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Operation and Maintenance Manual

Marine 200 Disintegrator



MAN-011 Rev 2 | Created 12-13-19 – ECN-00505

For serial numbers: S200-1810 and up

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Safety

1. Read and understand instruction manual and be aware of all warning stickers.
2. Make sure that all guards and access panels are in place at all times, **EXCEPT** when the power is locked off for maintenance work or cleaning.
3. **Always** know where emergency stop buttons are located.
4. **Always** know or have quick access to emergency phone numbers.
5. **Always** ensure that all maintenance and operating personnel read and understand this manual, including those personnel working second or third shift.
6. **Always** have a standard break-in time for a new operator. A minimum of two hours is suggested.
7. **Always** wear safety glasses when operating shredder.
8. **Always** “lock-out” power at the disconnect when shredder is not in use, when servicing shredder, or when performing routine shredder maintenance. This includes cleaning.
9. **Never** operate this or any other machine while under the influence of drugs, alcohol, or medications.
10. **Never** wear loose fitting clothing, ties, or jewelry while in the vicinity of this shredder.
11. **Never** allow long hair to be in the vicinity of the machine without use of a protective hair net.
12. **Never** place any part of your body in or on any part of the machine while in operation.
13. **Never** allow other personnel within ten feet of this machine while in operation.
14. **Never** remove guards, perform maintenance, or clear jam up debris without first locking out power disconnect.
15. **Never** allow horse play around machine.
16. **Never** bypass or interfere with any safety limit switches or guards. They are safety devices and serious injury can result if bypassed.

Overview

The Marine 200 is a self-contained low volume general use disintegrator, capable of destroying paper, small electronic media, and optical media.

Unit Size: (LxWxH, lbs.): 42.25” x 24.5” x 22.75”, 415 lbs.

Power Required: 115V/60Hz – 20A

Other voltages are available at the time of purchase.

1.) Unpacking

The Marine 200 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 Marine 200 or to the crate during shipping, the receiver must note what is damaged on the Bill of Lading and contact the shipping company immediately.

Unpacking:

1. Remove sides of crate using a 9/16" socket.
2. Carefully remove the unit from the crate using a forklift.

Unit Location:

The Marine 200 can be in an office or warehouse area within six feet of a wall receptacle. It is recommended that the machine be at least three to four inches away from the wall for proper ventilation.

2.) Installation

2.1 Power Requirements

FOR 115V/1-phase/60Hz

Note to Installer:

The Model 200 Disintegrator System has been supplied with a power cord and male plug for **20 Amp** service.

The male plug is a NEMA # 5-20P and requires a female connection as noted below.

Ref: NEMA 5-20R.

FOR 220V/1-Phase/50-60Hz

Note to Installer:

SEM has provided a power cord with male plug for **15 Amp** service.

The male plug is a NEMA #6-15P and requires a female connection as noted below.

Ref: NEMA #6-15R

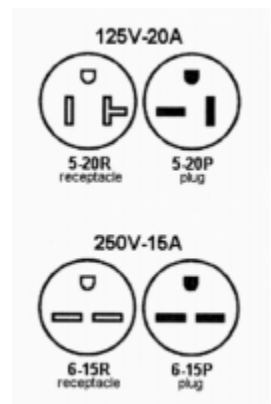
Alternative Options:

- Replace plug with customer-supplied substitute while conforming to local electrical codes and maintaining proper amperage ratings.
- This machine can be hardwired to a safety disconnect for permanent installations. This must be done by a licensed electrician while observing local electrical codes.

Plug and Receptacle Info:

- 115V – 125V single-phase: SEM supplies a NEMA #5-20P, the customer needs to supply a NEMA #5-20R receptacle 20 Amp.
- 220V – 250V single phase: SEM supplies a NEMA #6-15P, the customer needs to supply a NEMA #6-15R receptacle 15 Amp.

Note: Any overseas or European shipments at 220V single phase 50 cycles must supply their own plug unless otherwise specified at time of order.



2.2 General Information

- The machine includes an appropriate power cord and male plug. The unit is activated by a top mounted selector switch with indicator light.
- Access to the cutting chamber for service is provided by the main cabinet door. A safety unit switch activated by the main door prohibits operation when door is open.
- The Marine 200 has been wired per your specification. The motor supplied operates on single phase voltage.

Voltages:

- 115V/1-phase/60Hz: Disintegrator motor draws 4.7 Amp, vacuum motor draws 8.0 Amp at peak.
- 220V/1-phase/60Hz: Disintegrator motor draws 2.3 Amp, vacuum motor draws 4.0 Amp at peak.
- International voltages at 50Hz are also available.

3.) Operation

Please read this section carefully – most problems occur during the first hours of operation. Most problems can be eliminated by careful review of the operating, maintenance, and recommended service instructions.

Product destruction rate depends on the material, size, and desired particle size. All units are equipped with timed-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 jams that would require some disassembly to gain access to the cutting chamber.

