

LET'S PLAY BALL

Converter Update for GM's 4T80E

Lowers Cost without Harsh Apply



by Lance Wiggins

Cost is always a big issue when it comes to transmission repair. One of the first questions a customer is sure to ask when he finds out he needs a transmission rebuild is "how much?"

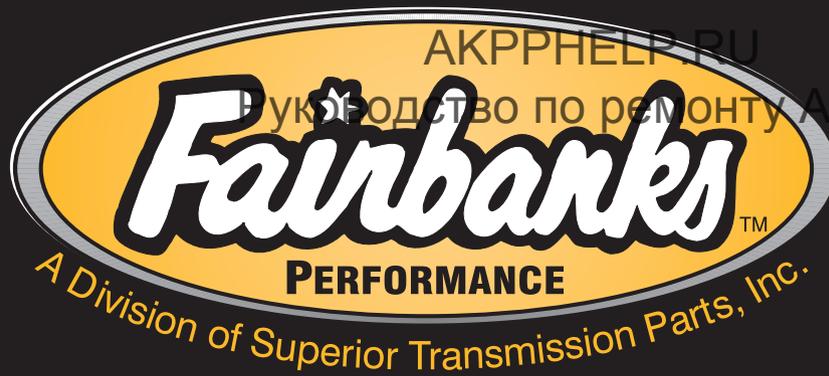
That cost was always a sticking point when it came to GM's 4T80E. That's because the 4T80E came with a Viscous Converter Clutch (VCC). The VCC seals a layer of silicone fluid between the converter cover and body, to soften the converter clutch apply (Figure 1a, 1b, 1c).

And it works great; a nice, smooth apply that the driver can barely notice. But when it came time to replace a VCC converter, he'd notice... he'd notice the *price*. Because the VCC isn't rebuildable, and a new one costs more than 500 bucks!

After the customer recovered from the shock, many shops would offer them a lower-cost option: Switching over to a standard, on/off converter clutch and block the TCC regulator valve. Sure, it cost less... a lot less. But now the transmission seemed to have an additional shift; the converter clutch apply felt like you'd added a 5th gear range. The customers weren't too pleased with the way their new transmission felt, but it was either that or spring for a VCC.



Figure 1A



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The VCC seals a layer of silicone fluid between the converter cover and body, to soften the converter clutch apply (Figure 1a, 1b, 1c).

