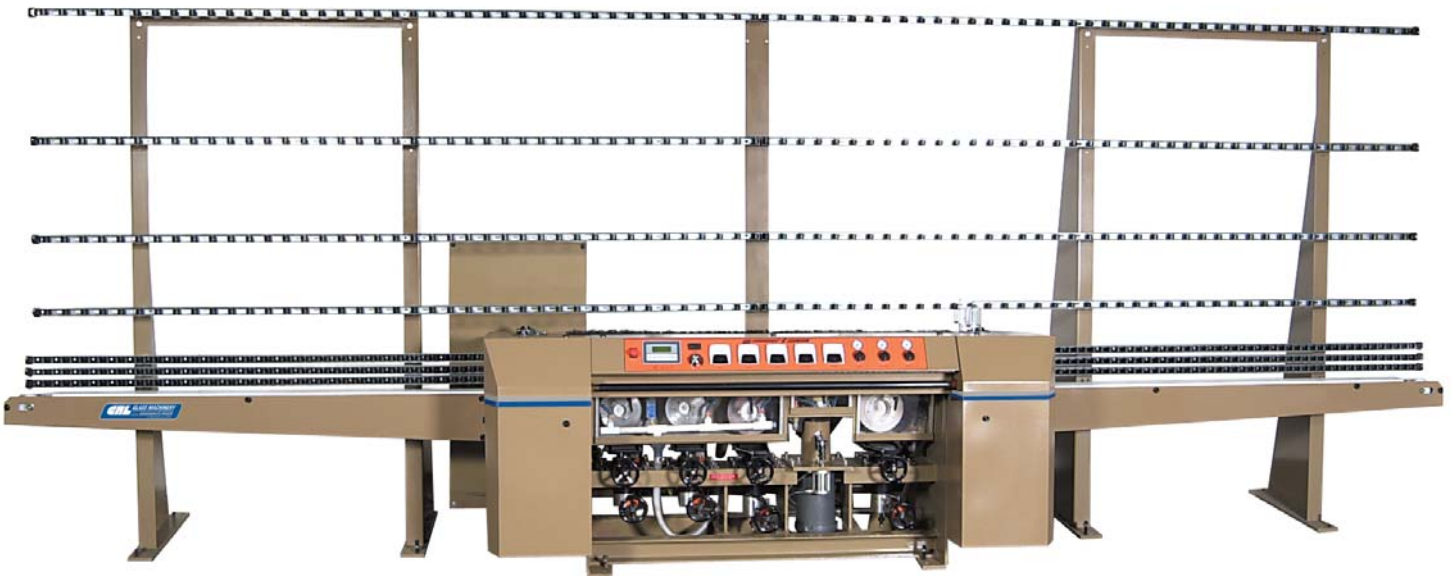


CRL VE4 and VE4PLUS1

Vertical Glass Edging Machines



OPERATING INSTRUCTIONS

AUGUST 2013



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SAFETY

FAILURE TO OBSERVE THE WARNINGS, CAUTIONS, AND INSTRUCTIONS LISTED IN THIS MANUAL AND ON THE DECALS ATTACHED TO THE VE-4/VE-4+1 EDGER COULD CAUSE SERIOUS INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT.

GENERAL SAFETY INFORMATION

Introduction

This manual contains installation instructions and operating and maintenance procedures for the VE-4/VE-4+1 Edger. The edger must be operated and maintained at all times in accordance with the instructions and procedures contained in this manual and on the decals attached to the edger. Only qualified personnel thoroughly familiar with the operating and maintenance instructions should operate and maintain this equipment.

Safe Operating Considerations

Safety must be observed through all facets of operation and maintenance. Proper tools and operating procedures must be used at all times to prevent accidents, which could cause injury to personnel or damage to equipment.

Safe, reliable operation and a long service life are dependent upon three important considerations:

1. Care exercised during installation

The most important single factor in installation of the VE-4/VE-4+1 Edger is the alignment and leveling of its three sections: the ingoing conveyer, main section and unloading conveyor. These must be installed properly on a solid floor so that critical alignments will be maintained.

2. Quality and frequency of inspection and maintenance.

The environment of glass grinds and abrasives makes conscientious maintenance essential. Frequent inspection and recommended lubrication procedures must be performed to ensure safe, trouble free operation and long machine life.

3. Common sense approach to operation.

The VE-4/VE-4+1 Edger is not necessarily a complex machine because of the operations it performs and the flexibility it offers. A little study will reveal most of its secrets. The most important rule is:

DON'T TAKE CHANCES.

NOTES, CAUTIONS AND WARNINGS

Notes

The notes contained throughout this manual provide additional information to carry out the operating and maintenance procedures. Any particular note is listed just prior to the procedural step to which it applies.

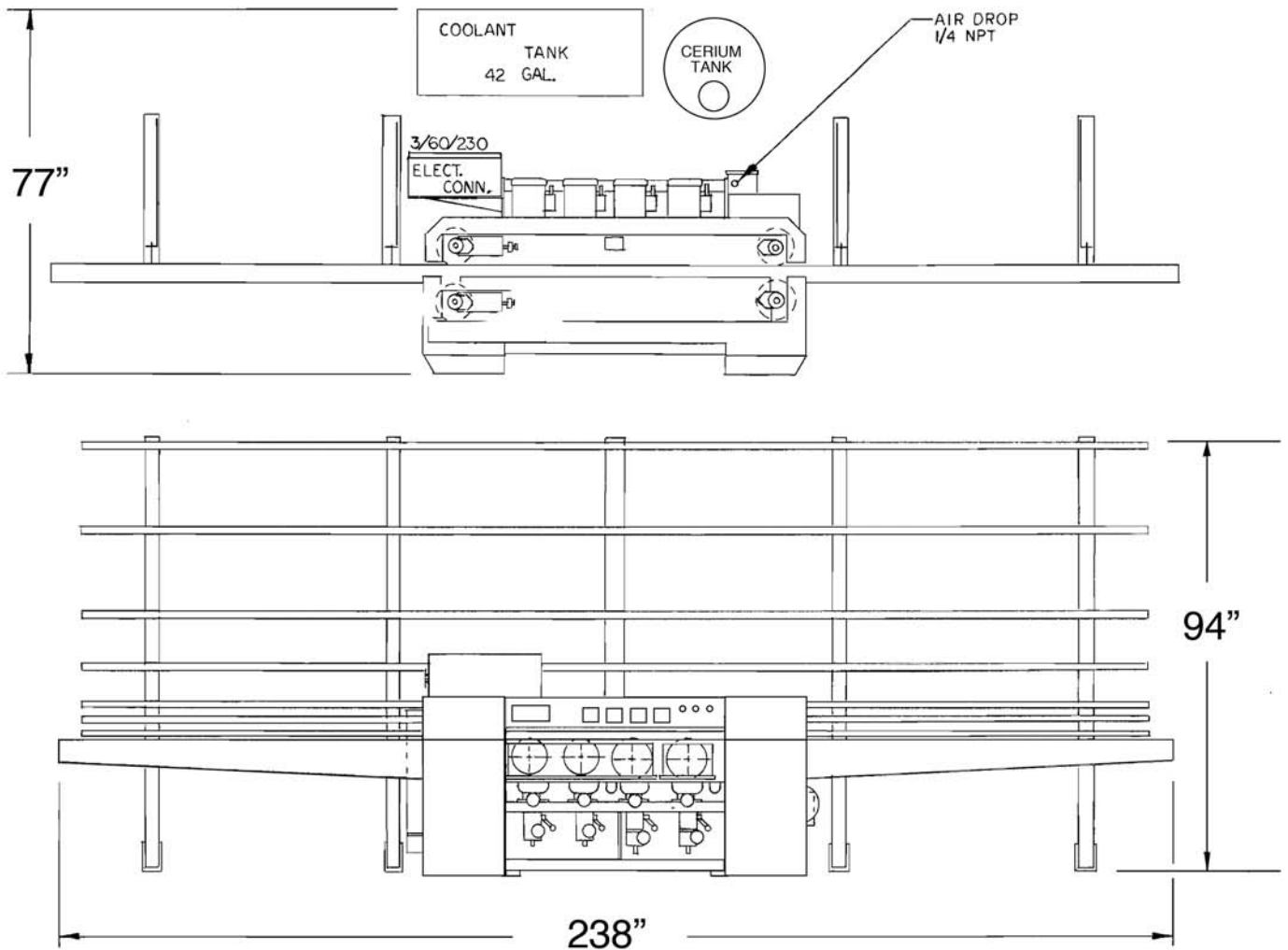
Cautions

The cautions in this manual contain instructions and information concerning operation and maintenance procedures, which if not followed could cause damage to equipment, parts, and facilities. Like notes, cautions are listed just prior to the steps to which they apply.

Warnings

The warnings in this manual contain instructions and information concerning operation and maintenance procedures, which if not followed could cause injury to personnel. Warnings also are listed just prior to the steps to which they apply.

Floor plan for the VE4 is below. The VE4PLUS1 is TEN inches wider, and the same depth and height.



General Precautions

The precautions listed here are general in nature. However, failure to observe and follow them could result in personal injury or damage to property. These general precautions are not all-inclusive. Specific cautions and warnings are listed throughout this manual, and additional ones may occur to the user, which are peculiar to a particular operation or industry. In addition, employers are subject to the federal Occupational Safety and Health Act (OSHA) of 1970, as amended, which requires that an employer keep abreast of the regulations which will continue to be issued under its authority.

1. Always operate and maintain the edger in accordance with the instructions and procedures in this manual.
2. Always load glass onto ingoing conveyor and let the belt take the glass into the machine. Do not feed glass directly into the conveyor pads by hand. Do not wear loose clothing that could get caught in the moving machinery. Keep clear of moving parts. Do not exceed the capacity of the edger.
3. Do not open doors, covers or guards while unit is in operation except in special circumstances, which are addressed later in this manual.
4. Never work on the edger and related components unless electrical power and motor drive has been locked out and tagged. The National Electrical Code requires a manually operable disconnect switch located within sight of the motor or a controller disconnecting means capable of being locked if it is not within sight of the motor.
5. Do not use edger for any purpose for which it was not designed. It is to be used solely to edge clean float glass, plate glass, or mirror Tempered,

reinforced, dirty or painted glass should not be run in the edger without special consideration. Tags, stickers, or tape should be removed from the area to be edged.

6. Do not poke or prod into the openings of the edger with a bar or stick.
7. Always have a clear view of the loading and unloading points and all safety devices of the edger. Keep in mind location of the emergency stop button.
8. Keep area around the edger drive, and control station dry and free of debris and obstacles.
9. Never operate edger without guards and all safety devices in position and functioning.
10. Always allow edger to stop naturally. Do not attempt to artificially brake or slow the motion of the edger or any of its components.
11. Always wear safety glasses, proper gloves, and other necessary equipment while operating and maintaining the edger. When in doubt, consult with shop safety requirements.
12. Always wear safety glasses, proper gloves, and other necessary safety equipment while handling glass. When in doubt, consult with shop safety representative.

Special Warning

Many of the photographs used to illustrate this manual were taken of partially assembled machines, or of machines with guards removed for clarity. This should not be construed to be a safe or normal way to run the VE-4/VE-4+1 Edger. Never operate the machine unless all interlocks and safety devices are operating properly, and unless all guards and covers are properly installed. To do so could result in injury or death.

SECTION 2

DESCRIPTION

General

The VE-4/VE-4+1 Vertical Edger (hereinafter referred to as the edger) was designed to grind and polish edges on the most common range of glass thickness sizes. The edger is equally suitable for high production, continuous service, or for intermittent service in custom shops. The edger consists of three main assemblies: the Main (center) section, ingoing conveyor system, and the discharge conveyor system (Figure 1). Additional auxiliary systems provide coolant and (as an option) cerium polishing. The glass is placed vertically on the ingoing conveyor on the left side of the edger and moves from left to right through the edger and finishes on the outgoing conveyor on the right side of the edger.

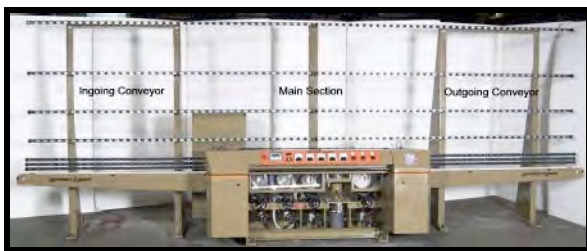


Figure 1 Edger Front View

Note

Details of the VE-4/VE-4+1 vary slightly between some serial numbers, and as affected by choice of optional features.

Main (Center) Section

The Main Center Section (Figure 2) contains the operator console, grinding and polishing spindles and motors, front pad and rear pad conveyor drive, glass thickness adjustment system, ammeters and the main body of the edger.

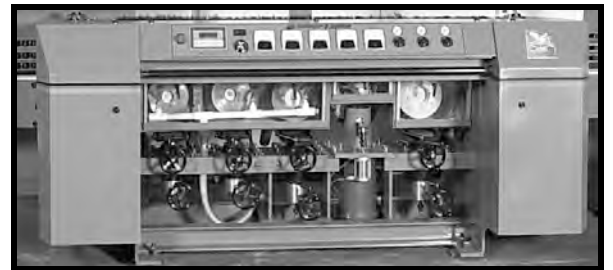


Figure 2 Edger Main Center Section

Operator Console

The Operator Console houses the displays and controls necessary to operate the edger. On the left side of the Operator Console (Figure 3) is the Emergency Stop pushbutton. The Emergency Stop pushbutton has a maintained push to actuate and twist to release operation.



Figure 3 Operator Console Left

Next to the Emergency Stop pushbutton is the operator interface console. The operator interface console is where the operator controls and sets the edger parameters. Next to the operator interface console is the conveyor speed control. This adjustment increases or decreases the speed of the conveyor. Above the conveyor speed control is the Total Hours display. The total hour's display shows the total hours of machine operation and is used to schedule lubrication and general maintenance for the edger. To the right of the conveyor speed control knob are the ammeters (Figure 4) for each of the grinding and polishing motors on the edger. These meters indicate the motor load for the grinding and polishing motors and are scaled in amperes. Moving to the right of the meters are the pneumatic adjustments (Figure 5) for the polishing wheels. The lower knob adjusts the air pressure and the gauge above each of the knobs indicates the air pressure for each of the polishing wheels. As the air pressure on each of the polishing wheels is increased, the harder the polishing wheel works on the glass.



Figure 4 Operator Console Center



Figure 5 Operator Console Right

The main power switch is located on the main electrical power panel in the back of the edger. The main electrical power panel contains motor starter protectors, main power supply, fuses, etc. necessary to run the edger.

Grinding and Polishing Wheels

The VE-4 edger uses two diamond grinding wheels seven inches in diameter in the grinding station, and two polishing wheels eight inches in diameter in the polishing station. The VE-4+1 edger additionally has a cup flat edge-polishing wheel. Each of these wheels are continuously cooled by spray nozzles that direct coolant on the wheels. The wheels will grind and polish the edges of glass from a minimum thickness

of 1/8 inch (3mm) to a maximum thickness of 1 inch (25.5mm).

