

# A *Fast Fix* for the Allison LCT 1000



by David Skora

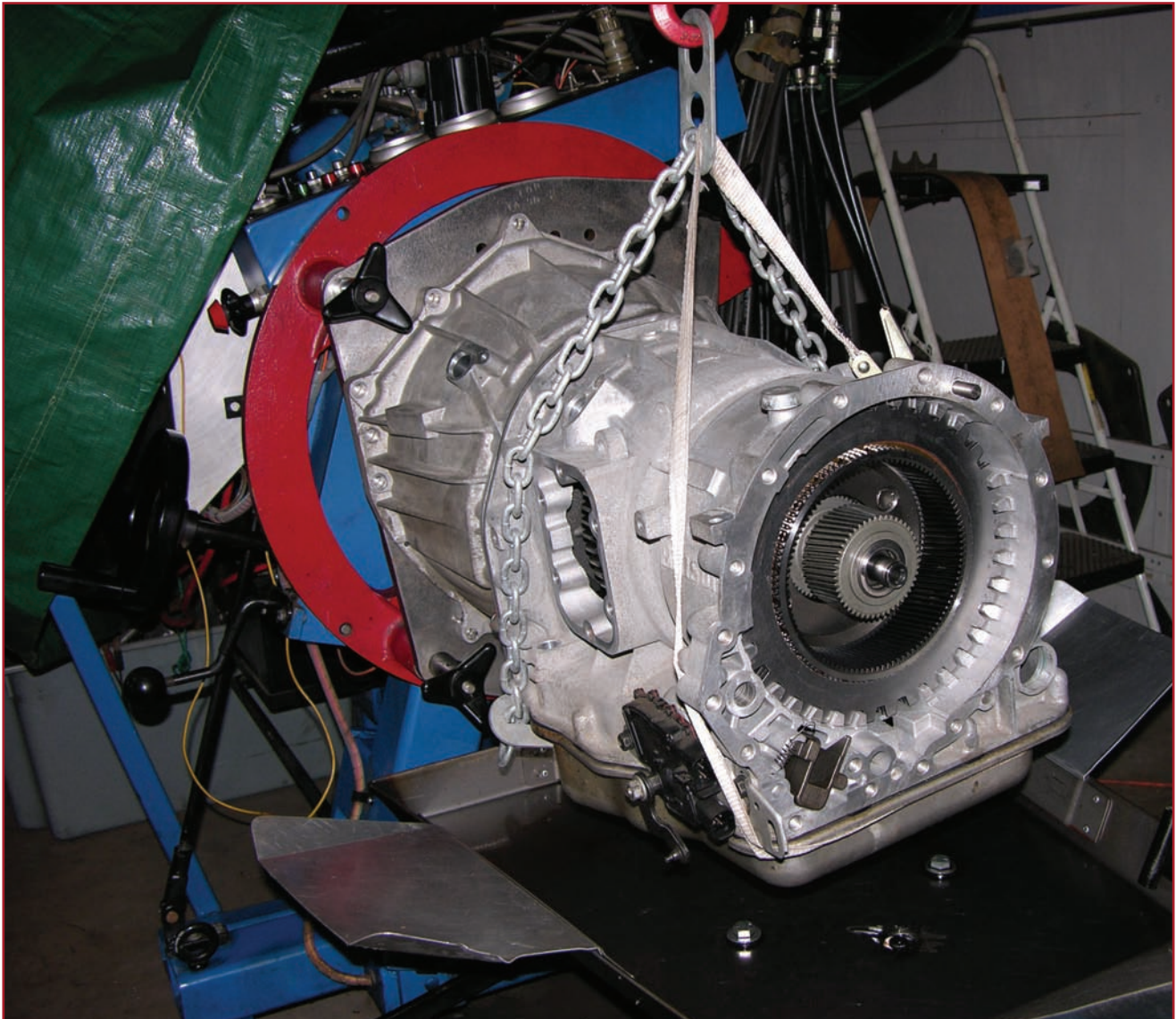


Figure 1: LCT 1000 mounted on a dyno for the purpose of this article.

**M**ost Duramax trucks are bought to do work. Most of the time they do and they keep doing it for a long time. Occasionally, one will fail due to broken 4X4 extension housing. When this happens, you lose forward and reverse operation, and some oil, too.