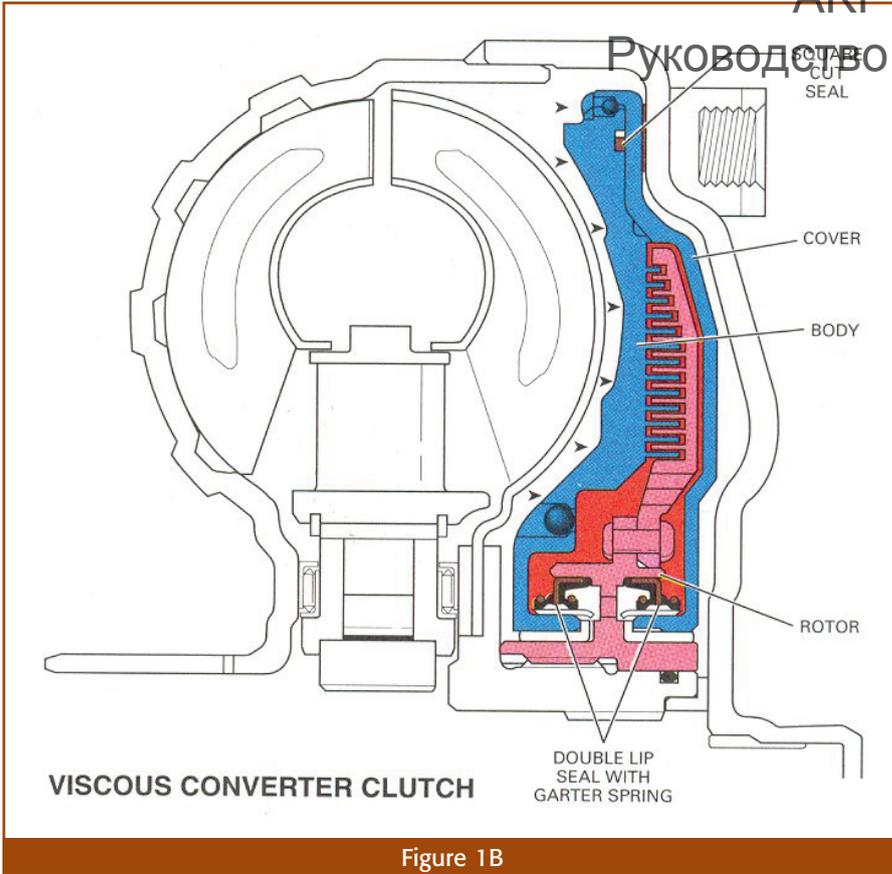


Figure 1B

In mid-2005, GM eliminated the VCC once and for all. They switched over to EC³ system (Electronic Converter Clutch Control) which has been in use since the mid '90s in other applications. The EC³ converter clutch uses a woven carbon fiber material attached to the pressure plate (Figure 2). The carbon fiber material is designed for a high slip application, so the clutch apply still feels smooth; much smoother than a standard TCC would be.

The good news here is that you can update earlier 4T80E transaxles to use the EC³ converter. The process isn't all that difficult, and the result is a smooth clutch apply, very similar to the feel of the VCC. And the cost is far lower than the VCC, so the customer is happy with both the transmission operation and the rebuild price: a win-win for everyone.

The friction material used on the VCC models is a standard paper.

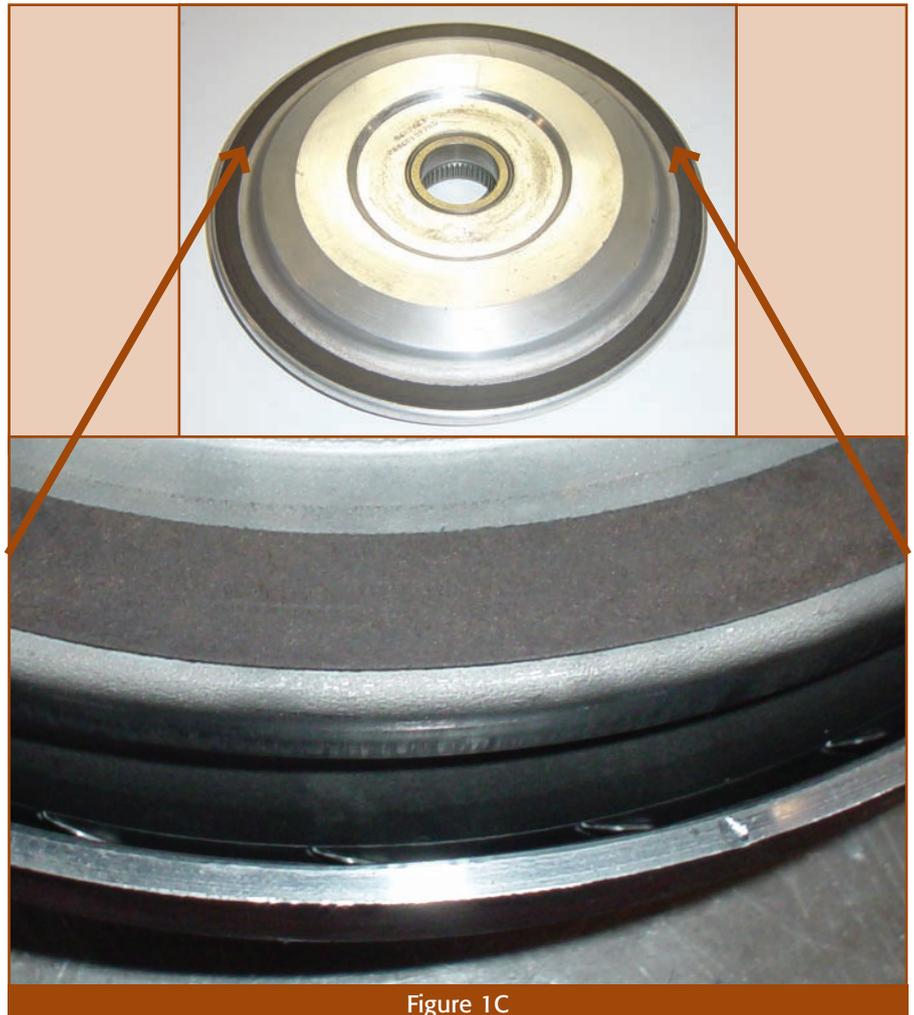


Figure 1C

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Updating to the EC³

The update to an EC³ system is designed for 4T80Es that come equipped with either the VCC or TCC. But there are several other changes required to accommodate the new converter. These updated parts can't be intermixed with the earlier components or systems; doing so could cause problems with system operation or durability.