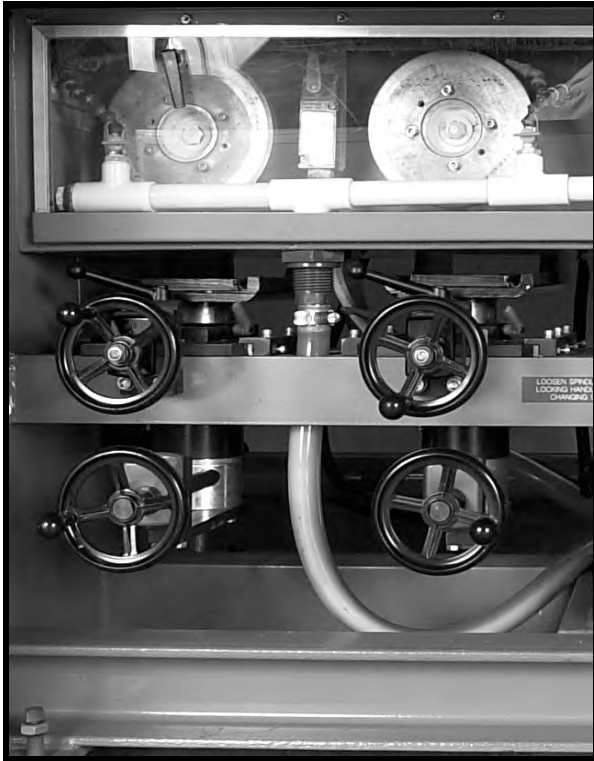


Figure 6 Grind Section

The wheels can be profiled to provide a pencil or flat-seamed edge (Figure 6), or any special edge desired. Each wheel is equipped with height adjustment for setting the wheel depth of cut. This adjustment is set with the lower adjustment spin wheel and is indicated with the orange digital counter. The front-to-back adjustment for centering the wheel on the glass is set with the upper adjustment spin wheel and is indicated with the black digital counter. The angular adjustment to cant the wheel is set by loosening the long black locking handle and pushing side to side on the lower height adjustment arm until the desired angle is set. The graphic indicator for the angle is on the front of the slide. The flat edge-polishing wheel on the VE 4+1 (Figure 7) has an adjustment knob to set the height of the flat edge polishing wheel. The flat edge-polishing wheel provides a high polish to a flat edge by polishing at right angles to the flat peripheral wheel. This removes the grind lines on the flat

edge of the glass. Access to the wheels is by turning the latching handles and removing the clear plastic splash shield in front of each wheel group. While in operation, the wheels are cooled with a diamond wheel coolant, which is re-circulated by a coolant pump and filtration system



Figure 7 Polishing Section

Coolant System

The purpose of the coolant system is to supply a constant flow of diamond wheel coolant free of large glass grinds to the grinding and polishing wheels while the edger is in operation. The immersion pump supplies the coolant to the wheels. The return coolant then flows from the coolant pan to the sediment compartment in the coolant tank. This is where most of the ground glass residue settles out. The coolant then cascades into the final section of the tank where it is pumped and re-circulated back to the wheels again.

Conveyor System

The conveyor system (See Figure 1) consists of an ingoing belt that carries glass into the center section, where it is gripped by the chain pads and moved through the edger from the left to the right. The edged glass moves out of the chain pad's grip onto the outgoing belt. The conveyor can be varied in speed from 0 to 380 inches per minute. The twin ingoing and outgoing cog belts are powered by the main conveyor drive. Both ends of the conveyor have 86 inches in length for loading and unloading glass. Each conveyor has two upright racks and seven rows of roller tracks. A center support, mounted to the rear tube, connects 4 upper roller bars from each conveyor frame. The frames can handle glass as short as 4 inches and as long as 100 inches, to a maximum height of 100 inches, in any thickness from 1/8 inch through 1 inch. An eighth set of rollers and upright extension is available as an option to handle glass up to 140 inches high.

Specifications

Glass Capacity

Thickness

1/8 to 1 inch, Maximum Opening to 2" for Cleaning

Length

4 to 100 inches

Height:

100 inches maximum. 140 inches with optional extensions

Weight:

1200 pounds maximum

Conveyor Speed:

Variable from 0 to 380 inches per minute

Wheel Stations

Grinding:

Two 3hp 3600 rpm motors with 7-inch grinding wheels

Polishing:

Two 3hp 1750 rpm motors with 8-inch polishing wheels

One 2hp 3450 rpm motor with cup flat edge polishing wheel (VE 4 + 1)

All wheels have adjustments for height to set wheel depth, angularity for glass thickness, in/out for wheel centering on glass, and can be profiled for pencil, flat-seamed edges, or other popular edge profiles commonly done on a peripheral wheel edger. The cup flat edge polishing wheel has a knob for adjustment of the wheel height

Spindle Load

Ammeters indicate load on each spindle

Electrical:

VE-IV 3 phase 60 Hz. 208/230 volts 70 amps service

VE-IV 3 phase 60 Hz. 460 volts 35 amps service

VE-4+1 3 phase 60 Hz. 208/230 volts 80 amps service

VE-4+1 3 phase 60 Hz. 460 volts 40 amps service

Plumbing

No direct hookup required

Edger Weight:

Approximately 4200 pounds

Approx. Length: 20' - 6" Width: 5' - 0" Height: 7- 6"

Options

Upright roller mounting rails to handle glass height to 140 inches

Cerium tank and pump

Pneumatic polishing spindles

SECTION 3

RECEIVING

Uncrating

Every VE-4/VE-4+1 Edger is fitted out and adjusted to work perfectly before it is shipped. Every part of the machine is tested in actual glass cutting operations, and every component of the machine is operating correctly before it is crated for shipment. It is essential that the edger be received and handled properly before its installation. This will ensure that it was received in exactly the same condition as it was when it left the factory, and that it reaches the site where it will be set up for operation without damage. The edger is shipped in two large frame crates. The machine is shipped with its major sections essentially assembled, but certain ancillary equipment and removable parts are shipped strapped down to the crate.

WARNING

The crate with the VE-4/VE-4+1 Edger weighs approximately 4500 pounds. Use adequate lifting devices to move the crate.

Inspecting Crates

Crate damage could indicate that it has been mishandled during shipping, and that

the machine could be damaged. It is very important that the crate be inspected for exterior damage immediately upon receiving it. Use the following procedures for inspection:

1. Check all surfaces of the crate for gouges, tears, or holes that could have been caused by the tines of a forklift or some other lifting device.
2. Check for crushed corners, edges, or framing members that could indicate that the crate was dropped.
3. Check for broken crate straps and for breaks or distortion in the framing.
4. Inspect the plastic wrappings that cover components. Note carefully any damage to the wrappings.
5. Remove framing and plastic wrappings as necessary to inspect the machine for visible damage. Be especially careful to inspect the machine in the vicinity of any damage to crating or wrapping.

NOTIFICATION

Document all damages to any part of the edger or its ancillary equipment, if any. Notify the carrier and Sommer and Maca Industries, Inc. immediately upon detection of any damage.

SECTION 4

INSTALLATION

Assembly Instructions

Center Section

1. Refer to Figure (8). Remove main section from shipping skid.

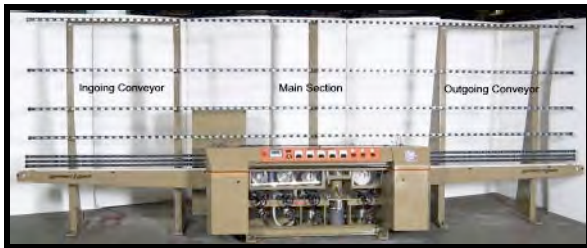


Figure 8 Front View

2. Put the foot mounting pads underneath each of the leveling screws.

Put a precision level on the rear center of the rear conveyor tube. (Figure 9) Using leveling screws, level the center section, side to side 0 degrees.



Figure 9 Left to Right Leveling

Using a precision angle indicator adjust the leveling screws front to back for a 5-degree tilt toward the back. (Figure 10)

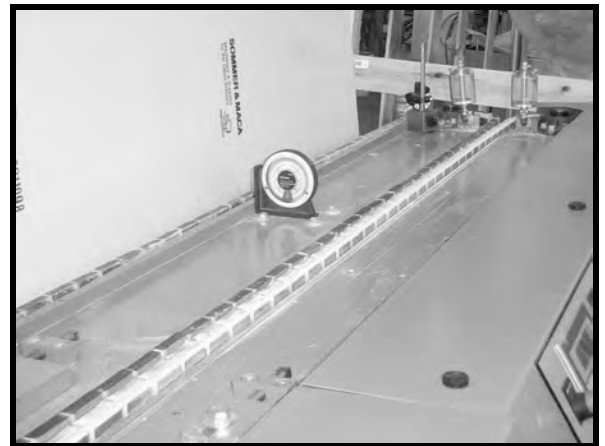


Figure 10 Front to Back Leveling

Install coolant tank behind the center section.

1. Connect all feed and drain hoses.

2. Mix one part of CRL Cat No. 2651005 wheel coolant SM-304DW, or equivalent, to 100 parts water (or as recommended) and fill coolant tank.

NOTE

Sometimes the coolant and water mixture may foam excessively, depending upon the local water chemistry, thus requiring the use of an anti-foaming agent. CRL Cat. No. NS31F

3. Connect power source to main cabinet. Make sure that the connection is in compliance with local electrical codes.

Connecting Ingoing and Outgoing Conveyor System

1. Mount ingoing and outgoing conveyor belt support racks to the center section. Do not tighten the bolts.

NOTE

Steps 2 & 3 should be performed simultaneously.

2. Using the leveling screws in the end support racks, (Figure 11) level the ingoing and outgoing conveyor belt guide tilted 5 degrees toward the back and 0 degrees side to side with a precision machinist level and a precision angle indicator.



Figure 11 End Support Rack Leveling Screws

3. Loosen the screws holding the belt support guide to the racks. With the adjusting threaded rods in back (Figure 12) bring the belt guide to .090 below the outside diameter of the timing pulley.



Figure 12 Belt Support Guide

4. Tighten all mounting screws left loose during adjustment.
5. Install the conveyor belt over the pulley and in the belt guide and tighten the belt to a 1-1/2 - 2" deflection when pressing lightly (Figure 13). Be sure to tighten the hold down screws of the take-up adjustment.

- This ANNEX page will help you set up the Glass Rails

Assembling the Glass Rack Rails is simple. There are 8 long rails for the upper rack. They are about 115" long on the VE4 and 120" long on the VE4PLUS1. There are 6 short rails for the lower rack, close to the conveyors. They are about 79" long on either machine..



Sliding a rail support onto the rail

Starting at the bottom with a short rail, slide a rack support on from each end (the outside support is 19" from the end, the inside support is 14.5" from the end) and line the supports up with the holes on the uprights. Place a plastic support tube over the threaded part and fasten the rail to the upright with a washer and nut. Attach all 6 lower rails this way.



Rack support and spacer

The upper rails need 3 supports each. The middle support slides in 60-1/4" from the outside end of the rail. The inside end support just slides onto the end of the rail. The threaded rod will be 1-1/4" from the inside end. Now fit the outside support 16" from the outer end of the rail. Place spacer tubes on the supports and line them up with the holes in the uprights. You may have to adjust the spacing of the supports as you install the rails.



Three lower rack rails attached to the upright

Place the black plastic end caps on all of the outer ends of the rails. All the upper rails attach in the same way.



Two upper rails attached to the center upright

DO NOT stand on the machine when installing the rack rails. Use a ladder on a flat, stable floor. Have a helper position the rails as you work up toward the top rail.





Figure 13 Ingoing Conveyor Belt Pulley

6. Mount the roller rails to the center support rack on the center section.
7. Set the glass size on the operator console to 1/4" (.25) glass. Move a piece of 1/4" glass x 84" long into the ingoing conveyor until the chain pads firmly grip the glass.
8. Watch the glass entering the main conveyor. Check that as the glass is entering the main conveyor it is not digging into the pulley on the ingoing conveyor. Check that the glass makes a smooth transition into the main conveyor and adjust the ingoing conveyor accordingly.
9. Next adjust the first grinding wheel for 1/32" depth of cut on the long piece of glass by running the glass in and stopping it after it passes over the grind wheel by about 6". Reverse the conveyor and measure the depth of cut.
10. To adjust the outgoing conveyor, run glass through the Edger until it is held by conveyor pads and is over the timing pulley on the outgoing side of the Edger.
11. Stop Conveyor.
12. Place a folded piece of paper between the bottom of the glass and outgoing conveyor belt and over the timing pulley. Adjust the belt support rail until the paper pulls slightly from position.

NOTE

The timing pulley of the outgoing conveyor is 1/32" higher than the

ingoing side to compensate for glass removal.

13. Run glass completely onto the outgoing conveyor. While it is still being gripped by the pads stop the conveyor.
14. If the far (right) end of the glass is not touching the belt, adjust the outgoing conveyor by bringing the right end of the outgoing conveyor up until the belt comes in contact with the glass.
15. Watch the glass as it exits the main conveyor as it transitions onto the outgoing conveyor. Check that the glass does not dig into the pulley on the outgoing conveyor and that the glass rides smoothly onto the outgoing conveyor. Adjust the outgoing conveyor accordingly.

Adjustment of the Grinding and Polishing Wheels

Three adjustments must be made on the grinding and polishing wheels before grinding and polishing any glass. One adjustment is to center the wheels on the glass. The second is for pivoting the wheels to the glass travel, and the third is for vertical height, which controls the amount of glass ground off.

WARNING

Make sure spindles are turned off before adjusting the wheels.

WARNING

Never install a polishing wheel on the grinding wheel spindle. Most polishing wheels are not made to rotate at 3450 rpm and may explode if installed incorrectly. Wheels must be installed with screws provided

Centering of the Wheels

CAUTION

Before proceeding with any adjustments, make sure the

locking handles on the respective slides are unlocked otherwise the threads on the actuator screw will be jammed and damaged.

1. The initial reference point of the wheels is when the rear pads and the flange of the hubs are in one plane. At that point the digital indicators should read "0" (zero). To center the wheel on the glass, use the formula:

$$\frac{\text{GrindWheelThickness}}{2} - \frac{\text{GlassThickness}}{2}$$

Example: Grinding wheel is 5/8" thick, glass is 1/4" (.220") thick

$$0.625 \div 2 - 0.220 \div 2 = 0.312 - 0.110 = 0.202"$$

2. Turn the hand wheel counterclockwise and move the wheel "in" until it reads .202 on the display. (Each revolution of the handle is .040") Another Example: If the wheel thickness is 1" and the glass thickness is 1/2".

$$1.000 / 2 - 0.500 / 2 = 0.250"$$

3. Lock the handle on the horizontal slide.

Note

The motion of the horizontal and vertical slide adjustments has backlash in the movement. To compensate for this the horizontal adjustment should be brought farther out about 3 turns out from the desired setting and then moved back inward to the desired setting to pick up the backlash. The vertical adjustment should be brought lower about 3 turns from the desired setting and then moved up to the desired setting to pick up the backlash.

Pivoting of the Wheels

The wheels are pivoted to allow the use of wide profile wheels on a thinner piece of glass. A 3/8" wheel can be used straight for

3/8" glass, pivoted slightly for 1/4" glass, and more for 3/16 or 1/8" glass.

NOTE

The profile of the diamond wheel determines the type of edge. Some wheels, even when pivoted, may not give the desired edge. Also, pivoting of grinding wheels can cause edge starrng of glass and chipping of mirror backing and coatings. Sommer & Maca offers a variety of wheel profiles. Contact the local sales representative for more information.

The following table gives some typical angles to turn the wheel. Every example mentioned and individual preferences should dictate actual angles as all wheels are different and resultant edge profiles are a matter of user preference.

Wheel Profile	1/2	3/8	1/4	3/16	1/8
1/2 FS	0°	4° - 8°	8° - 15°	NR	NR
1/2 PE	0°	0° - 5°	5° - 8°	8° - 11°	11°-15°
3/8 FS	NR	0°	4° - 8°	6° - 10°	8° - 15°
3/8 PE	NR	0°	0° - 5°	5° - 8°	8° - 11°
1/4 FS	NR	NR	0°	4° - 8°	6° - 10°
1/4 PE	NR	NR	0°	0° - 5°	5° - 8°

Table 1 Recommended Wheel Angles

NR Not Recommended

Vertical Adjustment

1. Unlock the vertical adjustment lock handles.
2. Bring the wheels all the way down by turning the vertical adjustment hand wheel counterclockwise.
3. Run a piece of glass, the same thickness used when this wheel was centered, into the Edger. Stop the conveyor when the glass is above the first grinding wheel.
4. Turn the hand wheel clockwise and bring the grinding wheel up until the wheel almost touches the glass. Note: This must be the body diameter of

wheel, not the profile minor diameter. Back glass out of machine. Turn the vertical adjustment hand wheel clockwise 3 revolutions or until it reads 6.940 that means the wheel is up .030" (.060/2). Lock the vertical adjustment handle. Each revolution of wheel is .020 on display but only raises the wheel .010".

