

Spinnit<sup>®</sup> HL-3 Hydraulic Paper Drill

USER'S MANUAL



***Before operating this equipment, please read these instructions completely and keep these operating instructions for future reference.***

Serial Number: \_\_\_\_\_  
Date of Purchase: \_\_\_\_\_  
Dealer: \_\_\_\_\_  
Address: \_\_\_\_\_  
\_\_\_\_\_  
Telephone Number: \_\_\_\_\_

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# 1 - Introduction

## 1.1 - Your New HL-3 Paper Drill

- Thank you for your purchase of the Spinnit®HL-3 Paper Drill.
- We ask that you take a moment to fill in the serial number and other information on the front cover of the manual. Please keep this manual as a reference for future use.
- For parts and service, please contact the Lassco-Wizer Dealer from whom you purchased the machine. If you require assistance in locating a Lassco-Wizer Dealer please contact our customer service department at 585-436-1934. Please have the model of your machine and the serial number when you call.
- If you wish to write to us, send correspondence to:

Lassco-Wizer  
Attn: Customer Service  
485 Hague Street  
Rochester, NY 14606

## 1.2 - Shipping Damage Inspection

- Remove the machine from the carton and inspect for any shipping damage. If any damage is present, report the damage to the carrier immediately; failure to do so may void any warranties.

## 2 - Safety

### 2.1 - Safety Instructions

- All operators must read and understand the Users Manual including all safety instructions before using this equipment. Failure to fully understand the safety instructions can result in personal injury. If after reading the manual you are still uncertain about use, please contact the dealer from whom you purchased the machine for assistance. If you need contact information for a Service Technician nearest you please call 585-436-1934.
- SAFETY OF THIS EQUIPMENT IS THE RESPONSIBILITY OF THE USER(S).
- Please read and follow all warning labels on your machine.
- INDUSTRIAL AND IN-PLANT USE ONLY. This equipment is for use in industrial and in-plant areas only and must be operated by trained and qualified personnel.
- WEAR PROPER APPAREL. Do not wear loose clothing, gloves, neckties, rings, bracelets, or other jewelry which may get caught in moving parts. Non slip footwear is recommended. Wear protective hair covering to contain long hair.
- Keep hands clear while operating machine.
- ALWAYS USE SAFETY GLASSES. Also use face or dust mask if drilling operation is dusty. Everyday eyeglasses only have impact resistant lenses, they are NOT safety glasses.
- KEEP GUARDS IN PLACE and in working order.
- Always disconnect the power before servicing this machine. Service should only be performed by a QUALIFIED TECHNICIAN.
- Always turn the machine to off mode and wait for the drills to stop spinning before installing or removing drill bits. Keep hands away from drills when operating. PLEASE NOTE THAT THE DRILL BITS MAY BE HOT AFTER USE. PROCEED WITH CAUTION WHEN CHANGING THE DRILL BITS.
- DON'T USE IN DANGEROUS ENVIRONMENT. Don't use this machine in damp or wet locations, or expose it to rain. Keep work area well lighted.
- THIS MACHINE IS DESIGNED FOR ONE PERSON OPERATION. Never operate the machine with more than one person.
- This machine is equipped with Tilt Sensors. If the table begins to lift unevenly the machine will shut down.
- If any oil is visible around the base of the machine, stop use immediately and contact a Service Technician.

- This machine must never be turned on without the proper amount of oil. Contact a Service Technician if there is any concern about the oil.
- KEEP CHILDREN AWAY. All visitors should be kept a safe distance from the work area.
- MAKE WORKSHOP KID-PROOF with padlocks or master switches.
- DON'T FORCE MACHINE. It will do the job better and safer at the rate for which it was designed.
- USE RIGHT MACHINE. Don't force tool or attachment to do a job for which it was not designed.
- MAINTAIN MACHINE WITH CARE. Keep tools sharp and clean for best and safest performance. Follow instructions for lubricating and changing accessories.
- REMOVE ADJUSTING KEYS AND WRENCHES. Form habit of checking to see that keys and adjusting wrenches are removed from machine before turning it on.
- KEEP WORK AREA CLEAN. Cluttered areas and benches invite accidents.
- DISCONNECT MACHINE before servicing; when changing accessories, such as drill bits, drill blocks, and the like.
- REDUCE THE RISK OF UNINTENTIONAL STARTING. Make sure the power switch is in the off position before plugging in.
- USE RECOMMENDED ACCESSORIES. Consult the user's manual for recommended accessories. The use of improper accessories may cause risk of injury to persons.
- NEVER STAND ON MACHINE. Serious injury could occur if the machine is tipped.
- DON'T OVERREACH. Keep proper footing and balance at all times.
- CHECK DAMAGED PARTS. Before further use of the machine, a guard or other part that is damaged should be carefully checked to determine that it will operate properly and perform its intended function--check for alignment of moving parts, binding of moving parts, breakage of parts, mounting, and any other conditions that may affect its operation. A guard or other part that is damaged should be properly repair or replaced.
- NEVER LEAVE MACHINE RUNNING UNATTENDED. TURN POWER OFF. Don't leave machine until it comes to a complete stop.

# 2 - Safety

## 2.2 - Warning Labels

### English



- WARNING: DO NOT EXPOSE TO RAIN OR USE IN DAMP LOCATIONS.

	<b>⚠ WARNING</b>
	Read and understand operator's manual and all other safety instructions before using this equipment

<b>⚠ WARNING</b>
FOR INDUSTRIAL AND IN-PLANT USE ONLY.

	<b>⚠ WARNING</b>
	Entanglement hazard. Rotating parts. Do NOT operate with exposed long hair, jewelry or loose clothing.

	<b>⚠ WARNING</b>
	<b>Moving parts can crush and cut</b> <b>Keep hands clear while operating machine.</b>

	<b>⚠ WARNING</b>
	Risk of eye injury. Wear eye protection.

	<b>⚠ WARNING</b>
	Risk of Injury. Do NOT operate without guards in place.

	<b>⚠ WARNING</b>
	Drill bits may be hot after use. Allow drill bits to cool down before touching

	<b>⚠ DANGER</b>	
	<b>Severe shock hazard.</b> Only authorized personnel may service this equipment. Turn power OFF before entry.	

### French

- AVERTISSEMENT: NE PAS EXPOSER À LA PLUIE ET NE PAS UTILISER DANS LES EMPLACEMENTS HUMIDES

<b>⚠ AVERTISSEMENT</b>
Lire et bien comprende le manuel de l'opérateur avant d'utiliser cette machine. Le fait de ne pas suivre les consignes d'utilisation peut entraîner des blessures graves ou endommager l'équipement.

<b>⚠ AVERTISSEMENT</b>
POUR UTILISATION INDUSTRIELLE ET EN USINE SEULEMENT.

<b>⚠ AVERTISSEMENT</b>
Risque d'enchevêtrement. Pièces rotatives. Ne portez jamais de vêtements amples ou de bijoux et attachez-vous les cheveux lorsque vous opérez cette machine.

<b>⚠ AVERTISSEMENT</b>
Les pièces mobiles peuvent écraser et couper. Éloignez les mains lorsque vous opérez cette machine.

<b>⚠ AVERTISSEMENT</b>
Risque de blessures aux yeux. Protection des yeux nécessaire.

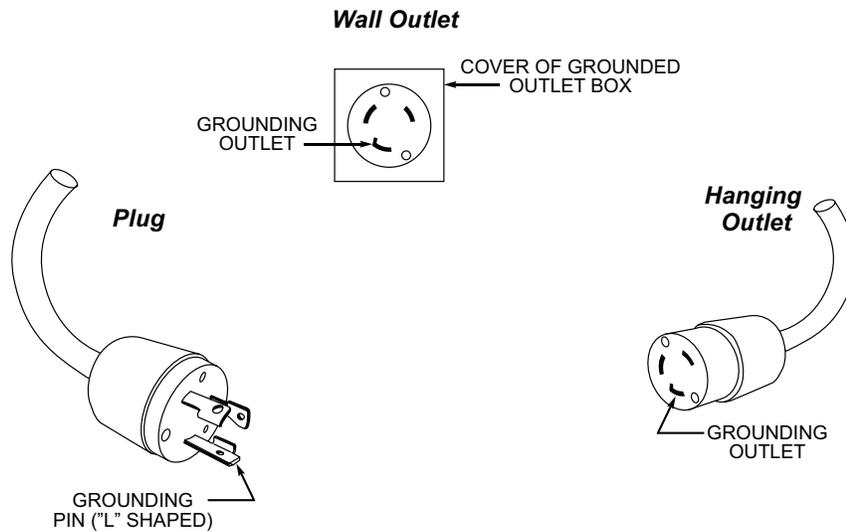
<b>⚠ AVERTISSEMENT</b>
Faire attention de ne pas se blesser. Ne pas utiliser cette machine sans la présence de tous les dispositifs de sécurité.

<b>⚠ AVERTISSEMENT</b>
Les outils de forage peuvent chauffer à l'usage. Laisser refroidir les outils de forage avant de les toucher.

