

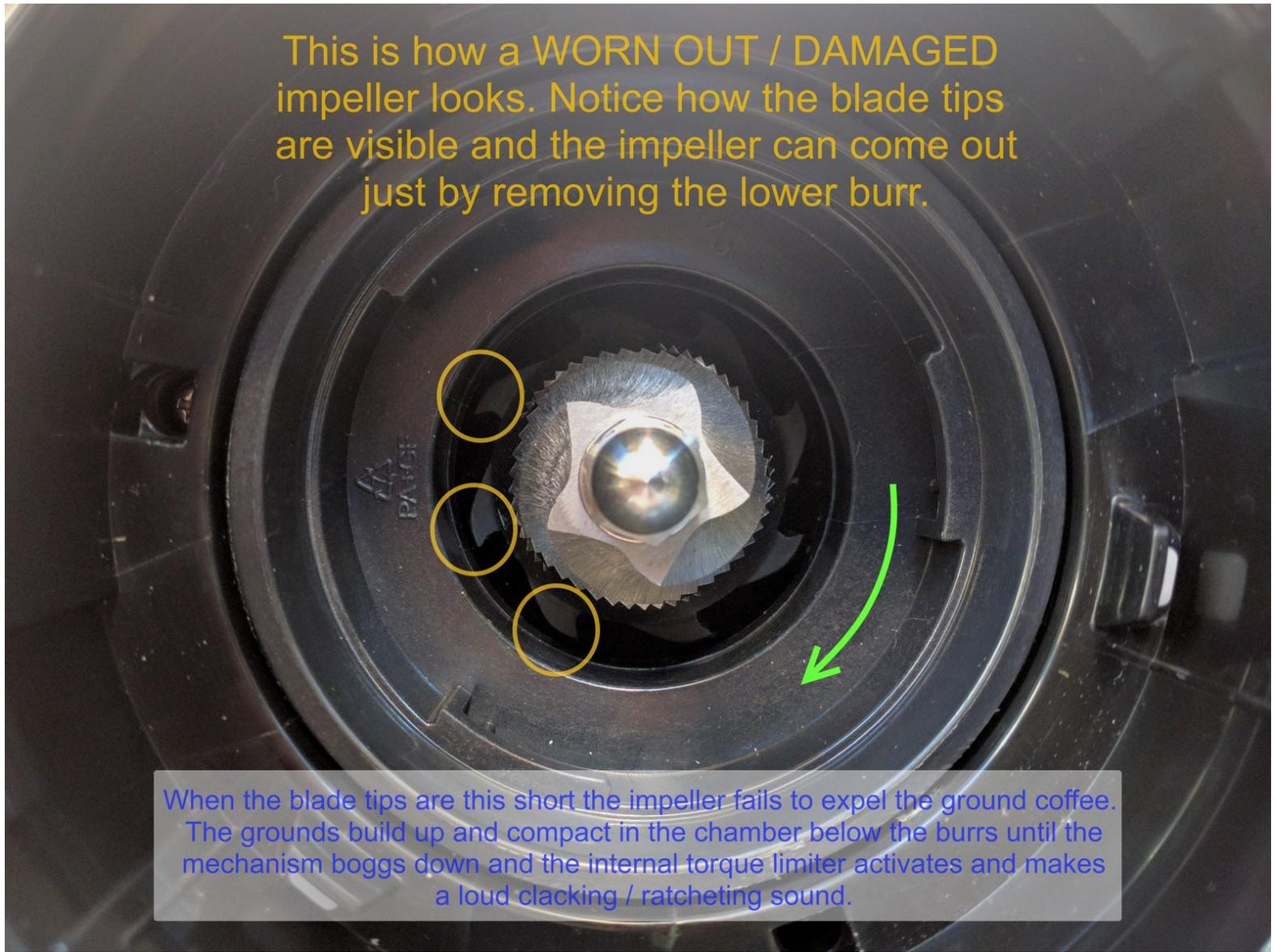


# BCG600SIL Dose Control Pro Coffee Grinder - Jamming due to Worn Impeller

When the Breville BCG600SIL Dose Control Grinder bogs down and makes a "gears stripping / clacking" sound it is usually a worn out coffee-grounds impeller.

Written By: Ben Gottemoller

This is how a **WORN OUT / DAMAGED** impeller looks. Notice how the blade tips are visible and the impeller can come out just by removing the lower burr.

A close-up photograph of the internal impeller of a Breville BCG600SIL coffee grinder. The impeller is a circular metal component with a central hub and several blades. The blades are significantly worn, with their tips rounded and frayed. Three yellow circles are drawn around the tips of the blades to highlight the damage. A green arrow points to the outer edge of the impeller, indicating that it can be removed by lifting the lower burr. The background shows the dark, metallic interior of the grinder's chamber.

When the blade tips are this short the impeller fails to expel the ground coffee. The grounds build up and compact in the chamber below the burrs until the mechanism bogs down and the internal torque limiter activates and makes a loud clacking / ratcheting sound.

## INTRODUCTION

Many users of the Breville BCG600SIL (and BCG400) Dose Control Grinder experience jamming / clogging issues. After bogging down either it just stops and flashes the button light, or makes a clacking sort of sound and little coffee comes out.

