⚠WARNING

Make sure the machine is turned off and the power plug is removed before proceeding with the next steps!

Step 2) Remove the Hopper from the machine
Step 3) Remove the Container from the machine

⚠WARNING

Always wear cut resistant gloves when working around and inside the cutting chamber.

Step 4) Open the granulator door to gain access to the cutting chamber
Step 5) Remove filter screen. More information about this can be found in chapter 3.5.3.2
Step 6) Optional: for thorough cleaning, also remove the Rotor. More information about this can be found in chapter 3.5.3.3
Step 7) Clean the cutting chamber using the following tools:
Step 8) Vacuum cleaner
Step 9) Pressurized air
Step 10) Brush
Step 11) Screwdriver,
Step 12) Tweezer (or similar object)
Step 13) Finally clean the granulator compartment and reinstall the filter.

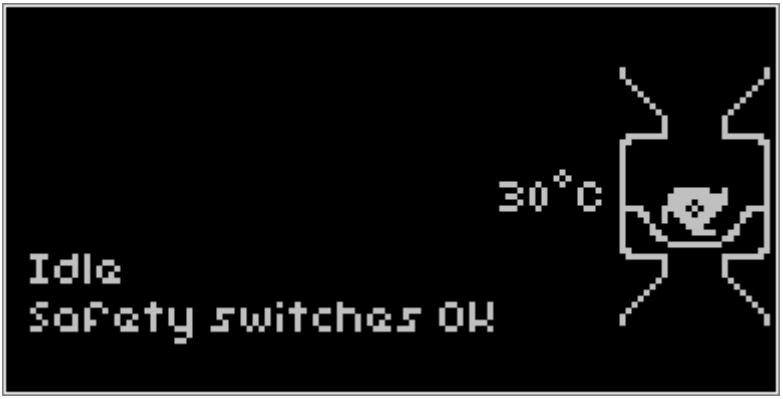
3.4. USER INTERFACE INSTRUCTIONS

3.4.1 STARTING THE GP20 GRANULATOR

Step 1) Make sure all components are locked into place, as explained in chapter 3.3

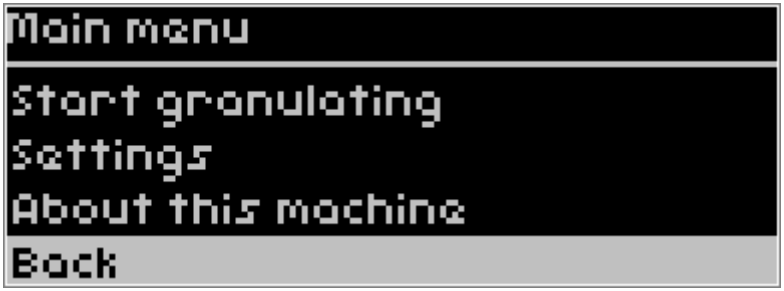
Step 2) Plug in the power cable. (Make sure the voltage of the power supply matches the voltage indicated on the sticker next to the power socket.)

Step 3) Press the on switch.
The display will show the home screen, where the status of the machine is shown, as well as the temperature of the granulating chamber.



Step 4) Adjust the hopper, as explained in paragraph 3.5.1.1

Step 5) Press the button to enter the menu and press “Start Granulating”. Confirm by clicking “Yes”, and subsequently the granulator will start.



Step 6) Feed the material or parts into the hopper. Make sure the parts are not too big to be fed into the opening of the granulator.

Step 7) Press “Stop Granulating” in the main menu if you are finished granulating. It is advised to only do this if the granulating chamber is completely empty, which can be detected based on the sound the process is making.

3.5. ADJUSTING AND MAINTENANCE

For all adjustments and maintenance activities to the machine, make sure to turn the machine off and remove the power cable.

3.5.1. HOPPER ADJUSTMENTS

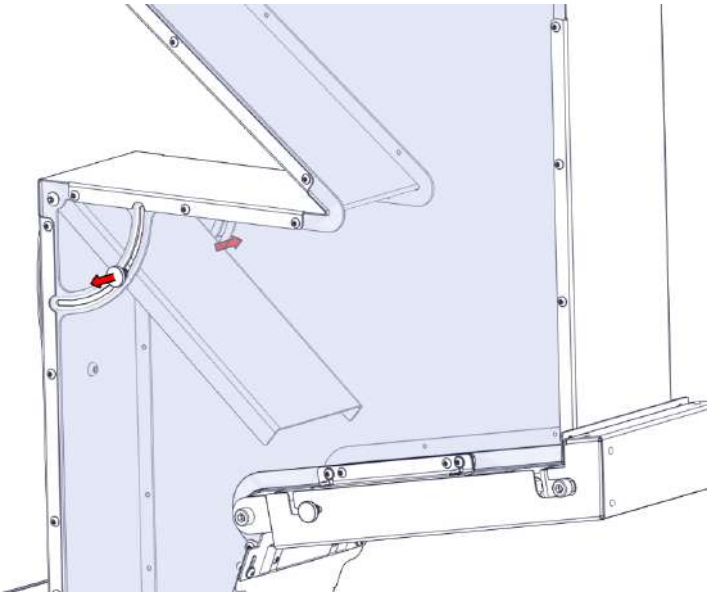
3.5.1.1. ADJUSTING THE FEEDING APERTURE

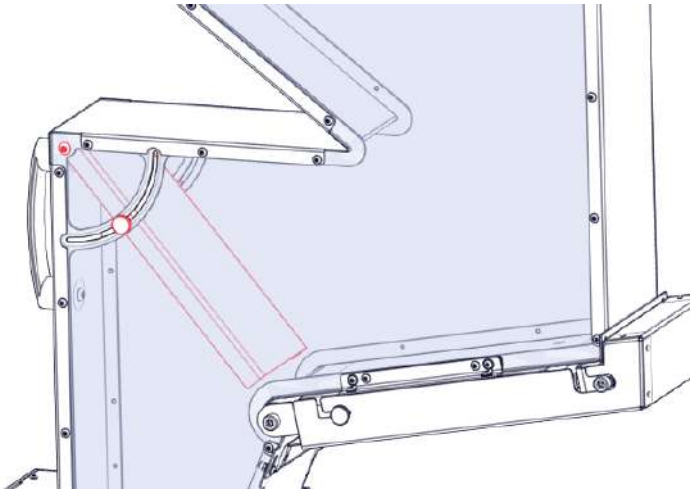
The feeding aperture of the hopper can be adjusted to control the amount of material that is allowed to pass through to the machine. Excess material remains in the feeding area until the path is cleared. The size of the feeding aperture depends on;

- the size of the input material and;
- the amount of material that can be fed at once to the machine.

If you only have a *GP20 Granulator*, the hopper has an additional barrier that prevents upward flying material. This barrier reduces the pass-through size at the bottom of the hopper. To minimize the chance of blockages, it is advised not to set the feeding aperture larger than the aperture at the bottom of the hopper.

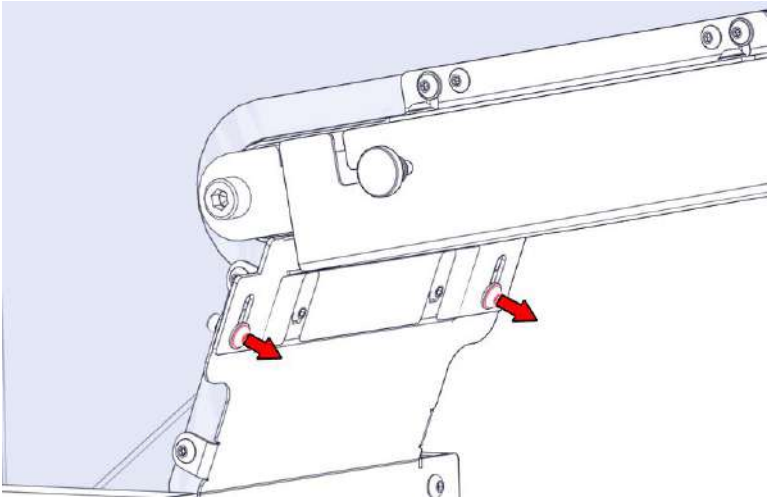
To adjust the feeding aperture, simply loosen the thumb screws on both sides of the hopper and set the plate to the desired position. Finally, tighten the thumb screws to fix the plate in place.

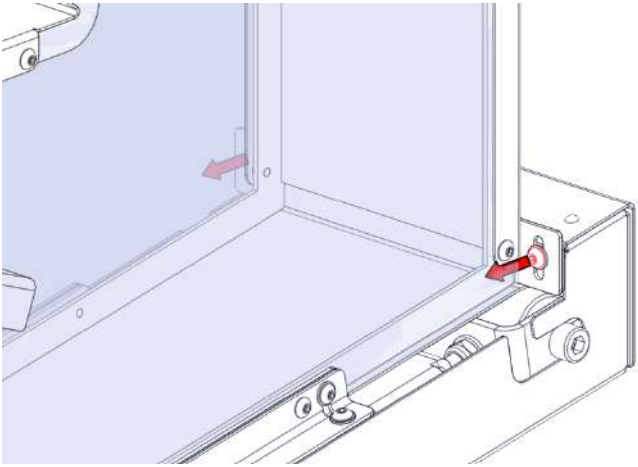


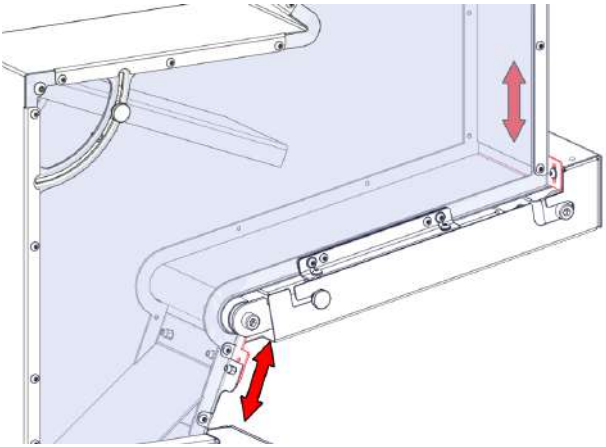


3.5.1.2. ADJUSTING THE BELT SCRAPERS

The conveyor belt can be customized by for example adding flaps. The belt scrapers will need to be adjusted accordingly to prevent the conveyor belt from being blocked. Simply loosen the two screws of each belt scraper and set to the desired distance. Finally, retighten the bolts.

