CLEATBENDER

MODEL A

OPERATION & MAINTENANCE MANUAL

LION MACHINERY

Manual# LMMODELA
June 2005

TRADEMARK NOTICES

Model-A Cleatbender

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Model-A Cleatbender

1. A MESSAGE FROM LION MACHINERY

Thank you for purchasing the lion Model-A Cleat Bender. The Lion Model-A Cleat Bender is manufactured with the highest quality material and workmanship.

- This machine has a capacity of 20 gauge mild steel and lighter. It cannot accept heavier material.
- The warranty on this machine is 30 days.
- Any parts found to be defective within 2 years of purchase from LION will be replaced.
- We will ship in stock warranty parts within 2 business days of receipt of order via Fed Ex ground at no charge.
- For replacement parts, call us or contact the machinery dealer from whom you purchased the machine.
- All purchase orders must be in writing (warranty and non-warranty parts).
- PLEASE CAREFULLY READ THIS INSTRUCTION MANUAL. IT IS WRITTEN FOR OWNERS, OPERATORS AND MAINTENANCE PERSONNEL.
- PLEASE CALL BEFORE ATTEMPTING TO ADJUST THE MACHINE IN ANY WAY. PARTS AND LABOR WARRANTIES WILL BE NULL AND VOID IF WORK IS COMPLETED WITHOUT MANUFACTURER ASSISTANCE BY PHONE. THIS IS A SIMPLE MACHINE, ALMOST TOO SIMPLE. PLEASE CALL 314-373-7686 OR FAX AT 314-373-7687.
- MAINTAIN YOUR MACHINE! KEEP THE MACHINE OUT OF AREAS WHERE SHAVINGS, GRINDING DUST, INSULATION, ETC. MAY GET INTO THE MACHINE OR WIPE DOWN THE MACHINE REGULARLY WITH A DRY RAG. READ THE MAINTENANCE INSTRUCTIONS ENCLOSED, SPECIFICALLY FOR THE FILTER REGULATOR UNIT AS IS SUPPLIED BY THE FILTER REGULATOR MANUFACTURER.
- THIS MACHINE HAS A FIXED BACK GAUGE. NO ADJUSTMENTS SHOULD BE REQUIRED WHEN IT ARRIVES. ANY ADJUSTMENTS-EVEN THOUGH OUTLINED IN THIS MANUAL MUST BE DISCUSSED WITH THE MANUFACTURER.
- LION Cleatbenders are shipped, and should be stored if necessary, enclosed in shrink wrap (covered) and in crates made of wood, with lifting and shipping instructions clearly stenciled on the outside. Should the machine arrive without a crate, contact the trucking company immediately to file a claim.
- WHEN THE TIME COMES, REPAIR AND OR REBUILD SERVICES ARE AVAILABLE BY CONTACTING DAVE KRIVANEK AT IOWA REBUILDERS (A CERTIFIED LION REPAIR COMPANY, AT 319-364-9181). NEVER SEND YOUR MACHINE WITHOUT APPROVAL AND SCHEDULING THROUGH IOWA REBUILDERS. FREIGHT TO AND FROM IOWA REBUILDERS IS TO BE PAID THE CUSTOMER. PAYMENT MUST BE MADE IN FULL FOR WORK COMPLETED PRIOR TO RETURN SHIPPING.
- *ALL WARRANTY WORK WILL STILL BE HANDLED BY LION MACHINERY.*

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2. LOCKOUT GUIDE

The protection of life and limb through responsible actions and adequate safeguards are the responsibility of all individuals in a workplace environment, or any environment where action or miss-action could possibly endanger the safety and wellbeing of others.

All maintenance, repair and adjustment procedures performed on this equipment shall comply with existing established ***Lockout*** requirements. At a minimum, these requirements must include the use of a keyed padlock or similar device utilized to physically and securely remove and isolate any power source from the equipment, preventing accidental reapplication while personnel may be in exposed circumstances, subject to possible injury or death.