NOTE

The indicator for in/out adjustment reads travel directly in .001 of an inch. The vertical adjustment indicator reads in wheel diameter not travel. So the actual travel is half of what the indicator reads.

The indicator for in/out adjustment reads travel directly in .001 of an inch. The vertical adjustment indicator reads in wheel diameter not travel. So the actual travel half of what the indicator reads, as it shows above .03 travel is

NOTE

When feeding the wheel "UP" (turning the spin wheel clockwise) the numbers on the indicator will decrease.

5. Turn the conveyor speed down to 25% and start the machine. Run glass "in" slowly until the diamond wheel cuts it. Observe that the coolant line is in proper position. Stop the conveyor and reverse to back out the glass.
6. Inspect partial cut for depth of cut, position of glass, and profile. Make minor adjustments accordingly.
7. Slowly run the glass "in" until it stops over the second grinding wheel. Repeat the vertical adjustment in the same order as described above but adjust the wheel to cut .015". This is necessary because wheel #2 is finer grit and will not grind as much glass as wheel #1. Wheel #2 should be set to remove only enough glass to improve the edge finish left by wheel #1.

Note

A general rule of thumb is to let the first grind wheel remove 80% of the glass cut and the second grinding wheel remove the remaining 20%.

8. The diameter of the polishing wheels is 8". When positioning the polishing wheel under the glass, set the polishing wheels up to 8.000 on the display of the two digital indicators.
9. Set the polishing wheel angle to 0° and run the larger profile board through the grinding wheels to establish a pattern on the profile board. Once the profile is established in the polishing wheel, rotate the polish wheel to 3° to 5° angle.
10. Turn the polishing spindle to a 3° to 5° angle or the same angle as on the grind spindle.

NOTE

Be sure there is plenty of coolant flow in the area where the profile board contacts the polishing wheel.

11. Tighten all lock handles.
12. Run the test glass completely through the edger so that it is both ground and polished. Make additional adjustments in wheel height and groove centering so that 1/32" of glass is removed and that the desired edge (pencil or flat-seamed) is attained. Tighten all locking screws.
13. Test the alignment of the conveyor by running an 84 inch long piece of glass through the edger lengthwise. The glass should both enter and exit straight and not ride up or down during grinding and polishing. The motor load current of each spindle should remain constant. If it deviates, the far end of the loading conveyor must be adjusted until the amp draw remains constant.
14. Next, run the 84" piece of glass the edger and listen to the cut. If the sound becomes quieter toward the end of the cut lower the ingoing -conveyor

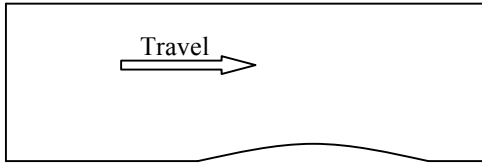
1/2 turn (adjustment screw only) and raise the outgoing conveyor 1/2 turn (adjustment screw only).

15. Based on the finished edge produced at this point, it is now a matter of fine-tuning.

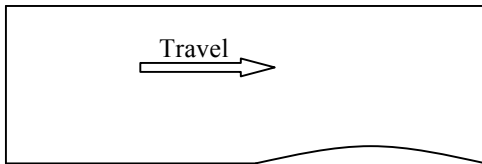
Using two pieces of ¼" glass 100" long by 12" height, run the glass through the edger and check the butt joint with a feeler gage. The end to end gap should be less than .010". If the gap is larger than .010" the ingoing and outgoing conveyors must be adjusted.

Example:

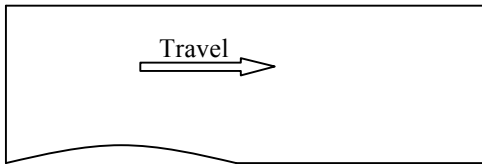
To change this condition, the ingoing conveyor adjustment must be raised ½ turn and the outgoing conveyor must be raise ½ turn.



Outgoing conveyor adjustment - down 1/8 turn to eliminate this condition. Do not adjust ingoing conveyor. Ingoing conveyor adjustment - down 1/8 turn. Do not adjust outgoing conveyor.



This space will move right to left depending on which conveyor is adjusted. It is recommended to adjust up 1/8 turn on both ends to eliminate this condition.



16. After steps 10 through 15 have been completed, return to step 3 and reset depth of cut.

17. The final step is to run the conveyor at full speed and view grinding spindle amp meters. The load of each spindle should remain constant.

Front Tube Adjustment

The distance between front and rear pads is adjustable by moving the front tube "in" and "out". Pressing the Glass Thickness Increase button will increase the glass thickness setting displayed on the screen. The range is fourteen (14) increments from 0.12 inches to 2 inches. Changing setting will cause the term "Glass Thick" to blink, this means the setting displayed and actual conveyor gap are not in agreement.

Pressing Glass Thick Dec button will decrease the glass thickness setting displayed on the screen. The range is fourteen (14) increments from 0.12 inches to 2 inches. Changing setting will cause the term "Glass Thick" to blink, this means the setting displayed and actual conveyor gap are not in agreement.

The edger will not move to the next glass size until the Glass Thickness On/Off key is pushed.

NOTE

The actual gap between front and rear pads is 1/8" less then the thickness of the glass. This is the amount of compression required to hold the glass.

Testing Initial Operation

After the edger is completely assembled press the Machine Start/Stop key on the operator console to start the edger.

Spindle motors will turn on in a sequence from first to fourth/fifth. Observe the direction of rotation and amperage display when spindles are not under a load.

The coolant pump will turn ON. Observe that coolant is flowing to both grinding wheels and polishing wheels and drains from the coolant pan to the coolant tank. Inspect coolant line positions.

Push the Conveyor Forward On/Off Key and set the conveyor speed to 100 IPM. Observe that the conveyor belts are moving left to right when facing the front of the edger. Vary the speed adjustment up and down. Observe that the conveyor increases and decreases in speed accordingly.

Push the Conveyor Reverse On/Off Key. Observe that the belts and conveyor chains reverse the directions of travel. Turn off the edger by pressing the Machine Start/Stop Key and verify the conveyor stops.

SECTION 5

OPERATING INSTRUCTIONS

Operator Interface



Figure 14 Operator Console

The following is a list of the keys on the operator console (Figure 14) and a description of their function.

**START
Machine
STOP**

This button sequentially starts and stops all selected spindles and Coolant Pump for normal production or maintenance operations. The screen will change when button is actuated, during startup the Setup screen changes to Operation screen and vice versa when stopped. The machine has an automatic shut down that will turn off the machine after thirty (30) minutes if no glass has been run through it.

**DEVICE
ON/OFF**

Active only when Setup screen is on, this button toggles a device on or off where the underscore cursor is located. All devices, except the

**BATCH
READ
POLISH
SETTINGS**

Cerium Pump (if included), that are ON will start when Machine START STOP button (above) is pressed. The Cerium Pump will start immediately when toggled to ON and will run continuously until toggled OFF on the Setup screen.

This buttons moves three (3) screens. Pressing it the first time shows the batch run length and time screen. A second press displays the polish spindle in/out setting and conveyor offset setting. Pressing it a third time returns the original screen.

**CURSOR
MOVE**

This button shifts the cursor from one settable function to another on the Setup and Polish Settings screens.

**POLISH
SETTING
DECREASE**

This button will decrease the value above the cursor by "1". If the cursor is located underneath a polish spindle setting, each decrement equals a conveyor travel of 0.12 inches. This means the spindle In or Out action will move upstream (happens sooner); there is no range of adjustment, it can be set from 0 to 32768. If the cursor is located at conveyor offset the compression can be changed. The range of adjustment is from -25 to 25. Decreasing the setting (and going into negative numbers) will close the conveyer gap by 0.01 inches the total range of adjustment is .25 inches"

**POLISH
SETTING
INCREASE**

This button will increase the value above the cursor by "1". If the cursor is located underneath a polish spindle setting, each increment

equals a conveyor travel of 0.12 inches. This means the spindle In or Out action will move downstream (happens later); there is no range of adjustment, it can be set from 0 to 32768. If the cursor is located at conveyor offset, the compression can be changed. The range of adjustment is from -25 to 25. Increasing the setting will open the conveyor gap by 0.01 inches the total range of adjustment is .25 inches

GLASS THICKNESS ON/OFF

displayed and actual conveyor gap are not in agreement.

After selecting a new glass thickness, the machine will go to the new size when this button is pressed. Pressing the button a second time can stop the adjustment. The term "Glass Thick" will stop blinking when the conveyor has reached its new position.

BATCH LENGTH CLOCK RESETS

When Batch readout screen is displayed, this button resets the batch clock and length readouts to zero "0".

CONVEYOR SPEED SELECT

The operator has two choices for conveyor speed adjustment: using the operator interface or potentiometer knob next to the interface. This button makes the selection and displays the choice on the screen.

EMERGENCY STOP RESET

When an emergency stop condition has occurred, the reason will be displayed on the screen. While the Emergency Stop screen is shown the conveyor can be run in reverse by holding down the Conveyor Reverse On/Off button, or the front conveyor can be opened by pressing and holding the Glass Thick On/Off button. After the condition has been corrected the RESET button must be pushed to return to normal operation.

CONVEYOR SPEED INCREASE

When the operator interface is the conveyor speed control source, this button raises the speed. Pressing the button and releasing it will increase speed by one (1) inch per minute. Holding button down will change speed at a faster rate. The top speed is 380 inches per minute. If the conveyor is not running, the number displayed will be the speed when conveyor is started.

GLASS THICKNESS INCREASE

Pressing this button will increase the glass thickness setting displayed on the screen. The range is fourteen (14) increments from 0.12 inches to 2 inches. Changing setting will cause the term "Glass Thick" to blink, this means the setting displayed and actual conveyor gap are not in agreement.

CONVEYOR SPEED DECREASE

When the operator interface is the conveyor speed control source, this button lowers the speed. Pressing the button and releasing it will decrease speed by one (1) inch per minute. Holding button down will change speed at a faster rate. The lowest speed is 0 inches per minute. If the conveyor is not running, the number displayed will be the speed when conveyor is started.

GLASS THICKNESS DECREASE

Pressing this button will decrease the glass thickness setting displayed on the screen. The range is fourteen (14) increments from 0.12 inches to 2 inches. Changing setting will cause the term "Glass Thick" to blink, this means the setting

CONVEYOR FORWARD ON/OFF

After starting the edger using the Machine START STOP button and all the spindles and pumps selected are running, this button will start conveyor going forward at the speed set by operator interface or

potentiometer. If the conveyor is already running forward, pressing this button again will stop it. If running in reverse, this button will change conveyor direction.

**CONVEYOR
REVERSE
ON/OFF**

After starting the edger using the Machine START STOP button and all the spindles and pumps selected are running, this button will start conveyor going reverse at the speed set by operator interface or potentiometer. If the conveyor is already running reverse, pressing this button again will stop it. If running in forward, this button will change conveyor direction.

The Running screen is now displayed on Operator Interface. The top line is Conv. Speed ### ipm

The third line on screen tells conveyor speed command source. If "OP INTF" is shown, the conveyor speed is set using operator interface keypad, and the numbers shown on the first line is the speed conveyor will run when started. When "KNOB" is displayed, speed is controlled by potentiometer located to the right of operator interface and the top line numbers will be zero.

Pressing "Conv Speed Select" key will toggle between the two sources.

When "OP INTF" is displayed pressing and releasing or pressing and holding the "Conv Speed Incr" or "Conv Speed Decr" keys will change top line numbers.

Refer to Table 2 for a setting depending on glass type, thickness, and type of cutting edge. It should be noted, however, that these settings are starting points only. Finer adjusting may be necessary to achieve a desired depth of cut for each thickness of glass.

The machine has an automatic shutdown that will turn off spindles, conveyor, and coolant pump thirty minutes after the last piece of glass has run. The cerium pump (if included and has been started) will continue to operate.

To start conveyor, press "Conv. Fwd. On/Off" key on Operator Interface.

Load glass onto ingoing conveyor (left side of machine when viewing from front) to begin normal operation.

As the glass moves through edger, observe ammeter for each spindle. Under proper grinding and polishing conditions each ammeter should be indicating less than five (5) amps if running on 208/230 volts or two and a half (2-1/2) amps if operating on 460 volts. The exception to this is if there is heavy glass removal. Also, if any ammeter begins to read higher that is an indication the wheel has become "loaded" and requires dressing. Refer Section 6 (Diamond Wheel

Edger Startup

Turn electrical disconnect switch to ON.

After machine controller initialization is complete the set-up screen is displayed.

Verify that the front tube is adjusted to the proper glass thickness, if not, readjust glass thickness as described below. Also, if the term "Glass Thick" is flashing on interface screen, the front tube location and setting displayed on screen are not in agreement and must be readjusted.

Using the Set Up screen on Operator Interface, select the spindles and pump(s) that will be used when the machine is started. This is done by pressing the Cursor Move key which moves the on screen cursor from one On/Off status to the next. At each On/Off status you can alternate between on and off by pressing the Device Toggle key.

The Cerium Pump (if included on this machine) is turned on and off directly from the Setup screen. Toggling the status to ON immediately starts the pump and it will run continuously until turned off on the Setup screen.

Start machine by pressing Mach Start/Stop key, All selected spindles and pumps will sequentially start.

Grinding) for frequency and procedure on dressing wheels.

CAUTION

Do not run glass through the edger unless coolant is flowing to each wheel at the point where the wheel contacts the glass. If a diamond-grinding wheel is run dry, the heat generated may break the glass and damage the wheel.

of the glass edge that is to be ground determines the amount of glass to be removed. If the cut edges are straight without flares or protrusions, then the amount necessary to be removed is minimal. If the cut edges are jagged and uneven, more glass will have to be removed.

The correct speed and depth of cut to achieve the desired grind and polish will have to be determined for each type and thickness of glass through experimentation. The combinations that give the desired results should be documented so that the conditions can be duplicated at a later date.

Grinding Speed

The speed at which glass is ground and polished (speed of the conveyor) is adjustable from 0 to 380 inches per minute. This speed is dependent upon six factors:

- Hardness of glass
- Type of glass (plate, float or sheet)
- Thickness of glass
- Grit and type of the grinding and polishing wheels
- Depth of grind
- Smoothness of finished edge

The softness or hardness of the glass, its thickness, and the smoothness of the cut edge to be ground will determine the grinding speed.

For example, plate glass can be edged faster than the same thickness of sheet or float glass. Thinner glass can be edged faster than thick glass, and hard glass is slower to edge than a softer grade of glass. The grit of the diamond wheel is very important to the speed of grinding. The courser the grit, the faster the wheel will edge. Conversely, course grit wheels will leave rough edges with chips. Fine grit wheels edge slower, make a smoother cut, but do not remove as much glass.

The amount of glass that must be removed is another important consideration of edging speed. For the fastest edging speed and longest wheel life, the smallest amount of glass possible should be removed. The cut

Operation

Adjustments

1. Set grinding and polishing wheels to the proper setting for the thickness of glass to be ground. (See Adjustment of the Grinding and Polishing Wheels in Section 4).
2. Adjust height of wheels for desired depth of cut (Refer to Section 4).

Edger Startup

1. Turn main power switch to ON.
2. Check to see if the front pads are adjusted to the proper glass thickness.

CAUTION

Do not run glass through the edger unless coolant is flowing to each wheel at the point where the wheel contacts the glass. If a diamond-grinding wheel is run dry, the heat generated may break the glass and damage the wheel.

3. Start the conveyor drive to forward and adjust speed control to desired speed. Refer to Table 1 for a setting depending on glass type, thickness and type of cutting edge. It should be noted, however, that these settings are starting points only. Finer adjusting may be necessary to achieve the

desired depth of cut for each thickness of glass.

