



by Pete Huscher  
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# The Pressure's OFF Ford's CFT30

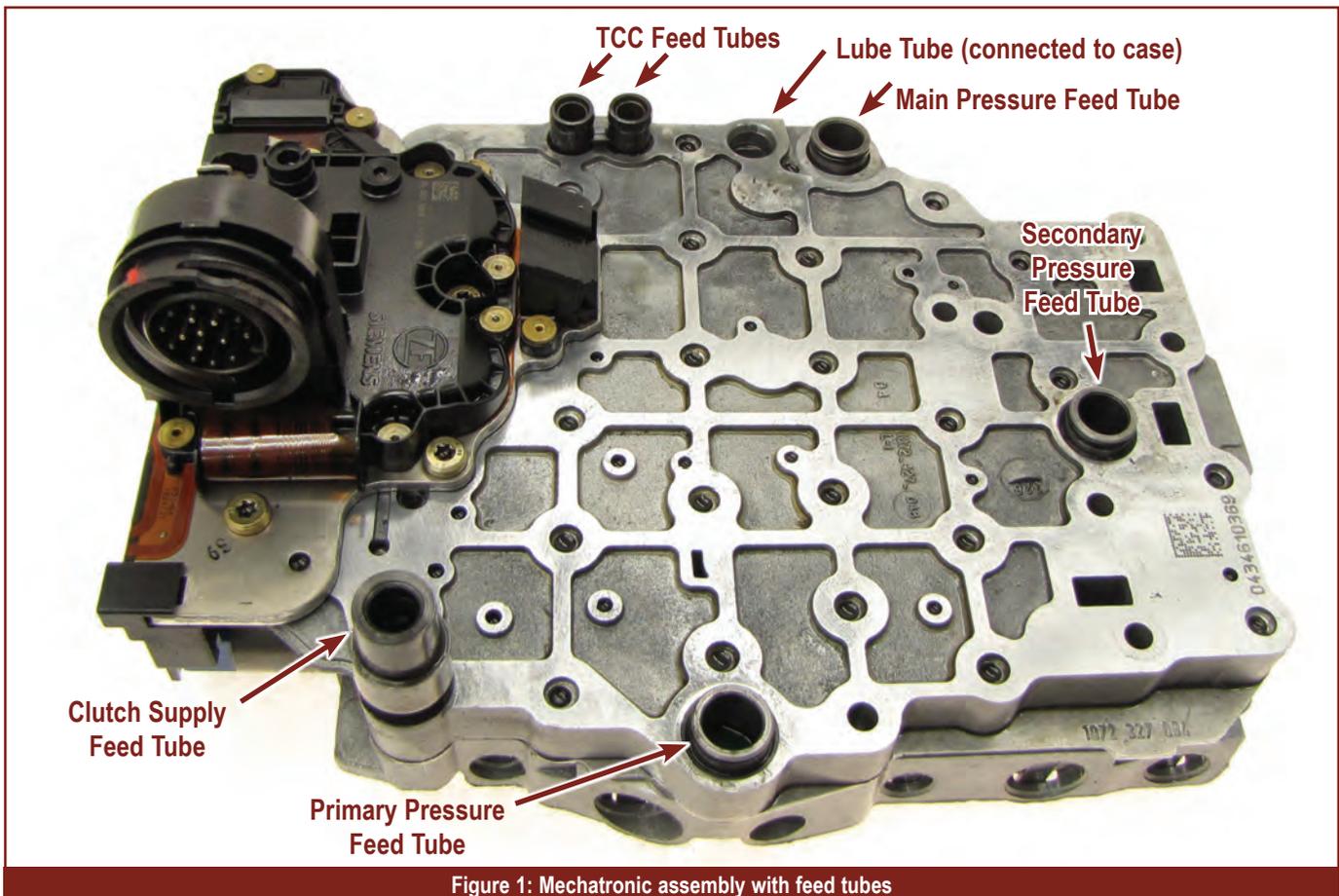


Figure 1: Mechatronic assembly with feed tubes

Over the past year, ATRA's Technical Department has been working feverishly to bring you the latest information on today's *continuously variable transmissions* (CVTs). In past issues of *GEARS* we've covered the details for Chrysler's CVT, the JF011E; and we've provided you with a basic understanding of how Ford's CVT, the CFT30, operates.

