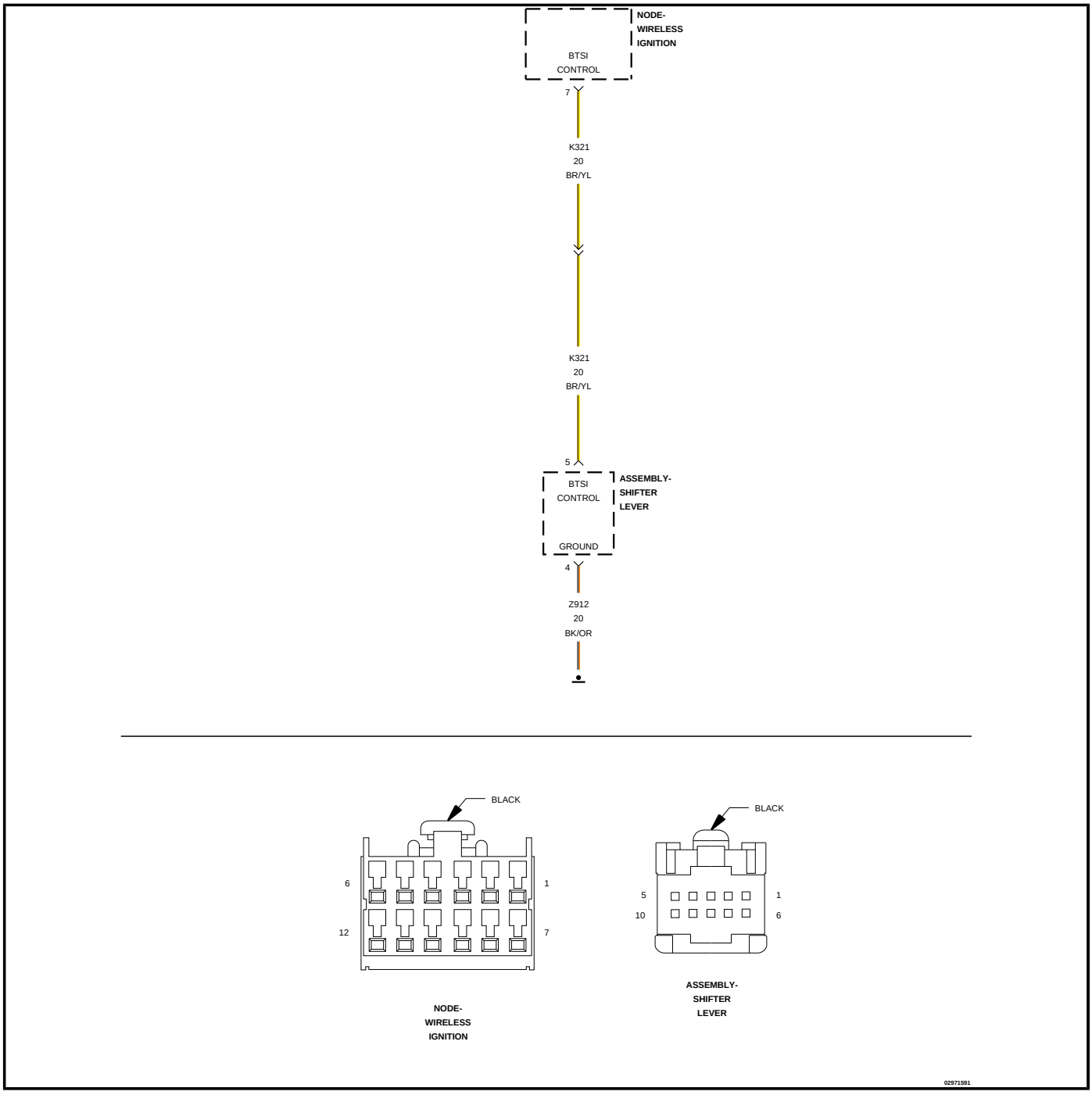
P0928-BTSI CONTROL CIRCUIT



For a complete wiring diagram, **refer to the Wiring Information**.

Theory of Operation

The brake switch signal must be active before the shift lever can be moved out of the park position. The Shifter Lever Assembly (SLA) Electronic Shift Module (ESM) receives two brake switch signals. The first signal is a CAN C Bus message sent to the shifter lever assembly. The second signal is a hard wired brake switch signal to the shifter lever

assembly from the Wireless Ignition Node (WIN). The CAN C Bus message is the primary brake switch signal and the hard wired signal serves as the backup brake switch signal. These two brake switch signals are compared against each other to verify proper brake switch operation.

- **When Monitored:**

  Continuously with the ignition on.
- **Set Condition:**

  The Diagnostic Trouble Code (DTC) will set if the high side driver detects a short to ground for 10 seconds.