Glass Thickness	Depth of Cut		
	1/32	3/64	1/16
1/8" or 3mm	350	350	350
3/16" or 5mm	325	325	325
1/4" or 6mm	300	300	300
3/8" or 10mm	150	120	100
1/2" or 12mm	125	100	80
5/8" or 16mm	50-60	40-50	30-40
3/4" or 19mm	50-60	30-40	20-30
1" or 25.4mm	10-15	10-15	5-10

Table 2 Grind Speed Recommendations

NOTE

The numbers on the speed readout are actual speeds. When the dial is set at full, the conveyor is moving at 380 inches per minute. When set at half, conveyor speed is approximately 190 inches per minute, and so on. Table 2 shows approximate speeds for depth of cut and glass thickness. The speeds are in inches per minute. The dial readings are for plate glass using properly dressed wheels to achieve an average quality edge. Speeds should be reduced 10 percent for sheet or float glass, 20 percent for harder grades of glass, and as necessary for better quality and different wheels

CAUTION

Never exceed glass capacities of the edger as listed in the specifications in Section 2.

CAUTION

Do not start or stop any operations of the edger while glass is over the grinding and polishing wheels. If an emergency occurs, press the EMERGENCY STOP BUTTON located on left side of the operator console.

4. Press START buttons to start the spindles.
5. Load glass onto the ingoing conveyor (left side when facing front of edger) to begin normal operation
6. Observe ammeters for each spindle as the glass is passing over the grinding and polishing wheels. Under proper grinding and polishing conditions each should be indicating less than 5 amperes unless heavy glass removal is required. If any ammeter begins to read higher, it is an indication that the wheel has become "loaded" and requires dressing. See Section 6 for the frequency and procedure for dressing the wheels.

Cerium System (Optional)

The VE-4/VE-4+1 is offered with an optional cerium system (Figure 15).



Figure 15 Cerium System

When the system is installed on the edger, the last polishing wheel is made of felt and receives a stream of cerium oxide slurry, which provides an optical finish to the glass. Always be sure the cerium spray lines are positioned properly. When changing from coolant to cerium, disconnect the spray line from the 4th wheel to the coolant pump, and connect to the cerium pump. Cap off line from coolant pump. Reverse procedure when going from cerium to coolant and in each case properly locate 4th wheel coolant line. See Section 6 for proper maintenance of the cerium system.

NOTE

On some operations, particularly on thin glass, the felt wheel can be dropped out of engagement. When this mode of operation is chosen, it is not necessary to operate the cerium pump.

Pneumatic System (Optional)

The VE-4/VE-4+1 is offered with an optional pneumatic system. When the system is installed on the edger, the two/three polishing wheels are furnished with a pneumatic lifting cylinder to quickly engage and disengage the polishing wheels with the glass and, to control the pressure of the wheels. The stroke of the wheels is minimal and is adjustable from 0 to 1/8". A stroke of 1/16" is set at the factory. Each spindle is furnished with a pressure regulator and gauge (located in front console of the machine) to adjust the desirable air pressure to lift the wheel and apply polishing force to the glass. Adjustment of the polishing wheels with the pneumatic system is the same as described earlier.

NOTE

A pressure regulator in the back of the machine (Figure 16) provides constant pressure for the return (down) of the wheels. This pressure is low and set at approximately 25PSI.

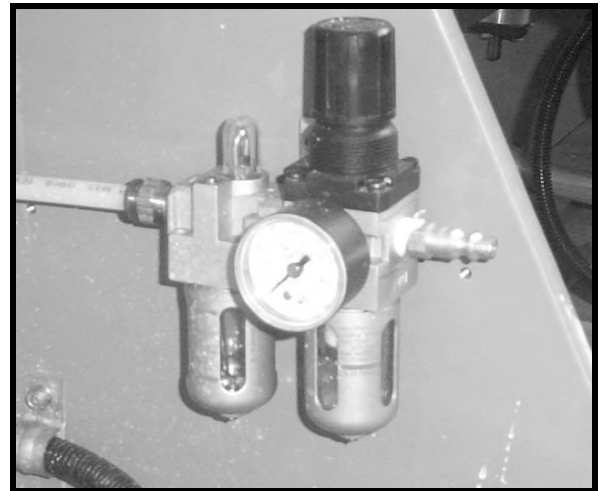


Figure 16 Air Pressure Regulator

SECTION 6

MAINTENANCE

NOTE

A running time hour meter is located on the operator console to aid in scheduling a proper maintenance program.

Conveyor System

Lubrication

Every 40 hours:

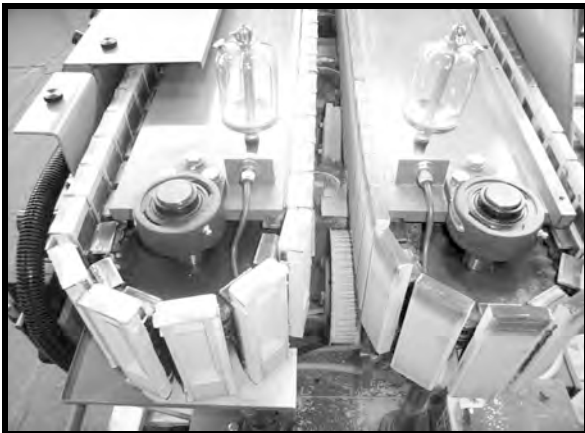


Figure 17 Outgoing Conveyor Bearings

Apply a small amount of grease to each of the four upper and lower sprocket bearings located at the ingoing side of the conveyor with a grease gun and to each of the four upper and lower sprocket bearings at the outgoing side (Figure 17).

Spray surfaces of sprockets and spur gears with penetrating oil to prevent rust. (Figure 18) Coat gear teeth with 630AA waterproof grease or equivalent. Use a

brush to apply a smooth and even coat of lubricant.

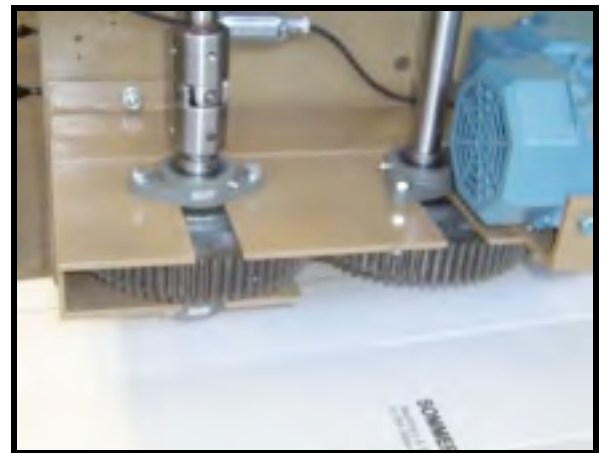


Figure 18 Spur Gear Lubrication

Apply grease to bearings of the front and rear drive shafts on the drive support bracket.

With the conveyor running slowly, saturate the conveyor chain with penetrating oil at least every week. Do this at the end of the day to allow the oil to soak into the chain overnight. Check the level of the oilers located on front and rear tubes.

Apply grease to the left and right side front tube adjustment slides. (Figure 19)



Figure 19 Front Tube Adjustment Slide

Lubricate the conveyor chain idler sprockets (Figure 20).



Figure 20 Conveyor Idler Sprocket Lubrication

Lubricate ingoing and outgoing conveyor idler pulleys with light machine oil. WD40 in a spray can works well.

After the first 100 hours of operation, drain the conveyor drive gearbox (Figure 21) and refill with gear oil Mobile SMC634. Thereafter, oil should be changed at least every 2500 operating hours or every 6 months, whichever comes first.



Figure 21 Conveyor Gear Box

Tightening Front and Rear Chain Assemblies

After every 160 hours of operation, tighten the front and rear chain pads according to the following procedure.

1. Remove front or rear chain guard. Inspect each chain pad assembly for slack. It should have approximately 1" of play at the center (when pulled with a slight force away)
2. Tighten the chain by loosening the two hex head screws, located on the left side of the main conveyor, and tightening the take-up screw to extend the sprocket bracket out from the frame (Figure 22).



Figure 22 Conveyor Chain Tension Adjust

Repeat steps 1 and 2 on the other chain pad assembly. It is important that both the front and rear chain assemblies are tightened equally. Measure the distance between the sprocket shafts as close as possible. They should be equal.

Replacing Chain Assembly Pads

Remove left or right front guards (if a front pad is damaged).

Locate the damaged pad and turn the conveyor "ON" to position the pad in a convenient place on the drive or idler sprocket.

Using an Allen wrench, remove (4) #10 screws holding the pad on the chain. Remove the pad.

Coolant System

Every 8 Hours of Operation or As Required

1. Drain and clean coolant tank. To drain and clean coolant tank, remove the bolts from the pump mounting plate and remove the pump from the tank. Remove the coolant tank re-circulating line. Hose out the tank with clean water to remove the glass grind build up.
2. Refill tank with a mixture of 1 part CRL Cat. No. 2651005 diamond coolant or

equivalent and 100 parts water or as recommended. The coolant concentrate improves finish of the grinding and polishing operation, inhibits rust formation on parts of the edger, and helps preserve rubber parts.

NOTE

Some polishing wheels do not polish very well with high coolant concentrates. Coolant concentration may be reduced to comply with wheel manufacturer's recommendations.

3. Flush the coolant pan inside the center section below the grinding and polishing wheels.
4. Clean the rear and front pads on the conveyor chains with a brush to remove the build up of coolant and cerium.
5. When the spray guard brush is dry, and with power off, remove buildup of glass grind from the brush by running a long thin rod, such as a large screwdriver, back and forth to knock off the coolant and cerium build up. The brush can be removed for more thorough cleaning.

Grind and Polishing Wheels

Diamond Grinding Wheels

Diamond wheels, depending on manufacturer and base metal bond, vary considerably in service life from one half million to over one and one half million linear inches. But they require periodic dressing. A good indication that a wheel requires dressing is that an ammeter shows more than four amperes of motor current draw, or the displayed numbers are not steady. When any of these situations occur, the groove in the wheel must be dressed according to the following procedure.

1. Remove front window to expose the diamond wheels

WARNING

Be extremely careful while performing the dressing operation as directed in step 2. Wear heavy leather gloves, protective clothing and eye protection.

2. Turn the diamond wheel motor ON until it reaches full operating speed and then turn it OFF. Quickly apply a CRL Cat. No. 46205871 dressing stone, or equivalent, soaked in diamond wheel coolant solution or water, to the wheel groove rocking it back and forth while pressing very hard as the wheel coasts to a stop so as to attain a good dressing. Figure 23

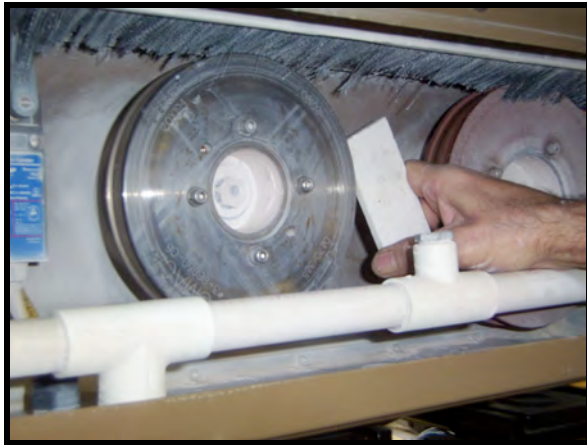


Figure 20 Grind Wheel Dressing

NOTE

Wheel dressing must be performed with the dressing stone thoroughly wetted.

3. Repeat step 2 several times then run a sample piece of glass. If the motor current still has not dropped to a normal operating range, again repeat step 2. If the grind wheel is too worn it should be replaced.

Polishing Wheels

These wheels have a short service life and must first be profiled to the contour of the grinding wheels. This can be done in either of two ways. The first way is to wear the wheel in by adjusting the diamond grinding

wheels properly. Then run glass through the machine while adjusting the polishing spindle upward until the entire edge is polished, repeating as many passes as necessary.

The second way is to run a dressing/profile board (Figure 24) through the edger just as a piece of glass is conveyed through for grinding and polishing. The board is ground to the profile of the diamond wheels and dresses the polishing wheels to the same shape.



Figure 21 Profile Board

This must be done a few times while adjusting the polishing spindle up to groove the polishing wheel deeply enough. Run machine both forward and backward to pass board over polish wheel as it is adjusted upward. In both methods turn ON the machine to start operation of wheels and pump. Turn conveyor ON and run board over polish wheel while adjusting it up slowly. The cup flat edge polish wheel in the VE 4 + 1 should not be dressed with the dressing board. The flat edge polish wheel should be turned off or the stop position set lower so the wheel does not hit the dressing board as the other wheels are being dressed.

Cerium System (Optional)

The VE-4/VE-4+1 is offered with an optional cerium system (slurry) for use with a polishing wheel. After 40 hours of operation,

drain, clean, and refill the entire system. Some coolant carryover into the cerium tank may occur every day. It can be expected that several inches of transfer during a day of operations will occur as the coolant comes through the divider gates on the glass as the gates open. Before startup, and especially before turning the cerium pump on, pump or siphon off excess water so the tank level is at one half full or about 6 to 8" in depth. Clean the strainer thoroughly. Check the cerium concentration level with a Baume hydrometer. Most cerium must have a minimum concentration of 5 degrees Baume, consult with manufacturer for recommended concentration levels. Coolant transfer into the cerium system can be minimized by the correct placement of the coolant line onto wheel #3 (wheel #4 on VE-4+1). Through experimentation one can determine an optimum coolant line position which will provide ample coolant to wheel #3 (wheel #4 on VE 4+1) and minimize transfer into the cerium compartment as well.

The VE-4/VE-4+1 is offered with an optional pneumatic system for use with two polishing wheels.

Observe the conveyor oil lubricator level and replenish as needed. Some oil may accumulate under the polishing spindles due to carryover by the seal in the spindle pistons. Wipe off the excessive oil with a clean rag.

Clean the air filter periodically.

QUICK MAINTENANCE GUIDE

DAILY CHECKS

1. COOLANT LEVEL.
2. COOLANT LINES FOR POSITIONING AND FLOW.
3. CHECK AMPERAGE ON ALL MOTORS. (NO LOAD/LOAD)
4. DRESS DIAMOND WHEEL AS NEEDED.
5. CLEAN OUT COOLANT TANK ABOUT EVERY 8 hr OF RUNNING TIME.
6. OPEN FRONT TUBE AND CLEAN OUT ALL GLASS GRINDS FROM INSIDE THE EDGER

EVERY 40 HOURS OF RUNNING TIME

1. GREASE ALL SPROCKET BEARINGS.(4 UNLOADING, 4 LOADING)
2. GREASE BEARINGS FRONT AND REAR DRIVE SHAFT.
3. APPLY GREASE TO FRONT TUBE ADJUSTMENT SLIDES.
4. SPRAY SPROCKETS AND SPUR GEARS WITH PENETRATING OIL.
5. SATURATE THE CONVEYOR CHAIN WITH PENETRATING OIL ONCE A WEEK USING THE CHAIN OILER AND LET SOAK OVERNIGHT.
6. COAT GEAR TEETH WITH LITHIUM WATERPROOF GREASE.
7. LUBRICATE LOADING AND UNLOADING CONVEYOR IDLER PULLEYS.
8. CLEAN FRONT AND REAR PADS.

MISCELLANEOUS

1. AFTER THE FIRST 100 hr DRAIN GEARBOX REFILL WITH MOBILE SMC634 THEREAFTER 2500 hr OPERATION
2. CHECK FRONT AND REAR CHAIN AND ADJUST AS NEEDED.
3. REMOVE AND GREASE DIAMOND WHEELS FORM THE HUB ABOUT 3 MONTHS.
4. EXERCISE LIFTING SPINDLES UP, DOWN, IN, AND OUT ABOUT EVERY 3 MONTHS.

OPTIONAL CERIUM AND PNEUMATICS

1. CERIUM SYSTEM

- CERIUM LEVEL. (DAILY)
- SIPHON OFF EXCESS COOLANT TRANSFER BEFORE STARTING PUMP.
- CLEAN STRAINER THOROUGHLY DAILY.
- CERIUM LINE POSITIONING AND FLOW.
- CERIUM BAUME LEVEL DAILY. (ABOUT 5 DEGREES BAUME)
- DRAIN, CLEAN, AND REFILL AFTER 40 HOURS OF OPERATION.

