

**OPERATION AND MAINTENANCE MANUAL SL III**  
**ORIGINAL INSTRUCTION**

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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.

Follow Lockout Procedure to 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.





 <p>Always use safety glasses that conform to ANSI Z87.1 and CAN/CSA Z94.3 Always wear proper personal hearing protection that conforms to ANSI S12.6 (S3.19)</p>	 <ul style="list-style-type: none"> <li>• Look for the knob with lockout point sticker which shown in image below push and turn it counterclockwise to match hole on the valve body which will turn off the main air supply.</li> <li>• Follow standard lock-out tag-out procedure before removing any guards to avoid injury.</li> </ul>
 <p>Make sure pneumatic pressures are at specified level before operating this equipment.</p>	

Table 1


 <p>Be sure all guards and covers are in place</p>	 <p>Keep fingers and hands away from pinch point areas: Between the punch stem and die, i.e., upper and lower tooling</p>
 <p>Keep this equipment properly maintained</p>	 <p>Check for worn or broken parts. Do not attempt to operate machine with broken parts present or if it is making unusual noises.</p>
 <p>Note the location of Reset buttons.</p>	 <p>Keep this manual near the machine for the operator's reference when necessary</p>

Table 2

**OPERATOR SAFETY NOTICE**

The Surelok III 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.
- Use 6mm Nylon disc to test safety feature, refer to Initial Testing section on page 7 of this manual



**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.**

- a. Disconnect and drain air before making any adjustments or servicing any Surelok components.
- b. Always be alert whenever operating any machinery.
- c. 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).
- d. Keep your hands and arms away from internal workings of the machinery when starting, running or stopping.
- e. Never override or disable any safety switch or safety interlock.
- f. Use extreme caution if maintenance or adjustments must be performed with power on and the machine in operation.
- g. Always wear eye protection when operating or maintaining machinery.

**RISK ASSESSMENT**

Hazard Type	Description	Mitigation
Mechanical	Top heavy machine tipping during transportation, lifting or installation	<ul style="list-style-type: none"> <li>• ¾" Threaded hole for lifting at highest point</li> <li>• Wide stand and wide skids for transportation</li> <li>• Warning decals included</li> </ul>
	Pinching and crushing hazards during operation and maintenance	<ul style="list-style-type: none"> <li>• Safety stroke mechanism that only permits power stroke to activate at opening of 6mm or less</li> <li>• Control circuit only permits operation by foot pedal and tooling sensor activation</li> </ul>
	Pinching and crushing hazards between main cylinder and internal moving parts during operation and maintenance	<ul style="list-style-type: none"> <li>• Mechanical fixed guarding</li> <li>• Air shut off valve</li> </ul>
	Stored energy (gravity) – tooling drop when foot pedal is pressed	<ul style="list-style-type: none"> <li>• Shock absorber to reduce tooling drop impact</li> </ul>
	Pinching and crushing hazards during tooling switch over and adjustments	<ul style="list-style-type: none"> <li>• Air shut off valve</li> <li>• Maintenance instructions</li> </ul>
	Stored air in power cylinder and stored air in control circuit	<ul style="list-style-type: none"> <li>• Compliant pressure vessels</li> <li>• Mechanical fixed guarding</li> <li>• Air shut off/exhaust ports to release stored air when not in use</li> </ul>
Noise hazards	Whistling pneumatics	<ul style="list-style-type: none"> <li>• Exhaust mufflers</li> </ul>
Ergonomic	Repetitive activity	<ul style="list-style-type: none"> <li>• Low impact foot pedal</li> <li>• Ergonomic machine height of 35 to 45"</li> <li>• Laser pointer to ease repeatability</li> </ul>
Radiation	Optical laser pointer can cause eye damage	<ul style="list-style-type: none"> <li>• Warning decal and classification</li> <li>• On/off switch for when not in use</li> </ul>

**Table 3**

SECTION 2.0 - SURELOK III INFORMATION

SURELOK III PRESS LAYOUT AND GENERAL DESCRIPTION

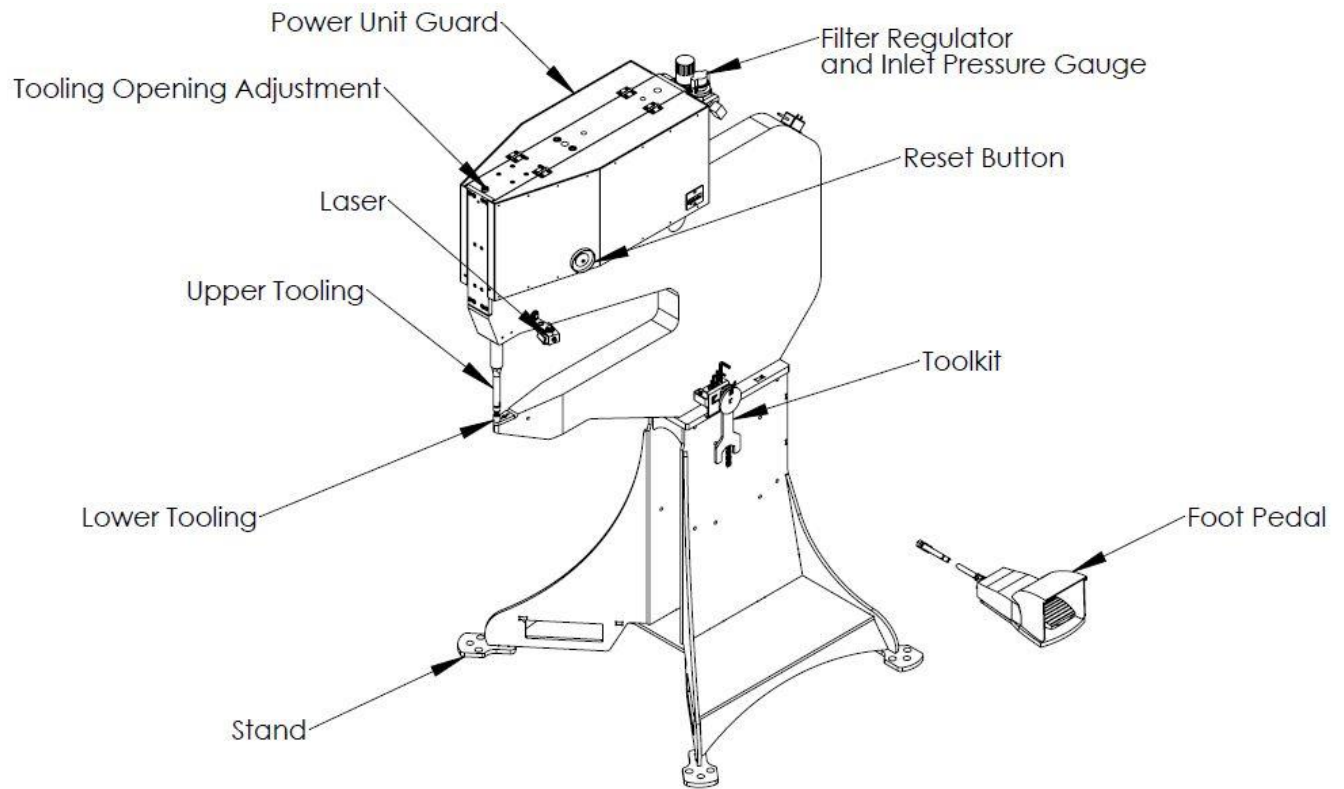


Figure 1 Surelok III Layout

**General Description of Equipment**

Norlok Technology Inc. is a machine tool manufacturing company with wide range of clinching products. The Surelok series is developed for sheet metal joining process and available in different sizes.

**Intended Use:**

The **Surelok III (SL III)** is Floor Mounted **Pneumatic Mechanical Press** designed for sheet metal operations such as clinching, punching, and riveting depending on the tooling applied. The tooling applies a high force to perform these sheet metal forming operations. The machine can also be utilized to perform high force press operations with modified tooling. SL III can perform such operations within rated performance limits and under standard industrial environment as mentioned below.