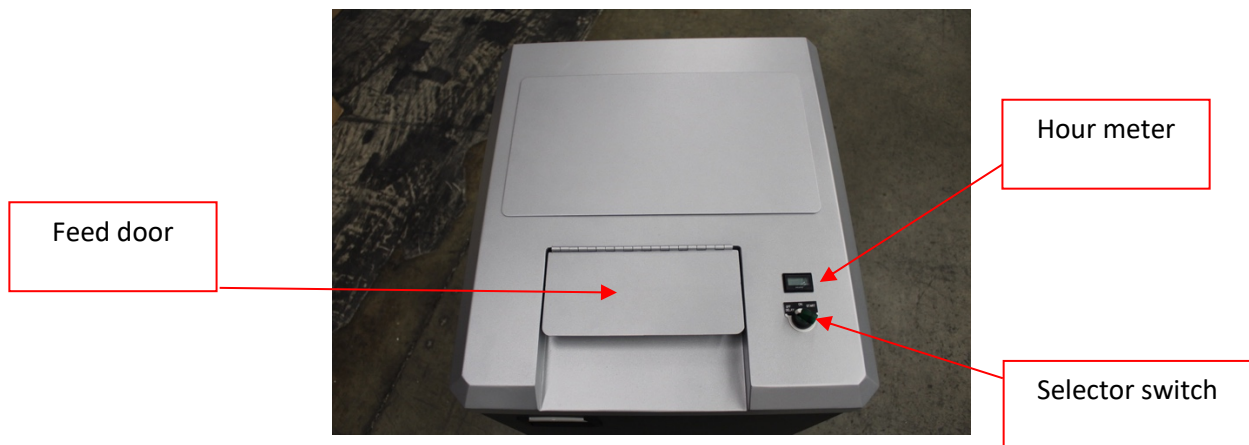
3.1 Start-up Procedure

Pre-start-up procedure:

- Familiarize yourself with all controls and button locations.
- Ensure that all guards and covers are in place.
- Ensure the area is clean.

Start – up:

- 1.) Ensure that the cabinet door is closed.
- 2.) Close top-feed door completely.
- 3.) Turn green selector switch to **START** and release to **RUN** position.
- 4.) Listen for machine to engage.



3.2 Clearing a Jam

Important: In case of emergency or overfeeding, opening the front door of the disintegrator cabinet will disengage a safety limit switch and immediately shut down the machine. This procedure should be reserved for emergency situations only. Bypassing the timed-shutdown can result in a jam.

To clear a jammed or locked rotor:

1. Make sure selector switch is in **OFF** position.
2. De-energize the unit by unplugging the power cord.
3. Open front door of disintegrator cabinet.
4. Remove plate on front hopper to access the cutting area – flat head or Phillips head screwdriver.
5. Remove loose product.
6. Rotate rotor toward the front of the machine using the drive belt to free its movement.
7. Rotor is not considered unjammed until it can freely rotate just by spinning the flywheel/drive belt.

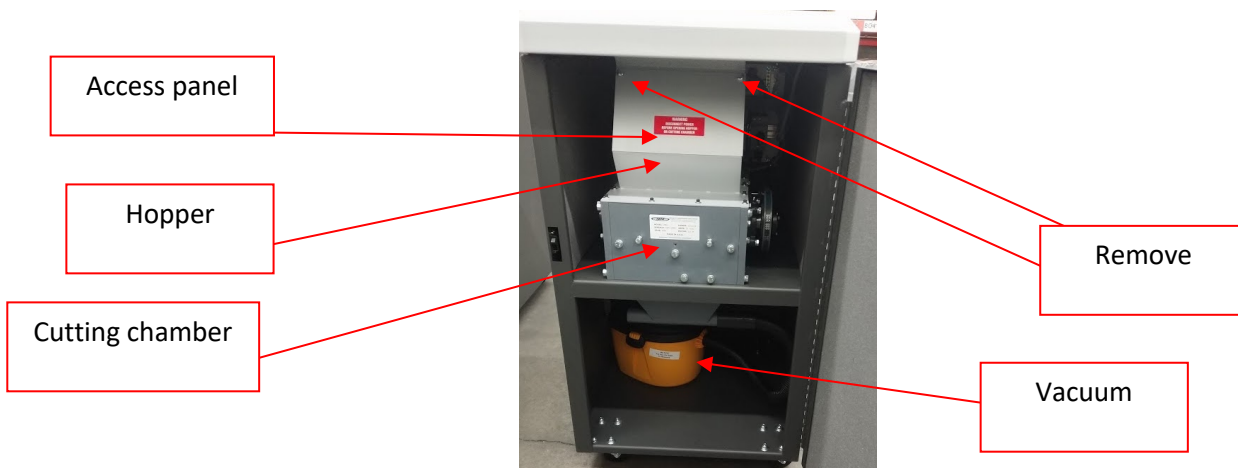


Figure 3.2: Hopper access panel

To restart:

1. Re-secure plate on front hopper.
2. Connect to power.
3. If necessary, reset overload on electrical panel behind the hopper (Figure 4.18).
4. Close main door.
5. Turn green selector switch to **START** and release to **RUN** position.

NOTE: Repetitive jams also can be a result of knives that require sharpening.

