

# **OPERATORS MANUAL FOR AGL64i**



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**Preface**

Your Advanced Greig Laminators, Inc. (AGL) laminator is a finely engineered and designed piece of equipment.

Standard equipment includes a 1/2 HP DC drive (variable and reversible), manually operated brake and clutch, plus an air-operated laminating section with easily adjustable spacer system for controlled laminating nip opening.

The nip rolls are the heart and soul of the laminator. To insure a quality end product, the rolls are rigid enough to carry their weight, plus the working pressures against them without deflecting. The covering is ground straight and concentric to the bearing journals to insure a constant uniform opening at the laminating nip between the top and bottom roll. The power transmission from the drive motor to the bottom laminating roll and the release liner windup clutch is with chain. The laminating nip section is protected with an electric photo-cell and safety cable system.

The AGL design has a rigidly constructed steel frame. All parts are machined to prints, ensuring complete interchangeability of all parts, manufactured or purchased. Adjustable air pressure to the laminating nip section is supplied via your regulated, clean and dry air.

## Selecting Area

Select an area that has a smooth, level surface for the laminator to set on, this will allow for easier maneuverability of the machine if it requires moving later on. The area should be large enough to allow an operator ample room to properly handle your largest product on the infeed and outfeed sides of the laminator. The sides of the laminator should also be easily accessible in case service or maintenance is required. AGL approximates this area should be about 7-8 feet in front and back of the machine and 3-4 feet on either end. This is only a suggestion, your plant and the products to be laminated will be the determining factor.

## Uncrating

Your new laminator may come in a full crate. The crate is designed to be usable for future shipping if required, so careful disassembly of the crate is important if the crate is to be reused. The crate is held together by screws (phillips head) a power screwdriver with a phillips bit is recommended but not required for uncrating. First, remove the top of the crate, keep the screws for future use on the crate. Next, remove the front of the crate (it is recommended that two people disassemble the crate, so one person can hold the panels while the other removes the screws). Move around the crate and remove the remaining panels. Remove the bolts holding the laminator down to the skid. A fork truck can now lift the laminator off the skid (it is possible to get the laminator out of the crate after removing only the top and front and the hold down bolts). With the laminator on the fork truck, thread the adjusting bolts into the lower cross bar, make sure that the bolt heads are about ½" above the caster. Lower the machine down onto the casters. With 3-4 people to guide the machine, roll the machine into the final position.



### CAUTION

*The laminator is a large heavy piece of equipment. Do not attempt to move the machine with one person. Injury is possible as well as permanent damage to the laminator. The laminator should only be rolled on a relatively smooth and level surface. Tipping or forcing the machine over large bumps can destroy the alignment of the rolls, idlers, and unwind/windup shafts. This alignment is required for proper lamination. Advanced Grieg Laminators, Inc.'s warranty does not cover malfunction of the machine due to improper handling of the machine during installation.*

Turn the leveling bolts down until they touch the floor. Remove the shrink wrap, bands, and protective coverings from the rolls.



### CAUTION

*Do Not use a knife or other sharp object to remove the shrink wrap from the laminator and the protective coverings from the rolls. This can cause irreparable damage to the laminator enclosures and rolls.*

## Leveling

The laminator has been trammed and burned in at the factory, but to insure the alignment of the machine it must be leveled in its final position. To level the machine, set a level on the upper front unwind/windup shaft. Turn the front leveling bolts until the bubble shows that the shaft is level. Repeat this procedure on the upper rear unwind/windup shaft. Next place the level across the upper unwind/windup shafts (front to rear) and adjust the leveling bolts to achieve a level reading. Repeat this procedure on the other end of the machine. Be sure to check the left to right level as it may have shifted when leveling from front to back. Repeat the previous procedures until you have a level reading at all four places. Tighten the jam nuts on the leveling bolts up tight against the lower cross bar to lock the bolts in place.



### CAUTION

*Do Not lift the casters more than ½" off the floor. This will cause the machine to be unstable.*

### Electrical Connection

Refer to the **Electrical Requirements** under Specifications for the proper requirements for your laminator. All connections to components and terminal blocks should be checked for tightness before initial startup. This will help avoid and electrical problems caused by connections that may have loosened due to vibration during shipping. A readily accessible disconnect device shall be incorporated into the fixed wiring circuit. The switch on the laminator is not considered a disconnect device. Consult a qualified, licensed electrician to ensure that the power supply for the machine is properly installed in your facility. Qualified personnel can remove the RH enclosure cover to allow access to the terminal strip and grounding lug. Advanced Grieg Laminators, Inc. will not be responsible for damage caused by incorrect electrical installation.

### Pneumatic Connection

Refer to the Pneumatic Requirements under Specifications for the proper requirements for your laminator. The air supply should be clean, dry, and regulated. Failure to properly clean and dry the air supplied to the laminator will cause damage to the cylinders. The laminator is supplied with a 1/4npt port for your final connection.



### **CAUTION**

*The air supply to the laminator must be clean and dry. Particles and moisture can damage the cylinders.*

### Recycling Packaging

If your machine came in a fully enclosed crate, the crate can be stored flat for future use or dismantled and the wood can be recycled. The screws can be kept for future use of the crates or stored for some other use. The shrink wrap is not recyclable and should be thrown away. The foam protective coverings over the rolls can be recycled to be used for other shipping purposes.

### Machine Dimensions

Length: 88"  
Height: 60"  
Depth: 38"  
Weight: 2100 lbs.

### Electrical Requirements

220/230 VAC single phase, 50/60 Hz, 60 Amp service.

### Pneumatic Requirements

Approximately 2-3 cfm at 60-90 psi line pressure supplied via your cleaned/dried/regulated plant air.

### Material Capacity

Upper Front Station:	10" Diameter x 60 long x 3" Diameter core.
Lower Front Station:	10" Diameter x 60 long x 3" Diameter core. (Thermal) 10" Diameter x 61 long x 3" Diameter core. (Pressure Sensitive)
Upper Rear Station:	10" Diameter x 60 long x 3" Diameter core. (Thermal) 10" Diameter x 61 long x 3" Diameter core. (Pressure Sensitive)
Lower Rear Station:	10" Diameter x 60 long x 3" Diameter core.
Middle Front Station:	8" Diameter x 60 long x 3" Diameter core. (Thermal) 8" Diameter x 61 long x 3" Diameter core. (Pressure Sensitive)

These are physical dimension restrictions. The weight of the supply roll should never exceed 90 lbs.

## IMPORTANT

### **READ THIS SECTION BEFORE OPERATING YOUR LAMINATOR**

#### General Machine Safety

The following messages are written here for your safety, all operators and others around the laminator should read, understand and follow these messages.

1. Read and understand all the safety instructions.
2. Keep this manual in a place where it can be easily referenced by all operators.
3. **All connections to components and terminal blocks should be checked for tightness before initial startup. This will help avoid and electrical problems caused by connections that may have loosened due to vibration during shipping.**
4. Use only the recommended power source to run the laminator. Consult a qualified and licensed electrician if you are unsure of the power supply and the safety features of the supply.
5. If power supply cord is run across the floor, provide adequate protection to the cord to avoid damage from foot traffic, dropped items or rolling items.
6. Do not attempt to service the laminator without qualified personnel available. Damage to the machine or injury to you could be caused by moving parts or high voltage.
7. Do not operate the laminator with out all guards in place. If a guard is damaged or not working properly, replace or repair before returning the machine to operation. If the machine is run without all guards in place the safety obligation of the manufacturer is null and void.
8. Do not insert fingers, hands, or items into openings in the sideframes. Items may become entangled in moving parts or in contact with high voltage.
9. Disconnect or lockout power from machine when any service is required and when cleaning the nip rolls.
10. Disconnect or lockout power from the machine and refer to service personnel if the performance of the machine changes indicating a problem or if machine does not operate normally to correct operational procedures.

#### Operator Safety

Your laminator is designed to protect the operator from injury when used properly. Do not operate the machine without all guards and protection devices in place, serious injury could occur.



### **WARNING**

***The nip section can pull you into laminator! Do not place fingers into the nip section when the rolls are rotating. It is recommended that operators tie long hair back and not wear neckties, loose clothing and jewelry since they can be caught in the nip section and pull the operator into the machine. Proper equipment such as gloves should be used if the material being laminated requires it. The nip rolls will lower if there is a loss of air pressure.***

The nip section is protected by a photoelectric eye that shoots a light beam across the machine in front of the nip rolls. When the machine is in continuous run mode, the rolls will stop when the beam is broken by an item too close to the nip section. However, if the machine is in jog mode, an alarm will sound warning the operator that he/she is very close to the nip section, but the rolls will not stop rotating. The jog mode is useful for starting prints into the laminator and smoothing the print corners out as they enter the nip section, but this mode should be used as sparingly as possible since it puts the operator at a greater risk than the run mode.



### **CAUTION**

***When the machine is in jog mode, an alarm will sound to warn the operator but the rolls will not stop rotating when the light beam is broken. Use this mode sparingly and with respect.***

There are E-stop switches on all four corners of the machine, as well as an E-stop ribbon switch in front and rear. The machine will stop and the nip section will open if any of these switches are tripped. Striking the red mushroom heads on the switches with your palm can activate the four switches. The ribbon switch can be tripped by using your foot and stepping on the yellow ribbon. The machine must be reset after and E-stop condition has occurred. Refer to the **Operation** section for further details.

## General

1. Power: A circuit breaker switch is located on the lower right rear of the machine to turn power on and off.
2. Reset: Located on the right rear enclosure, the reset button is used to start the machine initially and restart the machine after an E-stop condition has occurred. After the power is turned on, the reset button is held for 15 seconds to allow the machines electrical controls to reset to initial settings.
3. Speed: A potentiometer is used to control the speed that the laminator will run product through. Your laminator has the electrical and mechanical capability to run up to 20 feet per minute, but the quality of the product output is the governing factor in maximum process speed.
4. E-stops: E-stop switches are located at all four corners to allow the operator to stop the machine and open the nip rolls and pull rolls in case of emergency. The button must be pulled back out before pressing the reset button to restart the machine.
5. Nip Rolls: The nip rolls are the heart and soul of the laminator and must be cared for properly in order to give years of quality product output. Always dial the shim wheel to a shim setting greater than "0" when the machine is not in use. This will prevent the rolls from forming a flat spot from resting against each other. This also applies to the pull rolls.



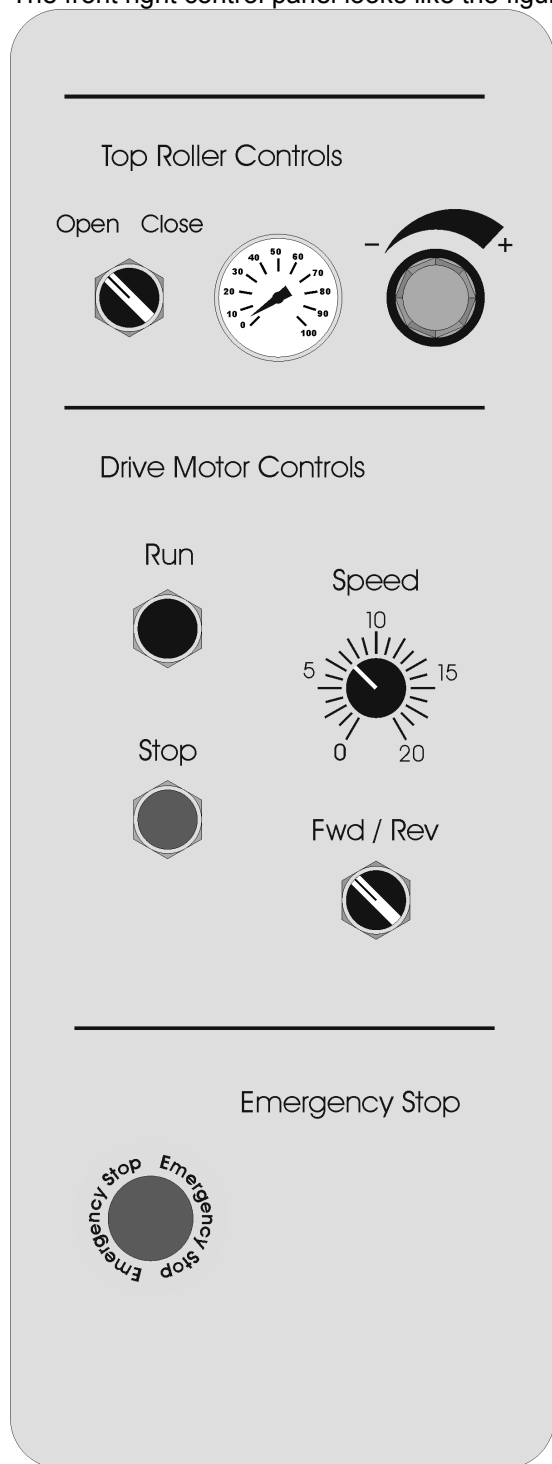
## CAUTION

***Always set the shim wheel to a setting greater than "0" when the machine is not in use. This will prevent the roll from coming together and forming a flat spot. Permanent damage can be caused to the rolls if this warning is not heeded.***

6. Fwd-Rev: This button is a lighted button that will determine which direction the machine will run. If the button is not lit, the machine will run from front to back. If the button is lit, the machine will run from back to front.
7. Stop: This button will stop the rotation of the nip rolls.
8. Run: This button will allow the machine to run continuously in the direction depicted by the Fwd/Rev button and at the speed set by the potentiometer.
9. Foot Switch: The foot switch will run the laminator in the direction depicted by the Fwd/Rev button and at the speed set by the potentiometer. The foot switch is always active, this allows an operator to press the foot switch to get a print started and then press the Run button to transfer to the continuous run mode without stopping.
10. Temperature Control with switch: The two position switch allows the operator to turn the heater in the roll on or off. The temperature controller allows the operator to set a desired temperature for a process.
11. Brakes: Turn the knob clockwise to increase web tension from the unwind station, the LED display bars will move up as tension increases. Turn the knob counter clockwise to decrease web tension from the unwind station, the LED display bars will move down as the tension decreases.
12. Clutches: Turn the knurled knob towards you to increase the web tension to the windup station. Turn the knurled knob away from you to decrease web tension to the windup station.
13. Pull Roll Clutch: Turn the regulator clockwise to increase the pressure to the pull roll clutch and pull roll cylinders and counter clockwise to decrease pressure to the clutch.

## Front Right Control Panel

The front right control panel looks like the figure below.



**Figure 1 Front Right Control Panel**

### Top Roller Controls:

Two position switch opens and closes the nip rolls. The regulator adjusts the air pressure to the cylinders that create the pressure on the nip rolls. The gauge indicates air pressure which allows for repeatable results.

### Drive Motor Controls:

**RUN** button switches the laminator from jog mode to run mode.

**Speed Pot** sets the laminators speed. 0-20 FPM

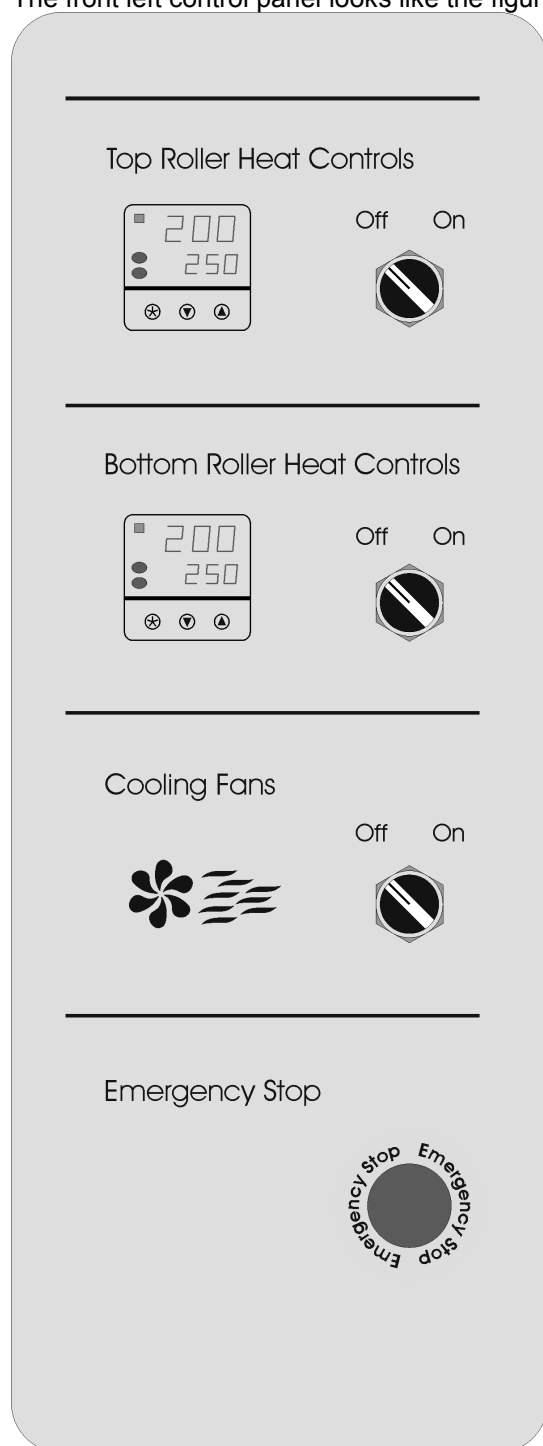
**STOP** button stops the drive from turning thus stopping the rolls.

**FWD REV** switch selects the direction the machine will run.

**E-Stop** switch will stop the laminator and open the rolls.

## Front Left Control Panel

The front left control panel looks like the figure below.



### Upper Roll Heat Control:

Two position switch turns heater for upper roll on and off. The temperature controller allows the operator to set a desired temperature for the process. The controller will maintain that temperature during the process.

### Lower Roll Heat Control:

Two position switch turns heater for upper roll on and off. The temperature controller allows the operator to set a desired temperature for the process. The controller will maintain that temperature during the process.

### Cooling Fans:

Two position switch turns the motorized impellers that create a cool air flow to the web on and off.

### Emergency Stop:

E-Stop switch will stop the laminator and open the rolls.

**Figure 2. Front Left Control Panel**

## Rear Right Control Panel

The rear right control panel looks like the figure below.



**Figure 3. Rear Right Control Panel**

### Top Pull Roller Control:

Two position switch opens and closes the pull rolls. The regulator adjusts the air pressure to the cylinders and clutch. The gauge indicates air pressure which allows for repeatable results.

### Front Back- Speed Control

Two position switch selects between the front potentiometer and the rear potentiometer for speed control.

### Drive Motor Controls:

**RUN** button switches the laminator from jog mode to run mode.

**Speed Pot** sets the laminators speed. 0-20 FPM

**STOP** button stops the drive from turning thus stopping the rolls.

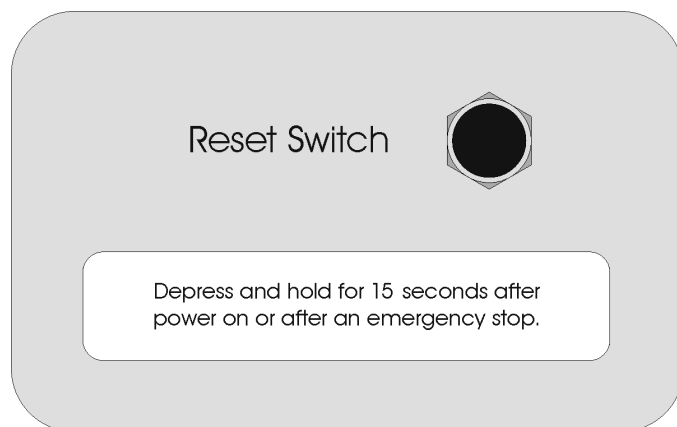
**FWD REV** switch selects the direction the machine will run.

### Emergency Stop:

E-Stop switch will stop the laminator and open the rolls.

## Reset Panel

The reset panel looks like the figure below.



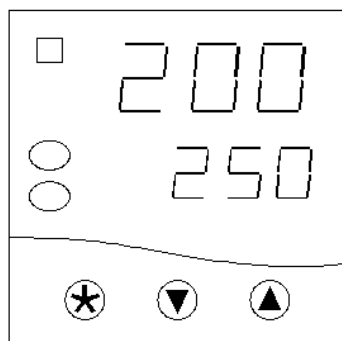
**Figure 4. Reset Panel**

## Reset Switch

The momentary pushbutton switch must be pressed and held for 15 seconds after turning on main power and after an emergency stop.

## Temperature Controls

Your laminator has heated rolls that allow you to laminate with thermal films and pressure sensitive films that require heat to activate the adhesive. The temperature controls have a maximum temperature set at the factory. The operator cannot set the temperature above this point. The controllers are also set up with an over temp alarm. If there is a failure and the heater coils heat out of control, the temperature controller will create an e-stop condition.



The temperature controller looks like the graphic shown at the left. The operator only needs to press and hold the **asterisk** key then press the **up arrow** key to raise the “Set Point Temperature” or the **down arrow** to lower the “Set Point Temperature”. The square green LED in the upper left will stay on initially as heater comes up to temperature and flash as the controller pulses electricity to maintain the heat in the rolls. The top alarm LED will flash on if the rolls exceed the upper temperature limit set at the factory and then the machine will go into an E-stop condition. The rolls must be allowed to cool down before restarting machine. The machine can be restarted by pressing and holding the Reset button for 15 seconds. If the machine fails again in the same manner, the laminator should be serviced by qualified personnel.

## Laminator Setup

Your laminator has been designed to make the setup and lamination process as easy and repeatable as possible, however, there will be techniques that make this phase easier that you will only learn by using the machine. Do not get frustrated if the setup process takes longer than you expected, the process will get quicker and easier the more you use your laminator.

The set up process is comprised of the following steps:

1. Loading and positioning the film.
2. Webbing the laminator.
3. Setting the process controls to initial settings.
4. Warm up time (if required by process)

### Loading and Positioning the Film

1. Determine the way the film is wound, adhesive inside or outside. This will determine the way it is placed on the unwind shaft. If the adhesive is wound to the inside, the web will be pulled from the bottom of the supply roll. The web path configuration figures show the film in this configuration.
2. Swing the upper rear shaft out for loading. The lower and center front unwind stations require you to loosen the upper clamp blocks to allow the shaft swing out.
3. Remove the locking core chuck and the core idler. The locking core chuck has rollers that rotate out to hold the core as it turns. Slide the locking core chuck, film roll, and core idler onto the shaft.
4. Rotate the shafts back into place.
5. Measuring from the sideplates, make sure the film is centered on the shaft. Once the measurements from each end of film to the sideplates are equal, tighten the locking core chuck and core idler down.
6. Repeat this process on any other unwind station.
7. If the film is a pressure sensitive with a release liner, you will need to set up a wind up station. This is done by webbing the film under an idler and separating the film and liner. Once the liner has been separated from the film, it must be routed up over the second idler and taped to a windup core.
8. The wind up core is a cardboard core that is held between the sideframes by a spring loaded disc. To remove the core, pull the core to your right until it clears the driving end and swing core out. Keep in mind that the windup cores will rotate the exact same direction as the lower nip roll.
9. Tape the release liner to the core and windup any slack by hand. Feed the film with adhesive around and through the nip opening. **Note: You may require feeder stock to keep the film from sticking to the lower nip roll.**

### Webbing the Laminator

The term webbing means routing the film through the laminators' idlers and nip rolls and thus creating a web. The easiest way to web the machine up after loading the film is by using a piece of feeder stock. The stock can be anything that is relatively stiff, but still flexible enough to route around the nip roll. A common example would be tag board.

The first step in webbing the machine is to have a planned web path configuration. There are two web path configurations shown for two different processes in this manual. The encapsulation process uses thermal film from top and bottom to "encapsulate" the substrate being fed into the laminator. This process seals the edges and protects the substrate. Refer to figure 3 as the webbing process is described below.

## Encapsulation Process

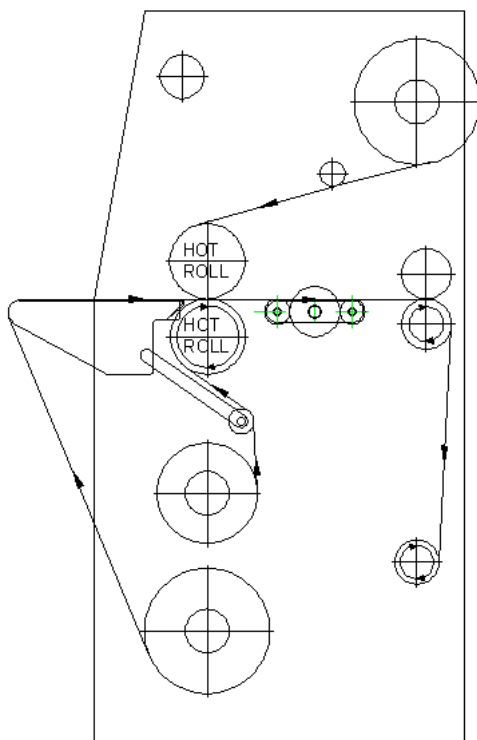
1. Load thermal film on the upper rear and center front unwind stations. Loosen the brake tension by rotating the knob counter clockwise.
2. Set the shim wheels to "0", place a piece of feeder stock into the nip rolls with plenty of stock hanging out the front. Close the nip rolls onto the piece of feeder stock.