In this issue, we'll cover pressure related problems. They're common, and you'll defiantly be working on this unit very soon so be prepared.

## Pressure Problems

Like many CVTs, Ford's CFT30 operates on much higher pressures than traditional transmissions. CFT30 operating pressures will usually be in the range of 220-250 PSI, but can exceed 1000 PSI at times.

The CFT30 has no external pressure ports; the only way to check the operating pressure is to monitor the main pressure sensor (PCA MES) and secondary pressure sensor (PCC MES) PIDS with a scan tool. If the TCM detects pressures out of range, the TCM will set one of these codes:

- P0840 — main pressure sensor out of range
- P0845 — secondary pressure sensor out of range
- P0868 — transaxle pressure low
- P0871 — secondary pressure low
- P0961 — PCA out of range

Ford claims these codes can be caused by faulty pressure control solenoids, faulty pressure sensors, a faulty Mechatronic assembly (valve body/TCM assembly); all of which are caused by either a faulty Mechatronic assembly, at a cost of over \$1100 P&L, or an internal leak in the hydraulic system.



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**The good part of the story is you can replace any of these feed tube sealing rings without completely disassembly the transmissions case**

Ford claims the only way to correct these problems is to replace the transmission. But we've found that the most common cause for these codes is an internal leak in the hydraulic system. And there are less expensive ways to repair those leaks.

The hydraulic system for the CFT30 is pretty simple. The CFT30 uses seven feed tubes to deliver pressure to the various transmission components. The Mechatronic assembly itself uses seven different feed tubes to deliver pressure to the case. They are (figure 1):

- Clutch supply feed tube
- Primary feed tube
- Secondary feed tube
- Main pressure feed tube
- (2) Torque converter clutch feed tubes
- Lube Tube

The Mechatronic assembly routes pressure through the case to the primary and secondary covers, located on the rear of the transmission (figure 2).

The primary variator and forward clutch circuit uses a feed tube located in the primary cover (figure 3) to control the primary variator and forward clutch operation.

The secondary variator circuit uses a feed tube located in the secondary cover (figure 4) and main case to control the secondary variator operation.

All of these feed tubes use sealing rings to seal each of the circuits.

