

# 6T70/6T75 Changing Times in 2013



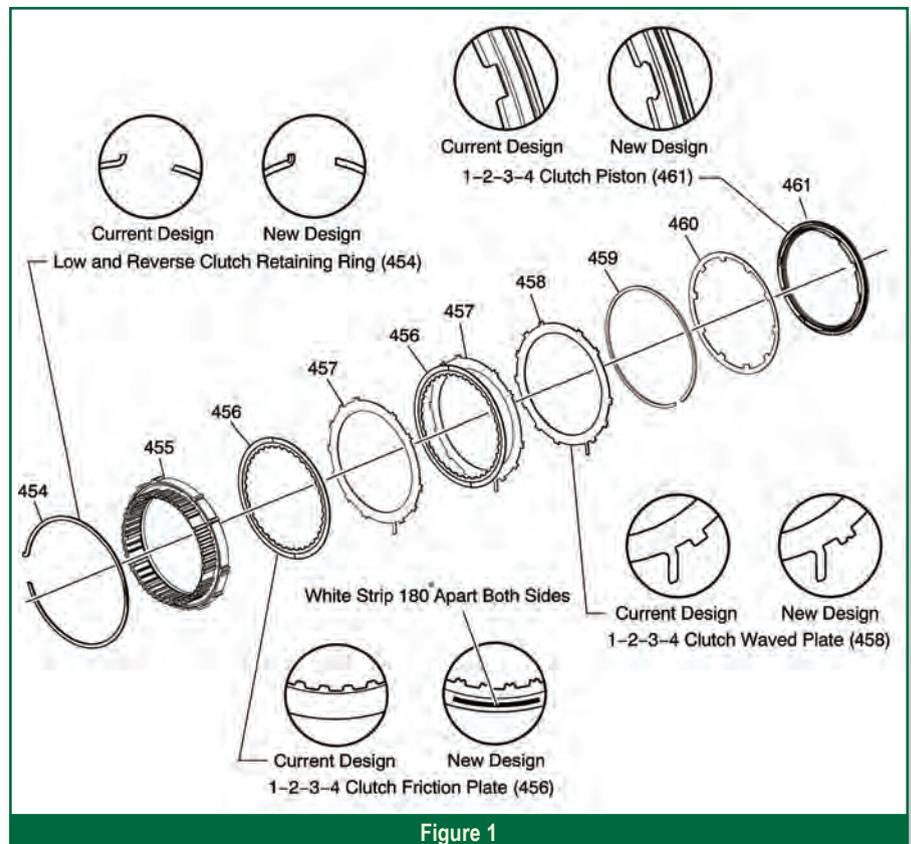
by Steve Garrett  
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As we conduct the seminars each year, we try to focus on product issues you'll likely see in your shop and on the updates that each of the different transmissions have undergone. The logic of focusing on those areas is to help you quickly diagnose and repair common product issues that you might face, and to help you avoid issues that have already been addressed by updates and product changes.

With that said, the 6T70 and 6T75 are becoming very popular in many shops. Product changes have occurred in the 6T70/75 to address specific problems, while other changes were designed to improve its performance and longevity. Like the 6T40 family of transmissions, the 6T70 has undergone several changes through the years. The largest and most comprehensive of these changes were introduced for the 2013 model year.

The 6T70 with RPO M7W or M7U and 6T75 transmissions with RPO codes M7V and M7X received a major control system update for the 2013 model year. As with updates on other transmission applications, this major change *wasn't* implemented in all 6T70/6T75 applications. Because of parts availability, only 6T70/6T75 applications with RPO codes M7W, M7U, M7V, or M7X received the update for 2013; other units won't receive the update until 2014 production. This means that two versions of the 6T70/6T75 transmission were available in 2013: Generation 1, which doesn't include the update package, and Generation 2, which does.

The most reliable way to determine



if your vehicle is equipped with a GEN 1 or a GEN 2 control system is to look at the RPO code located on the service parts ID label. The label is typically located in the glovebox, center console, or on the spare tire/jack storage area.

**IMPORTANT:** For the most part, GEN 1 and GEN 2 components *aren't* interchangeable.

Generation 2 changes were made to improve shift feel and durability of the unit. Generation 2 changes include:

- Wider snap ring groove for the diode one-way clutch.
- 1-2-3-4 clutch piston fingers are

taller. The 1-2-3-4 clutch wave and driven plates were redesigned (Figure 1).

