OPERATIONAL & MAINTENANCE MANUAL

SEM Model 2 SSD

Dual Stage Disintegrator CE Approved

POP-0049 Rev. 0
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Security Engineered Machinery

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IMPORTANT SAFETY PROCEDURES

Your new SEM Model 2 SSD incorporates powerful, heavy duty cutting mechanisms. **Serious and permanent injury may result** if proper precautions are not followed.

1. This equipment should never be operated by children or individuals that are untrained or incapable of understanding these safety precautions.
2. Do not reach into the feed opening for any reason. Never insert fingers, hands, other extremities, or objects not meant to be crushed into the feed opening.
3. Do not operate or come into close proximity to this equipment wearing loose clothing, neckties, dangling jewelry, or long hair which may become entangled in the cutting chamber.
4. Maintenance or repair of this equipment should be performed only by trained, authorized service personnel.
5. Always disconnect electric power (unplug) before removing or opening any cover or other panels providing access to the internal mechanisms.

Important:

If you over feed the shredder or have an Emergency and need to shut down the machine, press the red Emergency Stop button on the left side of the machine or open the collection bin door.

Warning:

Wait at least 30 seconds after inserting the last drive before pressing the STOP pushbutton to prevent STAGE 1 from jamming upon start-up.

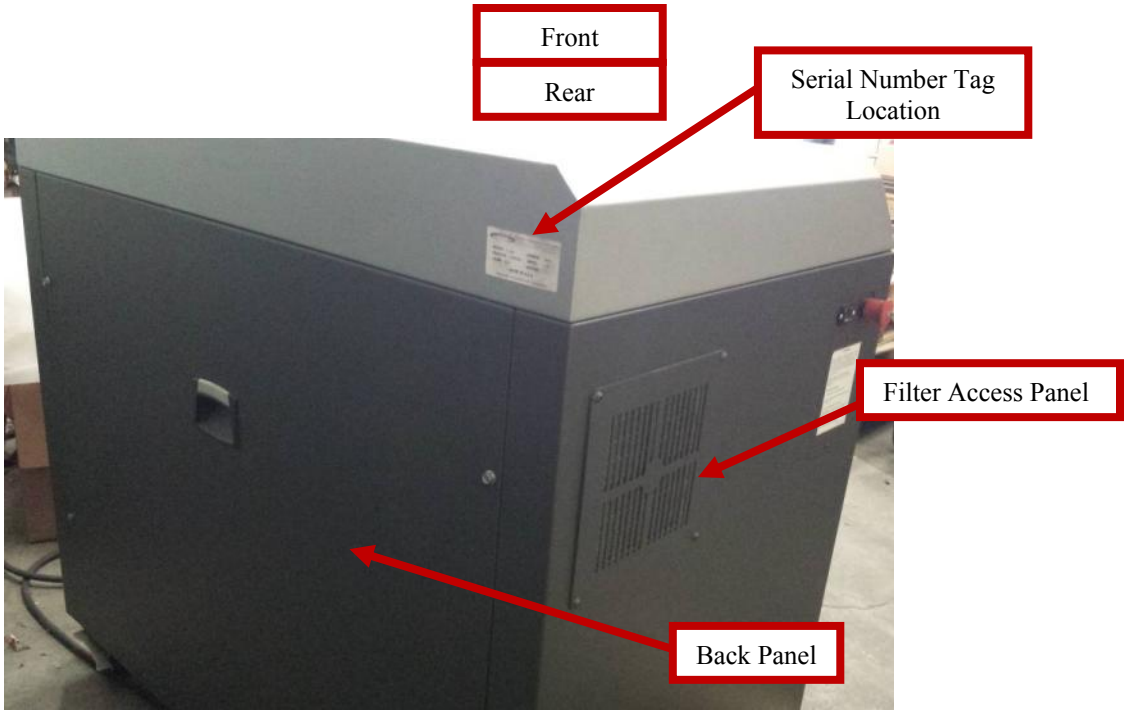
Warning:

Wait for the input chute to empty itself of all shredded material before feeding another drive.

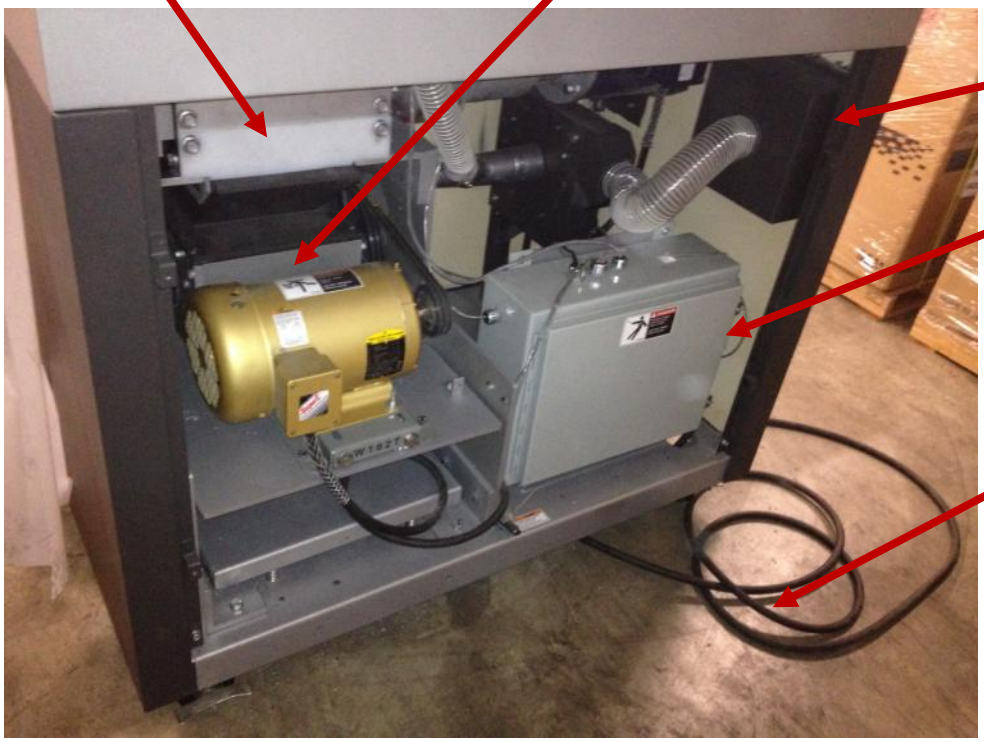
Important:

SEM recommends that machine operators wear safety glasses, hearing protection, a mask, and if doing maintenance or opening the cutting chamber, cut resistant gloves. It is up to each customer to determine the PPE for their individual site.

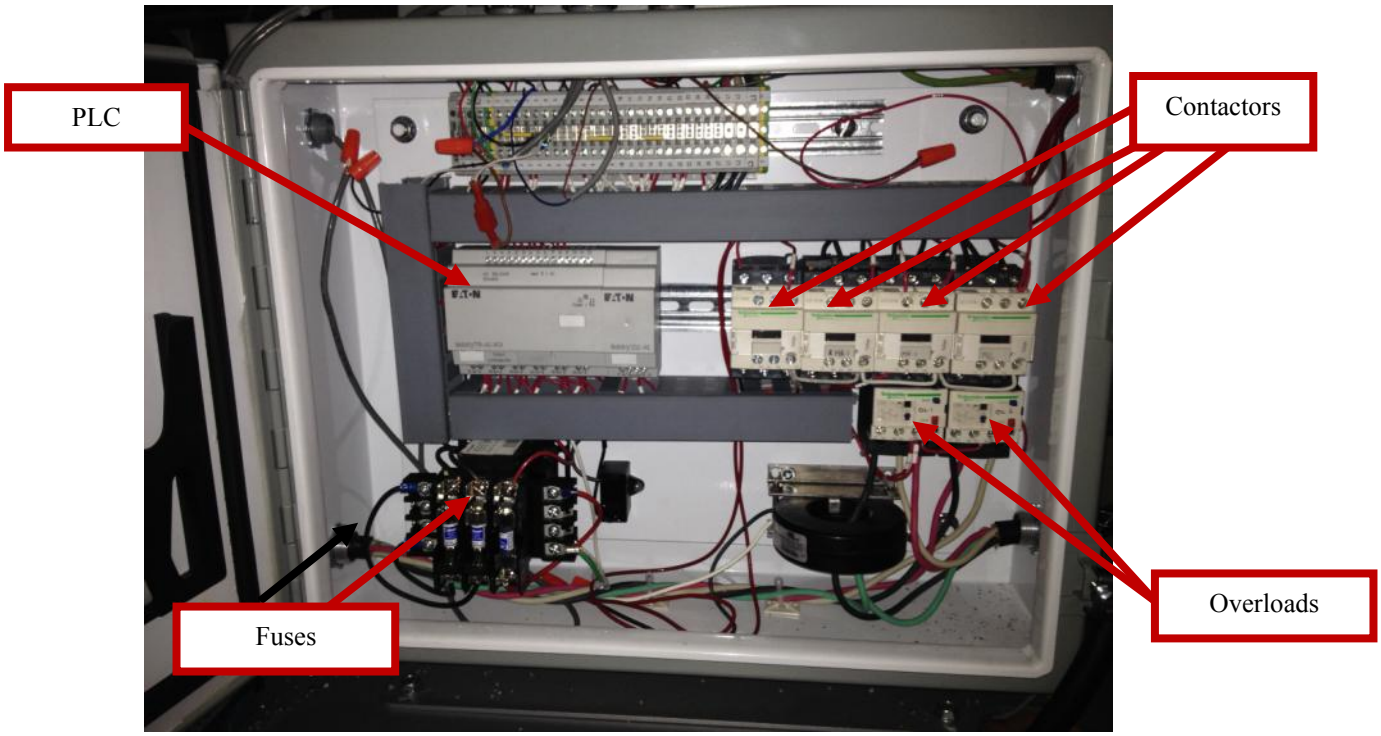
General Assembly



General Assembly Continued



Rear w/ cover removed



Electrical box

Unpacking Instructions

The **Model 2 SSD** has been secured to a pallet for shipping. Please inspect equipment immediately for any shipping damage.

Important Note: Prior to unpacking, if there is any visible damage to the Model 2 SSD or to the crate during shipping, the receiver must note what is damaged on the Bill of Lading and contact the shipping party immediately.

Tools needed:

- Lift truck with a minimum lifting capacity of approx. 2,500lbs (Crated unit weighs ~2,050lb)
- Hammer
- Pry bar
- Strap cutters

Unpacking:

1) Remove sides of crate
   Tools needed: hammer and pry bar

2) Cut straps holding Model 2 SSD
   Tools needed: strap cutters

3) Remove the Model 2 SSD from the pallet
   Tools needed: lift truck

   Note: It is recommended to lift the Model 2 SSD from the front with the forks 30" apart. The majority of the weight will be on the right side of the Model 2 SSD.

The Model 2 SSD is equipped with casters for ease of handling after the unit is lifted off of the pallet.

- If the unit requires storage, it may be stored in its shipping crate or unpackaged. If unpackaged, ensure that the wheel caster locks are engaged to prevent unwanted movement of unit.

- To transport the unit unlock all caster locks and then the unit may be pushed on a flat straight surface. **DO NOT push the unit on an inclined or declined surface as control of the unit can be lost and personal injury could occur.**

Power Specifications & Installation Requirements

Intended Use:
The SEM Model 2 SSD is intended to shred and disintegrate solid state drives. It can reduce media down to a particle size of 2x2mm depending on the size of the screen chosen. Larger screen mesh sizes are available for larger particles and faster throughput. For additional information about destruction of other media see Material Tested section. **The Model 2 SSD is NOT intended to destroy rotational drives. Inserting a rotational drive will damage the unit.**

MODEL 2 SSD

For Connecting to Three Phase Power

VOLTAGE	FULL LOAD AMPS (FLA)	Apparent Power
400VAC 50Hz 3-ph	**13.8 FLA**	**9.5 kVA**
415VAC 50Hz 3-ph	**13.5 FLA**	**9.7 kVA**

Note: Model 2 SSD should be connected to a dedicated circuit regardless of voltage.