2. PNEUMATIC

- OBSERVE THE OIL LUBRICATOR LEVEL.
- CLEAN AIR FILTER PERIODICALLY.

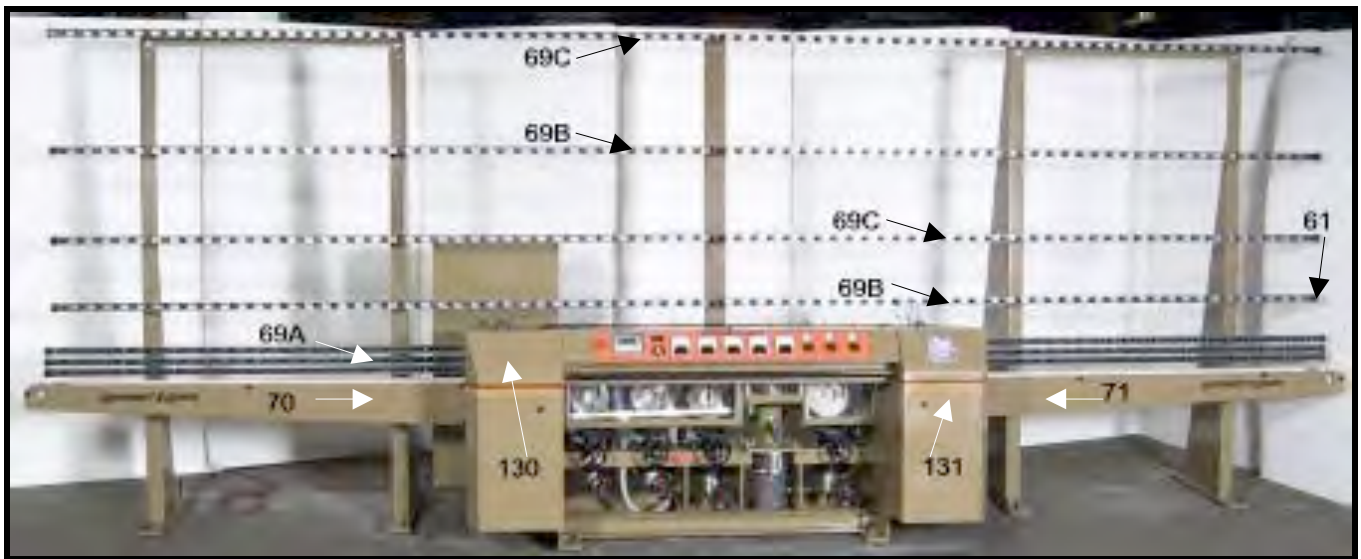
SECTION 7

TROUBLESHOOTING PROCEDURES

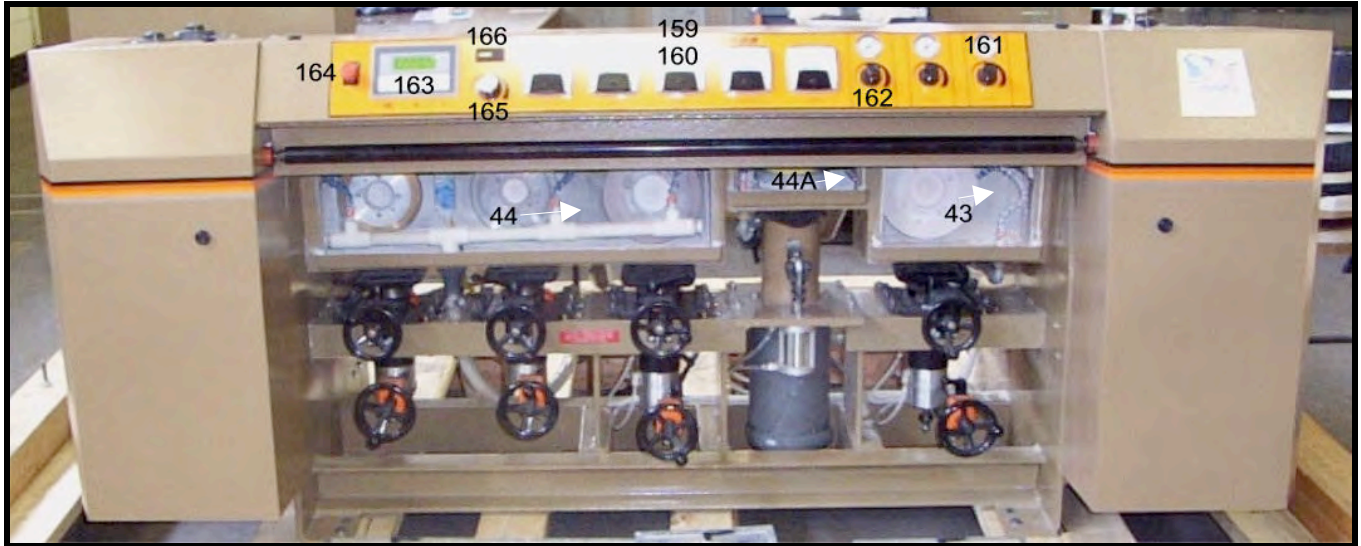
<p>Motor ammeters read over 5 amperes or higher than normal</p>	<ol style="list-style-type: none"> 1. Dress wheels 2. Re-true the diamond wheel 3. Slow down the conveyor speed 4. Check position of coolant lines
<p>Glass rides up in main section conveyor</p>	<ol style="list-style-type: none"> 1. Dress wheels 2. Check ingoing and outgoing conveyor for level 3. Check glass interference with outgoing conveyor 4. Check whether conveyor pads are under compressed 5. Slow down conveyor speed 6. Is a pad (pads) damaged? 7. Interference of glass with rails or rollers
<p>Choppy edge</p>	<ol style="list-style-type: none"> 1. Check glass for interference with outgoing or ingoing conveyor pulley or belt 2. Re-dress diamond wheel and polish wheel 3. Slow down conveyor 4. Re-true diamond wheel 5. Check motor mounting and adjustment lock screws for tightness 6. Check coolant
<p>Chipped edge or starred edge</p>	<ol style="list-style-type: none"> 1. Is wheel profile suitable for thickness of glass? 2. Is wheel turned too far and is steel contacting glass? 3. Is wheel worn out? 4. Try finer diamond wheel grit 5. Slow down conveyor speed
<p>Glass drops in conveyor</p>	<ol style="list-style-type: none"> 1. Check level of ingoing and outgoing conveyor 2. Is glass hitting outgoing conveyor? 3. Check whether conveyor pads compress tightly on glass. 4. Are all rubber pads in place?
<p>Motor ammeters increase or decrease substantially on long pieces of glass</p>	<ol style="list-style-type: none"> 1. Level ingoing and outgoing conveyors 2. Dress wheels 3. Is glass hitting outgoing conveyor? 4. Check position of coolant lines with respect to wheels

SECTION 8

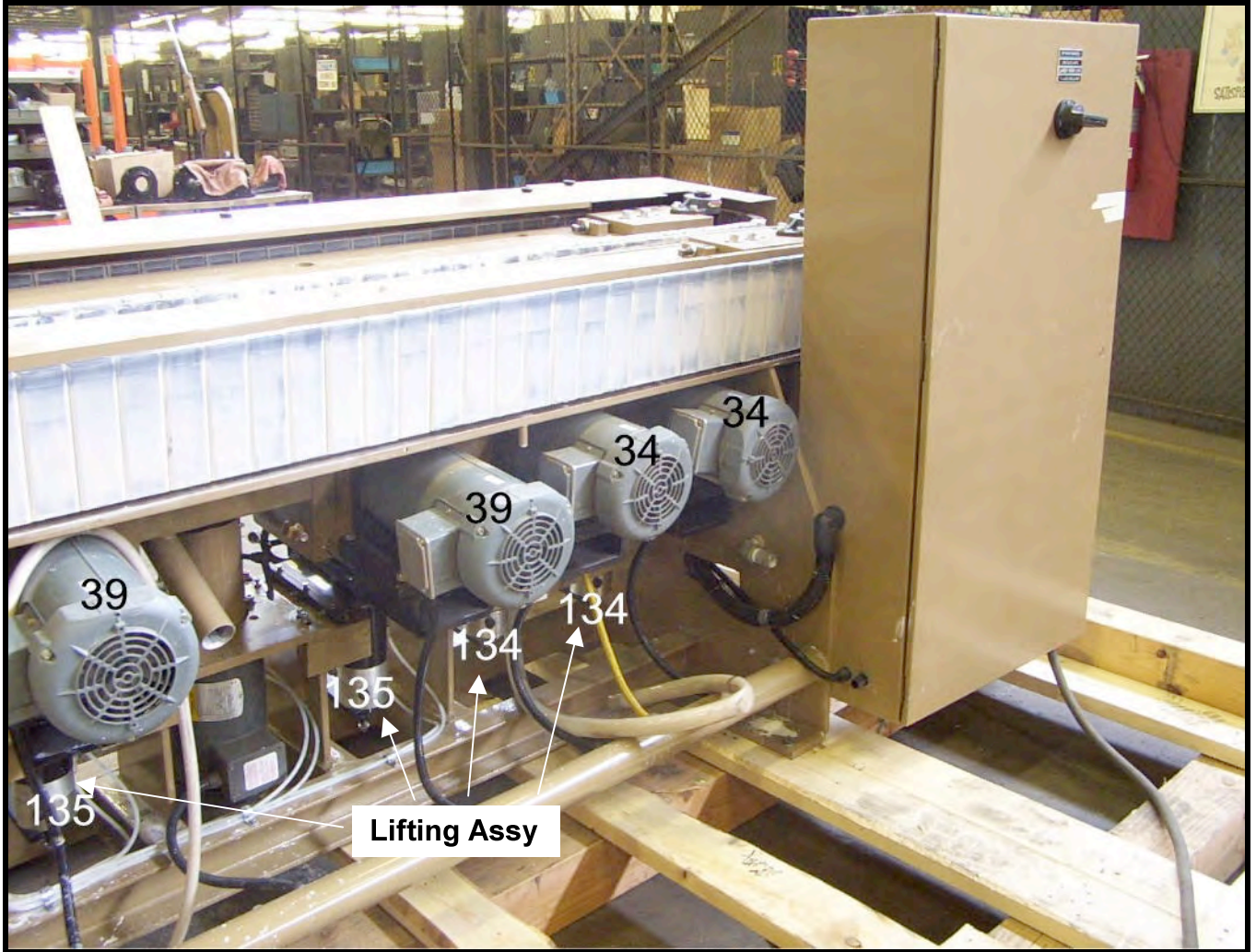
The following section shows the various views of the VE-4/VE-4+1. The numbers in the photographs reference the part numbers in the attached parts list located at the end of this section.



Picture 1 Overall Edger Front View



Picture 2 Main Center Section Front View



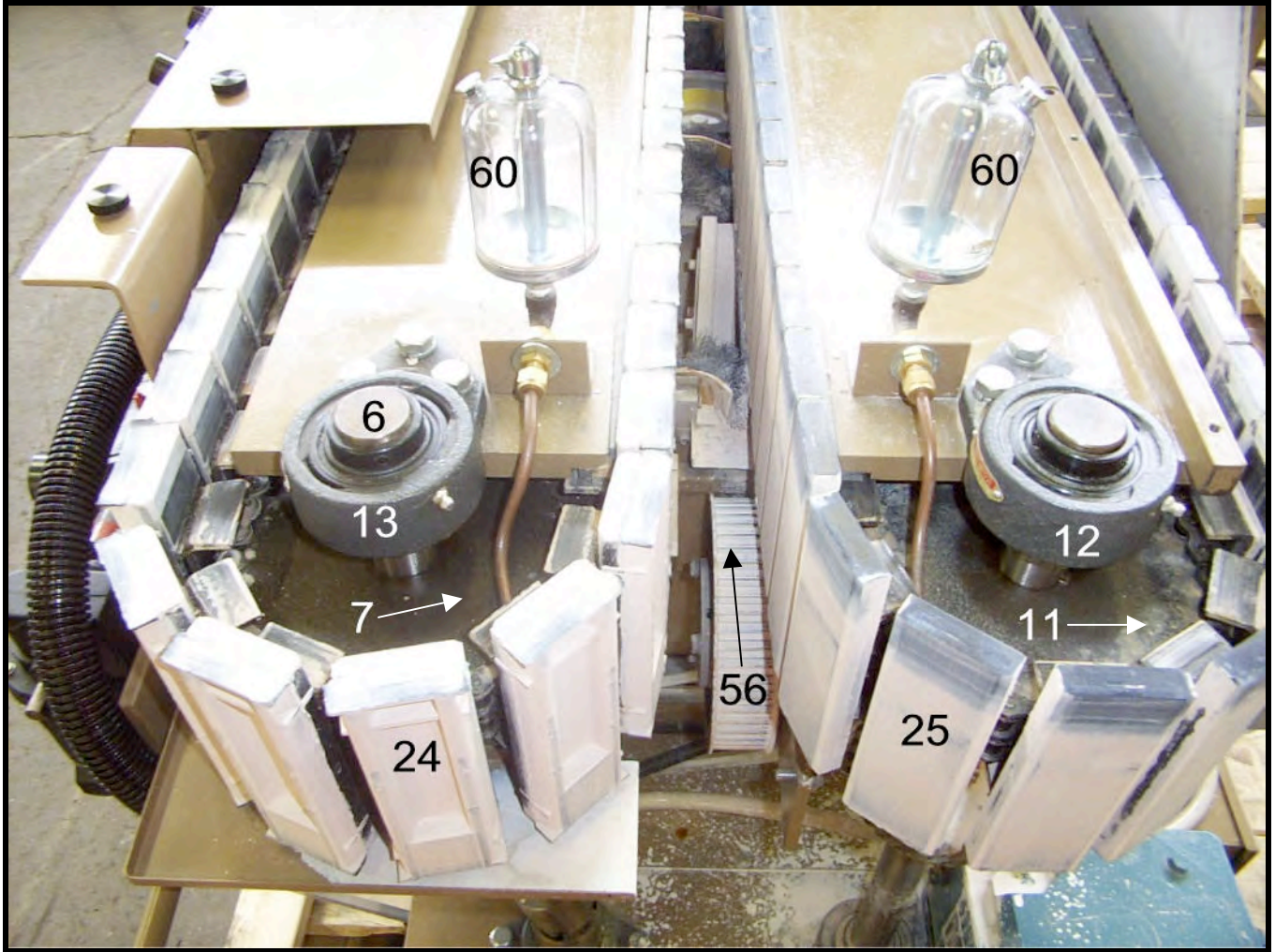
Picture 3 Edger Rear View Lifting, Grind and Polishing Motors



