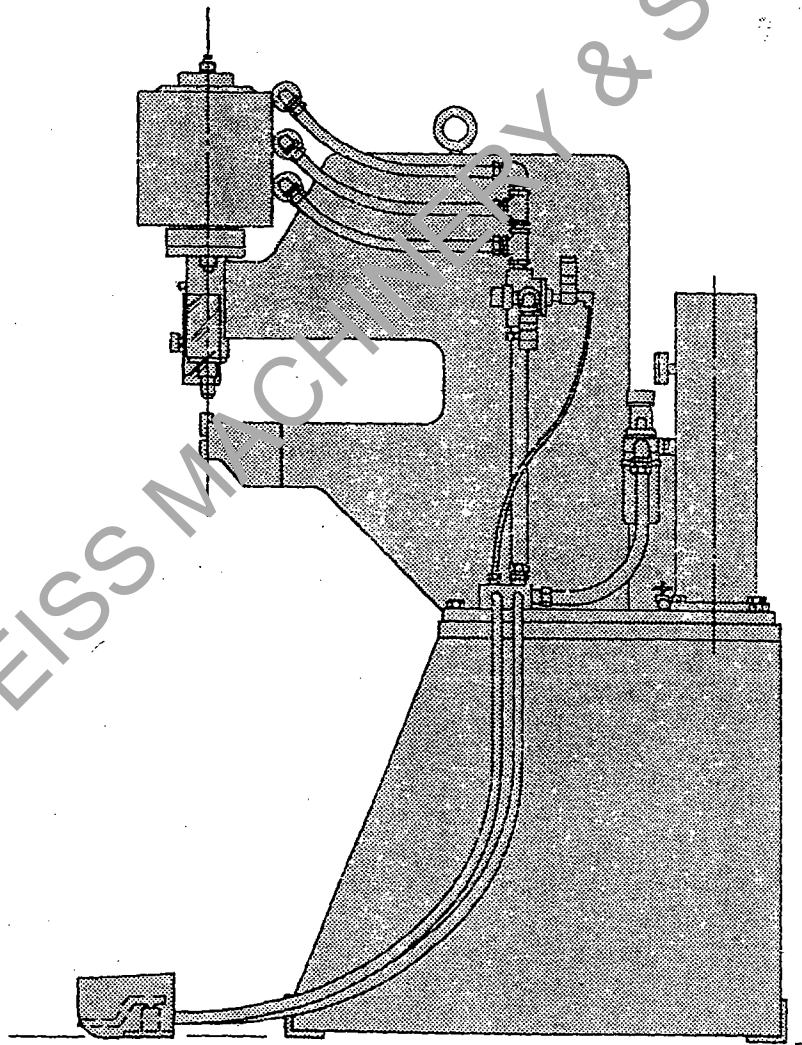
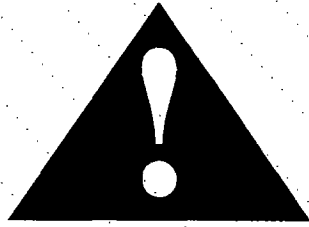


QUICLOK

MEDIUM DUTY OPERATION AND INSTRUCTION MANUAL



Made in America by LOCKFORMER



CAUTION

To provide clarity to points in question the illustrations and photographs contained herein are shown with cover(s) removed

**NEVER OPERATE THIS
EQUIPMENT UNLESS ALL COVERS
AND GUARDS ARE IN PLACE !**

The information in this document has been reviewed and is believed to be completely accurate, however, no responsibility is assumed for inaccuracies. Furthermore, the LOCKFORMER COMPANY reserves the right to make changes to any products herein, at any time, to improve reliability, function, or design. The LOCKFORMER COMPANY does not assume any liabilities arising out of any use of any product described herein, neither does not convey any license under its patent rights nor the rights of others.

SAFETY FIRST

IMPORTANT! READ THIS

Common sense and **extreme** care must be used at all times during the operation and maintenance of this equipment. It is important that **ALL** personnel who will operate, maintain, or supervise the use of this equipment read and understand the sections of this manual concerning **SAFETY** and the **OPERATION** of the equipment.

The equipment described in this manual was designed and manufactured for a specific function. It should not be used for any other purpose or outside of the design specifications as this may be hazardous. Modifications or additions to this equipment should not be made without consulting the Lockformer Co.

Replacement and maintenance parts should be equal to the original equipment. Use of other parts may result in unsafe operation. If there is a question to the suitability of a part, The Lockformer Co. should be consulted.

In general, every piece of equipment must be treated as dangerous. While operating or maintaining this equipment, each person must be aware of his own safety as well as the safety of all bystanders.

SIGN OFF SHEET FOR ALL EMPLOYEES

It is the employer's responsibility to instruct all persons who may come in contact with this equipment on the safe operation and maintenance of this equipment. Have each person read the sections of this manual concerning **SAFETY** and the **OPERATION** of the equipment. If a language barrier or other restriction limits understanding, this manual can be read to the individual with appropriate follow up questions to verify understanding. Have each individual sign below only after demonstrating their understanding of the safety practices described in this manual.

I verify that I have read and understand the safety and operation sections for this equipment installation:

NAME	DATE	NAME	DATE

Remember that this manual is only a portion of an adequate training program. It must be coupled with specific instructions for your application along with full information of national and local safety regulations that may apply.

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GENERAL SAFETY GUIDE



You are not ready to operate this equipment if you have not read and understood the safety information in this manual.



LOCKFORMER

WARNING

THIS EQUIPMENT IS DESIGNED TO BE OPERATED WITH ALL COVERS SECURED IN PLACE. OPERATION WITHOUT THESE SAFEGUARDS MAY RESULT IN CONDITIONS WHICH ARE HAZARDOUS TO THE OPERATOR AND OBSERVERS.

SAFETY GUIDELINES

Before operating the machine, study and follow the safety precautions in this section. These precautions are intended to prevent injury to you and your fellow workers. They cannot, however, cover all possible situations. Therefore, EXERCISE EXTREME CAUTION before performing any procedure or operation.

Safety Precautions BEFORE Starting The Machine(s)

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 lock outs and tagouts** to prevent accidental start-up when performing maintenance procedures.

Keep your hands away from internal workings of the machinery when starting, running or stopping.

Keep your work area clean. Remove all scrap, oil spills, rags, tools and other loose items that could cause you to slip, trip and fall.

When cleaning the machine or any of its components, do not use toxic or flammable substances. Do not perform any cleaning while the equipment is running.

Never override or disable any safety switch or safety interlock.

If equipped make sure that hydraulic and pneumatic pressures are at specified levels before operating this equipment.

Do not operate the rollformer unless all covers are in place.

Be sure that this Instruction Manual is kept near the machine so the operator can refer to it when necessary.

Keep this equipment properly maintained.

Always turn off power to the machine(s) at the main disconnect before performing any maintenance or adjustments so accidental start-up or electrocution cannot occur.

Safety Precautions WHILE Operating The Machine(s)

Never leave the work area while the equipment is in operation.

Always be alert while operating machinery.

Be alert for loose, worn or broken parts. Do not attempt to operate any machinery with such parts present or if the machinery is making unusual noises or actions.

Avoid skin contact, prolonged breathing, or eye exposure to any stock lubrication fluid being used.

Be aware of the locations of the **Power Off** or **Emergency Stop** button in case of an emergency.

Be sure all guards and covers are in place.

Continually observe the rollforming process and related equipment. If any unusual condition develops, immediately stop and inspect the machine.

Protect yourself! Wear safety glasses. Do not wear loose clothing, neckties, or jewelry. If long sleeves must be worn, avoid loose cuffs and buttons. Tie back and contain long hair.

Never adjust any roll feature or perform work near the rolls while they are running.

General

If any pneumatic or hydraulic feature is used, disconnect the main supply and exhaust pressure or bleed the lines to prevent cycling on retained pressure.

Always shut off the power at the main disconnect switch before entering the electrical control box.

Do not use compressed air to clean the machines. Air pressure may drive dirt and small chips into the machine(s) bearing surfaces or cause bodily injury.

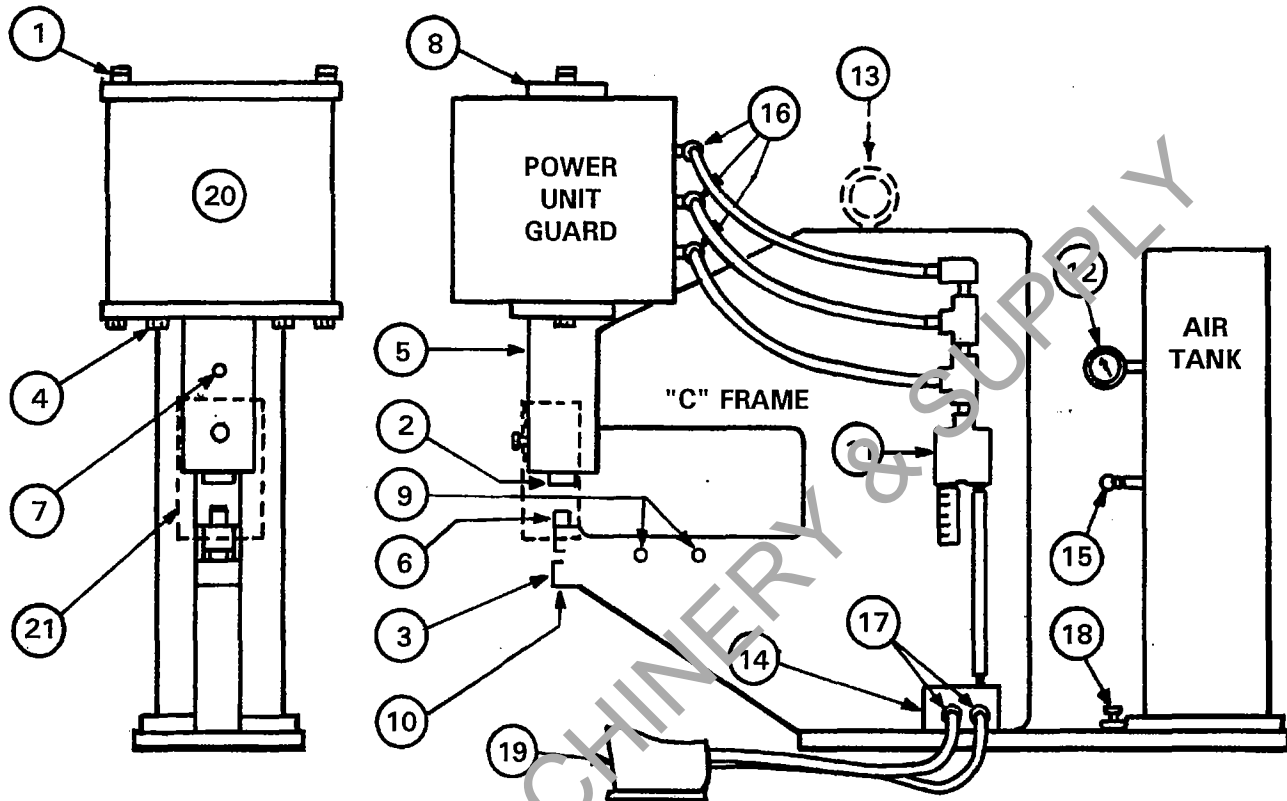
IMPORTANT

The information contained herein is to be used as a general guide only. For further safety information obtain and read the ANSI bulletin entitled: **ANSI B11.12-1996 Rollforming and Roll-Bending Machines Safety Requirements for Construction, Care and Use.**

CONTACT: American National Standards Institute
11 West 42nd Street
New York, New York 10036

GENERAL ARRANGEMENT ILLUSTRATION 1

High Speed Air Valves
61522



- (1) GUARD/SUPPORT NUT & LOCK NUT (10" CENTERS)
- (2) UPPER TOOLING ASSEMBLY (SEE PAGE 3)
- (3) SET SCREW (BOTH SIDES) PT.#62927
- (4) POWER UNIT NYLOK NUT (2) 4-3/4" CENTERS
- (5) C FRAME BARREL
- (6) DIE (BUTTONLOK) SEE PAGE 6
- (7) BREATHER PT.#61516
- (8) POWER UNIT TOP SUPPORT
- (9) BOLT HOLES FOR WORK PIECE TABLE (IF FITTED)
- (10) ADJUSTER SCREW PT.#42026

- (11) *FILTER + REGULATOR*
AIR VALVE PT. # 61539
- (12) AIR TANK GAUGE PT.#61540
- (13) LIFTING POINT
- (14) C FRAME AIR MANIFOLD PT.#25941
- (15) AIR SUPPLY INLET
- (16) QUICK EXHAUST PT.#61524
- (17) FITTINGS TO FOOT PEDAL PT. #61521
- (18) AIR TANK DRAIN PT.#61544
- (19) FOOT PEDAL PT.#55125
- (20) POWER UNIT PT. #420303
- (21) PLASTIC GUARD PT.#29737

