S2000 SYSTEM: AD078224

SAFETY, OPERATION, & MAINTENANCE



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FOREWORD

The purpose of this manual is to familiarize qualified individuals with the safety, maintenance, and operational procedures of the individual SWEED Machinery processors that comprise this Standard S2000 System equipment configuration, and of the equipment configuration as a whole.

The manufacturer recommends that users familiarize themselves with the applications and uses of SWEED Machinery equipment prior to operation. SWEED Machinery equipment should not be used for any purpose other than that for which it was designed.

To provide dependable and safe service, this machinery must be operated by trained personnel wearing eye protection and gloves. Personnel operating the equipment must understand the type of material that it is capable of processing.

Any misuse of SWEED Machinery equipment can be dangerous. All operators should be familiar with the general operating instructions and warnings.

It is the owner's responsibility to install the SWEED Machinery equipment in conformance with applicable federal, state, and local laws and to instruct personnel in safe operating procedures.

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INTRODUCTION

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GENERAL SAFETY & STANDARDS

1. SCOPE

This manual covers all information and requirements to safely operate and maintain the SWEED Standard S2000 System equipment configuration and the processors that comprise it. This introduction chapter contains general information that applies to all processors individually, and the equipment configuration ensemble. The following chapters go into specific details of operation and maintenance.

2. STANDARDS/ENVIRONMENT

2A. Mechanical & Electrical Standards

SWEED tests all equipment prior to shipment to ensure machine tolerance and electrical integration and operation. Equipment is built in accordance with all N.E.C and local requirements.

While cleaning is performed after testing, small amounts of test materials may be present during installation. Small paint discontinuities may also be present.

2B. Machine Environment

Machines are designed to function in an indoor environment with a temperature range that does not exceed +104°F. UV sensitive rubber components or synthetic components including hydraulic lines and belts should not be exposed to direct sunlight.

2C. Machine Positioning

Machines are designed to be mounted/bolted to sturdy stand, not welded, and must be bolted on a level concrete slab of minimum 6” thickness.

Unless otherwise specified, machines are only to be moved using a forklift. Machines should never be moved when powered on, or in motion. Alternative moving methods may be used only with approval from SWEED Machinery.

2D. Machine Clearances

Suitable clearance must be present around all sides of machines, except where they connect to each other via chutes, ducts, etc. Install machines at ergonomically suitable infeed height. All controls should be between 36” and 72” high.

2E. Machine Guards

Machines are equipped with guards to protect the operator from moving parts. In general, all moving parts are painted orange to help identify them; guard components are also painted orange. Any system guards made by SWEED will be identified in the Equipment Configuration chapter.

2F. Cleanliness

The machines’ work areas must be kept clean and uncluttered during the periods of operation or maintenance. No tools or other metal objects should be left on or around the machines.

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3. SAFETY INSTRUCTIONS

WARNING

To reduce the risk of fire, electric shock, equipment damage or injury, basic safety precautions should always be followed, including the following:

3A. General Equipment Safety Warnings

- Read and follow all safety instructions.
- Always used appropriate personal equipment protective equipment as outlined in Section 4. Operators should additionally comply with any company-specific PPE requirements.
- Only use equipment in the intended environment for its intended use, as outlined in Section 2 and each processor chapter. Contact SWEED if you have an application outside of the equipment's intended usage.
- Avoid contact with moving parts. Keep hands, hair, clothing, and other personal effects clear of equipment during use.
- DO NOT attempt any maintenance, jam removal, or cleaning unless the machine is fully locked out and all moving parts are motionless. This includes removing pneumatic or hydraulic energy sources from machines (if applicable).
- DO NOT operate equipment unless all guards and covers are in place and secure.
- DO NOT circumvent equipment safety switches or sensors.
- DO NOT place hands near the discharge area(s) of the equipment.
- DO NOT use equipment if key functional components appear worn or damaged.
- DO NOT climb on equipment.
- DO NOT weld or modify equipment.
- DO NOT cut flammable material.*

* Aluminum is considered combustible in certain forms and requires adherence to NFPA 484 regulatory housekeeping cleanliness requirements. It is imperative the end user follows all NFPA guidelines to ensure safe operation and handling of aluminum fines if present in dust collection systems. Not following cleanliness guidelines could result in deflagration or explosion if concentrations of aluminum dust reach critical concentrations. It is the responsibility of the end user to ensure NFPA regulatory requirements are satisfied when running all materials.

3B. Additional Safety Cautions

- Inspect equipment for wear/damage prior to operation.
- Ensure utility connections from electrical wiring, pneumatic hoses, and hydraulic lines do not present a slip, trip, or fall hazard.
- Ensure containers used for material collection are suitable for the material being processed: strong enough to hold material when full, not damaged from impact of chopped material, non-flammable where applicable.
- Equipment may be started remotely and unexpectedly when the cellular router is enabled. Always stay clear of moving parts when equipment is not fully locked out.

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- If necessary, measures must be taken to dissipate electrostatic build-up on the machine, containment bin, or processed material.
- Equipment should only be operated by trained personnel who have read and fully understand this manual and the risks involved in the machinery's use.
- Equipment should only be serviced by qualified personnel.
- Equipment should not be left unattended while in operation. Always supervise machinery to ensure safe and efficient operation.

4. PPE REQUIREMENTS

4A. Eye Protection

Required when operating or maintaining machines.

4B. Hand Protection

Required when handling material being processed or when maintaining machines.

4C. Hearing Protection

Required when operating machines. Most machines operate at over 70 dB when idling.

4D. Breathing Protection

May be required if processed material creates airborne dust or fiber when processed.

GENERAL MAINTENANCE

5. FASTENERS

Due to the vibratory impact associated with SWEED Machinery Inc equipment, it is imperative to follow a strict bolt tightening schedule for critical fasteners. Non-critical fasteners should be inspected for tightness on a regular basis. Failure to do so may result in damage to the machines, injury to the operator, and/or voiding of warranty.

5A. Break-in Period

Inspect and tighten loose fasteners after an initial break-in period of 8 hours. Critical fasteners and their torque requirements are identified for each processor within its specific chapter.

5B. Tightening Pattern

Where applicable, fasteners should be tightened incrementally in a pattern up to the torque specifications.

5C. General Torque Specs

For non-critical fasteners, SWEED recommends adherence to standard torque requirements based on fastener grade, as detailed in the tables on the following page.

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ASTM A449 / SAE Grade 5						
				Tightening Torque (ft lbs)		
Bolt Size	TPI	Proof Load (lbs)	Clamp Load (lbs)	Galv + Waxed	Galv	Plain
1/4"	20	2,700	2,025	4	11	8
5/16"	18	4,450	3,338	9	22	17
3/8"	16	6,600	4,950	15	39	31
7/16"	14	9,050	6,788	25	62	49
1/2"	13	12,050	9,038	38	94	75
9/16"	12	15,450	11,588	54	136	109
5/8"	11	19,200	14,400	75	188	150
3/4"	10	28,400	21,300	133	333	266
7/8"	9	39,250	29,438	215	537	429
1"	8	51,500	38,625	322	805	644
1-1/8"	7	56,450	42,338	397	992	794
1-1/4"	7	71,700	53,772	560	1,400	1,120
1-3/8"	6	85,450	34,088	734	1,836	1,469
1-1/2"	6	104,000	78,000	975	2,438	1,950
1-3/4"	5	104,500	78,375	1,143	2,857	2,286
2"	4-1/2	137,500	105,125	1,719	4,297	3,438
2-1/4"	4-1/2	178,750	134,063	2,514	6,284	5,027
2-1/2"	4	220,000	165,000	3,438	8,594	6,875
2-3/4"	4	271,150	203,363	4,660	11,651	9,321
3"	4	328,350	246,263	6,157	15,391	12,313

Figure 1. Standard Grade 5 Bolt Torque Table

ASTM A354 Grade BD / SAE Grade 8					
		Tension (lbs)		Tightening Torque Range (ft lbs) (Min - Max)	
Bolt Size	TPI	Min.	Max.	Lubricated	Plain
1/4"	20	3,800	2,850	6	12
5/16"	18	6,300	4,725	12	25
3/8"	16	9,300	6,975	22	44
4/16"	14	12,750	9,563	35	70
1/2"	13	17,050	12,788	53	107
6/16"	12	21,850	16,388	77	154
5/8"	11	27,100	20,325	106	212
3/4"	10	40,100	30,075	188	376
7/8"	9	55,450	41,577	303	606
1"	8	72,700	54,525	454	909
1-1/8"	7	91,550	68,663	644	1,287
1-1/4"	7	120,000	90,000	938	1,875
1-3/8"	6	138,600	103,950	1,191	2,382
1-1/2"	6	168,600	126,450	1,581	3,161
1-3/4"	5	228,000	171,000	2,494	4,988
2"	4-1/2	300,000	225,000	3,750	7,500
2-1/4"	4-1/2	390,000	292,500	5,484	10,969
2-1/2"	4	480,000	360,000	7,500	15,000
2-3/4"	4	517,650	388,238	8,897	17,794
3"	4	626,850	470,138	11,753	23,507
3-1/4"	4	745,500	559,125	15,143	30,286
3-1/2"	4	874,650	655,988	19,133	38,266
3-3/4"	4	1,014,300	760,725	23,773	47,545
4"	4	1,163,400	872,550	29,085	58,100

Figure 2. Standard Grade 8 Bolt Torque Table

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6. LUBRICATION

All machine components come pre-lubricated from the factory and do not require any supplemental grease before operation.

6A. Bearings

6Ai. Bearings should be lubricated using #2 NLGL or Multipurpose ball bearing grease.

6Aii. Grease should be added slowly to prevent damage to bearing seals, and should be added until slight leakage seeps past seals.

6Aiii. Refer to processor chapters for bearing checklists and lubrication schedules.

6B. Motors

Inspect, clean, and test motors at regular intervals. Use recommended lubrication intervals and grease type outlined in the manufacturer's manual (see motor table within each processor chapter).

6C. Gear Reducers

Follow maintenance intervals outlined in the manufacturer's manual. Use grease suggested in manufacturer's manual (see gear reducer table within each processor chapter).

6D. Chains

6Di. Chain lubrication should be maintained to prevent dirt buildup.

6Dii. Food grade or non-detergent petroleum-based oil should be used. Do Not use heavy oils.

7. PNEUMATIC CIRCUITS

SWEED recommends industry-standard maintenance of machines' pneumatic systems. At minimum, this includes regular inspections for leaks, equipment wear or damage, and appropriate system pressure.
Equipment exteriors should also be kept clean, with particular focus on any air exhaust ports.
Refer to the system and/or processor chapters for specific details about the pneumatic circuits and their maintenance requirements.

8. HYDRAULIC CIRCUITS

SWEED recommends industry-standard maintenance of machines' hydraulic systems. At minimum, this includes regular inspections for leaks, equipment wear or damage, appropriate system pressure and temperature, correct fluid level, and fluid quality.
Equipment exteriors should also be kept clean, with particular focus on any breather caps or fill openings.
Refer to the system and/or processor chapters for specific details about the hydraulic circuits and their maintenance requirements.

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LEGAL & LIABILITY

9. LEGAL DISCLAIMER

9A. Injuries & Damages

The manufacturer is not liable for injuries or damages resulting from improper use, unauthorized modifications, or failure to follow the installation, operation, and safety guidelines outlined in the provided equipment manuals.

9B. Safety Regulations

The operator assumes full responsibility for ensuring that the machine is used in accordance with all applicable local, federal, and EU safety regulations.

9C. Machine Modifications

No modifications or alterations should be made to the machine without written approval from the manufacturer. Unauthorized modifications void any warranties and increase the risk of injury or equipment failure.

10. LIABILITY WAIVER

By using this machine, the operator acknowledges that they have read, understood, and agree to the safety guidelines, risks, and limitations of the equipment. The operator assumes all risks associated with the machine's use, including injury, property damage, and any consequential or incidental damages.

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11. WARRANTY

WARRANTY

SWEED Machinery, Inc's equipment is warranted against defects and workmanship for a period of one year from date of shipment on all new machines and 90 days on refurbished machines. Parts claimed to be defective must be returned, freight prepaid, to our plant in Gold Hill, Oregon. Any parts determined defective due to faulty workmanship or materials will be replaced or repaired, at our option, free of charge, f.o.b. our plant. except as expressly provided herein, this warranty is in lieu of all other warranties, expressed or implied, including a warranty of merchant ability of fitness for a particular purpose. This warranty is void if the unit has been tampered with, modified, altered, or operated with parts other than supplied or recommended by SWEED Machinery, Inc. in no event shall SWEED Machinery, Inc., be liable for special, indirect, incidental, or consequential damages, however arising.

SWEED Machinery, Inc does not warranty this machine to meet the requirements of any safety codes of any state, municipality, or other jurisdiction, and the purchaser assumes all risk and liability whatsoever resulting from the use thereof whether used singularly or in combination with other machinery or apparatus.

Any change in materials, design, or performance intended to improve any product of SWEED Machinery, Inc., shall not obligate SWEED Machinery, Inc. to modify any previously manufactured equipment.

SWEED Machinery, Inc.

Note: All returned material must be accompanied by a SWEED Return Material Authorization (RMA) number. Please call our customer service department at 1-800-888-1352 if you need assistance.

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EQUIPMENT OVERVIEW

1. EQUIPMENT IDENTIFICATION

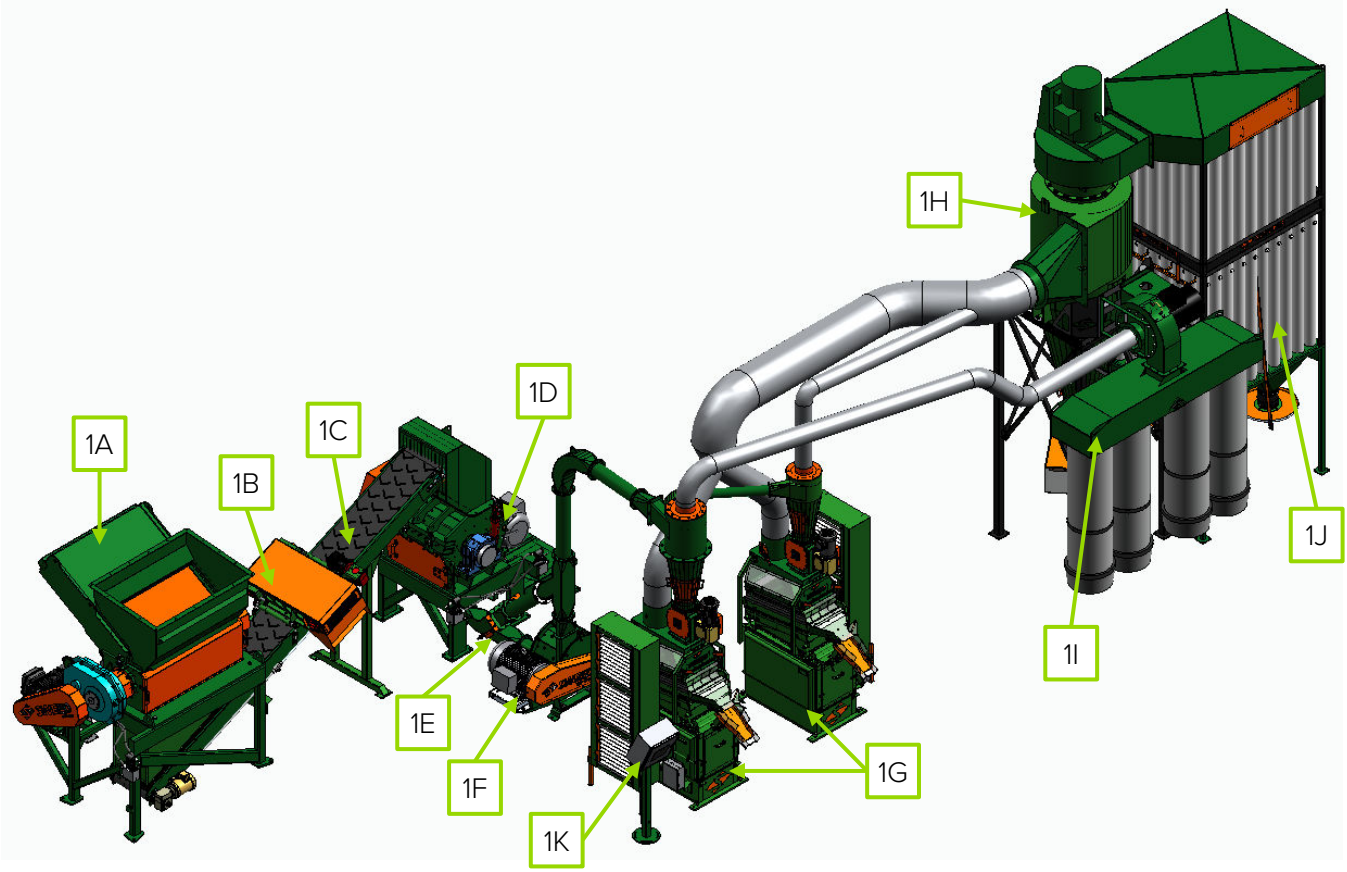


Figure 3. System ISO view

1A. PCR1048AC Pre-Chopper

Finely chops material with the assistance of a hydraulic ram. Exhausts onto the IC1815 Inclined Conveyor. The system PLC automatically actives this machine's ram based on the running amperage of the motor. When the Pre-Chopper motor is operating at low AMP levels, the ram actuates to feed more material into the knives.

A screen at the bottom of the cutting chamber determines the final size of the processed material; this screen can be changed depending on the material being cut and the desired final piece size.

1B. Magnetic Cross Belt

Separates magnetic fragments out of the material on the IC1815 Inclined conveyor and exhausts them into a collection container.

1C. IC1815 Inclined Conveyor

Conveys material from the Pre-Chopper to the Granulator.

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1D. SG1826AF Granulator

Chops material into very small, uniform pieces. A screen at the bottom of the cutting chamber determines the final size of the processed material; this screen can be changed to suit the material being cut. It is essential that the screen size is correct for the material to optimize throughput. Refer to Section 19A.

1E. Wye Duct Gate

Allows for material to be diverted around the Turbo Mill rather than through it. Has two slide gates that must be manually opened/closed.

1F. TM1815AC Turbo Mill

Breaks down material into superfine particles to separate metal fragments from plastic insulation. Material flow into and out of the machine is facilitated by air pressure. The final size of the processed material is determined by the dwell time—how long the material bounces around the processing chamber. Airflow and rotor speed determine dwell time; refer to Section 19B.

Material can be routed around this machine using the Wye Duct Gate.

1G. G-3 Airtable (2)

Separates material based on density using an oscillating deck with air blown up through it. The first Airtable is fed material from the Turbo Mill/Granulator and separates the copper from the aluminum and plastic. The second Airtable is fed the light material from the first Airtable and separates the aluminum from the plastic. Both Airtables have a dust hood and are fed from above by a cyclone with an airlock.

1H. CYC40 Cyclone

Separates material of substantial size from dust. Has an airlock at the bottom to allow material to pass through without disrupting the duct's static pressure. Fed by the second Airtable cyclone and the dust hoods of both Airtables. Has a 40HP 8000CFM blower which creates the air pressure that pulls material from the exhaust of the first Airtable to the cyclone that feeds the second Airtable.

1I. 4-Bank Dust Filter

Filter section fed by the cyclone of the first Airtable. Has a 15HP 2500CFM blower which creates the air pressure that pulls material from the Granulator through the Turbo Mill (if activated) and into the first Airtable cyclone.

1J. 8K CFM Open Baghouse

Filter section fed by the CYC40 Cyclone. Has a lever to allow the filters to be shaken.

1K. Main HMI Enclosure

Main system control. Contains the HMI display and an Emergency Stop Button. Also has the switch to turn the master control relay (MCR) on/off.

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2. INSTALLATION

2A. Mechanical Install

Refer to the Mechanical Install manual for detailed instructions on assembling and installing equipment for this system (see Appendix A). All machines should be mounted in accordance with the requirements described in the Standards/Environment section of the Introduction chapter.

2B. Electrical Install

All electrical wiring should be done by a licensed electrical contractor and in accordance with N.E.C, state, and local requirements. Refer to the Electrical Schematic and SPECs documents for electrical details (see Appendix A).

2C. General Installation Checks

Prior to the first startup of equipment, the following conditions must be met, and any machine-specific testing should be performed (if applicable).

2Ci. All equipment is permanently affixed in its final location and approved by a SWEED representative or appropriate party. At no point should the equipment be tested beforehand: serious damage or injury or damage can occur.

2Cii. All electrical connections are properly terminated.

2Ciii. All required pneumatic and ducting connections are made, and the appropriate compressed air supply is available (if applicable).

2Civ. All required hydraulic connections are made, and the appropriate type and quantity of hydraulic fluid has been added to the circuit(s) (if applicable).

2Cv. All motors have been jogged to ensure that their rotation direction is correct. Refer to each processor chapter for correct rotation direction.

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MAIN SYSTEM HMI NAVIGATION

3. TOP BANNER

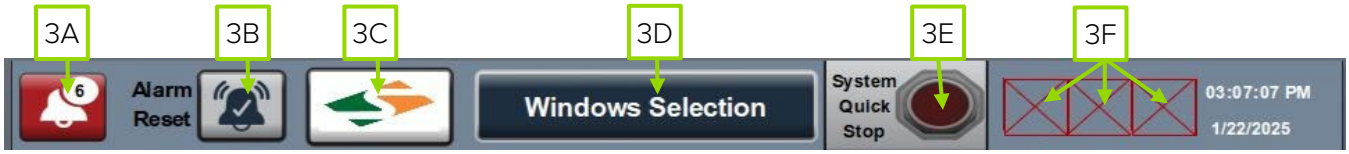


Figure 4. HMI Screen Top Banner

3A. Alarm Button

Press to navigate to the Alarms Page (see Section 13). The button will flash when there is an active alarm that has not been reset. The circle displays the quantity of active alarms.

3B. Alarm Reset Button

This button is only visible when there is an active alarm. Press to reset all active alarms. If an alarm's trigger condition is still true, the alarm will not reset.

3C. SWEED Logo Button

Press and hold to display all the motor identifiers for the equipment on the current page when in Auto mode. See Section 6E for an example.

3D. Windows Selection Button

Press to navigate to the Window Selection Page (see Section 4).

3E. System Quick Stop Button

Press to quickly stop the system. This **does not** cut electric power to the system, unlike the E-stops; instead, it is a PLC controlled stop that allows VFD motors to ramp down properly. The button will be lit up when the system is running.

See Section 17B for details about this stop mechanism, including conditions when it should be used and how to reset after it is activated.

3F. System Error Indicators

Areas where System Error Indicators will appear when they are active. Only 3 indicators will be displayed at once, although more than three could be active.

If any of indicators 3Fi-3Fiv are present on the banner, please contact SWEED for troubleshooting assistance. If indicator 3Fv is present, the ethernet connections at the HMI and the PLC should be checked prior to contacting SWEED.

3Fi. Scroll

3Fii. Red Circle with "X"

3Fiii. Lightning Bolt

3Fiv. PLC

3Fv. Network

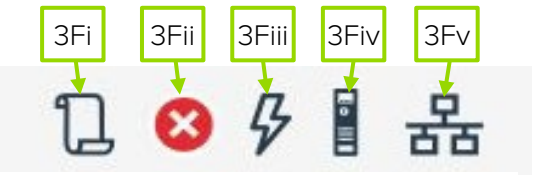


Figure 5. Error Icons

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4. WINDOWS SELECTION

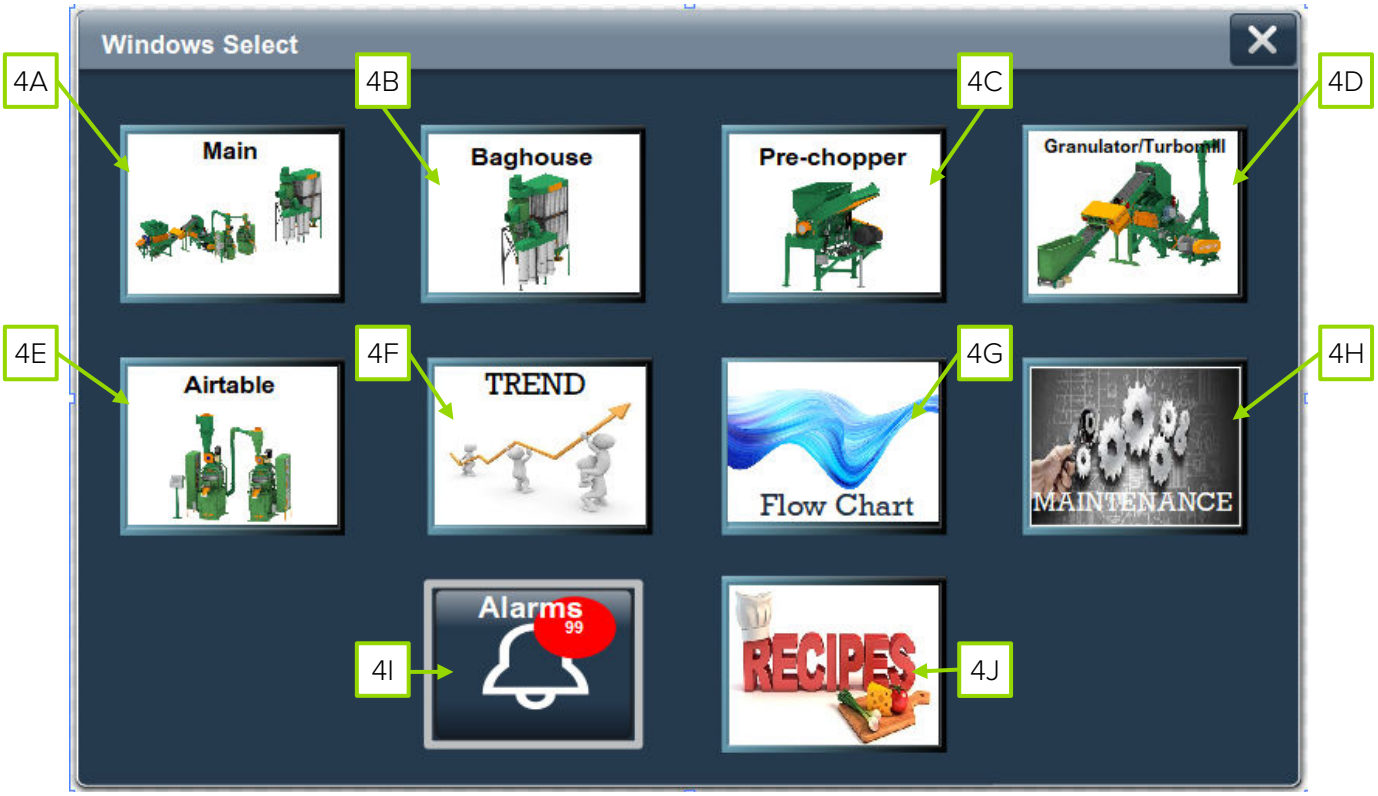


Figure 6. Windows Select Page

4A. Main Page Button

Press to navigate to the Main Page (see Section 5).

4B. Baghouse Page Button

Press to navigate to the Baghouse Page (see Section 6).

4C. Pre-Chopper Page Button

Press to navigate to the Pre-Chopper Page (see Section 7).

4D. Granulator/Turbo Mill Page Button

Press to navigate to the Granulator and Turbo Mill Page (see Section 8).

4E. Airtable Page Button

Press to navigate to the Airtable Page (see Section 9).

4F. Trend Page Button

Press to navigate to the Trend Page (see Section 10).

4G. Flow Chart Page Button

Press to navigate to the Flow Chart Page (see Section 11).

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4H. Maintenance Page Button

Press to navigate to the Maintenance Page (see Section 12).

4I. Alarms Page Button

Press to navigate to the Alarms Page (see Section 14).

4J. Recipes Page Button

Press to navigate to the Recipes Page (see Section 15).

5. MAIN PAGE

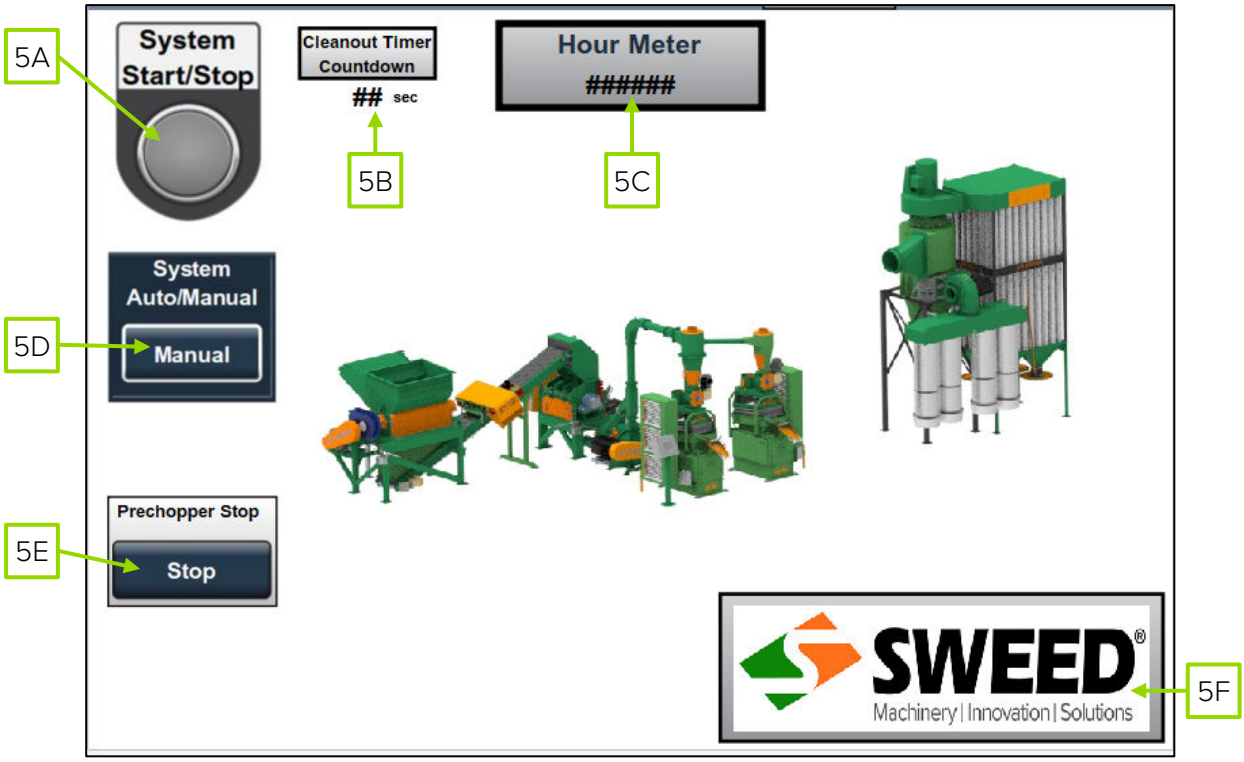


Figure 7. Main Page

5A. System Start/Stop Button

This button is available on all section/equipment screens.

Starts the system or stops it using the standard shutdown procedure. When the system is running, the button will glow green.

5B. Cleanout Timer Countdown

Displays how many seconds are remaining until the system finishes the standard shutdown procedure; the countdown will start once the Granulator amperage has dropped to idle.

5C. Hour Meter

Displays the total number of hours that the system has run in Auto Mode.

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5D. System Mode Button

This button is available on all section/equipment screens.

Press to toggle between Auto and Manual Modes. When the system is in Auto Mode, the button will be green and say “Auto” as shown; in Manual Mode, the button is grey and says “Manual”. As in mentioned in other sections, certain buttons and icons are only visible when in Manual Mode.

5E. Pre-Chopper Stop Button

Press to stop the Pre-Chopper only; the rest of the system continues to run. When pressed, the button turns red and says “Stopped”.

An application of this button is if material needs to be introduced to the system via the Conveyor (refer to Section 18B); the Pre-Chopper should be stopped to avoid overwhelming the Granulator.

5F. SWEED Button

Press to navigate to the HMI Settings Page. An “Are You Sure” page will be opened first (see Section 13).

6. BAGHOUSE PAGE

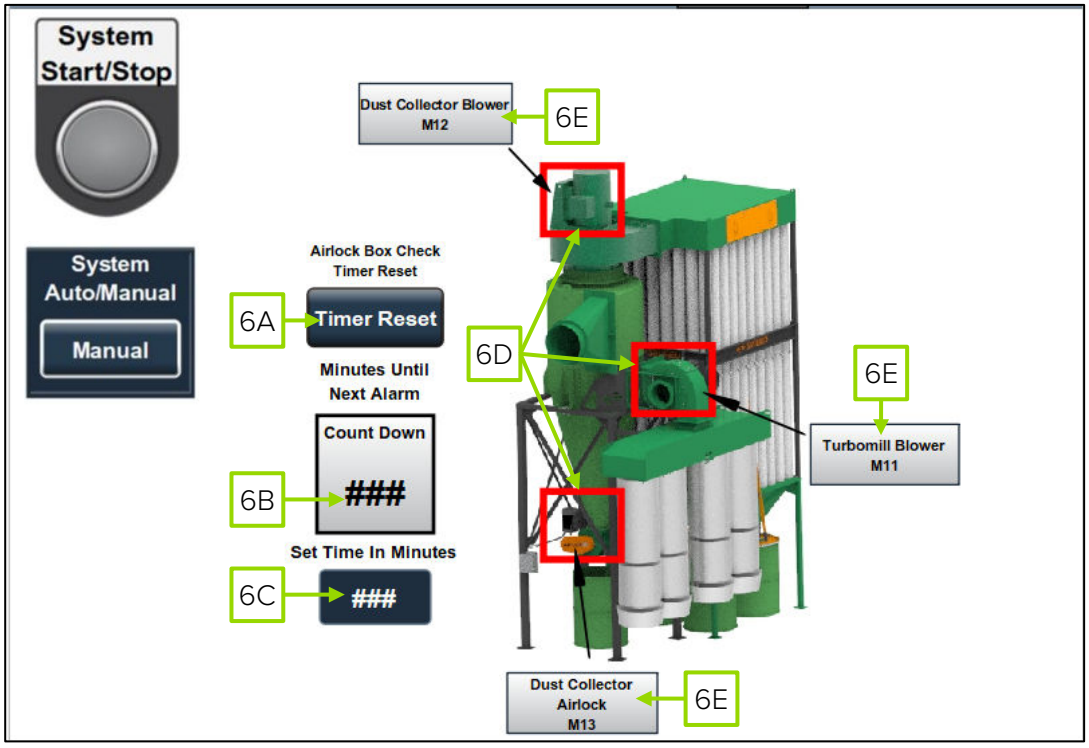


Figure 8. Baghouse Page

6A. Timer Reset Button

Press to reset the Airlock box check timer.

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6B. Countdown Meter

Displays how many Auto runtime minutes until the next Airlock box check alarm.

6C. Set Time Button

Displays the current set time for how long the system can run in Auto Mode before an Airlock box check should be done. Pressing the grey box will pull up a keypad to change the value.

6D. Motor Buttons

These red frames are only visible when the system is in Manual Mode. Press a frame to toggle the motor it surrounds on/off. The box will be green when the motor is running.

6E. Motor Identifiers

Identify the number assigned to the motor indicated. Displayed only when the SWEED Logo Button on the top banner is held (refer to Section 3C).

7. PRE-CHOPPER PAGE

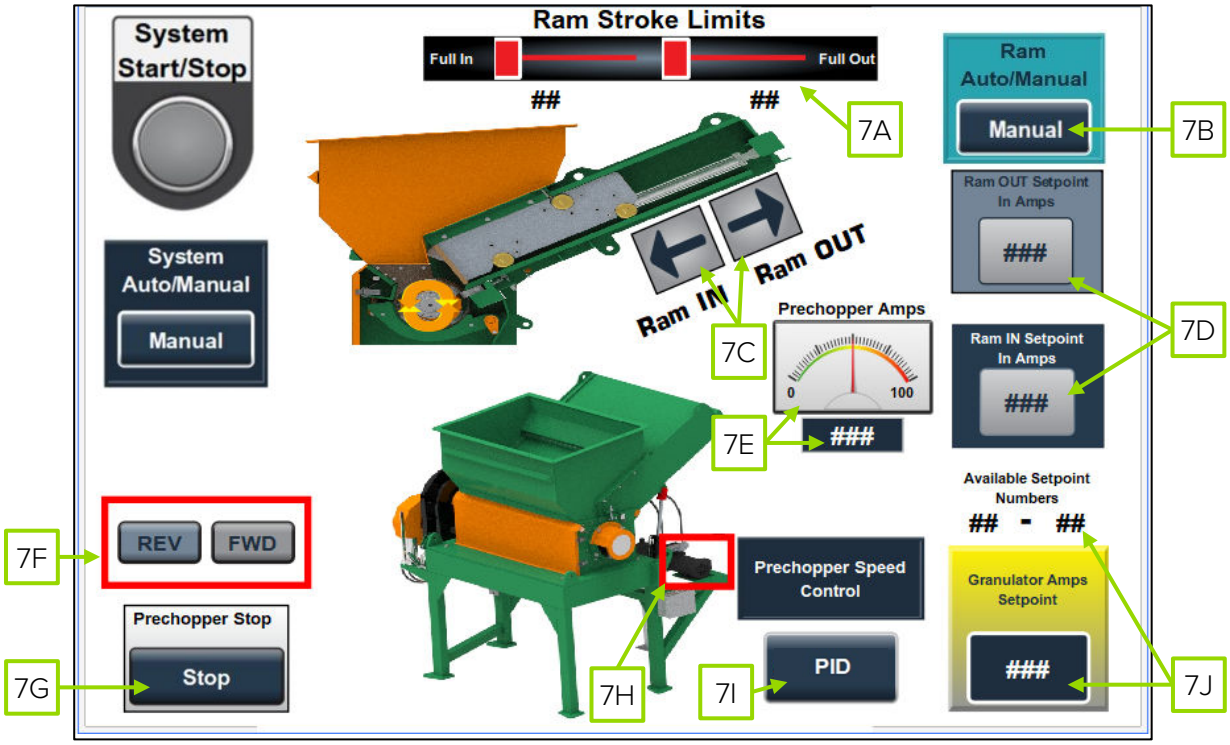


Figure 9. Pre-Chopper Page

7A. Ram Stroke Limit Sliders

Slide back and forth to set the inner and outer limits of the hydraulic Ram's stroke distance. The values displayed below the sliders are distances from the outer limit of the ram in inches.

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7B. Ram Mode Button

Press to toggle the hydraulic feed ram between Manual and Auto Modes. The button is green and says “Auto” when in Auto Mode.

7C. Ram Control Buttons

Press and hold to move the Ram in or out. These buttons are only visible when the Ram is in Manual Mode.

7D. Ram OUT/IN Amp Setpoints

Setpoints that determine when the Ram actuates when it’s in Auto Mode. When the Pre-Chopper amps are below the “IN” setpoint, the Ram will move in to push more material into the Pre-Chopper knives. When the amps are above the “OUT” setpoint, the Ram will move out.

7E. Current Pre-Chopper Amps

Displays the current amperage of the Pre-Chopper.

7F. Pre-Chopper Motor Jog Buttons

Press and hold to jog the Pre-Chopper motor forwards or backwards. These buttons are always visible but only work if the Pre-Chopper stalls and is unable to restart itself or when the system is in Manual Mode. If the Pre-Chopper stalls, these buttons can be used to jog the rotor to release the jammed material without needing to shut down the Pre-Chopper. If this doesn’t work, the jam must be cleared manually; refer to the Pre-Chopper processor chapter.

7G. Pre-Chopper Stop Button

Refer to Section 5E.

7H. Ram HPU Motor Frame

This red frame is only visible when the system is in Manual Mode. Press to toggle the Ram HPU motor surrounds on/off. The box will be green when the motor is running.

7I. PID/Fixed Pre-Chopper Speed Control Button

Press to toggle between the Fixed and PID Speed Control Modes for the Pre-Chopper. In PID Speed Mode, the PLC adjusts the speed of the Pre-Chopper to change the rate of material flow and maintain the amps of the Granulator at the Amperage Setpoint. In Fixed Mode, the Pre-Chopper runs at a fixed speed regardless of the Granulator current.

7J. Pre-Chopper Speed Setpoint

Displays the setpoint that controls the Pre-Chopper speed. Pressing the box will pull up a keypad to change the setpoint. In PID Mode, the Granulator Amps Setpoint is displayed; the maximum value for this setpoint is the Granulator Amps Setpoint for the Conveyor (see Section 8C) so that the Pre-Chopper will slow down when the Conveyor slows down. In Fixed Mode, the Fixed speed setpoint is displayed.

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8. GRANULATOR/TURBO MILL PAGE

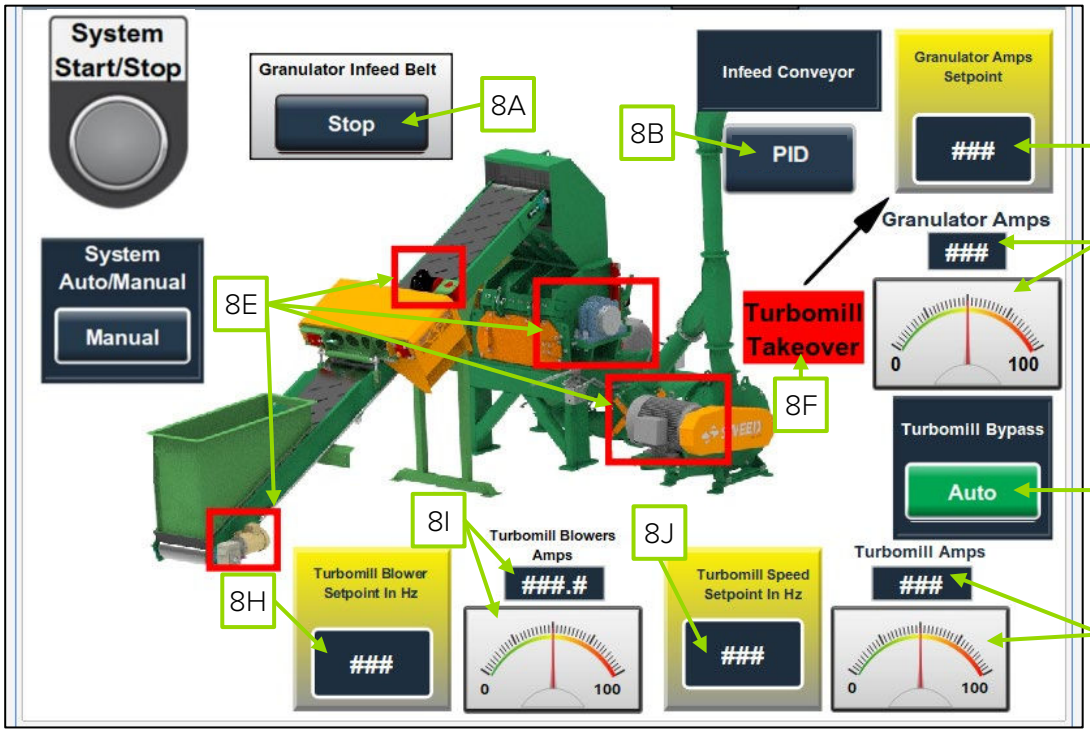


Figure 10. Granulator/Turbo Mill Page

8A. Granulator Infeed Belt Start/Stop Button

Press to stop the Conveyor and Pre-Chopper only; the rest of the system continues to run. When pressed, the button turns red and says “Stopped”.

8B. Conveyor PID/Fixed Mode Button

Press to switch between the Fixed and PID Speed Control Modes of the Conveyor. In PID Mode, the PLC adjusts the speed of the Conveyor to change the rate of material flow and maintain the running amperage of the Granulator at the Amperage Setpoint. In Fixed Mode, the Conveyor speed is fixed regardless of the Granulator current.

8C. Conveyor Speed Setpoint

Displays the setpoint that controls the Conveyor speed. Pressing the box will pull up a keypad to change the setpoint, and displays the min and max values for the field. In PID Mode, the Granulator Amps Setpoint is displayed. In Fixed Mode, the Fixed speed setpoint is displayed.

8D. Granulator Current Amps

Displays the current amperage of the Granulator.

8E. Motor Buttons

These red frames are only visible when the system is in Manual Mode. Press a frame to toggle the motor it surrounds on/off. The box will be green when the motor is running.

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8F. Turbo Mill Takeover Indicator

Appears when the PLC is governing the speeds of the Conveyor and Pre-Chopper based on the Turbo Mill amperage rather than the Granulator amperage. Refer to Section 18Ei.