To repair this, you'll need a new

or preferably updated 4X4 extension housing (29536309). GM and Allison recommend you repair this with the transmission removed. The recommended service and repair information is available from Allison, Alldata, OnDemand and some GM shop manuals. The obvious reason is to place the unit with the bellhousing down, to

make it easier to install and inspect the unit and adjustments for the B5 clutch and geartrain endplay.

In addition, there's also the possibility of finding other parts that are damaged or worn, such as worn planet washers, cracked or worn thrust washers, or glazed frictions. Until something like the extension housing breaks, you



may never know what other damage may be lurking inside. These transmissions can withstand a lot of abuse and still operate correctly, even with bad parts.

Since every situation is different, you'll need to consider the damage you can see and the damage you can't (such as the P2 planet, C4 clutch, C5 clutch, intermediate shaft and related thrust washers) that could be affected. This may be a good time to suggest other upgrades or a complete overhaul.

Take a look at the back end or the geartrain and decide if an in-vehicle repair is acceptable (figures 1, 2 and 3). The following procedures could be used to install and set up a replacement 4X4 extension housing with the main transmission housing mounted in the vehicle.

Keep in mind the C5 clutches, return springs, and the P3 planetary thrust bearings will be the critical items to examine during reassembly. Check the C5 clutch clearance if you're changing the C5 clutch components or the C5 clutch apply piston. Perform the geartrain endplay check and adjustments with the transmission assembled.

- Position the truck so the front of the vehicle is about 2"–4" lower than the rear.
- Move the shift selector to drive. (Note CAUTION)
- Support the main case so you can raise or lower the transmission as needed.
- Remove the transfer case from what's left of the extension housing.
- Raise the rear slightly.
- Carefully remove whatever is left of the extension housing, which usually includes the output shaft and P3 planet carrier.
- Remove the extension housing bolts to remove the remaining part of the extension housing, along with the C5 apply piston. The C5 return spring assembly and park pawl will try to interfere with this, so watch them.

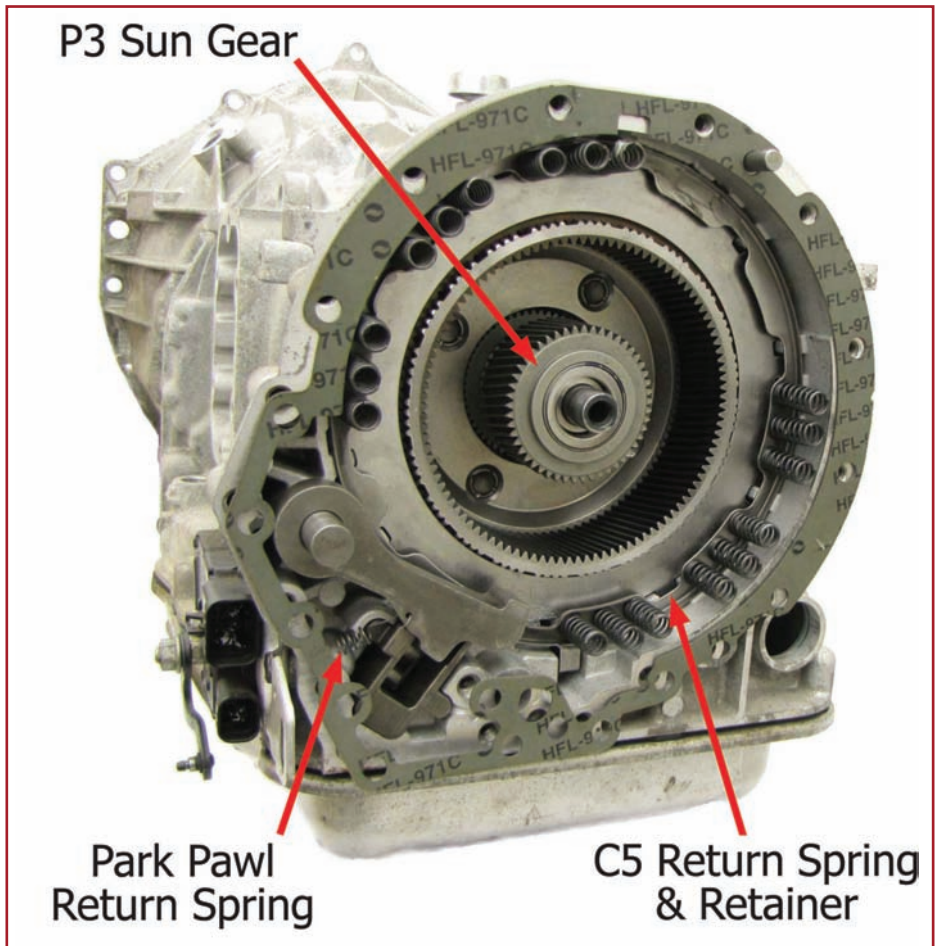


Figure 2: View of back end with everything in place.