QUICLOK UPPER TOOL ASSEMBLY

PT. # 0420801

ILLUSTRATION 2

(A) PUNCH HEAD
PT. #15740

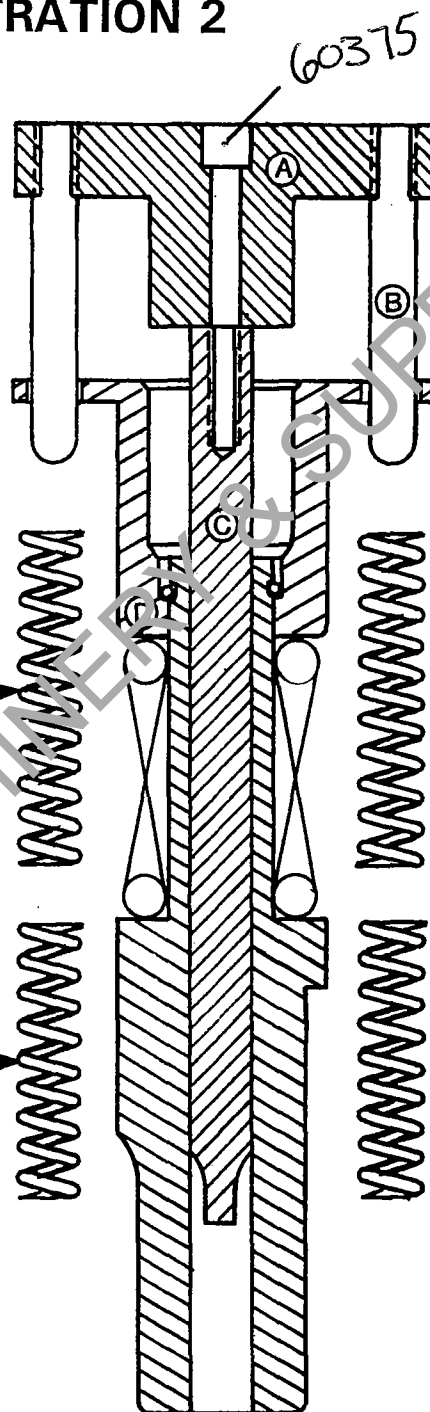
(B) SPRING GUIDES
PT. #42027

(C) PUNCH
PT. #86108

(D) UPPER PUNCH GUIDE
ASSEMBLY PT. #21431

(E) FOUR SPRINGS 3-1/2" LONG
PT. #70977

(F) FOUR SPRINGS 3" LONG
PT. #70978



AIR SUPPLY

Connect air hose to the inlet fitting of the air tank (3/4" or 1" diameter air hose recommended, but 1/2" is the minimum diameter that can be used). Set the Air Regulator to 100 psi by turning the dial on top of the regulator clockwise. The filter should be clean, and lubrication is not necessary. With the unit operating with a stroke of 1", the unit uses approximately 110 cubic inches of air at 100 psi per buttonlok. A four horse power compressor in good condition should be capable of thirty buttonloks per minute.

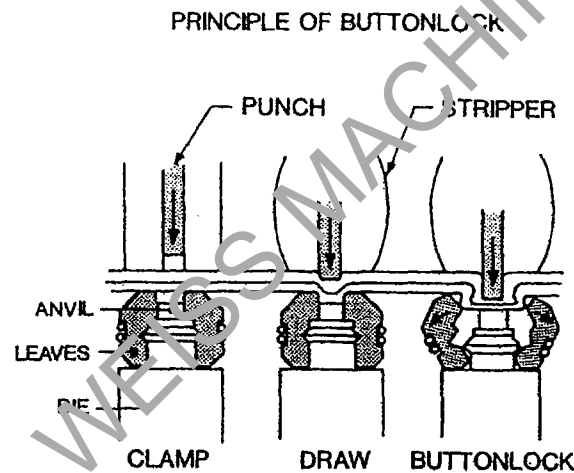
The Quiclok is now ready to operate with the die mounted. *To adjust for other gauges, or to change dies, please read Die Set Up on page 7.*

CAUTION - DO NOT ATTEMPT TO ADJUST THE DIE WITHOUT READING DIE SET UP INSTRUCTIONS.

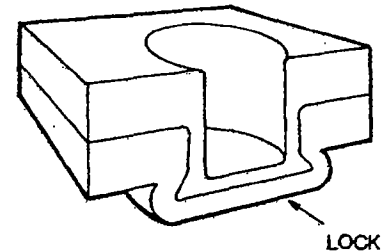
BUTTONLOK DESCRIPTION

Principle of the Buttonlok

In order to get the best out of your Quiclok, a basic understanding of the buttonlok is advised. The reference numbers in brackets (#), refer to the parts as shown on Illustrations 1 and 2.



CROSS SECTION OF A BUTTONLOCK



The buttonlok is formed when the upper tooling (2) squeezes the two layers of material to be joined between the punch (2C) and the die (6). The amount of squeeze is very important to the strength of the buttonlok and to the life expectancy of the punch and die.

The amount of this squeeze is controlled by adjusting the die either towards the punch or away from the punch, with a die adjusting screw (10). For thin material the die will have to be raised (moved towards the punch) and for thick material, the die will have to be lowered (moved away from the punch).

The correct die adjustment is the most critical adjustment on the unit. Please read the **Die Adjustment** section of this manual.

MATERIALS TO BE JOINED

The Quiclok is capable of joining two ply commercial quality mild steel, from 28 gauge to 16 gauge. Both layers of material should be of the same or similar thickness.

If different thicknesses are to be joined (not recommended) the best results will normally be found with the thicker material on the top (punch) side of the two ply.

The top (punch side) material should not be more than twice the thickness of the lower material (die side) and the combined thickness of the two layers should not exceed 0.125".

Other materials can be joined with the Quiclok as long as they are not harder than commercial quality mild steel. In most cases, both plies 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 top (punch side).

Common Materials:

Drawing Quality Steel
Commercial Quality Steel
Copper
Aluminum
Brass
Stainless Steel
High Carbon Steel

Button Quality:

Recommended
OK
OK
Usually OK
Usually OK
Not Usually Possible
Not Usually Possible

DIE SELECTION:

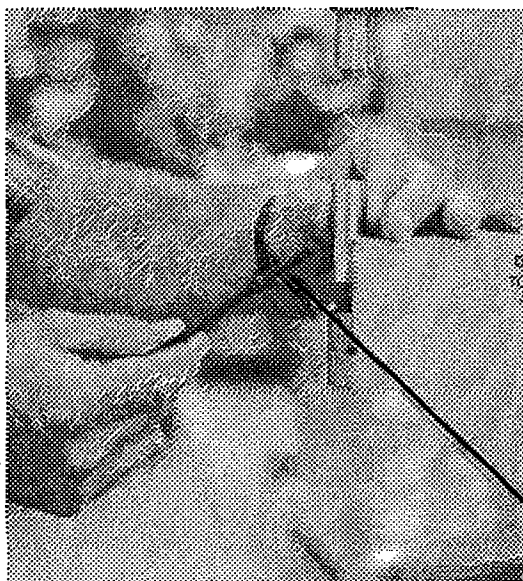
There are three sizes of dies required to cover the complete range of material that the Quiclok can handle. The punch in the upper tooling remains the same. The die selection chart on the next page can be used to find which die will be most suitable for your application, however the chart is a guide only, different types of material may require a different size die.

#50 die	2 ply 16 gauge max	2 ply 18 gauge (min)
#40 die	2 ply 20 gauge max	2 ply 24 gauge (min)
#30 die	2 ply 26 gauge max	2 ply 30 gauge (min)

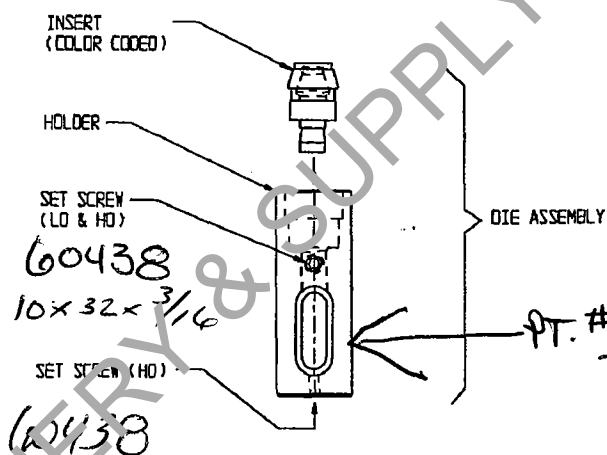
REMOVING THE DIE ASSEMBLY

CAUTION! DISCONNECT AIR SUPPLY AND DRAIN TANK BEFORE REMOVING DIE!

The buttonlok die may be removed by simply removing the Die Securing Screw. See photo and illustration below.



DIE SECURING SCREW



REPLACING THE DIE INSERT

1. Remove the Die Assembly.
2. Loosen the Die Insert Set Screw.
3. Insert an allen wrench up through the hole in the bottom of the die, and push the die insert out the top.
4. Install new die insert, and tighten the Die Insert Set Screw.
5. Install die in Quiclok, and tighten the Die Securing Screw. Lightly oil the die before replacing the die in the machine. The side of the die with the threaded set screw hole faces outward.
6. Replace the Plastic Guard (if removed).
7. Re-connect the Air Supply.

THE MACHINE IS NOW ASSEMBLED
AND READY FOR DIE ADJUSTMENTS

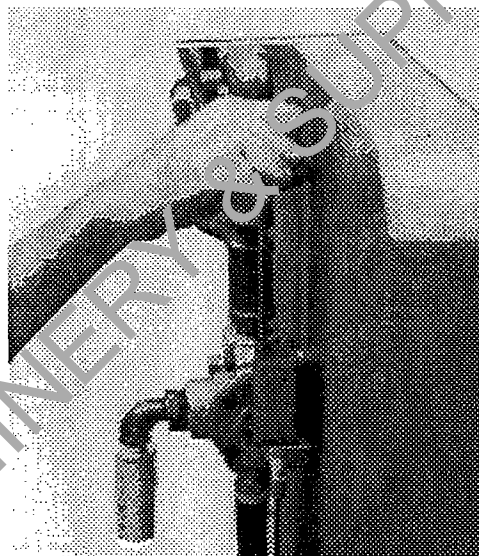
DIE ADJUSTMENTS

REQUIRED TOOLS FOR DIE REPLACEMENT:

15/16" Box Wrench
1/2" Allen Wrench
3/16" Allen Wrench
1/8" Allen Wrench

The die must be adjusted whenever the die has been changed, or a different gauge of material is used. If the material becomes thicker, the die will have to be lowered. Very little adjustment should be necessary.

NOTE: Before any die adjustments can be made, the Automatic Return Valve, mounted on the side of the machine, must be adjusted (by turning the adjusting screw clockwise) so that the press will remain in the buttoning position for at least 3 seconds before automatically returning (see photo). If you're not sure how to adjust the Automatic Return Valve, see page 15.

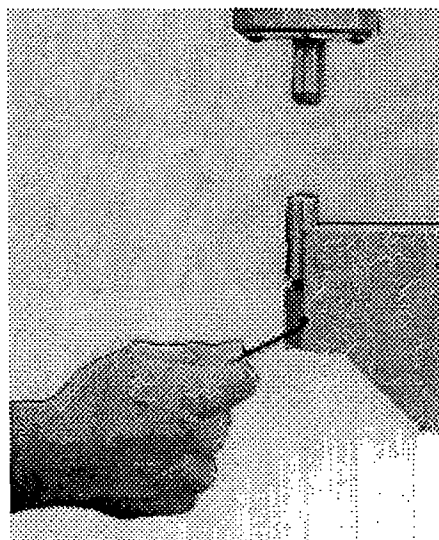


AUTOMATIC RETURN VALVE

It is also necessary to make sure the Pressure Regulator is set to 100 PSI and that at least 100 PSI is maintained in the Air Tank (120 PSI maximum).

TO ADJUST THE DIE

1. Loosen the Die Securing Screw.
2. Loosen the Die Adjusting Retaining Screws on each side of the die.



DIE ADJUSTING RETAINING SCREW

DIE ADJUSTMENT (CONTINUED)

3. Lower the die. Do this by turning the Die Height Adjusting Screw counter-clockwise until the die is as low as it will go.