3.3 Feeding Information

- Before introducing any material into the feed slot, the Marine 200 and its vacuum must be turned on and operating. The material collection vacuum must be checked periodically and emptied for continued operation.
- **Destruction material:** The Marine 200 is capable of processing a variety of materials safely and effectively. Products that can be destroyed include light metals, plastics, and paper. See Section 3.4 for materials that can be destroyed using the Marine 200. Please consult SEM customer service at 1-800-225-9293 before attempting to destroy anything not listed here.
- **Destruction rate:** Listening to the machine while operating is an easy way to gauge when you should be feeding more material. As more material is fed the sound levels will increase. When the sound levels decrease, more material can be fed. Destruction rates change depending on the screen size being used.
- For optimal sound reduction after inserting documents or other materials, close the feed door.
- When destruction is complete, allow the Marine 200 and vacuum to operate an additional 60 seconds after the last piece of material is destroyed. This will prevent build up in the cutting area and evacuation line, ensuring proper operation for the next user.
- Vacuum collection bags must be periodically changed for proper operation.

3.4 Feeding

1. Connect machine to power.
2. Turn selector switch to **START**.
3. Listen for vacuum and cutting chamber to engage.
4. Open feed door.
5. Place material into feed slot and release into chamber.

3.5 Acceptable Materials

The SEM Marine 200 series disintegrator has been evaluated by NSA and meets the requirements of NSA/CSS specification 02-02 for classified paper destruction and NSA/CSS 04-02 for classified CD destruction. The Marine 200 is capable of non-classified destruction of flash cards, flash drives, CAC IDs, credit cards, RFID chips, SIM, and SD cards. The Model 200 is also the only approved office machine that is practical for destroying classified key tape in quantity (two or more canisters per month). It will destroy key tape by the handful, not just a segment at a time.

Note: Meeting specifications are dependent on the screen size used in the machine.

Please contact SEM customer service at 1-800-225-9293 **before** attempting to destroy anything that isn't listed here.

Caution: Care must be taken when destroying media with the Marine 200. Be sure to remove any thick metal parts, screws, or batteries/capacitors. Please contact **SEM customer service** at **1-800-225-9293** with any questions.

4.) Maintenance

Important / Caution:

Before performing any service or maintenance on this machine, make certain to unplug the power cord from the receptacle.

4.1 Emptying the Waste Collection Vacuum

The waste collection vacuum is located inside of the cabinet on the lowest shelf. The vacuum has a 2.5-gallon capacity and should be checked regularly. Upon the first few cycles the customer should frequently check the vacuum so that they can gauge how often it will need to be emptied. Follow the instructions below to check/empty the waste collection vacuum.

1. Unplug the unit.
2. Open the cabinet.
3. Disconnect the vacuum hose at the vacuum.
4. Remove the vacuum from the cabinet by turning vacuum on its side to clear transition.
5. Remove the vacuum lid and unhook the bag from the lip if using bags.
6. Reinstall vacuum in reverse order.

4.2 Belt Adjustment

IMPORTANT: Belt should be checked and tightened if required after first two (2) days of operation. After that, check monthly.

1. De-energize the unit by unplugging the unit.
2. Remove the top cover - make sure to disconnect the grey connector before completely removing the cover.

3. Remove the hopper.



Location of electrical connection

Figure 4.1: Removing top cover

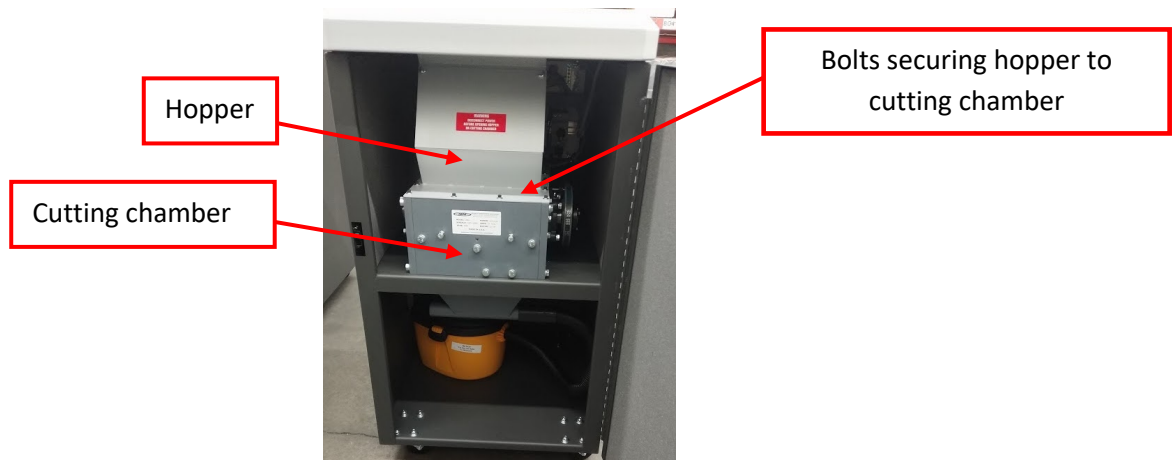


Figure 4.2: Removing hopper

4. Loosen the four bolts securing the base of the motor.
5. Use the two adjusting bolts to evenly adjust the motor (see right).
6. Check the tension of the drive belt .