Figure 3: View of back end with things out of place.



CAUTION — Be careful with the park pawl while removing the extension housing. It will help to move the shifter to drive. The park pawl may try to come off with extension housing. At the same time, the return spring, which is anchored in the rear of the case, will try to hold onto to the extension housing. To avoid breaking the return spring, unhook the spring from the park pawl. If you try removing the spring from the rear of the case, the spring will probably break (figure 2).

Before going any further, examine the back end of the unit. If it looks like figure 2, it may be your lucky day. If it looks more like figure 3, the intermediate shaft, P3 sun gear, or P2 ring gear have shifted farther back. You will need to check for mislocated thrust bearings or damage (figure 4).

NOTE — Figure 5 shows the rear of the LCT with as much of the geartrain as can be removed from the rear of the case.

Depending on the damage, you should also remove the P3 planet carrier, bearings, output shaft, and C5 clutches and inspect them for damage or debris.

Once these are out of the way, inspect the P3 sun gear and ring gear, main shaft, related bearings, case, park pawl, etc., for damage or further problems. Use your judgment to decide if any other internal parts have been damaged.

There are some things to check before reinstalling the housing, start with the C5 clutch endplay: The endplay is based on the distance between the reaction plate at the back of the C5 clutch stack and the rear flange at the rear of the case. If you're able to use the original clutch stack and the C5 apply piston, the clutch clearance will be the same.

If you've changed the C5 apply piston, make sure the height above the extension housing is the same as the original. If so, you'll have the same clearance as before. If you've had to change any of the C5 clutch stack or the apply piston height is different, you should measure the distance from the clutch reaction plate to a straightedge across the



Figure 4: View of P1/P2 planet assembly and thrust washers.

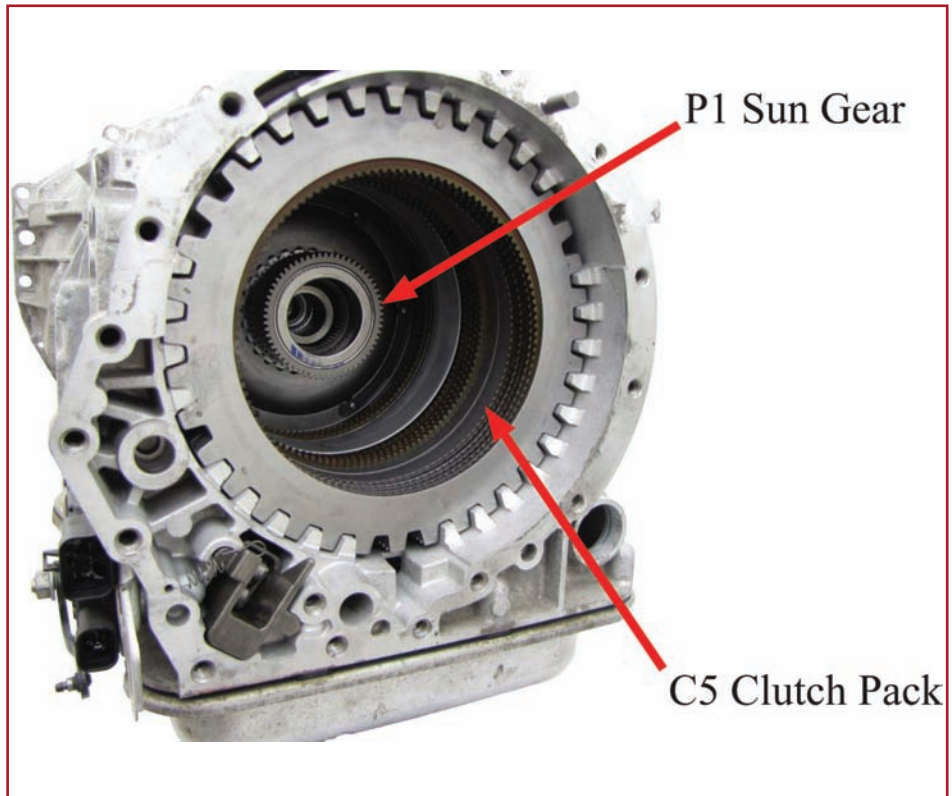


Figure 5: View of LCT 1000 with rear geartrain removed.

rear flange of the case (figure 6).

