



Operation and Maintenance Manual

SEM Model 3, 1012, 1012/5, 22, 22/5, 23, and 23/5
Disintegrator with Fan System Value Kits



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For sales, service, parts, and customer support, contact us:

SECURITY ENGINEERED MACHINERY

5 Walkup Drive • Westborough, MA 01581

info@semshred.com

1-508-366-1488 • Toll Free US 1-800-225-9293

www.semshred.com

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Disintegrator Safety Rules

1. Read entire manual prior to installation or initial operation.
2. **Observe and follow your company's safety policy regarding disintegrating equipment.**
3. **MOVING OR LIFTING THE DISINTEGRATOR:** Care must be taken when moving the machine along the floor or when lifting it. Damage may occur to sheet metal covers, electrical cabinets, or small brackets if pressure is applied to them when moving the disintegrator. When lifting the disintegrator, be certain of total machine weight and the capability of the lifting equipment.
4. **Always disconnect and perform lockout tagout (LOTO) when disconnecting the main electrical power to the disintegrator before performing any service.**
5. **SAFETY INTERLOCKS MUST NOT BE BYPASSED.** The mechanical and electrical safety interlocks ensure the safety of personnel. They should never be tampered with or removed for ANY reason. They should be frequently checked by a qualified mechanic for proper operation.
6. **DISINTEGRATOR LOCATION:** Provide an adequate area for routine maintenance that allows machine to be opened for service.
7. **SAFE HOUSEKEEPING:** The work area should be kept clean and uncluttered to allow personnel safe movement around the disintegrator during periods of operation or maintenance. No hand or power tools should be left on or about the machine. Any tools or other metal objects which mistakenly fall into the hopper feed opening can cause severe damage to internal screen chamber and cutting chamber components.
8. **SAFETY GLASSES OR A FACE SHIELD MUST ALWAYS BE WORN** when operating or servicing the machine. Although SEM machines are designed for the maximum in fly back control, caution must be used when operating near the area of the hopper feed opening in order to guard against unexpected material fly back.
9. **EAR PROTECTION** may be required when operating the machine during disintegration of very hard/noisy materials. The Occupational Safety and Health Act of 1970 (OSHA) has established guidelines for permissible noise exposures (1910.95) that should be followed. Each site should determine their own requirements for PPE.
10. **NEVER** operate the disintegrator unless it is fully assembled with all guards and interlocks in place and functional.
11. Observe all danger, warning, caution, and safety labels on the equipment.
12. Upon completion of any machine maintenance, be certain all safety guards and covers are securely and properly fastened prior to resuming machine operation. Failure to secure and tighten all safety guards and covers may result in injury to personnel and equipment.
13. **NEVER** wear any loose fitting clothes, neckties, or dangling items such as earrings, belts, or shoestrings. Jewelry such as wristwatches, bracelets, or rings should **NEVER** be worn. Long hair must be tied back or placed within a tight fitting hairnet. **NEVER** lean against or rest hands/feet on the disintegrator when it is in operation or opened for maintenance. **NEVER** stand on the disintegrator when it is in operation.
14. **ROTATION OF MOTORS:** All rotating items in the disintegrator are clearly marked on the machine. Always check for proper rotation of motors.
15. **ELECTRICAL GROUNDING:** All electrical equipment on the disintegrator must be grounded in accordance to all local codes and Article 250 of the National Electric Code.
16. **NEVER** modify the machine configuration or any individual component.

SEM has long recognized the importance of safety and has designed and manufactured our equipment with operator safety as a prime consideration. We expect users will abide by the foregoing recommendations in order to maintain operator safety.

1. Introduction

1.1 Scope

This manual is intended to be used as a guide and reference for personnel who will be installing, operating, and maintaining the SEM security disintegrator. The purpose is to aid these individuals in applying efficient, proven techniques which will enhance equipment productivity.

This introduction includes a brief functional description, a physical description, and machine specifications for these disintegrators. Additional sections within the manual provide instructions for installation, pre-operational procedures, operation, preventative maintenance, and corrective maintenance.

Installation instructions include all required data for receiving, unpacking, inspecting, and setup of the disintegrator. Also included are illustrations which will aid in utilizing techniques to accomplish these tasks efficiently. SEM can provide the assistance of a factory trained technician who will help in training your operator(s).

Pre-operational procedures include instructions, checks, and adjustments which should be followed before operating the disintegrator. These instructions are intended to supplement standard shop procedures performed at shift, daily, and weekly intervals.

The operation section includes a description of electrical and mechanical controls and information for operating the disintegrator safely and efficiently.

The maintenance section is intended to serve both as a guide for identification and location of most common problems and as a source of detailed assembly and disassembly instructions for those areas of the equipment requiring service.

The spare parts section contains a partial list of recommended parts which may require replacement. Refer to this section for a listing of spares which can be purchased.

1.2 General Description

SEM security disintegrators are designed to uniformly and consistently shred material to a specified end particle size.

Disintegrators are portable units mounted on heavy duty bases fitted with four casters, two of which are lockable.

The rotor on which the cutting knives are mounted is a fabricated steel unit supported by bearings mounted outside the cutting chamber. The rotor is driven by a motor which is capable of producing high torque loads. The disintegrator is equipped with a magnetic starter that is protected by manually resettable overload heaters. The slanted rotor knives and counter slanted bed knives produce a scissors cutting action which reduces the possibility of feedstock jamming in the cutting chamber. Motors are individually fused for maximum protection in compliance with the National Electric Code (NEC).

The control enclosure houses all of the necessary wiring, fuses, overload heaters, motor starter coils, along with the 115V control transformer and disintegrator operating controls. The control enclosure is built to meet NEC regulations.

2. Unpacking and Installation

This section contains all instructions required for experienced installation personnel to install the SEM disintegrator and prepare it for production. It is essential to follow all instructions carefully and in order. Be sure to observe all DANGER, WARNING, and CAUTION statements in order to prevent personal injury or machine damage and all NOTE statements which are designed to assist in the performance of procedures.

2.1 Preparing for Shipping

The disintegrator installation should be prepared in advance. Be certain that the area is clean, level, and free of obstructions. The site selected must have a floor rated to easily support the weight of the machine and a concrete floor of four inch minimum in thickness.

Shipping: To prepare the disintegrator for shipment, it is mounted on wooden skids, then blocked and banded to prevent movement. All non-painted items subject to corrosion are coated with a quality rust preventative and the machine is then covered with heavy duty polyethylene to protect it from moisture and dirt.

SEM disintegrators are normally shipped completely assembled unless the size of the machine or an agreement for special shipping arrangements requires partial disassembly.

2.2 Unpacking

NOTE: When the machine arrives, inspect it carefully for shipping damage **BEFORE** unpacking. Report any damage immediately to the transporting company that delivered it. Sign the freight bill, noting all damage.

If inspection reveals no shipping damage, unpack the unit by removing the polyethylene protective covering and banding. Attached to the machine is an envelope containing installation instructions. The usual contents of this envelope are parts list, assembly drawings, electrical diagrams, and a copy of this manual.

The machine may now be lifted from the skid. A fork lift is ideal for the purpose, but care must be taken to properly position the forks between the casters, from the front or side of the machine.

CAUTION: Do not attempt to lift up the disintegrator by any part of the hopper. A forklift should be used to move the disintegrator to its location.

2.3 Setup

1. Make certain the floor is clean, level, and free of obstructions before placing the machine into position.
2. Visually inspect the hopper in-feed opening to ensure that no stray packing material or debris are present.
3. Open the machine by loosening the hex coupling nut(s) at the front of the machine enough to allow for rotation of the threaded swing bolts out of the clamp(s)

NOTE: It is never necessary to loosen the spring-block locknuts located on the front of the cutting chamber. The spring blocks are factory set and require no adjustment.

4. When lifting the machine, always apply lifting pressure to hopper in order to swing the machine up and back to the fully open position. For machines equipped with hydraulic jacks, utilizing the jack handle, ensure the jack needle valve is fully closed by turning it clockwise until fully seated. Insert the jack handle into the pump pivot and pump the jack piston until the cutting chamber is back to the fully open position (refer to the instruction label on the machine base).

NOTE: In the fully open position, the machine is designed to remain open without requiring propping; however, a safety latch has been provided to prevent accidental closing of the machine. The safety latch is located on the right side of the cutting chamber and should always be checked to verify that it has fallen into position upon opening the machine.

CAUTION: The rotor knives and bed knives are extremely sharp. Always wear heavy gloves and exercise care when working in the cutting chamber.

5. Remove the screen from the screen chamber and wipe it clean. The screen should then be placed aside and should always be positioned standing upright on its side. Wipe the inside of the screen chamber clean.
6. Carefully inspect the interior of the cutting chamber for foreign material or debris. Slowly turn the rotor by hand to verify that it freely rotates without any obstruction or contact between rotor and bed knives. Wipe the inside of the cutting chamber clean. Before closing the machine, check that nothing has been left inside the machine.
7. Place the screen back into its original position before closing the machine.
8. Although the machine is designed to remain open without the use of the safety latch, you may find the cutting chamber resting on the latch. Application of lifting pressure to the hopper should swing the cutting chamber to its extreme open position. The safety latch pull cord, located on the right side of the machine, should now be pulled to disengage the safety latch. The cutting chamber can now be easily lowered to close the machine.
9. **For machines equipped with hydraulic jacks:** The safety latch pull cord, located on the right side of the machine, should be pulled to disengage the safety latch. Utilizing the jack handle, slowly turn the jack needle valve 1/8-1/4 turn counter clockwise to slowly lower the cutting chamber. The closing speed of the cutting chamber can be regulated by turning the needle valve clockwise or counter clockwise as needed (refer to the instruction label on the machine base).
10. Securely close the machine by rotating the threaded swing bolts up into the clamps and tightening the hex coupling nut(s) at the front of the machine. Do not over tighten nut(s).
11. Make certain all electrical connections are properly secured between accessories and the control enclosure (refer to the wiring diagram for wire and terminal connections). If something is not connected, contact a licensed electrician.
12. Open the sheave guard(s) by removing the bolts attaching the cover. Check the belts for proper tension and alignment (refer to belt tension and alignment section). Upon completion, close the sheave guards by placing the cover back into position. Insert all of the bolts originally removed and tighten them fully.