DIE HEIGHT ADJUSTING SCREW

4. Tighten the Die Securing Screw.
5. With a sample of the material to be joined, try to button lock the two pieces together. Because the die is at the bottom position, Very little, if any buttoning, should be visible. ***It is always best to start with the die set too low and work up to the correct setting.***
6. Turn the Adjusting Screw clockwise 1/4 of a turn, then make a test button lock, carefully noting the button depth. Repeat this process until the machine starts to form a button which seems to have some strength, then start adjusting the die by 1/8 of a turn until a good button is formed.
7. Once a good button seems to have been formed, test it by trying to pull and twist the button loose (see page 11). It's important to remember the amount of force used to pull and twist the button apart. Your feel for the strength of the button will determine the final setting for the press.
8. After the button has been pulled apart, turn the Adjusting Screw counter-clockwise (lowering the die) 1/16 of a turn and form another buttonlok.
9. Test the strength of the newly formed button. Compare the strength needed to separate the first button to the strength needed to pull apart the second button.

(continued)

DIE ADJUSTMENT (CONTINUED)

From this point, You now have two options to follow.

OPTION #1 If the button pulls apart easier, your original setting was correct. Re-adjust the die UP 1/16 of a turn (turning the die adjusting screw clockwise) and test the button.

REMEMBER: To get the die to its optimum setting, adjustments are made, AT FIRST, IN 1/4 TURNS AND THEN IN 1/8 TURNS, TESTING THE BUTTON LOCK AFTER EACH ADJUSTMENT HAS BEEN MADE.

STOP. The setting process is now complete.

OPTION #2 If the button-locked material is stronger or as strong as the previous button, turn the Adjusting Screw down another 1/16 of a turn. Again, test the material after each new setting. Continue this fine tuning until it appears that the latest die setting is not as strong as the die setting previous to it. Once this has been determined, turn the adjusting screw UP 1/16 of a turn. Form another button. Test it. This, along with your visual confirmation, should be the best Button Lock setting for the die and the material being used.

REMEMBER

The Key To Long Die Life Is To Set The Die To The Lowest Position That Will Still Produce A Strong Button.

Tighten the Die Securing Screw

Tighten the Die Adjusting Retaining Set Screws

Whenever the die, punch or material thickness is changed
The die has to be reset.

Reset the Automatic return valve for normal cycle speed and re-check the button. If the button is not as strong as before, the return cycle has been set too fast and must be slowed down.

-PRODUCTION CAN NOW BE RUN-

BUTTON STRENGTH

There are two ways to measure the strength of a buttonlok joint, shear (pull) and peel (see *illus. 3 on page 13*).

Pull is almost always stronger than peel and is less sensitive to die adjustment. Typical button strengths for properly adjusted dies are given for commercial quality mild steel. These should be used as a guide only, different material will affect the button strength.

Material Thickness Each / Two Ply	Button Strength (lbs.)		Recommended Die
	Shear	Peel	
.062"	450	175	#50
.032"	375	85	#40
.022"	300	70	#30

BUTTON FAILURE

If pulled hard enough, any buttonlok will pull apart (fail). There are two usual ways for a buttonlok to fail;

- The two halves of the button will pull apart, leaving a male button half (punch side) and a female button half (die side).
- The button will tear out of the top layer (punch side) leaving a hole in it. The button joint will remain in the lower layer (die side).

A correctly formed button will usually fail by tearing (b) in the pull test. The button strength usually increases as the die is adjusted towards the punch - however, it is easy to over adjust the die and overload the punch and die reducing their life.

In the peel test however, an under adjusted button (die too far away from the punch) will fail as in (a) and an over adjusted button (die too close to the punch) will fail as in (b).

The correct adjustment is when the die fails in peel sometimes as in (a) and sometimes as in (b). This will give the greatest peel strength.

If the peel strength of a correctly adjusted button is much less than shown in the chart above (for mild steel only), and the button tends to tear apart, the incorrect die may have been selected;

Change #50 die to #40 die.
Change #40 die to #30 die.

If this does not improve the peel strength of the button, then the material is not suitable for buttonlocking - probably too hard.

BUTTON FAILURE (CONTINUED)

If the peel strength of a correctly adjusted button is much less than shown in the chart above (for mild steel only), and the button does not tear apart, the incorrect die may have been selected;

Change #30 die to #40 die.
Change #40 die to #50 die.

If this does not improve the peel strength of the button, then the material is not suitable for buttonlocking - probably too soft.

TESTING BUTTON STRENGTH

The best method of testing button strength is to pull the button apart in both shear (pull) and peel and measure the force required with a pull tester.

In production however, an indication of the button strength can be found by measuring the diameter of the button cap (see illus. 3 on page 13).

If a button is tested in shear and peel with a pull tester and the upper and lower limits of the button strength are found, the cap diameters for these two limits can be measured.

Calipers or a GO - NOGO gauge can then be used in production to see if the cap diameter is within the measured limits.

NOTE ! If the material changes or the die # is changed, the button cap diameters will change (see illus. 3 on page 13).

When using the button cap diameter; shear and peel tests should also be used occasionally to confirm strengths.

THREE PLY MATERIAL

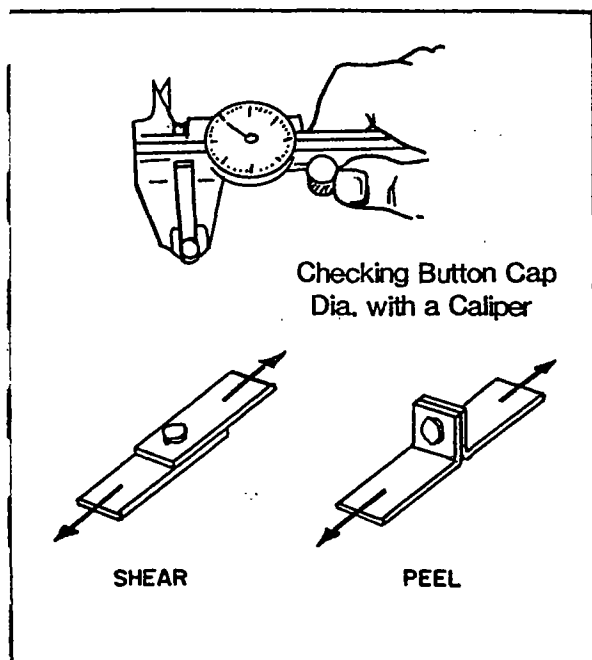
The Quiclok is primarily designed to join two ply material up to a maximum combined thickness of 0.125". It is possible to join three ply material up to a combined thickness of 0.125" however the strength of the top ply button joint (punch side) will be reduced.

It is possible to increase the strength of the top layer by using a punch with a larger punch tip radius, however this will slightly weaken any two ply joints formed with the new punch. Consult Lockformer if you have any problems with three ply material.

METHODS OF TESTING BUTTON STRENGTH

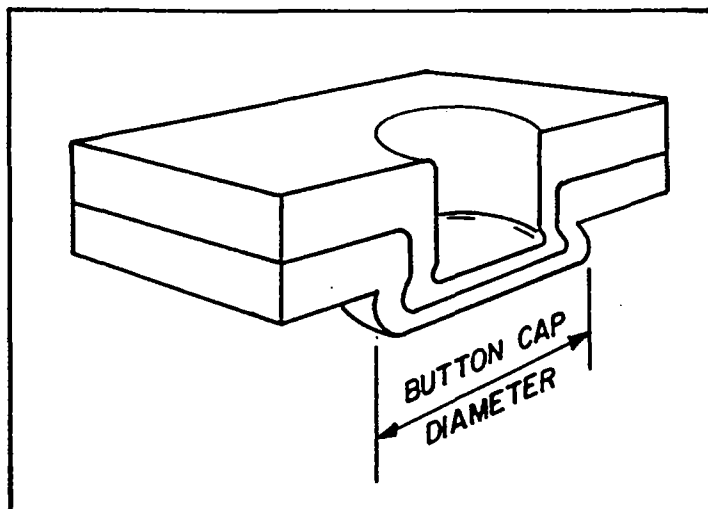
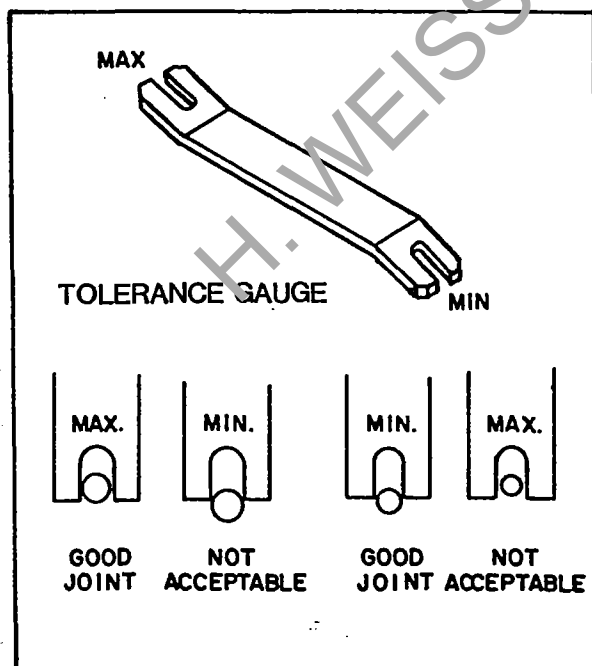
ILLUSTRATION 3

MEASURING THE BUTTON CAP DIAMETER (BD) WITH A CALIPER



SHEAR (PULL) AND PEEL TESTING

GO -NO GO GAUGE FOR TESTING BUTTON CAP DIAMETER



AUTOMATIC RETURN ADJUSTMENT

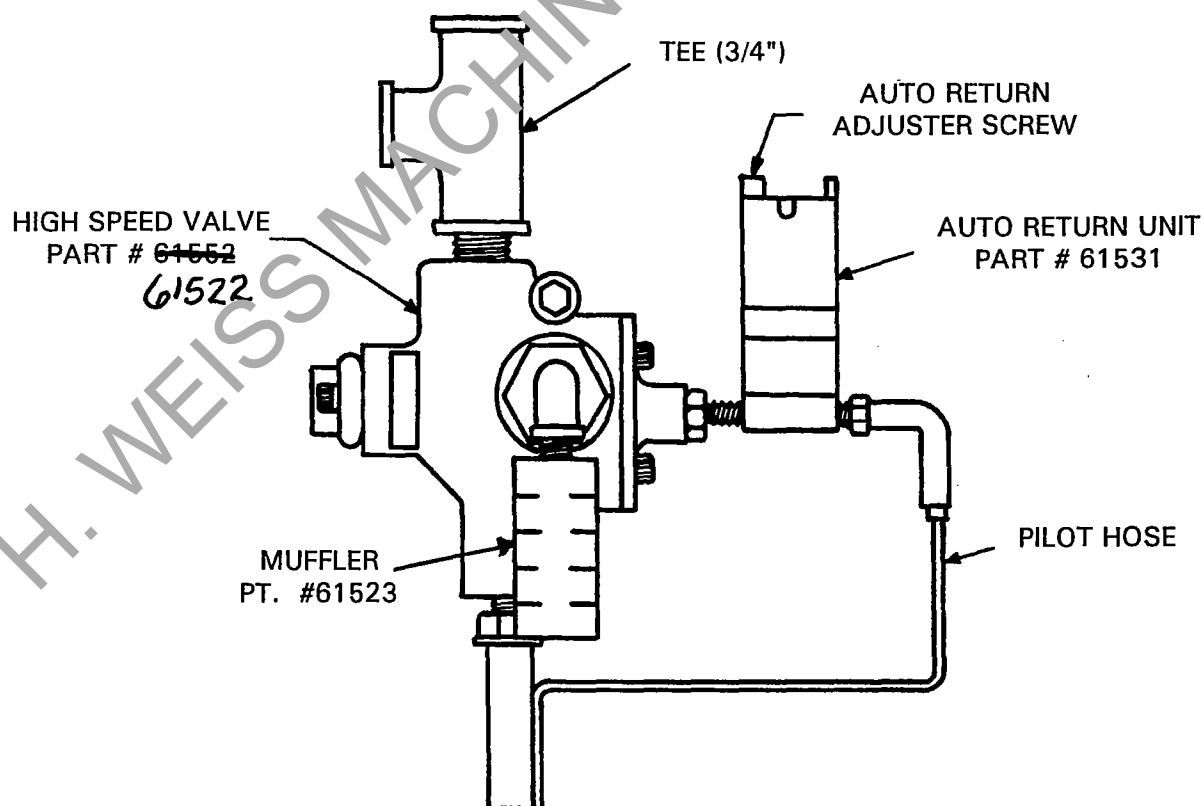
The Quiclok press is equipped with a High Speed Valve (part # 61522) and an Automatic Return Unit (part # 61531). When the foot pedal is depressed, the punch will close on the die; and when the foot pedal is released, the punch will return. However, with the Automatic Return, if the foot pedal is kept depressed, the punch will automatically return after a pre-set delay. To adjust this delay, there is a small adjusting screw in the top of the Auto Return Unit:

To **increase** the delay (longer punch duration) - turn the adjuster screw clockwise.