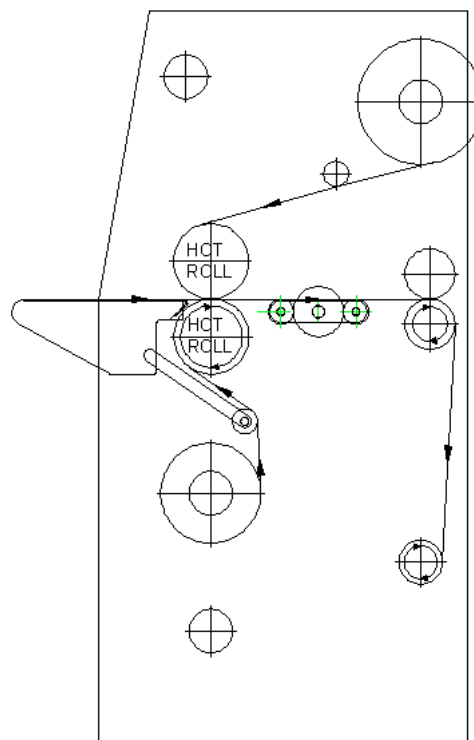
### CAUTION

*The nip section can pull you into laminator! Do not place fingers into the nip section when the rolls are rotating. It is recommended that operators tie long hair back and not wear neckties, loose clothing and jewelry since they can be caught in the nip section and pull the operator into the machine*

3. Pull the film from the upper rear station down under the upper idler roller and over the top of the top nip roll. Tape the film to the feeder stock.
4. Lower the infeed table by pulling the handle located under the center of the table. Rotate the table down. Pull the film from the center front station up between the nip roll and the idler roller. Tape the film to the feeder stock.
5. Rotate the table back into place until it locks.
6. Set the speed potentiometer to a low setting, select Fwd and press Run. Move to the rear of the machine.
7. Open the pull rolls with the switch located to your left hand side. Guide the stock coming from the nip rolls over the center idler and down through the pull rolls. Close the pull rolls after the film has passed through the rolls.
8. To wind up the product, route the film down to the lower rear windup and tape to the core.
9. Turn the heater controls to "On" and set the desired temperature. While the rolls are heating up use your process control chart to make all initial settings on the brakes, speed and nip pressure.
10. With rolls at the desired temperature you may feed the substrate into the nip section.
11. If your substrate is in roll form, you may use the lower front unwind station to feed it into the nip. Route the substrate from the unwind station around the infeed table and into the nip. Figure 3 shows the front lower station being used as the unwind and the lower rear being used as the product windup. Follow the procedure to load the film as discussed in the **Loading Film** section.



Roll Fed Encapsulation Process



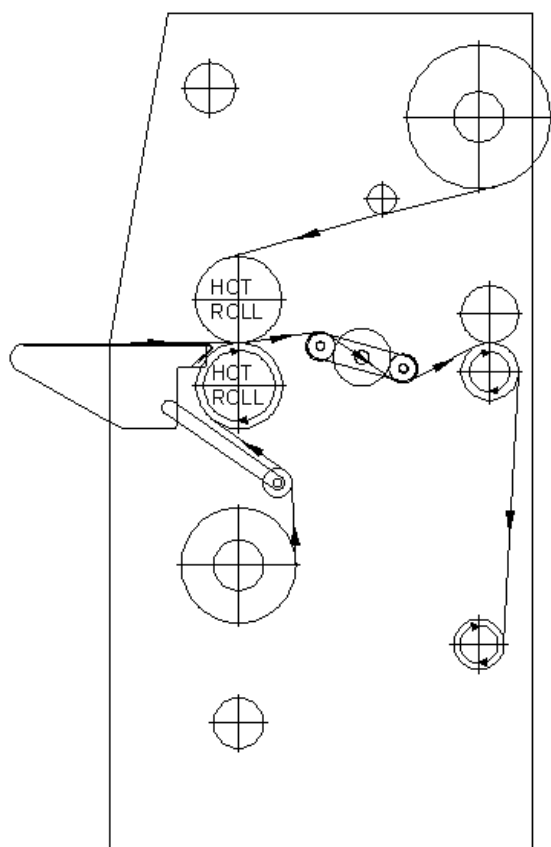
Sheet Fed Encapsulation Process

Figure 5. Encapsulation Process

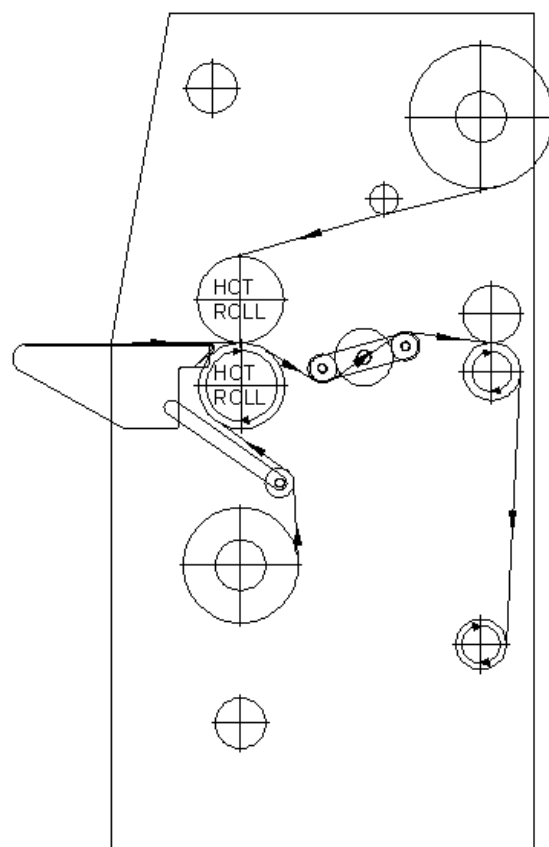
## Curl Cam Option

Your machine may have an option called the curl cam. This is a set of 2 idler rollers that can be pivoted and locked into position. This option is particularly useful when the machine is running thermal films of differing thickness. The curl cam allows the operator to form the film as it exits the nip rolls, before it has a chance to cool on its own. If the operator is finding that the product is getting upward curl, the curl cam should be positioned so that the film goes up over top of the leading roll and under the exiting roll, then through the pull rolls. If the operator is finding that the product is getting downward curl, the curl cam should be positioned so that the web goes under the leading roll and over the exiting roll, then through the pull rolls. The amount of angle will need to be determined by experience with the film/substrate combination.

The curl cam is adjusted by pulling one of the pins, located on both ends and rotating the head slightly to lock the pin in the out position. Pull the second pin out and rotate the assembly to the desired position and release pin. You may need to rotate the assembly slightly to allow pin to line up in hole. There will be a "click" as the pin locks itself into position. Go back to the other end and release the pin so that it locks into position as well. Be sure that the pins are in the same hole end to end so that the assembly is not racked or twisted.



**Curl Cam Correcting Upward Curl**



**Curl Cam correcting Downward Curl**

**Figure 6. Curl Cam**

## Pressure Sensitive Process

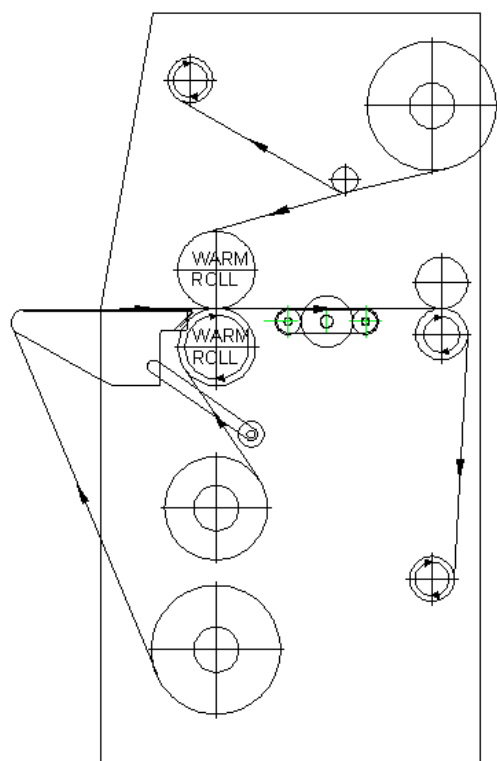
1. Load film on the rear upper unwind station and front center (if required and only without release liner). Loosen the brake tension by turning counter knob counter clockwise.
2. Set the shim wheels to "0", or to the correct shim height if a board is being used. Place a piece of feeder stock into the nip rolls with plenty of stock hanging out the front and close the nip rolls onto the piece of feeder stock.



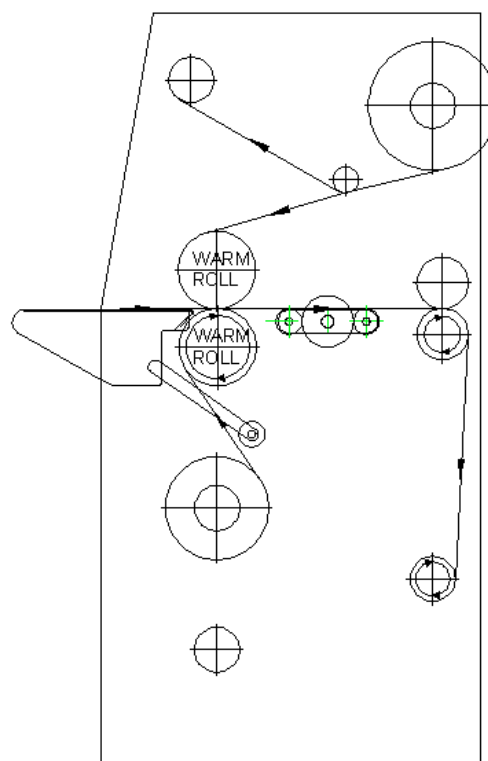
### **WARNING**

*The nip section can pull you into laminator! Do not place fingers into the nip section when the rolls are rotating. It is recommended that operators tie long hair back and not wear neckties, loose clothing and jewelry since they can be caught in the nip section and pull the operator into the machine*

3. Pull the film from the upper rear station down under the upper idler roller and over the top of the top nip roll. Separate the release liner from the film and tape the film to the feeder stock.
4. Route the release liner up to the upper front windup station. Tape the release liner to the wind up core.
5. Set the speed potentiometer to a low setting, select Fwd with the selector switch. Jog the machine forward to run out film. Be sure to place scrap substrate between the film and the lower nip roll to avoid adhesion to the lower roll.
6. Move to rear of machine and guide film up over the pull roll guard.
7. Turn the heater control to "On" and set the desired temperature.(if required) While the roll is heating up, use your process control chart to make all initial settings on the brakes, speed and nip pressure.
8. With roll at the desired temperature you may feed the substrate into the nip section.
9. If your substrate is in roll form, you may use the lower front unwind station to feed it into the nip. Route the substrate from the unwind station around the infeed table and into the nip. Figure 4 shows web path for this process. Follow the procedure to load the film as discussed in the **Loading Film** section.



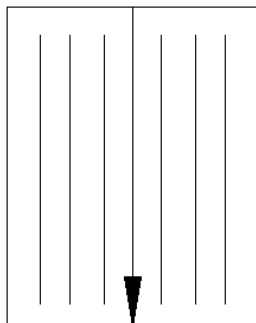
**Roll to Roll Pressure Sensitive**



**Sheet fed Pressure Sensitive**

**Figure 7. Pressure Sensitive Process**

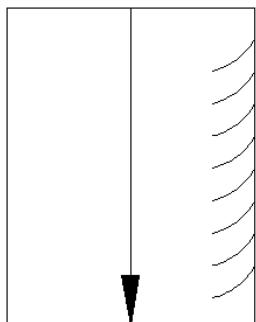
## Process Output Trouble Shooting



### Straight waves in output

Pull roll creating too much tension → Decrease clutch air pressure

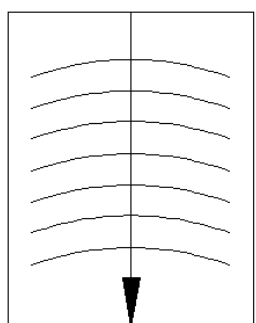
Film not cooling fast enough → Slow feed rate down and turn on cooling system.



### Waves on one side of output

Nip “zero” setting may be incorrect → Check nip setting and adjust if necessary. Refer to **Zeroing the Nip** in the maintenance section.

Pull roll “zero” setting may be incorrect → Check nip setting and adjust if necessary. Refer to **Zeroing the Nip** in the maintenance section. Pay particular attention to sides opposite the waves.



### D-Waves in Product

#### If waves are in the substrate and not film

Substrate problem → Check the substrate moisture content and the substrate tension.

#### If waves are in the film

Low tension between nip & pull roll → Increase air pressure to pull roll clutch.  
Roll pressure settings → Adjust nip and pull roll settings as required.

## Web Breaks

Web breaks caused by excess tension: If the web breaks between the unwind station and the nip, reduce the unwind brake tension. If the web breaks between the laminating opening and the rewind station, reduce the rewind clutch tension.

Web breaks will occur from faulty material. The AGL laminator will not correct this; the material must be replaced.

## Curl in Product

1. Running a hot mount material in cold-mount machine sometimes creates a curl in the finished product.
2. Too much web tension: Reduce unwind brake tension.
3. Excessive roll pressure: Reduce upper roll pressure.
4. Wrong spacers being used.

### Wrinkles in Product

1. Check the adhesive stock for wrinkles while operating. If wrinkles exist, this is a manufacturing material defect, and must be cut out of the roll. A laminator will not correct material defects.
2. String the web straight and square between the unwind and the windup shafts. If it is not straight and square, the tension will not be even across the web and will cause wrinkling.
3. If the web is loose between the unwind and the drive roll, there is not enough tension on the unwind brake. Increase the tension on the unwind brake to correct.
4. If the web is loose between the windup and the drive roll, there is not enough tension on the windup clutch. Increase the tension on the windup clutch to correct.
5. If the web gets narrow between the unwind and the drive roll, there is too much tension on the unwind brake. Decrease the tension on the unwind brake to correct.
6. Top and bottom laminating rolls may not be parallel. Make sure spacer shims are the same size, then zero the nip. Refer to **Zeroing the Nip** in the maintenance section.

### Poor Lamination

1. All substrate materials must be cleaned and free of dust, dirt, grease, and any other type film.
2. Poor lamination is usually caused by thickness variation in the substrate materials such as plywood, hard board or other such non-precisely made materials. To overcome this, cylinder spacers may have to be removed and materials laminated without the use of cylinder spacers, or the next smaller spacer may be used or special spacer utilized.
3. Materials such as Plexiglas or glass sometimes carry a greasy or oily film. These materials may need to be cleaned with a solvent prior to lamination.
4. Poor lamination can be caused by defective material. To correct this, replace defective material with higher quality material.

### Bubbles in Product

1. Visually inspect materials, mounting or overlays for any voids in the adhesive film. If any exist, it cannot be corrected by any laminating machine - that part of the material should be discarded.
2. Low pressure on nip rolls → Increase air pressure to nip rolls.
3. Incorrect shim setting → Adjust shim wheel to correct setting.
4. Nip “zero” setting may be incorrect → Check nip setting and adjust if necessary. Refer to **Zeroing the Nip** in the maintenance section.

### Process Control Charts

In order to consistently output high quality product, the operator must have a definite starting point on the many process variables. This can be achieved by having the operators document system settings when you have achieved acceptable quality output. The process control chart will allow any operator to set the machine up for a given process. Keep in mind that the system variables may require adjusting as the process is being run, but the chart gives an excellent starting point. Factors such as temperature, humidity, changing film roll diameters all affect the process, therefore, operator technique in running the machine is inevitable. There is a blank process control chart located on page 4-10, copy this page as often as needed for new processes.

## PROCESS CONTROL CHART

Process: \_\_\_\_\_  
 Product: \_\_\_\_\_  
 Material Top: \_\_\_\_\_  
 Material Bottom: \_\_\_\_\_  
 Other Material: \_\_\_\_\_  
 Date Settings Documented: \_\_\_\_\_

<b>Front Control Settings</b>	
Speed (Ft/min):	Direction:    Forward    Reverse
Nip Roll:    Up        Down	Shim Dial Setting:
Roll Pressure: (PSI)	Top Temp. Setting:            Deg. F
Top Roll Heater:        On    Off	Bottom Temp. Setting:        Deg. F
Bottom Roll Heater    On    Off	Web Cooling    On    Off
<b>Rear Control Settings</b>	
Pull Roll:    Up        Down	Shim Dial Setting:
Pull Roll Setting:(PSI)	
<b>Film Station Settings</b>	
Upper Rear Station:        Bars	Center Front Station:        Bars
Lower Front Station:        Bars	

Other Instructions: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

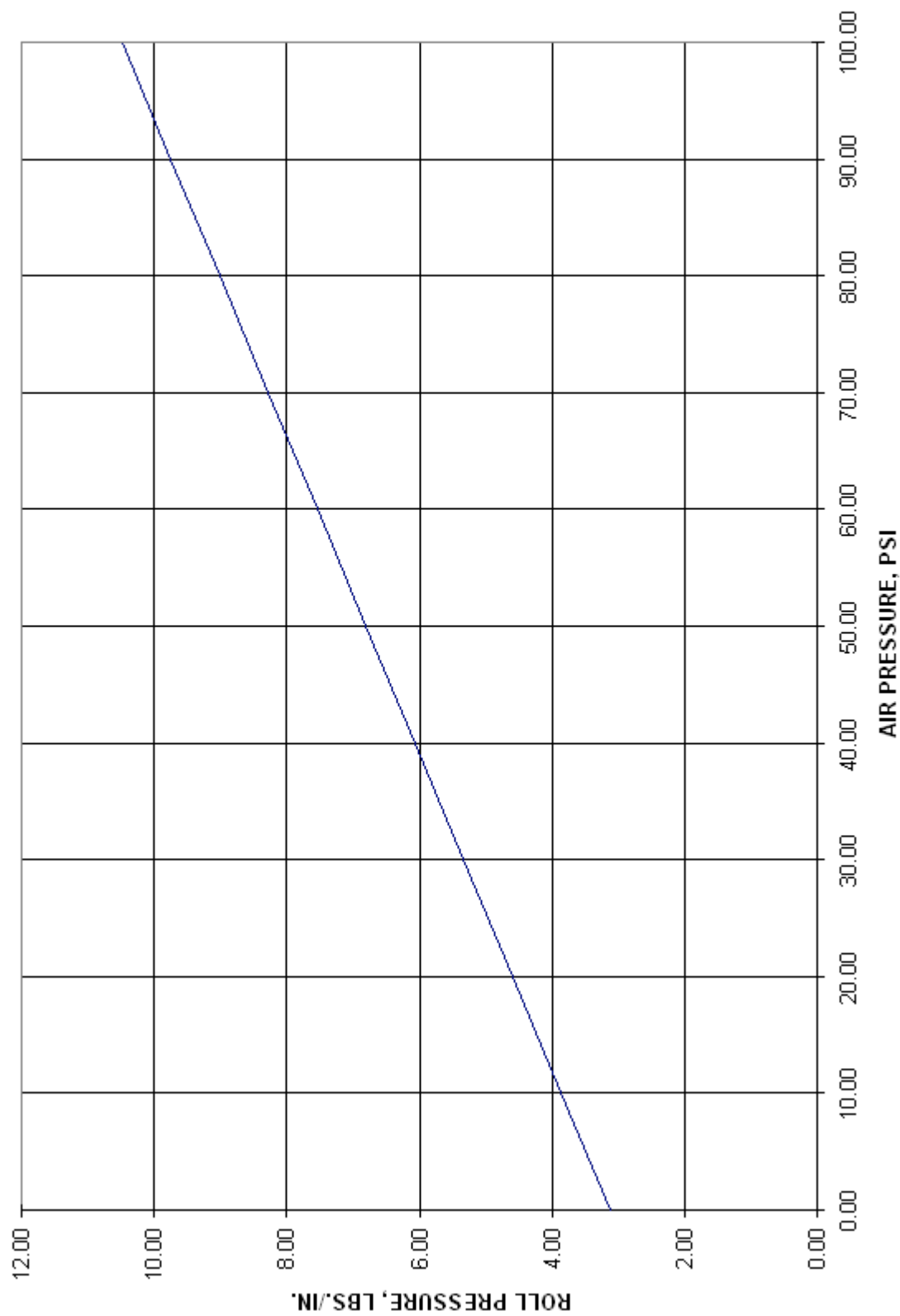
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\_\_\_\_\_

# AGL64 SERIES LAMINATOR ROLL PRESSURE



## Maintenance

As a result of years of experience, refined engineering and construction techniques, very little time need be lost to maintenance. However, regular maintenance will keep your laminator operating at its optimum level.



### **WARNING**

***Removing the enclosure covers to work on machine exposes person to electrocution and moving parts hazard. Only trained service personnel should perform maintenance with any guards or covers removed.***

## Nip Roll Section

The most critical adjustment of the nip and pull rolls is the “zero” position. This adjustment makes the top roll parallel to the bottom roll which creates even pressure and pull distribution across the face of the roll. If the rolls are out of adjustment, the machine will not laminate properly. Zeroing the nip is done at the factory before shipment, but should be checked at startup and if laminator is not creating quality output.

### Checking the Nip

1. Place two pieces of thin paper (approximately 1.0” wide by 12.0” long) between the upper pressure roll and the lower roll (about 3.0” from each end).
2. Set the shim dial to the “0” setting and put the upper pressure roll in the down position by activating pressure roll valve.
3. Pull gently on both pieces of paper, if both pieces of paper have the same drag, the nip is fine, if the drag is different, follow the procedure below to correct the setting. The pull rolls are adjusted the same as the nip rolls.

### Zeroing the Nip & Pull Rolls

1. Loosen the sets screw in the cylinder stop.
2. Adjust the cylinder stop clockwise to raise the roll and counter clockwise to lower the roll.
3. Check the nip using the 3 steps shown in the **Checking the Nip** section.
4. Once the drag on the pieces of paper has been equalized, tighten the setscrew in the cylinder stop.

## Cleaning the Nip Rolls & Pull Rolls



### **WARNING**

***Cleaning the nip rolls may require the nip rolls to be rotating. Rotate the rolls at a very slow rate to avoid being pulled into the nip section. Do not wear neck ties, loose clothing or hanging jewelry that could be pulled into the nip section.***

The nip rolls should be cleaned as often as necessary, the frequency will vary on the products used and the processes being run. AGL recommends a mild detergent solution or denatured alcohol with a 100% lint free cloth to clean the rolls. Your film manufacturer can recommend solvents that will remove the adhesive from silicone and neoprene rolls without causing damage to the coverings. To facilitate the cleanup process, adhesives should be cleaned from the rolls as soon as possible and while the roll is still warm. A rubber “eraser” has been included in your accessory kit that can be used to clean the adhesive from the warm rolls. Rub the eraser over the adhesive with the rolls turning very slowly. The cloth and alcohol can be used to remove the residue.



### **CAUTION**

***Use of incorrect solvents on your nip and pull rolls can cause irreparable damage to the coverings. Advanced Grieg Laminators, Inc. is not responsible for damage to roll coverings caused by these solvents.***

### Roller open and close rate

The rollers must open and close evenly to prevent excessive wear on the cylinders and bearings. This rate is set at the factory, but can be adjusted in the field. Follow the procedure below to adjust the nip rolls.



### **WARNING**

***Maintenance that requires working on the machine while power and air are connected poses and imminent danger of electrocution or extremities being caught in rotating parts. Only qualified personnel should work on a machine in this state***

1. There are flow control fittings on both cylinders, but the fittings on the left hand cylinders will require most of the adjusting.
2. To increase the rate, turn the adjustment screw counter clockwise, to decrease the rate turn the adjustment screw clockwise. The upper fitting controls the "Open" rate, and the lower fitting controls the "Close" rate. Do not rotate the screw more than ½ turn at a time.
3. Adjust the open rate until the rolls open correctly, then proceed with the close rate.
4. Lock the adjustment screw in place with the jam nut. Be careful not to turn the adjustment screw as you tighten the nut.
5. Replace enclosure covers.

### Lubrication

The high temp grease that is packed into the nip roll bearings will begin to pass by the seal as the machine is used in high temperature applications. The frequency of high heat processes will determine the frequency of adding grease to the bearings. Inspect the nip roll bearings at least weekly for grease outside the seals, regrease as necessary. The bearings on the lower pull roll should be checked for grease leakage after 3 months of use and then every 6 months from there on. The grease should be added slowly with the shaft turning until a slight bead forms at the seal.

Manufacturer lubrication recommendations:

High Temp Bearings: Dow Corning 44

Std. Temp Bearings: Shell Alvania Grease No. 3

When the bearings are being greased, the bearing gibs should also receive a coating of lithium grease.

The chain should be lubricated as needed with a Lubriplate spray chain lubricant. The tension in the chain should be checked at 6 months and tightened to take up any stretching that may have occurred, and then inspected yearly from that point on. Be careful not to overtighten the chain.

### Warranty and Conditions

AGL warrants all models of the laminator's product line manufactured to be free from defects in workmanship and materials for a period of one year with the exception of operator caused damage, or surface abrasions to the laminating rolls or other obvious caused damage. Compression set in silicone covered nip rolls can occur when a thicker material combination is run in the same lateral position through the nip roll on a consistent basis. This will permanently damage the silicone cover. Randomizing the lateral position of the process through the nip rolls for continuous production runs will maximize the life of the silicone covering. It is the sole responsibility of the end user to periodically shift the process from one side to the other to prevent compression set from happening. Compression set in the silicone coverings is not covered under the factory warranty. The warranty period will commence on the date it ships from AGL.