Possible Causes
ENGINE BRAKE DTCS PRESENT
(K321) BRAKE TRANSMISSION SHIFT INTERLOCK (BTSI) CONTROL CIRCUIT SHORT TO GROUND
(K321) BTSI CONTROL CIRCUIT OPEN
(K321) BTSI CONTROL CIRCUIT SHORTED TO VOLTAGE
SHIFTER ASSEMBLY
WIRELESS IGNITION NODE (WIN)

1. ENGINE DTCS PRESENT

1. With the scan tool, read PCM DTCs.

Are there any Powertrain Control Module (PCM) brake switch related DTCs present?

Yes • (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Diagnosis and Testing) and perform the appropriate diagnostic procedure.

No • Go To 2

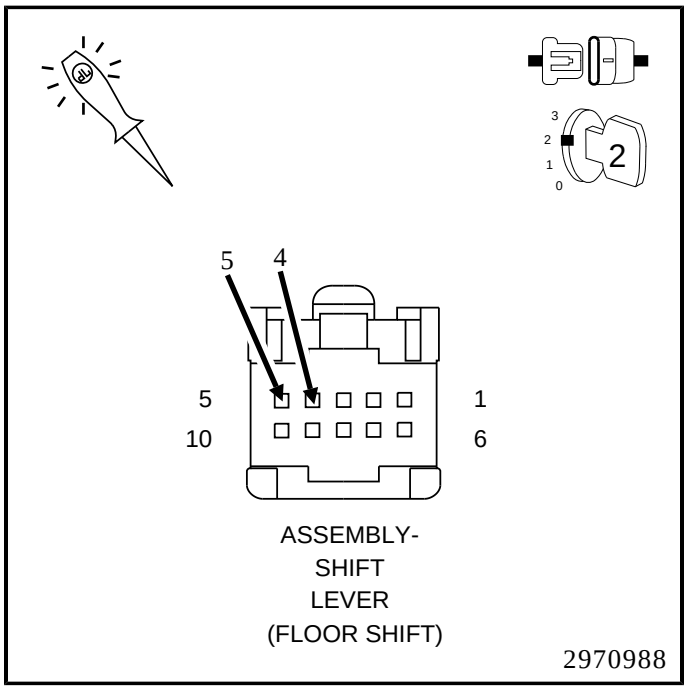
2. CHECK THE (K321) BTSI CONTROL CIRCUIT

1. Turn the ignition off to the lock position.
2. Disconnect the Shift Lever Assembly harness connector.

NOTE: Check connectors - Clean/repair as necessary.

3. Using a 12-volt test light, connect one end to the (Z911) Ground circuit and the other to the (K321) BTSI Control circuit in the Shifter connector.
4. Turn the Ignition on, engine not running.
5. With the scan tool under WIN, select Actuators and actuate the BTSI.

Does the test light illuminate brightly while the actuator is cycling the (K321) BTSI Control circuit on and off?



Yes
- Replace the Shift Lever Assembly in accordance with the Service Information.
- Perform the BODY VERIFICATION TEST. (Refer to 28 - DTC-Based Diagnostics/ MODULE, Totally Integrated Power (TIPM) - Standard Procedure).

No
- With the scan tool, stop the actuation.
- Go To 3

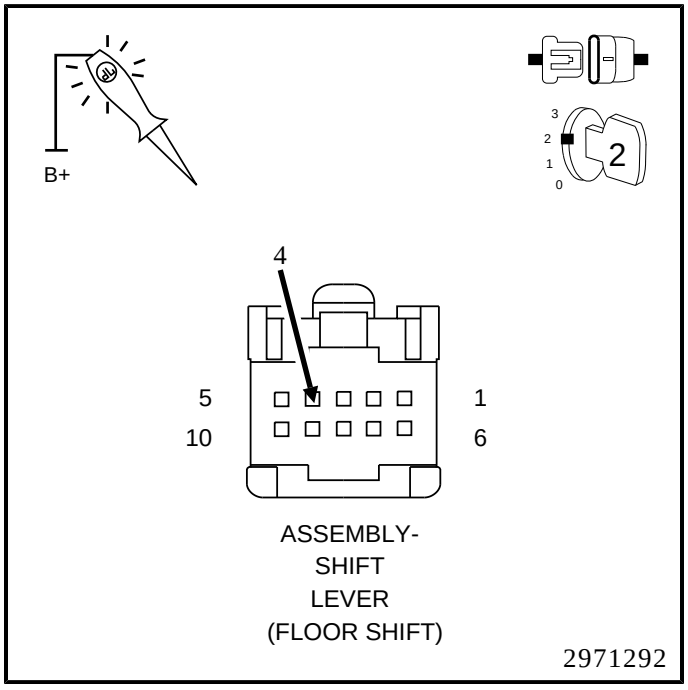
3. CHECK THE (Z911) GROUND CIRCUIT

1. Using a 12-volt test light connected to 12-volts, check the (Z911) Ground circuit in the Shifter connector.

Does the test light illuminate brightly?

Yes
- Go To 4

No
- Repair the open in the (Z911) Ground circuit.
- Perform the BODY VERIFICATION TEST. (Refer to 28 - DTC-Based Diagnostics/ MODULE, Totally Integrated Power (TIPM) - Standard Procedure).