13. ELECTRICAL SERVICE CONNECTIONS

Carefully check the diagrams packed with the machine. All internal wiring has been completed at the factory. All safety interlocks have been verified to be functional before shipment. It is only necessary to connect the electrical power source to the machine at the control enclosure. All equipment must be in compliance with Article 250 of the National Electric Code and local codes. Customers disconnecting means and branch circuit protection must be in compliance with the National Electric Code and all local codes. **Electrical installation should only be done by a licensed electrician.**

3. Pre-Operational Procedures

This section contains the information required to carry out pre-operational procedures, and the checklist of items which should always be reviewed prior to a production run.

DANGER: Before undertaking any machine repairs or maintenance, perform proper LOTO: always make certain that the machine disconnect switch is turned to the **OFF** position or that the control enclosure is disconnected from the main power source. Lockout all sources of power including the main disconnect switch and follow all of your plant lockout procedures.

3.1 Electrical Test

Before applying power to the machine, have a qualified electrician check the incoming voltage in disconnect, and L1 to L3 (see electrical diagrams at the end of the manual for standard wiring diagram, or individual diagram for your specific equipment packed with the machine). The voltage should be the same as indicated on the silver tag in the control enclosure. If the voltage is not the same, contact the SEM service department for voltage modification instructions.

Once it has been determined that the voltages are correct, it is necessary to start the motors and check for the proper direction of rotation.

1. Turn the main disconnect switch to the **ON** position.
2. Press the **Disintegrator Start** button to power the disintegrator motor. Visually compare the direction of motor shaft rotation to the rotation arrow label (clockwise when viewed from the shaft end). If the motor turns in opposite direction, reverse any two incoming power leads.
3. Once the rotation direction is correct, the remaining electrical controls need to be tested as follows:
 - Press the **Disintegrator Stop** button and allow the machine to stop.
 - For disintegrators equipped with conveyors, fans, etc., test their operation also by pressing the appropriate button. Check fan outlet for proper airflow.
 - For disintegrators with **E-Stop** buttons, test the buttons to ensure all motion stops.
 - Loosen the hex coupling nut on the threaded swing bolts at the front of the machine to verify the safety interlock switch shuts the machine off.

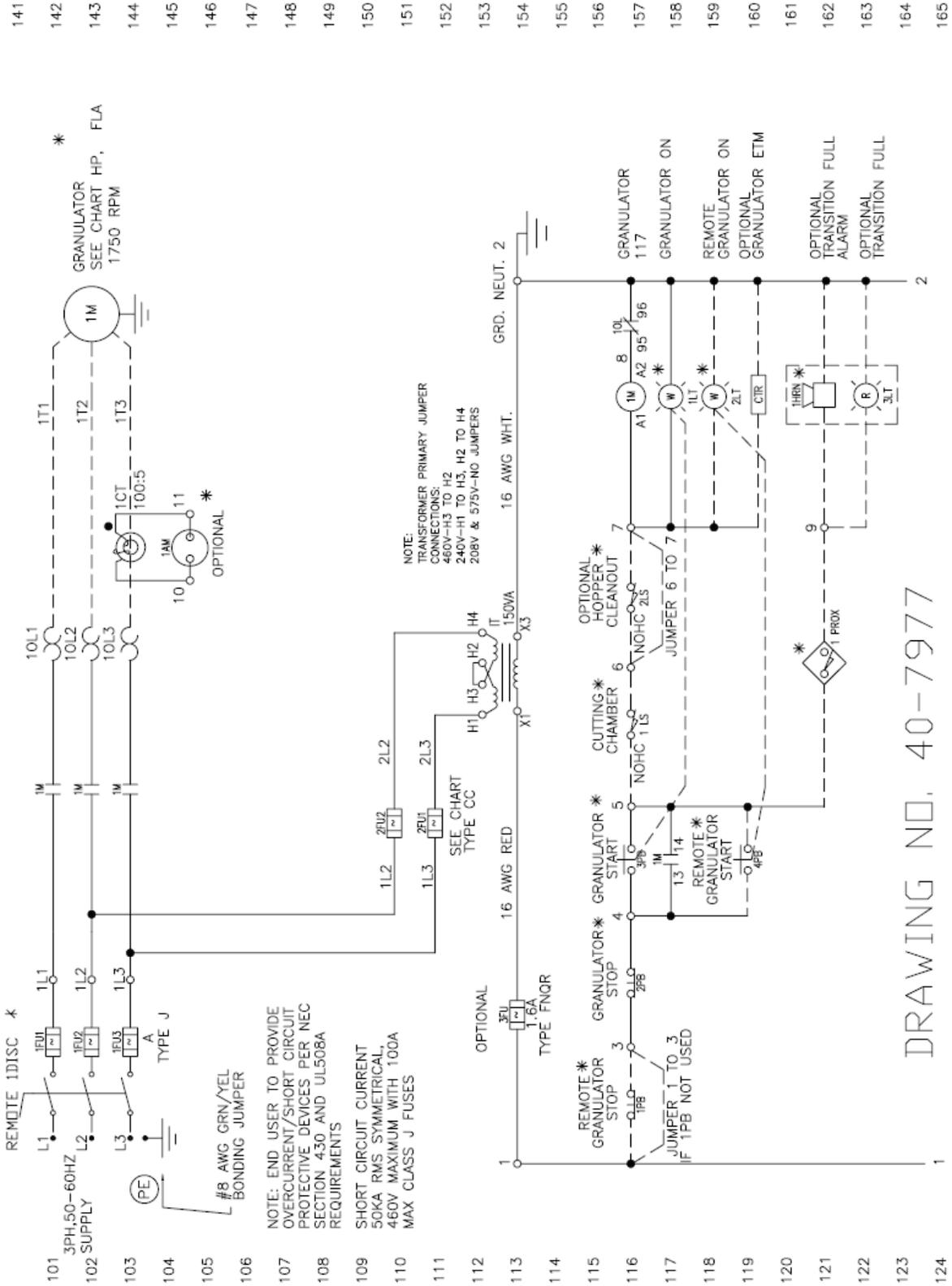
NOTE: If there is an access door on the hopper (for inspection or clean-out purposes) with a safety switch interlocked, make certain that removal of the limit switch actuator bracket shuts the machine off.

3.2 Pre-Operational Checklist

After all electrical and mechanical machine elements have been inspected and any defects corrected, the following pre-operational checklist should be used to ensure the disintegrator is ready for operation.

- Have all installation and preparation instructions been read and followed?
- Have the disintegrator operator and all other necessary personnel been fully trained on machine operation and all machine safety mechanisms?
- Have sufficient location clearances been allowed?
- Has the equipment been grounded as required by local codes and/or Article 250 of the National Electric Code?
- Have all motors been checked for rotation?
- Have all machine controls, buttons, and limit switch safeties been checked for proper functioning?
- Have the cutting and screen chambers been checked for foreign matter?
- Have the drive belts been checked for alignment and tension?
- Is the machine properly closed with all visible fasteners tight?
- Are all accessory components electrically and mechanically connected with proper support and with all fasteners tight?
- Are the fan cyclone and filter bags empty? (auxiliary equipment)
- Has the fan/cyclone been verified for proper rotation direction?
- Are all electrical enclosure boxes tightly closed and clamped shut?
- Are all personnel clear of the machine?
- Is the conveyor clear?

4. Disintegrator Starter Diagram



5. Electrical System Notes

START-UP OR OPERATION TROUBLESHOOTING

Disintegrator will not start:

1. Check all fuses. If blown, check for a locked rotor, grounds or other reasons. Replace fuses with the size and type shown on the wiring diagram (located in the control enclosure).
2. Check disintegrator motor and fan overloads. If required, reset #1 MOL, #2 MOL.
3. Check for an open safety limit switch at the machine cutting chamber, hopper cleanout door, or any other limit switches.
4. Call the SEM service department for assistance if the machine still will not start. Have the machine serial number at hand (located on the serial number plate on the cutting chamber).

Fan motor will not start (optional):

1. Check overload elements (fuses, overload heaters, etc.). Replace fuses with the size and type shown on the wiring diagram.

6. Operating Instructions

Before operating, make sure all doors, covers, guards, and limit switches are in place, securely fastened, and functional and that all accessory components are properly connected.

- Turn the main disconnect switch to the **ON** position.
- Start the disintegrator and fan (optional) by pressing the appropriate button at the operator station.
- Start conveyor (optional).
- Load feedstock at a uniform rate that does not exceed the capacity of the machine.

Refer to section **PROCEDURE TO OPEN/CLOSE THE DISINTEGRATOR** for instructions on how to open the disintegrator and obtain access to other machine areas for clean-out.

NOTE: If there is an access door on the hopper that is limit switch interlocked, make certain the limit switch actuator bracket is re-installed and is properly in contact with the limit switch or the machine will not start.

Temporary machine stops: When temporarily stopping the machine, allow all material to run out of the cutting chamber. Never try to restart the machine with material remaining inside the cutting chamber.

Final machine stops: When shutting the machine down, allow all material to pass through the fan (optional) and into the cyclonic air separator (optional) before pressing the **Stop Disintegrator** button.

Emergency stops: Feedstock must be cleaned out of the hopper and cutting chamber prior to restarting. Follow proper LOTO procedures before removing material from the hopper.

7. Troubleshooting

No particle:

1. Feedstock may be hung up inside the hopper. Shut the machine down and check.
2. Screens are plugged. Clean the screens.
3. Fan line may be clogged. Clean as required.