This is usually either a **worn out impeller** or **stripped drive gear**.

The main symptom of a worn impeller is the motor will bog down even at a coarse grind settings (which should be easy on it) and after a few seconds, after too much coffee gets compacted beneath the burrs, the light flashes, or it begins making a stripping / clacking sound. When the hopper is empty and no beans are in the burrs, it all sounds great. You can hear the latter in [this video](#) (with a similar grinder). The unit starts out sounding normal, but under load, up until the clacking sound. Often, incorrectly, the coffee beans get the blame.

On the other hand, a stripped drive gear will sound bad nearly ALL THE TIME, even with no coffee beans. Each revolution of the damaged gear teeth will make a bad sound. If the teeth are really wrecked, you sometimes won't even get rotation anymore and you'll just hear the motor spin up like a jet engine. Thankfully this failure mode is much less common; typically occurring in an obvious manner, such as if you got a rock or pebble jammed in the burrs during grinding.

Now, why does the BCG600 Grinder's impeller matter? It sits underneath the steel burrs and receives the ground coffee. Its purpose is to push those grounds out the chute that leads to the basket (or espresso portafilter). When the plastic blade fins wear down over time, the grinder begins to clog up because it can't properly expel the grounds anymore. This often gets mistaken for a problem with the main drive gear when a stripping sound comes from a torque limiter mechanism. You can examine your impeller if you simply remove the burrs, and look at the gap between the cylinder wall and the impeller blade tips (See the good vs bad pics in step #1 below). If that gap is more than 1 mm, then it's probably worth replacing. If you can take the impeller out without disassembly, then it's definitely worth replacing (A good impeller is wider than the hole and can't just come out).

Breville unfortunately doesn't sell parts, so this tutorial has been made possible only recently by 3D printer technology. I've designed an improved impeller for the BCG800XL that also fits the BCG600SIL and made it available here: [Shapeways Impeller Source](#)

This guide will walk through impeller replacement to fix the most common cause of jamming with the BCG600SIL (and likely the BCG400) Dose Control Pro Grinder from Breville.

If you have a BCG800XL (not a BCG600) [go here instead](#).

 **TOOLS:**

- [Phillips #1 Screwdriver](#) (1)
- [Long shaft Phillips 2 Screwdriver 7 inches or more](#) (1)
- [10mm Wrench](#) (1)
- [Utility Knife](#) (1)

 **PARTS:**

- [BCG600SIL Impeller](#) (1)

**Coffee Impeller**

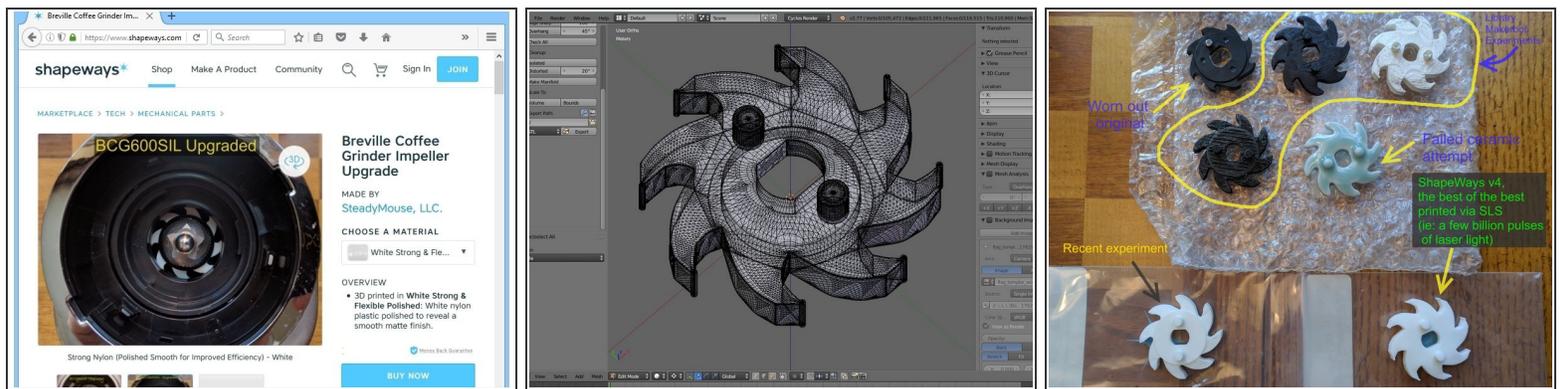
*This is a 3D printed part.*

## Step 1 — Inspect your grinder impeller



- First let's verify you have the problem this tutorial is designed to fix. These images show what a bad / worn out BCG600SIL impeller looks like and then what a good impeller looks like. If your grinder has similar wear to the bad picture (and is jamming) then this tutorial will be able to help you.
- Unplug your grinder. Remove the hopper and take the upper burrs out. Empty out any coffee grounds (An air gun or vacuum helps) and then inspect the impeller blades.
- If the impeller can fit through the hole (ie: be removed just by taking out the lower burr) then it definitely needs replacement. A good impeller should not be removable without dis-assembly and the tips of the impeller blades should not even be visible. If yours is between bad and good, make a judgement call using the pictures as a reference.
- FYI: If your impeller is made of **stainless steel** rather than plastic (like the picture), your model is NOT the BCG600SIL. In that case, you likely have a different model with significant design changes. Stainless steel should not wear out and so your problem is elsewhere.