- Redesigned 3-5-R/4-5-6 clutch housing and associated parts; 4-5-6 piston seal was moved from the piston to the housing, return springs, and clutch dam. The 3-5-reverse drive and driven plates and wave plate were changed and the snap ring groove was repositioned by 0.25 mm.
- Compensator holes were added to the turbine shaft (Figure 2).
- Redesigned TEHCM: The pres-

sure switches were eliminated, and the TEHCM now uses *clutch pulse learn* technology to control shift adapt operation. In addition, the PWM solenoids were updated from a variable *bleed* (VBS) to variable *feed* (VFS) design (Figure 3).

- Redesigned spacer plate and gaskets; updated spacer plate includes an updated cover design.

**In addition, the PWM solenoids were updated from a variable bleed (VBS) to variable feed (VFS) design (Figure 3).**

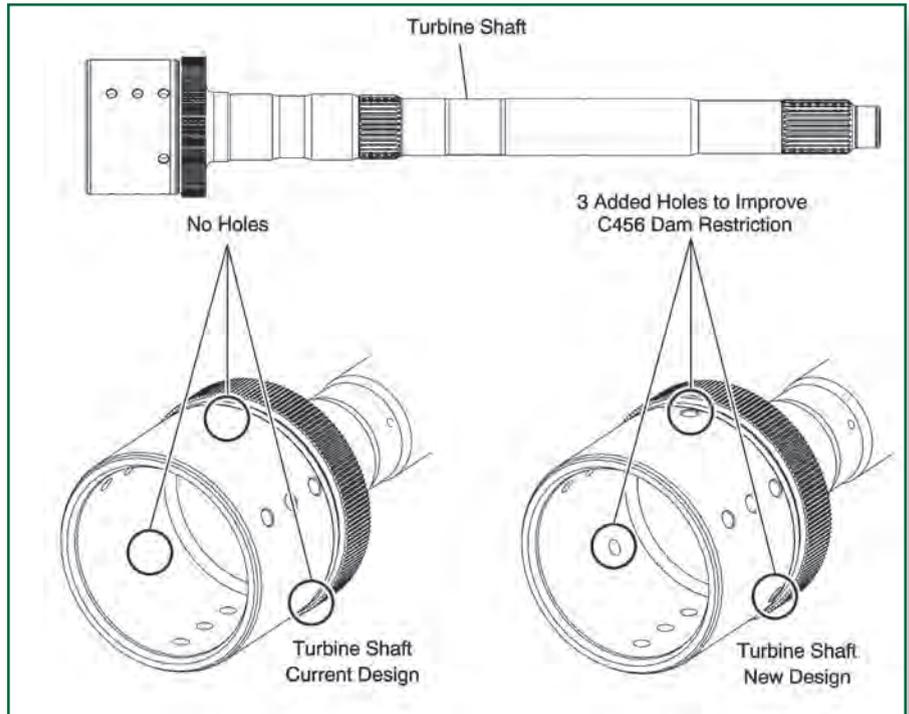