Excessive power required - blown fuses:

1. Overloading of the machine. Reduce amount of feedstock put into the machine per unit of time.
2. Knives are dull. Sharpen or replace knives and re-install.
3. Knife gap is too large. Adjust knives to proper gap specification.
4. Clearance between the rotor knives and screen is too small. Check that the screen is properly seated in the screen chamber.

Machine stalls:

1. Overloading of the machine. Reduce amount of feedstock put into the machine per unit of time.
2. Pieces of feedstock jammed in the rotor. Clear the jammed material then visually inspect the rotor to ensure it is not damaged and that the knife gaps are correct.
3. Machine has loose or thrown belts. Inspect, and if acceptable for use, re-install and tighten per maintenance instructions.

Bearings sound noisy or are hot:

1. Lack of lubrication. Lubricate per maintenance instructions.
2. Overloading of the machine. Reduce amount of feedstock put into the machine per unit of time.
3. Bearings have exceeded their rated life. Consult with the SEM service department for replacement instructions.
4. Bearings are not properly installed or tightened. Consult with the SEM service department for installation instructions.

Belts slip or squeal:

1. Belts are too loose. Tighten per maintenance instructions.
2. Overloading of the machine. Reduce amount of feedstock put into the machine per unit of time (see above).
3. Machine has thrown belts. Inspect, and if acceptable for use, re-install and tighten per maintenance instructions.

Motor will not start:

1. Fuses are blown. Replace fuses with the size and type shown on the wiring diagram (located in the control enclosure).
2. A limit switch is open. Check the limit switches at the machine front doors and any hopper cleanout door. Ensure proper actuation and replace if required.
3. Verify that the correct pushbuttons are being depressed and that the main disconnect switch is in the ON position.

Particle builds up in the transition or tubing:

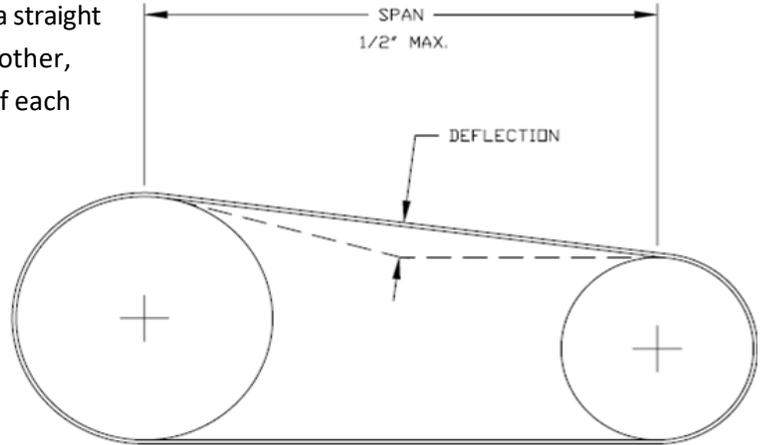
1. Fan is too small. Replace with larger unit or fan wheel.
2. Transition or tubing is clogged. Clean as required.
3. Return air vents are covered or too small. Ensure the vents are open.
4. Fan is not evacuating properly. Check for loose fan wheel on shaft, worn fan wheel, or loose fan drive belts.
5. Feedstock hangs up in the hopper or cutting chamber. Material being placed into the machine for processing is too large for the hopper, cutting chamber, or rotor diameter. Reduce the initial size of the feedstock.
6. Knives are dull. Sharpen or replace knives and re-install.
7. Overloading of the machine. Regulate the in-feed of scrap to uniformly feed the machine over an extended time period.

8. Service Instructions

PROCEDURE - BELTS

Prior to startup of this machine it is recommended that the drive belt tension is checked for proper run in deflection force as shown in illustration. After the equipment has run between 24 and 48 hours, drive belt tension must again be checked for proper operational deflection. A V-belt drive will successfully transmit its rated capacity if the belts are properly tensioned. To tension:

1. Verify that the alignment of the pulleys is correct. Utilizing a straight edge of sufficient length to span from one pulley to the other, place it along the sides of both pulleys. The entire edge of each pulley should fully contact the straightedge.
2. Measure the belt span (see figure on right).
3. Using a spring scale, apply a perpendicular force to any ONE of the belts at the mid point of the span.
4. Calculate the force (lbs.) required to deflect any one of the belts $\frac{1}{64}$ th of an inch for every inch of span. For example: the deflection for a 32-inch span would be $\frac{1}{64}$ th of an inch times 32 or $\frac{1}{2}$ of an inch.
5. The motor position should be adjusted until the actual deflection force matches the distance of deflection referenced in item 4 above.
6. There will normally be a drop-in belt tension during the first 24 to 48 hours of operation due to belt stretch and the belts seating themselves in the sheave grooves. After this initial run in period the machine should be stopped, and the belts should be rechecked for tension. The motor position should be adjusted until the deflection force matches the values in column "B".
7. Do not over tension belts as this can significantly reduce belt life and/or bearing life.



9. Knife Recommendations and Adjustments

NOTE: The rotor and bed knives should be inspected periodically for sharpness. The sharper the knives are kept, the more efficiently and effectively the machine will operate. Waiting until the knives have been severely rounded, chipped, or otherwise damaged will result in heavy shock loading during operation causing a subsequent reduction in knife life. (For re-sharpening diagrams refer to section 11).

KNIFE REMOVAL AND ADJUSTMENT PROCEDURE

1. Shut **OFF** all power including the main disconnect switch using proper LOTO practices.

DANGER: Before undertaking any machine repairs or maintenance, always make certain that the machine disconnect switch is turned to the **OFF** position or that the control enclosure is disconnected from the main power source. Lockout all sources of power including the main disconnect switch and follow all of your plant lockout procedures.

2. Follow instructions in section 14 on opening the machine and screen chamber.
3. See sketch in section 10, for the general cutting chamber drawing.
4. Remove the screen and stand it on edge to avoid damage.

ROTOR KNIFE REMOVAL

1. Carefully block the rotor with a piece of wood to prevent it from turning.
2. Loosen the hex head rotor knife bolts and carefully remove all rotor knives.
3. Clean the rotor knife seats thoroughly with a scraper and/or cloth paper to remove any foreign material or rust.
4. Inspect the knives and replace or re-sharpen as required.

BED KNIFE REMOVAL

1. Loosen the head socket cap screws holding the bed knives and clamping bars, working from the knife edges inward to the center. Note the relative position of each part before they are removed. As the last screw is backed out, the clamping bar and knife will require support to prevent them from falling.
2. Clean the bed knife seats thoroughly with a scraper and/or cloth paper to remove any foreign material and rust.
3. Inspect the components and replace or re-sharpen as required.

CAUTION: All knives should be handled with extreme care. It is suggested that all sharp cutting edges be covered with tape to prevent injury to personnel or damage to the knives during installation. Be sure to remove tape before gapping knives.

BED KNIFE INSTALLATION

1. Install the new or re-sharpened bed knives and clamps in the reverse of removal.
2. Make sure the knives are fully back against the knife adjusting screws and loosen the adjusting screw checknuts slightly.
3. Do not torque the socket cap screws fully at this point. Snug them down only.

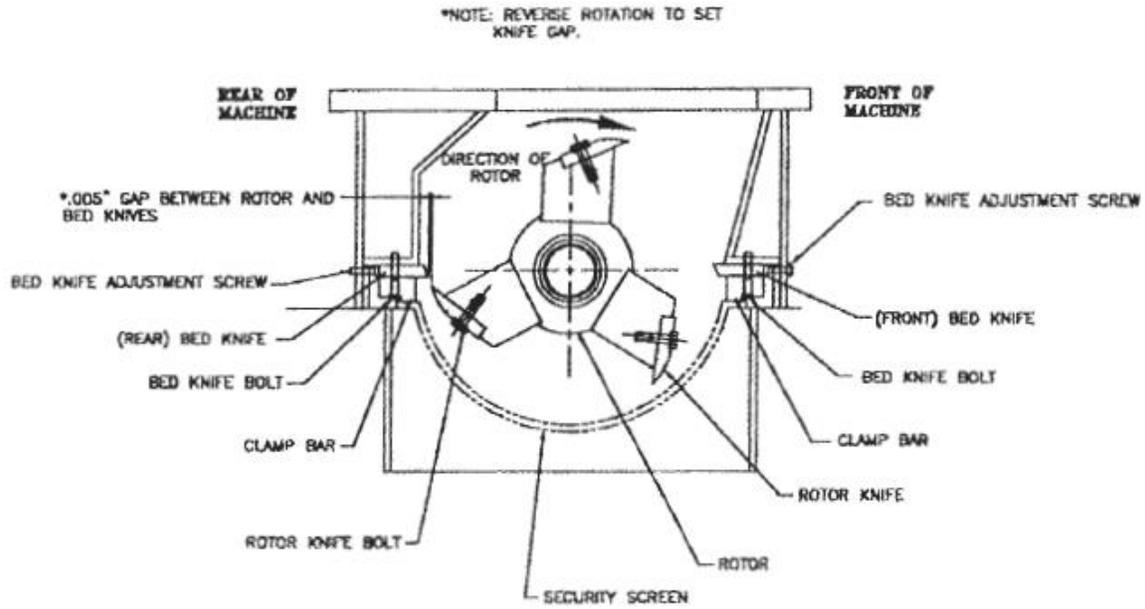
ROTOR KNIFE INSTALLATION PROCEDURE

1. Carefully block the rotor with a piece of wood to prevent it from turning.
2. Re-install the rotor knives onto the rotor. Do not torque the hex head rotor knife bolts fully at this point. Snug them down from right to left. Do not overtighten.
3. Check that the heel of the rotor knife is tight up against the knife seat. Utilizing a .005 inch feeler gauge, try to insert it between the heel of the knife and the knife seat at both ends and across the rotor knife. If the feeler gauge will not go down between the heel of the knife and the knife seat, the knife is installed correctly.
4. Torque down the rotor bolts. Start from the right most bolt on the knife and torque down the bolts equally, working towards the middle of the knife. Refer to page 18 for the correct torque values based upon bolt sizes and thread pitch. After the bolts on each knife have been fully torqued, recheck with a .005 inch feeler gauge between the knife and seat as noted above. Use the same procedure on all remaining rotor knives.