	Operating Condition	Storage Condition	Transportation
Temperature	-10 to 40° C	-10 to 40° C	-10 to 40° C
Humidity	70%	70%	70%
Altitude	1000m	1000m	1000m

Table 4

**SPECIFICATIONS – SURELOK III**

**Designation:** Pneumatic mechanical press

**Press Design:** Solid 3" steel "C" frame.

**Features:** Advanced power unit  
Regulator and Shut-off Valve  
Foot pedal operated

**Stroke:** 2 1/2" max (adjustable)

**Throat:** 25"

**Work Height:** 45"

**Approx. Weight:** 1250 lbs

**Noise Level:** A-Weighted: <70 dBA

**Upper Tooling:** Quick change adjustable punch

**Lower Tooling:** Quick change die

**Capacity:** MAX: Two ply 0.075" mild steel.  
MIN: Two ply 0.010" mild steel.  
MAX: Two ply 0.050" Stainless.  
MIN: Two ply 0.010" Stainless.

**Cycle speed:** 60-80 cycles/min  
Up to 150 cycles/minute with options and adjustment

**Air Requirements:** 80psi to 100psi (90psi recommended)  
Approx. 0.2 cuft free air per cycle  
2 HP @ 60 clinches per minute




**Reach**

Pipe Diameter	Die reach into Pipe
3" Ø	1 3/8"
4" Ø	3 1/4"
5" Ø	5"
6" Ø	12 1/4"
7" Ø	13 5/8"
8" Ø	15 7/8"
9" Ø	18 1/8"
10" Ø	20 1/2" *
11" Ø	22 3/4" *
12" Ø	25" *

Table 5 \*SLIII 25 only

- Both the punch and die are of special design and should not be sharpened.
- Under normal operation both punch and die should last for approximately 200,000 to 300,000 cycles.

**NORLOK'S EC DECLARATION SL III**

																	
<b><u>EC DECLARATION OF CONFORMITY</u></b>																	
<p>We                  Manufacturer: <b>Norlok Technology Inc.</b>                  Address: 26 Adams Blvd, Brantford, ON N3S 7V2, CA.</p> <p>Hereby declare that machinery mentioned below fulfills all the provisions and guidelines in accordance with referred directives and complies with norms set out by relevant harmonized standards.</p> <p>For                  Product Name: Surelok III/ SL III                  Commercial Name: Surelok III/ SL III                  Model Name: Surelok III                  Serial Number: 22007                  Equipment: Pneumatic Mechanical Press                  Function: Press operations such as Clinching, Punching, Riveting based on tooling applied</p> <p>Under directives                  Machinery Directive 2006/42/EC</p> <p>In reference to following harmonized standards</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="text-align: left;">Ref No.</th> <th style="text-align: left;">Titles</th> </tr> </thead> <tbody> <tr> <td>EN ISO 13857</td> <td>Safety distances to prevent danger zones from being reached by the upper limbs</td> </tr> <tr> <td>EN 349</td> <td>Minimum gaps to avoid crushing of parts of human body</td> </tr> <tr> <td>EN ISO 4414:2010</td> <td>Pneumatic fluid power – General rules and safety requirements for systems and their components</td> </tr> <tr> <td>IEC 62079:2001</td> <td>Annexes B: Compliance checklist for technical review Annexes C: Evaluation checklist for presentation review</td> </tr> <tr> <td>IEC 60825-1:2014</td> <td>Safety of laser products - Part 1: Equipment classification and requirements</td> </tr> <tr> <td>EN ISO 12100:2010</td> <td>Safety of machinery – General principle of design – Risk assessment and Risk reduction</td> </tr> <tr> <td>ISO 3864-2:2004(E)</td> <td>Graphical Symbols – Safety Colours and safety signs</td> </tr> </tbody> </table> <p><b>Authorized party for compiling of technical file</b>                  TÜV Rheinland InterCert Kft                  H-1143 Budapest, Gizella út 51-57                  Hungary</p> <div style="display: flex; justify-content: space-between; margin-top: 20px;"> <div style="width: 30%;"> <p style="text-align: center;">Brantford</p> <hr style="border: 0; border-top: 1px solid black;"/> <p style="text-align: center;">Place of Declaration</p> </div> <div style="width: 30%;"> <p style="text-align: center;">Oct 1 / 2021</p> <hr style="border: 0; border-top: 1px solid black;"/> <p style="text-align: center;">Date of Declaration</p> </div> <div style="width: 30%; text-align: right;">  <hr style="border: 0; border-top: 1px solid black;"/> <p style="text-align: center;">Jeff Boatright, President</p> </div> </div>		Ref No.	Titles	EN ISO 13857	Safety distances to prevent danger zones from being reached by the upper limbs	EN 349	Minimum gaps to avoid crushing of parts of human body	EN ISO 4414:2010	Pneumatic fluid power – General rules and safety requirements for systems and their components	IEC 62079:2001	Annexes B: Compliance checklist for technical review Annexes C: Evaluation checklist for presentation review	IEC 60825-1:2014	Safety of laser products - Part 1: Equipment classification and requirements	EN ISO 12100:2010	Safety of machinery – General principle of design – Risk assessment and Risk reduction	ISO 3864-2:2004(E)	Graphical Symbols – Safety Colours and safety signs
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DATE:2021/07/22

**NOTE: NORLOK'S SURELOK III IS CE CERTIFIED NOW FROM SERIAL NUMBER 22007 AND LATER. ONLY APPLICABLE IF MACHINE NAME PLATE STATES AND CONFIRMS CE.**



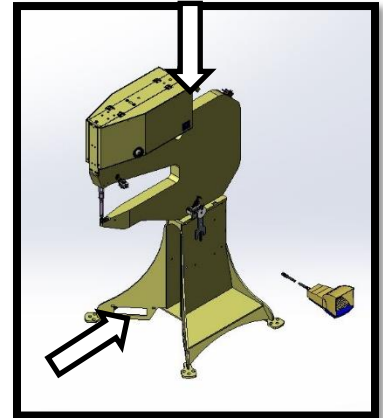
## SECTION 3.0 - INSTALLATION AND OPERATION

## INSTALLATION

## UNCRATING:

1. The press can be lifted using the forklift cutouts in the stand, using a  $\frac{3}{4}$ " NC eye bolt inserted into the top of the frame or using a chain hoist near the centre of mass which is in line with the  $\frac{3}{4}$ " hole on the top.
2. Locate the following items that may have been packed separately;
  - a) Manual
  - b) Laser pointer (if ordered)
  - c) Spare punch and die
  - d) Foot Pedal
3. Check the condition of the press and record the serial number for reference.

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



## LEVELING AND BOLTING DOWN MACHINE:

- I. Level the machine
- II. Lag the machine to the ground if necessary.

## 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 inlet with 125 psi (max) - 80 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.



**CAUTION TOP HEAVY**

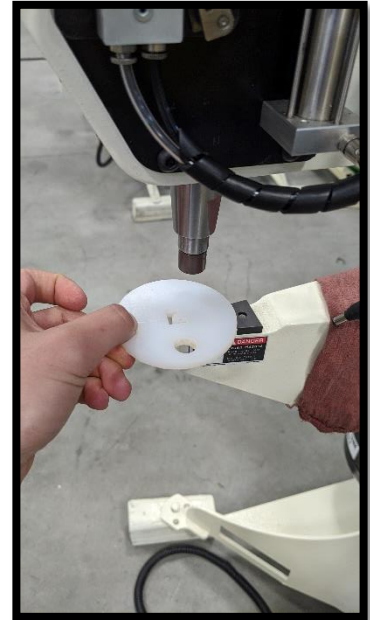
## INITIAL TESTING

- A. The machine is shipped already set up for your material. This can be confirmed easily and it is recommended.
- B. Ensure that all guards are in place.
- C. Slowly open the main air supply valve and check the pressure at the regulator on the machine.

The main Filter Regulator should be set at 100 psi. If the gauges do not read the correct pressure, adjust and lock the regulator.