8G. Turbo Mill Bypass Button

Press to toggle the Turbo Mill bypass on and off. When the bypass is off, the button is green and say “Auto” as shown. When the bypass is on, the button will be red and say “Bypassed”.
Note: pressing the HMI button is not all that needs to be done when turning the bypass on and off—the sliders of the Wye Duct Gate must also be moved. The Wye Gate does not have any sensor to determine if the sliders are properly positioned.

8H. Turbo Mill Blower Speed Setpoint

Displays the Blower Speed Setpoint in Hertz. Pressing the box will pull up a keypad to change the setpoint.
Blower speed (airflow) is a key factor in determining how finely material is pulverized by the Turbo Mill (refer to Section 19B).

8I. Turbo Mill Blower Amps

Displays the current amperage of the Turbo Mill Blower.

8J. Turbo Mill Speed Setpoint

Displays the Turbo Mill Speed Setpoint in Hertz. Pressing the box will pull up a keypad to change the setpoint.
Turbo Mill rotor speed is a key factor in determining how finely material is pulverized by the Turbo Mill (refer to Section 19B).

8K. Turbo Mill Amps

Displays the current amperage of the Turbo Mill motor.

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9. AIRTABLE PAGE

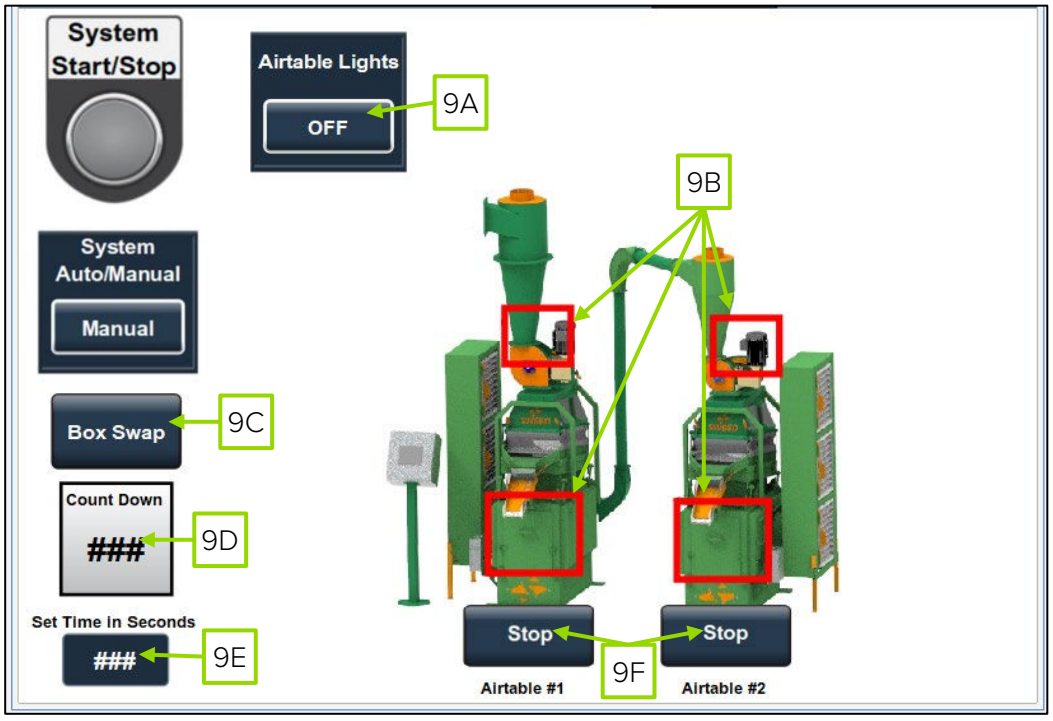


Figure 11. Airtable Page

9A. Airtable Lights Button

Press to turn the Airtable lights on or off. When the lights are off, the button will appear as shown in the figure above. When the lights are on, the button will be green and says “ON”.

9B. Motor Buttons

These red frames are only visible when the system is in Manual Mode. Press a frame to toggle the motor it surrounds on/off. The box will be green when the motor is running.

9C. Box Swap Button

Press to temporarily stop the Airtables so that the material collection boxes can be swapped out.

9D. Box Swap Countdown

Displays the number of seconds remaining until the Airtables resume processing when the Box Swap Button is pressed.

9E. Box Stop Set Time

Press to bring up a keypad to set the Box Swap Set Time.

9F. Airtable Stop Buttons

Press to stop the Airtables only; the rest of the system continues to run. When pressed, the button turns red and says “Stopped”.

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An application of these buttons is if there is inadequate material on the Airtable decks—inadequate material leads to poor separation, so the Airtables can be stopped until the rest of the system provides enough material to cover the decks.

10. TREND PAGE

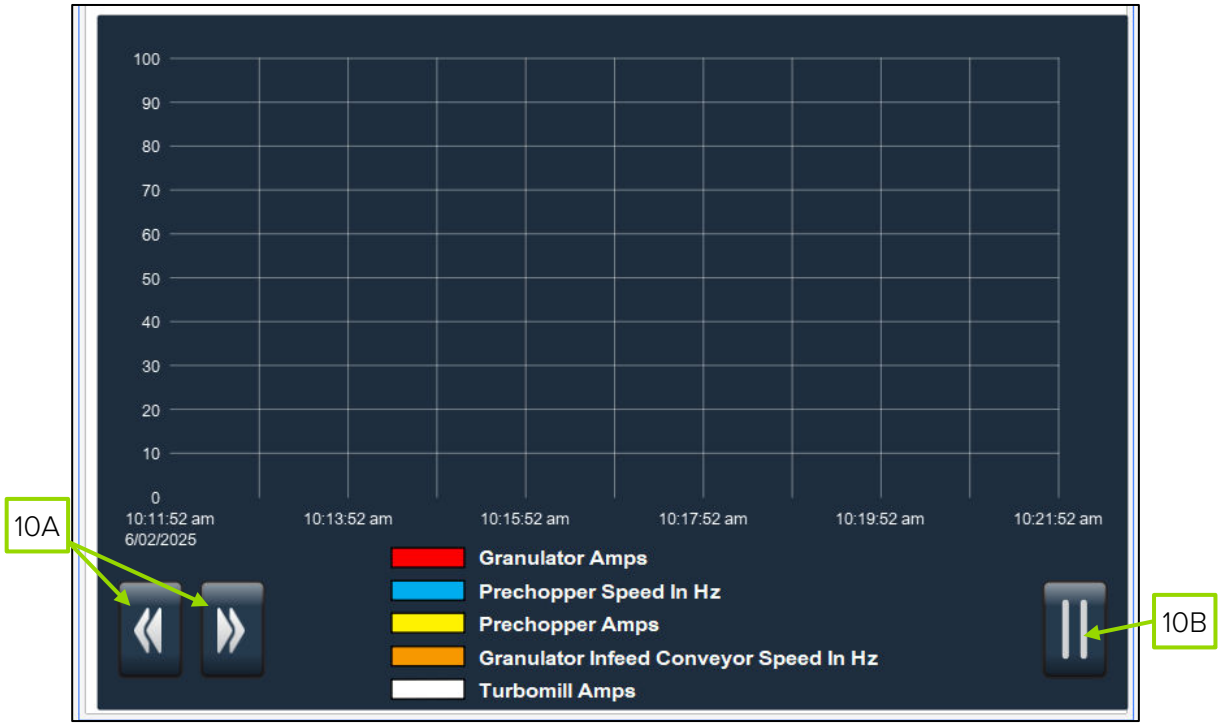


Figure 12. Trend Page

10A. Page Forward/Back Buttons

Press to move the graph forward/backwards along the x-axis. Note that the graph must be in a paused state for these buttons to work.

10B. Pause Button

Press to toggle the graph in and out of a paused state, which will prevent the graph from scrolling as new data is collected. When the paused state is active, the button will instead show a play symbol. When the graph resumes, the real-time data will be plotted again.

11. FLOW CHART PAGE

This page displays the sequence in which motors are started when the system is in Auto Mode. Motors that have been started are displayed in green. The sequence goes down/up each row before moving over.

As shown, when the Turbo Mill has been bypassed, the motor has a circle with a diagonal slash to indicate it is not currently in the sequence.

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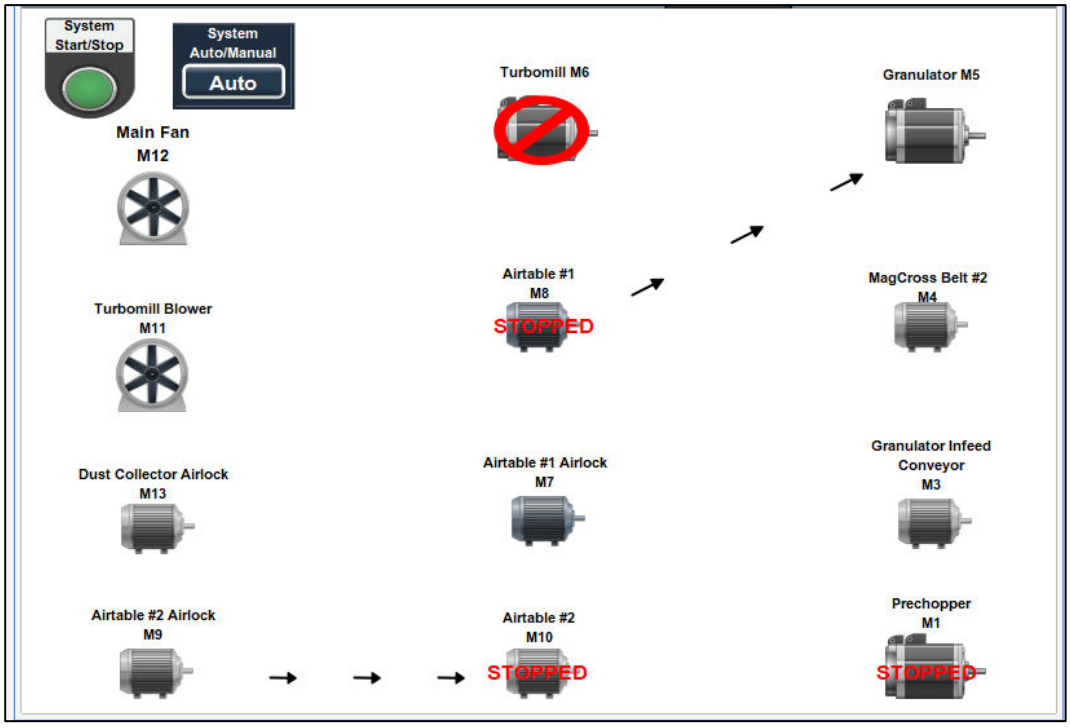


Figure 13. Flow Chart Page

12. MAINTENANCE PAGE

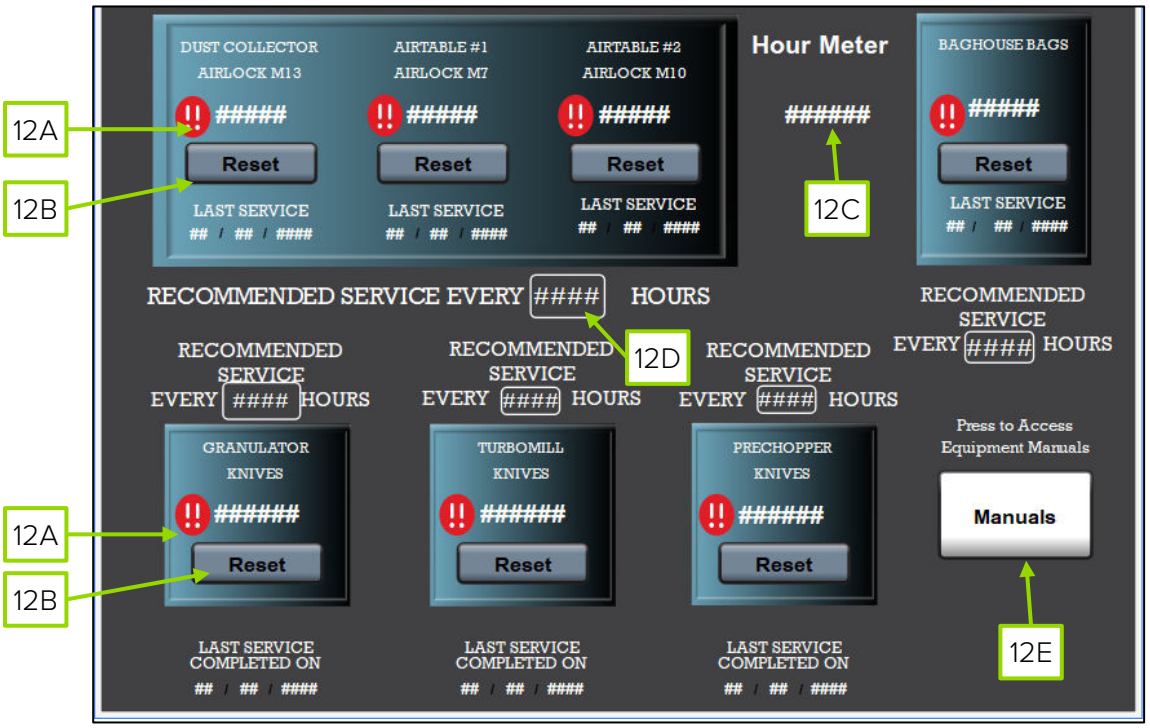


Figure 14. Maintenance Page

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12A. Runtime Hours

Displays the number of runtime hours on the device since the service interval was last reset. The red exclamation warning appears when the runtime hours value is greater than the recommended service interval.

12B. Service Reset Button

Press to update the last service date and reset the runtime hours for the device.

12C. Hour Meter

Displays the total number of hours that the system has run in Auto Mode. The same value is displayed on the Main Page (see Section 5B).

12D. Recommended Service

Displays the recommended service interval in hours. Pressing the box will bring up a keypad to change the value.

12E. Manuals Button

Press to access the Manuals Page which has a URL code and information about navigation to the processor manuals.

13. ARE YOU SURE PAGE

The “Are You Sure” page will come up either from pressing a Reset button on the Maintenance Page (see Section 12) or from pressing the SWEED button on the Main Page (see Section 5). If a Reset button is pressed, the name of the equipment whose service interval is being reset will be at the top of the page, as shown below.

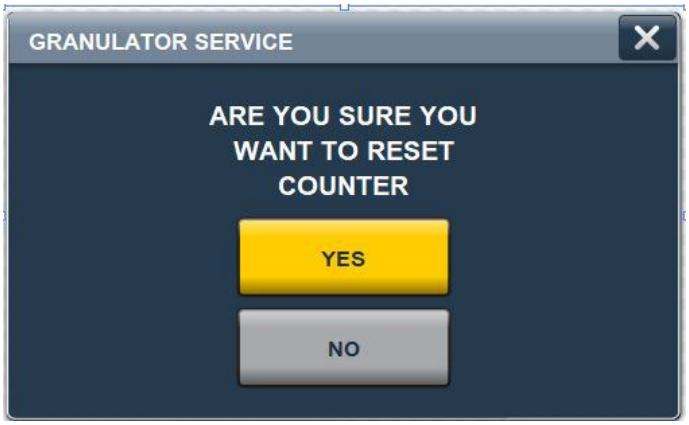


Figure 15. Example Service Reset Are You Sure Page

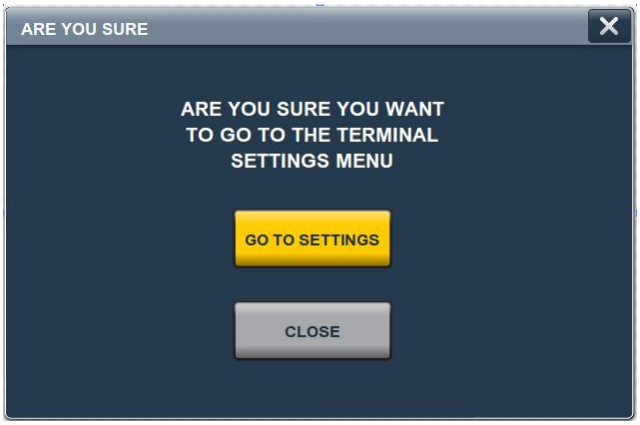


Figure 16. HMI Settings Are You Sure Page

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14. ALARMS PAGE

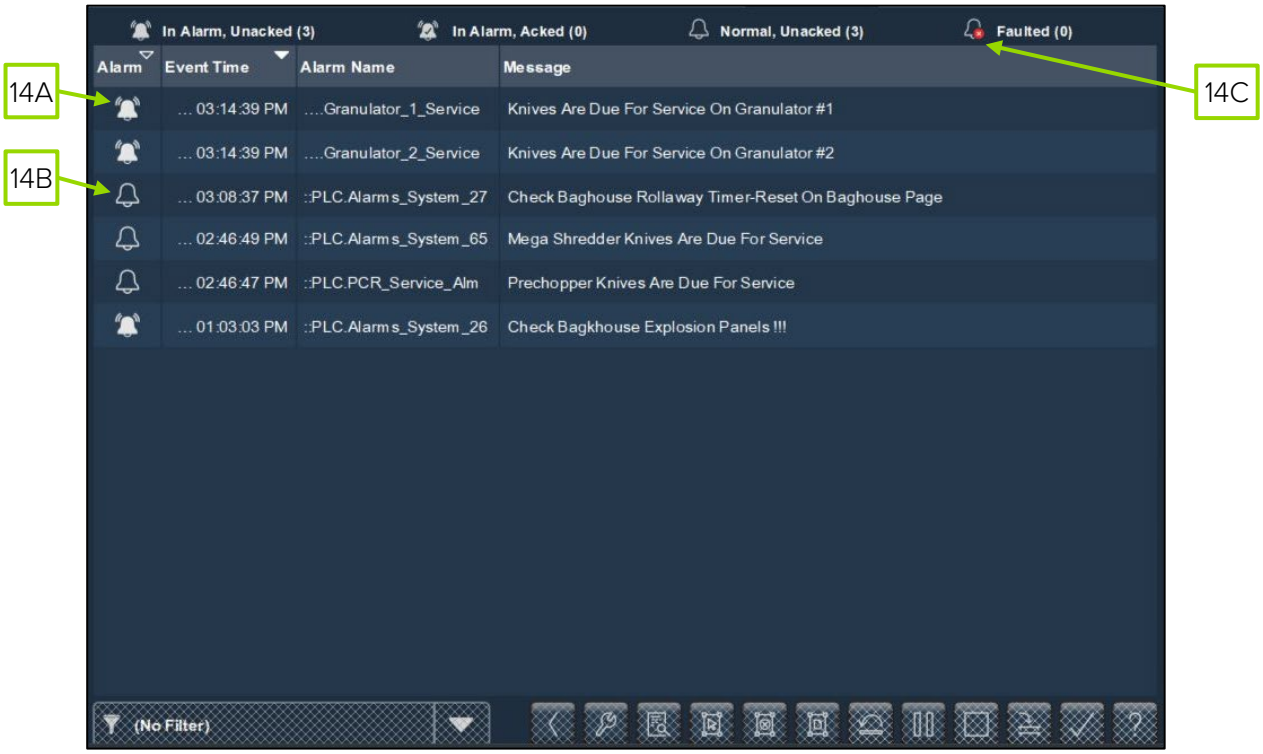


Figure 17. Alarms Page

14A. Solid Bell

This icon indicates that the alarm is still active.

14B. Outline Bell

This icon indicates that the alarm has been reset.

14C. Outline Bell with Red Circle: Alarm Fault

This icon indicates that the PLC lost communication with the device that triggered the alarm while the alarm was active. This happens occasionally with VFDs. The alarm reset button should still work as normal.

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15. RECIPES PAGE

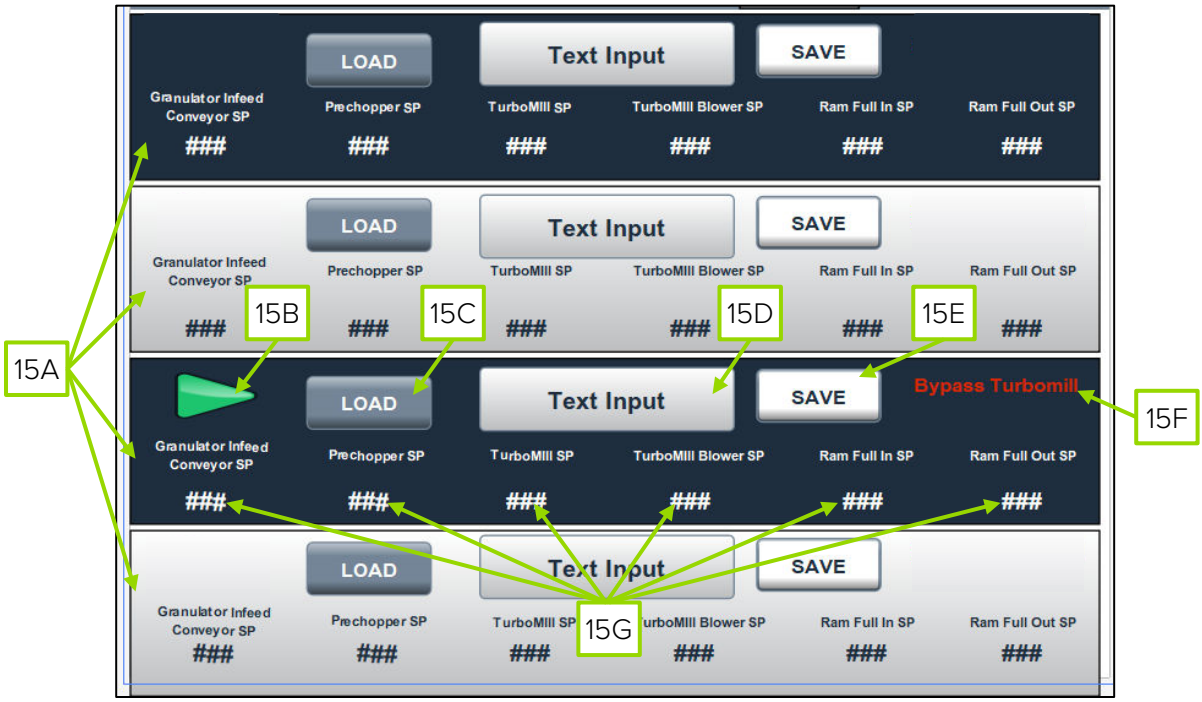


Figure 18. Recipes Page

15A. Configured Recipe Rows

Recipes are the settings for all the machines adjusted to suit the particular material type/composition being processed.

15B. Selection Arrow

This green arrow appears on the recipe that is currently loaded or was loaded most recently.

15C. Load Button

Press to load the recipe stored setting values to the machines.

15D. Recipe Name

Displays the name of each recipe. Pressing the grey box will pull up a keypad to alter the name.

15E. Save Button

Press to save/overwrite the current machine setting values to the recipe. A recipe does not have to be loaded to save/overwrite its settings.

15F. Bypass Turbo Mill Reminder

This reminder will appear on any recipes that have the Turbo Mill bypassed.

15G. Stored Values

Displays the stored machine setting values for the recipe.

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OPERATION

16. STARTING SYSTEM

16A. System Standard Startup	
STEP 1	Adjust the equipment to suit the material being processed. See Section 18C.
STEP 2	Ensure bins are positioned under the Airtables, MCB, and CYC40 Cyclone for material collection.
STEP 3	Load the appropriate material recipe via the Recipe Page (Section 15), if applicable.
STEP 4	Ensure the Wye Duct Gate sliders are in the appropriate positions.
STEP 5	Check that that system is in Auto Mode.
STEP 6	Press the System Start button.
STEP 7	If desired, monitor the startup of the system using the Flow Chart Page (Section 11).

17. STOPPING SYSTEM

17A. Standard System Stops

Press the System Start/Stop Button located on any of the system equipment pages to stop the system (see Section 5A). Once pressed, the system will take a few minutes to shut down completely, as the Granulator and Turbo Mill need to finish exhausting all the material in their processing chambers prior to shutting down.

17B. System Quick Stop

This button should be used in situations where the system needs to be stopped quickly, but it is not an emergency that threatens personnel safety. Example scenarios of appropriate use include equipment belts slipping or material jams.

17C. Emergency System Stops

The E-stop buttons should be used in emergency situations to cut power to the entire system. Be aware that even when an E-stop is pressed, it will take a few minutes for the flywheels of all cutting equipment to coast to a stop.

There is an E-stop button located on the HMI panel.

The face of an E-stop button must be pulled out when the system is reset.

17D. Reset following a System Quick Stop or Emergency Stop

Prior to restarting the system, any accumulated material must be removed from the Granulator and Turbo Mill processing chambers. Refer to the processor OMM chapters for details on accessing the chambers. Failure to remove this material prior to restarting the system could prevent the Granulator or Turbo Mill from starting.

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18. STANDARD OPERATION

18A. Feeding Material into the System

Unprocessed material should only be introduced to the system via the Pre-Chopper.

18B. Refeeding Material into the System

Small amounts of already processed material can be introduced via the Inclined Conveyor, but great care must be taken to not overload the Granulator with a surge of material.

SWEED recommends against attempting to refeed large quantities of processed material into equipment.

18C. Switching Between Material Sizes

18Ci. Switch out the Pre-Chopper screen for one with holes that are appropriately sized for the new material, if needed. Refer to the Pre-Chopper OMM chapter for details on changing the screen.

18Cii. Switch out the Granulator screen for one with holes that are appropriately sized for the new material, if needed. Refer to the Granulator OMM chapter for details on changing the screen.

18Ciii. Use the sliders located in the Wye Duct Gate to bypass/include the Turbo Mill in the process flow, as applicable.

18Civ. Adjust the Airtable settings to suit the new dimensions and/or composition of the processed material, if needed. Refer to Section 19B.

18Cv. Load the appropriate recipe for the new material, if applicable. Refer to Section 15. If a recipe does not exist, adjust the machine settings to suit the new material.

18D. Switching Between Materials with Different Copper/Aluminum Ratios

For effective Airtable sorting, the ratio of copper to aluminum in a batch of processed material needs to be fairly consistent. When switching to an infeed material with a very different ratio, the Airtable settings will likely need to be adjusted.

Ideally, all the old material should exit the Airtables prior to new material being introduced into the system.

18E. Equipment Dependencies (Auto Mode only)

18Ei. Each processor can only start up once the processor that follows it in the material flow is running. Refer to the Flow Chart Page (Section 11).

18Eii. If the Conveyor and Pre-Chopper are both in PID Mode, the Pre-Chopper will slow automatically when the Conveyor slows down (see Section 7J and Section 8C).

18Eiii. If the speed of the Conveyor drops below a certain threshold for a set amount of time, the Pre-Chopper will stop automatically. It will restart once the Conveyor returns to a normal speed.

18Eiv. If the amperage of the Turbo Mill motor is above its nameplate amperage for 20 seconds, the PLC enters Turbo Mill Takeover Mode and the speed of the Conveyor and Pre-Chopper are governed based on the Turbo Mill amperage. The system will

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return to its normal run state once the Turbo Mill motor amperage is 4 amps less than the nameplate value.

19. ADJUSTMENTS FOR OPTIMAL THROUGHPUT

19A. Pre-Chopper & Granulator

The size of material fed to the Granulators by the Pre-Chopper is a key factor in the Granulator processing time. If the fed material is too large, the Granulator will take significantly longer to cut it to the proper size; if it is too small, the output of the Granulator will not be maximized. The screen sizes of the Pre-Chopper and the Granulators should be balanced so that neither processor type is outpacing the other.

The Granulator screen should be selected so that the cut size of the processed material is only just small enough to liberate the copper and/or aluminum from the plastic. The Pre-Chopper screen size should be selected to maximize the cut size without outpacing the Granulator cut rate.

For this system, SWEED would recommend a target Granulator current load of about 35Amps. If the Granulators are never reaching this load, it means that they are outpacing the Pre-Chopper, and the Pre-Chopper screen could possibly be increased by one size.

19B. Turbo Mill

The material dwell time (how long the material spends in the pulverizing chamber) is determined primarily by the airflow rate and the Turbo Mill rotor speed. Airflow and dwell time have an inverse relationship, while rotor speed and dwell time have a direct relationship. Inadequate dwell time leads to insufficient material separation, while excessive dwell time is inefficient and can lead to material melting or burning.

19C. Airtables

Please refer to the manufacturer's manual for details on adjusting these particular Airtables for optimal separation (see Appendix A).

SWEED general recommendations for airtables are below for convenience.

19Ci. The separation line between heavy material and mix should be about ¾ of way to high end.

19Cii. Airflow is the primary adjustment variable to create good separation. Too much air flow leads to the heavy material dropping off the low end of the table. Too little air flow leads to lots of light material mixed in with the heavy.

19Ciii. The Airtable deck should be fully covered by material.

19Civ. It's best to make only one adjustment at a time. It can take a few minutes for an adjustment to become evident.

20. SYSTEM MANUAL MODE

When in Manual Mode, individual processors and motors can be toggled on and off at will. None of the equipment dependences mentioned in Section 18E are active in this mode. Consequently, the only equipment fail-safes in place are the motor protectors; there is no

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automatic program to adjust material flow rates or ensure that subsequent processors are running. Due to these modal limitations, the system should be run in Auto Mode unless there is a need to run only a few specific processors.

Examples of the most common uses of Manual Mode are below:

20Ai. Troubleshooting and testing, especially after an alarm condition.

20Aii. Clearing old material out of the system before switching to new material.

20Aiii. After processor maintenance to ensure everything is in working order.

21. SYSTEM TROUBLESHOOTING

See processor OMM chapters for troubleshooting of specific system components. General troubleshooting tips:

Possible Cause	Solution
21A. System or equipment will not start/stop running	
E-stop button has been pushed	Release emergency stop button
Failed electrical service	Check circuit power
System in Manual Mode	Put system into Auto Mode (see Section 5D)
Equipment dependencies	Check that an equipment dependency isn't applicable. Refer to Section 18E.
Motor protection tripped	Check HMI Alarms Page; reset appropriate motor

22. SYSTEM MAINTENANCE

22A. Dust Collection

This system features two dust collection apparatuses—the 8K CFM Open Baghouse and the 4-Bank Dust Filter. Refer to the 8K CFM Open Baghouse processor chapter for operation and maintenance details of the Baghouse assembly. Dust blowing out from the Airtable decks is a good indication that the Baghouse airflow is inadequate.

The end user should establish a schedule for cleaning out and emptying the 4-Bank Dust Filter assembly; the required frequency of this procedure is dependent upon the process material type and quantity. Each filter features a detachable plastic cap at its bottom to remove dust captured by the filter. SWEED suggests using a compressed air hand blower to remove dust stuck to the filter interiors: this should only be done when the filter bottom caps are on to prevent releasing dust into the air. Inadequate airflow from the Granulator/ Turbo Mill to the first Airtable is a good indication that the filters need to be cleaned.

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22B. Airtable

SWEED recommends supplemental upkeep in addition to the Airtable manufacturer's prescribed maintenance. The following is advised due to the intended use of the Airtable and the fact that SWEED provides the Airtable filter assembly:

22Bi. If very fine wire is processed by the system, wire pieces will likely build up in the openings of the Airtable deck over time. As this material builds up, it can impede airflow through the deck and prevent good separation. If this occurs, SWEED recommends removing the deck according to the manufacturer's instructions and spraying it with a power washer to clear the deck holes.

22Bii. The end user should establish a schedule for inspection and replacement of the Airtable air intake filters. Air is pulled through these filters and blown through the Airtable deck; low airflow through the deck could indicate that the filters are clogged and should be replaced.

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APPENDICES

23. APPENDIX A: SUPPLEMENTAL DOCUMENT LISTS

23A. SWEED Supplemental Documents	
Document Title	Reference For:
AD078224-EXP PARTS	Exploded part drawings
AD078224-MMM LIST	List of all manufacturer maintenance manuals.
S2000 HVAC Recycle AD078224 SPARE PARTS	Recommended spare parts.
S2000 Electrical Schematics	Electrical schematics for this equipment.
S2000_Mechanical Install Manual	Installation details for all equipment.

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MODEL: PCR1048AC

PRE-CHOPPER WITH HYDRAULIC RAM



*Pictures may not reflect exact layout received as additional customizations may be added per customer or system requirements.

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SAFETY & OPERATIONS

1. SCOPE

This manual covers specific information about the operation and maintenance of the SWEED PCR1048AC Pre-Chopper. It does not contain general safety and maintenance requirements, which are in the Introduction chapter, or specific operation steps, which are in the Equipment Configuration chapter.

Note that figures within this chapter are generalized for all configurations of the PCR1048AC: the appearances of customizable machine components, such as infeed and outfeed, may not reflect your machine's features and are simply intended to be representational. Additionally, the coloration of equipment is intended to create distinction between parts, and may not reflect reality.

2. INTENDED USE

2A. Functionality

This machine is designed to finely chop material using a set of dynamic knives on a rotor and stationary knives on the frame. It is a low speed, high torque machine. Material is pushed into the knives by a hydraulic ram. Material enters via the hood at the top of the machine and is cut into pieces small enough to exit through the screen at the bottom of the cutting chamber. This screen can be changed depending on the material being cut and the desired final piece size. Refer to the Equipment Configuration chapter for details of the machine's place in the material process flow.

2B. Standard Machine Sensors

The standard sensors used on this machine are listed in the table below. If control integration was included as part of your machine order, all sensors will be used as described. If controls were not included, it is the end-user's responsibility to ensure that sensors are integrated into control logic: refer to the Equipment Configuration chapter.

If your machine customizations included non-standard sensors, refer to the Equipment Configuration chapter for details.

Type	Description	Identification	Intended Purpose
Plunger Switch	Front Access Door Sensor	*Figure A16* & *Figure A20*	Prevents Pre-Chopper operation when the front access door is open (sensor is not made).
Plunger Switch	Hood Sensor	*Figure A20*	Prevents Pre-Chopper operation when the hood is open (sensor is not made).
Laser Distance	Ram Sensor	*Figure A21*	Tracks the current position of the ram.
Proximity Inductive	Encoder Sensor	*Figure A20*	Part of the encoder assembly that measures the RPM of the Pre-Chopper.

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2C. Mounting

CAUTION: It is critical that the machine is bolted to a level floor. Bolting to an uneven floor will cause stress within the machine body leading to possible bolt failure or other machine damage.

3. MACHINE-SPECIFIC SAFETY INSTRUCTIONS

- DO NOT look into machine infeed during use. While rare, it is possible for material to kick out during the feeding process.
- WARNING: Excess vibration may occur under abnormal material feeding or slight modifications. Pre-chopper should be visually and physically monitored during operation to gain a sense of sudden or excessive vibration. **Contact SWEED Machinery if vibration continues as ignoring vibration may cause significant damage to machine.**
- DO NOT operate with dull knives.
- WARNING: Flywheel mechanism spins down until it stops regardless of stop procedure. This means the knives will continue to rotate for a short period of time even after power to the motor is cut off.
- CAUTION: Too large of a knife gap can contribute to increased knife where and cause structural fatigue of the machine over time. Always operate the machine with an appropriate knife gap.
- CAUTION: Do not place hands or stand near parts of unit that may be hot after long hours of usage. This includes bearings and main housing.

4. OPERATION

4A. Setup

See the Installation section of the Equipment Configuration chapter for installation instructions. Connect the machine to the appropriate voltage power source and integrate into controls system. See SPECS manual for power requirements.

Jog the motor once to verify rotation is correct; correct rotation is shown in *Figure 1* below. **WARNING: running the motor in reverse may result in machine damage. It is critical to check rotation by bumping the motor prior to operating the machine.**

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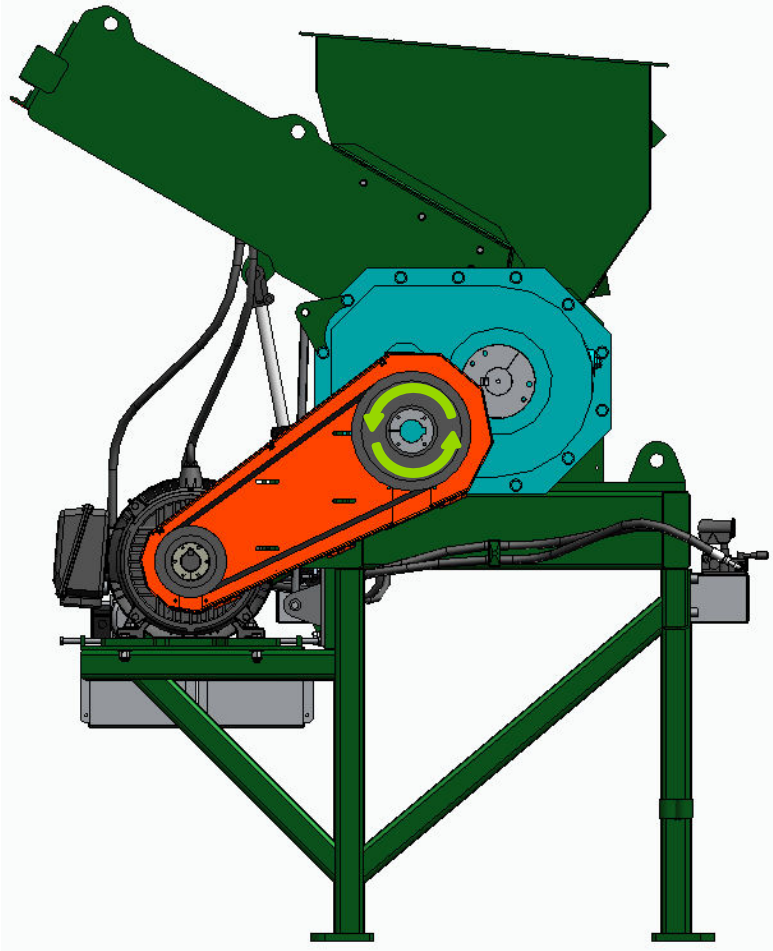


Figure 1. Correct motor rotation. Drive belt guard hidden for clarity.

4B. Starting Machine

Depending on the controls of the equipment configuration, it may not be possible to start the machine until other machines are operating. Refer to Equipment Configuration chapter for details on startup procedures.

Under typical startup scenarios, ensure the Pre-Chopper ram is fully retracted and it not set to auto-feed.

4C. Stopping Machine

Refer to Equipment Configuration chapter for standard shut down procedures.

This machine typically does not include an E-stop mounted directly to it. Instead, E-stops are part of the larger equipment configuration (if controls are provided by SWEED), or should be integrated by the end user during installation; refer to Equipment Configuration chapter.

Note: during any type of shutdown, including an E-Stop that cuts power to the motor instantaneously, the rotor must spin down until it stops. If the hood is full of material, the spin down may be quicker due to material slowing down the rotor.

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4D. Ram Actuation

The machine's ram mechanism is used to provide optimal throughput. Typical processors chop material by relying on gravity and material weight to push material into the cutting knives. SWEED's ram design hydraulically assists material into the cutting interface. Refer to the Equipment Configuration chapter for details on ram dynamics and controls.

4E. Tips for Optimal Function

Pieces of rigid material should be shorter than the width of the Pre-Chopper hood so that the whole length can be fed at once into the rotor. Avoid feeding long pieces of rigid material gradually by their ends, as this can result in the material bridging over the rotor rather than being drawn in.

Because this is a low speed, high torque machine, maintaining proper belt tension is critical. If the belt tension is too low, the belt is more likely to slip and quickly wear out as the Pre-Chopper cuts through large material loads.

As a general rule, the hood should not be filled more than halfway to help maximize machine throughput.

5. TROUBLESHOOTING

Possible Cause	Solution
5A. Machine will not start/stop running	
Failed electrical service	Check circuit power
Motor protection tripped	Reset motor
Broken drive belt	Replace belt
5B. Hydraulic Ram not operating	
Equipment controls	Hydraulic ram is actuated based on controls logic; refer to Equipment Configuration chapter
Failed hydraulic circuit	Check hydraulic circuit for electrical power and worn or failed components
Ram is jammed	Refer to Section 18.
5C. Hood or Screen Carriage not opening/closing	
Material jam	Remove jammed material
Failed hydraulic circuit	Check hydraulic circuit for electrical power and worn or failed components
External obstruction	Remove obstruction
5D. Exhausted material too large	
Installed screen unsuitable	Verify size of screen installed and material being processed. Consult SWEED for screen sizing optimization if needed.
Worn screen holes	Replace screen

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MAINTENANCE

6. COMPONENT IDENTIFICATION

See *Figure 2* below to identify and locate key components referred to in the following sections.

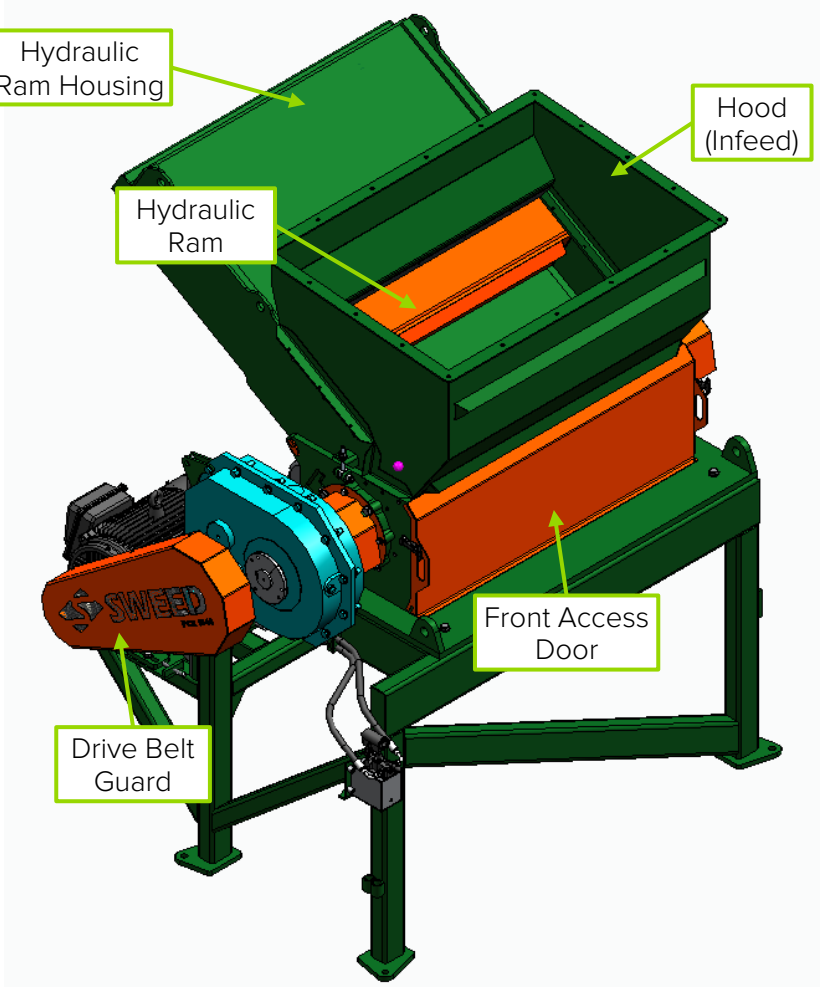


Figure 2. Component Identification

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7. ACCESSING MACHINE INTERIOR

7A. Open Top Hood	
STEP 1	Ensure Pre-Chopper is electrically locked out prior to any repair or maintenance. Ensure no material from the larger recycling system will be fed to the Pre-Chopper.
STEP 2	Check that the rotor has come to a complete stop. Verify by looking through the drive belt guard at belt sheave.
STEP 3	If applicable, remove any infeed assemblies attached to the top of the Hood and visually check that the Hood can rotate clear of any obstructions. See *Figure A2* and *Figure A3*.
STEP 4	Loosen the 4 Hood Eyebolts at the sides and back of the Pre-Chopper, then swing them free of the Hood slots. See *Figure A1*.
STEP 5	Standing at the rear hydraulic station, position the Hood Hand Pump Switch to the Open position. See *Figure A4* for Pump location. Refer to labels located on the Pump for identification of Switch Open position.
STEP 6	Apply a few hand pumps to the system to start opening the Hood. Verify there are no jams or obstructions to prevent the Hood opening fully.
STEP 7	Continue to hand pump the hydraulic cylinders until the Hood is fully open. See *Figure A3*.
STEP 8	Move the Pump Switch back to the Neutral position to prevent bleeder valve from leaking while not actively pumping. Refer to *Figure A5* for identification of the Neutral position.

7B. Close the Hood	
STEP 1	Ensure all mating surfaces are free from debris. Refer to *Figure A6* and *Figure A7*. Debris on these surfaces will cause incorrect Hood closure.
STEP 2	Push the Hood Hand Pump Switch to the Close position.
STEP 3	Actuate the Hand Pump to begin closing the Hood. Ensure no material falls onto the mating surfaces. Ensure the Hood Eyebolts are out of the way and will not impede Hood closing.
STEP 4	Once the Hood is fully closed, return the Pump Switch to the Neutral position to prevent bleeder valve from leaking.
STEP 5	Apply the 4 Hood Eyebolts to secure the Hood. Refer to Section 8B for torquing requirement.
STEP 6	Reapply any Hood infeed assemblies (if applicable).