KNIFE SETTING PROCEDURE

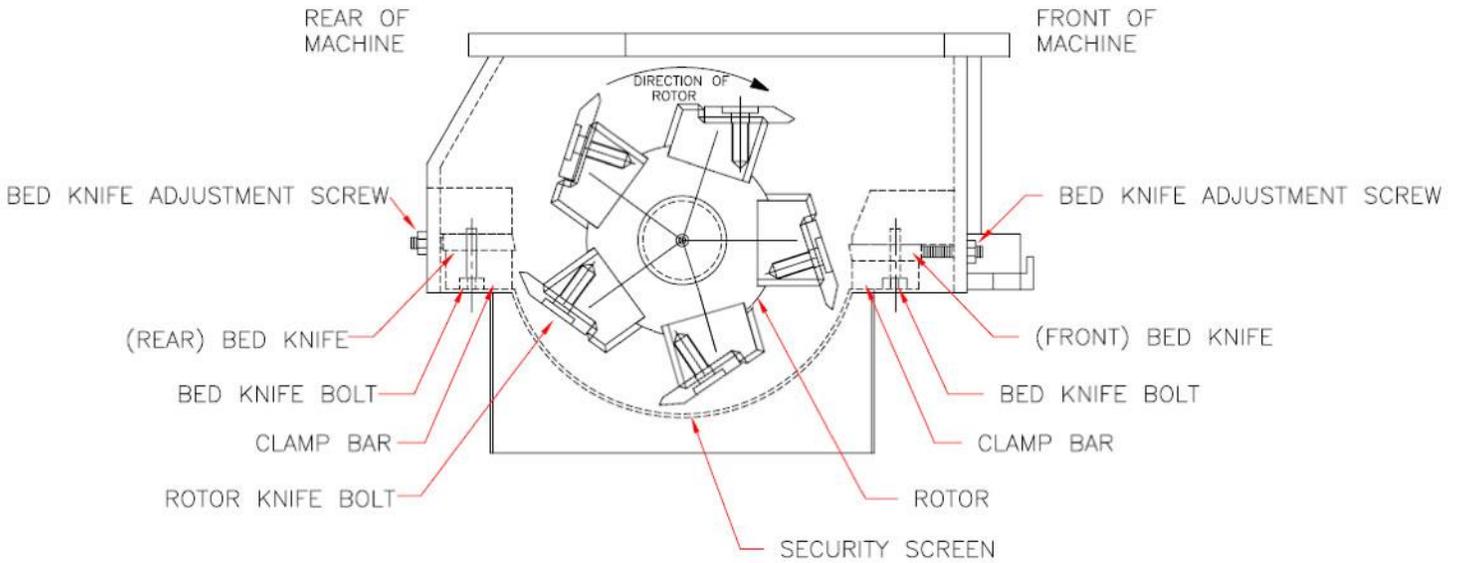
1. Align a rotor knife with a secondary bed knife on the disintegrator. With a .005 inch feeler gauge between the rotor and bed knife, start to adjust the bed knife into the rotor knife using the adjusting screw. During the movement of the bed knife, slowly rotate the rotor by pulling each knife towards you and check the clearance. The proper clearance will be established when a slight drag is felt on the feeler gauge as it is pulled between the knives. Once this clearance is established across the entire length of a knife, partially tighten the bed knife socket cap screws. Follow this procedure for all remaining bed knives.
2. If you find a high rotor knife, mark it and readjust to this knife.
3. Once knife adjustments are complete, equally and fully torque the bed knife socket cap screws, working from the end towards the center of the knife. Refer to page 18 for the correct torque values based upon bolt sizes and thread pitch.
4. Recheck the clearance once the bolts have been fully torqued and reset if necessary.
5. Turn the rotor so that the knives are aligned with a primary bed knife on the disintegrator and continue with the same procedure used to set up the secondary bed knives.
6. After the clearance setting of both the secondary and primary bed knives is complete and has been checked, turn the rotor by hand to ensure that none of the rotor knives hit the bed knives.
7. Reinstall the screen into the screen chamber and close the machine (refer to Section **PROCEDURE TO OPEN/CLOSE THE DISINTEGRATOR**, page 21).

10. General Cutting Chamber and Knife Settings



Typical Standard Cutting Chamber Assembly

(3 Rotor and 2 Bed Knives)



Typical Standard Cutting Chamber Assembly

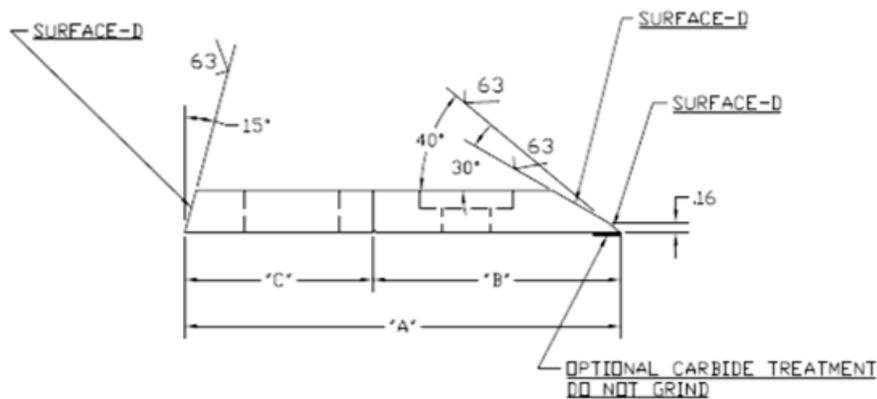
(5 Rotor and 2 Bed Knives)

11. Knife Grinding (Sharpening)

When the disintegrator knife edges become dull, they may be sent to Security Engineered Machinery or they may be sharpened by a capable machine shop. It is important that the rotor knives and bed knives be sharpened **as a set** to maintain proper tolerances for effective knife settings.

If knives are badly nicked, the machine shop should not try to eliminate the entire nick so as to conserve the edge and prolong knife life. The knives will function properly with nicks after sharpening, as long as 75% of the cutting edge is effective. Reference below Figure A, Figure B and Figure C for the following rotor and bed knife set up. **NOTE: Only grind surfaces marked "D".**

Standard Form Rotor Knife with Standard Form Bed Knife



NOTES ON KNIFE GRINDING:

After regrinding a number of times, the knives must be checked to be sure that there will be adjustment left in the bed knives. The general rule is to place a rotor knife and bed knife back to back as shown in the image above and measure the total distance, dimension "A".

Refer to "A" dimension chart per machine model number below.

Distance Dimension "A" – Minimum

Model 1012 = 4-3/4"

Model 1012/5 = 4-3/8"

Model 22 & 22/5 = 5-3/4"

Model 23 & 23/5 = 5-3/4"

Note: If dimension "A" is close to minimum, a new set of knives should be ordered from SEM. Please contact SEM customer service department.

Dimension B: Bed knives tolerance must be held alike and parallel in sets within .010".

Dimension C: Rotor knives tolerance must be held alike and parallel in sets within .002".

12. Lubrication Specifications

DESCRIPTION – BEARINGS

All SEM security disintegrators and accessories are supplied with pillow block bearings which are pre-lubricated from the factory. The external mounting of bearings on the SEM security disintegrators results in a trouble free, low maintenance, and long-life bearing design.

The pillow block bearings used require a high quality, lithium based, extreme pressure type of grease which conforms to the NGLI Grade 2 consistency. This grease has been chosen due to its suitability for use in heavy duty applications under heavy shock loads. It also contains rust inhibitors, has high temperature stability, and exhibits good water resistance.

RECOMMENDED GREASE PRODUCTS

AMOCO:	AMOLITH EP 2
CASTROL:	EP2
EXXON:	RONEX MP
GULF:	CROWN #2
MOBIL :	MOBILITH AW #2
SHELL :	ALVANIA EP LF #2
SUNOCO:	SUNAPLEX #2
TEXACO:	MULTIFAK EP #2

The pillow block bearings should be lubricated with care. Too much grease applied to the bearings at one time can rupture the bearing seals. Under normal operating conditions, a moderate amount of grease applied every 2,000 hours should be adequate to ensure long life. Severe operating conditions will require more frequent lubrication intervals.

13. Electrical Current and Tool Requirements

Disintegrator - TABLE 1

DISINTEGRATOR Model # / HP	FULL LOAD CURRENT THREE PHASE POWER			
	208V	230V	460V	575V
1012, 1012/5 @ 10 HP	30.8	26.8	13.4	10.7
1012, 1012/5 @ 15 HP	44.2	40.0	20.0	16.0
22 @ 20 HP	55.2	50.0	25.0	20.5
22, 23 @ 25 HP	70.7	64.0	32.0	25.6
22, 23 @ 30 HP	87.0	75.5	38.0	30.2
23 @ 40 HP	118.0	106.0	53.0	42.0

Fan - TABLE 2

FAN UNIT Model # / HP	SINGLE PHASE	
	115V	230V
F071B - 3/4 HP	9.6	4.8
F-034 - 3/4 HP	9.6	4.8
	3 - PHASE	
	460V	230V
F-112 - 1½ HP	4.2	2.1

TOOL REQUIREMENT – TABLE 3

MODEL	TORQUE WRENCH				ALLEN HEAD	OPEN END		
	BED KNIVES Hex Bit Socket	TORQUE SETTING	ROTOR KNIVES Socket	TORQUE SETTING	BED KNIFE ADJUSTMENT	MOTOR ADJUSTMENT BOLT	HOPPER	BELT GUARD
1012	5/16	45 Ft. Lbs.	9/16	50 Ft. Lbs.	1/8	15/16	9/16	7/16
22	1/2	175 Ft. Lbs.	15/16	195 Ft. Lbs.	3/16	15/16	3/4	7/16
23	5/16	45 Ft. Lbs.	15/16	190 Ft. Lbs.	3/16	15/16	3/4	7/16

BOLT SIZES – TABLE 4

MODEL	BED	ROTOR
1012	3/8-16 x 2	3/8 – 24 x 1-1/2
22	5/8-11" x 2 1/2	5/8 – 18 x 1-1/2
23	3/8-16 x 2 1/2	5/8 – 18 x 1-1/2

NOTE: .005 inch feeler gauge required for knife gap setting.