## Step 2 — Obtaining a new impeller



- Once sure your impeller is worn out, you'll need a replacement part. I ended up modeling it and 3D printing it several times at the local library. I've made the final design available for printing at [www.shapeways.com](http://www.shapeways.com) (See link below). Of course, you can also model your own design if you wish to spend the time.
- [Shapeways BCG600SIL Impeller Shop](#)
- Optional video of the ShapeWays part with a little background from when this was **originally designed for the BCG800XL** (The impeller is the same for both the BCG600 and BCG800 models): <https://youtu.be/zB5F9ha1-zs>
- For a look at how well the new design holds up in a similar grinder (the BCG800) see my 2-year teardown here: <https://photos.app.goo.gl/868a5ReyM2XAyj...>

### Step 3 — Tools you'll need



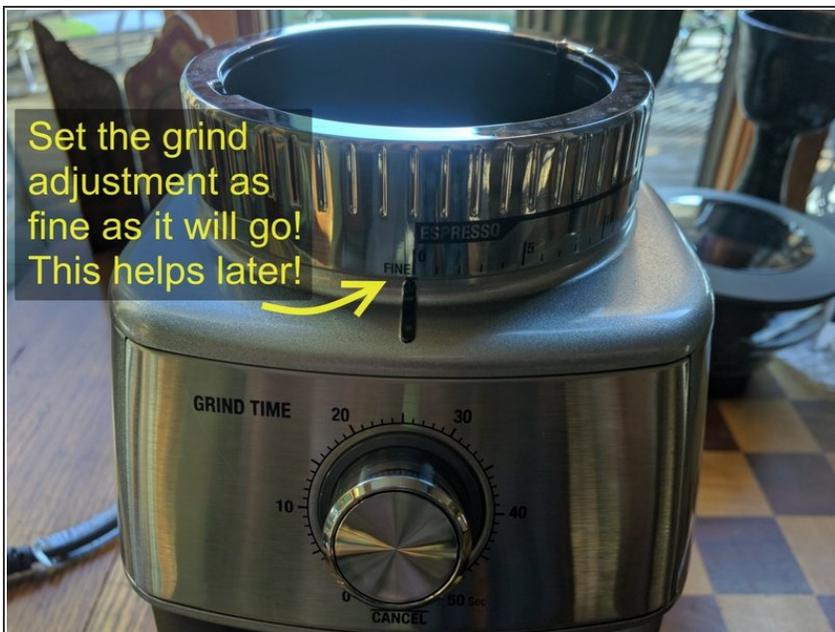
- You'll need a 10mm socket with ratchet (or a 10mm wrench).
- A #2 Phillips screwdriver with **7 inches of shaft or longer**, and preferably with magnetic tip (FYI: You can rub a magnet against it to magnetize it if it's not already).
- #1 Phillips screwdriver
- A knife or something with a sharp edge.
- Sandpaper and a file are likely optional but are occasionally necessary if the 3D printed impeller isn't a perfect fit.
- **FOR SAFETY THE GRINDER MUST BE UNPLUGGED DURING DISASSEMBLY AND REASSEMBLY! THERE ARE HIGH VOLTAGE CONTACTS INSIDE THAT ARE DANGEROUS AND EASY TO ACCIDENTALLY TOUCH WHEN THE UNIT IS PLUGGED IN! Please unplug your coffee grinder before continuing!**

## Step 4 — Remove hopper, upper burr, and lower burr



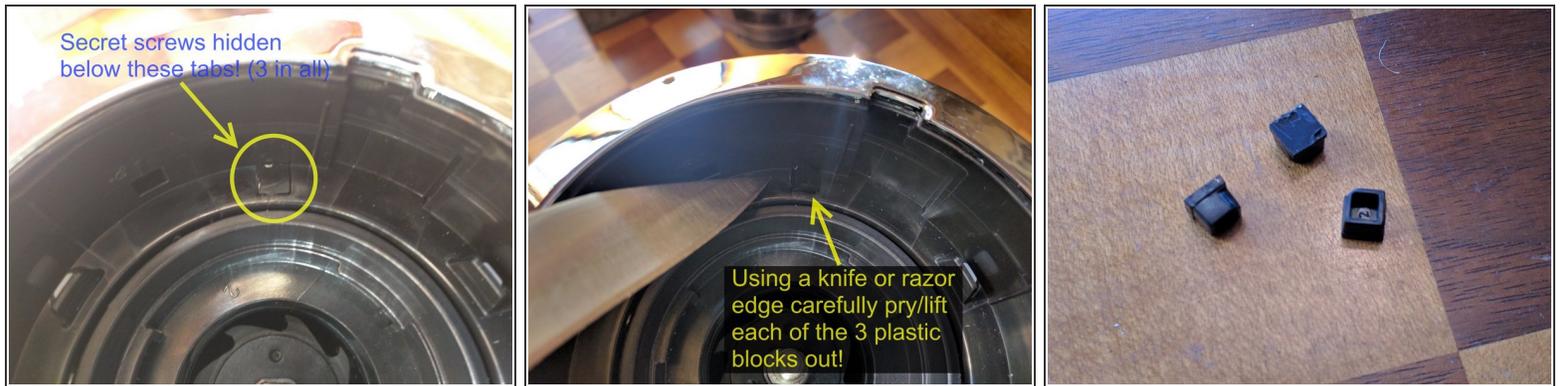
- Remove the hopper and the upper burr and set them aside.
- Use a 10mm socket to remove the nut for the lower burr. Note the threads are backwards! Rotate **CLOCKWISE** to loosen. You may have to jerk your wrist to break the nut free without the motor turning.
- If the motor starts turning, try snapping your wrist quickly to break the nut free.
- Set the acorn nut, lock washer, flat washer, and lower burr aside preserving the order.

