

## Rebuilding a Borg-Warner T-10 by Joe Fisher

<http://mysite.verizon.net/partshouseauto/Disassembly%20T-10-3.htm>

There are different approaches to rebuilding the T-10. The order of disassembly and assembly will differ depending on who you talk to. This is only one way. This is only for the early T-10's as the Super T-10 has some different procedures.

The Muncie is very similar to the T-10. I will be rebuilding one at a later date.

### Let's get right to disassembly.

After draining the transmission and removing the front bearing support I mount the trans on my engine stand.

Using pliers or wrench put the trans in 2<sup>nd</sup> gear. This allows the side cover to be removed without any interference.



Remove all bolts and tap the cover with a mallet and remove.



Notice how the fork clears the reverse idler shaft boss.



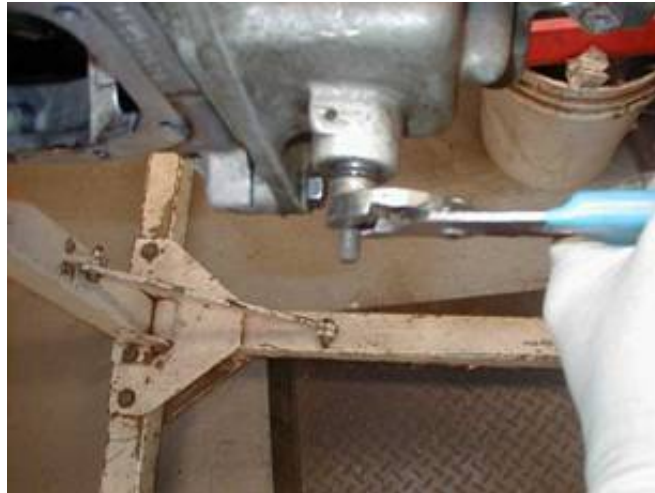
Remove speedo retainer bolt and plate. Gently pry out the speedo assembly.



To remove the reverse shaft lock pin I use a larger punch to start the pin moving. ALWAYS drive it bottom to top. Once I got it moving I use a 1/8 punch to remove it.

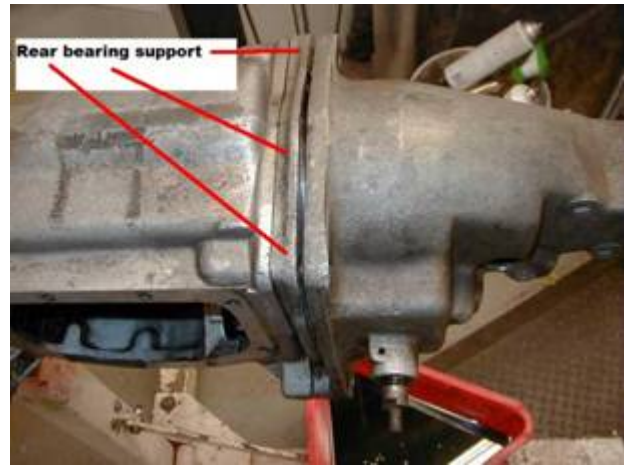


Now pull out the reverse lever until the O-ring is exposed.

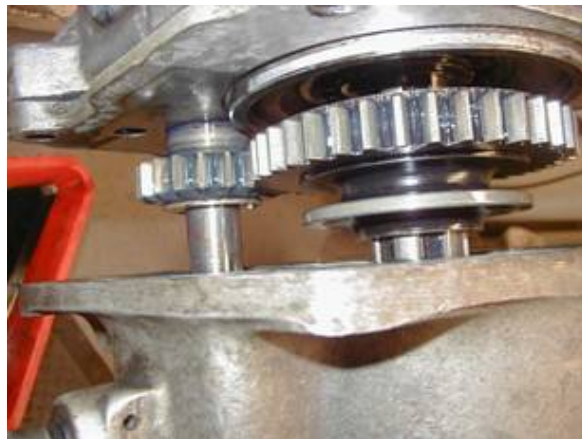


Remove the rear seal, then the tail to main case bolts. Tap the end of the tail housing to break it free.

Hold onto the rear bearing support as you wiggle the housing off. Make sure the rear bearing support stays in place.



This is the reverse gear and idler.



