P0706-TRANSMISSION RANGE SENSOR RATIONALITY

Circuit Schematic

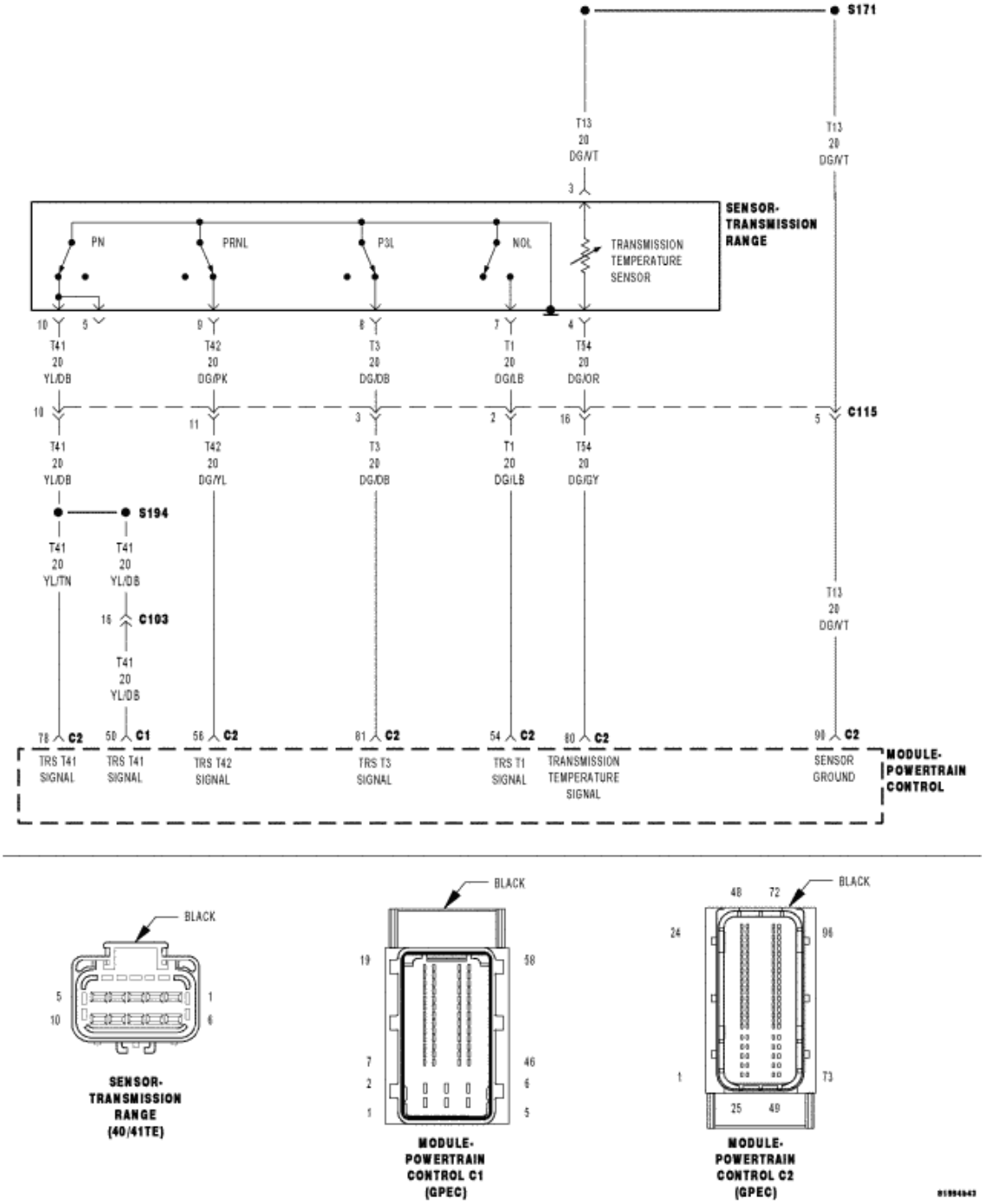

Fig. 1: Transmission Temperature Sensor Circuit Schematic
Courtesy of CHRYSLER LLC

Additional Wiring

For complete wiring diagrams, refer to:

SYSTEM WIRING DIAGRAMS for Avenger.

SYSTEM WIRING DIAGRAMS for Sebring 2D Convertible.

SYSTEM WIRING DIAGRAMS for Sebring 4D Sedan.

The C1 through C4 (T41, T42, T3, and T1) Signal circuits communicate the shift lever position to the PCM by terminating their respective circuits by the use of a Transmission Range Sensor (TRS). Depending on the shift lever position, each switch can be either open or closed which is then decoded by the PCM to determine the shift lever position. Each shift lever position has a certain combination of open or closed circuits and if a particular switch is open or closed in a wrong combination a PRNDL code will set. There are only 9 possible valid codes (8 for AutoStick®), one for each gear position and three recognized between gear codes. The remainder of the codes should never occur, these are called invalid codes. The chart below shows the normal switch states for each shift lever position.

Monitor Conditions

When Monitored:

Continuously with the ignition on in the run position.

Set Conditions

- **Set Condition:**

  The DTC will set if an invalid PRNDL code sets which lasts for more than 100 milliseconds within 1 second of power-up or the PRNDL code error does not correct itself before a change in input occurs.

Possible Cause

Possible Causes:
SHIFT LEVER CABLE OUT OF ADJUSTMENT
TRS SIGNAL CIRCUIT OPEN
TRS SIGNAL CIRCUIT SHORT TO GROUND
TRS SIGNAL CIRCUIT SHORT TO VOLTAGE
TRANSMISSION RANGE SENSOR
POWERTRAIN CONTROL MODULE

Always perform the **40/41TE PRE-DIAGNOSTIC TROUBLESHOOTING PROCEDURE** before proceeding.

