Shredder Deep Cleaning Procedure

GP20 Hybrid

Introduction

The maintenance and cleaning of the GP20 Hybrid is crucial to avoid material cross contamination or any performance issues that could arise from dirt, material build-up, or blockages. This document details the steps needed to carry out a deep cleaning procedure. This can be done directly after processing a material or as part of a regular maintenance procedure.

This step by step guide is used as an **optional addition to the Regular Cleaning Procedure.** When combined, the steps detailed here fit into the Regular Cleaning steps, after the section *Cleaning*, and before the section *Reassembly*.

Common tools

These tools are not provided by 3devo, but are required to perform maintenance tasks and part replacements. They can easily be sourced locally.

- 27 Wrench
- 8 Allen key
- Clean brush
- Vacuum (with thin nozzle attachment)
- Pressurized air (optional)
- Microfiber cloth (optional)

Safety Equipment

Safety equipment, brief description

- Cut proof gloves
- Safety goggles
- earplugs while shredder is on

Safety

1. Carry out procedure with two persons!
2. Hazards of cuts! Use necessary tools and protective equipment.

GP20 Hybrid Regular Cleaning

These are the steps that are completed before the Shredder Deep Cleaning can start. Below is a quick overview.

Machine

1. Machine is already switched OFF and unplugged.
2. 2 front castor wheels with breaks are locked.
3. Hopper is unplugged and removed.
4. Container is removed and emptied (if necessary).

Shredder

5. Shredder combs are removed and cleaned on the side.
6. Area in and around shredder knives is vacuumed and cleaned.

Follow the Shredder Deep Cleaning steps below before continuing with the *Reassembly* section.

GP20 Shredder Deep Cleaning

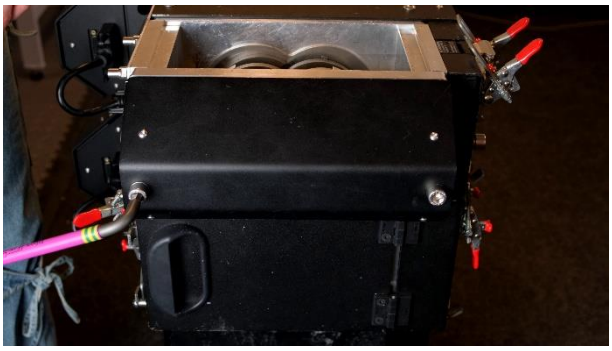
Step by step procedure

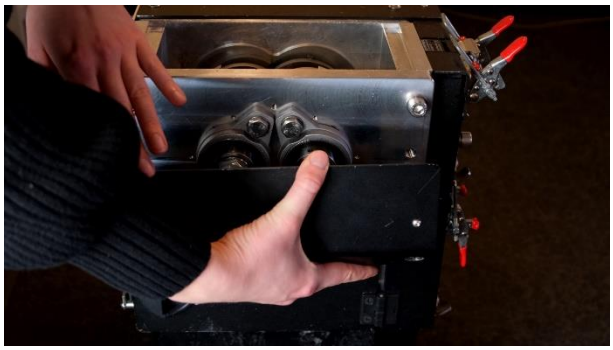
Deep Cleaning each module can be carried out separately, however it is advised to start with the Shredder module, then continue with the Granulator module afterwards to avoid further contamination.

Shredder

Disassembly

1. Unscrew 2 bolts holding shredder cover plate completely. Careful as the plate will come loose once the bolts are removed. Place bolts and plate safely on the side.