Approvals:

CE

All electrical panels contained within unit carry a rating of IP65.

CONNECTION INFORMATION

-All Model 2 SSD units are supplied with an open-ended power cord. This should be directly hardwired to a power disconnect switch.

-A disconnect throw switch should be mounted in close proximity (1-2 feet away) to the unit. See attached electrical schematic for further details.

-The electrical installation of this equipment must be installed by a certified electrician who is versed in the applicable electrical codes of the country/region that the equipment is being installed.

UNIT LOCATION

The Model 2 SSD can be located in an office or warehouse area within 6 feet of a wall receptacle. It is recommended that the machine be **at least** 3 to 4 inches away from the wall for proper ventilation.

After the open-ended power cord has been connected, the unit can be activated by ensuring the Emergency Stop key switch is not engaged and then by using the pushbutton controls on the front of the unit.

Startup and Operation

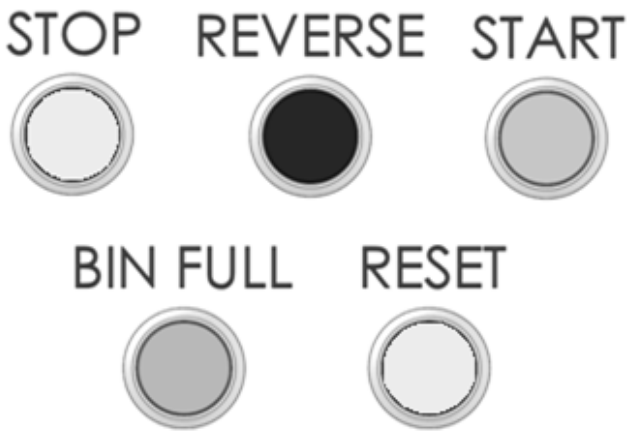
Please read this section carefully.

Most problems occur during the first hours of operation. These can be eliminated by careful review of the operating, maintenance and recommended service instructions.
Warning: Disintegrating of materials the unit is not intended for will likely result in jamming or damage. See pages 16 and 17.

Pre-start-up procedure:

- Familiarize yourself with all controls and button locations.
- Ensure that all guards and covers are in place.
- Ensure that the area is clean.
- Check input area for debris, discarded tools, etc.

Controls on Top of Unit



Startup Procedures:

1) Turn key-switch located on the left side of the cabinet to the ***ON*** position.
   Once the switch is in the ***ON*** position, the ***STOP*** pushbutton will illuminate indicating power to the unit. The internal filter will automatically turn on.

2) Press the ***START*** pushbutton to start the dual stage system. Once the pushbutton is pressed, the ***START*** pushbutton will illuminate. The ***STOP*** light will extinguish.

Feeding and Operating Procedures:

3) Begin feeding solid state drives through the feed chute. Feed one solid state drive through the feed chute every 45−60 seconds, depending on size of the items being destroyed. **DO NOT INSERT ROTATIONAL MAGNETIC MEDIA INTO THIS UNIT. Feeding a rotational drive into this unit will void the warranty.**

   Caution: Feeding drives too quickly may cause a jam or damage the screen.

4) When the collection bin is full, the ***BIN FULL*** light and the ***STOP*** pushbutton will illuminate. STAGE 1 will stop and STAGE 2 will initiate timed shutdown. After timed shutdown has completed, open the collection bin door and empty the contents of the collection bin. Re-insert the bin before starting the unit again. When the ***BIN FULL*** light is illuminated the collection bin will weigh approximately 25 lbs.

Disclaimer: If destroying lighter material in volume the ***BIN FULL*** light may not illuminate when the bin is filled. SEM recommends that the operator gauge how much material is run to avoid overflow and potential damage to the unit.

If ***STAGE 1*** experiences a jam, the unit will automatically reverse up to five times to clear the jam. If the jam is not automatically cleared, the unit will go into a timed shutdown mode illuminating both the ***RESET*** pushbutton and the ***STOP*** pushbutton. To restart the unit, press the ***RESET*** pushbutton. When the unit is ready to run, the ***RESET*** button will extinguish. Next, press the ***START*** pushbutton to restart the unit. If the unit is still jammed, the media may have to be removed manually. To release the jam unplug the unit from power source (recommended that each site has a LOTO program in place), then unbolt and remove the top cover to gain access to the ***STAGE 1*** chamber. Remove the solid state drive and/or remaining particles. Bolt the top cover back into place. Follow the startup procedures to restart the unit.

See page 26-30 for diagrams.

Warning: Disintegrating of materials the unit is not intended for will likely result in jamming or damage. See page 16.

Clearing a Jam/Accessing Stage 2 Cutting Chamber

1. Disconnect all power to the unit using proper lockout-tag out procedures (LOTO).
2. Open door and remove the plastic plugs in the front cover by pushing them out from behind the sheet metal.

Figure 1

Figure 2 – Plugs removed

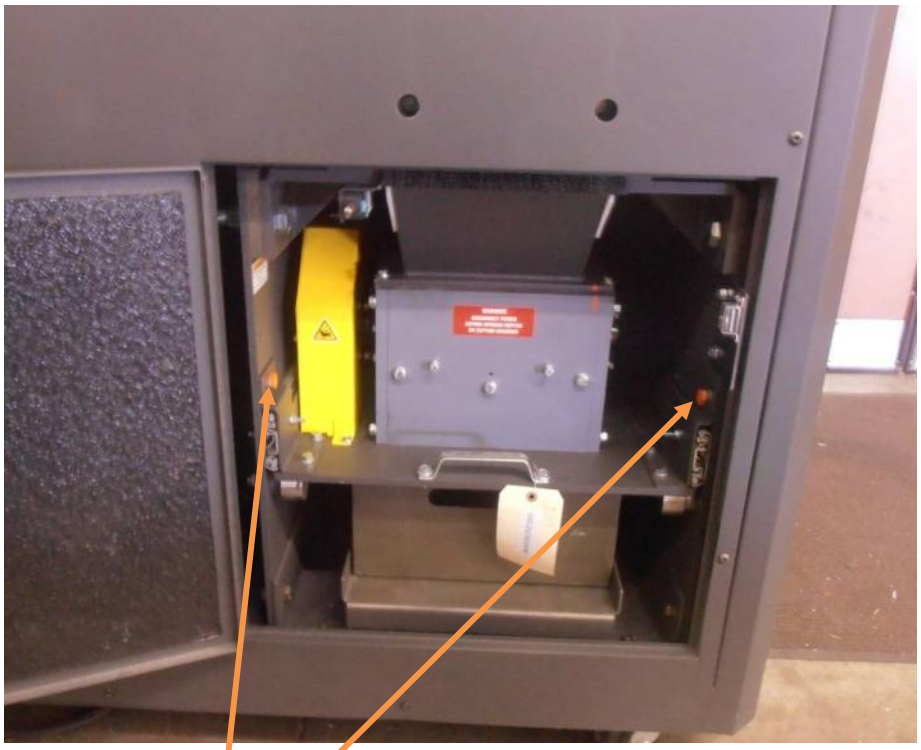


Figure 3

3. Remove the two painted side bolts holding the cutting chamber drawer in place. (See Figure 3)
   Note: Never operate the machine without the bolts in place.

Figure 4

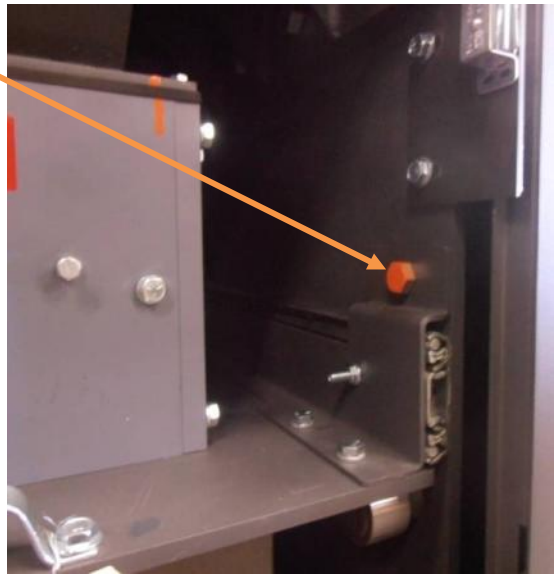


Figure 5

   a. Requires 3/4” socket wrench (See Figures 4 & 5)

4. Pull cutting chamber drawer all the way out (See figure 6)

Figure 6 – Pull handle

a. Brush should clear off any debris on top of the hopper and remain partially on the hopper once the drawer has been fully pulled out