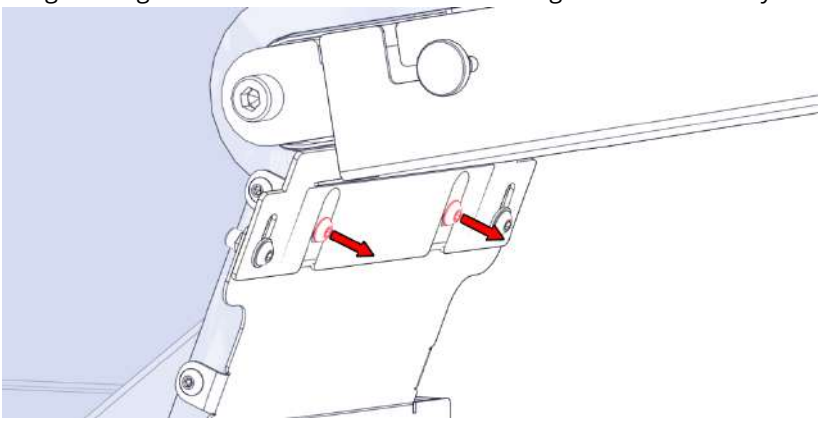


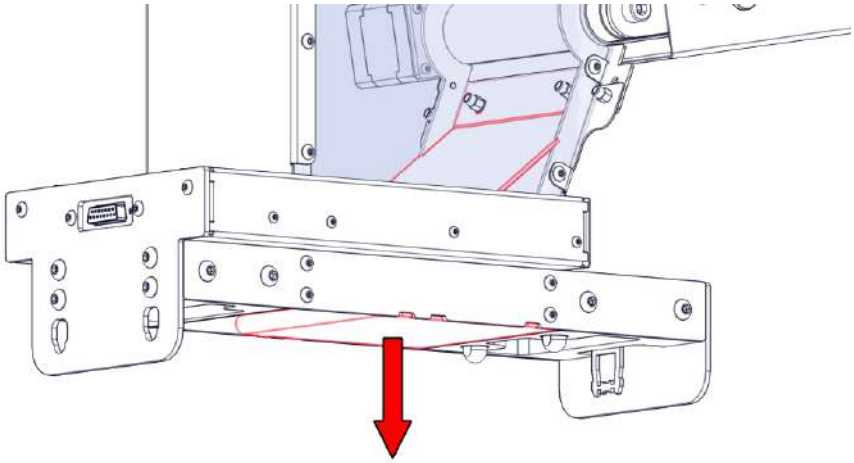




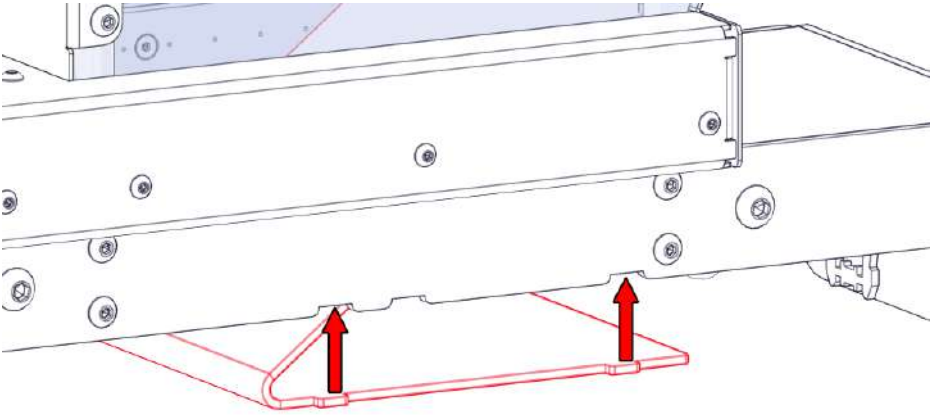
3.5.1.3. REMOVING AND INSTALLING GRANULE GUARD

If you have a GP20 Granulator without a GP20 Shredder, the hopper should have a granule guard installed. The granule guard stops granules from flying up. When the granule guard is not installed, the rotor will “scoop” all of the plastics out of the cutting chamber after which all the plastic will fall down at once. When removing the granule guard unscrew the two M4 bolts using a 2.5mm Allen key.





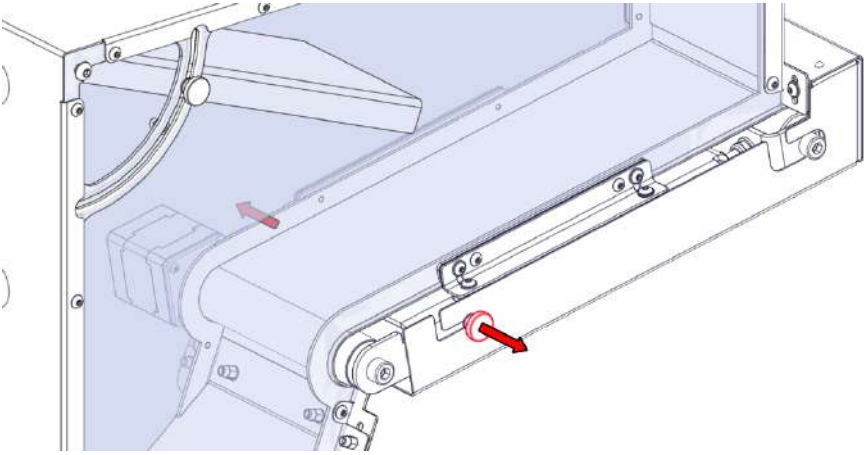
When reinstalling, keep in mind to insert the tabs inside the cut-outs before tightening the screws.



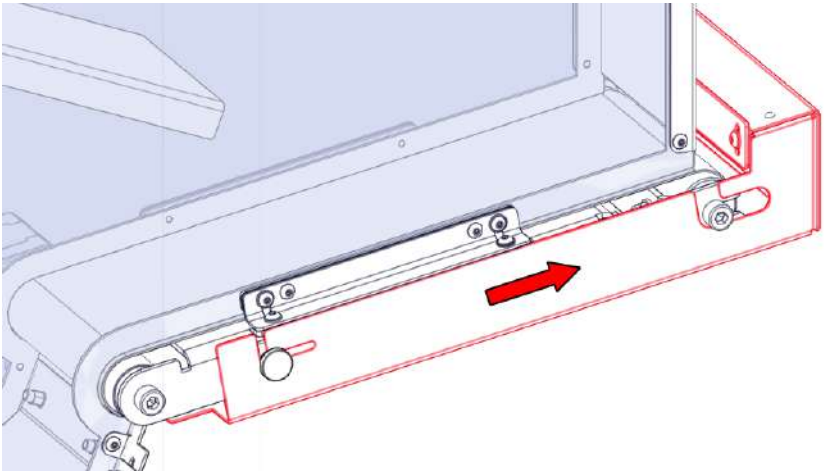
3.5.1.4. REMOVING THE BELT COVER

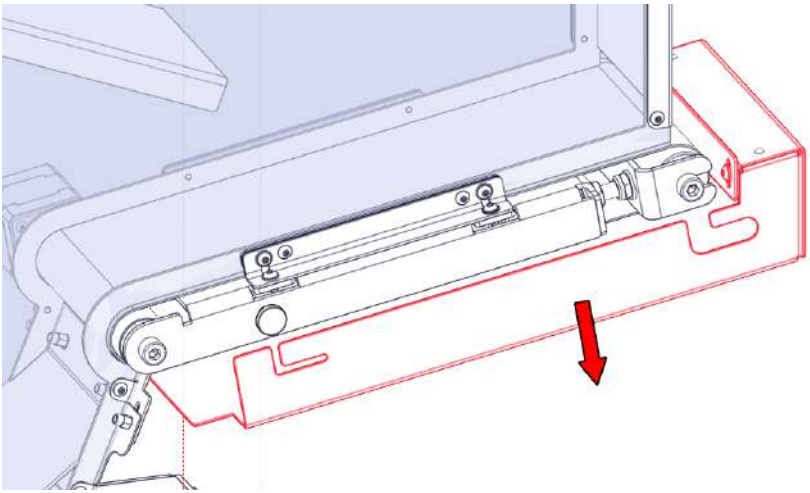
The belt cover can be removed to gain access to the belt. This can be useful when the belt requires cleaning.

Step 1) Untighten, the thumb screws partially



Step 2) Remove the cover by first sliding the cover horizontally followed by a vertical movement down.





3.5.2. GP20 SHREDDER CUTTING CHAMBER

In this chapter, all necessary information will be provided regarding adjustments and maintenance to the cutting chamber of the GP20 Shredder.

⚠WARNING

Make sure the machine is turned off and the power plug is removed before proceeding with the next steps!

