



Technical Bulletin #1767

Transmission: U150

Subject: *Slipping or Binding Shifts, Solenoid Test*

Application: Toyota/Lexus

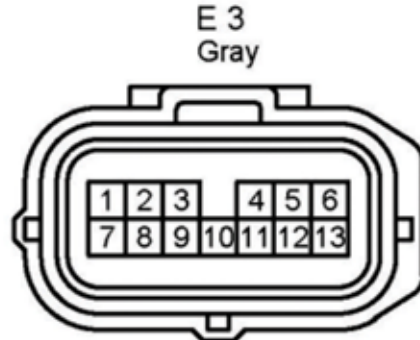
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U150

Slipping or Binding Shifts, Solenoid Test

When working on the Toyota or Lexus vehicle with U150 series transaxles, it may be noticed, either before or after overhaul the transmission has either slipping or binding shifting. This condition may be caused by the shift solenoids, valve body wear issues, or defective PCM.

To rule out the likelihood of a defective PCM, follow the voltage test for solenoids SL1, SL2, and SL3. Refer to figure 1 for the case connector view in order to follow the solenoid test. Refer to figure 2 for a wiring diagram with wiring colors to assist the technician in identifying the correct wire in the harness. NOTE: The diagrams in figure 1 and 2 are for 2008 Toyota Sienna. To avoid connector pin configuration and wire color confusion, please refer to the appropriate factory manual for the vehicle you are working on.



- Terminal 1: Transmission temp sensor high (reference voltage)
- Terminal 2: SLT solenoid high (SLT +)
- Terminal 3: S4 solenoid control
- Terminal 4: SL3 solenoid high (SL3 +)
- Terminal 5: SL2 solenoid high (SL2 +)
- Terminal 6: SL1 solenoid high (SL1 +)
- Terminal 7: Transmission temp sensor low (ground)
- Terminal 8: SLT solenoid low (SLT -)
- Terminal 9: SR solenoid control
- Terminal 10: DSL solenoid control
- Terminal 11: SL3 solenoid low (SL3 -)
- Terminal 12: SL2 solenoid low (SL2 -)
- Terminal 13: SL1 solenoid low (SL1 -)

Figure 1

U150 Slipping or Binding Shifts, Solenoid Test

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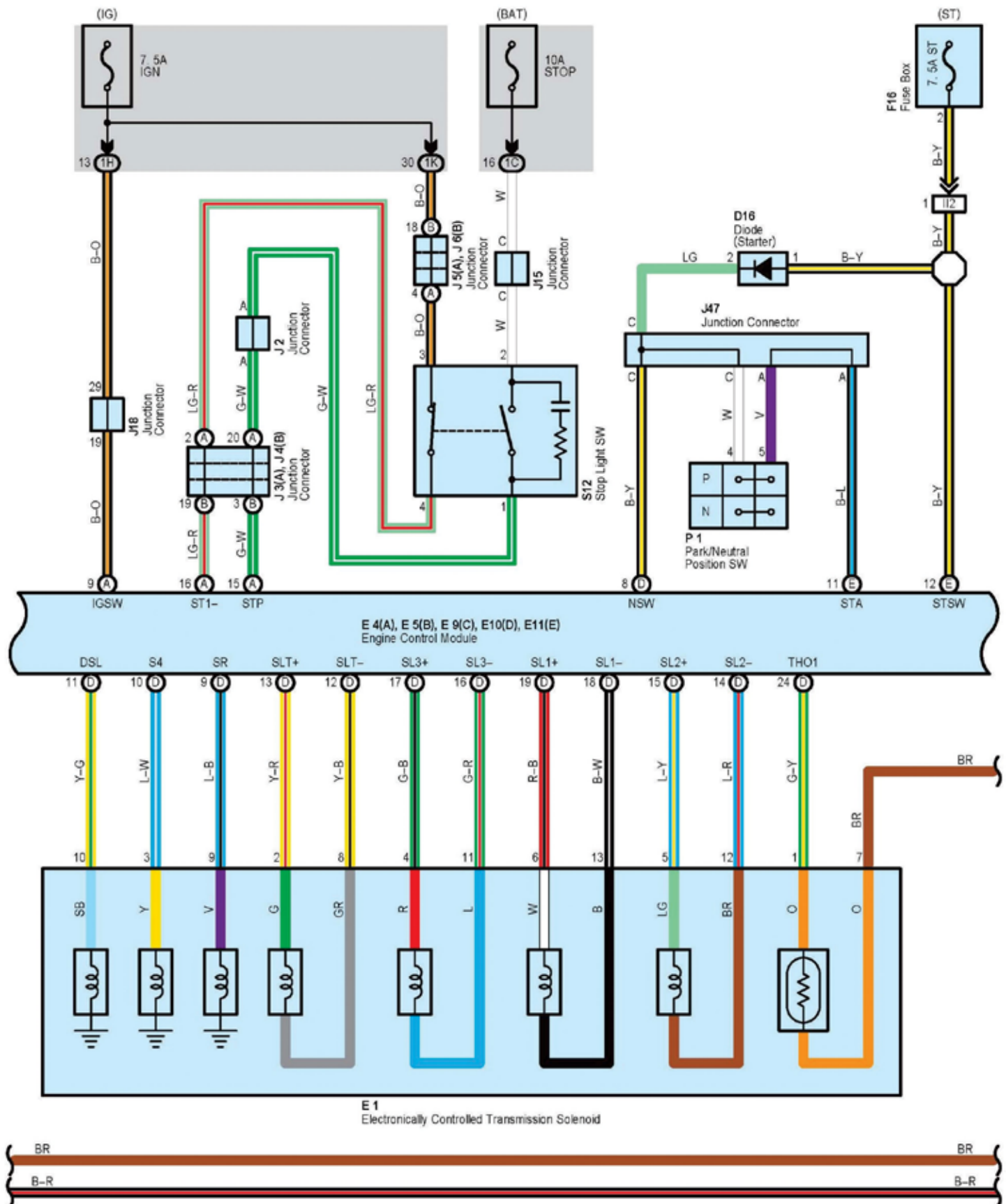