<b>⚠ DANGER</b>
Grave risqué d'électrocution. Seul le personnel autorisé peut faire l'entretien de cet équipement. COUPEZ l'alimentation électrique avant d'entrer.

## 2.3 - Grounding Instructions

Diagram 2-10

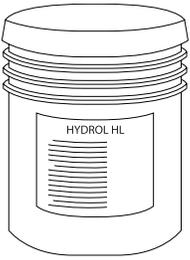


- In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This tool is equipped with an electric cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into a matching outlet that is properly installed and grounded in accordance with all local codes and ordinances.
- **DO NOT MODIFY THE PLUG PROVIDED.** If it will not fit the outlet, have the proper outlet installed by a **QUALIFIED ELECTRICIAN**.
- Improper connection of the equipment-grounding conductor can result in a risk of electric shock. The conductor with insulation having an outer surface that is green with or without yellow stripes is the equipment-grounding conductor. If repair or replacement of the electric cord or plug is necessary, do not connect the equipment-grounding conductor to a live terminal. Check with a **QUALIFIED ELECTRICIAN** or service personnel if the grounding instructions are not completely understood, or if in doubt as to whether the tool is properly grounded.
- **NEVER USE EXTENSION CORDS WITH THIS MACHINE.**
- If this machine is **PERMANENTLY CONNECTED**, it shall be connected to a supply circuit with a minimum rating of 30 Amps and a maximum over-current protection of 22 Amps.
- If this machine is **PERMANENTLY CONNECTED**, the supply circuit shall be provided with a means for locking the switch in the OFF position.
- If this machine is **PERMANENTLY CONNECTED**, the permanent connection must be installed by a **QUALIFIED ELECTRICIAN**.

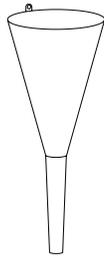
# 3 - Setting Up Your Machine

## 3.1 - Loose Items Inventory

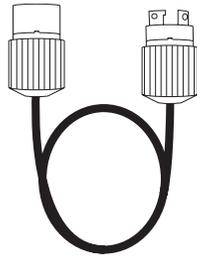
- Please remove and inspect the following items:



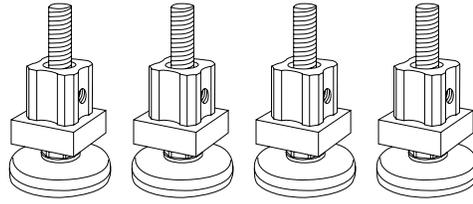
Hydrol HL: Hydraulic Oil (15 Liters)(1)



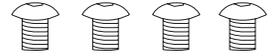
HG07: Plastic Funnel (1)



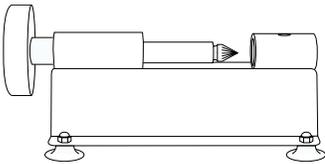
HE1A: Electrical Cord (1)



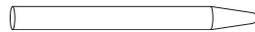
HG4A: Leveling Feet (4)



5/16"-18 x 1/2" screws (4)  
(these may be attached to the HG4A Leveling Feet)



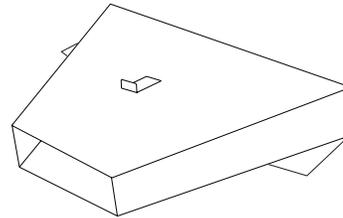
MS-1: Drill Sharpener (1)



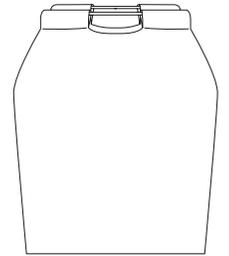
EBM-41: Sharpening Stone (1)



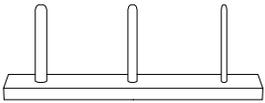
SPIN-EZE: Drill Bit Lubricant (1)



HA4A: Master Chip Chute (1)



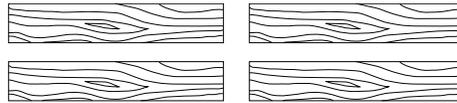
FMM6-652A: Chip Bag Assembly (1)



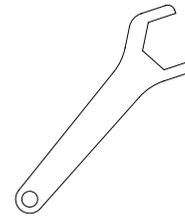
CC-2: Chip Clearer (1)



Hollow Drill Bits (3)  
(these items may be installed)



HG06: Drill Strips (4)



HG09: 7/8" Wrench (1)



HEX-18: 1/8" Wrench (1)

## 3.2 - Accessories Warning

- **USE RECOMMENDED ACCESSORIES.** Only use accessories approved by a Lassco-Wizer. The use of improper accessories may cause risk of injury to persons.

## 3 - Setting Up Your Machine

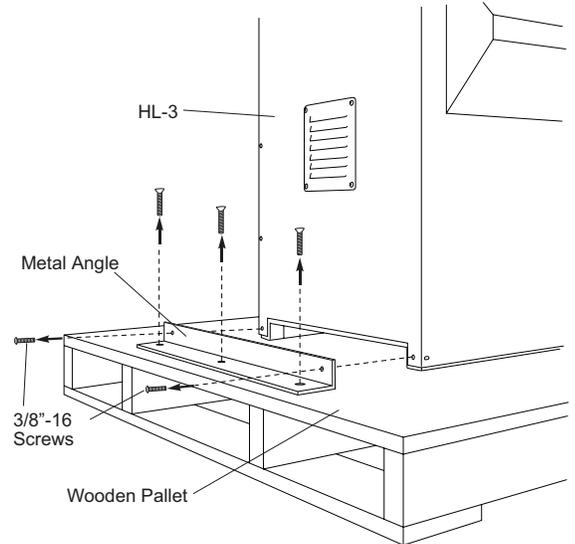
### 3.3 - Uncrating and Removing From the Pallet



**A FORK-LIFT MUST BE USED TO TRANSPORT THIS PALLET AND TO REMOVE THE HL-3 MACHINE FROM THE PALLET.**

- 3.3.1** Remove the wooden framing around the outside box.
- 3.3.2** Remove the box up and over the machine.
- 3.3.3** Remove the two Metal Angles on the sides of your machine by unscrewing all four (4) of the 3/8"-16 machine screws attaching it to the base of the HL-3 and removing all the screws securing the Metal Angles to the pallet as shown in diagram 3-10. Discard the Metal Angles.
- 3.3.4** Remove the HL-3 machine from the pallet by lifting it up and off being extremely careful not to tip the machine.

Diagram 3-10



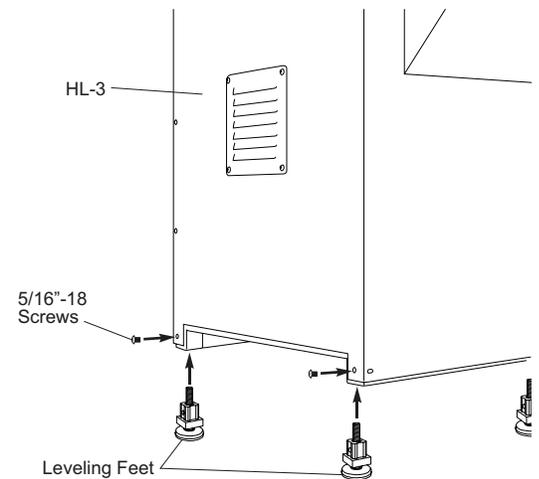
### 3.4 - Installing the Leveling Feet



**A FORK-LIFT MUST BE USED WHEN INSTALLING THE LEVELING FEET.**

- 3.4.1** Raising the machine up using a fork-lift, insert the four (4) Leveling Feet (HG4A) into the four (4) posts as shown in diagram 3-20. Make sure that the threaded hole on each of the Leveling Feet line up with the adjacent hole on each of the posts. Insert the four (4) 5/16"-18 screws included through the holes in the posts threading them into the Leveling Feet. Tighten down to secure.
- 3.4.2** Set the machine down and determine if the machine is level and make sure that it does NOT rock in any direction. If it does, determine which Leveling Feet need to be adjusted and whether they need to be adjusted up or down. Raise the machine back up using a forklift and turn the Leveling Feet either clockwise to raise the height; or counter-clockwise to lower the height. Repeat as needed until the machine is level and stable.