This warranty does not apply to any equipment which after delivery has been subject to abuse, accident or alterations by anyone other than persons authorized by AGL.

Component parts such as controls, motors, heating elements, air cylinders, rubber coverings, etc. which are incorporated into the design and manufacture of our laminators are purchased from reputable manufacturers and suppliers and, as such carry their respective warranties. Failure of any components purchased by AGL and incorporated in the laminators carry supplier warranty and to insure proper credit all parts that should fail must be returned freight prepaid for evaluation **LABOR AND ALL RELATED COSTS TO REPLACE THE DEFECTIVE PART WILL BE BORNE ENTIRELY BY THE END USER.** AGL assumes the responsibility of incorporating these various component parts into the fabrication of the laminator and warrants that this will be done in a suitable and workable manner.

AGL offers no warranty for the laminated product and/or process that the machine produces and as such will not be liable for any special, indirect or consequential damages.

**NO OTHER WARRANTY IS EXPRESSED OR IMPLIED INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR ANY PARTICULAR PURPOSE. AGL is not liable for incidental or consequential damage such as, but not limited to, lost profits, loss of use of other equipment or increases in operating costs or expenses.**

# Bill Of Material

**Part #:** AGL-64-K4342-1

**Appl #:**

**Assy #:**

**BOM Rev:** C

**Model #:**

**Rev:**

**Rev:**

**Date:** 3/4/2002

**Description:** MASTER BILL OF MATERIALS, AGL64i

Item:	Part #:	Description:	Qty:
1	AGL-64-K2528-3	MAIN MACHINE FRAME ASSEMBLY, AGL64i & 64R	1
2	AGL-64-K0959-1	NIP ROLL ASSEMBLY, AGL64 (BAUMER EYE)	1
3	AGL-64-K2242-2	PULL ROLL ASSY, AGL64R/64i (SENSOR INSIDE)	1
4	AGL-64-K2246-1	DRIVE ASSEMBLY, AGL64R/64i	1
5	AGL-64-K0962-2	UNWIND ASSEMBLY, AGL64I	1
6	AGL-64-K0963-1	WINDUP STATIONS, AGL64 SERIES	1
7	AGL-64-K4318	IDLER ROLLER ASSEMBLY, AGL64i	1
8	AGL-64-K0965	WEB COOLING ASSY, AGL 64	1
9	AGL-64-K4608-1	ELECTRICAL ASSEMBLY, AGL64I	1
10	AGL-64-K2254-2	PNEUMATIC ASSEMBLY, AGL64I/64R (NUMATIC VALVE)	1
11	AGL-64-K4314-1	EASY WEB INFEED TABLE ASSEMBLY, AGL64i	1
12	AGL-64-K4315	OUTFEED TABLE ASSEMBLY, AGL64i	1
13	AGL-64-K4223	CURL CAM ASSEMBLY, AGL64	1
15	AGL-64-K4326	INFEED BASKET ASSEMBLY	1
16	AGL-64-K5033-1	INFEED HOLD DOWN, 64/6400	1
17	AGL-XX-K2660	ACCESSORIES KIT, 44/4400/64 SERIES/6400/6450	1

# Bill Of Material

**Part #:** AGL-64-K2528-3

**Appl #:**

**Assy #:** AGLD2530-3

**BOM Rev:** E

**Model #:**

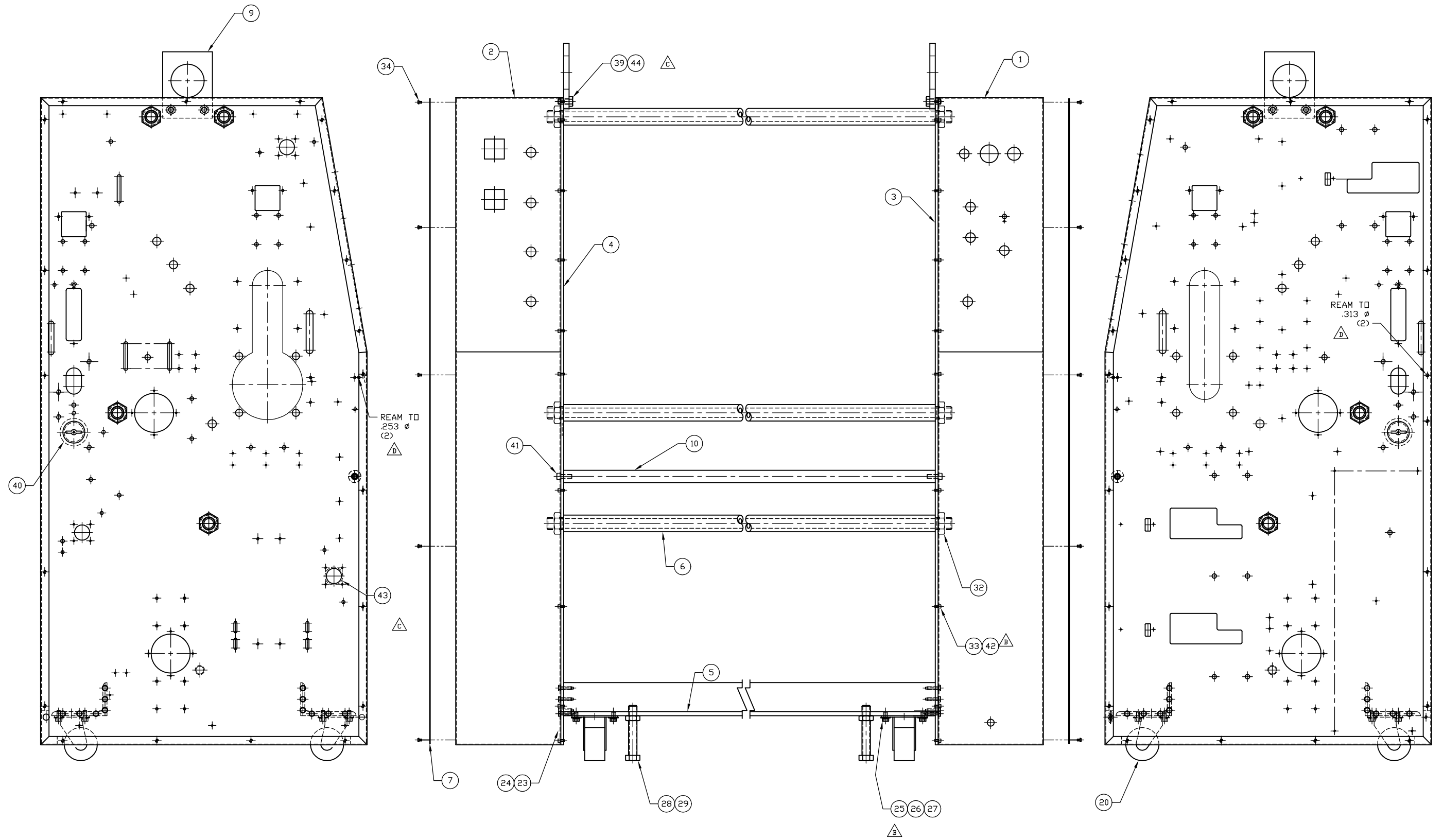
**Rev:**

**Rev:** D

**Date:** 8/29/2002

**Description:** MAIN MACHINE FRAME ASSEMBLY, AGL64i & 64R

Item:	Part #:	Description:	Qty:
1	AGL-64-D1147-1	RH. ENCLOSURE, AGL64i	1
2	AGL-64-D1148-1	LH. ENCLOSURE, AGL64i	1
3	AGL-64-D1149-1	RH. SIDEPLATE, AGL64 SERIES	1
4	AGL-64-D1150-1	LH. SIDEPLATE, AGL64 SERIES	1
5	AGL-64-B1151-01	LOWER CROSS ANGLE	2
6	AGL-64-B0010-01	CROSS TUBE	4
7	AGL-64-C1152	COVER, AGL 64	2
9	AGL-XX-B0823	LIFTING BRACKET	2
10	AGL-64-B4320	SHAFT, FRAME SUPPORT	1
20	001415	CASTER, 3" DIA, SWIVEL, 700 lb CAPACITY.	4
23	001416-08	HHCS, 1/4-20UNC, 1 LG, GD 8, ZINC	24
24	000493-06	WASHER, LOCK, 1/4 DIA, SPLIT, ZINC	24
25	000340-05	HHCS, 5/16-18UNC, 5/8 LG, ZINC	16
26	000207-07	WASHER, FLAT, SAE, 5/16 DIA, 11/16 OD, 11/32 ID, ZINC	16
27	000493-07	WASHER, LOCK, 5/16 DIA, SPLIT, ZINC	16
28	000358-26	HHCS, 3/4-10UNC, 4-1/2 LG, ZINC	4
29	000195-12	NUT, HEX, JAM, 3/4-10UNC, ZINC	4
31	000195-05	NUT, HEX, JAM, 1/4-20UNC, ZINC	2
32	000198-15	NUT, HEX, JAM, 1-1/8-12UNF, ZINC	10
33	000007-03	SHCS, #10-24UNC, 3/8 LG, BLACK	40
34	000055-03	BHSCS, #8-32UNC, 3/8 LG, BLACK	18
39	000349-08	HHCS, 1/2-13UNC, 1 LG, ZINC	4
40	002243-12	HOLE PLUG, ENCLOSURE, 1 1/2"	2
41	000013-08	SHCS, 3/8-16UNC, 1 LG, BLACK	2
42	000207-04	WASHER, FLAT, SAE, #10 DIA, 1/2 OD, 7/32 ID, ZINC	40
43	002243-08	HOLE PLUG, PUSH BUTTON	1
44	000493-10	WASHER, LOCK, 1/2 DIA, SPLIT, ZINC	4



D	ADDED REAM NOTES	9-17-07	GFT	
C	ADDED 43 & 44	7-19-05	GFT	
B	#25 WAS 3/4 LG. ADDED #42	4-20-04	GFT	
A	REMOVED CABLES, SPLICES, & EYEBOLTS	3-3-03	GFT	
REV. NO.	DESCRIPTION	DATE	INT.	ECN

**BREAK ALL SHARP EDGES**

**DO NOT SCALE DWG.**

UNLESS OTHERWISE SPECIFIED

0.00 +/-0.015  
0.000 +/-0.005

ANGLES +/- .5°

MAT'L:  
AGLK2528-3

FINISH:

JOB NO. QTY. DWG. BY. CHK. BY.  
GFT



Advanced Greig Laminators, Inc.  
801 Burton Blvd.  
DeForest, WI 53532

**MAIN MACHINE ASSY  
AGL64I**

SCALE: 1/4" = 1"

DATE: 1-15-02

DWG. NO.

**AGL-64-D2530-3**

REV.

**D**

# Bill Of Material

**Part #:** AGL-64-K0959-1

**Appl #:**

**Assy #:** AGLD1120-1

**BOM Rev:** E

**Model #:**

**Rev:**

**Rev:** B

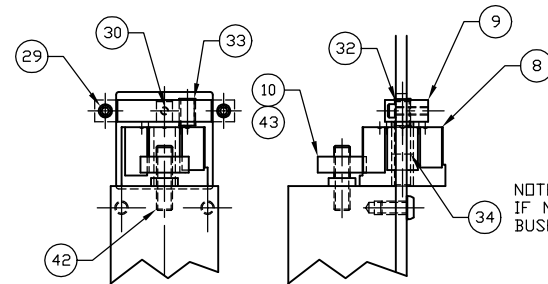
**Date:** 1/17/2002

**Description:** NIP ROLL ASSEMBLY, AGL64 (BAUMER EYE)

Item:	Part #:	Description:	Qty:
1	AGL-64-D1113	NIP ROLL SUB ASSY, AGL 64	2
2	AGL-64-C1116	HEATING ELEMENT, AGL 64	2
3	AGL-64-B1117	BEARING GIB	4
4	AGL-64-B1118	BEARING SPACER (SUB. BOKERS #1.75x.407x.187, PICKELED&OILED)	2
5	AGL-64-B1119	BEARING CENTERING COLLAR	2
6	AGL-64-B1121-1	RH. PHOTOEYE MTG. BRKT, AGL64	1
7	AGL-XX-B1070	BRACKET, SLIP RING STOP	1
8	AGL-64-B0015	SHIM WHEEL	2
9	AGL-64-B1122	SHIM WHEEL SUPPORT	2
10	AGL-64-B0913-1	STOP, CYLINDER, TAPPED	2
11	AGL-64-B0023	BEARING, TAKE-UP, MODIFIED (ALTER AMI #UCST210-32C4HR5)	2
12	AGL-64-B1155	JOURNAL PLUG, AGL 64	2
13	AGL-64-B4325	LH. PHOTOEYE MTG. BRKT, AGL64	1
20	012417-06	HHCS, 5/16-18UNC, 3/4 LG, BLACK OXIDE	8
23	012372-14	HHCS, 5/8-11UNC, 1-3/4 LG, PLAIN BLACK FINISH	6
25	000493-12	WASHER, LOCK, 5/8 DIA, SPLIT, ZINC	6
26	000201-11	NUT, HEX, 5/8-11UNC, ZINC	6
27	000009-12	SHCS, 1/4-20UNC, 1-1/2 LG, BLACK	8
28	000127-08	SSS, CUP PT, #8-32UNC, 1/2 LG, BLACK	2
29	000007-06	SHCS, #10-24UNC, 3/4 LG, BLACK	4
30	000129-06	SSS, CUP PT, #10-24UNC, 3/8 LG, BLACK	2
31	000198-07	NUT, HEX, JAM, 3/8-24UNF, ZINC	4
32	000289-16	PIN, DOWEL, 3/8 DIA, 2 LG	2
33	001392-15	PLUNGER, SPRING, LEP, 3/8-16UNC, 5/8 LG	2
34	000732-06	BUSHING, BRONZE, 3/8 ID, 1/2 OD, 3/4 LG	4
35	000055-03	BHSCS, #8-32UNC, 3/8 LG, BLACK	2
36	000553-05	PHMS, SLOTTED, #4-40UNC, 5/8 LG, ZINC	2
37	000207-01	WASHER, FLAT, SAE, #4 DIA, 5/16 OD, 1/8 ID, ZINC	4

**Part #:** AGL-64-K0959-1**Appl #:****Assy #:** AGLD1120-1**BOM Rev:** E**Model #:****Rev:****Rev:** B**Date:** 1/17/2002**Description:** NIP ROLL ASSEMBLY, AGL64 (BAUMER EYE)

Item:	Part #:	Description:	Qty:
38	000493-01	WASHER, LOCK, #4 DIA, SPLIT, ZINC	2
39	000201-01	NUT, HEX, #4-40UNC, ZINC	2
40	000007-03	SHCS, #10-24UNC, 3/8 LG, BLACK	1
41	001403-32	BEARING, FLANGE, 4-BOLT, LARGE PATTERN, 2 BORE, HIGH TEMP	2
42	000161-28	SSS, CUP PT, 3/8-24UNF, 1-3/4 LG, BLACK	4
43	012378-04	SSS, BRASS TIP, 1/4-20UNC, 1/4" LG.	4
44	012415-08	WASHER, LOCK, 8mm DIA, SPLIT, BLACK OXIDE	8
45	000005-04	SHCS, #8-32UNC, 1/2 LG, BLACK	4
46	000207-04	WASHER, FLAT, SAE, #10 DIA, 1/2 OD, 7/32 ID, ZINC	2



SHIM SYSTEM DETAIL  
SCALE: 1/2 = 1

NOTE:  
SET SCREWS TO EXTEND OUT  
OF CYLINDER BY 7/8"  
USE LOCTITE 271 <sup>B</sup>

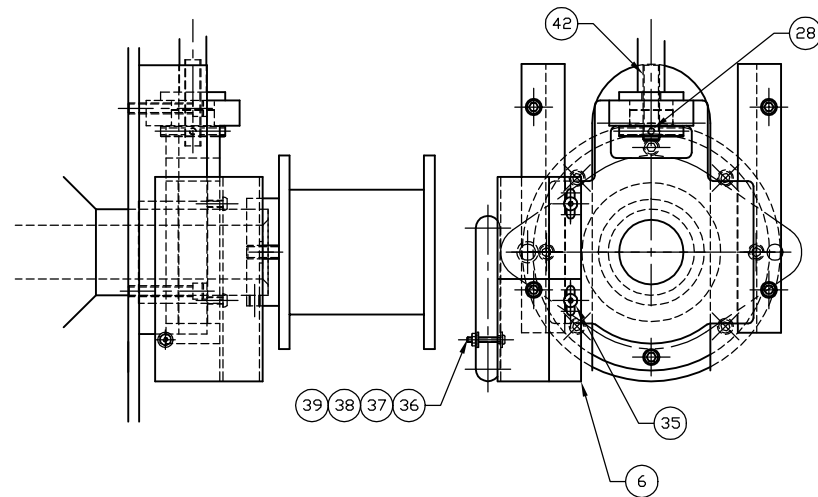
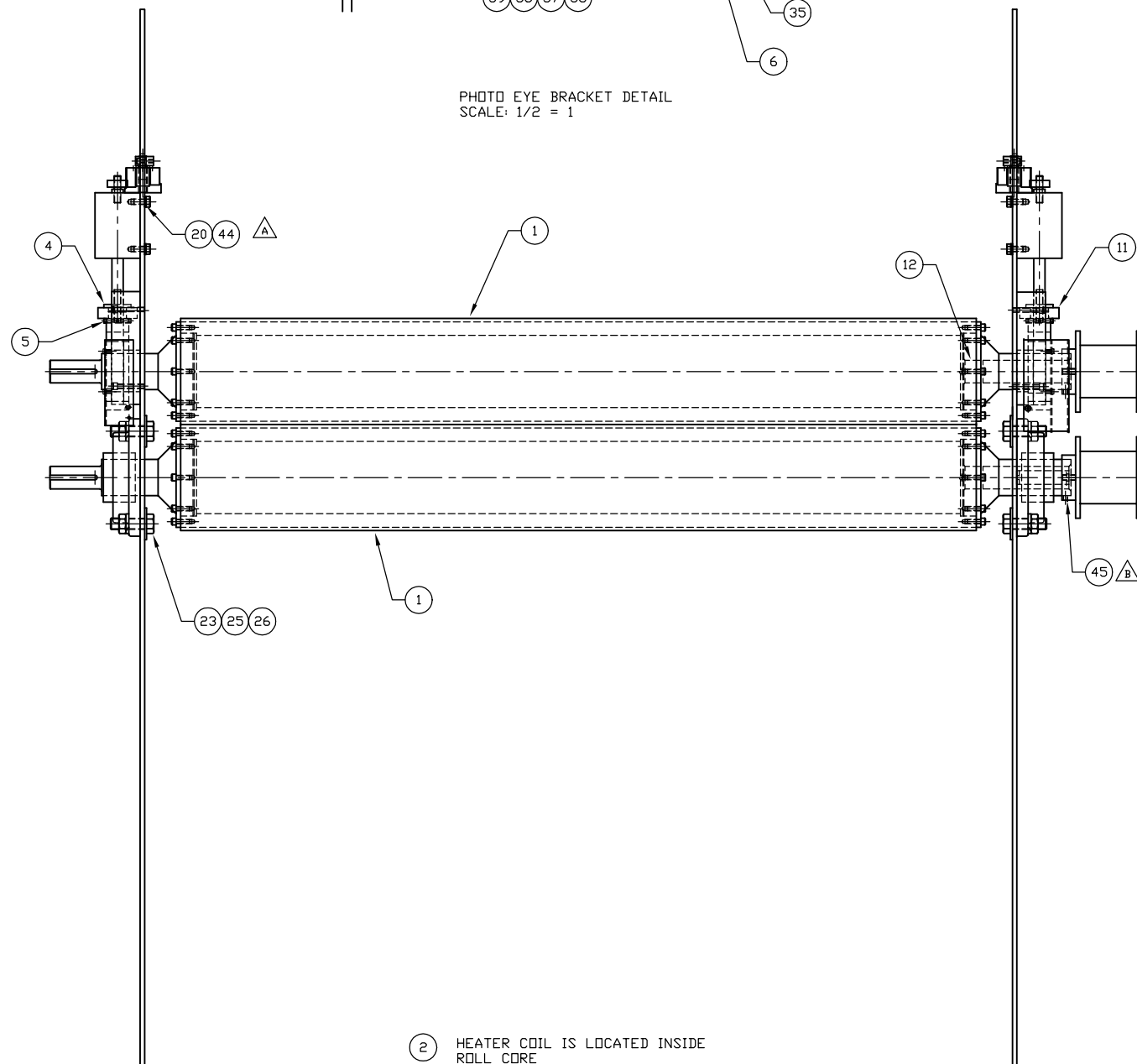
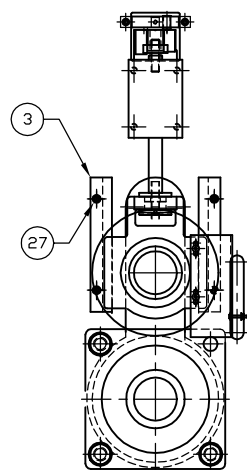
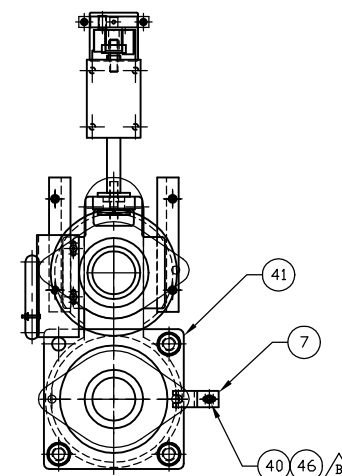



PHOTO EYE BRACKET DETAIL  
SCALE: 1/2 = 1



2 HEATER COIL IS LOCATED INSIDE  
ROLL CORE



B	ADDED NOTES, #45 & 46	7-19-05	GFT	
A	WAS BHSCS, ADDED LOCKWASHER	11-13-03	GFT	
REV NO.	DESCRIPTION	DATE	INT.	ECN

BREAK ALL SHARP EDGES				 Advanced Greig Laminators, Inc. 801 Burton Blvd. DeForest, WI 53532			
DO NOT SCALE DWG.							
UNLESS OTHERWISE SPECIFIED		MAT'L: AGLK0959-1		NIP ROLLER ASSEMBLY AGL 64 (BAUMER EYE)			
0.00 +/-0.015 0.000 +/-0.005		FINISH:					
ANGLES +/- .5°		JOB NO. QTY. DWG. BY: CHK BY: GFT					
SCALE: 1/4 = 1				DWG. NO.		REV.	
DATE: 1-17-02				AGL-64-D1120-1		B	

**NIP ROLLER ASSEMBLY**  
**AGL 64 (BAUMER EYE)**

# Bill Of Material

<b>Part #:</b> AGL-64-K2242-2	<b>Appl #:</b>	<b>Assy #:</b> AGLC2241-2	<b>BOM Rev:</b> B
<b>Model #:</b>	<b>Rev:</b>	<b>Rev:</b> D	<b>Date:</b> 2/26/2002
<b>Description:</b> PULL ROLL ASSY, AGL64R/64i (SENSOR INSIDE)			

Item:	Part #:	Description:	Qty:
1	AGL-64-B0842	UPPER PULL ROLL SUB ASSY	1
2	AGL-64-B0913-1	STOP, CYLINDER, TAPPED	2
3	AGL-64-B2244-1	PULL ROLL GUIDE BLOCK, AGL64R/64i	2
4	AGL-64-B0018	LOWER PULL ROLL	1
5	001317-16	KEY, 0.188 SQ, 2.00 LG, CRS	1
6	AGL-64-B4388-1	SENSOR BRACKET, LH. AGL64R/64i	1
7	AGL-64-B1122	SHIM WHEEL SUPPORT	2
8	AGL-64-B0015	SHIM WHEEL	2
9	AGL-64-B1331-1	EYEBOLT MODIFICATION (ALTER FASTENAL #44428)	1
10	AGL-64-B2239	STROKE STOP, AGL64R	2
11	AGL-64-B4388-2	SENSOR BRACKET, RH. AGL64R/64i	1
20	012417-06	HHCS, 5/16-18UNC, 3/4 LG, BLACK OXIDE	8
21	000573-06	PHMS, PHILLIPS, #4-40UNC, 3/4 LG, ZINC	2
22	000207-01	WASHER, FLAT, SAE, #4 DIA, 5/16 OD, 1/8 ID, ZINC	4
23	000346-08	HHCS, 7/16-14UNC, 1 LG, ZINC	4
24	000493-09	WASHER, LOCK, 7/16 DIA, SPLIT, ZINC	4
25	000198-07	NUT, HEX, JAM, 3/8-24UNF, ZINC	2
26	000131-08	SSS, CUP PT, 1/4-20UNC, 1/2 LG, BLACK	2
27	000764-16	BEARING, FLANGE, 2-BOLT, 1.00 DIA BORE	2
29	000009-08	SHCS, 1/4-20UNC, 1 LG, BLACK	1
30	000195-07	NUT, HEX, JAM, 3/8-16UNC, ZINC	1
32	000055-03	BHSCS, #8-32UNC, 3/8 LG, BLACK	4
33	000007-06	SHCS, #10-24UNC, 3/4 LG, BLACK	4
34	001392-15	PLUNGER, SPRING, LEP, 3/8-16UNC, 5/8 LG	2
35	000732-06	BUSHING, BRONZE, 3/8 ID, 1/2 OD, 3/4 LG	4
36	000289-16	PIN, DOWEL, 3/8 DIA, 2 LG	2
37	000129-06	SSS, CUP PT, #10-24UNC, 3/8 LG, BLACK	2
38	000201-01	NUT, HEX, #4-40UNC, ZINC	2