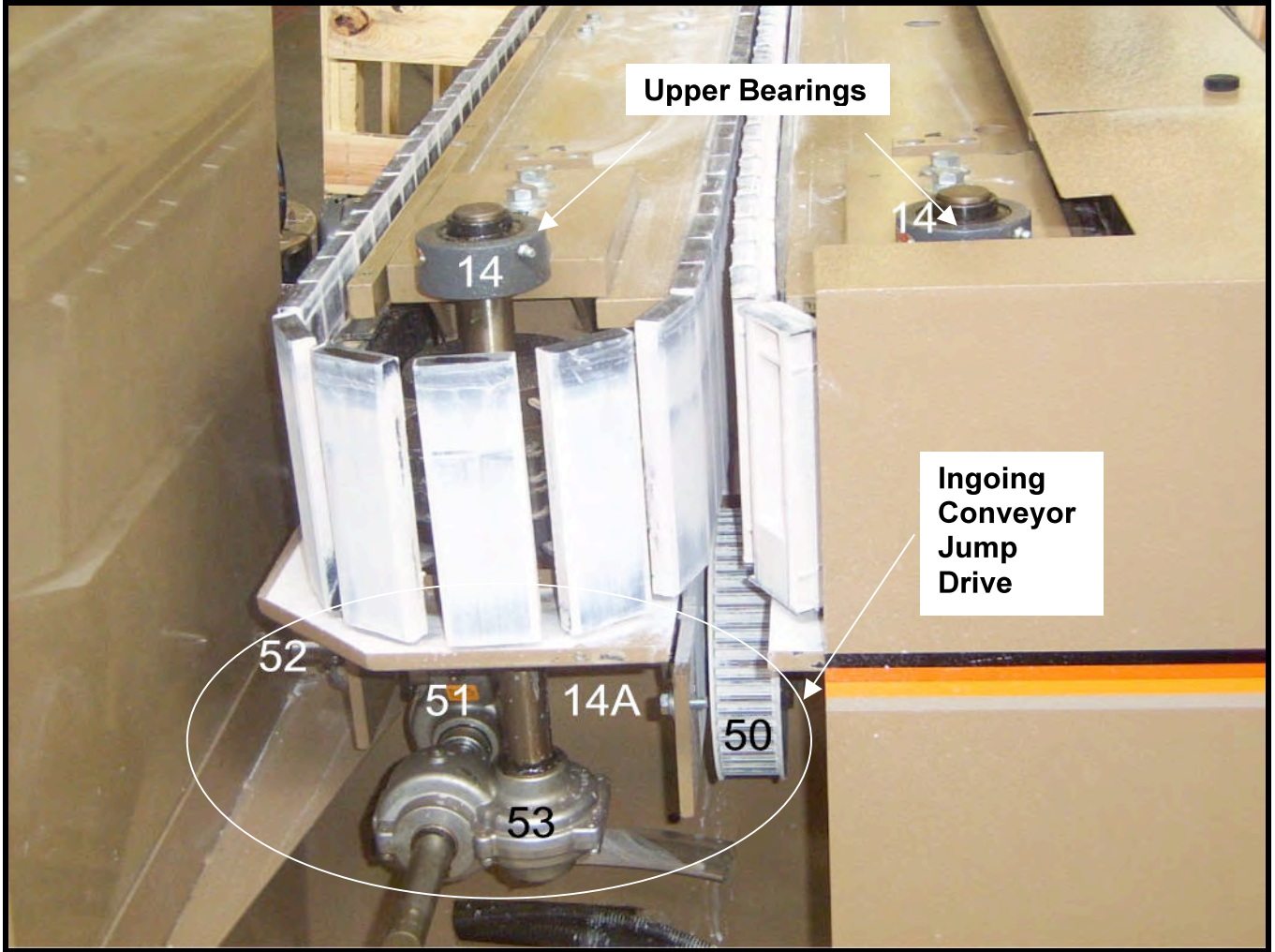
Picture 4 Right Side Front Tube Adjustment Jacks, Drive Motor and Couplings



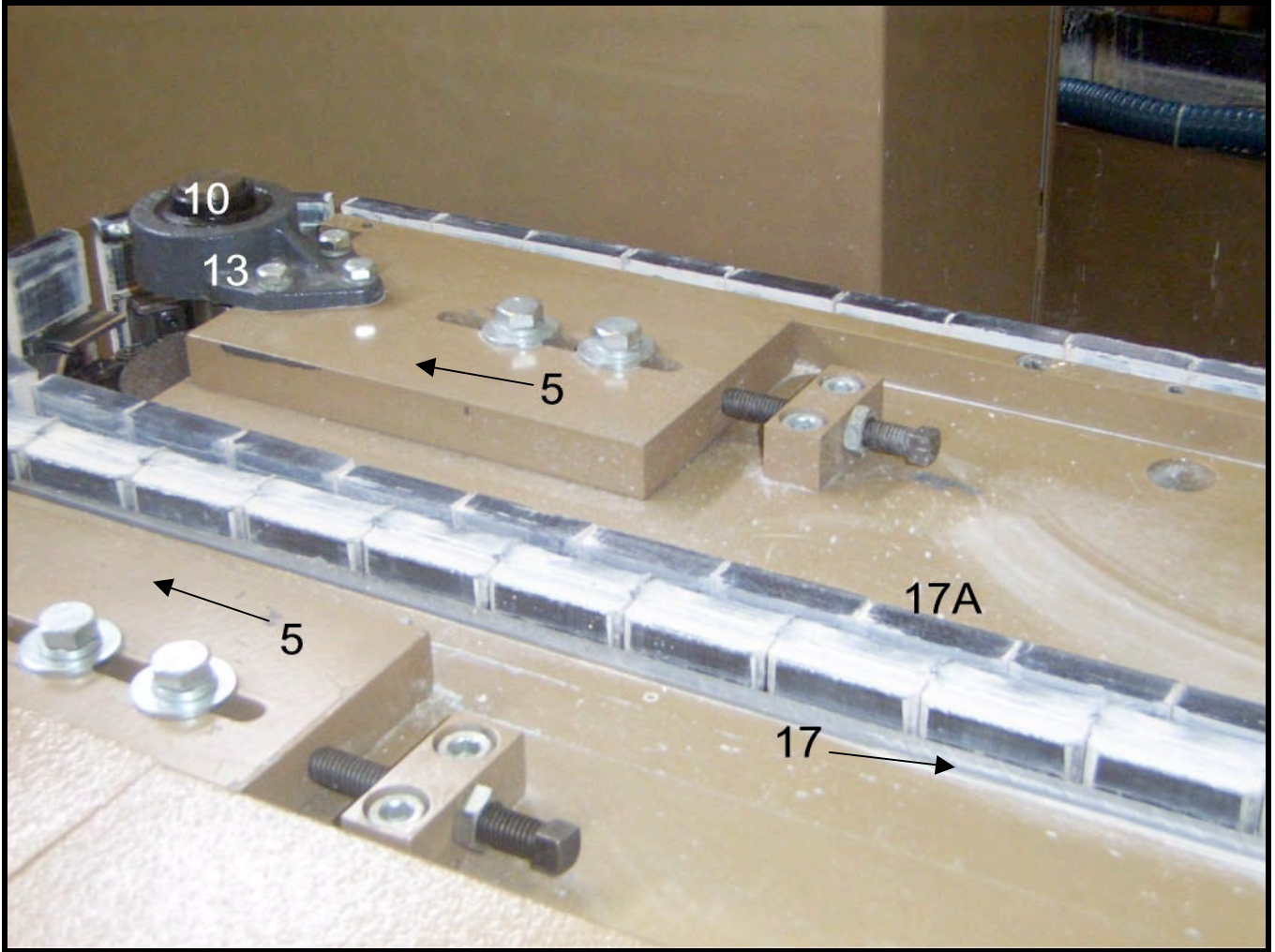
Picture 5 Left Side Front Tube Jacks, Coupling and Feedback Potentiometer



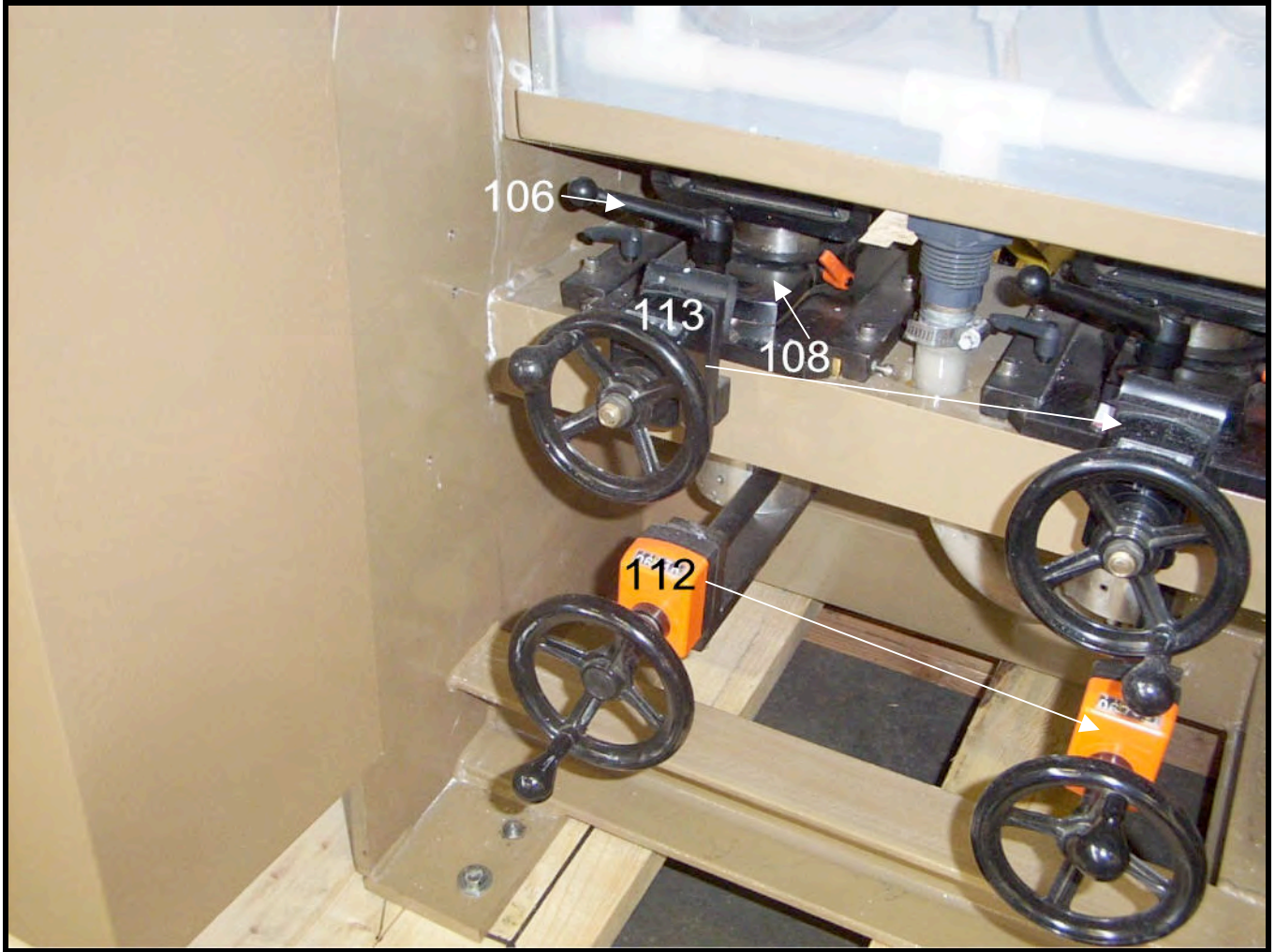
Picture 6 Right Side Conveyor Bearings, Pads, Sprockets and Lubricators



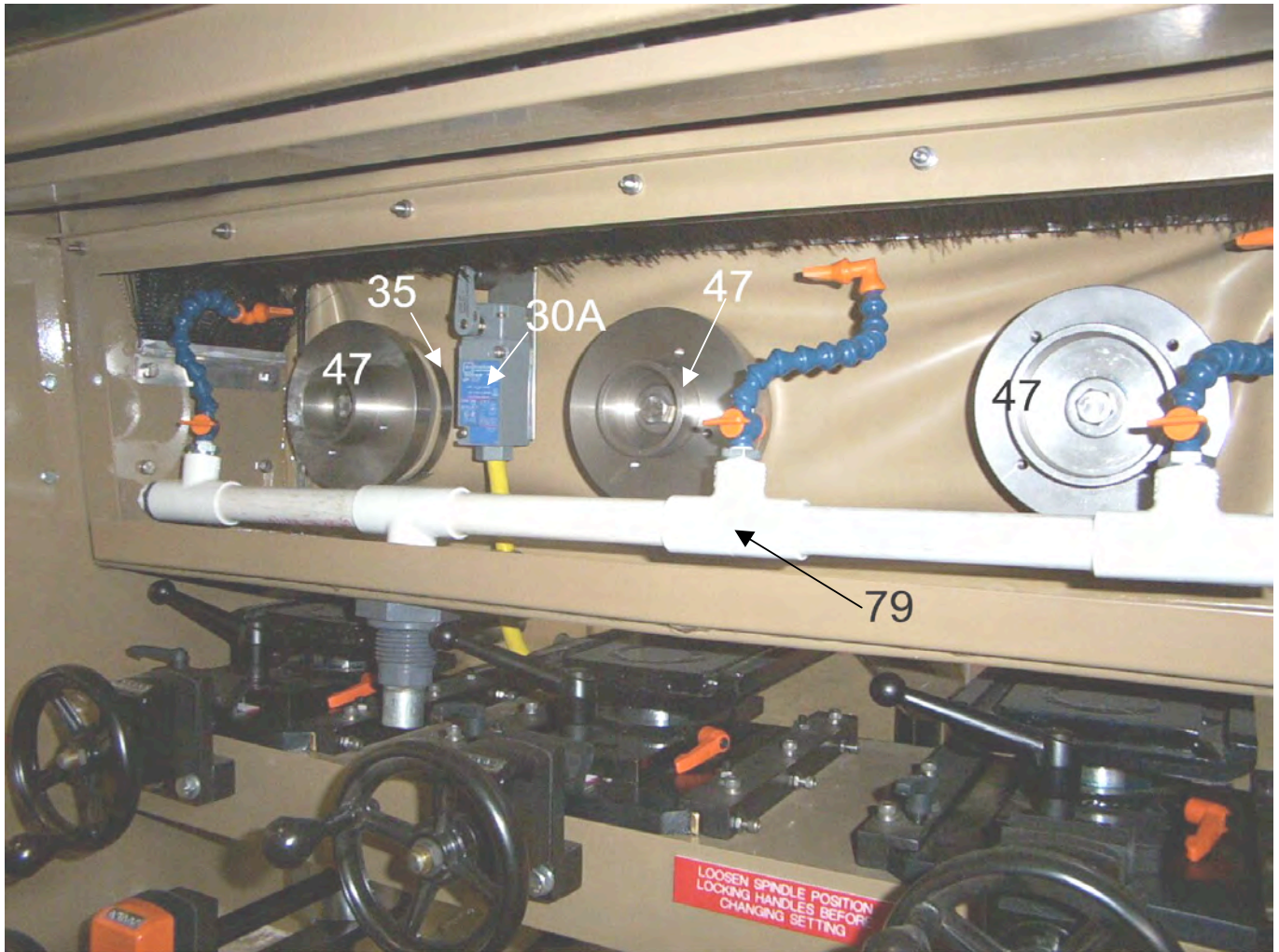
Picture 7 Left End Conveyor Jump Drive For Ingoing Conveyor