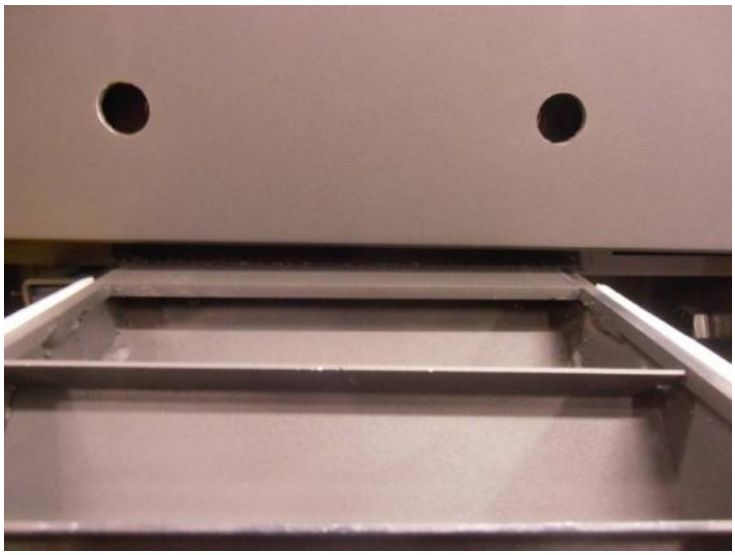


Figure 7 – Brush alignment

5. Remove the four bolts in the hopper

Figure 8

a. Requires 7/16 socket wrench
b. Bolts to be removed

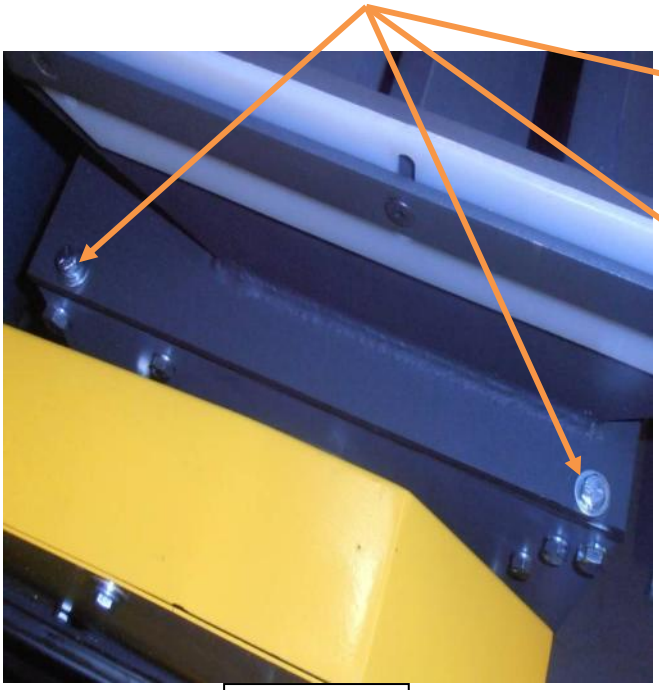


Figure 9 – Belt side

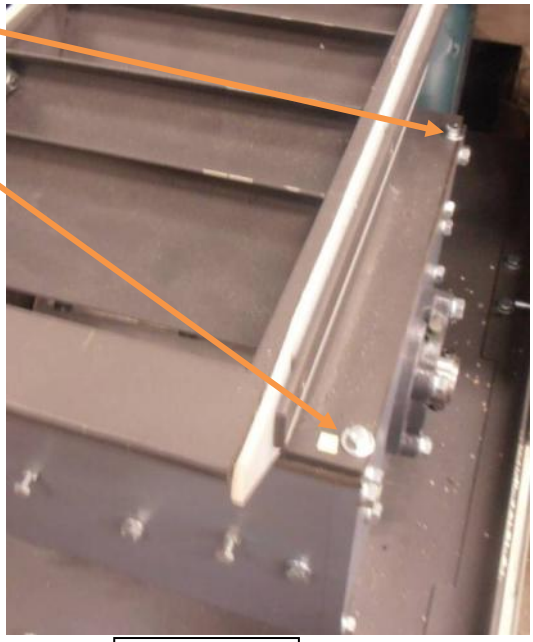
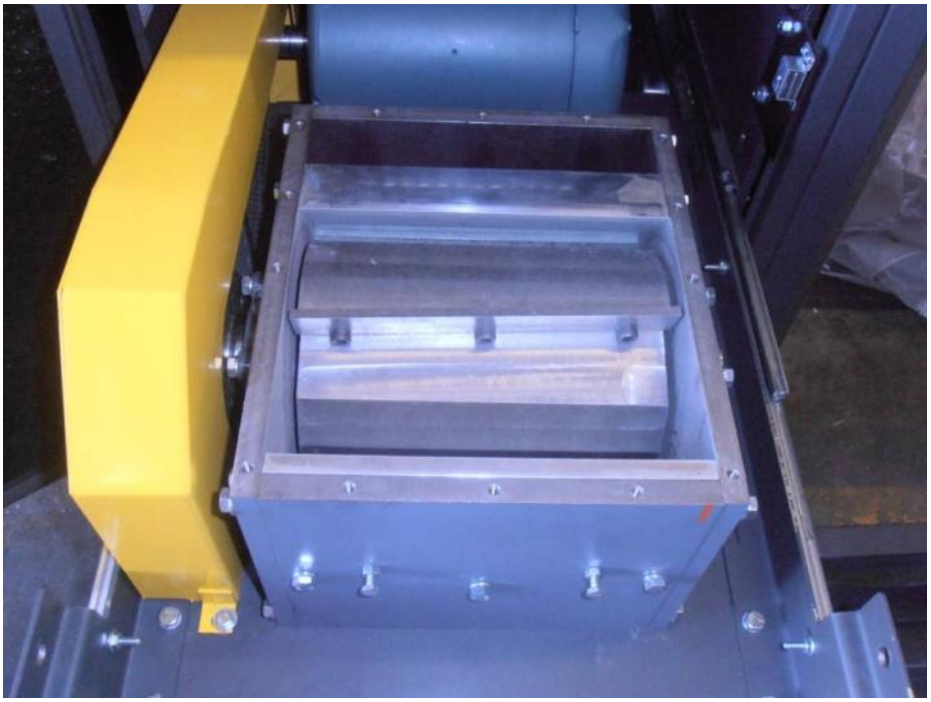


Figure 10

6. Clear the jam
    a. Ensure that the rotor is capable of making the full 360° of rotation otherwise it is still jammed.
    b. In the event that the operator cannot clear out all of the material from the cutting chamber, the screen may need to be removed (See page 20).



7. Loosen the bolts of the brush and move it up so it clears the hopper.
    a. Snug one bolt so it stays in position

8. Replace the gasket and hopper, ensuring the painted lines match up (typically red).

Figure 11

    a. Insert but do not tighten bolts.
    b. Align the hopper and ensure the drawer can close all the way before tightening bolts as the fit is very tight (See figure 12).

c. After aligning, tighten front two bolts, recheck alignment, and tighten the back two.

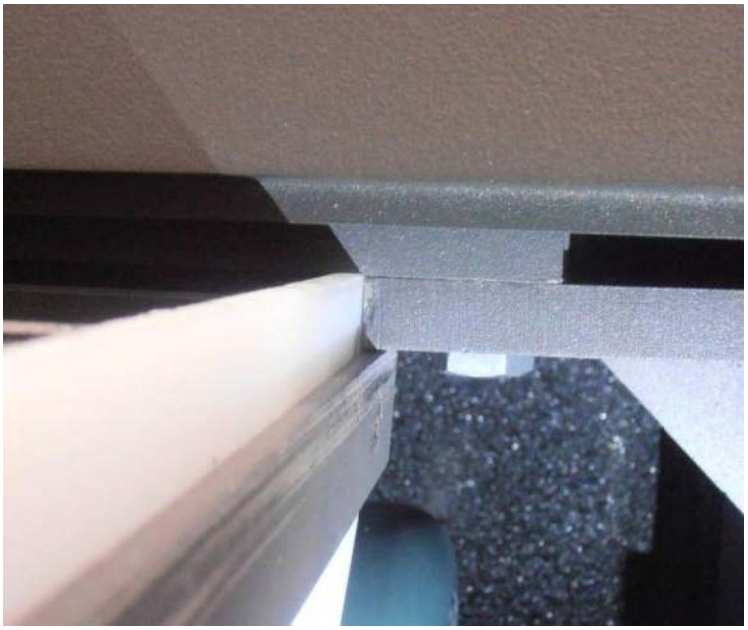


Figure 12

9. Close the drawer, making sure the brush has been moved out of the way.
10. Loosen brush bolts and align brush with the front edge of the hopper, approximately 15/16” to 1” below the top of the door frame opening (See figures 13 and 14).

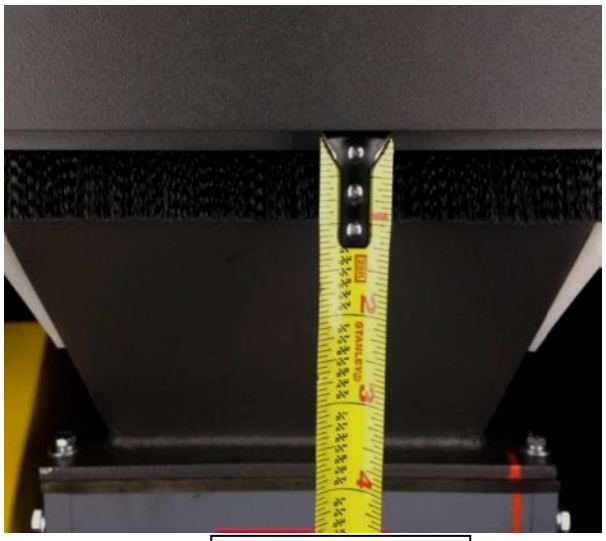


Figure 13

Figure 14

a. Make sure the brush is positioned 1 inch from surface shown in pictures above. If brush is not far enough down, particles may exit the hopper.
b. Snug the bolts when lined up.

11. Replace the painted bolts in the sides of the cutting chamber drawer (normally red).

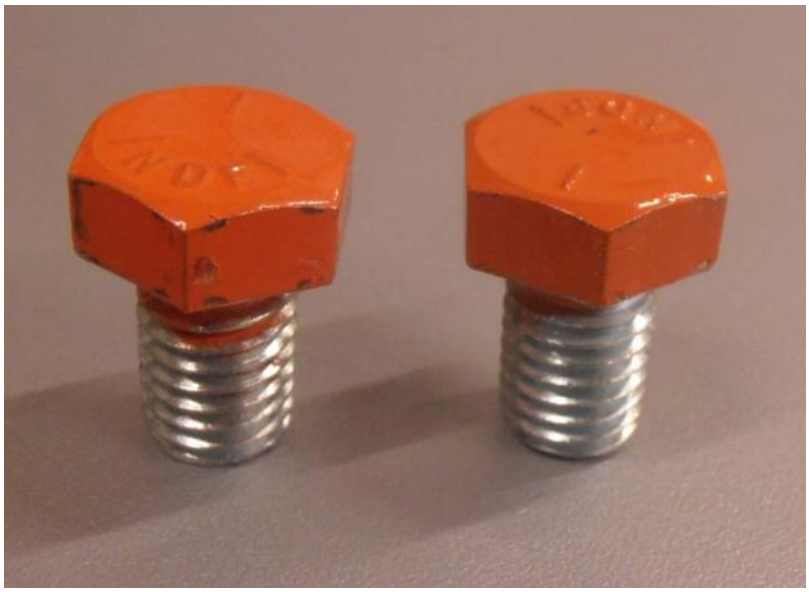


Figure 15

a. See Figures 3-5 for location of bolts

12. Replace the plastic plugs – See figures 1 and 2 for locations.

Figure 16

Shutdown Procedures:

After feeding the final drive, wait approximately 30 seconds before pressing the ***STOP*** pushbutton. This will allow ***STAGE 1*** to clear before activating timed shutdown (approximately 90 seconds) in which the machine will shutdown automatically after the 90 seconds. The ***STOP*** pushbutton will illuminate and the ***START*** pushbutton will extinguish.

Important: If there is an emergency the red ***EMERGENCY STOP*** button on the left side of the unit can be pressed at any time to stop the unit.
Warning: Bypassing timed-shutdown can cause damage to or jamming of the ***STAGE 2*** Chamber.

Turn key-switch, located on the left side of the cabinet, to the ***OFF*** position.

Shreddable Materials

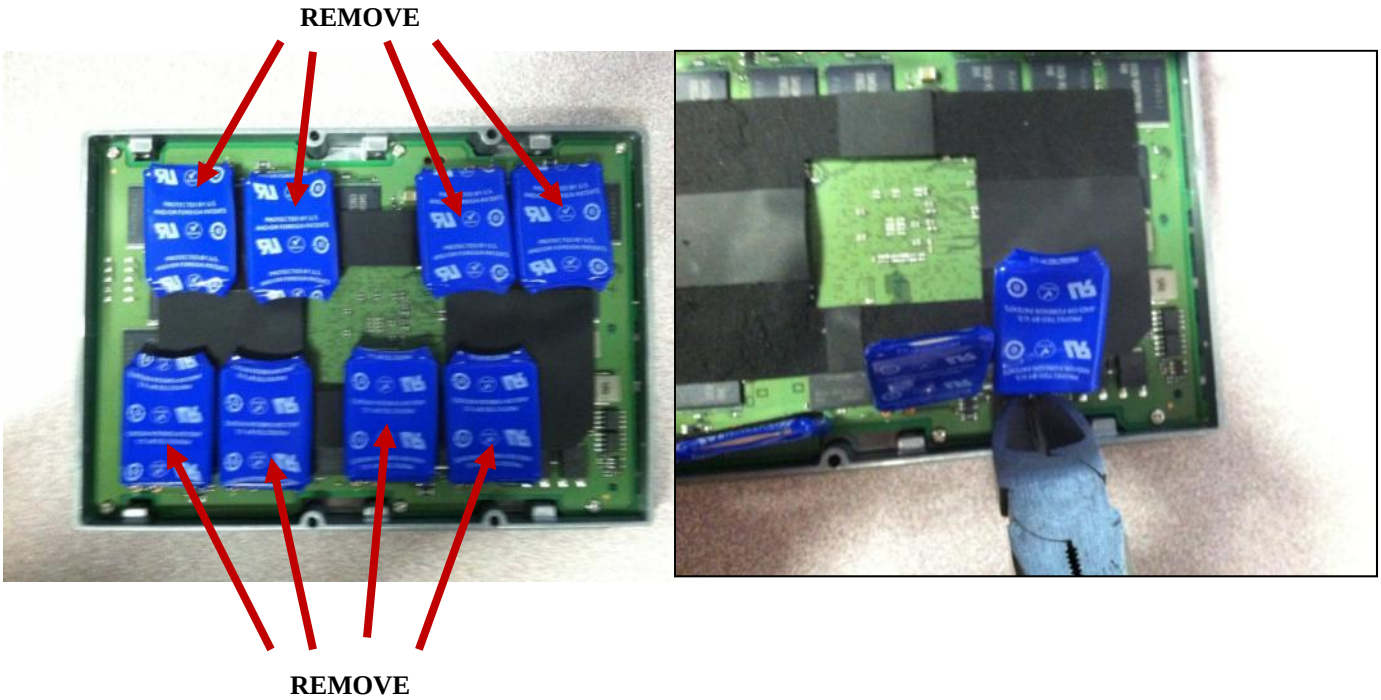
THIS UNIT IS NOT INTENDED FOR ROTATIONAL MEDIA.