**Part #:** AGL-64-K2242-2

**Appl #:**

**Assy #:** AGLC2241-2

**BOM Rev:** B

**Model #:**

**Rev:**

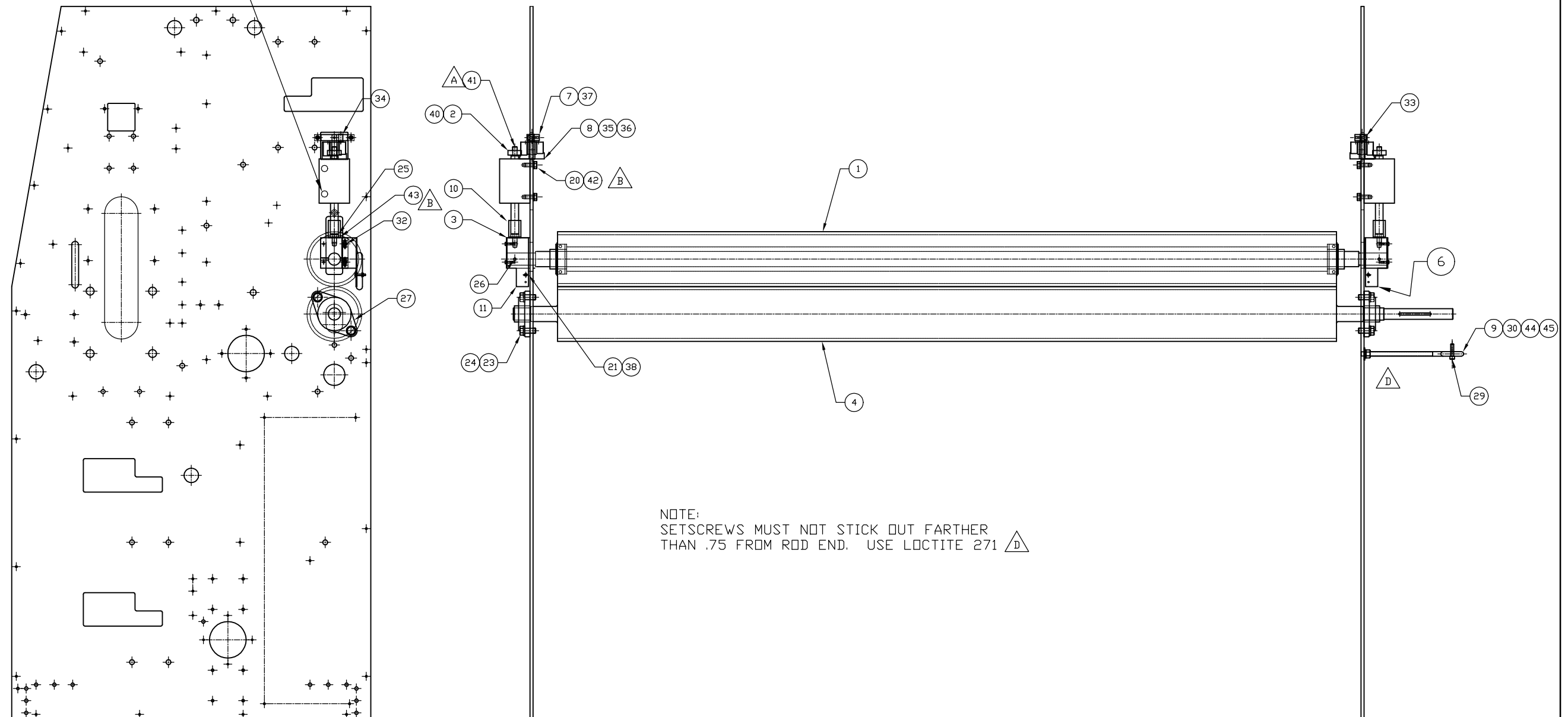
**Rev:** D

**Date:** 2/26/2002

**Description:** PULL ROLL ASSY, AGL64R/64i (SENSOR INSIDE)


Item:	Part #:	Description:	Qty:
39	000494-01	WASHER, LOCK, #4 DIA, INT STAR, ZINC	2
40	012378-04	SSS, BRASS TIP, 1/4-20UNC, 1/4" LG.	4
41	000161-24	SSS, CUP PT, 3/8-24UNF, 1-1/2 LG, BLACK	4
42	012415-08	WASHER, LOCK, 8mm DIA, SPLIT, BLACK OXIDE	8
43	001350-08	WASHER, FLAT, USS, 3/8 DIA, 1 OD, 7/16 ID, ZINC	2

△C MOUNT CYLINDER SO THAT  
PORTS ARE TOWARDS THE  
FRONT OF THE MACHINE.



NOTE:  
SETSCREWS MUST NOT STICK OUT FARTHER  
THAN .75 FROM ROD END. USE LOCTITE 271 △D

D	ADDED LOCTITE SPEC, 44,45, REMOVED 22,39	7-19-05	GFT	
C	ADDED NOTE	10-11-04	GFT	
B	WAS BHSCS, ADDED LW, FW	11-13-03	GFT	
A	ADDED #41	3-3-03	GFT	
REV NO.	DESCRIPTION	DATE	INT.	ECN

BREAK ALL SHARP EDGES					 Advanced Greig Laminators, Inc. 801 Burton Blvd. DeForest, WI 53532	
DO NOT SCALE DWG.						
UNLESS OTHERWISE SPECIFIED		MAT'L: AGLK2242-2			PULL ROLL ASSEMBLY AGL64R/64i	
0.00 +/-0.015 0.000 +/-0.005		FINISH:				
ANGLES +/- .5°		JOB NO.	QTY.	DWG. BY GFT	CHK BY	SCALE: 1/6 = 1
						DATE: 1-17-02
					DWG. NO.	REV.
					AGL-64-C2241-2	D

# Bill Of Material

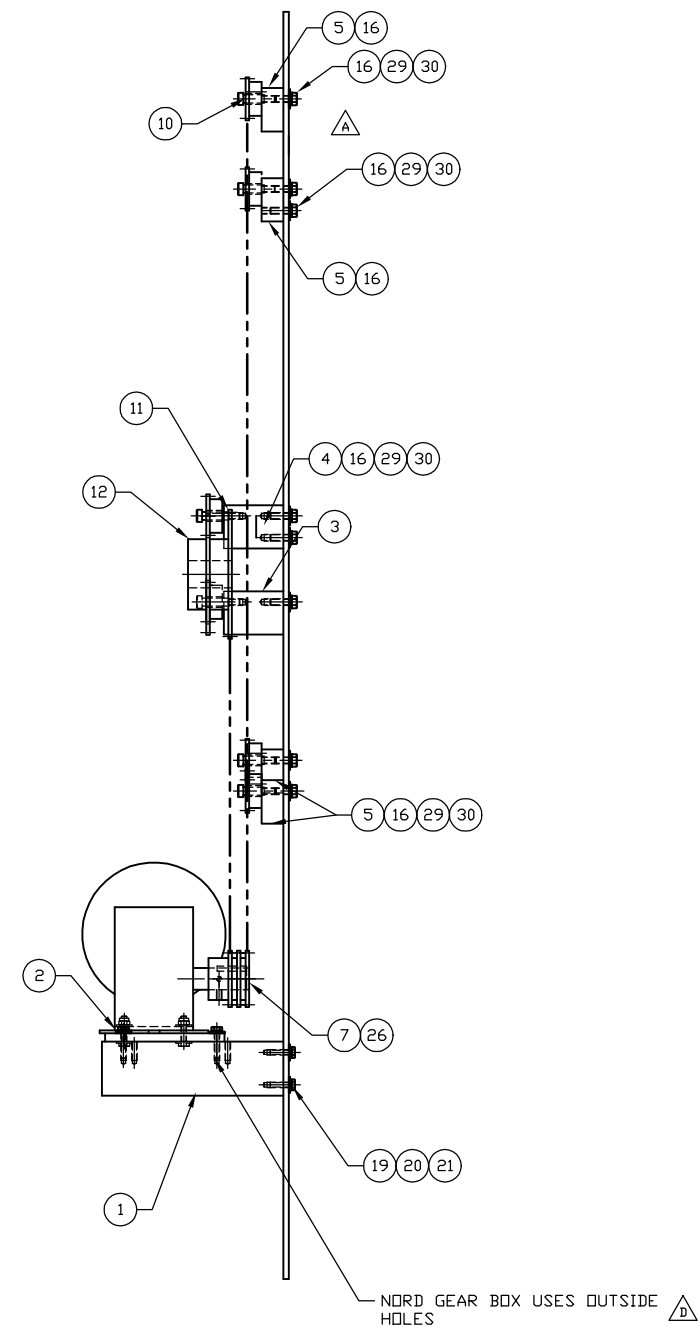
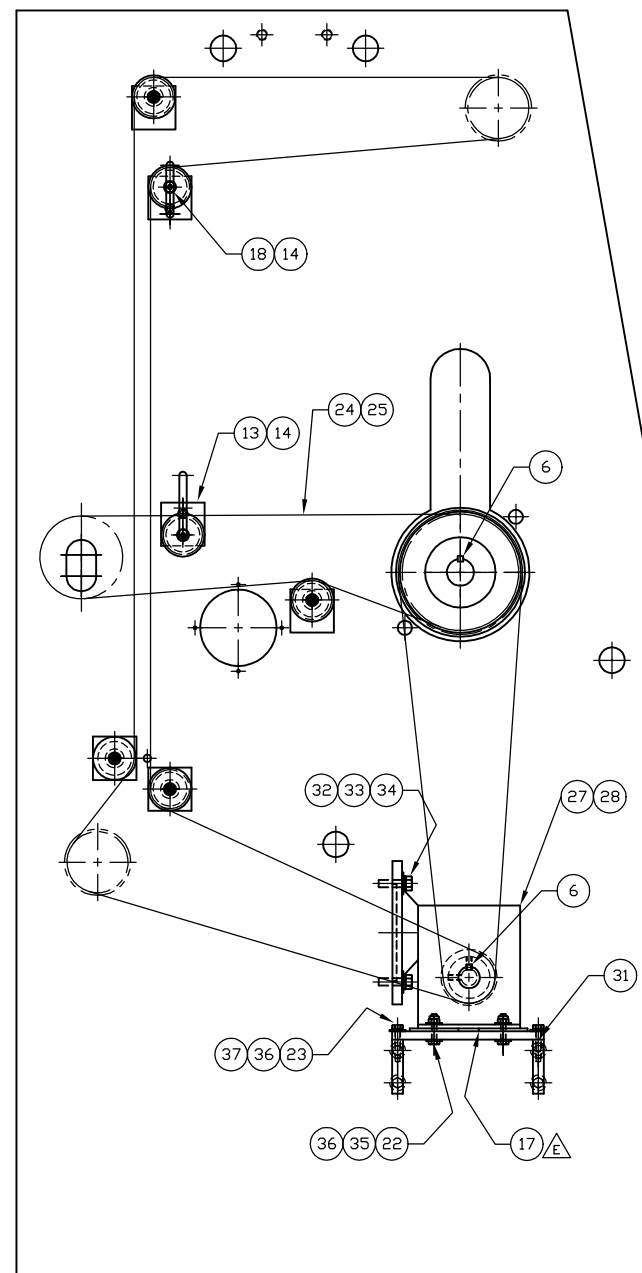
<b>Part #:</b> AGL-64-K2246-1	<b>Appl #:</b>	<b>Assy #:</b> AGLD2245-1	<b>BOM Rev:</b> D
<b>Model #:</b>	<b>Rev:</b>	<b>Rev:</b> E	<b>Date:</b> 2/27/2002
<b>Description:</b> DRIVE ASSEMBLY, AGL64R/64i			


Item:	Part #:	Description:	Qty:
1	AGL-64-B0046	MOTOR SUPPORT BAR	2
2	AGL-64-B0047	MOTOR MOUNTING PLATE	1
3	AGL-64-B1109	IDLER SPACER, 2.75 LG AGL 64	1
4	AGL-64-B1110	IDLER TENSIONER, 2.75 LG AGL 64	1
5	AGL-64-B1111	IDLER TENSIONER, 1.00 LG AGL 64	4
6	001330-16	KEY, 0.25 SQ. 2.00 LG, CRS	2
7	AGL-64-B1112	SPROCKET MODIFIED, AGL 64, (ALTER MARTIN #E35B20)	1
10	000912-15	SPROCKET, 3/8 PITCH, 0.50 DIA BORE, 15 TOOTH	6
11	001401-48	SPROCKET, 3/8 PITCH, 1-1/4 BORE, 48 TEETH	1
12	001401-45	SPROCKET, 3/8 PITCH, 1-1/4 BORE, 45 TEETH IMPORT	1
13	000635-10	SHOULDER SCREW, 3/8 DIA, 1-1/4LG (5/16-18UNC)	2
14	000732-06	BUSHING, BRONZE, 3/8 ID, 1/2 OD, 3/4 LG	6
16	012417-06	HHCS, 5/16-18UNC, 3/4 LG, BLACK OXIDE	8
17	012495-03	WASHER, RUBBER, 2.25 OD. X .38 ID. X .13 THICK	4
18	000635-08	SHOULDER SCREW, 3/8 DIA, 1 LG (5/16-18UNC)	4
19	012418-08	HHCS, 1/4-20UNC, 1 LG, BLACK OXIDE	4
20	012416-06	WASHER, FLAT, SAE, 1/4 DIA, 5/8 OD, 9/32 ID, BLACK OXIDE	4
21	012415-06	WASHER, LOCK, 6mm DIA, SPLIT, BLACK OXIDE	4
22	000337-10	HHCS, 1/4-20UNC, 1-1/4 LG, ZINC	4
23	000337-08	HHCS, 1/4-20UNC, 1 LG, ZINC	4
24	001402	CHAIN, #35, 704 PITCHES	1
25	001275	CHAIN, #35, CONNECTING LINK	3
26	000133-06	SSS, CUP PT, 5/16-18UNC, 3/8 LG, BLACK	2
27	012022-04	NOW PURCHASED AS PART OF #012022-01	1
28	012022-01	GEAR BOX, 60:1,56C, WITH SINGLE OUTPUT SHAFT	1
29	012415-06	WASHER, LOCK, 6mm DIA, SPLIT, BLACK OXIDE	8
30	012416-07	WASHER, FLAT, SAE, 5/16 DIA, 11/16 OD, 11/32 ID, BLACK OXIDE	8
31	012214-04	WASHER, RUBBER, 1/4 ID. X 5/8 OD.	4

**Part #:** AGL-64-K2246-1**Appl #:****Assy #:** AGLD2245-1**BOM Rev:** D**Model #:****Rev:****Rev:** E**Date:** 2/27/2002**Description:** DRIVE ASSEMBLY, AGL64R/64i

Item:	Part #:	Description:	Qty:
32	000343-10	HHCS, 3/8-16UNC, 1-1/4 LG, ZINC	4
33	000207-08	WASHER, FLAT, SAE, 3/8 DIA, 13/16 OD, 13/32 ID, ZINC	4
34	000493-08	WASHER, LOCK, 3/8 DIA, SPLIT, ZINC	4
35	000651-05	NUT, HEX, NYLOCK, 1/4-20UNC, ZINC	4
36	000207-06	WASHER, FLAT, SAE, 1/4 DIA, 5/8 OD, 9/32 ID, ZINC	12
37	000493-06	WASHER, LOCK, 1/4 DIA, SPLIT, ZINC	4

- 
- A triangle with the letter 'D' inside it.



E	CHANGED RUBBER WASHERS	9-22-06	GFT	2137	BREAK ALL SHARP EDGES DO NOT SCALE DWG.				 Advanced Greig Laminators, Inc. 801 Burton Blvd. DeForest, WI 53532	DRIVE SYSTEM ASSEMBLY AGL64R/64I				SCALE: 1/4" = 1"	DWG. NO. AGL-64-D2245-1	REV. E
D	ADDED NOTES	7-19-05	GFT													
C	REVERSED BOLT THROUGH PLATE & GEARBOX	4-21-04	GFT		UNLESS OTHERWISE SPECIFIED  0.00    +/-0.015 0.000   +/-0.005	MAT'L: AGLK2246-1										
B	ADDED BUSHINGS BENEATH GEARBOX	6-13-03	GFT													
A	#16 AND #19 WERE BHSCS	3-3-03	GFT		0.00    +/-0.015 0.000   +/-0.005	FINISH:	JOB NO. QTY. DWG. BY. CHK BY GFT									
REV. NO.	DESCRIPTION	DATE	INT.	ECN	ANGLES +/- .5°											

# Bill Of Material

**Part #:** AGL-64-K0962-2

**Appl #:**

**Assy #:** AGLD0974-2

**BOM Rev:** C

**Model #:**

**Rev:**

**Rev:** B

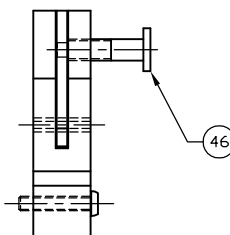
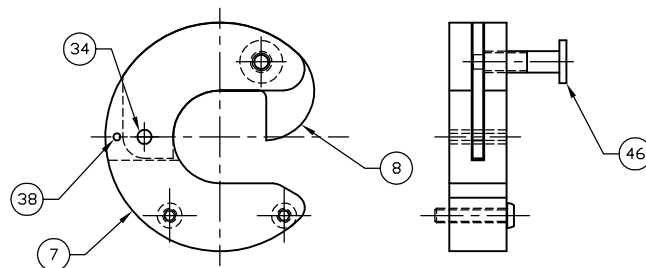
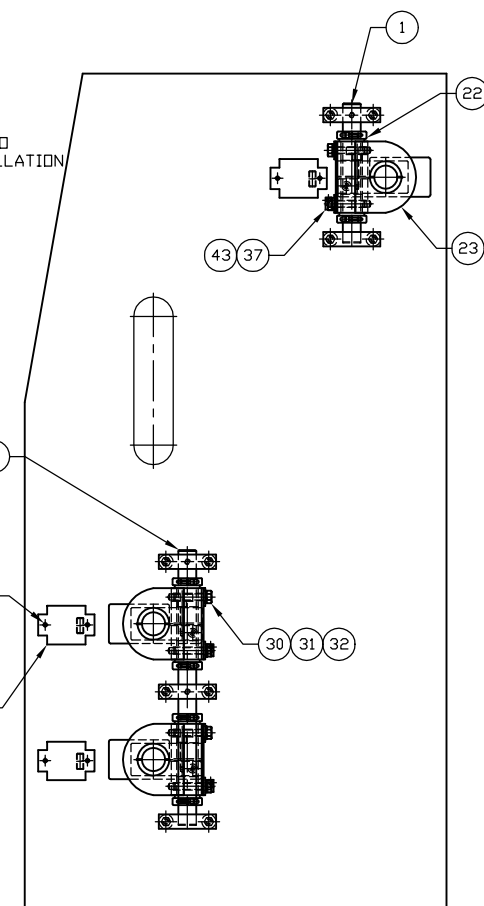
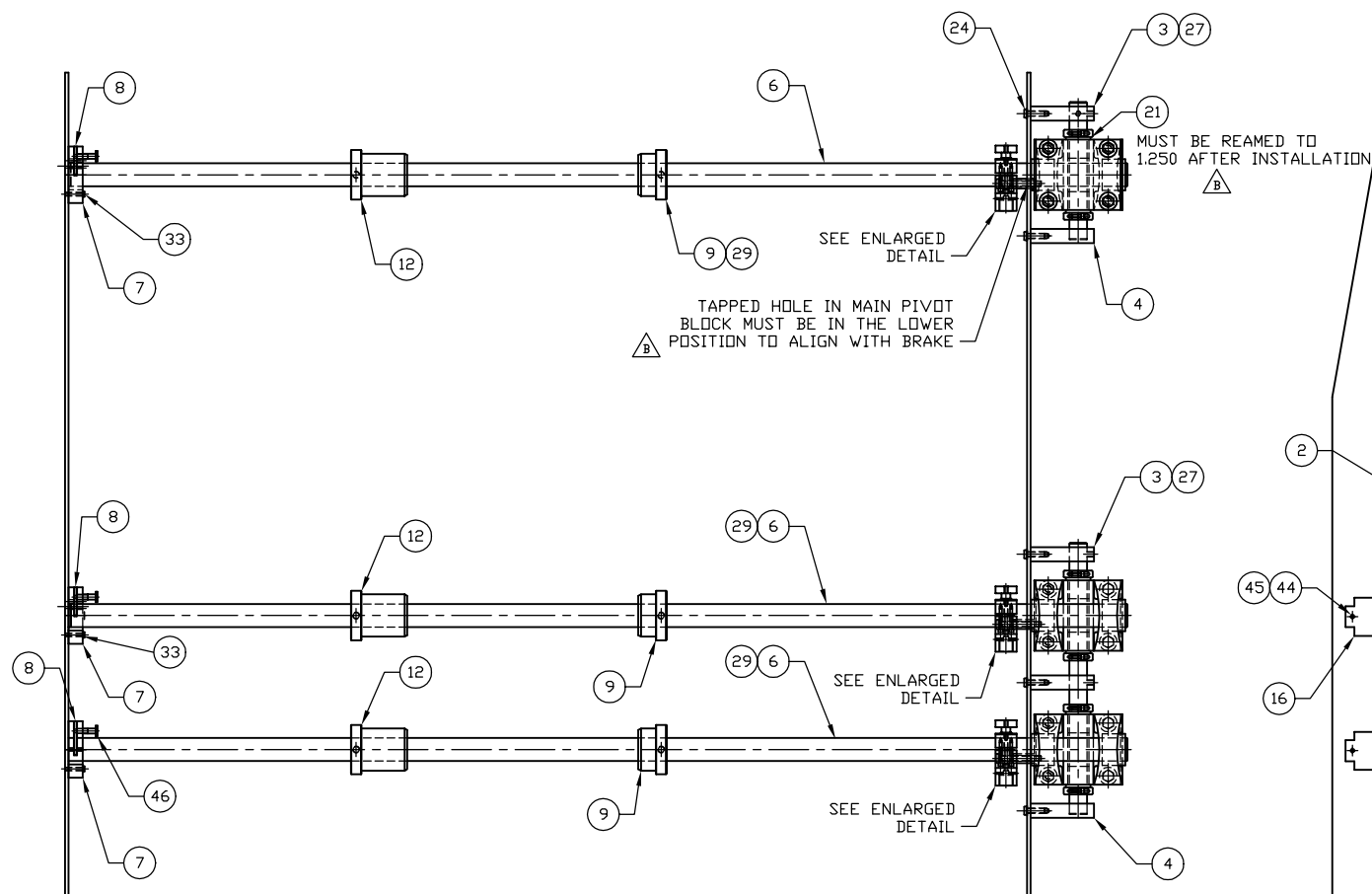
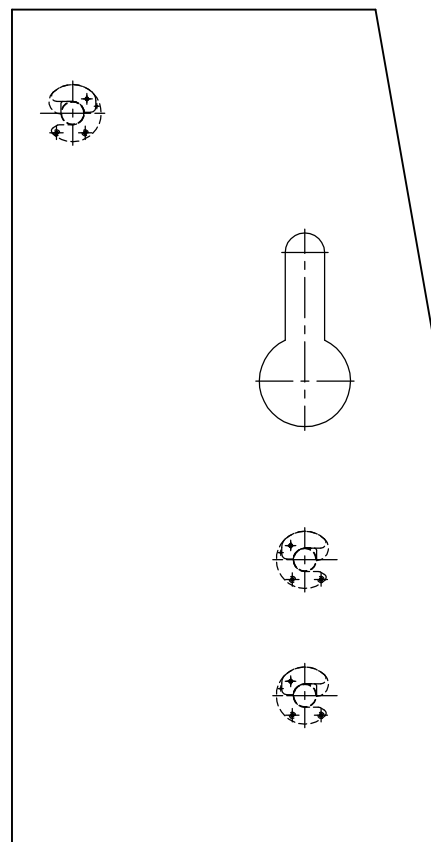
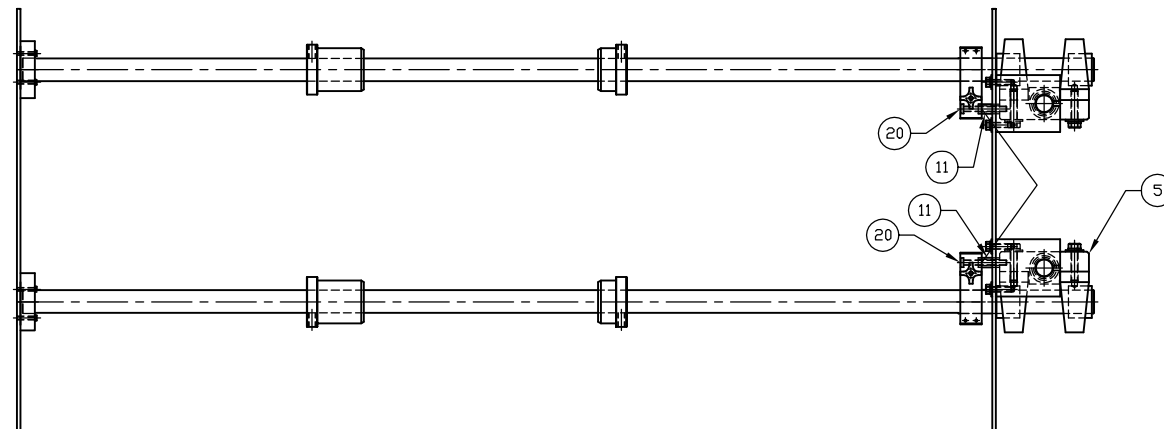
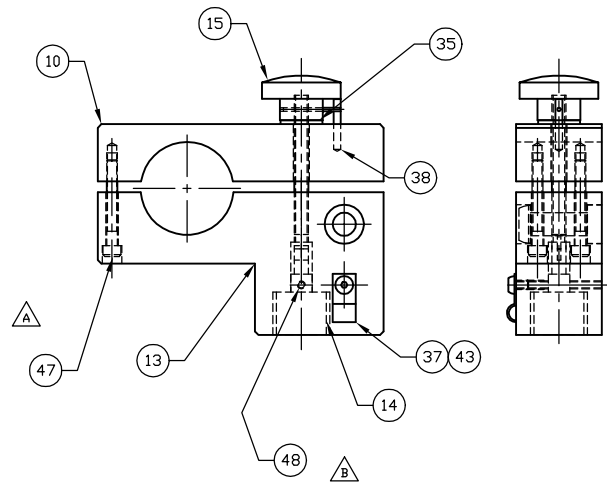
**Date:** 10/9/2002

