



Security Engineered Machinery Co., Inc

PRODUCT OPERATION & MAINTENANCE PROCEDURE

For Model DS-400



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For Serial Numbers: S400-1743 & Up

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1. Important Safety Procedures

Your new SEM Model DS-400 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 shredded 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 de-energize the unit using proper “Lock Out Tag Out” or LOTO procedures before removing or opening any cover or other panels providing access to the internal mechanisms.

Important:

If you overfeed the disintegrator, or have an emergency and need to bypass the timed shutdown, open the front door of the disintegrator to immediately shut the machine down. Note that the rotor will still be spinning for a short period afterwards.

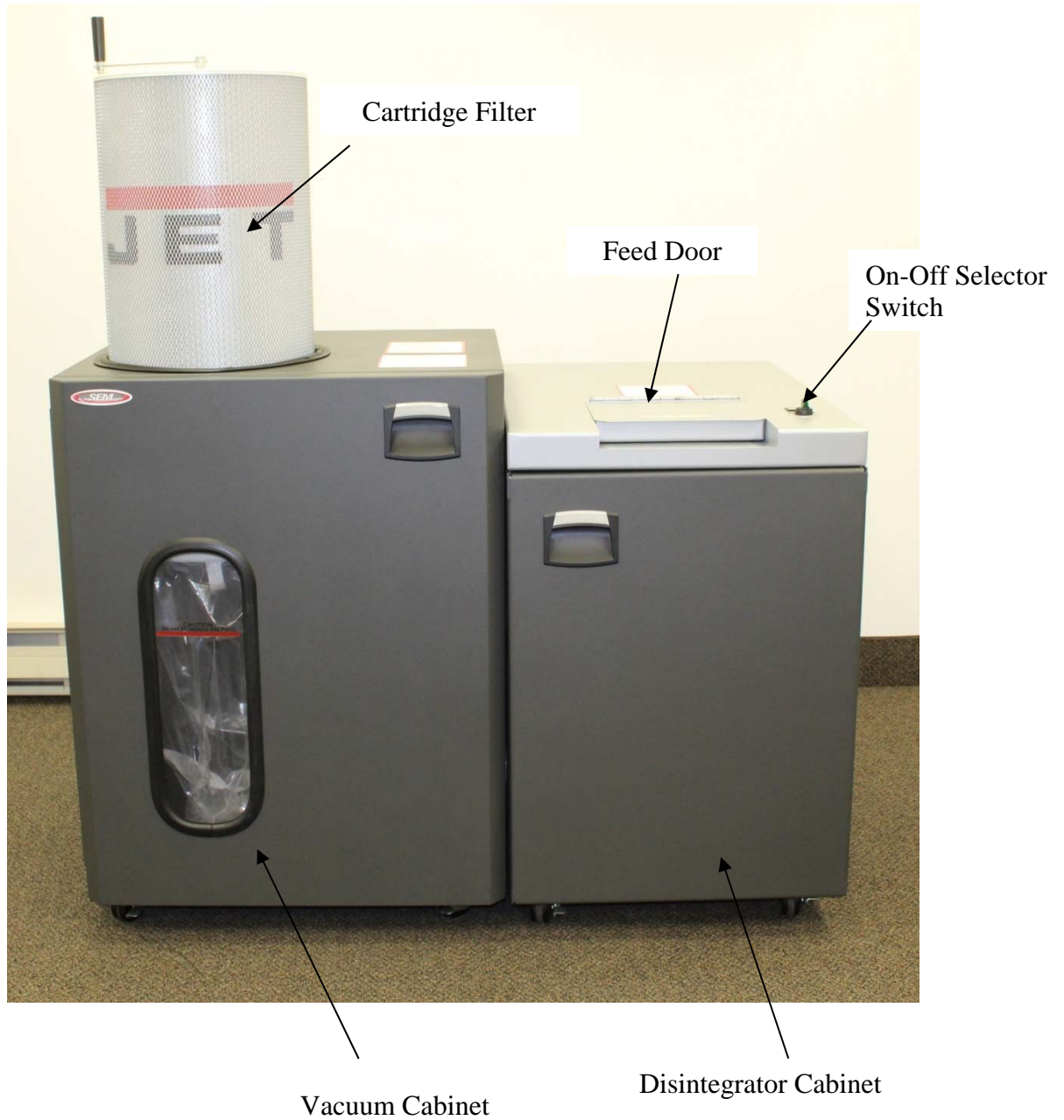
Warning:

Opening the front door to bypass the timed shutdown can result in jams or damage to the unit.

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. A suggested minimum break in period for new operators is two hours.

2. General Assembly Diagram





3. Unpacking and Installation

3.1 – Unpacking

- The **Model DS-400** 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 DS-400 or to the crate during shipping, the receiver must note what is damaged on the Bill of Lading and contact the shipping party immediately. Retain packaging for 90 days.
- **Unpacking:**
 - o **Tools Needed**
 - Lift truck or power jack
 - Strap cutters
 - o Cut straps holding unit down to the pallet
 - o Remove cardboard packaging and foam
 - o Remove four bolts, two on each side of the front border of the pallet
 - o Use a fork truck or power jack to lift the unit from the pallet or set up a ramp
 - Do not attempt to work the unit off the pallet without a ramp, unit is very heavy and could topple
 - o Rest unit on casters on floor
- **Transportation:** To move the unit, unlock all caster locks and then the unit can be pushed on flat surfaces. **DO NOT** push the unit on an inclined or declined surface as control of the unit can be lost and personal injury or damage to the unit could occur.
- **Storage:** If the unit requires storage, it may be stored in its shipping crate or unpackaged. If unpackaged, ensure that the caster locks are engaged to prevent unwanted movement of unit.