To **decrease** the delay (shorter punch duration) - turn the adjuster screw counter-clockwise.

IMPORTANT - If the punch duration is too short, the machine will produce a weak buttonlok. Therefore, the button should be checked after any Auto Return adjustment.

NOTE - If the adjuster screw is turned fully clockwise (increasing), the unit will not return automatically.

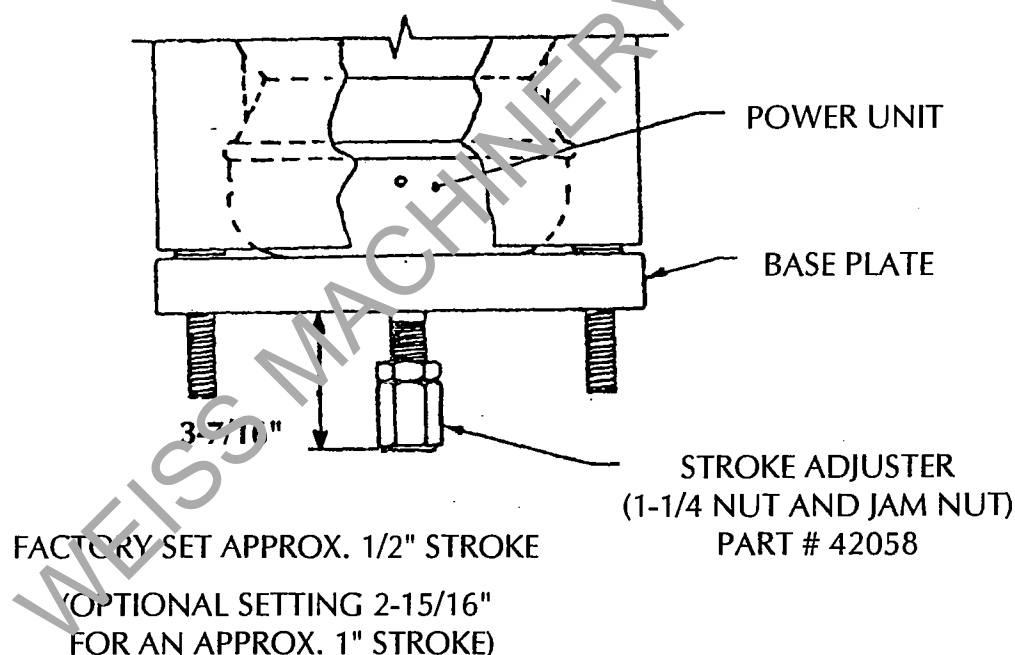


STROKE ADJUSTMENT

The stroke of the machine may be adjusted at the bottom of the Power Unit, when the Power Unit has been removed. Reducing the stroke of the machine will increase the speed of the unit and reduce the air volume required.

1. Before adjusting the Stroke Adjuster (see illustration below), adjust the Open Height Adjustment on top of the Power Unit first; Loosen the Lock nut and turn the socket head set screw counter-clockwise to its maximum opening (see previous page).
2. Remove the Power Unit as described on page 21.

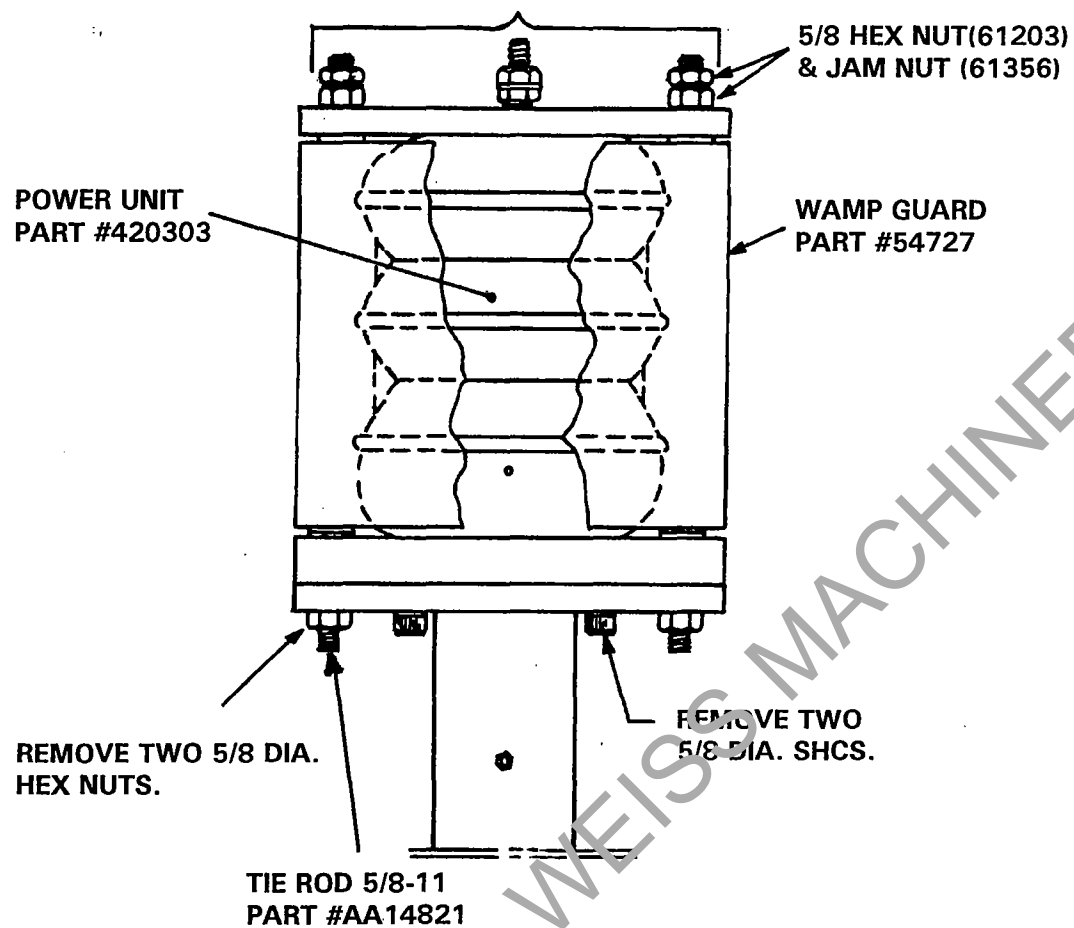
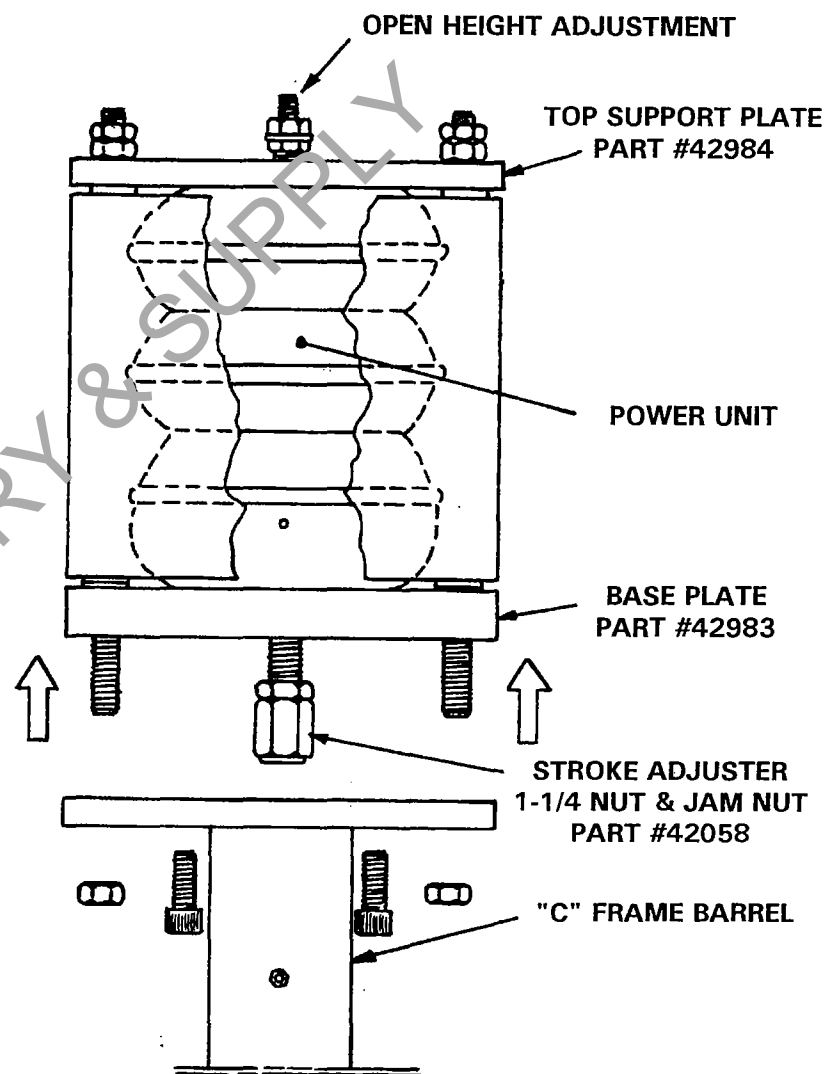
WARNING! THE POWER UNIT IS REMOVED AS AN ASSEMBLY UNIT. DISASSEMBLING THE POWER UNIT VOIDS YOUR WARRANTY. PLEASE CALL FOR SERVICE IF THE POWER UNIT NEEDS TO BE DISASSEMBLED, OR SHIP THE COMPLETE POWER UNIT TO LOCKFORMER FOR SERVICE.

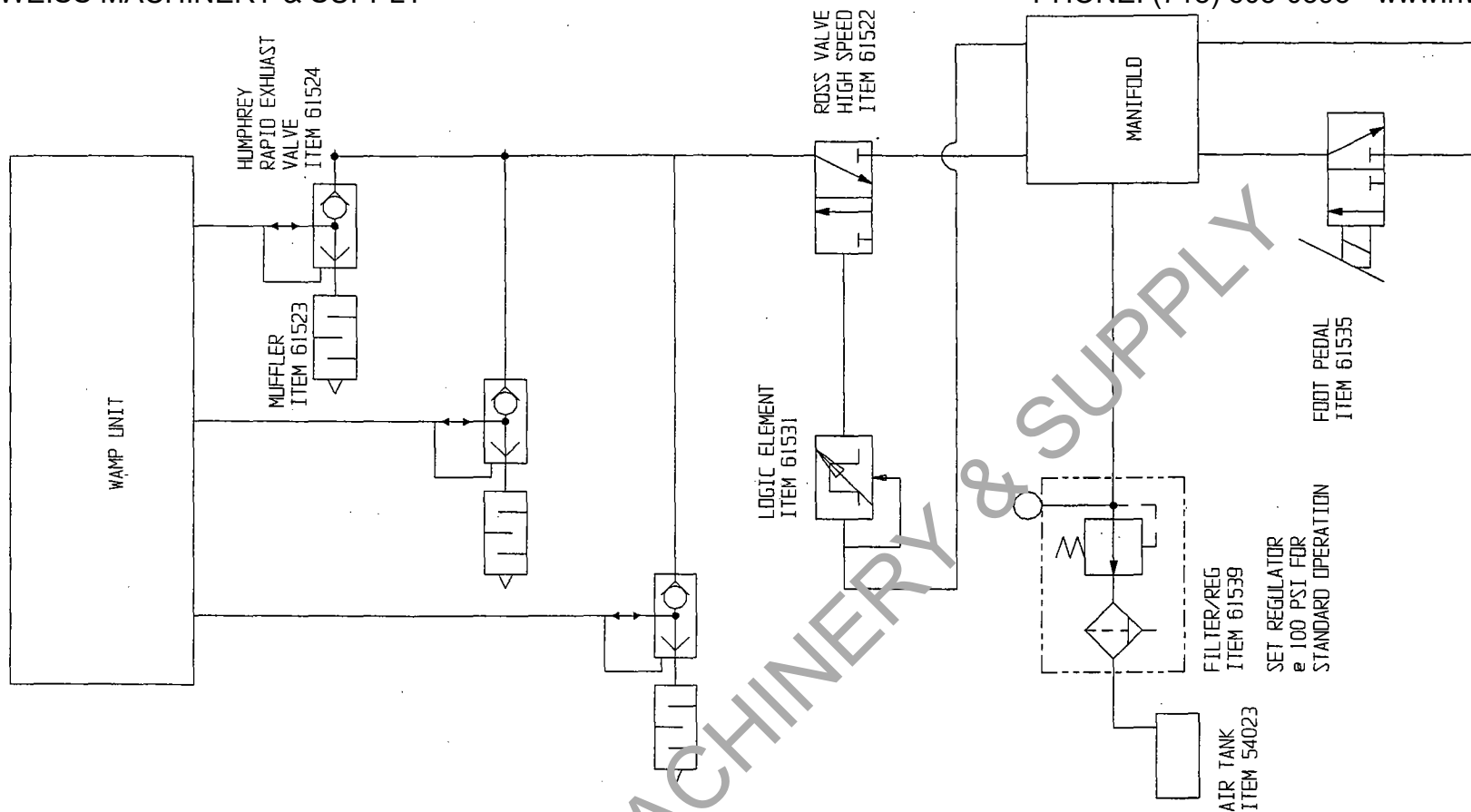


3. Loosen the jam nut from the Stroke Adjuster Nut with two 1-1/4" wrenches. Use one to hold the Adjuster Nut, and at the same time, loosen the jam nut with the other wrench.
4. To reduce the stroke of the machine, adjust the Stroke Adjuster Nut counter-clockwise.