The Model 2 SSD is capable of destroying the following products:

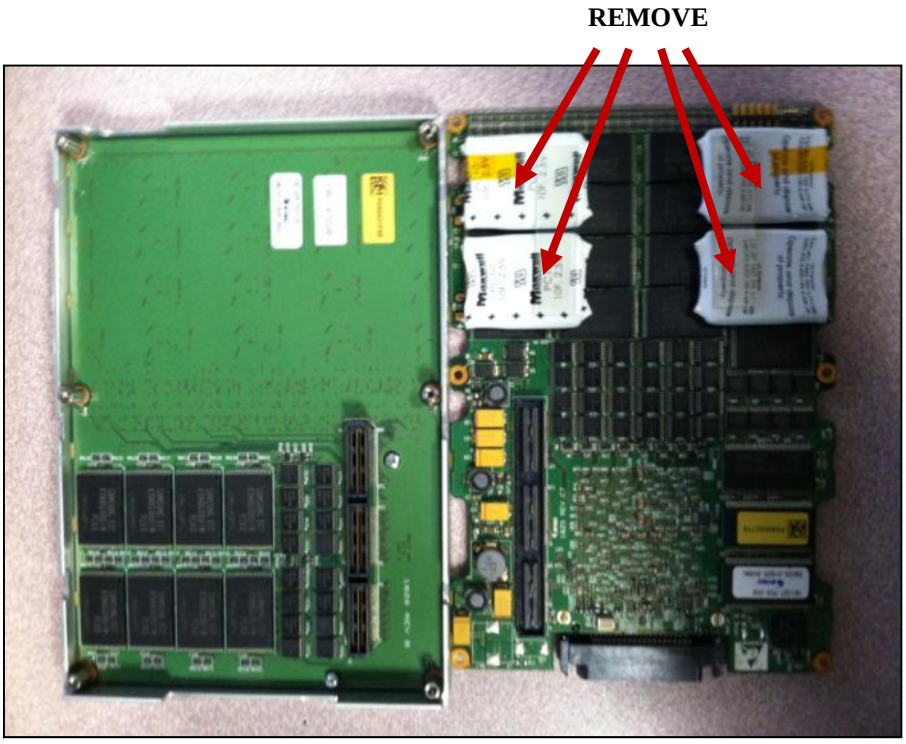
- 1” solid state drives
- CD/DVDs
- Thumb drives
- PDAs and cell phones
- Tablets

All capacitors, batteries, and liquid-crystal displays should be removed from solid state drives and other solid state media before running through the Model 2 SSD. This will often involve opening the product before running it through the unit.
See Examples below:

EXAMPLE 1:



EXAMPLE 2:



Important/Caution: Lock out Disconnect

ALWAYS lock out the disconnect receptacle before cleaning, lubricating, maintaining, removal of any guards and after destruction operation is complete.

Warning: Shredded material can be sharp, SEM recommends wearing gloves.
Tools Needed: Pliers and other hand tools, vacuum (recommended vacuum listed with spare parts), cleaning solution (ex: windex/simple green) to clean all surfaces.
PPE Required: At minimum – gloves, eye protection, mask

Access STAGE 2 Chamber:

1. See page 9 for process

Cleaning:

Every 8 hours of operation:

1. Disconnect all power from the unit.
2. Unbolt and remove the top cover to gain access to the STAGE 1 chamber.
3. Remove debris that may have built up on cutters and combers.
4. Visually inspect the cutters for damage.
5. Open collection bin door and remove collection bin.
6. Clean any excess debris from the collection bin area.
7. Clean all surfaces inside unit and outside with cleaning solution.
8. Wipe up excess cleaning solution and vacuum all other loose debris.

Lubrication:

For optimum performance, regular **lubrication** is recommended.

When to Lubricate STAGE 1:

After approximately every 32 hours of operation:

- Apply light machine oil to cutters. (ex: WD40)

When to Lubricate STAGE 2:

Twice yearly or as needed:

- Grease fittings are accessible when the collection bin door is open and the Stage 2 platform has been pulled out. (See page 10, skips steps 5 – 8)
- Grease with Gulflex "A", multi-purpose or equivalent, grease fittings are located on rotor bearings.

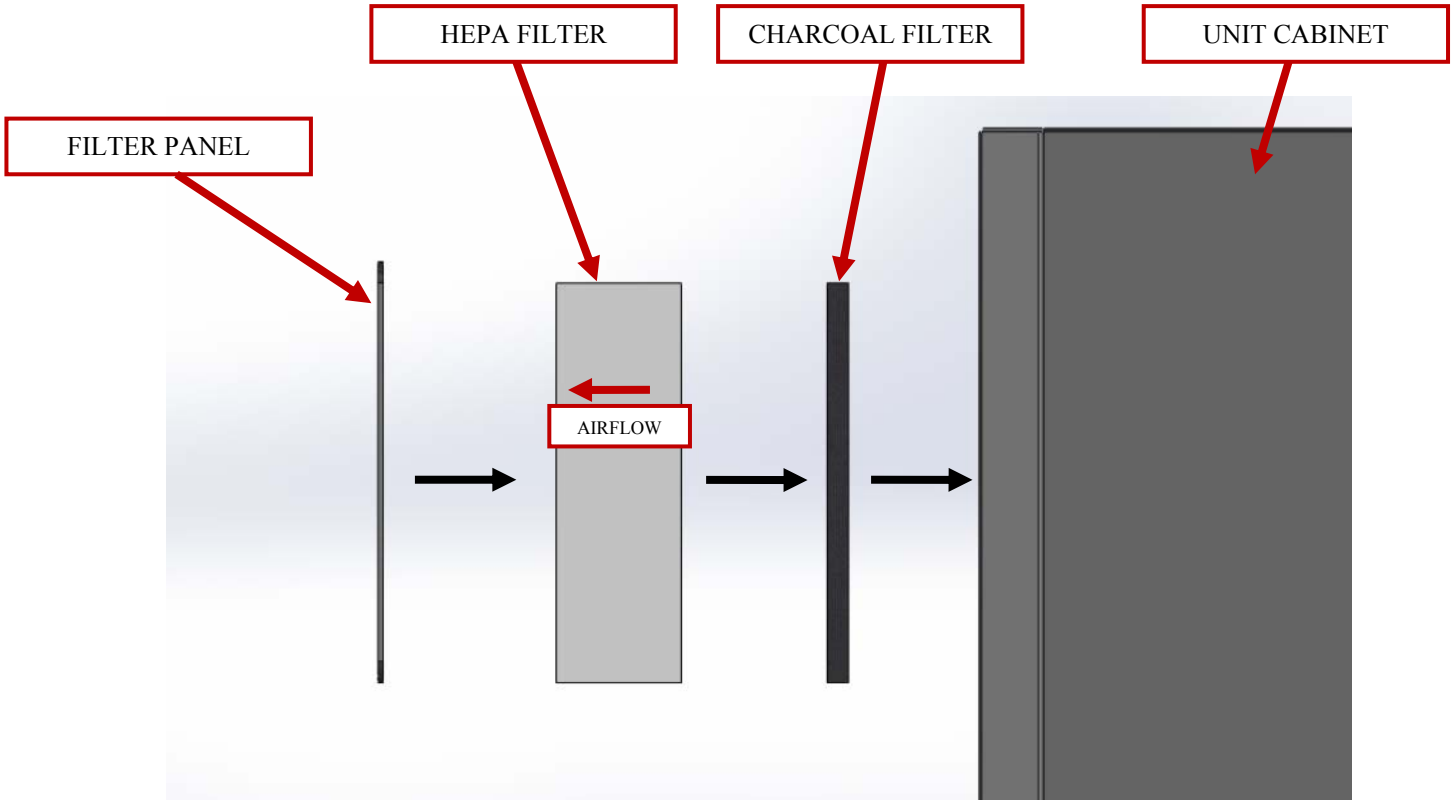
Filter Change:

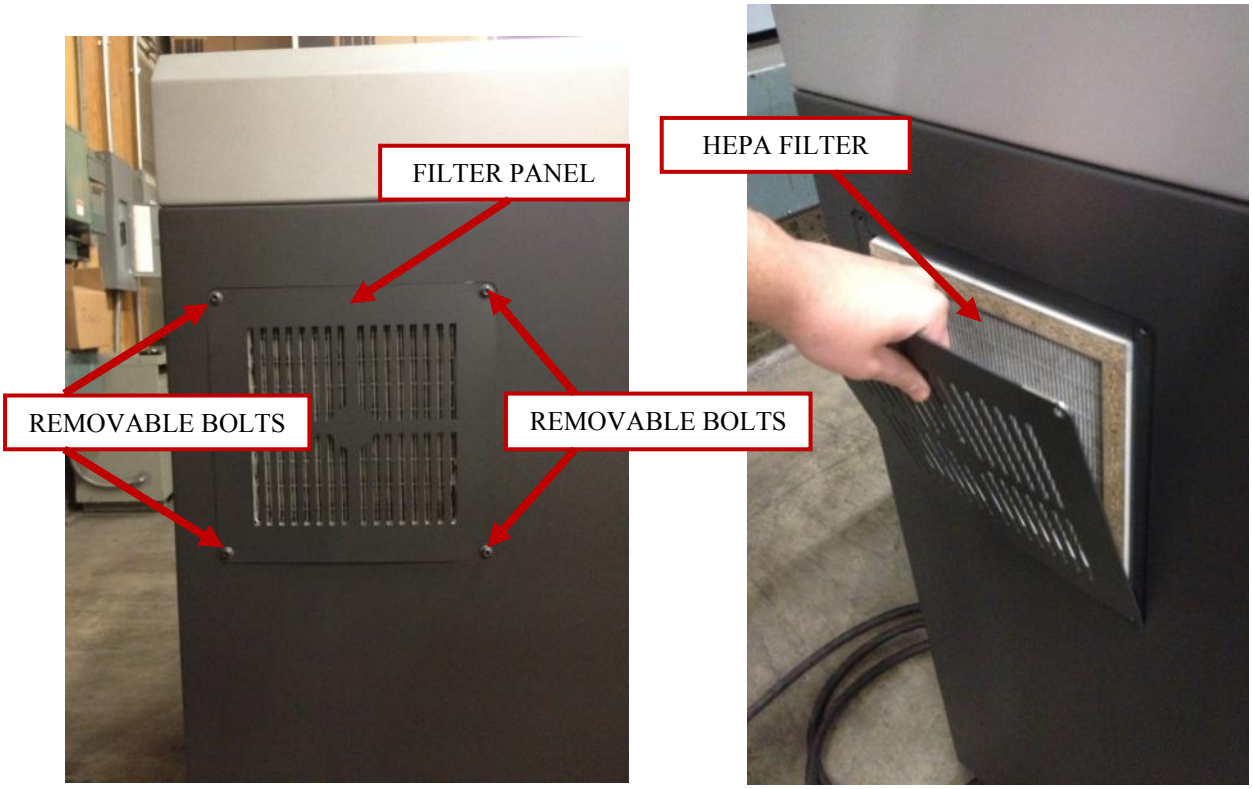
The HEPA and charcoal filter of this unit requires changing periodically, depending on use. The charcoal filter should be changed at a minimum of every 15 hours for screens sized larger than 1/8", and every 10 hours of usage for screens sized 1/8" and smaller or as needed. The HEPA filter should be changed once yearly or as needed, and **cleaned every time the pre-filter is changed**. The charcoal filter is located behind the HEPA filter, and should be compressed for maximum efficiency.