3.2 – Power

- **Power:** The Model DS-400 uses a 3 horsepower, 3 phase motor to run its cutting chamber with a 1 horsepower single phase 120V vacuum motor run off of the main incoming power. The following table lists the recommended disconnects for the DS-400 which should be installed to local electrical code by a licensed electrician only.

VOLTAGE	FULL LOAD AMPS (FLA)	RECOMMENDED SERVICE
208 Volts	~18.2 FLA	25 Amp
230 Volts	~16.1 FLA	20 Amp
380-415 Volts	~10 FLA	15 Amp
460 Volts	~8.1 FLA	15 Amp

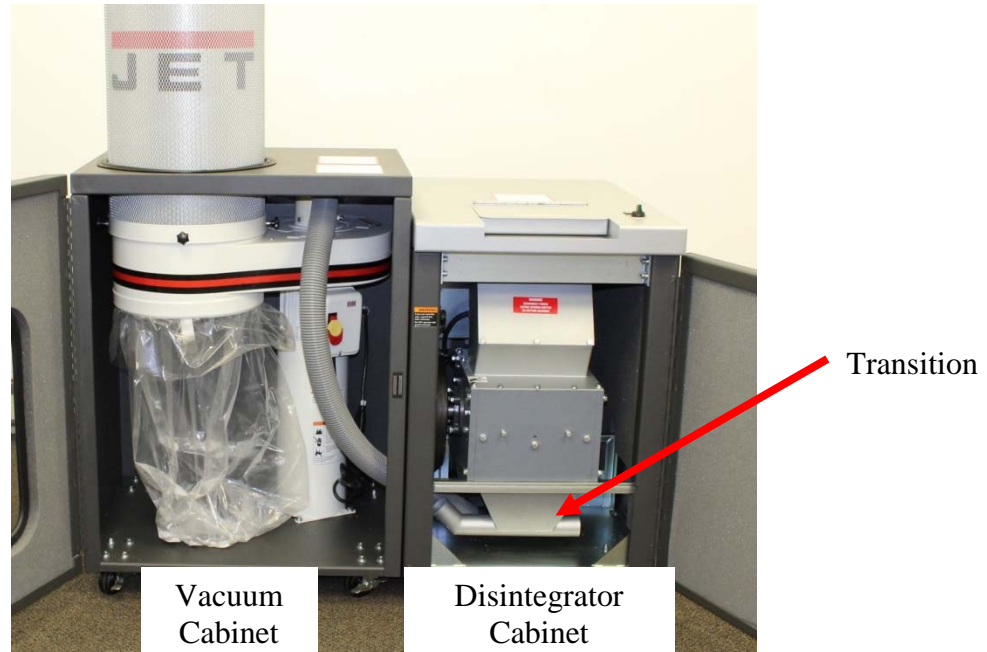
- **Voltage Drop:** When operating at 208 V, SEM recommends no more than a 3% voltage drop on the receptacle for optimal performance (Min 200 V while under load).
- **Note:** Model DS-400 should be connected to a dedicated circuit regardless of voltage.
- **Note:** Motors are normally dual voltages, 230/460 but can only be operated at the specific voltage as wired at the factory. If a voltage change is required in the field, contact the factory for proper instructions.

3.3 - Plug and Receptacle Information

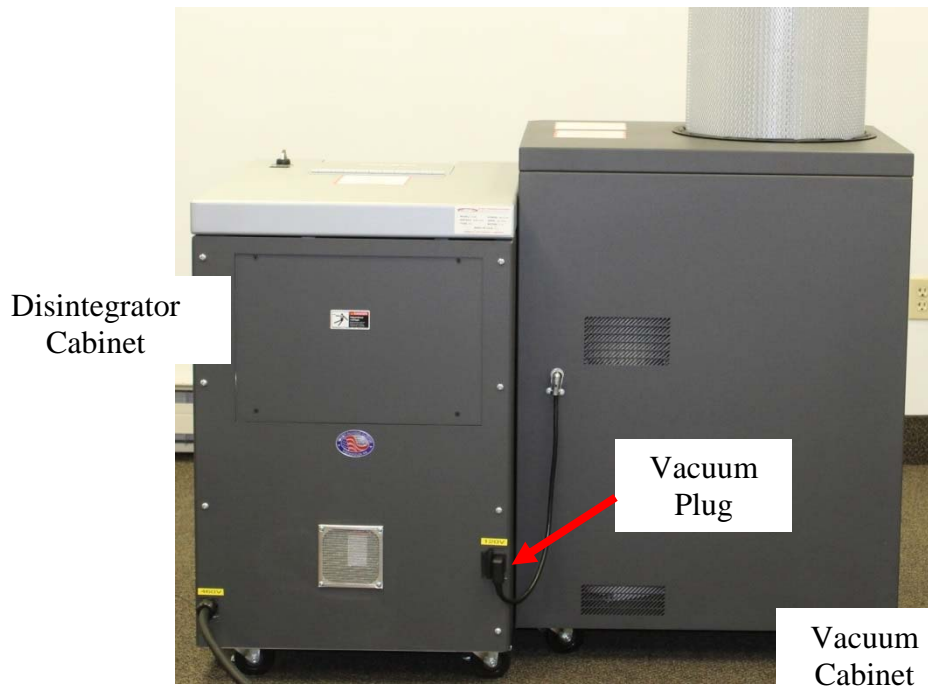
- **Power Cord:** All Model DS-400 units are supplied with an open-ended power cord.
 - o This can be directly hardwired to a power disconnect switch.
- **Disintegrator Location:** The Model DS-400 can be located in an office area or warehouse within 6 feet of a wall receptacle of a **dedicated 15-25 amp** line based on the above chart. It is recommended that the machine be at least three to four inches away from the wall for proper ventilation.
- A **disconnect throw switch** should be mounted in close proximity to the unit, approximately **1-2 feet** away.