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8. FASTENERS

8A. Knife Bolt Break-in

Whenever a knife bolt is deliberately loosened or removed (for example when the knife is replaced) the knife bolt break-in period resets, and the knife bolts should be checked for the correct torque after 8 hours of run time.

8B. Critical Fastener Torque Specifications (see *Figure A1*, *Figure A8*, and *Figure A9* for bolt identification; refer to *Figure A10* for tool requirements)

Callout	Description	BOLT-NUT Specification	Copper-Based Anti-Seize	2ND Pass Req.	TORQUE (FT-LB)
A	Stationary Knife Bolt	Bolt, 1/2-13 X 2 1/2 Hex Head GR 8	Yes	Yes	90
B	Stationary Knife Push Bolt	Bolt, 1/2-13 X 3 SQ Head	No	No	*
C	Stationary Knife Pull Bolt				*
D	Stationary Knife Side Bolt				*
E	Rotating Knife Bolt	Bolt, M12-1.75 X 50 SHCS	Yes	Yes	92
F	Rotating Knife Holder Bolt	Bolt, 1/2-13 X 1 3/4 SHCS	Yes	No	106
G	Eyebolts	5/8 ID, 5/8-11 Thread, Various Lengths	No	No	**

* Hold square head while applying torque to jam nut. Hand tight plus 1/4 turn.
** Seat nut by tool plus 1/4 turn

9. LUBRICATION

Checklists of the standard bearings, motors, and gear reducers used in this machine model are below; refer to the Exploded Parts package and the Manufacturer Maintenance List if your machine specifications included custom components.

9A. Bearings Lubrication Schedule / Checklist

Refer to the table below for recommended lubrication intervals based on standard service conditions.

Run Time	Rotor Bearings (2)
8 hrs/day	12 weeks
16 hrs/day	12 weeks
24 hrs/day	10 weeks

For details of the standard service conditions and lubrication intervals for bearings in non-standard conditions, refer to the manufacturer manual list below.

QTY	SWEED #	Part Description	Manufacturer Manual
2	BX039321	Rotor Bearings	DODGE Mounted Ball Bearing Manual

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9B. Motor Checklist

QTY	SWEED #	Part Description	Manufacturer Manual
1	BX025424	50HP Motor	WWE Polyphase AC Induction Motors Install & OMM
1	BX033372	1HP Ram Motor	WWE Fractional Motors OMM

9C. Gear Reducer Checklist

QTY	SWEED #	Part Description	Manufacturer Manual
1	BX039325	15:1 Reducer	Dodge Torque-Arm II Speed Reducer Manual

10. BELT MAINTENANCE

Belts should be regularly inspected for wear, proper alignment, and that tension is within tolerance. Belt tensioning steps and specifications are below.
Details for the installation of new belts can be found in *Figure A12*.

10A. Belt Tensioning	
STEP 1	Ensure Pre-Chopper is electrically locked out prior to any repair or maintenance. Verify that rotor has come to a complete stop by looking through the drive belt guard at belt sheave.
STEP 2	Open the Drive Belt Guard by unscrewing the 3 bolts located on its top. See *Figure 2* for guard identification.
STEP 3	Check the belt tension using a belt tension gauge applied at the middle of the belt. Refer to *Figure A11*.
STEP 4	Verify that the measured tension is within the specifications outlined in *Figure 3* below. If the tension is out of spec, it can be adjusted using the following steps.
STEP 5	Loosen the 4 Motor Restraint Screws that attach the Motor Mount to the frame. See *Figure A13* for component identification.
STEP 6	Use the Jacking Bolts located on each side of the Motor Mount to adjust the Mount position and tension the belt.
STEP 7	Once the Mount is positioned to create the proper belt tension, retighten the Restraint Screws.
STEP 8	If a new belt is being installed, refer to the instructions in *Figure A12*.
STEP 9	Close and secure the Drive Belt Guard.

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PCR1048 PRE-CHOPPER 2/5VP850 BELT TENSION		
Tension	New Belt	Used Belt
Static Tension (per rib strand)	114 to 122 lbf	98 to 106 lbf
Static Belt Pull (total pull)	227 to 243 lbf	194 to 211 lbf
Rib/Strand Deflection Distance	0.41 in	0.41 in
Rib/Strand Deflection Force	7.9 to 8.4 lbf	6.9 to 7.4 lbf
Total Deflection Force (2 strands)	15.8 to 16.8 lbf	13.8 to 14.8 lbf
Sonic Tension Meter	506 to 543 N	434 to 470 N
Belt Frequency	36 to 37 Hz	33 to 34 Hz
Powerband Multiplier	1.0016 to 1.0017	1.0014 to 1.0015

Figure 3. Belt tensioning specs

11. KNIFE GAPS

11A. Break-In Period

SWEED requires all knife gaps be checked following the first 8 hours of operation to ensure correct and efficient cutting.
Failure to do so may cause harm to the machine.
This break-in period resets whenever the knives are replaced.

11B. Checking Knife Gaps	
STEP 1	Follow steps in Section 7A to open the Hood.
STEP 2	Using extreme caution, rotate the Rotor slowly by hand and check the gap between the Rotating Knives and the Stationary Knives using a feeler gauge. **At room temperature, knife gap should be 0.002”-0.015”.** During rotation, ensure hands never touch the cutting surfaces; even a slowly rotating Rotor can cause serious harm.
STEP 3	If gaps are outside of specification, visually inspect the knives to ensure they do not require rotation or replacement, then refer to Section 11C to adjust the knife gaps. Note that only the positions of the Stationary Knives are adjustable on this machine. Therefore it is critical to check the gap between a single Stationary Knife and many of its mating Rotating Knives to ensure that a gap is not out of spec due to a worn Rotating Knife.

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11C. Adjusting the Knife Gaps	
STEP 1	Remove and discard the four Stationary Knife Bolts from the knife that requires adjustment. Then install new bolts and tighten so the knife is snug but its position can still be adjusted (about 12 ft-lbs). (Skip this step if the stationary knife was just replaced.)
STEP 2	Use the jacking bolts to move the Stationary Knife to the correct location. Start from one end of the knife and work to the other end. Jacking Bolts are identified in *Figure A8*.
STEP 3	Once knife is properly positioned, tighten the Stationary Knife Bolts to the torque value specified in Section 8B.
STEP 4	Recheck all gaps to ensure torque process did not change gaps. If all gaps are within specification, tighten all the Jacking Bolt jam nuts according to the specification in Section 8B.
STEP 5	Follow the steps in Section 7B to close the Hood.

12. ROTATING KNIVES

12A. Knife Wear

The Rotating Knives are manufactured with 4 cutting points to maximize their life; this should allow for the knife to be rotated 90 degrees 3 times before replacement.

However, depending on the material being cut and the length of knife service, the knife edges might become too worn for effective cutting. In this case, the knife should only be rotated 180 degrees once to expose both new knife edges and a new knife point prior to replacement. As a rule of thumb, if more than half of each exposed knife edge is worn, the knife should be rotated 180 degrees rather than 90.

Visual inspection of the current cutting edge determines when the Rotating Knives should be rotated or replaced; if the edge appears dull or is chipped, it is time to rotate or replace the knife. An out of spec knife gap between a single Rotating Knife and the Stationary Knife is also an indicator that the Rotating Knife edge should be switched.

It is not unusual for the Rotating Knives to wear at different rates, so gap checking and inspection of the cutting edges of all knives should be a regular maintenance task.

12B. Knife Bolts

SWEED recommends using new Knife Bolts whenever a Rotating Knife is removed from the Pre-Chopper to be sharpened. Refer to Section 8B for bolt specifications.

The Bolt Break-In period resets whenever a knife is installed and the Knife Bolts are torqued. See Section 8A.

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12C. Replacing the Rotating Knives	
STEP 1	Follow steps in Section 7A to open the Hood.
STEP 2	Remove the cap screw and lock washer that holds the Rotating Knife in place, then remove the knife (see *Figure A8* for component identification). Do not remove the screw without also removing the knife.
STEP 3	Thoroughly clean the knife bed area with compressed air to ensure no debris is present. Debris can prevent correct seating of knives and cause gapping issues.
STEP 4	Rotate the knife 90° to a new cutting edge (if available) or replace the knife.
STEP 5	Install a new split lock washer and Rotating Knive Bolt lubricated with copper-based anti-seize. Then tool tighten so that the knife is snug but its position is still adjustable (torque to about 12 ft-lbs).
STEP 6	Using a large brass punch and hammer, align the brass punch on each exposed face of the Rotating Knife and apply 2-3 hammer hits to ensure knife is fully seated.
STEP 7	Apply final torque to cap screw as specified in Section 8B.
STEP 8	Repeat previous steps to replace Rotating Knives as needed.
STEP 9	Check that the gaps between the replaced Rotating Knives and the Stationary Knives are within spec (see Section 11B).

13. STATIONARY KNIVES

13A. Knife Bolts

SWEED recommends using new Knife Bolts whenever the Stationary Knife is flipped or sharpened. Refer to Section 8B and *Figure A8* for bolt specifications and identification.

Additionally, adjusting the knife gaps requires the Stationary Knife Bolts to be loosened; SWEED recommends replacing these bolts whenever the knife gaps require adjustment, unless they were just replaced from the installation of a new Stationary Knife (refer to Step 1 of Section 11C).

The Bolt Break-In period resets whenever a knife is flipped or sharpened. See Section 8A.

13B. Sharpening the Stationary Knives

Stationary knives can be flipped upside down once to expose a new knife edge prior to re-grind. Both sides of the stationary knife can be re-ground after the knife has been flipped.

13Bi. Grind the edge profile specified in *Figure 4* below. Remove just enough material to create a sharp edge. Excess grinding will decrease knife life. Alternate cutting angles or geometry will cause damage to the Pre-Chopper.

13Bii. Ensure that knife edge meets the required minimum thickness requirement after grinding (see *Figure 4*). If not, a new knife is required.

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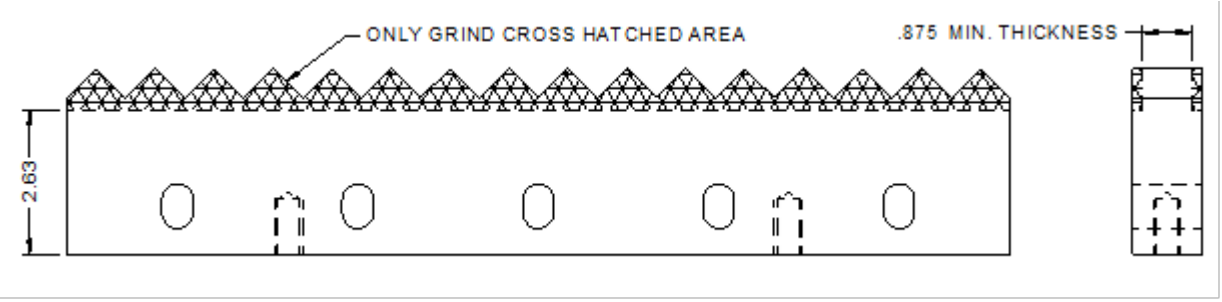


Figure 4. Rotating Knife Sharpening Profile Specifications

13C. Replacing the Stationary Knives	
STEP 1	Follow steps in Section 7A to open the Hood.
STEP 2	Remove the Pull Jacking Bolts from the rear of the Stationary Knife. Loosen the Push Jacking Bolts and the Side Jacking Bolts if necessary. Refer to *Figure A8* for bolt identification.
STEP 3	Remove the five Stationary Knife Bolts, then remove the knife.
STEP 4	Thoroughly clean the knife bed area with compressed air to ensure no debris is present. Debris can prevent correct seating of knives and cause gapping issues.
STEP 5	Position newly sharpened (or flipped) Stationary Knife on the knife bed, then screw in the Pull Jacking Bolts to hold it in place. Ensure that the jam nuts allow space for positional adjustment.
STEP 6	Install new Stationary Knife Bolts lubricated with copper-based anti-seize and tool tighten so that the knife is snug but its position is still adjustable (torque to about 12 ft-lbs). This will allow the proper knife gap to be set.
STEP 7	Follow the steps in Section 11C to set the knife gaps and finalize knife installation.

14. ROTATING KNIFE HOLDERS

Although less common than knife wear, the Rotating Knife Holders can be worn or damaged through normal Pre-Chopper use. A Holder should be replaced whenever it is chipped or otherwise damaged and no longer provides a flat and even-edged support surface for the knife. Running the Pre-Chopper with damaged Rotating Knife Holders will cause the Rotating Knives to wear at a much faster rate and can damage the machine. SWEED recommends using new Holder Bolts whenever the Knife Holder is replaced. Refer to Section 8B and *Figure A8* for bolt specifications and identification.

14A. Replacing the Rotating Knife Holders	
STEP 1	Follow Steps 1-2 in Section 12C to remove the Rotating Knife from the damaged Holder.
STEP 2	Cut the welds that connect the Holder to the Rotor.

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STEP 3	Remove and discard the 1/2” socket head bolt that fastens the Holder to the Rotor. See *Figure A8* for bolt identification.
STEP 4	Thoroughly clean the knife holder pocket. Any debris could prevent proper seating of the Holder.
STEP 5	Position the new Holder into the pocket and install a new socket head bolt coated in a medium-strength thread locker; refer to Section 8B for bolt specifications. Tighten the bolt until snug.
STEP 6	Using a large brass punch and hammer, align the brass punch with each flat side of the Holder and apply 2-3 hammer hits to ensure the Holder is fully seated.
STEP 7	Torque the Holder Bolt to the value specified in Section 8B.
STEP 8	Tack weld the Holder to the Rotor where the side of the Holder meets the outer diameter of the Rotor (see *Figure A14* and *Figure A15*). Use a low hydrogen electrode such as ER80S-B2 or similar.
STEP 9	Follow Steps 3-9 of Section 12C to install the Rotating Knife into the replaced Holder.
STEP 10	Inspect tack welds for cracks 24 hours after welding.

15. SCREENS

SWEED Pre-Chopper screens are available in discreet sizes; if the equipment configuration includes directly preceding or subsequent machines in a material processing system, the screen size has been selected to optimize the system throughput. If the system is intended to process a variety of materials, different sizes of screens are provided for the different material applications. Consult SWEED for information on optimization and different screen sizes. Refer to Section 15C below or the Spare Parts document for a list of standard screen part numbers that fit your machine. Custom screens are available upon request. Different screen sizes should be switched out as needed for different material processing applications.

Screens will slowly wear out over time, which will allow oversized material pieces to pass through. Screens should be periodically inspected for wear and replaced as needed.

15A. Removing the Screen	
STEP 1	Ensure Pre-Chopper is electrically locked out prior to any repair or maintenance. Verify that rotor has come to a complete stop by looking through the drive belt guard at belt sheave.
STEP 2	Unhook and remove the Front Access Door latches of the Pre-Chopper. Then remove the Door
STEP 3	Loosen the four Screen Eyebolts that hold the Carriage in place.
STEP 4	Standing at the front hydraulic station, position the Screen Hand Pump Switch to the Open position. See *Figure A4* for Pump location. Refer to labels located on the Pump for identification of Switch Open position.

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STEP 5	Apply a few hand pumps to the system to start opening the Screen Carriage. If the Carriage does not open it may be necessary to clean some lodged material in the cutting chamber side walls. (Do not place hands between Carriage and Screen as pinching may occur.)
STEP 6	Continue to hand pump the hydraulic cylinders until the Screen Carriage is fully open. See *Figure A17*.
STEP 7	Move the Pump Switch back to the Neutral position to prevent bleeder valve from leaking while not actively pumping. Refer to *Figure A5* for identification of the Neutral position.
STEP 8	Remove the Screen from the Carriage by rotating while pulling the screen out. Refer to *Figure A19*.

15B. Installing the Screen	
STEP 1	Ensure all mating surfaces, prior to new screens being applied, are free from material and items that will cause jamming.
STEP 2	Slide the first Screen onto the Screen Carriage as shown in *Figure A19*, ensuring the Screen seats fully and correctly on the Carriage (refer to *Figure A18*).
STEP 3	Push the Screen Hand Pump Switch to the Close position.
STEP 4	Actuate the Hand Pump to begin closing the Screen Carriage. Ensure no material falls onto the mating surfaces. Ensure the Carriage Eyebolts are out of the way and will not impede Carriage closing.
STEP 5	Continue pumping until the Carriage is fully closed. If Carriage and Screens do not seat fully in the closed position, the Eyebolts will not be able to reach far enough to hold the Carriage in place. In this case, it may be necessary to re-open the Carriage and look for material that may be causing binding.
STEP 6	Move the Pump Switch back to the Neutral position to prevent bleeder valve from leaking while not actively pumping. Refer to *Figure A5* for identification of the Neutral position.
STEP 7	Slide the Eyebolts into the slots in the Carriage to hold it in place. See *Figure A17*.
STEP 8	Snug the Eyebolt nuts, ensuring that the Carriage remains level.
STEP 9	Tighten the Eyebolt nuts according to the specification in Section 8B.
STEP 10	Re-apply the Front Access Door and its latches.
STEP 11	Double check Front Access Door Sensor is still firmly secure and depressed (see *Figure A16* & *Figure A20*). If the door sensor is not properly depressed, the machine will not turn on.

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15C. List of Screen Sizes			
SWEED Part #	Rev	Description	Qty
CB047234		SCREEN, 1/2” HEX PCR1048	1
CB046078		SCREEN, 3/4” HEX PCR1048	1
CB045790		SCREEN, 1” HEX PCR1048	1
CB046079		SCREEN, 1 1/4” HEX PCR1048	1
CB046926		SCREEN, 1 1/2” HEX PCR1048	1

16. WEAR PLATES

The interior of the Pre-Chopper cutting chamber is equipped with replaceable Wear Plates to prevent scouring of the main structure by processed material. These Plates should be periodically inspected and replaced as needed. If the side Wear Plates become too worn, there could be a drop in material throughput as more material can pass between the ends of the knives and the Wear Plates.

SWEED recommends using new fasteners to affix the Wear Plates when they are replaced. Refer to the Exploded Part package for identification of the Wear Plates used in your Pre-Chopper model.

17. HYDRAULIC SYSTEM

This machine has two hand pump powered hydraulic circuits which only cycle when maintenance is performed on the Pre-Chopper. One operates the cylinder to open and close the Hood, and the other operates the two cylinders that open and close the Screen Carriage.

There is also an electrically powered circuit which controls the hydraulic ram. Key components of this circuit are a pump, a relief valve, and a solenoid-operated directional control valve.

17A. Hydraulic Oil

17Ai. All circuits require ISO 32 hydraulic oil.

17Aii. SWEED recommends the use of Chevron Rando HD oil in this equipment.

17B. Ram Circuit Hydraulic Specifications

17Bi. Recommended relief valve setting: 1200psi

17Bii. 1500psi maximum circuit pressure

18. CLEARING JAMS

Jams should only be cleared when the machine is fully locked out and all moving parts are motionless. Ensure that no material will be fed to the machine during maintenance.

Jams most commonly occur at the machine’s Rotor, and are often caused by unsuitable materials being fed into the Pre-Chopper (refer to SPECS manual for details on approved materials). Details on how to clear jams from the Rotor are in Section 18A below.

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Jams can also occur between the bottom of the hydraulic Ram and the Ram Housing; these are easiest to clear by removing the Ram Guard to access the underside of the Ram (refer to *Figure A21*).
For jams that occur while opening/closing the Hood or replacing the Screen, please refer to Sections 7 and 15.

18A. Rotor Jams	
STEP 1	Follow the steps described in Sections 7A to open the Hood.
STEP 2	Attempt to clear the jam. The Rotor can be manually rotated back and forth to assist in this. Ensure hands never touch the cutting surfaces during rotation; even a slowly rotating Rotor can cause serious harm.
STEP 3	If unable to clear the jam from above, follow the steps in Section 15A to remove the screen and access the Rotor from below.
STEP 4	Verify Rotor is no longer impeded by manually rotating it a few times before following the steps in Sections 7B and 15B to close the Hood and the screen carriage (if applicable).

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APPENDICES

19. APPENDIX A: MAINTENANCE FIGURES

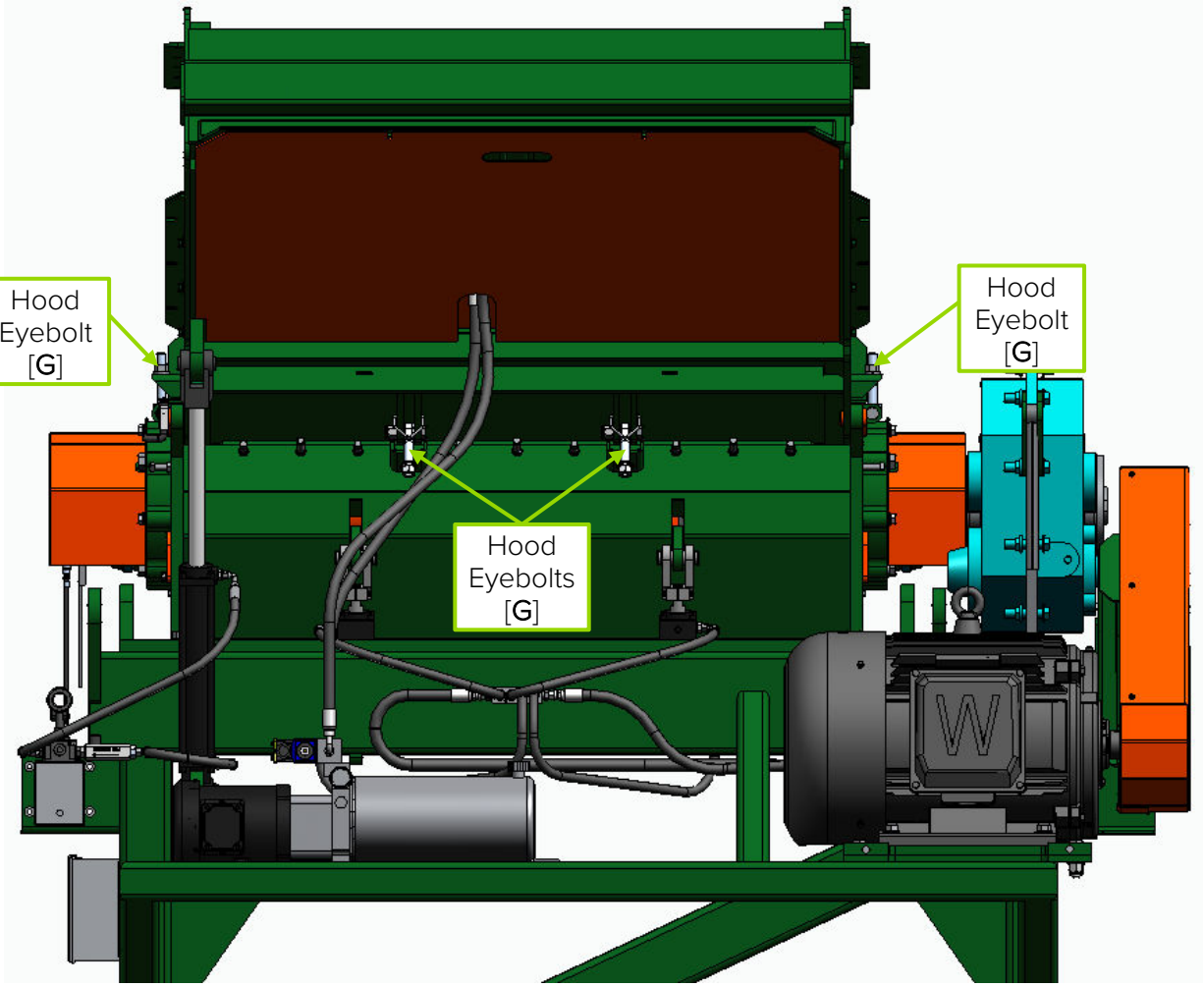


Figure A1. Key components to open hood

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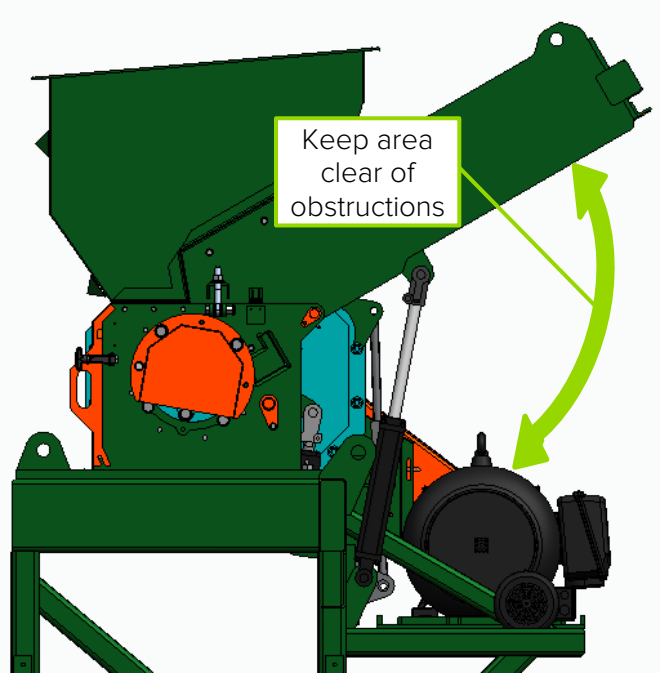


Figure A2. Hood opening clearance

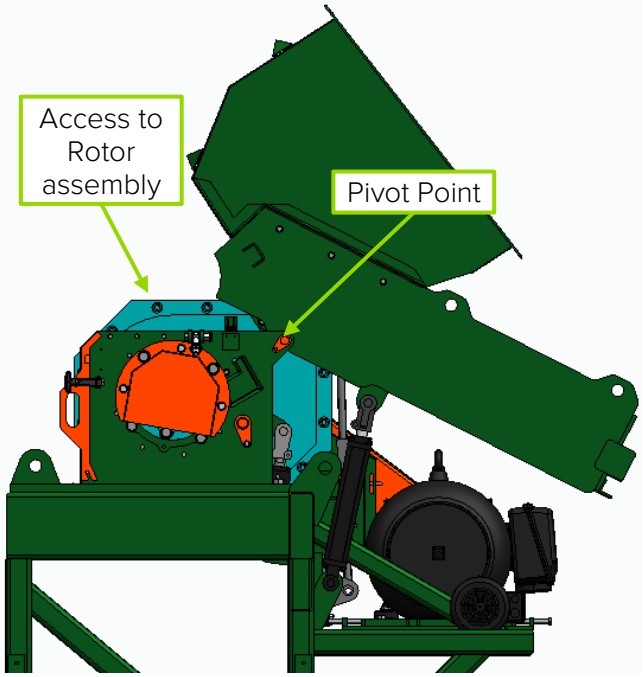


Figure A3. Hood opened

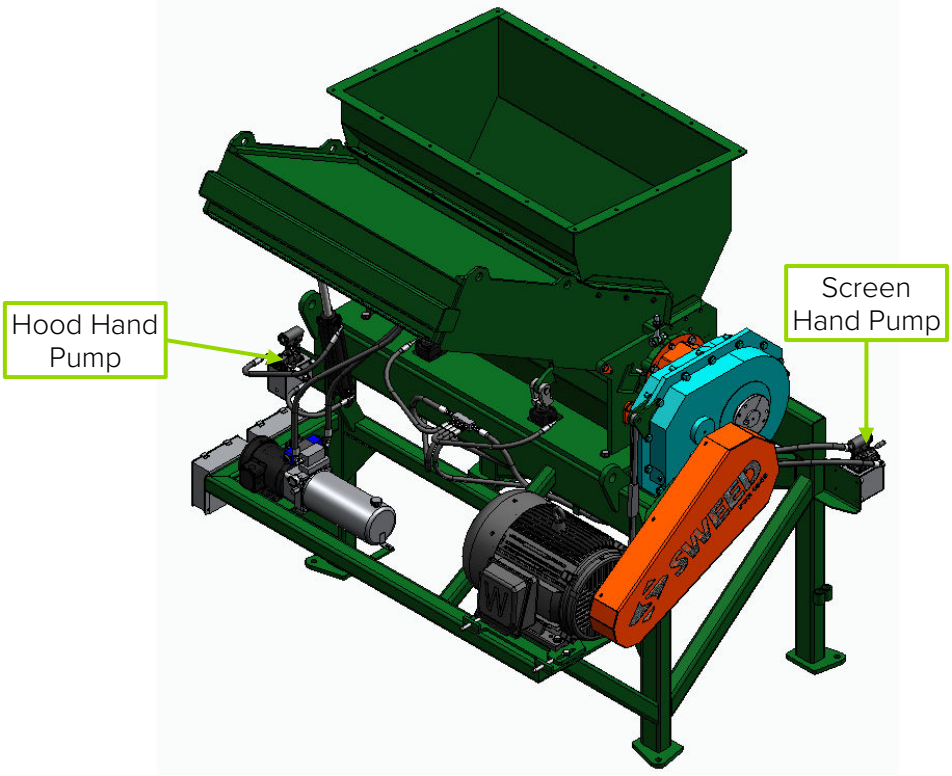


Figure A4. Hydraulic Hand Pumps

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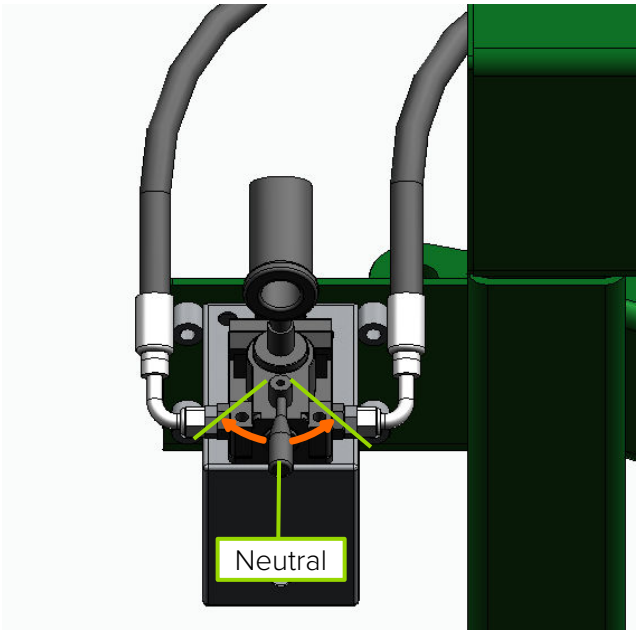


Figure A5. Hand Pump Switch positions
(refer to Pump labels to identify Open and Close positions)

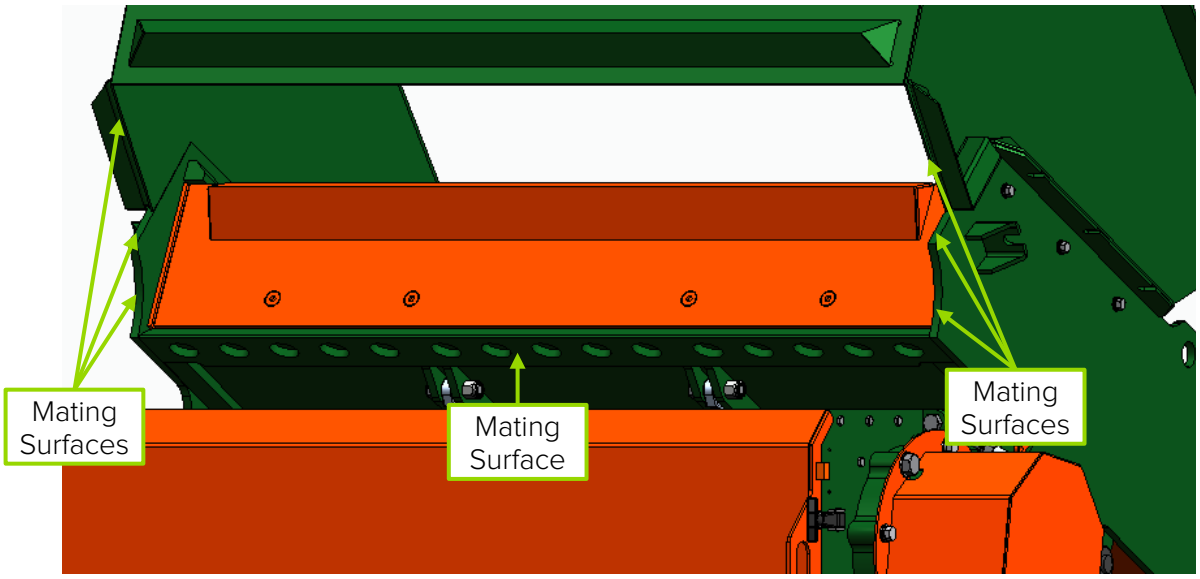


Figure A6. Hood mating surfaces

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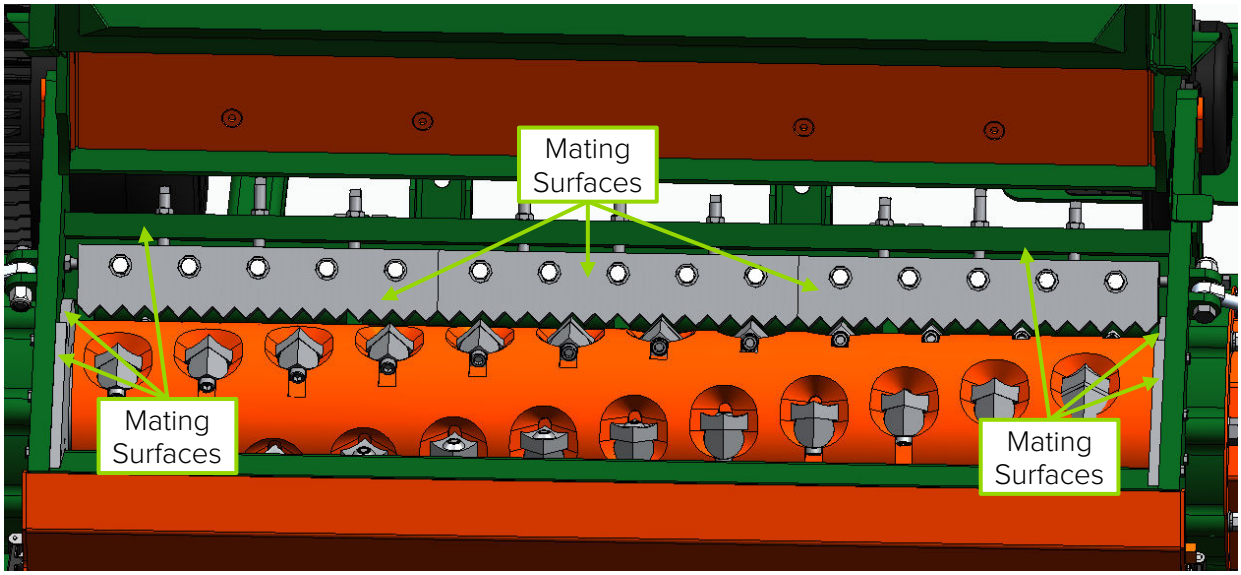


Figure A7. Body mating surfaces

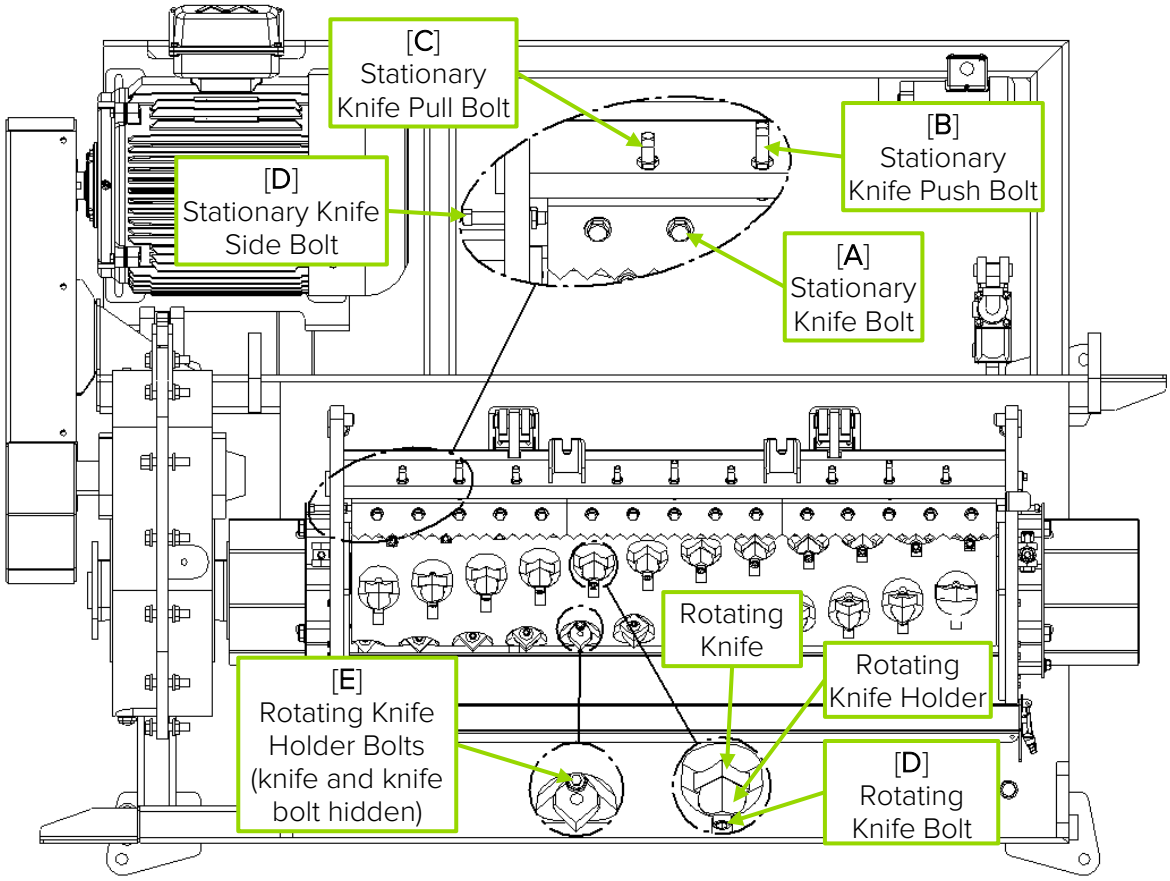


Figure A8. Critical Fastener locations. Ram and Hood hidden for clarity.

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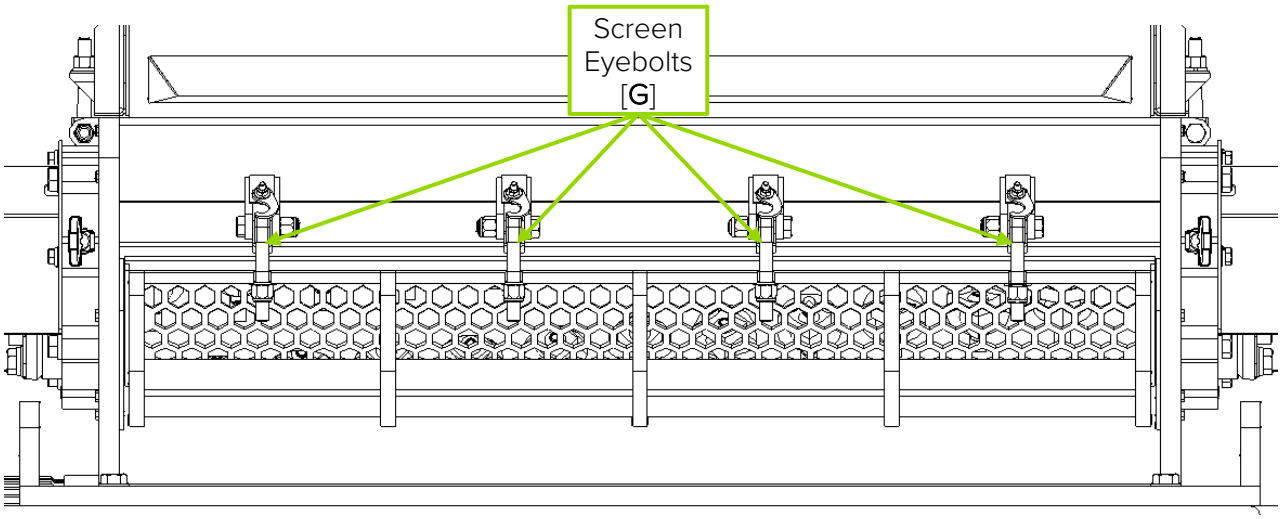


Figure A9. Screen Eyebolts. Front Access Door hidden for clarity.

SPECIALTY TOOLS FOR KNIFE REPLACEMENTS AND GAP ADJUSTMENTS	
Tool	Use
10mm Allen Socket X 1/2" Drive	Rotating Knife Bolts [**B**]
3/8" Allen Socket X 1/2" Drive	Rotating Knife Holder Bolts [**C**]
1/2" Torque Wrench (min 120 ft-lb rated)	Torquing Stationary Knife Bolts and Rotating Knife and Knife Holder Bolts
Feeler Gauge Set 0.001-0.020"	Checking gap between knives

Figure A10. Table detailing unusual tools required for machine maintenance

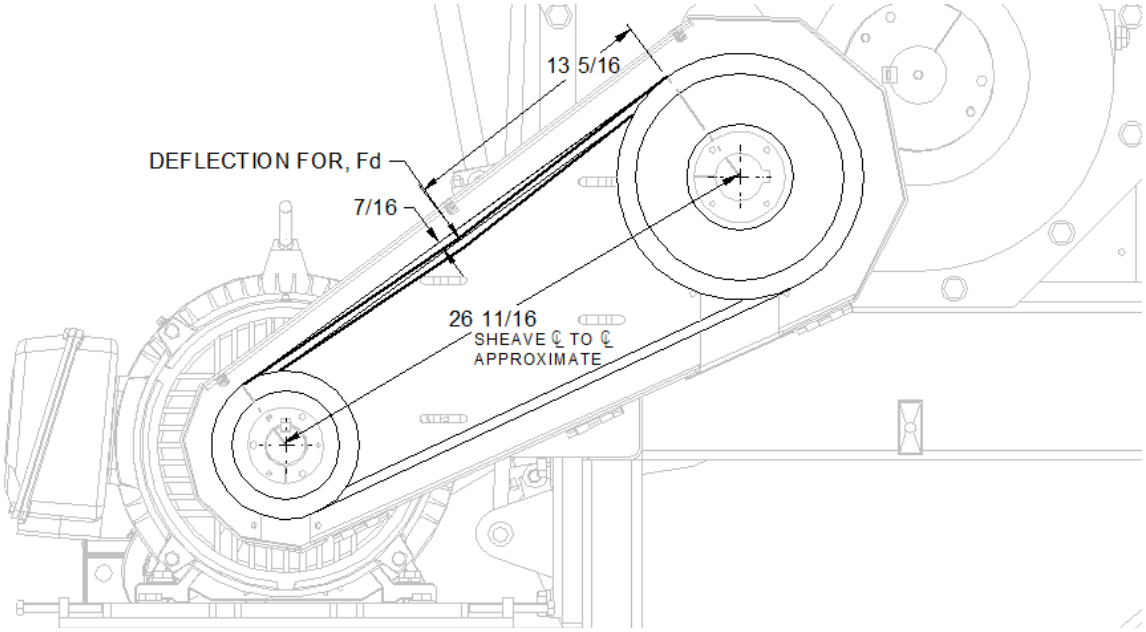


Figure A11. Belt tensioning diagram

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Belt Tensioning Instructions:
Always use a belt tension gauge that indicates static tension to determine proper belt tightening specification. Deflection forces specified are for Sweed PCR1048 50HP Pre-Chopper using 2/5VP 850 Gates PowerBand® Belt.
If multiple belts are being used for the drive, divide tension by number of belts to give per belt tension to be measured.

Step 1: Position belt and set tension to the prescribed Installation Tension.
Step 2: Run belt for five minutes.
Step 3: If belt tension drops below Suggested Tension range, retighten belt to Installation Tension.
This will allow the belt to seat-in and run at Suggested Tension after it has operated under normal driving conditions.