Diagram 3-20

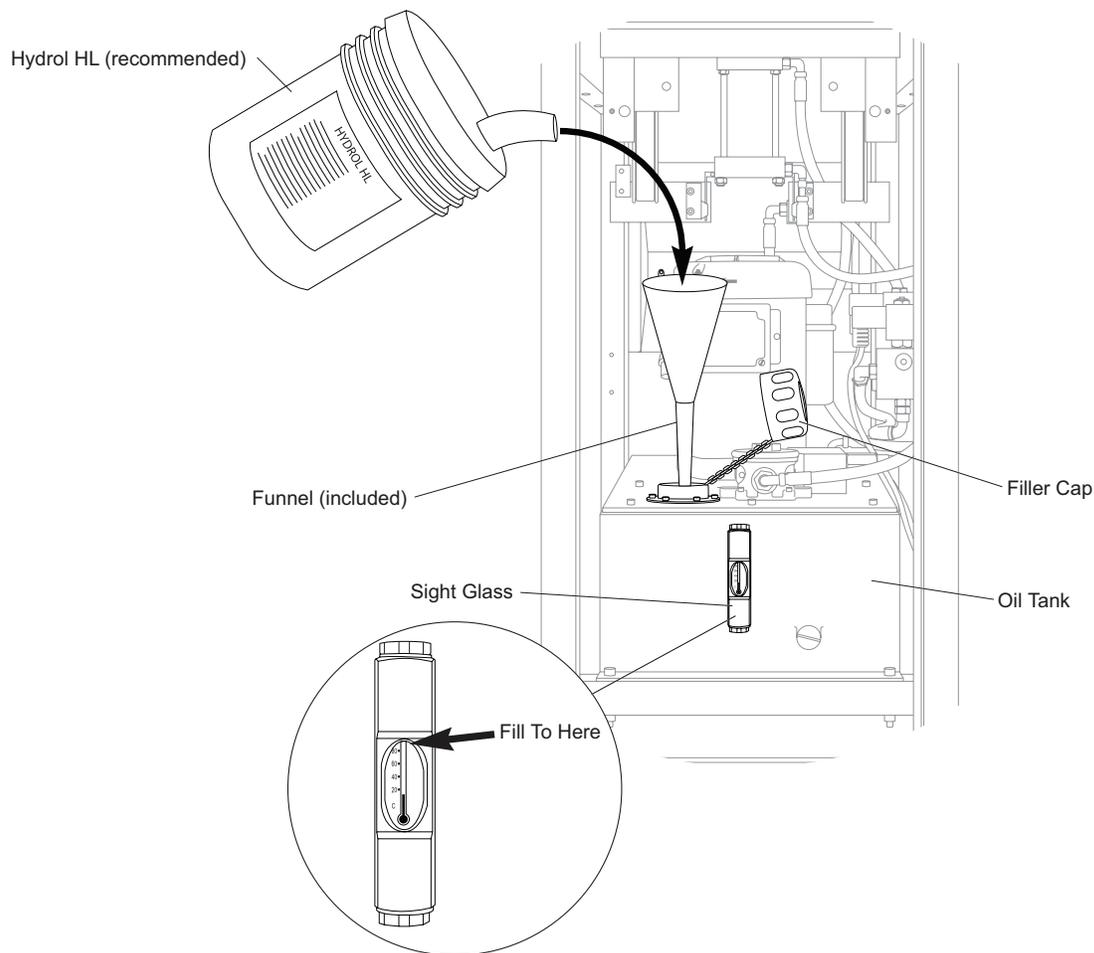


## 3 - Setting Up Your Machine

### 3.5 - Adding the Oil

- 3.5.1** Your HL-3 paper drill is partially filled with Hydraulic Oil and tested prior to shipping; you will need to add oil for proper operation. Access the Oil Tank by opening the rear panel of the machine. This requires you to turn the five (5) Pawl Latches with a flat head screwdriver counterclockwise a few turns which will unlatch the panel. This panel is hinged and will swing out allowing access to the internal mechanisms of the hydraulic lift.
- 3.5.2** Remove the Filler Cap by turning it counterclockwise. Insert the included Plastic Funnel into the Oil Tank and, using the included Hydrol HL Oil, fill the Oil Tank until the oil level reaches the top of the Sight Glass as shown in diagram 3-30. Wipe up any spillage immediately and dispose of appropriately. Replace the Filler Cap and tighten down.
- 3.5.3** Close the rear panel by holding it closed and turning the five (5) Pawl Latches clockwise until they are secure.

Diagram 3-30

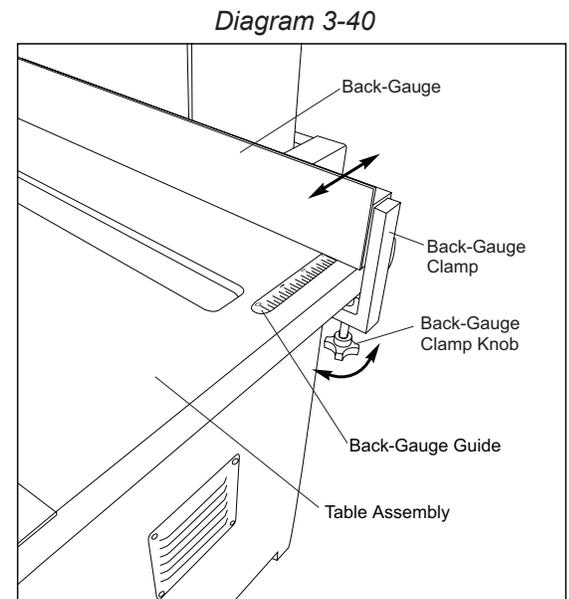


- 3.5.4** After the Hyrol Oil has been added it will be necessary to work air out of the lines before beginning operation. Using the Setup Switch (see page 11, section 4.1), raise and lower the table pedestal for approximately ten (10) minutes until the air is worked out of the hydraulic lines. The machine may make a "humming" noise until the air is worked out--this is normal.

## 3 - Setting Up Your Machine

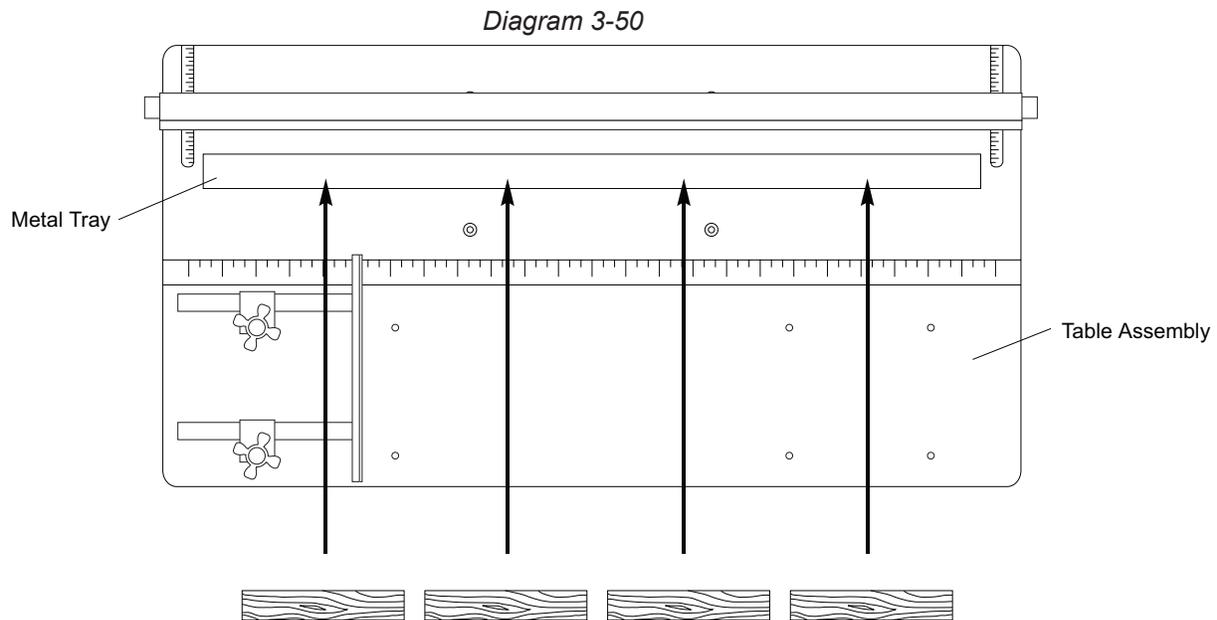
### 3.6 - Adjusting the Back-Gauge Assembly

- 3.6.1** Adjust the Back-Gauge to the desired throat depth using the two (2) small Back-Gauge Guides located on each back edge of the Table Assembly as shown in diagram 3-40. Loosen the Back-Gauge Clamp Knobs on the Back-Gauge Clamps (located on the underside of the Table Assembly) and, using the fore mentioned guides, make sure the Back-Gauge is square. Tighten down the Back-Gauge Knobs on the Back-Gauge Clamps when the Back-Gauge is adjusted as desired.



### 3.7 - Installing and Positioning the Drill Strips

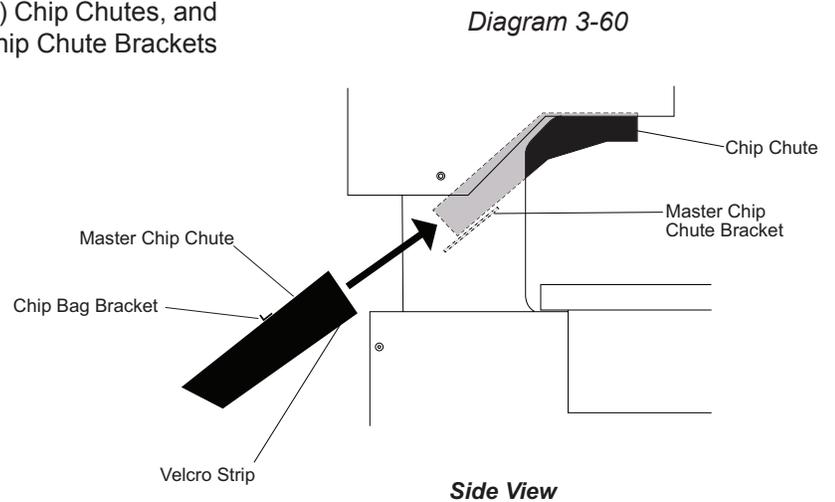
- 3.7.1** Slide the Drill Strip(s) (HG06) into the Metal Tray located on the Table Assembly as shown in diagram 3-50. Position the Drill Strip(s) so that they are directly beneath the Drill Bits when the Table rises. It is recommended that the drill strips be rotated and changed regularly as they wear. For additional information on Drill Strips see section 4.4 and section 4.8.