MAINTENANCE DIAGRAM

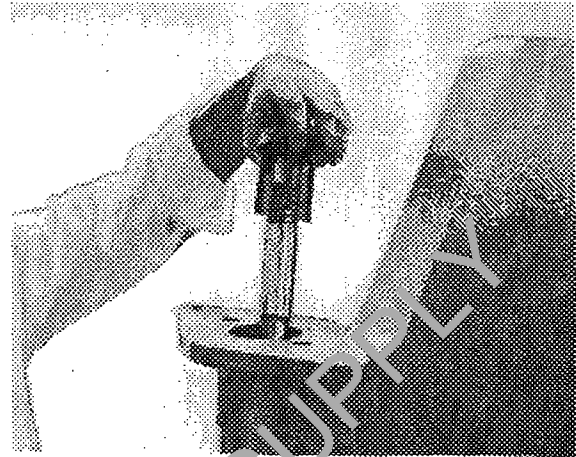
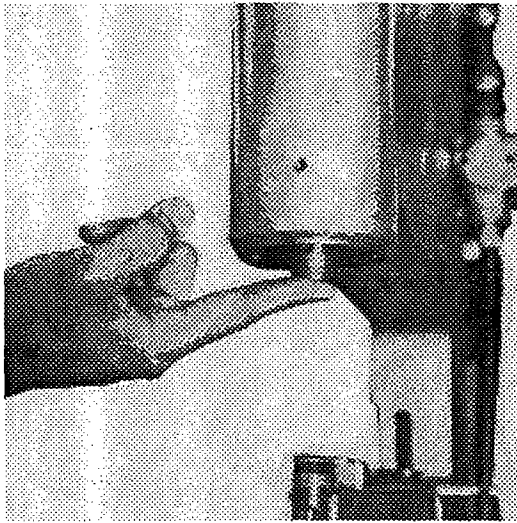
IMPORTANT: DO NOT ADJUST NUTS AT
TOP OF POWER UNIT

**POWER UNIT ASSEMBLED****POWER UNIT REMOVED**



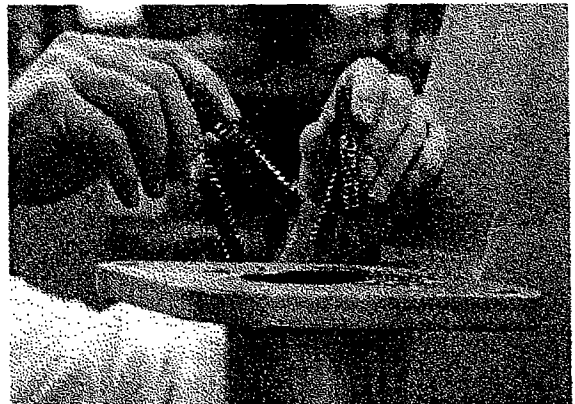
THE LOCKFORMER CO.			6
711 OGDEN AVE. LISLE, ILLINOIS 60532			5
MACHINE	MODEL	PART NUMBER	4
PART NAME		55998	3
PNEUMATIC DIAGRAM			2
MATERIAL	HEAT TREAT	SCALE	1
		FULL	
DATE	DRAWN BY	CHECKED BY	REVISIONS
3-9-94	KM		

REMOVING THE UPPER TOOLING

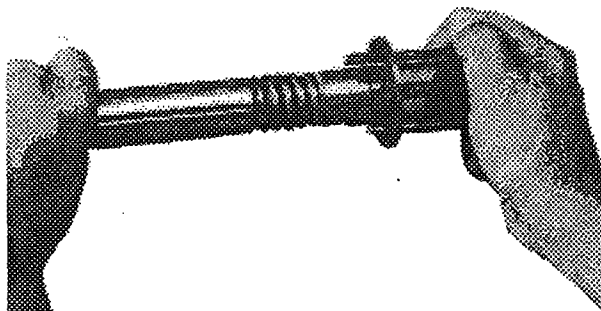


1. Take the Upper Tooling out of the barrel. Do this by pushing UP on the bottom of the Upper Tooling and lifting it up and out from the top of the barrel. See photos above.

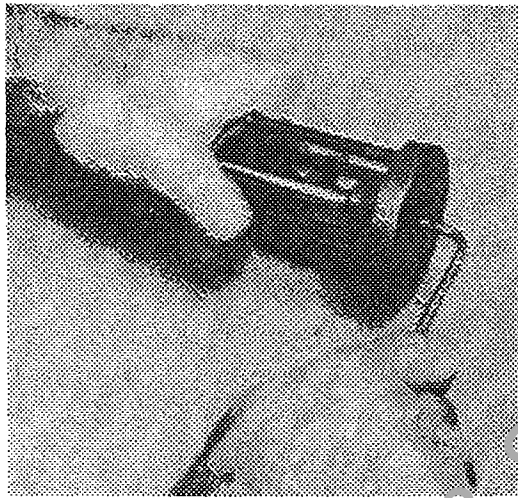
2. Remove the four (4) Upper Lifter Springs. There are eight (8) springs in the barrel. Four (4) deep pocket springs and four (4) Upper Lifter Springs. The four Upper Lifter Springs will be plainly visible once the Upper Tooling has been removed. Take out the four Upper Lifter Springs ONLY.



PUNCH CAP



3. Remove the Punch from the Upper Tooling. To do this, the Upper Tooling has to be separated. Simply grab the Punch Cap and pull it apart and away from the Upper Punch Guide.

REMOVING THE UPPER TOOLING (continued)

4. The Punch is removed from the Punch Cap by removing the 10/32" SHCS that holds the Punch in place. It may be necessary to put the Punch in a vise to remove the 10/32" SHCS.
5. Put in a new Punch and tighten down the 10/32" SHCS to 20 ft/lbs. Again, it may be necessary to put the punch in a vise while tightening the SHCS down.
6. Liberally grease the punch and re-assemble the two pieces of the Upper Tooling.

REPLACING THE UPPER TOOLING (see page 3)

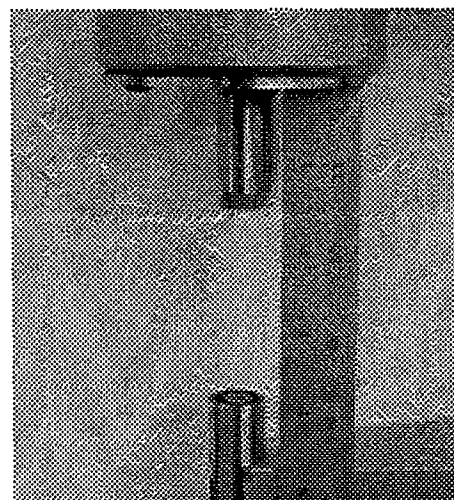
Before the Upper Tooling can be replaced **with** the (4) Upper Lifter Springs, the Upper Tooling barrel clearance has to be checked. This clearance is checked by inserting the Upper Tooling **without** the (4) Upper Lifter Springs.

1. Line up the (4) Upper Tooling Guides with the (4) springs still in the pockets of the barrel. The Upper Tooling should easily push down to the bottom of the barrel. If the tooling is too tight in the barrel, you will have to remove it, loosen the 10/32" SHCS, then re-tighten it. This should correct the problem.

IMPORTANT - The Upper Tooling has to slide down easily to the bottom of the barrel before proceeding with the next step.

2. Once the Upper Tooling slides down easily to the bottom of the barrel, remove it. Put the (4) Upper Lifter Springs on the Spring Guides. A good coat of heavy grease will help hold the springs to the Upper Tooling Spring Guides.
3. After greasing the Upper Tooling, replace it in the barrel. Make sure the (4) Lifter Springs, attached to the Upper Tooling line up with the spring pockets in the barrel. ***Lining the springs up with the spring pockets is critical.***
4. Much of the positioning for the Upper Tooling will depend on the feel the operator has for the machine. You'll know when the Upper Tooling is positioned correctly; the Upper Tooling will *drop* into the pockets of the barrel. This is done by wiggling and turning the Upper Tooling until you can feel and hear the tooling drop into place.
5. When the Upper Tooling does drop into place, measure how much of the tooling is sticking out of the bottom of the barrel. If 1-1/2" to 2" is sticking out, the tooling has been installed correctly (see photo on right). If less than 1-1/2" is sticking out from the bottom of the barrel, continue to turn the tooling from the top until it drops into place. You are now ready to replace the Power Unit.

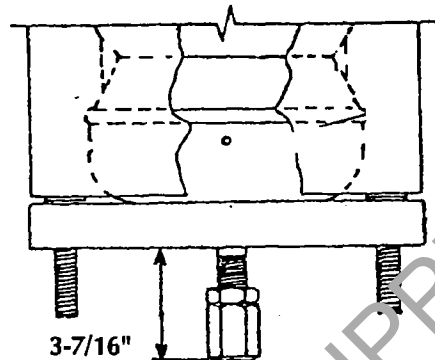
REMEMBER, this is a critical stage of re-assembly. If the Upper Tooling is not positioned correctly, severe damage to the machine will occur.



REPLACING THE POWER UNIT

1. Before the Power Unit can be replaced, the Pressure Nut and Jam Nut setting and tightness have to be checked. Grab hold of them and try turning them. If they turn and the Power Unit shaft *does not* turn, then they are loose. If the nuts and shaft turn as one, then they are tight.

If the Pressure and Jam nuts are loose, first MEASURE the distance of the shaft from the underside of the base plate of the Power Unit, to the end of the Pressure Nut.



2. If your Quiclok has a 1/2" stroke, the distance from the base plate to the end of the Pressure Nut should be 3-7/16".

If your Quiclok has a 1" stroke, the distance from the base plate to the end of the Pressure Nut should be 2-15/16".

3. Make the necessary adjustments to the Pressure and Jam nuts, if needed, to get them to the proper setting. After applying Blue Loctite, or its equivalent, to the shaft, tighten the two nuts down to a torque of 80 ft. lbs.
4. Replace the Power Unit, with its mufflers to the rear of the press.
5. Replace the (2) 5/8 SHCS. Tighten them down to a torque of 160-180 ft/lbs.
6. Replace the (2) 5/8" Locknuts and washers. Tighten them down to a torque of 80-90 ft/lbs.
7. Replace the plastic guard.
8. Re-connect the air hoses from the Power Unit to the Valve, being careful not to overtighten the hose end swivels.
9. Re-connect the air supply, and check that the regulator is set to 100 PSI.

THE QUICLOK IS NOW RE-ASSEMBLED.