Figure A12. New belt tensioning instructions

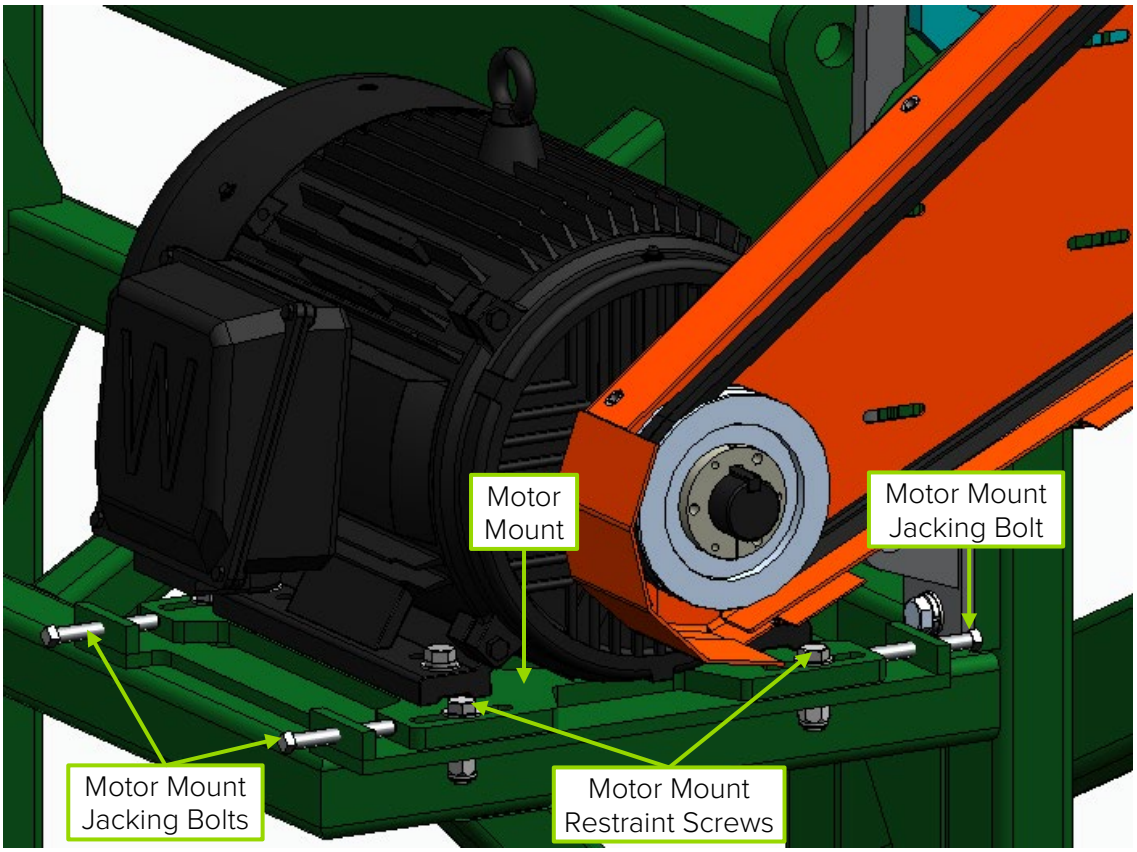


Figure A13. Motor mount components

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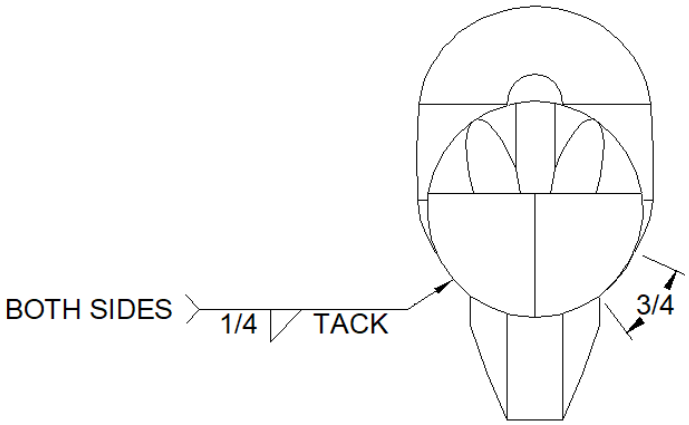


Figure A14. Rotating Knife Holder Welds Top View

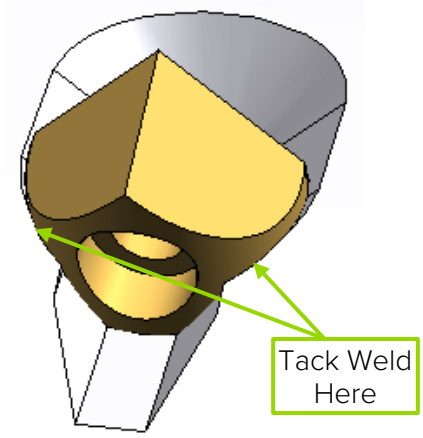


Figure A15. Rotating Knife Holder Welds ISO View

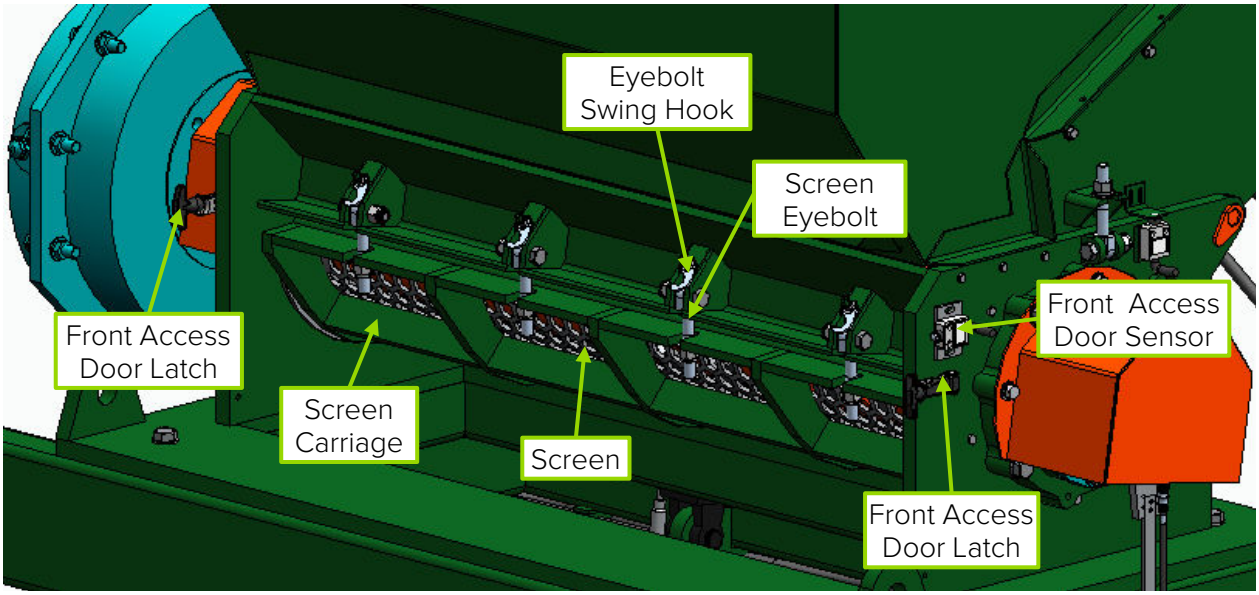


Figure A16. Front Access components.
Front Access Door hidden for clarity.

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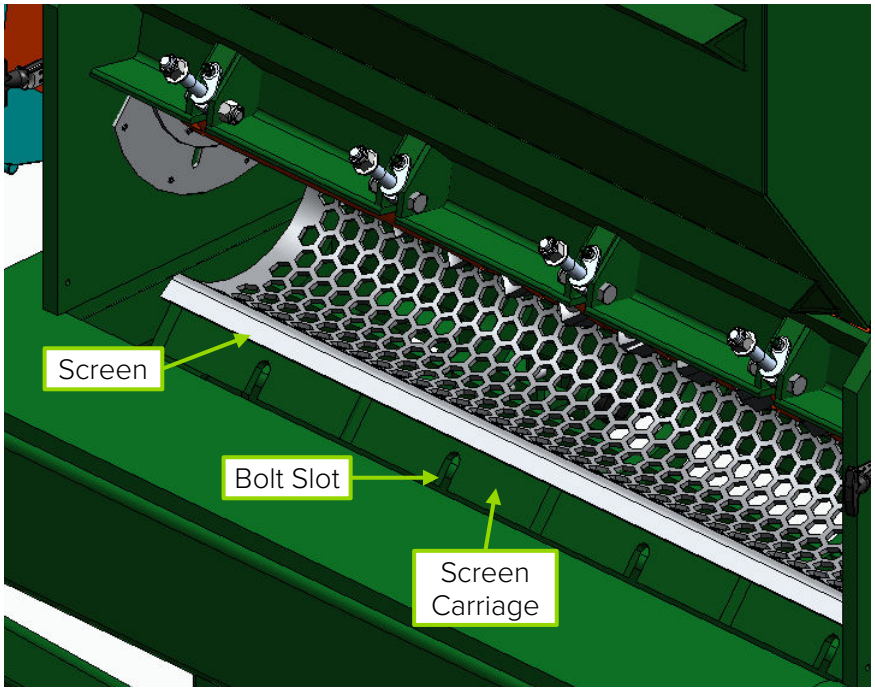


Figure A17. Screen Carriage in open position

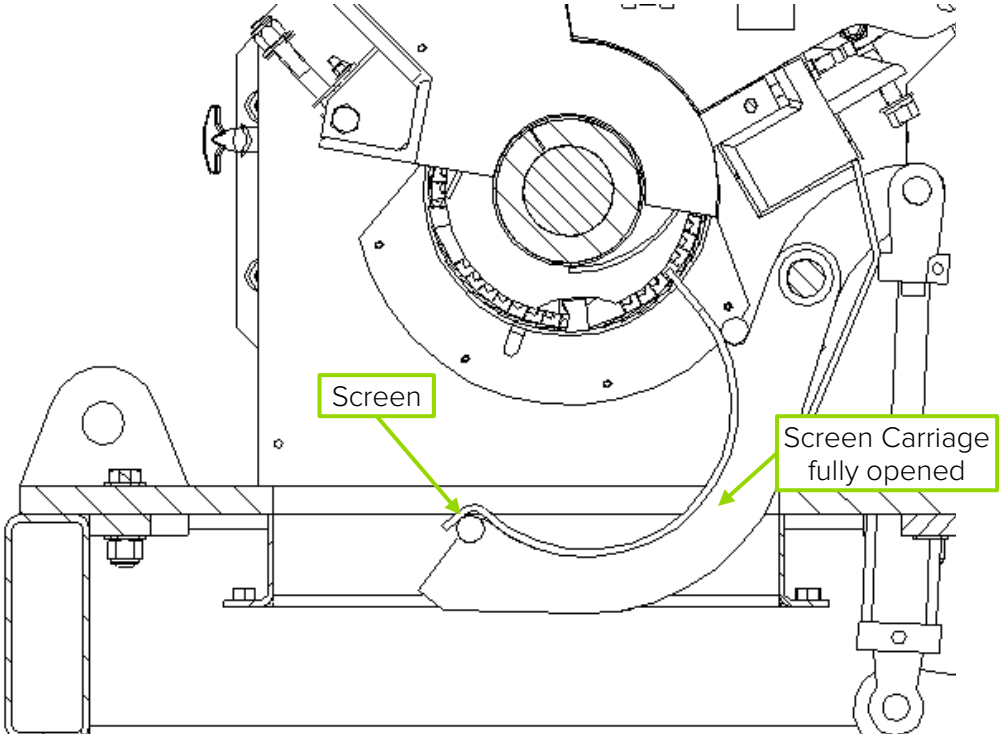


Figure A18. Screen Carriage in open position with Screen in place. Cross-sectional side view shown for clarity.

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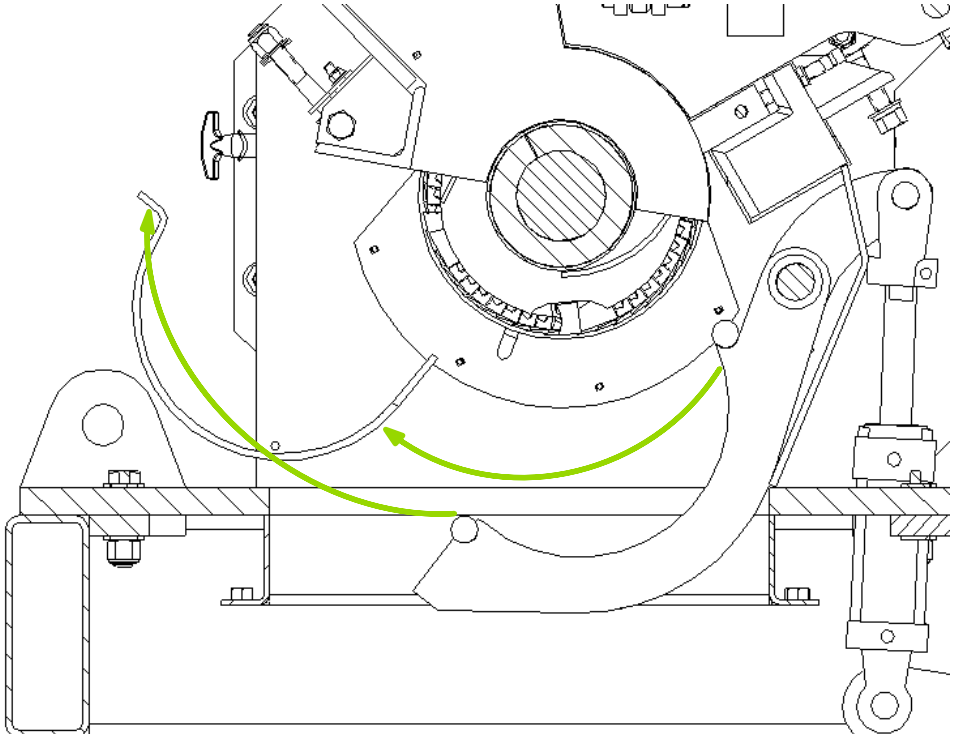


Figure A19. Screen Carriage in open position with Screen removed. Cross-sectional side view shown for clarity.

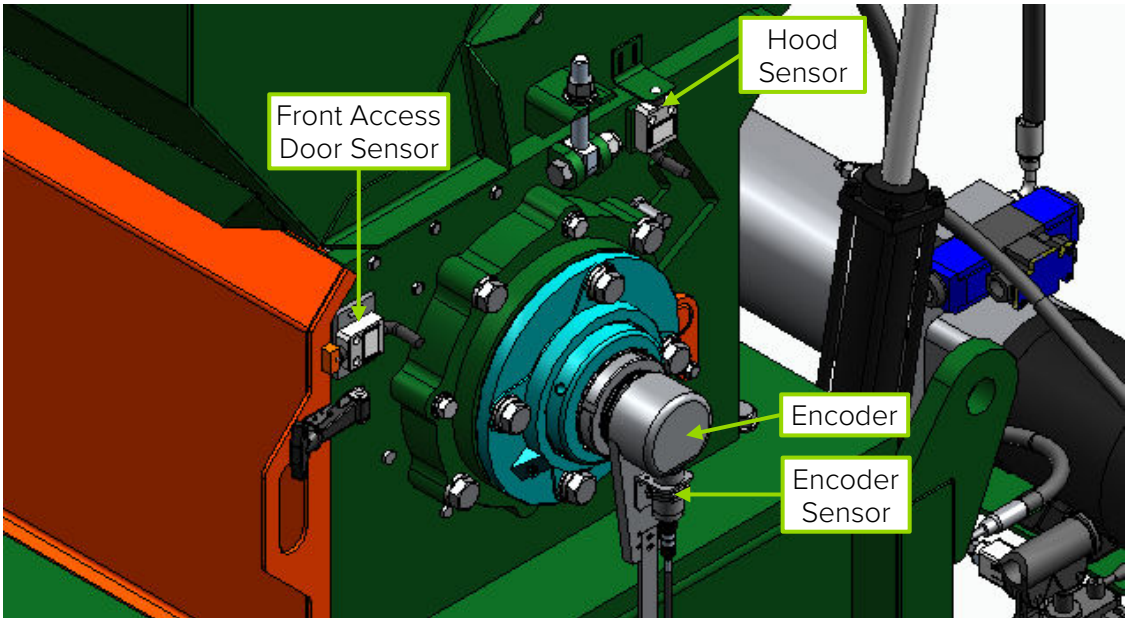


Figure A20. Sensor identification. Bearing Cover hidden for clarity.

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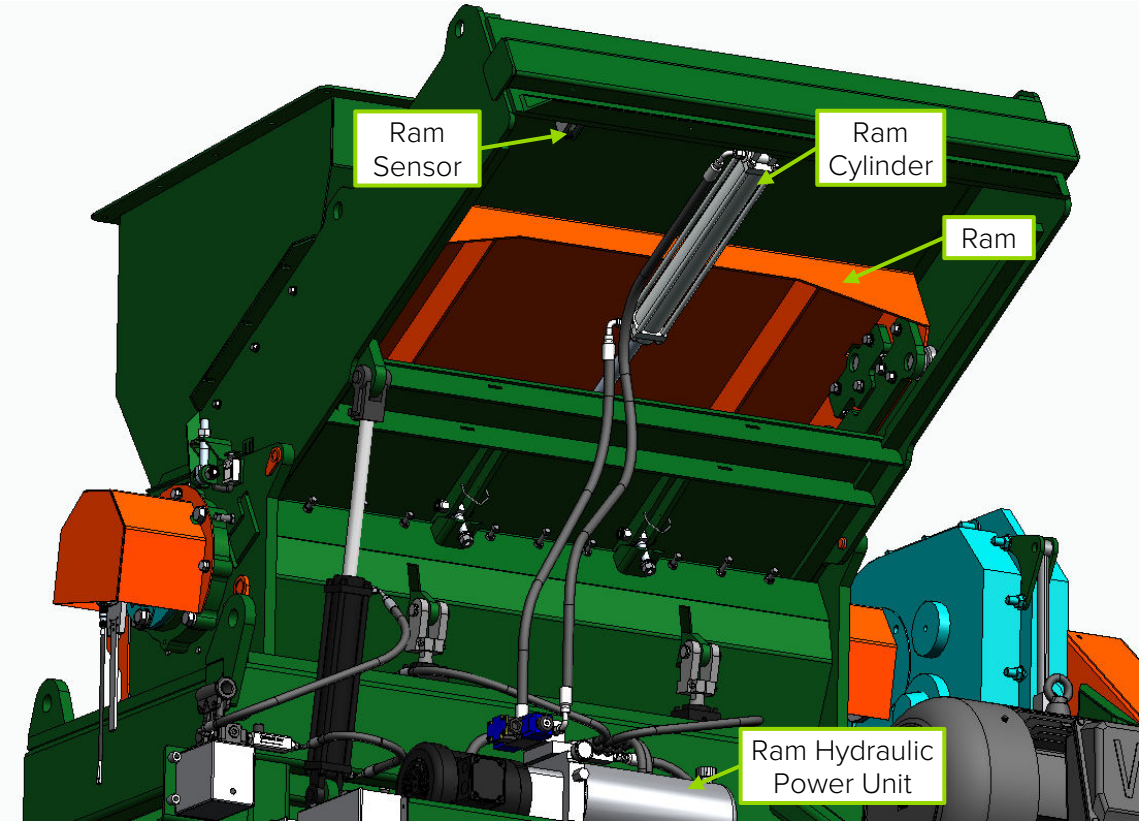
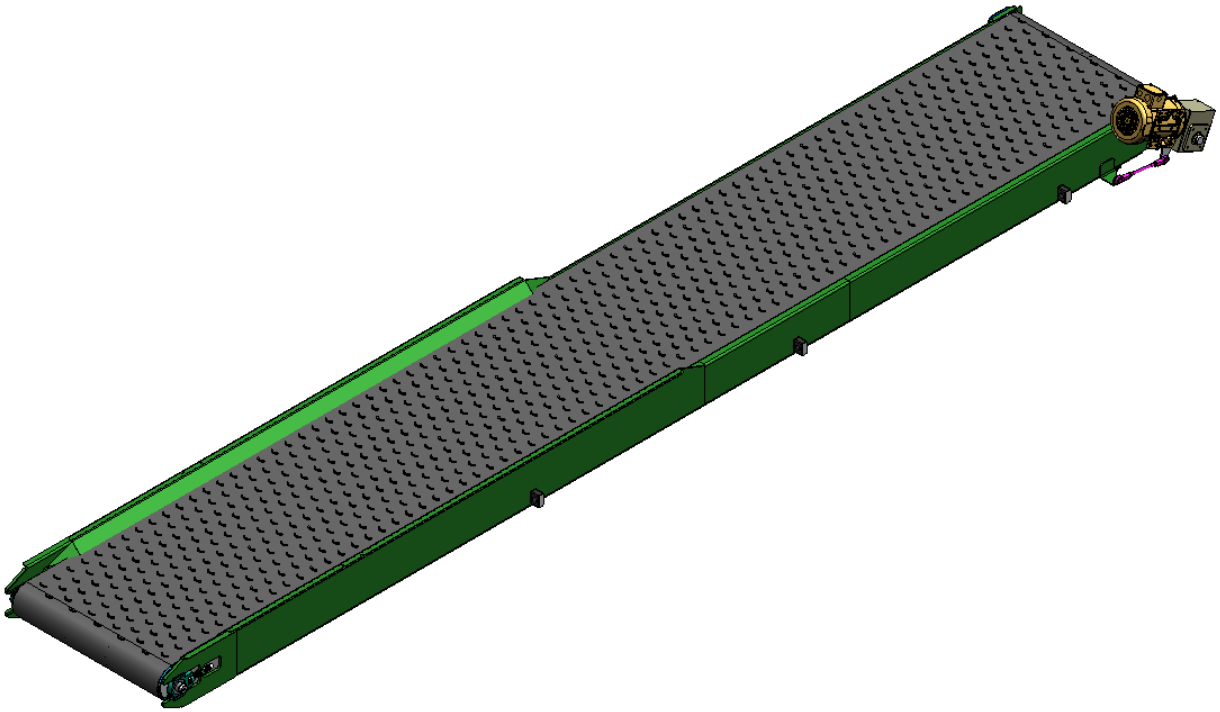


Figure A21. Hydraulic Ram Components
Ram Guard hidden for clarity.

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MODEL: SLIDE BELT CONVEYOR



*Pictures may not reflect exact layout received as additional customizations may be added per customer or system requirements.

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Revision	Date	Written By	Reviewed By
3	05/28/2025	JNR	RJW

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SAFETY & OPERATIONS

1. SCOPE

This manual covers specific information about the operation and maintenance of SWEED Slide Belt Conveyors. It does not contain general safety and maintenance requirements, which are in the Introduction chapter, or specific operation steps, which are in the Equipment Configuration chapter.

Note that instructions and figures within this chapter are generalized for all Slide Belt Conveyor configurations. Although the models differ in angle, strength, and length, their functions serve a similar purpose and common preventative maintenance. Additionally, the coloration of equipment is intended to create distinction between parts, and may not reflect reality.

2. INTENDED USE

2A. Functionality

This machine is designed to convey material up/along its length and deposit it at the next piece of equipment or storage container. Refer to the Equipment Configuration chapter for details of the machine's place in the material process flow.

If the machine is equipped with wing pulleys, any material caught between the pulley and the belt will be cleaned out as the belt rotates, minimizing the need for removal of built-up material.

If the machine is equipped with a magnetic head pulley, magnetic material will be held to the belt as it travels around the head pulley, then drop off into the Conveyor belly pan. Conveyors with magnetic head pulleys feature a gap in the belly pan for this collected magnetic material to exhaust out of the pan into a collection container.

2B. Standard Machine Sensors

Conveyors do not come with any standard sensors. If your machine customizations included sensors, refer to the Equipment Configuration chapter for details.

3. MACHINE-SPECIFIC SAFETY INSTRUCTIONS

- If loading material by hand, be cautious of overburdening the Conveyor and/or the next piece of equipment in the material process flow.
- Do not stand on or ride the Conveyor.

4. OPERATION

4A. Setup

See the Installation section of the Equipment Configuration chapter for installation instructions. Connect the machine to the appropriate voltage power source and integrate into controls system. See SPECS manual for power requirements.

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Jog the motor once to verify rotation is correct to convey material in the appropriate direction; verify belt direction using *Figure 1* below.

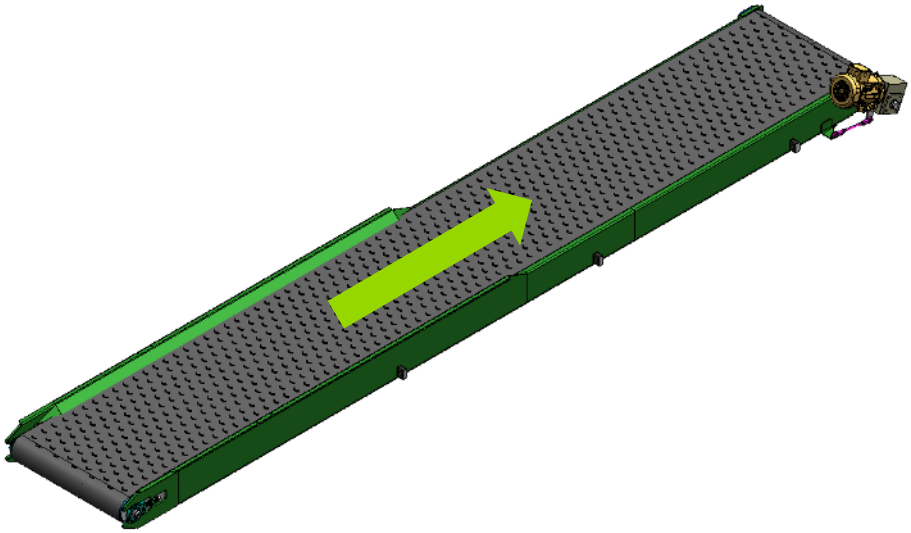


Figure 1. Correct belt rotation for material conveyance

4B. Starting Machine

Depending on the controls of the equipment configuration, it may not be possible to start the machine until other machines are operating. Refer to Equipment Configuration chapter for details on startup procedures.

4C. Stopping Machine

Refer to Equipment Configuration chapter for standard shut down procedures.

This machine typically does not include an E-stop mounted directly to it. Instead, E-stops are part of the larger equipment configuration (if controls are provided by SWEED), or should be integrated by the end user during installation; refer to Equipment Configuration chapter.

5. TROUBLESHOOTING

Possible Cause	Solution
5A. Conveyor belt stops moving	
Motor tripped	Reset motor
Belt is loose	Tighten belt
Belt is too tight	Loosen belt
Material jam	See Section 0

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MAINTENANCE

6. COMPONENT IDENTIFICATION

See *Figure 2* below to identify and locate key components referred to in the following sections.

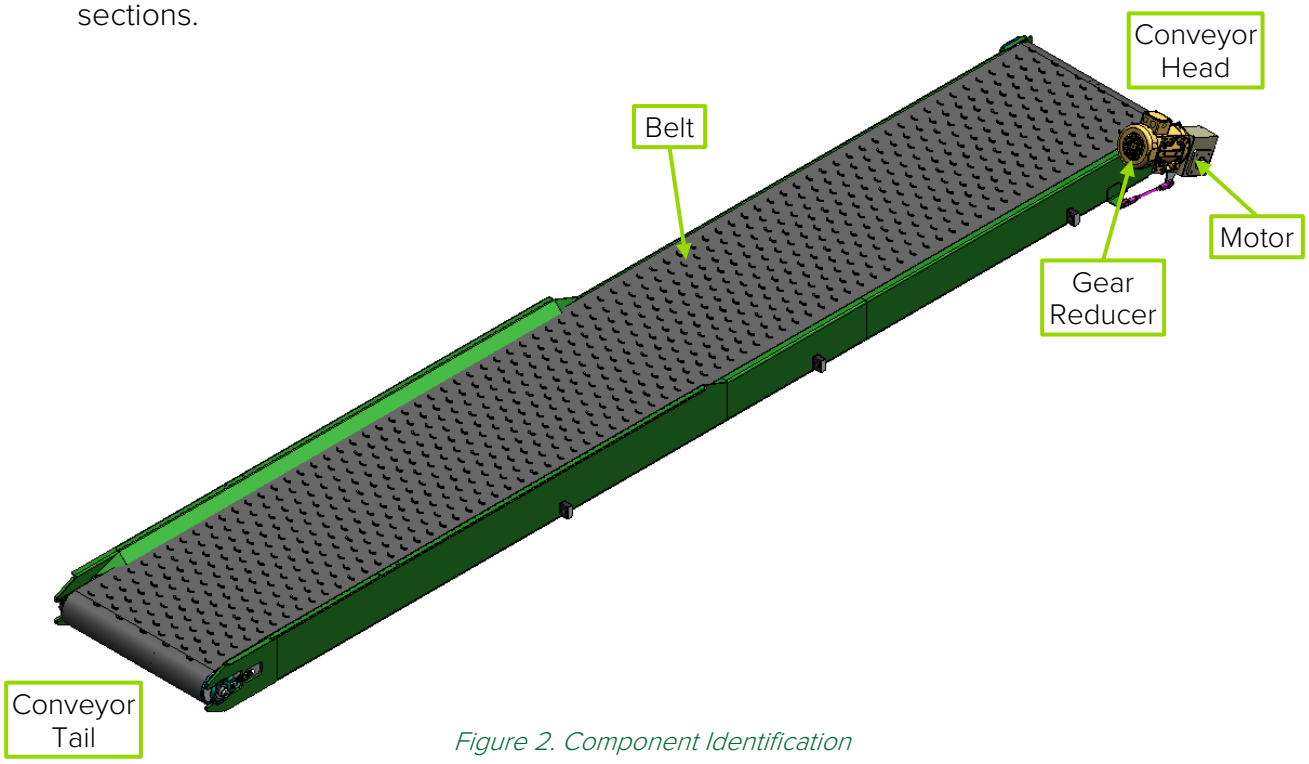


Figure 2. Component Identification

7. LUBRICATION

Checklists of the standard bearings, motors, and gear reducers used in this machine model are below; refer to the Exploded Parts package and the Manufacturer Maintenance List if your machine specifications included custom components.
Reference locations for the lubrication points of components can be found in *Figure A1* and *Figure A2*.

7A. Bearings Lubrication Schedule / Checklist

Refer to the table below for recommended lubrication intervals based on standard service conditions.

Run Time	Pulley Support Bearings (4)
8 hrs/day	12 weeks
16 hrs/day	12 weeks
24 hrs/day	10 weeks

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For details of the standard service conditions and lubrication intervals for bearings in non-standard conditions, refer to the manufacturer manual list below.

QTY	SWEED #	Part Description	Manufacturer Manual
4	See Exp Part Package	Pulley Support Bearings	Refer to Manufacturer Maintenance Manual List

7B. Motor Checklist

QTY	SWEED #	Part Description	Manufacturer Manual
1	See Exp Part Package	Drive Motor	Refer to Manufacturer Maintenance Manual List

7C. Gear Reducer Checklist

QTY	SWEED #	Part Description	Manufacturer Manual
1	See Exp Part Package	Reducer	Refer to Manufacturer Maintenance Manual List

8. BELT MAINTENANCE

8A. Break-in Period

Inspect and tighten conveyor belt (if necessary) after an initial break-in period of 8 hours.

8B. 60 Hours of Operation

Inspect and tighten (if necessary) conveyor belt every 60 hours of machine operation following initial break-in period. Belts will naturally stretch over time.

8C. Tightening Standard

Due to tread, thickness, and material, different conveyor belts will have different amounts of slack even when ideally tensioned. As a rule of thumb, belts should be just tight enough to rotate without slipping when conveying a full load of material. Belt binding, stopping, and slipping are good indicators that a belt is too loose. Avoid overtightening belts, as overtightening can increase wear throughout the machine.

8D. Tensioning

See *Figure A2* for identification of the Belt Tensioners. The Tensioners on both sides of the belt should be adjusted equally to ensure the pulley remains square to the frame. If there are Tensioners on both the Head and Tail of the Conveyor, it is ideal to adjust both the Head and Tail Tensioners so that neither pulley is at the end of its range.
Some Conveyors have a Pulley Jacking Bolt on one end (identified in *Figure A1*), which should not be used for tensioning. The only time it should be adjusted is if a collision or other incident causes the pulley to no longer be squarely aligned with the frame.

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9. CLEARING JAMS

Jams should only be cleared when the machine is fully locked out and all moving parts are motionless. Ensure that no material will be fed to the machine during maintenance.

While jams are unusual on Conveyors, if they do occur, the material is likely stuck between the belt and the conveyor belly pan or tail pulley. If necessary, the belt can be loosened to help remove the jammed material.

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APPENDICES

10. APPENDIX A: MAINTENANCE FIGURES

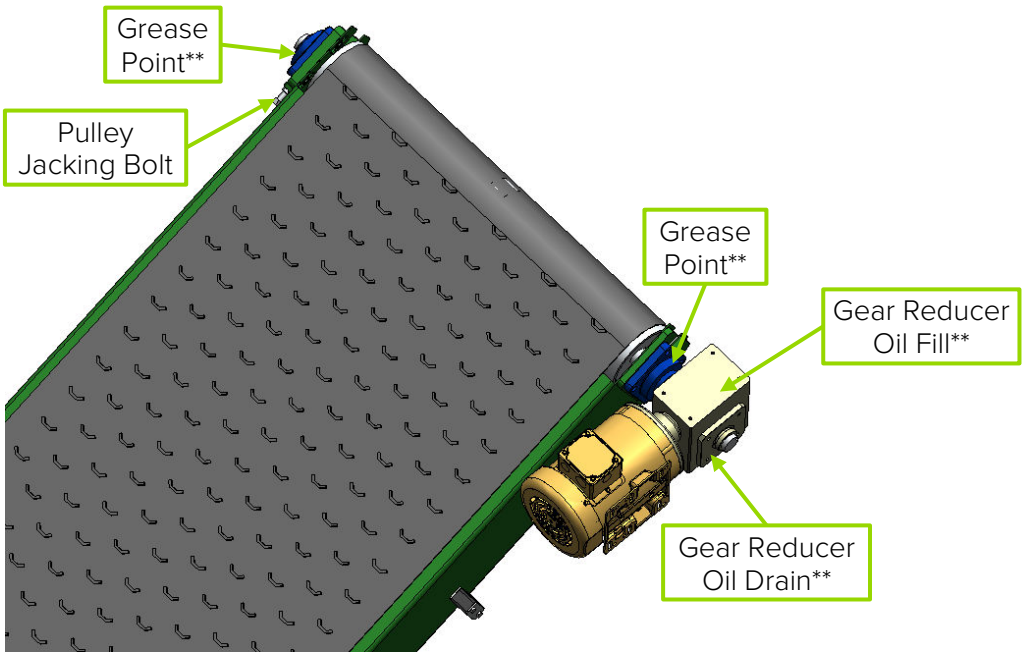


Figure A1. Example Head lubrication points

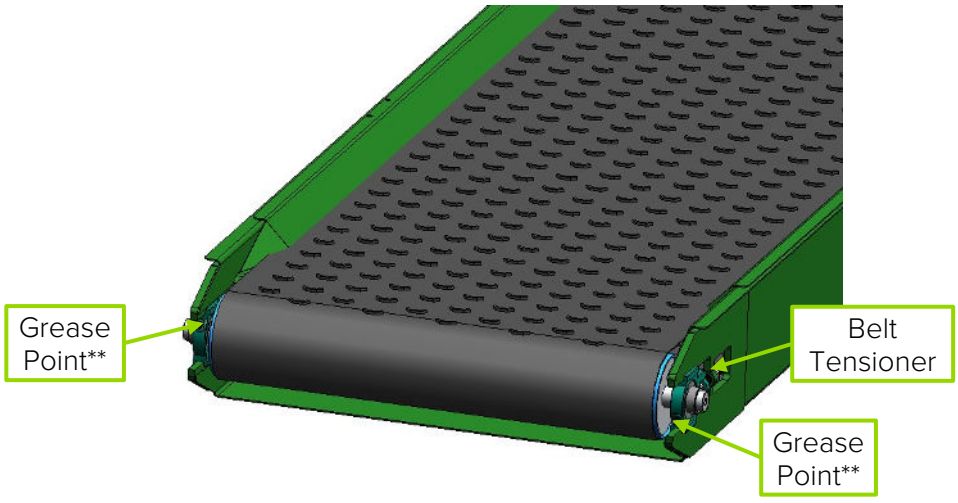


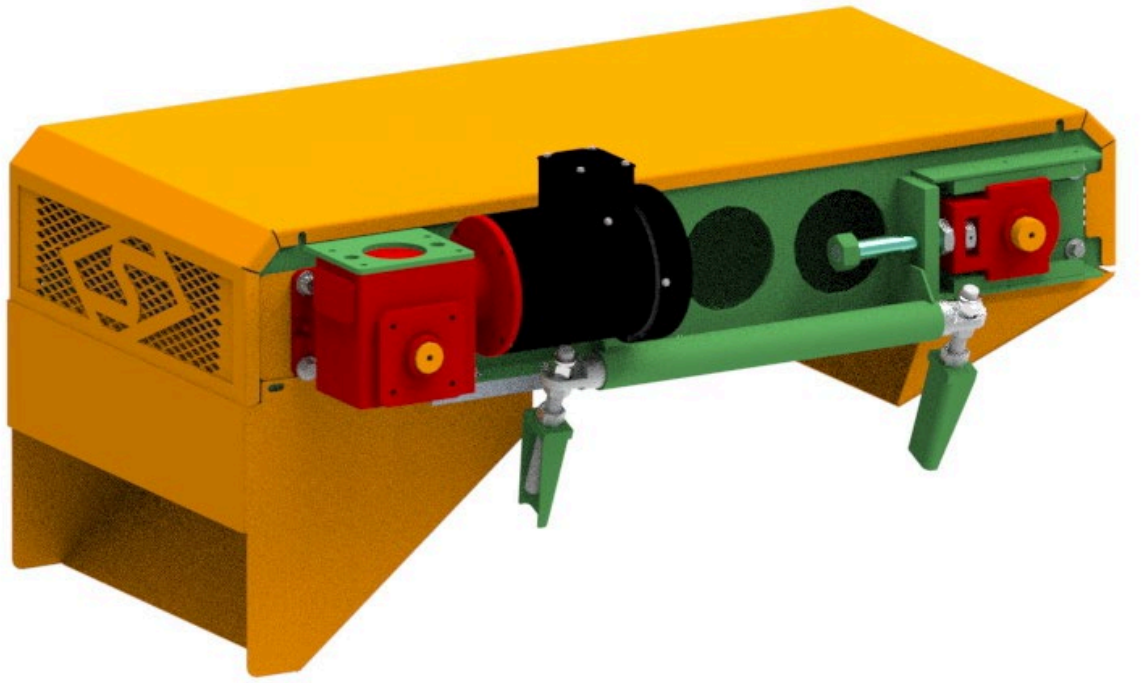
Figure A2. Example Tail lubrication points

**These are typical locations for the majority of the conveyor machines that have been commissioned to service. These lubrication (grease, fill, and drain) points may vary but will be in the general area of the components shown.

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MODEL: MAGNETIC CROSS BELT

(MCB)



*Pictures may not reflect exact layout received as additional customizations may be added per customer or system requirements.

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Revision	Date	Written By	Reviewed By
0	05/28/2025	JNR	RJW

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SAFETY & OPERATIONS

1. SCOPE

This manual covers specific information about the operation and maintenance of the SWEED Magnetic Cross Belt. It does not contain general safety and maintenance requirements, which are in the Introduction chapter, or specific operation steps, which are in the Equipment Configuration chapter.

Note that figures within this chapter are generalized for the Magnetic Cross Belt models 2042, 2026, 2030, 2860, and 2056. Although the models differ in size, their functions serve a similar purpose and common preventative maintenance. Additionally, the coloration of equipment is intended to create distinction between parts, and may not reflect reality.

2. INTENDED USE

2A. Functionality

This machine is designed to separate magnetic from nonmagnetic material during conveyance. It is intended to be oriented above a standard conveyor or a shaker table with its belt running perpendicular to the direction of material conveyance below it. Refer to the Equipment Configuration chapter for details of the machine's place in the material process flow.

2B. Standard Machine Sensors

The MCBs do not come with any standard sensors. If your machine customizations included sensors, refer to the Equipment Configuration chapter for details.

2C. Mounting

The MCB has specific mounting features designed to fit the conveyor or shaker table it is intended to attach to. Refer to the Installation section of the Equipment Configuration chapter for details.

3. MACHINE-SPECIFIC SAFETY INSTRUCTIONS

- WARNING: This machine features multiple magnets which create a strong magnetic field. Devices and objects that could be affected by this magnetic field should be kept away from the machine. Examples include cell phones, pacemakers, and magnetic jewelry.
- Extreme caution should be taken if the magnets are removed from the machine, as the attraction force between the magnets creates a pinch hazard. (Under normal use conditions, the magnets should never need to be removed or replaced.)

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4. OPERATION

4A. Setup

See the Installation section of the Equipment Configuration chapter for installation instructions. Connect the machine to the appropriate voltage power source and integrate into controls system. See SPECS manual for power requirements.
Jog the motor once to verify rotation is correct to convey material in the appropriate direction; verify belt direction using *Figure 1* below.

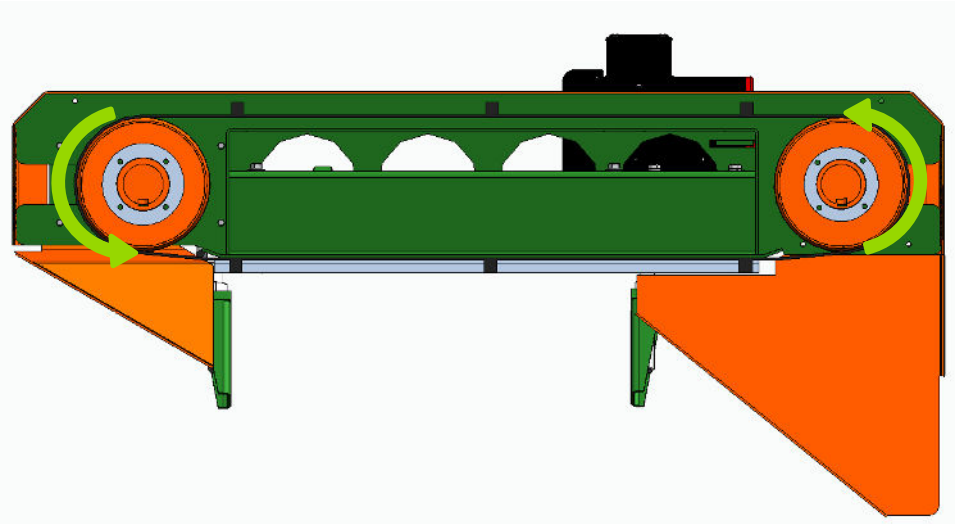


Figure 1. Correct rotation of belt for material conveyance. Cross sectional side view shown for clarity.

4B. Starting Machine

Depending on the controls of the equipment configuration, it may not be possible to start the machine until other machines are operating. Refer to Equipment Configuration chapter for details on startup procedures.

4C. Stopping Machine

Refer to Equipment Configuration chapter for standard shut down procedures.
This machine typically does not include an E-stop mounted directly to it. Instead, E-stops are part of the larger equipment configuration (if controls are provided by SWEED), or should be integrated by the end user during installation; refer to Equipment Configuration chapter.

4D. Adjusting Belt Distance from Conveyor

The MCB mounting is specifically designed for the machine's application in the equipment configuration. For fine adjustments there are jacking bolts and rotatable mount stubs to change the angle and distance between the MCB and the conveyor/shaker table.

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4E. Tips for Optimal Function

MCB should be set at the maximum distance from the conveyor/shaker table at which it can still pull magnetic material off the conveyance device. Using this maximum distance minimizes the amount of nonmagnetic material being carried off by the MCB. If the MCB is too close and the material on the conveyance device accumulates in piles, the cleats of the MCB belt may kick off material.

The angle of the MCB relative to horizontal should always be parallel with the conveyance device it sits above.

5. TROUBLESHOOTING

Possible Cause	Solution
5A. Belt stops moving	
Motor tripped	Reset motor
Belt is loose	Tighten belt
Belt is too tight	Loosen belt
Material jam	See Section 9
5B. Not all magnetic material being pulled off conveyor/shaker table	
Magnetic belt too far from material	Adjust the belt to be closer to the conveyance device
5C. Lots of non-magnetic material being pulled off conveyor/shaker table	
Magnetic belt too close to material	Adjust the belt to be further from the conveyance device

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MAINTENANCE

6. COMPONENT IDENTIFICATION

See *Figure 2* below to identify and locate key components referred to in the following sections. Note that the Conveyor Mounts identified are not truly a part of the MCB assembly; these are a part of the conveyor that the MCB is designed to be attached to.