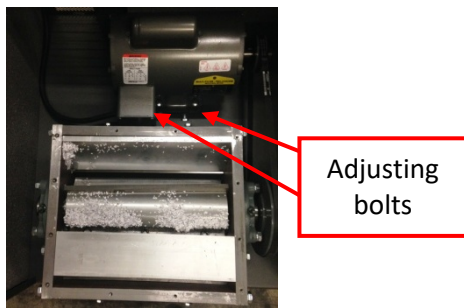


Figure 4.3

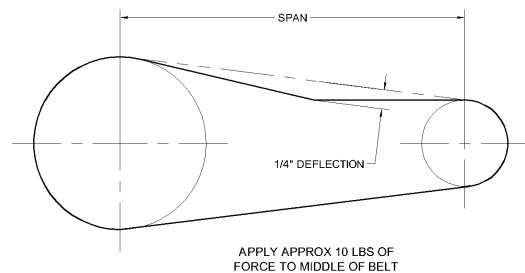


Figure 4.4: Checking belt tension

7. After the tension is satisfactory, tighten the locking nuts on the adjusting bolts.
8. Tighten the four bolts holding the motor to the cabinet.
9. Reinstall hopper, top cover, and feed assembly in reverse order.

4.3 Removing or Changing the Screen

Tools and PPE (Personal Protective Equipment) Required:

- Cut resistant gloves, safety eyewear, and a mask.
- 1/2" deep socket with 6" or longer extension.
- 9/16" socket.

Removing the Screen:

- Remove the four bolts in the corners underneath the cutting chamber that hold the transition in place with a 9/16" socket.
- 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 to not spill any remaining material.
- Inspect screen for damage. Particle size integrity cannot be guaranteed if screen is damaged – contact manufacturer for replacement.

Note: Material resting on the screen is not considered to be adequately destroyed.

Caution: Material resting on the screen may fall through upon removal. Eye protection and gloves are recommended as well as other personal protective equipment (PPE) if required by employer.

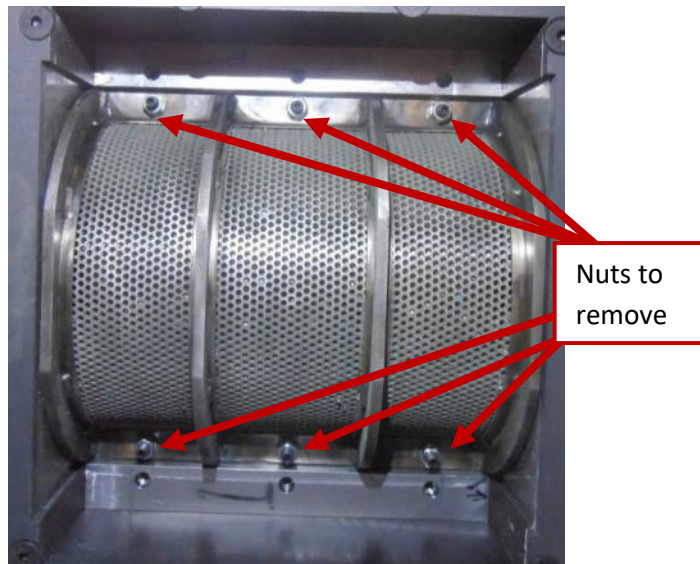


Figure 4.5: View from underneath screen

4.4 Changing Knives

Frequency: Blade changes should be done as needed and are recommended based on usage as knife wear varies depending on the material being destroyed. At a minimum, knives should be changed and returned for sharpening at 25 hours of usage to avoid excess dust and potential jams.

Note: 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.