MEDIUM DUTY QUICLOK

SPECIFICATIONS

Description:	Medium duty Quiclok
Frame:	Steel "C" frame
Throat:	6, 12, 18, or 24
Stroke:	1/2" Standard setting 1" Maximum available
Capacity:	Two ply 16 gauge mild steel (#50 die) Two ply 22 gauge mild steel (#40 die) Two ply 26 gauge mild steel (#30 die)
Power Unit:	Wamp (Pneumatic Press)
Die Type:	MD Die 2.0" x 0.75" diameter.
Punch Type:	Standard MD Punch 0.18" tip diameter .010/.015 tip radius
Cycle Speed:	60 buttons / minute (1/2" stroke) 40 buttons / minute (1" stroke)
Duty Cycle:	100%
Air Requirements:	100 psi (minimum) 120 psi (maximum)
Air Consumption:	0.12 cu. ft. free air per button (Approx. 5HP @ 60 buttons per minute)
Approx. Weight:	MDQL 6 - 528# MDQL 12 - 757# MDQL 18 - 1139# MDQL 24 - 1679#

Trouble Shooting

Problem With Operation

A. Total Failure Of Joint (Also see Section C - Deformed or Distorted Joints)		
<u>Problem</u>	<u>Cause</u>	<u>Solution</u>
A. No Button Formed	Broken Punch or Die High Pressure Too Low	Replace Tool
B. Button Partially Formed-No Squeeze	Metals not of specified thickness Retainer rings or die spring broken Pressure drop Incorrect tooling for metal being used Incorrect shut height tool clearance	Use specified metal or use proper tooling Replace ring or spring Restore pressure Verify joint data, change tooling if necessary Adjust shut height for correct clearance
C. Piercing/Cracking of punch side	Metal not of specified thickness Incorrect tooling for metals Weak or broken springs Punch-die not concentric	Use specified metals or change to correct tooling. Verify joint data/ change tooling if necessary Replace spring(s) Realign tooling
B. Intermittent Failure		
A. Same tooling produces intermittently Good & Bad parts	Insufficient stripper force to compensate for part variation or non-mating parts. Parts do not fit gauging or nesting Parts interfere with tooling operation	Correct parts to conform - Increase stripper force Correct parts or gauging to fit Correct parts or gauging to allow clearance

C. Deformed Or Distorted Joints

<p>A. Cracks appear on Button</p>	<p>Metals not of specified thickness or hardness</p> <p>BD too large, tooling over adjusted</p> <p>Incorrect tooling for metals</p> <p>Punch/die not concentric</p> <p>Excessive deflection</p>	<p>Use specified metals or change appropriate tooling</p> <p>Back off shut height adjustment</p> <p>Verify joint data/ change tooling if necessary</p> <p>Realign tooling</p> <p>Check for damage</p>
<p>B. Cracks appear inside joint cup</p>	<p>Metals not of specified thickness or hardness</p> <p>Tooling incorrect for metals</p> <p>Punch/die not concentric</p> <p>Weak or broken stripper spring</p>	<p>Use specified metals or change to proper tooling.</p> <p>Verify joint data/ change tooling if necessary</p> <p>Realign tooling</p> <p>Replace spring</p>
<p>C. Lump or Irregularity on button</p>	<p>Chipped punch or die</p>	<p>Replace</p>
<p>D. Concentric Double button</p>	<p>Missing/non-functional stripper</p> <p>Double hit</p>	<p>Replace or repair stripper</p> <p>Check controls or operator</p>
<p>E. No backflow of button round top "squeezed"</p>	<p>Broken or weak stripper spring</p>	<p>Replace spring</p>
<p>F. Partial back flow of button</p>	<p>Die leaf missing or opened before joining</p> <p>Deflection in force frame or tool holder</p>	<p>Replace leaf if missing or check for interference causing leaf to open on part loading.</p> <p>Check for damage</p>

<p>G. Dimpling and unformed button</p>	<p>Die leaf missing</p> <p>Retaining ring leaf open</p>	<p>Replace leaf</p> <p>Replace ring</p>
<p>H. Scarring of top material</p>	<p>Heavy: stripper spring bottoming-insufficient spring travel.</p> <p>Light: Die not protected adequately.</p>	<p>Replace with correct stripper</p> <p>Add leaf shielding</p>
<p>I. Button not round</p>	<p>Leaf not opening</p> <p>Deflection is binding leaves.</p> <p>Flexing of force frame</p> <p>Punch and die are not concentric</p>	<p>Check for interference</p> <p>Check leaf guarding</p> <p>Check for damage</p> <p>Realign tooling</p>
<p>J. Parts are distorted during joining</p>	<p>Insufficient stripper force</p> <p>Stripper tip too small</p> <p>Die not protected</p> <p>Die leaf below shield</p> <p>Misgauging/Nesting</p>	<p>Replace stripper spring to suit.</p> <p>Replace with large diameter</p> <p>Add leaf shield</p> <p>Adjust shield height</p> <p>Adjust or replace gauging/nesting to suit.</p>

Run Date: 06-MAY-1994 Time: 02:32 PM

B/M EXPLOSION REPORT: SINGLE LEVEL

User: HWM

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Parent Item: 420926
#50 MDQL DIE

Prod Cat: FA Usr Def:8D Stk:S Ctl:C P/M:M Comm:

Eng Rls: Rev: 00
Date: 04/28/92 Size: Route:

LEV	COMPONENT ITEM NUMBER	QTY PER UM	OPTIONS COMPONENT DESCRIPTION	OPER	SQ	SCRAP FCTR	B/M TYP	--ENGR RLS	RELEASE REV	DATE	S Z	PRI ROUTE	ITM STS	S C P T T /	COMM CODE
1	55708	1.0000	EA #50 MDQL DIE	0	0	.0	A		03	04/27/92	A	PRIM	A	S C M	QLP

Run Date: 06-MAY-1994 Time: 02:20 PM

B/M EXPLOSION REPORT: SINGLE LEVEL

User: HWM

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The Lockformer Company

Parent Item: 429995 Prod Cat: FA Usr Def:8D Stk:S Ctl:C P/M:M Comm:

Eng Rls: Rev: 00

Date: 06/15/89 Size: Route: ALT

LEV	COMPONENT ITEM NUMBER	QTY PER UM	OPTIONS COMPONENT DESCRIPTION	OPER	SQ	SCRAP FCTR	B/M TYP	--ENGR RLS	RELEASE REV	DATE	S Z	PRI ROUTE	ITM STS	S K	C L	P M	COMM CODE
1	420101	1.0000	EA C-FRAME ASSY (6)	0	0	.0	A		00	05/10/89				A	S	C	M
1	420201	1.0000	EA STAND ASSY (6,12)	0	0	.0	A		00	05/10/89				A	S	C	M
1	420303	1.0000	EA WAMP 11 L90 ASSY	0	0	.0	A		00	04/23/91				A	S	C	P QLP
1	420402	1.0000	EA AIR VALVE ASSY	0	0	.0	A		00	05/10/89				A	S	C	M
1	420501	1.0000	EA AIR TANK ASSY	0	0	.0	A		00	05/10/89				A	S	C	M
1	420601	1.0000	EA AIR MANIFOLD ASSY	0	0	.0	A		00	05/10/89				A	S	C	P QLP
1	420701	1.0000	EA FOOT PEDAL ASSY	0	0	.0	A		00	05/10/89				A	S	C	P QLP
1	420801	1.0000	EA PUNCH & GUIDE ASSY	0	0	.0	A		00	05/10/89				A	S	C	P QLP
1	420925	1.0000	EA #40 MDQL DIE	0	0	.0	A		00	04/28/92				A	S	C	M
1	421202	1.0000	EA TOOL KIT	0	0	.0	A		00	02/06/90				A	S	C	M

Run Date: 06-MAY-1994 Time: 02:29 PM

B/M EXPLOSION REPORT: SINGLE LEVEL

User: HWM

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Parent Item: 429994 Prod Cat: FA Usr Def:8D Stk:S Ctl:C P/M:M Comm:
 QCK-LC12 #40DIE AS

Eng Rls: Rev: 00
 Date: 06/15/89 Size: Route: ALT

LEV	COMPONENT ITEM NUMBER	QTY PER UM	OPTIONS COMPONENT DESCRIPTION	OPER	SQ	SCRAP FCTR	B/M TYP	--ENGR RLS	RELEASE--- REV DATE	S I Z	PRI ROUTE NUM	ITM STS	S K	C L	P M	COMM CODE
1	420102	1.0000	EA C-FRAME ASSY (12)	0	0	.0	A		00 05/10/89				A	S	C	M
1	420201	1.0000	EA STAND ASSY (6,12)	0	0	.0	A		00 01/10/89				A	S	C	M
1	420303	1.0000	EA WAMP 11 L90 ASSY	0	0	.0	A		00 04/23/91				A	S	C	P QLP
1	420402	1.0000	EA AIR VALVE ASSY	0	0	.0	A		00 05/10/89				A	S	C	M
1	420501	1.0000	EA AIR TANK ASSY	0	0	.0	A		00 05/10/89				A	S	C	M
1	420601	1.0000	EA AIR MANIFOLD ASSY	0	0	.0	A		00 05/10/89				A	S	C	P QLP
1	420701	1.0000	EA FOOT PEDAL ASSY	0	0	.0	A		00 05/10/89				A	S	C	P QLP
1	420801	1.0000	EA PUNCH & GUIDE ASSY	0	0	.0	A		00 05/10/89				A	S	C	P QLP
1	420925	1.0000	EA #40 MDQL DIE	0	0	.0	A		00 04/28/92				A	S	C	M
1	421202	1.0000	EA TOOL KIT	0	0	.0	A		00 02/06/90				A	S	C	M

Run Date: 06-MAY-1994 Time: 02:31 PM

B/M EXPLOSION REPORT: SINGLE LEVEL

User: HWM

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The Lockformer Company

Parent Item: 429993 Prod Cat: FA Usr Def:8D Stk:S Ctl:C P/M:M Comm:

Eng Rls: Rev: 00

Date: 06/15/89 Size: Route: ALT

QCK-LC18 #40DIE AS

LEV	COMPONENT ITEM NUMBER	QTY PER UM	OPTIONS COMPONENT DESCRIPTION	OPER	SQ	SCRAP FCTR	B/M TYP	--ENGR RLS	RELEASE--- REV DATE	S I Z	PRI ROUTE	ITM STS	S C P T T /	COMM CODE
1	420103	1.0000	EA C-FRAME ASSY (18)	0	0	.0	A		00 05/10/89			A	S C M	
1	420202	1.0000	EA STAND ASSY (18)	0	0	.0	A		00 05/10/89			A	S C M	
1	420303	1.0000	EA WAMP 11 L90 ASSY	0	0	.0	A		00 04/23/91			A	S C P	QLP
1	420402	1.0000	EA AIR VALVE ASSY	0	0	.0	A		00 05/10/89			A	S C M	
1	420501	1.0000	EA AIR TANK ASSY	0	0	.0	A		00 05/10/89			A	S C M	
1	420601	1.0000	EA AIR MANIFOLD ASSY	0	0	.0	A		00 05/10/89			A	S C P	QLP
1	420701	1.0000	EA FOOT PEDAL ASSY	0	0	.0	A		00 05/10/89			A	S C P	QLP
1	420801	1.0000	EA PUNCH & GUIDE ASSY	0	0	.0	A		00 05/10/89			A	S C P	QLP
1	420926	1.0000	EA #50 MDQL DIE	0	0	.0	A		00 04/28/92			A	S C M	
1	421202	1.0000	EA TOOL KIT	0	0	.0	A		00 02/06/90			A	S C M	

Run Date: 06-MAY-1994 Time: 02:30 PM

B/M EXPLOSION REPORT: SINGLE LEVEL

User: HWM

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Parent Item: 429992 Prod Cat: FA Usr Def:8D Stk:S Ctl:C P/M:M Comm:
QCK-LC24 #40DIE ASEng Rls: Rev: 00
Date: 06/15/89 Size: Route: ALT

LEV	COMPONENT ITEM NUMBER	QTY PER UM	OPTIONS COMPONENT DESCRIPTION	OPER	SQ	SCRAP FCTR	B/M TYP	--ENGR RLS	RELEASE REV	DATE	S Z	PRI ROUTE NUM	ITM STS	S K	C L	P M	COMM CODE
1	420104	1.0000	EA C-FRAME ASSY (24)	0	0	.0	A		00	05/10/89				A	S	C	M
1	420203	1.0000	EA STAND ASSY (24)	0	0	.0	A		00	05/10/89				A	S	C	M
1	420303	1.0000	EA WAMP 11 L90 ASSY	0	0	.0	A		00	04/23/91				A	S	C	P QLP
1	420402	1.0000	EA AIR VALVE ASSY	0	0	.0	A		00	05/10/89				A	S	C	M
1	420501	1.0000	EA AIR TANK ASSY	0	0	.0	A		00	05/10/89				A	S	C	M
1	420601	1.0000	EA AIR MANIFOLD ASSY	0	0	.0	A		00	05/10/89				A	S	C	P QLP
1	420701	1.0000	EA FOOT PEDAL ASSY	0	0	.0	A		00	05/10/89				A	S	C	P QLP
1	420801	1.0000	EA PUNCH & GUIDE ASSY	0	0	.0	A		00	05/10/89				A	S	C	P QLP
1	420925	1.0000	EA #40 MDQL DIE	0	0	.0	A		00	04/28/92				A	S	C	M
1	421202	1.0000	EA TOOL KIT	0	0	.0	A		00	02/06/90				A	S	C	M