⚠WARNING

Always wear cut resistant gloves when working around and inside the cutting chamber.

3.5.2.1. REMOVING AND INSTALLING SCRAPER COMBS

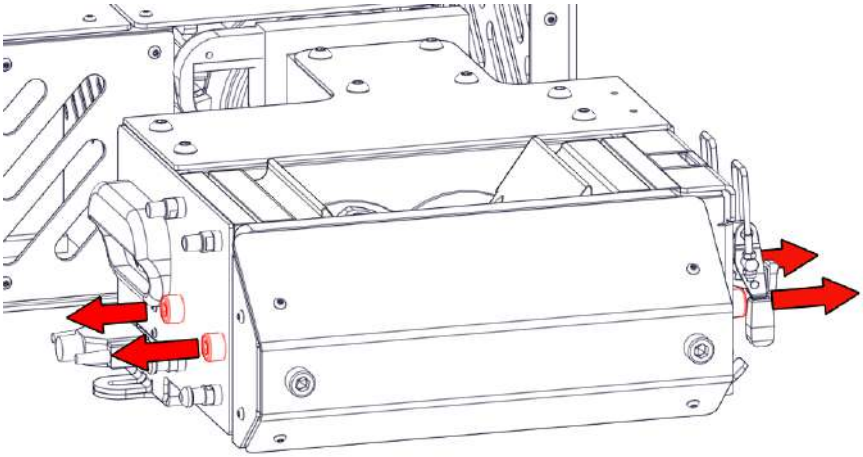
The scraper combs serve a few important functions during the shredding process;

- Preventing material from wrapping around the shredder spacers and therefore;
- Preventing the machine from overloading due to material wedging
- Self-cleaning the cutting chamber
- Preventing material to come back up

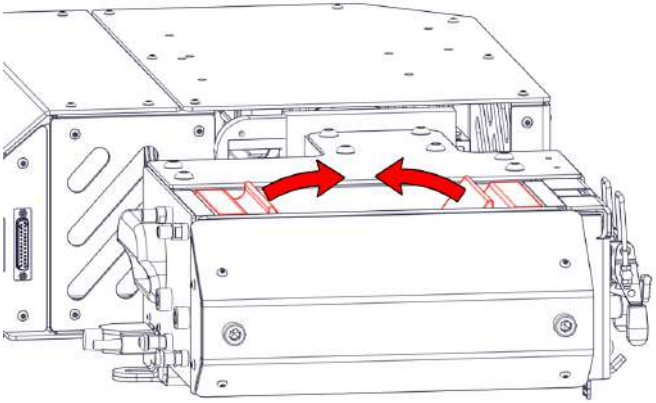
It is advised to remove the Scraper combs prior to cleaning the cutting chamber of the GP20 Shredder.

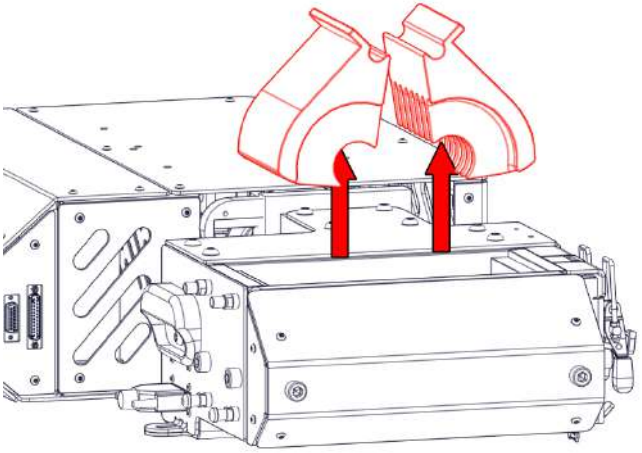
Step 1) Remove the hopper from the machine.

Step 2) Each scraper comb is fixed in place with two bolts. These bolts can be found on the outside of the machine. Loosen all four bolts (two per scraper comb).



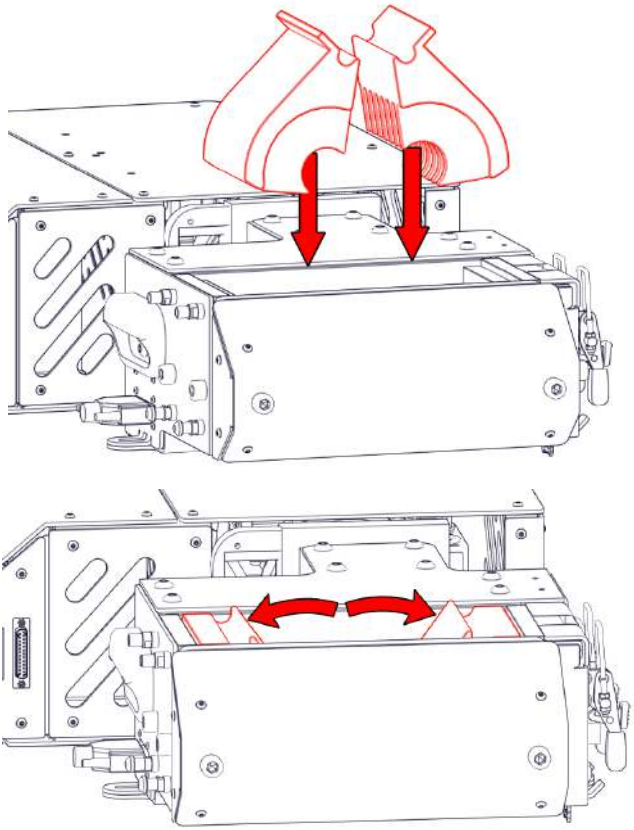
Step 3) Carefully pull the scraper comb up and lift it out.



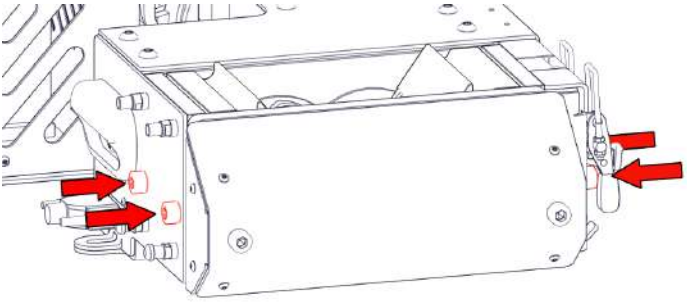


For installing the Scraper combs, the same steps can be done in reverse as shown above.

Step 1) Lower the Scraper combs inside of the machine.



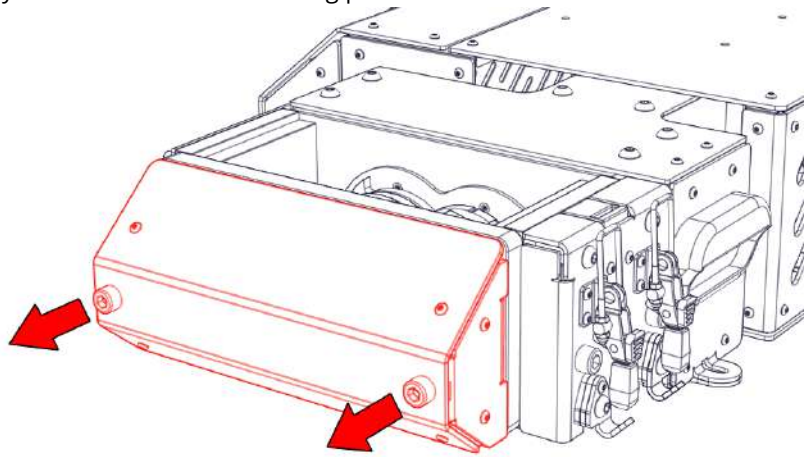
Step 2) Tighten the bolts on the side using an 8mm Allen key. This will keep the scraper combs in place. Don't tighten it too.



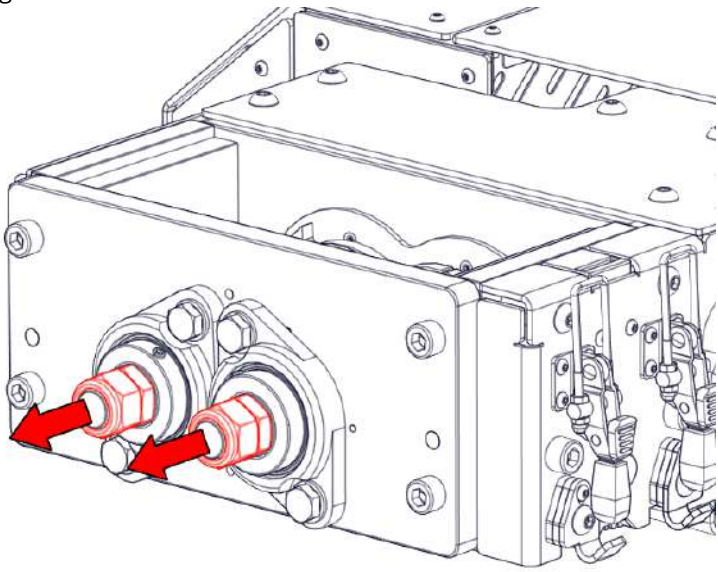
3.5.2.2. REMOVING AND INSTALLING SHREDDER BLADES

Step 1) Remove the scraper combs as explained in the previous chapter.

