

# CHRYSLER JEEP AW4 HIGH GEAR STARTS

- **COMPLAINT:** Vehicle takes off in high gear in the Overdrive range but will shift manually moving the selector through all the ranges.
- **CAUSE:** One cause may be a resistor pack has shorted in the brake switch circuit to the TCM blowing a 15 amp fuse (See Figure 1). Another possibility is a severed direct battery feed wire to the TCU or a bad TCU itself.
- **CORRECTION:** Remove the panel below the glove box and locate the TCU (See Figure 1). In the harness near the TCU unit there is a 15 amp in line fuse on a yellow wire with a resistor pack just a little further down stream on the same wire. This wire provides battery feed to the TCU from the ignition switch. To check the power circuit, unplug the TCU and turn the ignition to the "ON" position. With a volt meter set to DC volts, place the negative lead to a good known ground and with the positive meter lead, check terminal D16 for battery voltage (See Figure 2). If the fuse is blown, the resistor pack may be shorted to ground or shorted across itself and will need to be replaced. The part number for a new resistor pack is 83504880. When the fuse and resistor pack are known to be good, battery voltage should be seen at D16. Terminal C10 should have battery voltage only when the brake is depressed. When the brake is released C10 should drop to 0 volts. If battery voltage is not seen at either D16 or C10 and the fuse and resistor pack is known to be good, the ignition switch or the wire from the ignition switch is bad and will need to be repaired. Once the TCU power supply has been verified to be in good working order, road test the vehicle. If the vehicle is continuing to take off in 4th gear, check terminal D14 for battery voltage. This is direct battery feed into the TCU and should be hot with the key on or off. If voltage is not seen, run your own wire into the connector from the battery through a 10 amp fuse and your done. However, if you still have 4th gear starts after this repair, either the TCU is bad or other electrical problems remain. When faced with this situation you have 3 choices:
  - 1. Get a scanner that will give you codes or
  - 2. Take a chance and change the TCU or
  - 3. Perform a step by step pin check at the TCU connector to determine the electrical failure.

Figure 3 is a chart providing the values to be observed when performing a pin test at the TCU connector. Most of the testing is to be performed by carefully back probing each wire with the connector plugged into the TCU unless otherwise instructed (a company called J.S. Popper in N.J. sells test leads designed to do this kind of work limiting the possibility of damaging the wire or connector). In the chart you will see an asterisk next to the neutral switch and comfort switch checks. If battery voltage is not seen as indicated in the chart on both sensors, check for a blown 7.5 amp # 13 fuse in the main fuse panel. Figure 4 provides a partial wiring schematic for the purpose of wire color identification. If each pin check falls within the proper specification, you can safely say your TCU is a Transmission Condemned Unit. The following information lists that which can be observed with the use of a Snap-On Scanner 4.7 or later version Domestic cartridge.







# The following is information that can be observed using a Snap-On Scanner equipped with a 4.7 (or later) version Domestic Cartridge

## JEEP AW4 TRANSMISSION APPLICATION

1987-1990 - Jeep 2.5L & 4.0L Cherokee & Comanche 1991-1993 - Jeep 4.0L Cherokee & Comanche 1994-1997 - Jeep 4.0L Cherokee

The AW4 TCU is capable of producing 3 different code types:

"CURRENT CODE" will only be displayed while condition which set it still exists.

"STORED" CODES" are stored in memory. Condition that caused code to set may or may still exist. "STATUS\_\_\_\_\_\_" codes are in codes and data display.

If condition causing code no longer exists, stored code will be erased after about 75 key cycles.

#### 1987 TO 1990 CODES

CODE 700 - SOLENOID FAULTS (ALL 3) CODE 701 - POWER/COMFORT SWITCH FAULT CODE 702 - SPEED SENSOR FAULT CODE 703 - GEAR SELECT FAULT CODE 704 - NO SERIAL DATA CODE 705 - TPS FAULT CODE 706 - BRAKE. SWITCH FAULT CODE 707 - TEMP GROUND FAULT CODE 708 - WRONG TCM CODE 709 - IGNITION LINE OFF WITH KEY ON CODE 710 - INTERMITTENT SOLENOID FAULT

### 1991 & LATER

CODE 700 - SOLENOID # 1 CODE 700 - SOLENOID # 2 CODE 700 - SOLENOID # 3 CODE 702 - SPEED SENSOR FAULT CODE 703 - GEAR SELECT FAULT CODE 704 - TPS FAULT CODE 708 - WRONG TCM

#### **DATA STREAM PARAMETERS**

BRAKE: PRSD/RLSD (Pressed/Released) CURRENT GEAR: 1st, 2nd, 3rd, 4th LOCK-UP: **ON/OFF** MODE: POWER/COMFORT (1992 & Later always reads power, switch eliminated) (01 = 4.0L, 02 = 2.5L)MODULE: 01/02PRNDL: PRND, 3, 1-2 RPM: **OUTPUT SHAFT RPM** SOLENOID 1: **ON/OFF** SOLENOID 2: ON/OFF SOLENOID 3: ON/OFF (TCC) **TPS STEPS:** (1 thru 7) STATUS\_\_\_\_\_ A value other than 0 in first half of display indicates solenoid fault. A value other than 0 in

second half of status display indicates TPS fault.



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Figure 1



Figure 2

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TCU Terminal No.			
Neg. Lead	Pos. Lead	Inspection Procedure	Standard Value
D7	C3	Key On Engine Off. Meter set to DC volts. Speed Sensor	5 to 8 volt pulse per one revolution
	C8	Key On Engine Off. Selector Lever in the 1-2 position. Meter set to DC volts.	* Battery Voltage
	С9	Key On Engine Off. Selector Lever in the D position. Meter set to DC volts.	* Battery Voltage
	C10	Key On Engine Off. Meter set to DC volts Brake OFF Brake ON	O Volts Battery Voltage
	C11	Key On Engine Off. Meter set to DC volts Comfort switch in POWER mode Comfort switch in COMFORT mode	* Battery Voltage O Volts
	C14	Key Off. TCU unplugged. Meter set to Ohms Converter Clutch Solenoid Resistance	11 - 15 ohms
	C15	Key Off. TCU unplugged. Meter set to Ohms Shift Solenoid # 2	11 - 15 ohms
	C16	Key Off. TCU unplugged. Meter set to Ohms Shift Solenoid # 1	11 - 15 ohms
	D1	Key On Engine Off Meter set to DC Volts TPS Voltge Supply	Approx. 5 Volts
	D2	Key On Engine Off Meter set to DC Volts TPS Voltge Input (1987-1990 Models Only) Closed Throttle Wide Open Throttle	Approx.4.5 Volts Approx.0.5 Volts
		Key On Engine Off Meter set to DC Volts TPS Voltge Input (1991-Up Models Only) Closed Throttle Wide Open Throttle	Approx.0.5 Volts Approx.4.5 Volts
	D3	Key On Engine Off Meter set to DC Volts TPS Ground	0.1 Volt or less
	D14	Key Off Meter set to DC Volts Direct Battery Feed	Battery Voltage
	D16	Key On Engine Off Meter set to DC Volts Ignition Voltage	Battery Voltage

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