**Description:** UNWIND ASSEMBLY, AGL64I


Item:	Part #:	Description:	Qty:
1	AGL-64-B0968-01	VERTICAL SHAFT, 9.75 LG	1
2	AGL-64-B0968-02	VERTICAL SHAFT, 19.25 LG	1
3	AGL-64-B0004	SHAFT BRACE, CANTILEVERED UNWIND	3
4	AGL-64-B0005	SHAFT SUPPORT, CANTILEVERED UNWIND	2
5	AGL-64-B0940	MAIN PIVOT BLOCK	3
6	AGL-64-B0969	UNWIND SHAFT	3
7	AGL-XX-B4323-1	UNWIND SHAFT SUPPORT	3
8	AGL-XX-B4324-1	UNWIND SHAFT LATCH	3
9	AGL-64-B0044	CORE COLLAR	3
10	AGL-XX-B4703	UPPER BRAKE	3
11	AGL-64-B0972	BRAKE SPACER	3
12	AGL-XX-B2917-1	CORE HOLDER, 1-5/8 BORE (ENCORE)	3
13	AGL-XX-B4704	LOWER BRAKE	3
14	AGL-XX-B4667	POT. MODIFICATION (ALTER BOURNS #3590S-1-103, AGL #002970-103 in loc. R-2	3
15	AGL-XX-B4668	KNOB ASSEMBLY	3
16	AGL-64-K4302	LED DISPLAY, MANUAL BRAKE	3
20	000063-24	BHSCS, 3/8-16UNC, 3 LG, BLACK.	3
21	001356-12	BUSHING, FLANGED, BRONZE, 1 1/4 ID., 1 1/2 OD. 1 1/2 LG	6
22	000411-20	COLLAR, SHAFT, 1.25 DIA BORE, 1/2 WIDE	6
23	001355-26	BEARING, TAPPED BASE, 1 5/8 BORE	6
24	000063-08	BHSCS, 3/8-16UNC, 1 LG, BLACK	10
27	000135-08	SSS, CUP PT, 3/8-16UNC, 1/2 LG, BLACK	3
29	012265-06	SSS, NYLON TIPPED, 1/2-13UNC, 3/4 LG. BLACK	3
30	000349-17	HHCS, 1/2-13UNC, 2-1/4 LG, ZINC	12
31	000207-10	WASHER, FLAT, SAE, 1/2 DIA, 1-1/16 OD, 17/32 ID, ZINC	12
32	000493-10	WASHER, LOCK, 1/2 DIA, SPLIT, ZINC	12
33	000059-10	BHSCS, 1/4-20UNC, 1-1/4 LG, BLACK	8
34	000285-08	PIN, DOWEL, 1/4 DIA, 1 LG	3

**Part #:** AGL-64-K0962-2**Appl #:****Assy #:** AGLD0974-2**BOM Rev:** C**Model #:****Rev:****Rev:** B**Date:** 10/9/2002**Description:** UNWIND ASSEMBLY, AGL64I

Item:	Part #:	Description:	Qty:
35	000207-06	WASHER, FLAT, SAE, 1/4 DIA, 5/8 OD, 9/32 ID, ZINC	3
37	000055-02	BHSCS, #8-32UNC, 1/4 LG, BLACK	6
38	000217-06	PIN, SPRING, 1/8 DIA, 3/4 LG	3
42	001731-03	CABLE, 3 x 20 AWG, SHIELDED	6
43	012227-105	CLAMP, CABLE, 1/4"	6
44	002982-04	SPACER, ROUND, #6 ID, .23 OD, .44 LG	6
45	000053-06	BHSCS, #6-32UNC, 3/4 LG, BLACK	6
46	012143-07	PLUNGER, DELRIN KNOB, LOCKING, 1/4-20UNC	3
47	000035-12	SHCS, #10-32UNF, 1-1/2 LG, BLACK	6



B	ADDED NOTES, #48	7-19-05	GFT	
A	ADDED #47	3-3-03	GFT	
REV NO.	DESCRIPTION	DATE	INT.	ECN

BREAK ALL SHARP EDGES				 <div>Advanced Greig Laminators, Inc. 801 Burton Blvd. DeForest, WI 53532</div>	
DO NOT SCALE DWG.					
UNLESS OTHERWISE SPECIFIED		MAT'L: AGLK0962-2		UNWIND STATIONS ASSEMBLY AGL 64I	
0.00 +/-0.015 0.000 +/-0.005  ANGLES +/-0.5°		FINISH:			
JOB NO.	QTY.	DWG. BY	CHK BY	SCALE: 1/6 =1	DWG. NO.
		GFT		DATE: 10-9-02	AGL-64-D0974-2
					REV. B

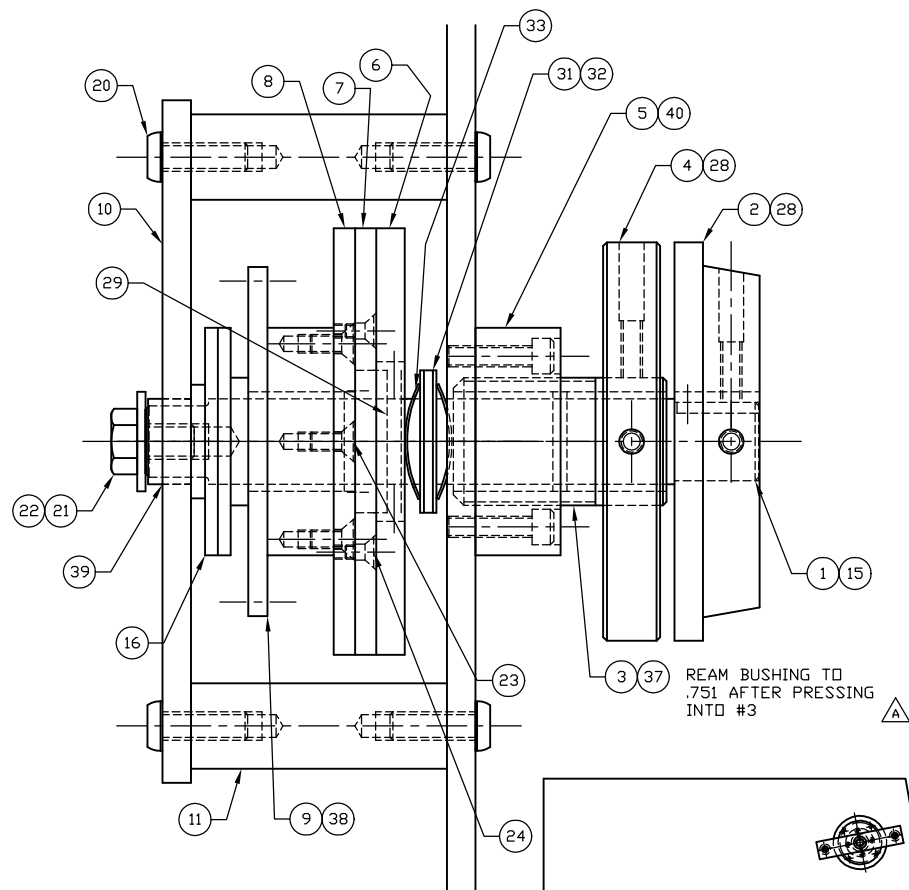
# Bill Of Material

<b>Part #:</b> AGL-64-K0963-1	<b>Appl #:</b>	<b>Assy #:</b> AGLD0991-1	<b>BOM Rev:</b> -
<b>Model #:</b>	<b>Rev:</b>	<b>Rev:</b> A	<b>Date:</b> 1/15/2002
<b>Description:</b> WINDUP STATIONS, AGL64 SERIES			

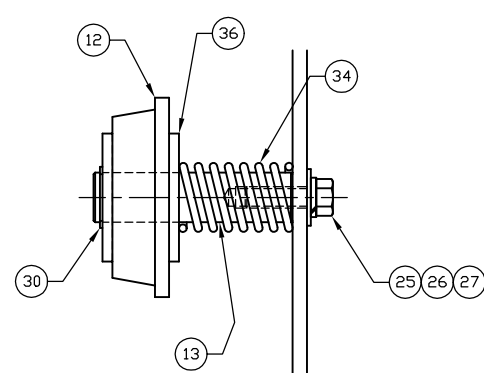
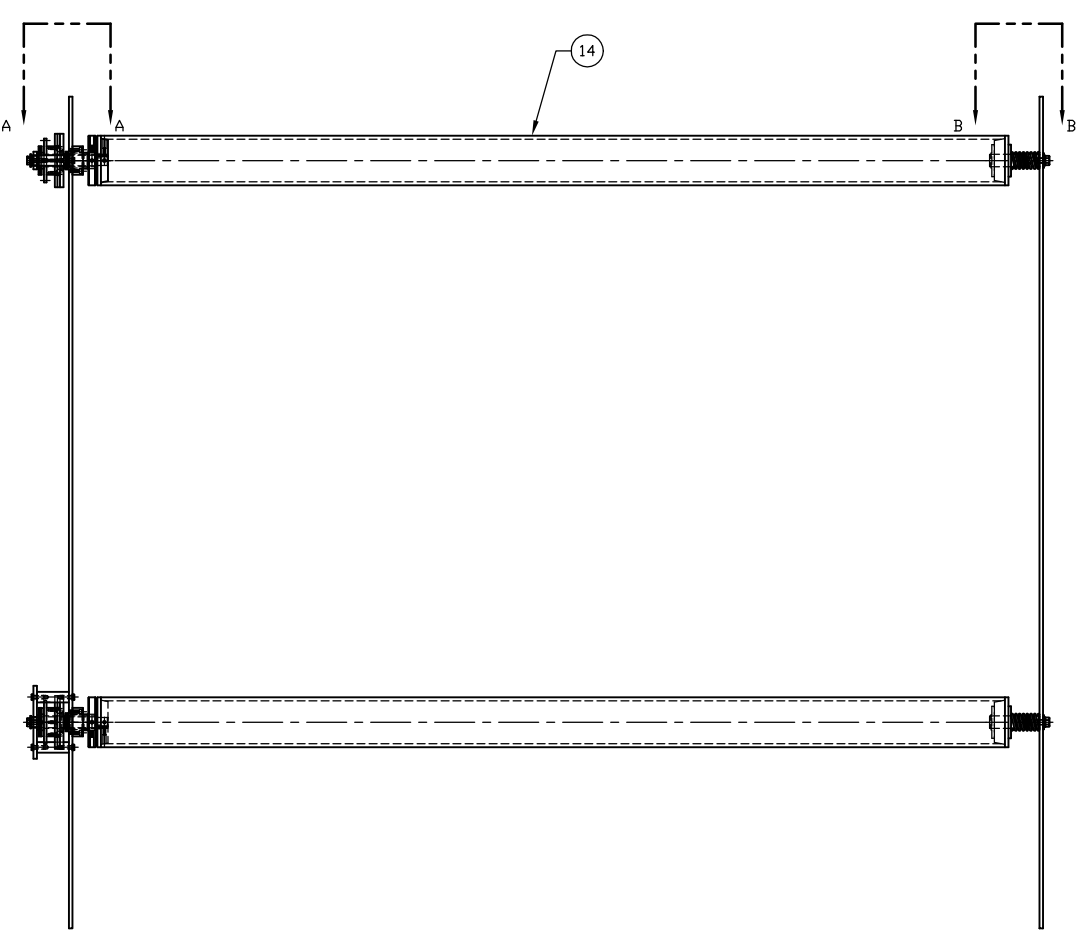
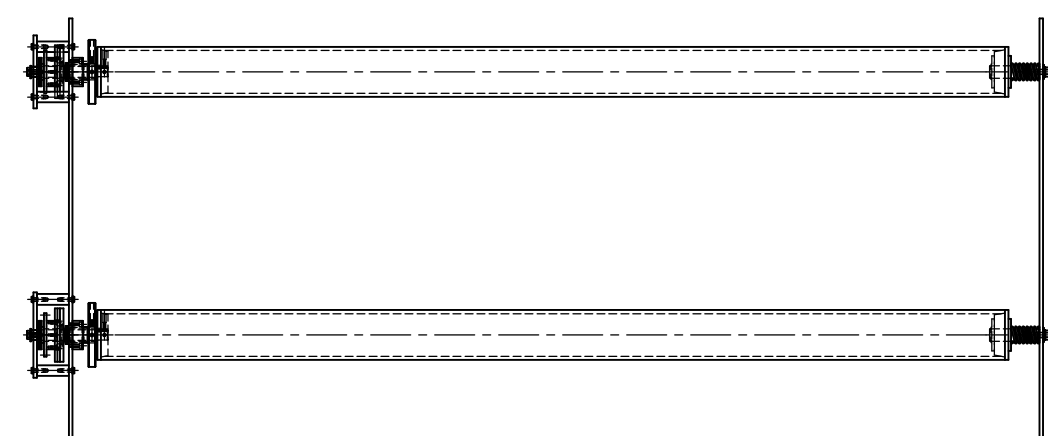
Item:	Part #:	Description:	Qty:
1	AGL-64-B0978	CLUTCH SHAFT	2
2	AGL-64-B0979	CORE HOLDER, DRIVE SIDE	2
3	AGL-64-B0980	ADJUSTMENT TUBE	2
4	AGL-XX-B4005	ADJUSTMENT KNOB, 4.50 DIA.	2
5	AGL-64-B0982	THREADED BLOCK	2
6	AGL-64-B0983	CLUTCH PLATE	2
7	AGL-44-B0429	FRICTION DISC	2
8	AGL-64-B0985	BACKING PLATE	2
9	AGL-64-B0986	CLUTCH SPROCKET, MODIFIED (ALTER MARTIN #35B24) (000912-24)	2
10	AGL-64-B0987	SHAFT SUPPORT BAR	2
11	AGL-64-B0988	SHAFT SUPPORT STANDOFF	4
12	AGL-64-B0989	CORE HOLDER, IDLER SIDE	2
13	AGL-64-B0990	SHAFT, STATIONARY	2
14	AGL-64-B0984-1	CORE, WINDUP	2
15	001317-04	KEY, 0.188 SQ, 0.50 LG, CRS	2
16	AGL-XX-B1078	REDUCER WASHER (SUB. BOKERS #1.75x.780x.125)	4
20	000059-06	BHSCS, 1/4-20UNC, 3/4 LG, BLACK	8
21	000340-04	HHCS, 5/16-18UNC, 1/2 LG, ZINC	2
22	001350-07	WASHER, FLAT, USS, 5/16 DIA, 7/8 OD, 3/8 ID, ZINC	2
23	000085-03	FHSCS, #8-32UNC, 3/8 LG, BLACK	8
24	001429-03	FHSCS, #5-40UNC, 3/8 LG, BLACK	8
25	000343-10	HHCS, 3/8-16UNC, 1-1/4 LG, ZINC	2
26	000207-08	WASHER, FLAT, SAE, 3/8 DIA, 13/16 OD, 13/32 ID, ZINC	2
27	000493-08	WASHER, LOCK, 3/8 DIA, SPLIT, ZINC	2
28	000129-08	SSS, CUP PT, #10-24UNC, 1/2 LG, BLACK	8
29	000217-10	PIN, SPRING, 1/8 DIA, 1-1/4 LG	2
30	000928-56	RING, RETAINING, EXT. 7/8	2
31	000777-12	BEARING, THRUST, WASHER, 3/4 DIA BORE, .03 THICK	4

**Part #:** AGL-64-K0963-1**Appl #:****Assy #:** AGLD0991-1**BOM Rev: -****Model #:****Rev:****Rev:** A**Date:** 1/15/2002**Description:** WINDUP STATIONS, AGL64 SERIES

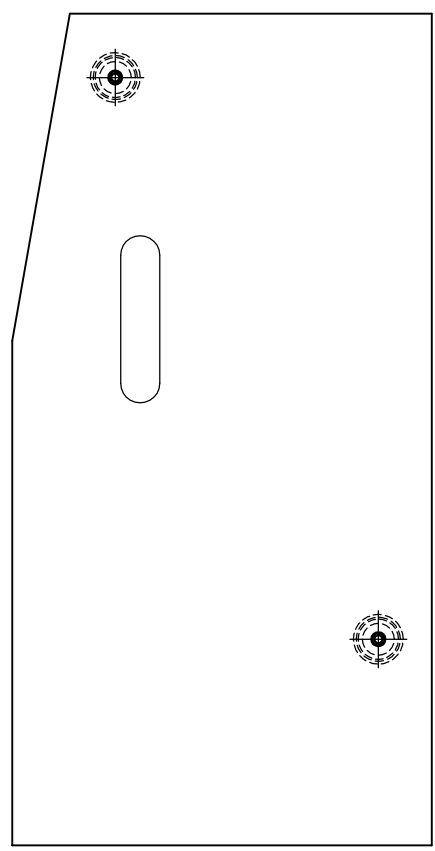
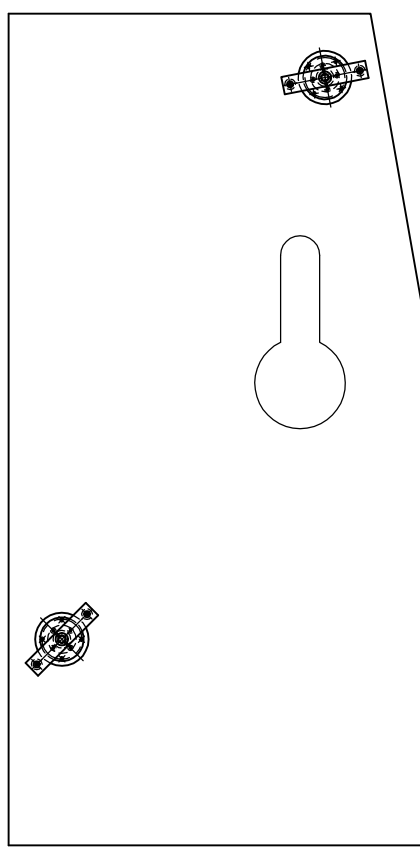
Item:	Part #:	Description:	Qty:
32	000776-12	BEARING, THRUST, NEEDLE, 3/4 BORE	2
33	001358-92	SPRING, CURVED DISC, .80 ID. 1.10 OD.	4
34	012027-06	SPRING, COMPRESSION, 1.095 OD. .105 THICK, 2.50 LG. MUSIC WIRE	2
36	000207-14	WASHER, FLAT, SAE, 7/8 DIA, 1-3/4 OD, 15/16 ID, ZINC	4
37	000721-07	BUSHING, BRONZE, 3/4 ID. 7/8 OD. 7/8 LG	4
38	001360-08	BUSHING, FLANGE, BRONZE, 3/4 ID 7/8 OD 1 LG	2
39	000741-04	BUSHING, FLANGE, BRONZE, 5/8 ID 3/4 OD 1/2 LG	2
40	000007-06	SHCS, #10-24UNC, 3/4 LG, BLACK	8



VIEW A-A



VIEW A-A  
SCALE: 2/3 = 1



REV NO.	DESCRIPTION	DATE	INT.	ECN
A	ENLARGED CLUTCH VIEW, ADDED NOTE	7-19-05	GFT	

BREAK ALL SHARP EDGES				DO NOT SCALE DWG.			
UNLESS OTHERWISE SPECIFIED				MATERIAL: AGLK0963-1			
0.00 +/-0.015				FINISH:			
0.000 +/-0.005				JOB NO. QTY. DWG. BY CHK BY			
ANGLES +/-5°				GFT			
				SCALE: 1/6 = 1			
				DATE: 1-17-02			
				DWG. NO. AGL-64-D0991-1			
				REV. A			

**AGL** Advanced Greig Laminators, Inc.  
801 Burton Blvd.  
DeForest, WI 53532

**WINDUP STATIONS ASSEMBLY  
AGL 64 SERIES**

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# Bill Of Material

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**Part #:** AGL-64-K4318

**Appl #:**

**Assy #:** AGLC4319

**BOM Rev:** A

**Model #:**

**Rev:**

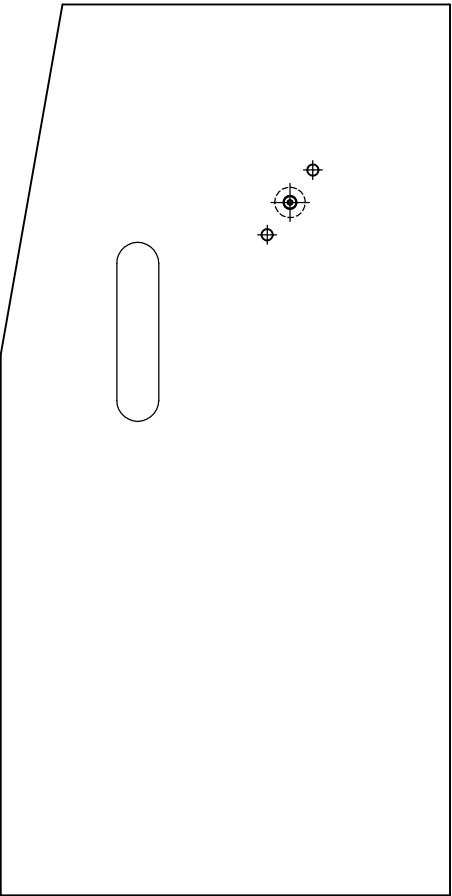
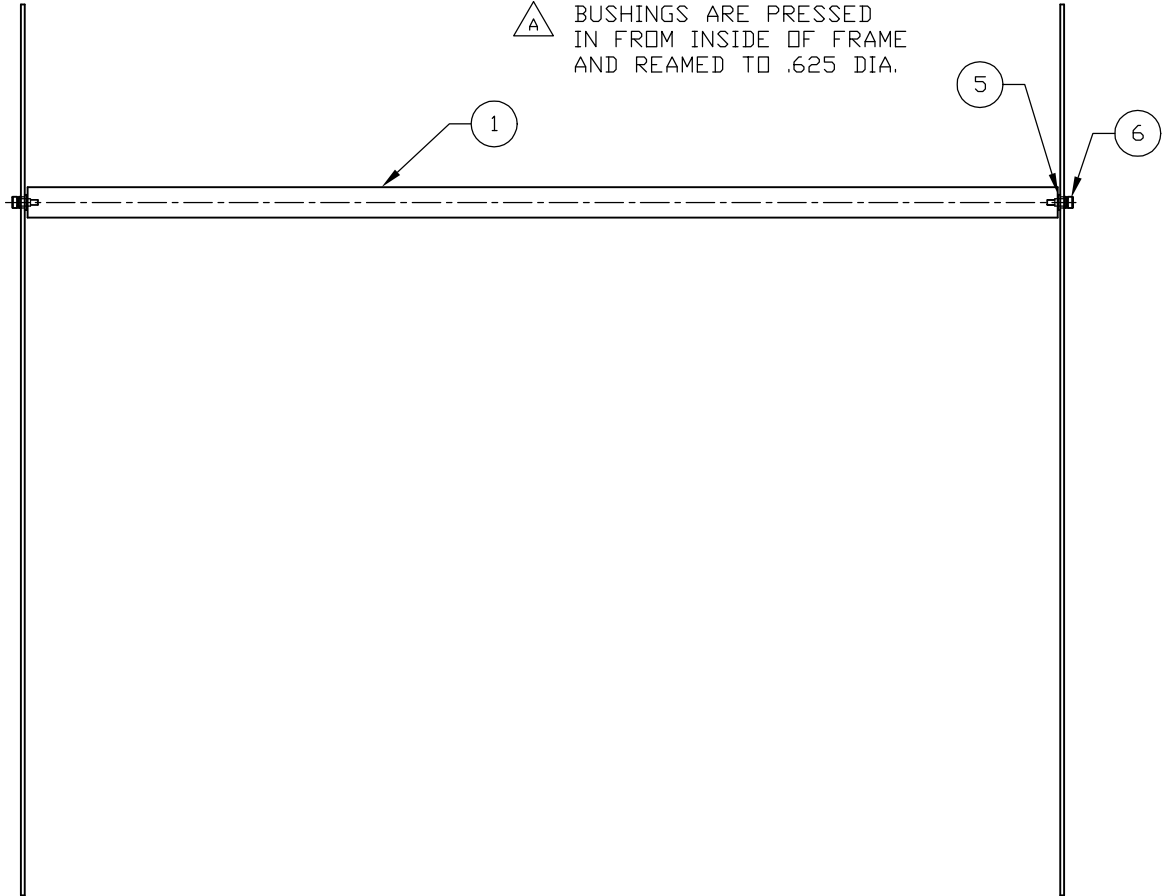
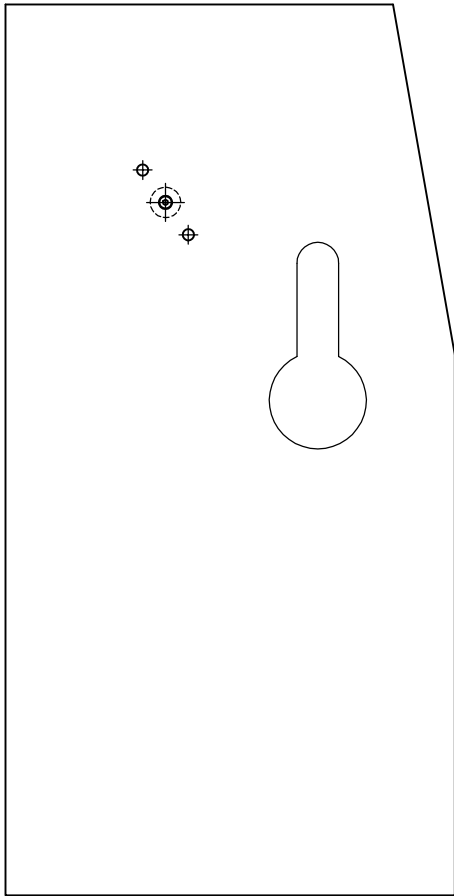
**Rev:** A