Here's what the EC³ update includes:

- A new EC³ torque converter (VCC converters will still be available on some applications as in previous years).
- Updated computer calibration.
- A new case cover spacer plate (Figure 3).



Figure 2

A new case cover spacer plate

EC³: Electronic Converter Clutch Control. The EC³ converter clutch uses a woven carbon fiber material attached to the pressure plate.

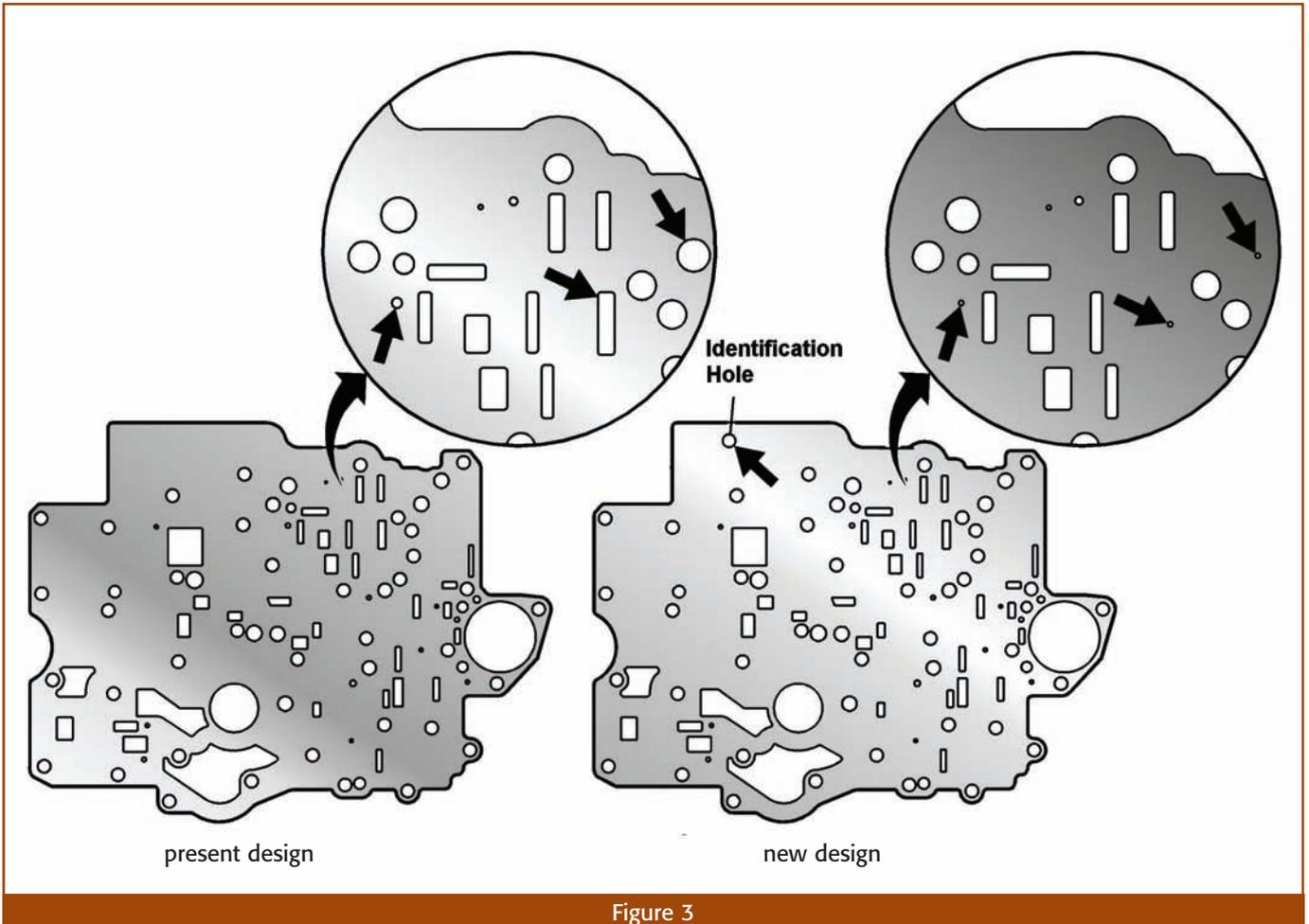


Figure 3

Remember that Old-Time Service?