Rear bed knife adjustment bolts have square heads. A short stamped out open-end wrench required.

14. Procedure to Open/Close the Disintegrator

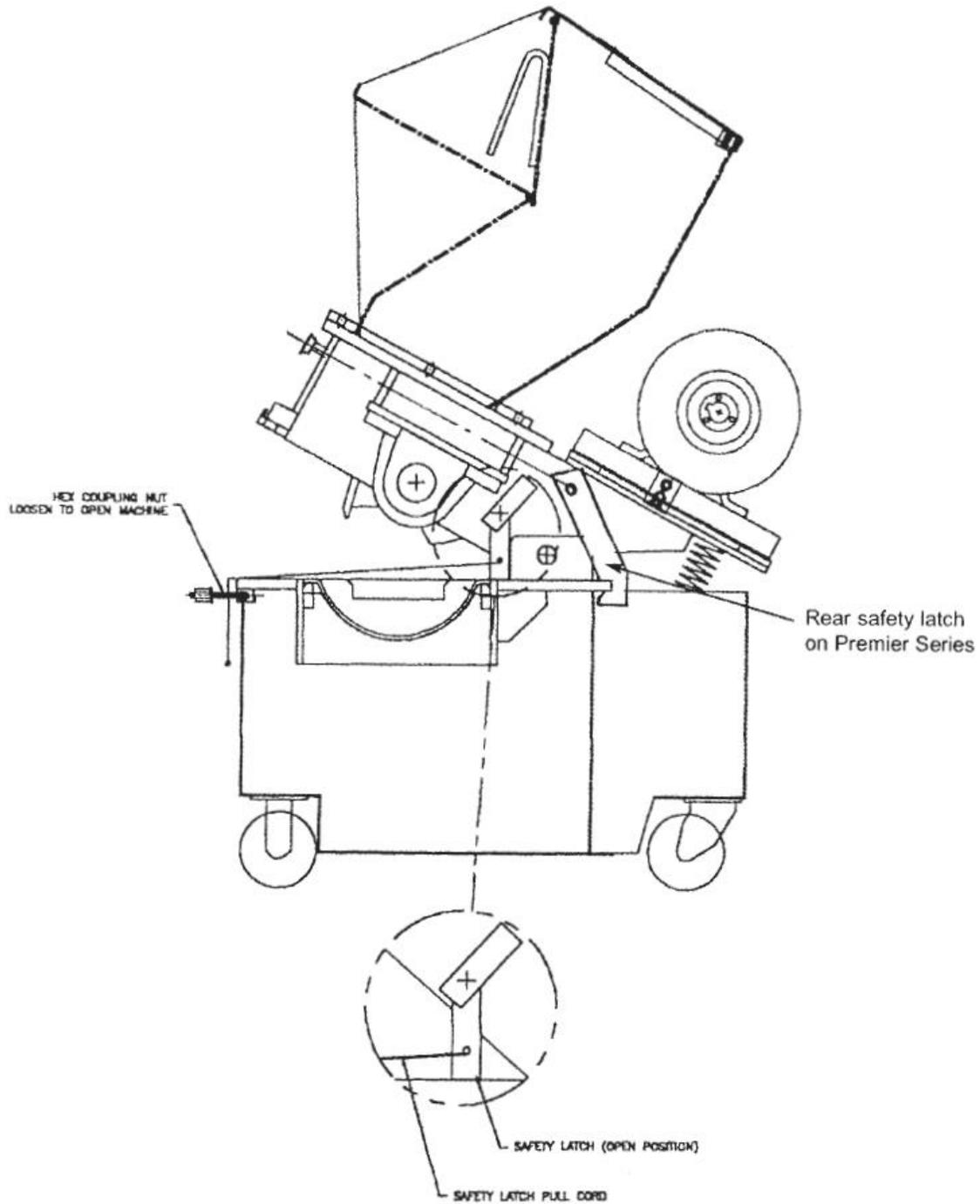
PROCEDURE TO OPEN THE DISINTEGRATOR

- Allow all material to run out of the cutting chamber.
- **Shut OFF and LOCKOUT** all power including the main disconnect switch.
- Open the machine by loosening the hex coupling nut(s) at the front of the machine enough to allow for rotation of threaded swing bolts out of the clamp(s).
- **NOTE:** It is never necessary to loosen the spring-block locknuts located on the front of the cutting chamber. The spring blocks are factory set and require no adjustment.
- Apply a lifting pressure to the hopper in order to swing the machine up and back to the fully open position.
- **For machines equipped with hydraulic jacks:** Utilizing the jack handle, ensure the jack needle valve is fully closed by turning it clockwise until fully seated. Insert the jack handle into the pump pivot and pump the jack piston until the cutting chamber is fully up and back to the extreme open position (refer to the instruction label on the machine base).
- **NOTE:** In the fully open position, the machine is designed to remain open without the use of any devices; however, a safety latch has been provided to prevent accidental closing of the machine. The safety latch is located on the right side of the cutting chamber and should always be checked to verify that it has fallen into position upon opening the machine.
- **CAUTION:** The knives mounted on the rotor and also located at the edges of the cutting chamber are extremely sharp. Always wear heavy gloves and use extreme care when working in the cutting chamber.

PROCEDURE TO CLOSE THE DISINTEGRATOR

- Ensure that all tools, rags, screws, etc. are removed from the inside of the cutting chamber and screen chamber.
- If previously removed, place the screen back into its original position, ensuring it is fully seated within the cradle.
- The machine is designed to remain open by using the counter balance springs and safety latch. To close the chamber, apply hand pressure to the hopper to allow the safety latch to release, by way of the pull-cable mechanism. The cutting chamber can now be easily lowered to close the machine.
- **For machines equipped with hydraulic jacks:** The safety latch pull cord, located on the right side of the machine, should be pulled to disengage the safety latch. Utilizing the jack handle, slowly turn the jack needle valve 1/8-1/4 turn counter clockwise to slowly lower the cutting chamber.
- The closing speed of the cutting chamber can be regulated by turning the needle valve clockwise or counter clockwise as needed (refer to the instruction label on the machine base).
- Securely close the machine by rotating the threaded swing bolts up into the clamps and tightening the hex coupling nut(s) at the front of the machine.
- Recheck all components to ensure that they are properly fastened.