Picture 8 Conveyor Tension Adjustment and Tracks



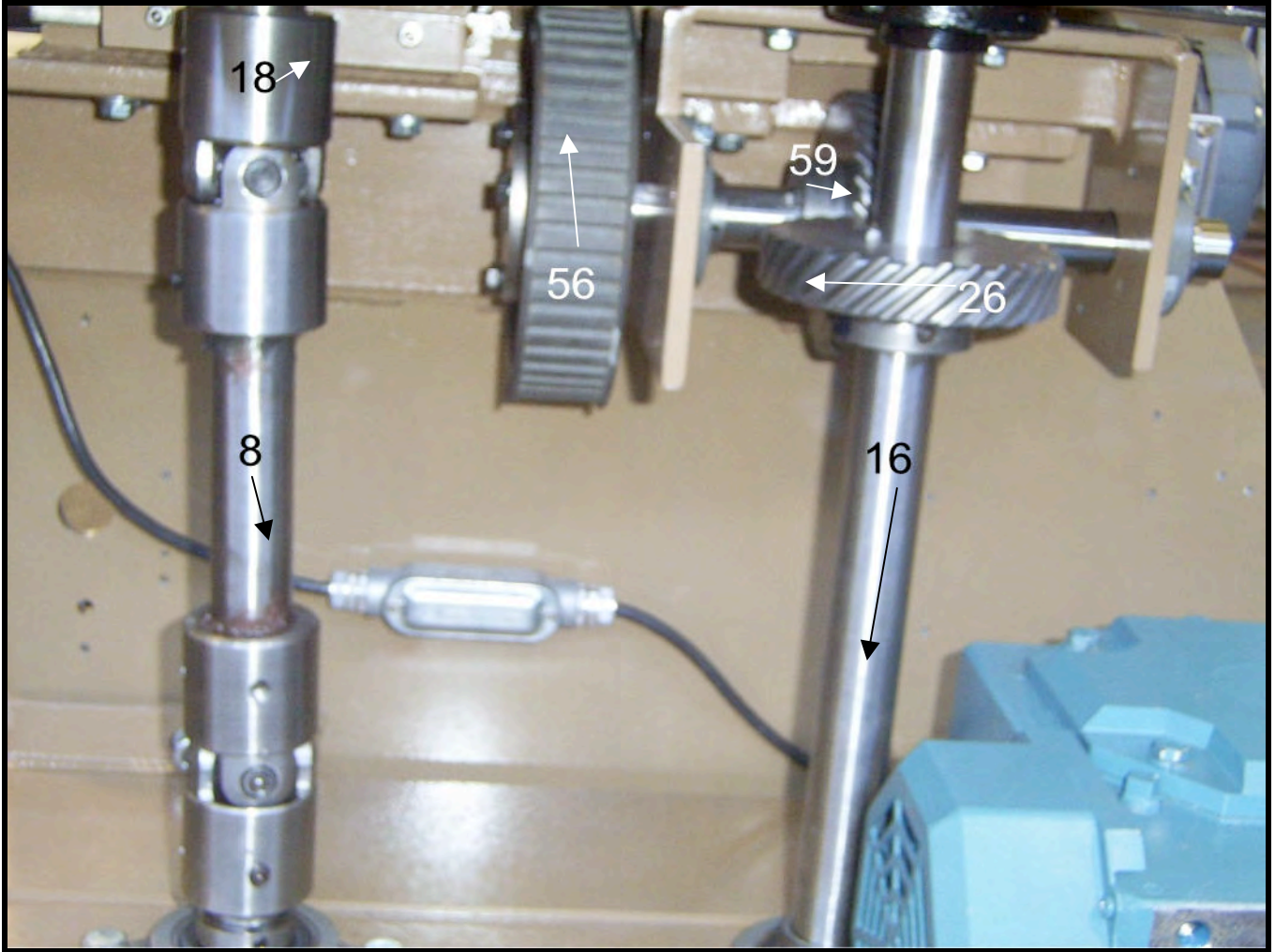
Picture 9 First and Second Grind Wheel Adjustments



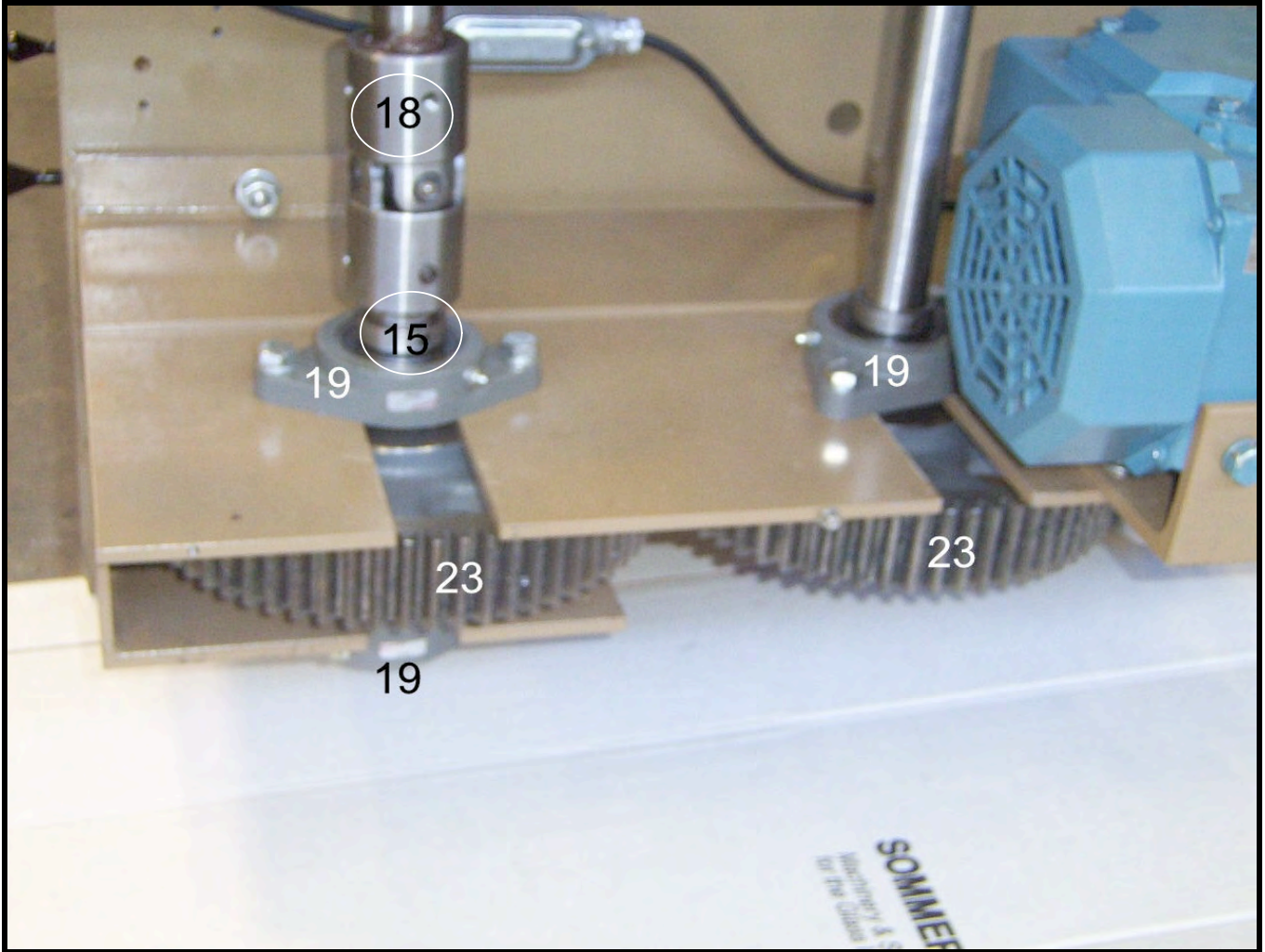
Picture 10 Grind Section Hubs, Coolant Manifold and Glass Switch



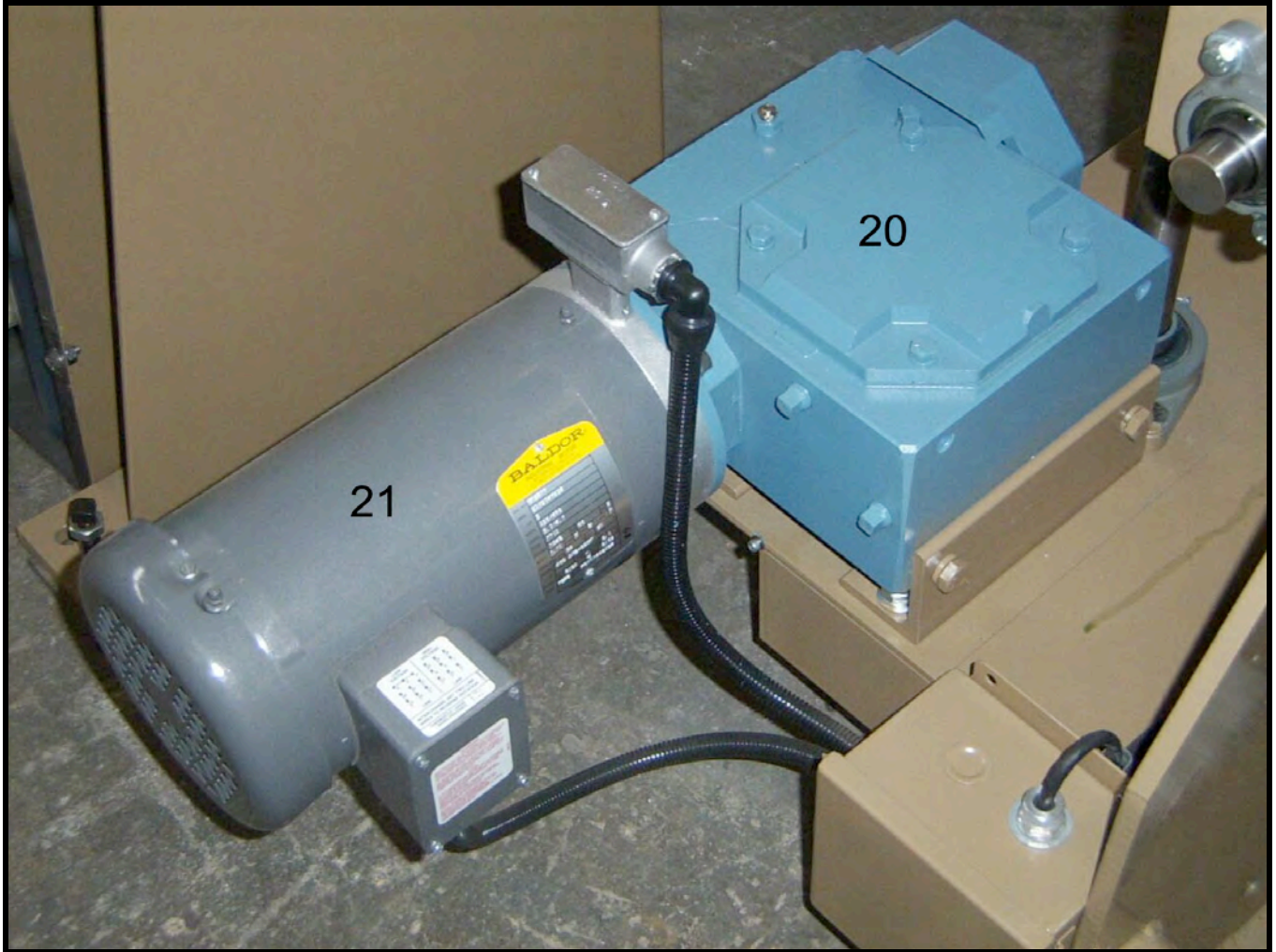
Picture 11 Cerium Polishing Section Hub and Cerium Lines



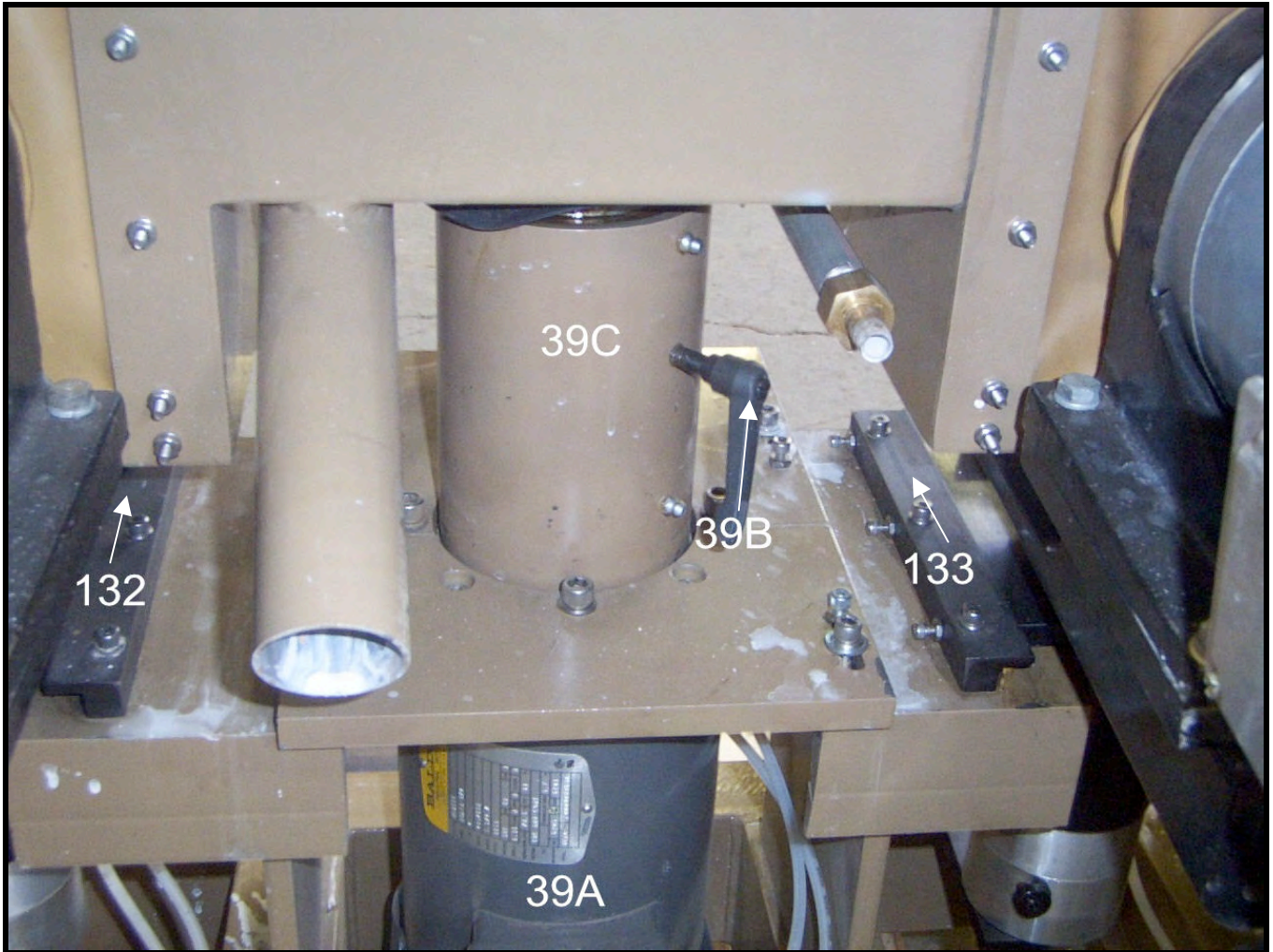
Picture 12 Main Conveyor Drive Section



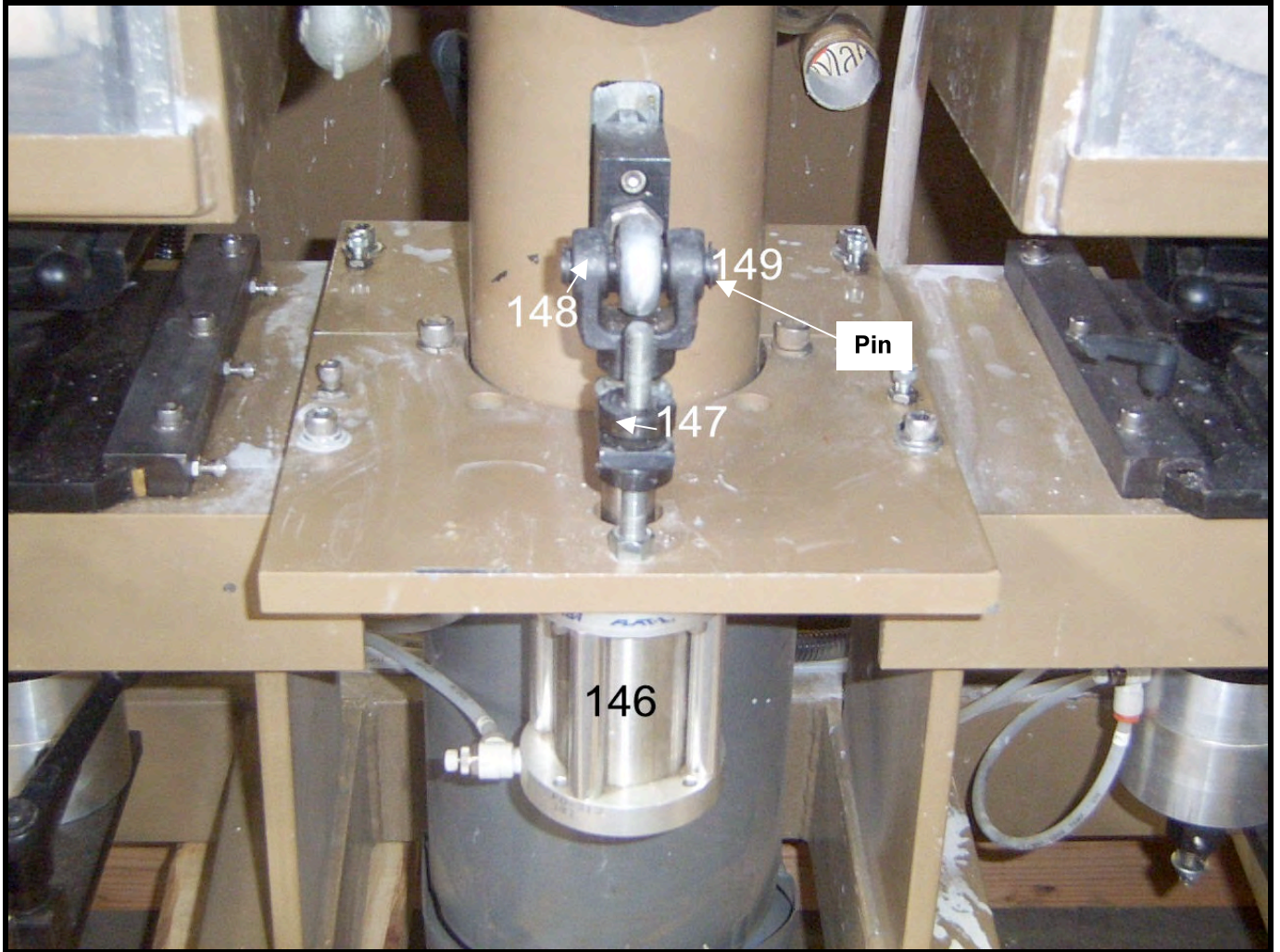
Picture 13 Conveyor Drive Spur Gears and Bearings