Important Note: Direction of air flow noted on HEPA filter

Important Note: Failure to change HEPA filter may result in hazardous particle emissions.
See diagrams and instructions on cleaning and changing filters below.

Filter Change and Diagrams:





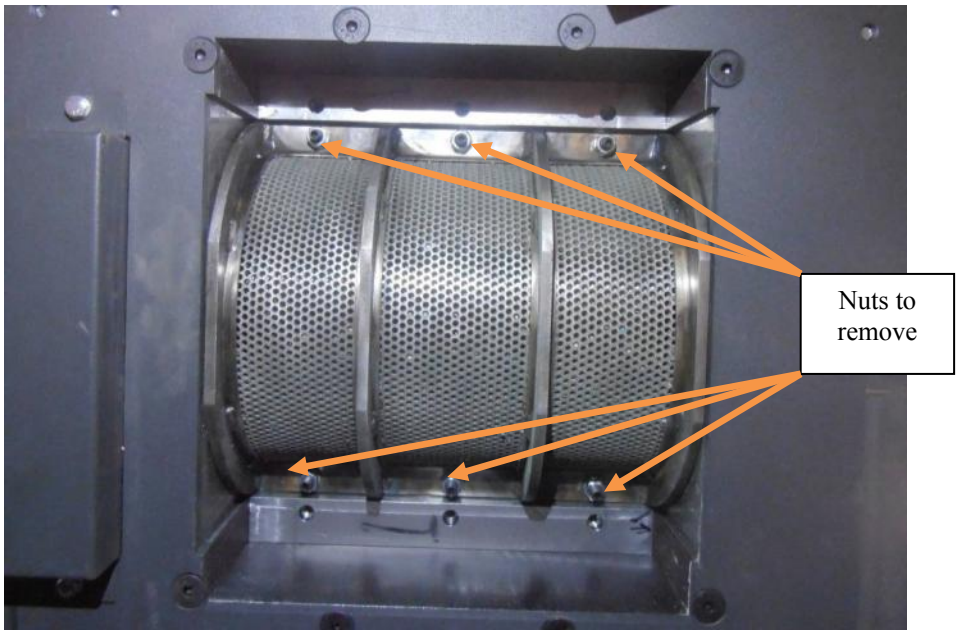
Removing and changing filters:

1. Unscrew 4 screws on filter panel cover and remove cover.
2. Remove the HEPA filter and charcoal pre-filter.
3. Insert a new charcoal pre-filter.
4. Clean dust and debris from HEPA filter if not replacing it. Vacuum if necessary.
    a. Put filter in a bag with the airflow arrow pointing upwards, then drop filter from approximately a foot high on the floor 3 to 4 times.
    b. 
5. Inspect and insert HEPA filter.
    a. Make sure the airflow indication arrow is pointing towards the exterior of the machine.
6. Replace the filter panel cover with 4 screws.

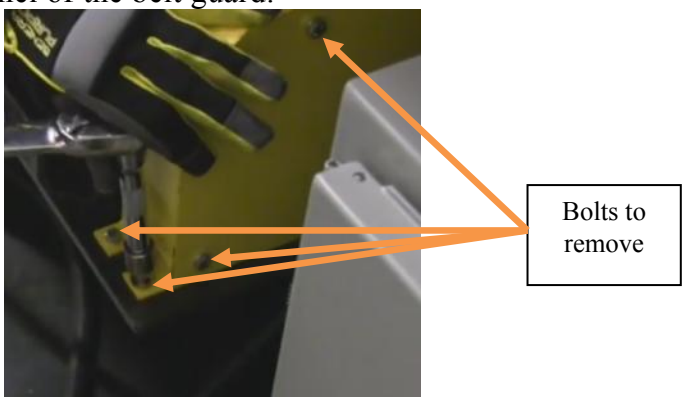
Remove Screen:

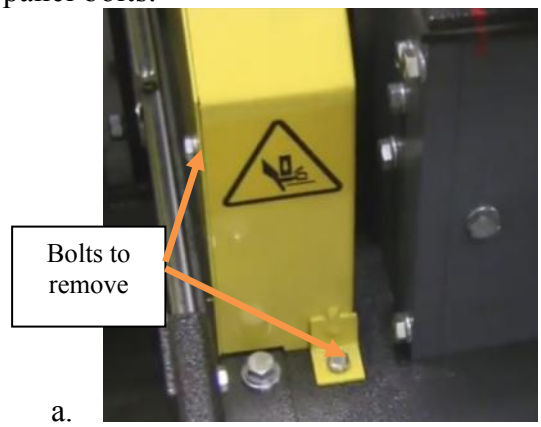
1. See page 10, skip steps 5 through 8.
2. The screen will be exposed under the platform. Remove six 5/16-18 nuts from the screen, using a 1/2" deep socket with extension and lower it carefully so as to not spill any remaining material.
3. Inspect screen for damage
    a. Note that material resting on the screen is not considered to be adequately destroyed.
    b. Particle size integrity cannot be guaranteed if screen is damaged – contact manufacturer.

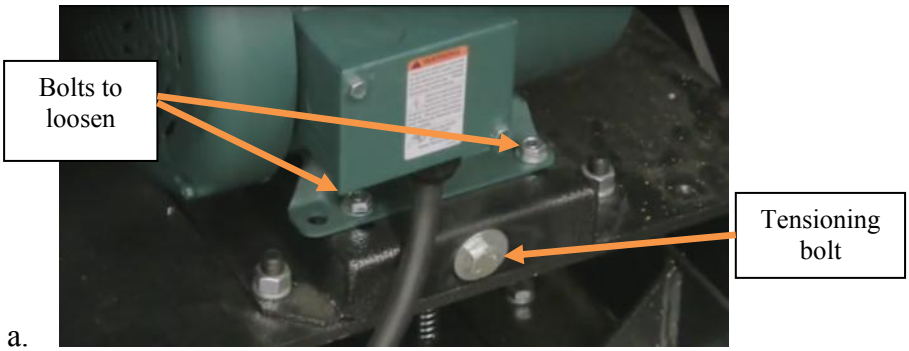
<u>Caution</u>: Material resting on the screen may fall through upon removal. **Eye protection and gloves are recommended as well as other PPE.**



Belt Adjustment:

1. Remove the four bolts in the corners of the rear panel and remove the panel.
2. Remove the bolts at the rear of the yellow belt guard, two flange bolts and two on the side panel of the belt guard.
   a. 

3. Remove the two painted side bolts holding the STAGE 2 shelf and pull the shelf out.
4. Remove the remaining bolts at the front of the belt guard, one flange bolt and two side panel bolts.
   a. 

5. Carefully maneuver the belt guard out (make sure the side panel is off).
6. The motor is mounted on a slotted frame. Slightly loosen the four mounting bolts on the motor base.
   a. 

7. Use the tensioning bolt on the frame to adjust the motor.
   a. Adjusting the screw clockwise will tighten the belt and counterclockwise will loosen or allow for belt removal.
8. Proper belt tension is determined by pinching both belts between the thumb and forefinger and causing a bow on the slack side. This should be no more than ½".
9. Adjust until proper tension is achieved, and tighten mounting bolts.
10. Rotate the belt to inspect for damage before replacing belt guard.

IMPORTANT: Belt should be checked and tightened if required after the first 10 hours of operation, after that check quarterly. The belt should be changed annually.

Knife Removal and Sharpening:

Blade changes should be done as needed and is recommended based on usage as knife wear varies depending on the material being destroyed. In all cases, knives should be changed and sharpened at a minimum of 25 hours of usage to avoid excess dust and potential jams. SEM highly recommends that this work be completed by SEM trained technicians. Damage to equipment and harm to personnel may occur if work is not performed correctly.

