

Metroboard Pulley Replacement Procedure

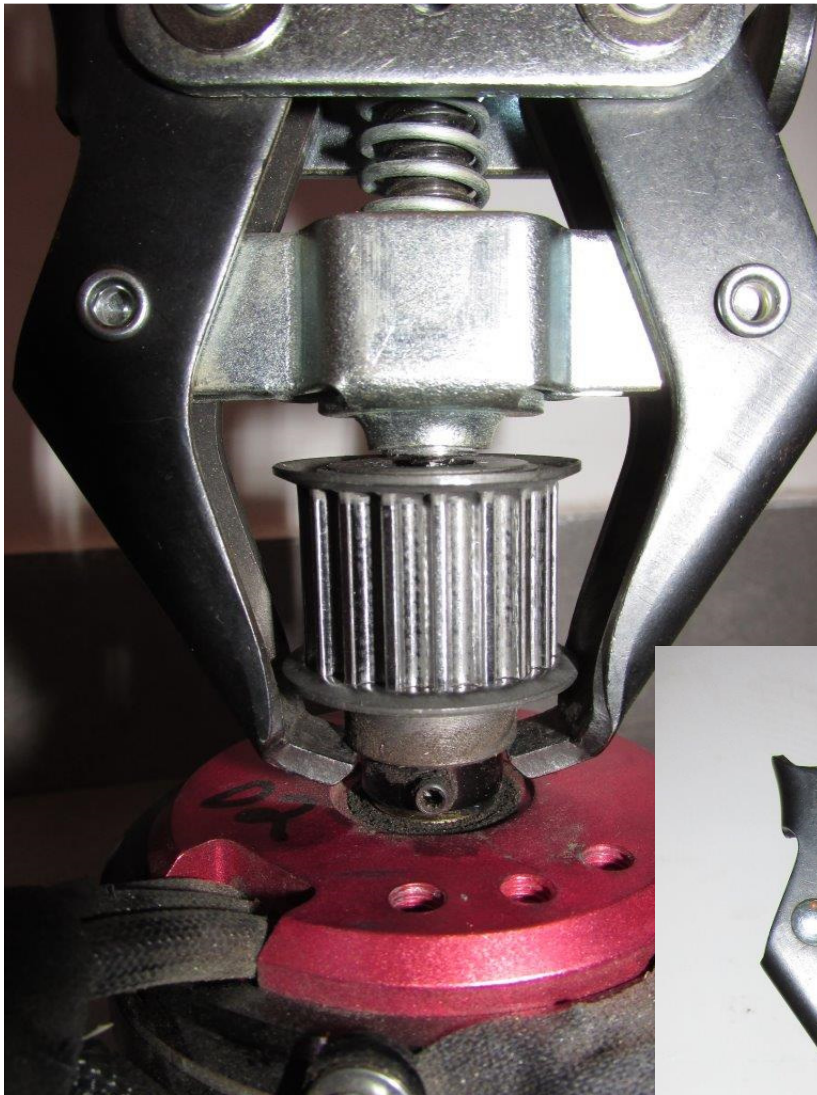
- 1) Remove the two transmission cover screws (1/8" allen driver). Then remove the transmission cover. Note there is a split lock washer and flat washer as well, so don't lose those!
- 2) Remove the two motor mounting screws and split lock washers and flat washers (5/16" nut driver if you have hex cap screws, 3 mm allen driver if you have button head cap screws, 4 mm allen driver if you have socket head cap screw). Then slide the motor as close to the drive wheel as possible (where the opening is biggest in the motor bracket), and then carefully pull the motor away from the motor bracket and completely remove. Be careful not to bang the pulley teeth or pulley flange as you slide the motor through the bracket. It may be a tight fit, but you should be able to wiggle the pulley through the motor bracket. Note that when you reinstall the motor later, **DO NOT USE A RATCHETING TYPE SOCKET WRENCH AS THIS CAN EASILY STRIP THE ALUMINUM MOUNTING THREADS ON THE MOTOR FACE CAP**. Just use a manual nut driver or allen driver depending on the screw type.
- 3) Remove the 2 set screws (90 deg apart) from the hub of the pulley using a 2.0 mm (or in some cases 2.5 mm) allen key
- 4) Slide the pulley off the shaft if you can. If the pulley doesn't slide off easily, it may be because the pulley you have is glued on to the shaft. Sometimes it can be difficult to remove by hand. If so you will need to use a "puller tool" such as this one: <https://www.amazon.com/dp/B06ZYGX8F8/>. Sometimes even with the "puller" it can be tricky to remove the pulley, because the plunger of the puller is typically 10 mm in diameter exactly the same size as the bore of the pulley it has to go through. The combination of dry glue and a tight fit can make things bind. So if it's not coming off easily use a spacer 8 mm or smaller in diameter and about 6 mm in length between the puller plunger and the motor shaft. You can actually use the set screws of the pulley that you just removed as this "spacer". See pics below. Orient the 6 mm long set screw in the length direction so it sits on top of the motor shaft as shown roughly centered on the shaft. Note it will stick up a bit beyond the pulley



- 5) Install the puller. Note to avoid damaging the pulley flange, the wings of the puller should grab the bottom face of the pulley hub (and not the pulley flange which will likely damage it as you remove)



- 6) Start tightening the puller using the puller handle (not shown). If the handle is bent (which sometimes can happen if it's overloaded), cut it off with a hack saw, and replace with something stiffer such as a screwdriver that you can slide through the hole of the puller shaft and get more leverage



