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## SECTION 1.0 - SAFETY GUIDELINES

Before operating the machine, study and follow all safety guidelines in this manual, these precautions are intended to prevent injury to you and your fellow workers. Please use EXTREME CAUTION before performing any procedure or operation.

### **WARNING**

This equipment is designed to be operated with all covers secured in place. Operation without these safeguards may result in conditions that are hazardous to the operator and observers.

Disconnect air and drain all air from the system when:

Doing any kind of maintenance to the machine

- ✓ During any set-up changes
- ✓ Moving the machine
- ✓ When leaving machine unattended

### **SAFETY PRECAUTIONS BEFORE OPERATING THE MACHINE**

Protect yourself. Keep your work area clear of all scrap, oil spills, rags, tools, and other obstructions, which could cause you to slip, trip or fall.

- ✓ Wear safety glasses always.
- ✓ Be familiar with procedures of disconnecting and draining air from system.
- ✓ Make sure hydraulic and pneumatic pressures are at specified levels before operating this equipment.
- ✓ Be sure all guards and covers are in place.
- ✓ KEEP FINGERS AND HANDS AWAY FROM THE PINCH POINT AREAS. (Between the punch stem and die, i.e., upper and lower tooling)
- ✓ Keep this equipment properly maintained.
- ✓ Check for worn or broken parts. Do not attempt to operate machine with broken parts present or if it is making unusual noises.
- ✓ Be aware of the location of the air shutoff/exhaust valve and electrical disconnects (if installed) or the emergency stop button in the case of an electrically operated machine.
- ✓ Keep this manual near the machine for the operator's reference when necessary.
- ✓ Always wear proper personal hearing protection that conforms to ANSI S12.6 (S3.19).
- ✓ Always use safety glasses that conform to ANSI Z87.1 and CAN/CSA Z94.3.



## OPERATOR SAFETY NOTICE:

The Letter Lok 4000 is designed as a safe and reliable machine.

However, as with any punching machine, the critical danger area is the pinch point between the punch and die.

- ✓ Keep fingers and limbs away from this critical pinch point.
- ✓ Never operate this machine without all covers and guards in place.



**THE NATIONAL SAFETY COUNCIL REMINDS US THAT MANY ACCIDENTS ARE CAUSED BY FAILURE TO FOLLOW FUNDAMENTAL SAFETY RULES.**

**This is the reason that a careful operator is the best guarantee of an accident free work place.**

- Disconnect and drain air before making any adjustments or servicing any Letter Lok components.
- Always be alert whenever operating any machinery.
- Only one person should control the machine(s). Never allow anyone to operate the controls while you are working on this equipment. In addition to disconnecting power, always use lockouts and warning signs to indicate that you are working on the machine(s).
- Keep your hands and arms away from internal workings of the machinery when starting, running or stopping.
- Never override or disable any safety switch or safety interlock.
- Use extreme caution if maintenance or modifications must be performed with power on and the machine in operation.
- Always wear eye protection when operating or maintaining machinery.

## SECTION 2.0 – INSTALLATION AND OPERATION

### INSTALLATION

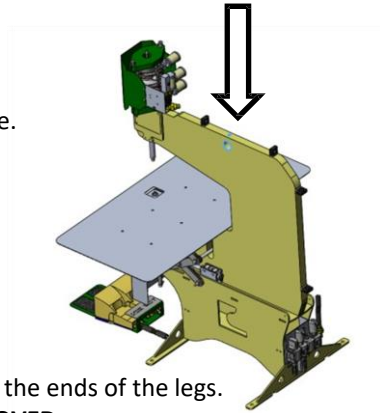
#### UNCRATING:

1. Remove the machine from the shipping crate. It may be picked up with a chain hoist from the 2 1/2" diameter hole in the top of the frame. Caution should be taken when lifting in this manner; the machine may kick back once it has left the ground. An alternative method includes attaching a 3/4" NC eye bolts to the top of the "C" frame. When lifting in this manner, it is important to be conscious of the filter and regulator setup at the back of the Frame.
2. Locate the following items that may have been packed separately;
  - a) Manual.
  - b) Laser locator (if supplied).
  - c) Spare punches and dies (if ordered).
  - d) Foot Pedal
3. Check the condition of the press and record the serial number for reference.

SERIAL # \_\_\_ - \_\_\_\_

#### LEVELING AND BOLTING DOWN MACHINE:

- I. Locate the machine at its operating position.
- II. Level the machine by shimming the legs of the stand.
- III. Secure the stand to the floor with the four bolt down holes located on the ends of the legs.
- IV. **INSTALL ALL GUARDS AND SAFETY DEVICES IF THEY HAVE BEEN REMOVED.**



#### INSTALLING AIR SUPPLY:

1. Make sure that the foot pedal is not activated.
2. Make sure that the main air supply valve is turned OFF.
3. Supply the Letterlok 4000's inlet with 100 psi (max) - 95 psi (min) of clean dry air. Use an additional filter / regulator on the inlet line if necessary. We recommend a minimum of 1/2" diameter airline.

#### INITIAL TESTING:

- A. Ensure that all guards are in place.
- B. Slowly open the main air supply valve and check the pressure at the regulator on the machine.  
For **Medium Duty Tooling**, the main Filter Regulator should be set at 100 psi and the secondary regulator to 65 psi.  
If the gauges do not read the correct pressure, adjust and lock the regulator.

**WARNING! THIS ACTION ACTIVATES THE HIGH PRESSURE CLINCHING STROKE.**

- C. Operate the foot pedal and hold down, the tooling will retract automatically. The tooling is returned by meeting a preset pressure.
- D. The clinching stroke is factory set for a 1 second automatic return. If the foot pedal is released before the automatic return the clinching stroke will end as a safety feature.  
If the automatic return is too fast or too slow the automatic return valve must be adjusted - see maintenance section.
- E. The foot pedal must be released and re-activated to repeat the clinching stroke.

## TABLE:

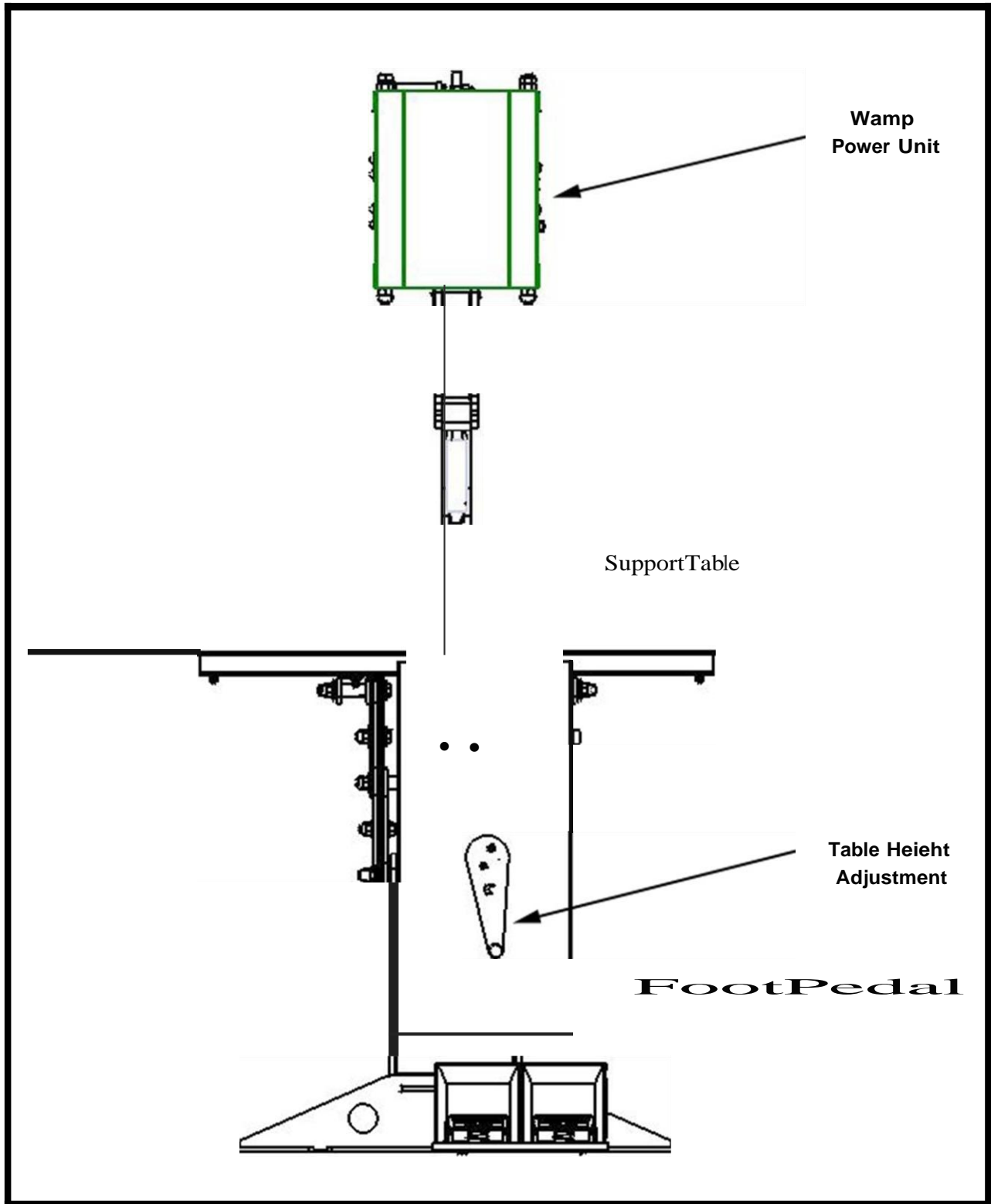
- F. Fasten the table top to the two support arms.
- G. The table height may be adjusted with the adjuster handle.
- H. Adjust the table to the correct height.

### **THE CORRECT HEIGHT OF THE TABLE IS 1/4" BELOW THE BASE OF THE LETTER WHEN THE LETTER IS RESTING ON THE PUNCH.**

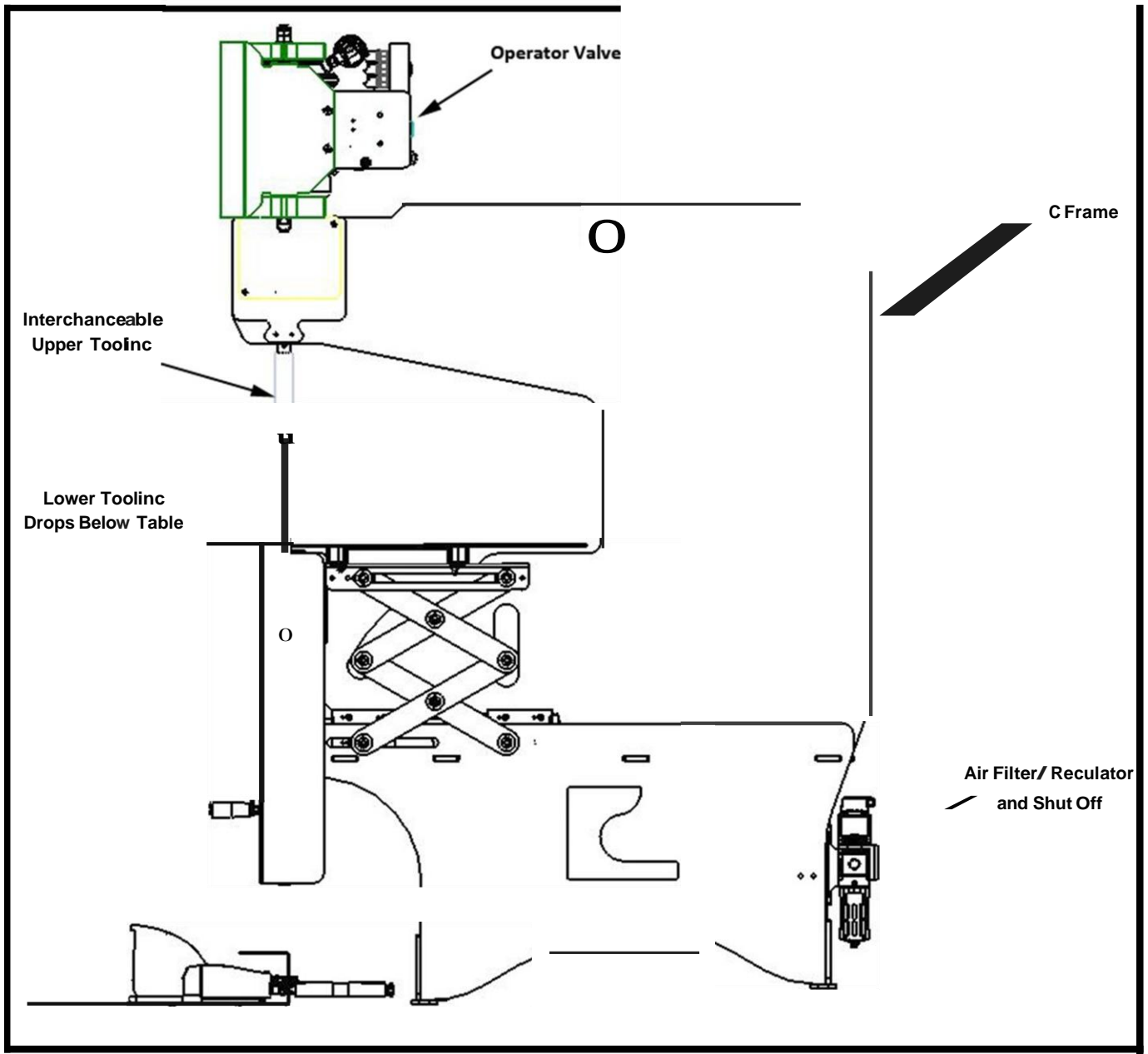
- I. If there is not a 1/4" gap below the letter, when the punch stripper is squeezed during punching, the side of the letter will buckle, and could push the punch out of alignment with the die, damaging the punch or die.