These requirements must also include the **tagging** of the lockout device to notify all individuals working in the area, or anyone who could for whatever reason be in a position to possibly remove or otherwise defeat the purpose of the lockout device, as to its installation, why, and the individual responsible for its application.

Power sources include electrical, pneumatic, hydraulic, or any other hazardous energy source. This procedure shall be used to ensure that the machine is stopped and isolated from all potentially hazardous energy sources and that these energy sources are locked out before employees perform any servicing or maintenance when the unexpected energization, start-up of the machine, or the release of stored energy could cause injury.

FOR THIS UNIT *(where applicable)*

- **Hydraulic power** sources are provided with a lockable valve to block hydraulic pressure from the system. Where applicable, this valve shall be placed in the off position and locked in place.
- **Electrical power** sources are provided either with a male plug for connection to the electrical source, or are hardwired to the source distribution panel. When a plug is provided, the plug shall be disconnected from the source power and secured within a covering and tagged appropriately.

  When hardwired to the source distribution panel, the panel shall have a manual disconnect which is lockable in the off position, or in the event of a circuit breaker, the panel will have a lockable door which will deny access to unauthorized personnel.
- **Pneumatic power** is applied to the machine through a quick disconnect fitting. This quick disconnect fitting shall be disconnected from the pneumatic power source and secured within a covering and tagged appropriately.

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3. SAFETY SUMMARY

A. INTRODUCTION

Safety is everyone's business. Whether you are an equipment operator, a maintenance person, a supervisor, or business owner, you are directly responsible for the day-to-day safe operation of your Lion Machinery equipment. It is your responsibility to maintain and operate this equipment in strict compliance with all applicable laws, safety regulations, and the manufacturer's recommended procedures.

B. PROMOTING SAFETY

Institute a company safety program. The formation of an organized safety program is strongly recommended. This safety program should include the formation of a safety committee to review and update company safety policies on a regular basis. Establish a firm policy on safety regulations in the work place. Publish these objectives, spelling out each employee's responsibilities. ***Make certain that each employee knows what is expected of them.***

C. SAFETY PROGRAM

The following steps are suggestions that a company developing, or expanding, a comprehensive safety program should consider:

1. Lion Machinery carefully designs safeguards into their products in order to minimize hazards. However, the manner in which equipment is incorporated into a manufacturing process may inadvertently create a hazard or otherwise defeat built-in safeguards. Closely examine the operation of your company's processing equipment. Take notice of potential hazards. Install guards or take other appropriate action to eliminate hazard risks.
2. Make certain equipment operators and maintenance personnel are properly trained.
3. Setup a program of daily, weekly, and monthly machinery inspection. Make a check list. Keep a historical record of all maintenance work, repairs, and adjustments.
4. Frequently evaluate safety guards and devices during actual production runs***. Correct any unsafe practice or situation immediately***.
5. Establish safe, convenient material handling systems. If conveyor equipment is installed in your facility, it should conform to recommendations published in the 'American National Standard, Conveyors and Related Equipment, Safety Standards for ANSI/ASME B20.1' which are available from the American National Standards Institute (ANSI).
6. Provide personal protective equipment, such as safety glasses with side shields, safety helmets, tongs, gloves, hand pads, spats, and protective sleeves, as required to suit the operation.
7. Organize a company safety committee. Schedule periodic meetings on a regular basis to review and update all safety policies.
8. Establish a firm policy on safety regulations in the work place. Publish these objectives, spelling out each employees responsibilities. ***Make certain that each employee knows what is expected of them.***
9. Investigate all accidents and close calls. Take immediate action to prevent a recurrence of the incident. Keep records of the investigation and the corrective measures taken.

10. Post a list of names, addresses, and phone numbers of physicians and others who are to be called in emergency situations.