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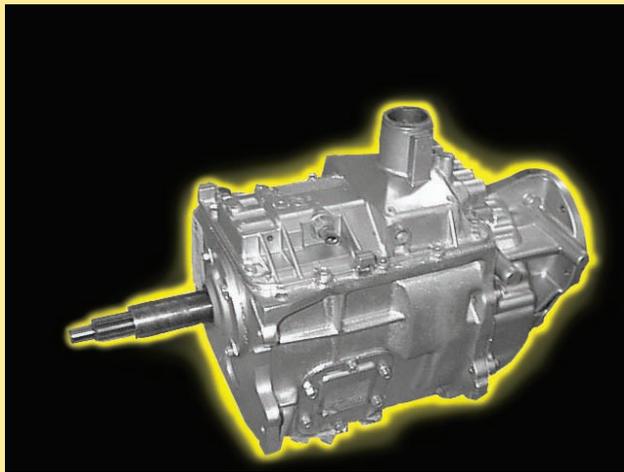
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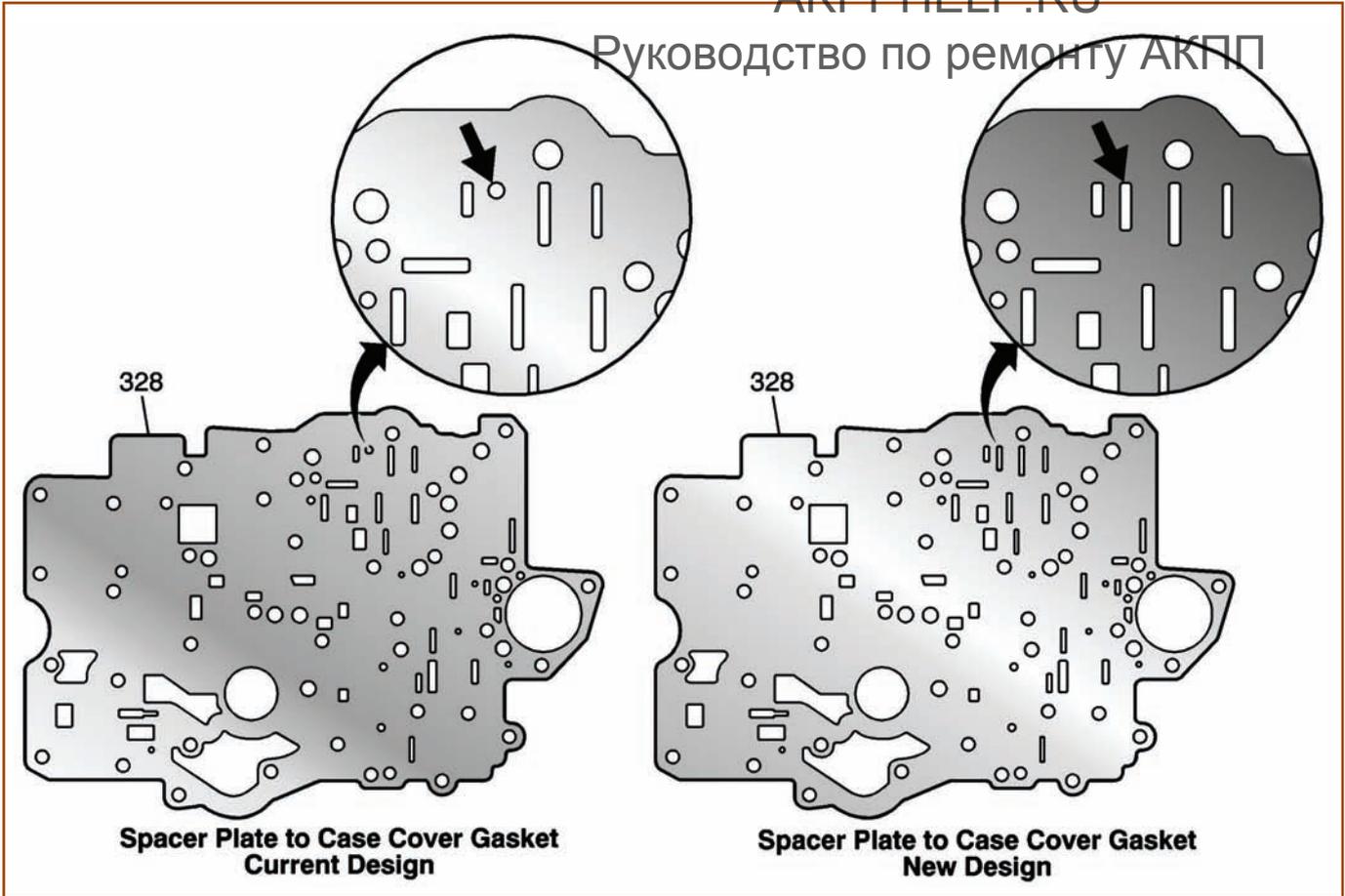