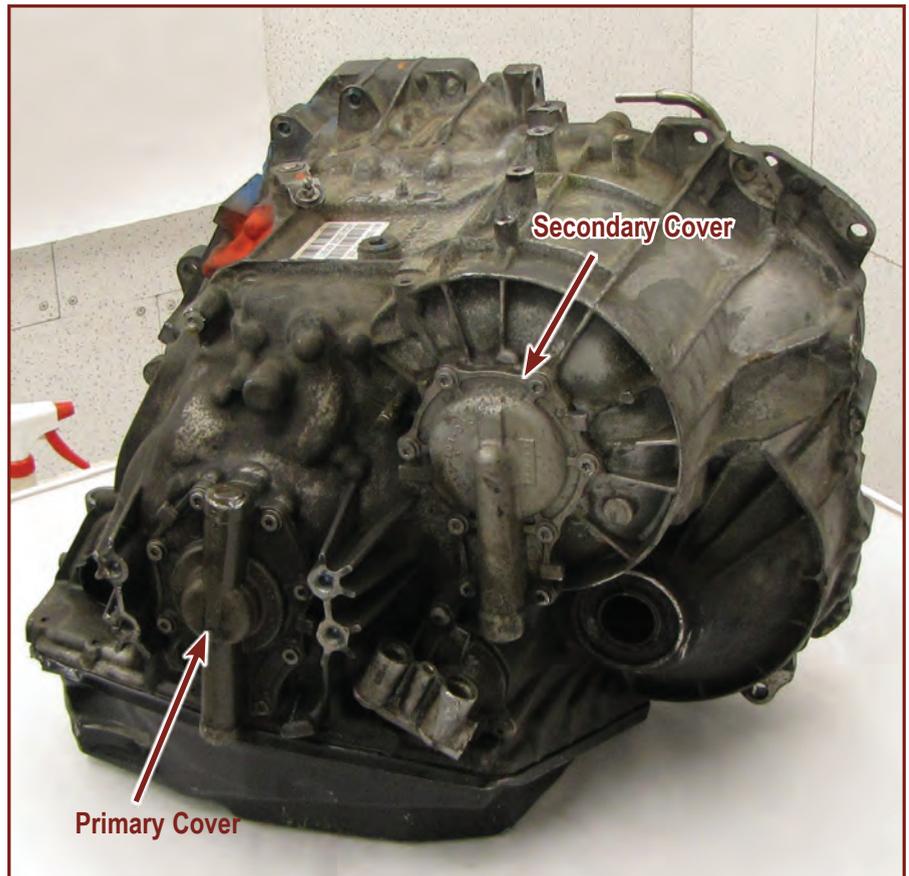


Figure 2: Primary and Secondary covers

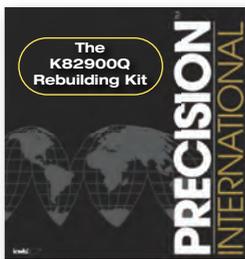


Figure 3: Primary variator feed tube



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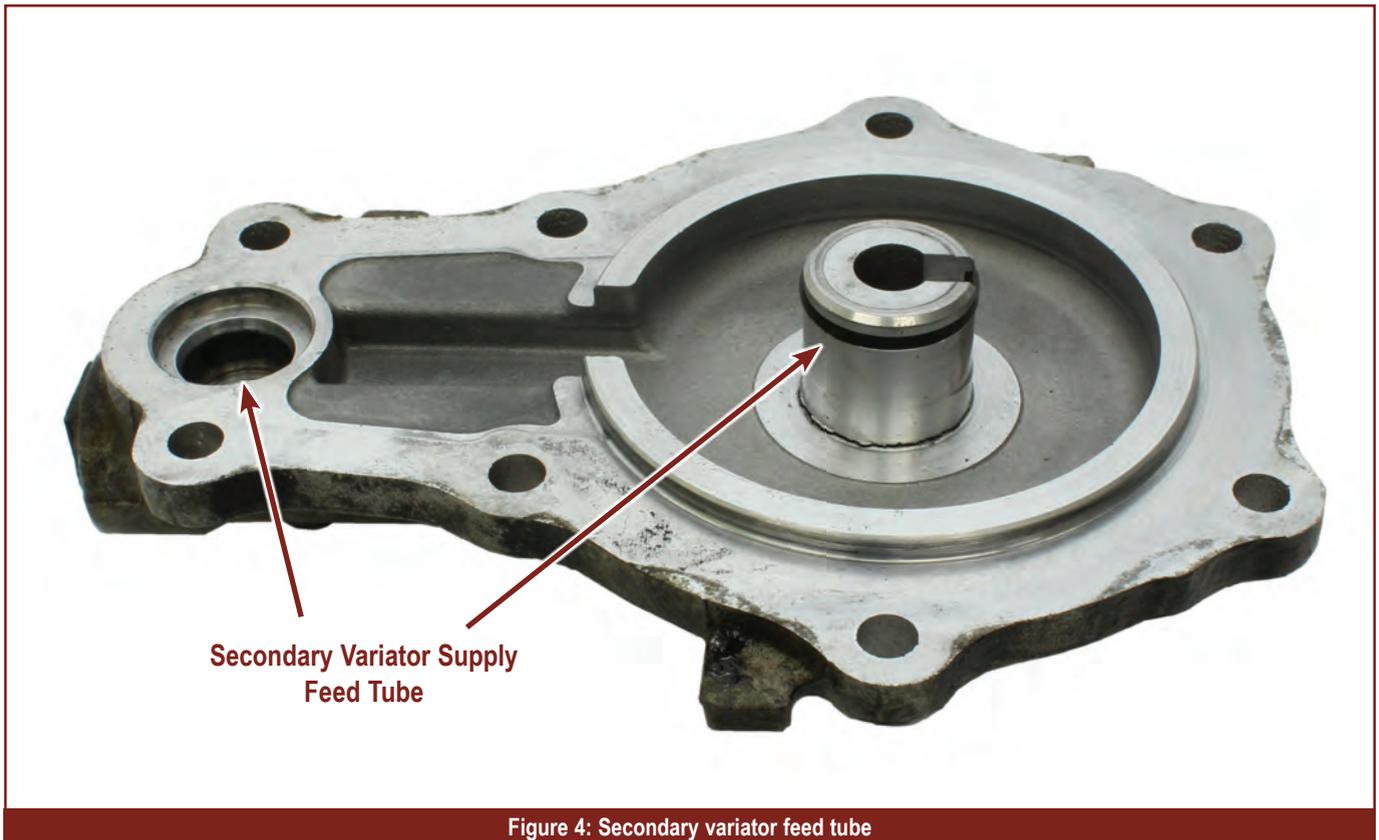