D. REFERENCE SOURCES

Questions concerning specific hazards or safeguarding of equipment may be addressed to the equipment manufacturer. For additional information, refer to the sources listed here:

American National Standards Institute (*ANSI*)

ANSI B11.18, "Machinery and Machine Systems for the Processing of Coiled Strip, Sheet and Plate - Safety Requirements for Construction, Care and Use." **ANSI B11.4**, "Shears: Safety Requirements for Construction, Care and Use." **ANSI B11.14**, "Coil-Slitting Machines/Systems Safety Requirements for Construction, Care and Use." **ANSI B11.18**, "Machinery and Machine Systems for the Processing of Coiled Strip, Sheet and Plate - Safety Requirements for Construction, Care and Use."

National Fire Protection Association (*NFPA*)

NFPA 79, "Electrical Standards for Industrial Machinery."

European Union

"Directives on Safety of Machinery" *and* "CE Marking"

E. WARNING LABELS

Warning and safety related informational labels are placed on the Lion Machinery' equipment at strategic points. It is important that these labels not be removed, covered, hidden, or defaced. The purpose of these labels is to alert personnel to potential personal injury hazards or *other* direct or indirect safety concerns.

- **DANGER** indicates an imminently hazardous situation which avoided, will result in death or serious injury.

- **WARNING** indicates a potentially hazardous situation which avoided, could result in minor or serious injury.

- **CAUTION** indicates a potentially hazardous situation which, avoided, may result in minor or moderate injury.

- **NOTICE** indicates a company policy that relates directly or i to the safety of personnel or protection of property.

It is important that the meaning of a safety sign be clearly understood by those who may come in contact with the hazard. To increase the understanding of a safety sign's components, the ANSI Z535 committee encourages safety sign manufacturers and owners of facilities to publish and exhibit the following (*above*) information on safety posters, safety bulletins or the like. Doing so will assist in the objective of achieving a national uniform system for the recognition of potential personal injury hazards and accident prevention." - *ANSI Z535.2, Annex A1*

F. WARNING MESSAGES IN THIS MANUAL

Throughout this manual various ⚠**DANGER**, ⚠**WARNING**, ⚠**CAUTION**, and safety related ⚠***NOTICE*** appear. The intent is to alert operator and maintenance personnel to potential hazards. In addition, *important* operation and maintenance details are emphasized with the ⚠**NOTE** heading.

G. SAFETY FIRST

The equipment in this line was designed and manufactured for a specific task. **DO NOT** use the equipment for any other function or to process material that is beyond the equipment's design specifications. Modifications or additions to this equipment line should not be made without first consulting Lion Precision Industries. Replacement and maintenance parts should be equal to original equipment. Use of other parts may result in unsafe operating conditions. If there is a question as to the suitability of a part, Lion Machinery 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 their own safety as well as the safety of all others around the line.

Metal Strips

The metal strip may have sharp or ragged edges. The strip is under tension and is subject to abrupt tension changes. This can result in strip breakage with the ends flying without warning. Stay clear of the strip whenever possible. When it is necessary to approach or handle the strip, use extreme caution. Use protective devices such as tongs, gloves, eye protection, and wrist guards as required for safety. The strip presents many pinch hazards with the machinery. Stay clear of these. Never step on or over strip in the line.

Machinery

Never reach into any piece of machinery which is operating or which is capable of operation. Loose clothing or jewelry should be kept clear of machinery at all times. When working on one piece of equipment, be aware of hazards of surrounding equipment. Any item inserted into a machine may be thrown or may cause a dangerous malfunction or breakage.

Safe Guards

No equipment should be operated unless the safe guards or devices supplied with the product are securely in place and properly adjusted.

⚠WARNING

Lion has conducted hazard evaluation and risk analysis studies for their products. *Safe guards installed on the equipment are there for a reason.* BEFORE EQUIPMENT IS PLACED INTO SERVICE, ALL SAFE GUARDS OR DEVICES MUST BE IN PLACE AND PROPERLY ADJUSTED.

