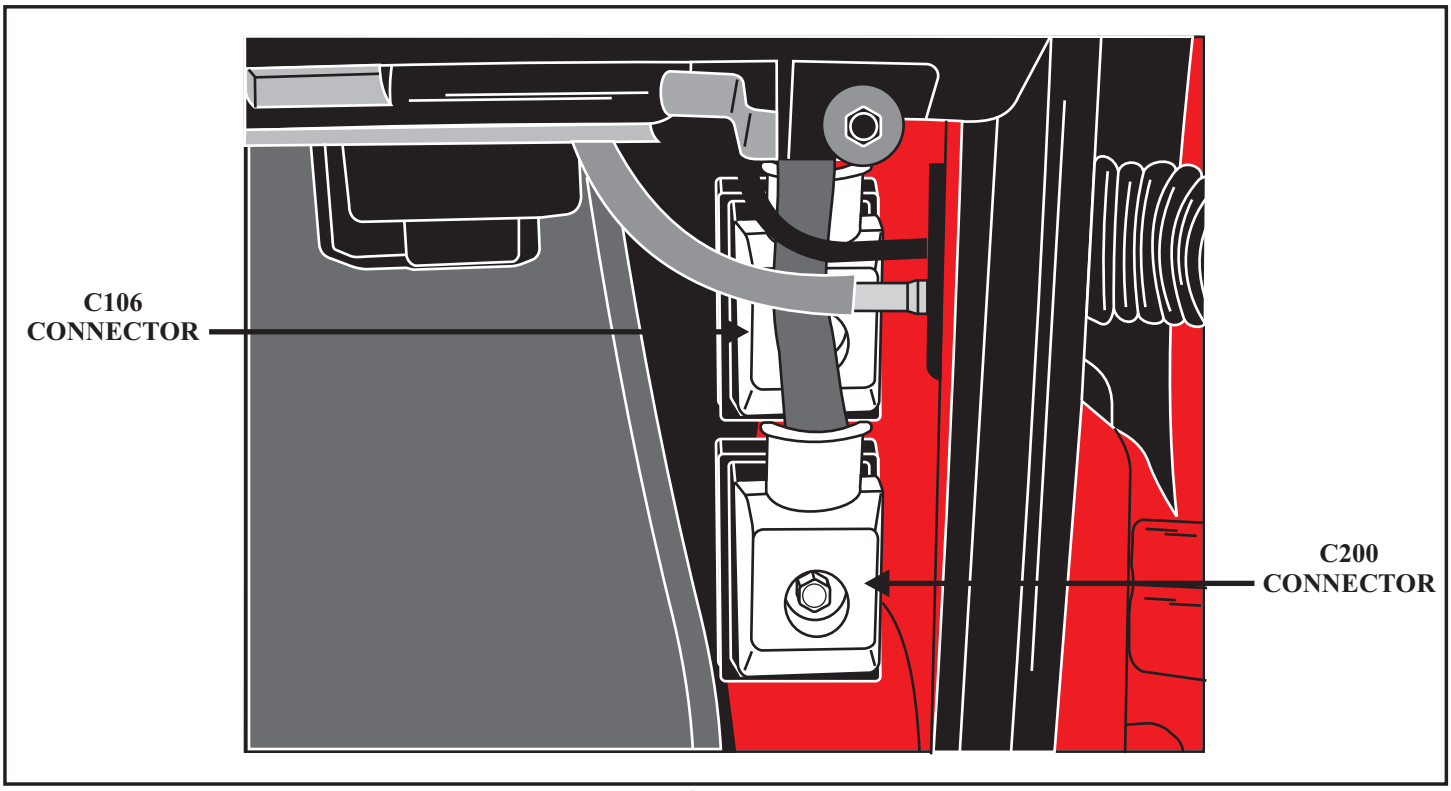

Figure 6

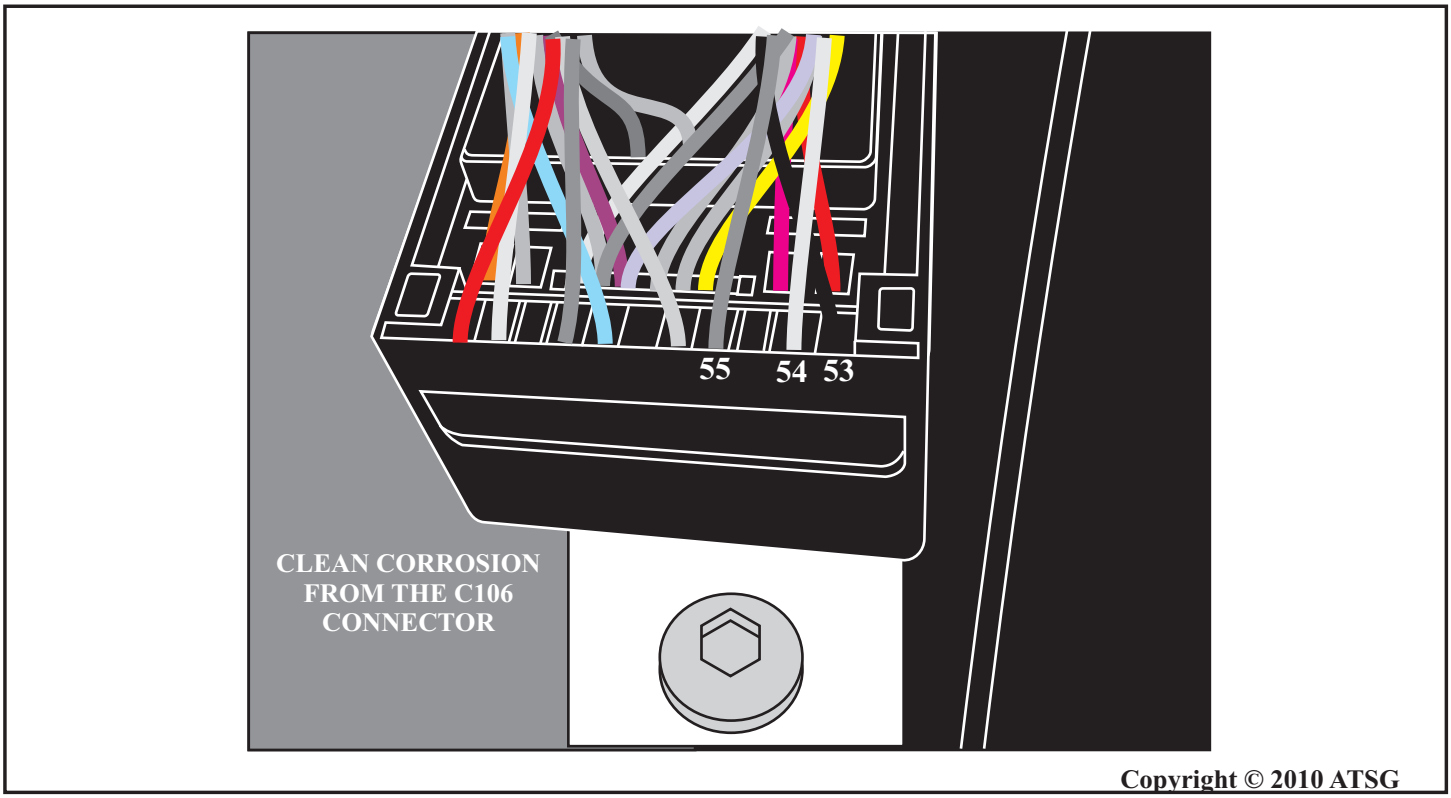

Figure 7

JEEP & DODGE TRUCKS
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1999 JEEP GRAND CHEROKEE 4.0L VIN S WITH THE 42RE TRANSMISSION