3.4 – Vacuum Installation Instructions

- Place the Vacuum Cabinet next to the Disintegrator Cabinet as shown so the holes in the sides are lined up with each other then open doors on the cabinets and feed the vacuum hose through the hole in the bottom of the right side of Vacuum Cabinet and fit over the angled tube of the transition in the disintegrator cabinet.



- Plug Vacuum cabinet into the back of the Disintegrator Cabinet





4. Startup and Operation

4.1 – Before You Begin

- **Important:** Most problems occur during the first hours of operation. These can be eliminated by careful review of the operating, maintenance, and recommended service instructions. Please carefully read this section before operating the machine.
- **Warning:** Disintegrating of materials the unit is not intended for will likely result in jamming or damage (See 4.2).
- The Model DS-400 has been shipped complete and tested and is operational when received provided proper electrical requirements are met.
- **Intent:** The Model DS-400 was designed to destroy solid state media, optical media, and paper products. But as with any type of office machine, it can be overloaded or jammed if overfed. Product destruction rate depends on the material, size and desired particle size. When feeding, apply the concept of "less is more". Feeding the unit less volume at a higher frequency will result in better feed rates and reduce the operating costs.
- **Time Delay Shutdown:** All Model DS-400's units are equipped with time shutdown to help prevent jamming of the disintegrator. When the selector switch is in the OFF DELAY position, the disintegrator will run for an additional 60 seconds to clear the chamber. This will help to prevent jamming the unit.
- **Diagrams:** Refer to section 2 for diagrams.
- **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.

4.2 – Shreddable Materials

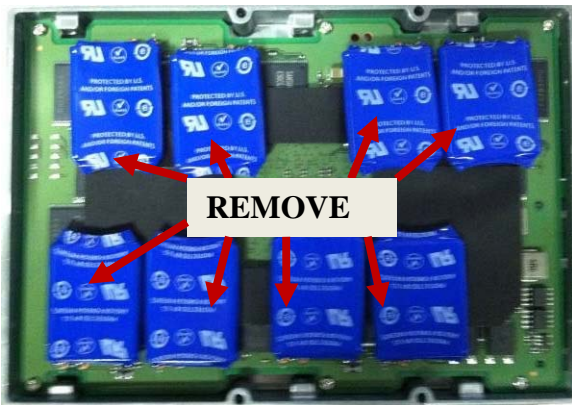
THIS UNIT IS NOT INTENDED FOR ROTATIONAL MEDIA.



- The Model DS-400 is capable of destroying the following products:
 - o PC Boards and Solid State Media (removed from case)
 - o CD/DVD/Optical media (with select screen sizes)
 - o Thumb drives
 - o PDAs and cell phones
 - o Paper

All capacitors, batteries, and liquid-crystal displays should be removed from solid state drives and other solid state media before running through the Model DS-400. This will often involve opening the product before running it through the unit.

See Examples below:



This unit is not intended for shredding rotational hard drives. Shredding rotational hard drives on this machine will cause damage to the machine and void your warranty



4.3 – Operation

- **Vacuum:** Verify that the vacuum is connected and all access points are closed.
- **Powering On:** Turn the selector switch, the unit will start and illuminate the green operating lamp.
- **Feeding:** Lift feed tray cover and drop material into the hopper.
- **Feed Rates:** The following are recommended feed rates for this unit
 - o **Paper** – 10 Sheets every 10 seconds
 - o **CDs** – 3 per feed every 15-20 seconds
 - o **Floppy Disks** – 3-5 per feed every 20 seconds
 - o **USBs** – 3-4 per feed every 20 seconds
 - o **Phone Boards** – 1 per feed every 45-60 seconds
 - o **SSD Boards** – 1 per feed every 30 seconds
 - o *Feed rates will vary depending on volume of shredded material, overall knife wear, and screen size. Larger screens have better feed rates.*
- **Shut down:** Allow the unit to run for 60 seconds before turning the power selector switch to off. This will initiate an additional 60 second timed shutdown to allow the chamber and evacuation line to clear
 - o **Warning:** Bypassing timed shut down can result in jams or damage to the cutting chamber.
- **In case of emergency:** Open the front door of the unit to shut the unit down and bypass the timed shutdown.
- **Vacuum:** Vacuum bag capacity is 35 gallons/approximately 200 sheets/5 reams of paper. Be sure to change this periodically. The line on the vacuum cabinet window shows SEMs recommended fill point.