Maintenance

Before performing any maintenance on a piece of equipment, insure that all power is locked off in accordance with your company's lockout/tagout policy. Be sure that all movable members (*such as rolls, arms, tables, etc.*) are securely blocked from inadvertent motion which might be hazardous. Treat all electrical lines as being live and all piping as being under high pressure. Insure that all items are properly reassembled before placing them into operation. *Before equipment is returned to service, ALL safe guards or devices* MUST BE *in place and properly adjusted.*

⚠ NOTICE

Before doing any WELDING ON EQUIPMENT, the following precautions must be taken to insure against damage:

1) All power is removed from system.
2) The weld ground is connected to the closest possible location on the unit where the welding is being performed.
3) All encoders, sense eyes, and controls should be electronically disconnected if at all possible to avoid possible damage.

Operation

This equipment is capable of speeds, tensions, and adjustments which may be hazardous for some of the materials within the line specification. For example, thin, narrow strip may be subjected to tensions sufficient to cause breakage. Never attempt to process any material unless the safe adjustments for that particular are known and can be implemented.

Traffic Around Equipment

Care should be taken at all times in moving around the equipment, whether on foot or in a vehicle. Changes in floor elevation, machine bases and debris around the equipment are trip hazards. Take care that personnel are not trapped between vehicles and equipment.

⚠DANGER

Do not attempt to walk or climb on any machine while in operation. Failure to observe this warning may result in death or serious injury.

H. HAZARD REMINDER

Use the following HAZARD REMINDER sheet to reinforce awareness of the hazards associated with coil processing lines. This reminder can be a useful supplement to your company's safety program. *Lion suggests the following steps:*

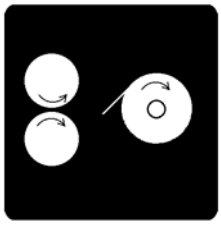
1. SHOW each individual the HAZARD REMINDER sheet and explain each category of hazard.
2. POINT OUT EXAMPLES of each type of hazard on the actual equipment the individual operates or works around.

3. EXPLAIN HOW TO AVOID HAZARDS in the individuals work environment.
4. GIVE a copy of the HAZARD REMINDER sheet to each individual.

Safety is everyone's business!

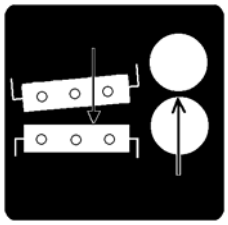
Model-A Cleatbender

THINK SAFETY FIRST



NIP POINT

WHEN ONE OBJECT ROTATES NEAR ANOTHER, IT CAN PULL YOU IN *and* CRUSH YOU



PINCH POINT

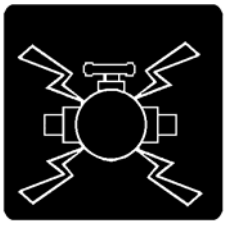
WHEN ONE OBJECT MOVES CLOSER TO ANOTHER, IT CAN CUT *or* PINCH YOU.

MOVING EQUIPMENT and COILS

CAN KNOCK YOU OFF BALANCE *or* CRUSH YOU

STRIP EDGES *and* ENDS

CAN CUT *or* STRIKE YOU.



ELECTRICAL *and* FLUID SYSTEMS

CAN SHOCK *and* BURN YOU *and* CAN EXPLODE.

CLIMBING ON MACHINES

CAN MAKE YOU FALL - MAYBE INTO ONE OF THE HAZARDS ABOVE.

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4. Safety Instructions

This machine should only be operated with all guards in place! Review your machine to understand the location of all guards listed below.

1	Finger Guard
2	Top Cover
3	Back Panel (Behind Unit)
4	Foot Pedal Guard
5	Machine Table Top
6	Table

⚠WARNING:

NEVER ATTEMPT TO PLACE YOUR HANDS OR FINGERS UNDER THE FINGER GUARD! Keep finger guard at its lowest position, as close to the table as possible to allow ONLY material under it!