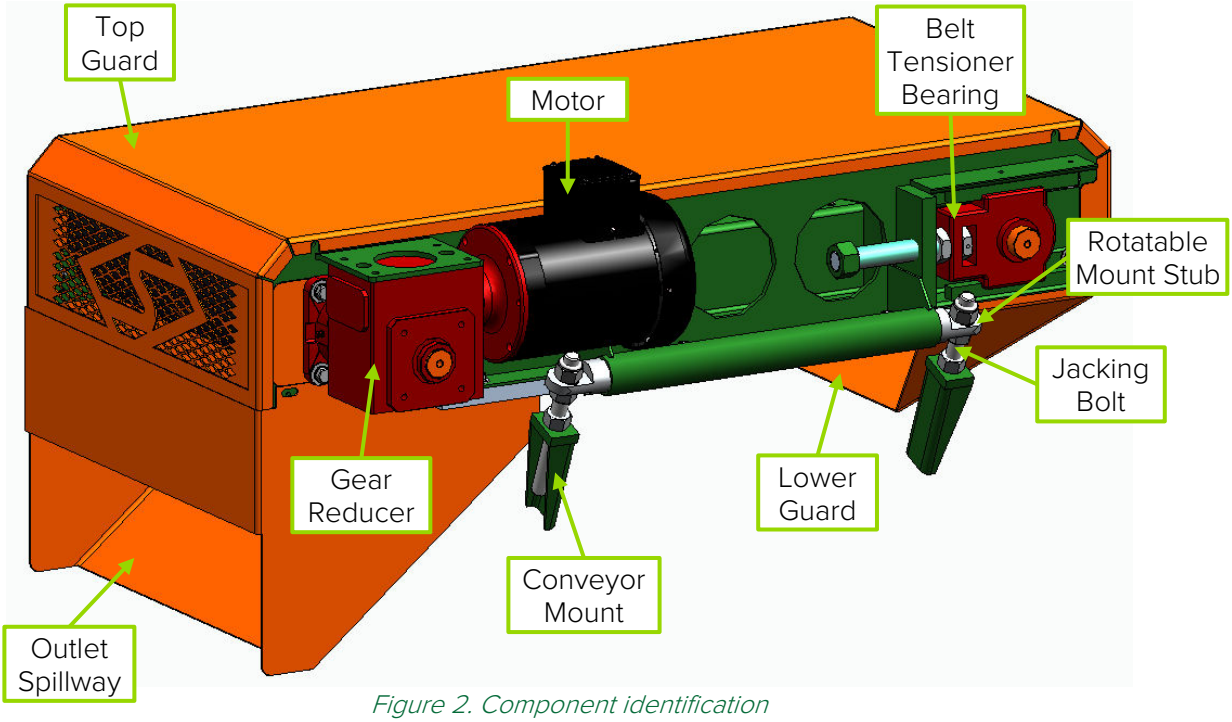


Figure 2. Component identification

7. LUBRICATION

Checklists of the standard bearings, motors, and gear reducers used in this machine model are below; refer to the Exploded Parts package and the Manufacturer Maintenance List if your machine specifications included custom components.
Reference locations for the lubrication points of components can be found in *Figure A1* and *Figure A2*.

7A. Bearings Lubrication Schedule / Checklist

Refer to the table below for recommended lubrication intervals based on standard service conditions.

Run Time	Pulley Support Bearings (4)
8 hrs/day	12 weeks
16 hrs/day	12 weeks
24 hrs/day	12 weeks

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For details of the standard service conditions and lubrication intervals for bearings in non-standard conditions, refer to the manufacturer manual list below.

QTY	SWEED #	Part Description	Manufacturer Manual
4	See Exp Part Package	Pulley Support Bearings	Refer to Manufacturer Maintenance Manual List

7B. Motor Checklist

QTY	SWEED #	Part Description	Manufacturer Manual
1	See Exp Part Package	Drive Motor	Refer to Manufacturer Maintenance Manual List

7C. Gear Reducer Checklist

QTY	SWEED #	Part Description	Manufacturer Manual
1	See Exp Part Package	Reducer	Refer to Manufacturer Maintenance Manual List

8. BELT MAINTENANCE

8A. Break-in Period

Inspect and tighten MCB belt (if necessary) after an initial break-in period of 8 hours.

8B. 60 Hours of Operation

Inspect and tighten (if necessary) conveyor belt every 60 hours of machine operation following initial break-in period. Belts will naturally stretch over time.

8C. Tightening Standard

Due to tread, thickness, and material, different MCB belts will have different amounts of slack even when ideally tensioned. As a rule of thumb, belts should be just tight enough to rotate without slipping when conveying a full load of material. Belt binding, stopping, and slipping are good indicators that a belt is too loose. Avoid overtightening belts, as overtightening can increase wear throughout the machine.

8D. Tensioning

See *Figure 2* and *Figure A1* for identification of the Belt Tensioner Bearings. Tensioners on both sides should be adjusted equally to ensure the pulley remains square to the frame. The Pulley Jacking Bolt identified in *Figure A2* should not be used under normal circumstances. The only time it should be adjusted is if a collision or other incident causes the front pulley to no longer be squarely aligned with the frame.

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9. CLEARING JAMS

Jams should only be cleared when the machine is fully locked out and all moving parts are motionless. Ensure that no material will be fed to the machine during maintenance.

While jams are unusual on MCBs, when they do occur the material typically gets stuck between the top of the belt and the Top Guard. The Top Guard should be removed to clear the jam.

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APPENDICES

10. APPENDIX A: MAINTENANCE FIGURES

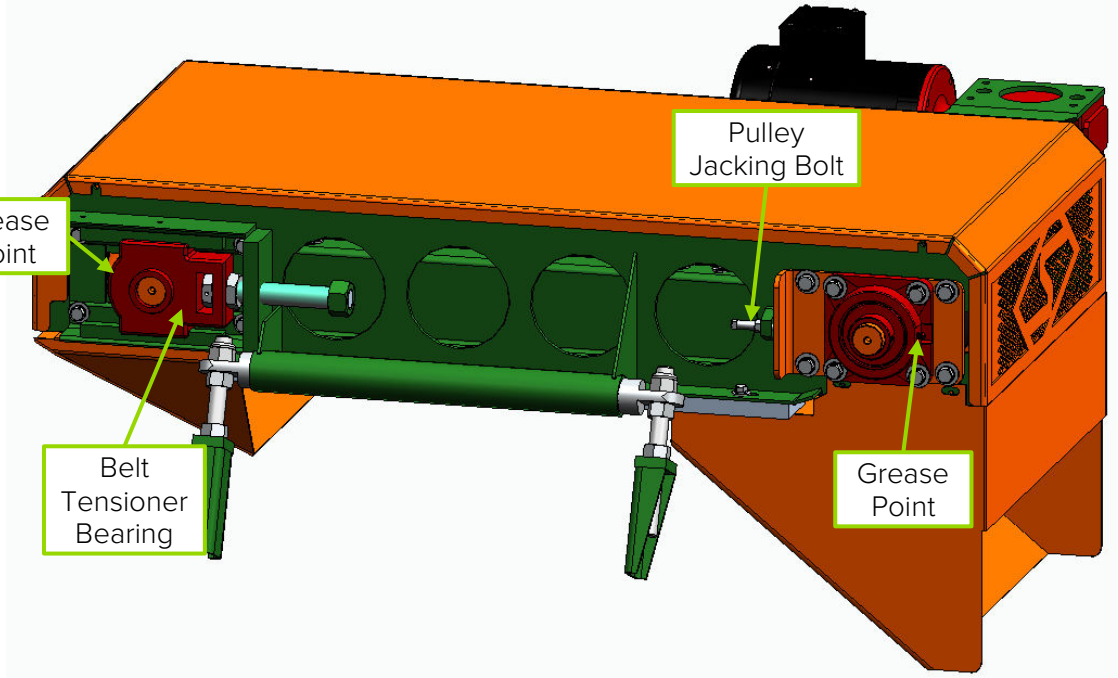


Figure A1. Driven side component identification

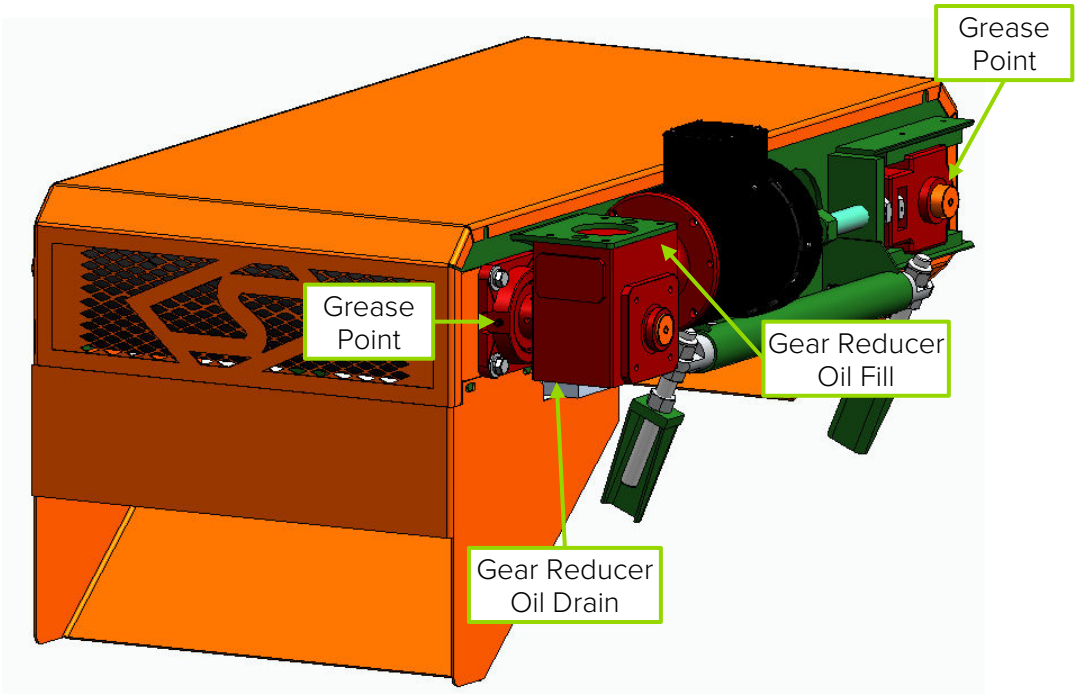


Figure A2. Drive side lubrication points

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MODEL : SG1826AF

GRANULATOR



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Revision	Date	Written By	Reviewed By
0	05/13/2025	JNR	RJW

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SAFETY & OPERATIONS

1. SCOPE

This manual covers specific information about the operation and maintenance of the SWEED SG1826AF Granulator. It does not contain general safety and maintenance requirements, which are in the Introduction chapter, or specific operation steps, which are in the Equipment Configuration chapter.

Note that figures within this chapter are generalized for all configurations of the SG1826AF: the appearances of customizable machine components, such as the base and hood, may not reflect your machine's features and are simply intended to be representational. Additionally, the coloration of equipment is intended to create distinction between parts, and may not reflect reality.

2. INTENDED USE

2A. Functionality

This machine is designed to chop material into very small, uniform pieces using a set of dynamic knives on a rotor and stationary knives on the frame. It is a low torque, high speed machine. Material enters through the hood infeed and is cut into pieces small enough to exit through the screen at the bottom of the cutting chamber. This screen can be changed to suit the desired final size of the material being processed. Refer to the Equipment Configuration chapter for details of the machine's role in the material process flow.

2B. Standard Machine Sensors

The standard sensors used on this machine are listed in the table below. If control integration was included as part of your machine order, all sensors will be used as described. If controls were not included, it is the end-user's responsibility to ensure that sensors are integrated into control logic: refer to the Equipment Configuration chapter.

If your machine customizations included non-standard sensors, refer to the Equipment Configuration chapter for details.

Type	Description	Identification	Intended Purpose
Inductive Proximity	Screen door sensor	*Figure A25*	Prevents Granulator operation when the screen door is open (sensor is not made).
Inductive Proximity	Hood Sensor	*Figure A25*	Prevents Granulator operation when the hood is open (sensor is not made).

2C. Mounting

CAUTION: It is critical that the machine is bolted to a level floor. Bolting to an uneven floor will cause stress within the machine body leading to possible bolt failure or other machine damage.

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3. MACHINE-SPECIFIC SAFETY INSTRUCTIONS

- DO NOT look into machine infeed during use. While rare, it is possible for material to kick out during the feeding process.
- WARNING: Excess vibration may occur under abnormal material feeding or slight modifications. Granulator should be visually and physically monitored during operation to gain a sense of sudden or excessive vibration. Contact SWEED Machinery if vibration continues as ignoring vibration may cause significant damage to machine.
- DO NOT operate with dull knives.
- WARNING: Flywheel mechanism spins down until it stops regardless of stop procedure. This means the knives will continue to rotate for a short period of time even after power to the motor is cut off.
- CAUTION: Too large of a knife gap can contribute to increased knife where and cause structural fatigue of the machine over time. Always operate the machine with an appropriate knife gap.
- CAUTION: Do not place hands or stand near parts of unit that may be hot after long hours of usage. This includes bearings and the main housing.

4. OPERATION

4A. Setup

See the Installation section of the Equipment Configuration chapter for installation instructions. Connect the machine to the appropriate voltage power source and integrate into controls system. See SPECS manual for power requirements.

Jog the motor once to verify rotation is correct; correct rotation is shown in *Figure 1* below. WARNING: running the motor in reverse may result in machine damage. It is critical to check rotation by bumping the motor prior to operating the machine.

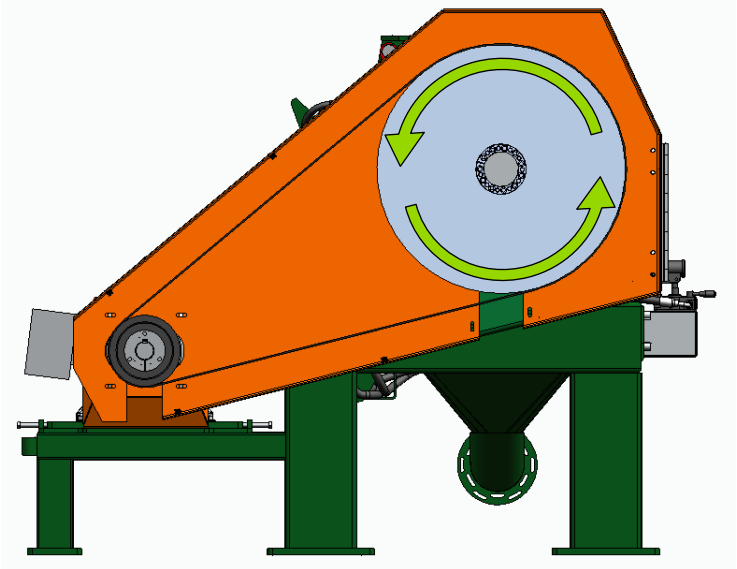


Figure 1. Correct motor rotation. Drive guards hidden for clarity.

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4B. Starting Machine

Depending on the controls of the equipment configuration, it may not be possible to start the machine until other machines are operating. Refer to Equipment Configuration chapter for details on startup procedures.

Additionally, the Granulator is not designed to start when there is material loaded in the cutting chamber. Any material in the chamber can prevent machine startup.

4C. Stopping Machine

Refer to Equipment Configuration chapter for standard shut down procedures.

This machine typically does not include an E-stop mounted directly to it. Instead, E-stops are part of the larger equipment configuration (if controls are provided by SWEED), or should be integrated by the end user during installation; refer to Equipment Configuration chapter.

Note: during any type of shutdown, including an E-Stop that cuts power to the motor instantaneously, the rotor must spin-down until it stops. If there is no material in the cutting chamber, this typically takes 2-3 minutes.

4D. Air Cooling Check

Airflow is very important in the SWEED Granulator. Without correct airflow the Granulator may overheat, or material could build up. Minimum airflow requirements are typically designed and implemented with CFM requirements. If these system components are modified or airflow is reduced, excess heat may cause reduced efficiency or other issues. Consult SWEED Engineering prior to changing any HVAC or airflow design.

4E. Material Flow into Granulator

It is essential to ensure the Granulator is fed material at an appropriate rate. If too much material is introduced to the cutting chamber, the rotor can become jammed.

4F. Tips for Optimal Function

The size of material fed to the Granulators by the preceding machine is a key factor in the Granulator processing time. If the fed material is too large, the Granulator will take significantly longer to cut it to the proper size; if it is too small, the output of the Granulator will not be maximized.

The Granulator screen should be selected so that the cut size of the processed material is only just small enough to liberate the copper and/or aluminum from the plastic.

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5. TROUBLESHOOTING

Possible Cause	Solution
5A. Machine will not start/stop running	
Failed electrical service	Check circuit power
Motor protection tripped	Reset motor
Broken drive belt	Replace belt
Too much material in cutting chamber	Clear material before trying to start the machine again.
5B. Hood or Screen Carriage not opening/closing	
Material jam	Remove jammed material
Pump Switch in incorrect position	Check correct orientation of switch (see labels on pump)
Failed hydraulic circuit	Check hydraulic circuit for worn or failed components
External obstruction	Remove obstruction
5C. Significant decrease in throughput	
Dull knives	Check knife edges; replace or sharpen
Incorrect knife gapping	Check knife gaps
Worn screen holes	Flip or replace screen
Deteriorated side wear plates	Replace side wear plates

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MAINTENANCE

6. COMPONENT IDENTIFICATION

See *Figure 2* below to identify and locate key components referred to in the following sections.

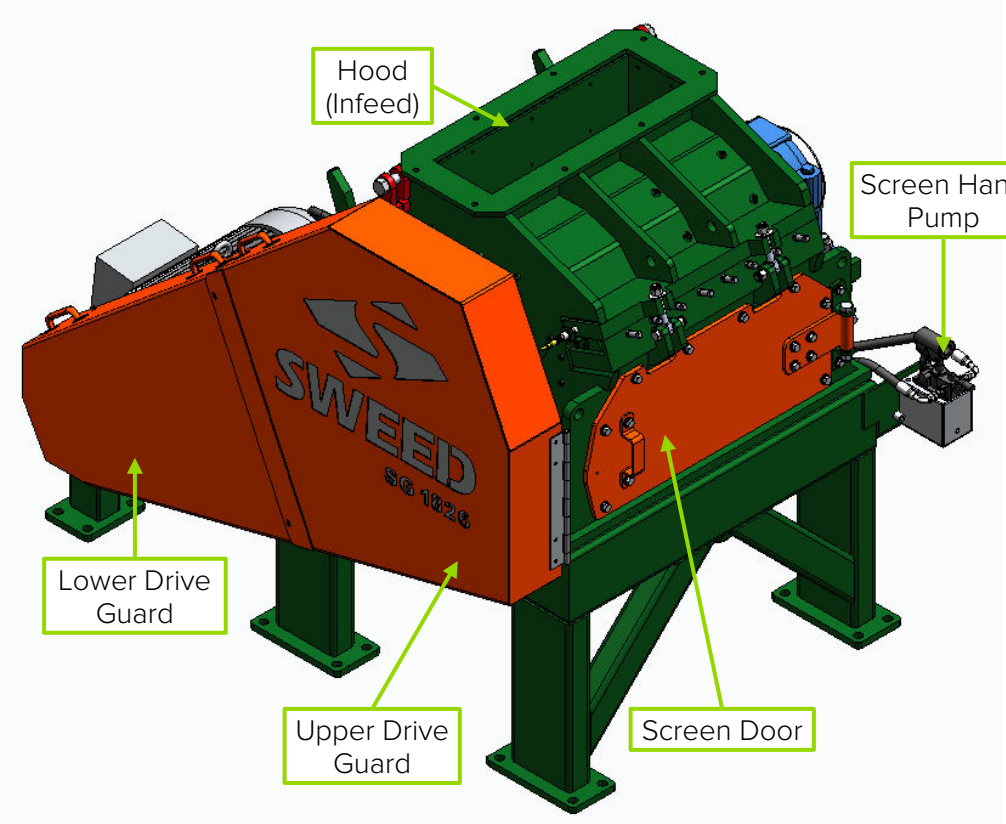


Figure 2. Component Identification

7. ACCESSING MACHINE INTERIOR

7A. Open the Hood	
STEP 1	Ensure Granulator is electrically locked out prior to any repair or maintenance. Ensure that no material from the larger recycling system will be fed to the Granulator.
STEP 2	Check the rotor has come to a complete stop. During a free spin, (after electrical supply has been shut off) this process may take a few minutes. Verify the rotor is stopped by looking through drive-side guard at the flywheel.
STEP 3	If applicable, remove any infeed assemblies attached to the top of the Hood so that the Hood will be able to swing open as shown in *Figure A2* and *Figure A3*.

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STEP 4	Loosen the 4 Hood Eyebolts at the front and back of the Granulator, and swing them free of the Hood slots. See *Figure A1* for locations.
STEP 5	Remove the 2 Safety pins so they won't interfere with the Hood Pivot Plates as the Hood swings open. See *Figure A1* for part identification.
STEP 6	Standing at the rear hydraulic station, position Hood Hand Pump Switch to the Open Position. See *Figure A4* for Pump location. Refer to labels located on the Pump for identification of Switch Open Position.
STEP 7	Apply a few hand pumps to the system to start opening the Hood. Verify there are no jams or obstructions to prevent the Hood opening fully.
STEP 8	Continue to hand pump hydraulics until the Hood is fully open. See *Figure A5*.
STEP 9	Move the Pump Switch back to the Neutral Position to prevent bleeder valve from leaking while not actively pumping. Refer to *Figure A7* for identification of Neutral Position.
STEP 10	Apply the 2 Safety Pins back into the pin holes. The Hood Pivot plate should be positioned so it will catch on the pins. See *Figure A6*. This provides a mechanical safety lock to prevent the Hood closing during work in the Cutting Chamber. **Application of the Safety Pins is required.**

7B. Close the Hood	
STEP 1	Ensure all mating surfaces are free from debris. Refer to *Figure A8* and *Figure A9*. Granulated debris on these surfaces will cause incorrect Hood closure.
STEP 2	Remove the Safety Pins. Refer to Section 7A Step 10.
STEP 3	Push the Hood Hand Pump Switch to the Close Position.
STEP 4	Actuate the Hand Pump to begin closing the Hood. Ensure no granulated material falls onto the mating surfaces. Ensure the Hood Latches are out of the way and will not impede the Hood closing.
STEP 5	Once Hood is fully closed, return the Hood Hand Pump Switch to the Neutral Position to prevent bleeder valve from leaking.
STEP 6	Apply the 4 Hood Eyebolts to secure the Hood.
STEP 7	Reapply any Hood infeed assemblies (if applicable).

8. FASTENERS

8A. Knife Bolt Break-in

Whenever a knife bolt is deliberately loosened or removed (for example when the knife is replaced) the knife bolt break-in period resets, and the knife bolts should be checked for the correct torque after 8 hours of run time.

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8B. Critical Fastener Torque Specifications (see *Figure A10* and for bolt identification; refer to *Figure A11* for tool requirements)					
Callout	Description	BOLT-NUT Specification	Copper-based Anti-Seize	2ND Pass Req.	TORQUE (FT-LB)
A	Stationary Knife Bolt	Bolt, 3/4-10 X 3 SHCS	Yes	Yes	360
B	Stationary Knife Push Bolt	Bolt, 1/2-13 X 3 SQ Head	No	No	*
C	Stationary Knife Pull Bolt				
D	Rotating Knife Bolt	Bolt, 3/4-10 X 3 SHCS	Yes	Yes	360
E	Rotating Knife Adj. Bolt	Bolt, 3/8-16 X 1 1/4 SQ Head	No	No	*

* Hold Square head while applying torque to jam nut. Hand tight plus 1/4 turn.

9. LUBRICATION

Checklists of the standard bearings and motors used in this machine model are below; refer to the Exploded Parts package and the Manufacturer Maintenance List if your machine specifications included custom components.

9A. Bearings Lubrication Schedule / Checklist

Refer to the table below for recommended lubrication intervals based on standard service conditions.

Service Conditions	Rotor Bearings (2)
12 hours/day 150°F Max	Once per month

For details of the standard service conditions and lubrication intervals for bearings in non-standard conditions, refer to the manufacturer manual list below.

QTY	SWEED #	Part Description	Manufacturer Manual
2	BX039585	Rotor Bearing	DODGE, ISAF Bearing Manual

9B. Motor Checklist

This Granulator model has two standard motor size options; only one will be on your machine.

QTY	SWEED #	Part Description	Manufacturer Manual
1	BX031351	40HP Motor	WWE Polyphase AC Induction Motors Install & OMM
1	BX039695	60HP Motor	

10. BELT MAINTENANCE

Belts should be regularly inspected for wear, proper alignment, and that tension is within tolerance. Belt tensioning steps and specifications are below.
Details for the installation of new belts can be found in *Figure A13*.

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10A. Belt Tensioning	
STEP 1	Ensure Granulator is electrically locked out prior to any repair or maintenance. Verify the rotor is stopped by looking through drive-side guard at the flywheel.
STEP 2	Open the Upper Belt Guard by removing the bolts that secure it to Lower Belt Guard, then swinging it open with the hinges. See *Figure 2* for guard identification.
STEP 3	Remove the bolts that secure the Lower Belt Guard and lift it away from the machine. The belt should now be accessible.
STEP 4	Check the belt tension using a belt tension gauge applied at the middle of the belt. Refer to *Figure A12*.
STEP 5	Verify that the measured tension is within the specifications outlined in *Figure 3* below. If the tension is out of spec, it can be adjusted using the following steps.
STEP 6	Loosen the 4 Motor Mount Restraint Screws that attach the Motor Mount to the frame. See *Figure A14* for component identification.
STEP 7	Use the Jacking Bolts located on each side of the Motor Mount to adjust the Mount position and tension the belt.
STEP 8	Once the Mount is positioned to create the proper belt tension, retighten the Restraint Screws.
STEP 9	If a new belt is being installed, refer to the instructions in *Figure A13*.
STEP 10	Replace the guards.

SG1826 GRANULATOR 3/5V1500 BELT TENSION		
Tension	New Belt	Used Belt
Static Tension (per rib strand)	151 to 161 lbf	129 to 140 lbf
Static Belt Pull (total pull)	882 to 945 lbf	756 to 819 lbf
Rib/Strand Deflection Distance	0.70 in	0.70 in
Rib/Strand Deflection Force	9.6 to 10 lbf	8.3 to 8.9 lbf
Total Deflection Force (3 strands)	28.8 to 30 lbf	24.9 to 26.7 lbf
Sonic Tension Meter	2010 to 2154 N	1723 to 1866 N
Belt Frequency	23 to 24 Hz	22 Hz
Powerband Multiplier	1.0079 to 1.0085	1.0068 to 1.0074

Figure 3. Belt tensioning specs

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11. KNIFE GAPS

11A. Break-In Period

SWEED requires all knife gaps be checked following the first 8 hours of operation to ensure correct and efficient cutting.
Failure to do so may cause harm to the machine.
This break-in period resets whenever the knives are replaced.

11B. Checking Knife Gaps	
STEP 1	Follow steps in Section 7A to open the Hood.
STEP 2	Using extreme caution, rotate the Rotor slowly by hand and check the gap between the Rotating Knives and the Stationary Knives using a feeler gauge. **At room temperature, knife gap should be 0.003”-0.006”.** During rotation, ensure hands never touch the cutting surfaces; even a slowly rotating Rotor can cause serious harm.
STEP 3	If gaps are outside of specification, visually inspect the knives to ensure they do not require sharpening or replacement, then refer to Sections 11C and 11D to adjust the knife gaps.

11C. Adjusting Rotating Knife Gaps

The position of the Rotating Knives should always be set by the Rotating Knife Setting Fixture (see *Figure A16*). Use of this Fixture requires the Knife to be removed from the Granulator. Refer to Section 12D for instructions on how to remove the knife, set its position, and reinstall it.

11D. Stationary Knife Gaps	
STEP 1	(Skip this step if the Stationary Knife was just installed.) Remove the 4 Stationary Knife Bolts and discard. Install new Bolts using copper-based anti-seize and tighten so the Knife is snug but not so tight that the jacking bolts cannot adjust the Knife position (torque to about 12 ft-lbs).
STEP 2	Use a feeler gauge and the adjustment bolts to move the Stationary knife so that the gap between the Rotating and Stationary Knives is between **0.003” and 0.006”.** Start from one end of the knife and work to the other end.
STEP 3	Torque the Stationary Knife Bolts to the value specified in Section 8B.
STEP 4	Recheck the gap to ensure it didn’t change during the torquing process.
STEP 5	Tighten all the adjustment bolt jam nuts to the specification detailed in Section 8B. Ensure the adjustment bolts do not twist by holding their heads while tightening the jam nuts.

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STEP 6	Repeat Steps 2-5 as needed for other Stationary Knives.
STEP 7	Follow steps in Section 7B to close the hood.

12. ROTATING KNIVES

12A. Knife Wear

The Rotating Knives should be sharpened based on visual inspection of the current cutting edge; if the edge appears dull or is chipped, it is time to sharpen the knife. An out of spec knife gap between a single Rotating Knife and the Stationary Knives is also an indicator that the Rotating Knife edge should be sharpened.

12B. Knife Sharpening

12Bi. When sharpening the Rotating Knives, the edge profile should be ground as specified in *Figure 4* below.

12Bii. Only remove enough material to create a sharp edge; excess grinding will decrease knife life. Alternative cutting angles or geometry will cause damage to the Granulator.

12Biii. Ensure total metal removed after multiple grinds does not exceed that specified in *Figure 4* below.

12Biv. SWEED strongly recommends always grinding all the Rotating Knives at the same time and making sure the Knives are ground similar amounts. Doing so helps to ensure rotational balance of the rotor.
All the Rotating Knives should be replaced when a single Knife reaches the end of its life for the same reason.

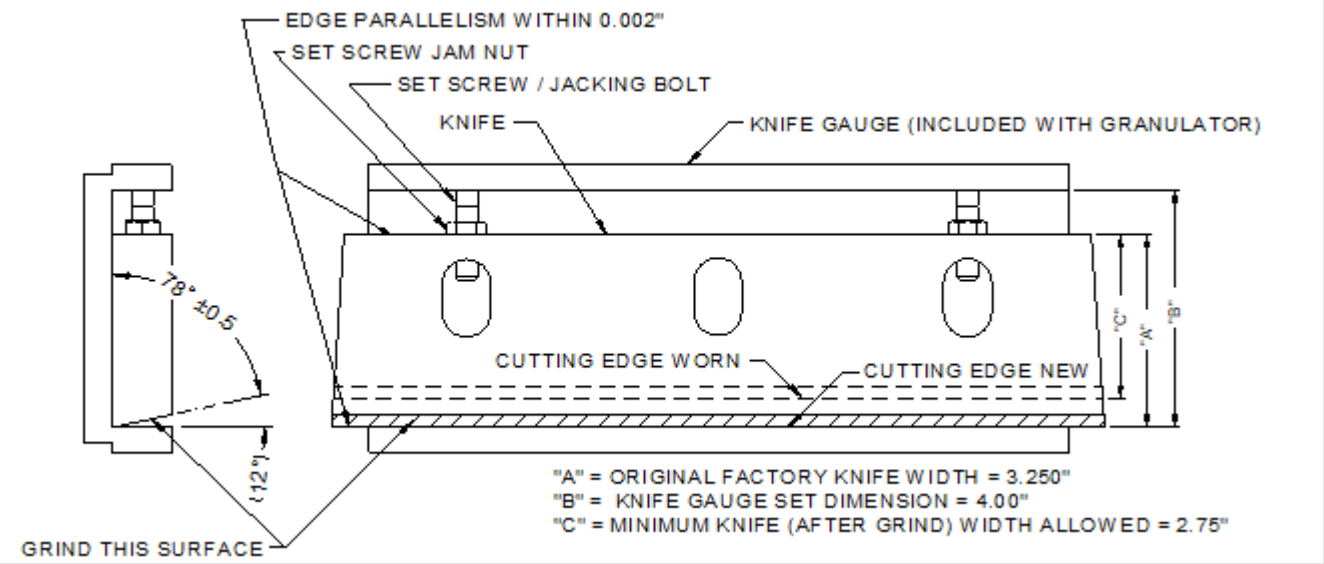


Figure 4. Rotating Knife Sharpening Profile Specifications

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12C. Knife Bolts

SWEED recommends using new Knife Bolts whenever a Rotating Knife is removed from the Granulator to be sharpened or to adjust the knife gap. Refer to Section 8B for bolt specifications. The Bolt Break-In period resets whenever a knife is installed and the Knife Bolts are torqued. See Section 8A.

12D. Replacing the Rotating Knives	
STEP 1	Follow steps in Section 7A to open the Hood.
STEP 2	Remove the 3 cap screws that hold the Rotating Knife and Lock Bar in place, then remove the Lock Bar and Knife. (see *Figure A15* for component identification). Do not remove the screws without also removing the Knife.
STEP 3	Clean the surfaces where the Knife contacts the Rotating Knife Holder with compressed air to ensure no debris is present. Debris can prevent correct seating of knives and cause gapping issues.
STEP 4	Sharpen or replace the Knife. Sharpening instructions are in Section 12B above.
STEP 5	Locate the Setting Fixture supplied with the Granulator; this assembly helps ensure correct fit-up and installation of the Rotating Knives. *Figure A16* is an image of the fixture for reference.
STEP 6	Place the new or sharpened Knife into the Setting Fixture as shown in *Figure A17*.
STEP 7	Loosen the jam nuts of the Rotating Knife Adjustment Bolts, then turn the bolts until their heads contact the wall of the Setting Fixture.
STEP 8	Tighten the jam nuts according to the specification in Section 8B.
STEP 9	Remove the Knife from the Setting Fixture and place it onto the Rotating Knife Holders, making sure that the knife edge orientation is correct and the heads of the Adjustment Bolts contact the Holders (see *Figure A15* and *Figure A18*).
STEP 10	Install the Lock Bar using new Rotating Knife Bolts lubricated with copper-based anti-seize. Hand tighten the fasteners so that the Knife is snug but not so tight that its position cannot be adjusted (torque at approximately 12 ft-lbs).
STEP 11	Tap the front of the knife with a brass punch to ensure that the Adjustment Bolts are still contacting the Holders.
STEP 12	Torque the cap screws to the value specified in Section 8B.
STEP 13	Repeat previous steps to replace Rotating Knives as needed.
STEP 14	Follow steps in Section 7B to close the Hood.

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13. STATIONARY KNIVES

13A. Knife Wear

The Stationary Knives should be flipped or sharpened based on visual inspection of the current cutting edges; if an edge appears dull or is chipped, it is time to flip or sharpen the knife.

Stationary Knives have 4 cutting edges that can be used before the knife requires sharpening. Always refer to *Figure A19* when flipping the knives to ensure the cutting edges slope in the correct direction.

13B. Knife Bolts

SWEED recommends using new Knife Bolts whenever a Stationary Knife is removed from the Granulator.

Refer to Section 8B for bolt specifications.

The Bolt Break-In period resets whenever a knife is installed and the Knife Bolts are torqued. See Section 8A.

13C. Sharpening the Stationary Knives

13Ci. Grind the edge profile specified in *Figure 5* below.

13Cii. Remove just enough material to create a sharp edge. Excess grinding will decrease knife life. Alternate cutting angles or geometry will cause damage to the Granulator.

13Ciii. Ensure “DO NOT GRIND” surfaces are not modified during sharpening.

13Civ. Ensure that knife edge meets the required minimum thickness requirement after grinding. If not, a new knife is required.

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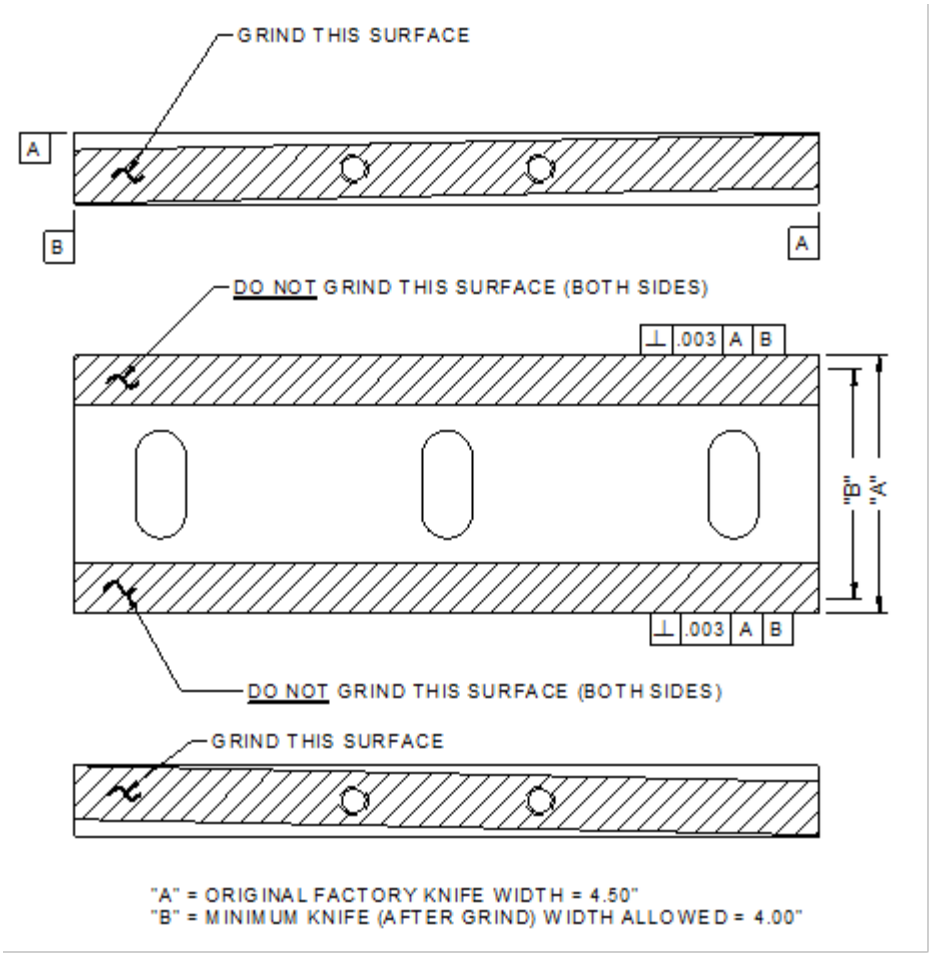


Figure 5. Stationary Knife Sharpening Profile Specifications

13D. Replacing the Stationary Knives	
STEP 1	Follow steps in Section 7A to open the Hood.
STEP 2	Remove the Pull Bolts from the Stationary Knife. Loosen the Push Bolts if necessary. Refer to *Figure A10* for bolt identification.
STEP 3	Remove the 3 Stationary Knife Bolts, then remove the knife.
STEP 4	Thoroughly clean the knife bed area with compressed air to ensure no debris is present. Debris can prevent correct seating of knives and cause gapping issues.
STEP 5	Position newly sharpened (or flipped) Stationary Knife on the knife bed, then screw in the Pull Bolts to hold it in place. Ensure that the jam nuts allow space for positional adjustment. Verify knife orientation. Refer to *Figure A19*.

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STEP 6	Install new Stationary Knife Bolts lubricated with copper-based anti-seize. Tighten the bolts so the Knife is snug, but its position can still be adjusted using the adjustment bolts.
STEP 7	Manually spin the rotor backwards until a Rotating Knife is coincident with the replaced Stationary Knife. Verify that the Stationary and Rotating Knives are sloped in opposite directions.
STEP 8	Follow the steps in Section 11D to adjust the position of the Stationary Knife.

14. SCREENS

SWEED Granulator screens are available in discreet sizes; if the equipment configuration includes directly preceding or subsequent machines in a material processing system, the screen size has been selected to optimize the system throughput. If the system is intended to process a variety of materials, different sizes of screens are provided for the different material applications. Consult SWEED for information on optimization and different screen sizes. Refer to Section 14D below or the Spare Parts document for a list of standard screen part numbers that fit your machine. Custom screens are available upon request. Different screen sizes should be switched out as needed for different material processing applications.

The screen size should be selected so that only material that is cut to the optimal size (or smaller) can pass through. The optimal material cut size is just small enough to liberate the copper and/or aluminum from the plastic. Additionally, the holes of the screen should always be larger than the diameter of the thickest wire being liberated to increase efficiency.

14A. Screen Wear

The edges of the Screen holes become dull over time, which makes it more difficult for appropriately sized material to pass through. A significant drop in Granulator throughput can be an indicator that the Screen is worn and should be replaced.

14B. Removing the Screen	
STEP 1	Ensure Granulator is electrically locked out prior to any repair or maintenance. Ensure that no material from the larger recycling system will be fed to the Granulator (if applicable).
STEP 2	Verify the rotor is stopped by looking through drive-side guard at the flywheel.
STEP 3	Remove the bolts securing the Screen Door to the frame and swing the door open. Refer to *Figure 2* for component identification.
STEP 4	Loosen the nuts on the Screen Swing Eyebolts just enough so that the Eyebolts can be swung forward and caught on the front of the frame using the Integrated Hooks. See *Figure A20* and *Figure A21*.

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STEP 5	Standing at the front hydraulic station, position the Screen Hand Pump Switch to the Open Position. See *Figure A4* for Pump location. Refer to labels located on the Pump for identification of Switch Open Position.
STEP 6	Actuate the hand pump until the Screen Carriage is fully open as shown in *Figure A22*.
STEP 7	Move the Pump Switch back to the Neutral Position to prevent bleeder valve from leaking while not actively pumping. See *Figure A7* for identification of the neutral position.
STEP 8	Remove the Screen from the Carriage by rotating while pulling the Screen out. Refer to *Figure A24*.

14C. Installing the Screen	
STEP 1	Ensure all mating surfaces, prior to new screen being applied, are free from material and items that will cause jamming.
STEP 2	Slide the Screen onto the Screen Carriage as shown in *Figure A24*, ensuring the Screen seats fully and correctly on the Carriage (refer to *Figure A23*).
STEP 3	Position the Screen Hand Pump Switch to the Close Position. Refer to labels located on the Pump for identification of Switch Close Position.
STEP 4	Apply a few hand pumps to start closing the Screen Carriage. If the Carriage does not begin to close, make sure the Screen is properly seated and not wedging against the side wall, and that no material is in the way. Do not place hands between Carriage and Screen as pinching may occur if hydraulic pressure has been added and Carriage has jammed.
STEP 5	Continue pumping until the Carriage is fully closed.
STEP 6	Move the Pump Switch back to the Neutral Position to prevent bleeder valve from leaking while not actively pumping.
STEP 7	Slide the Eyebolts into the slots in the Carriage to hold it in place. If Carriage and Screen do not seat fully in the closed position, the Eyebolts will not be able to reach far enough to hold the Carriage in place. In this case, it may be necessary to re-open the Carriage and look for material that may be causing binding.
STEP 8	Alternate tightening the nuts of the Swing Eyebolts until all are fully seated.
STEP 9	Close the Screen Door and secure it to the frame with its fasteners.

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14D. List of Standard Screen Sizes			
SWEED Part #	Rev	Description	Qty
CB033696		SCREEN, 1/8" HOLES, 3/16" THICK, SG1826	1
CB039482		SCREEN, 3/16" HOLES, 3/16" THICK, SG1826	1
CB032160	C	SCREEN, 1/4" HOLES, 3/16" THICK, SG1826	1
CB039483	C	SCREEN, 3/8" HOLES, 3/16" THICK, SG1826	1
CB039484	C	SCREEN, 1/2" HOLES, 3/16" THICK, SG1826	1

15. WEAR PLATES

The interior of the Granulator Hood is equipped with replaceable Wear Plates to prevent scouring of the main hood structure as material moves around the cutting chamber. These Plates should be periodically inspected and replaced as needed. If the side Wear Plates become too worn, there could be a drop in material throughput as more material can pass between the ends of the knives and the Wear Plates.

SWEED recommends using new fasteners to affix the Wear Plates when they are replaced. Refer to the Exploded Part package for identification of the Wear Plates used in your Granulator model.

16. HYDRAULIC SYSTEM

This machine has two hydraulic circuits: one which operates the cylinders to open and close the hood, and the other operates the cylinders that open and close the screen. Both of these circuits are operated with hand pumps, and only cycle when the maintenance is performed on the Granulator.

16A. Hydraulic Oil

16Ai. Both circuits require ISO 32 hydraulic oil.

16Aii. SWEED recommends the use of Chevron Rando HD oil in this equipment.

17. CLEARING JAMS

Jams should only be cleared when the machine is fully locked out and all moving parts are motionless. Ensure that no material will be fed to the machine during maintenance.

Jams most commonly occur within the Granulator cutting chamber due to an unsuitable material or too much material being fed at once. Refer to Section 4E.

If a cutting chamber jam does occur, refer to the steps in Section 17A below.

For jams that occur while opening/closing the Hood or replacing the Screen, please refer to Sections 7 and 14.