4.4 – Troubleshooting

- **Jams:** If the unit jams follow the instructions below
 - o Disconnect unit from power using proper LOTO procedures
 - o Open the front door
 - o Remove the screws from the hopper cover
 - o Use belts to rotate the rotor
 - o Only reach in to remove a piece of material if necessary
 - o If rotor cannot make a full 360° rotation then the unit is still considered jammed
 - o Reattach hopper cover and close door
 - o Restart machine
- **Unit Not Starting:** If the unit will not start follow the instructions below
 - o **De-energize unit before proceeding**
 - o Ensure all guards and covers are properly secured to the unit
 - This ensures limit switches are active
 - o Open electrical panel and reset circuit breakers if necessary
 - o Make sure the unit is connected to a dedicated receptacle of proper voltage
 - Confirm receptacle has a >3% voltage drop



5. Maintenance

5.1 – Before Maintaining

- **Ensure that proper “Lock Out Tag Out” (LOTO) procedures are being followed any time the unit is being cleaned, maintained, or otherwise opened up. Serious injury or damage to the machine can occur.**
- **Warning:** Shredded material can be sharp, SEM recommends wearing cut resistant gloves.
- **Tools Needed:** Phillips head screwdriver, pliers and other hand tools, vacuum (recommended vacuum listed with spare parts), cleaning solution (windex/simple green) and rags/paper towels
- **PPE Required:** At minimum, SEM requires gloves, eye protection and a mask

5.2 – Cleaning

- **Frequency:** After 8 hours of operation
- **Process:**
 - o Disconnect power from the unit
 - o Rotate the handle on the filter of the vacuum 3-5 full rotations
 - Make sure there is a bag attached to the vacuum
 - o Open the front door of each cabinet
 - o Vacuum any loose debris inside
 - o Wipe down hopper with cleaning solution
 - o Change vacuum cabinet bag if necessary
 - o Close door and clean exterior of both cabinets

5.3 – Lubrication

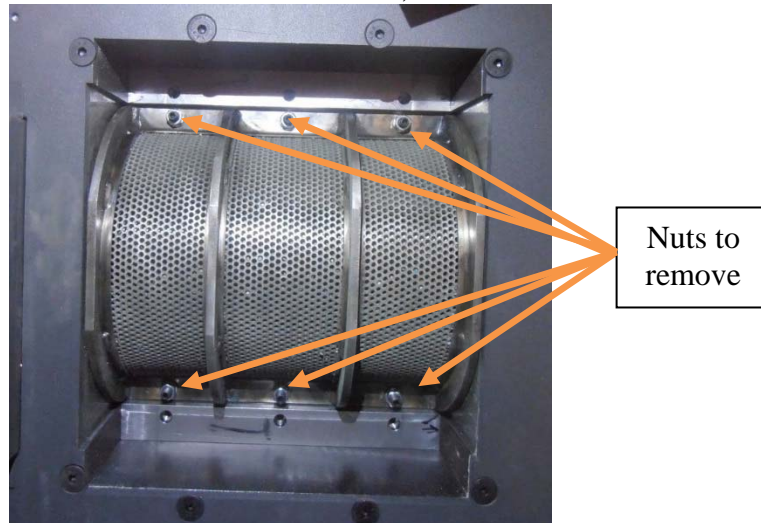
- Regular **lubrication** is recommended for optimal performance
- **Frequency:** Twice Yearly
- Grease Fittings are located on the top of the rotor bearings on the sides of the cutting chamber
 - o Grease with **Gulflex “A”** multipurpose grease or equivalent

5.4 – Filter

- To clean the filter on the vacuum cabinet, turn the handle on top 3-5 full revolutions **clockwise**
- Filter should not need frequent changes but if filtration performance is significantly hindered contact SEM for service
- Be sure that there is a bag attached to the vacuum or it will just fall to the floor

5.5 – Screen Change/Removal

- **Tools & PPE Required:**
 - o 9/16” Socket Wrench with 1/2-2” extension
 - o 1/2” Socket Wrench with deep socket
 - o Gloves, eye protection, mask
- **Steps:**
 - o **Release tension from belt**
 - o Remove the (4) 3/8-16 bolts holding up the transition
 - o Remove the (6) 5/16-18 nuts holding up the screen inside the cutting chamber
 - o Carefully lower the screen and inspect for damage
 - Material resting on screen is not considered adequately destroyed and may fall through when screen is removed
 - Particle size integrity cannot be guaranteed if screen is damaged
 - Depending on the media, shredded material may be sharp – be sure to wear all recommended PPE during maintenance.
- Replacement screens and other screen sizes are available, contact SEM for details and prices



5.6 – Belts

- **Tools & PPE Required:**
 - o 9/16” Wrench/Socket Wrench
 - o 3/4” Wrench/Socket Wrench
- **Adjustment Steps:**
 - o Turn bolt on adjustment plate
 - o Adjust until the belts can only be pressed in 1/2” when held between the thumb and forefinger
- **Replacement:**
 - o Relieve all slack from the belts,
 - o Slip belts over side of cutting chamber sheave
 - o Set new belt in groove of motor sheave and work it over the cutting chamber sheave
 - Be careful not to get fingers caught in belt and use LOTO procedures to avoid injury
- **Change Frequency:**
 - o Belts should be re-tightened after the first ten hours of operation, checked quarterly and changed annually