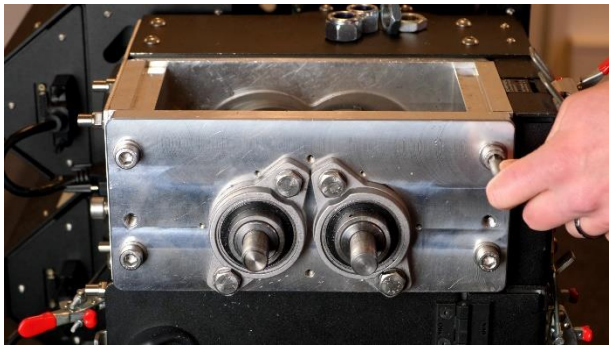
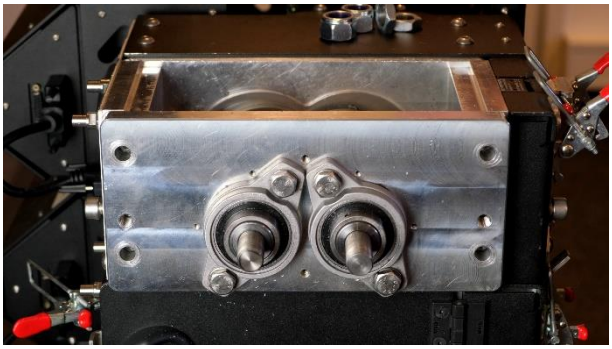




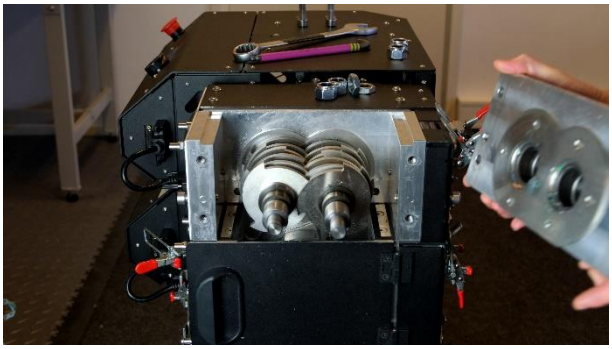
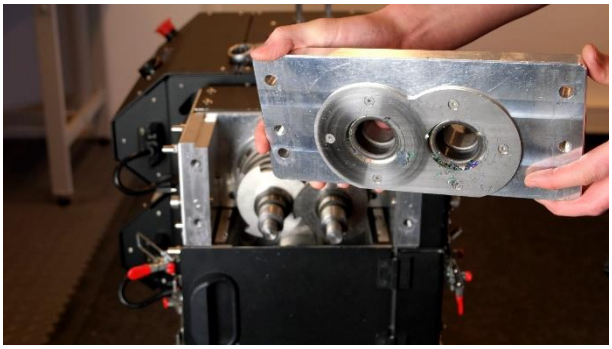
2. Completely unscrew 27 x 2 lock nuts from the two central axles. You may need to stabilize the machine slightly with a foot on the trolley. Place lock nuts on the side.


3. Unscrew 27 x 2 inside nuts completely and remove. Place on the side.

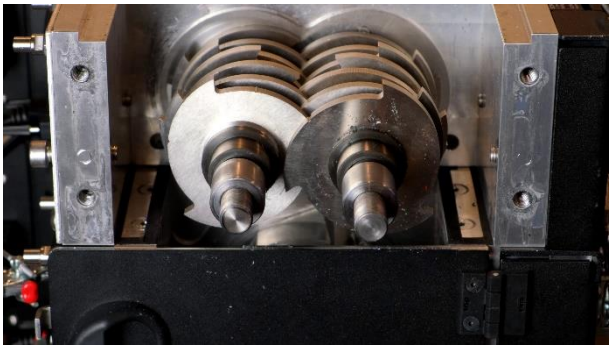
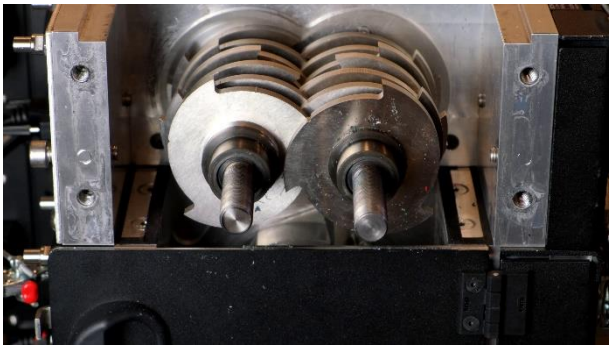
4. Loosen 4 bolts in the corners of the shredder side plate. The plate will stay secure on the axels. Place on the side.