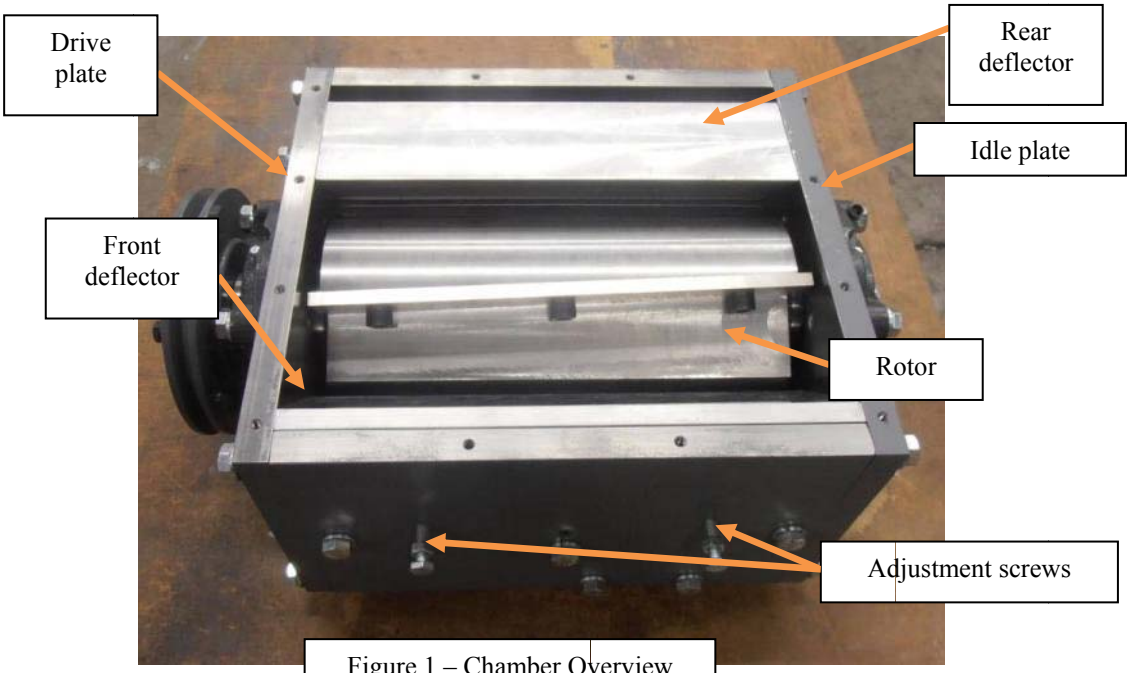


Figure 1 – Chamber Overview

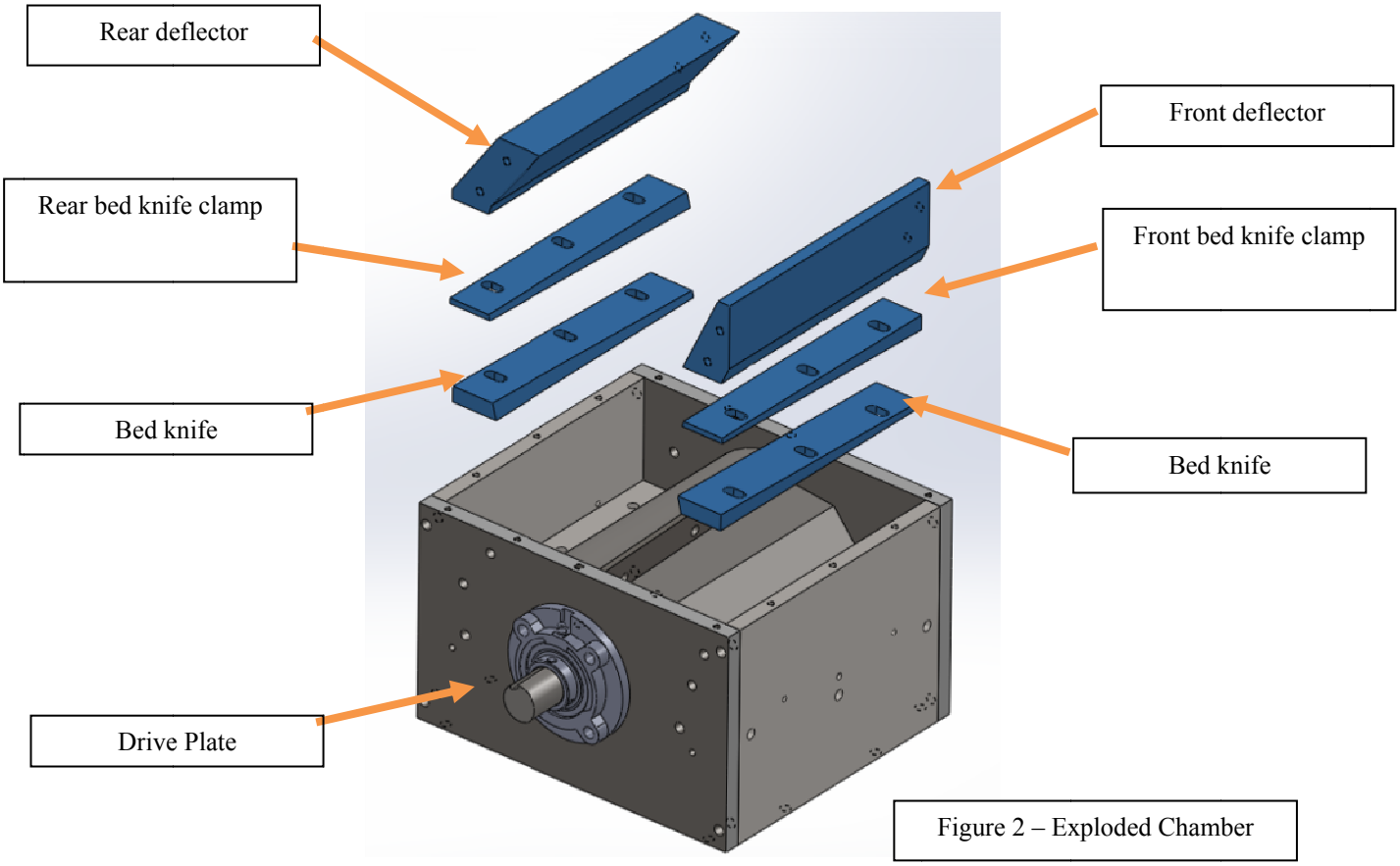


Figure 2 – Exploded Chamber

Note: While changing knives, it is recommended to wear abrasive resistant cut gloves.

To avoid downtime, it is best to have a spare set of sharp knives on hand at all times. Dull blades removed from the machine must be sharpened as a set (3 rotor/2 bed) by a qualified sharpener to ensure proper operation. SEM offers sharpening services. Call 800-225-9293 for pricing.

1. **Remove front and rear deflectors.**
    a. Requires 1/2" wrench

Figure 3

Figure 4

2. **Remove bolts from rotor knives and remove knives.**
    a. CAUTION – Knives are sharp
    b. Requires 5/16" Allen drive socket bit
3. **Remove bolts from bed knives.**
    a. Replace one knife at a time
    b. Make sure to keep track of the bed knife clamps
4. **Wipe bed knife clean and place atop bed knife seat with thicker end towards drive plate and blades facing rotor.**
    a. One knife will be upside down

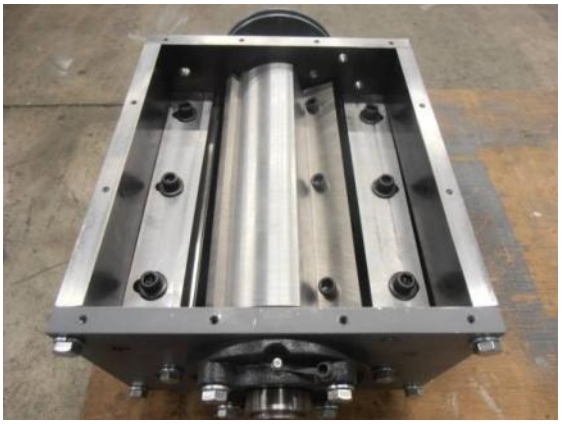


Figure 5 – Shown w/ bolts

5. **Wipe bed knife clamp clean and place atop bed knife with thick end towards idle plate (opposite drive) and the tapered side facing the rotor and the wide part of the taper being on the bottom.**

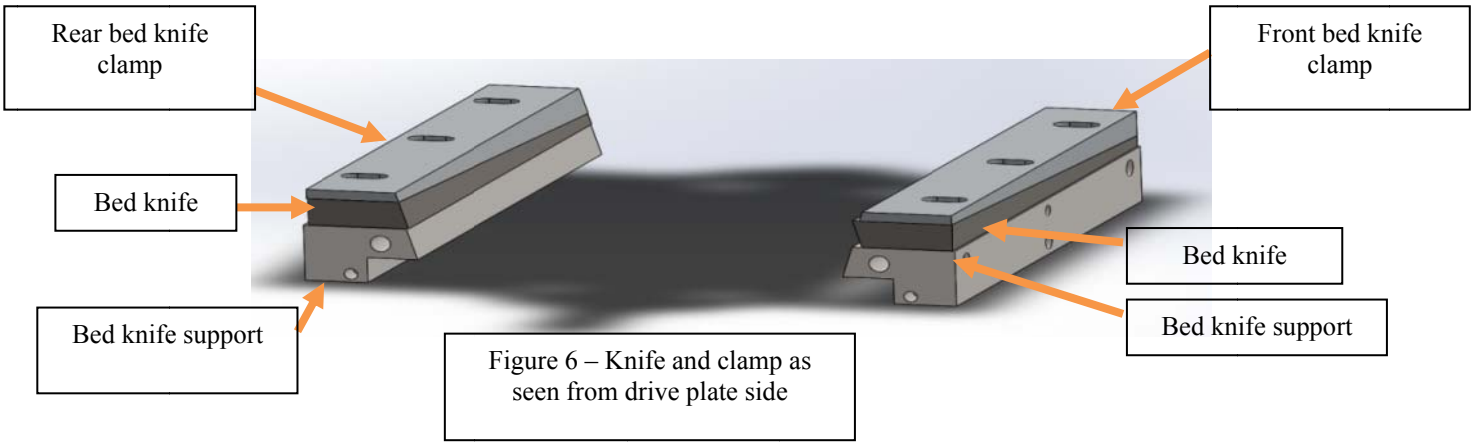


Figure 6 – Knife and clamp as seen from drive plate side

6. **Install bed knife bolts with – 6 – 3/8-16 x 1 1/2" ½ socket head cap screw + 6 – 3/8" thick black washer through top of clamp – set to hand tight.**
    a. Flat side of washer should be touching clamp
7. **Repeat steps 4-6 for the second bed knife.**
8. **Wipe off rotor flats and rotor knives before attaching them one at a time with – 9 – 3/8-24 x 3/4" socket head cap screw.**
    a. Beveled edge of knife sits in notch of rotor corner

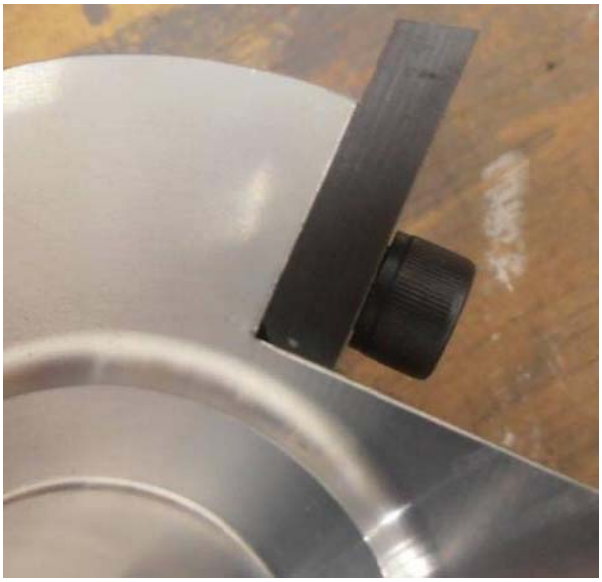


Figure 7

9. **Torque rotor knives to 50-55ft/lbs using a torque wrench with a 5/16" Allen drive socket bit**

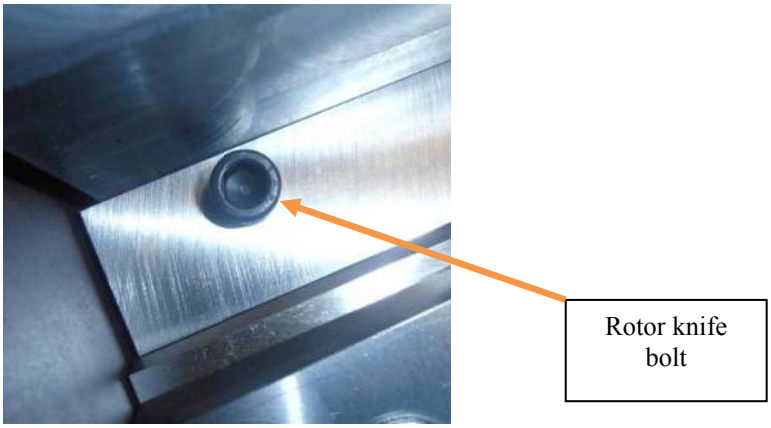


Figure 8

10. **Set clearance between rotor and bed knives to .005" using adjustment screws and a feeler gauge, rotating the knives in reverse (clockwise) so flat to flat contact will not cut feeler gauge.**
    a. Process may need to be repeated until proper clearance is achieved.
    b. Double check clearance after tightening bolts as gap should be checked on each knife on rotor and across the whole surface of each knife.
    c. Adjustment screws require a 7/16" wrench.

