

Technical Tips

SLUDGE BUILDUP IN OVERDRIVE UNITS

The following letter was sent to Ed Hellmann along with a membership renewal form from William R. Young of Roy, Utah. Bill noted that in addition to his two 1935 DeSoto Airflows, a coupe and a sedan, he also has three Dodge trucks, a '37 1 1/2 ton auto transporter, a '34 light pick-up with dual side mounts, and an extensively modified '34 1 ton with an early large pick-up bed. Ed.

Dear Jim:

After reading David Askey's article in the Oct. '84 Newsletter I feel compelled to also inform the Airflow club people of another problem with sludge and residue buildup. This occurs in the overdrive unit. I feel it is a must on all units to be removed, disassembled and cleaned. The disassembly must be complete to removing the centrifugal overdrive engaging dogs. They are adjustable with machine screws on springs which internally get sludged up. Where these two halves slide against each other there are two small springs and steel balls counter-bored in each with indents for the ball in the other half.

Then the free wheeling rollers and springs and cage should be removed. Be careful in reassembly to install back in the same way it came out and not upside down. The reason this has to be disassembled is because there are lubrication holes behind the cage that get filled and clogged.

The most important place to be cleaned are two steel slingers which are crimped on their mating parts and cannot be removed. One is at the rear of the overdrive external ring gear which is riveted to the final drive shaft. The other is at the front of the five gear planetary unit and lets the lube flow through holes in the five shafts to the needles on the gears. I have never disassembled one of these because it appears that the shafts and ring plates are pressed together and flush riveted. What apparently happens is that the centrifugal force fills these slingers with residue almost completely and then this in turn blocks the lube holes. These slingers cannot be cleaned just by solvent or by hot or cold tank soaking. I usually wash all parts in solvent first and then go for final disassembly. To clean the slingers I use either small music wire or welding rod. The residue is usually packed as hard as putty and you have to literally dig it out. Go round the ring several times with the wire probe and then hot or cold dip the parts. Then check again with the wire probe and wash repeatedly in solvent while probing.

This overdrive unit is the best ever made and the strongest but the overdrive gears and the needle bearings



This is Bill Young's '37 Dodge Transporter. He also has two Dodge pickups as well as a '35 DeSoto sedan and a '35 DeSoto coupe.

will starve for lubrication at speed if clogged. The unit is designed to pull lube into the outer planetary hub - or what I call the ring gear. As there are 4 1/2" holes drilled on an angle toward the direction of rotation which are evenly spaced around the ring gear. The oil then flows through and out both ends, the free wheeling hub, and the five planetary gears and then overflows out the slingers.

I've disassembled many of these units and am doing three of them right now. I've never found one that wasn't filled up in the slingers no matter how clean and little wear they had.

There is one part that seems to wear somewhat and in some units I've found them worn about .030 to .050. This is a bronze thrust washer .345" thick that is on the back side of the stationary hub gear on which the five planetary gears rotate and the unit thrusts against. This washer has internal teeth cut in it so as to slide over the teeth of the hub gear and up against the snap ring at the front end of the hub gear. When I find them with excessive wear, I slide them off and turn them around to the side that isn't worn. The internal part of this washer where the teeth are cut makes it so there is no wear there. So when turning it around you have the same stand off as a new washer.

Another good feature of this overdrive unit is that it can be removed from the transmission without removing the transmission from the car. If you have a good running transmission I have not found them to need cleaning like the overdrive does.

I've looked up in an old interchange book and found that these old transmissions were also used in 1937 on Studebaker Presidents and as late as 1939 in the eight cylinder Chryslers. The basic T-85 gear box was also used in '49 and up Lincolns with a smaller Warner overdrive and had a side shifting case. I talked to a fellow a few years ago who was a transmission

specialist who said the T-85 was used as late as the mid-sixties especially in the high performance Ford Mustangs (Mac I etc.). I am using a cluster or counter shaft gear from one of these now with a matching low gear. The only difference I find is the low gear is a little thicker in the hub area, not the teeth, and must be faced off about 1/8" on the back side. The cluster gear has a smaller center where the original Chrysler transmission uses a caged hyatt roller bearing, the Mustang cluster uses the separate smaller needles and spacer washers like many modern transmissions, having two rows of needles front and back with a long spacer in between. Then another difference is the front or large gear end of the cluster is not recessed like the old

Chrysler ones, so you will have to use a thin thrust washer or counterface it to the same depth as the Chrysler gear. The only other thing I can think of that you will have to be careful with is the stationary hub gear which is bolted inside the overdrive case with 3 5/16 inch bolts and bent over lock washers. On the back side of this hub which consists of three plates are cutouts for eight torque springs, but there are only four in place. This is much like the hub of a clutch disc and takes the shock when the overdrive snaps in. The thing to be careful with is that these four springs tend to fall out when removing the hub. They must be reinstalled in their original slots because if installed in the wrong slots they will fall into some cutouts for lube flow that are on the face of the case where the hub face rests. Also, the three holes mounting the plate to the case are not evenly spaced so it only bolts in one position.

The first time I disassembled one of these units and those springs fell out and I saw the eight slots for them, I must have searched for them for nearly a full day before I finally determined there were only four used.

I hope this helps.

Sincerely,

Bill Young
Roy, Utah

Editor's Note
Photographs

Please do not write on the back of photos you send to the Newsletter with a pen. Pencil is OK. If not completely dry the ink comes off and sticks to the next photo. Ball point ink is particularly bad. Ed.

We have a number of photos which have appeared in the Newsletter but have not been returned. We hope to get these back to you within the next week or two. Again, our thanks for sharing them with the club. Ed.