## 3 - Setting Up Your Machine

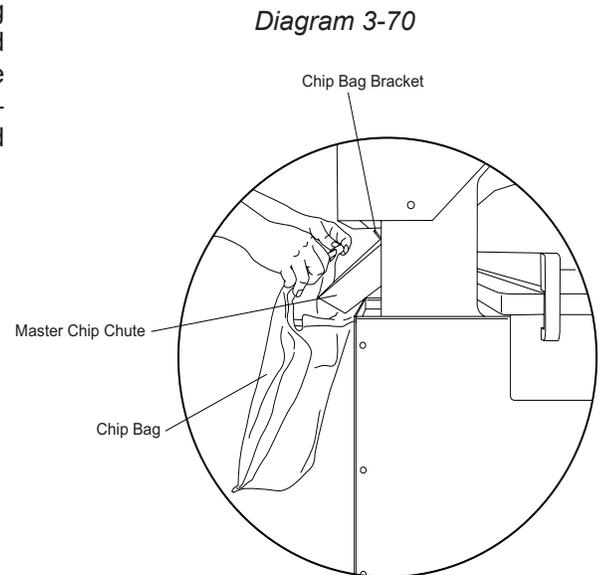
### 3.8 - Attaching the Master Chip Chute

- 3.8.1** Attach the Master Chip Chute (HA4A) to the rear of the machine as shown in diagram 3-60. Make sure that the Master Chip Chute fits completely over the openings of all three (3) Chip Chutes, and secure the Master Chip Chute to the Master Chip Chute Brackets using the Velcro adhesive.



### 3.9 - Attaching the Chip Bag

- 3.9.1** Attach the Chip Bag (FMM6-652A) to the machine by stretching the mouth of the bag over the Master Chip Chute (HA4A) and hooking the aluminum bar onto the metal bracket located on the top flat portion of the Master Chip Chute as shown in diagram 3-70. Please note that you must empty this bag as it becomes filled with chips; this will help to prevent back-up and clogging.

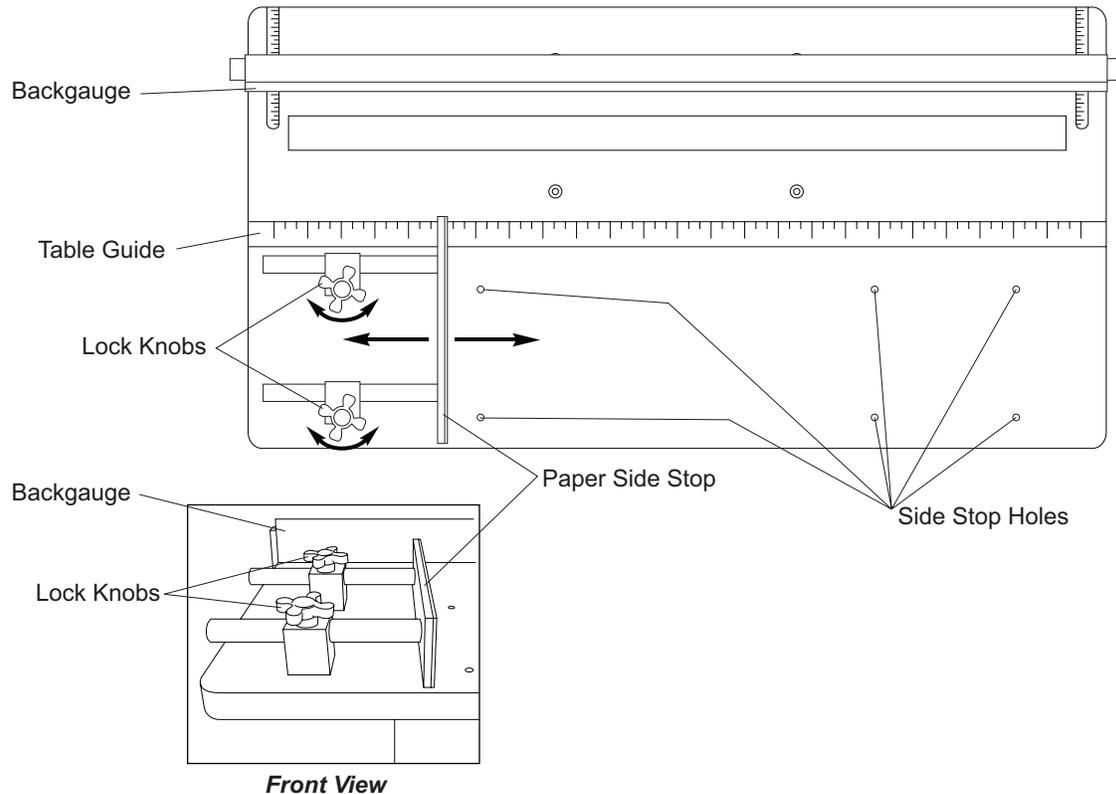


## 3 - Setting Up Your Machine

### 3.10 - Adjusting the Paper Side Stop

**3.10.1** The Paper Side Stop comes installed on the Table but may need to be adjusted to a different distance. After making sure the Back-Gauge is squared up as desired, place either your product or a square on the table so that it is properly aligned with the desired hole positions. Loosen the two (2) lock knobs on the Paper Side Stop and slide it until it is squared with your product as desired. Tighten down the two (2) lock knobs to secure the Paper Side Stop in place. The Paper Side Stop can be moved to another one of the four (4) sets of Side Stop Holes by loosening the lock knobs on the Paper Side Stop completely and moving the whole Paper Side Stop assembly so that the lock knobs line up with the desired set of Side Stop Holes. Insert and tighten the lock knobs and position the Paper Side Stop as desired. Refer to diagram 3-80.

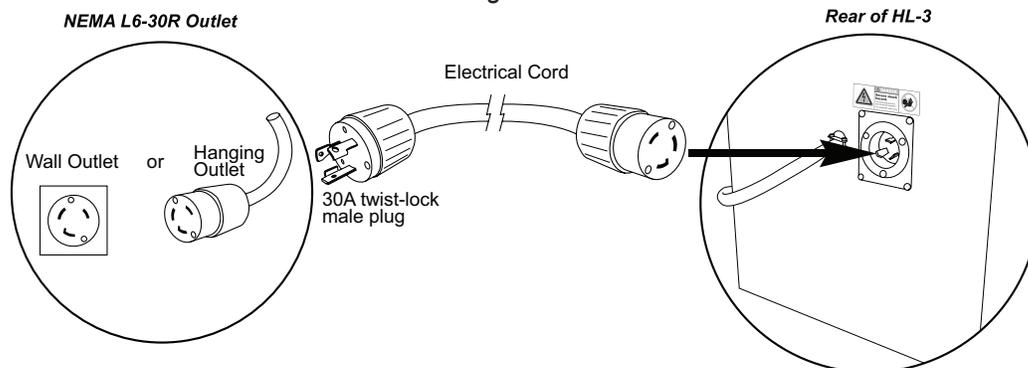
Diagram 3-80



### 3.11 - Electrical Instructions

**3.11.1** Your HL-3 comes with an Electrical Cord (HE1A) containing the plug to fit into the machine with an 8', 10 gauge, 3 conductor cable fitted with a 30A twist-lock male plug. You will need a NEMA L6-30R outlet for this plug. A different plug may be required due to local electrical requirements and you may need to contact a Service Technician or an Electrician to safely attach a plug to fit your desired 208-230 single-phase outlet. This machine requires a 30 Amp circuit for safe operation; the machine has a full load draw of 12.8 Amps.

Diagram 3-90

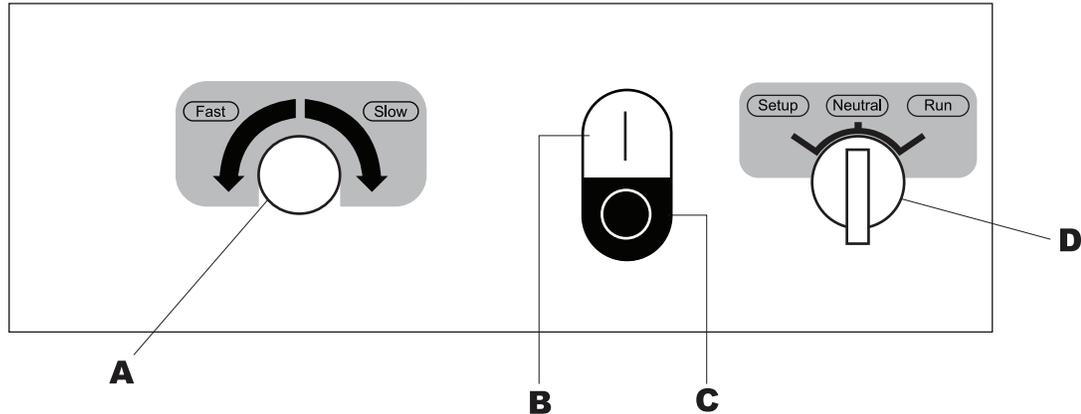


## 4 - Operation

### 4.1 - Understanding the Control Panel

- 4.1.1** Using diagram 4-10, make all user's familiar with the Control Panel on the front of your HL-3. Below the diagram are descriptions of all the controls and there respective functions.