5. Slide off the side plate, and place on the side.

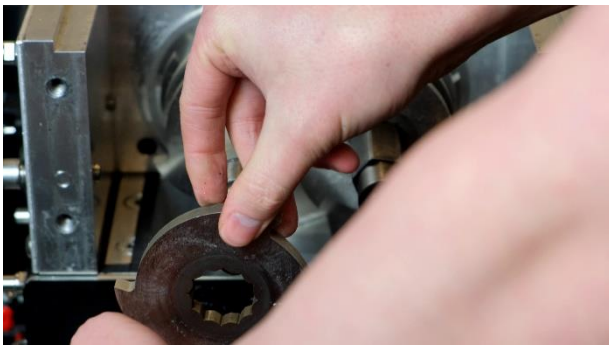



6. Notice that there is a wide bearing on each axle. Slide them off and place them together.

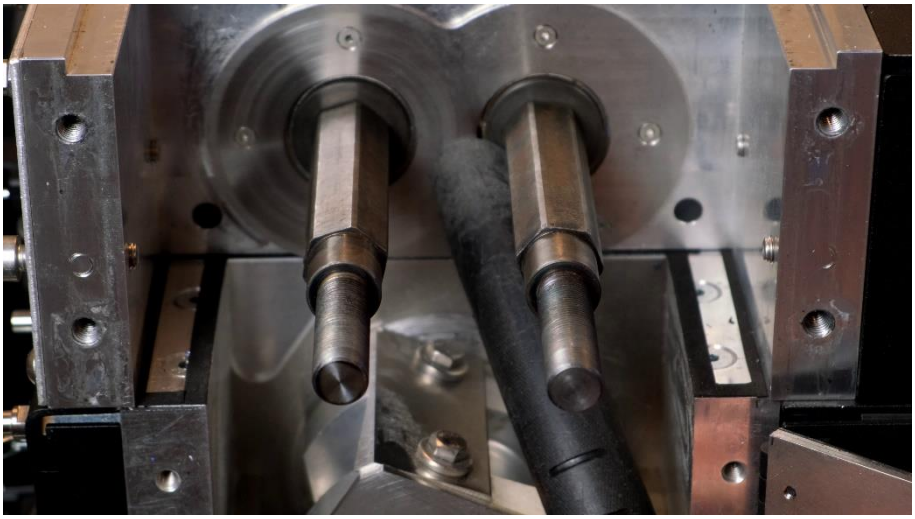
7. There are additional bearings on each axle that have a flared rim. They are called “plain bearing bushes”. Again, slide them off and place them together.

8. Slide off each blade and spacer one by one. It helps to pile them in two stacks without changing their direction.

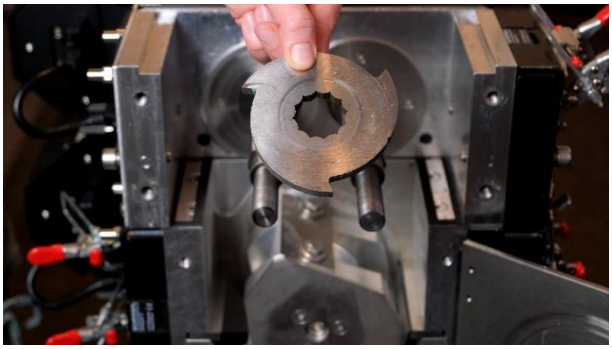


Cleaning

9. Vacuum in and around the two axles and shredder area. A brush or microfiber cloth can be useful too.



10. Brush off or wipe each blade. Careful with the edges as they can cut. Wear cutproof gloves, if necessary.



11. Clean side plate with vacuum, brush, or cloth.

Reassembly

It is crucial that the blades are reassembled in a very specific pattern. Otherwise, the shredder will not shred properly and might even cause further hardware issues.

