



Technical Bulletin #357

Transmission: A500 / A518

Subject: No fourth gear

Application: Dodge

Issue Date: 1996

A500 / A518

No Fourth Gear

Fourth gear is electronically controlled on the A500 / A518. In order for the PCM to allow fourth gear, the engine temperature must be more than 65° F, the overdrive switch/module must be on, the VSS must indicate at least 25 MPH, and the TPS must indicate above an idle and less than 70 percent open. When all conditions are met, the overdrive solenoid will be energized for fourth gear.

Depending on the engine application, one of four types of systems may be used. Use the following descriptions to identify which type the vehicle has.

TYPE I MODULE: This module may be part of the overdrive cancel switch and is mounted on the steering column or near the glove compartment. The overdrive control module will not allow overdrive until the signal to allow fourth gear is sent by the PCM [the overdrive cancel switch must be in the on position (figure 1)].

Type I

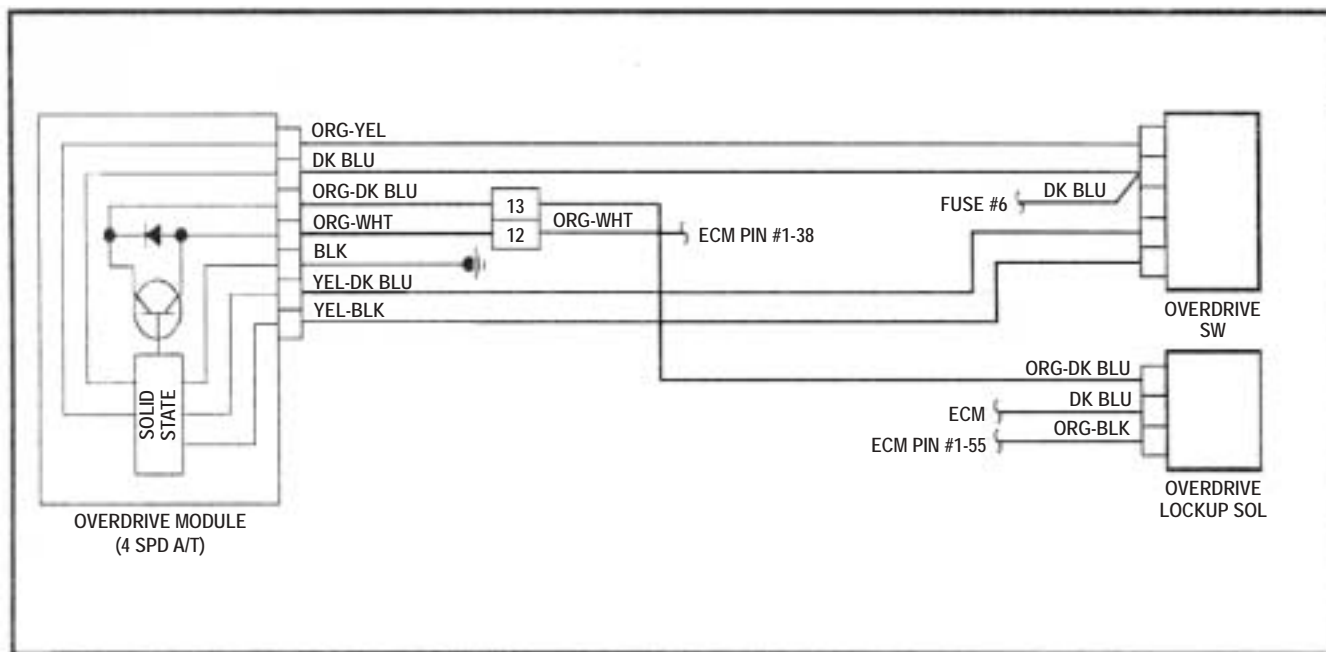
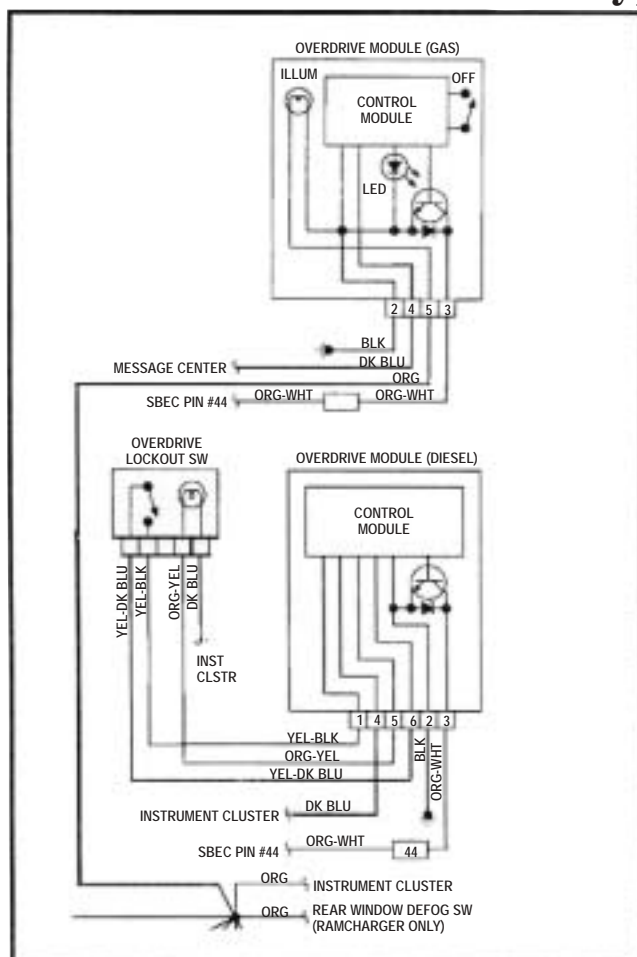