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17A. Rotor Jams	
STEP 1	Follow Steps 1-7 in Section 14B to open the Screen Carriage and access the Rotor and cutting chamber from below.
STEP 2	Attempt to clear the jam. The Rotor can be manually rotated back and forth to assist in this. Ensure hands never touch the cutting surfaces during rotation; even a slowly rotating Rotor can cause serious harm.
STEP 3	If unable to clear the jam from below, follow the steps described in Section 7A to open the Hood and access the Rotor/cutting chamber from above.
STEP 4	Verify Rotor is no longer impeded by manually rotating it a few times.
STEP 5	Remove any material from the cutting chamber to ease Granulator startup.
STEP 6	Inspect the knife edges and check the knife gaps to ensure that knife edges were not damaged by the jam. Follow steps to replace the knives or adjust the knife gaps if needed.
STEP 7	Follow steps to close the Screen Carriage and/or the Hood.

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APPENDICES

18. APPENDIX A: MAINTENANCE FIGURES

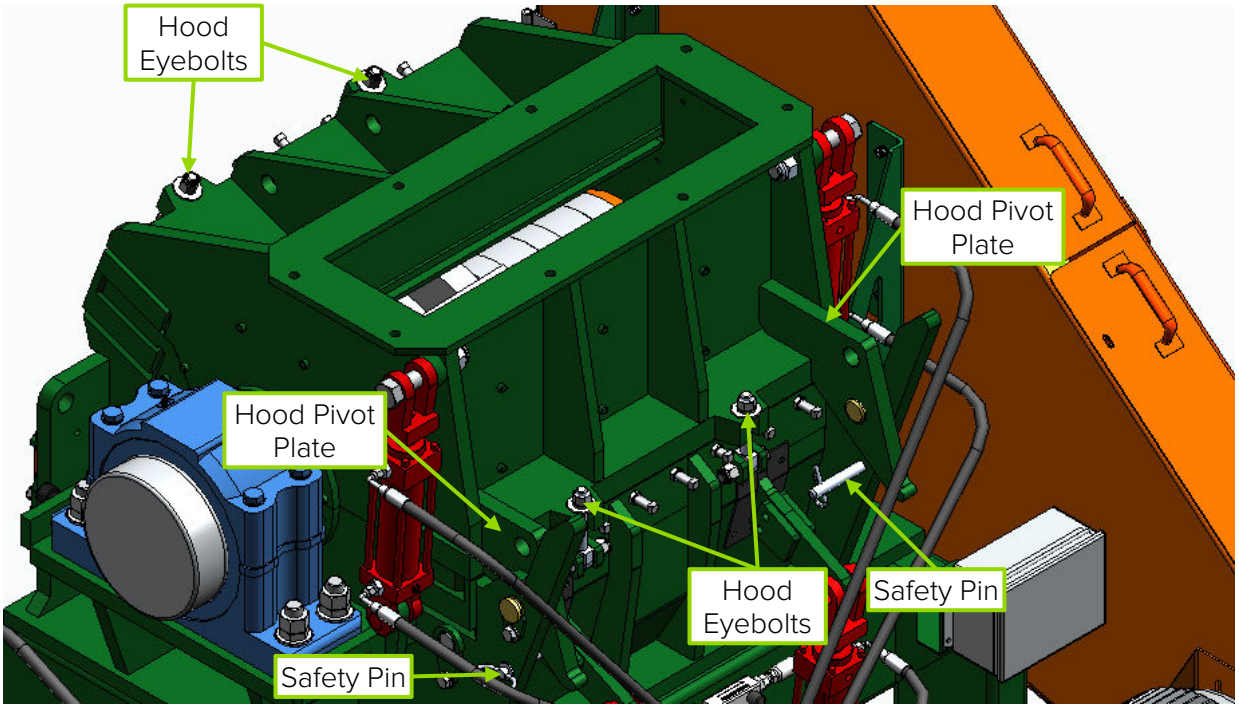


Figure A1. Key components to open Hood

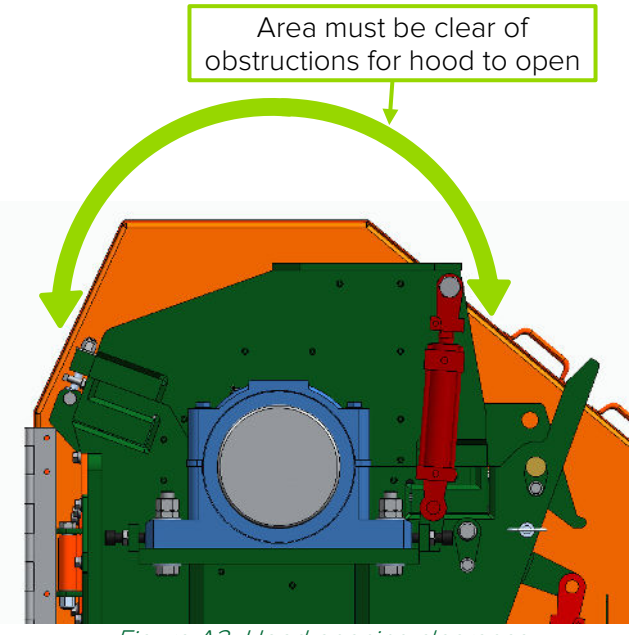


Figure A2. Hood opening clearance

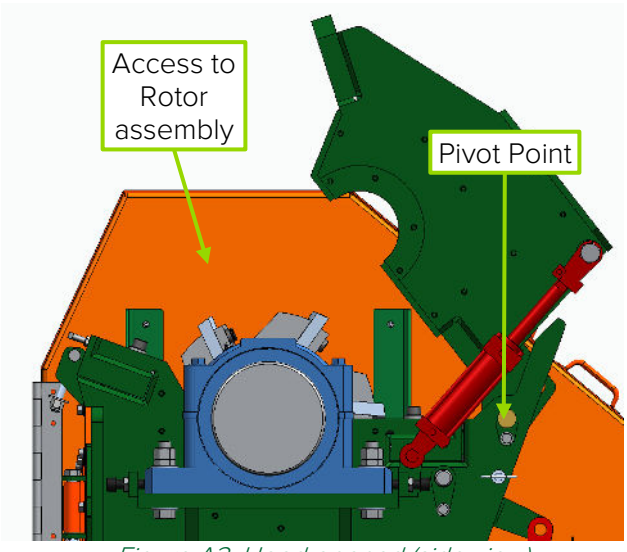


Figure A3. Hood opened (side view)

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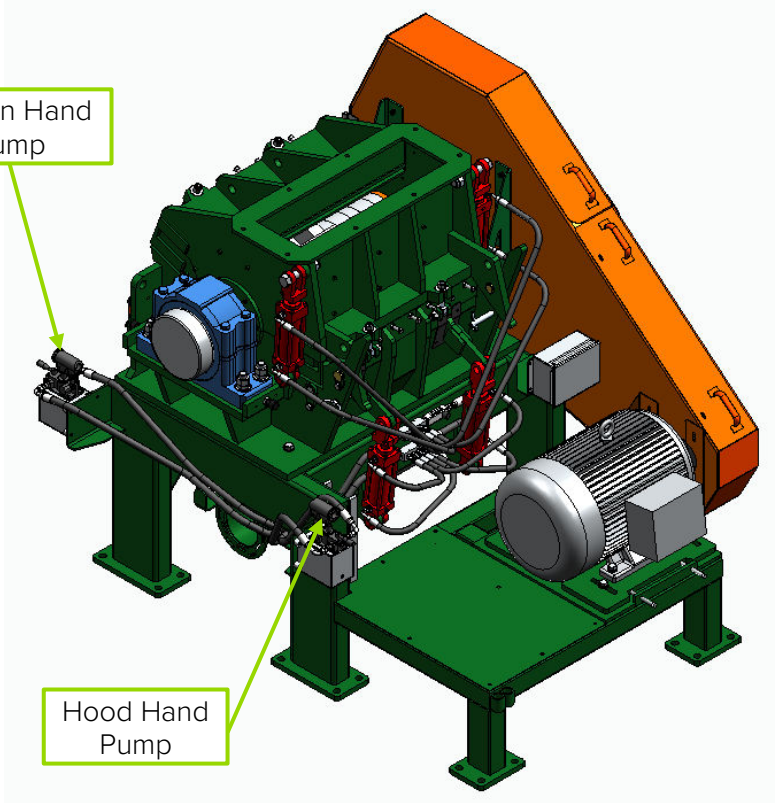


Figure A4. Hydraulic Hand Pumps

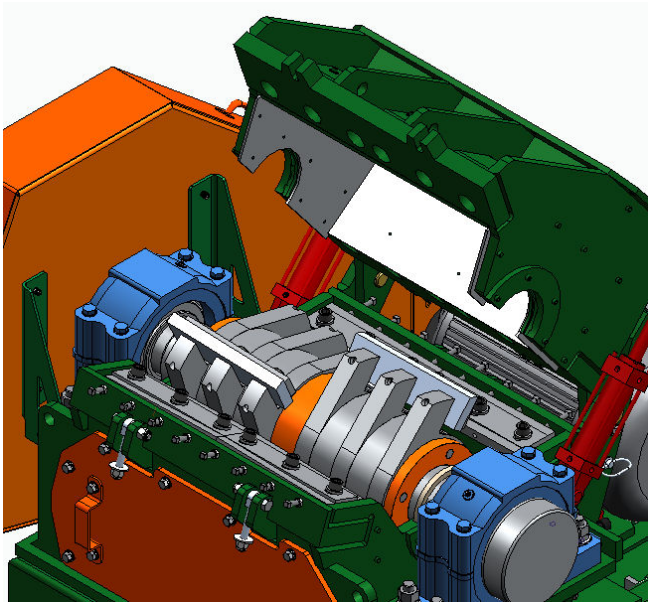


Figure A5. Hood opened

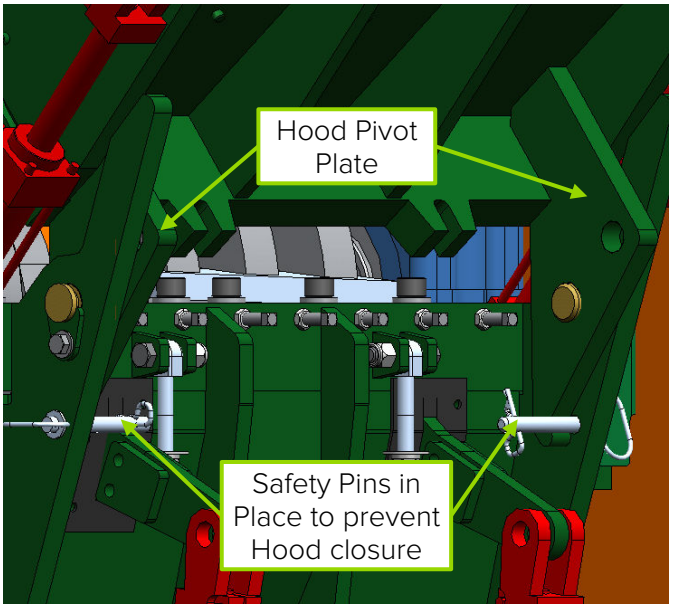


Figure A6. Safety Pins applied

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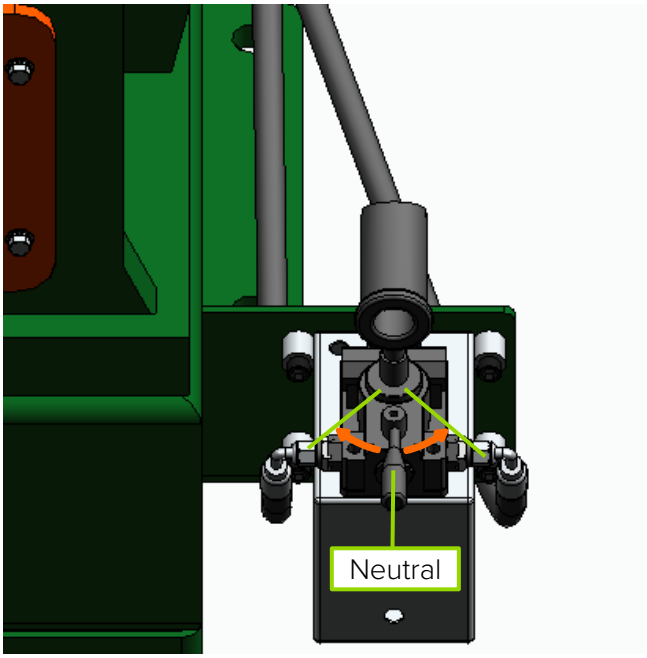


Figure A7. Hand Pump Switch positions
(refer to Pump labels to identify Open and Close positions)

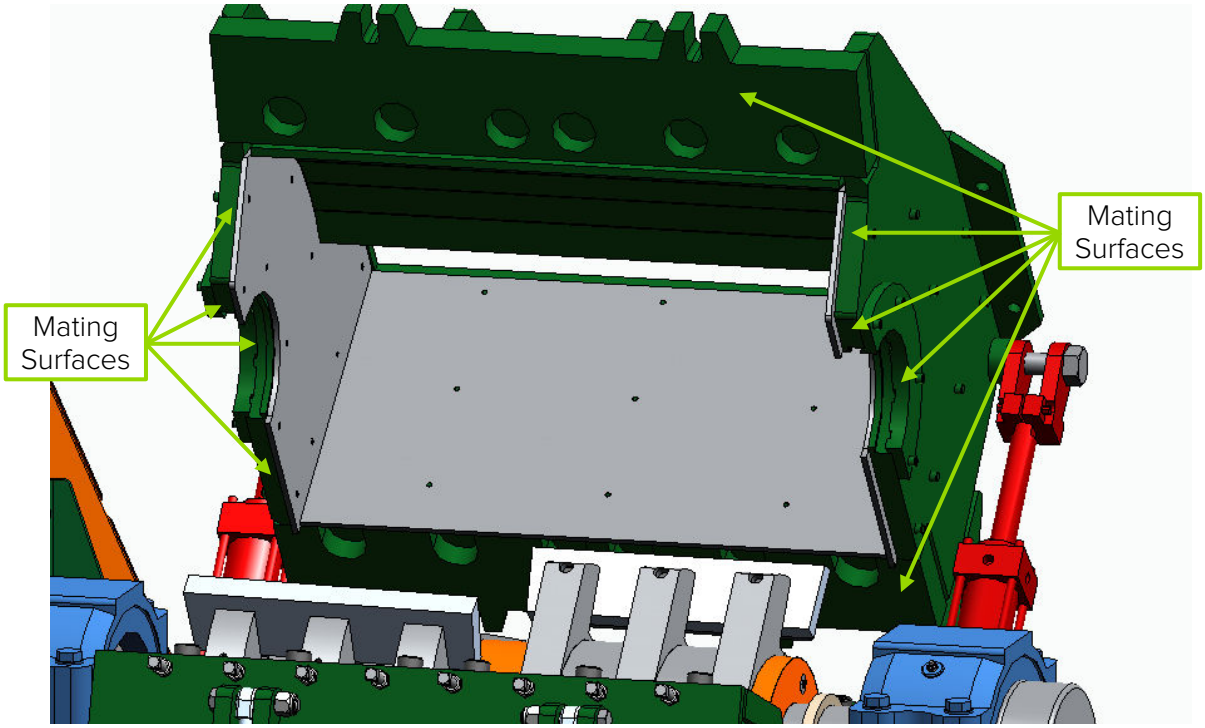


Figure A8. Hood mating surfaces

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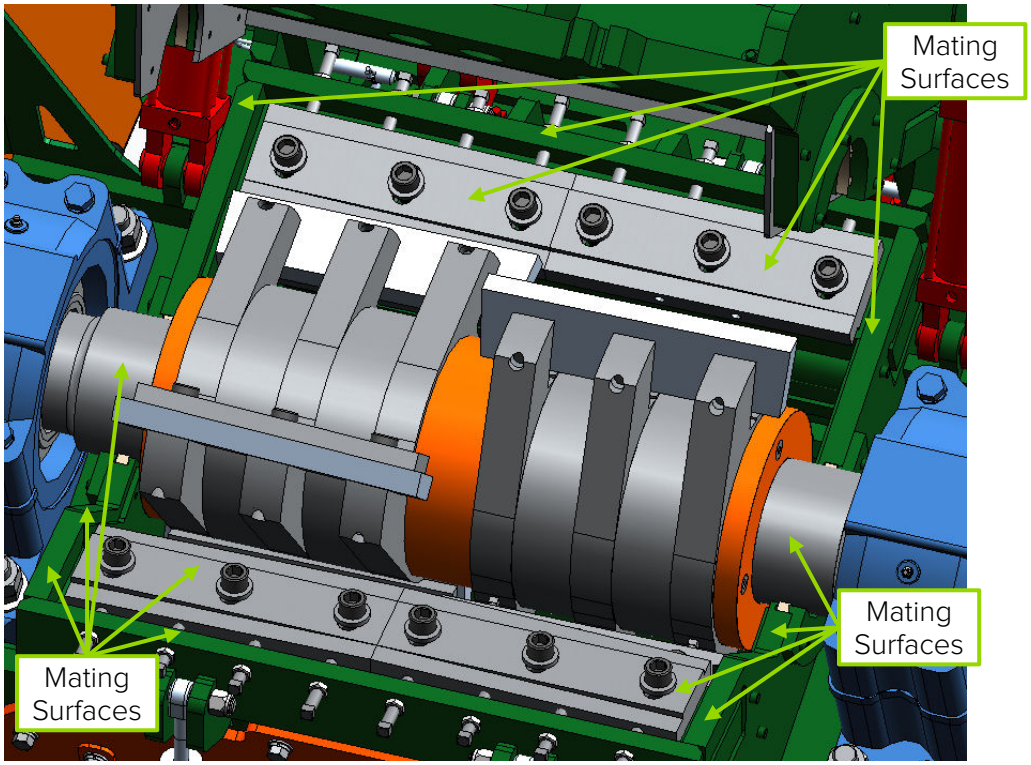


Figure A9. Body mating surfaces

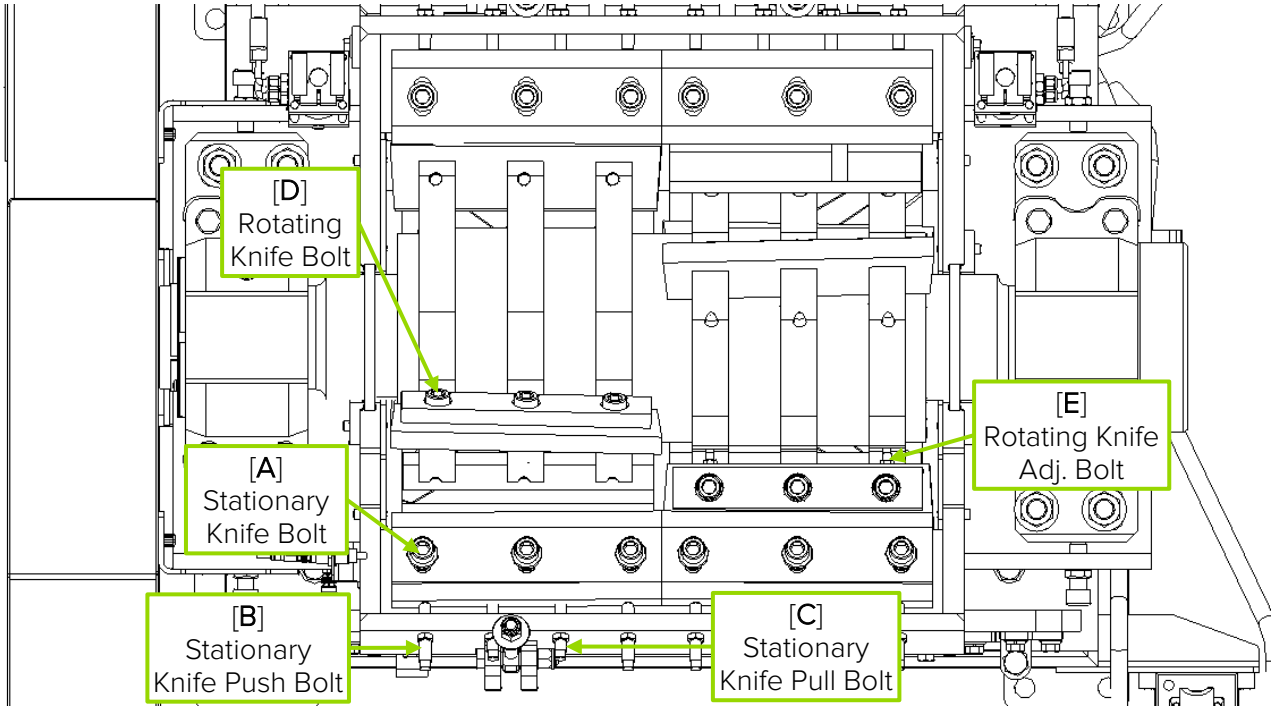


Figure A10. Critical fastener identification
Top view with Hood hidden for clarity

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SPECIALTY TOOLS FOR CRITICAL FASTENERS AND GAP ADJUSTMENTS	
Tool	Use
5/8” Allen Socket X 3/4” Drive	Stationary/Rotating Knife Bolts
6” extension for 3/4” Drive	To reach rear Stationary Knife Bolts
3/4” Torque Wrench (min 400 ft-lb rated)	Torquing Knife Bolts
Feeler Gauge Set 0.001-0.010”	Checking knife gaps

Figure A11. Table detailing unusual tools required for machine maintenance

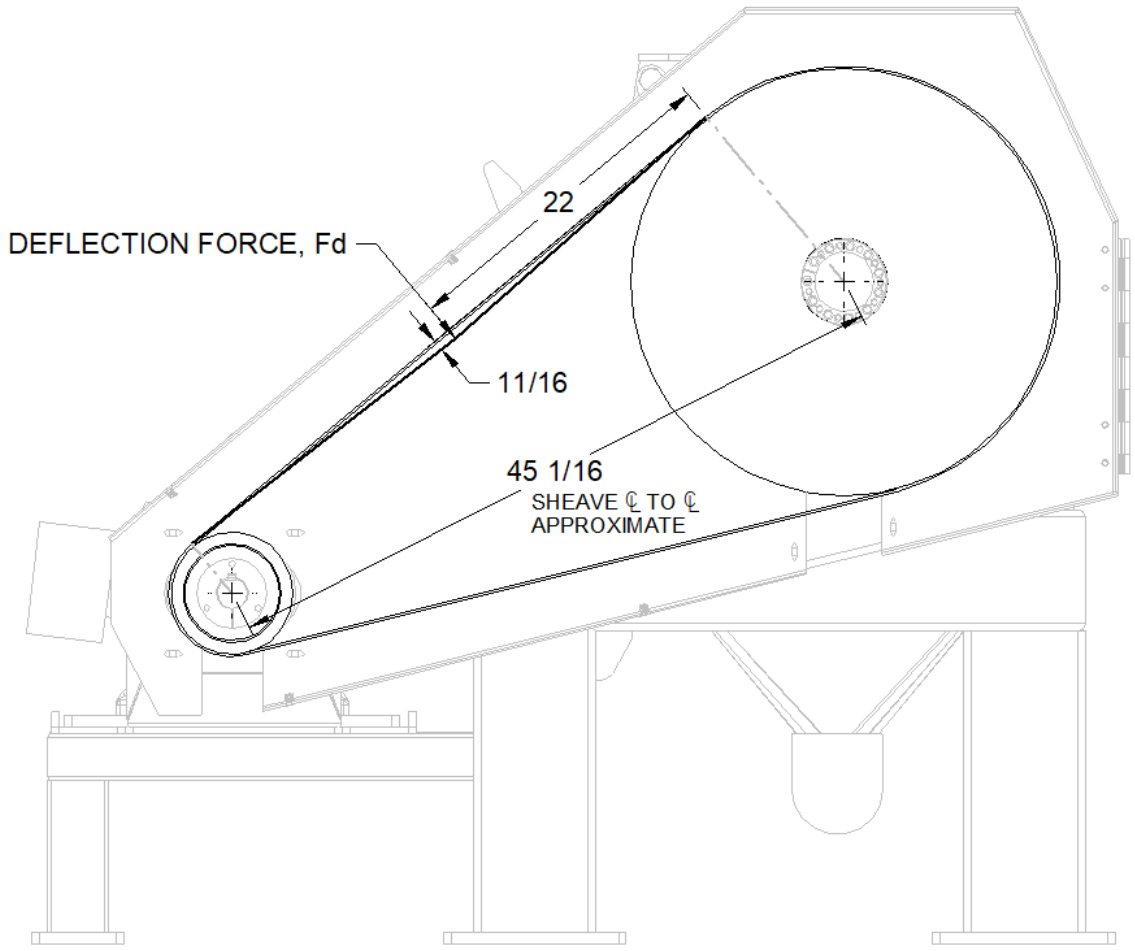


Figure A12. Belt tensioning diagram

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Belt Tensioning Instructions:
Always use a belt tension gauge that indicates static tension to determine proper belt tightening specification. Deflection forces specified are for Sweed SG1826AF 40HP Granulator using 3/5V 1500 Gates PowerBand® Belt.
If multiple belts are being used for the drive, divide tension by number of belts to give per belt tension to be measured.

Step 1: Position belt and set tension to the prescribed Installation Tension.
Step 2: Run belt for five minutes.
Step 3: If belt tension drops below Suggested Tension range, retighten belt to Installation Tension.
This will allow the belt to seat-in and run at Suggested Tension after it has operated under normal driving conditions.

Figure A13. New belt tensioning instructions

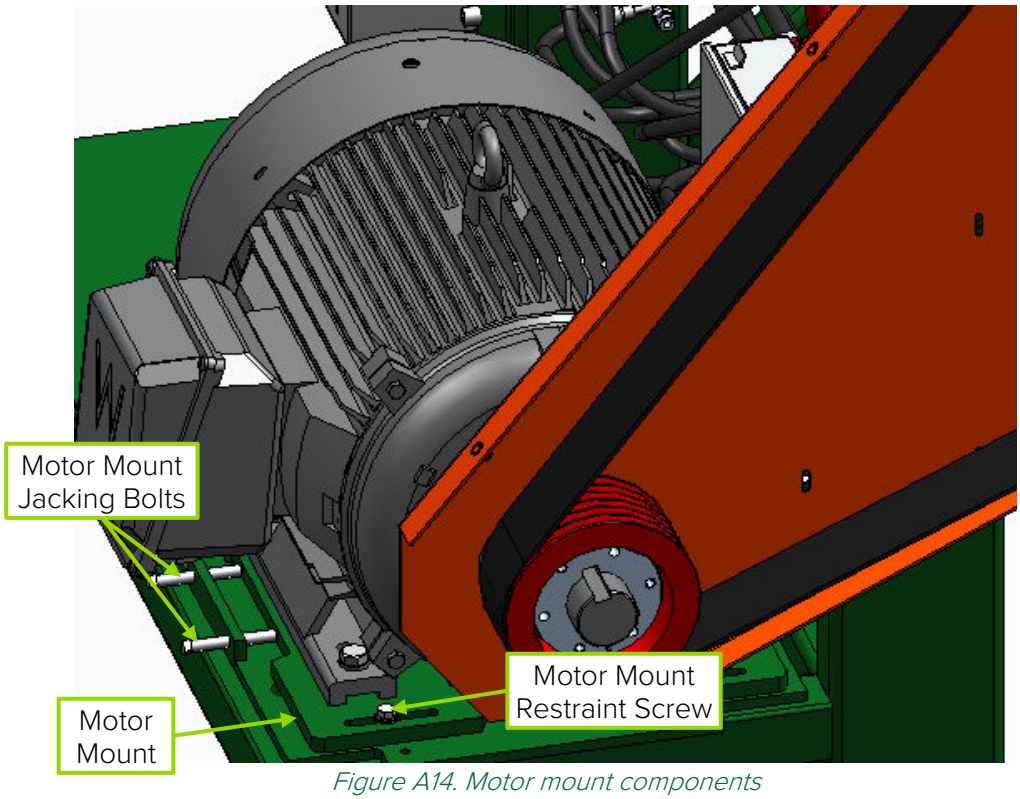


Figure A14. Motor mount components

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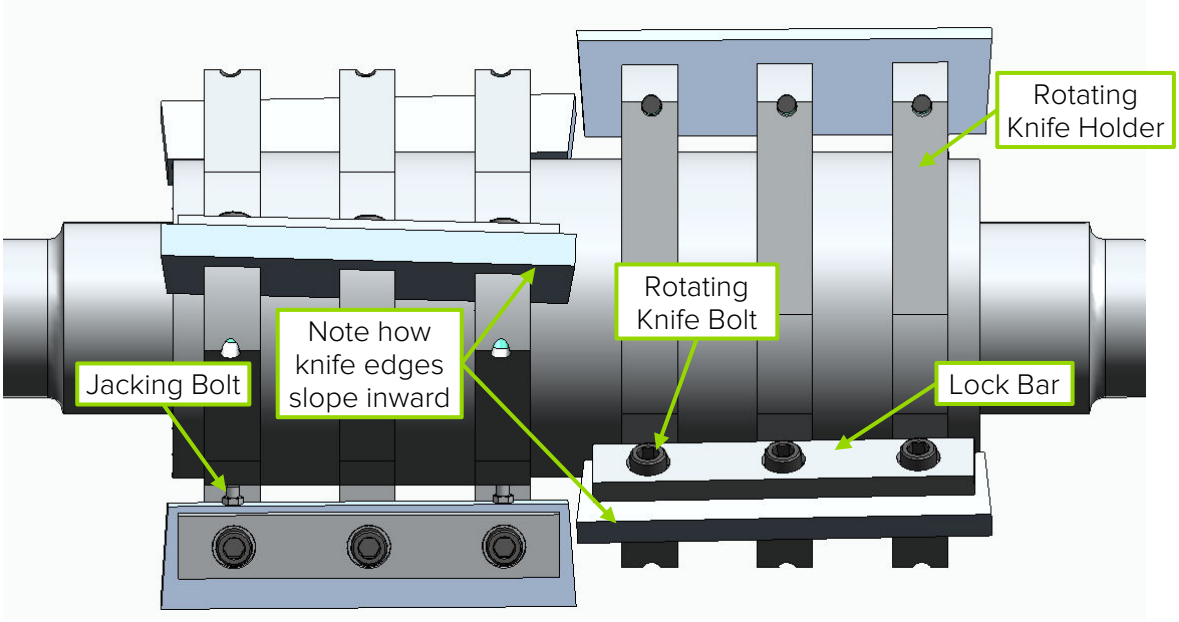


Figure A15. Rotating knife components and orientation

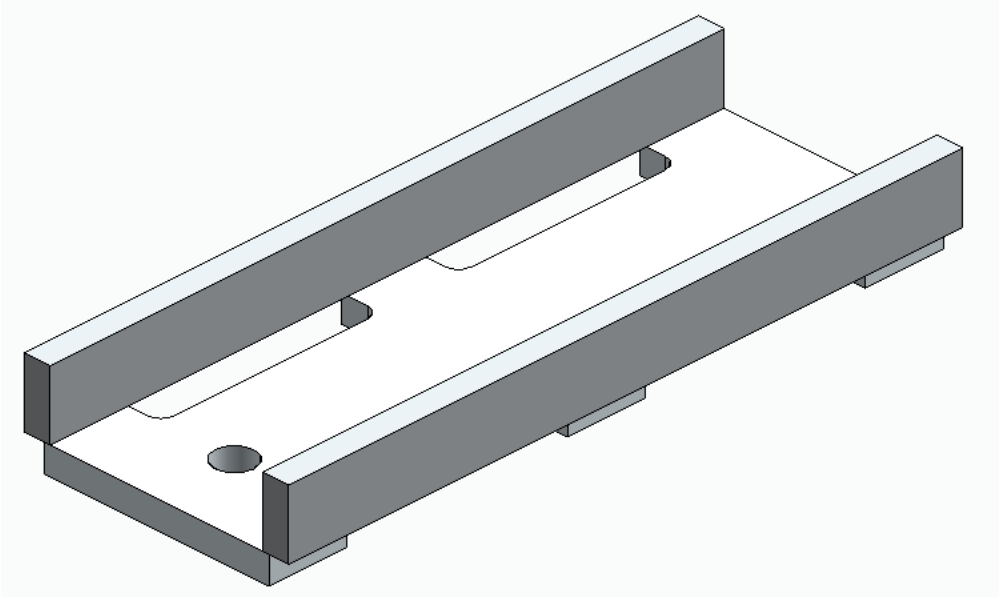


Figure A16. Rotating Knife Setting Fixture (SWEED part AB077954)

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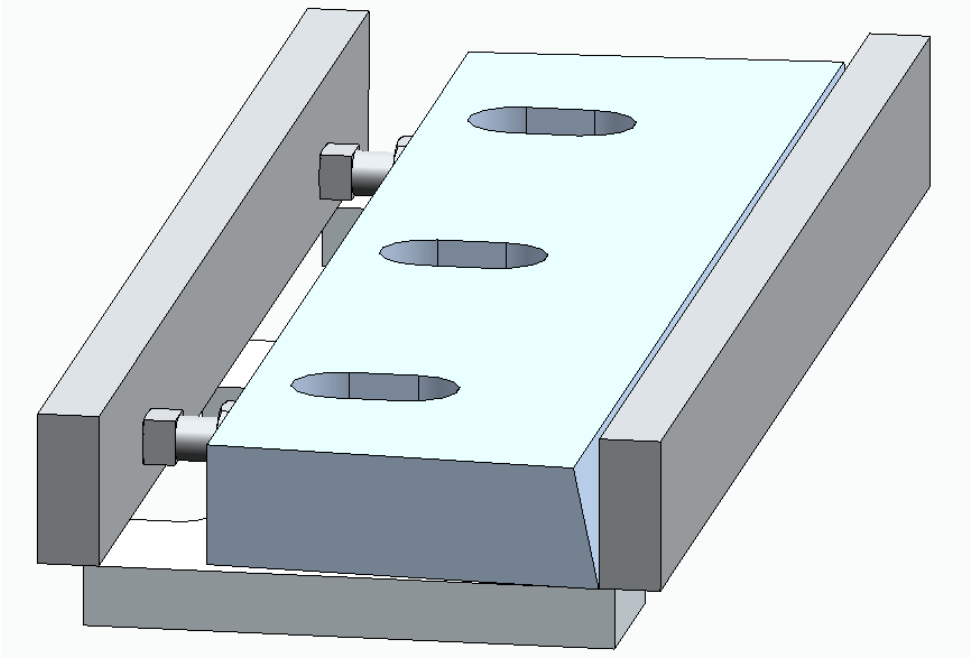


Figure A17. Rotating Knife in Setting Fixture

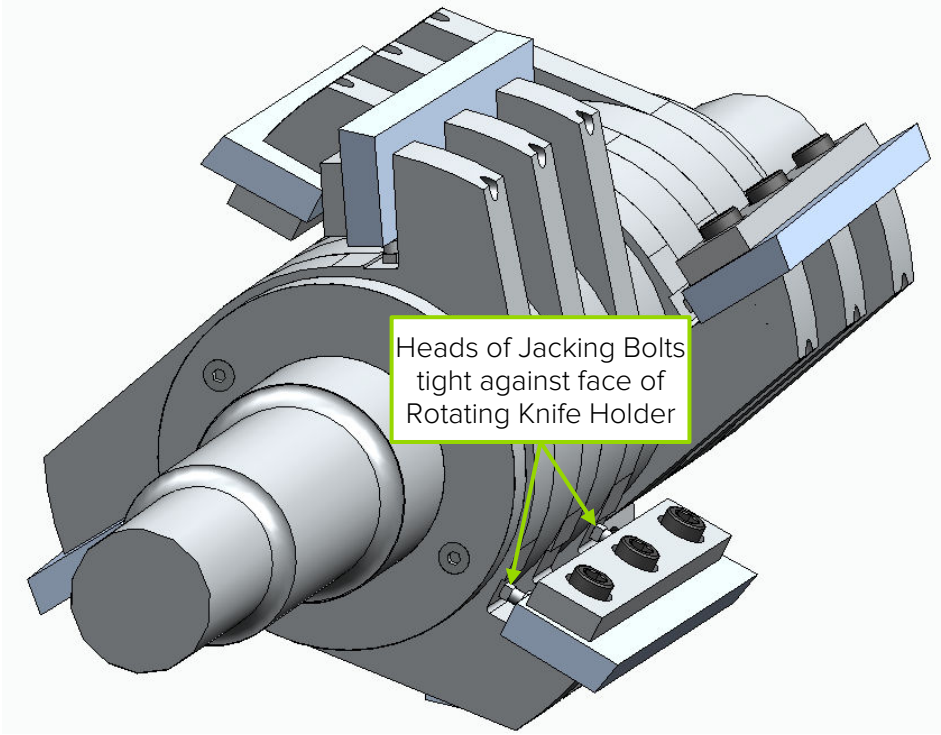


Figure A18. Rotating Knife proper installation

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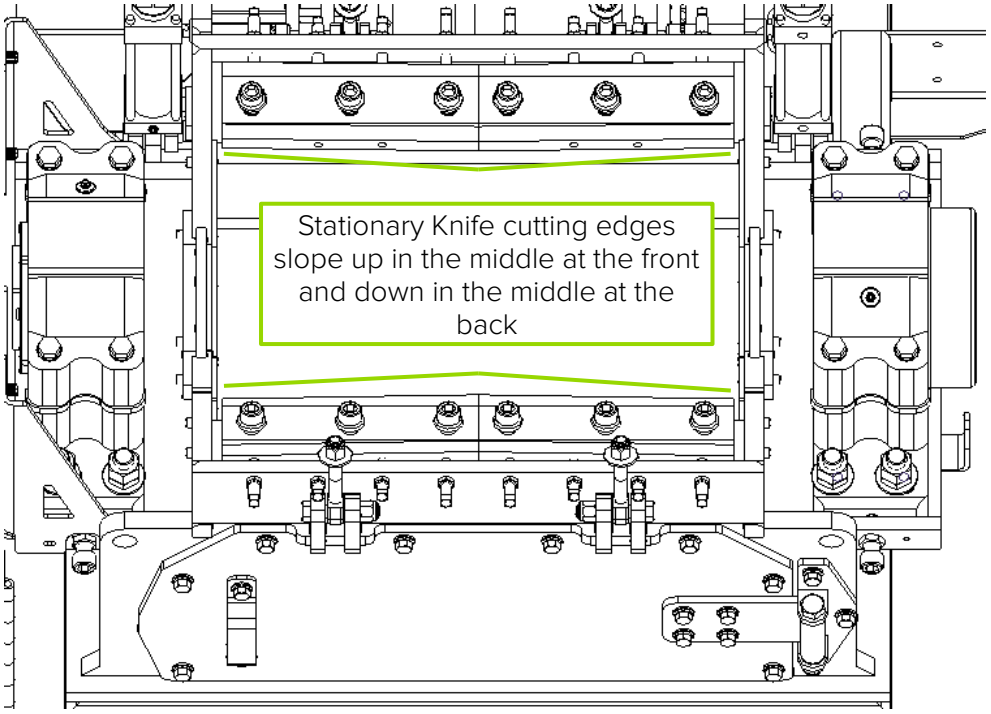


Figure A19. Stationary Knife edge orientation

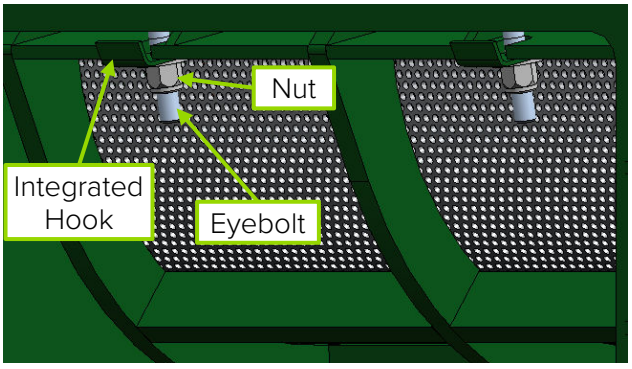


Figure A20. Screen Swing Eyebolts securing the Screen

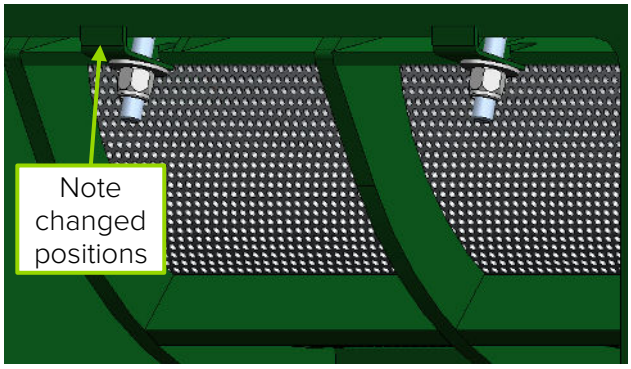


Figure A21. Screen Swing Eyebolts swung forward to hook onto frame

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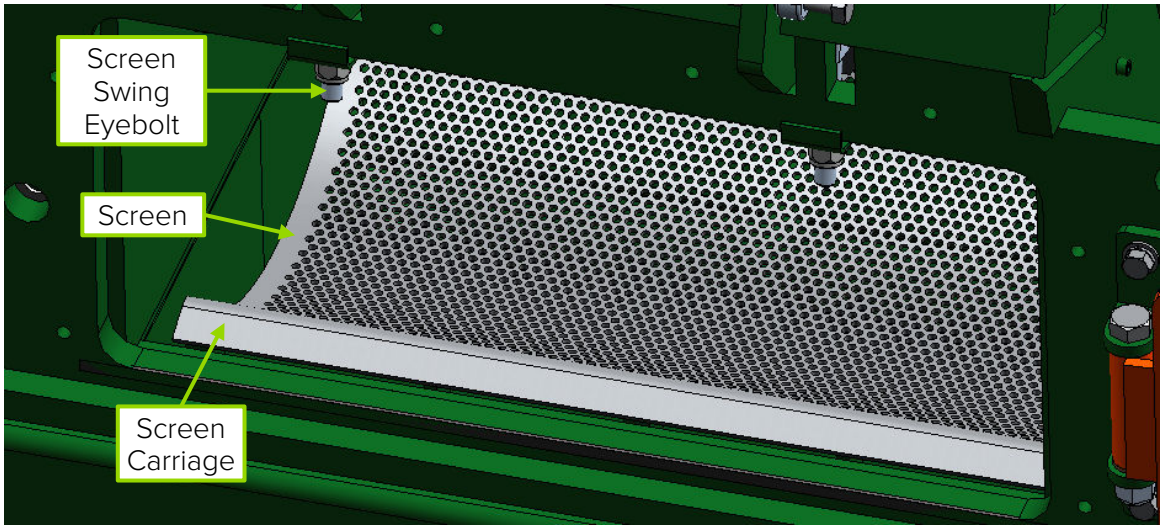


Figure A22. Screen Carriage in fully open position

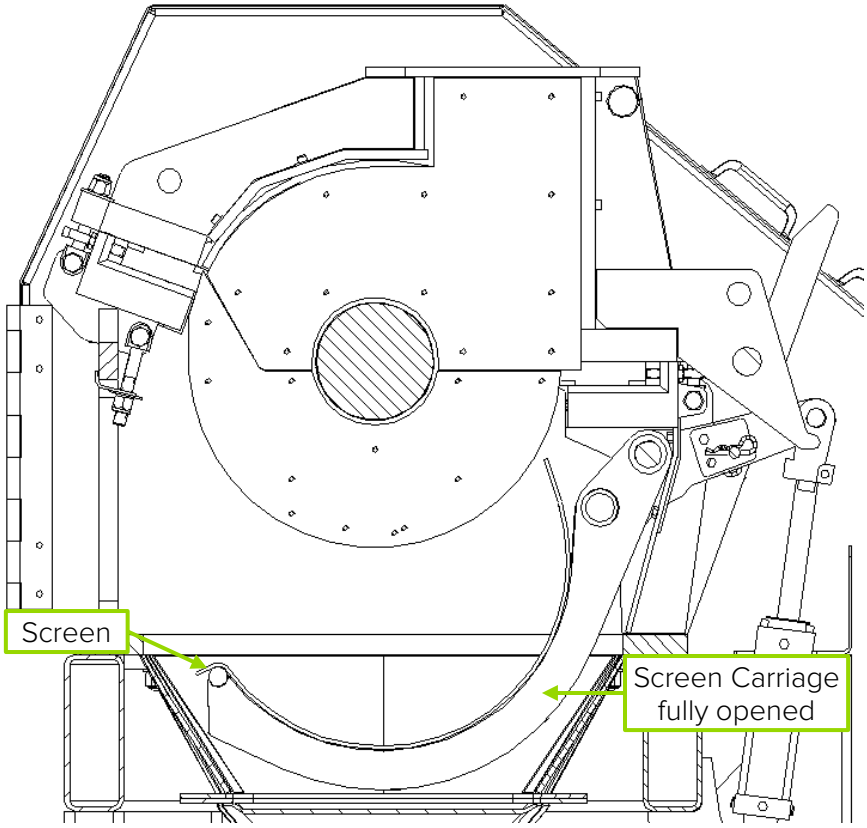


Figure A23. Screen Carriage in open position with Screen in place. Cross-sectional view shown for clarity

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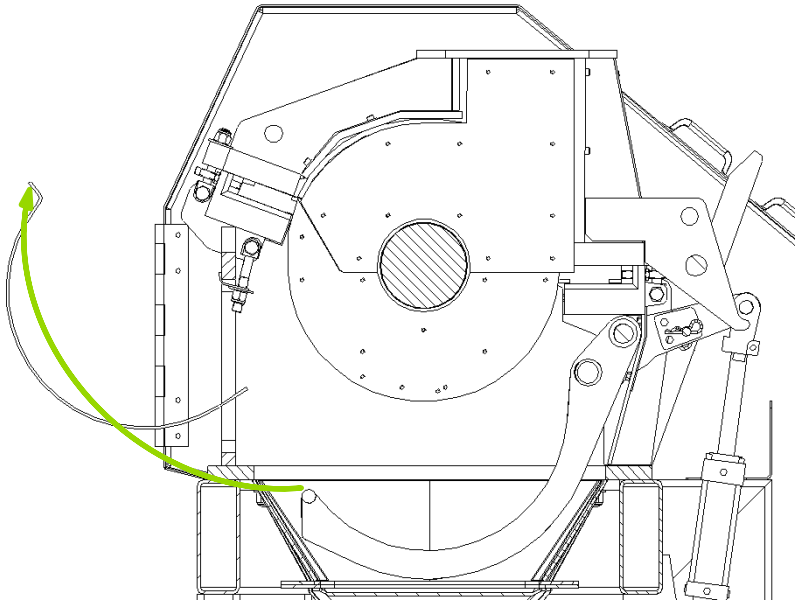


Figure A24. Screen Carriage in open position with Screen removed. Cross-sectional side view shown for clarity.