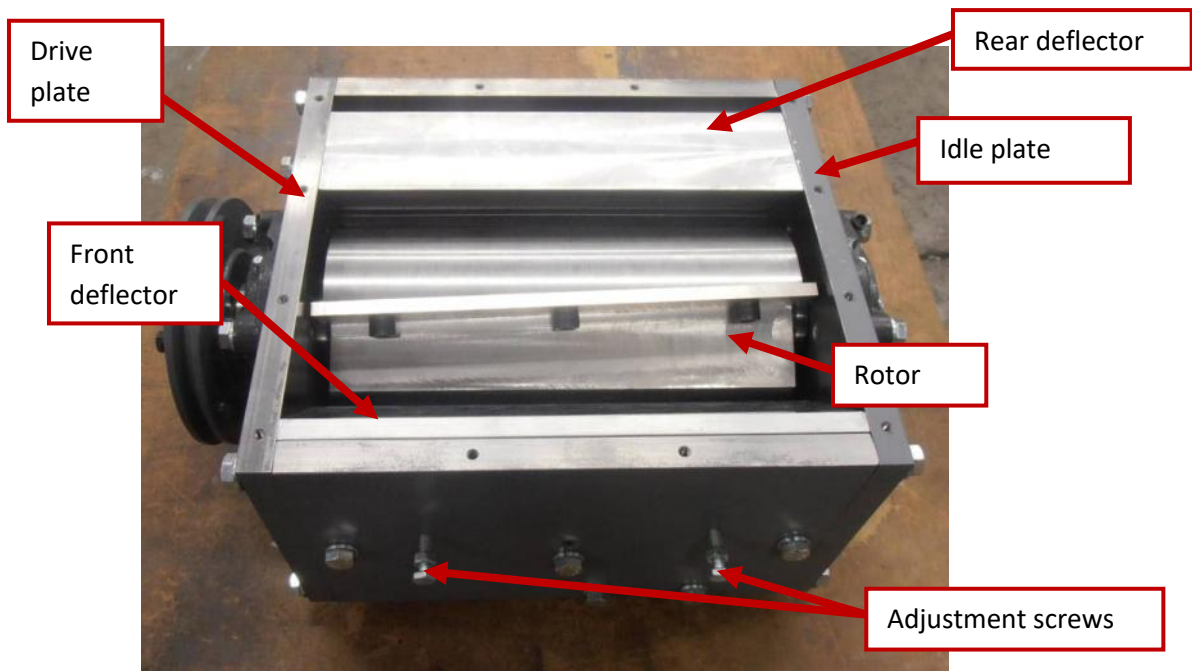


Figure 4.6: Chamber overview

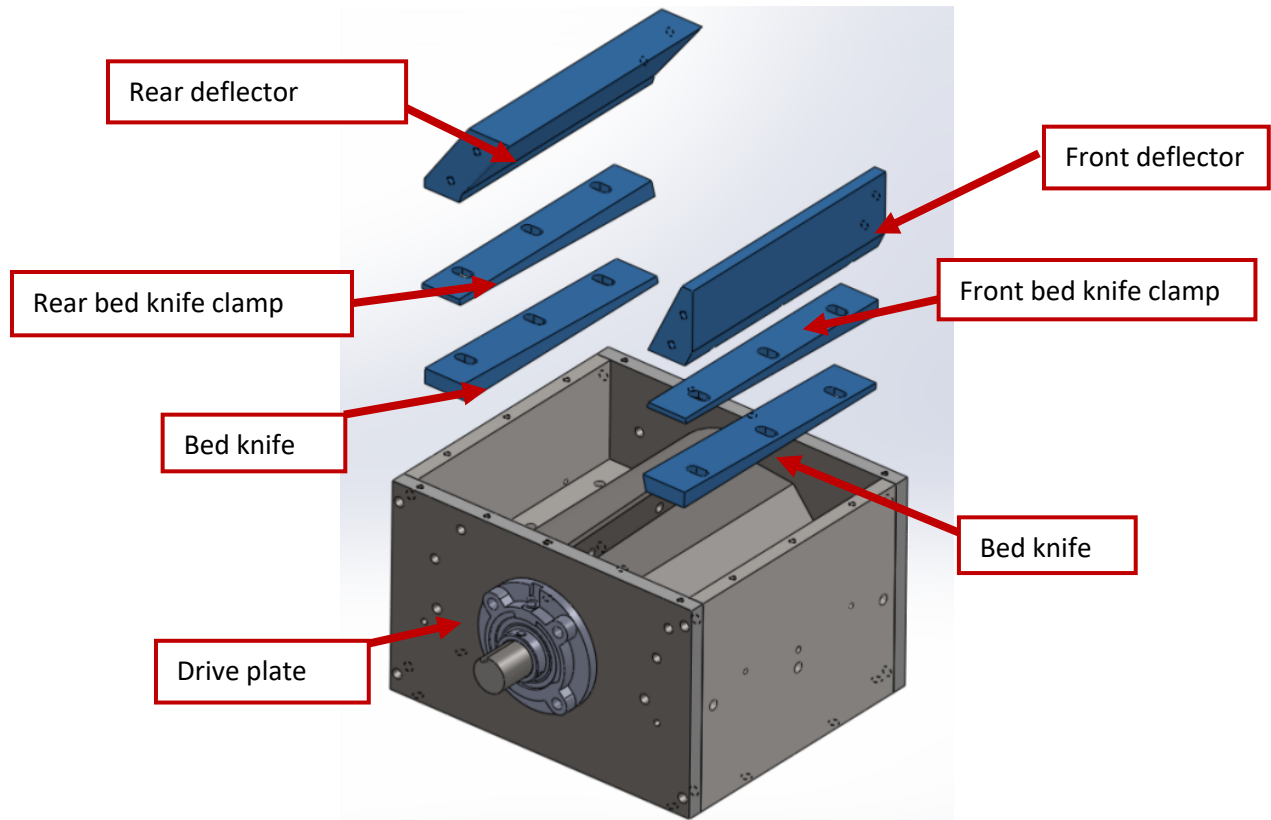


Figure 4.7: Exploded chamber

Tools and PPE Required:

- Cut resistant gloves
- 7/16", 1/2" wrench or socket wrench
- 5/16" Allen drive socket bit
- 4-6" socket wrench extension
- Torque wrench compatible with sockets listed above
- .001" feeler gauge

Spare Knives and Sharpening: To avoid downtime, it is always best to have a spare set of sharp knives on hand. SEM offers spare knives and sharpening services. Contact SEM customer service at 1-800-225-9293.