## Step 5 — Set the grind all the way to fine



- Turn the grind-adjustment all the way **as fine as it goes**. This just makes things easier later.

## Step 6 — Remove hidden plastic screw covers



- There are three plastic blocks that must be pried out and set aside using a knife edge. Be careful and take your time prying them up and out.
- Underneath you will find 3 screws.

## Step 7 — Remove the hidden top screws



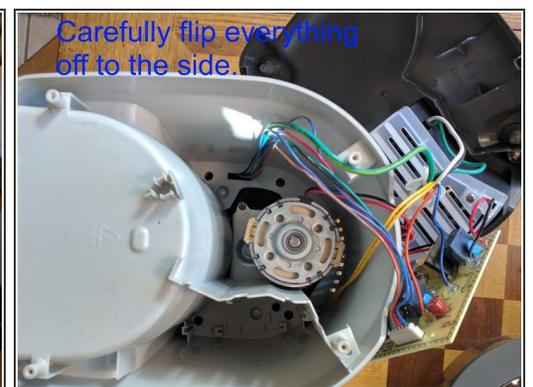
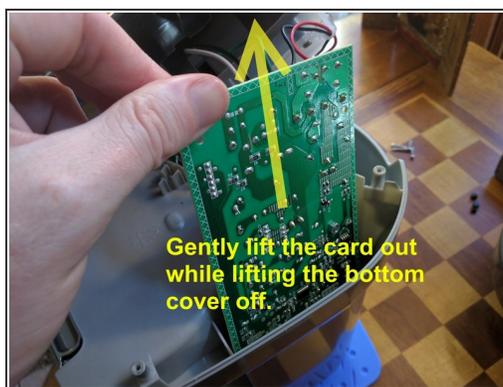
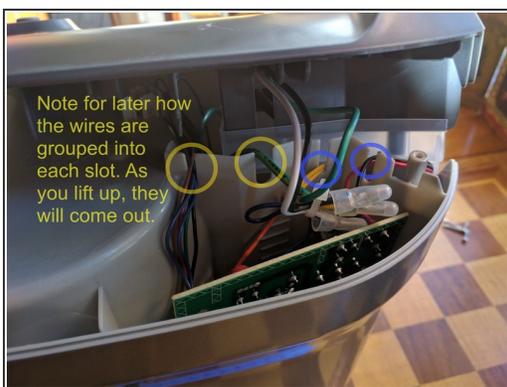
- Using a #1 Phillips Screwdriver remove each of the three top screws and set them aside.

## Step 8 — Remove the bottom



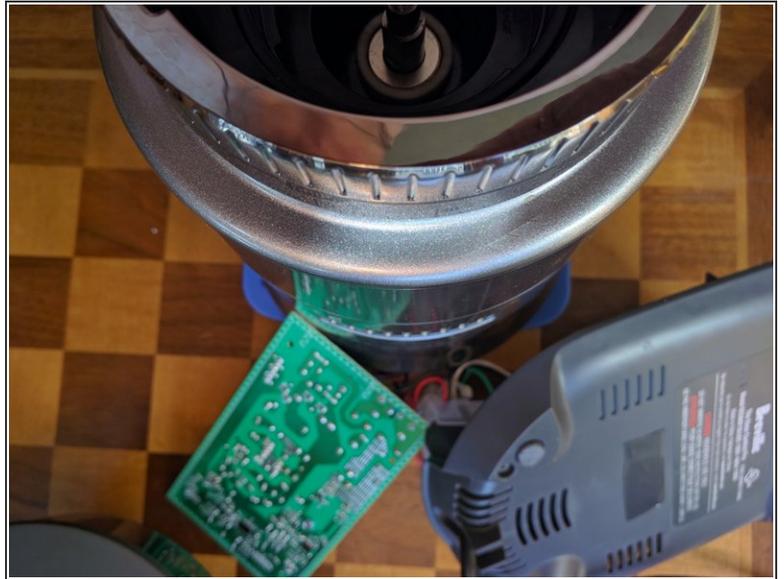
- Flip the unit over
- Using a #2 or #3 Phillips Screwdriver, remove all four of the bottom screws and set them aside.
- Carefully lift the bottom cover off, taking care not to place stress on the wires.