Figure 2

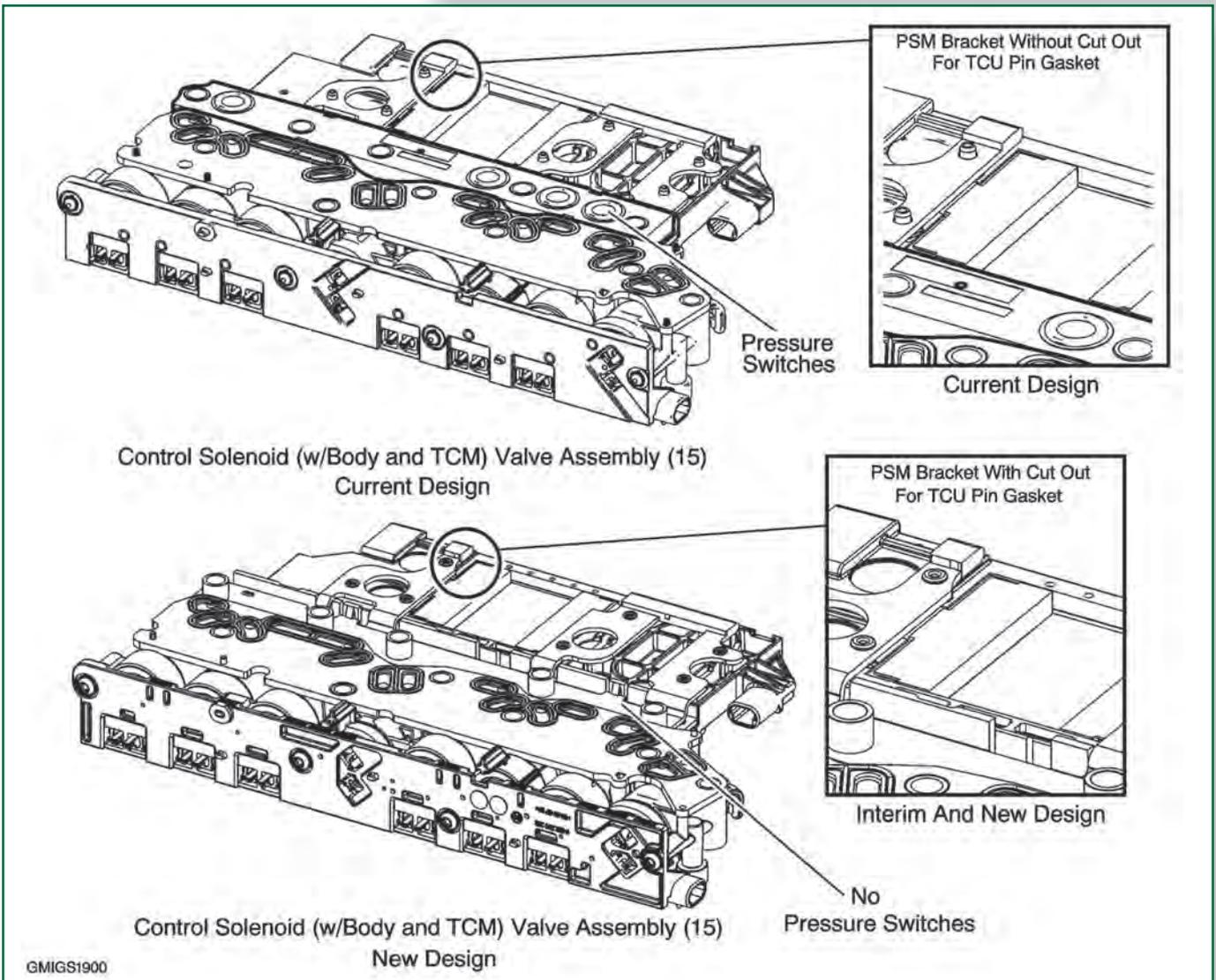


Figure 3

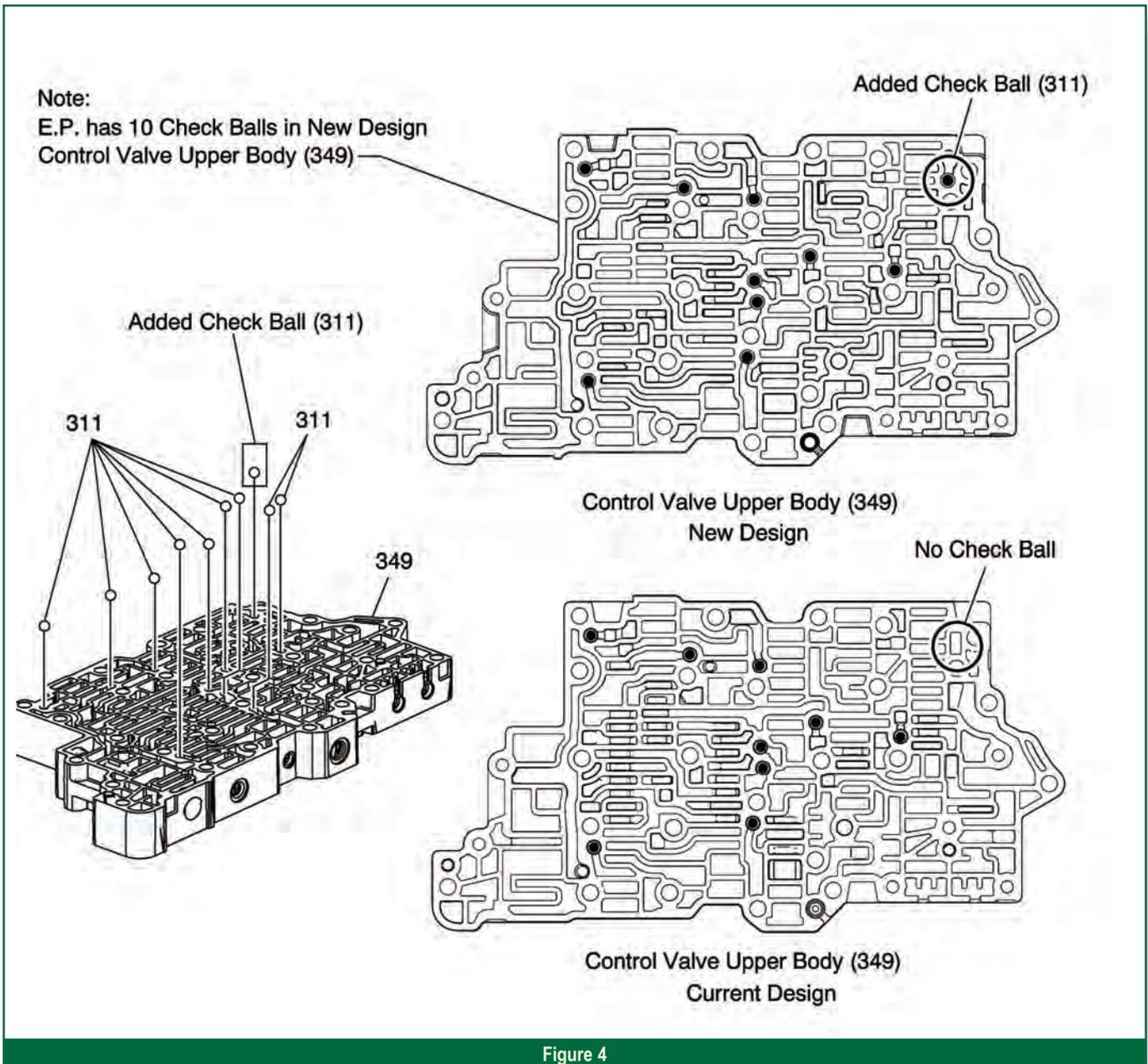


Figure 4

- Three actuator feed accumulator pistons and springs were added to the valve body (Figure 4).
- One checkball was added to the upper valve body.
- All of these valves were updated to a new design:
  - Pressure regulator
  - 2-6 clutch regulator (Figure 5)
  - Low reverse 4-5-6 clutch regulator
  - Clutch select solenoid valve 2
  - 1234 C456 C35R clutch boost valve
  - Actuator feed limit valve
  - 1234 clutch regulator valve
  - 3-5 R clutch regulator valve
- 4-5-6 clutch accumulator piston springs, retainers, and isolator spring were updated.
- Low/reverse snap ring, wave plate, and friction discs were changed.
- 2-6 clutch wave plate and friction discs were redesigned.
- 3-5-reverse clutch snap ring, wave plate, and driven discs were updated.

### Clutch Pulse Learn

The Transmission Electro-Hydraulic Control Module (TEHCM) used with the GEN 2 control system doesn't use pressure switches. Instead, it uses a new process, known as *clutch*

*pulse learning*, to control the shift adapt system.

According to GM, the TEHCM momentarily commands a clutch on at low pressure. It increases pressure pulse commands until it detects an interruption in transmission input speed.

The first characteristic the TEHCM learns is the return spring force. After that, it uses different pulse commands to determine the volume of transmission fluid required to move the clutch piston far enough to apply the clutch.