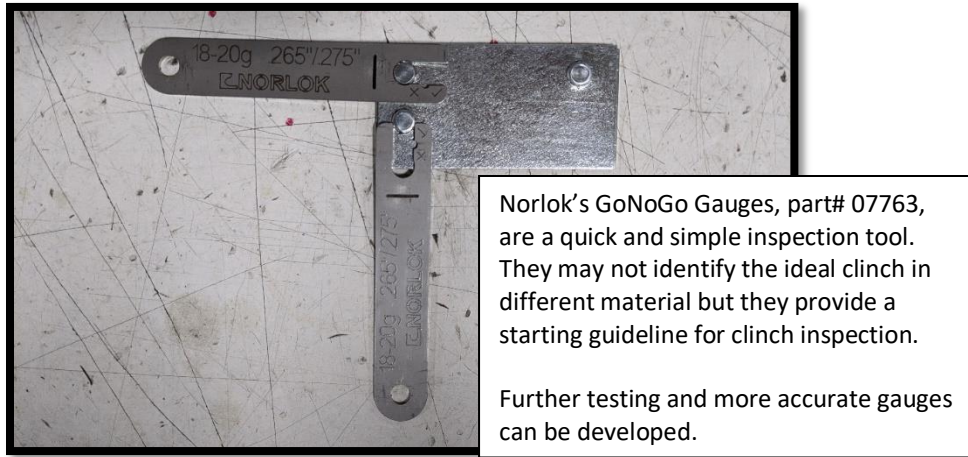
### **WARNING! THIS ACTION ACTIVATES THE HIGH PRESSURE CLINCHING STROKE.**

- D. To test the clinch safety feature, place the supplied 6mm Nylon disc between the upper and lower tooling
- E. Press the foot pedal and verify that the high-pressure clinching stroke does not operate. If it does, refer to Safety Stroke Adjustment section on page 14 of this manual.
- F. With the safety feature verified, place 2 pieces of your material on the die plate keeping your hands clear.
- G. Operate the foot pedal labeled "clinch".
- H. Inspect the connection. Refer to Measurement of Clinch Quality and Tooling Adjustment sections.



## 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



Norlok's GoNoGo Gauges, part# 07763, are a quick and simple inspection tool. They may not identify the ideal clinch in different material but they provide a starting guideline for clinch inspection.

Further testing and more accurate gauges can be developed.

Figure 3 Measuring a Button Diameter (BD) using a Norlok GoNoGo Gauge

Go/NoGo Gauge Part#	Suitable material
07763.238.246	30ga
07763.250.260	22ga-28ga
07763.265.275	18ga-20ga
07763.275.290	14ga-16ga
07763.280.300	0.280-0.300

Table 6 Go/No-go Gauge Chart



Figure 2 Measuring a Button Diameter (BD) using Vernier calipers

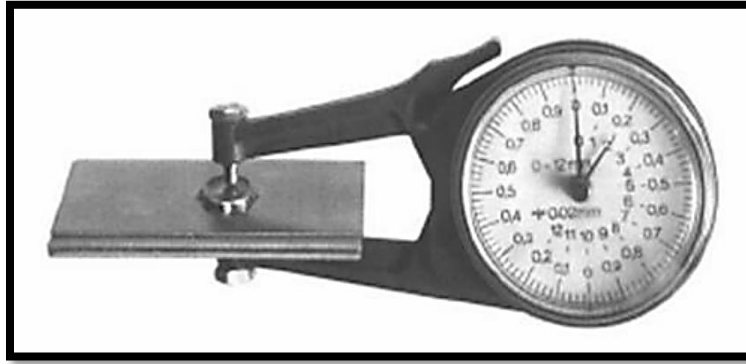


Figure 4 Measuring a Clinch Thickness (CT)

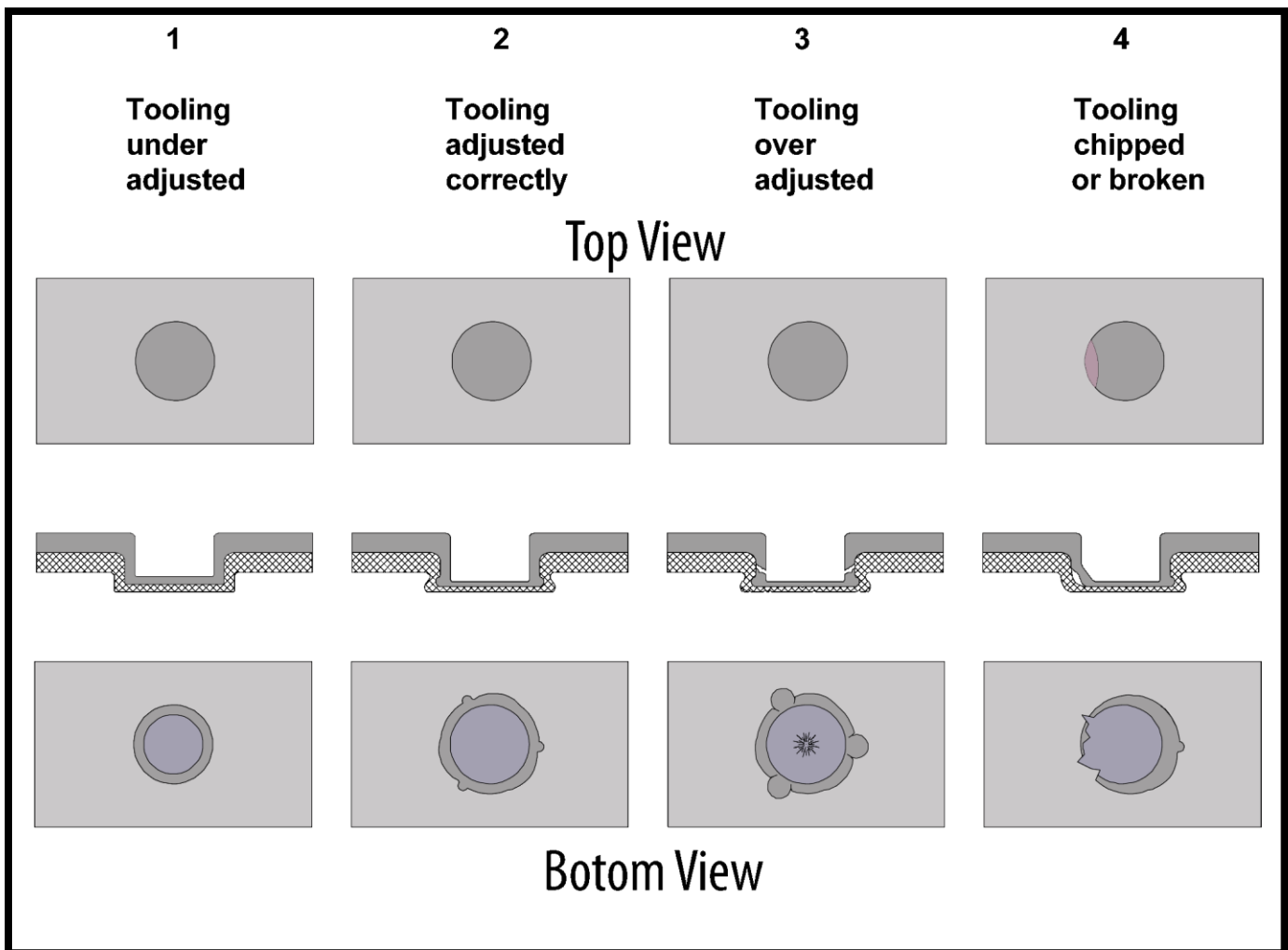


Figure 5 Trouble Shooting Quick View

## TOOLING ADJUSTMENT PROCEDURE

### SQUEEZE ADJUSTMENT

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.
6. Make sure that the pressure on the inlet filter is set correctly.