(*For serial numbers S400-0100 and S400-0101 contact SEM for replacement belts – 3VX500)

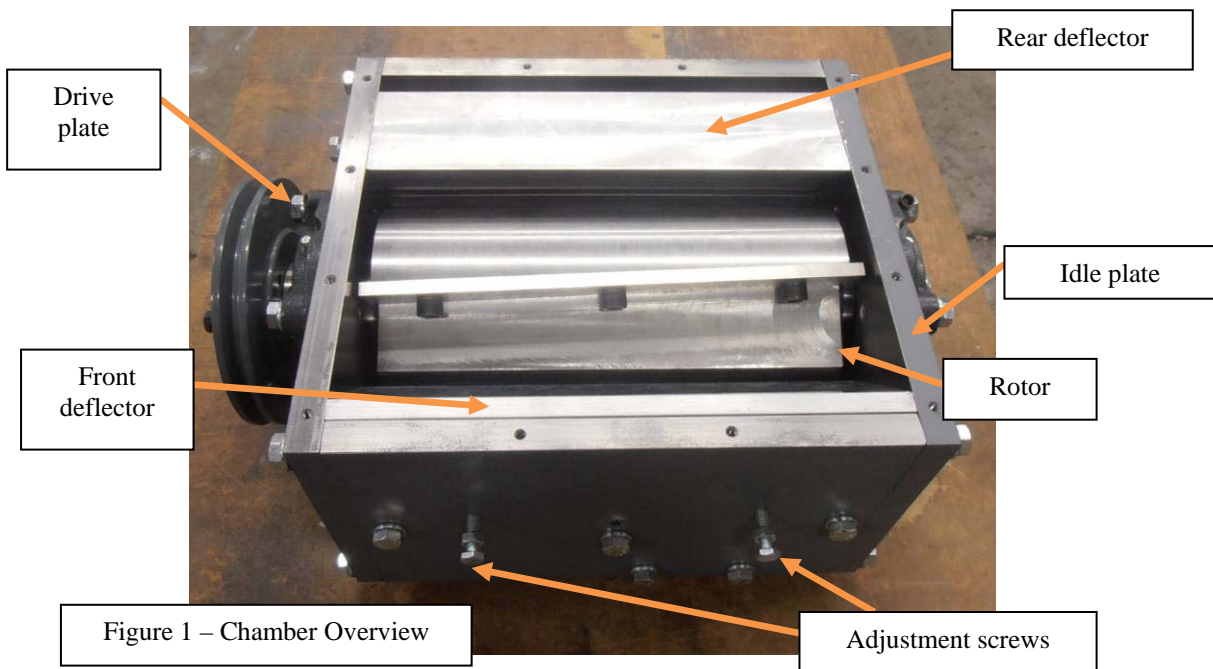
5.7 – Knife Changing and Sharpening

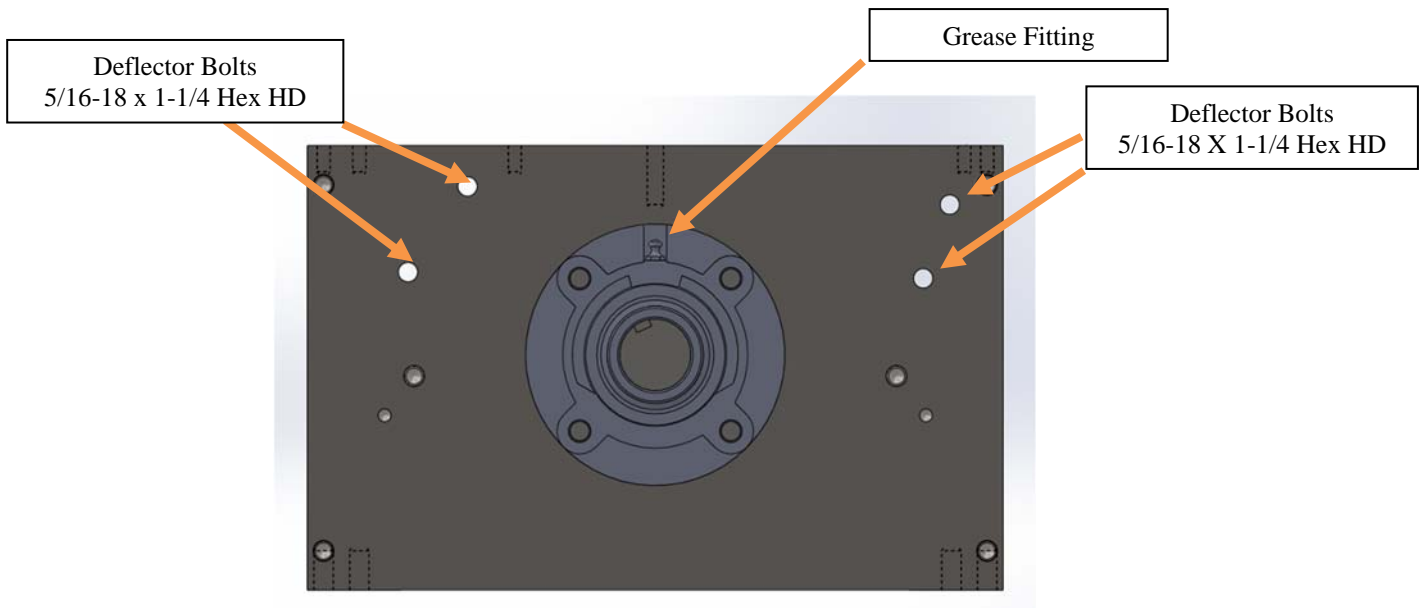
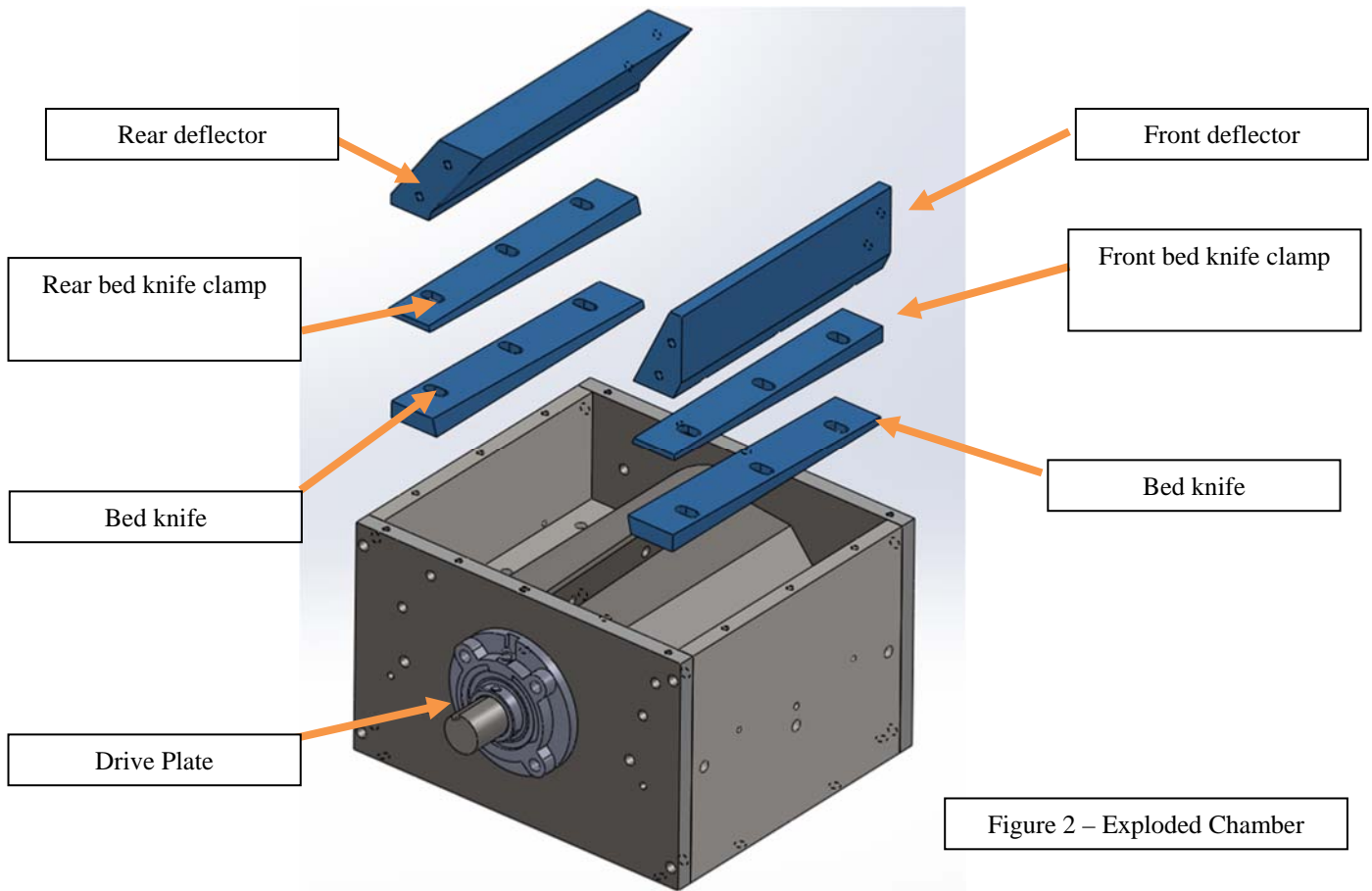
Blade changes should be done as needed and is recommended based on usage as knife wear varies depending on the material being destroyed. In all cases, knives should be changed and sharpened at a minimum of 25 hours of usage to avoid excess dust and potential jams. SEM highly recommends that this work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

- **Tools & PPE Required:**
 - o 7/16” and 1/2” socket wrench
 - o 5/16” Allen drive socket bit on torque wrench
 - o .005” Feeler Gauge
 - o Rag/paper towel
 - o Cut resistant gloves
 - o Eye protection

- **Note: While changing knives it is recommended to wear abrasive resistant cut gloves**