Diagram 4-10

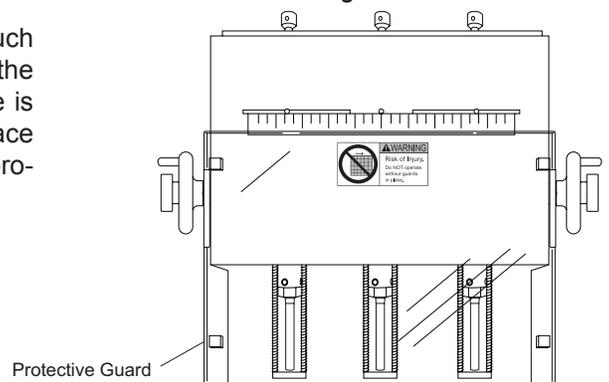


- A Speed Control Knob:** This control allows for the adjustment of the table lift speed. Turning this knob clockwise slows down the table lift; turning this knob counterclockwise speeds up the table lift.
- B Power ON:** Push down to turn the power on to the machine. The drills will not turn when the power is on unless the machine is in “Run” mode.
- C Power OFF:** Push down to turn the power to the machine off.
- D Run / Setup Knob:**
- Run** - Turn the Run / Setup Knob clockwise so that the white mark is aligned with the black “Run” mark. The spindles will starting spinning and the Foot Pedal becomes active.
  - Neutral** - The Hydraulic Motor will run but the Spindle Motor will be off. The foot pedal in inoperative. Use this mode to warm up the hydraulics for five minutes before operating the machine.
  - Setup** - Turn the Run / Setup Knob counterclockwise so that the white mark is aligned with the black “Setup” mark. The knob must be held in place while leveling the drill bits. When held in the “Setup” position, the Table will rise completely allowing you to level the drills bits. When you release the knob the Table returns to its lowered position.

### 4.2 - Protective Guard

- 4.2.1** Your HL-3 comes with a protective guard installed. DO NOT operate this machine without the guard in place.
- 4.2.2** Please note that when you are performing certain operations such as removing and installing drill bits, you will need to move the guard out of the way. Making sure the power to the machine is disconnected or locked-out, push the guard up and hold in place while performing necessary operations or maintenance. The protective guard should not be removed during operation.

Diagram 4-20



## 4 - Operation

### 4.3 - Drill Bit Removal and Installation



**CAUTION: DRILL BITS MAY BE HOT AFTER USE. ALLOW DRILL BITS TO COOL DOWN BEFORE TOUCHING.**

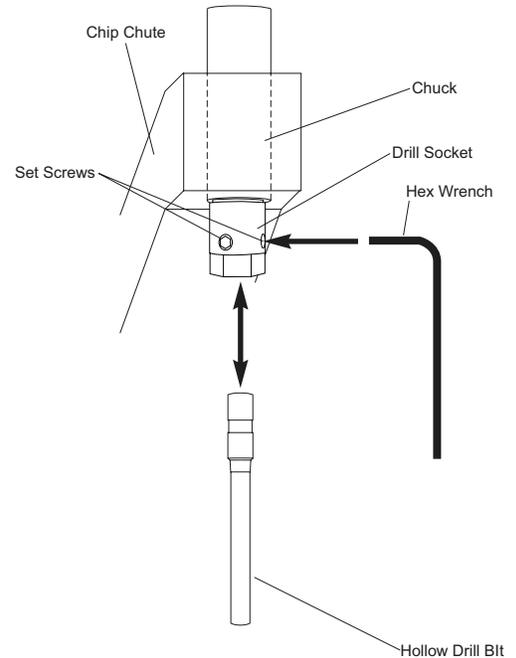


**BEFORE REMOVING OR INSTALLING THE DRILL BITS, DISCONNECT OR LOCK-OUT THE POWER SUPPLY.**

**4.3.1** To remove a drill bit from the machine: Loosen the two (2) set screws with the provided hex wrench. Then grasp the Drill Bit and pull it out of the socket.

**4.3.2** To Install a drill bit in the machine: Insert the desired drill bit into the drill socket all the way making sure there are no obstructions. Tighten down the two (2) set screws making sure they lock the drill bit into the drill socket securely.

Diagram 4-30

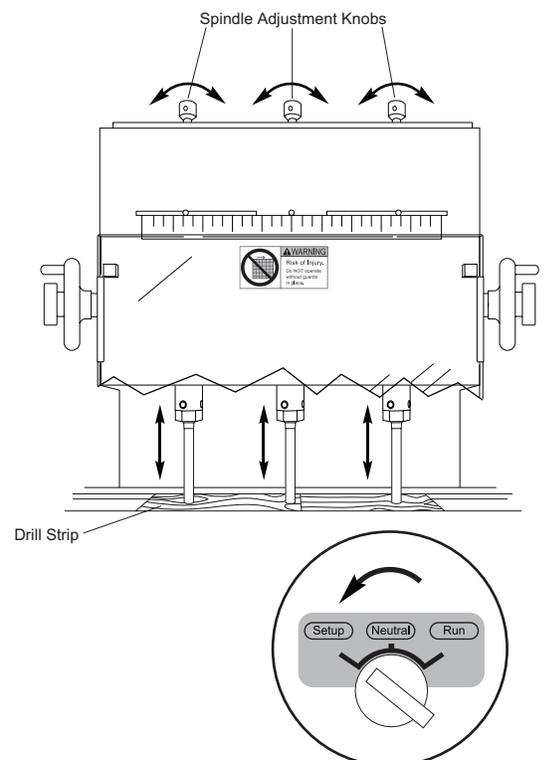


### 4.4 - Leveling the Drill Bits

**4.4.1** After your drill bits are installed raise the drill bits by turning the spindle adjustment knobs counterclockwise. Turn the machine on and put the drill in Setup mode. This will require you to hold the switch on Setup while adjusting the bits. After the Table rises completely turn the Spindle Adjustment Knobs clockwise to lower the drill bits making them all level with each other and just touching the Drill Strip. The Drill Strip is there to protect the table in case of an accident, however it is not recommended to drill into the Drill Strip. This can cause the drill bits to dull quickly.

**4.4.2** We recommend using a piece of Card Stock under the product you are drilling. When using Card Stock, level the drill bits so that they lightly score the Card Stock when in Setup mode. This will keep your drill bits from dulling quickly and keep the drill bits from drilling into the Drill Strip.

Diagram 4-40



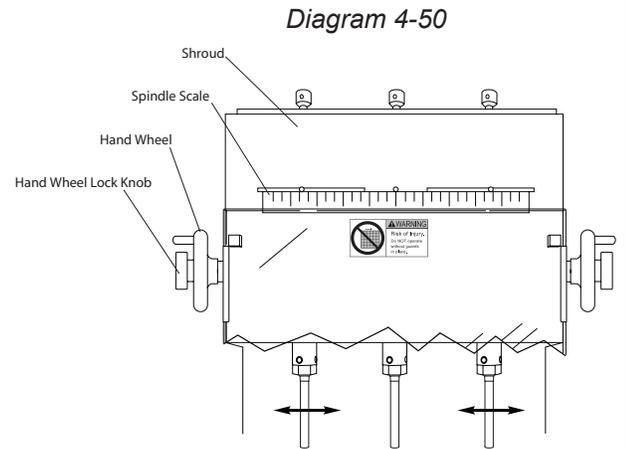
## 4 - Operation

### 4.5 - Adjusting the Distance Between Holes

**4.5.1** To adjust the outside spindles to a desired spacing, loosen the Hand Wheel Lock Knob. Turn the Hand Wheel to move the spindle farther away from the center or to move the spindle closer to the center. Please note that the direction you turn the Hand Wheel depends on the side of the machine. Use the Spindle Scale located on the front of the Shroud as a guide. When the spindle is at its desired location tighten the Hand Wheel Lock Knob by turning clockwise. Repeat with the second outside spindle.