SECTION 3.0- LETTER LOK INFORMATION

LETTER LOK 4000 PRESS LAYOUT (FRONT VIEW)



LETTER LOK 4000 PRESS LAYOUT (SIDE VIEW)



## SPECIFICATIONS – LETTER LOK 4000

<b>Press Design:</b>	Solid 2" steel "C" frame.
<b>Features:</b>	WAMP pneumatic power unit. Air shut off and regulator Foot pedal operated
<b>Stroke:</b>	1" max. (Adjustable to zero) [OSHA requires a ¼" or less without guarding and interlocks.]
<b>Throat:</b>	25"
<b>Work Height:</b>	44"
<b>Upper Tooling:</b>	Die insert in a hardened die holder Adjustable for material thickness Optional – SPR tooling available
<b>Lower Tooling:</b>	Quick change punch set in 8 3/8" long tooling.
<b>Capacity:</b>	MAX: Two ply 0.0625" mild steel. MIN: Two ply 0.010" mild steel.
<b>Cycle speed:</b>	60-80 cycles/minute (standard)
<b>Air Requirements:</b>	100psi (recommended) Approx. 0.6 cu ft free air per cycle. (5 HP @ 60 clinches per minute)



## OPERATION BASICS:

### "WAMP" UNIT:

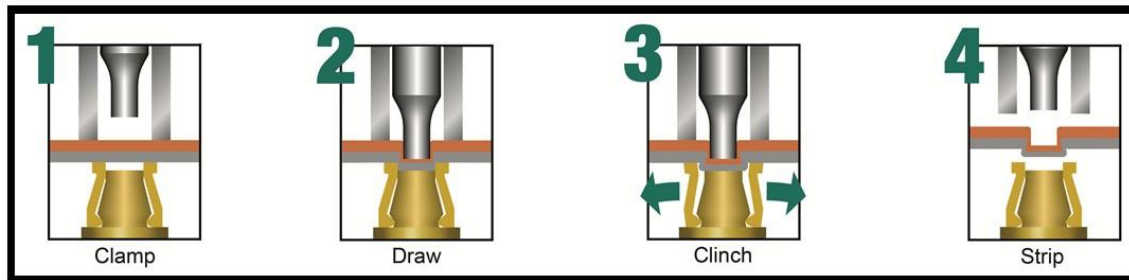
- 1) The press is powered by a multi stacked air diaphragm unit known as a "WAMP" unit.
- 2) This power unit is very reliable and can be serviced by the user if required. If necessary it may be removed from the press and serviced or exchanged by the factory.
- 3) The clinching stroke is operated by a guarded foot pedal.
  - The pneumatic system features a single shot automatic return. The machine operates through a single clinching stroke each time the foot pedal is activated and held down. The automatic return is set to about 1 second. If set too fast a good joint may not be formed. If set too slow, production will be reduced. The clinching stroke will be terminated before the automatic return cycle is complete if the foot pedal is released before the auto return cycle is complete.
  - For machines fitted with the Ultra High Speed (UHS) Control, the pneumatic system will operate faster, and operates on a pressure feedback principle. A single touch of the foot pedal will initiate a complete clinch cycle. The stop button can be used to return the tooling.

## OPEN HEIGHT ADJUSTMENT

The open height (the gap between the upper punch and lower die) may be reduced by adjusting a screw in the center of the top of the WAMP unit, as described in a later section of the manual. This adjustment is used to eliminate any "pinch point" between the punch and die and does not effect any other press adjustments or alter the quality of the Clinchlok joint.

### TOOLING:

- 1) The clinching punch and stripper are located in the lower tooling and operate through the low-pressure stroke of the machine (Usually 8 1/2").
- 2) The clinching die is located in the upper tooling of the machine. Different dies may be selected, and easily installed to suit different material thicknesses.
- 3) Both the punch and die are of a very special design and should not be sharpened.
- 4) Under normal operation both punch and die should last for approximately 200,000 to 300,000 cycles.

**CLINCHLOK PRINCIPLE:****WHAT IS “CLINCHING”?**

Clinching is a method of fastening sheet metal together without the use of heat, rivets, fasteners or adhesives. It is fast, clean, and reliable and does little or no damage to painted surfaces.

It is ideal for fastening galvanized, aluminum, pre-painted & coated mild steel, as well as brass, copper & stainless steel.

Clinching can fasten two-ply from 10 gauge (0.130”) to 32 gauge (0.012”), with a strong, leak-proof joint.

**HOW DOES IT WORK?**

- ✓ The clinchlok joint is formed when the punch squeezes the two-ply material between itself and a special die.
- ✓ As the punch squeezes the material the two layers “mushroom” out, forming a strong joint.
- ✓ The die features spring-loaded “blades” that allow the material to be drawn down by the punch, and then expand outwards to form the joint.

**STEP-BY-STEP CLINCHING METHOD:****CLAMP**

1. Two-ply material is laid on the die in desired location.
  - i. Punch stripper and die holder clamp material.

**DRAW**

2. Punch begins to penetrate.
  - i. The material is drawn down into the die.

**CLINCH**

3. Material is squeezed between the punch & die anvil. This causes an outward flow of material. The die blades spread to allow extrusion to occur.

**STRIP**

4. Punch and stripper retract, and material can now be easily removed from the die.

## TOOLING ADJUSTMENT :

- 1) The amount of joint squeeze is controlled by adjusting the upper tooling (die) either towards the punch or away from the punch with the tooling adjusting screw.
- 2) For thin material the die will have to be lowered (moved towards the punch) and for thick material the die will have to be raised (moved away from the punch).
- 3) The correct tooling adjustment is the most critical adjustment on the Letter Lok 4000. Please read the tooling adjustment instructions in a later section of this manual.

## MATERIALS TO BE JOINED:

- 1) The LETTER LOK 4000 is capable of joining two ply commercial quality aluminum from 0.032" to 0.090". For best results both ply of material should be of the same or similar thickness.
- 2) If different thicknesses are to be joined the best results will normally be found with the thicker material on the lower (punch) side of the two ply although this is not always possible.
- 3) The thicker material should not be more than twice the thickness of the thinner material and the combined thickness of the two ply should not exceed 0.150". Some cases, Such as Poly Carbonate and Aluminum Composite are possible with larger thicknesses.
- 4) Other materials can be joined with the LETTER LOK 4000 as long as they are not harder than commercial quality mild steel. In most cases both ply should be of the same hardness, but if a different hardness is used for each ply (not recommended) the harder material should be on the lower (punch side) if possible.

Common materials:	Capacity:
Stainless steel	Special Equipment/ Tooling Required
High carbon steel	Special Equipment/ Tooling Required
Commercial quality steel	Maximum 0.060" + 0.060"
Drawing quality steel	Maximum 0.060" + 0.060"
Aluminum	Maximum 0.090" + 0.060"
Copper	Maximum 0.060" + 0.060"
Brass	Maximum 0.060" + 0.060"
Aluminum Composite Material (ACM)	Maximum 0.050" Aluminum + 0.125" ACM
Poly Carbonate (Lexan)	Maximum 0.050" Aluminum + 0.188" Lexan

## DIE SELECTION:

1. There are three sizes of dies required to cover the complete range of material that the LETTER LOK 4000 can handle.
2. The punch in the lower tooling is not changed for different material thicknesses.
3. The die selection chart can be used to find which die will be most suitable for your application, however the chart is a guide only, different types of material may require a different size of die.

**OTHER OPTIONS MAY BE AVAILABLE, PLEASE CONSULT FACTORY FOR DETAILS.**

Die size	Material thickness		
MD #50	0.080" +	0.090"	Aluminum
	0.060" +	0.090"	Aluminum
	0.060" +	0.060"	Aluminum
MD #40	0.060" +	0.060"	Aluminum / copper
	0.040" +	0.060"	Aluminum / copper
	0.040" +	0.040"	Aluminum / copper
	0.032" +	0.040"	Aluminum / copper
MD #30	0.032" +	0.032"	Aluminum / brass
	0.025" +	0.025"	Mild Steel

## JOINT STRENGTH:

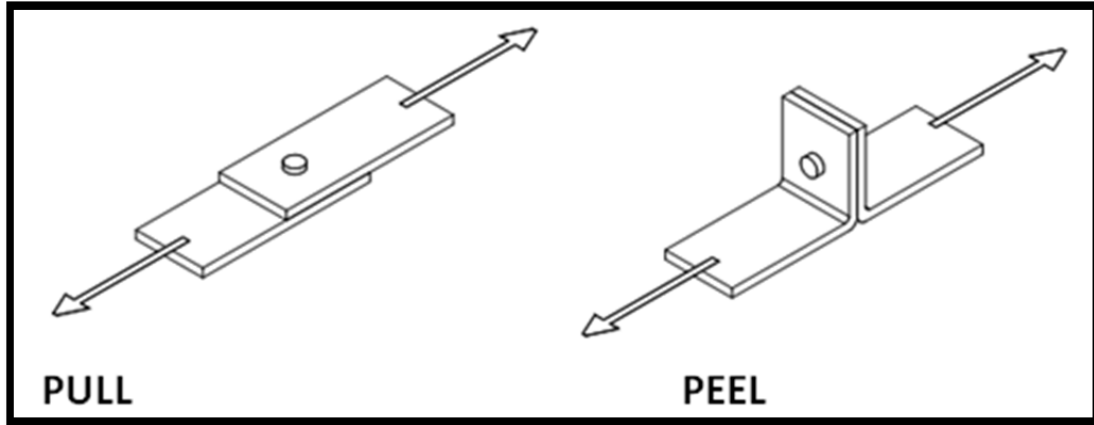


Figure 1 Pull - Peel Layout

1. There are two ways to measure the strength of a Clinchlok joint, pull and peel (see Figure 1 Pull - Peel Layout).
2. Pull is almost always stronger than peel and is less sensitive to die adjustment.
3. Typical joint strengths for properly adjusted tooling are given for commercial quality mild steel.
4. These should be used as a guide only; different material will affect the joint strength.
5. If the material is softer than mild steel these strengths will be reduced according to the strength of the material.