⚠WARNING:

DO NOT REMOVE ANY GUARDS WHEN MACHINE IS OPERATING. DO NOT REMOVE ANY GUARD WHEN AIR IS SUPPLIED TO THE MACHINE. IF GUARDS HAVE BEEN REMOVED FOR MAINTENANCE, BEFORE TESTING AND/OR OPERATING THE MACHINE RETURN GUARDS TO THEIR PROPER POSITION.

When performing any maintenance or adjustment of the machine observe the following precautions:

1. Remove the air supply line to the machine.
2. Depress foot pedal several times to release air pressure in the table and bend cylinders.
3. Depress small valve next to regulator on the side of the machine until no airflow is heard.
4. Be sure all guards are properly in place before reconnecting the airline.
5. Loose objects and tools should not be rested anywhere on the machine. These items may enter the bending area and cause damage for which LION is NOT responsible.

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SYSTEM OVERVIEW

5. SYSTEM OVERVIEW

A. DESCRIPTION

The LION Model-A Cleatbender offers an economical way of producing 180° drives on L shapes, pre-formed ducts and flats. These units are light weight and engineered for years of dependable service.

These machines are easy to setup and minimal maintenance is required. The maximum capacity of the Model-A is 20 gauge mild steel, with a bend length of 3 to 23 ¼" or 29 ¼", depending upon the model purchased. The bend width range is 7/16 inches to 1 inch.

The Model A carries a 30 day labor warranty and a 24 month parts warranty, with parts typically available the day of the order.

(1) Sequence of Operation

1. Insert metal until it contacts the back gage fingers.
2. Depress foot pedal and remove your foot from pedal immediately.
3. Table bar slides forward and contacts limit valve under table.
4. Limit valve starts bending bar in motion.
5. Bending bar swings down around fixed back gage fingers.
6. Bending continues until table-retract valve is contacted.
7. Table retract valve causes table bar to retract.
8. Bending continues until bend retract valve is contacted.
9. Limit valve reverses bending bar motion.
10. Bending bar returns to upright position.
11. Metal is removed from machine.

(2) Installation

When your Lion Model-A Cleatbender arrives from the factory, ensure the following tasks are completed before attempting to use the machine. In addition, ensure ALL operators have read and understand this manual.

1. Remove the machine from the crate.
2. After moving it to the location where it is to be used, check to ensure the machine is sitting solid and level on the floor.
3. If the machine rocks, place shims under the machine feet until the machine is solid and level.
4. Install anchors to the floor to keep the machine from "walking" during use.
5. Run a **1/2 inch air line** to the machine and connect it to the filter, oiler and pressure regulator assembly on the front panel of the machine.
6. Fill the oiler with pneumatic tool oil. (Available at most hardware stores)
7. Turn on the air supply and using the pressure regulator on the front panel, set the air pressure to 90psi.

8. Cycle the machine by depressing the foot pedal momentarily. Adjust oil flow using the knob on top of the lubricator to give one drop of oil every ten machine cycles.

Once the machine is properly secured to the floor and air supply is established you are ready to begin the test bend procedure. This procedure will ensure your LION Cleatbender is ready for operation.

B. TEST BEND PROCEDURE

To ensure your machine is forming the desired bend, you need to complete the following test bend procedure.

(1) Test Bend Procedure

1. Place a piece of metal from 3 to 24, 30, or 36 inches wide (depending on your model's bend length) on the table and slide it into the machine until it contacts the rear gage fingers.

2. Depress the foot pedal and ***immediately*** remove your foot from the pedal.

The table bar beneath the table should slide forward and lock the work in place. Bending will begin when the table bar is in the full forward position. At the end of the bending cycle the bending bar will return to the upright position and the piece can be removed from the machine.

3. Check the drive cleat edge you have made for width, tightness, and angle of bend.

If everything looks good you may use the machine without making any adjustments.

If adjustments are necessary see the appropriate section on adjustments in this manual before making any changes.

If this is your first time adjusting the machine or you have not adjusted the machine in some time, PLEASE CALL US at (314) 638-0100 or (800) 782-6648 for assistance. The person actually doing the adjustments should call...message relay for adjustments has not been effective in the past. We must talk to the person doing the adjustments!

