

It Jumps Out of Gear!

by Tom Endy

The Model A Ford Transmission:

Jumping out of gear is a common complaint one often hears about the Model A transmission. Ford issued a service bulletin (December 1928, page 303) stating that the cause is excessive clearance between the main shaft (A-7060) and the two slider gears (A-7101 and A-7100). To correct this phenomenon Ford decreed that when ever one of these parts is replaced, they must all three be replaced as an assembly with hand selected and fitted parts. I have come to the conclusion that this was an excellent way to increase parts sales, and is not necessarily the culprit. Ford would have one believe they had hired Henry Aldrich to sit in the stock room selecting the three parts into matched assemblies.

A shopping List:

There are a whole host of factors that can cause the jumping out phenomenon. The main shaft clearance may be one factor, but I believe it is way at the bottom of the shopping list. A transmission that wants to jump out of gear may be suffering, to some degree, from several of these factors. Any one of which may not be sufficient to cause a problem, but the cumulative affect may be what's going on. It's kind of like a plane crash. Usually there is no one factor that causes the accident; it is the cumulative affect of a number of them that brings the plane down. When addressing a jumping out problem it is a good idea to consider and inspect for all of the factors and correct them as you proceed.

The Tower:

The easiest thing is to attack the tower first. Try another known good tower before you go to all the trouble of pulling the transmission. A number of worn parts in the tower can cause the jumping out. The two rails (A-7240 and A-7241) have very defined slots cut into them to hold the shifting forks in the position selected. The rails can become worn, leaving little definition in the slots, with wear trails leading to and from them. The two lock plungers (A-7233) can also be worn on the ends so as to not snap smartly into the rail slots. These parts should be replaced if found excessively worn. The repo lock plungers work ok, but I have no experience with repo rails, I usually look for good serviceable

originals. The two shifting forks (A-7230) can become worn in the area where the ball on the end of the gearshift lever (A-7209) operates their movement. This area can be welded up and filed down to the original dimensions. The ball on the end of the gearshift lever can also become worn square This too can be welded up and filed down to approximately the half inch diameter it originally was. A repo gearshift lever replacement will also work very well. A nice fit of the shift lever ball inside the two cut outs in the two forks helps hold the gears in the position selected.

The Transmission Itself:

The gears inside the transmission are all straight cut as opposed to being helical cut (at an angle) as is the case in future transmission development. Straight cut gears want to be in reasonably good alignment or they may decide to "walk" out of the selected position. There are a number of things that can cause misalignment. The pilot end of the input shaft (A-7017-B) can become worn and grooved from operating in a seized flywheel bearing (A-7600). This causes the input shaft to wander around and contribute to jumping out. The pilot end can be repaired by machining it down and pressing on a sleeve to snugly fit a flywheel bearing. The flywheel bearing should always be replaced when installing a new clutch. The roller bearing (A-7118) that rides inside the rear end of the pilot shaft and on the front end of the main shaft may be failed as well as the race surfaces of both shafts. This will also cause the two shafts to wander around (and also make a lot of noise). The very front of the high\second slider gear (A-7101) has slots cut into it that grab hold of the end of the rear gear on the pilot shaft when shifted into high gear. These slots can become worn, losing their definition, causing a sloppy union. The same can be said for extreme wear found on the rear of the gear on the end of the pilot shaft. Inspect the front slider gear carefully, and if the slots appear to be excessively worn, replace the slider. Excessively worn teeth on the cluster gear (A-7113) and either or both of the two slider gears can also be a contributing factor to jumping out. It is also a good idea to check the fit of the main shaft and the two slider gears just to pacify Ford. Forget about buying a new matched set, however, Henry Aldrich retired years ago.

600W Lubrication:

Lubrication of the transmission was originally specified to be 600W oil. No one today knows exactly what that was. Each Model A parts supplier sells something called 600W, but they all seem to be different. The 600W Bratton sells is my choice. It is a mixture of Shell gear oil and STP. It is very thick and stringy and clings well to the main shaft and sliders. The selection of lubrication used, I believe, plays an important factor in not jumping out of gear. The use of thinner oil, on the other hand, is a contributing factor. Bratton's 600W is also recommended for use in the differential and the steering box.

Outside The Transmission:

The alignment of other components in the Model A drive train should also be considered. One very often overlooked area is the alignment of the clutch housing that sits between the rear of the engine block and the bell housing. Two horse shoe shaped brass shims, .010 each (A-6400) should be installed at the two holes the accelerator pedal mechanism bolts to. The shims go between the engine block and the clutch housing ears. Many times these are found missing. Their purpose is to compensate for the thickness of the gasket used between the engine block and the lower part of the clutch housing. The gasket and the shims should be the same thickness. However, today they are all over the map. Depending on the supplier, the gasket can be anywhere from .006 to .018 thick. The proper shimming and alignment of the clutch housing is another subject however. A very good article by Bill Barlow on this subject appeared in the April 2004 publication of the Victoria Association Bustle. Many clutch housings have been damaged over the years and cannot be properly aligned and should be replaced. Much of the damage comes from people changing a timing gear. The front of the engine is jacked up after the front motor mount is removed so as to be able to get the front timing cover off. If the engine has the original solid rear motor mounts, something has to give because the engine can't bend. Usually the clutch housing cracks at the two bottom mounting bolts. Most clutch housings seen at swap meets have the offending two cracks. Misaligned or out of tolerance clutch housings are also an avenue to premature clutch failure.

Poor Quality Reproduction Gears:

Poor quality reproduction gears can be a definite factor in the jumping out phenomenon. A few years ago the Model A market was subjected to gears manufactured in Argentina. I had a personal experience with such gears. A car came into the shop that would not stay in any gear. The transmission had been recently overhauled. The cluster and two slider gears were brand new and had Argentina stamped on them. The two sliders appeared to fit snugly enough on the main shaft, but all three gears looked very strange, like they had been machined out of a large block of steel. The transmission was removed and reinstalled twice before it was decided to replace the three gears with some used originals. The problem went away after that.

Good Quality Reproduction Gears:

In the past few years good quality U.S. made gears have become available from Bratton, Snyder, and Mac's. John LaVoy of Model A Times fame advised that he installed a complete set of new U.S. made transmission gears in a car and drove it to the MAFCA Portland National last summer. John reports that the transmission was very smooth and quiet. This is good news as good serviceable original gears are becoming increasingly hard to find. Purchasing brand new transmission gears is an expensive route to take however. ☺



Not exactly 600W