15. Standard Machine Safety Latch



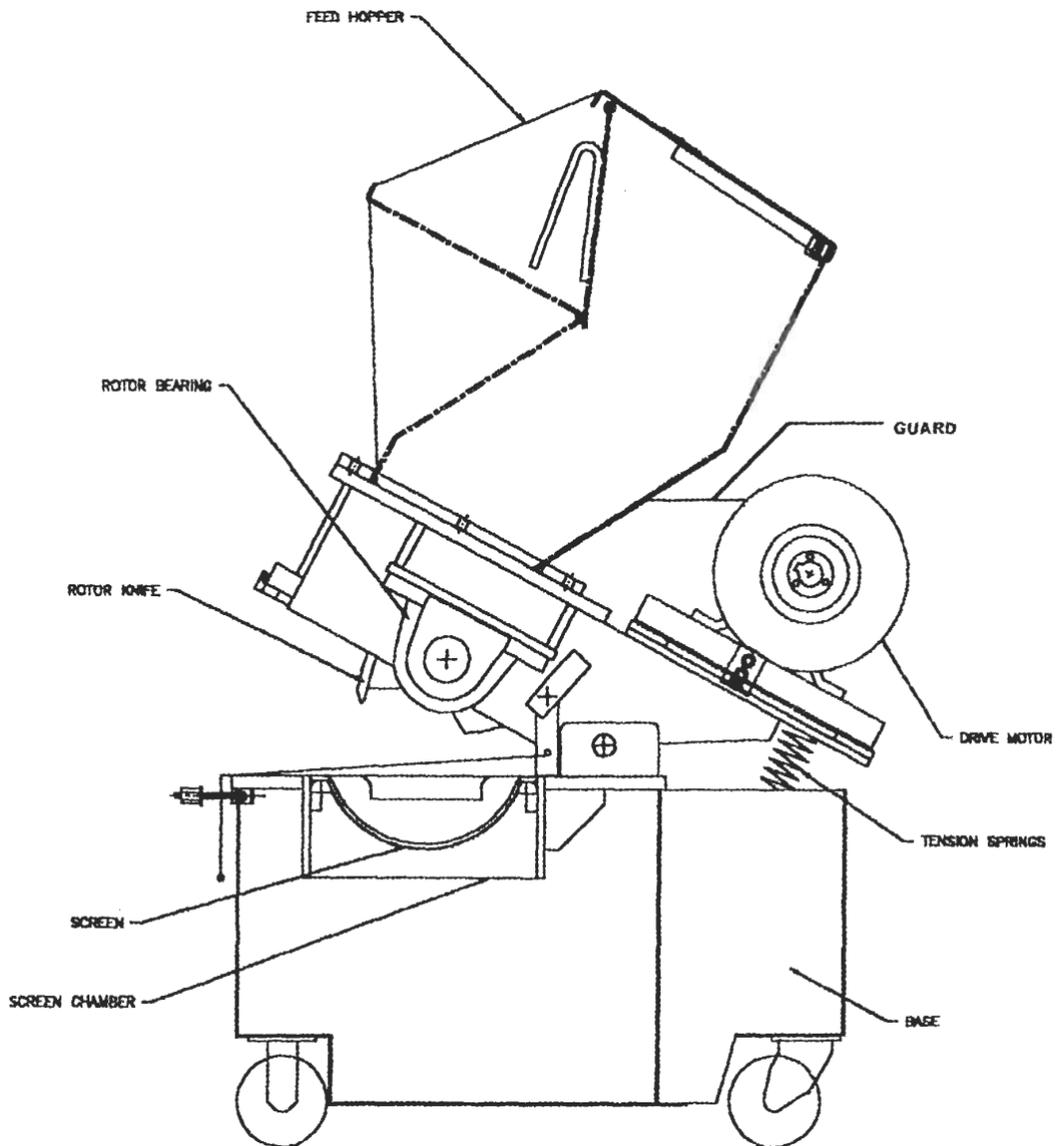
16. Recommended Spare Parts

NOTE: Refer to part numbers when ordering replacement parts. Check the parts carefully as knives and screens generally have their numbers etched or stamped on them. The serial number of the machine will also be required when ordering parts from SEM. This listing of recommended parts does not include all parts which are available for purchase. The SEM parts department can be reached at 508-366-1488 / 1-800-225-9293 or by emailing service@semshred.com.

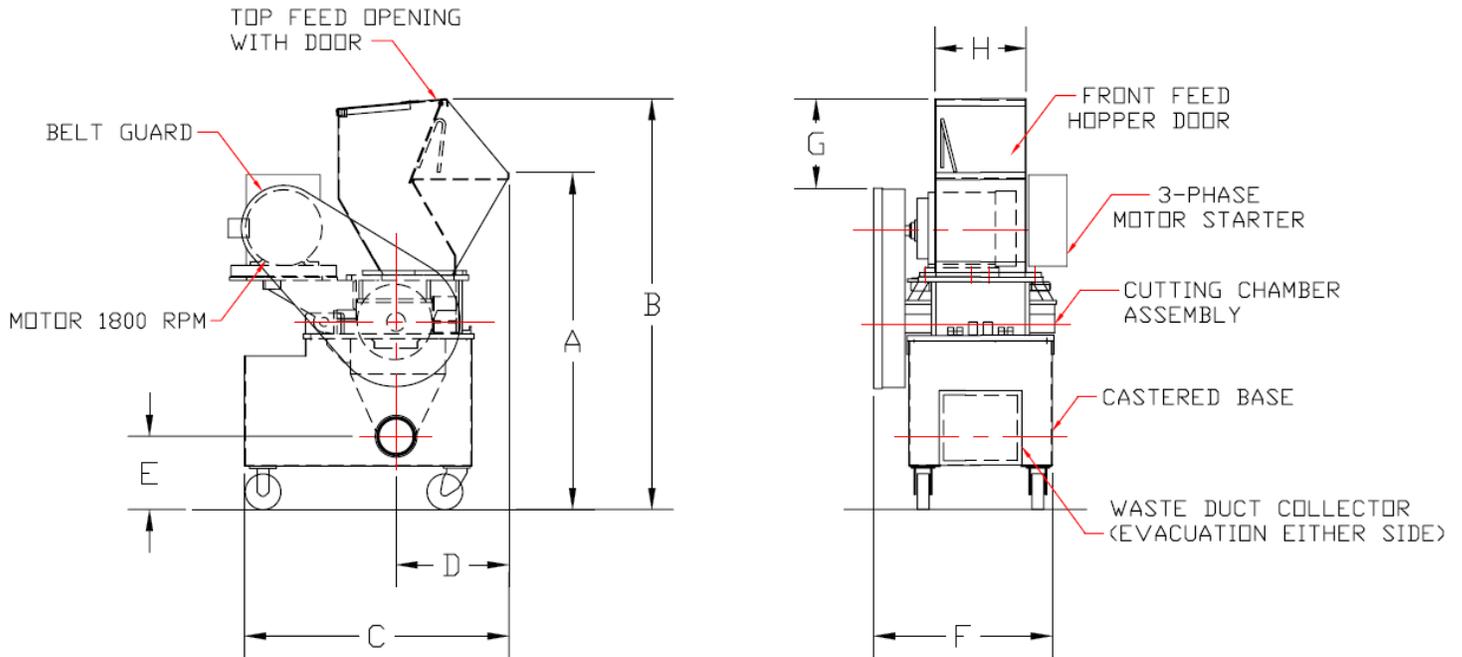
WARNING: The use of replacement parts not manufactured or approved by SEM may void the product's warranty.

Machine:	Model 1012	Model 1012/5 /1016	Model 22	Model 22/5
1/8 Security Screen	344101218	347101618	3492218	3492218
Knives	3951012K	3991016K5	40322K	40322K5
Bed Knife Bolts	800BBM12 (14)	800BBM12 (16)	800BBM15-24 (16)	800BBM15-24 (16)
Rotor Knife Bolts	800RBM2/12 (21)	800RBM2/12 (50)	800RBM15-24 (27)	800RBM15-24 (35)
Belts	V3VX710/5	V5VX830/4	VB87/4	VB87/4
(Belts)	@15HP V5VX830/4			
Machine:	Model 23	Model 23/5		
1/8 Security Screen	3512318	3512318		
Knives	40523K	40523K5		
Bed Knife Bolts	800BBM12 (28)	800BBM12 (28)		
Rotor Knife Bolts	800RBM15-24 (24)	800RBM15-24 (40)		
Belts	VB87/4	VB87/4	@40HP VB92/4	
General:				
Toolkit	554GMTK230			
Bags	755BAG3MILA			