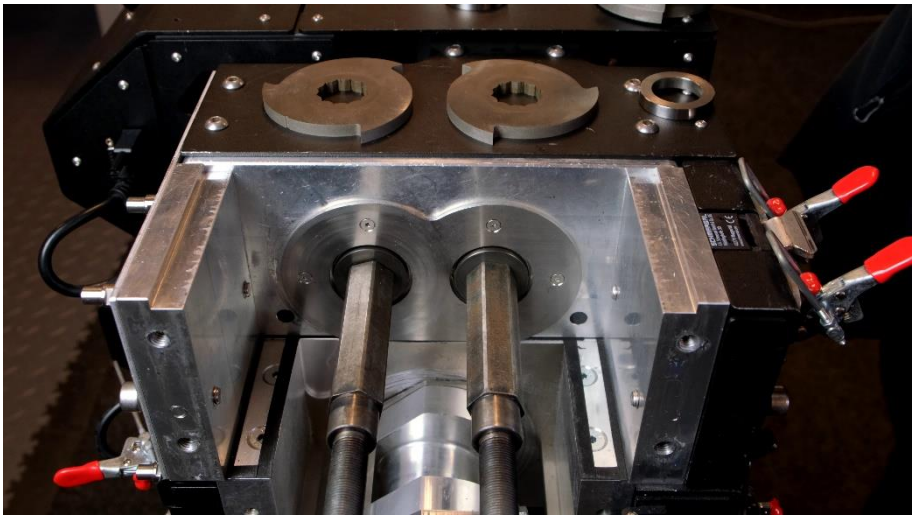
Blades' Pattern

There are 3 rules to the blades' assembly:

I. Blades on the left axle rotate clockwise, while blades on the right axle rotate counterclockwise. This dictates the direction of the reassembly. Each blade has 3 teeth which will turn towards each other on opposing axles. (there are also 2 and 7 teeth variants)

Do not flip the directions!

The picture below shows two blades on their side. They are correctly positioned with teeth facing each other.



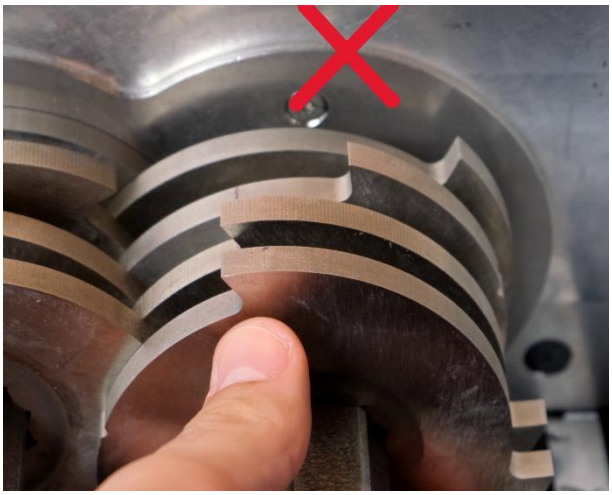
II. The blades and spacers alternate on a single axle: blade, spacer, blade, spacer etc. And the blades alternate on the two opposing axles, as illustrated below.

Left axle	Right axle
blade	spacer
spacer	blade
blade	spacer
spacer	blade

III. Each additional blade added, is rotated one notch counterclockwise.

Do not line up the teeth on neighboring blades!

The pictures below highlight this rule. The left picture shows correct assembly, while the right picture shows the incorrect parallel alignment.

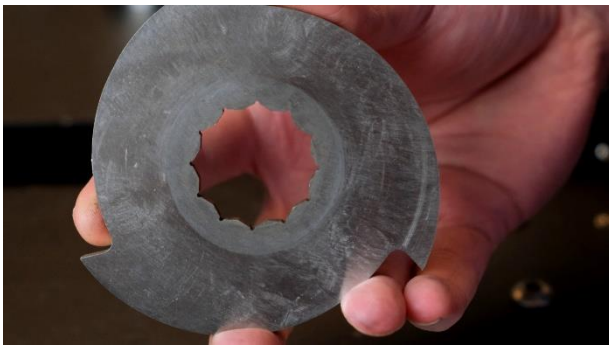


Blades' Reassembly

12. Insert the first blade on the left axle with the tip of a teeth pointing directly up.
13. Insert a spacer on the right axle.

14. Insert the first blade on the right axle with the tip of a teeth pointing directly up.
15. Insert a spacer on the left axle.

16. Insert the second blade on the left axle with a teeth slightly to the left of the previous blade. This is easy to align because of the internal notches of the blades.