The TEHCM calculates fill time based on learned volume. It conducts CP Learn during steady conditions in 3<sup>rd</sup>, 5<sup>th</sup>, and 6<sup>th</sup> gears. Here's when the TEHCM enables CP Learn:

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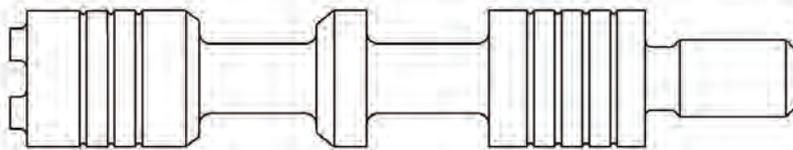
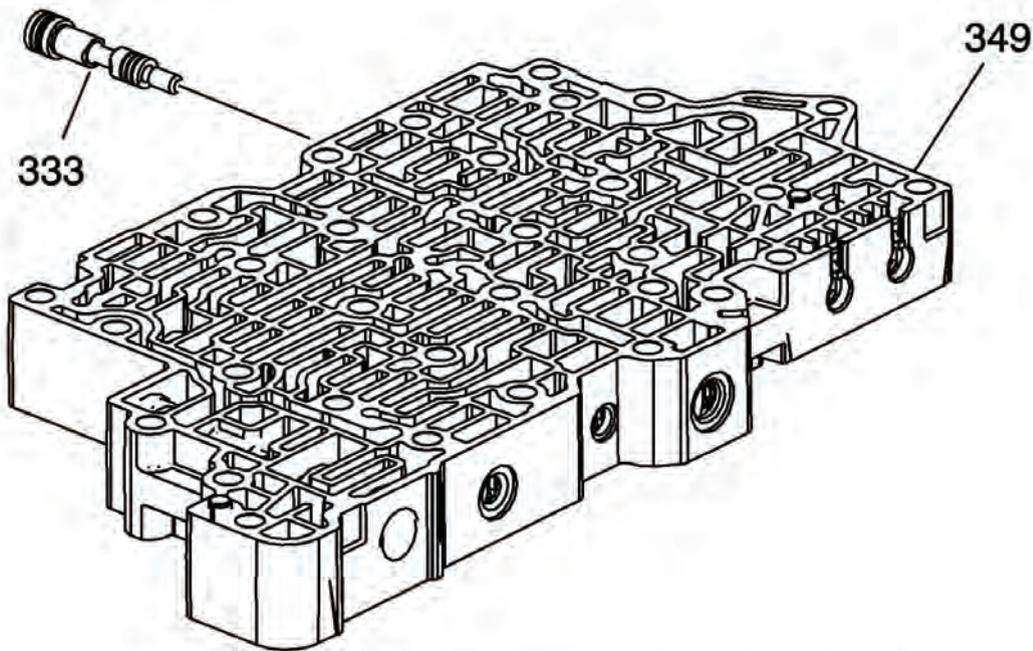
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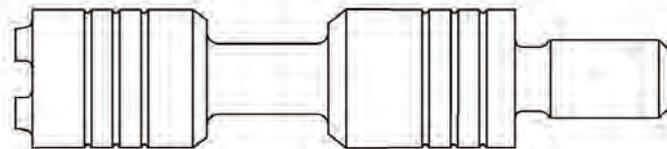
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2-6 Clutch Regulator Valve (333)  
New Design

Figure 5

- 4-5-6 clutch — 3<sup>rd</sup> gear
- 1-2-3-4 clutch and 2-6clutch — 5<sup>th</sup> gear
- 3-5-R clutch — 6<sup>th</sup> gear.

A rough road could cause a false reading for transmission input speed interruption, so if the TEHCM detects a rough road, it aborts CP Learn until road conditions improve.

You may notice a slight, momentary bump or drag when the TEHCM performs CP Learn; this will take place about every 1250 miles (2012 km). This is normal; don't try to correct it.

CP Learn frequency is normally based on the number of clutch apply cycles, but the TEHCM will initiate a CP Learn sooner if the shifts indicate improper clutch fill times.

Well as you can see, a lot has changed in the 6T70 family of transmissions. So keep this article close at hand; it could be a lifesaver. Until next time, remember what Abraham Lincoln once said, "I don't think much of a man who is not wiser today than he was yesterday."



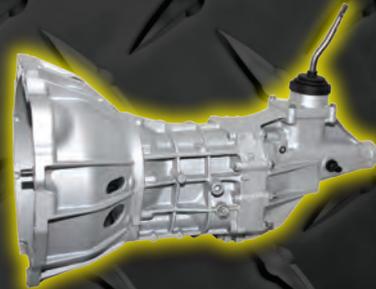


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