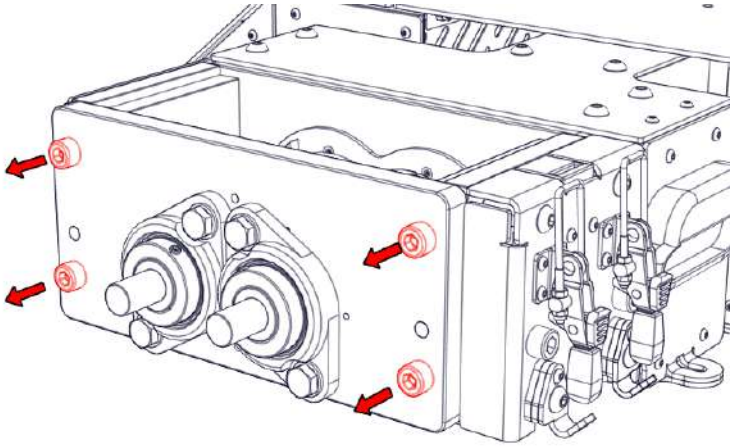
Step 2) Unscrew the two bolts on the front of the machine using an 8mm Allen key and remove the black casing plate.

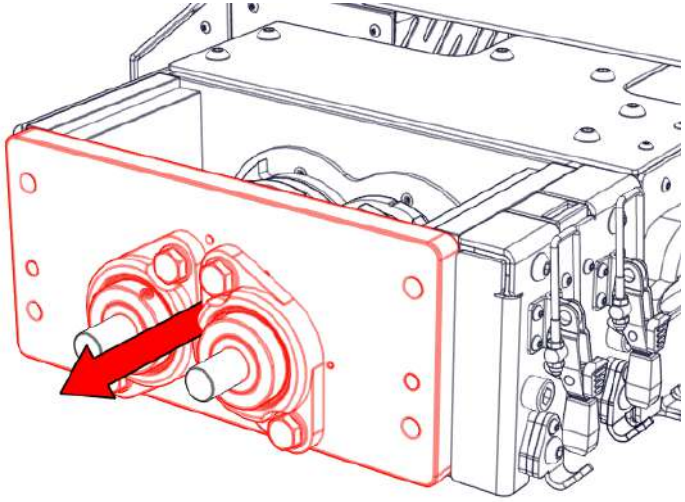


Step 3) The ends of the shredder shafts are now exposed. Remove all four hexagon nuts from both shafts.

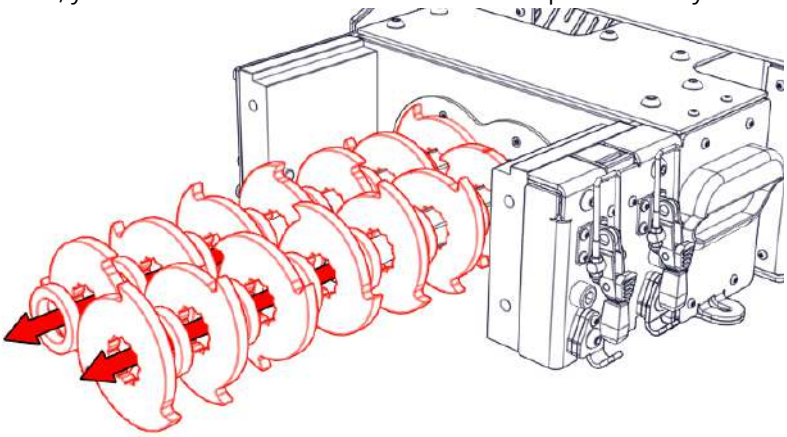


Step 4) Unscrew the four bolts using an 8mm Allen key and slide the front plate towards you.





Step 5) Now, you can remove the shredder blades and spacers one by one.

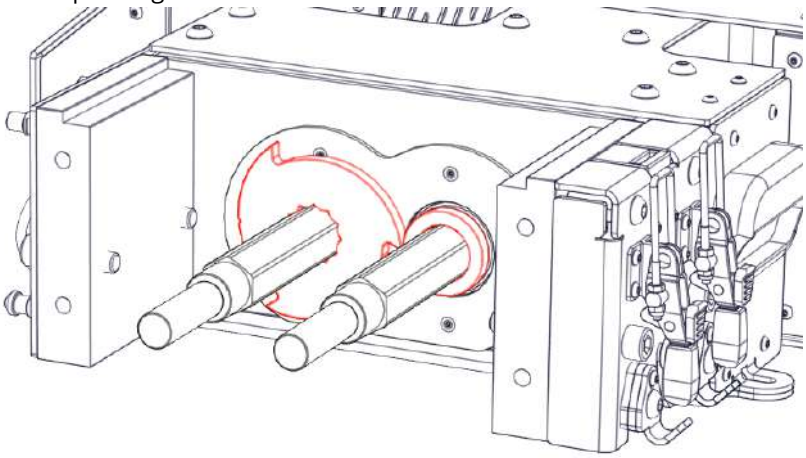


⚠CAUTION

Before reinstalling the shredder blades, it is very important to make sure that the shredder shafts, all shredder blades and shredder spacers are cleaned properly. If dust or contaminant get stuck between the blades, the right clearance cannot be ensured which may result in ***extreme damage*** *to the shredder blades and scraper combs.*

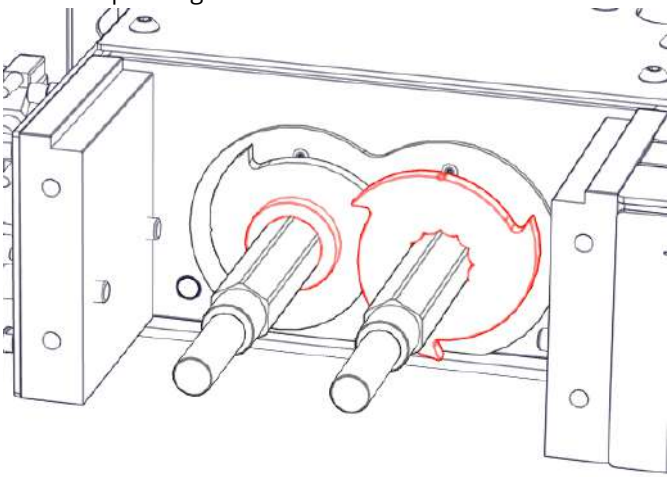
When the shredder shafts, shredder blades and shredder spacers are properly cleaned, the blades can be reinstalled

Step 1) Start by sliding a shredder blade on the left shaft. Make sure the teeth are pointing in the clockwise direction.



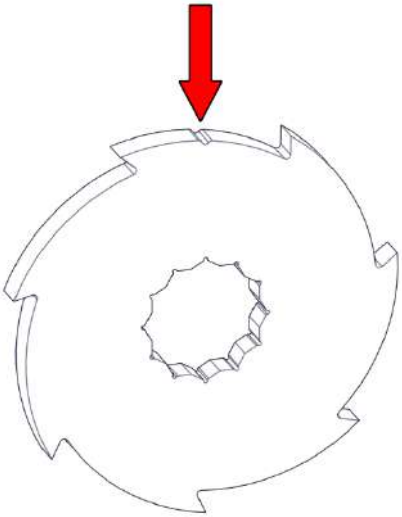
Step 2) Slide one shredder spacer on the right shaft opposing the shredder blade

Step 3) Slide another shredder blade on the right shaft. Make sure the teeth are pointing in the counterclockwise direction.

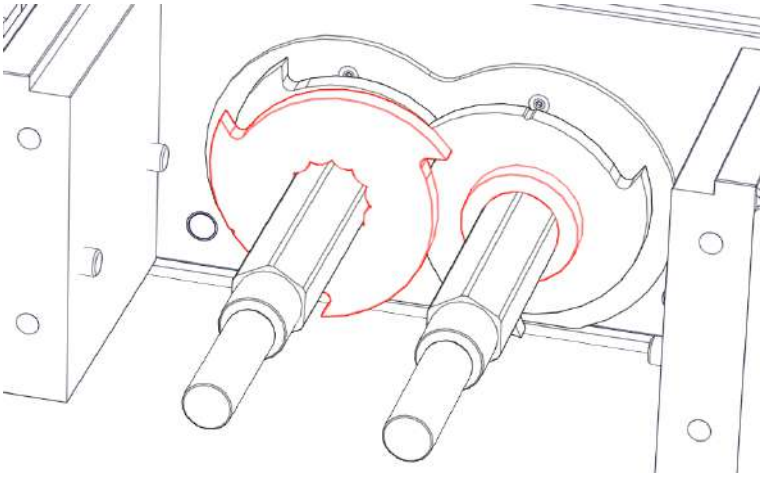


Step 4) Slide a shredder spacer on the left shaft opposing the shredder blade.

Step 5) In case of the 7 teeth-blade: In order to keep track of the rotational configuration of the stacked blades, it is advised to use the small cut-out located on the outer contour of the shredder blade for your reference.