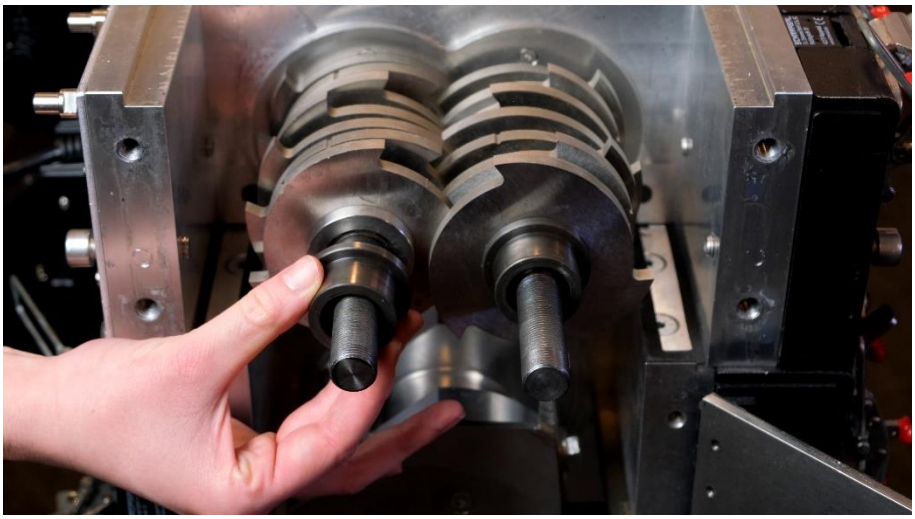



17. Insert the second spacer on the right axle.
18. Insert the second blade on the right axle with a teeth one notch to the left.

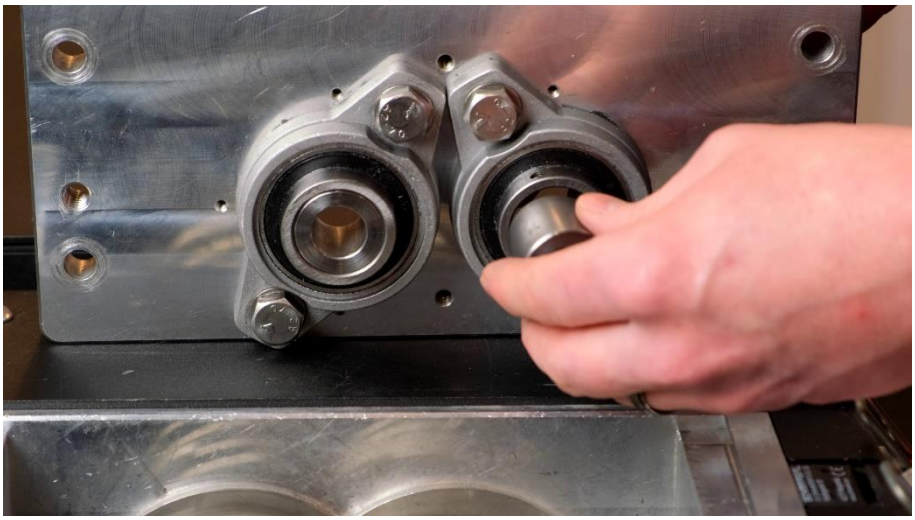
19. Continue with this pattern until all blades and spacers are used. The correct assembly pictured below form a spiral pattern on each axle.