Looking into the tail housing, you will see the reverse idler shaft, thrust washer, reverse lever and fork and detent ball.



Measure the distance from the end of the shaft to the speedometer drive gear, which we will use later.



Remove the reverse idler gear.



Move the 3<sup>rd</sup>-4<sup>th</sup> slider forward engaging forth.



Remove the front bearing retainer. There is no seal on these early units.



Get your self a good set of snap ring pliers. Here are two different types I use.



Remove the front snap ring and spacer washer.



Using two small pry bars, or screwdrivers, pry out front bearing about a 1/4" at a time and while holding back with the pry bars have someone light tap the end of the input shaft until the bearing is removed.



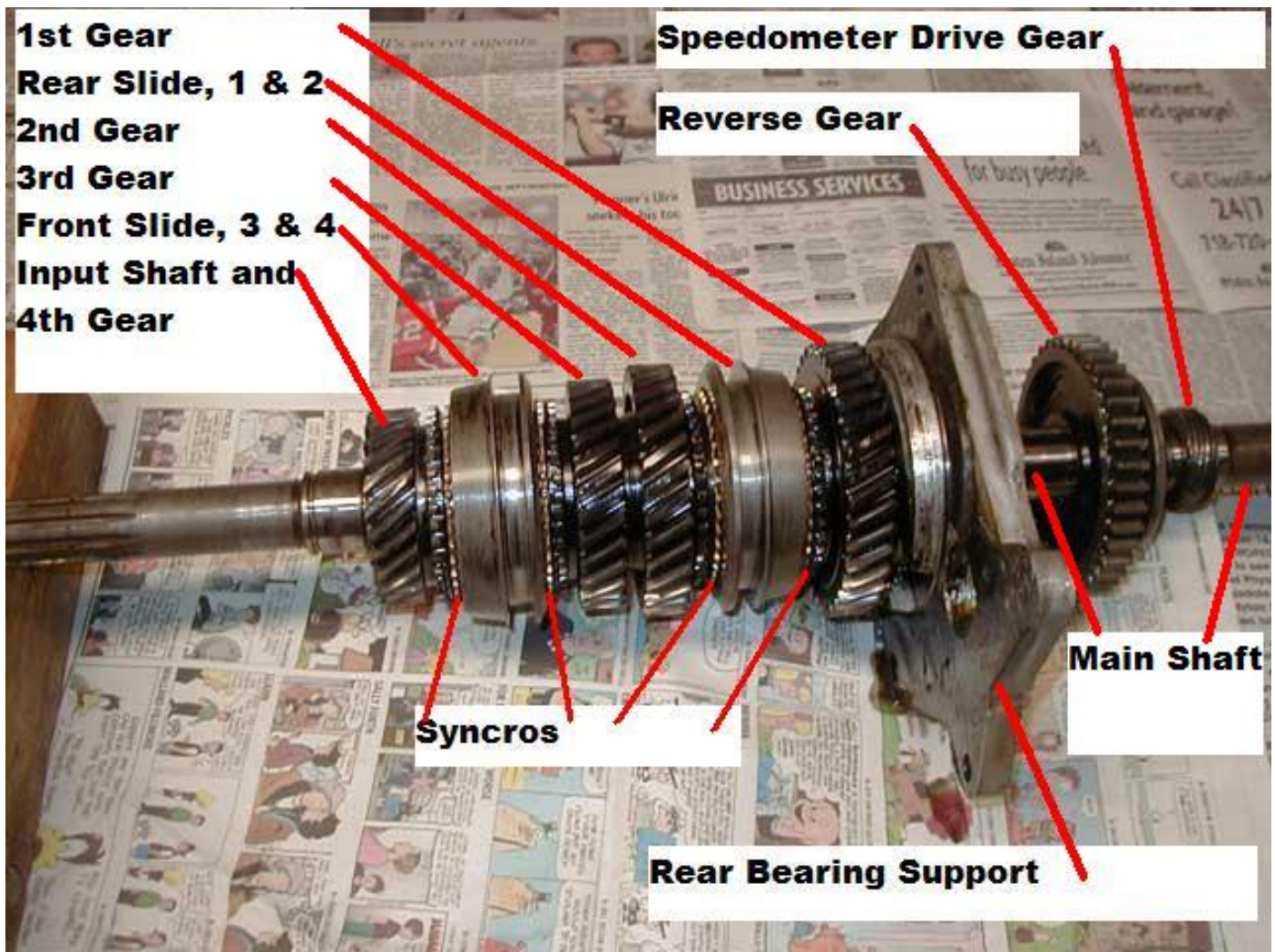
Now I pull the complete assembly out of the case. I push on the input to keep it on the shaft so I don't lose the needle bearings.