Figure 4

- A new valve body gasket (Figures 4 & 5).
- A new converter clutch control valve spring and TCC enable spring (Figures 6 & 7).

Updated Computer Calibration

The computer will require a calibration update to accommodate the new converter clutch operation. These changes will alter the parameters for setting four DTCs — P0741, P0742, P2763 and P2764 — basically eliminating the parameter window where the VCC would normally slip.

Updated Case Cover Spacer Plate and Gasket

The new spacer plate will service VCC and TCC applications; an ID hole was added to the left corner of the new gasket for easy identification.

- Change from VCC — Four orifice dimensions were changed.
- Change from TCC — Three orifice dimensions were changed.

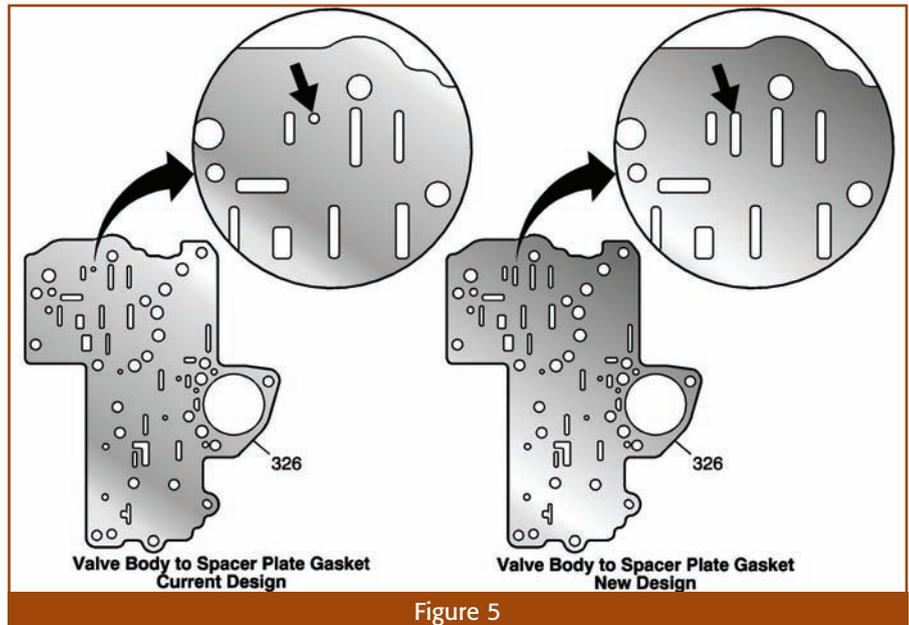


Figure 5

The updated spacer plate will be available in a kit, especially for this modification. One passage change was required for the EC³ application gasket. The updated gasket is included in the service kit to update prior VCC applications.

Valve Body Gasket

The updated gasket is included in the service kit to update prior VCC applications.