Material thickness Punch - Die	Button strength (lbs)*		RECOMMENDED DIE
	PULL	PEEL	
0.090" + 0.063"	240	95	#40
0.063" + 0.090"	210	48	#40
0.040" + 0.063"	140	45	#40
0.063" + 0.040"	270	50	#40
0.090" + 0.090"	225	150	#40 / #50
0.080" + 0.080"	265	90	#40 / #50
0.063" + 0.063"	240	72	#40
0.050" + 0.050"	260	85	#30
0.040" + 0.040"	175	60	#30
0.032" + 0.032"	160	55	#30

\*These strength numbers are a guideline only and should be validated with actual samples

Figure 2 Clinch Strength Chart\*

## MEASUREMENT OF CLINCH QUALITY – NON DESTRUCTIVE TESTING

1. The two best ways to verify a Clinchlok joint are measuring the BD (Button Diameter) and the CT (Clinch Thickness)
2. A measurement of either of these parameters gives a very strong correlation to actual clinch strength

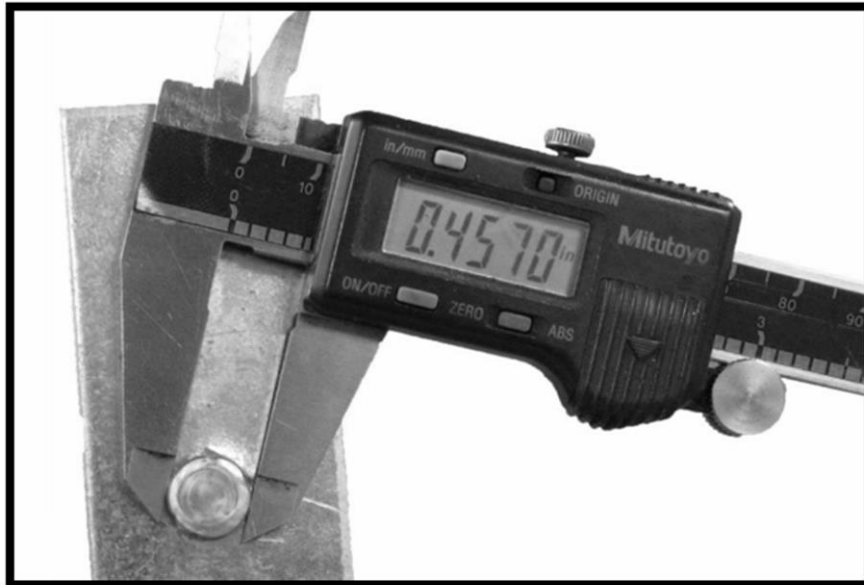


Figure 3 Measuring a Button Diameter (BD)

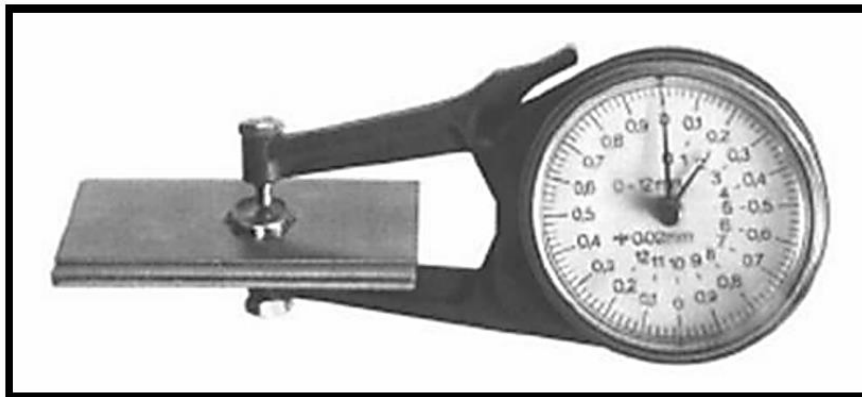


Figure 4 Measuring a Clinch Thickness (CT)

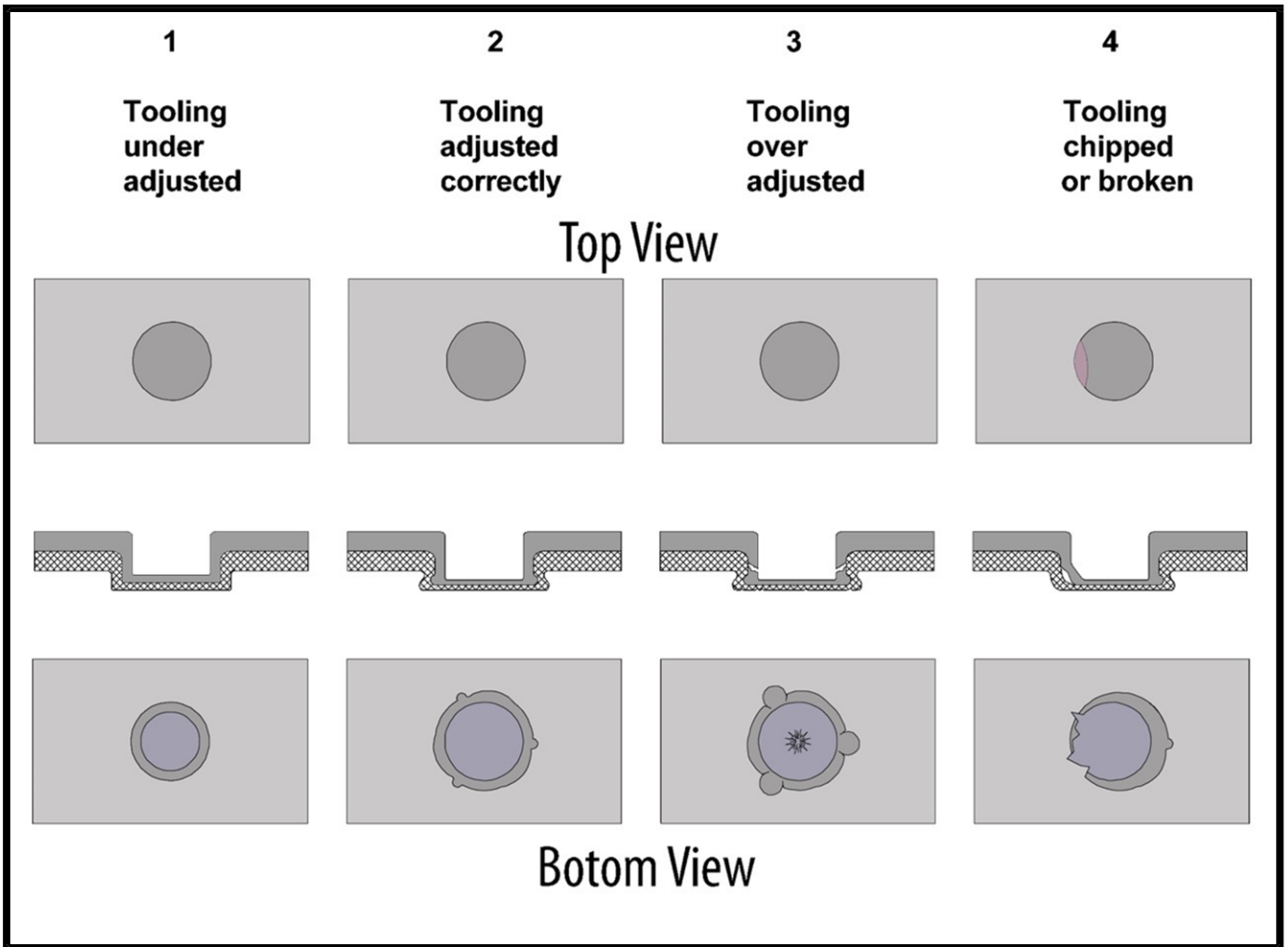


Figure 5 Trouble Shooting Quick View

SECTION 5.0 – CLINCHING TERMINOLOGY

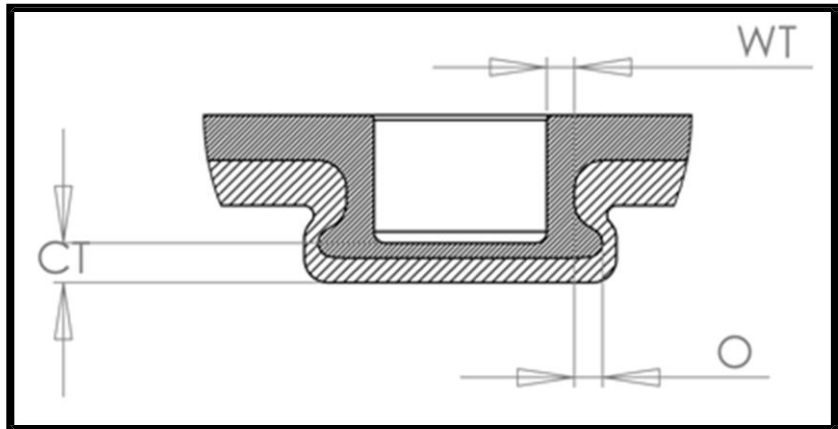


Figure 8 Clinching Terminology 1

WT = Wall Thickness  
 CT = Clinch Thickness  
 O = Overlap  
 PP = Punch Penetration  
 BH = Button Height  
 PD = Punch Diameter  
 BD = Button Diameter

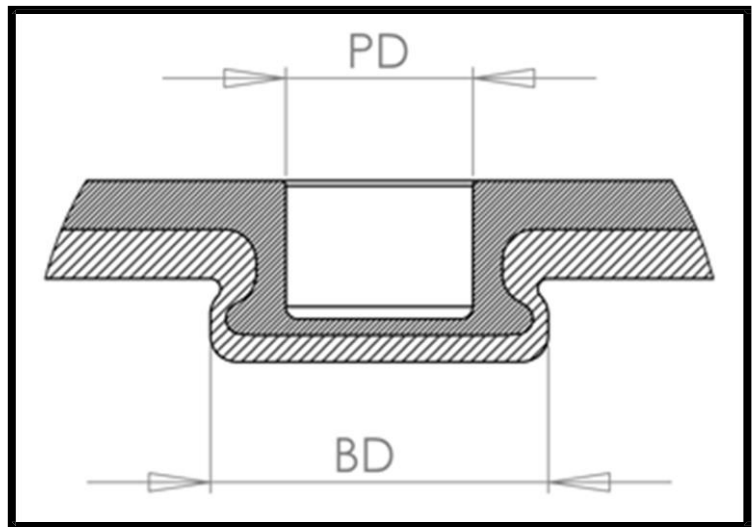


Figure 8 Clinching Terminology 2

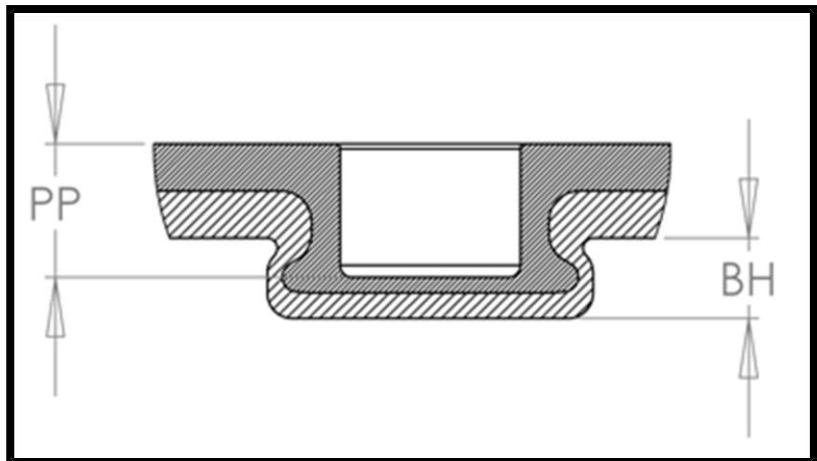


Figure 8 Clinching Terminology 3



**VIEWS OF THE CLINCHLOK JOINTS:**



Figure 9 - CROSS SECTION OF JOINT

## JOINT FAILURE:

1. If pulled hard enough any clinchlok joint will pull apart.
2. There are normally two ways for a clinchlok to pull apart:
  - a. NON TEARING FAILURE  
The two halves of the joint will pull apart leaving a male joint half (punch side) and a female joint half (die side).
  - b. TEARING FAILURE  
The joint will tear out of the punch side layer leaving a hole in it. The joint will remain in the die side layer.
3. A correctly formed joint will usually fail by tearing (b) in the pull test. The joint strength usually increases as the punch is adjusted towards the die. However it is easy to over adjust the punch and overload the punch and die reducing their life.
4. In the peel test, an under adjusted joint (punch too far away from the die) will pull apart as a non-tearing fail (A) and an over adjusted button (punch too close to the die) will pull apart as a tearing fail (B).
5. The correct adjustment is when the joint fails in peel sometimes as non-tearing and sometimes as tearing. This will give the greatest peel strength.
6. If the peel strength of a correctly adjusted joint is less than shown in the joint strength chart, and the **joint tends to fail by tearing apart**, the incorrect die (too deep) may have been selected;  
Change #50 die to #40 die. Change #40 die to #30 die.
7. If this does not improve the peel strength of the joint, - either, the punch tip radius is too sharp, or the material is not suitable for clinching (probably too hard). Consult factory.
8. If the peel strength of a correctly adjusted joint is much less than shown in the chart above, and the **joint tends to fail as a non-tearing failure**, the incorrect die (too shallow) may have been selected;  
Change #30 die to #40 die. Change #40 die to #50 die.
9. If this does not improve the peel strength of the joint then - either the punch tip radius is too large, or the material is not suitable for clinching (probably too soft). Consult factory.