Warranty note: If adjustments are made that are not listed above and/or instructed by the factory, the machine warranty may be null and void. Call for assistance!

C. CAM ADJUSTMENT PROCEDURE

The Model-A utilizes two cams which are used to control the table bar during the bending cycle and when the bar returns to its "home" position after the bend.

(1) Cam Adjustment Procedure

The control cams for MODEL-A are mounted inside the back cover of the machine. The top cam (Item **B**) controls the table retract valve and the lower cam (Item **C**) controls the bend retract valve.

- **Table Retract (Item B)** – If the table bar retracts too soon, incomplete bends will occur. Lower the valve to keep the table bar in sequence longer to complete the bend.

  If the bending bar catches the table bar, the machine will jam. If this occurs, raise the valve until the machine cycles freely.

- **Bend Retract (Item C)** – If the machine turns the drive too tightly or stops at the end of a bend cycle without returning, raise the valve until the desired opening is achieved.

  If the drive is too open, lower the valve until the desired opening is achieved.

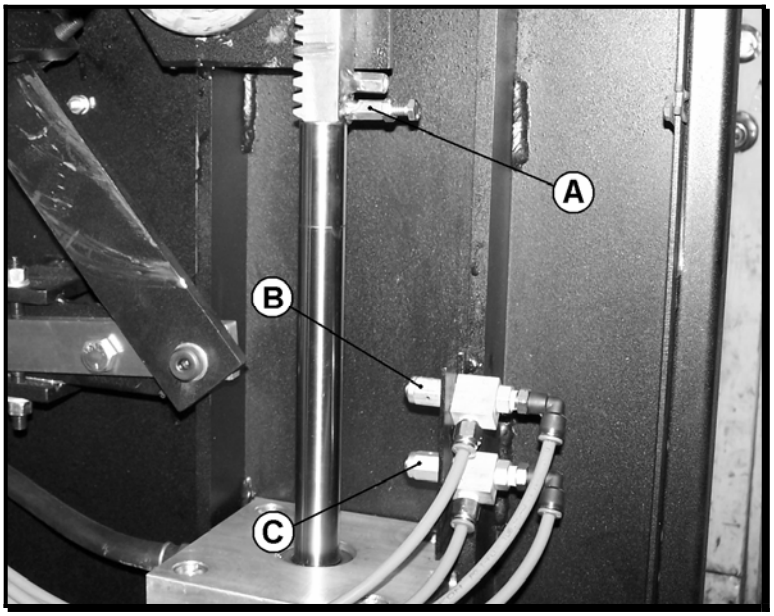

Figure 5-1 A-Plus Cam Adjustments

D. TABLE & BENDING BAR SPEED ADJUSTMENT PROCEDURES

The velocity the table and bending bar move are controlled by exhaust speed control valves that are located behind the front panel. Use the illustration below to identify the appropriate valves and adjustment points.

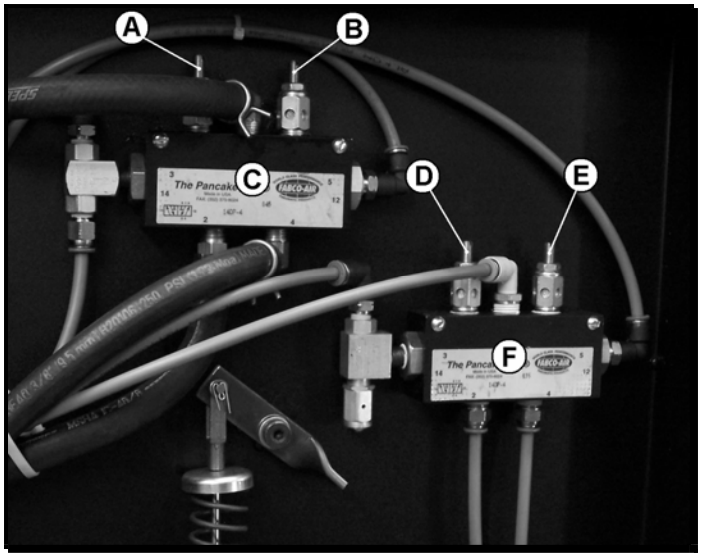

Figure 2 Pneumatic Valve Assemblies

A	Bending Bar Retract Speed
B	Bending Bar Extend Speed
C	Bending Bar Control Valve
D	Table Extend Speed
E	Table Retract Speed
F	Table Control Valve