**4.5.2** The center spindle is stationary.

**4.5.3** When drilling fewer than three holes simply remove undesired drill bits.

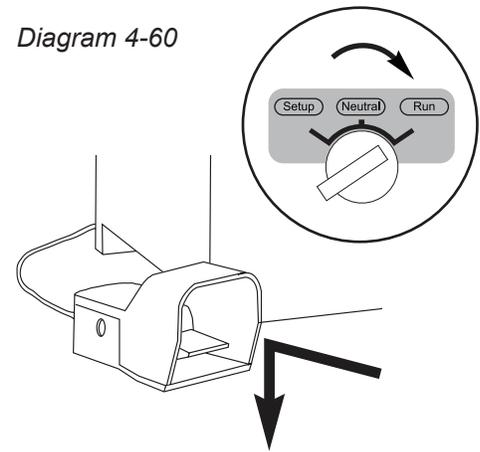


### 4.6 - Drilling

**4.6.1** After the drill bits have been leveled and the spindles adjusted you are ready to begin drilling. Put the machine in Run mode and set the product on the table as desired. Press down and hold the foot pedal making the Table rise until the drill bits drill through the complete stack. Release the foot pedal to lower the table. This machine does not have a cycle. Releasing the foot pedal at any time will automatically make the Table lower. Refer to the Trouble Shooting Guide for any problems.

**4.6.2** In an emergency situation release the foot pedal to lower the table.

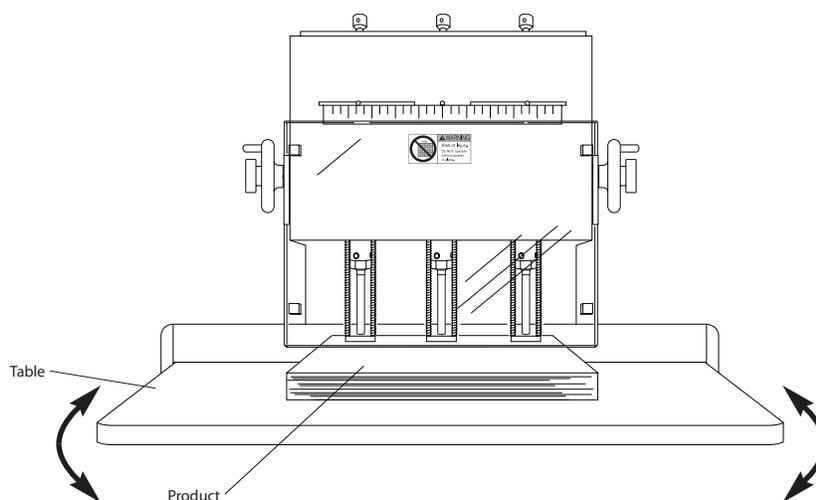
*Diagram 4-60*



### 4.7 - Tilt Sensors

**4.7.1** Your HL-3 comes equipped with Tilt Sensors in the table lift system. If your machine shuts down during operation, it may be because the table is lifting unevenly. Take your foot off of the pedal. Put the control panel into Neutral mode. Turn the power back on. The table should relax. If the table does not return to its lowest point, you may need to physically push the table down. See the *Troubleshooting Guide* for more information.

*Diagram 4-70*



## 4 - Operation

### 4.8 - Tips on Drilling

- 4.8.1** Use a sharp drill bit at all times... Using the MS-1 drill bit sharpener, sharpen your drill bits regularly. Apply light pressure when sharpening. Too much pressure may cause flaring of the tip. (Once a drill bit has a flared tip, it becomes defective.)
- 4.8.2** Sharpening Stone... Use to debur the outside cutting edge of the drill bits for better performance.
- 4.8.3** Lubricate drill bits occasionally... Use Drill-Ease or Spin-Eze. While the drill is running, simply touch the Drill-Ease stick to the drill bit or brush on the Spin-Eze. Drill through scrap to remove any excess. This will allow for a smoother cut.
- 4.8.4** Drill Strips...When drilling, a drill bit must stop slightly above the drill strip. Replace worn out drill strips regularly to ensure proper drilling.

## 5 - Maintenance

### 5.1 - Safety

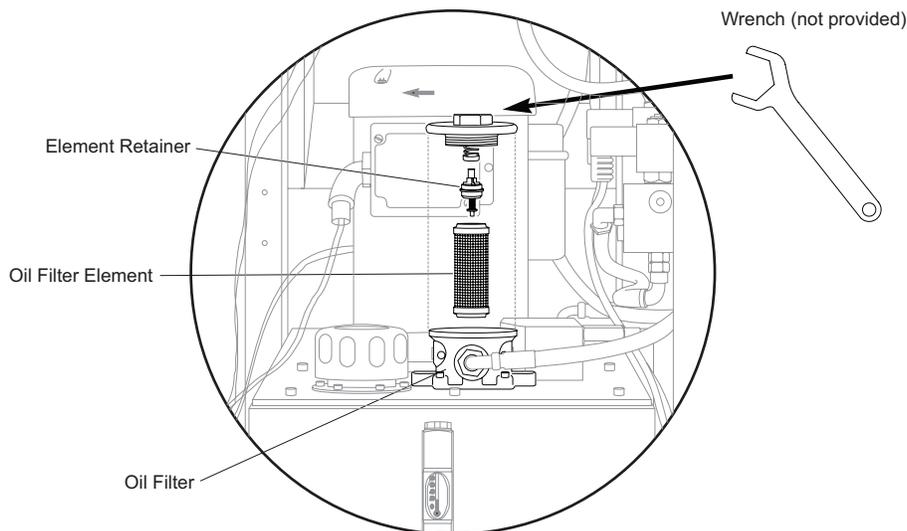


***ALWAYS DISCONNECT THE POWER BEFORE PERFORMING MAINTENANCE ON THIS MACHINE. MAINTENANCE SHOULD ONLY BE PERFORMED BY A QUALIFIED TECHNICIAN.***

### 5.2 - Changing the Oil Filter Element

- 5.2.1** The Filter Element should be changed every 2100 Machine Hours. Machine Hours are defined as the period of time that the machine is turned on and pumping oil, regardless of being operated or not (Even when not drilling, the machine is pumping oil continuously).
- 5.2.2** To change out the Oil Filter Element, use a wrench (not provided) to remove the cap on the Oil Filter as shown. Remove the used Oil Filter Element by pulling it out. Remove the Element Retainer and insert it into the new Oil Filter Element. Insert the new Oil Filter Element into the Oil Filter. Replace the cap of the Oil Filter so that it aligns with the top of the Element Retainer and tighten it down using the same wrench.

Diagram 5-10

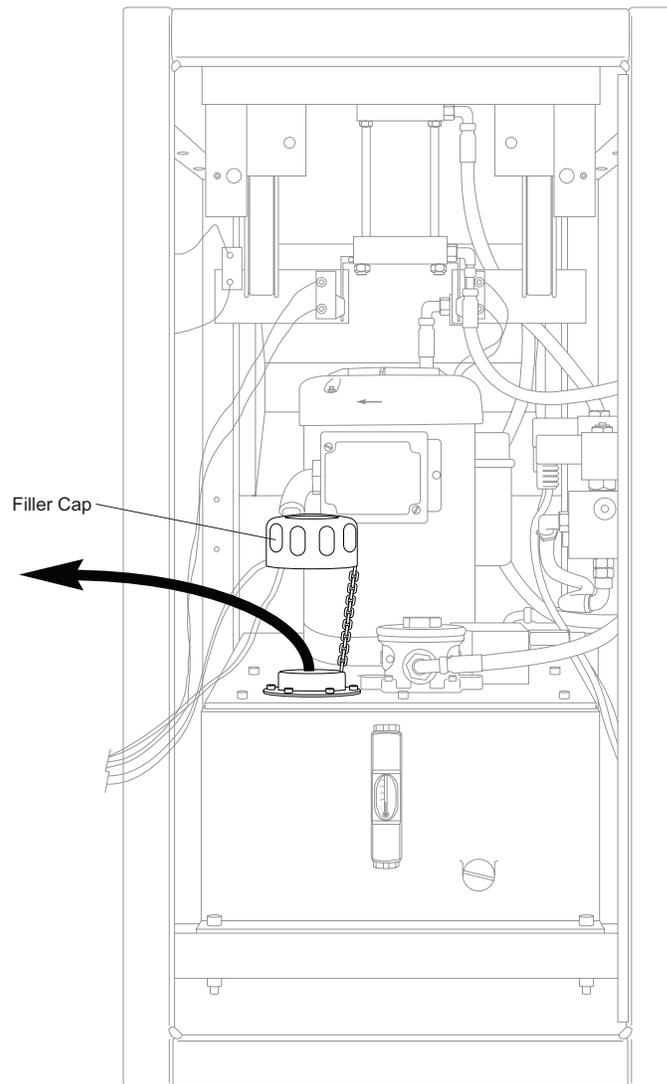


# 5 - Maintenance

## 5.3 - Changing the Hydraulic Oil

- 5.3.1** When using Lassco-Wizer Hydrol HL, the Hydraulic Oil should be changed every 2100 Machine Hours. Machine Hours are defined as the period of time that the machine is turned on and pumping oil, regardless of being operated or not (Even when not drilling, the machine is pumping oil continuously).
- 5.3.2** If an equivalent oil (other than Hydrol HL) is used, this maintenance schedule may vary, depending on the manufacturer's specifications. Some hydraulic oils break down when their temperature exceeds 120°F (48.9°C). Hydrol HL will maintain its consistency until it reaches 210°F (98.9°C).
- 5.3.3** Access the Oil Tank by opening the rear door of the machine. This requires you to turn the five (5) Pawl Latches with a flat head screwdriver counterclockwise a few turns to unlatch the door.
- 5.3.4** To drain the Hydraulic Oil: Remove the Filler Cap by twisting it counterclockwise. Drain the Hydraulic Oil using either a pump system to pump the oil out of the machine, or use a syphon system to drain out the oil. It is important to remove as much of the oil as possible.
- 5.3.5** Discard the used hydraulic oil making sure to follow all local regulations when disposing.