The only procedure we can't perform using the factory method is the endplay. Technically the endplay is checked with the unit assembled and positioned with the bellhousing

on a stand. To check it, you have to pry the PTO gear up and down, with a dial indicator measuring the input shaft movement. It should be between 0.0110"–0.0610".



# UNBEATABLE

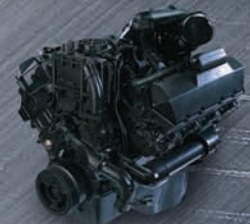
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Here's an alternate method:

- Temporarily assemble the planet assemblies and intermediate shaft with the rear gasket in the case.
- Install the 4X4 extension housing with the C3 planet carrier and output shaft installed. Don't tighten the output shaft flange nut.
- Remove PTO cover or the Turbine Speed Sensor.
- Use a rubber or plastic hammer to tap the output shaft forward, to seat or zero-out the shafts, thrust bearings and washer clearances.
- Set a dial indicator against the end of the output shaft and zero it.
- Use a pry bar to pry the PTO gear back to get a measurement.

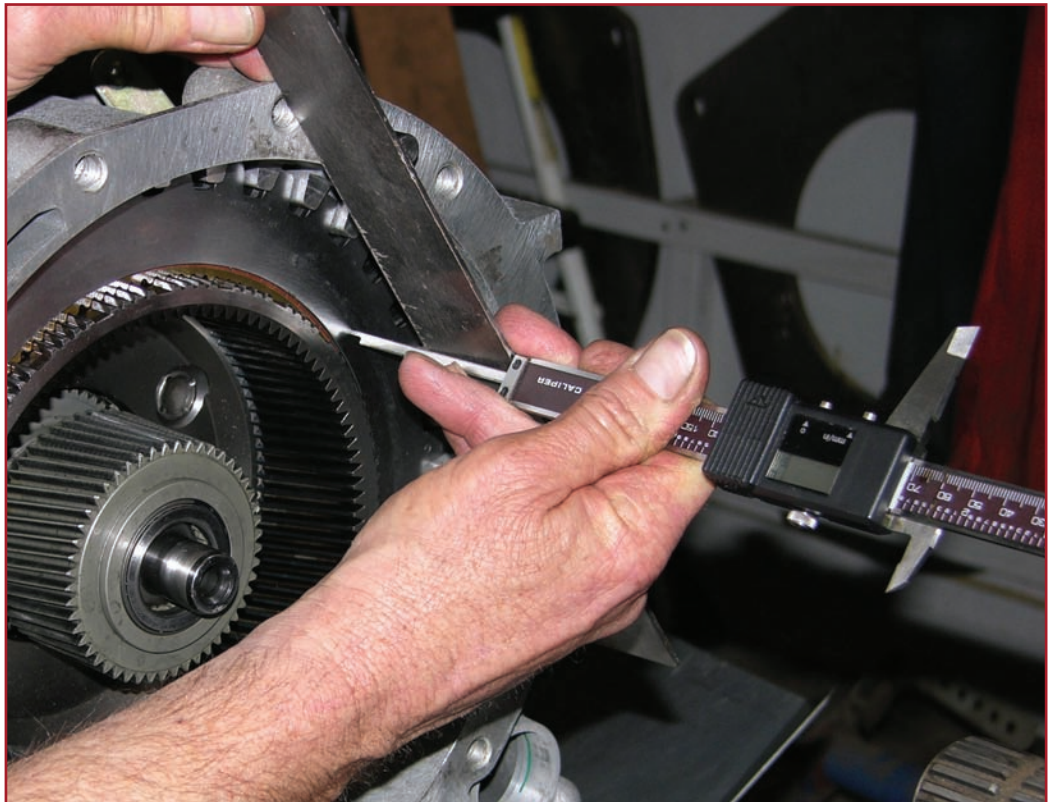


Figure 6: Checking C5 clutch depth from rear of case.