(1) Table Speed Adjustment

The speed at which the table advances at the beginning of the cycle is not critical. The table should move forward smoothly and not “bang.” The speed at which the table is retracted during the bending cycle is very critical and is related to the speed of the bending bar.

The table must move back before it is pinched by the bending bar. The speed control allows speed control of the table to ensure that the table will not be pinched by the bending bar.

1. To increase the *extend* table speed, loosen the locknut on adjustment screw (**D**), and turn the screw counterclockwise. This opens the speed control and allows the table to move faster. To slow table speed turn the screw clockwise. Ensure the locknut is secured after the adjustment has been made.
2. To increase the *retract* table speed, loosen the locknut on adjustment screw (**E**), and turn the screw counterclockwise. This opens the speed control and allows the table to move faster. To slow table speed turn the screw clockwise. Ensure the locknut is secured after the adjustment has been made.

(2) Bending Bar Speed Adjustment

The Bending Bar speed is critical during the forward movement or bending cycle. The speed at which the bar returns is not as critical. The metal may be removed as soon as the bending bar reverses. The valve used to control these functions is located inside the front panel.

1. To increase the *extend* bending bar speed, loosen the locknut on adjustment screw (**B**), and turn the screw counterclockwise. This opens the speed control and allows the bending bar to move faster. To slow bending bar speed turn the screw clockwise. Ensure the locknut is secured after the adjustment has been made.
2. To increase the *retract* bending bar speed, loosen the locknut on adjustment screw (**C**), and turn the screw counterclockwise. This opens the speed control and allows the bending bar to move faster. To slow bending bar speed turn the screw clockwise. Ensure the locknut is secured after the adjustment has been made.

E. TABLE HEIGHT ADJUSTMENT

The table height was factory set with a single thickness of 20 gauge metal inserted between the table and the hold down bar. This will typically accommodate 20 to 28 gauge material.

⚠CAUTION:

The machine will jam if the clearance between the table bar and hold down bar is less than the thickness of the metal to be bent.

(1) Table Height Adjustment Procedure

The height of the table is adjustable to accommodate various metal thicknesses. The table height was set at the factory with a single thickness of 20 gauge material. The table height should be raised for production bending of lighter gauge metals.

If for some reason the table height will not accommodate your material thickness, please follow the recommended step by step procedure below.

⚠NOTICE:

The table height MUST BE raised for bending of lighter gauge metals.