## Step 9 — Move electronics card and wires to the side



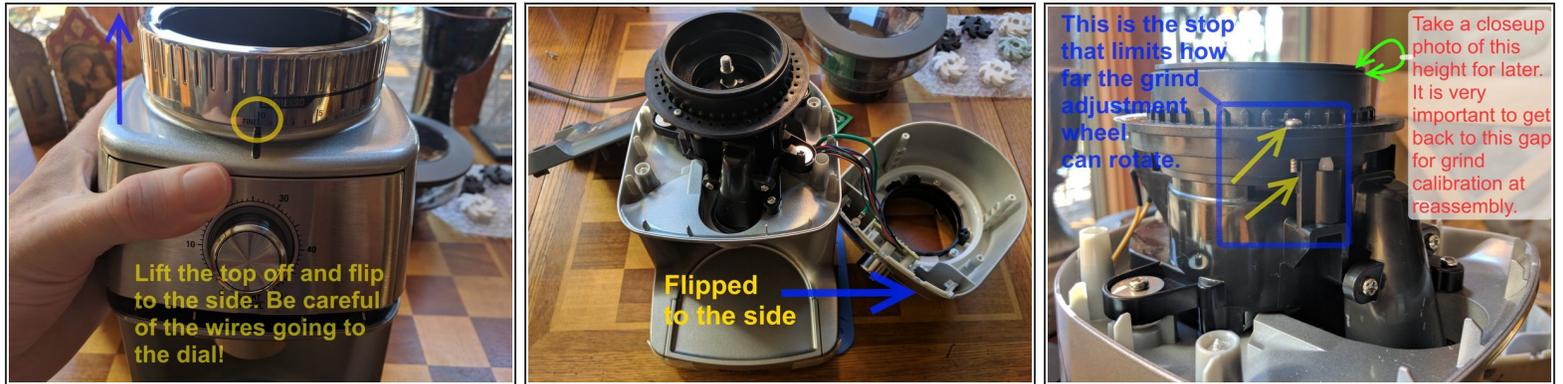
- Carefully lift the cover while pulling up on the control card.
- Flip everything gently to the side so we can get at the internals of the grinder.

## Step 10 — Remove inside top screws



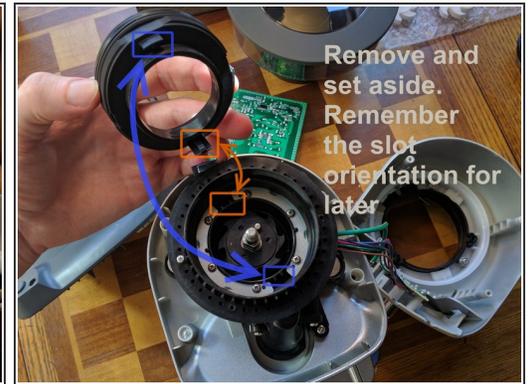
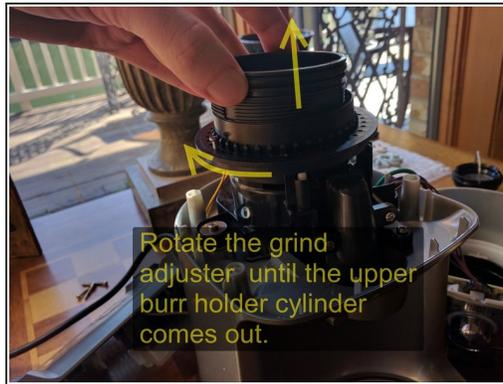
- Using the long #2 Phillips Screwdriver (7 inches or more) remove the 4 inside top screws and set aside.
- Next VERY CAREFULLY turn the grinder over to be right-side-up again. You want to avoid stress on the wires.
- Perhaps place the unit on a towel so there is minimal stress on the wires while we work on the top. As we continue remain aware of the wires so they do not get stressed.

## Step 11 — Remove the top cover and observe burr holder gap



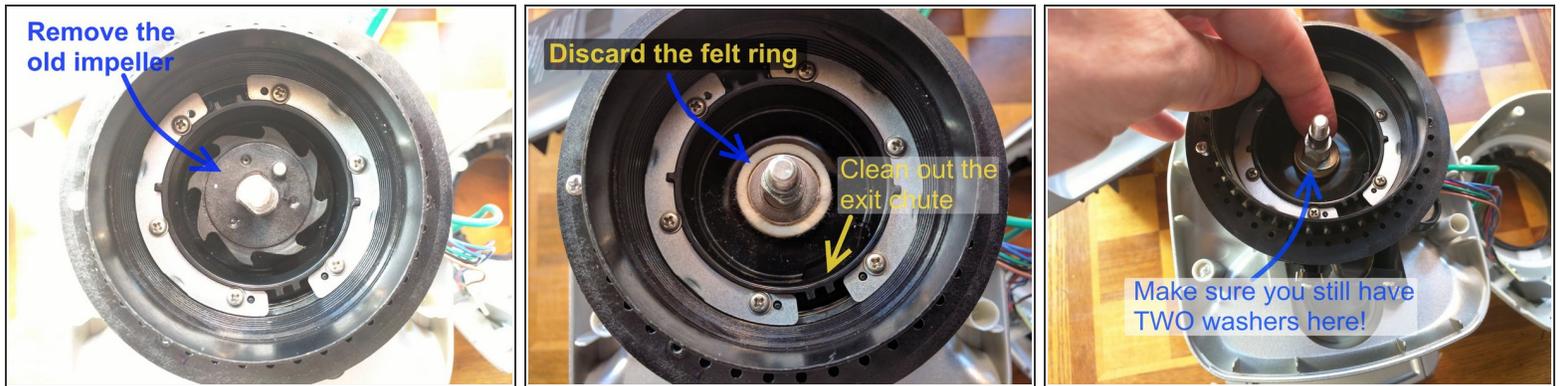
- Carefully lift off the top and flip it to the side. It will hang from the few wires going to the control knob.
- Take note that the chrome grind adjuster is set to **fine** and the stop-screw in the third pic is up against the plastic stop pointed to by the bottom yellow arrow.
- Finally, take a photo of the gap between the lip of the "upper burr holder" and the internal "grind adjustment cylinder" illustrated in the third picture by the green arrows. At reassembly later it will be very important we get back to this gap. Having a photo will help you know you have succeeded.