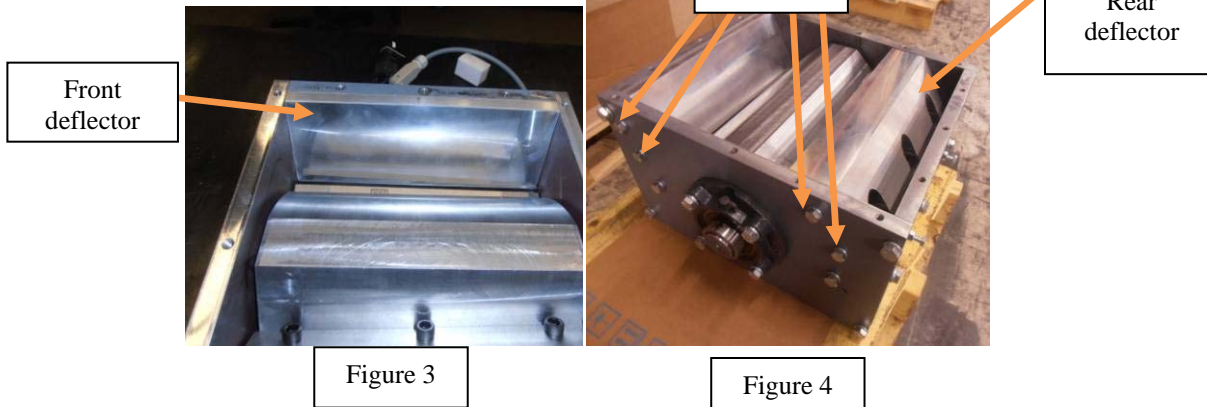
- To avoid downtime, it is best to have a spare set of sharp knives on hand at all times. Dull blades removed from the machine must be sharpened as a set (3 rotor/2 bed) by a qualified sharpener to ensure proper operation. SEM offers sharpening service. Call 800-225-9293 for pricing.





1. Remove front and rear deflectors.

- a. Requires 1/2" wrench



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

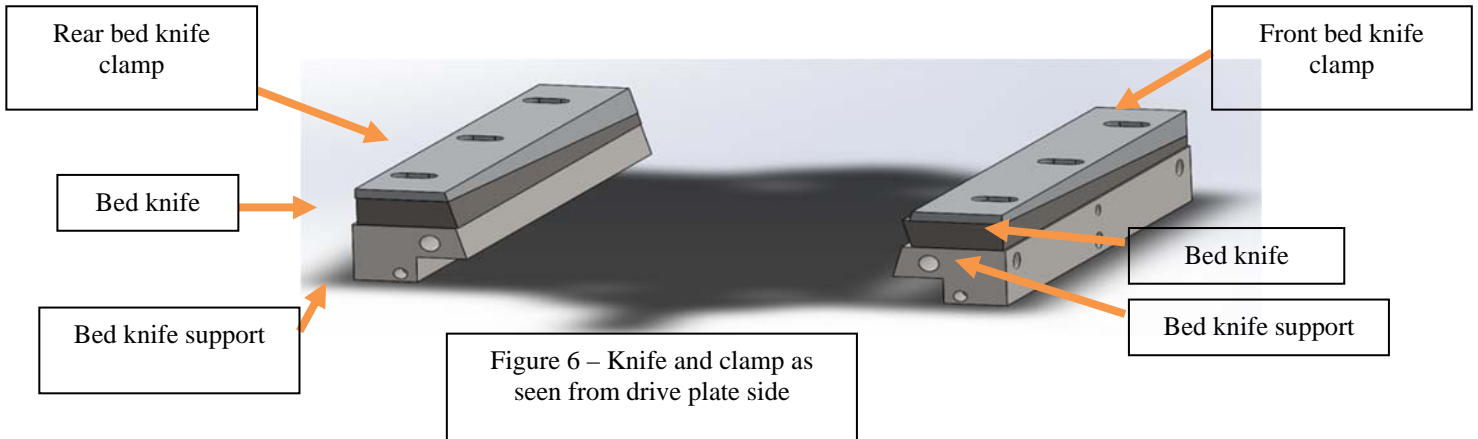
4. Wipe bed knife clean and place atop bed knife seat with thicker end towards drive plate and blades facing rotor.

- 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.



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

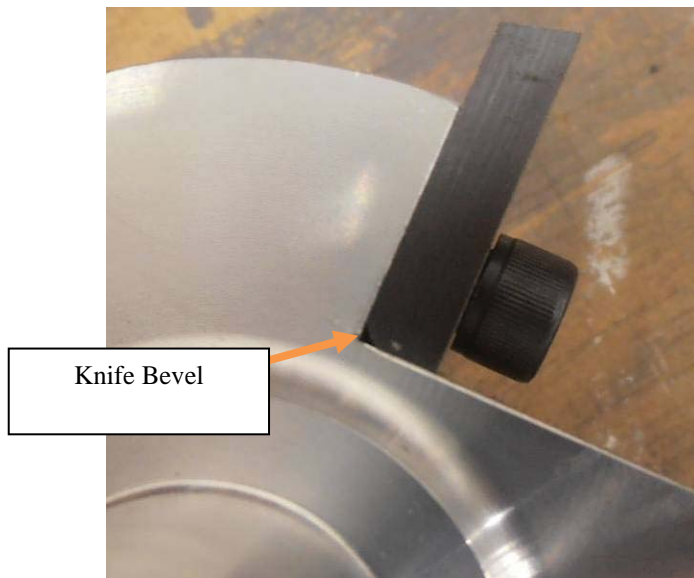


Figure 7

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

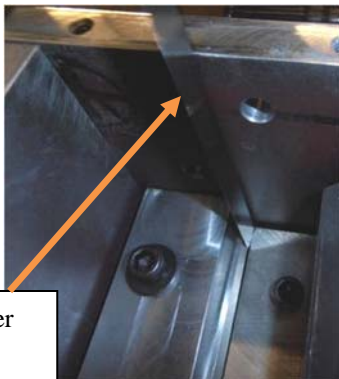


Rotor knife
bolt

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.

