

## T5 Dis-assembly - Assembly Procedure

The following procedures are issued to guide the dis-assembly and re-assembly of the MTE T5 tailhousing for the Sunbeam Tiger.



Figure 1. Here's the trans, mounted in the vise, ready for dis-assembly

The steps begin with the removal of the thin cover plate over the shift box. Use care not to bend this plate as it will be re-used. With the Shift Blocks now exposed, the split pins are driven down into the holes so that they disengage with the shift rod. They do not have to be driven all the way down, only to the point the shift blocks are loose on the shaft. If you only drive them this far, they will be retained in the blocks, and will not fall thru the open bottoms..



Figure 2. Use a 3/16 drift pin to tap the split pins down into the bodies of the shift blocks. You should be able to remove the rear block from the shift box at this point. Then continue driving the pin out the bottom. Note this block has no tang on the bottom

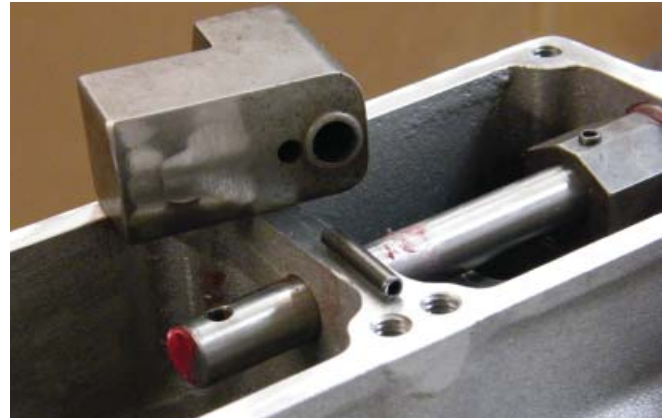


Figure 3. Here we have the rear shift block removed from the box and the pin driven out of the block.

Repeat this split pin movement process with the front shift block. Then you are ready to remove the bolts that connect the tailhousing to the main T5 case assembly. The larger bolts have 15 mm hex heads and the two 1/4" bolts require a 3/16" hex wrench. The socket head bolt under the shift box requires an 8 mm hex wrench.



Figure 4. Here's the tailhousing, ready to be removed from the main case. I hope you've drained all the oil out of the transmission by this point, or you will be getting a major flood as you tap the tailhousing to the rear. In this shot, you can see the main case bolted to a plate held in the jaws of the vise to support the assembly.

I recommend using a large rubber hammer to drive the tailhousing to the rear to break the adhesive seal of the RTV bonding the case and tailhousing together. After this seal

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breaks, the case should move easily. You need to control the front shift block with your thumb, pressing down slightly to allow it to slide to the rear over the shift shaft. This shift block contains the spring and ball that runs in the detents of the shift gate located at the bottom of the forward shift box. Holding pressure with your thumb allows the shift block to slide easily on the shaft.

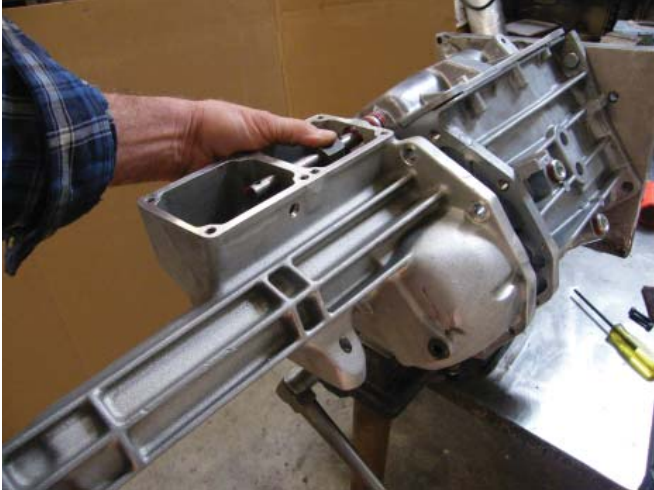


Figure 5. With the RTV now seal broken, thumb pressure is applied to the shift block to allow it to slide on the shift shaft. This photo was obviously taken without the RTV sealant.



Figure 6. Here's the tailhousing just about removed from the main case assembly.



Figure 7. Here's the assembly spread out. Ball, Spring and Split Pin

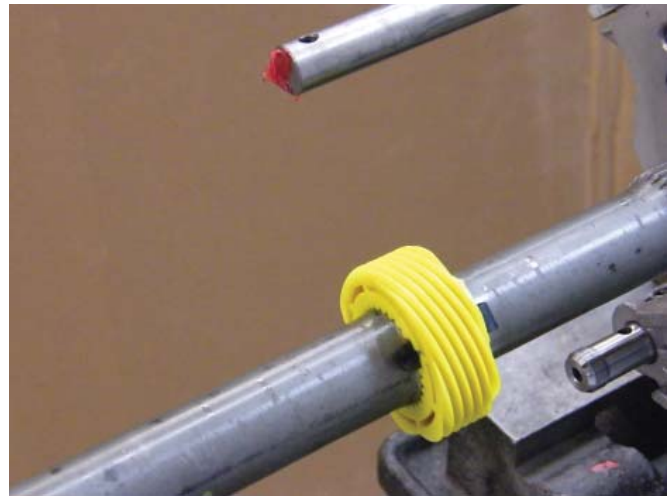


Figure 8. This is what the speedo drive gear should look like except that this is a 7 tooth drive gear.