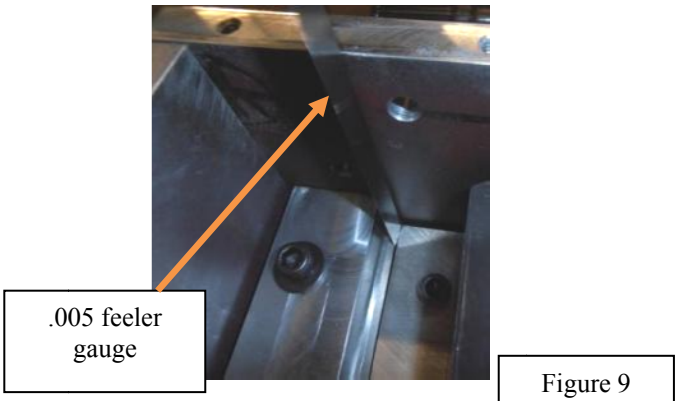


Figure 9

11. **Torque bed knives to 45-50 ft/lbs (Torque wrench should not be used as a socket wrench and should be calibrated to ensure proper tightening to avoid damage. SEM offers a complete toolkit for this system).**
    a. Double check knife clearance after torquing bolts

Figure 10

12. **Attach front and rear deflectors as shown with – 8 – 5/16-18 x 1 1/4" hex bolt + 5/16" lock washer.**
    a. Requires 1/2" wrench

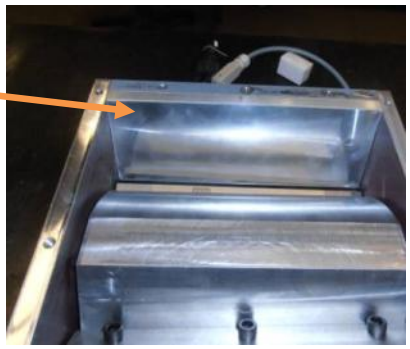


Figure 11

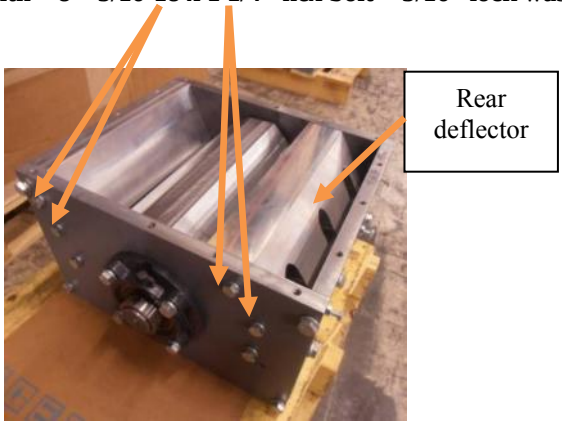


Figure 12

13. **Do a final check of bolt torques, assembly bolt tightness, and knife gapping.**
14. **Contact manufacturer for details about service and re-sharpening.**

Note: Knives must be sharpened as a complete set (2 bed knives & 3 rotor knives) and can be sharpened two or three times provided they are not damaged or overused between sharpening which will reduce the life of the knife. Failure to sharpen or replace knives will result in excess dust, frequent jamming of STAGE 2 chamber, reduced throughput and excess vibration and increased noise throughout the machine. Contact manufacturer for sharpening and service plans.

Current Relay Adjustment:

This unit is designed to automatically reverse if it jams while shredding. The electrical current relay controls this feature and is preset by the factory prior to shipping. However, power variations can cause the unit to jam and not reverse. To correct this problem the current relay may require a small adjustment.

Note: Press the STOP pushbutton before making any changes to the current relay. The power does not need to be off for this adjustment.

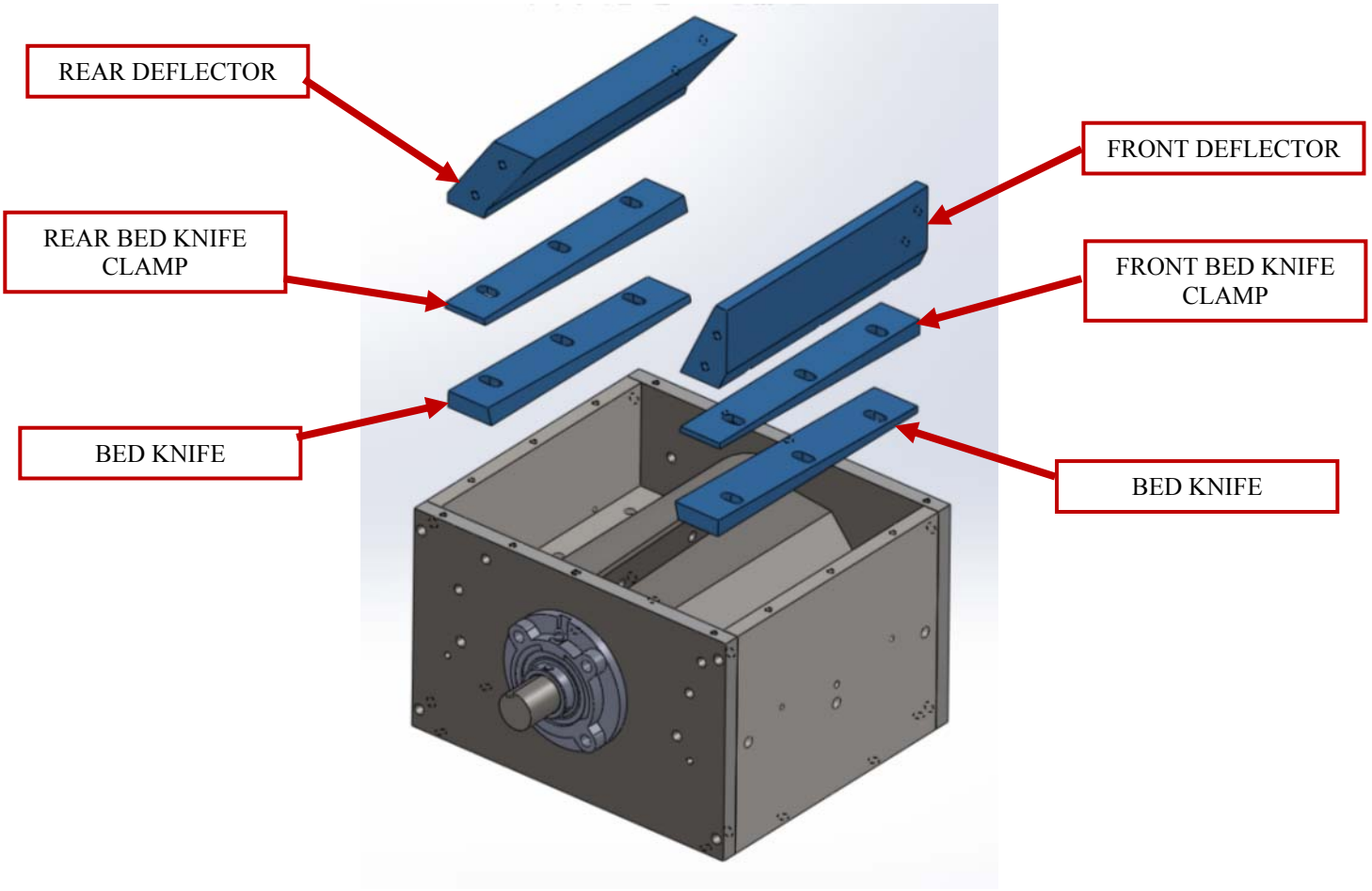
1. Remove cover on left side of machine to expose current relay
2. Turn the knob labeled Threshold clockwise to the next tick mark
3. Test by running drive through the unit

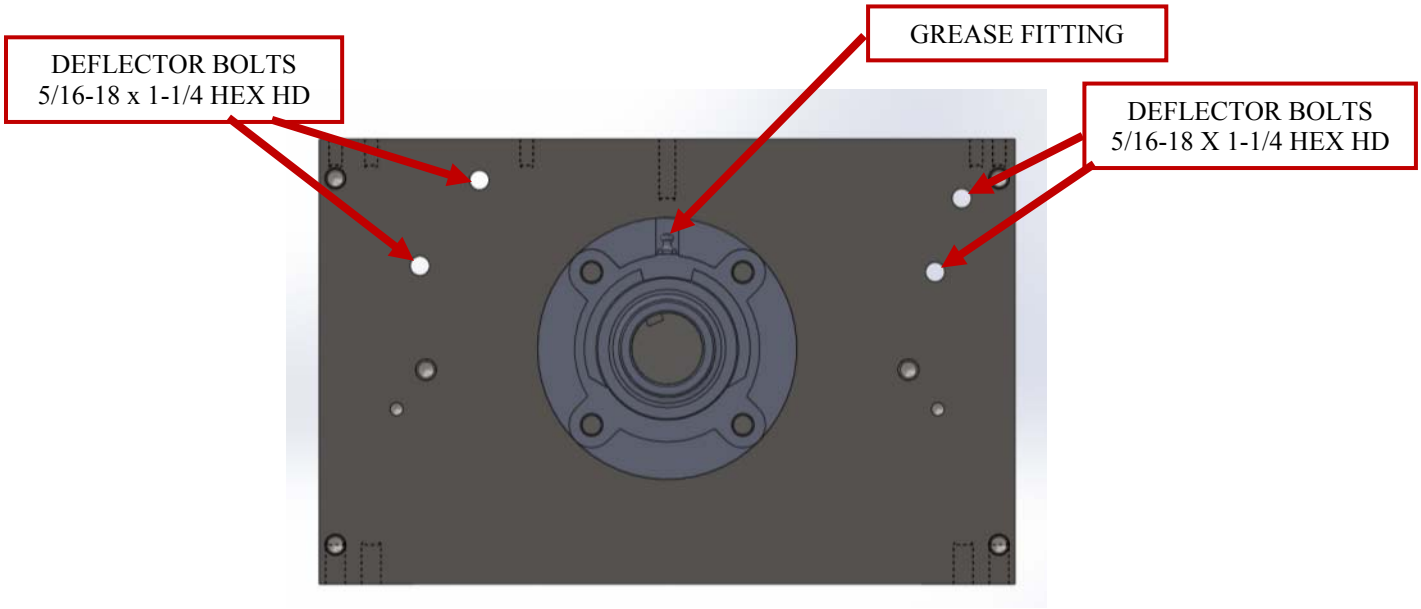
Important Note: If the unit does not automatically reverse after three adjustments, check the incoming power and voltage drop, this may require an electrician to verify.

Plastic Shield Adjustment

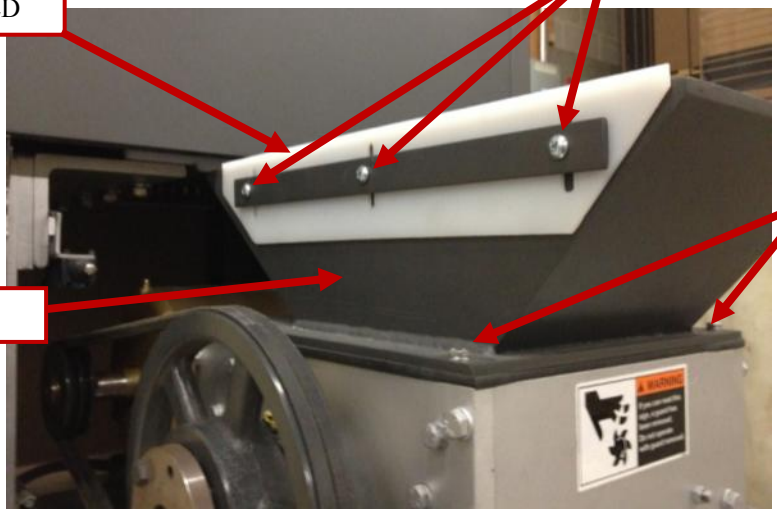
Located on either side of the hopper are plastic shields that may require periodic adjustment. These can be moved by loosening the bolts fastening them to the hopper, and sliding them up until they fit properly. They should not be high enough to interfere with the sliding of the Stage 1 Platform, but they should be high enough to prevent debris from leaving the top of the hopper.