Adjust the endplay by changing the selective shim between the output shaft spacer in front of the ball bearing, inside the 4X4 extension housing.

- Remove the components used to check the endplay.
- Install the geartrain, clutches and shafts.
- Install the correct endplay washer.
- Install the C5 spring retainer with plenty of assembly grease to hold it.
- Install the park pawl, etc.

The back of your LCT 1000 should look like this (figure 7). There isn't much more to say, except tighten the output flange nut with pin drive wrench J 43769 to 40-50 ft-lbs.

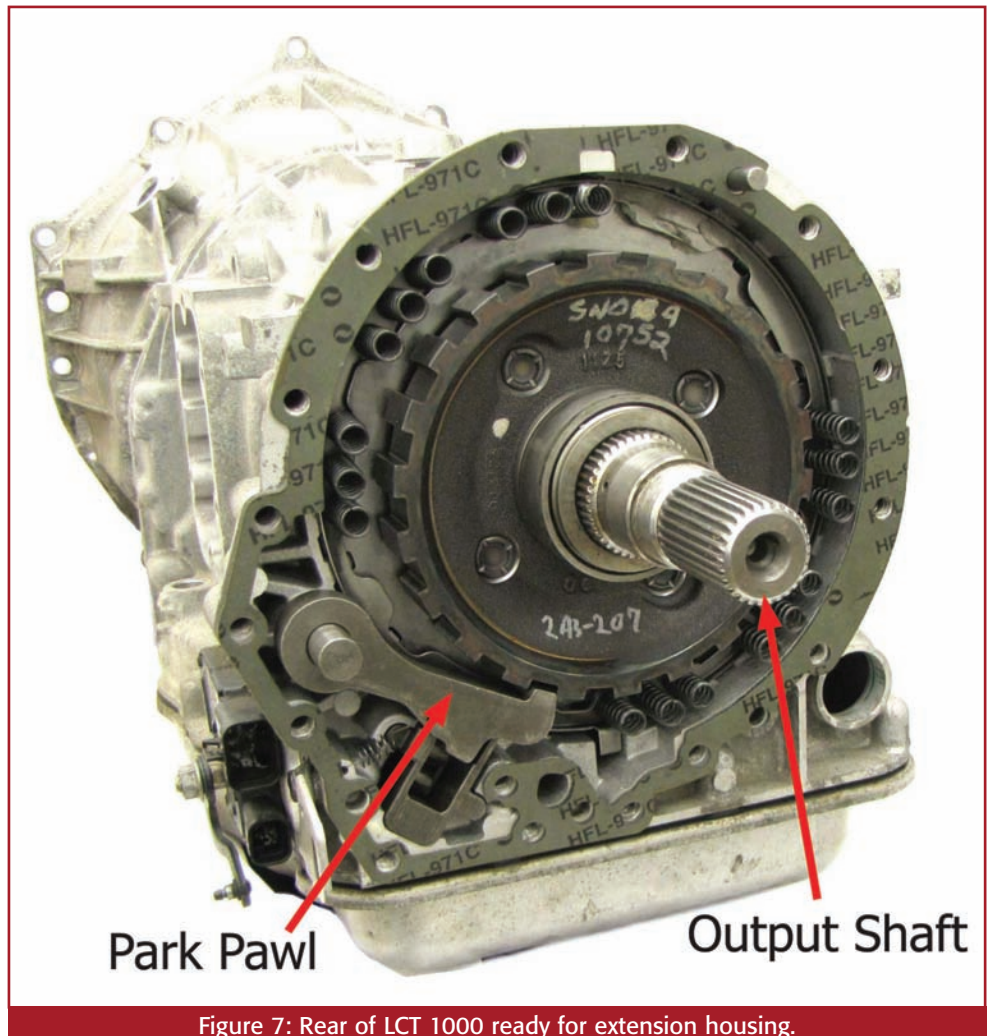


Figure 7: Rear of LCT 1000 ready for extension housing.





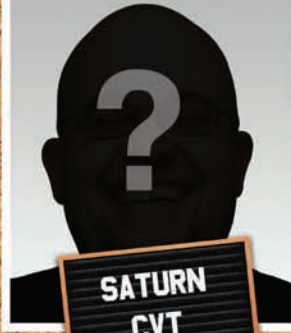
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