Figure 1: TYPE 1 typical wiring diagram

Type II



Type II Module: This module signals the PCM when the overdrive cancel module switch is on; thus preventing fourth gear (figure 2a). Some overdrive cancel modules also monitor transmission oil temperature and prevent fourth gear if the transmission oil temperature exceeds 270° F (figure 2b).

Figure 2a: TYPE II typical wiring diagram, *without* oil temperature sensor

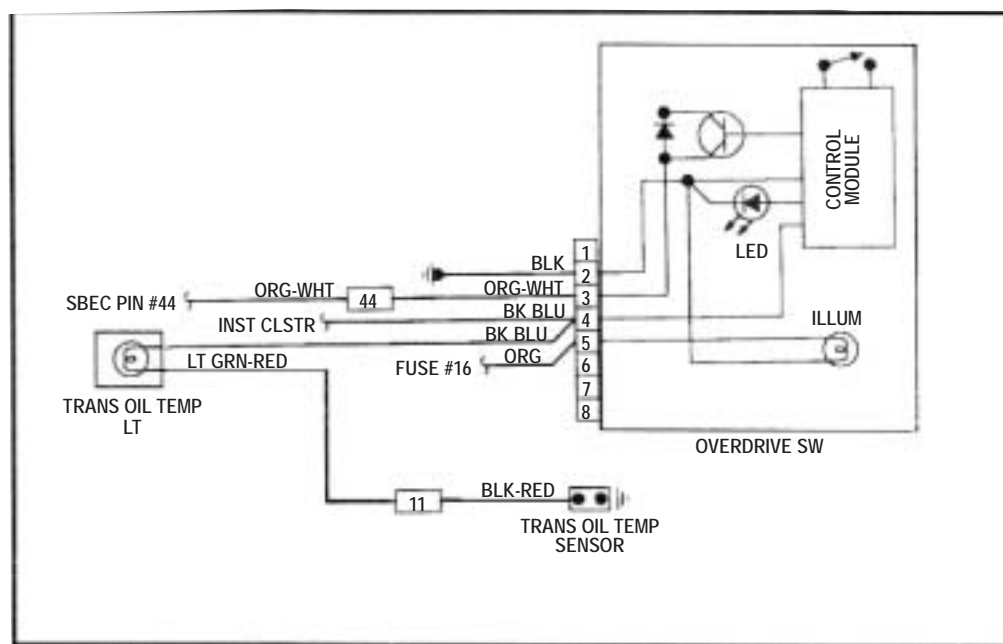


Figure 2b: TYPE II typical wiring diagram, *with* oil temperature sensor

Type III

has a switch and indicator bulb only. When the overdrive cancel button is pushed, the PCM receives this signal and cancels fourth gear (figure3).