Figure 6 Removing Tooling Guard

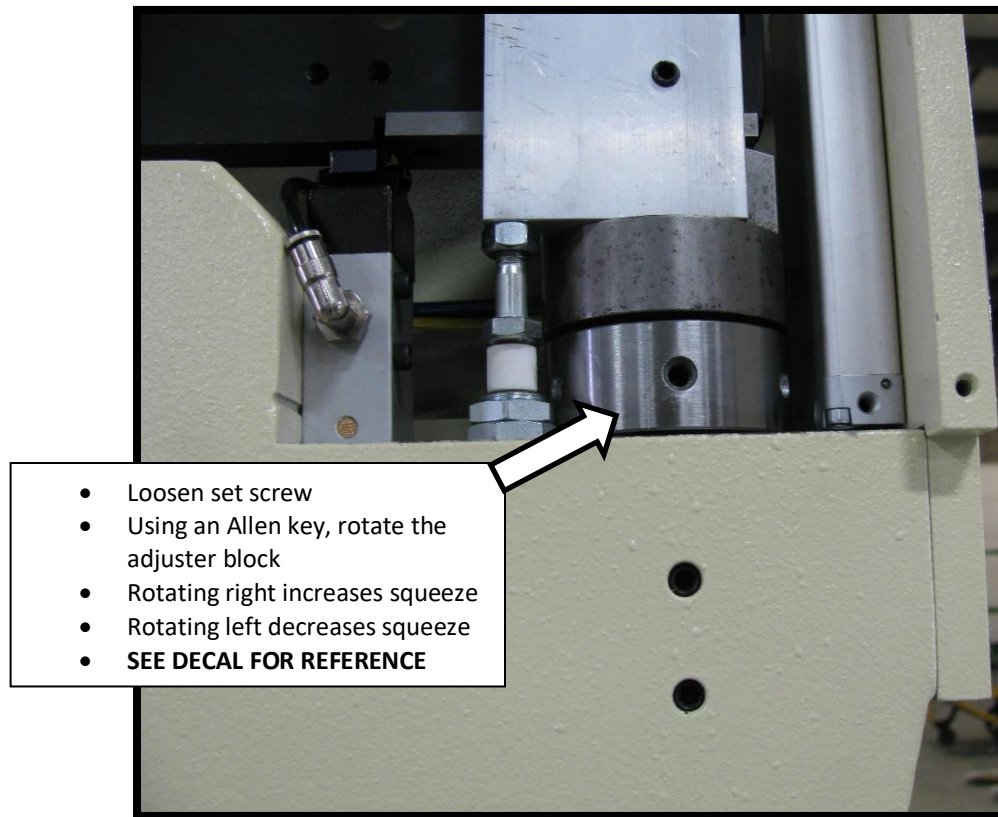


Figure 7 E Tooling Adjustment

**RESET SQUEEZE SETTING AFTER EVERY TOOLING SWITCH OVER**

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

8. Make a sample clinch joint using the correct material.
9. The joint should be too weak because the tooling will be too high (not enough "squeeze").
10. Turn the adjuster block clockwise 1/4 turn, lowering the punch.
11. Make a joint and check the joint strength.
12. If the joint is still weak lower the tooling by 1/4 turn and repeat the procedure.
13. Once a good joint has been made the tooling should be raised by 1/16th of a turn, and the joint strength checked.
14. If the joint produced at this new setting is weaker than the original reset the tooling downward by 1/16th turn.
15. 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.
16. Tighten the tooling adjuster set screw and replace the cover.
17. **REMEMBER - SET THE TOOLING TO THE HIGHEST SETTING THAT WILL PRODUCE A GOOD JOINT. THIS ENSURES MAXIMUM TOOL LIFE.**