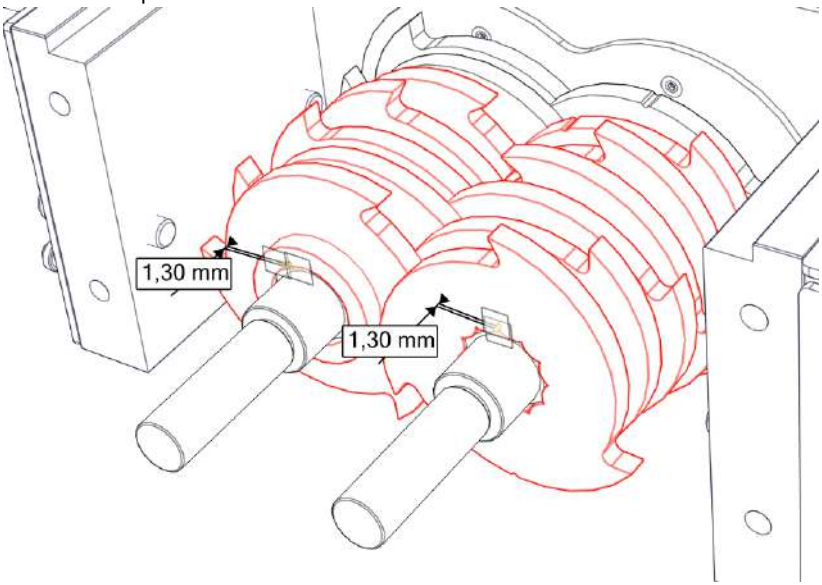


Step 6) The recommended configuration for 7 teeth blades is to stack each subsequent blade one-sixth turn with respect to the previous blade of the same shaft. In case of a 3-teeth-blade: use steps of 30 degrees (1/12th of a turn). These sequential turns can be done either clockwise or counterclockwise as long as it is done consistently for both shafts.

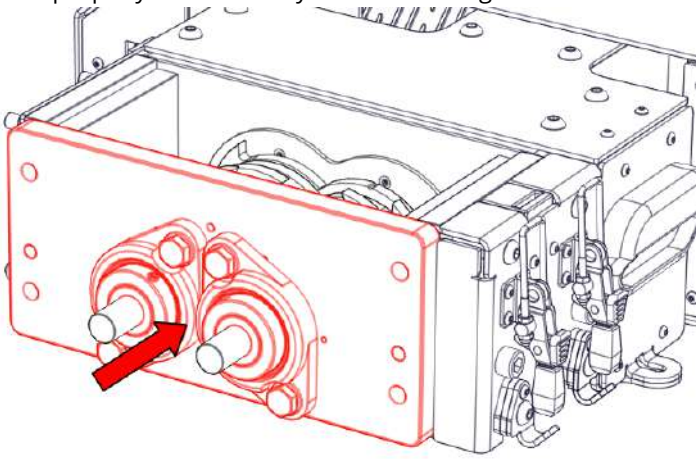


Step 7) Repeat step 1 until 4 until all blades are placed.

Step 8) The hexagon shaped part of the shaft should be completely covered with shredder blades and spacers. In the illustration below, the blade and spacer have an 1,3mm overlap. The overlap may vary as long as there is some overlap.

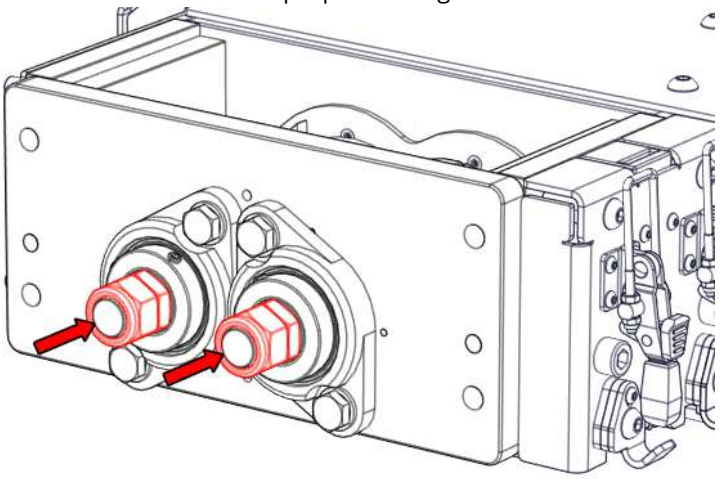


Step 9) Slide the front plate back on the shafts. Make sure the front plate is cleaned properly around the cylindrical bushings.

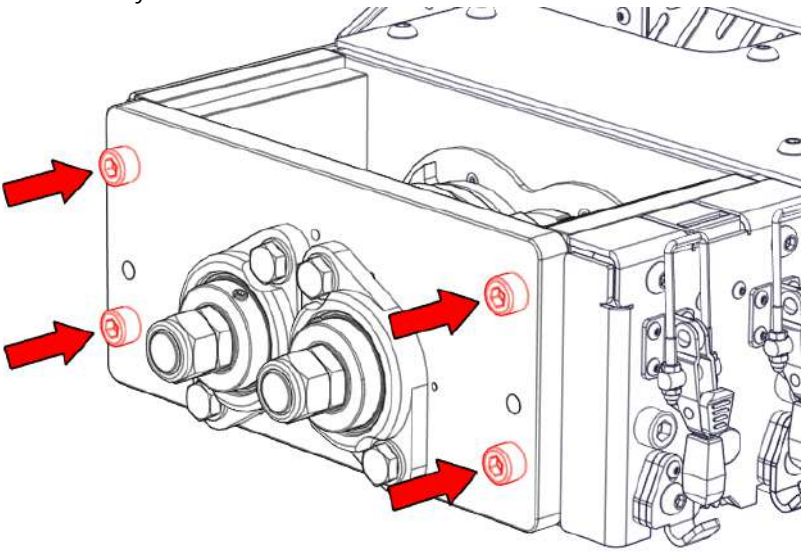


Step 10) Start by placing one thin nut per shaft and tighten the nuts a little bit at a time. Even tightening is important to avoid imbalances in the stacked blades.

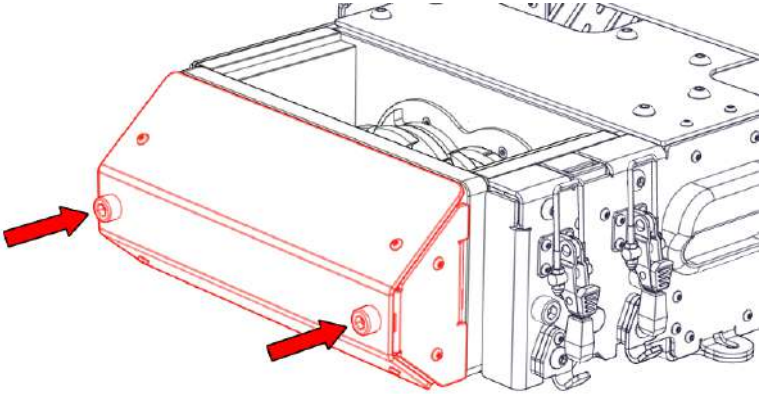
Step 11) If both thin nuts are tightened and there is no play in the shredder blades, the nylon locking nuts can be placed and tightened against the thin nuts. This ensures a proper holding force for the stacked blades.



Step 12) Screw in the four bolts in the corners of the front plate using a 8mm Allen key.



Step 13) Mount the black casing plate back on the machine by screwing in the two bolts also using a 8mm Allen key.

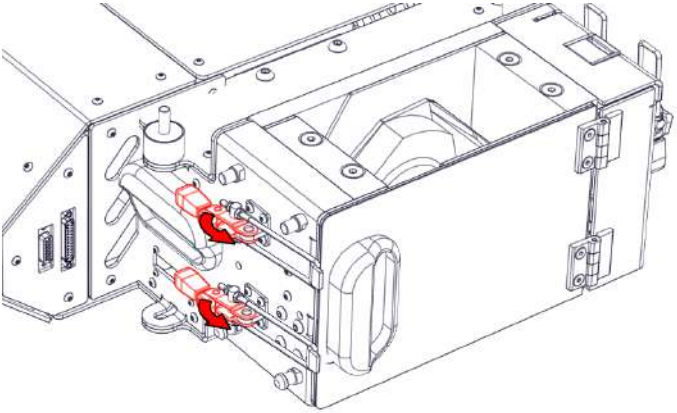


3.5.3. GP20 GRANULATOR CUTTING CHAMBER

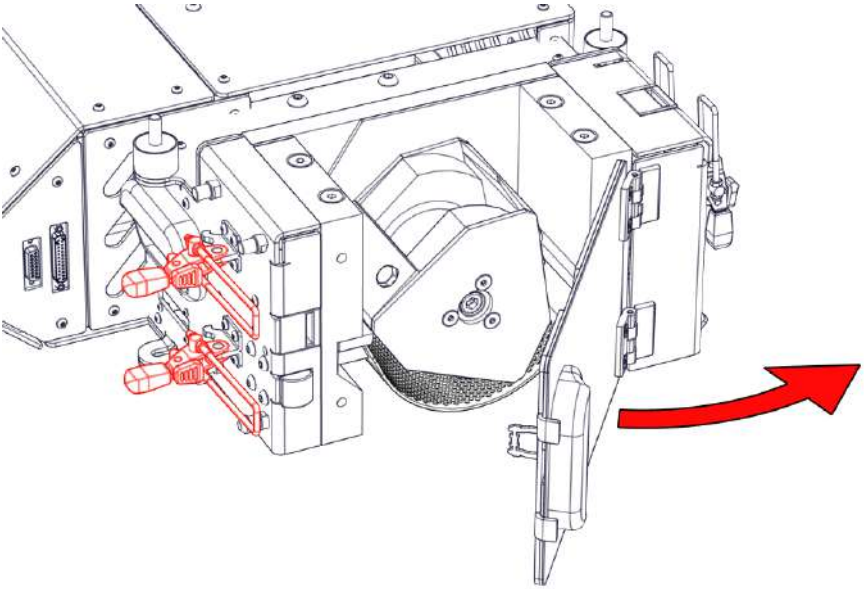
In this chapter, all necessary information will be provided regarding adjustments and maintenance to the cutting chamber of the GP20 Granulator.

3.5.3.1. OPEN GRANULATOR DOOR

The granulator door is locked in place with two toggle clamps. Release the safety hooks from the toggle clamps by pressing the red lever.