## Step 12 — Remove upper burr holder



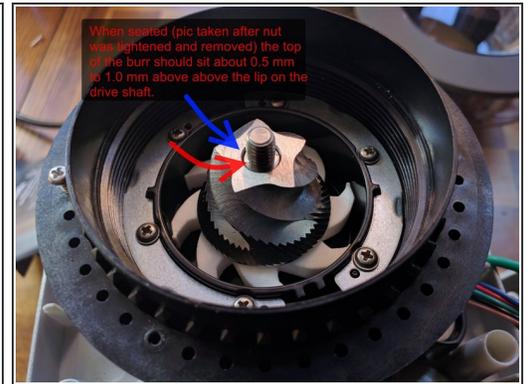
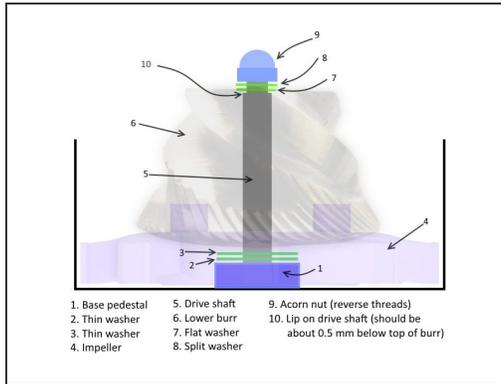
- Back the adjustment limiter "stop-screw" out HALF WAY. Leaving it partly in insures we don't lose track of what hole it belongs in!
- The stop-screw should be out just enough that you can rotate the grind adjuster freely past the stops.
- Rotate the grind adjuster clockwise (second pic) until the upper burr holder cylinder backs all the way out.
- Remove the upper burr holder, noting the slot orientation for later.

## Step 13 — Remove old impeller



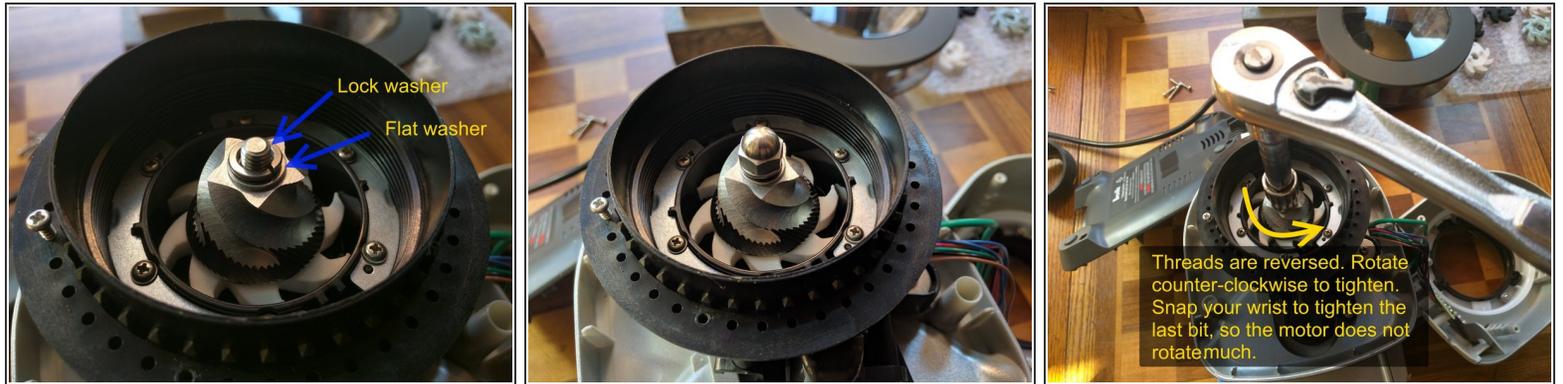
- Lift out the old impeller
- Remove and discard the felt ring. It is usually pretty ratty and the new impeller hugs the pedestal more closely and doesn't need it.
- Clean the grounds expeller chute in case it's clogged.
- Make sure you still have BOTH washers on the drive shaft.

