Overdrive Issues

I recently rebuilt a members gearbox and overdrive. This was not the first one I have done but certainly one that gave me a real problem. After the rebuild the member picked up the box and took it home to fit. A week or so later he called me and said he had just got the box fitted and took the car for a test run and found it would no go into OD.

I asked him to bring the car to my place so I could look at it and do all the normal test. This he done and during a test run I noticed that when in OD, it felt and sounded like the clutch was slipping. Also when direct drive was selected you could feel that it went into a solid direct drive just like a normal box coming out of OD.

Checked the selector adjustment, OK. I decided that the box had to come out again so the car was taken home and box delivered back to me the next day. I put it on my test stand and checked the pressure, 420lbs in or out of OD with a momentary drop when OD was selected. Must be mechanical.

I pulled the OD from the box and striped it down. Big mistake, I should have more closely inspected it as I striped it as will become obvious later. After inspecting every part and checking clearances, I was stumped. Every thing looked good. A lot better in fact than most other ODs I have attacked.

Back to the paperwork. I re-read some documents I had downloaded from the internet about 10 years ago. On about the third document I saw it…….what a fool. The writer explained how he had built an OD and on test he found that the OD clutch was slipping, just like this one. He also did all the checks I had done and found no problems.

He was smarter than me though and investigated the eight springs that push the OD into direct. The oil pressure acting on two pistons push against these eight springs to engage the clutch that takes the unit into OD. His measurements showed that the long spring had the same number of turns (about 31) but had a 0.010” thicker wire than the short springs. Short springs 0.084”and the long springs 0.094”.

This means that the long spring binds up (can no longer compress) about 0.310” before the short springs. Now when the springs are fitted, the short springs are supposed to be fitted to the inner guide post on the thrust ring which are closer to the OD adapter plate where the other end of the springs are located. All eight springs are located on the same plane on the adaptor plate but the inner post on the thrust ring are much closer the adaptor than the outer post. He found that if one or more of the springs were fitted to the wrong post, the spring would bind and prevent the clutch from fully engaging. The spring would act like a stop. Made sense to me.

The springs on my box all looked about the same length. They are supposed to have about 0.10” difference in free length. My springs only had about 0.050” diff. Given the only other difference was the wire thickness, they all look the same and I had mixed one or more of them. If I had checked the build as I dismantled it, I may have picked up the problem before I had fully stripped it. This would then only required me

to pull the OD, change the springs and re fitting the OD. It would not have required to strip it.

This is a later box and in the earlier ones there is a noticeable difference in spring length. If you get new ones, they will be the same as the later ones so be careful. They should be colour coded on one end though, red for the long ones and yellow for the short ones. Definitely a trap for young players and older pretenders.