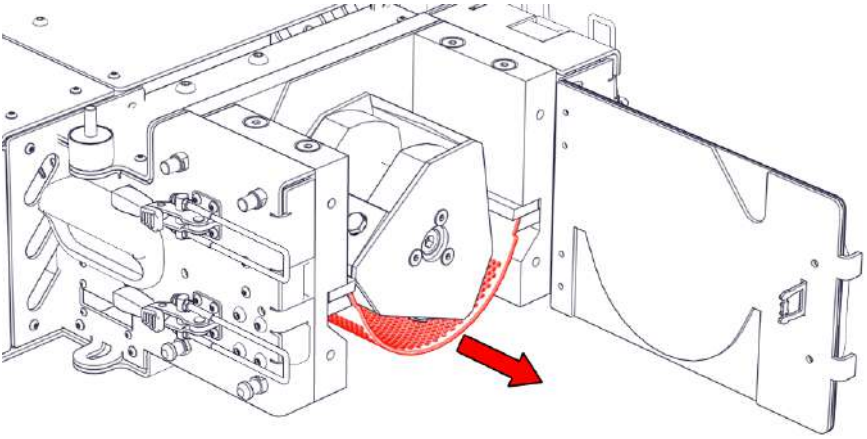


Now, open the toggle clamps and the granulator door will be pushed open by a spring loaded element. The door is pushed open to ensure that the safety sensor will be disengaged.



3.5.3.2. REMOVING AND INSTALLING FILTER SCREEN

If the granulator door is opened as instructed in chapter 3.5.3.1 and the Container is removed from the machine, the filter screen can be removed from the GP20 Granulator. Simply slide the filter screen towards you.



3.5.3.3. REMOVING AND INSTALLING GRANULATOR ROTOR

⚠WARNING

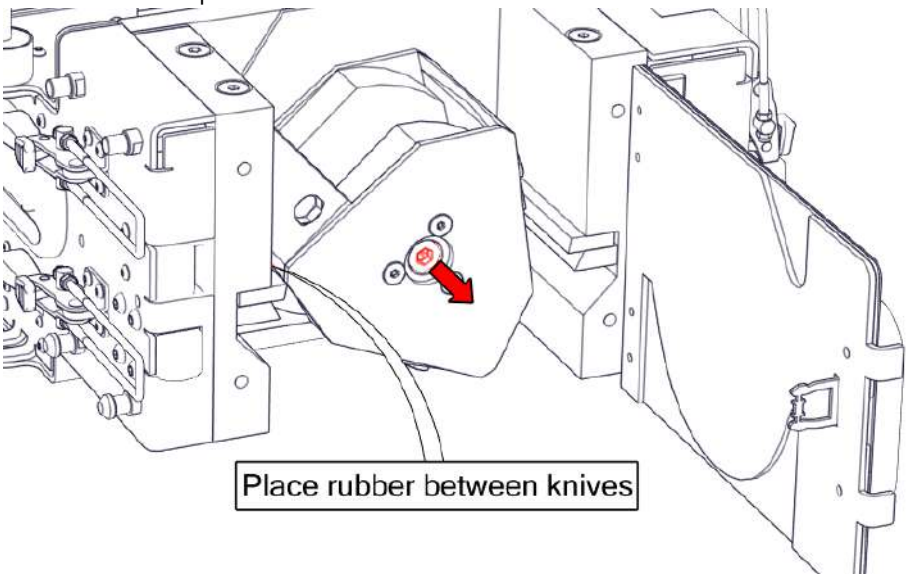
Always wear cut resistant gloves when working around and inside the cutting chamber.

Step 1) Open the granulator door. More information about this in chapter 3.5.3.1

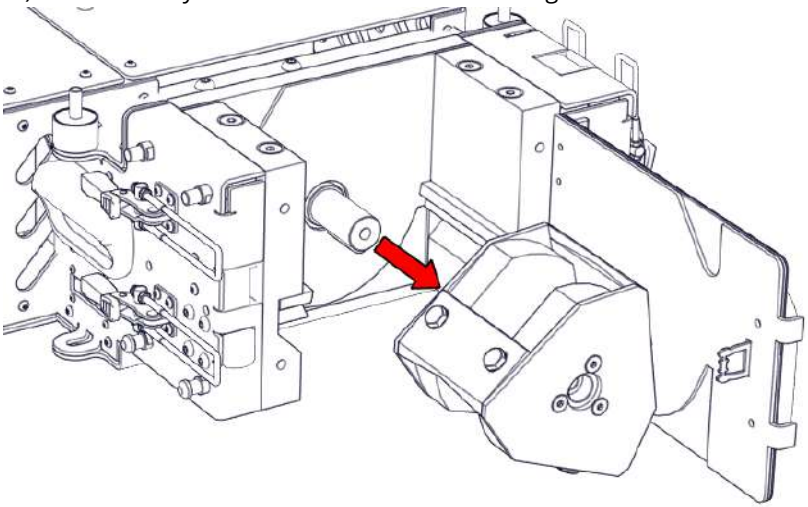
Step 2) Remove the Container.

Step 3) Remove the Filter screen as instructed in chapter 3.5.3.2

Step 4) Block the rotor by placing a piece of rubber between the rotary and stationary knives. Use an 8mm Allen key to unscrew the bolt that locks the rotor in place.

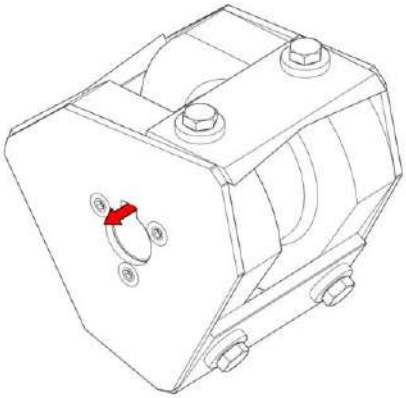


Step 5) Carefully slide the rotor out of the cutting chamber.

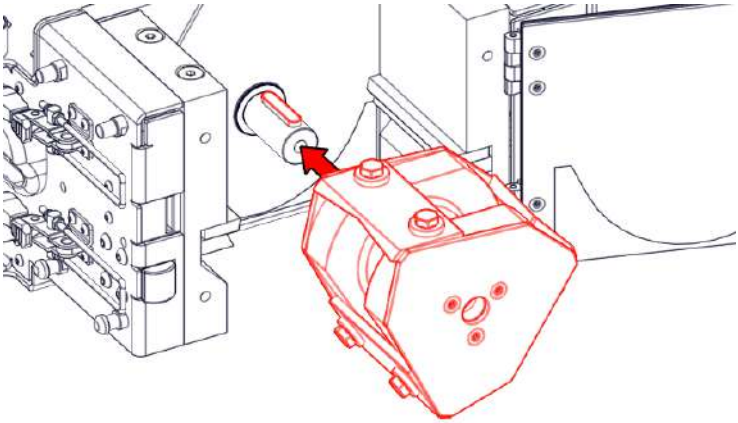


Step 6) When installing the rotor, it is important to properly clean the cutting chamber first to ensure proper alignment of the rotor.

Step 7) Locate the keyway inside of the hole of the rotor



Step 8) Locate the key inside of the shaft



Step 9) Slide the rotor fully on the drive shaft

Step 10) Insert the bolt through the hole in the center of the rotor and tighten it.

Step 11) Manually turn the rotor to verify that the rotor runs smoothly.

3.5.3.4. ADJUSTING/REPLACING THE GRANULATOR KNIVES

⚠WARNING

Always wear cut resistant gloves when working around and inside the cutting chamber.

The granulator knives are wear components, they will become blunt after processing for a long time. When processing very hard materials or non-plastics the life span of the knives is drastically reduced.

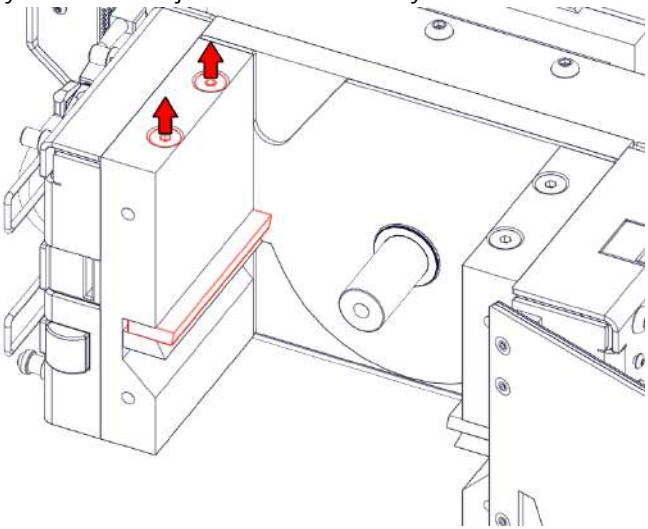
In this case replacing or adjusting them is necessary to have the optimal efficiency.