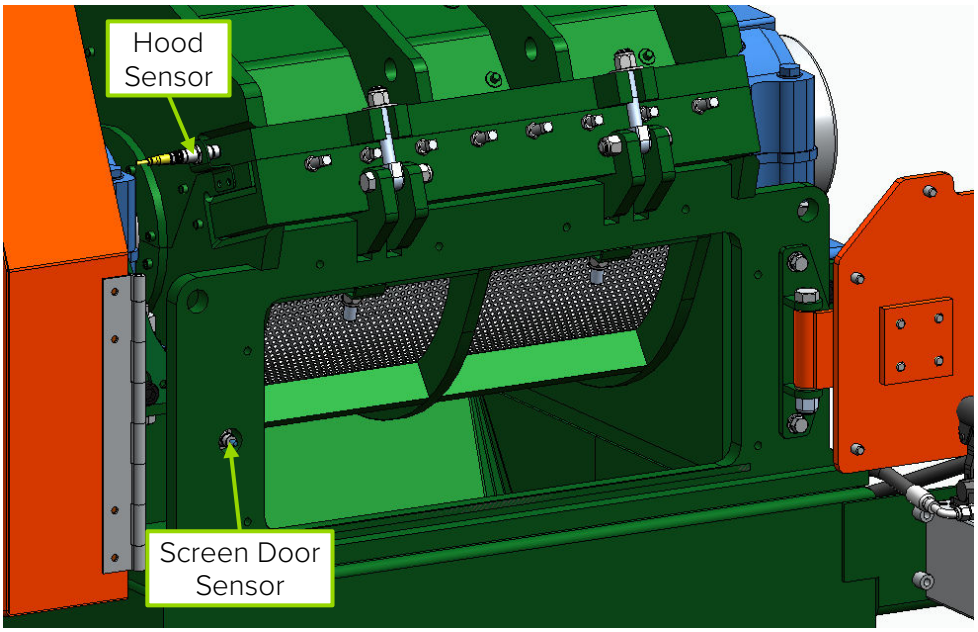
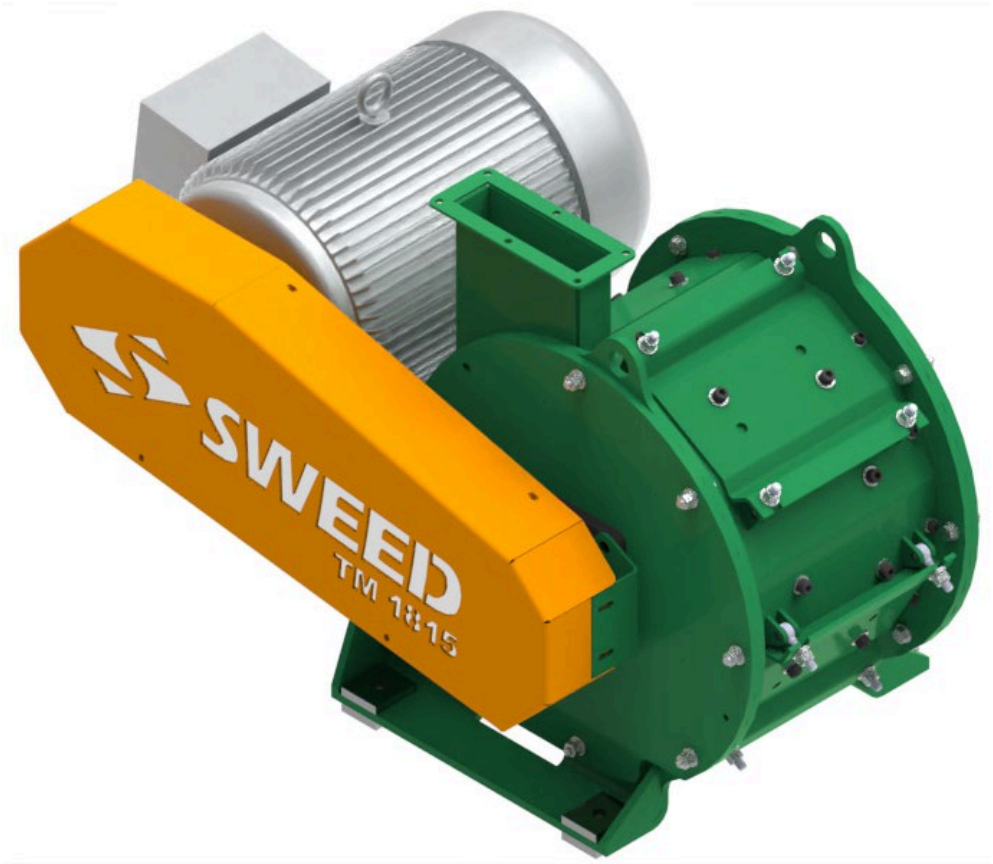


Figure A25. Hood and door sensors

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MODEL: TM1815AC

40HP TURBO MILL



*Pictures may not reflect exact layout received as additional customizations may be added per customer or system requirements.

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Revision	Date	Written By	Reviewed By
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SAFETY & OPERATIONS

1. SCOPE

This manual covers specific information about the operation and maintenance of the SWEED TM1815AC Turbo Mill. It does not contain general safety and maintenance requirements, which are in the Introduction chapter, or specific operation steps, which are in the Equipment Configuration chapter.

Note that figures within this chapter are generalized for all configurations of the TM1815AC: the appearances of customizable machine components, such as the base and inlet, may not reflect your machine's features and are simply intended to be representational. Additionally, the coloration of equipment is intended to create distinction between parts, and may not reflect reality.

2. INTENDED USE

2A. Functionality

This machine is designed to break down material into fine particles using a set of rotating impact plates on a rotor and stationary impact plates on the housing. It is a low torque, high speed machine. Material enters through the side via an airduct and is pulverized until it is small enough for the airflow to lift it up and out of the top of the machine. The size of the exiting material can be adjusted by changing the airflow rate and speed of the machine.

Refer to the Equipment Configuration chapter for details of the machine's place in the material process flow.

2B. Mounting

CAUTION: It is critical that the machine is bolted to a level floor. Bolting to an uneven floor will cause stress within the machine body leading to possible bolt failure or other machine damage.

3. MACHINE-SPECIFIC SAFETY INSTRUCTIONS

- WARNING: Excess vibration may occur under abnormal material feeding or slight modifications. Turbo Mill should be visually and physically monitored during operation to gain a sense of sudden or excessive vibration. Contact SWEED Machinery if vibration continues as ignoring vibration may cause significant damage to machine.
- WARNING: Flywheel mechanism spins down until it stops regardless of stop procedure. This means the impact plates will continue to rotate for a short period of time even after power to the motor is cut off.
- CAUTION: Do not place hands or stand near parts of unit that may be hot after long hours of usage. This includes bearings and main housing.

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4. OPERATION

4A. Setup

See the Installation section of the Equipment Configuration chapter for installation instructions. Connect the machine to the appropriate voltage power source and integrate into controls system. See SPECS manual for power requirements.

Jog the motor once to verify rotation is correct; correct rotation is shown in *Figure 1* below.

WARNING: running the motor in reverse may result in machine damage. It is critical to check rotation by bumping the motor prior to operating the machine.

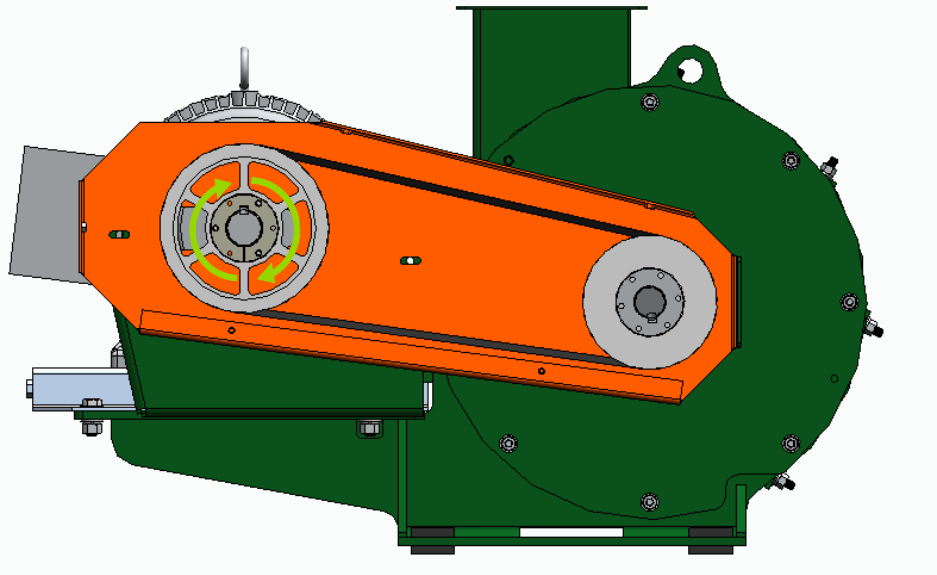


Figure 1. Correct motor rotation. Drive belt guard hidden for clarity.

4B. Starting Machine

Depending on the controls of the equipment configuration, it may not be possible to start the machine until other machines are operating. Refer to Equipment Configuration chapter for details on startup procedures.

Additionally, the Turbo Mill is not designed to start when there is material loaded in the pulverizing chamber. Material in the chamber can prevent machine startup.

4C. Stopping Machine

Refer to Equipment Configuration chapter for standard shut down procedures.

This machine typically does not include an E-stop mounted directly to it. Instead, E-stops are part of the larger equipment configuration (if controls are provided by SWEED), or should be integrated by the end user during installation; refer to Equipment Configuration chapter.

Note: during any type of shutdown, including an E-Stop that cuts power to the motor instantaneously, the rotor must spin-down until it stops. If there is no material in the pulverizing chamber, this will typically take 2-3 minutes.

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4D. Airflow

Airflow is critical to the SWEED Turbo Mill, since air conducts material in and out of the pulverizing chamber. Without correct airflow, too much material could build up in the chamber and jam the rotor. Excessive heat is another possible consequence, which could result in melted or burnt material. Minimum airflow requirements are typically designed and implemented with CFM requirements. Consult SWEED Engineering prior to changing any HVAC or airflow design.

4E. Material Flow into Turbo Mill

It is essential to ensure the Turbo Mill is fed material at an appropriate rate. The best way to achieve this is by metering the flow using upstream equipment. If too much material is introduced to the cutting chamber at once, the rotor can become jammed.

4F. Suitable Infeed Material

As a general rule, SWEED recommends material no thicker than 16 AWG. The material length is of less consequence, but it must be short enough to allow for conveyance by air. Thicker materials are more likely to retain heat, which can lead to metal discoloration and plastic melting or burning.

4G. Tips for Optimal Function

The material dwell time (how long the material spends in the pulverizing chamber) is determined primarily by the airflow rate and the Turbo Mill rotor speed. As the airflow increases, the dwell time will decrease. As the rotor speed increases, the dwell time will also increase. A longer dwell time will result in smaller material pieces.

If the dwell time is too short, the material won't be pulverized small enough to separate the different components. If the dwell time is too long, material may melt or burn.

If the material is overheating, SWEED recommends increasing the airflow to both decrease dwell time and help cool the material.

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5. TROUBLESHOOTING

Possible Cause	Solution
5A. Machine will not start/stop running	
Failed electrical service	Check circuit power
Motor protection tripped	Reset motor
Broken drive belt	Replace belt
Too much material in cutting chamber	Clear material before trying to start the machine again.
5B. Machine stalls due to material overload	
Inadequate airflow	Check for appropriate airflow before and after the Turbo Mill
Material feed rate too high	Decrease infeed rate
Dwell time too long	Increase airflow
	Decrease rotor speed
5C. Material overheating (discoloration, melting, burning)	
Dwell time too long	Increase airflow
	Decrease rotor speed
Material too thick	Sort out oversized material (refer to Section 4F)
5D. Material not properly separated	
Dwell time too short	Decrease airflow
	Increase rotor speed
Material lengths too long	Feed shorter lengths of material

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MAINTENANCE

6. COMPONENT IDENTIFICATION

See *Figure 2* and *Figure 3* below to identify and locate key components referred to in the following sections.

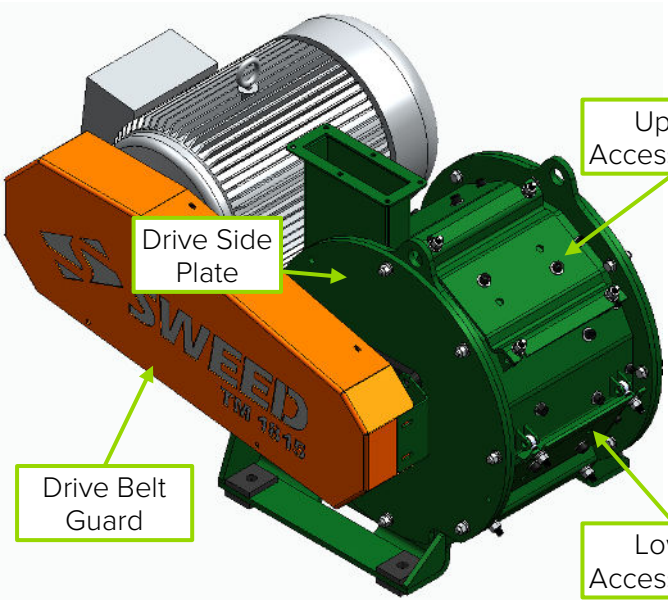


Figure 2. Component identification: front ISO view

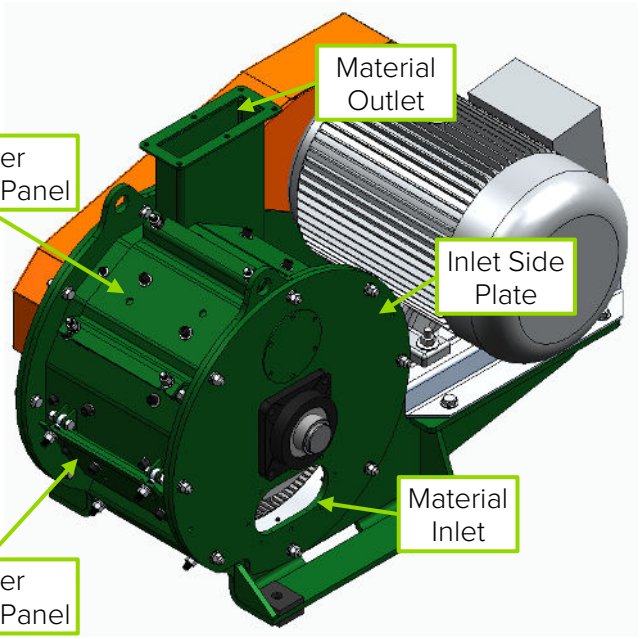


Figure 3. Component identification: rear ISO view

7. ACCESSING MACHINE INTERIOR

7A. Removing the Access Panels	
STEP 1	Ensure Turbo Mill is electrically locked out prior to any repair or maintenance. Verify the rotor is stopped by looking through Drive Belt Guard at the sheave.
STEP 2	Loosen the nuts that secure the 4 Eyebolts to the Upper Access Panel, then swing the Eyebolts out of the Panel bolt slots. Refer to *Figure A1*.
STEP 3	Remove the Access Panel.
STEP 4	Repeat the previous two steps with Lower Access Panel.
STEP 5	After maintenance is complete, reapply the Access Panels and secure them with the Eyebolts.

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7B. Removing the Inlet Side Plate	
STEP 1	Ensure Turbo Mill is electrically locked out prior to any repair or maintenance. Verify the rotor is stopped by looking through Drive Belt Guard at the sheave.
STEP 2	Remove any infeed assemblies attached to the Side Plate that may prevent it being disconnected from the Turbo Mill.
STEP 3	Prepare a lift to support the end of the Rotor shaft. SWEED recommends a piece of scrap wood (approximately 2.25" tall) for the initial support and a lift strap hung from a forklift or crane for maintained support.
STEP 4	Using the Inlet as an access point, carefully rotate the Rotor manually so there is not an Impact Plate at the very bottom of the Rotor.
STEP 5	Wedge the piece of scrap wood between the Rotor and the lowest Stationary Impact Plate to support the Rotor. Wiggle the Rotor to ensure that the support is secure.
STEP 6	Loosen the bearing set screw so that the bearing can slide off the shaft without added resistance.
STEP 7	Remove the fasteners that secure the Side Plate. Refer to *Figure A3* for fastener identification.
STEP 8	Slide the Side Plate and bearing away from the housing along the Rotor shaft. If the bearing is stuck on the shaft, the jacking points on the Side Plate can be used with 1/2-13 bolts to push against the housing. Refer to *Figure A1*.
STEP 9	Once the Side Plate is removed, hook the lift strap around the Rotor shaft to securely support it while work is performed on the machine interior.

7C. Removing the Drive Side Plate	
STEP 1	Ensure Turbo Mill is electrically locked out prior to any repair or maintenance. Verify the rotor is stopped by looking through Drive Belt Guard at the sheave.
STEP 2	Open the front of the Drive Belt Guard by removing the 5 bolts that secure it to the back of the guard, then lifting it away. See *Figure 2* for guard identification.
STEP 3	Remove the 3 belts from the sheaves. It may be necessary to adjust the Motor position to create adequate slack for belt removal—refer to Steps 5 and 6 of Section 10A for details.
STEP 4	Remove the sheaves and QD bushings from both the Motor and Rotor shafts. Refer to *Figure A2*.
STEP 5	Remove the 4 bolts that secure the Back Plate of the Drive Belt Guard to the housing, then remove the Plate.
STEP 6	Remove the Bearing Locknut from the Rotor shaft.

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STEP 7	Prepare a lift to support the end of the Rotor shaft. SWEED recommends using two lift straps hung from a forklift or crane.
STEP 8	Hook one of the lift straps onto the exposed section of the Rotor shaft, and raise it until the shaft is supported securely.
STEP 9	Loosen the bearing set screw so that the bearing can slide off the shaft without added resistance.
STEP 10	Remove the fasteners that secure the Side Plate. Refer to *Figure A3* for fastener identification.
STEP 11	Slide the Side Plate and bearing away from the housing along the Rotor shaft. If the bearing is stuck on the shaft, the jacking points on the Side Plate can be used with 1/2-13 bolts to push against the housing. Refer to *Figure A1*.
STEP 12	Once the Side Plate is far enough from the housing, hook the second lift strap around the Rotor shaft between the Side Plate and the housing.
STEP 13	Remove the outer lift strap, then finish removing the Side Plate and bearing from the shaft.

8. FASTENERS

8A. Impact Plate Bolt Break-in

Whenever an impact plate bolt is deliberately loosened or removed (for example when the plate is replaced) the bolt break-in period resets, and the impact plate bolts should be checked for the correct torque after 8 hours of run time.

8B. Critical Fastener Break-in

Whenever a critical fastener is deliberately loosened or removed, the fastener break-in period resets, and the fastener should be checked for the correct torque after 8 hours of run time.

8C. Critical Fastener Torque Specifications (see *Figure A3*, *Figure A4*, and *Figure A5* for fastener identification; refer to *Figure A6* for tool requirements)

Callout	Description	BOLT-NUT Specification	Copper-Based Anti-Seize	2ND Pass Req.	TORQUE (FT-LB)
A1	Stationary Impact Plate Bolt	Bolt, 1/2-13 X 1 SHCS	Yes	Yes	106
A2	Stationary Impact Plate Bolt (on Access Panel)	Bolt, 1/2-13 X 1 1/4 SHCS			
B	Rotating Impact Plate Bolt	Bolt, 3/8-16 X 1 1/4 Hex HD GR5	Yes	Yes	26
C	Rotating Impact Plate Nut	Nut, 3/8-16 Nylock Hex	NA	NA	NA
D	Wear Ring Bolt	Bolt, 3/8-16 X 1 SHCS	Yes	Yes	*
E	Side Plate Bolts	Bolt, 1/2-13 X 2 Hex HD GR5	Yes	Yes	*

* Seat nut by tool plus 1/4 turn

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9. LUBRICATION

Checklists of the standard bearings and motors used in this machine model are below; refer to the Exploded Parts package and the Manufacturer Maintenance Manual List if your machine specifications included custom components.

9A. Bearings Lubrication Schedule / Checklist

Refer to the table below for recommended lubrication intervals based on standard service conditions. For bearings that experience high speeds (marked with * in the table below), too much grease can cause overheating. Adding the proper amount of grease at the appropriate lubrication interval and draining excess grease via the grease fitting are critical maintenance operations. Refer to the manufacturer manual(s) for grease amount(s). Bearings are installed with the appropriate grease amount of from the factory, so SWEED recommends recording the bearing temperature during initial startup for comparison as the correct operational temperature.

Run Time	Rotor Bearings (2)*
8 hrs/day	2 weeks
16 hrs/day	1 weeks
24 hrs/day	1 weeks

*Bearings experience high speeds

For details of the standard service conditions and lubrication intervals for bearings in non-standard conditions, refer to the manufacturer manual list below.

QTY	SWEED #	Part Description	Manufacturer Manual
2	BX008399	Rotor Bearings	TURNER Mounted Ball Bearing Lubrication

9B. Motor Checklist

QTY	SWEED #	Part Description	Manufacturer Manual
1	BX031351	40HP Motor	WWE Polyphase AC Induction Motors Install & OMM

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10. BELT MAINTENANCE

Belts should be regularly inspected for wear, proper alignment, and that tension is within tolerance. Belt tensioning steps and specifications are below.
Details for the installation of new belts can be found in *Figure A8*.

10A. Belt Tensioning	
STEP 1	Ensure Turbo Mill is electrically locked out prior to any repair or maintenance. Verify the rotor is stopped by looking through the Drive Belt Guard at the sheave.
STEP 2	Open the front of the Drive Belt Guard by removing the 5 bolts that secure it to the back of the guard, then lifting it away. See *Figure 2* for guard identification.
STEP 3	Check the belt tension using a belt tension gauge applied at the middle of the belt. Refer to *Figure A7*.
STEP 4	Verify that the measured tension is within the specifications outlined in *Figure 4* below. If the tension is out of spec, it can be adjusted using the following steps.
STEP 5	Loosen the Motor Restraint Nuts that secure the Motor to the Motor Mount. See *Figure A9* for component identification.
STEP 6	Use the Motor Mount Jacking Bolts to adjust the Motor position and tension the belt.
STEP 7	Once the Motor is positioned to create the proper belt tension, retighten the Restraint Nuts.
STEP 8	If a new belt is being installed, refer to the instructions in *Figure A8*.
STEP 9	Replace the guard.

TM1815 TURBO MILL 3-B72 BELT TENSION		
Tension	New Belt	Used Belt
Static Tension (per rib/strand)	47 to 50 lbf	40 to 44 lbf
Static Belt Pull (total pull)	281 to 301 lbf	241 to 261 lbf
Rib/Strand Deflection Distance	0.37 in	0.37 in
Rib/Strand Deflection Force	3.4 to 3.6 lbf	3.0 to 3.2 lbf
Sonic Tension Meter	208 to 223 N	179 to 194 N
Belt Frequency	29 to 30 Hz	27 to 28 Hz
Powerband Multiplier	1.0020 to 1.0021	1.0017 to 1.0018

Figure 4. Belt tensioning specs

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11. ROTATING IMPACT PLATES

11A. Impact Plate Wear & Rotation

The Rotating Impact Plates are manufactured with 4 impact edges to maximize their life; this should allow the plate to be flipped 180 degrees 3 times before replacement. However, depending on the length of service before flipping, the plate may become too worn for the edge on the inverse side of the plate to be used. As a rule of thumb, if the impact edge has been worn down so that its radius is larger than half the plate thickness, the inverse edge should not be used.

Visual inspection of the current impact edge determines when the Rotating Impact Plates should be flipped or replaced; if the edge has a large radius or is chipped, it is time to flip or replace the plate. Continuing to use worn Impact Plates will increase the dwell time of material in the pulverizing chamber.

Additionally, SWEED strongly recommends flipping and replacing all of the Rotating Impact Plates at the same time to help ensure rotational balance of the rotor.

11B. Impact Plate Bolts

New Impact Plate Bolts and Locking Nuts are required whenever they are removed from an Impact Plate. Reusing these fasteners will void the Turbo Mill warranty as the Rotating Impact Plates may come off during operation if Bolts/Nuts are not correctly installed/replaced. Contact SWEED for replacement fastener kits, or refer to Section 8C for fastener specifications.

The Bolt Break-In period resets whenever an Impact Plate is installed and the Impact Plate Bolts are torqued. See Section 8A.

11C. Replacing the Rotating Impact Plates	
STEP 1	Access the Rotor by either following the steps in Section 7A to remove the Access Panels, or removing a Side Plate using the steps in Section 7B or 7C.
STEP 2	Remove the bolts and locking nuts that secure the Rotating Impact Plate to the Rotor, then remove the Impact Plate. CAUTION: As Rotating Impact Plates are removed from the Rotor, it becomes rotationally unbalanced and will tend to rotate so the heaviest portion is on the bottom. Maintenance Operator should be mindful of preventing Rotor rotation and use extreme caution when removing Impact Plates.
STEP 3	Visually inspect the Rotor for signs of abnormal wear or other issues.
STEP 4	Install the new or flipped Impact Plate using new Locking Nuts and Bolts lubricated with copper-based anti-seize. Verify that the Bolt orientations and the Impact Plate's position relative to the Rotor Bolt Plate are correct. See *Figure A5*.
STEP 5	Torque the Bolts/Nuts to the value specified in Section 8C.
STEP 6	Repeat previous steps to replace other Rotating Impact Plates as needed.
STEP 7	Reapply the Access Panels and secure them with the Eyebolts.

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12. STATIONARY IMPACT PLATES

12A. Impact Plate Wear

The Stationary Impact Plates should be replaced based on visual inspection of the current impact edges; if the edges have large radii or are chipped, it is time to replace the plate. Continuing to use worn Impact Plates will increase the dwell time of material in the pulverizing chamber.

12B. Impact Plate Bolts

New Impact Plate Bolts are required whenever they are removed from an Impact Plate.
Reusing these fasteners will void the Turbo Mill warranty as the Stationary Impact Plates may come off during operation if Bolts are not correctly installed/replaced.
Contact SWEED for replacement fastener kits, or refer to Section 8C for fastener specifications.
The Bolt Break-In period resets whenever an Impact Plate is installed and the Impact Plate Bolts are torqued. See Section 8A.

12C. Replacing the Stationary Impact Plates

The Stationary Impact Plates can be removed/replaced with two different methods. The first method, detailed in Section 12D, involves the removal of a Side Plate to facilitate access to the pulverizing chamber. This method allows for simultaneous inspection and removal of all the Stationary Impact Plates, as well as providing access to the closer Wear Ring (see Section 13).
The second method, detailed in Section 12E, involves less disassembly than the first method but allows for less visibility of the pulverizing chamber.

12D. Stationary Impact Plate Replacement—Side Plate Method	
STEP 1	Follow the steps in either Section 7B or 7C to remove one of the Side Plates and access the pulverizing chamber.
STEP 2	Remove the 12 bolts that secure the accessible Wear Ring to the housing.
STEP 3	Remove the Wear Ring.
STEP 4	Remove and discard the bolts and lock washers that secure the Stationary Impact Plate to the housing, then remove the Impact Plate.
STEP 5	Thoroughly clean the housing where the Impact Plate attaches using compressed air to ensure no debris is present.
STEP 6	Install the new Impact Plate using new Bolts lubricated with copper-based anti-seize. Verify that the Plate orientation is correct—refer to *Figure A10*. Incorrect installation of the Impact Plates will cause significant issues.
STEP 7	Torque the Bolts to the value specified in Section 8C.
STEP 8	Repeat previous steps to replace other Stationary Impact Plates as needed.
STEP 9	Follow Steps 4-6 of Section 13A to reinstall the Wear Ring.

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STEP 10	Follow the Section 7B or Section 7C steps in reverse to reinstall the removed Side Plate.

12E. Stationary Impact Plate Replacement—Access Panel Method	
STEP 1	Follow the steps in Section 7A to remove the Access Panels.
STEP 2	Remove and discard the bolts and lock washers that secure each of the 4 Stationary Impact Plates closest to the Access Panel gaps. Then remove the Plates. Refer to *Figure 5* below.
STEP 3	The other Plates are trickier to access, and must be removed in a particular order. Details are in the following steps, and the Plates are labeled in *Figure 5*.

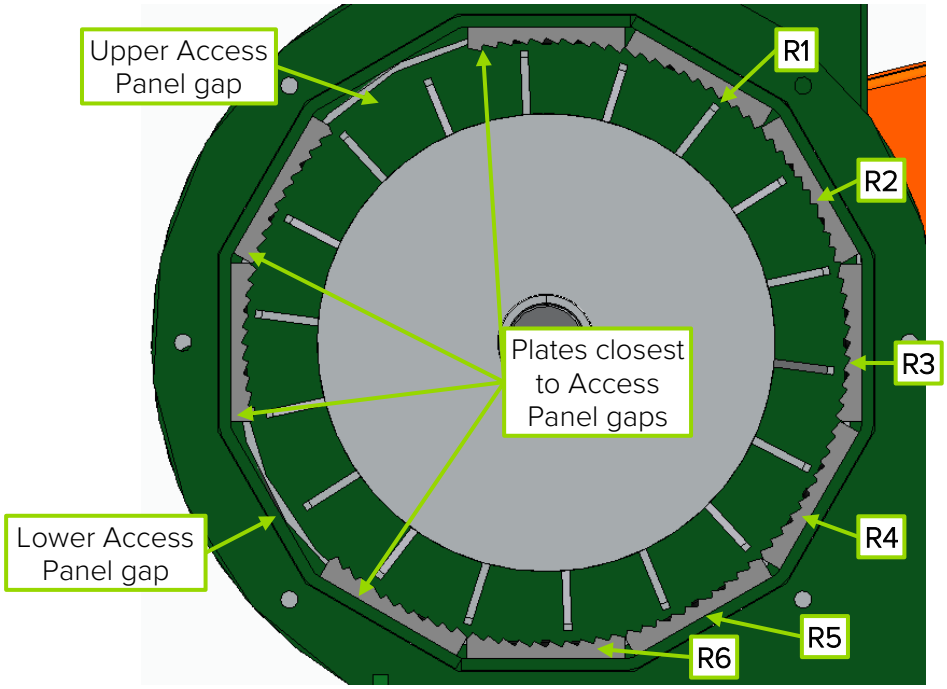


*Figure 5. Stationary Impact Plate **removal** order*
(Side Plate, bearing, and Wear Ring hidden for clarity)

STEP 4	For Plate R1, begin by securing the rotor to temporarily prevent rotation. Then remove and discard the fasteners that secure the Plate; it should drop onto the Rotor and catch on a Rotating Impact Plate.
STEP 5	Remove the Rotor securement and carefully spin the Rotor forward manually to move the Plate to the Upper Access Panel gap until it can be lifted out of the pulverizing chamber.
STEP 6	Repeat the previous 2 steps for Plate R2.

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STEP 7	Remove the fasteners from plates R3-R5 in order so that each plate is free from the housing but supported by its neighbor.
STEP 8	Brace the front edge of R6, then remove its fasteners. Slowly withdraw the brace and R6 will be pushed forward by R3-R5.
STEP 9	Remove R3-R6 from the housing as each one settles at the bottom of the pulverizing chamber. A long and thin screwdriver can be used through the empty holes in the housing to move the Plates forward.
STEP 10	Thoroughly clean the pulverizing chamber using compressed air to ensure no debris is present.
STEP 11	Installation of the new Plates must be done in the order shown in *Figure 6* below. **It is essential to verify that the Plate orientation is correct before each Plate is inserted into the housing**—refer to *Figure A10*. All Impact Plates should be installed using new Bolts lubricated with copper-based anti-seize.

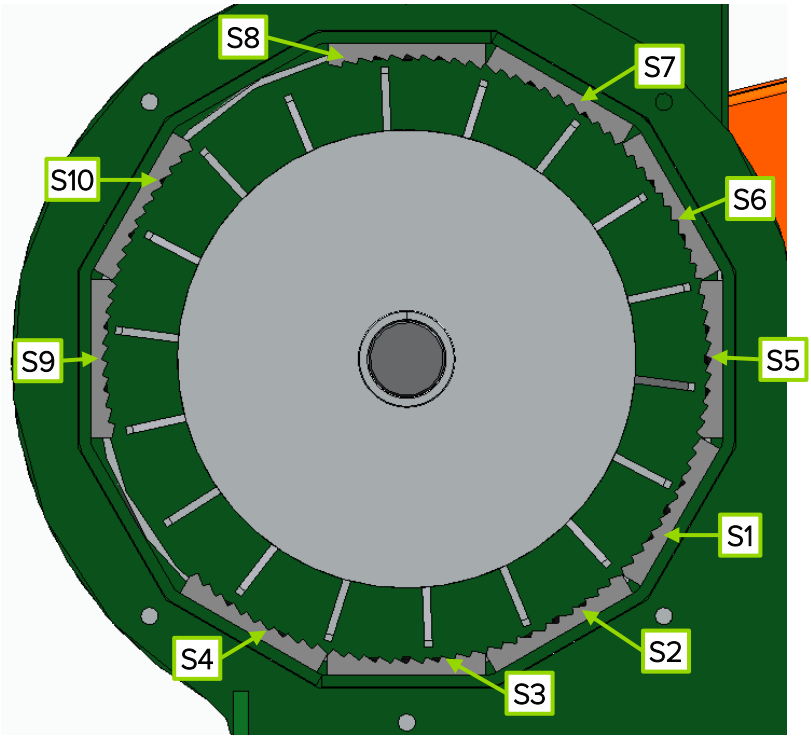


*Figure 6. Stationary Impact Plate **installation** order*
(Side Plate, bearing, and Wear Ring hidden for clarity)

STEP 12	Plates S1 and S2 should be placed into the machine then pushed further inwards by Plates S3 and S4. Secure Plate S4 using new Bolts, then continue onto Plates S3, S2, and S1.

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STEP 13	Plates S5-S7 should be installed one at a time by placing them on top of the Rotor through the Upper Access Panel then manually turning the Rotor backwards until the plate drops into place. A long and thin screwdriver can be used through the empty holes in the housing to help slowly lower the plates to their correct positions.
STEP 14	Plates S8-10 can be positioned easily through the Access Panel gaps.
STEP 15	The two Access Panels also have Stationary Impact Plates attached to them; remove the fasteners that secure the Plates, then remove the Plates.
STEP 16	Install new Plates onto the Access Panels and secure with new Bolts.
STEP 17	Torque all of the Stationary Impact Plate Bolts to the value specified in Section 8C.
STEP 18	Reapply the Access Panels and secure them with the Eyebolts.

13. WEAR PLATES

The interior edges of the Turbo Mill pulverizing chamber are equipped with replaceable Wear Rings to prevent scouring of the main housing by processed material. These Rings should be periodically inspected and replaced as needed. Refer to the Exploded Part package for identification of the Wear Rings used in your Turbo Mill model.

13A. Replacing the Wear Rings	
STEP 1	Follow the steps in Section 7B to remove the Inlet Side Plate.
STEP 2	Remove the 12 bolts that secure the accessible Wear Ring to the housing.
STEP 3	Remove the Wear Ring.
STEP 4	Thoroughly clean the housing where the Wear Ring attaches using compressed air to ensure no debris is present.
STEP 5	Install the new Wear Ring.
STEP 6	Tighten the bolts as specified in Section 8C.
STEP 7	Reinstall the Inlet Side Plate by following the steps in Section 7B in reverse.
STEP 8	Follow the steps in Section 7C to remove the Drive Side Plate.
STEP 9	Repeat Steps 2-6 above to install the new Wear Ring, then follow the Section 7C steps in reverse to reinstall the Drive Side Plate.

14. CLEARING JAMS

Jams should only be cleared when the machine is fully locked out and all moving parts are motionless. Jams most commonly occur within the Turbo Mill pulverizing chamber due to an unsuitable material or too much material being fed at once. If such as jam does occur, the Lower Access Panel should be removed to allow the material to be cleared from the pulverizing chamber (refer to Section 7A). If the jam cannot be cleared this way, it may be necessary to remove one of the Side Plates instead—see Section 7B and Section 7C.