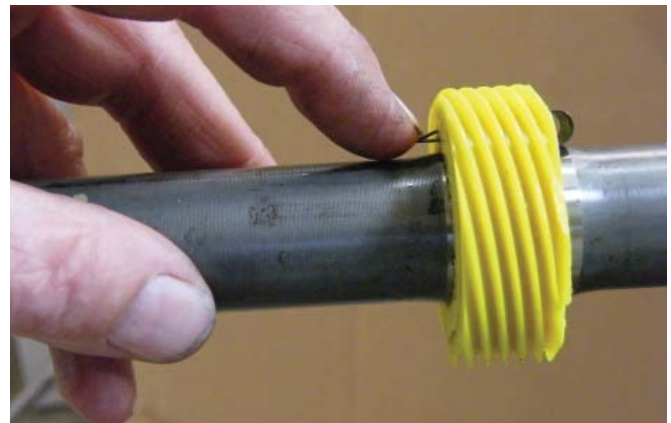


Figure 9. Here's a close-up look at the gear and the retaining clip. You can see the small tang that rises up from the clip to hold the gear from moving to the rear.

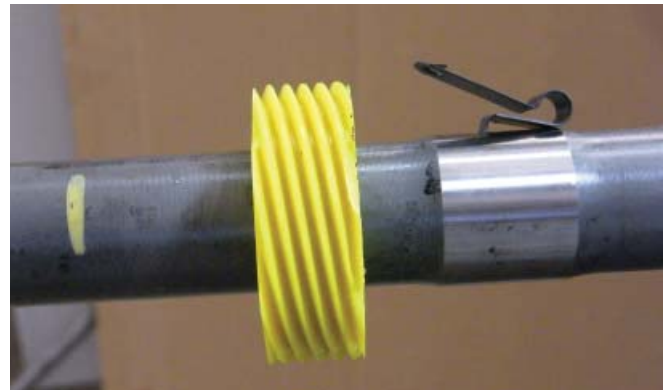


Figure 10. Tapping the gear to the rear, now you can see the full clip and the other downward tang that locks into the hole in the output shaft.

With the tailhousing removed, we can examine the speedo drive gear. It is a light press fit, held in place with a spring steel clip, one tang downward into the output shaft. A loop at the front to keep it from traveling to the front, and one tang upward to lock onto the plastic gear to keep it from traveling to the rear. To remove the gear you push the clip down so that the tang clears the slot in the gear and tap the gear to the rear, moving around the gear to keep it square with the shaft.

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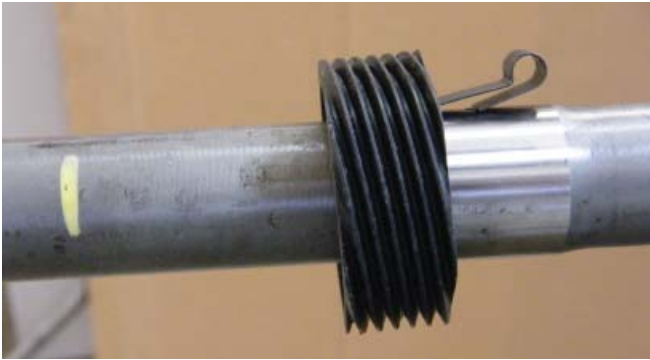


Figure 11. Now we can install the 6 tooth drive gear onto the output shaft.



Figure 12. Here the gear is fully installed and tapped slightly to the rear to allow the tang to "bite" into the side of the plastic gear. Make sure that the clip is straight and square in the slot on this gear.

Be sure to frequently tap the rear bearing race on the output shaft back into the main case. The bearing taper tends to let it slide out. If it moves too far out, the 3-4 syncros can move out of place and the trans won't go back together properly. You can fix this by removing the top cover and working them back into position, but it's an extra step you don't need to do if you keep the bearing and output shaft in the proper position. I have used a piece of metal with a hole in it, and a bolt into the case it to press on the race and hold it, but if you're careful, this may not be necessary.

With the Speedo gear now changed, it's time to clean up the castings and remove the old RTV sealant from both sides. I use a very sharp wood chisel and a toothbrush size stainless steel wire brush. Start by shaving the flat surfaces with the chisel, being very careful not to gouge the aluminum. The internal and external edges of RTV can typically be pulled off in strings. There is extra RTV in the area near the two 1/4" bolts. It is not necessary to dig all of this RTV out. You can wash the surface with lacquer thinner or other high volatility solvent, to prepare it for bonding to the new RTV. The wire brush gets the surfaces mechanically as clean as they need to be, followed by a good solvent wash. You may also have to clean out the bolt holes, both the threaded side and the open side, so that the bolts will pass through. Then it's time to apply the new RTV sealant. I use Permatex Ultra Black out of a pressure can. This gives easy control of application and makes the placement uniform over the seal area.