At this point I put my hand through the side of the case and guide the assembly out. It is now out and ready to go on the bench.



Now that it is on the bench take pictures!



Pull the input shaft off the main shaft.



Remove snap ring and pull the front hub and slider, syncros, third and second gear, rear slide and syncros off of the main shaft. Be careful of the flat needle roller thrust bearing. (Torrington)

Note how the slides go on.



Remove the rear snap ring.



I used a press to remove the rear hub and spacer and then to press off the speedometer gear.



Now slide everything off the shaft and note the order and orientation of the parts.



Remove the idler gear and washer from the case.



Drive or press the counter shaft from the housing. Note the half moon woodruff key.



Completely remove the shaft while lifting the counter gear slightly.



Remove counter gear and thrust washers. Let the bearings and spacers fall into a container.



Before removing the reverse lever, use a small file and debur the end of the shaft where the lever rides. If you don't there is a chance of scoring the bore and it makes it difficult to remove. Notice the scoring of the bore due to a previous rebuild. There is the detent spring.



Just push the lever into the case and remove the spring, ball, lever and guide.



There are a few methods to remove the bushing. Some people use a hacksaw blade and cut a slot in the bushing to collapse it.

This is one method I use sometimes. It uses a bolt, nut, some washers and a large washer.

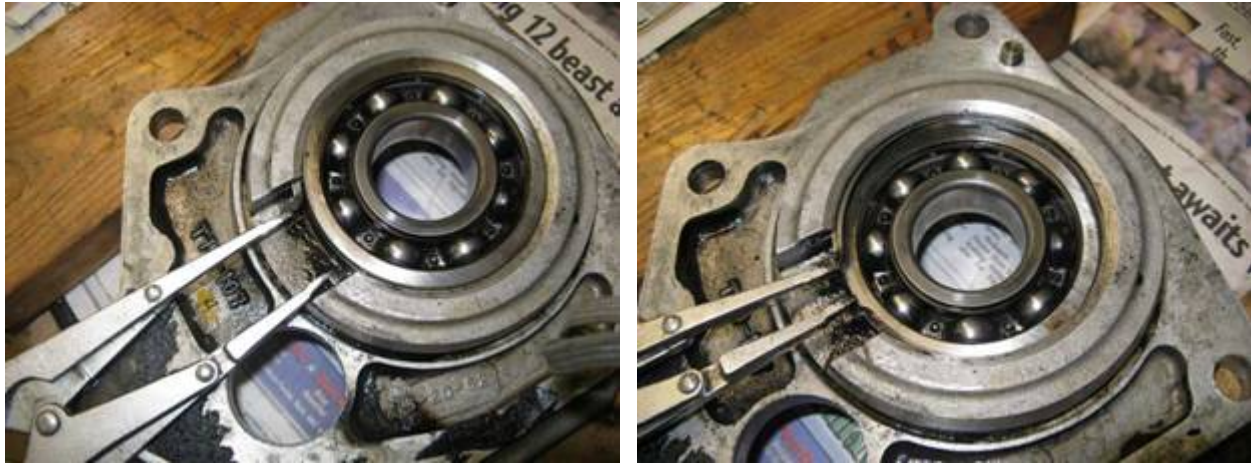
The inside washer is ground down to just a little smaller than the ID of new bushing.



This is the tool I use; it even works with the main shaft still installed.



To remove the rear bearing put the bearing retainer on two blocks and with a snap ring pliers spread the ring and lightly tap the bearing out of the retainer.



Now to the side cover. Remove the two forks. Debur the ends of the shift levers as we did for the reverse gear. Pull the two levers out of the cover. There will be two balls, lock out pin, a spring and a sleeve. **This spring is different then the reverse one so keep separate.**



Now that everything is apart it is time to clean and inspect all the components.

Before I rebuild a trans I want to know what was wrong with it so I can focus on the those problems.