17. Cross Section of a Disintegrator

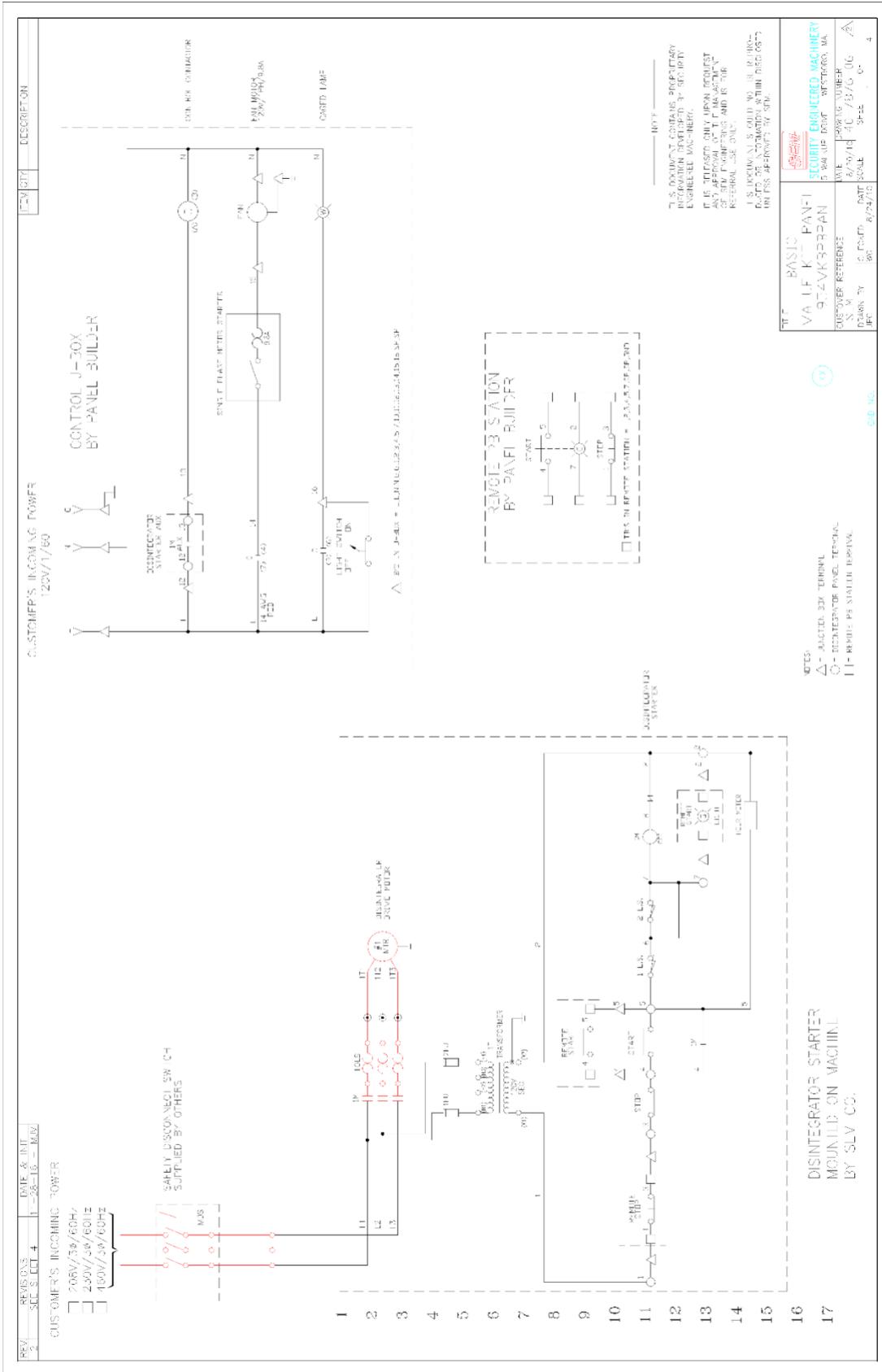


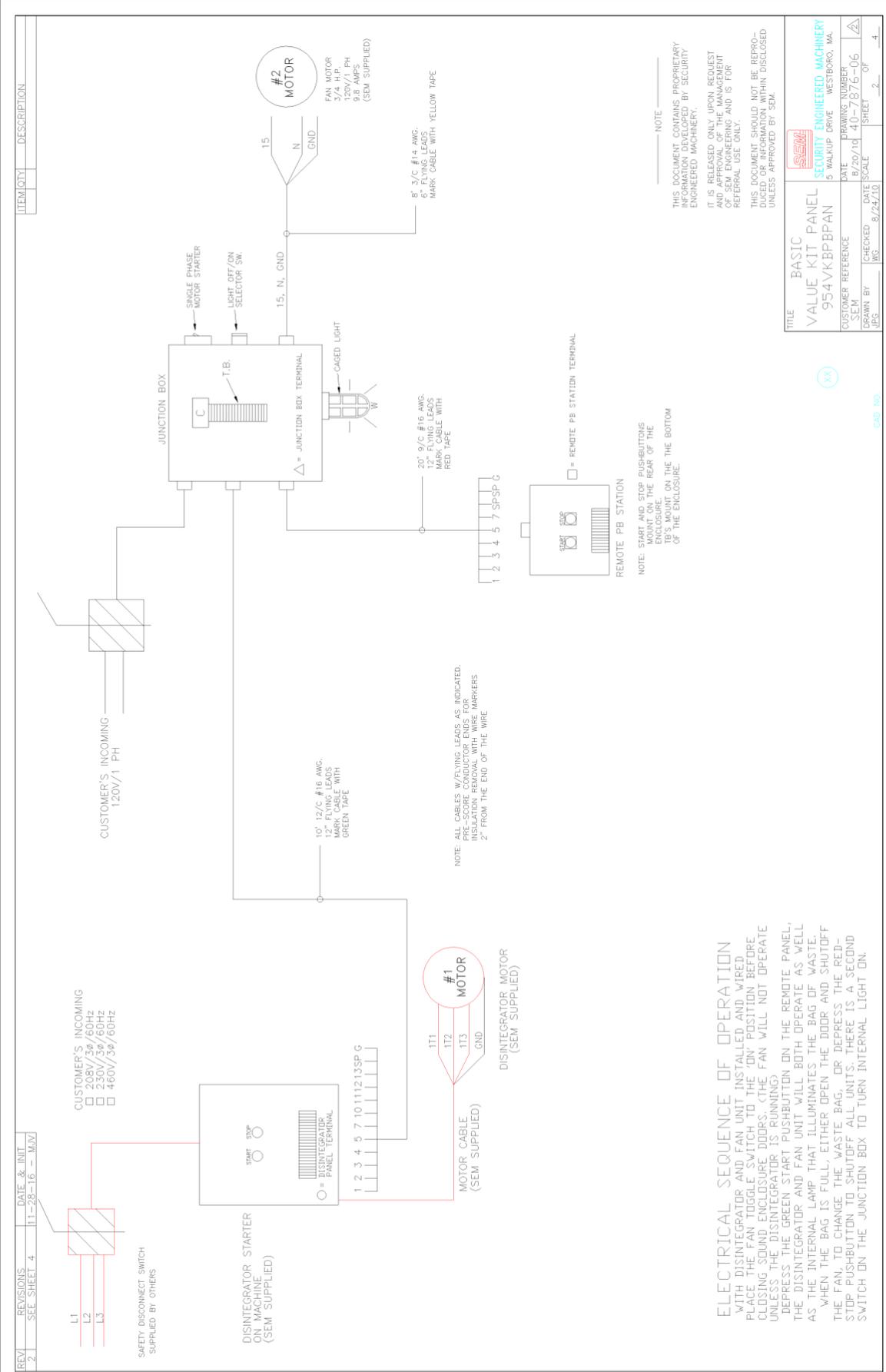
18. Disintegrator Dimensional Information



MODEL	A	B	C	D	E	F	G	H
3	50.50" (1283mm)	62" (1575mm)	42" (1067mm)	16" (406mm)	7.25" (184mm)	28.50" (724mm)	4.25" (108mm)	12" (305mm)
1012	50.50" (1283mm)	62" (1575mm)	42" (1067mm)	16" (406mm)	7.25" (184mm)	28.50" (724mm)	10" (254mm)	12" (305mm)
1012/5	55.50" (1410mm)	62" (1575mm)	48" (1219mm)	18" (457mm)	8" (203mm)	34" (864mm)	10" (254mm)	16" (406mm)
22	55.50" (1410mm)	69" (1753mm)	45" (1143mm)	19.75" (502mm)	12" (305mm)	38" (965mm)	12" (305mm)	20" (508mm)
23	55.50" (1410mm)	69" (1753mm)	48" (1219mm)	19.75" (502mm)	12" (305mm)	42" (1067mm)	12" (305mm)	24" (610mm)

19. Basic Kit Electrical





REV	REVISIONS	DATE & INIT	ITEM QTY	DESCRIPTION
2	SEE SHEET 4	11-28-16 - M.V.		

TITLE	BASIC VALUE KIT PANEL	DATE	8/24/10	SHEET	2	OF	4
CUSTOMER REFERENCE	954VKBPBPAN	DATE	8/29/10	SCALE			
DRAWN BY	SEM	DRAWING NUMBER	40-275-06				
IPC		CAD. NO.					

NOTE

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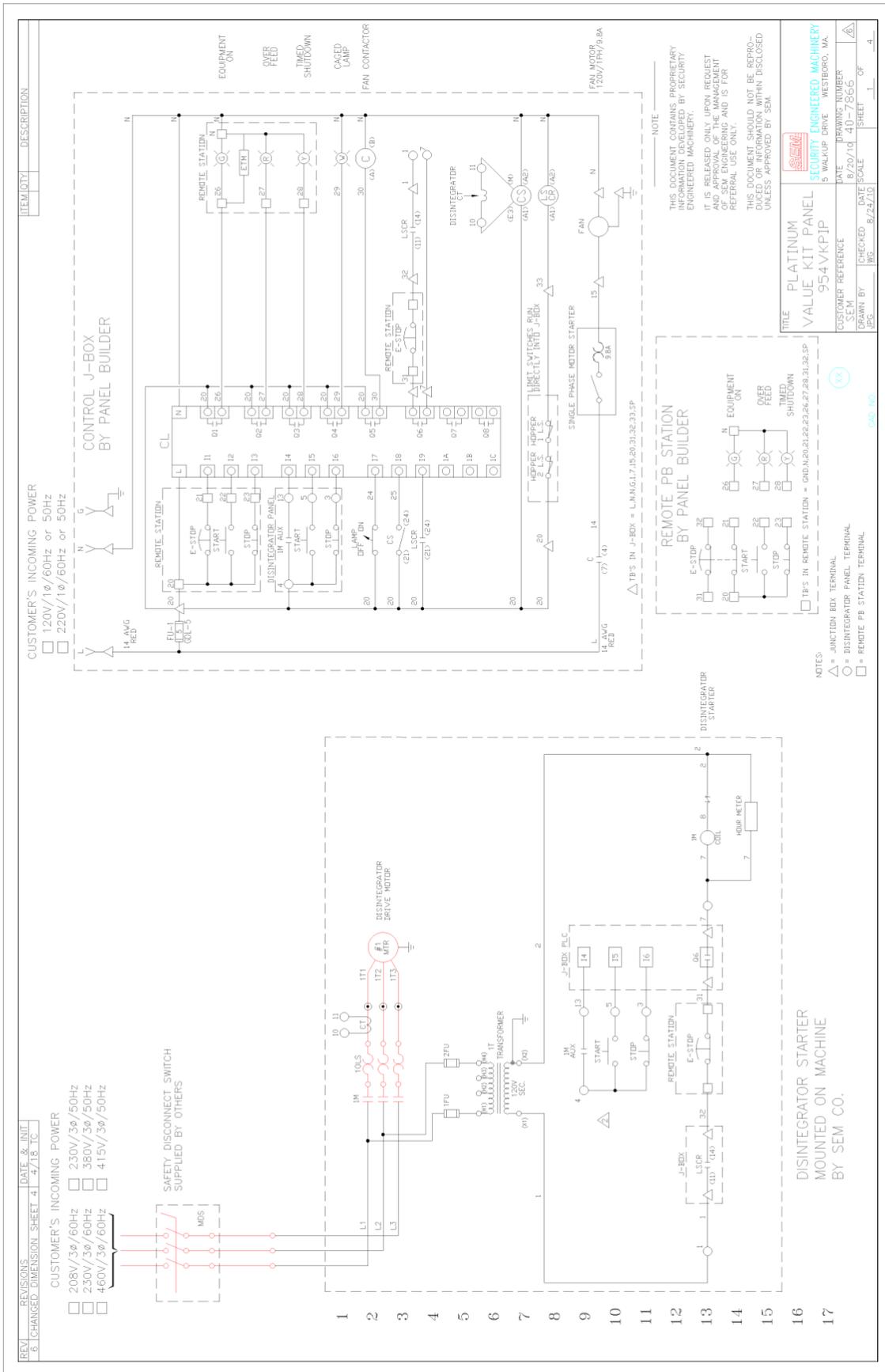
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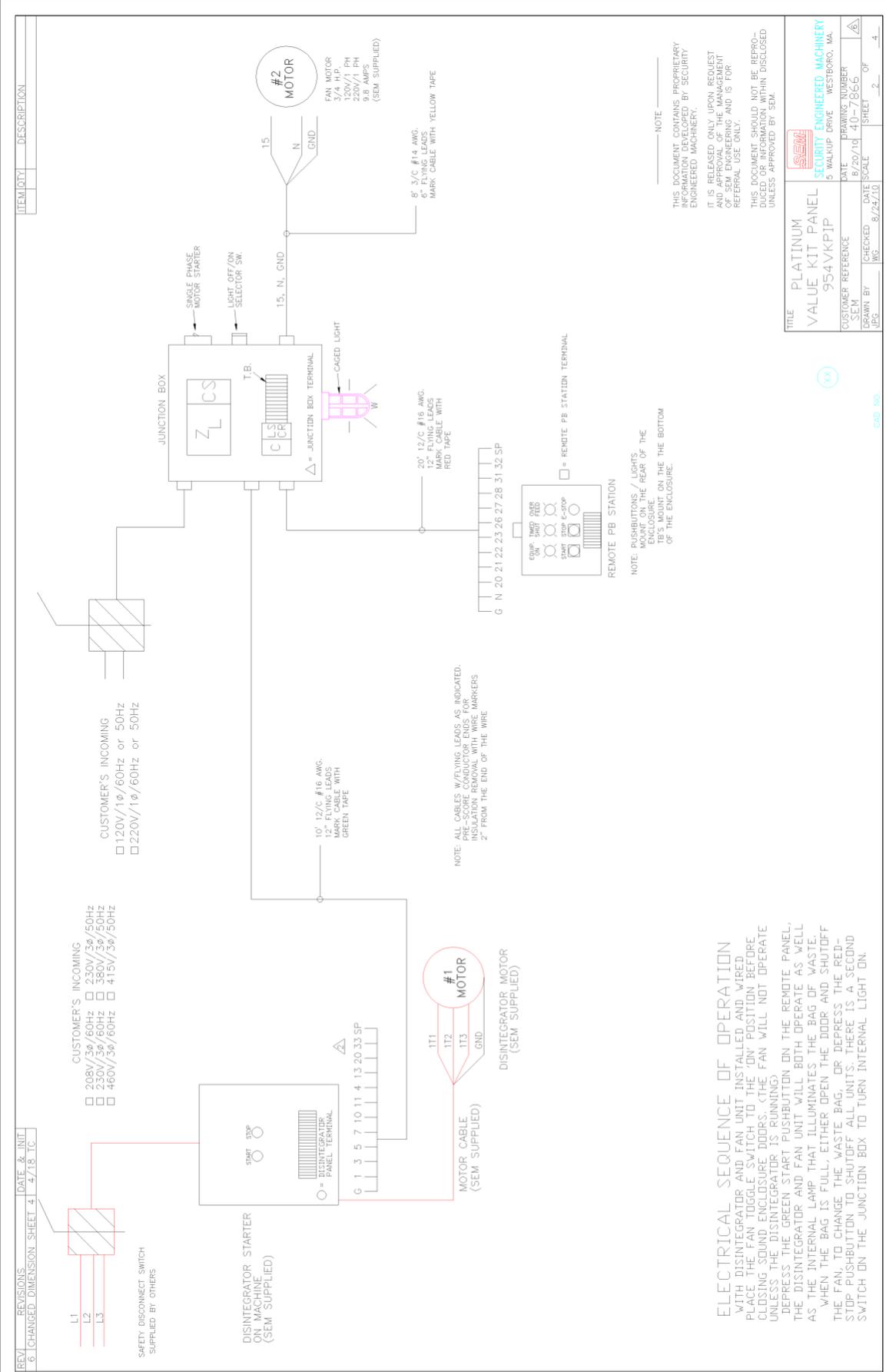
ELECTRICAL SEQUENCE OF OPERATION