To ensure an equal gap between the rotary knives and the stationary knives, it is important that the cutting edges of all the rotary knives are on the same imaginary cylindrical cutting face. The easiest way to do this is to;

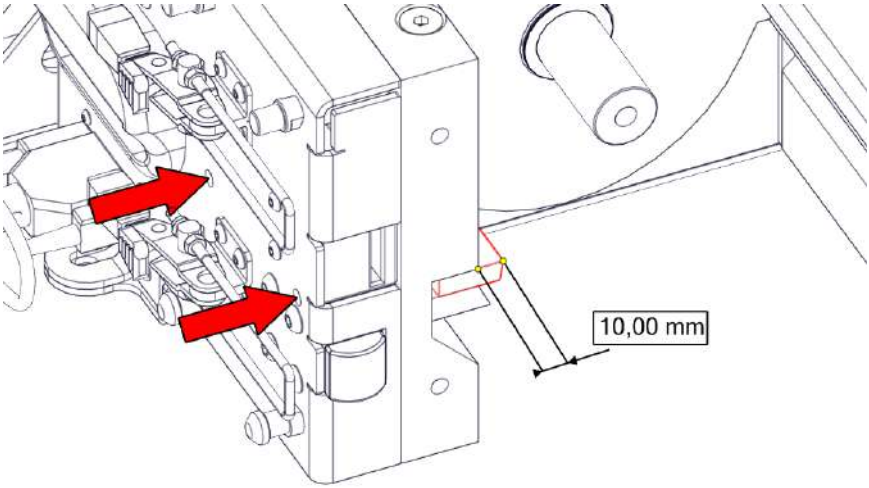
Step 1) In the case of a GP20 Hybrid, the GP20 Shredder should be lifted off GP20 Granulator first in order to gain access to the bolts responsible for holding the stationary knives in position

Step 2) The initial position of the left stationary knife is important. If it is too much to the left, the rotary knives can crash into the filter screen. If it is too much to the right, the gap between de rotary knives and filter screen will be too big reducing cutting efficiency. Loosen the two M8 bolts using a

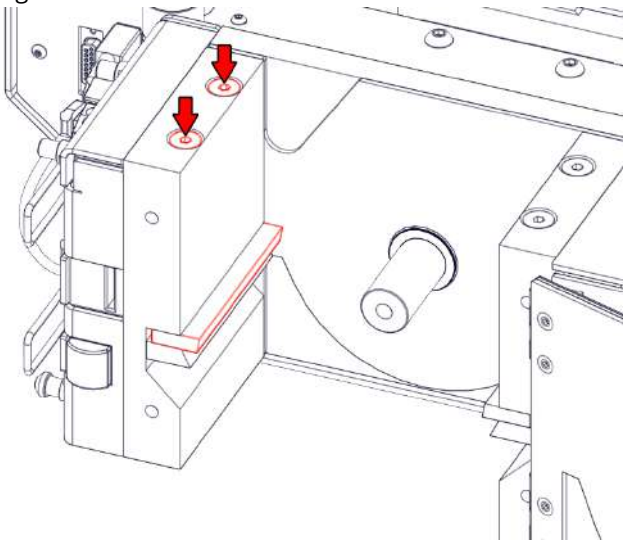
5mm Allen key in order to adjust the left Stationary knife.



Step 3) Adjust the position of the left Stationary knife by tightening or untightening the set screws from the side using a 3mm Allen key.
A good starting point is to offset the cutting edge of the stationary knife by 10mm with respect to the block it is mounted on. Use the two set screws to carefully manipulate the left stationary knife.



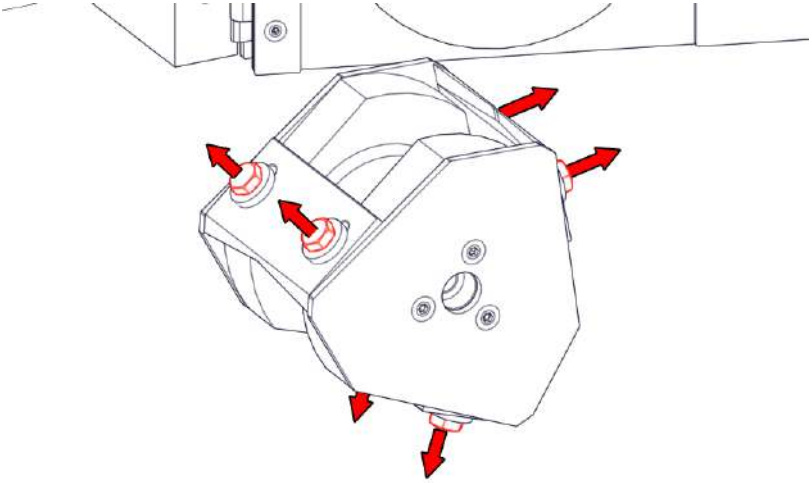
Step 4) Fix the left stationary knife in position by tightening the two bolts on top of the machine. Make sure the stationary knife does not move while tightening.



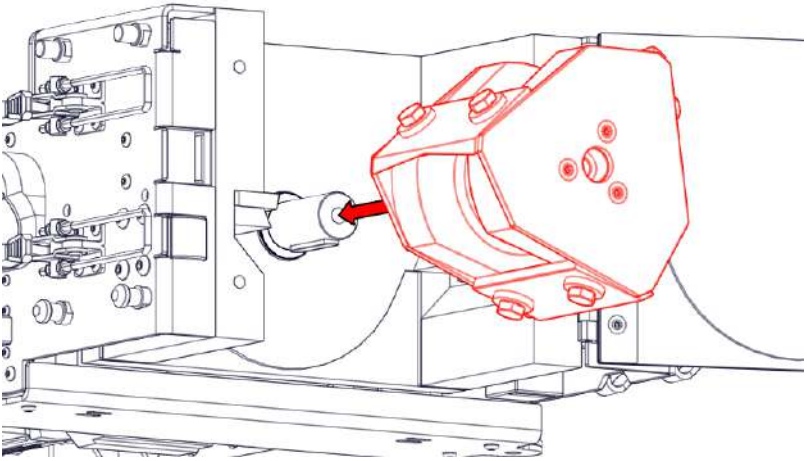
The left stationary knife can now be used as a reference for adjusting the rotary knives

Step 5) Remove the rotor as instructed in chapter 3.5.3.3

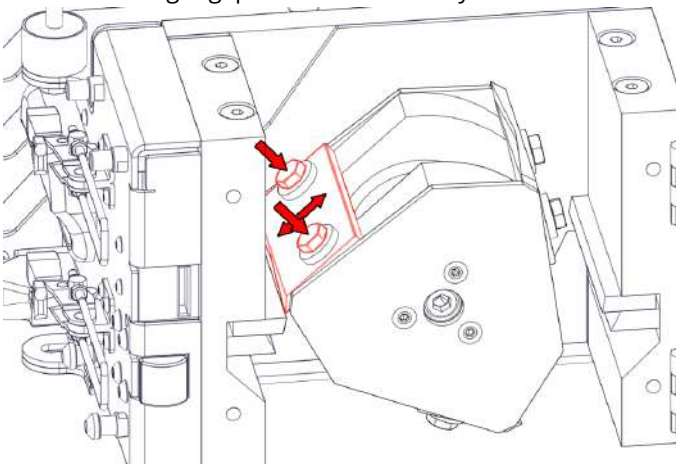
Step 6) Slightly loosen the hexagon bolts of the rotary knives so that the rotary knives are free to slide along the surface.



Step 7) Place the rotor with the free moving rotary knives back in the machine and lock it on the shaft.



Step 8) Manually turn the rotor so that the cutting edge of one rotary knife is touching the cutting edge of the left stationary knife. Use a thin piece of paper or set the right gap between the rotary knives and the left stationary knife.

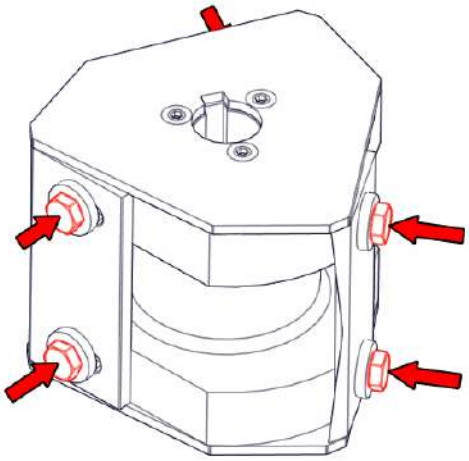


Step 9) Carefully tighten the bolt

Step 10) Do the same for the other rotary knives

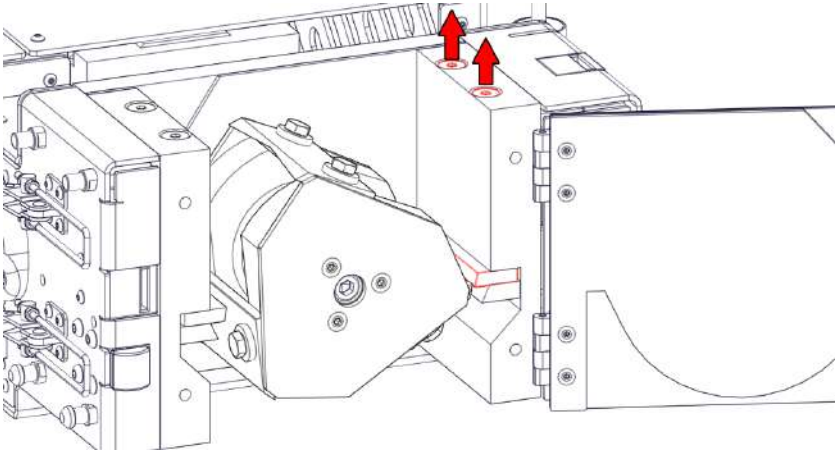
Step 11) Insert the filter screen to check that the knives are not scraping along the filter screen. If everything is correct, remove the filter screen again.

Step 12) Carefully remove the Rotor again and place it on a workbench. Now, fully tighten all the bolts.