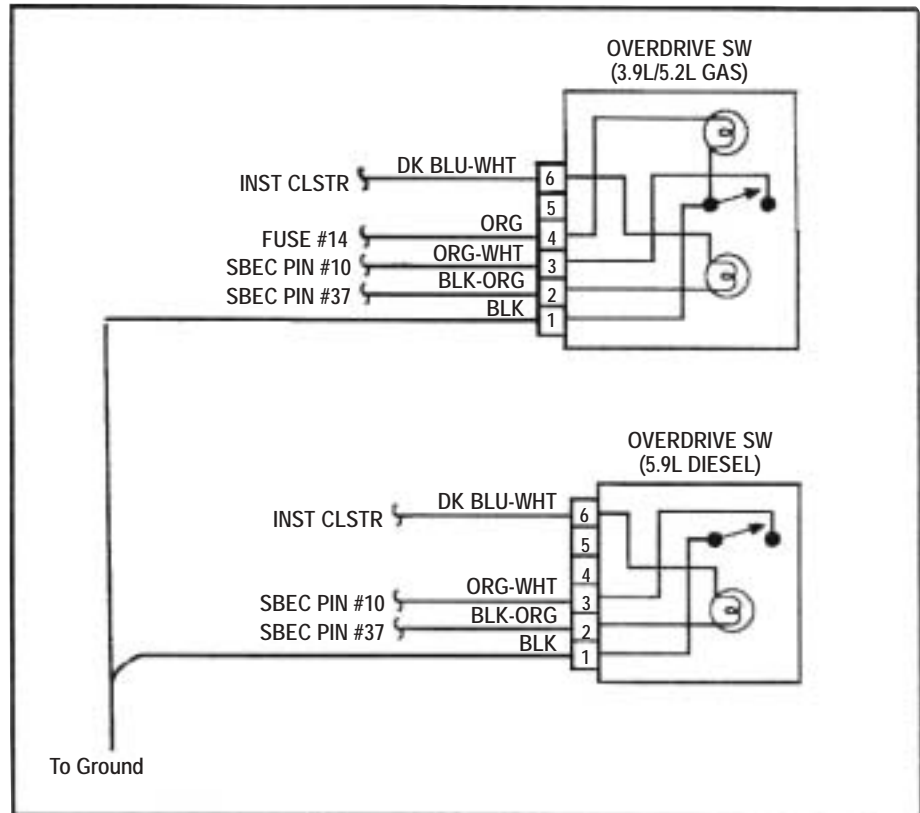


Figure 3: TYPE III Typical wiring diagram

1992 DAKOTA MODULE: This module works like a type III module and also includes an oil temperature sensor. If the transmission oil temperature exceeds 270° F, the overdrive cancel module signals the PCM to cancel lockup and fourth gear. The transmission oil temperature light will also come on when this occurs (figure 4).

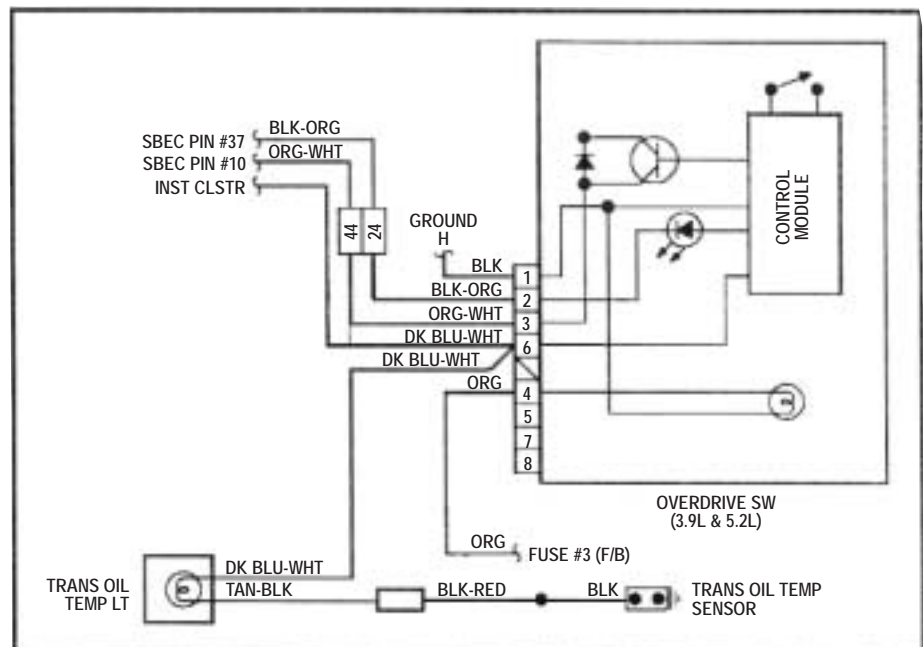


Figure 4: 1992 DAKOTA wiring diagram

DIAGNOSIS FOURTH GEAR

1. Turn on the ignition. Make sure 12 volts are present at the center terminal (dark blue wire) of the transmission connector. If not, check fuses, fusible links, A/C clutch relay, ignition switch, etc.
2. With 12 volts applied to the center wire of the transmission connector, connect a jumper wire from ground to the front terminal.
3. If fourth gear does not work, the solenoid may be bad or the problem is hydraulic or mechanical.
4. If fourth gear operates, the problem is electrical or computer related. See appropriate test under *Computer Test*.