## Step 14 — Install the new impeller!



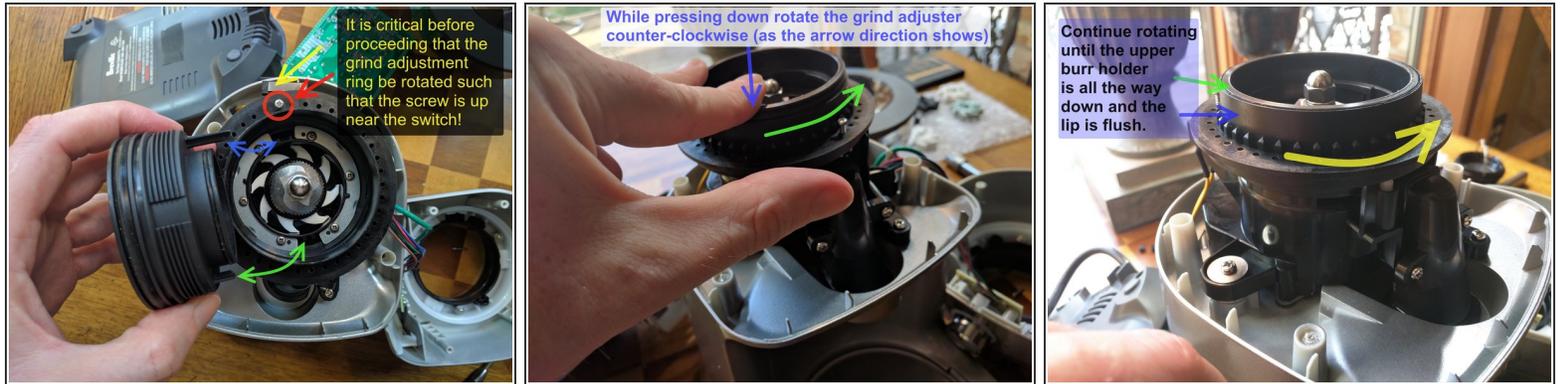
- Before installation, I recommend giving your new replacement impeller a quick rinse in the sink followed by a pat down with a towel until dry. This helps to prevent static charge later during first grinding.
- Press the impeller onto the shaft and check that it's a good fit. If it's too tight to go on, you can file it very slightly to make it fit.
- Install the lower burr on top of the impeller.
- Use the 3rd pic as a reference for optimal height of the burr. If the burr is too high above the lip on the shaft (higher than in the pic), try putting the nut+washer on, tightening hard, and then taking it back off. The top of the burr should be within 0.5mm of the lip on the drive shaft as illustrated by the pic.

## Step 15 — Reinstall the conical lower burr



- Put the conical lower burr in place making sure it sets on the pegs of the impeller properly. Then place the washers on and tighten the 10mm nut. Remember the threads are reversed.
- **IMPORTANT:** Tighten the nut pretty hard. The impeller, being plastic, has a small amount of springiness to it and must be squashed hard so that the height of the lower burr does not vary. If you find that the burrs are too close after you're all done, then this is the reason. Tighten until the motor begins to move, and then give it an extra wack.

## Step 16 — Grind adjuster alignment



- Rotate the grind adjuster until the stop-screw in the first pic is near the switch pointed to by the yellow arrow. This helps the upper-burr-holder threads pickup at the correct spot.
- Set the upper-burr-holder in place with the slots matching the illustration in the first photo.
- CRITICAL: Study the second photo. While pressing down with one hand, begin to rotate the grind adjuster in the direction shown by the arrow.
- Continue rotating the adjuster until the upper-burr-holder is all the way down. The **stop-screw should be about where it is in the 3rd pic** at this point.

## Step 17 — More grind adjuster alignment



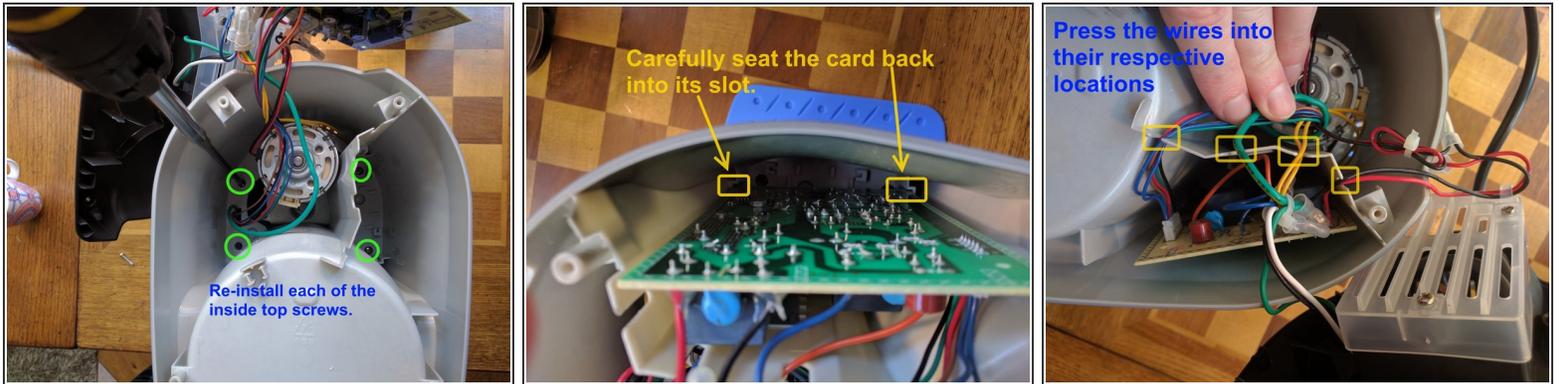
- With the upper-burr-holder all the way down, reverse direction on the grind-adjuster and rotate through 50% to 75% of a rotation.
- Stop when the stop-screw is right above the plastic stop shown in the first picture.
- The lip should be about the height shown in the first and second pic. That's critical for your grind to match up with the labeling on the chrome-adjustment wheel after this is all done.
- Compare the lip height with the photo you took in Step 11. Make sure the gap looks the same.
- Screw the stop-screw back in.
- **Optional Modification:** If you desire a finer grind capability than normal, mark the original stop-screw hole, and then move the stop-screw a few holes *clockwise*. Then rotate the upper-burr-holder counter-clockwise till the screw hits the stop again. Make extra sure the burrs do not touch if you do this!