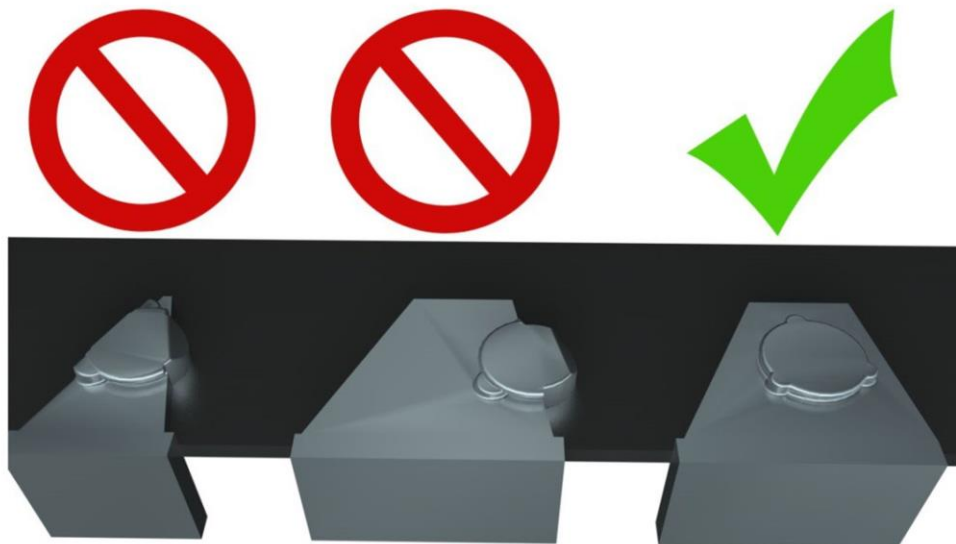


Figure 10 - Visual Inspection

## TOOLING ADJUSTMENT PROCEDURE

1. The tooling must be adjusted to produce the correct amount of "squeeze" between the punch and die when the joint is made.
2. As described earlier, the correct tooling adjustment is very important for producing a good joint and to maximize punch and die life.
3. The aim of tooling adjustment is to produce minimum "squeeze" that will produce a good joint.
4. The basic procedure is to set the tooling too high (not enough "squeeze") to produce a good joint and then to slowly lower the tooling by 1/6th of a turn (or less) to produce a good joint.
5. Make sure that the correct die has been selected for the material to be fastened. If equipped with an automatic return, make sure it is set correctly. The tooling cannot be set correctly if the automatic return is set too fast. If in doubt slow the return to a 3-second delay when setting the die adjustment. (See maintenance section for adjustment)
6. Make sure that the pressure on the inlet filter is set correctly.
7. Loosen (do not remove) tooling cover plate securing screw, and rotate the cover plate to the left. For safety reasons, the cover plate must not be removed from the barrel. Loosen the tooling adjuster set screw.
8. Using a wrench, rotate the tooling shaft counter-clockwise, raising the tooling until it is too high to produce a strong joint (not enough squeeze). There is a limit as to how far the tooling adjustment can be turned up. If the tooling cannot be raised up far enough to make a weak joint then a tooling shim will be required.

### **OBSERVE ALL SAFETY PRECAUTIONS, AND MAKE SURE ALL GUARDS AND COVER PLATES ARE IN PLACE.**

9. Make a sample clinch joint using the correct material.
10. The joint should be too weak because the tooling will be too high (not enough "squeeze").
11. Turn the tooling shaft clockwise 1/4 turn, lowering the punch.
12. Make a joint and check the joint strength.
13. If the joint is still weak lower the tooling by 1/4 turn and repeat the procedure.
14. Once a good joint has been made the tooling should be raised by 1/16th of a turn, and the joint strength checked.
15. If the joint produced at this new setting is weaker than the original reset the tooling downward by 1/16th turn.
16. If the joint produced at this new setting is as strong as the original, raise the tooling by another 1/16th turn and repeat the process.
17. Tighten the locking setscrew and replace the barrel cover.
18. Readjust automatic return (if altered).
19. **REMEMBER - SET THE TOOLING TO THE HIGHEST SETTING THAT WILL PRODUCE A GOOD JOINT**

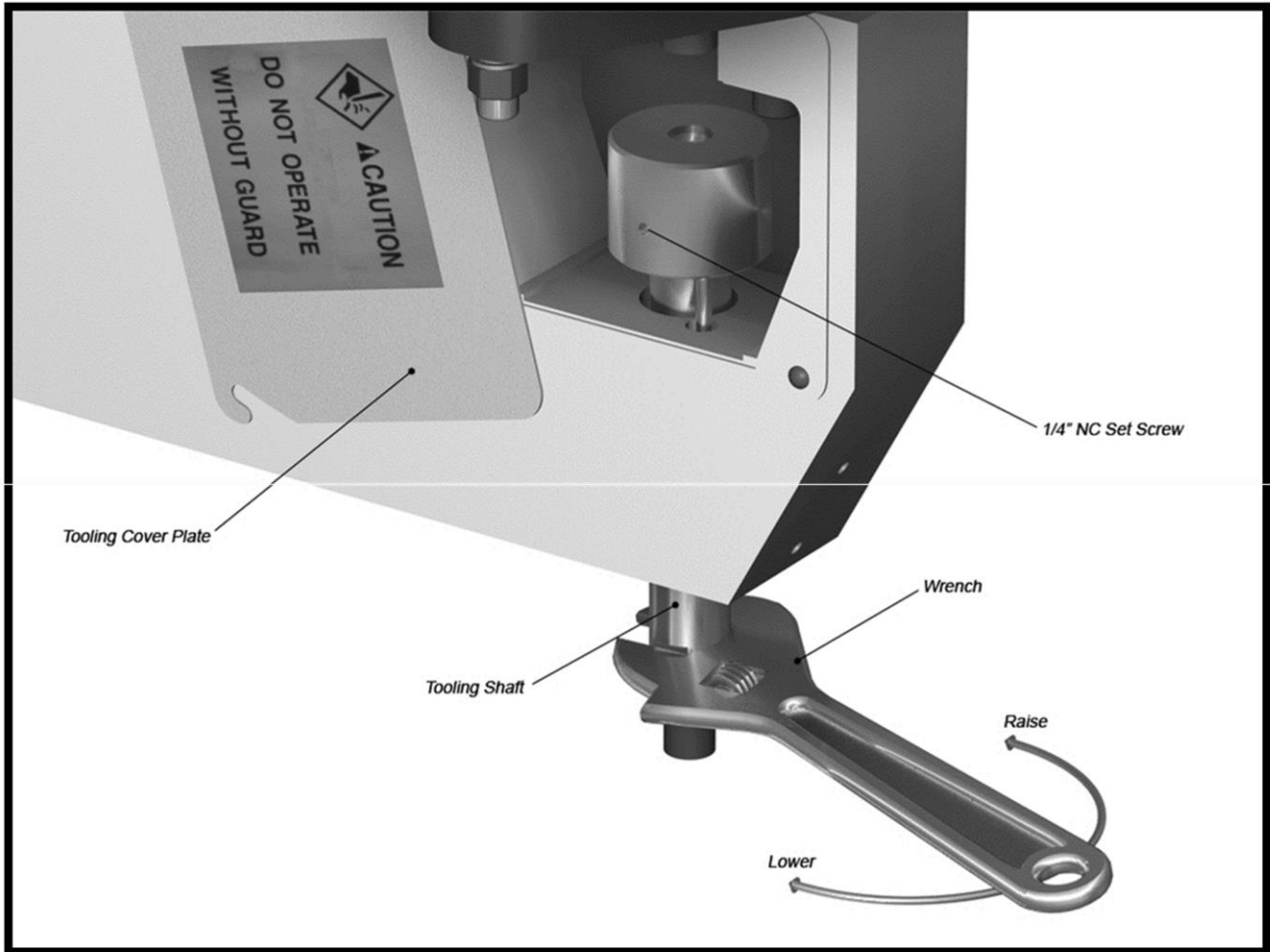


Figure 11 Upper Tooling Adjustment

## REPLACING DIE:

1. REMOVE THE AIR SUPPLY TO THE PRESS AND DRAIN THE AIR TANK.
2. Remove the die holder from the upper tooling. There is a set screw in the upper tooling that holds the die holder.
3. Remove the die from the holder. There is a small set screw in the side of the holder that retains the die. Remove this set screw and using the hex key wrench push the die out of the holder (there is a hole in the base of the holder).
4. Clean and oil the holder and install the new die in the holder. The new die should be flush with the top of the holder.
5. Install the die retaining set screw.
6. Grease the outside of the die holder and replace in the upper tooling. Make sure that the retaining flat on the outside of the die holder lines up with the set screw in the upper tooling.
7. Tighten the set screw in the upper tooling, securing the die holder.
8. Connect air supply.
9. Set tooling adjustment as described in maintenance section - tooling adjustment.

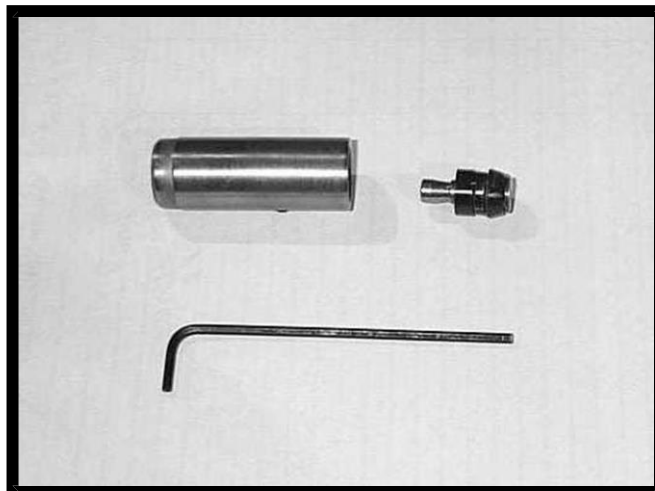
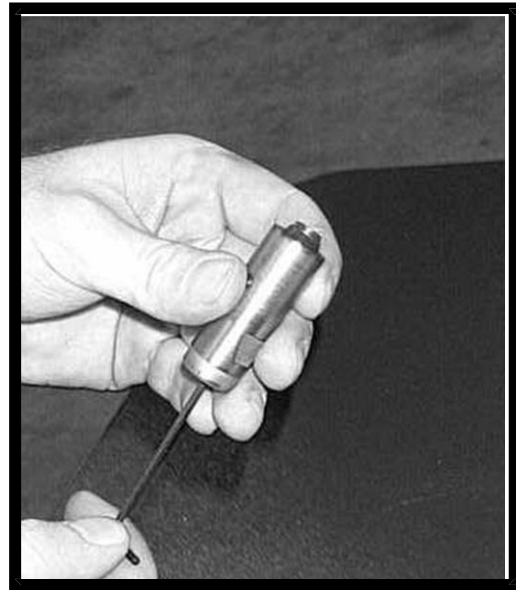
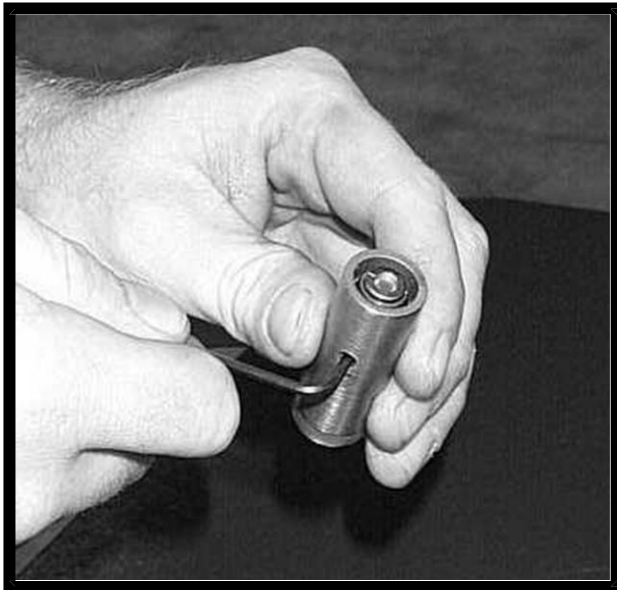


Figure 12 Die Removal Steps

## DIE INSERT ASSEMBLY:

1. Remove the Die Insert as described above.
2. Remove and discard the old elastomer.
3. Set new blades around the die anvil and hold in place.
4. Press new elastomer over the die blades pushing it down until it slips into the groove on the outside of the die blades.
5. Install Die Insert Assembly in the die holder.