WITH DISINTEGRATOR AND FAN UNIT INSTALLED AND WIRED, PLACE THE FAN TOGGLE SWITCH TO THE 'ON' POSITION BEFORE CLOSING SOUND ENCLOSURE DOORS. (THE FAN WILL NOT OPERATE UNLESS THE DISINTEGRATOR IS RUNNING)

DEPRESS THE GREEN START PUSHBUTTON ON THE REMOTE PANEL, THE DISINTEGRATOR AND FAN UNIT WILL BOTH OPERATE AS WELL AS THE INTERNAL LAMP THAT ILLUMINATES THE BAG OF WASTE. WHEN THE BAG IS FULL, EITHER OPEN THE DOOR AND SHUTOFF THE FAN, TO CHANGE THE WASTE BAG, OR DEPRESS THE RED-STOP PUSHBUTTON TO SHUTOFF ALL UNITS. THERE IS A SECOND SWITCH ON THE JUNCTION BOX TO TURN INTERNAL LIGHT ON.

20. Platinum Kit Electrical





REV.	REVISIONS	DATE & INIT.	ITEM ID	DESCRIPTION
6	CHANGED DIMENSION SHEET	4/7/18 TC		

TITLE	PLATINUM VALUE KIT PANEL	DATE	8/24/10	SHEET	2	OF	4
CUSTOMER REFERENCE	954VKPIP	DATE	18/29/10	SCALE			
SEMI DRAWN BY							
IPC							

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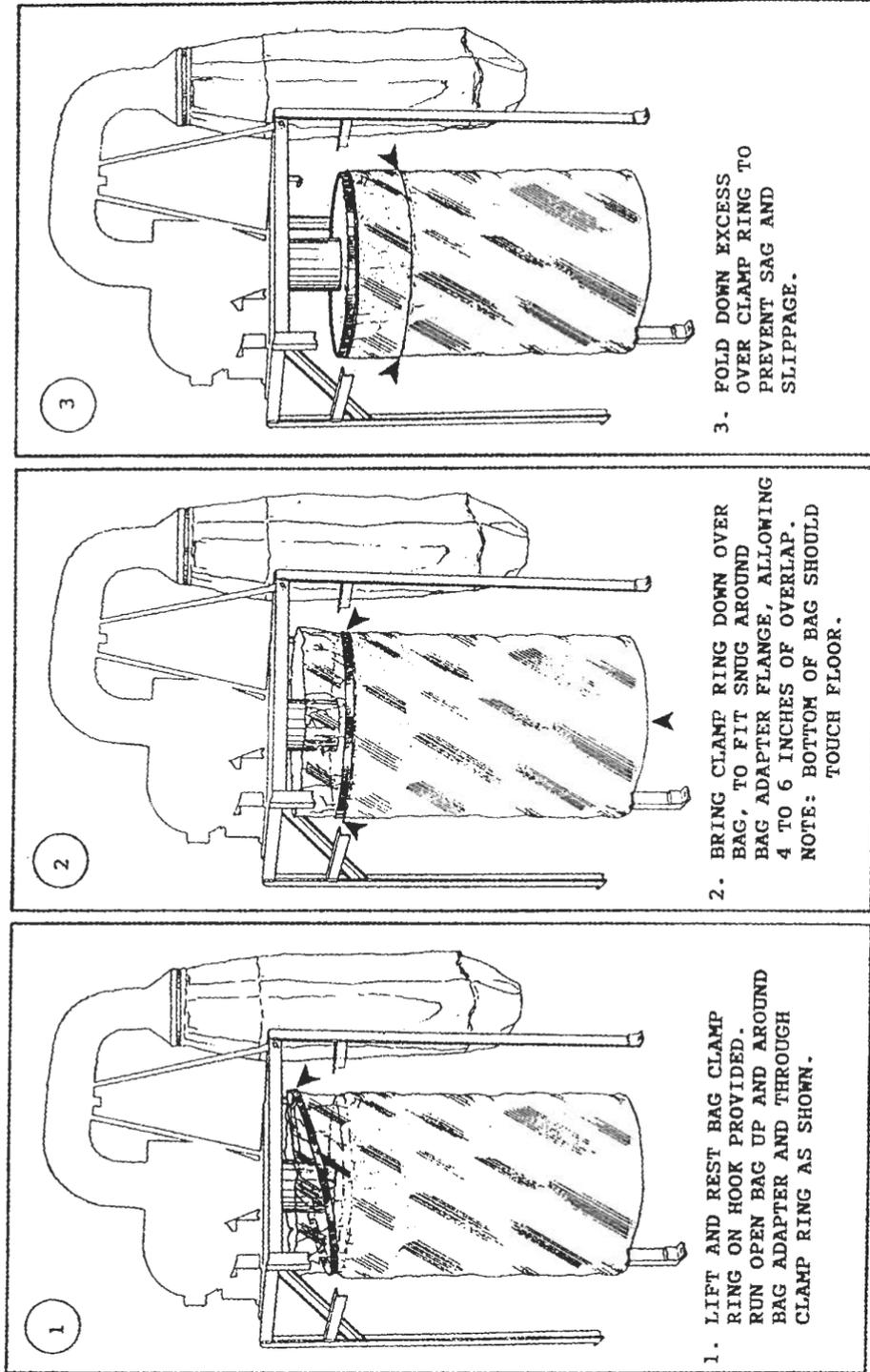
ELECTRICAL SEQUENCE OF OPERATION

WITH DISINTEGRATOR AND FAN UNIT INSTALLED AND WIRED. PLACE THE FAN TOGGLE SWITCH TO THE 'ON' POSITION BEFORE CLOSING SOUND ENCLOSURE DOORS. (THE FAN WILL NOT OPERATE UNLESS THE DISINTEGRATOR IS RUNNING)

DEPRESS THE GREEN START PUSHBUTTON ON THE REMOTE PANEL, THE DISINTEGRATOR AND FAN UNIT WILL BOTH OPERATE AS WELL AS THE INTERNAL LAMP THAT ILLUMINATES THE BAG OF WASTE. WHEN THE BAG IS FULL, EITHER OPEN THE DOOR AND SHUTOFF THE FAN, TO CHANGE THE WASTE BAG, OR DEPRESS THE RED-STOP PUSHBUTTON TO SHUTOFF ALL UNITS. THERE IS A SECOND SWITCH ON THE JUNCTION BOX TO TURN INTERNAL LIGHT ON.

21. Directions for Changing Bags of Fan Units

3 STEPS TO CHANGE PLASTIC BAGS FOR TYPICAL FAN EVACUATION SYSTEMS





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