## Step 18 — Put the top back on



- Set the top back on, while making sure the chrome adjuster ring is still on the 'fine' setting.
- Put the 3 hidden screws back in.
- Try rotating the chrome adjuster ring through the entire range before proceeding. It is very important that all is correct there before moving on.
- Gently turn the unit upside down, taking care not to stress the wires near the base.

## Step 19 — Inside-top screws and control card



- Reinstall each of the 4 inside screws with the long Phillips #2
- Gently slide the card back into its slot
- Guide the colored wire groups into their respective slots as shown by the third photo.

## Step 20 — Bottom cover and top plastic caps



- Carefully press the bottom cover back on and then screw it into place with the 4 screws.
- Flip the unit over and check that grind adjustment still works well by rotating through the entire range.
- When satisfied, reinstall the 3 plastic blocks that hide the top screws. Take note that they have an orientation as shown in the 3rd pic!

## Step 21 — Reinstall the upper burr and hopper



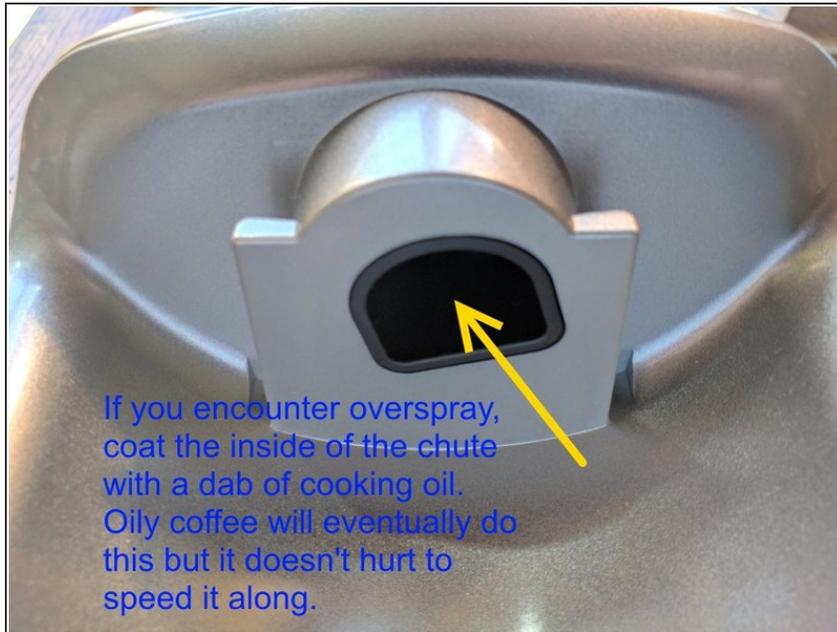
- Look things over one last time and then reinstall the upper burr.
- Install the hopper **WITHOUT COFFEE**.
- Plug it in and run the (empty) grinder briefly to make sure it all sounds OK. Try both coarse and fine grind settings. If it sounds wrong, investigate or comment below.
- If all is well, add some coffee to the hopper. Dial in the grind and try it out!
- Tip: There is a bit of a break-in period the first week where the new impeller builds up a protective coffee coating. I recommended using a medium to light roast during this period.

## Step 22 — Done! Try it out!



- This is the FINAL step! The steps that will follow are troubleshooting tips. Enjoy your coffee!
- Congrats on using 3D printing to repair something! Godspeed! Deus tecum.
- If you thought this guide was thorough, you should see our primary work. SteadyMouse LLC helps folks with Parkinson's disease use their mouse again. Come check us out anytime at <https://www.steadymouse.com> and perhaps help us spread awareness. Cheers!

## Step 23 — Troubleshooting #1 - Overspray



- If you encounter ground coffee escaping the chute and getting on the counter, it may mean your coffee is too dry, humidity is too low (static charge), or even that the grinder chute is too clean.
- To fix this, try placing a tiny dab of vegetable oil on your finger and rubbing it high up inside of the coffee chute. This will allow a fine layer of grounds to coat the walls of the chute.
- The added friction of the grounds on the wall of the chute should slow the velocity of the grounds down enough that the overspray stops.
- FYI: This whole step happens naturally with oily coffee beans, but takes a little longer than with the vegetable oil trick.
- Also for static charge issues in general, this is a good tip:  
<https://www.youtube.com/watch?v=T0Dh1W40...>

The steps should have taken you all the way through re-assembly. Provided that impeller wear was your issue, everything will work again. If you have other issues see the troubleshooting steps or post below for further help.