COMPUTER TEST

TYPE I: turn on the ignition. Ensure that the overdrive cancel switch is off. Check for five volts at the orange/white wire (pin 38). If no voltage is present, check the overdrive cancel module. See *Component Tests*. If five volts are present, check the operation of the TPS, coolant temperature sensor, vehicle speed sensor and park/neutral switch. See *Component Tests*.

TYPE II: turn on the ignition. Ensure that the overdrive cancel switch is off. Back-probe (tap into wire if necessary) orange/white wire (pin 44) at the 60-pin PCM connector. There should be zero volts. Turn on the overdrive cancel switch. Pin 44 should now have five volts (12 volts on some models). If the circuit does not work as described, check the overdrive cancel module. See *Component Tests*. If the circuit operates, but the overdrive solenoid does not work, check the operation of the TPS, coolant temperature sensor, vehicle speed sensor or park/neutral switch. See *Component Tests*.

TYPE III: and **1992 Dakota**, turn on the ignition. Ensure that the overdrive cancel switch is off. Back-probe the PCM terminals 55 and 37. There should be 12 volts present at both terminals. If there is no voltage at terminal 55, check the circuit between the PCM and the overdrive cancel solenoid connector. If there is no voltage at terminal 37, check the overdrive cancel switch or overdrive cancel module. See *Component Tests*.

Back-probe the PCM at terminal 10. Check for 12 volts with the overdrive cancel switch off and zero volts with the overdrive cancel switch on. If the voltage at terminal 10 does not work as described, check the overdrive cancel switch or overdrive cancel module.

If the voltage works as described, but the overdrive does not work, check the TPS, engine coolant temperature sensor, vehicle speed sensor and park/neutral switch. See *Component Tests*.

COMPONENT TESTS

Throttle Position Sensor: Back-probe the TPS signal return wire at the PCM pin 22 (orange/dark blue wire). There should be .5-1.5 volts at closed throttle and 3.4-4.2 volts at W.O.T. If not, check the related circuits or replace the TPS.

Coolant Temperature Sensor: Disconnect the sensor. Measure the resistance across the sensor terminals. At 70° F, resistance should be 7,000-13,000 ohms. At 200° F resistance should be 700-1,000 ohms. If not, replace the sensor.

Oil Temperature Switch: Switch should be open below 270° F and closed above 270° F.

Overdrive Switch: All switches work by momentarily making contact to ground with the signal wire coming from the overdrive cancel module or PCM. See diagrams under *Operation* for typical switch circuits.

VSS: Back-probe PCM pin 48 on TYPE I (or PCM pin 47 on all others). Turn on the ignition and raise the drive wheels. The voltmeter should pulse as the wheels are turned.

Overdrive Cancel Module:

On TYPE I: disconnect the overdrive cancel module. Check for battery voltage at the overdrive control module pin five (to PCM), pin six (from the overdrive solenoid) and pin seven (from the ignition fuse). If no voltage is present, check these circuits. Ensure pin four has continuity to the ground. On modules with a transmission oil temperature sensor, make sure the circuit between pin seven and the sensor is not shorted to the ground. If no problems are found, replace the overdrive control module.

On TYPE II: ensure that battery voltage is present at the overdrive control module pin four (from ignition fuse). If not, repair the ignition feed circuit. Make sure pin two (black wire) has continuity to ground. Backprobe pin three (orange/white wire). Turn off the overdrive cancel switch. There should be zero volts. Turn on the overdrive cancel switch. There should be 12 volts present. If the module does not work as described, test the overdrive cancel switch. See *Component Tests*. On models with a transmission temperature switch, make sure the circuit between pin four and the sensor is not shorted to ground. If no problems are found, replace the overdrive control module.

On TYPE III: disconnect the overdrive switch. Continuity should be present between pins three and one when the button is pushed. Apply 12 volts to pin six, and ground pin one. The overdrive cancel bulb should be on. Apply 12 volts to pin four and ground pin one. The overdrive-cancel illumination bulb on the dash should come on.

On 1992 Dakota: disconnect the overdrive cancel module. Ensure that the 12 volts are present at pins six and two. Ensure that 12 volts are present at pin three. Make sure no continuity is present when oil temperature is less than 270° F, and continuity is present when oil temperature is more than 270° F. Turn off the ignition. Reconnect the overdrive cancel module. Measure the voltage at pin two and three. Turn on the ignition. Make sure voltage switched from high to low as the overdrive cancel switch is being pushed. If the overdrive cancel module does not work as described, replace it.