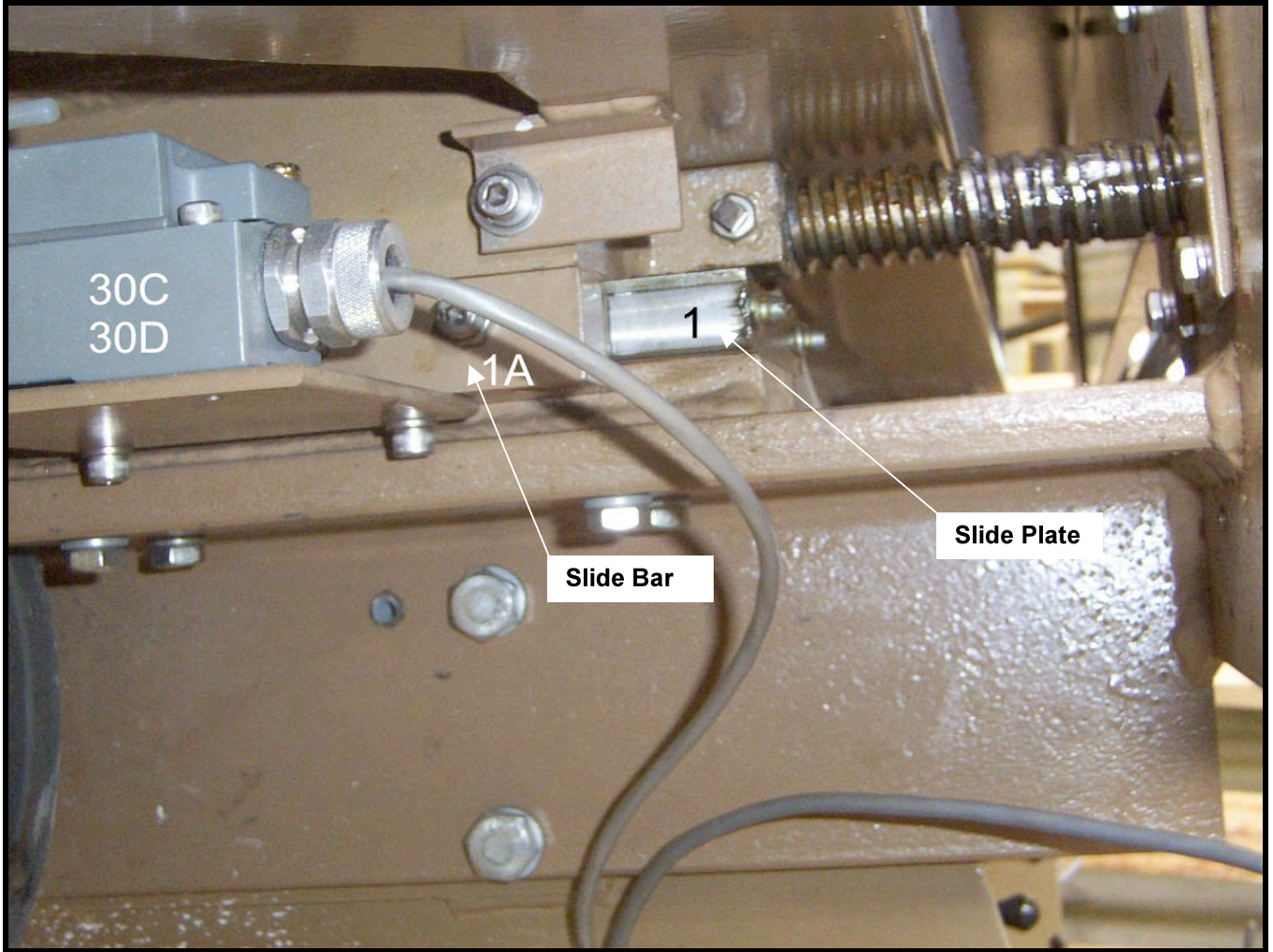
Picture 14 Conveyor Drive Motor and Gearbox



Picture 15 Rear View Flat Edge Polish and Adjustment Slides



Picture 16 Front View Flat Edge Polish Lifting Assembly



Picture 17 Left Front Tube Adjustment Slide and Glass Oversize Switch



Picture 18 Cerium Tank, Pump and Screen Filter



Picture 19 Coolant Tank and Pump

PARTS LIST (Partial)

Item	Part Number	Quantity	Description
1	3-88130-02	1	Slide Plate Left Side
42	3-88131-01	1	Slide Plate Right Side
1A	3-88130-01	2	Slide Bar Outside
1B	3-88130-02	2	Slide Bar Inside
2	469-0622-0	2	Screw Jack 24:1 Ratio 2-1/2" Travel (VE-4 + 1)
2	469-0639-1	2	Screw Jack 20:1 Ratio 2-1/2" Travel (VE-4)
3	432-5400-0	2	Keyless Bushing
4	3-92809-02	1	Cross Shaft jack screw
5	3-94208-00	2	Take-up Bracket
6	3-88140-01	1	Shaft Head Upper
7	430-1012-2	1	Conveyor Drive Sprocket
8	3-88138-01	1	Shaft Center
9	3-92167-01	1	Ingoing Drive Shaft (Rear Tube)
10	3-92166-01	1	Shaft Take-Up
11	430-1012-2	1	Conveyor Drive Sprocket-Outgoing
12	3-92785-00	2	Outgoing Bearing
13	441-0632-0	2	Bearing 3-Bolt
14	441-0621-2	1	Bearing 3-Bolt
14A	3-94201-00	2	Bearing 2 Bolt
15	3-88139-01	1	Lower Head Shaft
16	3-88141-01	1	Head Shaft Rear Tube
17	3-96832-00	2	Conveyor Guide Rail Front
17A	3-96833-00	2	Conveyor Guide Rail Rear
18	3-87740-00	2	Universal Joint
19	441-0700-4	3	Lower Bearing
20	434-2266-2	1	Main Drive Gear Box
21	410-1661-0	1	Conveyor Motor
22	3-86386-00	1	Gear Box Pinion
23	3-86392-00	2	Spur Gear
24	3-92783-00	1	Conveyor Chain Assembly - Front
25	3-92782-00	1	Conveyor Chain Assembly - Rear
26	3-89225-00	1	Helical Gear
27	434-2044-0	1	Gear motor Tube Adj.
112	461-2024-0	1	Digital Position Indicator
113	461-2025-1	1	Digital Position Indicator
130	3-97159-0	1	Left Side Guard
131	3-97158-0	1	Right Side Guard
28A	431-2024-0	1	Flexible Coupling
28	434-2193-1	1	Worm Reducer
29	3-91588-00	1	Potentiometer
30A	419-1527-0	1	Glass Switch
30B	419-1539-2	1	Glass Switch Actuator
30C	119-1504-0	1	Glass Oversize Switch
30D	419-1517-1	1	Glass Oversize Switch Lever Arm
31	3-88146-01	1	Flexible Water Stop (Not Shown)
32	3-88147-01	1	Flexible Water Stop (Not Shown)
33	3-92799-01	4	Wiper
34	3-90500-01	2	Spindle Motor Assy Grind
35	3-88570-02	4	Slinger

37	3-94466-00	2	Rail Conveyor Guide Front
38	3-89228-00	2	GIB
39	3-90500-02	2	Spindle Motor Assy Polish
39A	410-0651-0	1	Motor 3450 RPM 2 hp (Flat Edge Polish VE-4+1)
39B	461-0439-0	1	Handle, Adj 3/8 – 16 x .78 LG
39C	3-95933-00	1	Spindle, Telescopic Assy. (VE-4+1)
40	431-2004-0	6	Coupling Half
41	431-2004-1	3	Coupling Spider
43	3-93074-00	1	Cabinet Window (Cerium Section)
44	3-93075-00	1	Cabinet Window (Grind Section)
44A	3-96840-00	1	Cabinet Window (Smooth Section)
45	3-93057-00	1	Flexible Curtain –1 Head
46	3-92792-00	1	Flexible Curtain - 3 heads
47	3-84303-02	2	Wheel Hub Grind
48	3-91345-01	2	Wheel Hub Polish
49	141-1200-1	2	Bearing
50	3-94940-05	1	Drive Pulley Ingoing 1" Bore
51	434-2288-0	1	Gear Unit LH 1" Bore
52	3-92140-00	2	Drive Shaft 1"
53	434-2287-0	1	Gear Unit LH 1-1/4" Bore
54	3-92939-00	1	Bracket-Pulley Ingoing
55	3-92938-00	1	Bracket-Pulley Outgoing
56	3-94940-06	1	Drive Pulley Outgoing 1-1/4" Bore
57	3-92182-00	1	Drive Shaft 1-1/4"
58	441-0808-1	2	Bearing (Flanged) Bore 1-1/4"
59	434-0034-5	1	Gear, 45 Φ Helical 1-1/4"
60	3-92147-00	2	Chain Oiler Assy
132	3-88556-00	4	Clamp, Spindle Base
133	3-88555-00	4	Clamp, Spindle Base Gib Side)
134	3-95904-01	2	Spindle Lifting Post Assy
135	3-95828-00	2	Pneumatic Spindle Lifting Assy.
136	423-3300-8	5	Coolant Shut Off Valve PVC
137	423-3301-6	5	Segmented Flexible Line PVC
138	423-3300-3	5	Nozzle PVC
139	423-3300-2	1	Elbow PVC
Ingoing Outgoing Conveyor			
62	3-92936-04	1	Belt Support Rail Ingoing Conveyor
75	3-92936-03	1	Belt Support Rail Outgoing Conveyor
63	3-93064-01	2	Pulley Yoke
65	431-0013-0	2	Idler Shaft
66	3-93081-00	2	Idler Pulley
67	433-1306-1	2	Belt
68	3-88120-00	2	Belt Guide
69A	3-99830-08	6	Lower Roller Track VE-4 & VE 4+1
69B	3-99830-09	8	Upper Roller Track VE-4
	3-99829-02	18	Rail Support Bracket VE-4 & VE4+1
69C	3-99830-01	8	Upper Roller Track VE-4+1
	3-95012-04	18	Spacer Tube , Plastic VE-4 & VE4+1
61	463-0007-9	14	Plastic End Cap
70	3-92934-04	1	Left Side Guard
71	3-92934-03	1	Right Side Guard

Coolant Arrangement			
77	125-0055-0	1	Pump
78	3-88129-00	1	Tank
79	3-93073-00	1	Manifold
Guards (Parts Not Shown)			
81	3-94206-00	x	End Conveyor Guard – Ingoing
82	3-94207-00	x	End Conveyor Guard – Ingoing
83	3-92934-02	x	Ingoing Conveyor Guard
84	3-92934-01	x	Discharge Conveyor Guard
85	3-92947-00	x	Front Guard
86	3-93078-00	x	Rear Conveyor Guard
87	3-92784-00	x	Drive Guard
88	3-93079-00	x	Drip Pan Front Conveyor
89	3-93080-00	x	Drip Pan Front, Left
90	3-93077-00	x	Drip Pan Rear Guard
91	3-92935-00	x	Ingoing Conveyor Guard
92	3-92935-01	x	Discharge Conveyor Guard Cover
Cerium Options			
94	3-87795-00	1	Adapter Polish Wheel
95	425-0307-0	1	Cerium Pump 1/2-HP ROD STYLE 3/60/230/460v 1725RPM
96	499-1017-1	1	Cerium Oxide (8 lb. can)
97		x	
98	3-96906-00	1	Cerium Tank Complete Assy w/ Pump
99	3-91243-00	1	Strainer
Vertical 100 Extension Rack			
101	3-93982-01	1	Extension End Rack (Not Shown)
102	3-93982-02	2	Extension End Rack (Not Shown)
103	3-93981-00	2	Extension Center Rack (Not Shown)
104	3-92931-01	1	Roller Track (Not Shown)
105	469-0260-0	2	Stand Off (Not Shown)
Pneumatic Spindle Assy			
106	461-0346-3	6	Lift Clamp
107	3-94226-00	1	Spindle Lifting Post
108	3-88554-00	1	Spindle Base Plate
109	3-94225-00	1	Angle Adjusting Sleeve
110	3-94227-00	1	Piston
111	3-92622-01	1	Vertical Adjusting Sleeve
115	3-94231-00	1	Worm Gear Housing
116	3-93684-00	1	Pneumatic Arrgmt
Mechanical Arrangement			
117	3-90381-00	1	Spindle Lifting Post
118	3-90384-00	1	Angle Adjusting Sleeve
119	3-88554-00	1	Spindle Base Plate
120	3-88556-00	1	Spindle Base Clamp
123	3-94515-02	1	Worm Gear Housing

146	423-0209-8	1	Cylinder air 2" Bore
147	452-0032-6	2	Collar Clamo 3/8" - 24
148	423-0187-0	1	Rod Clevis Female
149	423-0187-1	1	Pin Pivot
150			
151			
152			
153			
154			
155			
156			
157			
158			
Electrical Parts			
159	412-0631-6		METER AC AMP 0-10 AMP (Used on 208-230 Volt)
160	412-0631-4		METER AC AMP 0-5 AMP (Used on 460 Volt)
161	423-0127-0		PRESSURE GAUGE, 1 ½ CDIAL (0-160PSI)
162	423-2021-7		PRESSURE REGULATOR, 1/4NPT
163	412-7505-0		OPERATOR INTERFACE
164	412-3902-1		SWITCH,PUSHBUTTON 22MM E STOP
165	419-4214-1		KNOB ROGEN RB-67-4-SK OR EQUAL
166	412-1915-0		MIN. TIMER RED LION#CUB3T300
1-3 FU	111-3129-1		FUSE,CLASS J 60A 600V TD (Used on 208 230 Volt)
1-3 FU	111-3124-1		FUSE,CLASS J 30A 600V TD (Used on 460 Volt)
8-10 FU	111-3120-2		FUSE,CLASS CC 15A 600V (Used on 460 Volt)
12 FU	111-3106-2		FUSE CLASS CC 2-1/2 A 600V TD (Used on 460 Volt)
4-6 FU	111-3113-2		FUSE,CLASS CC 6A 600V TD
7 FU	111-3153-0		FUSE,1/4 X 1-1/4 8/10A 250V TD
11 FU	111-3102-2		FUSE CLASS CC 1-6/10A 600V TD



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