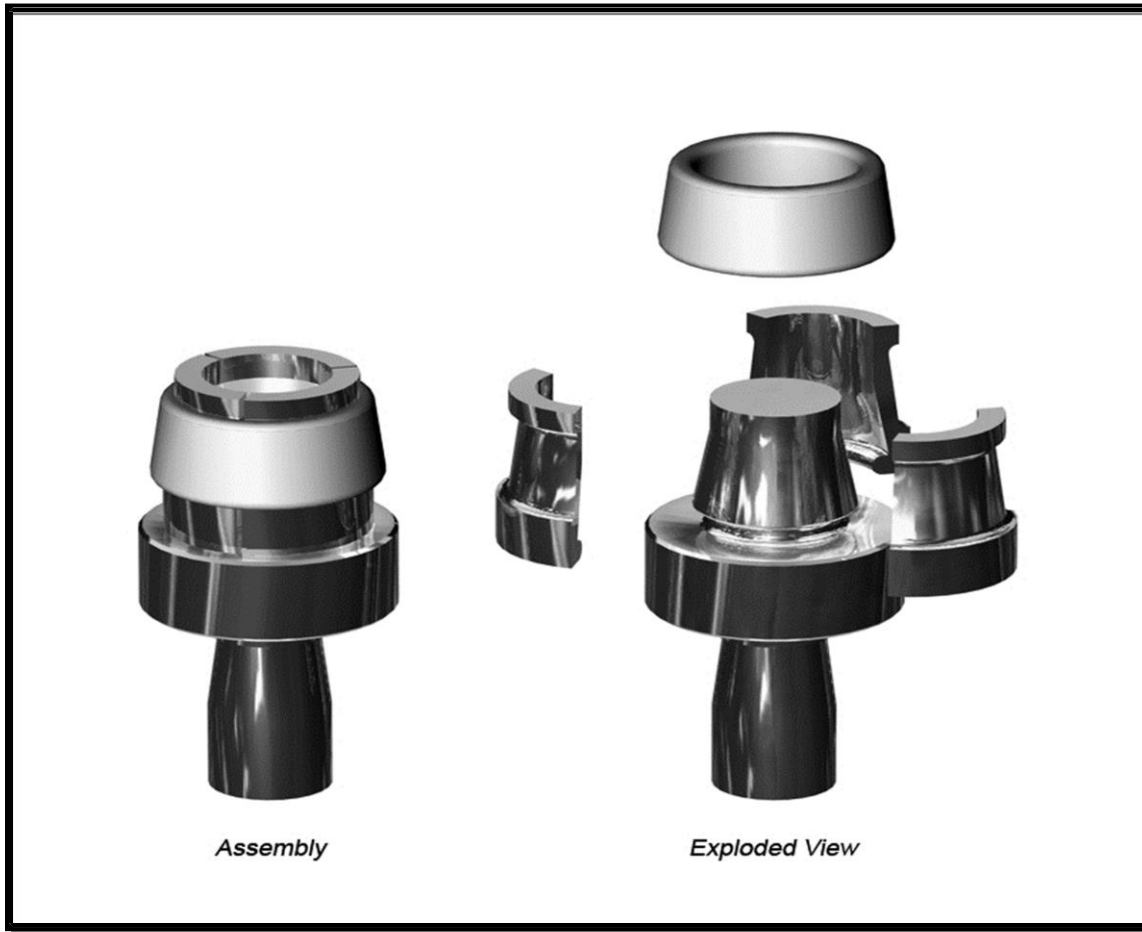


Figure 13 Die Components

## SECTION 6 - REPLACING PUNCH:

### **PUNCH REPLACEMENT: (SEE ILLUSTRATIONS ON NEXT PAGES)**

1. Lower by pressing foot pedal
2. Turn off air supply at back of press
3. Remove upper tooling
4. Remove Lower Cover Plate
5. Remove Lower Tooling.

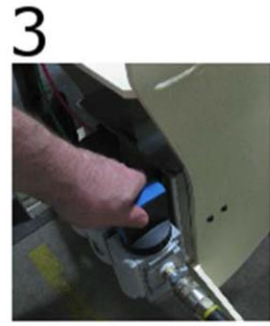
**Tooling is held to lower cylinder by Press fit over O ring. This may require a sharp pull upward to separate**

6. Place lower tooling in a vice with aluminum or soft jaws. Use a  $\frac{3}{4}$ " wrench to loosen punch stripper

**DO NOT USE VICE GRIPS OR CHANNEL LOCKS ON PUNCH STRIPPER AS THIS CAN CAUSE DAMAGE**

7. Remove Stripper
8. You can use a vice grip on the punch and a 5/16 wrench on the flats of the punch stem.
9. Follow reverse order to reinstall new punch.
10. Grease punch before inserting into Punch Stripper
11. The tooling may have to be adjusted to suit the new punch, so check the joint quality before putting the press back into production.





Step 1 and 2: Lower tooling by pressing foot pedal

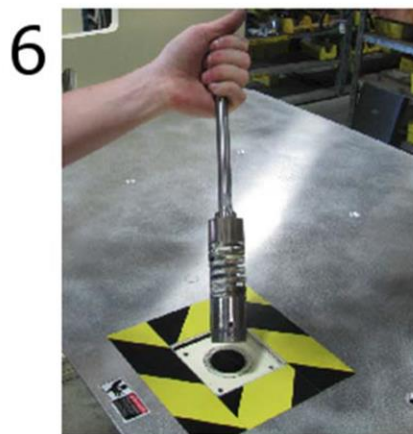
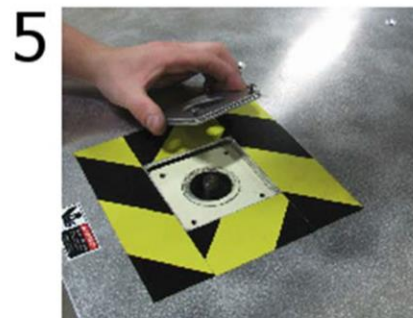
Step 3: Turn off air supply

Step 4: Remove upper tooling

Step 5: Remove Lower Cover Plate

Step 6: Remove Lower Tooling.

*Tooling is held to lower cylinder by Press fit over O ring. This may require a sharp pull upward to separate*





Step 7: Place lower tooling in a vice with aluminum or soft jaws. Use a  $\frac{3}{4}$ " wrench to loosen punch stripper

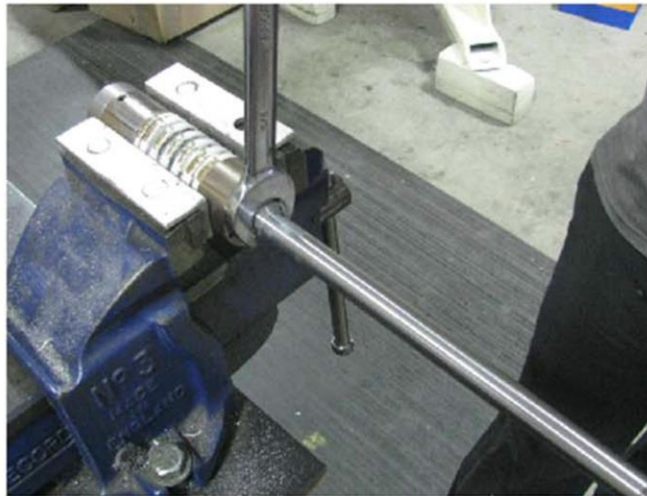
**DO NOT USE VICE GRIPS OR CHANNEL LOCKS ON PUNCH STRIPPER AS THIS CAN CAUSE DAMAGE**

Step 8: Remove Stripper

Step 9: You can use a vice grip on the punch and a  $\frac{5}{16}$  wrench on the flats of the punch stem.

Follow reverse order to reinstall new punch. Grease punch before inserting into Punch Stripper

7



8



9



## SECTION 7.0 - MAINTENANCE

### PREVENTATIVE MAINTENANCE

DESCRIPTION	DAILY	WEEKLY	MONTHLY	YEARLY
*Ensure all guards and safety equipment are in place.	X			
*Verify ¼" (6.4mm) safety feature is working.	X			
*Test if two hand anti tie down is working	X			
Check and maintain correct air regulator pressure.	X			
Check electronic pressure switch adjust if necessary (if equipped).	X			
Inspect, clean and oil punch and die.	X			
Make sure that the machine is set for the correct material thickness	X			
Is the correct die installed?	X			
Is the correct tooling adjustment set?	X			
Check for hydraulic hose quick connect is tight	X			
Check, clean and replace (in needed) air filters/ mufflers		X		
Check for air leaks.		X		
Check for Hydraulic leaks.		X		
Check for Oil level		X		
Check for leaks around the booster when making a clinch		X		
Grease upper tooling			X	
Check for any loose fasteners in hanging assembly			X	
Empty filter regulator and exhaust bowl if there is liquid			X	
Check tightness of bolts. i.e frame, booster, tooling etc.				X
Check for hydraulic hoses damage				X

**Table 1 PM schedule**

**Note:**

- ⚠ We Recommend that any PM check with (\*) must be perform daily or if any new operator starting from mid of the shift as it is crucial for operator safety.
- PM maintenance schedule mentioned above is for Medium production rate where numbers are based on one day production for 8 Hours shift.**

Likely if production rate for your machine is high based on below criteria frequency of PM checks needs to be increased and likewise for low production rate it would be less frequent.

Low Production Rate	Medium Production Rate	High Production Rate
4500 or less clinches / Day	4500 to 7000 clinches / Day	7000 or More clinches / Day

## **MAINTENANCE - PRESSURE ADJUSTMENTS:**

- ✓ Supply the machine with 100 PSI (max) 90 PSI (min) clean dry air. We recommend a 1/2" (min) air line at 120 psi.
- ✓ The inlet pressure regulator must be set at 65 psi.

## **MAINTENANCE - REGULATOR DRAINING & FILTER CLEANING:**

- ✓ There is only one air filter that will require draining.
- ✓ The inlet filter will collect any air contaminants that have collected in the air tank. If filter requires draining other than daily then the inlet air is contaminated. It may be necessary to install an extra inlet filter before.
- ✓ There is a small filter on the exhaust of the foot pedal.
- ✓ If the filter becomes blocked the press may not return when the foot pedal is released.
- ✓ This filter should be replaced (not cleaned) if it becomes blocked.
- ✓ The breathers on the rear of the "WAMP" unit should be cleaned weekly.

## **MAINTENANCE - LUBRICATION OF UPPER TOOLING**

- ✓ The upper tooling should be greased with lithium EP general-purpose grease whenever the punch is changed or at least every month.
- ✓ It is not necessary to remove the upper tooling to grease the internal components. They can be greased from the outside of the machine through the side access tooling cover plate.
- ✓ Disconnect the air supply to the press and drain all air from the reservoir tank (if supplied).
- ✓ Brush grease lightly onto the upper tooling shaft, exposed just above the tooling sleeve. Do not over grease or a hydraulic lock can occur.
- ✓ The upper tooling is now greased, and the press is ready for production.

## OPEN HEIGHT ADJUSTMENT:

The stroke of the Letter Lok 4000 is factory set to a pinch point opening of 1/4". The Letter Lok 4000 has a maximum open height - (the gap between the punch and the die), of 1".

This gap may be easily reduced, to eliminate a "pinch point" by adjusting a screw in the center of the top of the WAMP power unit as shown in the drawing below. Reducing the open height has no effect on the joint strength, or any other adjustments on the machine.

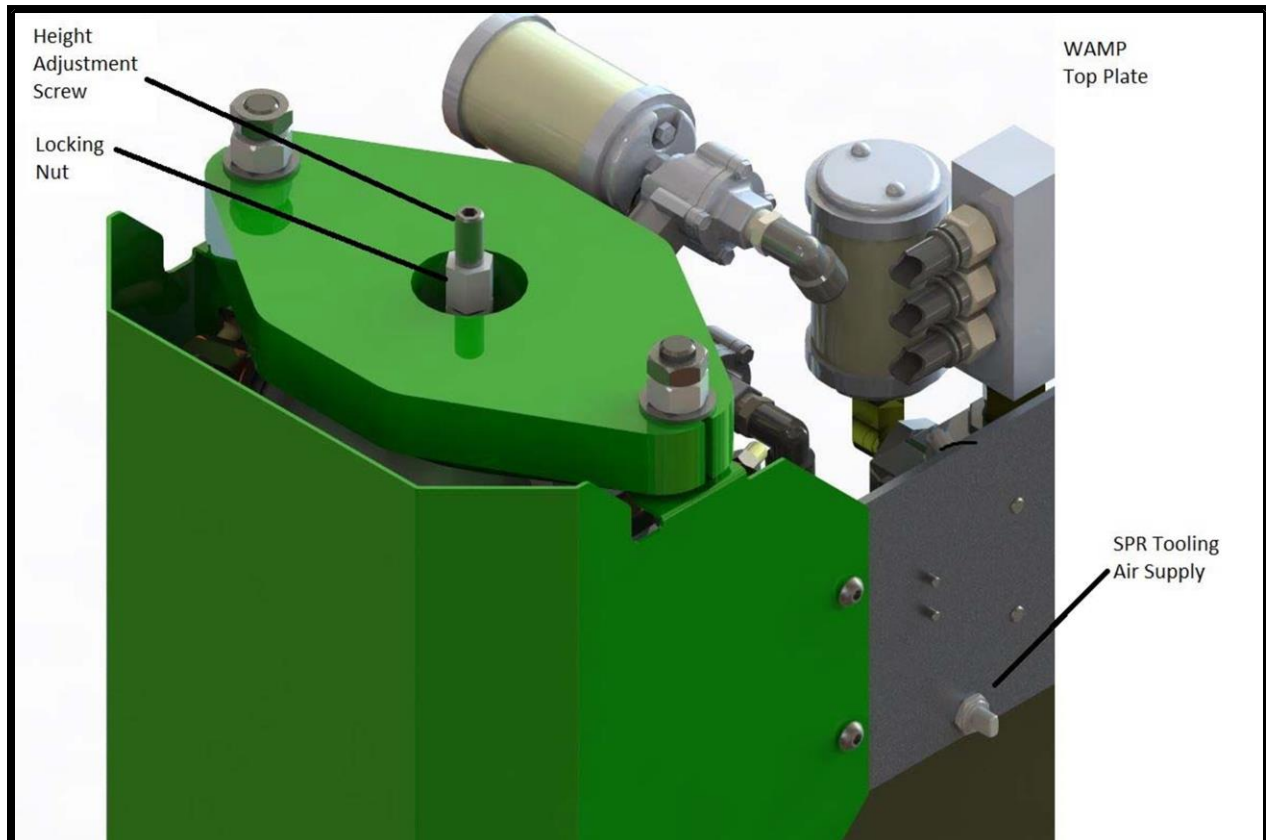


Figure 14 Top of WAMP - WAMP Adjustment

### PROCEDURE:

1. Turn off main air valve.
2. Loosen the open height-locking nut.
3. Adjust the open height screw with the hex key supplied with the tool kit until the required daylight gap is obtained (the maximum gap is the same as the stroke of the machine - 1").
4. Retighten the locking nut.  
**Do not over tighten - there is an "O" ring seal below the locking nut.**
5. Reconnect the air supply.
6. This adjustment will not affect the joint and the die will not have to be adjusted.