Reassembly continued

20. Slide on the two the plain bearing brushes, one on each axle. Ensure the taller flared side is on the inside.



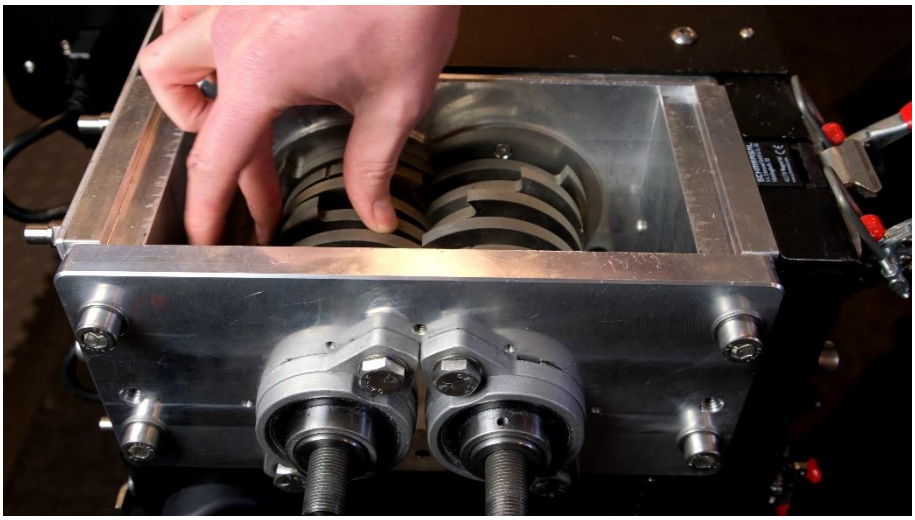
21. On a flat surface, hold the side plate and insert the two round bearings into the two holes.



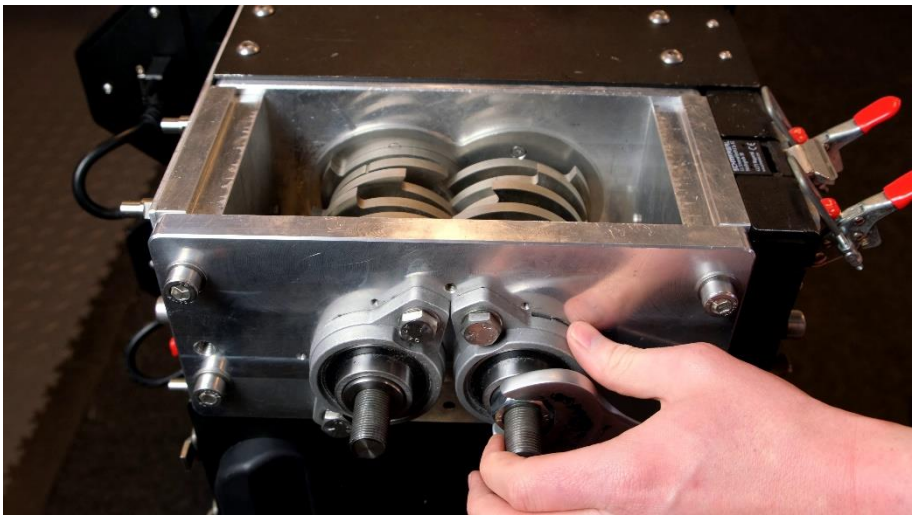
22. Slide the plate onto the two axles, careful not to let the bearings fall out.

23. Screw in 4 corner bolts and tighten thoroughly.

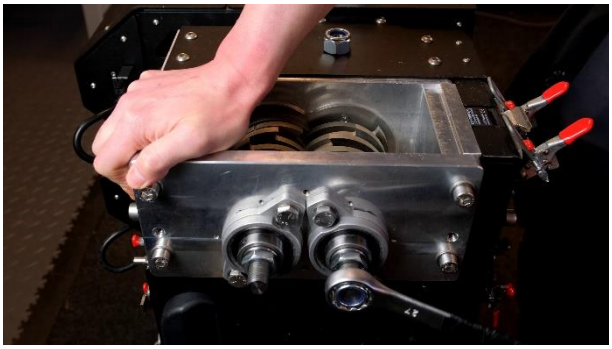
Now the side plate is attached and the blades are secure, however they can still move. As a test, you can carefully jiggle the blades by hand and hear a slight clinking. They need to be tightened.



24. Add the inside axle nut to the right axle and tighten by hand. These need to be tightened but not too much. Use the wrench to do a half turn until there is some resistance on the nut. This is tight enough to stop the blades from moving. Repeat with the left axle.



25. Add the new lock nuts to each axle. These can only be screwed in by the wrench as the lock nut will tighten around the thread of the axle. Once again tighten slightly, about a half turn with the wrench.




26. Attach the cover plate and add a small amount of blue Loctite to each bolt, before screwing them and tightening them thoroughly.

For the shredder combs, continue with the *Reassembly* steps in the Regular Cleaning Procedure document.