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Subject:
Using parameter identification data
to diagnose problems

Unit:
48RE

Vehicle Applications:
2004 Dodge Ram 4x4 diesel pickup

Essential Reading:
 Rebuilder
 Shop Owner
 Center Manager
 Diagnostician
 R & R

Analyzing Data Helps Solve Complicated Problems

I guess we can all agree that today's transmissions are getting more complicated. They are also getting more challenging to diagnose and repair.

However, they also are getting more sophisticated, and we have more data available to us when we hook up our scan tools. In years past I guess we all have felt the frustration when we hooked up the scan tool and got codes with no data. There is nothing more frustrating than trying to diagnose a shifting problem or a torque-converter-clutch engagement problem with no data stream available to the scan tool.

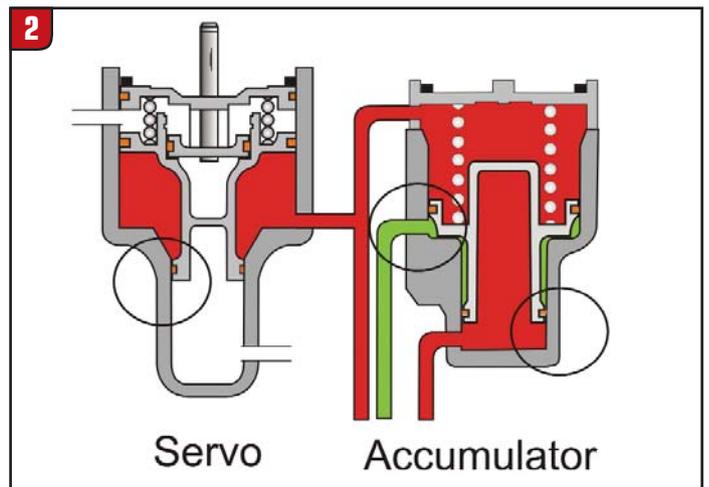
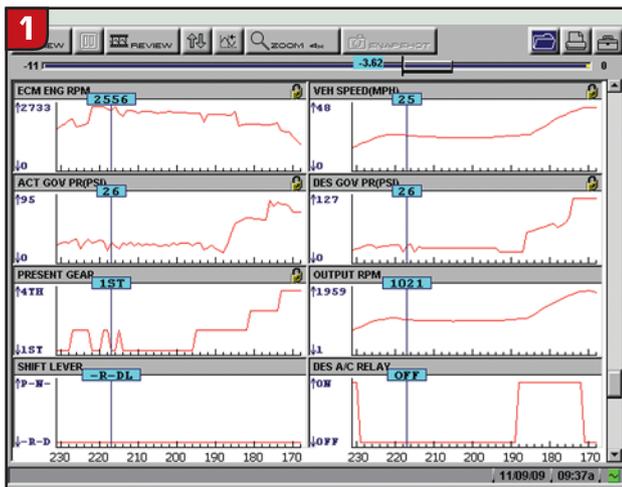
With the addition of parameter identification data (PID), we can combine data with our knowledge

of the way a transmission is designed to work and use it as a form of X-ray that permits us to see inside the transmission, so to speak. Let us use the following example to illustrate this.

A 2004 Dodge Ram 4x4 truck with a diesel engine and a 48RE transmission came in with no diagnostic trouble codes and no second gear. The transmission had been replaced with a factory rebuilt by the local dealer not long before it arrived in our shop. When we disassembled the transmission we found the second-gear band burnt, but the rest of the clutches were like new. We repaired the transmission and, in an effort to find the reason for the second-gear band being burnt, rebuilt the valve

body. We installed a new governor solenoid, governor transducer (sensor), a new output-speed sensor, and new sealing rings and seals, since they had come in the gasket set.

When we road-tested the vehicle we noticed that at times it would shift normally but at other times behaved the same as when it came in. So we connected the scan tool and recorded the data when the problem appeared. When we analyzed the data we noticed that the PRESENT GEAR parameter would go from second to first gear even though the rest of the data did not show a reason for it (Figure 1). This parameter is a calculation based on comparing engine speed with output-shaft



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speed; apparently we were losing second gear at times, and the increase in engine speed made the PRESENT GEAR parameter read first gear.

Keeping in mind that we never did find the reason for the burnt band, we started to analyze the data along with the transmission hydraulics. It was here that we noticed the possibility of having an internal leak at either the accumulator or the second-gear servo (Figure 2).

So we removed the accumulator and front-band servo and installed metal sealing rings at all three possible locations for this leak, and the problem was corrected.



It appears that at times the Teflon rings that are being used today collapse, even though they are new, causing an internal leak. We have since found out that Superior Transmission Parts Inc. produces a Shift Correction Package™ for the 48RE, Part # K48RE, which provides metal rings for these pistons.

The more we use PID to analyze transmission concerns, the more familiar we become with what is normal to see in a data stream and what is not. This is similar to when we first started to use pressure gauges; it took us a while to read the pressures and learn to associate the pressure readings with internal problems.

To help us in our quest to better use data for diagnostics, Snap-on has made available a useful program call ShopStream Connect that allows us to better analyze the data stream at our computer and to store it for later use. This stored data then can be used in the future to compare with similar units and help us diagnose future problems. We also can share this data with others to help them or to ask for their help. You can download it free at <http://diagnostics.snapon.com/ssc>.

With today's challenging transmissions, we need to use the PID provided by the manufacturers and use this information to help us diagnose today's complicated transmission problems. The doctor will see you now. **TD**

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