## MAINTENANCE - AUTOMATIC RETURN ADJUSTMENT:

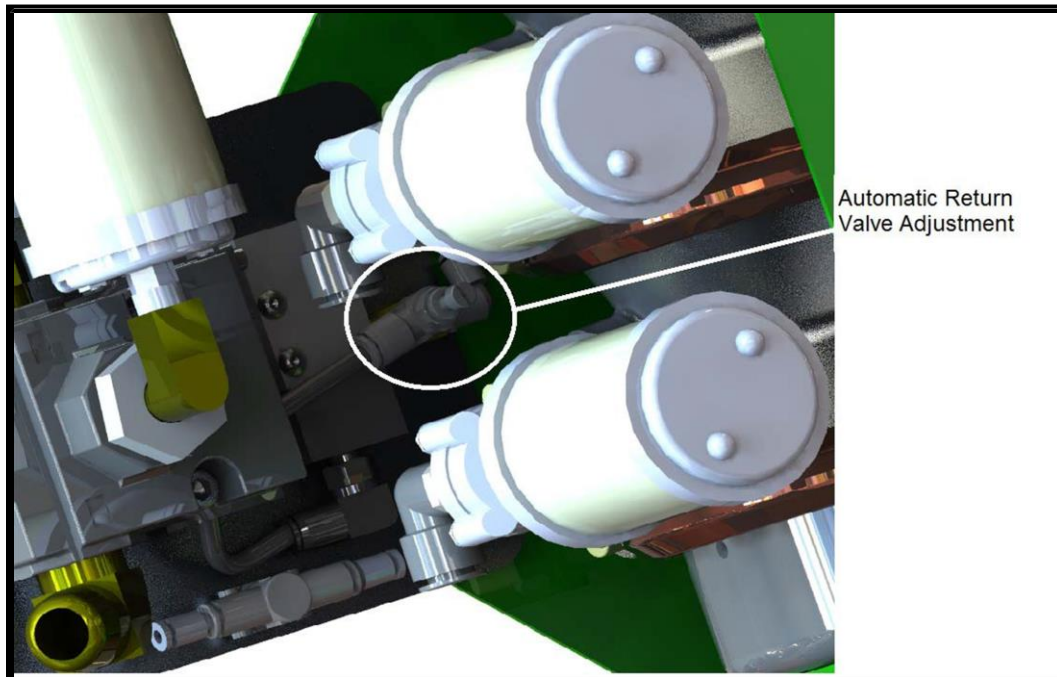


Figure 15 Automatic Return Valve

1. The press features an automatic - one shot return system.
2. The automatic return valve is a time delay system mounted on the side of the operator valve assembly.
3. The return valve is adjusted by turning a screw mounted on the top of the valve. Turning the screw clockwise (in) will increase the return delay (slow the press down).
4. Adjust the valve so that the upper tooling returns after approximately one second if the foot pedal is kept pressed.
5. If the return valve is set too fast the WAMP air power unit may not reach full operating pressure and the joint quality will be reduced - especially if the air supply is low.
6. Turning the adjuster screw all the way in will turn off the automatic return.
7. In this mode the press will only return when the foot pedal is released.
8. This is especially useful in trouble shooting joint problems.

## MAINTENANCE – WAMP POWER UNIT:

### AIR LEAK:

1. To find the cause of the air leak in a Wamp power unit you must isolate the chamber the leak is coming from.
2. When a Wamp power unit is initially operated air will always be exhausted out of the breathers and base chamber. The leak we are looking for is in the pressurized and stalled condition.
3. In order to help find the leak the, the dwell time of the press must be increased by adjusting the automatic return pulse unit to the longest setting. (Figure 15 Automatic Return Valve)
4. Remove the two brass breathers from the Wamp intermediate chambers. These should be cleaned or replaced before being reinstalled.
5. Disconnect all but one airline from the main valve to the Wamp power unit. Plug the unused hoses or fold them in two and clamp with a vice grip to seal them.
6. By using the foot pedal apply air to each of the three chambers one at a time and note the resultant air leak. Use the chart below to identify the cause of the leak.

Air inlet	Leak location	Cause
Top cap (port 1)	Breather A	Top diaphragm
Upper chamber (port 2)	Breather A	Upper chamber seal
	Breather B	Middle diaphragm
Lower chamber (port 3)	Breather B	Lower chamber seal
	Base unit	Bottom diaphragm

7. In the case of a diaphragm leak we suggest replacing both the diaphragm and clamp band at the same time (It would be best to replace all three).
8. In the case of an intermediate chamber seal leak the chamber must be replaced as an assembly (clamp and diaphragm included).

Part name	Part #
Diaphragm	200002
Clamp band	200003
Breather	200292
Intermediate chamber (includes diaphragm & clamp)	900154



## REPLACING CLAMP BANDS AND DIAPHRAGMS:

**CAUTION: ALWAYS DISCONNECT THE AIR SUPPLY TO THE PRESS AND DRAIN ALL AIR FROM THE RESERVOIR TANK BEFORE SERVICING THE LETTER LOK 4000.**

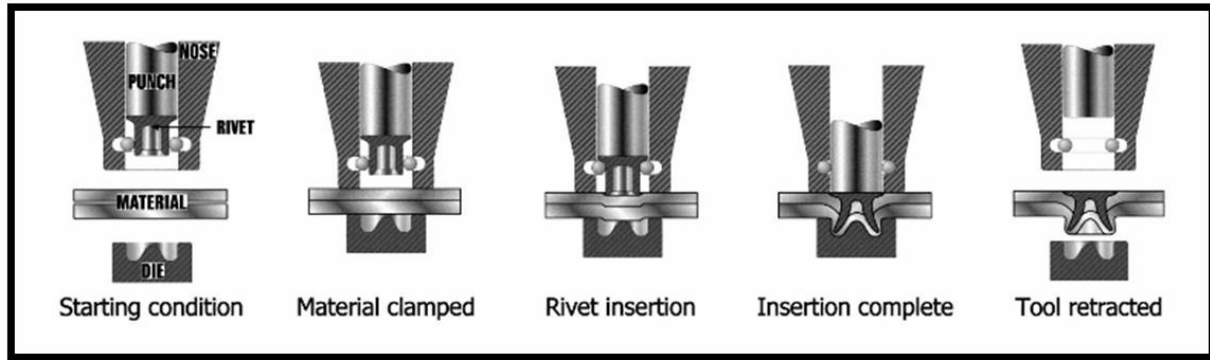
1. In the event that the diaphragms and clamp-bands of the "WAMP" power unit require replacement, it is not necessary to remove the entire unit from the machine.
2. Remove the four 5/8" hex nuts that are located on the top retainer plate of the "WAMP" power unit. These are double nuts mounted at the top of the two 5/8" retainer rods.
3. Lift off the top retainer plate and pull off the rectangular "WAMP" guard. The two guard tubes are lined with 5/8" plastic anti rattle hose, if these hoses fall out the guard tubes replace them.
4. Remove the three 3/8" hoses that run from the operator valve to the "WAMP" unit.
5. Loosen and remove the lower clamp band from the power unit. Do not re-use this clamp band.
6. Lift off the upper intermediate chamber, lower intermediate chamber and top chamber as a complete unit. Remove the exposed rubber diaphragm from the base chamber (this diaphragm may have lifted off with the upper chambers).
7. Replace the diaphragm with a new unit, MAKING SURE THAT IT IS RESTING EVENLY ON THE TOP OF THE LOWER INTERMEDIATE CHAMBER.
8. Reinstall the chamber assemblies, making sure that the ports at the back of the upper and lower chambers are in line. Again, MAKE SURE THAT THE UPPER CHAMBER SITS EVENLY ON TOP OF THE LOWER CHAMBER.
9. Install a new clamp band between the lower intermediate chamber and the base chamber with the bolts located in the same position as the upper clamp band.
10. Evenly tighten the 3/8" clamp bolts until the clamp band bolt tabs bend slightly.
11. Gently "seat" the clamp band onto the "WAMP" unit by striking the center of both halves of the clamp band with a hammer. Re-tighten the clamp bolts, until the clamp bolt tabs bend slightly.
12. Repeat steps 6-12 for the remaining two chambers.
13. Install the top retainer plate (not including guard).
14. Install the 5/8" washer and 5/8" hex nut on each retainer rod and evenly tighten the nuts to 35 ft lbs (**DO NOT OVER-TIGHTEN and make sure the top retainer plate lays flat on the top of the top chamber**).
15. Re-tighten the clamp bands and reseal them as outlined in step 10.
16. Remove top plate, install guard. Evenly tighten the nuts to 35 ft lbs (**DO NOT OVER-TIGHTEN and make sure the top retainer plate lays flat on the top of the top chamber**).
17. Install the two remaining locking nuts onto the retainer rods and lock against the previously torqued nuts.
18. Re-connect the three air hoses from the operator valve to the "WAMP" power unit.
19. The machine is now ready to be placed back in operation.

## REPLACING UPPER INTERMEDIATE CHAMBER AND TOP CHAMBER ASSEMBLY:

**CAUTION: ALWAYS DISCONNECT THE AIR SUPPLY TO THE PRESS AND DRAIN ALL AIR FROM THE RESERVOIR TANK BEFORE SERVICING THE LETTER LOK 4000.**

1. In the event that the intermediate chambers of the "WAMP" power unit require servicing it is not necessary to remove the entire unit from the machine.
2. Remove the four 5/8" hex nuts that are located on the top retainer plate of the "WAMP" power unit. These are double nuts mounted at the top of the two 5/8" retainer rods.
3. Lift off the top retainer plate and pull off the rectangular "WAMP" guard. The four guard tabs are lined with 5/8" plastic anti rattle plastic bushings, if these bushings fall out the guard replace them.
4. Remove the three 3/8" hoses that run from the operator valve to the "WAMP" unit.
5. Loosen and remove the middle clamp band from the power unit. Do not re-use this clamp band.
6. Lift off the upper intermediate chamber and top chamber as a complete unit. Remove the exposed rubber diaphragm from the lower intermediate chamber (this diaphragm may have lifted off with the upper chambers).
7. Replace the diaphragm with a new unit, MAKING SURE THAT IT IS RESTING EVENLY ON THE TOP OF THE LOWER INTERMEDIATE CHAMBER.
8. Install the replacement upper intermediate chamber assembly making sure that the ports at the back of the upper and lower chambers are in line. Again MAKE SURE THAT THE UPPER CHAMBER SITS EVENLY ON TOP OF THE LOWER CHAMBER.
9. Carefully install the upper retainer plate with the machine cutouts facing the top chamber. The machined cut-away should be at the back of the power unit. Do not install the guard at this point. MAKE SURE THAT THE NEW CHAMBER AND DIAPHRAGM ARE STILL RESTING EVENLY ON TOP OF THE LOWER INTERMEDIATE CHAMBER.
10. Install one washer and bolt on each of the two 5/8" retainer rods and evenly torque to 25 ft lbs, making sure that the top retainer plate lays flat on the top of the top chamber. Again make sure that the components have not moved out of alignment.
11. Install a new clamp band between the upper and lower intermediate chambers with the bolts located in the same position as the upper clamp band. Evenly tighten the 3/8" clamp bolts until the clamp band bolt tabs bend slightly.
12. Gently "seat" the clamp band onto the "WAMP" unit by striking the center of both halves of the clamp band with a hammer. Re-tighten the clamp bolts, until the clamp bolt tabs bend slightly.
13. Remove the two quick exhausts, hex nipples and mufflers from the old chamber and install them on the new chambers.
14. Remove the top retainer plate and install the guard. It may help to remove the 5/8" anti-rattle hose located inside the two guard tubes, and install these hoses on the 5/8" retainer rods first.
15. Install the top retainer plate as outlined in section (9).
16. Install the 5/8" washer and 5/8" hex nut on each retainer rod and evenly tighten the nuts to 35 ft lbs (**DO NOT OVERTIGHTEN and make sure the top retainer plate lays flat on the top of the top chamber**).
17. Install the two remaining locking nuts onto the retainer rods and lock against the previously torqued nuts.
18. Re-connect the three air hoses from the operator valve to the "WAMP" power unit.
19. The machine is now ready to be placed back in operation.