Run Date: 06-MAY-1994 Time: 02:16 PM

B/M EXPLOSION REPORT: SINGLE LEVEL

User: HWM

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Parent Item: 420201
STAND ASSY (6,12)

Prod Cat: FA Usr Def:9D Stk:S Ctl:C P/M:M Comm:

Eng Rls: Rev: 00
Date: 05/10/89 Size: Route:

LEV	COMPONENT ITEM NUMBER	QTY PER UM	OPTIONS COMPONENT DESCRIPTION	OPER	SQ	SCRAP FCTR	B/M TYP	--ENGR RLS	RELEASE REV	DATE	S Z	PRI ROUTE	ITM STS	S K	C L	P M	COMM CODE
1	54057	1.0000	EA STAND WLDM QL 6.12	0	0	.0	A		02	05/10/89	D	PRIM	A	S	C	M	
1	60098	4.0000	EA 3/8-16X2HHCS	0	0	.0	A		00				A	S	C	P	QLP
1	61122	4.0000	EA 3/8-16 HN FIN	0	0	.0	A		00				A	S	C	P	
1	62030	8.0000	EA 3/8X3/32 WSHR	0	0	.0	A		00				A	S	C	P	QLP
1	62363	8.0000	EA WASHER, LOCK, 3/8", MED	0	0	.0	A		00	08/11/88	-		A	S	C	P	

Run Date: 06-MAY-1994 Time: 02:32 PM

B/M EXPLOSION REPORT: SINGLE LEVEL

User: HWM

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Parent Item: 420202 The Lockformer Company

Prod Cat: FA Usr Def:9D Stk:S Ctl:C P/M:M Comm:

Eng Rls: Rev: 00

STAND ASSY (18)

Date: 05/10/89 Size: Route:

LEV	COMPONENT ITEM NUMBER	QTY PER UM	OPTIONS COMPONENT DESCRIPTION	OPER	SQ	SCRAP FCTR	B/M TYP	--ENGR RLS	RELEASE REV	--- DATE	S Z	PRI ROUTE	ITM STS	S K	C L	P M	COMM CODE
1	54022	1.0000	EA STAND WLMT 18	0	0	.0	A		00	05/10/89	D	PRIM	A	S	C	M	QLP
1	60098	4.0000	EA 3/8-16X2HHCS	0	0	.0	A		00				A	S	C	P	QLP
1	61122	4.0000	EA 3/8-16 HN FIN	0	0	.0	A		00				A	S	C	P	
1	62030	8.0000	EA 3/8X3/32 WSHR	0	0	.0	A		00				A	S	C	P	QLP
1	62363	8.0000	EA WASHER, LOCK, 3/8", MED	0	0	.0	A		00	08/11/88	-		A	S	C	P	

Run Date: 06-MAY-1994 Time: 02:31 PM

B/M EXPLOSION REPORT: SINGLE LEVEL

User: HWM

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Parent Item: 420203
STAND ASSY (24)

Prod Cat: FA Usr Def:8D Stk:S Ctl:C P/M:M Comm:

Eng Rls: Rev: 00
Date: 05/10/89 Size: Route:

LEV	COMPONENT ITEM NUMBER	QTY PER UM	OPTIONS COMPONENT DESCRIPTION	OPER	SQ	SCRAP FCTR	B/M TYP	--ENGR RLS	RELEASE--- REV DATE	S I Z	PRI ROUTE	ITM STS	S C P T T /	COMM CODE
1	54058	1.0000	EA STAND WLDH QL 24	0	0	.0	A		00 05/10/89	D	PRIM	A	S C M	QLP
1	60098	4.0000	EA 3/8-16X2HHCS	0	0	.0	A		00			A	S C P	QLP
1	61122	4.0000	EA 3/8-16 HN FIN	0	0	.0	A		00			A	S C P	
1	62030	8.0000	EA 3/8X3/32 WSHR	0	0	.0	A		00			A	S C P	QLP
1	62363	8.0000	EA WASHER, LOCK, 3/8", MED	0	0	.0	A		00 08/11/88	-		A	S C P	

Run Date: 06-MAY-1994 Time: 02:16 PM

B/M EXPLOSION REPORT: SINGLE LEVEL

User: HWM

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Parent Item: 420101 The Lockformer Company

Prod Cat: FA Usr Def:8D Stk:S Ctl:C P/M:M Comm:

Eng Rls: Rev: 00

C-FRAME ASSY (6)

Date: 05/10/89 Size: Route:

LEV	COMPONENT ITEM NUMBER	QTY PER UM	OPTIONS COMPONENT DESCRIPTION	OPER	SQ	SCRAP FCTR	B/M TYP	--ENGR RLS	RELEASE REV	DATE	S I	PRI ROUTE	ITM STS	S K	C L	P M	COMM CODE
1	22096	1.0000	EA DIE HOLDER	0	0	.0	A		00	05/10/89	A	PRIM	A	S	C	M	QLP
1	29737	1.0000	EA GUARD	0	0	.0	A		02	05/10/89	B	PRIM	A	S	C	M	QLP
1	33227	1.0000	PC BARREL END CAP	0	0	.0	A		02	06/12/90	A	PRIM	A	S	C	M	
1	42026	1.0000	EA SET SCREW MODIFIED	0	0	.0	A		00	05/10/89	A	PRIM	A	S	C	M	QLP
1	55121	.0000	EA MAIN ASSY	0	0	.0	A		00	05/10/89	E		A	S	C	M	
1	55160	.0000	EA C-FRAME ASSY 6	0	0	.0	A		00	05/10/89	C		A	S	C	M	
1	60050	4.0000	EA 5/16-18X1 1/2HHCS	0	0	.0	A		00				A	S	C	P	QLP
1	60306	4.0000	EA 1/4-20X1 1/2SHCS	0	0	.0	A		00				A	S	C	P	
1	60309	1.0000	EA 1/4-20X1/2 SHCS	0	0	.0	A		00	12/13/85			A	S	C	P	
1	60363	2.0000	EA 5/16-18X3 SHCS	0	0	.0	A		00				A	S	C	P	QLP
1	61516	1.0000	EA ASP-1-BV BREATHER	0	0	.0	A		00	05/10/89	P		A	S	C	P	
1	62362	4.0000	EA WASHER, LOCK, 5/16"ID, MED	0	0	.0	A		00	09/20/88	P		A	S	C	P	
1	62938	4.0000	EA 1/4-20X1/2 BHSCS	0	0	.0	A		00	12/07/89	P		A	S	C	P	
1	62941	1.0000	EA 5/8-11 EYE BOLT	0	0	.0	A		00	05/10/89	P		A	S	C	P	
1	62970	2.0000	EA 1/4-20X1/4SS BRST	0	0	.0	A		00	05/25/90	P		A	S	C	P	QLP
1	85202	1.0000	EA DECAL QUICKLOK	0	0	.0	A		00	05/10/89	P		A	S	C	P	QLP
1	86162	1.0000	PC PUNCH GUIDE BSHNG	0	0	.0	A		00	03/08/90	P		A	S	C	P	
1	89113	1.0000	EA C-FRAME COMPLETE 6	0	0	.0	A		00	05/10/89	P	PRIM	A	S	C	P	
1	AA60338	1.0000	PC 1/4-20X1.25SHCS UN	0	0	.0	A		00	06/25/92	P		A	S	C	P	
1	AA62001	4.0000	EA FLT WASHER.31X.75	0	0	.0	A		00	10/12/93	P		A	S	C	P	

Run Date: 06-MAY-1994 Time: 02:32 PM

B/M EXPLOSION REPORT: SINGLE LEVEL

User: HWM

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Parent Item: 420103 The Lockformer Company

Prod Cat: FA Usr Def:8D Stk:S Ctl:C P/M:M Comm:

Eng Rls: Rev: 00

C-FRAME ASSY (18)

Date: 05/10/89 Size: Route:

LEV	COMPONENT ITEM NUMBER	QTY PER UM	OPTIONS COMPONENT DESCRIPTION	OPER	SQ	SCRAP FCTR	B/M TYP	--ENGR RLS	RELEASE--- REV	DATE	S Z	PRI ROUTE	ITM STS	S K	C L	P M	COMM CODE
1	22096	1.0000	EA DIE HOLDER	0	0	.0	A		00	05/10/89	A	PRIM	A	S	C	M	QLP
1	29737	1.0000	EA GUARD	0	0	.0	A		02	05/10/89	B	PRIM	A	S	C	M	QLP
1	33227	1.0000	PC BARREL END CAP	0	0	.0	A		07	06/12/90	A	PRIM	A	S	C	M	
1	42026	1.0000	EA SET SCREW MODIFIED	0	0	.0	A		00	05/10/89	A	PRIM	A	S	C	M	QLP
1	55121	.0000	EA MAIN ASSY	0	0	.0	A		00	05/10/89	E		A	S	C	M	
1	55162	.0000	EA C-FRAME ASSY 18	0	0	.0	A		00	05/10/89	C		A	S	C	M	
1	60050	4.0000	EA 5/16-18X1 1/2HHCS	0	0	.0	A		00				A	S	C	P	QLP
1	60306	4.0000	EA 1/4-20X1 1/2SHCS	0	0	.0	A		00				A	S	C	P	
1	60309	1.0000	EA 1/4-20X1/2 SHCS	0	0	.0	A		00	12/13/85			A	S	C	P	
1	60363	2.0000	EA 5/16-18X3 SHCS	0	0	.0	A		00				A	S	C	P	QLP
1	61516	1.0000	EA ASP-1-BV BREATHER	0	0	.0	A		00	05/10/89	P		A	S	C	P	
1	62362	4.0000	EA WASHER, LOCK, 5/16"ID, MED	0	0	.0	A		00	09/20/88	P		A	S	C	P	
1	62925	1.0000	EA 3/4-10 EYE BOLT	0	0	.0	A		00	05/10/89	P		A	S	C	P	
1	62938	4.0000	EA 1/4-20X1/2 BHSCS	0	0	.0	A		00	12/07/89	P		A	S	C	P	
1	62970	2.0000	EA 1/4-20X1/4SS BRSSST	0	0	.0	A		00	05/25/90	P		A	S	C	P	QLP
1	85202	1.0000	EA DECAL QUICKLOK	0	0	.0	A		00	05/10/89	P		A	S	C	P	QLP
1	86162	1.0000	PC PUNCH GUIDE BSHNG	0	0	.0	A		00	03/08/90	P		A	S	C	P	
1	89112	1.0000	EA C-FRAME COMPLETE18	0	0	.0	A		00	05/16/89	P	PRIM	A	S	C	P	
1	AA60338	1.0000	PC 1/4-20X1.25SHCS UN	0	0	.0	A		00	06/25/92	P		A	S	C	P	
1	AA62001	4.0000	EA FLT WASHER.31X.75	0	0	.0	A		00	10/12/93	P		A	S	C	P	

Run Date: 06-MAY-1994 Time: 02:30 PM

B/M EXPLOSION REPORT: SINGLE LEVEL

User: HWM

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Parent Item: 420102
C-FRAME ASSY (12)

Prod Cat: FA

Usr Def:8D

Stk:S

Ctl:C

P/M:M

Comm:

Eng Rls:

Rev: 00

Date: 05/10/89

Size:

Route:

LEV	COMPONENT ITEM NUMBER	QTY PER UM	OPTIONS COMPONENT DESCRIPTION	OPER	SQ	SCRAP FCTR	B/M TYP	--ENGR RLS	RELEASE--- REV	DATE	S I Z	PRI ROUTE NUM	ITM STS	S K	C L	P M	COMM CODE
1	22096	1.0000	EA DIE HOLDER	0	0	.0	A		00	05/10/89	A	PRIM	A	S	C	M	QLP
1	29737	1.0000	EA GUARD	0	0	.0	A		02	05/10/89	B	PRIM	A	S	C	M	QLP
1	33227	1.0000	PC BARREL END CAP	0	0	.0	A		02	06/12/90	A	PRIM	A	S	C	M	
1	42026	1.0000	EA SET SCREW MODIFIED	0	0	.0	A		00	05/10/89	A	PRIM	A	S	C	M	QLP
1	55121	.0000	EA MAIN ASSY	0	0	.0	A		00	05/10/89	E		A	S	C	M	
1	55161	.0000	IN C-FRAME ASSY 12	0	0	.0	A		00	05/10/89	C		A	S	C	M	
1	60050	4.0000	EA 5/16-18X1 1/2HHCS	0	0	.0	A		00				A	S	C	P	QLP
1	60306	4.0000	EA 1/4-20X1 1/2SHCS	0	0	.0	A		00				A	S	C	P	
1	60309	1.0000	EA 1/4-20X1/2 SHCS	0	0	.0	A		00	12/13/85			A	S	C	P	
1	60363	2.0000	EA 5/16-18X3 SHCS	0	0	.0	A		00				A	S	C	P	QLP
1	61516	1.0000	EA ASP-1-BV BREATHER	0	0	.0	A		00	05/10/89	P		A	S	C	P	
1	62362	4.0000	EA WASHER, LOCK, 5/16"ID, MED	0	0	.0	A		00	09/20/88	P		A	S	C	P	
1	62938	4.0000	EA 1/4-20X1/2 BHSCS	0	0	.0	A		00	12/07/89	P		A	S	C	P	
1	62941	1.0000	EA 5/8-11 EYE BOLT	0	0	.0	A		00	05/10/89	P		A	S	C	P	
1	62970	2.0000	EA 1/4-20X1/4SS BRST	0	0	.0	A		00	05/25/90	P		A	S	C	P	QLP
1	85202	1.0000	EA DECAL QUICKLOK	0	0	.0	A		00	05/10/89	P		A	S	C	P	QLP
1	86162	1.0000	PC PUNCH GUIDE BSHNG	0	0	.0	A		00	03/08/90	P		A	S	C	P	
1	89114	1.0000	IN C-FRAME COMPLETE12	0	0	.0	A		00	05/10/89	P	PRIM	A	S	C	P	
1	AA60338	1.0000	PC 1/4-20X1.25SHCS UN	0	0	.0	A		00	06/25/92	P		A	S	C	P	
1	AA62001	4.0000	EA FLT WASHER.31X.75	0	0	.0	A		00	10/12/93	P		A	S	C	P	

Run Date: 06-MAY-1994 Time: 02:30 PM

B/M EXPLOSION REPORT: SINGLE LEVEL

User: HWM

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Parent Item: 420104 Prod Cat: FA Usr Def:8D Stk:S Ctl:C P/M:M Comm:
 C-FRAME ASSY (24)

Eng Rls: Rev: 00
 Date: 05/10/89 Size: Route:

LEV	COMPONENT ITEM NUMBER	QTY PER UM	OPTIONS COMPONENT DESCRIPTION	OPER	SQ	SCRAP FCTR	B/M TYP	--ENGR RLS	RELEASE REV	DATE	S I	PRI ROUTE	ITM STS	S K	C L	P M	COMM CODE
1	22096	1.0000	EA DIE HOLDER	0	0	.0	A		02	05/10/89	A	PRIM	A	S	C	M	QLP
1	29737	1.0000	EA GUARD	0	0	.0	A		02	05/10/89	B	PRIM	A	S	C	M	QLP
1	33227	1.0000	PC BARREL END CAP	0	0	.0	A		02	06/12/90	A	PRIM	A	S	C	M	
1	42026	1.0000	EA SET SCREW MODIFIED	0	0	.0	A		00	05/10/89	A	PRIM	A	S	C	M	QLP
1	55121	.0000	EA MAIN ASSY	0	0	.0	A		00	05/10/89	E		A	S	C	M	
1	55430	.0000	EA C-FRAME ASSY 24	0	0	.0	A		00	11/09/90	C		A	S	C	M	
1	60050	4.0000	EA 5/16-18X1 1/2HHCS	0	0	.0	A		00				A	S	C	P	QLP
1	60306	4.0000	EA 1/4-20X1 1/2SHCS	0	0	.0	A		00				A	S	C	P	
1	60309	1.0000	EA 1/4-20X1/2 SHCS	0	0	.0	A		00	12/13/85			A	S	C	P	
1	60363	2.0000	EA 5/16-18X3 SHCS	0	0	.0	A		00				A	S	C	P	QLP
1	61516	1.0000	EA ASP-1-BV BREATHER	0	0	.0	A		00	05/10/89	P		A	S	C	P	
1	62362	4.0000	EA WASHER, LOCK, 5/16"ID, MED	0	0	.0	A		00	09/20/88	P		A	S	C	P	
1	62925	1.0000	EA 3/4-10 EYE BOLT	0	0	.0	A		00	05/10/89	P		A	S	C	P	
1	62938	4.0000	EA 1/4-20X1/2 BHSCS	0	0	.0	A		00	12/07/89	P		A	S	C	P	
1	62970	2.0000	EA 1/4-20X1/4SS BRST	0	0	.0	A		00	05/25/90	P		A	S	C	P	QLP
1	85202	1.0000	EA DECAL QUICKLOK	0	0	.0	A		00	05/10/89	P		A	S	C	P	QLP
1	86162	1.0000	PC PUNCH GUIDE BSHNG	0	0	.0	A		00	03/08/90	P		A	S	C	P	
1	89115	1.0000	EA C-FRAME COMPLETE24	0	0	.0	A		00	05/10/89	P	PRIM	A	S	C	P	
1	AA60338	1.0000	PC 1/4-20X1.25SHCS UN	0	0	.0	A		00	06/25/92	P		A	S	C	P	
1	AA62001	4.0000	EA FLT WASHER.31X.75	0	0	.0	A		00	10/12/93	P		A	S	C	P	

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B/M EXPLOSION REPORT: SINGLE LEVEL

User: HWM

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Parent Item: 420402 The Lockformer Company

Prod Cat: FA Usr Def:8D Stk:S Ctl:C P/M:M Comm:

Eng Rls: Rev: 00

AIR VALVE ASSY

Date: 05/10/89 Size: Route:

LEV	COMPONENT ITEM NUMBER	QTY PER UM	OPTIONS COMPONENT DESCRIPTION	OPER	SQ	SCRAP FCTR	B/M TYP	--ENGR RLS	RELEASE REV	DATE	S Z	PRI ROUTE	ITM STS	S K	C L	P M	COMM CODE
1	55123	.0000	EA AIR VALVE ASSY	0	0	.0	A		00	05/10/89	D		A	S	C	M	
1	61513	1.0000	EA 30182-12-12 FITTG	0	0	.0	A		00	05/14/89	P		A	S	C	P	QLP
1	61522	1.0000	EA 2753A5001 ROSS VLV	0	0	.0	A		00	08/17/89	P		A	S	C	P	QLP
1	61523	1.0000	EA ASQF-3 MUFFLER	0	0	.0	A		00	05/10/89	P		A	S	C	P	QLP
1	61526	3.0000	EA 6MJ-8MP JICNPTADPT	0	0	.0	A		00	05/10/89	P		A	S	C	P	
1	61527	1.0000	EA 3109-53-11 MALE EL	0	0	.0	A		00	05/10/89	P		A	S	C	P	QLP
1	61530	1.0000	EA 12LOC-12RFJX LOCON	0	0	.0	A		00	05/10/89	P		A	S	C	P	QLP
1	61531	1.0000	EA LOGIC ELEMENT #59157 (ARO) INCLUDES #59736 COVER PLATE	0	0	.0	A		00	08/17/89	P		A	S	C	P	QLP
1	61556	26.0000	IN 140-53-01TUBE100FT	0	0	.0	A		00	05/19/89	P		A	S	C	P	
1	61647	1.5000	FT HOSE, 3/4"ID LOCK ON, BLACK	0	0	.0	A		00	05/10/89	P		A	S	C	P	
1	65050	1.0000	EA 1/8 CLS NIPPLE	0	0	.0	A		00				A	S	C	P	QLP
1	65081	3.0000	EA 3/4NPT CLOSE NPPL	0	0	.0	A		00	05/10/89	P		A	S	C	P	
1	65121	3.0000	EA 3/4X1/2 HEX BSHG	0	0	.0	A		00				A	S	C	P	QLP
1	65126	1.0000	EA 1/8 X 1/4 NPT	0	0	.0	A		00				A	S	C	P	QLP
1	65129	1.0000	EA 1 X 3/8 MALE REDS	0	0	.0	A		00	07/22/81	P		A	S	C	P	
1	65183	1.0000	EA 3/8 STREET ELBW	0	0	.0	A		00				A	S	C	P	QLP
1	65288	2.0000	EA 3/4X1/2NPT TEE	0	0	.0	A		00	08/17/89	P		A	S	C	P	
1	65359	1.0000	EA 3/4 FEM ELBOW	0	0	.0	A		00	08/17/89	P		A	S	C	P	

Run Date: 06-MAY-1994 Time: 02:17 PM

B/M EXPLOSION REPORT: SINGLE LEVEL

User: HWM

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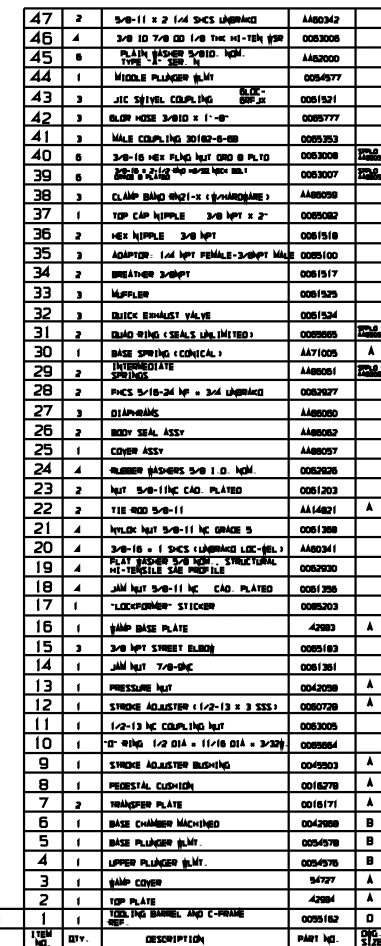
Parent Item: 420501
AIR TANK ASSY

Prod Cat: FA Usr Def:9D Stk:S Ctl:C P/M:M Comm:

Eng Rls: Rev: 00
Date: 05/10/89 Size: Route:

LEV	COMPONENT ITEM NUMBER	QTY PER UM	OPTIONS COMPONENT DESCRIPTION	OPER	SQ	SCRAP FCTR	B/M TYP	--ENGR RLS	RELEASE REV	DATE	S I Z	PRI ROUTE NUM	ITM STS	S K	C L	P M	COMM CODE
1	54023	1.0000	EA AIR TANK WLMT	0	0	.0	A		03	05/10/89	C	PRIM	A	S	C	M	QLP
1	55126	.0000	EA AIR TANK ASSY	0	0	.0	A		00	05/10/89	D		A	S	C	M	
1	61513	1.0000	EA 30182-12-12 FITTG	0	0	.0	A		00	04/14/89	P		A	S	C	P	QLP
1	61530	1.0000	EA 12LOC-12RFJX LOCON	0	0	.0	A		00	05/10/89	P		A	S	C	P	QLP
1	61539	1.0000	EA FILTER/REG #B12-696-M3LA (NORGREN)	0	0	.0	A		00	05/10/89	P		A	S	C	P	QLP
1	61540	2.0000	EA W54 PRESSURE GA	0	0	.0	A		00	05/10/89	P		A	S	C	P	QLP
1	61541	1.0000	EA 8MP8MP NPT ADPTR	0	0	.0	A		00	05/10/89	P		A	S	C	P	
1	61543	1.0000	EA 249IFHD22 MALE EL	0	0	.0	A		00	05/10/89	P		A	S	C	P	
1	61544	1.0000	EA VALVE, NEEDLE #NV-106C-4-2 (PARKER)	0	0	.0	A		00	05/10/89	P		A	S	C	P	QLP
1	61647	2.0000	FT HOSE, 3/4"ID LOCK ON, BLACK	0	0	.0	A		00	05/10/89	P		A	S	C	P	
1	65081	1.0000	EA 3/4NPT CLOSE NPPL	0	0	.0	A		00	05/10/89	P		A	S	C	P	
1	65186	1.0000	EA 90 STREET EL	0	0	.0	A		00				A	S	C	P	
1	65210	1.0000	EA 1/4NPT SHPP	0	0	.0	A		00				A	S	C	P	QLP
1	65288	1.0000	EA 3/4X1/2NPT TEE	0	0	.0	A		00	08/17/89	P		A	S	C	P	
1	66678	2.0000	IN TUBE, COPPER 1/4"OD X .030WALL (U424-C4)	0	0	.0	A		00	08/17/89	P		A	S	C	P	QLP
1	85222	1.0000	PC DECAL DRAIN AIR TK	0	0	.0	A		00	09/21/92	P		A	S	C	P	





THE LOCKFORMER CO.		#
711 SOUTH AVE.	1 FIVE, 811 PLYMOUTH	2
MINNEAPOLIS	W.D. QUICKE	3
phone 14414	phone 14414	4
HAND II L90 ASSY	55990	5
quantity	unit price	6
order no	date	7
104	2-23-64	8
		REVISIONS