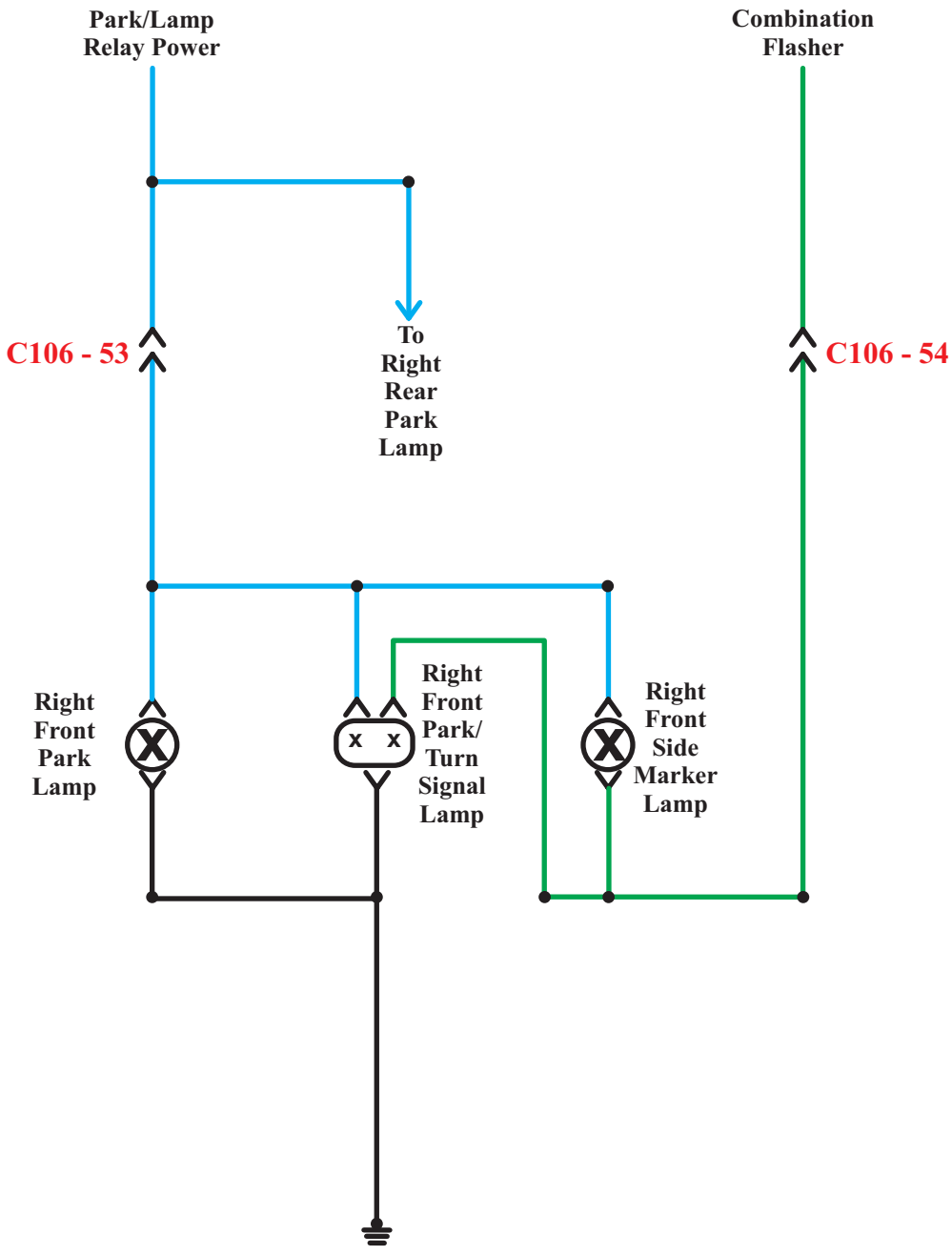

Figure 8

JEEP & DODGE TRUCKS
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1999 DODGE RAM TRUCK 5.9L DIESEL VIN 6 WITH THE 47RE TRANSMISSION