**SELF PIERCING PRINCIPLE:****WHAT IS A “SELF PIERCING RIVET”?**

Self Piercing Riveting (SPR) is a method of fastening sheet metal together without the use of heat, pre-drilled/ punched holes or adhesives.

It is very well suited for Aluminum Composite Materials, Polycarbonate, and other non-Metals.

It is ideal for fastening galvanized, aluminum, pre-painted & coated mild steel, as well as brass, copper & stainless steel.

Clinching can fasten two-ply from 10 gauge (0.130”) to 24 gauge (0.024”), with a strong, leak-proof joint.

**HOW DOES IT WORK?**

- ✓ The clinchlok joint is formed when the punch squeezes the two-ply material between itself and a special die.
- ✓ As the punch squeezes the material the two layers “mushroom” out, forming a strong joint.
- ✓ The die features spring-loaded “blades” that allow the material to be drawn down by the punch, and then expand outwards to form the joint.

**STEP-BY-STEP SPR METHOD:****CLAMP**

Two-ply material is laid on the die in desired location.

- i. Punch stripper and die holder clamp material.

**INSERTION**

Rivet begins to penetrate.

- ii. The rivet and material are drawn down into the die.

**COMPLETE**

Material is squeezed between the punch & die anvil. This causes an outward flow of material. The rivet spreads to create an interlock and strong connection.

**RETRACT**

Punch and stripper retract, and material can now be easily removed from the die.

## SELF PIERCING PRINCIPLE:

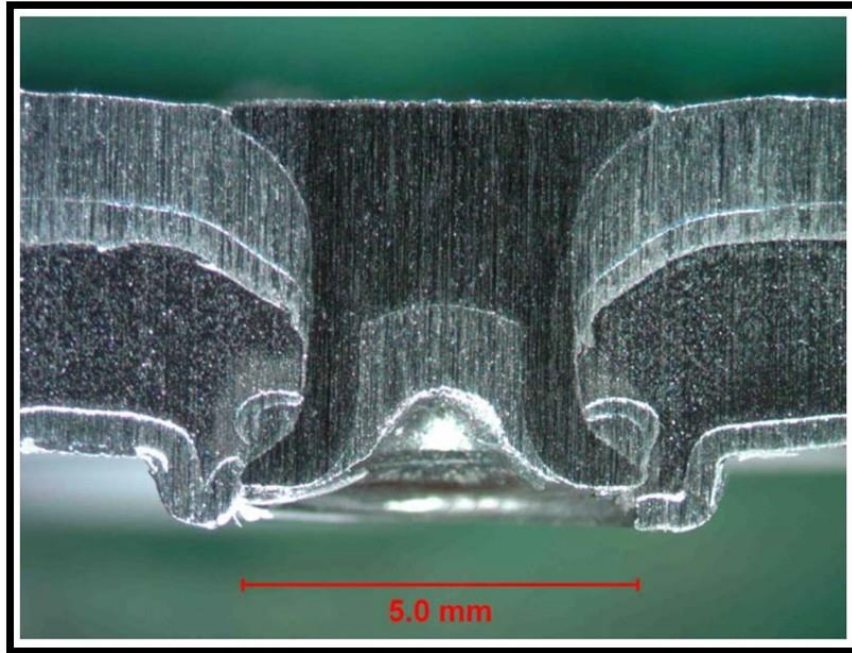


Figure 16 SELF PIERCING RIVET CROSS SECTION

## TOOLING ADJUSTMENT SPR:

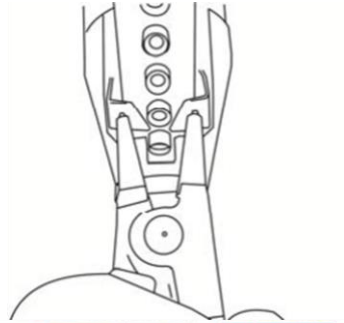
1. The amount of joint squeeze is controlled by adjusting the upper tooling (SPR Punch) either towards the Die or away from the Die with the tooling adjusting screw.
2. For thin material the SPR Punch will have to be lowered (moved towards the Die) and for thick material the SPR Punch will have to be raised (moved away from the Die).
3. The correct tooling adjustment is the most critical adjustment on the Letter Lok 4000.
4. A typical Self Piercing Rivet is meant to be pressed flush to the top material.

## WITH SELF PIERCING RIVETS. THE SPR RIVET AND DIE ARE VERY IMPORTANT

**IF A RIVET IS NOT HOLDING, VERIFY THAT THE DIE IS IN GOOD CONDITION AND THAT THE CORRECT RIVET HAS BEEN SELECTED FOR THE APPLICATION**

DISASSEMBLY

1. Remove air from the tool assembly.
2. Remove the tape from the nose area by parting the rivet catches with the snap ring pliers. Pull the rivet tape out backwards.



3. Remove the cassette.



4. Remove the Norlok SPR Adapter from the upper tooling assembly.
5. Remove the pneumatic fitting from the Norlok SPR Adapter.



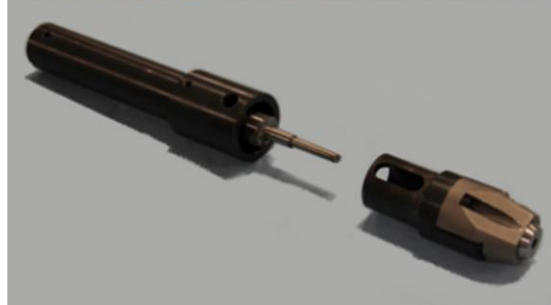
6. Rotate the nose to align the guide bush screw (Part Number: H-M1904) with the access hole.



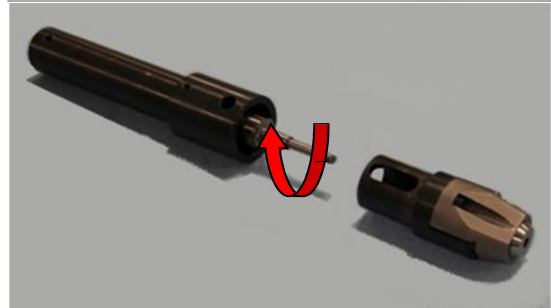
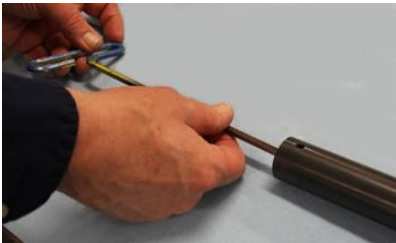
7. Use a 5mm Allen wrench to remove guide bush screw (H-M1904).



8. Remove the guide bush assembly from the upper press tool shaft.



9. Rotate the punch 180° to gain access to the punch set screw. (Pliers may be needed to grasp the punch. A 6mm T-handle can be used to turn the M8 bolt in the upper press tool shaft.)



10. Use a 3mm Allen wrench to remove the punch set screw.



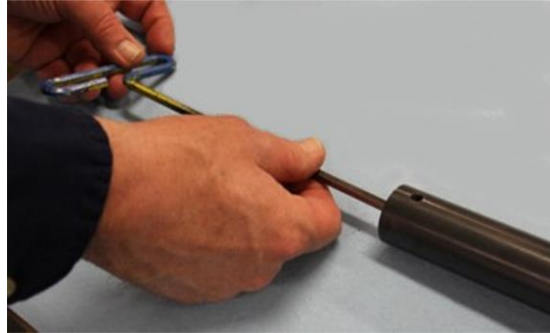
11. Remove the punch.



12. Use a 6mm and a 4mm T-handle to break the bolts free in the upper press tool shaft. Turn counter-clockwise.



13. Use a 6mm T-handle to unscrew the M8 bolt from the upper press tool shaft. Leave a few threads engaged.



14. Push the M8 bolt through the upper press tool shaft until the seal breaks free.



15. Unscrew the M8 bolt and remove.



16. Pull the press plunger out of the upper press tool shaft. Wipe off old grease from the press plunger.



17. Remove the seal.



18. Use a pick to remove the o-ring.



19. Use 4mm Allen wrench to remove the M8 screw from the press plunger.



20. Use a 3mm Allen wrench to loosen and remove the two M4 Socket Head Cap Screws that secure the nose adapter assembly to the guide bush assembly.





21. Use a brass hammer or similar to gently tap both sides of the nose adapter assembly back and forth to free the tubular dowels from the guide bush.



22. Carefully slide the nose adapter assembly free of the guide bush paying attention not to accidentally drop the rivet catchers.



23. Remove the rivet catchers.



24. Place the guide bush assembly in a soft jaw vise. Use a punch and hammer to tap out the M3 X 14mm long dowel pin securing the plug. Allow the punch to retain the plug as the pin is tapped out.



25. Use thumb pressure to restrain the spring force and withdraw the punch.



26. Lift out the plug and two coil springs.



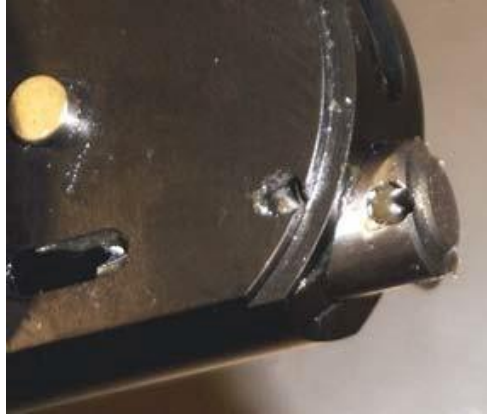
27. Slide out the M3 X 20mm long dowel pin from the plunger.





28. Push the plunger out of the guide bush.

29. Clean and inspect all components for wear and or damage. Replace as required.



30. Thoroughly clean the guide bush assembly.



## **Reassembly**

1. Lubricate plunger and plunger bore in guide bush with general purpose grease. Insert plunger into bore paying attention to correct orientation (see picture on right). Slide plunger in until 3mm hole in plunger is visible through slot in guide bush.



2. Insert M3 X 20mm long dowel pin through slot in guide bush and hole in plunger and center in assembly.



Picture showing dowel pin correctly assembled.



3. Partially insert M3 X 14mm long dowel pin into hole as shown in picture to left.



4. Apply general purpose grease to both large and small springs, assemble small spring inside large spring and insert pair into plunger bore.



5. Secure assembly vertically in soft jawed vice or similar. Place plug on top of springs orienting as shown in picture. Push plug down using thumb pressure or a punch (as shown in picture) compressing springs until a 2.5 Allen wrench or similar can be inserted through hole to temporarily retain plug.



6. Lever Allen wrench up / down as required to align hole in plug with M3 X 14mm long dowel pin inserted at Step 3 then use a hammer to carefully tap dowel pin through assembly until centered.



7. Apply general purpose grease to washer, rivet catch retainer and place onto pivot pin. Repeat for opposite side.



8. Place the new rivet catch onto pivot pin and engage end with plunger pin. Repeat for opposite side.
9. Grease outside of the catches.



10. Place nose adapter assembly over the rivet catchers and engage tubular guides into holes in guide bush.



**Note:** Ensure nose adapter is oriented correctly and the rivet entry slot is on the same side of the guide bush as the rivet catchers.



11. Install M4 x 0.7, 16mm long Socket Head Cap Screws to draw down and retain the nose adapter.



12. Apply grease to the inner and outer guide bush.



13. Use 4mm Allen wrench to install the M8 screw into the press plunger.



14. Keep pressure on the screw and turn counter-clockwise.



15. Fully seat the screw into the press plunger. The screw will be approximately halfway through the press plunger to the point where the outer threads end and the set screw cannot physically be driven back any further.



16. Install a new o-ring.

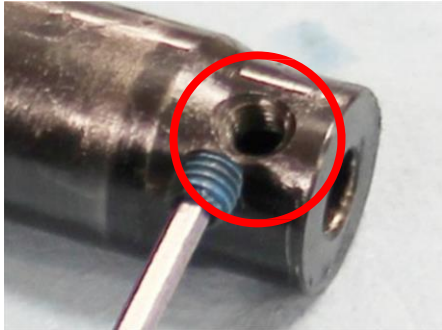
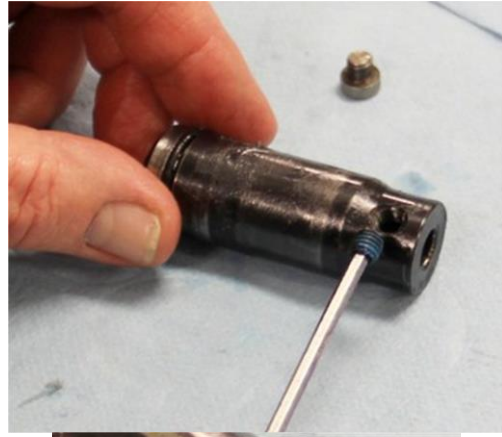


17. Grease the new o-ring.





18. Insert the new punch set screw in the press plunger until flush. Be sure to use the correct screw location. The guide bush screw (Part Number: H-M1904) has a spot face to accommodate the screw head. The punch set screw location has no spot face.