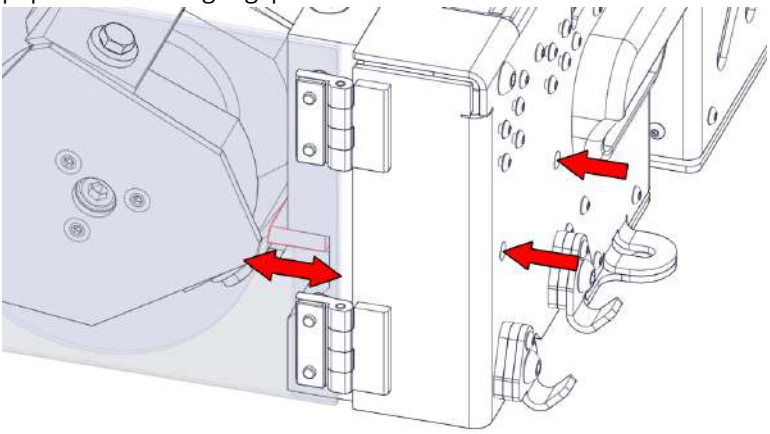


Step 13) Place the rotor back in the machine

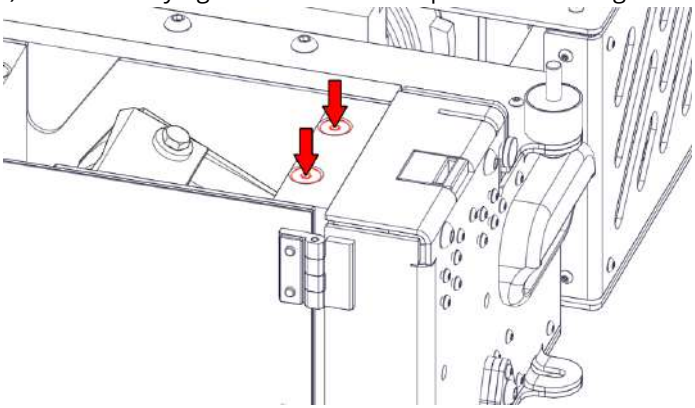
Step 14) Loosen the two M8 bolts using a 5mm Allen key in order to adjust the right stationary knife.



Step 15) Use a 3mm Allen key on the right side of the machine to adjust the right stationary knife with respect to the rotary knives. Use a thin piece of paper to set the right gap.

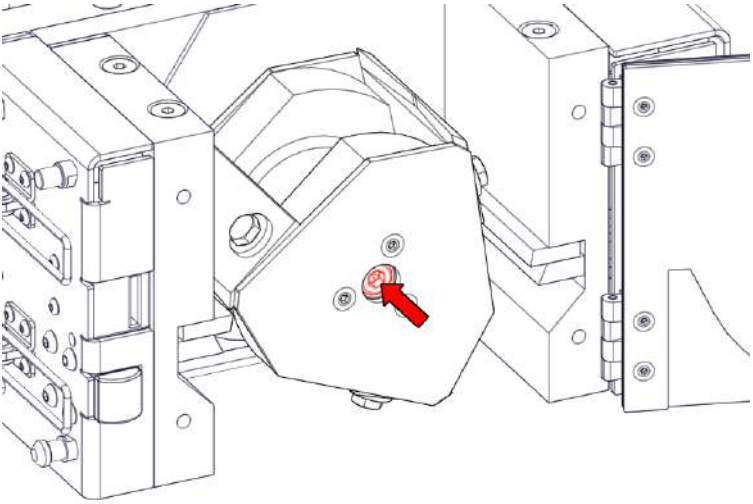


Step 16) Carefully tighten the bolts on top without moving the stationary knife.



Step 17) Check the gaps by manually turning the rotor. Place the filter screen and check for any collisions with the knives.

Step 18) If everything is correct, fix the rotor in place with a M10x70 bolt using an 8mm Allen key.



4. TROUBLESHOOTING

Troubleshoot information about most common problems.

4.1. ISSUE SITUATIONS

Issue	Probable cause	Measures
The material is stuck in the hopper, and the hopper conveyor belt is not able to carry the material into the machine.	The conveyor belt does not have enough grip on the material.	Fill the hopper less full, adjust the feed aperture, or add flaps to the conveyor belt, by sticking pieces of tape on the belt.
The output regrind is contaminated.	The machine was not cleaned properly, or the input parts were dirty.	Clean the machine as explained in chapter 3.3.3 and chapter 3.3.4
The parts are floating over the shredder knives and not being grabbed.	The parts are too big, round or light for the chosen shredder knives.	Change the type of knives in the shredder, or decrease the part size.

4.2. SAFETY BEFORE MOTOR START MESSAGES

Safety switch	Information	Measures
Door panel not secured	Please close the door, properly secure the clip and start again via the main menu.	See chapter 3.5.3.1 for further instructions.
Emergency stop pressed	Please rotate the red emergency button clockwise and restart the machine via the main menu.	The red emergency switch located next to the display is pressed in.
Hopper not secured	Please mount the hopper, properly secure the clips and start again via the main menu.	See chapter 3.3.2 for further instructions.
Left shredder comb not placed	Place the left comb between the knives, place hopper and restart the machine via the main menu.	See chapter 3.2.2 for further instructions.
Right shredder comb not placed	Place the right comb between the knives, place hopper and restart the machine via the main menu.	See chapter 3.2.2 for further instructions.
Outlet not secured	Please attach the outlet, properly secure the clips and restart the machine via the main menu.	
Machine link safety issue	Fix any safety issues on the linked machine and check the machine link cable connection.	

4.3. RUNTIME ERROR MESSAGES

Runtime errors that may occur during machine usage. For errors that are not shown below, please make sure that the latest firmware is installed. If problems persist, contact support for more information: support.3devo.com

Error message	Information	Comments
Stopped: no material	The machine was stopped, insufficient material is being fed through the hopper.	To save energy consumption the machine automatically stops if no material is being fed.
Configuration data too new	This firmware is too old to load the configuration, please update. If you continue, all saved configuration data will be erased.	Check support.3devo.com to download the firmware and see further instructions.
Initialization failed	Failed to initialize the hopper. Is the hopper connector plugged in?	
Initialization failed	Failed to initialize the hopper. Firmware might be too old for this machine.	Check support.3devo.com to download the firmware and see further instructions.
Initialization failed	Failed to initialize the interface board.	Contact us via support.3devo.com
Machine was reset	This is expected when the serial port is opened, or firmware has been uploaded.	This indicates whether the machine restarted by accident. If the machine restarts due to a firmware upgrade for example, this message can be ignored.
VFD – no communication	Could not communicate with the VFD motor controller.	Make sure the latest firmware is installed or contact the manufacturer to resolve this situation. Check support.3devo.com.

VFD – not found	No valid response from the VFD motor controller received.	Make sure the latest firmware is installed or contact the manufacturer to resolve this situation. Check support.3devo.com.
VFD – not supported model	Unsupported VFD motor controller model detected.	Make sure the latest firmware is installed or contact the manufacturer to resolve this situation. Check support.3devo.com.
Error has occurred	The external supply voltage is too low or absent.	First check if the voltage of the machine matches your power outlet. This issue usually happens if a USB cable is plugged in, but the machine is off, or the power plug is not plugged in. Please check these last points.
Error has occurred	VFD motor current limit reached.	Either too much material was being fed, or the material is too thick/strong. Decrease the amount of material being fed or decrease the size of the parts.
Error has occurred	Motor obstruction retries maximum reached.	The motor is obstructed too much in a short period. The material might be too big/tough or feed in lesser quantities.
Error has occurred	Thermistor is not connected.	Contact us via support.3devo.com.
Error has occurred	Motor too hot.	This might happen if the machine is running for an extended amount of time, in a warm environment. If it happens very often, please

		contact us via support.3devo.com.
Error has occurred	Failure reading a thermocouple.	Contact us via support.3devo.com.
Error has occurred	Could not communicate with the VFD. Power might be off.	Try turning the machine off and on again. Contact us via support.3devo.com.
Error has occurred	VFD communication fault.	Try turning the machine off and on again. Contact us via support.3devo.com.
Error has occurred	VFD controller fault.	May happen during an overload condition of the motor. If this happens frequently, contact us via support.3devo.com.
Error has occurred	The internal supply voltage was unstable. This is expected when the USB cable is plugged in.	Check if the power cord is properly connected and the power switch is on.
Error has occurred	Motor not running or running much too slow.	Check for any obstructions. Contact us via support.3devo.com.
Error has occurred	Failure communicating with hopper.	Check if the cable to the hopper is connected properly. Contact us via support.3devo.com.
Error has occurred	Failure reading hopper sensor.	Contact us via support.3devo.com.
Error has occurred	Emergency stop button is pressed.	Please rotate the red emergency button clockwise and restart the machine via the main menu.
Error has occurred	Hopper no longer secured.	As a safety mechanism, machine will not start if the hopper is not connected

		properly. See chapter 3.3.2 for further instructions.
Error has occurred	Outlet no longer secured.	As a safety mechanism, machine will not start if the outlet is not connected properly.
Error has occurred	Door panel not secured.	As a safety mechanism, machine will not start if the door is not closed properly. See chapter 3.5.3.1 for further instructions.

Error has occurred	Linked machine safety error, or machine link connection problem.	As a safety mechanism, machine will not start if the granulator and shredder are not connected properly.
Error has occurred	Contactor is not enabled.	Contact us via support.3devo.com.
Error has occurred	Contactor contacts are fused together.	The contactor fused message may occur when the contactor is worn out or after power outage. Contact us via support.3devo.com.

5. TRANSPORTATION

Keep the original packaging. When the machine is shipped back to 3devo for service or maintenance the machine should be packed in the same way as how it arrived.

For additional questions, please contact support.3devo.com.

6. **NOTES**

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