Figure 2

Slipping or Binding Shifts, Solenoid Test

Refer to figure 3 for the U150 series solenoid apply chart.

Solenoid Apply Chart							
	SL1	SL2	SL3	S4	SR	DSL	SLT
P/N	ON	ON	OFF	OFF	OFF	OFF	MOD
Rev	ON	ON	OFF	OFF	OFF	OFF*	MOD
D 1st	ON	ON	OFF	OFF	OFF	ON*	MOD
D 2nd	OFF	ON	OFF	OFF	OFF	OFF	MOD
D 3rd	ON	OFF	OFF	OFF	ON	ON**	MOD
D 4th	OFF	OFF	ON	OFF	ON	ON**	MOD
D 5th	OFF	OFF	ON	ON	ON	ON**	MOD

Figure 3

DSL OFF* In reverse DSL solenoid may be turned ON to provide reverse inhibit function.

DSL ON* In manual low, DSL solenoid is turned ON to provide engine braking function.

DSL ON** In Drive 3, 4 and 5 DSL solenoid is turned ON for TCC control.

Solenoid Test

Using a voltmeter, back probe the terminals for each of the solenoids SL1, SL2, and SL3.

SL1: Monitor the voltage across terminals 6 and 13 of the transmission case connector. You should see approx. 7 volts on the meter when you are in 1st gear. When the computer commands an up shift into 2nd gear the voltage should drop from 7 volts to 0 volts in less than ½ second. When the computer commands third gear you should see the voltage go from 0 volts to about 7 volts in less than ½ second. When the computer commands 4th gear you should see the voltage again go from 7 volts to 0 volts in less than ½ second. This will be normal operation for the SL1.

SL2: monitor the voltage across terminals 5 and 12. You should see approx. 7 volts when the vehicle is in 1st and 2nd gear. When the computer commands third gear you should see the voltage drop to approx. 0 volts in less than ½ second. The voltage should stay at 0 volts in 3rd, 4th, and 5th gear.

SL3: Monitor the voltage across terminals 4 and 11. You should see 0 volts when the vehicle is in 1st, 2nd, or 3rd gear. When the computer commands a shift to 4th gear, you should see the voltage go to approx. 7 volts in less than ½ second. The voltage should remain at 7 volts in 5th gear as well. These voltage values must be watched carefully. Any difference in voltages may indicate a faulty PCM.