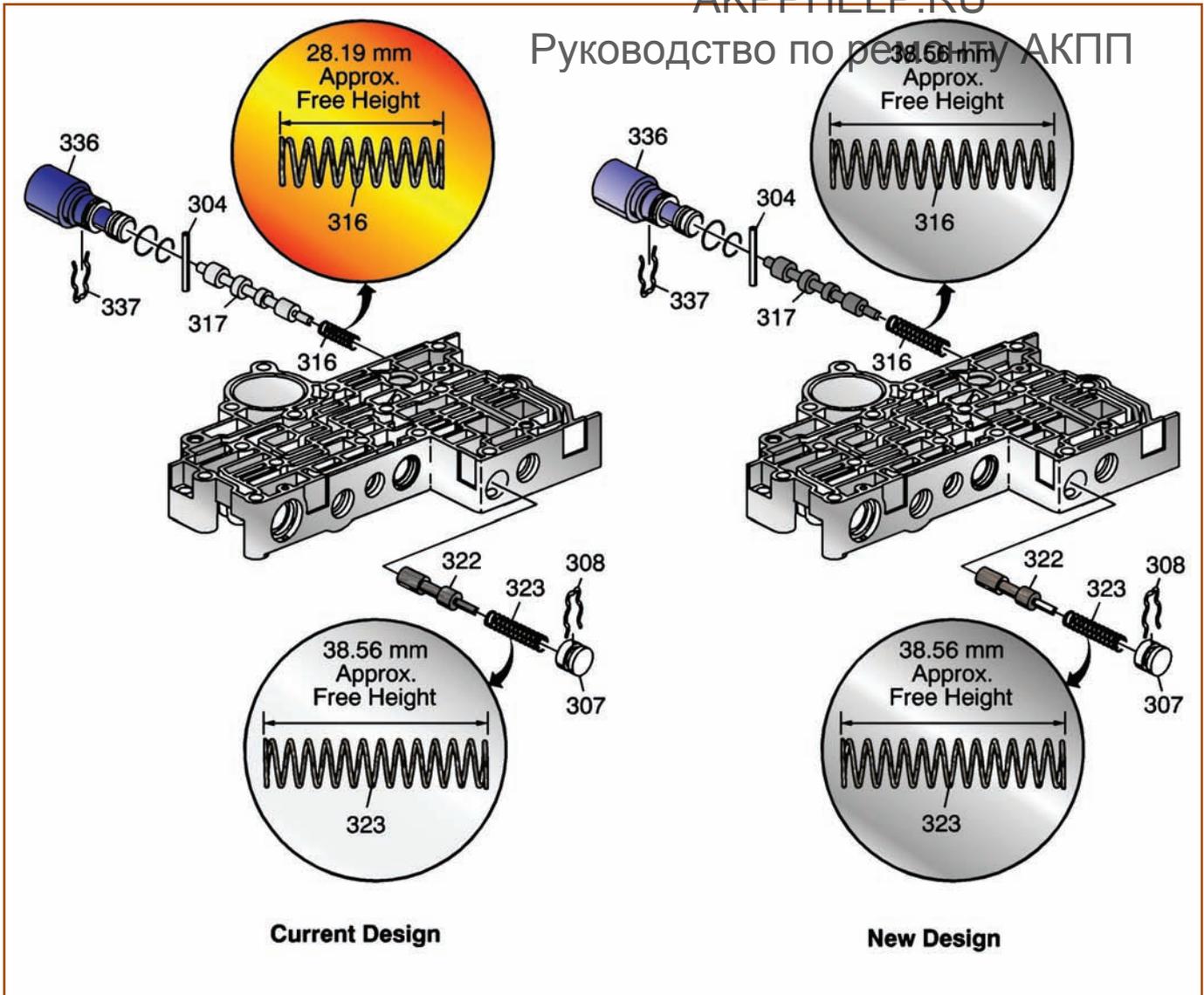


Figure 6

Converter Clutch Control Valve and TCC Enable Springs

An updated converter clutch control valve spring and TCC enable spring are required for the update to the EC³ converter. Both valves now use the same spring. The update kit is available under one of these part numbers:

24233678 — Some TCC applications, such as export models

24233679 — VCC applications

OR – check with your aftermarket supplier.

That's all there is to it: The new converter will provide an apply feel very similar to the VCC converter, at a fraction of the cost. And the new EC³ is designed to last longer than the original VCC converter.

It isn't often we get to offer a modification that improves durability *and* reduces cost. With cost being such an important issue to your customer, this modification is great news for you and your customers. The important thing is to make sure you perform it completely, to avoid driveability or diagnostic problems later.



Figure 7