- 7) Pulley Sliding off Shaft

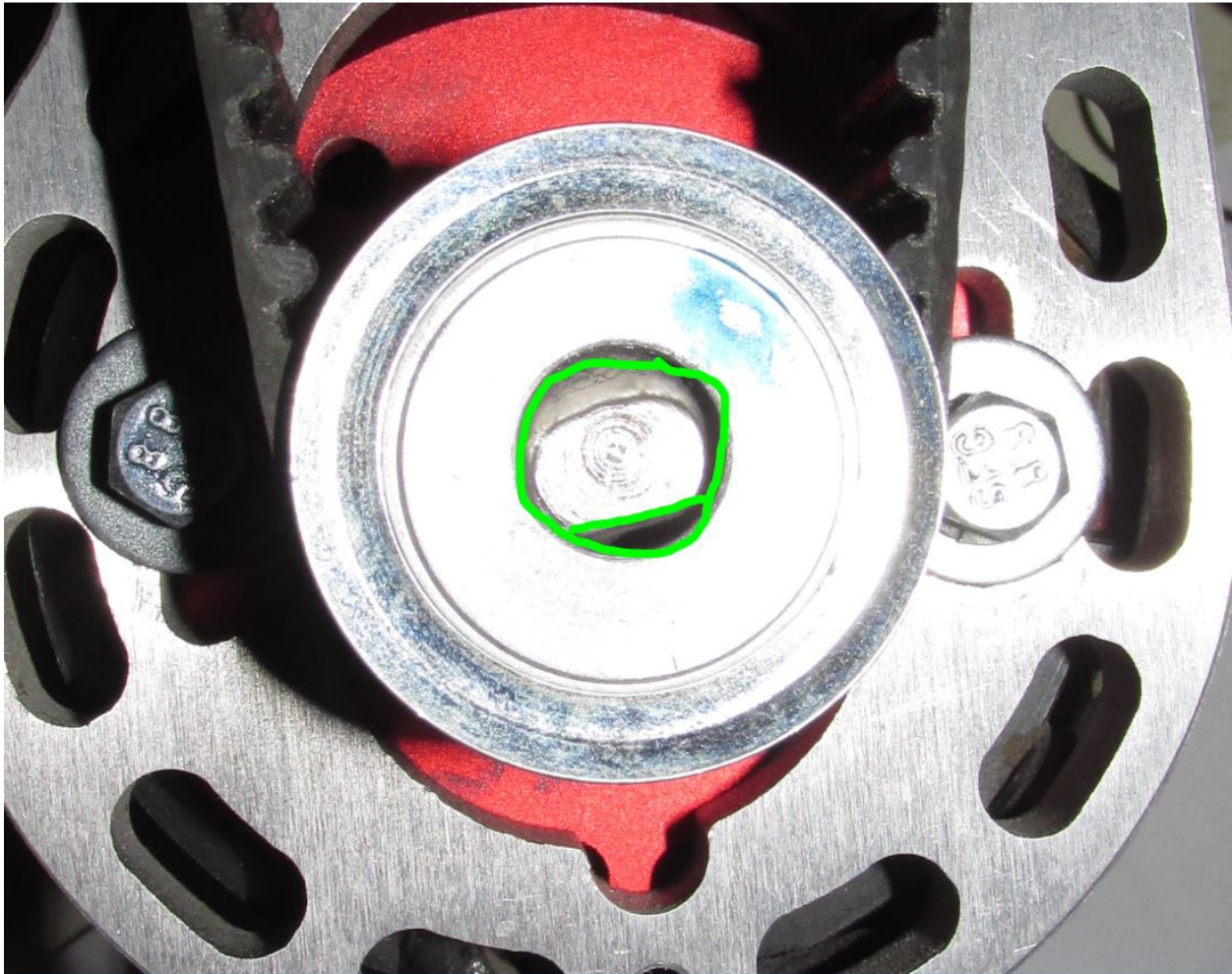


8) Pulley Completely Removed from Shaft



- 9) After removing the pulley, you should lightly sand the motor shaft and clean off any glue residue still on the shaft before proceeding to next step. Use rubbing alcohol on the shaft to make sure the shaft is clean before proceeding.
- 10) Install the new pulley aligning one of the set screws with the flat on the motor shaft and pushing the pulley all the way down onto the black collar already on the shaft. **Note if your motor shaft does not have a black collar, you will need to set the pulley height to 5.5 mm above the face cap. You can do this by inserting a 7/32" drill bit between the motor face cap and the bottom of the pulley as you tighten to set the height correctly. IMPORTANT: The set screws we sent you (in a separate bag) should have threadlocker on them, but if it is wiped off, then apply some new medium or high strength threadlocker to the set screw threads before installing in the pulley.**
- 11) First tighten the set screw that is against the flat of the shaft. Tighten firmly (using a 2.5 mm allen key) but be careful not to strip the head of the set screw as you tighten.

- 12) Then tighten the set screw 90 deg to the flat.
- 13) Allow threadlocker to dry at least 12 hours before running the motor again
- 14) As an added precaution against the pulley vibrating loose, you may need to dribble a bit of **THICK (NOT THIN)** instant glue (aka super glue or CA glue) down the open end of the pulley as shown below by the green lines. Don't use a huge amount. Just dribble a bit around the perimeter of the end of the motor shaft and allow a bit to drip into the flat of the shaft as well. Make sure to keep the motor upright for a few hours to allow the glue to dry and so that it doesn't migrate out of the pulley!



- 15) Note for the 19 and 20 tooth pulleys you will need to use the socket head cap screws we sent you to mount the motor to the motor bracket, to keep the pulley flange from rubbing on the normal hex cap screws. So switch to these new screws. Note these socket head cap screws require a 4 mm allen driver. Note that it's possible the transmission cover will hit the top of the socket head cap screws due to their increased height compared to the hex cap screws. If this happens, you can add a washer (around 1 mm thick) on top of the two transmission cover threaded mounts which will shift the cover away from motor mount screws enough to clear them.