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APPENDICES

15. APPENDIX A: MAINTENANCE FIGURES

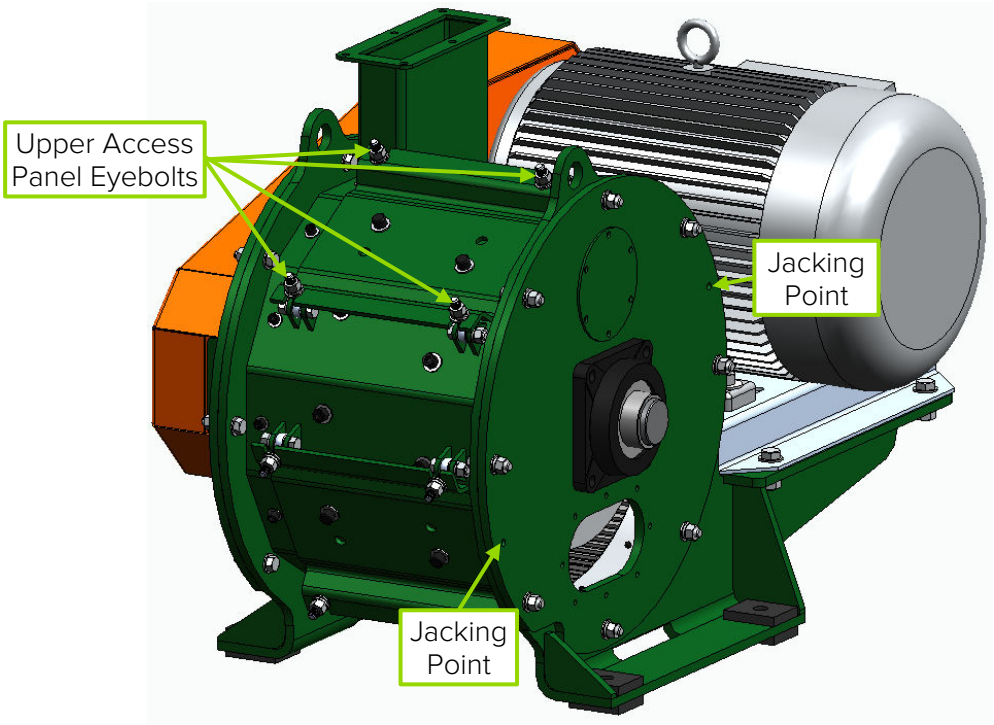


Figure A1. Key components for accessing machine interior

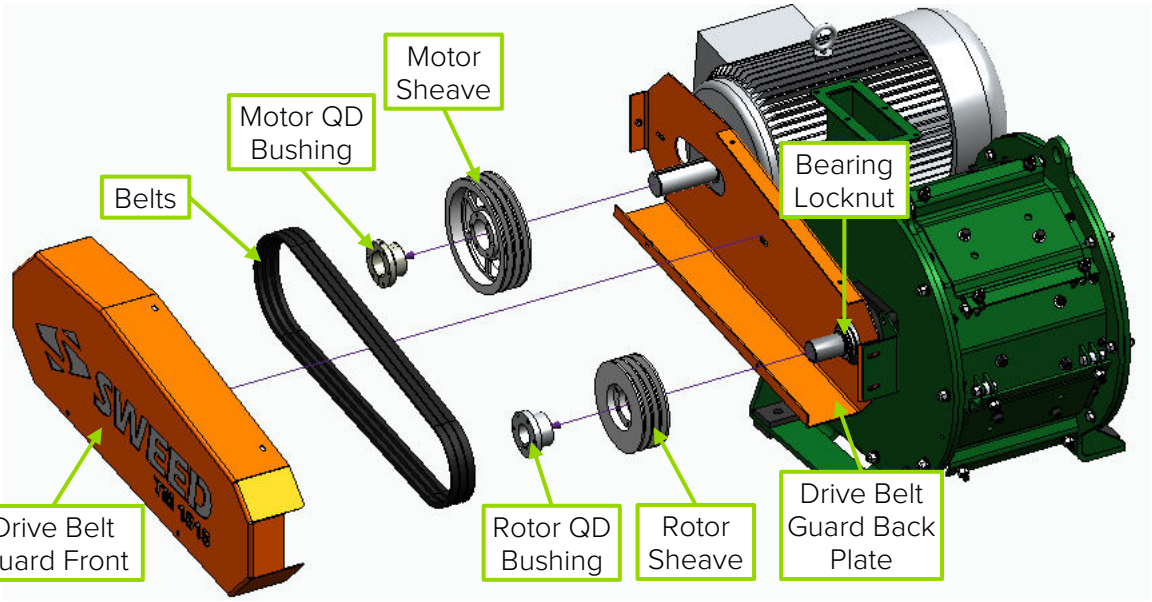


Figure A2. Key components when accessing Drive Side Plate

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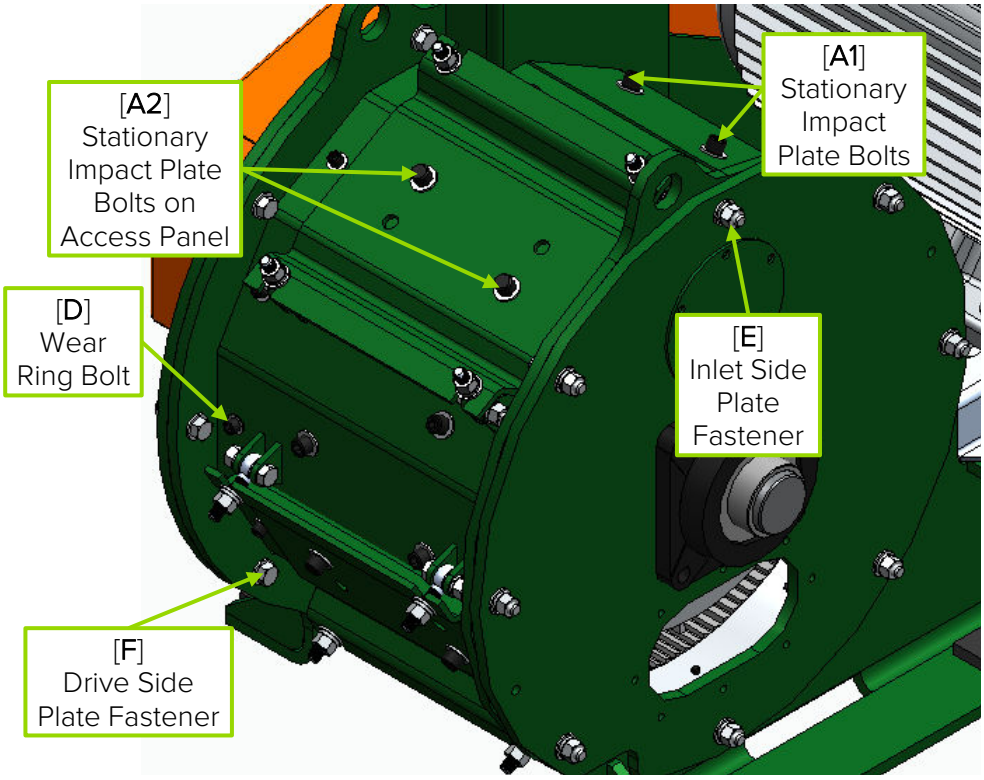


Figure A3. Critical Fasteners exterior view

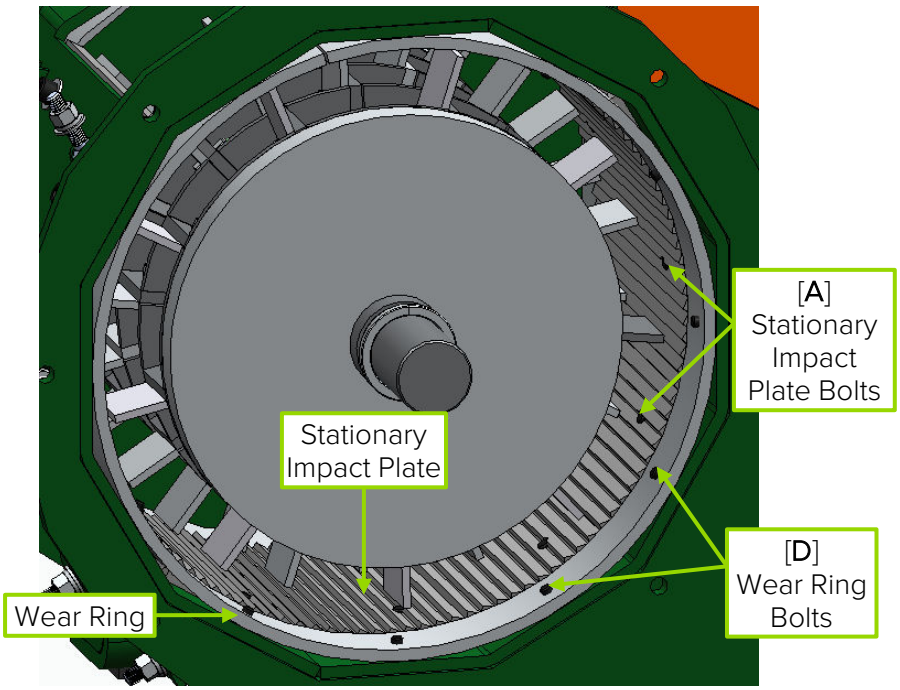


Figure A4. Pulverizing Chamber Components
(Inlet Side Plate removed for clarity)

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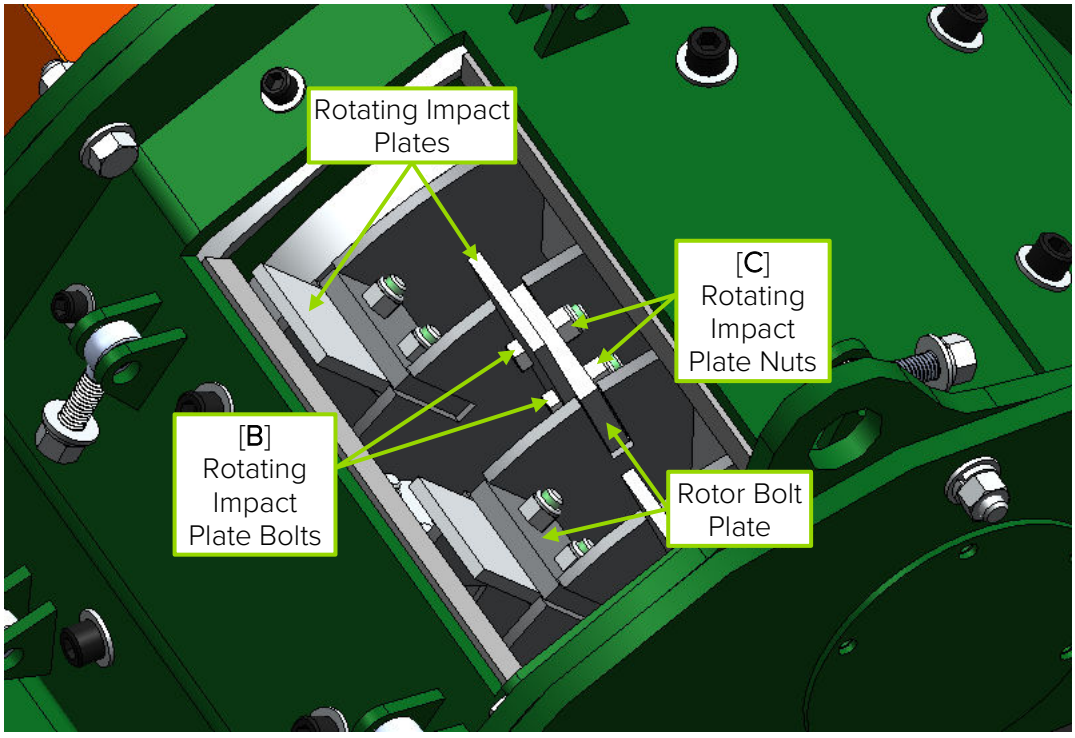


Figure A5. Rotor Components
(Upper Access Panel removed for clarity)

SPECIALTY TOOLS FOR CRITICAL FASTENERS	
Tool	**Use**
3/8” Allen Socket X 3/4” Drive	Stationary Impact Plate Bolts
5/16” Allen Socket X 3/4” Drive	Wear Ring Bolts
3/4” Torque Wrench (min 125 ft-lb rated)	Torquing Impact Plate and Wear Ring Bolts

Figure A6. Table detailing unusual tools required for machine maintenance

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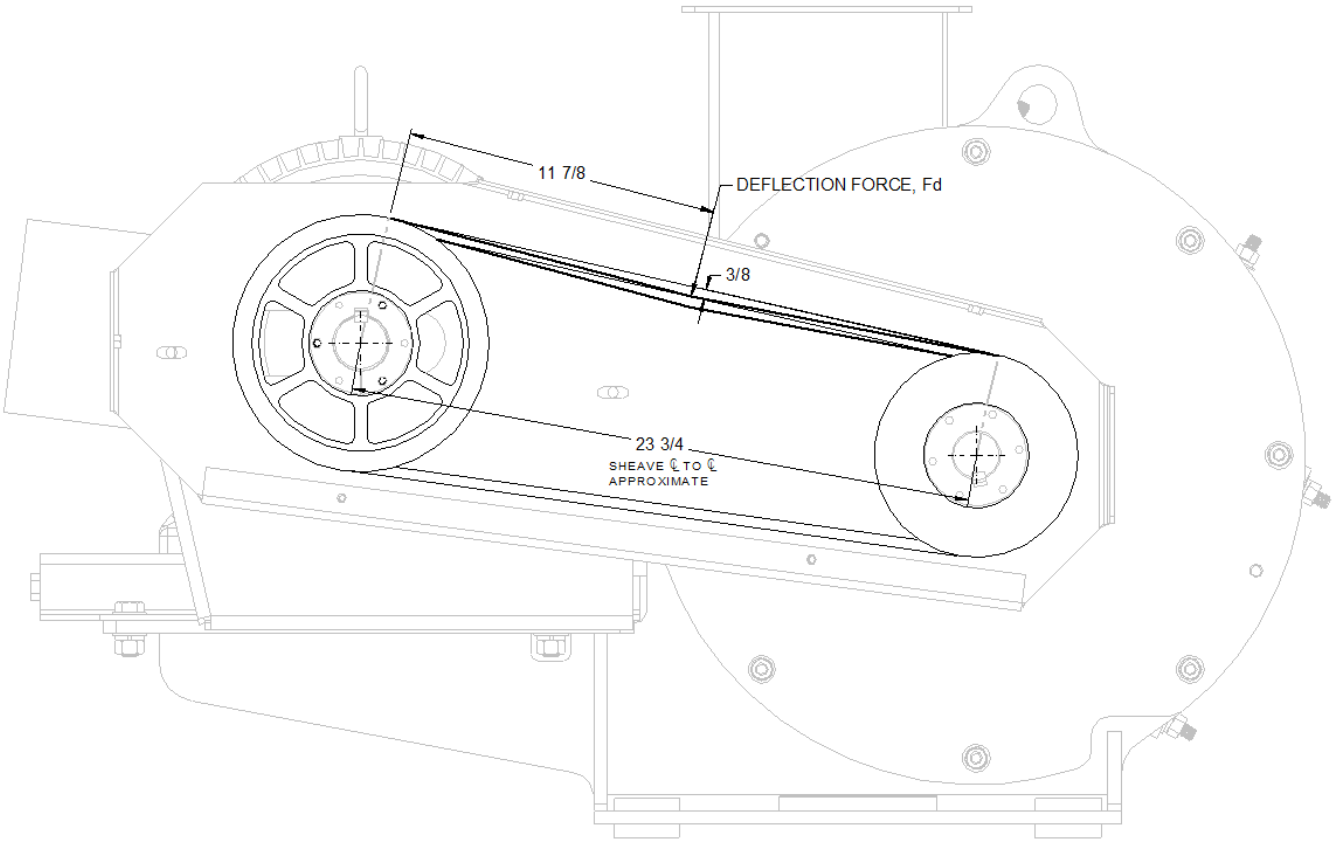


Figure A7. Belt tensioning diagram

Belt Tensioning Instructions:
Always use a belt tension gauge that indicates static tension to determine proper belt tightening specification. Deflection forces specified are for Sweed TM1815AC Turbo Mill using 3X B72 Gates Hi-Power II® Belts.
If multiple belts are being used for the drive, divide tension by number of belts to give per belt tension to be measured.

Step 1: Position belt and set tension to the prescribed Installation Tension.
Step 2: Run belt for five minutes.
Step 3: If belt tension drops below Suggested Tension range, retighten belt to Installation Tension.
This will allow the belt to seat-in and run at Suggested Tension after it has operated under normal driving conditions.

Figure A8. New belt tensioning instructions

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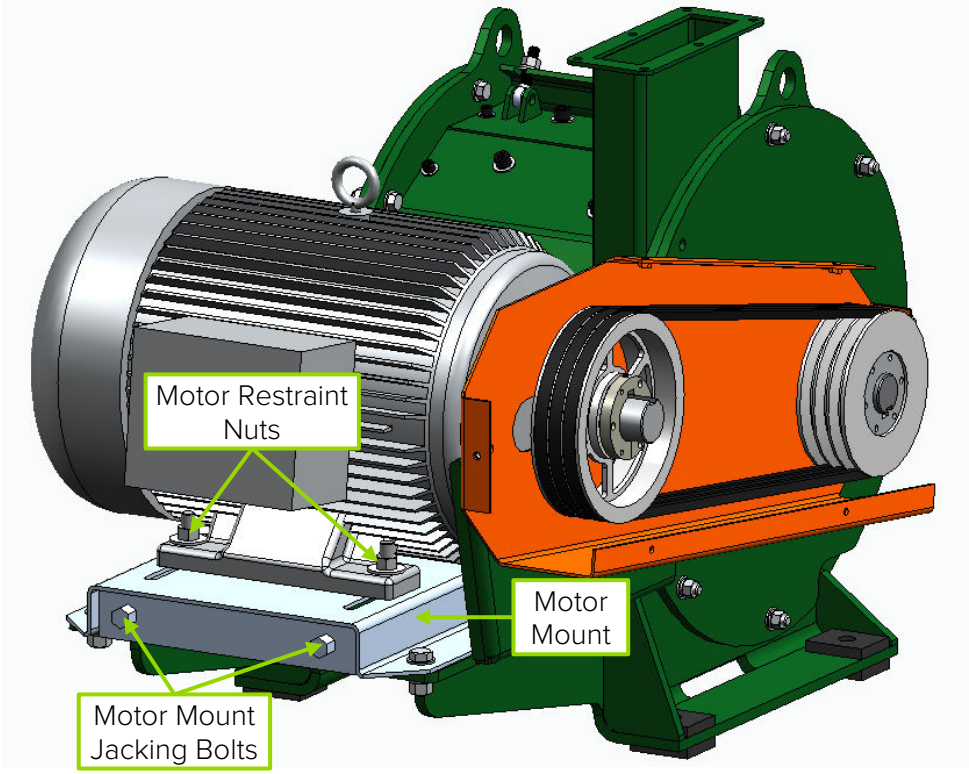


Figure A9. Motor mount components

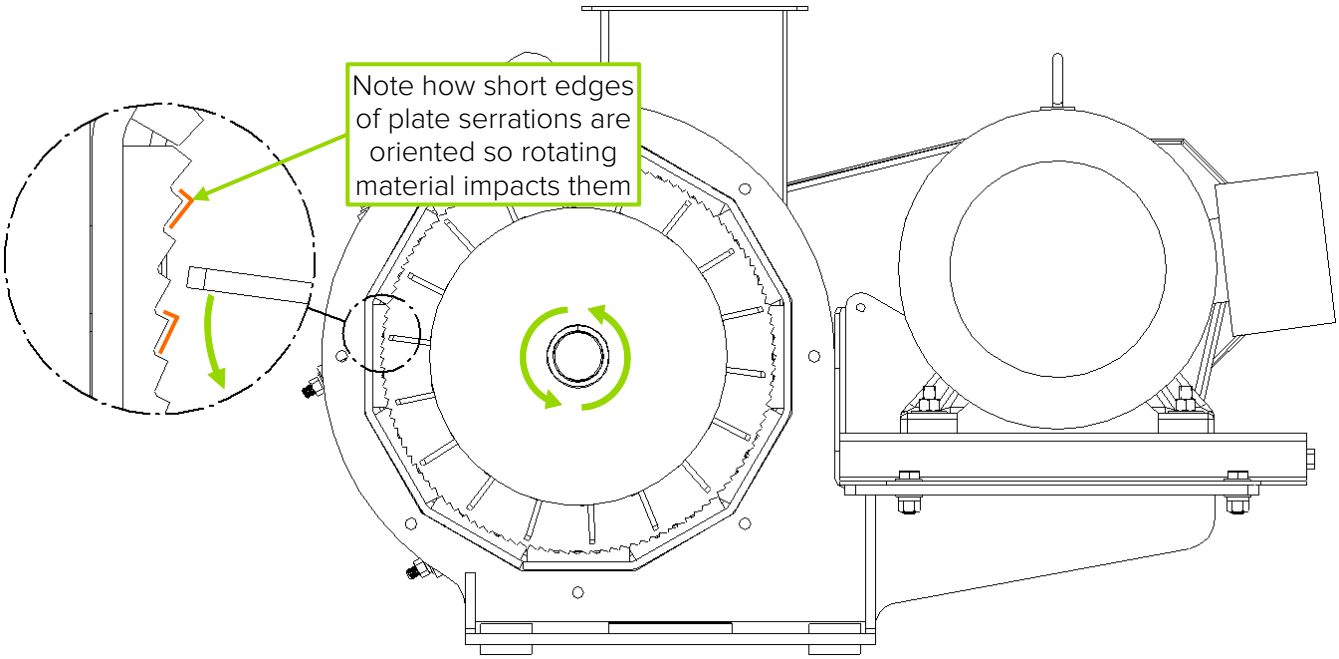
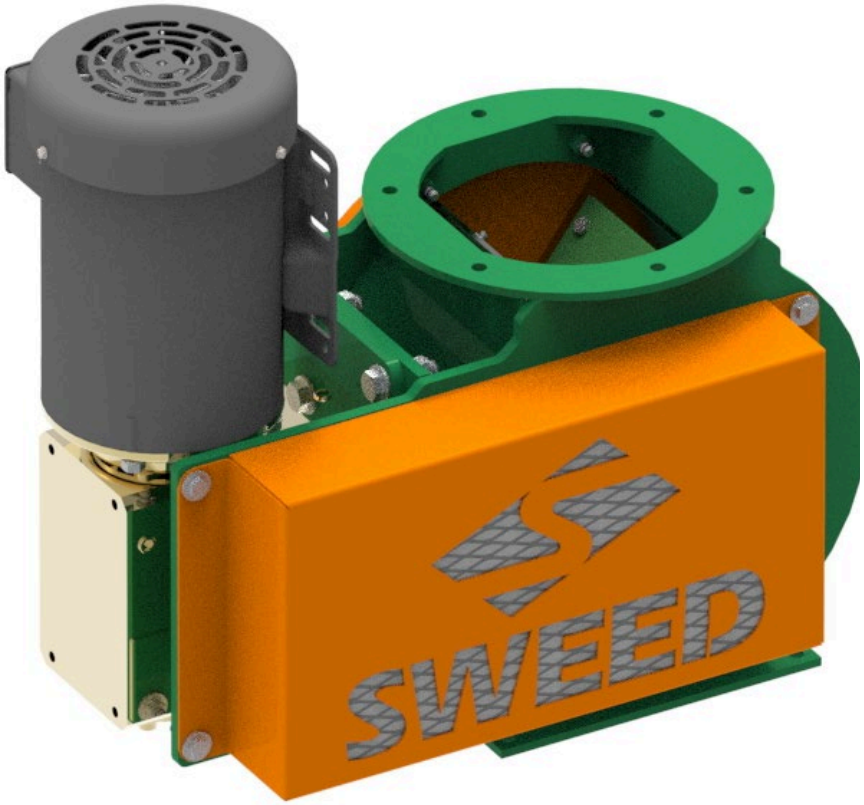


Figure A10. Stationary Impact Plate orientation
(View from infeed side; side plate hidden for clarity)

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MODEL: ROTARY AIRLOCK

SIZES 8”, 10”, AND 14”



*Pictures may not reflect exact layout received as additional customizations may be adder per customer or system requirements.

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Revision	Date	Written By	Reviewed By
3	5/28/2025	JNR	RJW

ROTARY AIRLOCK TABLE OF CONTENTS

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SAFETY & OPERATIONS

1. SCOPE

This manual covers specific information about the operation and maintenance of the SWEED Rotary Airlock. It does not contain general safety and maintenance requirements, which are in the Introduction chapter, or specific operation steps, which are in the Equipment Configuration chapter.

Note that instructions and figures within this chapter are generalized for 8", 10", and 14" Rotary Airlocks. Although the models differ in size and volume, their overall functions serve a similar purpose. Additionally, the coloration of equipment is intended to create distinction between parts, and may not reflect reality.

2. INTENDED USE

2A. Functionality

This machine is designed for use at the bottom of a cyclone assembly to allow debris to exit the cyclone without disrupting the airflow of the duct system. Refer to the Equipment Configuration chapter for details of the machine's place in the material process flow.

2B. Standard Machine Sensors

Airlocks do not come with any standard sensors. If your machine customizations included sensors, refer to the Equipment Configuration chapter for details.

2C. Moving Machine

The 8" and 10" Airlocks are lightweight enough that they should be movable by two people. However, SWEED still recommends the use of a forklift or crane for positioning/installation of the machine.

3. OPERATION

3A. Setup

See the Installation section of the Equipment Configuration chapter for installation instructions. Connect the machine to the appropriate voltage power source and integrate into controls system. See SPECS manual for power requirements.

Jog the motor once to verify rotation is correct; correct rotation is shown in *Figure 1* below.

WARNING: running the motor in reverse may result in machine damage. It is critical to check rotation by bumping the motor prior to operating the machine.

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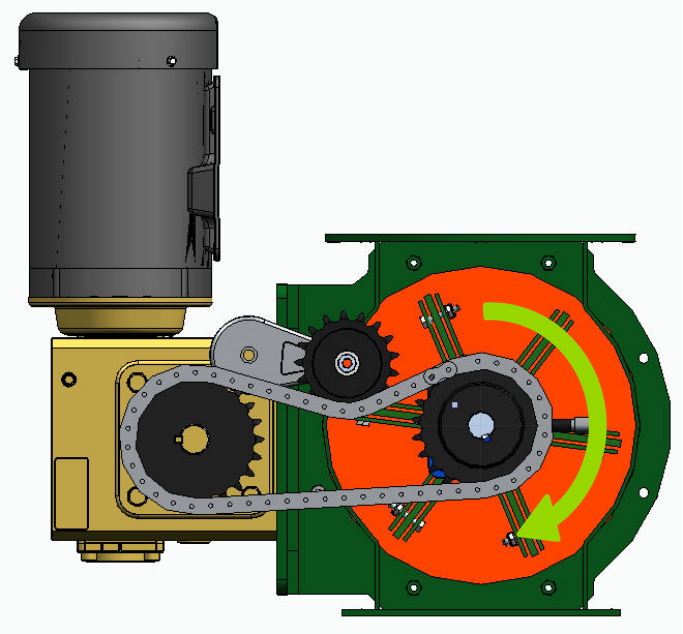


Figure 1. Correct rotation of rotor assembly.

3B. Starting Machine

Depending on the controls of the equipment configuration, it may not be possible to start the machine until other machines are operating. Refer to Equipment Configuration chapter for details on startup procedures.

3C. Stopping Machine

Refer to Equipment Configuration chapter for standard shut down procedures.

This machine typically does not include an E-stop mounted directly to it. Instead, E-stops are part of the larger equipment configuration (if controls are provided by SWEED), or should be integrated by the end user during installation; refer to Equipment Configuration chapter.

4. TROUBLESHOOTING

Possible Cause	Solution
4A. Rotary Airlock rotor assembly stops moving	
Motor tripped	Reset motor
Chain is skipping	Check rotation direction is correct (see Section 3A)
Material jam	See Section 9
Airflow leak	Replace rotor flaps (see Section 0)

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MAINTENANCE

5. COMPONENT IDENTIFICATION

See *Figure 2* and *Figure 3* below to identify and locate key components referred to in the following sections.

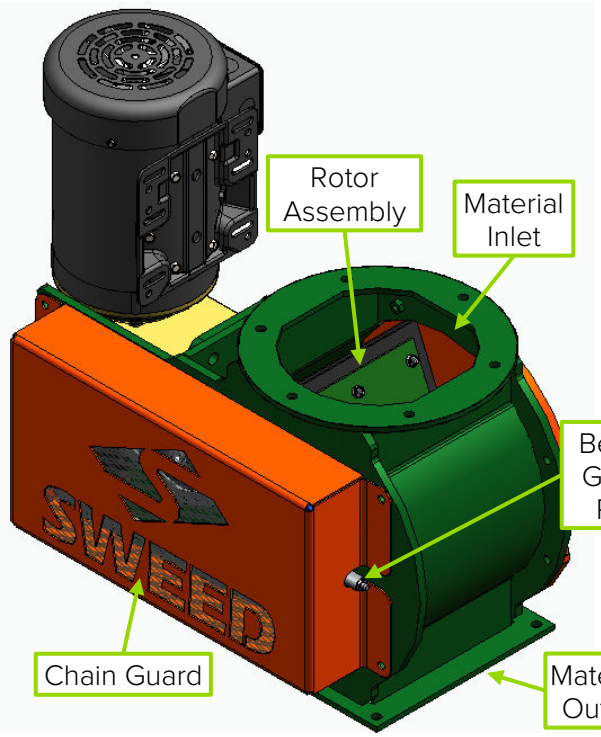


Figure 2. Front ISO component identification

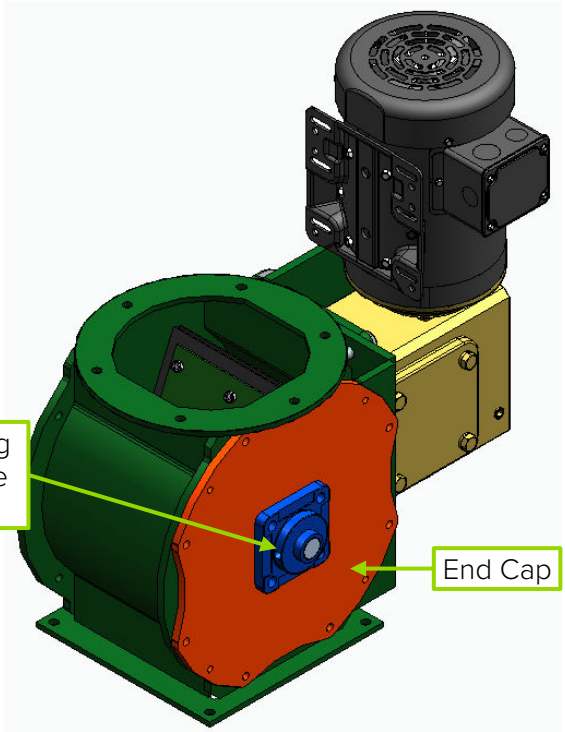


Figure 3. Rear ISO component identification

6. LUBRICATION

Checklists of the standard bearings, motors, gear reducers, and chains used in this machine model are below; refer to the Exploded Parts package and the Manufacturer Maintenance List if your machine specifications included custom components.

6A. Bearings Lubrication Schedule / Checklist

Refer to the table below for recommended lubrication intervals based on standard service conditions.

Run Time	Rotor Assembly Bearings
8 hrs/day	12 weeks
16 hrs/day	12 weeks
24 hrs/day	10 weeks

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For details of the standard service conditions and lubrication intervals for bearings in non-standard conditions, refer to the manufacturer manual list below.

QTY	SWEED #	Part Description	Manufacturer Manual
2	BN005313	8” Airlock Rotor Bearing	DODGE Mounted Ball Bearing Manual
2	BN005313	10” Airlock Rotor Bearing	DODGE Mounted Ball Bearing Manual
2	BN000493	14” Airlock Rotor Bearing	DODGE Mounted Ball Bearing Manual

6B. Motor Checklist

QTY	SWEED #	Part Description	Manufacturer Manual
1	BX030222	8” Airlock Motor	WWE Fractional Motors OMM
1	BX019840	10” Airlock Motor	WWE Polyphase AC Induction Motors Install & OMM
1	BX035649	14” Airlock Motor	WWE Polyphase AC Induction Motors Install & OMM

6C. Gear Reducer Checklist

QTY	SWEED #	Part Description	Manufacturer Manual
1	BX040232	8” Airlock Gear Reducer	VORTEX Worm Gear Speed Reducers
1	BX040528	10” Airlock Gear Reducer	VORTEX Worm Gear Speed Reducers
1	BX042004	14” Airlock Gear Reducer	VORTEX Worm Gear Speed Reducers

6D. Chain Checklist

QTY	SWEED #	Part Description	Chain Type
1	CX043815	8” Airlock Chain, RC50 X 36”	RC50
1	CX044188	10” Airlock Chain, RC50 X 37”	RC50
1	CX044959	14” Airlock Chain, RC60 X 43”	RC60

7. CHAIN TENSIONING

7A. Chain Tensioning

The Airlock is equipped with a rotary spring tensioner (see *Figure A1*), which should hold the chain at the proper tension even as it naturally stretches through use. The chain can be removed or installed by pushing up on the tensioner sprocket bolt to create enough slack for the chain master link to be manipulated.

If the bolt attaching the Tensioner to the frame is loosened or the Tensioner needs to be replaced, the following steps should be followed for proper installation.

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7B. Installing the Chain Tensioner	
STEP 1	Lockout/tag out power to the Rotary Airlock. Ensure that the blowers/air system that feeds air and material to the Rotary Airlock is either powered off and locked out or the gate valve to the Rotary Airlock is closed (if applicable). See Equipment Configuration chapter for ducting details.
STEP 2	Remove the Chain Guard.
STEP 3	Install the Tensioner Sprocket onto the new Tensioner, if applicable.
STEP 4	Loosely attach the Tensioner to the frame and adjust its position so that the Sprocket engages with the chain but isn't tensioning it.
STEP 5	Place a wrench on the nut that secures the Tensioner Mount Bolt to the frame, then rotate it so the shaft is braced against the frame and the nut won't turn when the Mount Bolt is tightened. Refer to *Figure A2* for component identification.
STEP 6	Place a wrench on the head of the Tensioner Mount Bolt and another on the Tensioning Hex, then rotate the Tensioning Hex in the direction that tensions the chain.
STEP 7	Turn the Hex until the position mark on the bottom of the tensioner body lies between the second and third reference marks in the appropriate direction.
STEP 8	Hold the Hex in the position described while tightening the Tensioner Mount Bolt until the Tensioner is secure.

8. ROTOR FLAP REPLACEMENT

The Rotor Assembly flaps (see *Figure A3* and the Exploded Parts Drawings) will naturally wear with use and should be periodically checked to see if they require replacement.

8A. Replacing the Rotor Assembly Flaps	
STEP 1	Lockout/tag out power to the Rotary Airlock. Ensure that the blowers/air system that feeds air and material to the Rotary Airlock is either powered off and locked out or the gate valve to the Rotary Airlock is closed (if applicable). See Equipment Configuration chapter for ducting details.
STEP 2	On the End Cap side of the Airlock, loosen the bearing set screw so that the bearing can slide off the shaft without added resistance.
STEP 3	Prepare a lift to support the end of the Rotor Assembly shaft. Sweed recommends a lift strap hung from a forklift or crane.
STEP 4	Remove the nuts and washers that secure the End Cap to the frame, but do not remove the bolts yet.
STEP 5	Carefully slide the End Cap and its attached bearing away from the frame along the Rotor shaft, supporting the bearing until there is enough space between the End Cap and frame to apply the prepared support to the Rotor Assembly shaft.

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STEP 6	With the end of the Rotor Assembly shaft supported, the End Cap can be fully removed from the shaft to facilitate access to the Rotor Assembly.
STEP 7	Remove the fasteners that secure the Rotor Flaps and Bolt Plates to the Rotor Assembly, then replace the Flaps. Repeat as needed for the other Flaps.

9. CLEARING JAMS

Jams should only be cleared when the machine is fully locked out and all moving parts are motionless. Ensure that no material will be fed to the machine during maintenance.

While jams are highly unusual on Rotary Airlocks, if they do occur, the material is likely stuck between the flaps of the Rotor Assembly and the housing. To clear the material, shut down and electrically lock out the Rotary Airlock, and ensure that the system is not feeding material/air to it. Then remove the End Cap by following steps 1-6 of Section 8A, and clear the jam. Replace the End Cap before restarting the Airlock.

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APPENDICES

10. APPENDIX A: MAINTENANCE FIGURES

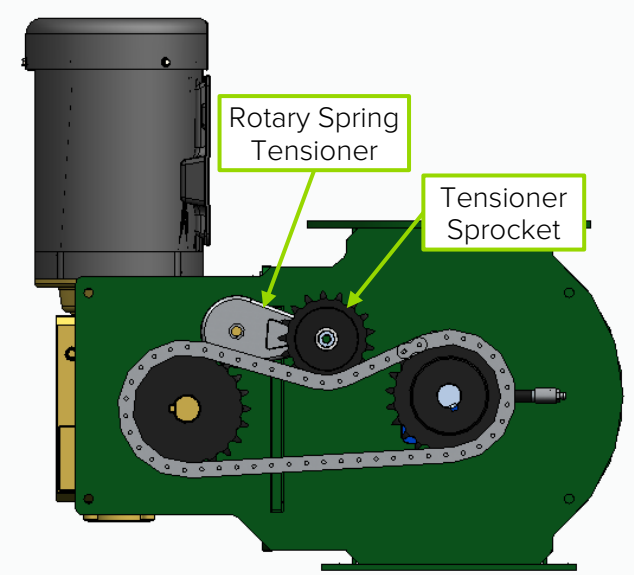


Figure A1. Rotary Spring Tensioner. Chain guard hidden for clarity.

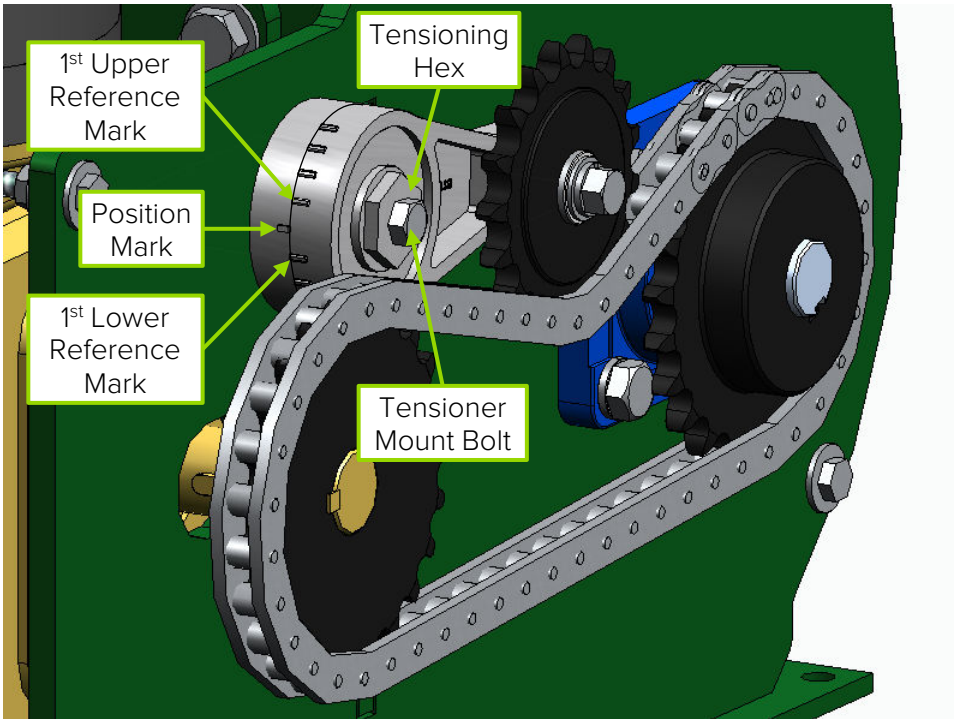


Figure A2. Chain Tensioner Details

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Figure A3

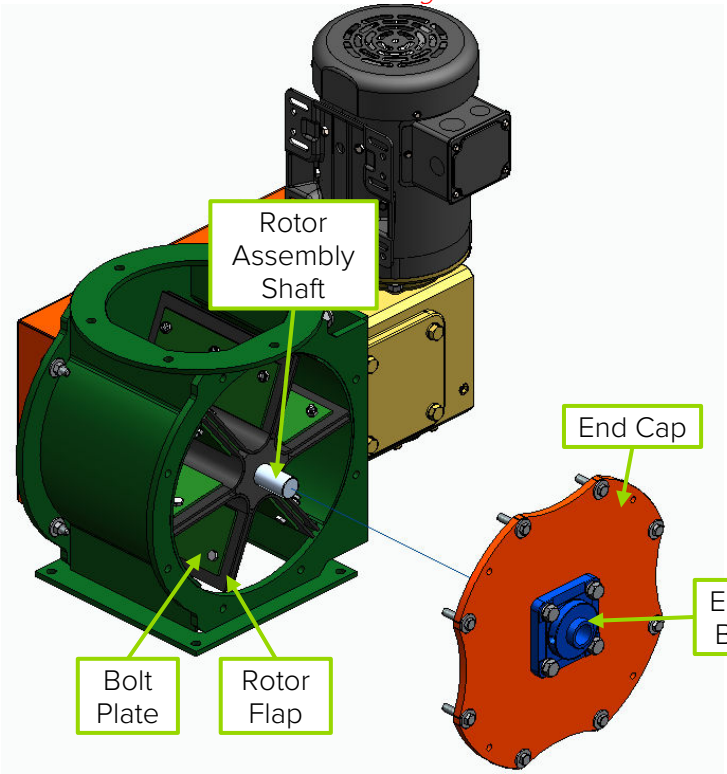
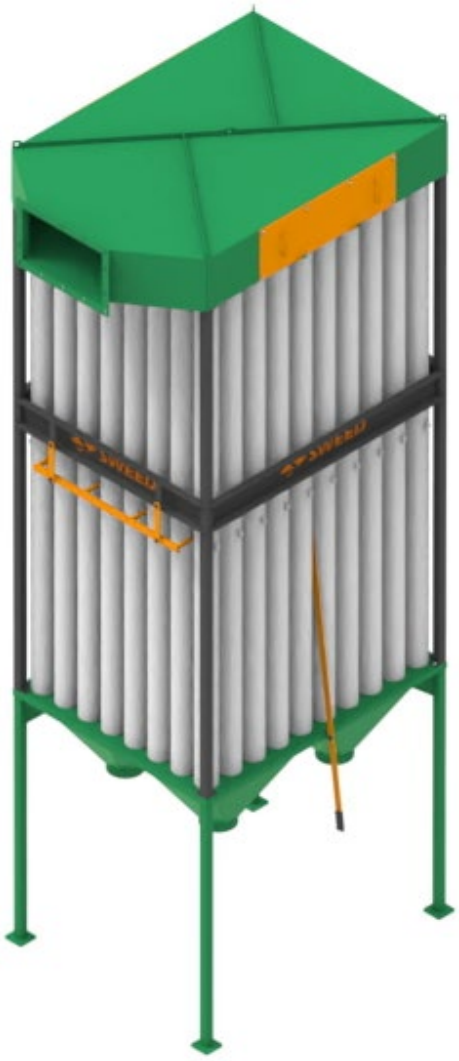


Figure A3. Example part identification for replacing Rotor Flaps

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8K CFM OPEN BAGHOUSE

OPEN FILTERS, MANUAL SHAKER



*Pictures may not reflect exact layout received as additional customizations may be added per customer or system requirements.

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SAFETY & OPERATIONS

1. SCOPE

This manual covers specific information about the operation and maintenance of the SWEED 8K CFM Open Baghouse. It does not contain general safety and maintenance requirements, which are in the Introduction chapter, or specific operation steps, which are in the Equipment Configuration chapter.

Note that figures within this chapter are generalized for all configurations of the 8K CFM Open Baghouse: the appearances of customizable machine components, such as bottom chute connections and duct inlet, may not reflect your machine's features and are simply intended to be representational. Additionally, the coloration of equipment is intended to create distinction between parts, and may not reflect reality.

2. INTENDED USE

2A. Functionality

This equipment is designed to capture dust and other particulates from the airflow of a system duct network. Refer to the Equipment Configuration chapter for details of the machine's place in the material process flow. This processor features chutes at the frame bottom for collection of the dust gathered by the fabric filter bags, and a manual shaker lever to shake dust free from the filters.

2B. Standard Machine Sensors

This Baghouse does not come with any standard sensors. If your machine customizations included sensors, refer to the Equipment Configuration chapter for details.

3. MACHINE-SPECIFIC SAFETY INSTRUCTIONS

- WARNING: this equipment collects fine particles from the material processing system, which could create a combustion hazard under certain conditions. Refer to the safety instructions in the Introduction chapter.
- Extreme caution should be taken whenever maintenance of the Baghouse could release dust particles into the air, such as moving/replacing the chute collection containers or replacing the filters. Appropriate PPE should be equipped.
- DO NOT allow dust to overflow the collection containers into the chutes.
- DO NOT shake the filters without a collection container connected to the chutes.
- Ensure that the connection between the chutes and the collection containers is adequately sealed to prevent dust escaping when the filters are shaken.

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4. OPERATION

4A. Setup

See the Installation section of the Equipment Configuration chapter for installation instructions. Connect the assembly to a ducting system of the appropriate airflow.

4B. Shaking the Filters

Filters should be shaken using the manual lever at the end of each workday to clear dust from their sides. Filters can be shaken more frequently as needed depending on how much dust is created by the material processing system.

4C. Replacing Collection Containers

The collection containers should be replaced as needed when full. A rest period between shaking the filters and replacing the containers should be allowed so that any airborne dust within the Baghouse and containers can settle. Additionally, containers should only be replaced when the airflow system is off to minimize dust released from the Baghouse.

4D. Tips for Optimal Function

Inadequate airflow and dust flying out of equipment in the material processing system are good indicators that too much dust has built up in the filters.

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MAINTENANCE

5. COMPONENT IDENTIFICATION

See *Figure 1* below to identify and locate key components referred to in the following sections.

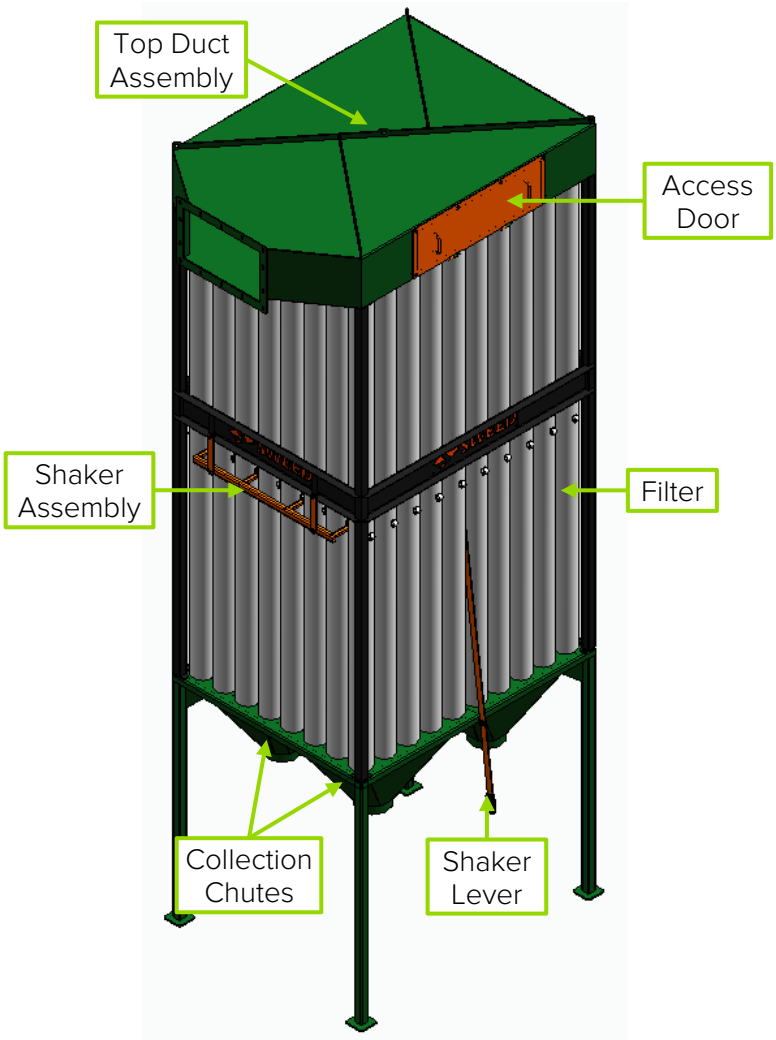


Figure 1. Component identification

6. FILTERS

The filters on this equipment are designed for durability and are expected to last years before requiring replacement. Holes in the fabric and inadequate airflow even after the filters have been shaken are good indicators that the filters have reached the end of their lives and should be replaced.

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6A. Removing the filters	
STEP 1	Lockout/tagout power to the duct system to ensure no forced airflow will occur.
STEP 2	Use the Shaker Lever to dislodge any material caught in the Filters. Then allow a few minutes for dust to settle.
STEP 3	Pinch the bottom of the Filter together by hand to compress the rings that hold it in place.
STEP 4	Holding the rings in the pinched position, lift the bottom of the Filter out of the hole in the frame.
STEP 5	Detach the Filter loop from the S-hook that attaches it to the Shaker Assembly.
STEP 6	Repeat the pinching procedure at the top of the Filter and guide it out of its hole in the Top Duct Assembly. If necessary, the Filter rings can be accessed from above using the Access Door.
STEP 7	Guide the length of the Filter down out of the Shaker Assembly.
STEP 8	Repeat with other Filters as needed.

6B. Installing the filters	
STEP 1	Lockout/tagout power to the duct system to ensure no forced airflow will occur.
STEP 2	Clear any debris that may obstruct inserting the new Filters into the holes in the frame.
STEP 3	Guide the top of the Filter up through the bottom of the Shaker Assembly.
STEP 4	Pinch the top of the Filter together by hand to compress its securement rings.
STEP 5	Holding the rings in the pinched position, insert the top of the Filter into a hole in the Top Duct Assembly. Take care not to damage the sleeve while securing the rings in the hole. If all of the Filters are being replaced/installed, it is essential to follow a logical installation order so that all of the Filter securement holes are accessible.
STEP 6	Verify that the Filter is hanging straight down without twists or kinks.
STEP 7	Attach the closest Shaker Assembly S-hook to one of the Filter loops. It may be necessary to turn the filter so that the hook can reach—in this case the rings at the top of the Filter should be pinched and turned to prevent the Filter from twisting.
STEP 8	Repeat the pinching procedure at the bottom of the Filter and insert it into the plate at the bottom of the frame. Make sure that the top and bottom holes of the Filter are concentric. Verify the Filter is not twisted.
STEP 9	Repeat with other Filters as needed.

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