Screen: It is recommended, but not required, to remove the screen from the chamber while changing the knives.

- 1.) Remove front and rear deflectors.
 - Requires 1/2" wrench



Figure 4.7

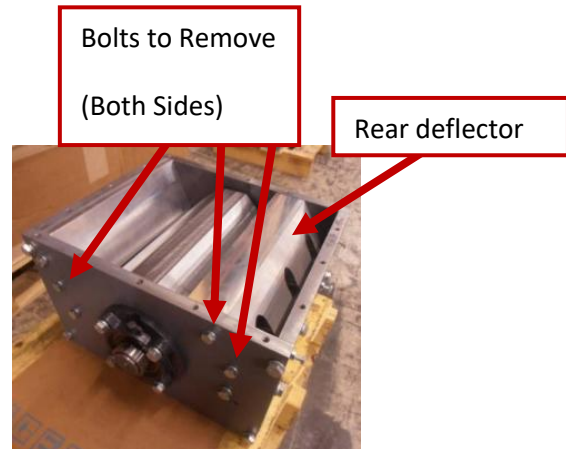


Figure 4.8

- 2.) Remove bolts from rotor knives and remove knives.
 - CAUTION – Knives are sharp.
 - Requires 5/16" Allen drive socket bit.
- 3.) Remove bolts from bed knives.
 - Replace one knife at a time.
 - Make sure to keep track of the bed knife clamp.

4.) Wipe bed knife clean and place atop bed knife seat with thicker end towards drive plate and blades facing rotor. One knife will be “upside down”.

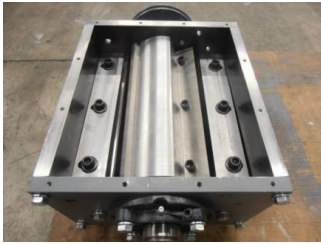


Figure 4.9

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.

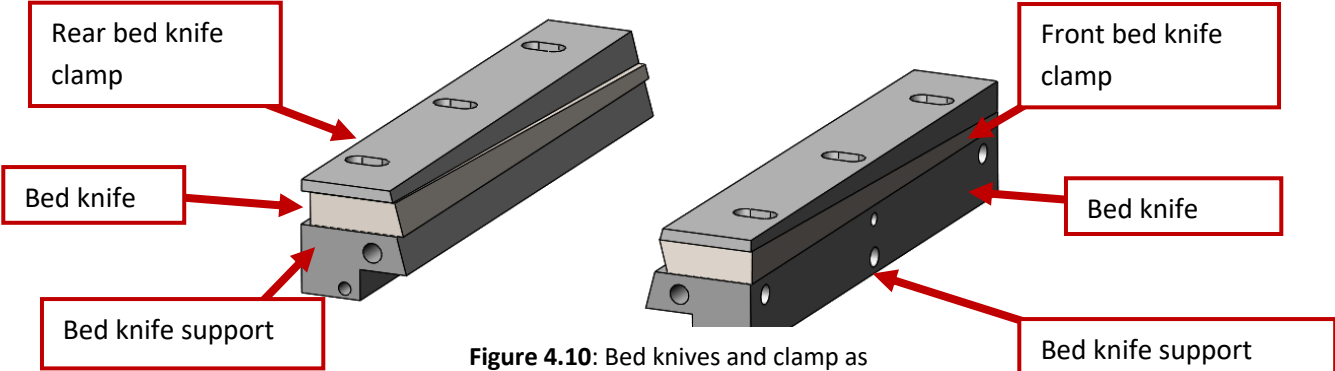


Figure 4.10: Bed knives and clamp as seen from drive plate

6.) Install bed knife bolts with six 3/8-16" x 1-1/2" socket head cap screw and six 3/8" thick grey washer through top of clamp – set to hand tight. 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 nine – 3/8-24" x 3/4" socket head cap screw. Beveled edge of knife sits in notch of rotor corner.



Figure 4.11

9.) Torque rotor knives to 50-55ft./lbs. Requires torque wrench + 5/16 Allen drive socket bit.

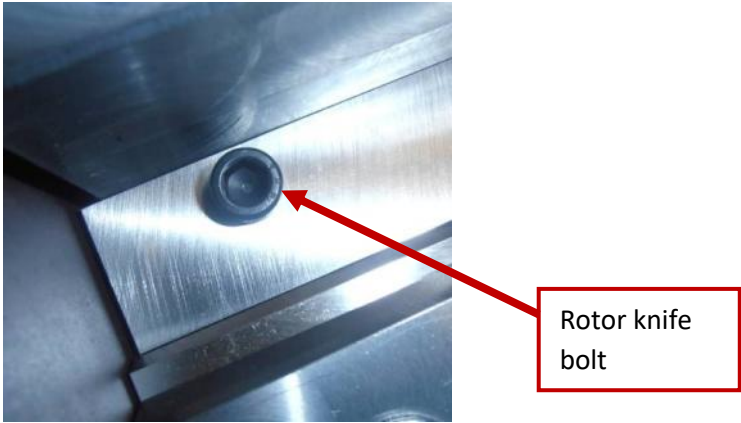


Figure 4.12

10.) Set clearance between rotor and bed knives to .001" using adjustment screws and a feeler gauge, rotating the knives in reverse (clockwise) so "flat to flat" contact will not cut feeler gauge.