**Date:** 1/15/2002

**Description:** IDLER ROLLER ASSEMBLY, AGL64i


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Item:	Part #:	Description:	Qty:
1	AGL-64-B2826	IDLER ROLLER, AGL64 SERIES	1
5	000639-10	SHOULDER SCREW, 5/8 DIA, 1-1/4 LG (1/2-13UNC)	2
6	000741-04	BUSHING, FLANGE, BRONZE, 5/8 ID 3/4 OD 1/2 LG	6



A	ADDED REAM NOTE	7-19-05	GFT	
REV NO.	DESCRIPTION	DATE	INT.	ECN

BREAK ALL SHARP EDGES				
DO NOT SCALE DWG.				
UNLESS OTHERWISE SPECIFIED		MAT'L: AGLK4318		
0.00 +/-0.015		FINISH:		
0.000 +/-0.005		JOB NO. QTY. DWG. BY CHK BY		
ANGLES +/-5°		GFT		

 Advanced Greig Laminators, Inc. 801 Burton Blvd. DeForest, WI 53532			IDLER ROLL ASSEMBLY AGL 64i	
SCALE: 1/8 = 1		DWG. NO.		REV.
DATE: 1-15-02		AGL-64-C4319		A

# Bill Of Material

**Part #:** AGL-64-K0965

**Appl #:**

**Assy #:** AGLD0999

**BOM Rev:** G

**Model #:**

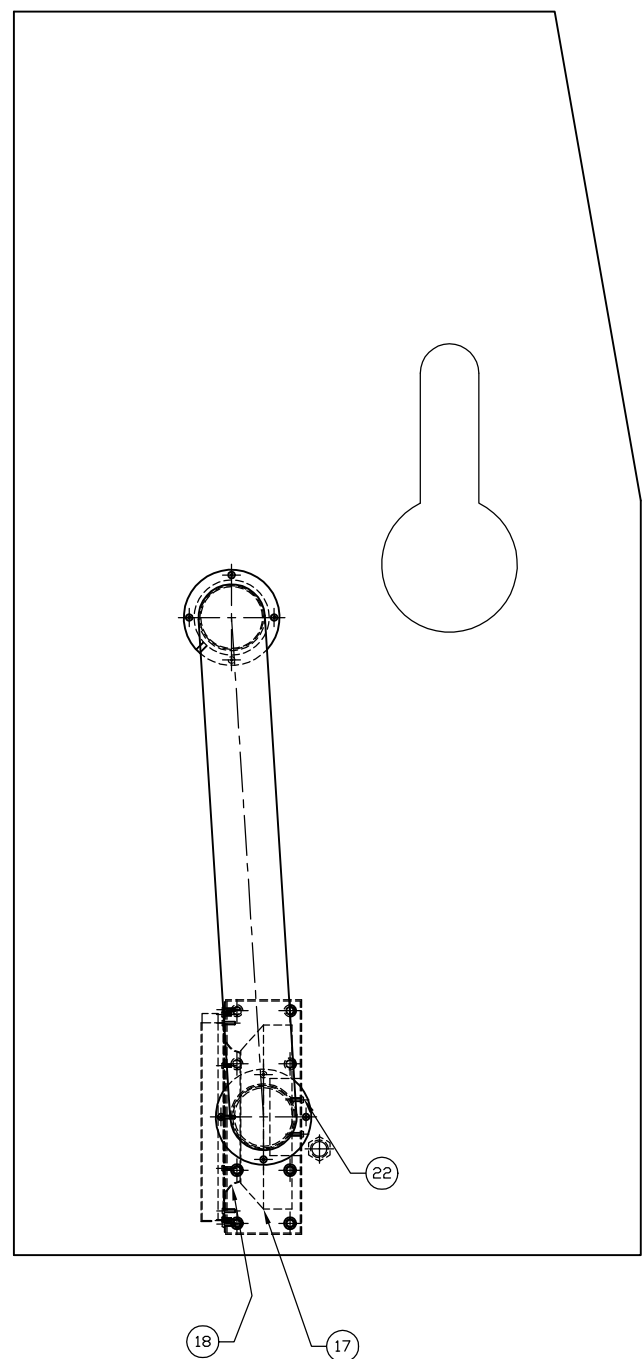
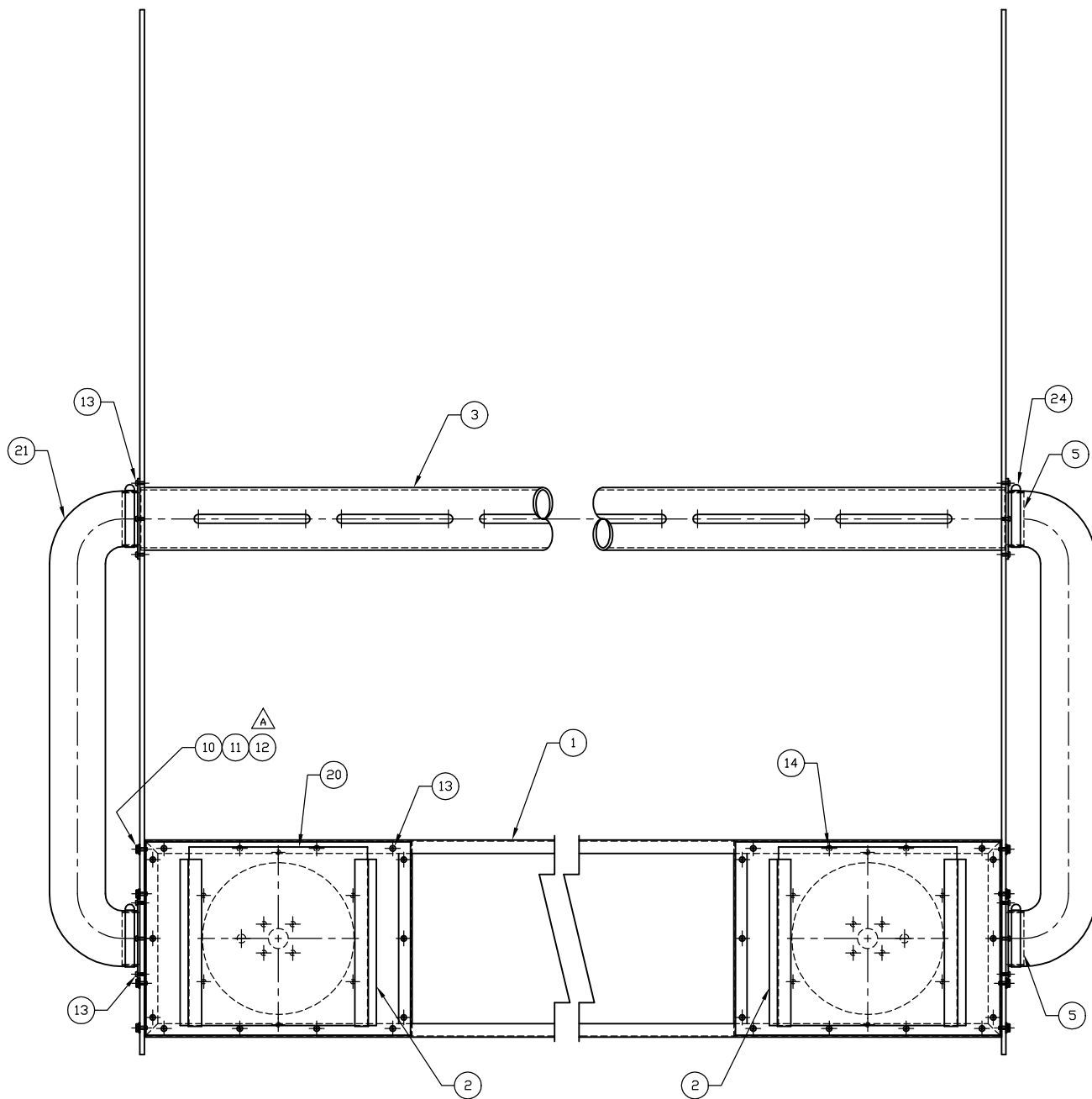
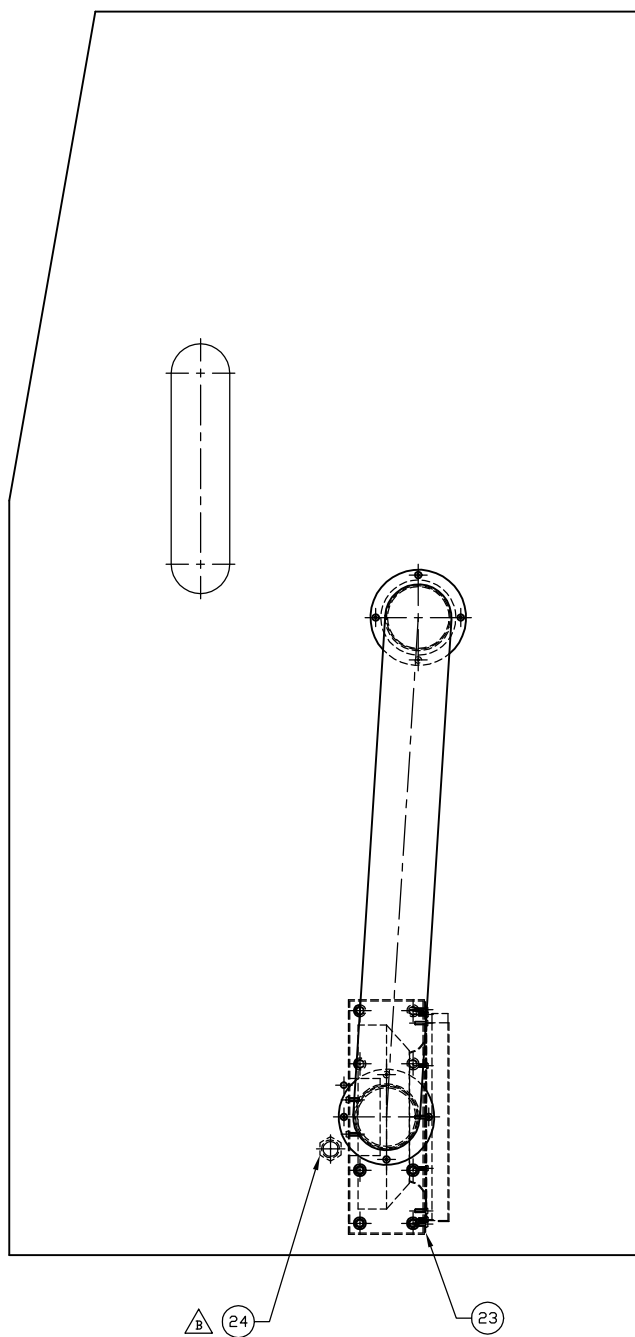
**Rev:**

**Rev:** C


**Date:** 4/17/1998

**Description:** WEB COOLING ASSY, AGL 64

Item:	Part #:	Description:	Qty:
1	AGL-64-D0997	FAN PLENUM	1
2	AGL-64-C0998	COVER, PLENUM	2
3	AGL-64-C3132	COOLING TUBE, AGL64	1
5	AGL-64-B2510	ADAPTER RING, AGL6400	4
10	000334-06	HHCS, #10-24UNC, 3/4 LG, ZINC	16
11	000207-04	WASHER, FLAT, SAE, #10 DIA, 1/2 OD, 7/32 ID, ZINC	16
12	000493-04	WASHER, LOCK, #10 DIA, SPLIT, ZINC	16
13	000055-03	BHSCS, #8-32UNC, 3/8 LG, BLACK	44
14	000053-03	BHSCS, #6-32UNC, 3/8 LG, BLACK	12
17	001362-01	IMPELLER, MOTORIZED, 460cfm, 230VAC	2
18	001362-02	INLET RING, MOTORIZED IMPELLER	2
20	001363	AIR FILTER, 1 x 10 x 10	2
21	001364	FLEXIBLE DUCT, 3.0 DIA x 15 FT. LG	1
22	001366-10	BHSCS, M4x10 LG, BLACK	8
23	001365	HOSE CLAMP, 3.0 DIA	4
24	002448-01	CORD GRIP, LIQUID-TIGHT, 1/2" NPT, 0.20-0.35 DIA, BLK	2



C	REMOVED TUBE MTG. BRACKETS	8-31-00	GFT	2058
B	ADDED ITEM 24	1-5-00	GFT	2031
A	10,11 & 12 WERE 1/4" INSTALLED FROM OTHER SIDE	9-17-98	GFT	
REV. NO.	DESCRIPTION	DATE	INT.	ECN

BREAK ALL SHARP EDGES				 Advanced Greig Laminators, Inc. 801 Burton Blvd. DeForest, WI 53532			
DO NOT SCALE DWG.				WEB COOLING ASSEMBLY AGL 64			
UNLESS OTHERWISE SPECIFIED		MATERIAL: AGLK0965					
0.00 +/-0.015 0.000 +/-0.005		FINISH:		JOB NO. QTY. DWG. BY. CHK. BY. GFT			
ANGLES +/-5°							
				SCALE: 1/4" = 1"		DWG. NO.	
				DATE: 4-24-98		AGL-64-D0999	
						REV. C	

# Bill Of Material

**Part #:** AGL-64-K4608-1      **Appl #:**      **Assy #:** AGLC5303      **BOM Rev:** E  
**Model #:**      **Rev:**      **Rev:** -      **Date:** 12/11/2002  
**Description:** ELECTRICAL ASSEMBLY, AGL64I

Item:	Part #:	Description:	Qty:
0	AGL-64-D4609-2	ELECTRICAL SCHEMATIC, AGL64I (NUMATIC VALVE)	REF.
1	AGL-64-B5070	DECAL PACKAGE, AGL64I, -01 BLUE, -02 GREEN, -03 BURGUNDY	1
11	AGL-64-A0941	LABEL, TERMINAL BLOCK, AGL 6400/64/64i	1
12	AGL-64-C1146-1	SUBPANEL, AGL64 SERIES	1
13	002728-01	EMITTER, SERIES 10	2
14	002427-04	SWITCH, FOOT, SPDT, MTD. IN GUARD, 16' CABLE	2
15	002337-01	SOCKET, RELAY, 11-PIN, DIN RAIL MTG, FINGER SAFE	3
16	002332-02	RELAY, MIDGET, 3PDT, 240V	2
17	002339-02	CLIP, HOLD-DOWN, RELAY SOCKET	3
18	006006-60	CIRCUIT BREAKER, 2 POLE, 60 AMP, PANEL MNT.	1
19	002099-10	LABEL, .50 x 1.50, VINYL, SELF LAMINATING	200
20	001883-05	TERMINAL BLOCK, 35MM, 10-26 AWG, GRAY, UK5N 02M0381	51
21	001879-01	DIN RAIL, 35MM WIDE, 7.5MM HIGH, 2 MT LG, NS35/7.5	30
22	000716-00	WIRE, STRANDED, 16 AWG, BLACK	45
23	000719-00	WIRE, STRANDED, 10 AWG, BLACK	50
24	002324-01	SWITCH, KNOB, 2 POS, 1NO	5
25	001153-05	CORD GRIP, BELL-MOUTH, BLACK, 5/8" MTG HOLE	1
26	001089-01	CABLE TIE, NYLON, WHITE, 4" LG	50
27	001090-01	CABLE TIE, MOUNT, ADHESIVE-BACKED, 3/4" SQ	35
28	001876-10	TERMINAL BLOCK, GND, 35MM, 8-20 AWG, USLKG10 29C3451	8
29	002544-02	WIRE, THERMOCOUPLE, TYPE J, #20AWG,SHIELDED, 1000 FT ROLL	30
30	002728-02	RECEIVER, SERIES 10	2
31	001886-01	BAR, JUMPER, 10-POS, #FB10-6 ( 10 pcs.per bag)	1
32	002696-01	MOTOR, PERM MAGNET, 180VDC, 1/2 HP, 1750 RPM	1
33	000720-00	WIRE, STRANDED, MTW, 6 AWG, BLACK	20
35	001089-02	CABLE TIE, NYLON, WHITE, 5.5" LG	15
36	001090-02	CABLE TIE, MOUNT, ADHESIVE-BACKED, 1" SQ	15
37	001875-01	FUSE HOLDER, TERMINAL BLOCK, 35MM MTG, (NOW INCLUDES 001881-01)	6

**Part #:** AGL-64-K4608-1**Appl #:****Assy #:** AGLC5303**BOM Rev:** E**Model #:****Rev:****Rev:** -**Date:** 12/11/2002**Description:** ELECTRICAL ASSEMBLY, AGL64I

Item:	Part #:	Description:	Qty:
38	001881-01	NOW PURCHASED AS PART OF 001875-01	6
39	006021-30	CIRCUIT BREAKER, 2 POLE, 30 AMP, DIN RAIL MNT	2
40	001530-008	FUSE, SLO-BLO, 3/4A, 250V, 1/4X1-1/4"	2
41	001530-070	FUSE, SLO-BLO, 7.0A, 250V, 1/4X1-1/4"	2
43	002507-04	END COVER, TERMINAL BLOCK, D-UK4/10	2
44	002542-04	SLIP RING, 5 POLE, 3@45A, 2@2A, 2 BORE	2
45	002728-03	CABLE, SERIES 10, 2M LG.	3
50	000557-03	PHMS, SLOTTED, #8-32UNC, 3/8 LG, ZINC	8
51	000561-03	PHMS, SLOTTED, #10-32UNF, 3/8 LG, ZINC	16
52	000575-02	PHMS, PHILLIPS, #6-32UNC, 1/4 LG, ZINC	2
53	002509-60	CONTACTOR, 3-POLE, 70A, 220V, 1 AUX	1
54	002512-01	LEGEND, HIGH VOLTAGE	2
55	002511-01	ALARM, PANEL MTG, 3-28VDC	1
56	002448-02	CORD GRIP, LIQUID-TIGHT, 1" NPT, 0.71-0.98 DIA, BLK	1
57	001966	LUG, GROUNDING, 1/0-14AWG	1
58	001006-08	NUT, LOCK, CONDUIT, 1"	1
59	000337-04	HHCS, 1/4-20UNC, 1/2 LG, ZINC	1
60	000493-06	WASHER, LOCK, 1/4 DIA, SPLIT, ZINC	1
61	002698-06	LUG, 1/4" HOLE, #6 AWG WIRE	4
62	001826-04	POWER SUPPLY, SINGLE, 24VDC, 2.4A	1
63	001530-040	FUSE, SLO-BLO, 4.0A, 250V, 1/4X1-1/4"	2
64	000715-00	WIRE, STRANDED, 18 AWG, BLACK	315
65	002728-05	CABLE, SERIES 10, 5M LG.	1
66	002974-01	RELAY, MIDGET, 3PDT, 24VDC	1
67	001352-06	STANDOFF, HEX, M/F, #10-32UNC, 3/4 LG, AL	5
68	002523-08	FERRULE, INSULATED, 18AWG, WIDE COLLAR	206
69	002523-01	FERRULE, INSULATED, 16AWG, STD LENGTH, BLACK	12
70	002523-02	FERRULE, INSULATED, 14AWG, STD LENGTH, BLUE	6
71	000717-24	WIRE, STRANDED, 14 AWG, GREEN/YELLOW	14.00

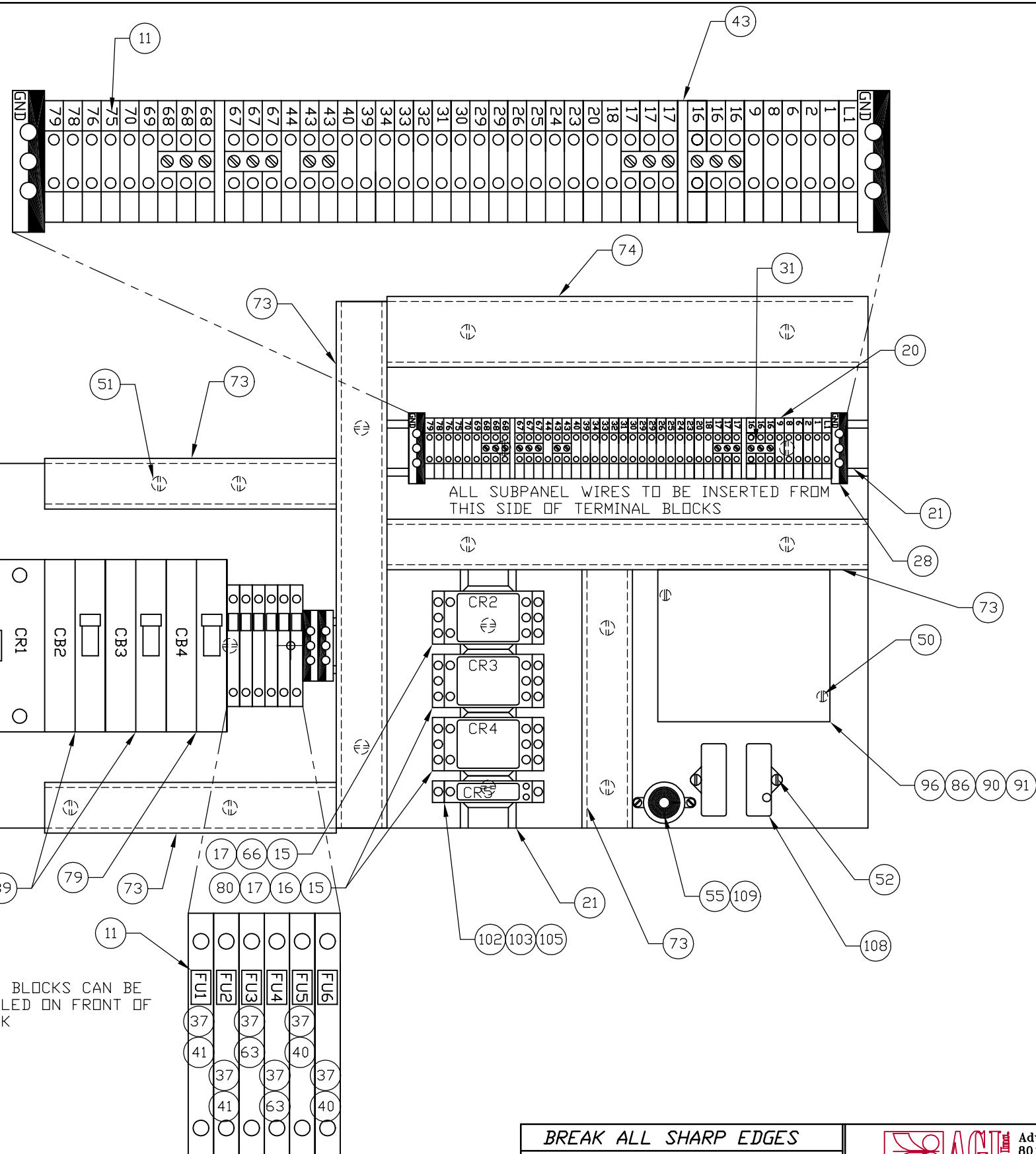
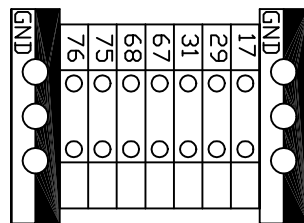
**Part #:** AGL-64-K4608-1**Appl #:****Assy #:** AGLC5303**BOM Rev:** E**Model #:****Rev:****Rev:** -**Date:** 12/11/2002**Description:** ELECTRICAL ASSEMBLY, AGL64I