Punch set screw



H-M1904

19. Grease the outer press plunger.



20. Grease the inner bore of the upper press tool shaft.



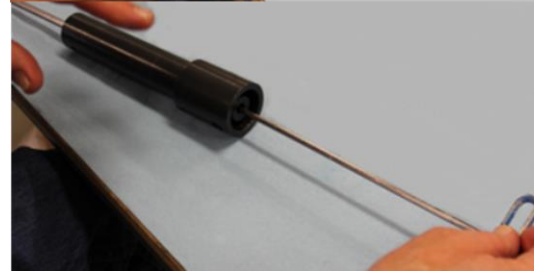
21. Press the plunger into the upper press tool shaft until fully seated.



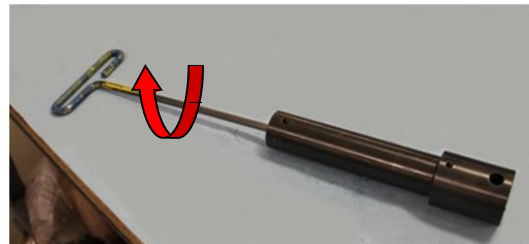
22. Install the upper press tool shaft M8 bolt using M6 Allen wrench. Screw the bolt in fully, but do not tighten. Back the bolt off 1/8<sup>th</sup> of a turn.



23. Holding the M8 bolt in position so it does not rotate, screw the press plunger screw into the bolt using M4 Allen wrench. The screw will stop when it hits the upper press tool shaft M8 bolt. Fully tighten to lock the set screw and bolt together.



24. Use the M6 Allen wrench to turn the upper press tool shaft M8 bolt to be sure the press plunger rotates freely.





25. Apply grease to the new seal.



26. Insert seal cup side down on the press plunger. Ease the seal past the access hole inside of the upper press tool.



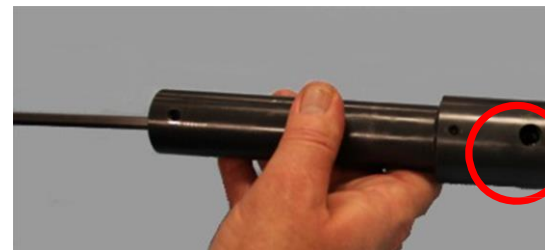
27. Use the M6 Allen wrench to turn the upper press tool shaft M8 bolt to align the punch set screw location with the access hole.



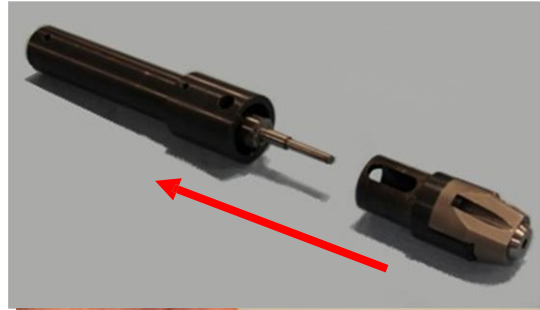
28. Back the punch set screw out then install the punch. Tighten the punch set screw.



29. Use the M6 Allen wrench to turn the upper press tool shaft M8 bolt to align the guide bush screw (H-M1904) location with the access hole.



30. Align the oval slot on the nose assembly with the access hole on the upper press tool shaft. Install the nose assembly.



31. Install the guide bush screw (H-M1904) and tighten.



32. Install the pneumatic fitting from the Norlok SPR Adapter.

33. Install the Norlok SPR Adapter to the upper arm of frame. Be sure to align the guide bush entry slot on the nose with the tape feed tube.



34. Install the cassette.

35. Thread the tape down the feed tube and to the nose with the rivet head facing up. Avoid any unnecessary twists in the tape.



36. Push the tape through the rivet catches and the guide bush until the first rivet is just outside of the guide bush entry slot.

37. Grip the tape from the opposite side and pull until two distinct clicks are heard. Route the tape up through the exit tube.

38. Restore air to the tool.



## SECTION 10.0 – SPARE PARTS

### SPARE PARTS LIST:

#### CLINCH TOOLING:

Letter Lok Punch	MP 700010
#30 Medium Duty Die (Yellow, 26 gauge – 32 gauge)	MP 70000
#40 Medium Duty Die (Blue, 20 gauge – 26 gauge)	MP 70001
#50 Medium Duty Die (Red, 14 gauge – 20 gauge)	MP 70002
Die Holder	401203
Elastomer	404500
Die Blade	403471
Punch Stripper	006058
Stripper End Cap	000048

#### SPR TOOLING:

SPR Punch, 3mm	H-18-00366
Die, 3mm Rivet (for 3mm ACM, 3 and 4mm PolyCarbonate backs)	H-DZ0762025
Die, 3mm Rivet (.040-.040,.040 -.050,and . 040 -.063 Aluminum)	H-DZ0762000H1R1.5
Die Holder	401203
Elastomer	404500
Die Blade	403471
Punch Stripper	006058
Stripper End Cap	000048

#### WAMP:

Intermediate Chamber Assembly, Advanced Power Unit	900154
Base Chamber Assembly	900006
Wamp Diaphragm	200002
Wamp Clamp Bands	200003
Wamp Quick Exhaust	200008
3/8" Muffler, M00 (On quick exhaust and Main Valve)	200009
3/8" Muffler, P38 (WAMP breathers)	200292
Main Valve, Standard 56C	200293

#### MISC:

Automatic Return Module	200436
Foot Pedal	200496
¼" NPT Bronze Muffler P28 (On foot pedal)	200035
Rivet Catch, 3mm	H-18-00264
SPR Circlip Pliers	H-P710
Nose Insert, 3mm	H-24-00173
Guide Bush Retaining Screw	H-M1906
M4 x 16 SHCS	H-P042
O-ring	H-18-00367
Seal	H-18-00354

**USE SPARE PARTS MANUAL TO ORDER ANY OF THE PARTS**

## SECTION 11.0 TROUBLE SHOOTING GUIDE

PROBLEM	CAUSE	SOLUTION
<u>Press will not operate</u>	No air	Connect air supply
	Regulator set too low	Check Filter/Regulator pressure (95 – 100 psi) Check regulator – 65 psi
	Lock-out valve turned off	Turn on valve
	Auto return set very fast	Set to 1 second (minimum).
	Main valve jammed	Service or replace
Slow (or no) press return after foot pedal is released.	Foot pedal jammed	Check and release. Replace if required.
	Blocked foot pedal exhaust	Remove foot pedal exhaust muffler to check. Clean or replace muffler
<u>Press returns when air is shut off.</u>	Auto return valve faulty	Bypass auto return valve to check operation. Replace valve if defective.
	Main operator valve faulty	Usually indicated by long exhaust from valve Replace (or use service kit to rebuild)
<u>Press does not return after foot pedal released.</u>  <u>Press does not return when air is shut off.</u>	Open height adjust set too low	Adjust open height adjuster to required open height
	Upper tooling binding	Remove power unit. If tooling remains down after power unit is removed, remove tooling and lubricate (see manual). If tooling returns to up position, fault is in WAMP power unit.
	Wamp power unit jammed	Tooling will remain down after main valve has exhausted Remove power unit and rebuild
<u>Joints inconsistent</u>  <u>Press lacks power</u>	Low or inconsistent air pressure	Check air supply and regulator pressures
	Back pressure in Wamp power unit	Replace exhaust vents in intermediate chambers.
	Major air leak in Wamp power unit	Check for leaks when unit is stalled in down position. Repair or replace defective Wamp chamber

PROBLEM	CAUSE	SOLUTION
Weak clinch – Punch shears top layer of material	Wrong die (too deep)	Check die chart for correct die / gauge Change die to lower die # (shallower anvil depth) - If #50 change to #40 - If #40 change to #30
	Wrong punch (too sharp)	Change punch to larger PTR
	Punch set too low	Adjust punch away from die (see manual for instructions)
Weak clinch – Clinch pulls apart <u>Inconsistent joint strength</u>	Die dirty Die damaged	Check for dirt buildup in die holder and between blades Check for weak or broken elastomer – replace Check for damaged or broken die blades – replace
	Punch damaged	Inspect punch and replace if required
	Wrong die	Change die to deeper die - If #30 change to #40 - If #40 change to #50
	Wrong punch	Change punch to sharper punch tip radius (ptr)
	Die set too high	Adjust die closer to punch
	Low air pressure	Check tank pressure (100 – 125 psi) during clinching Check regulator pressure (65 psi)
	Press cycle too fast	Check auto return (1 second minimum) Reset to 3 seconds and check clinch
	Back pressure in WAMP power unit	Remove two vents in back of WAMP unit and retry. If clinch OK replace or clean vents, and reset auto return to 1 second. Also check for air leaks (see below).
	Air leak in WAMP unit	Remove two vents in back of WAMP unit and check for major air leak with unit stalled in down position (set auto return to maximum to stall). If more than a slight leak then diaphragm or internal seal has failed (see manual for repair).

## G2 LL4000 (2016+) Troubleshooting Video Links



Machine Setup - <https://vimeo.com/475089243>



Open Height Adjustment - <https://vimeo.com/475221300>



Die Removal & Inspection - <https://vimeo.com/475219080>



Punch Removal & Inspection - <https://vimeo.com/477604019>



Clinch Pedal Not Operating (Slide Block Malfunction) - <https://vimeo.com/475210511>



Adjust Slide Block Timer - <https://vimeo.com/773956555>



Removing Stuck Letter - <https://vimeo.com/774309380>



Lower Tooling Stuck in Up Position - <https://vimeo.com/773804824>





How To Remove Stuck Lower Tooling - <https://vimeo.com/773836370>



Poor Clinch - <https://vimeo.com/477601835>



Setting the Dwell Time - <https://vimeo.com/736534965>



Tooling Adjustment - <https://vimeo.com/477603761>



Air Prep Troubleshooting - <https://vimeo.com/774434934>



Wamp Air Leak Diagnostic – <https://vimeo.com/518142756>




Wamp Repair – <https://vimeo.com/522365660>



SPR Conversion - <https://vimeo.com/437978431>

Check out our other channel letter fastening machines:

LL1200  (SPR) - <https://vimeo.com/431816154>

LL1200  (Clinching) - <https://vimeo.com/431567703>

LL3000  - <https://vimeo.com/431437738>

## SECTION 12.0 – WARRANTY INFORMATION

**Subject to the conditions below, and with the exception of punches and dies, Norlok Technology Inc. ("Norlok") warrants to the first end user (the "Buyer") that Norlok equipment and components are free from defects in material and workmanship for one year from the date of purchase of the equipment or components. Punches and dies are covered under the same warranty conditions for a period of thirty days from purchase from Norlok Technology Inc.**

Norlok will either repair, or replace defective components, including lowest transportation costs, but not including installation or any similar charges, provided that;

1. The buyer notifies Norlok in writing of the claimed defect within one year of the shipment from the Norlok factory (thirty days in the case of punches and dies).
2. Provides a complete explanation of the claimed defect, the application of the product, and any other information as may be requested by Norlok.
3. Returns the defective component to Norlok in accordance to Norlok's specific written instructions and authorization obtained from Norlok prior to the return of the product.
4. Norlok's inspection of the product confirms that the product was defective.

### **This warranty applies only if the product was;**

- I. used in, and applied correctly under normal operating conditions and good engineering practice,
- II. was installed, operated, and maintained in accordance with all instructions issued or published by Norlok,
- III. was used within the stated pressure, and operating limitations published by Norlok,
- IV. was not subject to abuse, misuse, or unauthorized modification.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, NOT WITHSTANDING ANY DISCLOSURES TO NORLOK OF THE USE FOR WHICH THE PRODUCT IS TO BE PUT. THE BUYER'S SOLE AND EXCLUSIVE REMEDY ON ANY CLAIM OF ANY KIND OF LOSS OR DAMAGE ARISING OUT OF THE USE OF NORLOK EQUIPMENT OR COMPONENTS SHALL BE FOR THE REPAIR OR REPLACEMENT OF ANY DEFECTIVE PRODUCT AS PROVIDED HEREIN.

**IN NO EVENT SHALL NORLOK BE LIABLE FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES. There are no warranties expressed or implied made by Norlok other than the warranty against defects in material and workmanship set forth above, and Norlok neither assumes or authorizes any other person or firm to assume for it any other obligations or liability.**

## Revision History and Approval

Rev.	Nature of changes	Approval	Date
0	Initial Release	Jeff Boatright	September 2015
1	Revamped Preventative Maintenance Section	Chris M	May 2022