

Transmission Assembly Procedure

by Tom Endy 2021

Place the cleaned up and painted transmission housing in the work stand and break the sharp edges of the rear holes of the cluster and idler shafts with a rotating grinding stone so as to not tear up the O-rings on the two shafts during installation.

Install the bearing stop snap rings in the front and rear of the housing if it is a later housing. The early housings have a metal stop that is integral to the housing and does not use snap rings.

Lubricate each part with 600W oil before installing.

Install the cluster gear by lowering it into place in the housing after first installing the two roller bearings and the spacer sleeve inside the gear. The long roller bearing is positioned to the rear, the spacer sleeve in the center and the short roller bearing in the front. With the gear in position install the cluster shaft in from the front after removing the O-ring. Push the cluster shaft through the cluster gear until it protruded out the rear of the housing. Re-install the O-ring and tap the cluster shaft back into position in the housing. Make sure that the cluster gear thrust clearance is less than a nominal .010". The very early housings required a bronze thrust washer at each end of the cluster gear.

Install the idler gear, making sure that the "snout" on the gear faces forward. Slide the idler shaft into place from the back of the housing.

Install the crosspiece and install and tighten the 9/16" hex bolt that locks and prevents the two shafts from rotating. Coat the threads of the bolt with sealer. Note that the original cluster and idler gear shaft assemblies used a different style of cross piece that was thicker and used a one inch long 9/16" hex bolt. Cluster and idler shafts sold today require that a "thin" cross piece and a 3/4" long 9/16" hex bolt be used, otherwise you will jam the transmission up if you use the original one inch long 9/16" hex bolt.

Prepare the main shaft for installation. Install a new roller bearing stop that resembles a key ring on the front end of the main shaft if the shaft is a later shaft. The early shafts had the roller bearing stop built into the shaft and does not use the key ring style stop. Install the oil slinger to the rear of the shaft making certain that it is installed correctly so that there is a nominal 1/16" space between the baffle and the bearing. Remove one seal from one side of the sealed bearing with a screw driver and orient it so the sealed side of the bearing faces outboard. Use a shop press to press the bearing into place.

Install the main shaft through the rear of the housing and at the same time install the two slider gears on the main shaft. The large gear to the rear, the small gear to the front. Make sure the two shifting fork slots are facing each other.

Prepare the input shaft for installation. Install the oil slinger to the rear of the shaft making certain that it is installed correctly so that there is a nominal 1/16" space between the baffle and the bearing. Remove one seal from one side of the sealed bearing with a screw driver and orient it so the sealed side of the bearing faces outboard. Use a shop press to press the bearing into place. Install the sleeve and snap ring behind the bearing. Note the sleeve and snap ring are sold today to replace the "C" shaped device originally used in production.

Install a short roller bearing inside the input shaft gear and install the shaft into the front of the housing. Use a soft hammer to tap it into place.

Install the front bearing retainer housing to the front of the transmission over the input shaft. Coat the gasket with sealer. Orient the retainer so that the hole for the spring to the throw out bearing is at the top. Install and tighten the four 1/2" hex mounting bolts. Coat the threads of the bolts with sealer.

Install the rear bearing retainer housing to the rear of the transmission. Coat the gasket with sealer. Orient the retainer so that the hole for the grease fitting is at the bottom right side of the transmission when looking at it from the rear. Install The four 5/8" hex mounting bolts. Coat the threads of the bolts with sealer. Torque the bolts to 45 ft. lbs. Safety wire the bolts.

Install the grease fitting to the rear bearing retainer.

Install the fill plug. Apply sealer to the threads.

Remove the transmission from the work stand and install the drain plug. Apply sealer to the threads.

The other two gaskets from the gasket set will be used when the transmission is mounted to the bell housing and when the tower is installed.