TRS SWITCH STATES

SLP	T41 (C1)	T42 (C2)	T3 (C3)	T1 (C4)

P	CLOSED	CLOSED	CLOSED	OPEN
R	OPEN	CLOSED	OPEN	OPEN
N	CLOSED	CLOSED	OPEN	CLOSED
OD	OPEN	OPEN	OPEN	CLOSED
3	OPEN	OPEN	CLOSED	OPEN
L	OPEN	CLOSED	CLOSED	CLOSED

Diagnostic Test

1. **CHECK TO SEE IF P0706 DTC IS CURRENT**

   With the scan tool, perform the Shift Lever Position Test.

   Select the test outcome from the following:

   Test passes:

   Go To step 6.

   Test fails with Error Code:

   Go To step 2.

   Test fails without Error Code:

   Perform the Gearshift Adjustment Procedure per the Service Information.
   Perform **40/41TE TRANSMISSION VERIFICATION TEST**.
2. **CHECK THE TRANSMISSION SOLENOID/TRS ASSEMBLY**

   Turn the ignition off to the lock position.

   Remove the Ignition Switch Feed fuse from the TIPM.

   CAUTION: Removal of the Ignition Switch Feed fuse from the TIPM will prevent the vehicle from being started in gear.

   WARNING: The Ignition Switch Feed fuse must be removed from the TIPM. Failure to do so can result in personal injury or death.

   NOTE: Check connectors - Clean/repair as necessary.

   Install the Transmission Simulator, Miller tool #8333 and Electronic Transmission Adapter Kit.

   Ignition on, engine not running.

With the scan tool, perform the Shift Lever Position Test.

When the scan tool instructs you to put the Gear Selector in a particular position, you must do so using the selector switch on the Transmission Simulator.

The LED for the gear position in question must be illuminated on the Transmission Simulator prior to pressing "ENTER" on the scan tool.

NOTE: If the Shift Lever Position test fails, make sure to note the identification of the TRS Signal circuit for future reference.

Did the Shift Lever Position test pass?

Yes

Remove the Oil Pan and Main Valve Body Assembly per the Service Information. Check for metal debris on top of the TRS Assembly and the manual valve code plate. If debris is present, determine the cause of the debris and repair the transmission as necessary. If no problems are found, replace the TRS Assembly per the Service Information.

Perform **40/41TE TRANSMISSION VERIFICATION TEST**.

No

Go To step 3.

3. **TRS SIGNAL CIRCUIT OPEN**

Turn the ignition off to the lock position.

Disconnect the Transmission Simulator, Miller tool #8333 and Electronic Transmission Adapter Kit.

Disconnect the PCM C1 and C2 harness connectors.

Measure the resistance of the identified TRS Signal circuit (C1 - T41, C2 - T42, C3 - T3, and C4 - T1) between the PCM C1 and C2 harness connectors and the Transmission Solenoid/TRS Assembly harness connector.

Is the resistance above 5.0 ohms?

Yes

Repair the identified TRS Signal circuit (C1 - T41, C2 - T42, C3 - T3, and C4 - T1) for an open.

Perform **40/41TE TRANSMISSION VERIFICATION TEST**.

No

Go To step 4.

4. **TRS SIGNAL CIRCUIT SHORT TO GROUND**

   Measure the resistance between ground and the identified TRS Signal circuit (C1 - T41, C2 - T42, C3 - T3, and C4 - T1).

   Is the resistance below 5.0 ohms?

   Yes

   Repair the identified TRS Signal circuit (C1 - T41, C2 - T42, C3 - T3, and C4 - T1) for a short to ground.

   Perform **40/41TE TRANSMISSION VERIFICATION TEST**.

   No

   Go To step 5.

5. **TRS SIGNAL CIRCUIT SHORT TO OTHER CIRCUITS**

   Measure the resistance between the identified TRS Signal circuit (C1 - T41, C2 - T42, C3 - T3, and C4 - T1) and all other circuits in the Transmission Solenoid/TRS Assembly harness connector.

   Is the resistance below 100k ohms between the identified TRS Signal circuit and any other circuit(s) in the Transmission Solenoid/TRS Assembly harness connector?

   Yes

   Repair the identified TRS Signal circuit (C1 - T41, C2 - T42, C3 - T3, and C4 - T1) for a short to other circuit(s).

   Perform **40/41TE TRANSMISSION VERIFICATION TEST**.

   No

   Using the schematics as a guide, check the Powertrain Control Module (PCM) terminals for corrosion, damage, or terminal push out. Pay particular attention to all power and ground circuits. Check for any Service Bulletins that may apply. If no problems are found, replace and program the PCM per the Service Information. With the scan tool perform the Quick Learn procedure.

   Perform **40/41TE TRANSMISSION VERIFICATION TEST**.

6. **INTERMITTENT WIRING AND CONNECTORS**

   The conditions necessary to set the DTC are not present at this time.

   Using the schematics as a guide, inspect the wiring and connectors specific to this circuit.

   Wiggle the wiring and connectors while checking for shorted and open circuits.

   With the scan tool, check the DTC EVENT DATA to help identify the conditions in which the DTC was

set.

Check for any Service Bulletins that may apply.

Were there any problems found?

Yes

Repair as necessary.
Perform **40/41TE TRANSMISSION VERIFICATION TEST**.

No

Test Complete.