- Requires 7/16" wrench and .001" feeler gauge.
- Process will need to be repeated until proper clearance is achieved.
- You will hear a **light** "knock" while spinning the rotor when one or two rotor knives meet the feeler gauge. This indicates proper clearance.
 - There should be little resistance, just a noise.
 - If the rotor stops, there is too little clearance.
 - The knocking only occurs on the longest of the three rotor knives, occasionally it will occur for two knives.
- Check clearance in front of each bed knife bolt. The "knocking" should occur either in the middle OR on the two outside bed knife bolts.
- Double check clearance after tightening bolts as gap should be checked on each knife on rotor and across the whole surface of each knife.

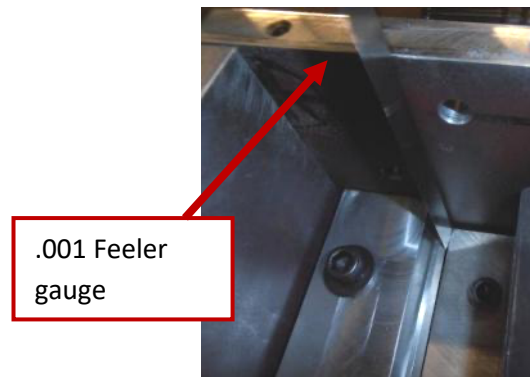


Figure 4.13

11.) Torque bed knives to 45-50 ft./lbs.

- Requires torque wrench and 5/16" Allen drive socket bit.
- 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 torqueing bolts.



Figure 4.14

12.) Attach front and rear deflectors as shown with six 5/16-18" x 1 1/4" hex bolts and 5/16" lock washers.

- Requires 1/2" wrench

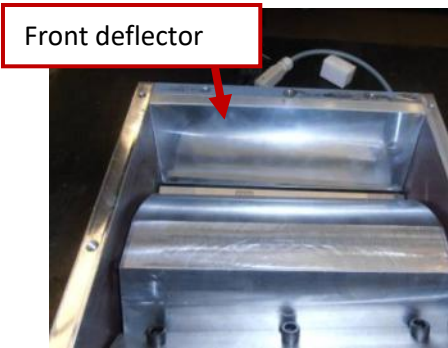


Figure 4.15



Figure 4.16

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

Warning: Failure to sharpen or replace knives will result in excess dust, frequent jamming of STAGE 2 chamber, reduced throughput, excess vibration, and increased noise throughout the device.

Re-sharpening: Knives can be re-sharpened 2-3 times provided they are not significantly damaged or worn.

Knives **must be sharpened as a complete set** (2 bed knives, 3 rotor knives). Contact SEM customer service at 1-800-225-9293 for details or for replacement knives.

Measuring the spare knives:

1. Place knives flat, back-to-back.
2. Measure from cutting edge to cutting edge.

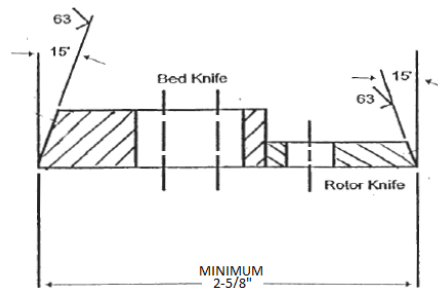


Figure 4.17: Minimum measurement of knife pairs

3. If the measurement is below the minimum, then the knives cannot be used and must be replaced.

4.5 Electrical Panel

The electrical panel is located in the main cabinet, behind the hopper.