Figure 4: Secondary variator feed tube

Sealing ring shrinkage, deterioration, or damage can cause hydraulic circuit leaks, which is becoming one of the most common causes for pressure codes to set on this unit.

The good part of the story is you can replace any of these feed tube sealing rings without completely disassembly the transmissions case. The question is, do you replace the \$1100 Mechatronic assembly, or should you take a couple hours labor and a seal kit to repair or reseal the feed tubes, all in an effort to eliminate the pressure codes? Depending on the age of the vehicle and the condition of the transmission, resealing the tubes may be worth a shot.

## Resealing the Tubes

The first step to resealing the feed tubes is to remove the Mechatronic assembly from the case. With the Mechatronic assembly removed, you'll be able to see the seven feed tubes located in the Mechatronic assembly and/or stuck in the case as shown in figure 1.

Remove each of the feed tubes (identifying their locations for reassembly later) and replace the feed tube

sealing rings. Be sure to coat the feed tubes and sealing rings with Ford CVT fluid prior to reinstalling the tubes in the case.

Install the Mechatronic assembly and transmission pan.

Next, remove the primary and secondary covers located at the rear of the transmission as shown in figure 2.

Remove the primary variator feed tube from the primary cover and replace the sealing rings as shown in figure 3.

Reinstall the primary variator feed tube into the primary cover and install the primary cover onto the main case.

Next, remove the secondary variator feed tube from the secondary cover and replace the sealing rings as shown in figure 4. Again, be sure to coat the sealing rings with Ford CVT fluid prior to installing the primary and secondary covers.

Once you've reinstalled the primary and secondary covers, check the fluid level and refill as needed. Clear all codes from the computer system and road test vehicle to recheck transmission operation. If the pressure codes return, you'll need to replace the Mechatronic assembly.

Replacing the Mechatronic assembly is pretty straightforward: Remove the transmission pan, then remove and replace Mechatronic assembly.

Reinstall the transmission pan, check and refill transmission as needed. Clear the codes from the computer system.

With the new Mechatronic assembly installed, you'll have to reflash the vehicle with the latest update. After the reflash, test drive vehicle to make sure the transmission is operating properly.

**IMPORTANT:** We've encountered pump problems and sealing ring leaks in the forward clutch circuit. These repairs will require you to disassemble the transmission.

Well, there you have it: a quick and simple way to take care of Ford CFT30 pressure problems. With a little patience and a better understanding of the CFT30 transmission, you should have no problem *keeping those CVT trannies rolling* down the road.





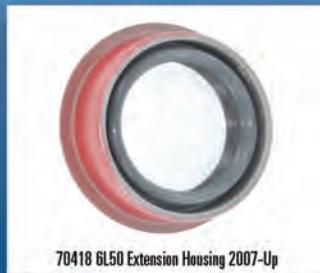
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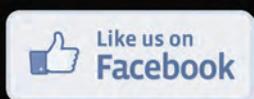


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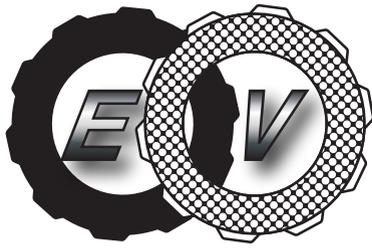
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