### STROKE ADJUSTMENT FOR SLIII

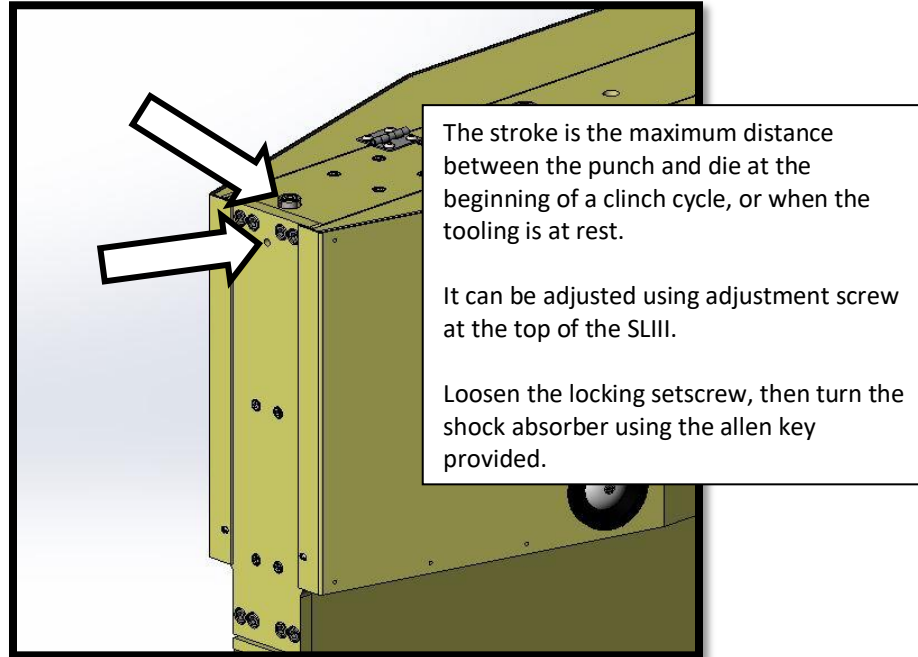


Figure 8 Stroke Adjust for SLIII

### SAFETY STROKE ADJUSTMENT

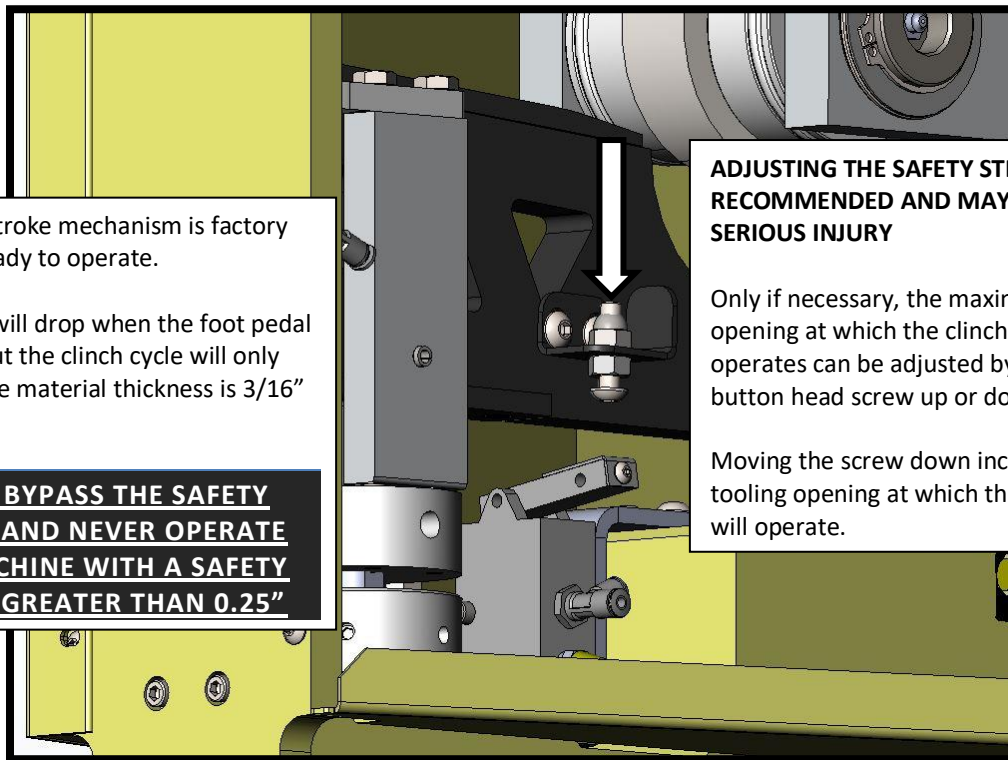


Figure 9 SLIII Safety Stroke Adjust



## PRESSURE SWITCH ADJUSTMENT

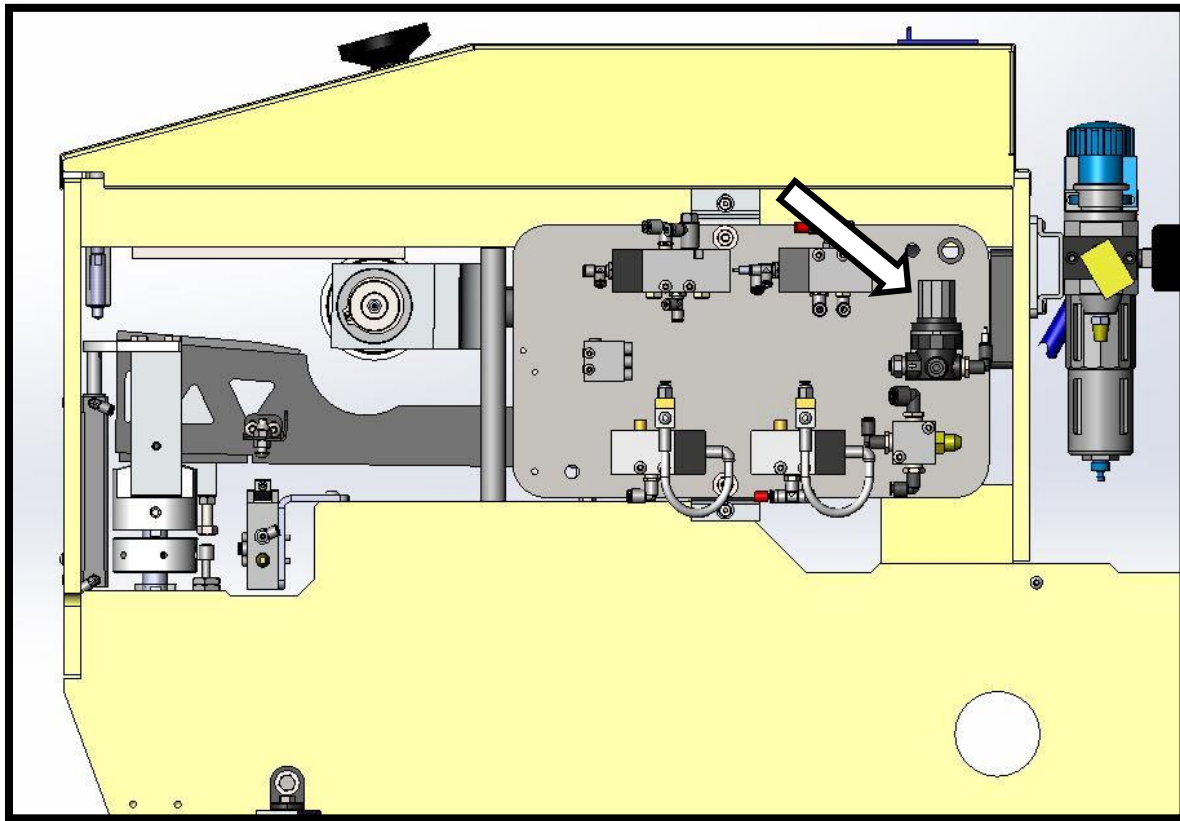


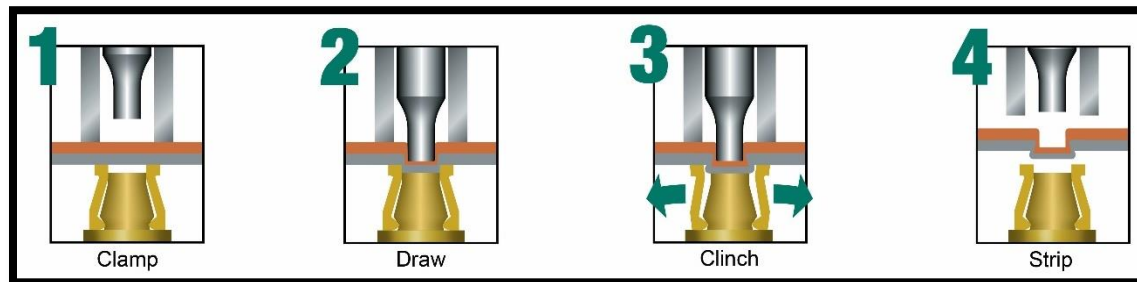
Figure 10 Pressure Switch

- The standard pressure switch is located at the back of the frame.
- Turning the knob clockwise increases the pressure at which the clinch cycle resets – but may increase the cycle time and if set too high the clinch cycle will not restart.
- Turning the knob counter-clockwise decreases the pressure at which the clinch cycle resets – but may reduce clinch quality.
- The pressure switch is factory set for consistent clinching at the quickest cycle time.

**WARNING: OVER ADJUSTMENT OF PRESSURE SWITCH CAN CAUSE TOOLING DAMAGE**

## SECTION 4.0 - CLINCHLOK BASICS

## 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 (punch) either towards the die or away from the die with the tooling adjusting screw.
2. For thin material the punch will have to be lowered (moved towards the die) and for thick material it will have to be raised (moved away from the die).
3. The correct tooling adjustment is the most critical adjustment on the Surelok II. Please read the tooling adjustment instructions in a later section of this manual.

**MATERIALS TO BE JOINED**

1. The Surelok II is capable of joining commercial quality mild steel up to two ply 10 gauge mild steel.
2. For best results both ply of material should be of the same or similar thickness.
3. If different thicknesses are to be joined the best results will normally be found with the thicker material on the upper (punch) side of the two ply although this is not always possible.
4. 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 0.276".
5. Other materials can be joined with the Surelok II 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 upper (punch side) if possible.

**DIE SELECTION**

1. There are three sizes of dies required to cover the complete range of material that the Surelok II can handle.
2. The punch in the upper 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.**

**Table 7 Medium Duty Machines (3/16" Punch Diameter, 5/8" Die Diameter)**

Die size	Material thickness
<b>MD #50</b>	0.075" + 0.075"
	0.063" + 0.063
	0.063" + 0.052"
	0.063" + 0.040"
	0.052" + 0.052"
<b>MD #40</b>	0.052" + 0.040"
	0.040" + 0.040"
	0.040" + 0.034"
	0.034" + 0.034"
	0.034" + 0.028"
	0.034" + 0.022"
	0.028" + 0.028"
<b>MD #30</b>	0.028" + 0.022"
	0.022" + 0.022"
	0.022" + 0.018"
	0.022" + 0.014"
	0.018" + 0.018"
	0.018" + 0.014"
	0.014" + 0.014"
0.010" + 0.010"	

**JOINT STRENGTH**

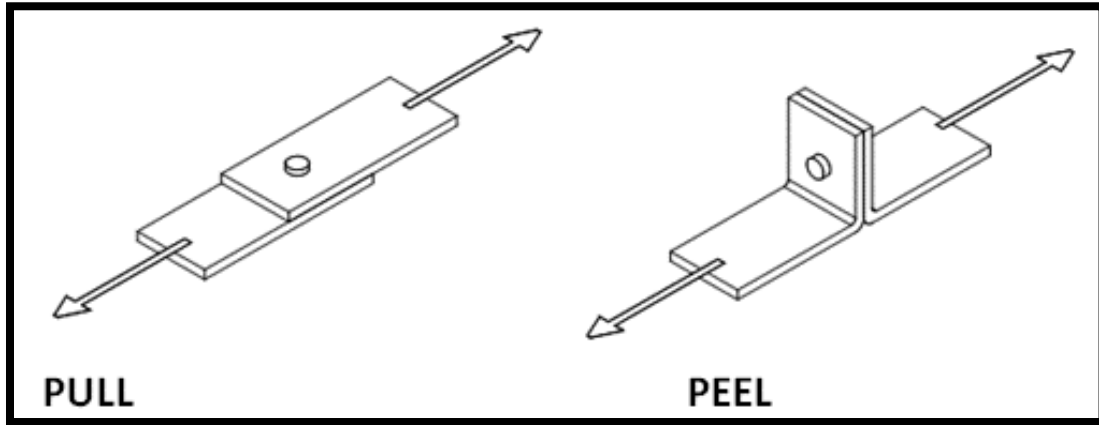


Figure 11 Pull - Peel Layout

1. There are two ways to measure the strength of a Clinchlok joint, pull and peel (see Figure 11 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	Button strength (lbs)*		RECOMMENDED DIE
	PULL	PEEL	
Two Ply			
0.075"	550	190	#50
0.060"	475	175	#50
0.050"	430	150	#50
0.040"	400	120	#40
0.030"	375	100	#40
0.020"	285	70	#30