Diagram 5-20

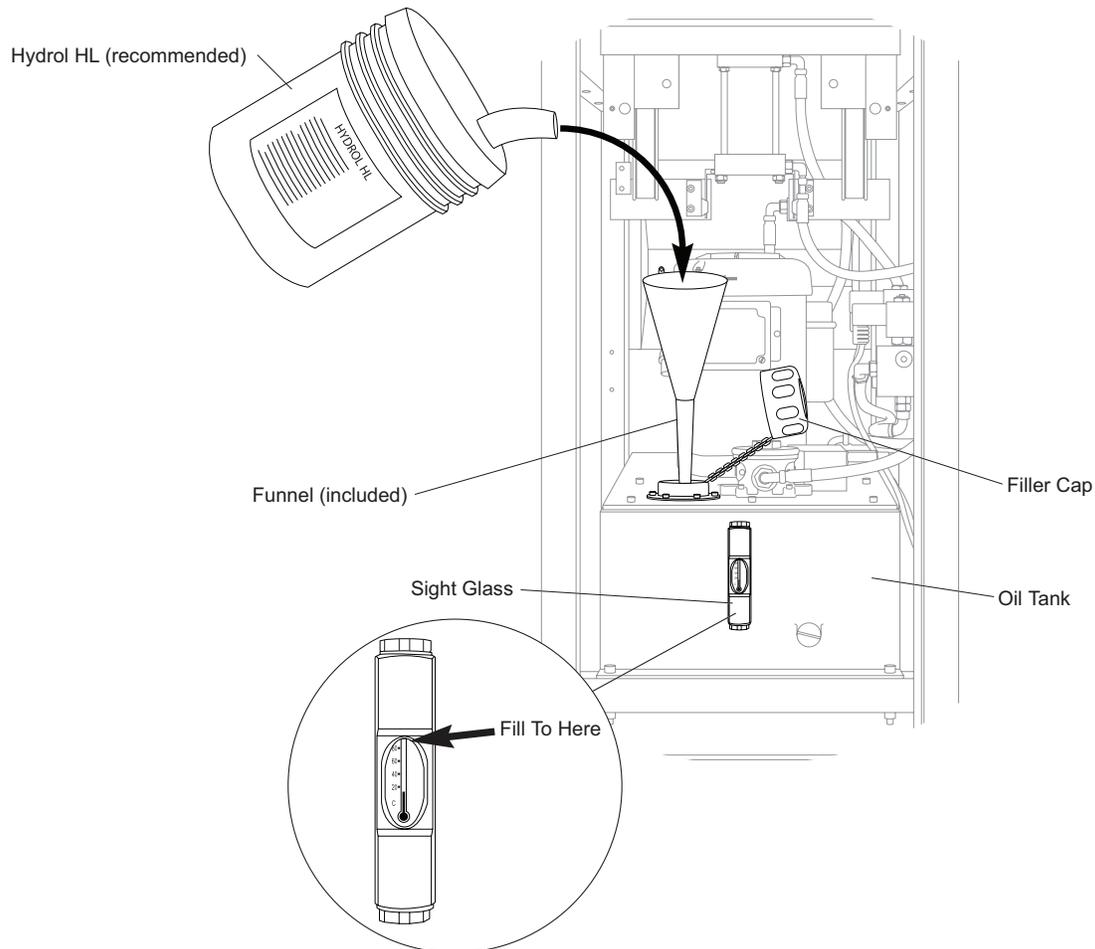


## 5 - Maintenance

### 5.3 - Changing the Hydraulic Oil

- 5.3.6** Insert the included Plastic Funnel into the Oil Tank and, using a new batch of Hydrol HL Oil or an equivalent brand, fill the Oil Tank until the oil level reaches the top of the Sight Glass as shown in diagram 5-30. Wipe up any spillage immediately and dispose of appropriately. Replace the Filler Cap and tighten down.
- 5.3.7** Close the rear panel by holding it closed and turning the five (5) Pawl Latches clockwise until they are secure.

Diagram 5-30



- 5.3.8** After the Hydrol Oil has been added it will be necessary to work air out of the lines before beginning operation. Using the Setup Switch (see page 11, section 4.1), raise and lower the table pedestal for approximately ten (10) minutes until the air is worked out of the hydraulic lines. The machine may make a “humming” noise until the air is worked out--this is normal.

# 5 - Maintenance

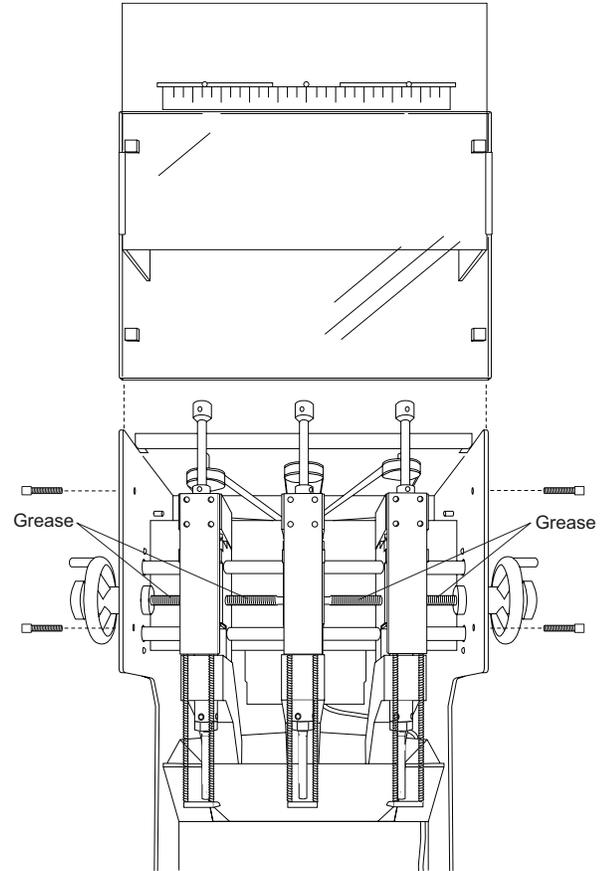
## 5.4 - Annual Lubrication

**5.4.1** Lubricating your HL-3 should be done at least once every 12 months; however, it may be necessary to lubricate certain parts more often depending on use. Whenever a moveable or adjustable part starts becoming difficult to move or adjust, it may be time to lubricate.

**5.4.2** Remove the front panel of the top shroud by removing the four (4) hex screws on the side of the machine. Pull the front panel forward and/or upward to remove both the panel and the protective guard attached to it. Refer to diagram 5-40.

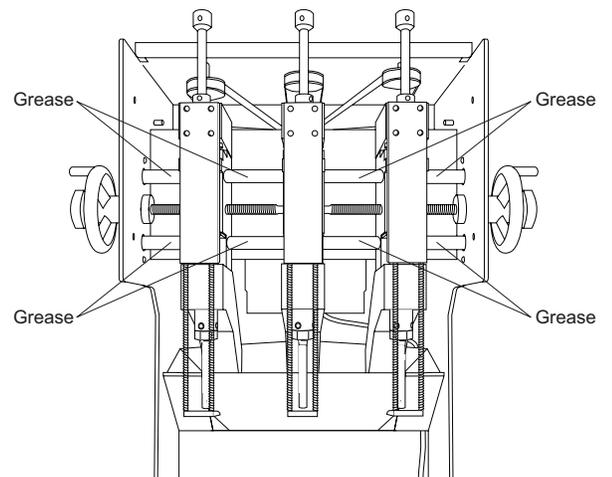
**5.4.3** Lubricate the Head Traverse Screws by applying light grease either by hand, or with a small brush to the points indicated in diagram 5-40. Move the heads to both extremes to coat the complete surface of the screws and inspect them for thread wear.

Diagram 5-40



**5.4.4** Apply light grease on the two (2) Traverse Rods either by hand or with a small brush to the points indicated in diagram 5-50. Crank both heads in and out to distribute the lubrication and to check the head movement.