Maintenance Diagrams

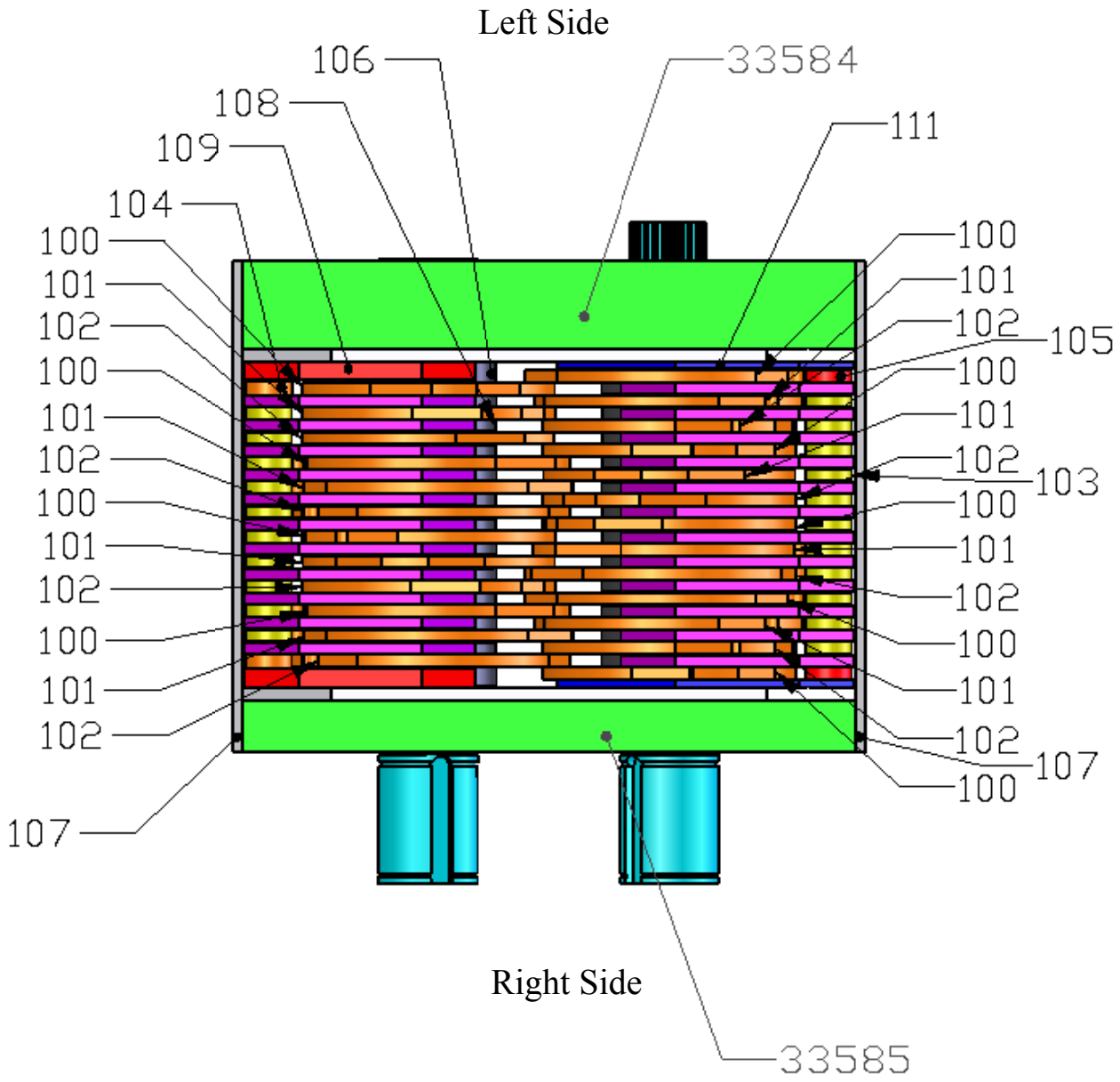




Maintenance Diagrams Continued



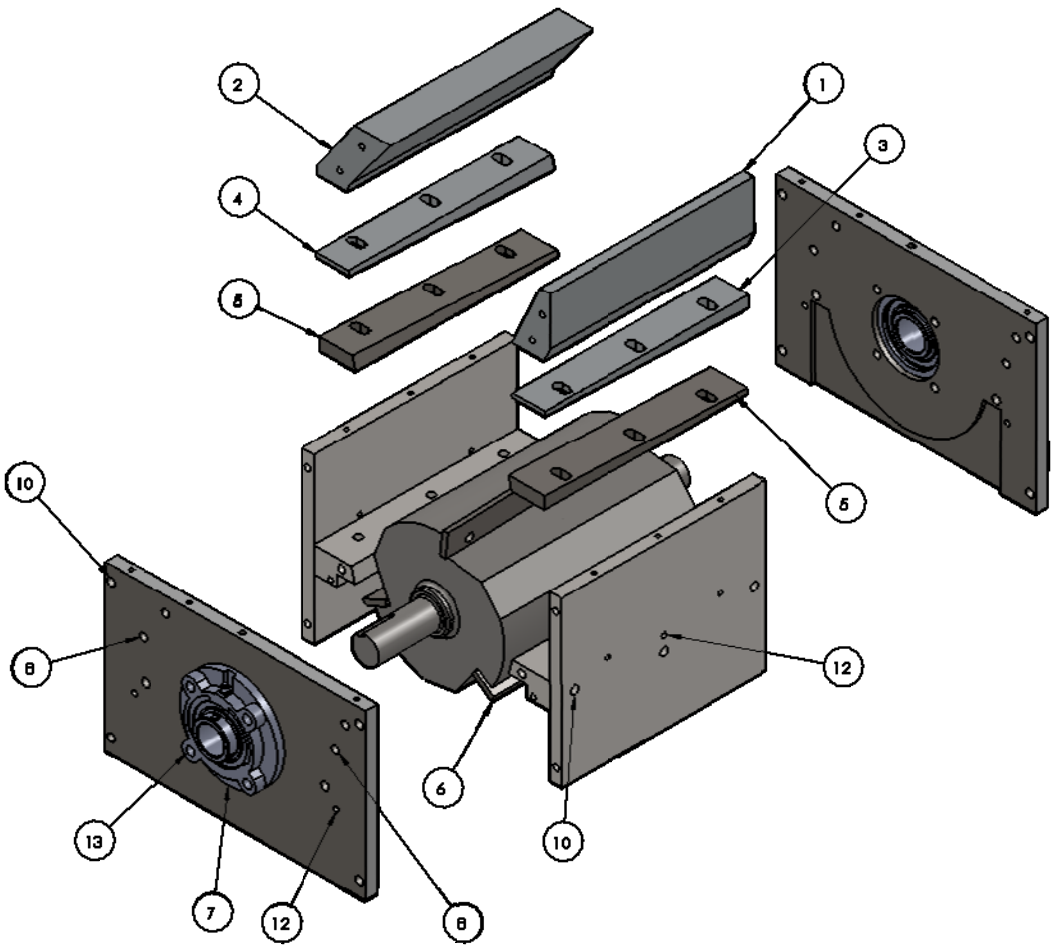
Stage 1 Chamber Assembly



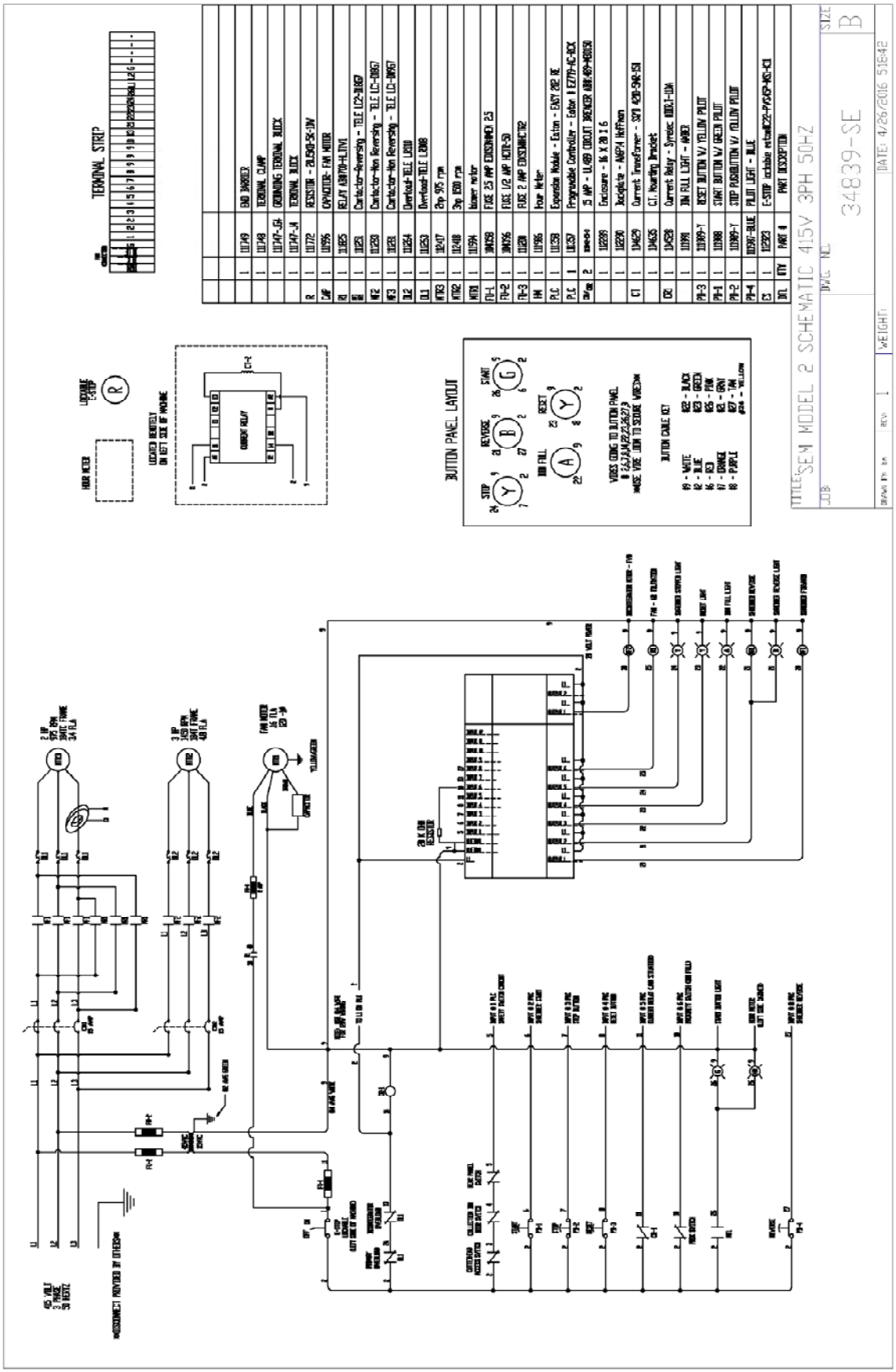
*All parts above denoted by a three-digit number have the part number 25381 followed by that number. For example: number XXX would be 25381-XXX.

Stage 2 Chamber Assembly

ABBREVIATED PARTS LIST/BOLT LOCATIONS			
ITEM	QTY	DESCRIPTION	PART/DWG#
1	1	Front Deflector	34146
2	1	Rear Deflector	34148
3	1	Bed Knife Clamp (Front)	34149
4	1	Bed Knife Clamp (Rear)	34150
5	2	Bed Knives	
6	3	Rotor Knives	
7	2	Bearing	
8	8	5/16-18x1-1/4 Hex Head	
9	8	5/16 Lock Washers	
10	6	3/8-16x1-1/4 Hex Head Grade 5	
11	6	3/8 Lock Washers	
12	6	1/4x1" Roll Pin	
13	8	3/8-16x1-1/2" Hex HD Cap Grade 5	
14	8	3/8 Flat Washers	



400-415 Volt Electrical Diagram



Recommended Spare Parts

ITEM	QTY	DESCRIPTION	PART/DWG#
1	1	Spare Set of Knives (3 Rotor/2 Bed) designed for Model 2 SSD	391200K/3
2	1	Spare Sizing Screen (2 mm) designed specifically for Model 2 SSD*	SSD-2SCREEN18P
3	1	Spare Waste Collection Bin for Model 2 SSD	WCB-2SSD
4	1	Carbon Pre-Filter for Model 2 SSD (3-pack)	CF-2SSD
5	2	Spare V-Belts for Model 2 SSD (set of 2)	3VK500/2
6	3	Replacement HEPA Filter for Model 2 SSD	HF-2SSD
7	2	Case of 50 Anti-Static Waste Collection Bags	640ASB0202
8	1	Toolkit	553TK200

Additional screen sizes are available – contact manufacturer for details