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

Table 8 Clinch Strength Chart Medium Duty

SECTION 5.0 - CLINCHING TERMINOLOGY

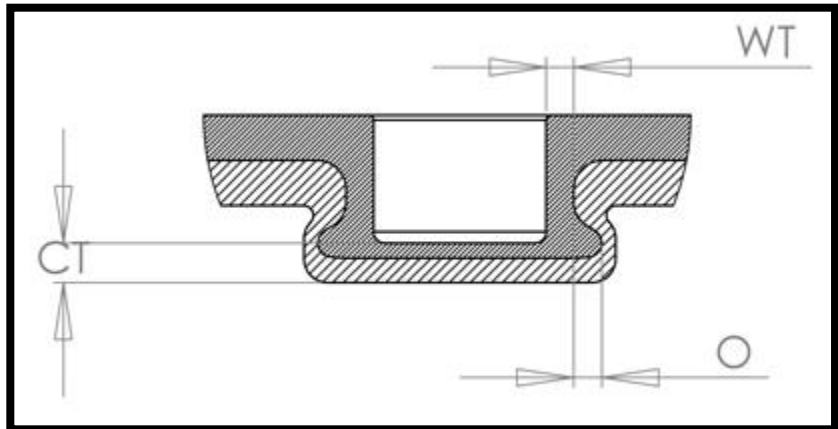


Figure 14 Clinching Terminology 1

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

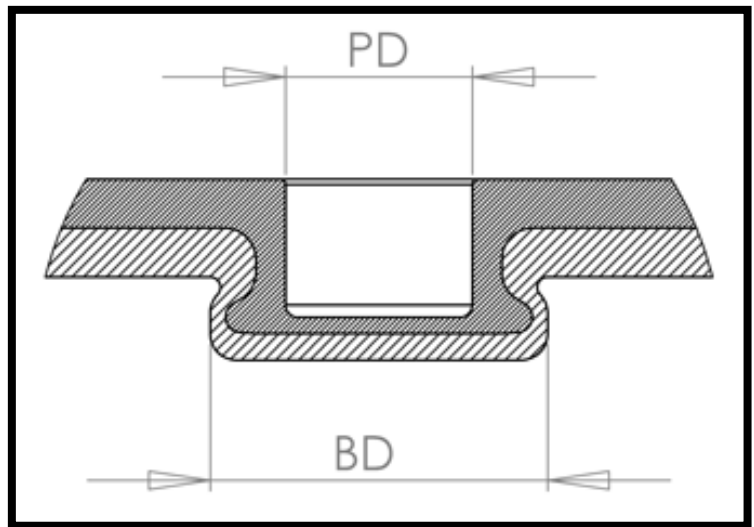


Figure 14 Clinching Terminology 2

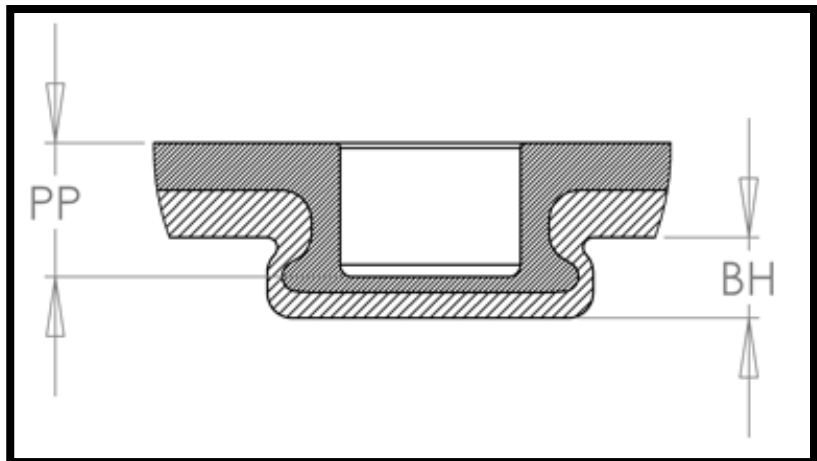


Figure 14 Clinching Terminology 3

IEWS OF THE CLINCHLOK JOINTS



Figure 15 – Cross Section of Joint



Figure 16 Clinch Button

## 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 that 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 #70 die to #60 die. Change #50 die to #40 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 that 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 #40 die to #50 die. Change #60 die to #70 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.