Item:	Part #:	Description:	Qty:
72	002955-01	WIRE DUCT, 1 x 1-1/2, WHITE	144.0
73	002955-02	WIRE DUCT, 1 x 2-1/4, WHITE	48.0
74	002955-04	WIRE DUCT, 1-1/2 x 3, WHITE	96.0
75	000343-08	HHCS, 3/8-16UNC, 1 LG, ZINC	4
76	000493-08	WASHER, LOCK, 3/8 DIA, SPLIT, ZINC	4
79	006021-20	CIRCUIT BREAKER, 2 POLE, 20 AMP, DIN RAIL MNT	1
80	002492-022	SUPPRESSOR, ARC, TYPE QC, 22 OHM	2
81	001731-03	CABLE, 3 x 20 AWG, SHIELDED	10
82	002523-06	FERRULE, INSULATED, 6AWG, STD LENGTH, GREEN	10
83	002523-05	FERRULE, INSULATED, 10AWG, STD LENGTH, BLACK	12
84	002523-10	FERRULE, INSULATED, 12AWG, STD LENGTH, GRAY	2
85	002523-02	FERRULE, INSULATED, 14AWG, STD LENGTH, BLUE	2
86	002951	SIGNAL ISOLATOR	1
87	002512-05	LEGEND, DANGER PINCH POINT	4
88	002512-03	LEGEND, DO NOT OPERATE WITHOUT GUARDS IN PLACE	2
89	002512-04	LEGEND, CAUTION HOT	2
90	002727-01	CONNECTOR, 90 DEG. FLAG DISCONNECT 16-14AWG	2
91	002727-02	CONNECTOR, 90 DEG. FLAG DISCONNECT 12-10AWG	2
92	002506	SWITCH ASSY, PUSHBUTTON, E-STOP	4
93	002510-02	SWITCH, PB, MAINT., LIGHTED, 1NC-1NO, 24V, AMBER	2
94	002318-06	SWITCH, PUSHBUTTON, FLUSH, 1NC, RED	2
95	002318-02	SWITCH, PUSHBUTTON, FLUSH, 1NO, BLACK	3
96	001998-03	CONTROLLER, MOTOR, 240V INPUT, 90 or 180VDC OUTPUT	1
97	001625-05	CONTROLLER, TEMP, THERMOCOUPLE, PULSED, ALARM	2
98	001623-50	RELAY, 50A, 240V, 1-PHASE	4
99	002325-01	SWITCH, KNOB, 2 POS, 1NO-1NC	1
100	001998-04	POTENTIOMETER KIT, USE WITH KBMG-212D	1
101	006004-67	RIBBON SWITCH, 4' LEADS, 4 WIRE, YELLOW, 67" LG.	2
102	002974-02	RELAY, MIDGET, 1PDT, 24VDC	1


**Part #:** AGL-64-K4608-1**Appl #:****Assy #:** AGLC5303**BOM Rev:** E**Model #:****Rev:****Rev:** -**Date:** 12/11/2002**Description:** ELECTRICAL ASSEMBLY, AGL64I

Item:	Part #:	Description:	Qty:
103	002337-06	SOCKET, RELAY, 5-PIN, DIN RAIL MTG	1
104	012393	DOUBLE SIDED TAPE	134
105	002345-221	RESISTOR, METAL-FILM, 1%, 1/4W, 221 OHM	1
106	006033-02	CONNECTOR, BRASS/SETSCREW, 2-10AWG	4
107	006033-03	CONNECTOR, BRASS/SETSCREW, 2-14AWG	4
108	001362-03	CAPACITOR	2
109	000573-02	PHMS, PHILLIPS, #4-40UNC, 1/4 LG, ZINC	2
110	001211-03	NUT, K-LOCK, #8-32UNC, ZINC	2
111	002506-1	LEGEND, EMERGENCY STOP DECAL	4
112	002893-02	END BARRIER, FUSE BLOCK	1

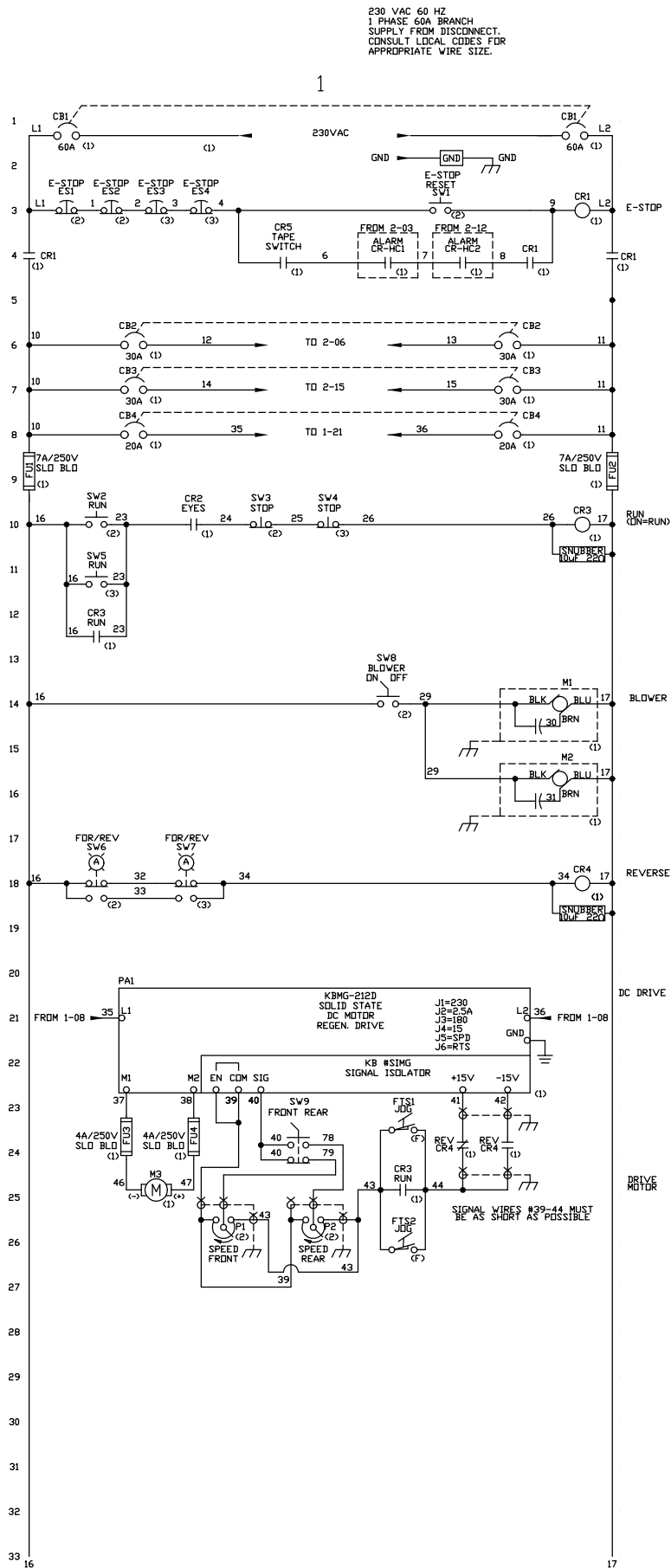
RIGHT SIDE TERMINAL  
BLOCK



REV NO.	DESCRIPTION	DATE	INT.	ECN

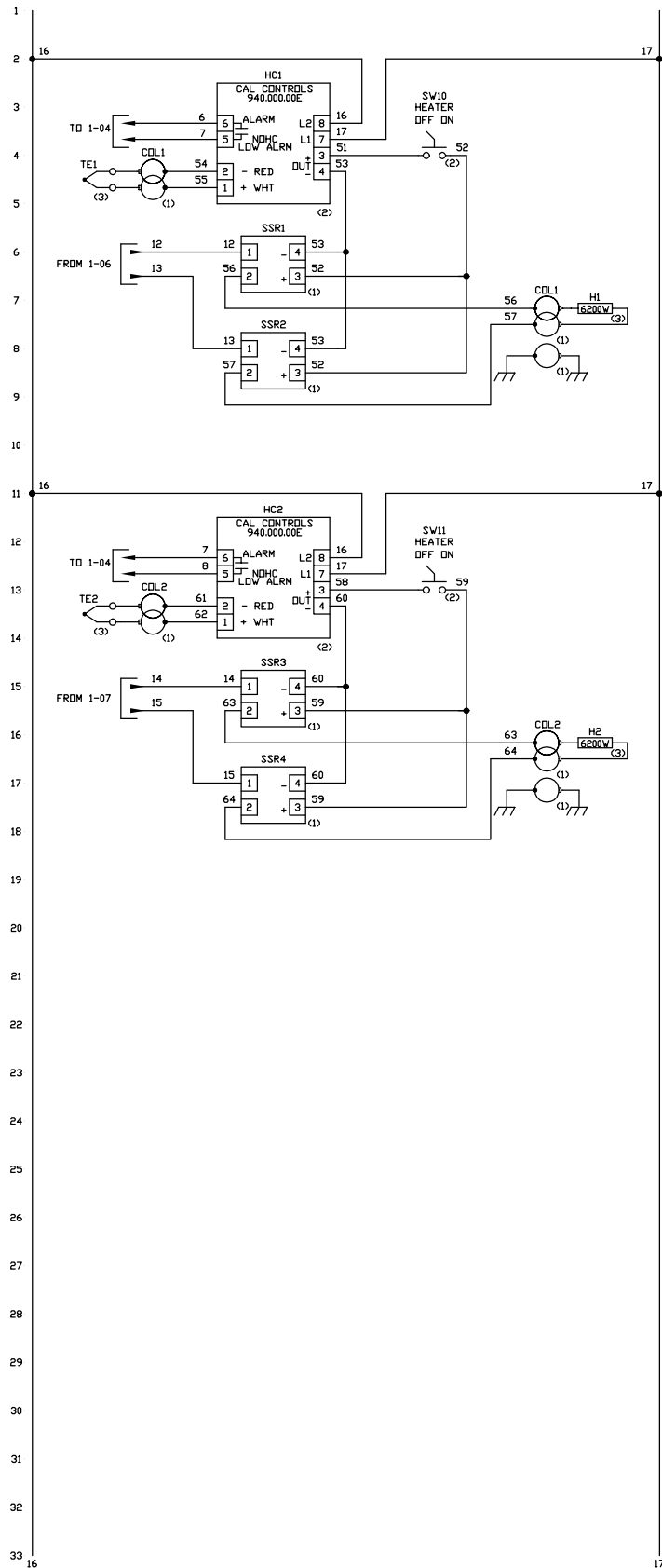
BREAK ALL SHARP EDGES				 Advanced Greig Laminators, Inc. 801 Burton Blvd. DeForest, WI 53532				
DO NOT SCALE DWG.								
UNLESS OTHERWISE SPECIFIED		MAT'L:		SUBPANEL ASSEMBLY AGL64I/64R				
		AGLK4608-1						
0.00    +/-0.015 0.000   +/-0.005		FINISH:		SCALE: 1/2" = 1"				
ANGLES +/- .5°		JOB NO.	QTY.	DWG. BY.	CHK BY	DWG. NO.		REV.
				GFT		AGL-64-C5303		
				DATE: 1-16-04				

NOTE:  
GROUND SUBPANEL TO  
GROUND LUG ON SIDE  
PLATE OF MACHINE

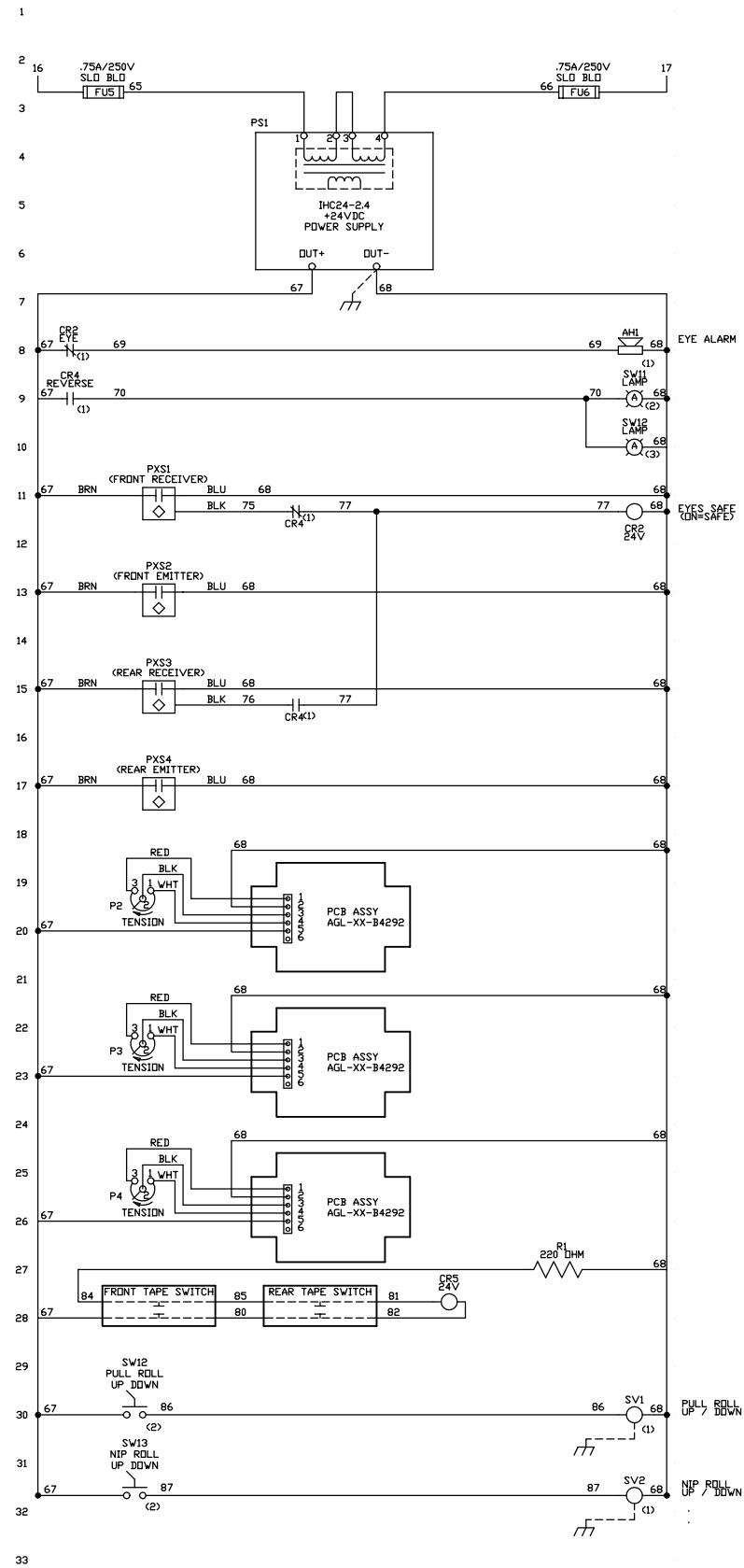


NOTES:  
5 IN/LB MINIMUM TORQUE,  
ALL TERMINAL SCREWS  
USE STRANDED COPPER WIRE WITH  
60 DEGREE C / 300 VOLT INSULATION  
FOR ALL EXTERNAL CONNECTIONS.

2



3



BREAK ALL SHARP EDGES

DO NOT SCALE DWG.

UNLESS  
OTHERWISE  
SPECIFIED

MAT'L:

FINISH:

JOB NO.

QTY.

DWG. BY

CHK BY

0.00 +/-0.015

0.000 +/-0.005

ANGLES +/- .5°

SCALE: NTS

DATE: 9-27-06

DWG. NO.

AGL-64-D4609-2

REV.

A



Advanced Greig Laminators, Inc.  
801 Burton Blvd.  
DeForest, WI 53532

CONTROL SCHEMATIC  
AGL64i (24VDC VALVE)

REV. NO. DESCRIPTION

12-8-06

GFT

INT.

ECN

# Bill Of Material

**Part #:** AGL-64-K2254-2

**Appl #:**

**Assy #:** AGLC2257-2

**BOM Rev:** B

**Model #:**

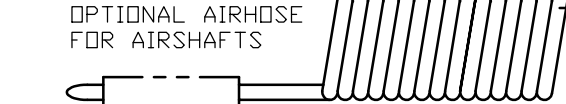
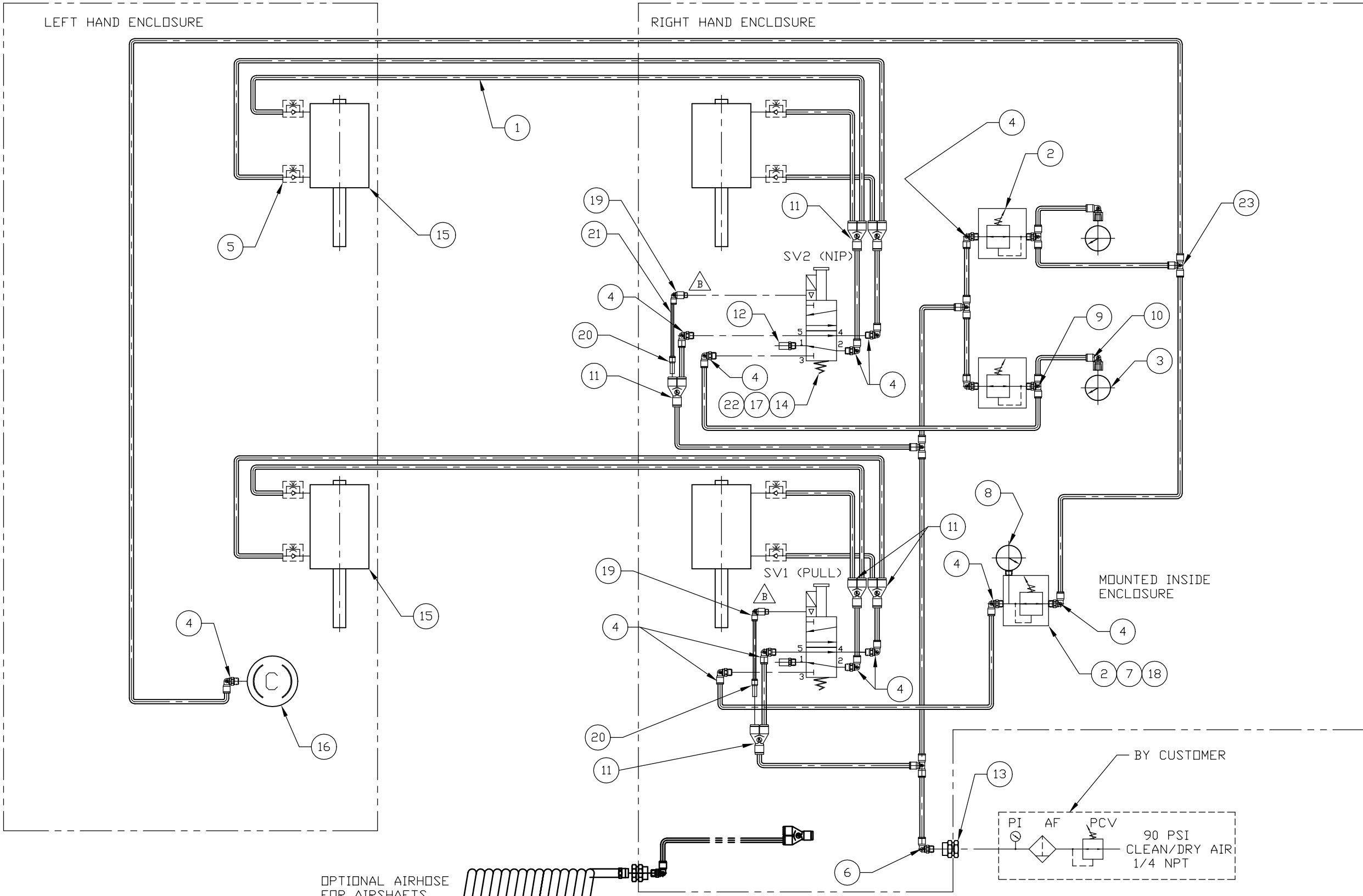
**Rev:**

**Rev:** B

**Date:** 9/25/2006

**Description:** PNEUMATIC ASSEMBLY, AGL64I/64R (NUMATIC VALVE)

Item:	Part #:	Description:	Qty:
1	012263-05	TUBING, 1/4" OD, BLACK	100
2	001294	REGULATOR, PRESSURE, 1/8NPT	3
3	012234-01	GUAGE, PRESSURE, 0-100PSI, 1/8NPT, PANEL MNT, CHROME BEZEL	2
4	000847-10	FITTING, PIPE, ELBOW, MALE, 1/4 OD, 1/8 NPT	13
5	000861-03	FITTING, PIPE, FLOW CONTROL, ELBOW, 1/4 OD, 1/8 NPT	8
6	000847-12	FITTING, PIPE, ELBOW, MALE, 1/4 OD, 1/4 NPT	1
7	012010-02	BRACKET KIT, REGULATOR	1
8	012234-03	GUAGE, PRESSURE, 0-100PSI, 1/8NPT, PANEL MNT.	1
9	000849-08	FITTING, PIPE, TEE, BRANCH, 1/4 OD, 1/8 NPT	2
10	000851-04	FITTING, PIPE, ELBOW, FEMALE, 1/4 OD, 1/8 NPT	2
11	000855-04	FITTING, TUBE, "Y", 1/4 OD TUBE	6
12	012011-01	MUFFLER, EXHAUST, 1/8NPT	2
13	000822-02	FITTING, PIPE, BULKHEAD, 1/4 NPT, 3/4-16UNC	1
14	012303-04	VALVE, SOLENOID, 2 POSITION, 24VDC, EXT. PILOT	2
15	001457-20	AIR CYLINDER, 2 DIA BORE, 2 1/2" STROKE, FINE THD	4
16	012255-07	CLUTCH, PNEUMATIC, 32 TOOTH INPUT, 7/8 BORE, LOCO PADS	1
17	000577-12	PHMS, PHILLIPS, #8-32UNC, 1-3/4 LG, ZINC	2
18	000057-03	BHSCS, #10-24UNC, 3/8 LG, BLACK	2
19	000847-05	FITTING, PIPE, ELBOW, MALE, 5/32 OD, 10-32UNF	2
20	012280-05	FITTING, REDUCER, PLUG-IN, 1/4 TUBE-5/32 TUBE	2
21	012262-05	TUBING, 5/32" OD, BLACK	3
22	012572-04	CONNECTOR, SOLENOID VALVE	2
23	000854-04	FITTING, TUBE, TEE, 1/4 OD TUBE	4



B	#19 WAS STRAIGHT	9-18-07	GFT	
A	REVISED TO AS BUILT	7-18-07	GFT	2141
REV NO.	DESCRIPTION	DATE	INT.	ECN

BREAK ALL SHARP EDGES				
DO NOT SCALE DWG.				
UNLESS OTHERWISE SPECIFIED		MAT'L: AGLK2254-2		
0.00 +/-0.015		FINISH:		
0.000 +/-0.005		JOB NO. QTY. DWG. BY. CHK BY		
ANGLES +/- .5°		GFT		

 Advanced Greig Laminators, Inc. 801 Burton Blvd. DeForest, WI 53532		PNEUMATIC ASSEMBLY AGL64I/64R (NUMATIC VALVE)	
SCALE: 1/4" = 1"	DWG. NO.	REV.	
DATE: 9-25-06	AGL-64-C2257-2	B	

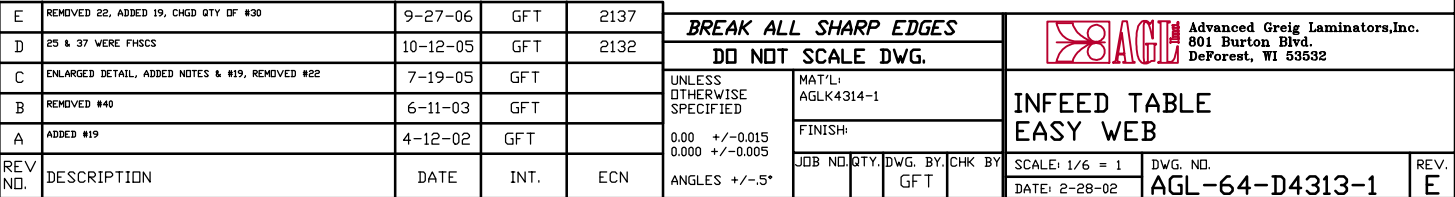
# Bill Of Material

<b>Part #:</b> AGL-64-K4314-1	<b>Appl #:</b>	<b>Assy #:</b> AGLD4313-1	<b>BOM Rev:</b> I
<b>Model #:</b>	<b>Rev:</b>	<b>Rev:</b> E	<b>Date:</b> 2/28/2002
<b>Description:</b> EASY WEB INFEED TABLE ASSEMBLY, AGL64i			