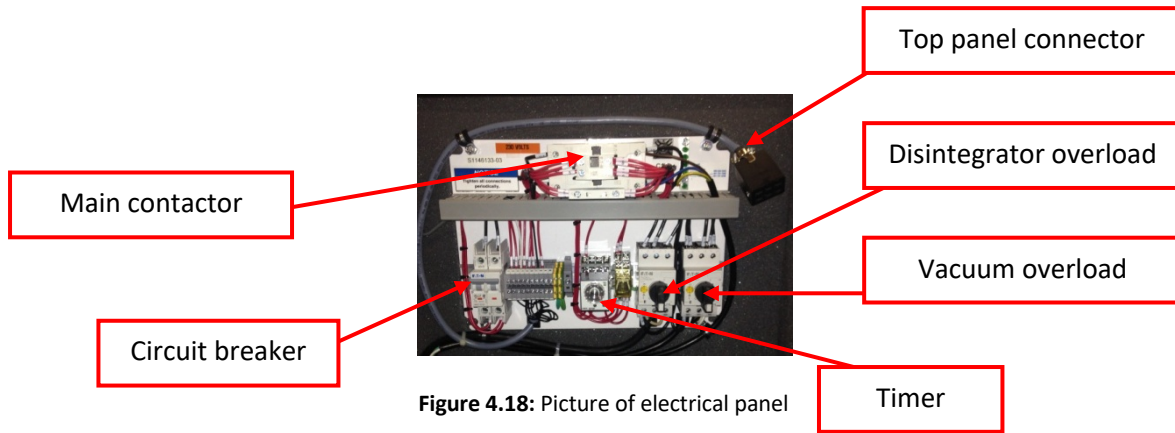


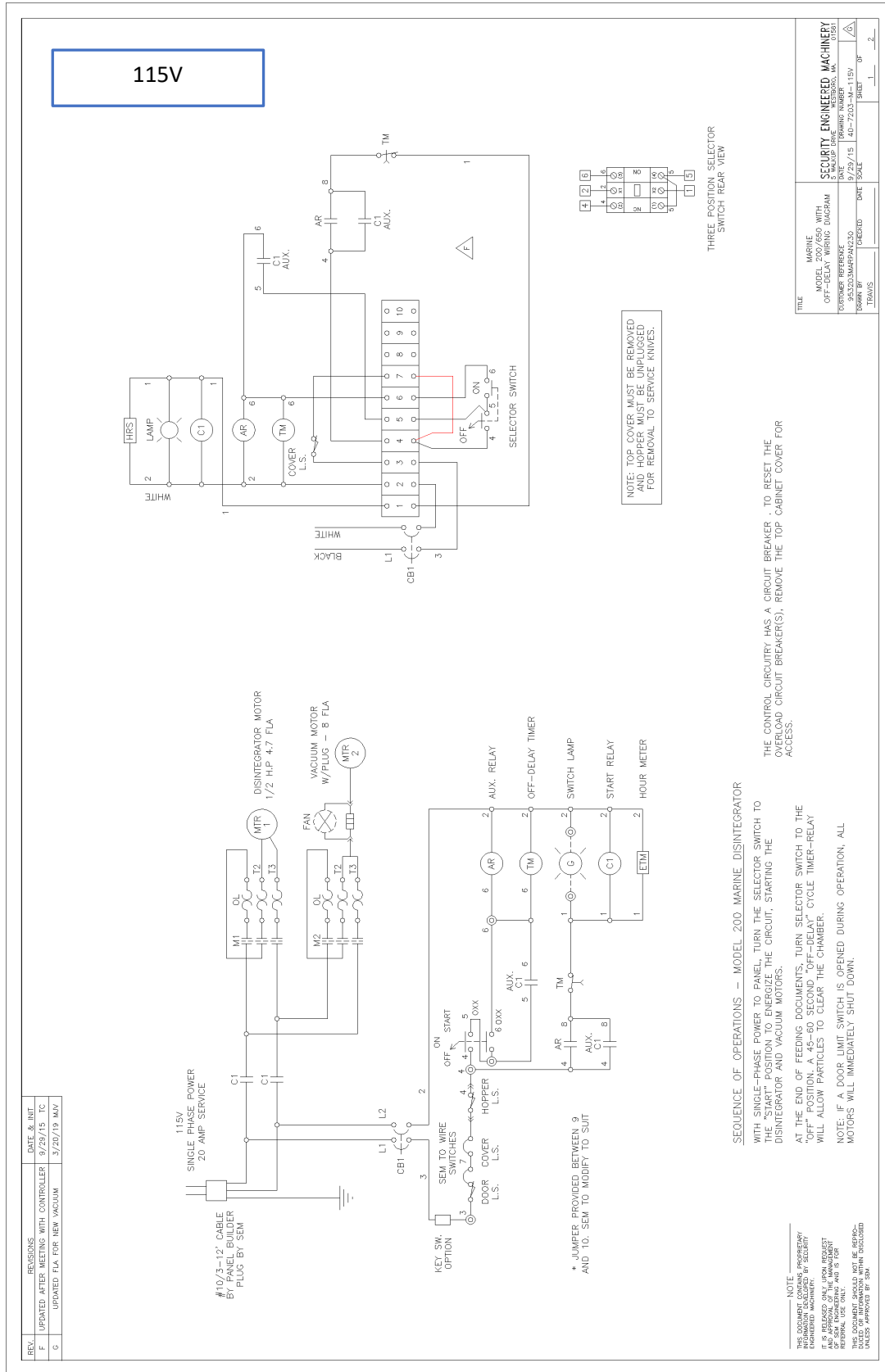
Figure 4.18: Picture of electrical panel

Note: Pre-shredder overload is not shown.

Accessing the electrical panel:

1. Open cabinet door.
2. Removed feed assembly (see section 4.2).
3. Remove the top cover (see section 4.2).
4. Remove hopper (see section 4.2).

4.6 Electrical Diagrams



5.) Spare Parts

Option	Description	Part NO.
Drive Belt	Spare/Replacement drive belt	3VX355
Vacuum Bag	3 Pack of bags for vacuum, provides extra layer of filtration	300-45634417
Vacuum Filter	Replacement vacuum filter	9034100
Maintenance Kit	Tool kit with an assortment of tools needed to service the machine	DMK200
Standard Knife Set	(1) set of standard knives (3 rotor & 2 bed)	391200K/3
Security Screen	Standard 3/32" security screen	341201332



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