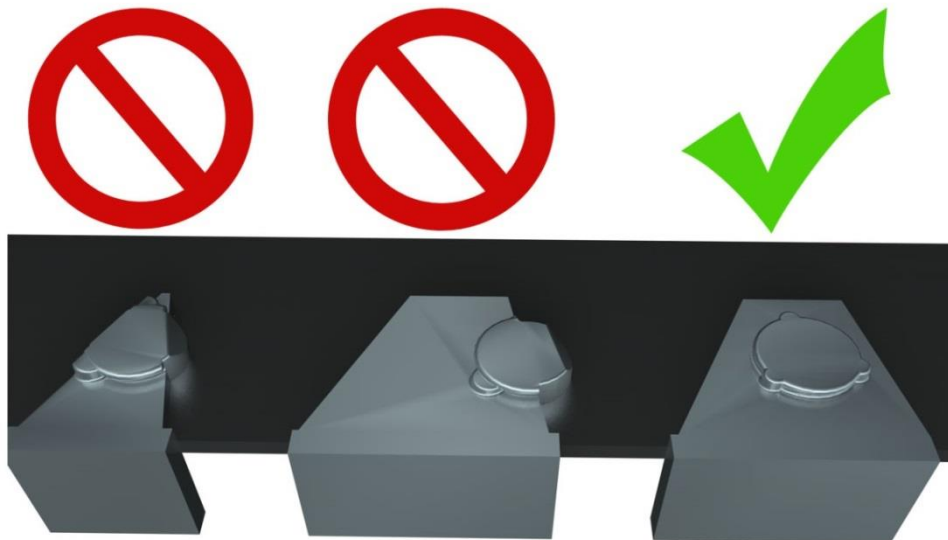


Figure 17 - Visual Inspection

SECTION 6.0 - TOOLING MAINTENANCE & REPLACEMENT

**DISCONNECT AND DRAIN AIR BEFORE ANY TOOLING CHANGES OR MAINTENANCE**

STANDARD REVERSIBLE TOOLING – PUNCH REPLACEMENT

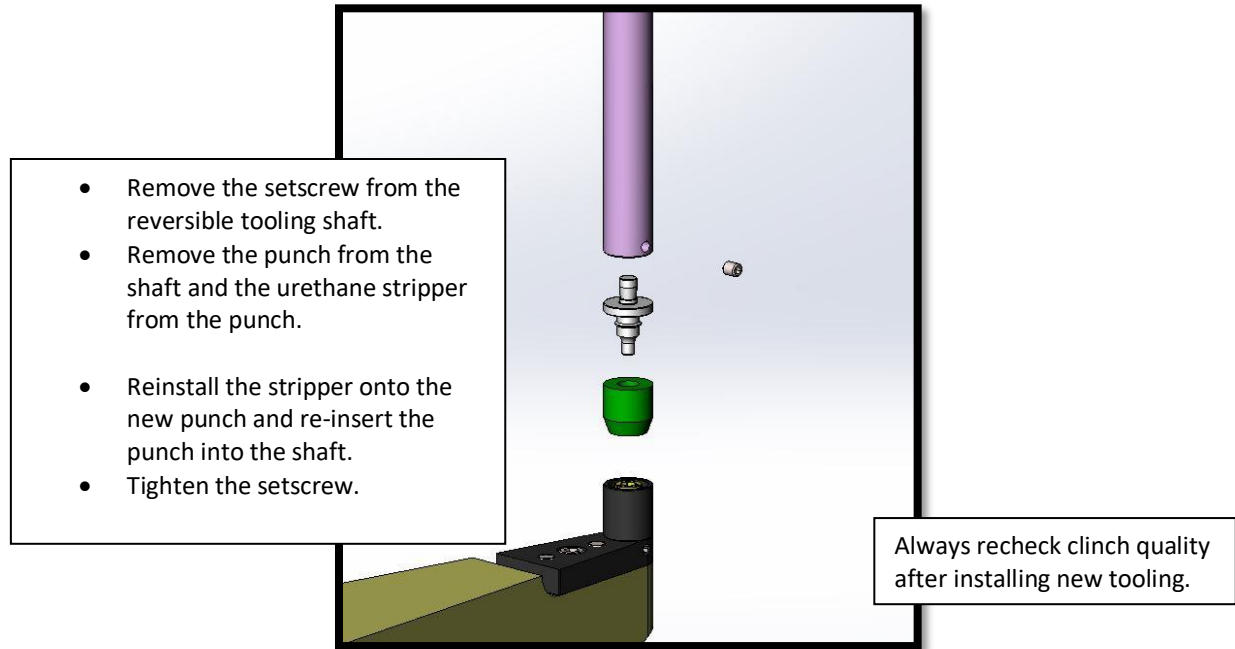


Figure 18 Replace Reversible Punch

OPTIONAL P-TOOLING – PUNCH REPLACEMENT

**REMOVE THE TOOLING ASSEMBLY FROM THE SHAFT BEFORE MAINTENANCE  
FAILURE TO DO SO WILL CAUSE DAMAGE TO THE SHAFT**

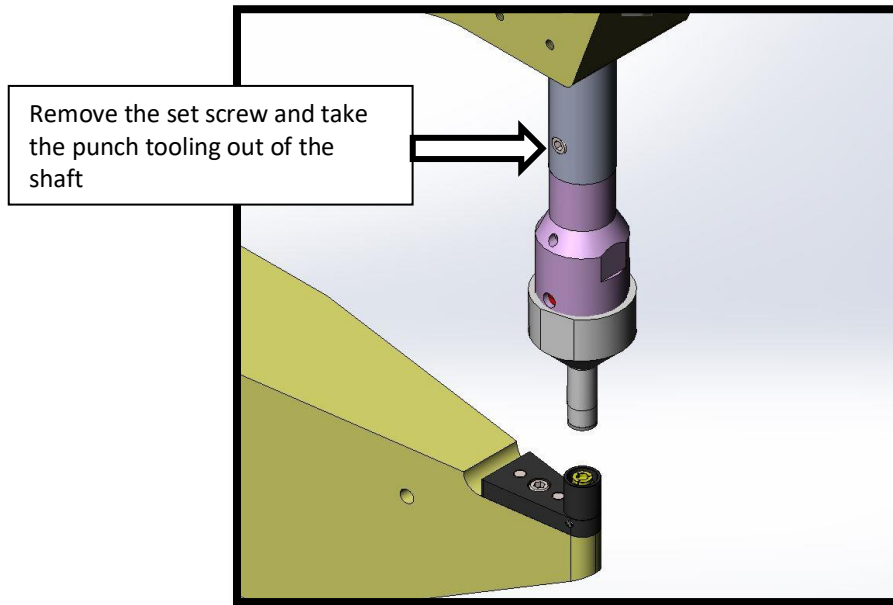


Figure 19 P Tooling



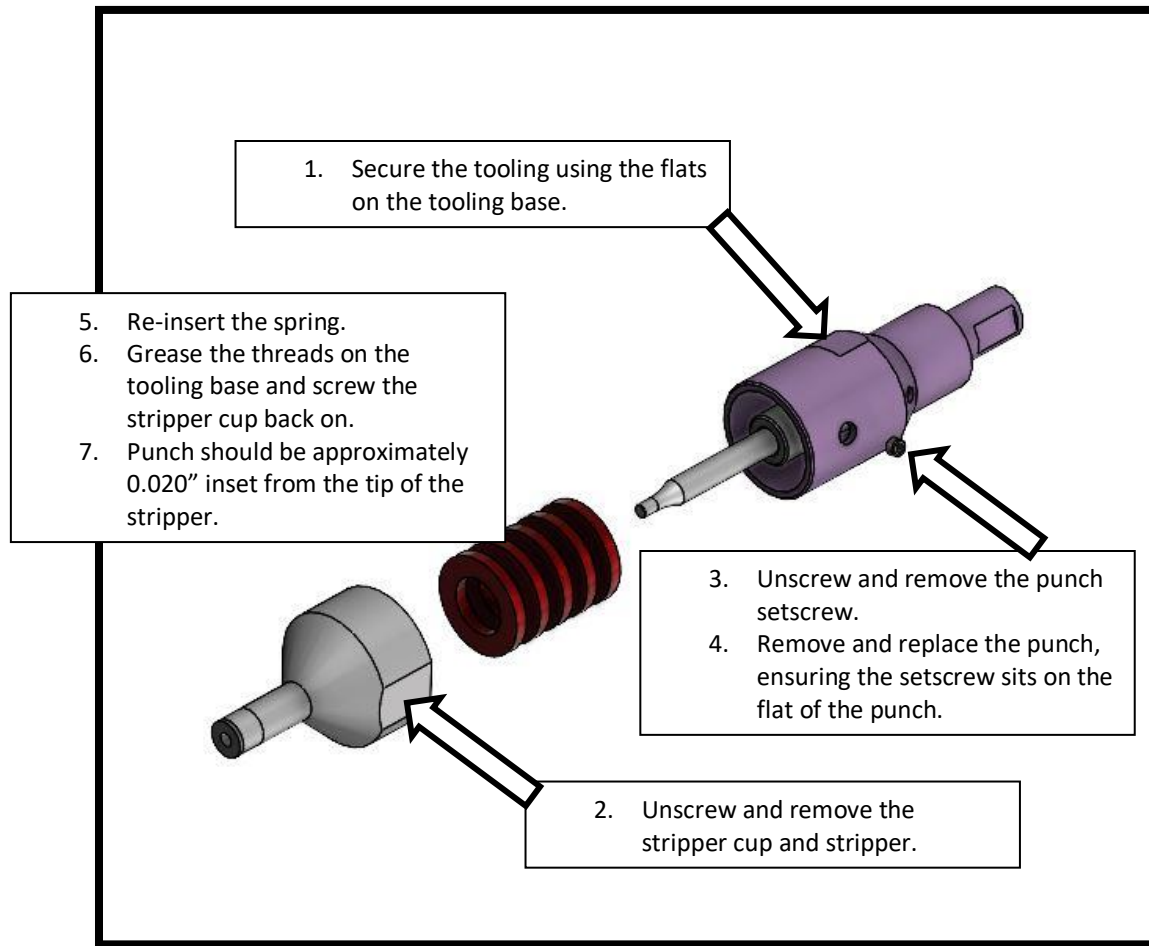


Figure 20 Remove E Punch

REPLACING DIE

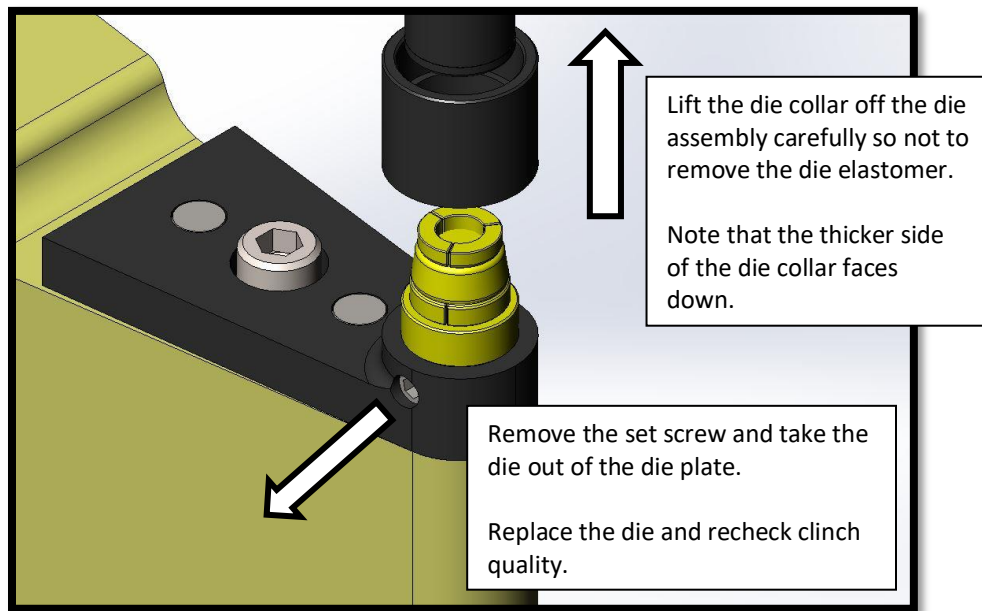


Figure 21 Replace Die

**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.

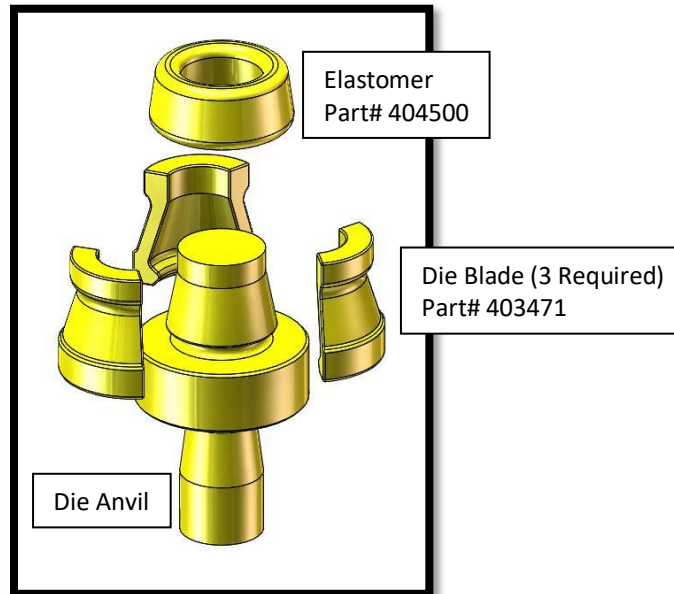


Figure 22 Round Die Insert Assembly

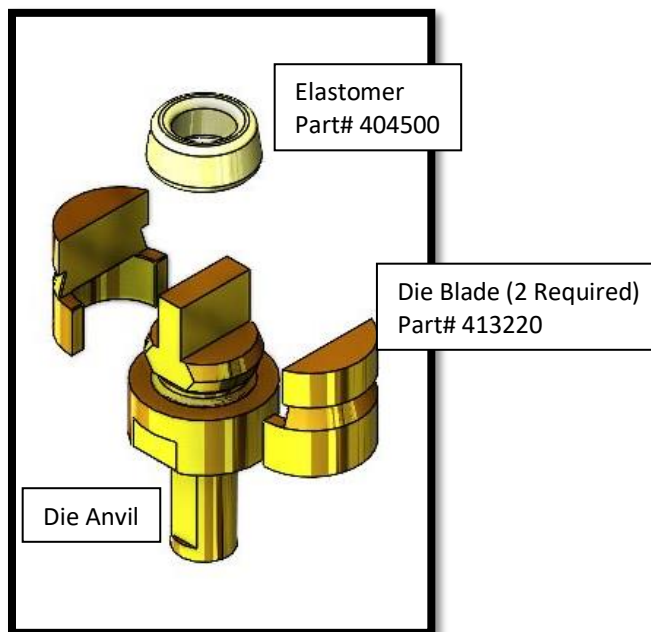


Figure 23 Rectangular Die Insert Assembly

## SECTION 7.0 - MAINTENANCE

## PREVENTATIVE MAINTENANCE

	DESCRIPTION	DAILY	WEEKLY	MONTHLY
1.	Ensure all guards and safety equipment are in place.	X		
2.	Drain moisture from air tank (if supplied).	X		
3.	Maintain correct inlet air pressure.	X		
4.	Check and maintain correct air regulator pressure.	X		
5.	Check automatic return and adjust if necessary (if equipped).	X		
6.	Clean and oil die.	X		
7.	Clean and oil punch.	X		
8.	Make sure that the machine is set for the correct material thickness	X		
9.	Is the correct die installed?	X		
10.	Is the correct tooling adjustment set?	X		
11.	Check and clean air filters.		X	
12.	Check for air leaks.		X	
13.	Check for air leaks when making a clinch (around WAMP unit)		X	
14.	Grease upper tooling			X
15.	Check laser operation (If supplied)			X
16.	Check tightness of bolts. i.e Stand, WAMP etc.			X

Table 9

**MAINTENANCE - PRESSURE ADJUSTMENTS**

- Supply the machine with 125 PSI (max) 80 PSI (min) clean dry air. We recommend a 1/2” (min) air line at 120 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 from the air supply. If filter requires draining other than daily then the inlet air is contaminated. It may be necessary to install an extra inlet filter before.

**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).
- To get access, lift the tooling and place a block or thick bolt under the adjuster block.
- 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.

**SECTION 8.0 – TROUBLE SHOOTING GUIDE**

**Table 10**

**OPERATION TROUBLESHOOTING**

<b>PROBLEM</b>	<b>CAUSE</b>	<b>SOLUTION</b>
A. Press does not close with foot pedal	Upper tooling tight in barrel	Clean tooling and lubricate
B. Tooling does not retract automatically or dwells before returning	Inlet pressure lower than pressure switch setting	Check supply line and regulator. Supply should at 125psi and regulator at 100 psi. Pressure switch should be set at factory recommendation