Figure 13. Here's a shot showing the RTV sealant placed on the main case. You can see the loops around the bolt holes and the extra sealing material in the 1/4" bolt area. I only apply the RTV to one side of the assembly. Note that the rear bearing race is about where you want it to be. It sticks out of the main casting the same distance as the bearing recess in the tailhousing.

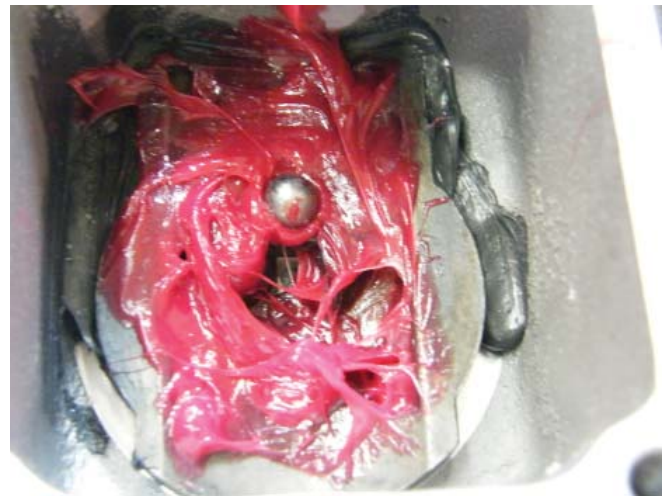


Figure 14. Before you begin to slide the tailhousing back onto the trans, apply some grease to the shift plate and place the detent ball into the rear most center hole. Then you will double check to make sure that the split pin is NOT still stuck in the front shift block. Take it out if it is. You will be placing this front shift block, with the long spring held in place with some grease, over this ball as you install the tailhousing.

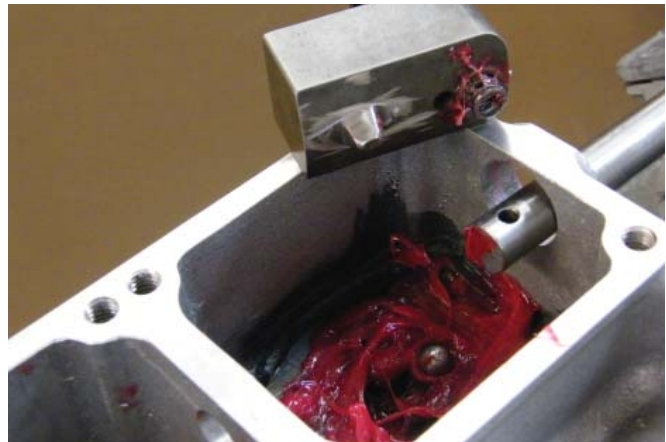


Figure 15. Now we're ready to put this back together. The shift shaft holes should be about straight up so that they will align with the holes in the shift blocks

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The assembly of the tailhousing is a little tricky. You may want to try this a few times before you place the RTV because after that things start to be messy and sticky if you need to make more than one attempt. There are several “stops” along the way forward as the pieces get into the “right” alignment. The starting point is the when the shift shaft enters the shift block. As the tailhousing is moved forward, it will require some rocking and rolling. The end of the output shaft will hit the inside of the casting and you will have to move it so that it goes into the yoke bushing. The housing will have to be moved to allow the shift shaft to pass through the hole between the shift boxes. And finally as you approach the main case, the reverse shaft will have to enter the blind hole in the tailhousing casting.



Figure 16. Again holding the shift block with your thumb, you guide the tailhousing assembly over the output shaft and the shift shaft. You will guide this assembly allowing the shift shaft to pass through the shift block toward the hole between the shift boxes seen at the bottom of this picture.



Figure 17. Here's a shot of the shift shaft entering the hole between the walls

I always do at least one complete assembly and test the “shift-ability”, before I do a final RTV assembly. I'm also cutting the extra case bolt off at that assembly, so for me it's not really an extra step. You can install the shift mechanism without the cover plate to test the “shift-ability”. If you do this before you pull it apart, you will know immediately if it's not working as it is supposed to. After you're satisfied that you can do this tailhousing assembly, then it's time to apply the RTV and do it for real. I apply RTV on all of the bolts as I install them. Then it's a good idea to turn the gears over several times to spread any RTV that got onto them during assembly. Torque the bolts to spec or at least as tight as you dare. Then it's time to place the split pins into the shift blocks and shift shaft.



Figure 18. Here's the moment where the tailhousing rejoins the main case. I'd advise you to try this at least once and try the assembly for shift-ability before you go for a final RTV assembly. Just don't leave a split pin in a shift block. Putting one pin on top of another will really ruin your day.



Figure 19. Drive the split pins in until they are flush with the top of the blocks



Figure 20. With the split pins in place, it's time to install the cover plate over the shift boxes with all six bolts. I typically wait a day for the RTV to set on this cover plate before I remove four bolts and the shifter for installation in the Tiger. Then some grease on the ball end of the shift lever and more RTV on the perimeter of the shift mechanism before it's lowered into place through the tunnel floor. I hope this makes the assembly clear and easier for you.