Item:	Part #:	Description:	Qty:
1	AGL-XX-B4173	TABLE END, LH.	1
2	AGL-XX-B4174	TABLE END, RH.	1
3	AGL-XX-B4175	CONNECTING LINK	2
4	AGL-XX-B4176	GUIDE, ROLLER	2
5	AGL-64-B4311-01	CROSS BAR W/ HOLE, INFEED TABLE	1
6	AGL-XX-B4307	SPRING PLUNGER SUB ASSEMBLY	2
7	AGL-64-C4226	TABLE END	1
8	AGL-64-C4181-01	INFEED TABLE, LIGHT GREY	1
9	AGL-XX-B4308	SLIDE MODIFICATION	1
10	AGL-64-B4182	ROLLER SUB ASSEMBLY	1
11	AGL-XX-B4183	SPACER, CONNECTING LINK	2
12	AGL-XX-B4184	PULLEY MODIFICATION (ALTER REID #CBL-870)	2
13	AGL-XX-B4309	BLOCK, ACTUATOR	1
14	AGL-64-B4310	TIP SUPPORT, INFEED TABLE	1
15	AGL-XX-B4312	SLIDE BAR	1
16	AGL-64-B4245	CROSS BAR, 2 SLOTS	1
18	AGL-64-B4311-02	CROSS BAR, INFEED TABLE	1
19	012603-030	SHIM, LENGTHENING, 3/8 SHOULDER, 5/16 THREAD, .03 THICK	8
20	000007-08	SHCS, #10-24UNC, 1 LG, BLACK	12
21	000635-05	SHOULDER SCREW, 3/8 DIA, 5/8 LG (5/16-18UNC)	4
23	000009-08	SHCS, 1/4-20UNC, 1 LG, BLACK	9
24	000059-05	BHSCS, 1/4-20UNC, 5/8 LG, BLACK	10
25	012345-25	BHSCS, M12-1.75, 25MM LG, BLACK	6
26	000633-05	SHOULDER SCREW, 5/16 DIA, 5/8 LG (1/4-20UNC)	2
27	012342-10	T-NUT, 10mm, 1/4-20UNC THREADS	20
28	000207-06	WASHER, FLAT, SAE, 1/4 DIA, 5/8 OD, 9/32 ID, ZINC	11
29	012355-01	HANDLE, TEE	1
30	012336-06	WASHER, FLAT, TEFLON, WHITE, 1/16 THK, .390 ID. x .875 OD.	2

**Part #:** AGL-64-K4314-1**Appl #:****Assy #:** AGLD4313-1**BOM Rev:** I**Model #:****Rev:****Rev:** E**Date:** 2/28/2002**Description:** EASY WEB INFEED TABLE ASSEMBLY, AGL64i

Item:	Part #:	Description:	Qty:
31	001398-03	WIRE ROPE, VINYL COATED, 1/8 DIA RED	8
32	001399-03	SPLICE, WIRE ROPE, ALUMINUM, 1/8 DIA	2
33	001409-04	EYELET, END FITTING, GAS SPRING, M6 THREAD	3
34	012356-20	SSS, CUP PT, M6-1.0mm, 20mm LG. BLACK	1
35	012345-50	BHSCS, M12-1.75, 50MM LG, BLACK	1
36	000135-16	SSS, CUP PT, 3/8-16UNC, 1 LG, BLACK	1
37	000061-08	BHSCS, 5/16-18UNC, 1 LG, BLACK	2
38	000195-06	NUT, HEX, JAM, 5/16-18UNC, ZINC	2
39	000417-10	COLLAR, SHAFT, 2-PIECE, .63 DIA 7/16 WIDE	2
41	000035-12	SHCS, #10-32UNF, 1-1/2 LG, BLACK	2
42	012363-01	CONNECTION SCREW, M12 x 30mm LG.	1
44	012054-04	PIN, COTTER, 3/32 DIA. x 1-1/4 LG.	2



# Bill Of Material

**Part #:** AGL-64-K4315

**Appl #:**

**Assy #:** AGLC4316

**BOM Rev:** C

**Model #:**

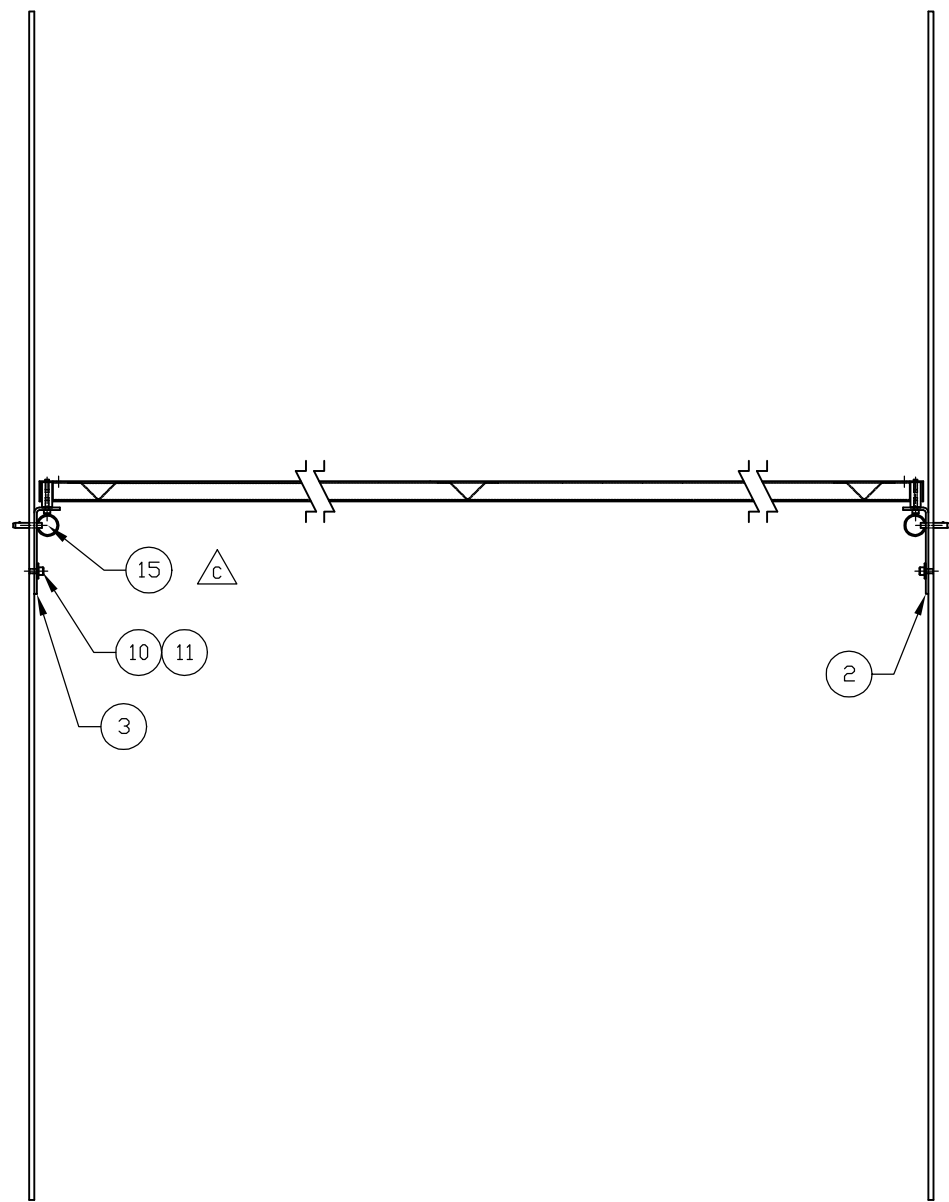
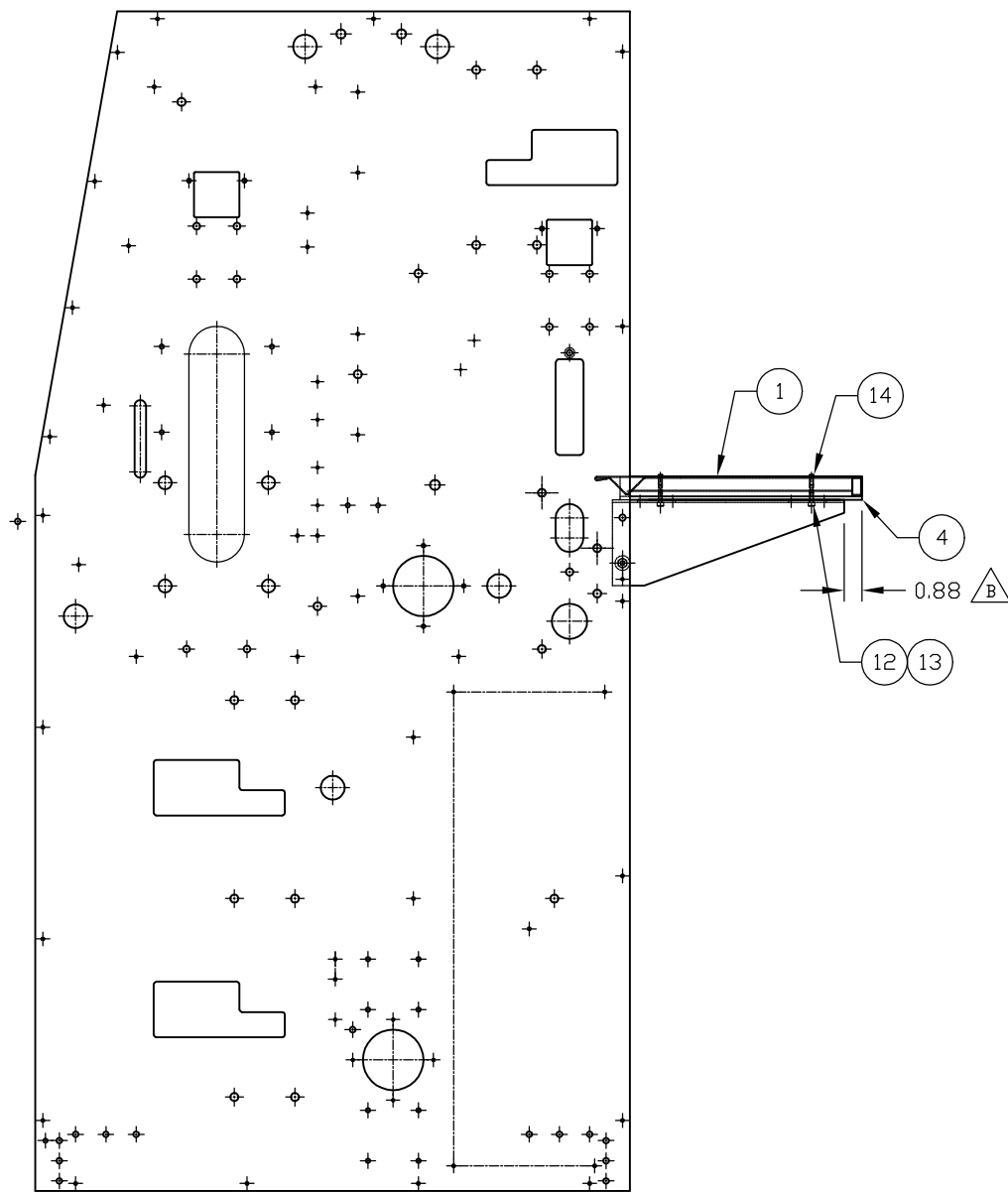
**Rev:**

**Rev:** C

**Date:** 1/15/2002


**Description:** OUTFEED TABLE ASSEMBLY, AGL64i

Item:	Part #:	Description:	Qty:
1	AGL-64-C0955-01	INFEED TABLE, REMOVABLE (LIGHT GREY)	1
2	AGL-64-B0083-01	TABLE SUPPORT, LEFT HAND (LIGHT GREY)	1
3	AGL-64-B0082-01	TABLE SUPPORT, RIGHT HAND (LIGHT GREY)	1
4	AGL-64-B0923	MOUNTING ENDS, OUTFEED TABLE	2
10	000009-04	SHCS, 1/4-20UNC, 1/2 LG, BLACK	2
11	000207-06	WASHER, FLAT, SAE, 1/4 DIA, 5/8 OD, 9/32 ID, ZINC	2
12	000007-04	SHCS, #10-24UNC, 1/2 LG, BLACK	4
13	000207-04	WASHER, FLAT, SAE, #10 DIA, 1/2 OD, 7/32 ID, ZINC	4
14	000129-08	SSS, CUP PT, #10-24UNC, 1/2 LG, BLACK	4
15	012133-03	PIN, QUICK RELEASE, 1/4 DIA. x .8 LG.	2
16	012029-03	LANYARD, QUICK RELEASE PIN, 6" LG., MTG. TAB	2



C	CHANGED TO 1/4 DIA. PINS	9-22-06	GFT	
B	ADDED DIMENSION, REVISED NOTATION	7-19-05	GFT	
A	ADDED NOTE AND #15	2-27-02	GFT	
REV NO.	DESCRIPTION	DATE	INT.	ECN

BREAK ALL SHARP EDGES				
DO NOT SCALE DWG.				
UNLESS OTHERWISE SPECIFIED		MAT'L: AGLK4315		
		FINISH:		
0.00	+/-0.015	JOB NO.	QTY.	DWG. BY.
0.000	+/-0.005			CHK BY
ANGLES +/- .5°		GFT		

 Advanced Greig Laminators, Inc. 801 Burton Blvd. DeForest, WI 53532		OUTFEED TABLE ASSY	
		AGL64i	
SCALE: 1/6 = 1		DWG. NO.	
DATE: 1-15-02		AGL-64-C4316	
REV.			C

# Bill Of Material

**Part #:** AGL-64-K4223

**Appl #:**

**Assy #:** AGLB4222

**BOM Rev:** H

**Model #:**

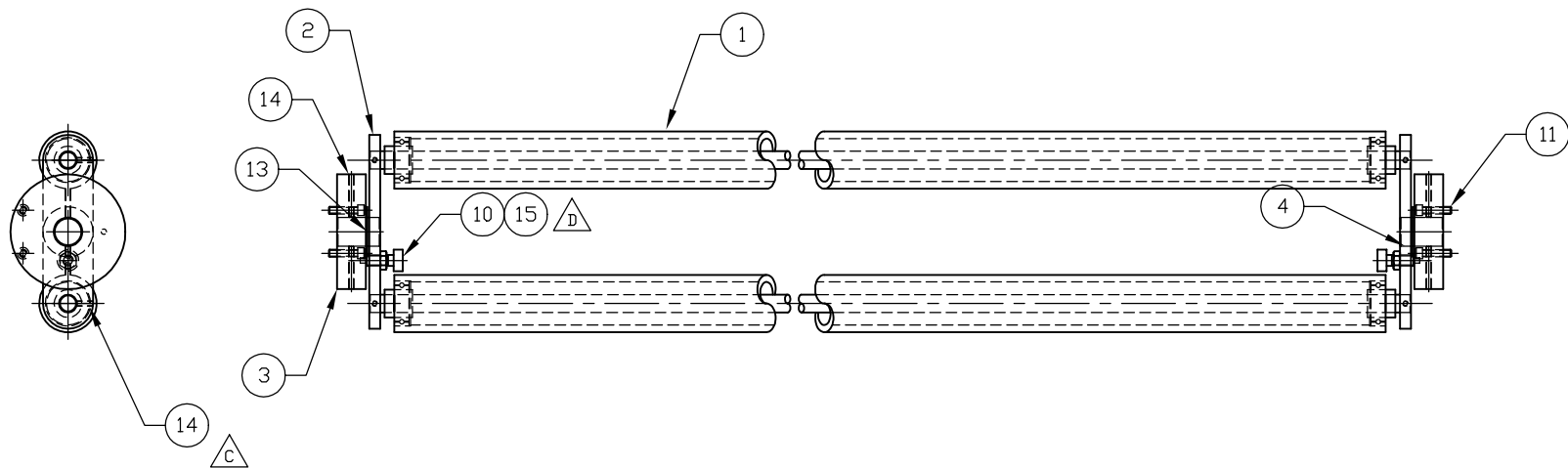
**Rev:**

**Rev:** D

**Date:** 3/6/2002

**Description:** CURL CAM ASSEMBLY, AGL64


Item:	Part #:	Description:	Qty:
1	AGL-64-B4241	CHILL ROLLER SUB ASSY	2
2	AGL-XX-B4219	ARM, CHILLER ROLL	2
3	AGL-XX-B4330	BRACKET, CHILLER ROLL	2
4	AGL-XX-B4221	SHAFT, CHILLER ROLL	2
10	012143-03	PLUNGER, KNURLED KNOB,LOCKING, 3/8-16UNC	2
11	000009-08	SHCS, 1/4-20UNC, 1 LG, BLACK	4
13	012368-16	WASHER, FLAT, DELRIN, WHITE, 1/16 THK, 1.03 ID. x 1.75 OD.	4
14	000129-08	SSS, CUP PT, #10-24UNC, 1/2 LG, BLACK	8
15	000195-07	NUT, HEX, JAM, 3/8-16UNC, ZINC	2



ASSEMBLY NOTES:

1. APPLY GREASE TO SHAFT (#4) BEFORE PLACING ARMS (#2) OVER THEM.

3. ASSEMBLY MOUNTS IN THE LOWEST SET OF HOLES IN THE SIDEPLATES

					BREAK ALL SHARP EDGES				 Advanced Greig Laminators, Inc. 801 Burton Blvd. DeForest, WI 53532						
					DO NOT SCALE DWG.										
D	ADDED 15	9-25-06	GFT		UNLESS OTHERWISE SPECIFIED	MAT'L: AGLK4223, AGLK4735 AGLK4823, AGLK5961				CHILLER ROLLER ASSY					
C	#14 WAS #12, REVISED NOTATION	7-19-05	GFT			FINISH:									
B	ADDED #12 BACK	3-3-03	GFT			0.00 +/-0.015 0.000 +/-0.005									
A	REMOVED #12	11-27-02	GFT			0.00 +/-0.015 0.000 +/-0.005									
REV NO.	DESCRIPTION	DATE	INT.	ECN	ANGLES +/- .5°				JOB NO.	QTY.	DWG. BY.	CHK BY	SCALE: 1/4" = 1	DWG. NO.	REV.
											GFT		DATE: 11-16-01	AGL-64-B4222	D

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# Bill Of Material

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**Part #:** AGL-64-K4326

**Appl #:**

**Assy #:** AGLC4327

**BOM Rev:** -

**Model #:**

**Rev:**

**Rev:** -

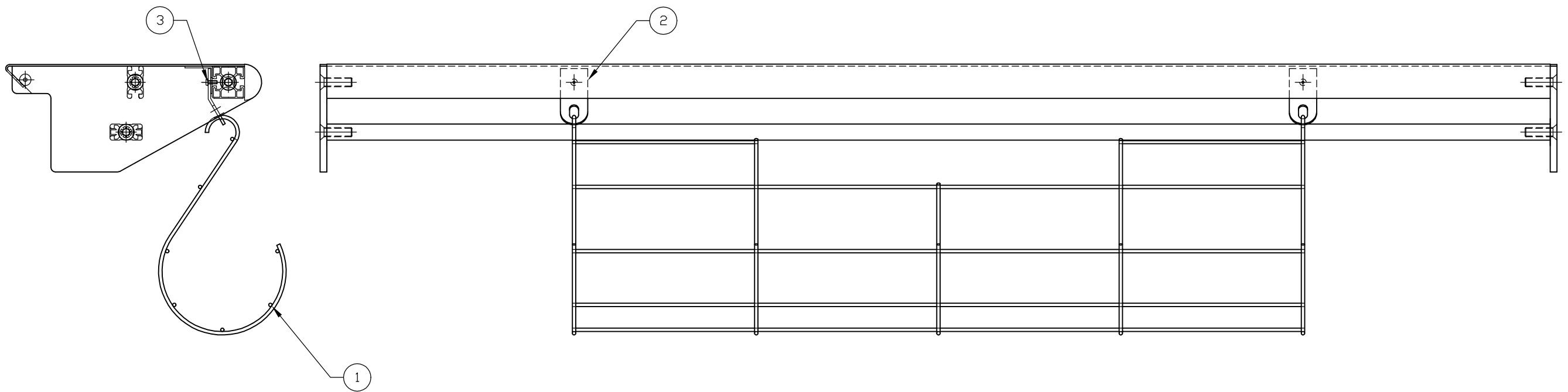
**Date:** 1/17/2002

**Description:** INFEEED BASKET ASSEMBLY

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Item:	Part #:	Description:	Qty:
1	AGL-64-D4329	INFEEED BASKET	1
2	AGL-XX-B4328	HANGING BRACKET, BASKET	2
3	000071-04	BHSCS, #10-32UNF, 1/2 LG, BLACK	2

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REV NO.	DESCRIPTION	DATE	INT.	ECN

BREAK ALL SHARP EDGES			
DO NOT SCALE DWG.			
UNLESS OTHERWISE SPECIFIED	MAT'L: AGLK4326		
	FINISH:		
	JOB NO.	QTY.	DWG. BY, CHK BY
0.00 +/-0.015			GFT
0.000 +/-0.005			
ANGLES +/- .5°			

 Advanced Greig Laminators, Inc. 801 Burton Blvd. DeForest, WI 53532			INFEED BASKET ASSEMBLY	
SCALE: 1/4" = 1'		DWG. NO. AGL-64-C4327		REV.
DATE: 1-17-02				

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# Bill Of Material

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**Part #:** AGL-64-K5033-1

**Appl #:**

**Assy #:** AGLB5034

**BOM Rev:** B

**Model #:**

**Rev:**

**Rev:** B

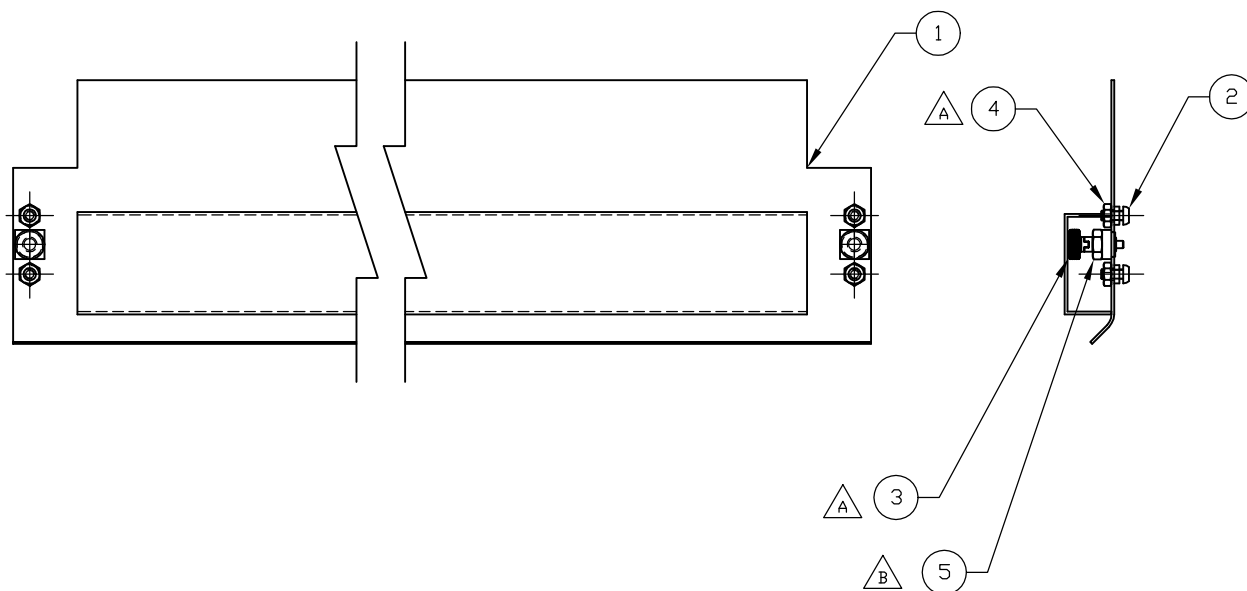
**Date:** 6/12/2003

**Description:** INFEEED HOLD DOWN, 64/6400

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Item:	Part #:	Description:	Qty:
1	AGL-64-C2904-01	INFEEED HOLD DOWN, 64/6400 SERIES (LIGHT GREY)	1
2	000055-03	BHSCS, #8-32UNC, 3/8 LG, BLACK	4
3	012143-08	PLUNGER, KNURLED KNOB,LOCKING, 1/4-20UNC	2
4	000201-03	NUT, HEX, #8-32UNC, ZINC	4
5	000195-05	NUT, HEX, JAM, 1/4-20UNC, ZINC	2

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LOC TITE IN THE BHSCS  
WITH BLUE LOC TITE. LEAVE  
APPROX .06 GAP FOR REMOVABLE  
TABLE, AND .10 GAP FOR EASY WEB  
TABLE.

**BREAK ALL SHARP EDGES**

**DO NOT SCALE DWG.**

UNLESS  
OTHERWISE  
SPECIFIED

0.00  $\pm$ 0.015  
0.000  $\pm$ 0.005

ANGLES  $\pm$ 0.5°

MAT'L:

AGLK5033  
AGLK5033-1

FINISH:

JOB NO.

QTY.

DWG. BY.

CHK BY

GFT



Advanced Greig Laminators, Inc.  
801 Burton Blvd.  
DeForest, WI 53532

**INFEED HOLD DOWN  
ASSEMBLY,**

SCALE: 1/2" = 1"

DWG. NO.

DATE: 4-25-03

**AGL-64-B5034**

REV.

**B**

B	ADDED JAM NUT	9-17-07	GFT	
A	ADDED #3 & 4	9-25-06	GFT	
REV NO.	DESCRIPTION	DATE	INT.	ECN

# Bill Of Material

**Part #:** AGL-XX-K2660

**Appl #:**

**Assy #:**

**BOM Rev:** C

**Model #:**

**Rev:**

**Rev:**

**Date:**

**Description:** ACCESSORIES KIT, 44/4400/64 SERIES/6400/6450

Item:	Part #:	Description:	Qty:
1	012235-01	CUTTER, ZIPPY	1
2	012236-01	ROLL ADHESIVE ERASER, PLAIN, SHRINKWRAPPED	1
3	001446-04	ALLEN WRENCH, LONG ARM, 3/32, T-HANDLE	1
5	001446-11	ALLEN WRENCH, LONG ARM, 1/4 T-HANDLE	1
7	012248	CLOTH, LOW LINT, 12x13	1
8	012249	ALCOHOL, ISOPROPYL, 1 PINT	1
10	001530-070	FUSE, SLO-BLO, 7.0A, 250V, 1/4X1-1/4"	2
11	X6	OPERATORS MANUAL	1