4. (K321) BTSI CONTROL CIRCUIT SHORT TO GROUND

1. Turn the ignition off.
2. Disconnect the WIN harness connector.

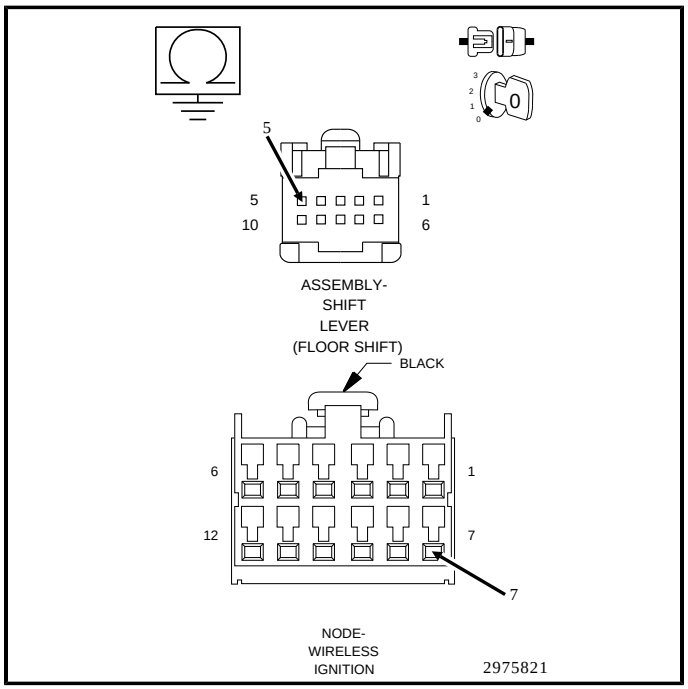
NOTE: Check connectors - Clean/repair as necessary.

3. Measure the resistance between ground and the (K321) BTSI Control circuit in the WIN and the Shift Lever connectors.

Is the resistance below 10k Ohms at either connector?

Yes
- Repair the short to ground in the (K321) BTSI Control circuit.
- Perform the BODY VERIFICATION TEST. (Refer to 28 - DTC-Based Diagnostics/ MODULE, Totally Integrated Power (TIPM) - Standard Procedure).

No
- Go To 5



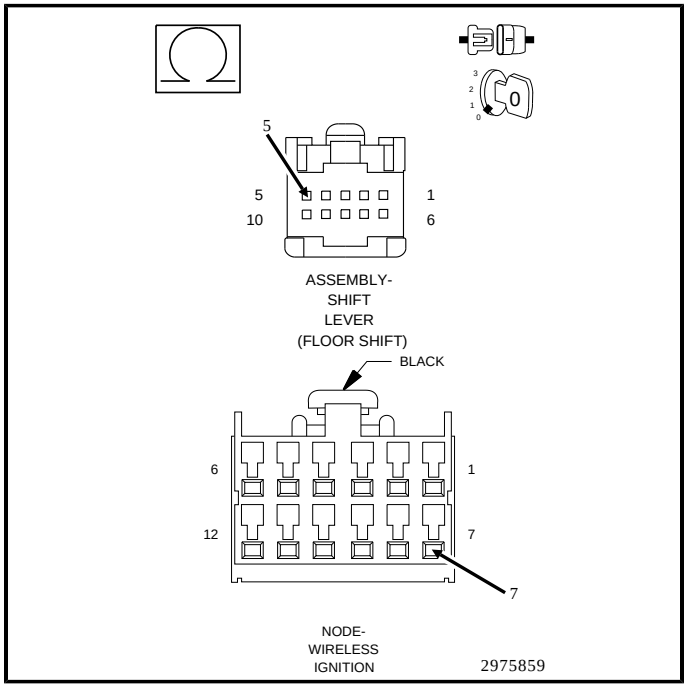
5. (K321) BTSI CONTROL CIRCUIT OPEN

1. Measure the resistance of the (K321) BTSI Control circuit between the Shift Lever harness connector and the WIN harness connector.

Is the resistance above 5.0 Ohms?

Yes
- Repair the open in the (K321) BTSI Control circuit.
- Perform the BODY VERIFICATION TEST. (Refer to 28 - DTC-Based Diagnostics/ MODULE, Totally Integrated Power (TIPM) - Standard Procedure).

No
- Go To 6



6. (K321) BTSI CONTROL CIRCUIT SHORTED TO VOLTAGE

1. Turn the ignition on.
2. Measure the voltage between ground and the (K321) BTSI Control circuit in the Shift Lever harness connector and the WIN harness connector.

Is there any voltage present at either connector?

Yes
- Repair the short to voltage in the (K321) BTSI Control circuit.
- Perform the BODY VERIFICATION TEST. (Refer to 28 - DTC-Based Diagnostics/ MODULE, Totally Integrated Power (TIPM) - Standard Procedure).

No
- Replace the Wireless Ignition Node in accordance with the Service Information.
- Perform the BODY VERIFICATION TEST. (Refer to 28 - DTC-Based Diagnostics/ MODULE, Totally Integrated Power (TIPM) - Standard Procedure).