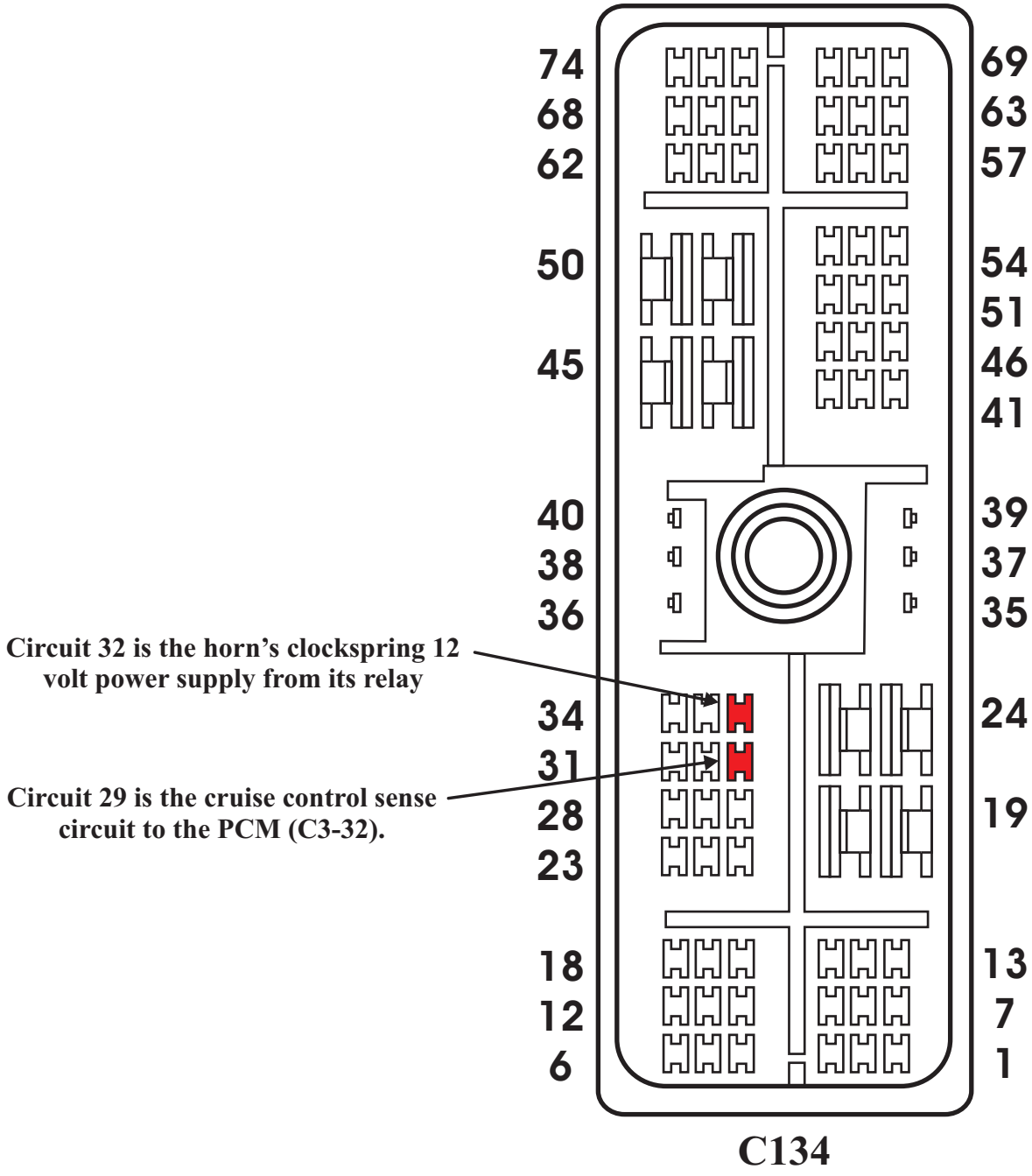

Figure 9