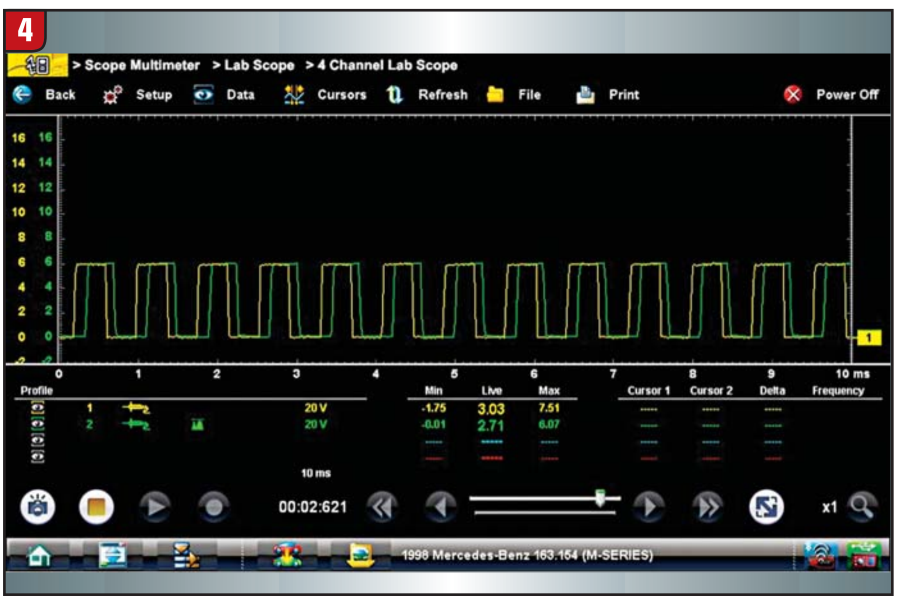
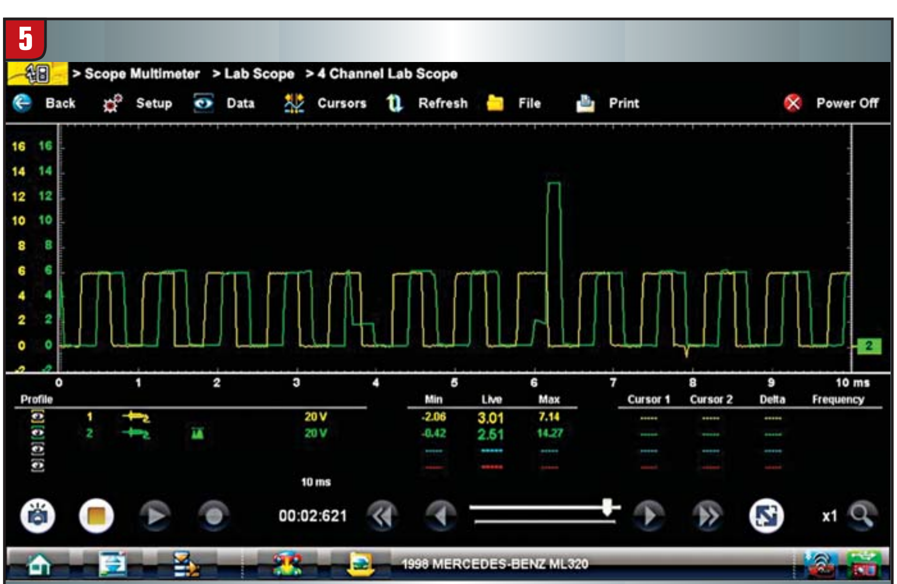

Testing N2 and N3 speed sensors in reference to battery ground

Since the codes were directing us to the N2 and N3 speed sensors again (notice no code 014), we decided to go straight to the horse's mouth, so to speak; we back-probed the N2 and N3 speed sensors at the TCM (**Figure 3**).

Channel 1 (yellow) is N2 speed-sensor signal and Channel 2 (green) is N3 speed-sensor signal in reference to battery ground. The problem was intermittent so we had to drive it for a while, but we finally got to see the problem. **Figure 4** shows a good signal from both N2 and N3 speed sensors. Remember that both speed sensors share a common 6 volts and ground provided by the TCM. Each speed sensor has its own signal return wire to the TCM. Grounding the scope to battery ground (reference to battery ground) allows us to see the voltage and ground integrity of the circuit in one test. Here we can see good voltage source (6 volts) and a good ground (0 volt), and the frequency (Hz) changed with increase in road speed.



However, every now and then we saw a short to voltage on the N3 speed-sensor return signal (**Figure 5**).



Now the most-likely short in the circuit to battery voltage would be the voltage that the TCM provides to the transmission through pin 6 for the shift solenoids, and since this was an intermittent problem we had to make an educated guess. We know how problematic the transmission-harness connector can be, so we decided to start there. Our hunch paid off (**Figure 6**).

It appears that the connector did leak transmission fluid into the harness, but it did not get to the TCM. The fluid had caused the insulation to flake off at the bot-

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