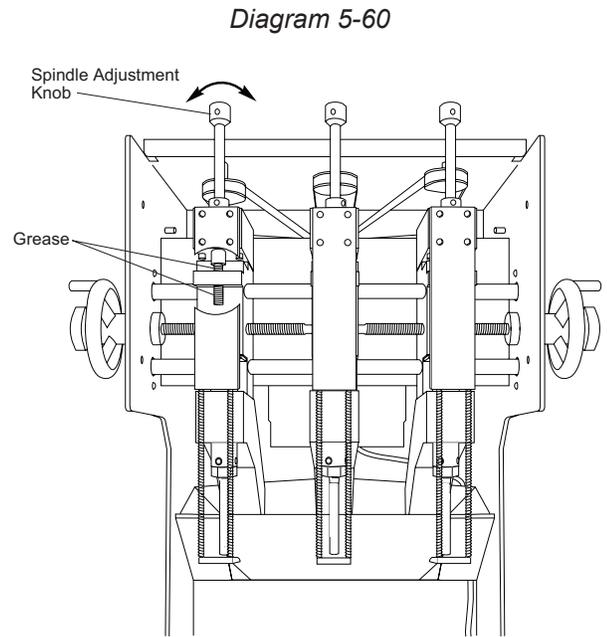
Diagram 5-50



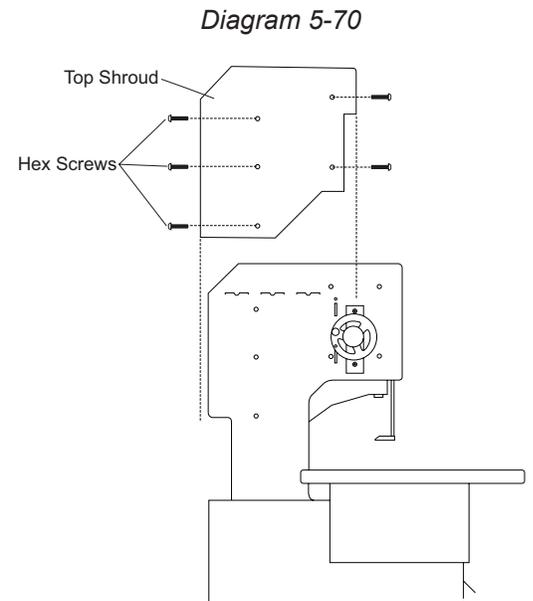
# 5 - Maintenance

## 5.4 - Annual Lubrication

**5.4.5** Apply light grease on the Quill Thread, either by hand or with a small brush, to the points indicated in the diagram. Please note it is not necessary to remove the Pressure Foot. The Quill Thread can be accessed just behind the Pressure Foot. After the grease has been applied, raise and lower the Quill using the Spindle Adjustment Knob so that the grease is fully distributed. Repeat on the remaining Quills. Diagram 5-60 to the right shows a cut out of the Pressure Foot for illustration purposes.

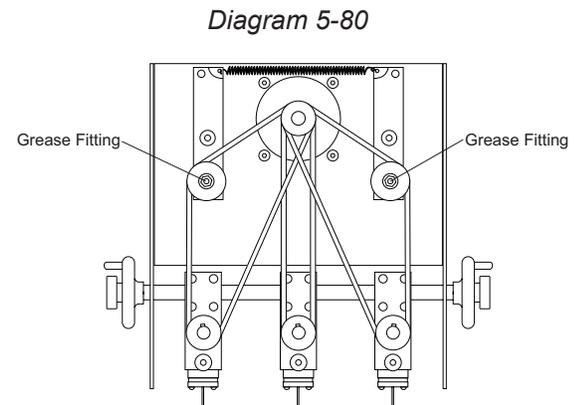


**5.4.6** Access the rear pulleys and the drive belts by removing the Top Shroud cover. This can be removed by unscrewing the five (5) Hex screws located on each side of the machine. Pull the cover up and away from the machine to access the rear pulleys and the drive belts. Refer to diagram 5-70.



**5.4.7** Using a grease gun (not provided) lubricate the two (2) Grease Fittings on the Idler Pulleys with grease. Rotate the belts by hand to check the Idler Pulleys for wear. Refer to diagram 5-80.

**5.4.8** Replace the Top Shroud in the same fashion it was removed. Make sure to tighten down all ten (10) Hex screws. Refer to diagram 5-70.

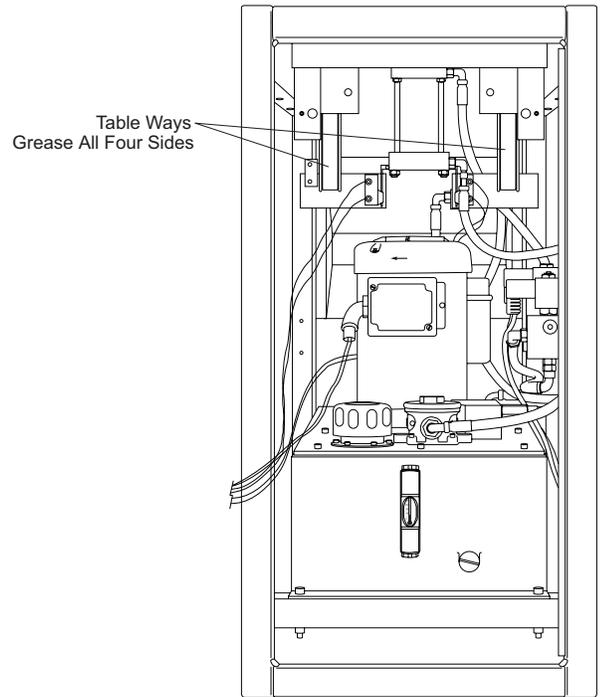


# 5 - Maintenance

## 5.4 - Annual Lubrication

- 5.4.9** Access the Table Ways through the rear door. Lightly grease the Table Ways on all four (4) sides with a brush.

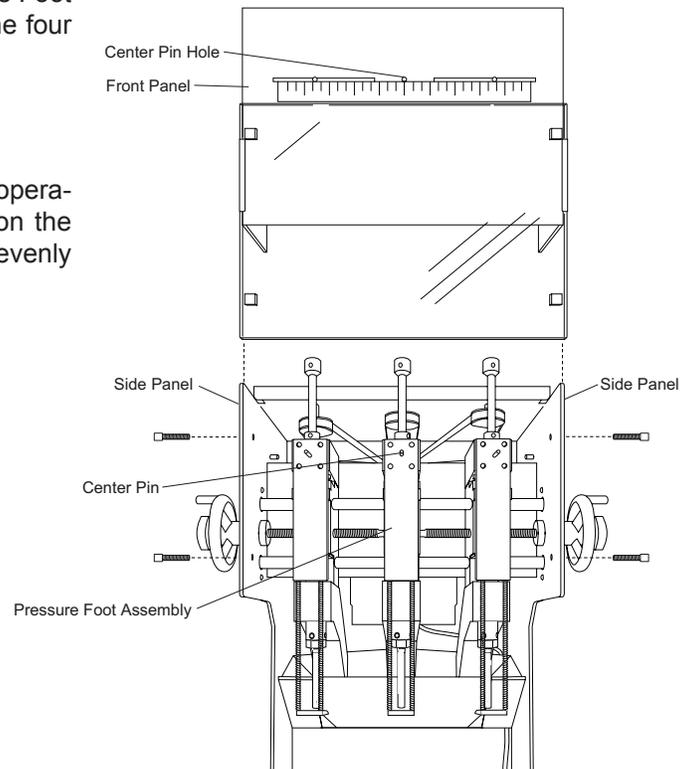
Diagram 5-90



- 5.4.10** Replace the Front Panel by realigning it with the Side Panels making sure to line up the pin sticking out of the center Pressure Foot Assembly with the center hole on the Front Panel. Use the four (4) Hex Screws to tighten it back in place.

Diagram 5-100

- 5.4.11** After all maintenance is done and the machine is ready for operation, re-connect the power supply. Use the setup switch on the control panel to work the Table Assembly up and down to evenly distribute the grease on the Table Ways.



## 6 - Trouble Shooting Guide

### 6.1 - Determining the Cause and Correction to Certain Problems

Problem	Cause	Correction
Drill bit not concentric.	Foreign material in chuck or in drill plug.	Inspect and clean.
	Drill bit is bent.	Replace drill bit.
	Drill bit not inserted in chuck properly.	Reinsert drill bit correctly.
Drill bit not drilling.	Drill bit plugged.	Remove and clear chips. Check for other foreign matter.
	Drill bit dull.	Sharpen drill bit.
	<b>Note:</b> In extreme conditions, the drill chuck and/or chip chute may be plugged. Remove the drill bit, remove the master chip chute, and clean.	
The machine stuggles or hesitates when drilling.	Drill bit dull.	Sharpen drill bit .
	The table lift speed is set too fast.	Lower the speed of the table lift.
	Drill bit is clogged.	Use a chip clear to remove the obstruction.
	Hydraulic failure.	Contact a service technician.
The machine won't start.	Cord is not plugged in or power supply is bad.	Make sure cord is plugged in and check the power source.
	A fuse has blown in the machine.	Replace fuse. If problem re-occures frequently contact a service technician.
Power to the machine shuts off during operation.	The table has lifted unevenly causing the Tilt Sensors to shut down operation.	Check drill bits to make sure they are not clogged and that they are sharp.
The machine gets loud while on but not operating.	The Pressure Relief Valve has gone bad.	Replace the Pressure Relief Valve.
The machine gets loud while on and operating.	The Filter Element is plugged.	Replace the Filter Element.
	The Pressure Relief Valve has gone bad.	Replace the Pressure Relief Valve.