	Upper tooling tight in barrel	Clean and lubricate tooling and barrel sleeve
	Exhaust mufflers on WAMP blocked	Remove and clean
	Air leak in WAMP	Review WAMP service bulletin to inspect

**JOINING ISSUES**

PROBLEM	CAUSE	SOLUTION
A. No Button Formed	Punch broken	Replace – see punch replacement section in manual
	Die broken	Replace – see die replacement section in manual
	Tooling adjustment too high	See tooling adjustment section in manual
	Pressure switch set too low	Set pressure switch to factory recommendation
B. Button Partially Formed – No Squeeze	Metals not of specified thickness.	Use specified metal or use proper tooling.
	Pressure drop	Restore Pressure
	Incorrect tooling for metal being used	Verify joint data – change tooling if necessary
C. Piercing / Cracking of Punch Side	Metal not of specified thickness	Use specified gauge or change tooling

**JOINT QUALITY**

PROBLEM	CAUSE	SOLUTION
A. Cracks appear on button	Metals not of specified thickness or hardness	Use specified metals or change to proper tooling
	Button diameter too large, tooling over adjusted	Readjust tooling
	Incorrect tooling for metals	Verify joint data/ change tooling if necessary
	Punch / die not concentric	Realign tooling
	Excessive deflection	Check machine for damage
B. Cracks appear inside joint cup	Metals not of specified thickness or hardness	Use specified metal or change to proper tooling
	Incorrect tooling for metals	Verify joint data/ change tooling if necessary
	Punch / die not concentric	Realign tooling

	Weak or broken stripper spring	Replace
C. Lump or Irregularity on button	Chipped punch or die	Replace
D. Concentric double button	Stripper failure	Replace or repair
	Double hit	Check controls re-train operator
E. No “mushroom” effect of button	Broken or damaged stripper	Replace
F. Partial “mushroom” effect of button	Die blade missing or opened before joining	Replace blade if missing or check for interference causing leaf to open on part loading
	Excessive deflection in frame or tooling	Check for damage
G. Dimpling and unformed button	Die blade missing	Replace blade
	Die elastomer damaged	Replace elastomer
H. Button not round	Die blades not opening	Check for interference
	Excessive deflection of frame or tooling	Check for damage
	Punch and die are not concentric	Realign tooling
I. Parts are disjointed during joining	Tooling adjusted too high	See page 18 for tooling adjustment

## SECTION 9.0 - DOCUMENT REVISION HISTORY

REV No:	Issue Description	Date	Revised By
4.0	Initial check in	2021-11-15	Sameh Helmy
5.0	Removed ISO	2022-01-10	Nishit dave

Table 11

## SECTION 10.0 - 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 nor authorizes any other person or firm to assume for it any other obligations or liability.**