- Process may need to be repeated until proper clearance is achieved
- Double check clearance after tightening bolts as gap should be checked on each knife on rotor and across the whole surface of each knife.
- Adjustment screws require a 7/16" wrench



.005 feeler
gauge

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).

- 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

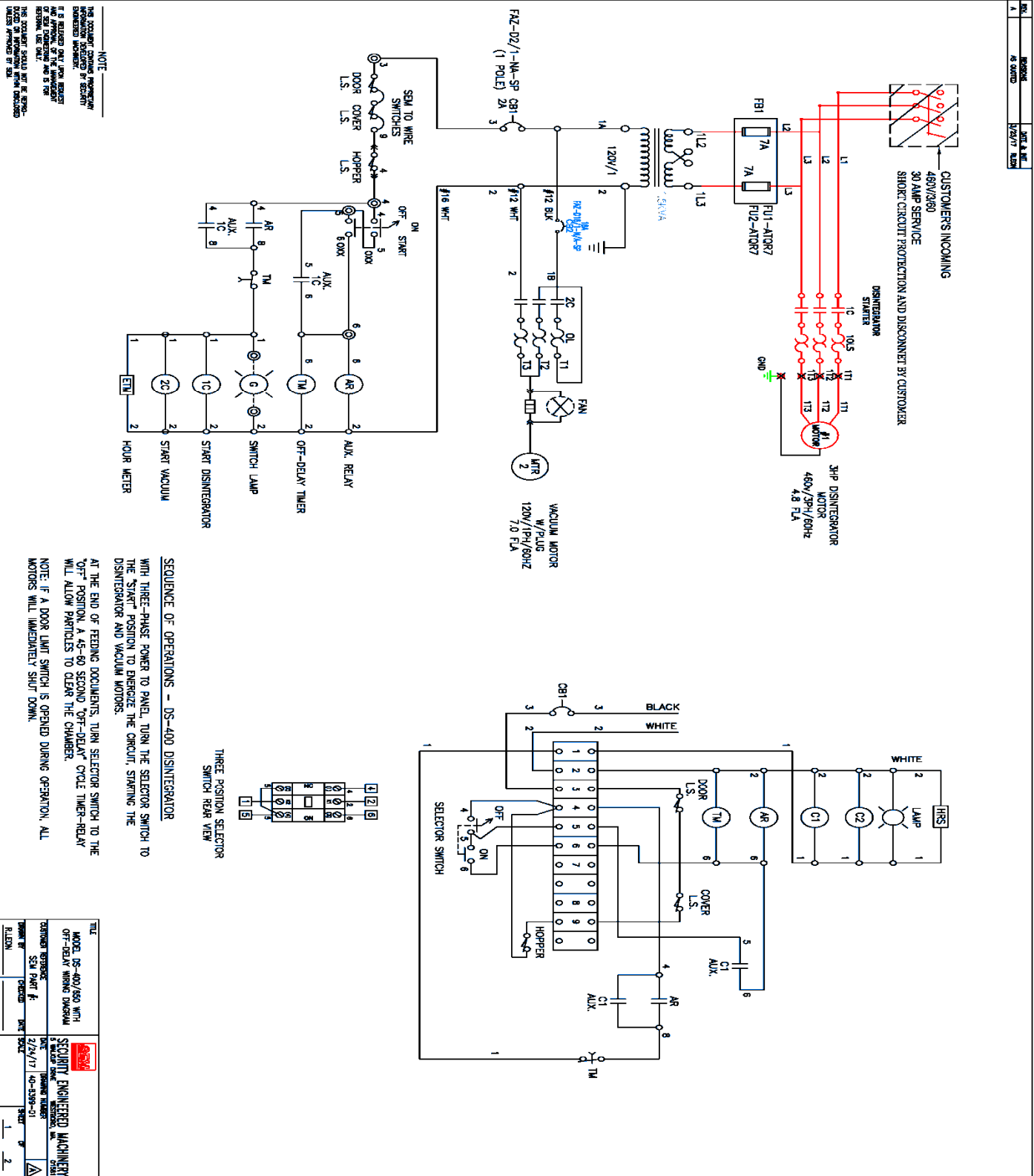
13. Do a final check of bolt torques, assembly bolt tightness, and knife gapping.

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 cutting chamber, reduced throughput and excess vibration and increased noise throughout the machine. Contact manufacturer for sharpening and service plans.

6. Electrical Diagrams

6.1 – 460 V





7. Spare Parts

ITEM	QTY	DESCRIPTION	PART/DWG#
1	1	Spare Set of Knives (3 Rotor/2 Bed) designed for Model 2 SSD/ DS400	391200K/3
2	1	Spare Sizing Screen (2 mm) designed specifically for Model 2 SSD/ DS400*	SSD-2SCREEN18P
3	1	Case of Bags for 650 Vac	
4	2	Drive Belts for DS400	3VX500
5	1	Toolkit	553TK200
6	1	Vacuum Bags (2/bag) (for 9272410)	9196400

*Other screen sizes are available – contact manufacturer for more information