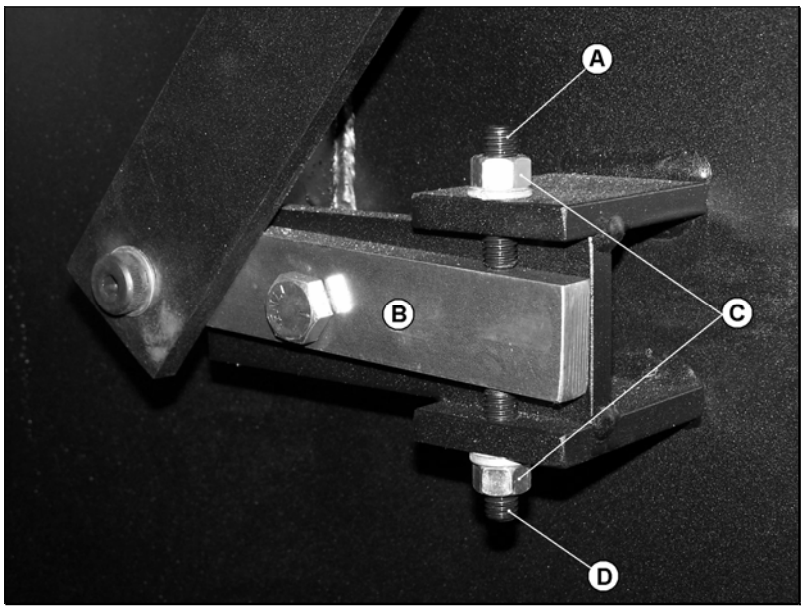

Figure 5-3 Table Height Adjustment

- ✓ To raise the table:
  1. Loosen both lock nuts (**C**) on adjusting screws (**A** & **D**).
  2. Turn adjusting screw (**D**) counter clockwise to loosen (lower).
  3. Tighten adjusting screw (**A**) clockwise to raise the table.
  4. Use a piece of metal of the same thickness to be bent as a feeler gauge between the table bar and the hold down bar.
  5. Once the proper clearance is set, tighten adjusting screw (**A)** and retighten the both lock nuts.
- ✓ To lower the table:
  1. Loosen both lock nuts (**C**) on adjusting screws (**A** & **D**).
  2. Turn adjusting screw (**A**) counter clockwise to loosen (raise).
  3. Tighten adjusting screw (**D**) clockwise to lower the table.
  4. Use a piece of metal of the same thickness to be bent as a feeler gauge between the table bar and the hold down bar.
  5. Once the proper clearance is set, tighten adjusting screw (**D)** and retighten the both lock nuts.

F. TABLE POSITION ADJUSTMENT

The table bar position is adjusted using the adjustment setscrews located under the main table. The entire table bar assembly is moved by using the hex setscrews located at the welded angle mounts on the sides of the table assembly.

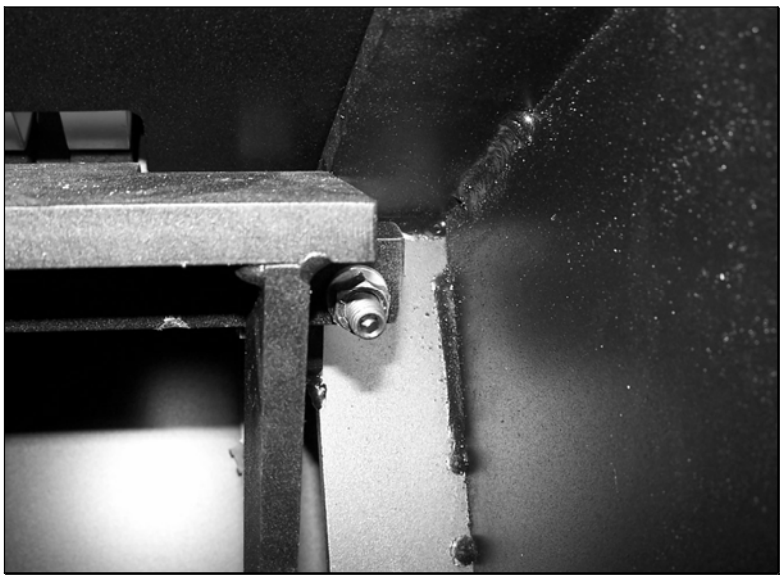

Figure 5-4 Table Position Adjustment

1. To adjust the table position, loosen the jam nut on both sides of the table.
2. Rotate clockwise or counter clockwise and adjust as needed.
3. Secure both jam nuts.
4. The front edge of the table should be 1/16 inch short of the centerline of rotation when the table is in the forward position. This dimension may be determined from the center mark on the bearing pins on *each* side of the machine.

G. HOLD DOWN BAR ADJUSTMENT

The bottom surface of the hold down bar (Item **A**) and the bottom surface of the bending bar (Item **B**) should be flush * (see below). To re-align the Hold Down Bar and the Bending Bar, follow the recommended procedure.

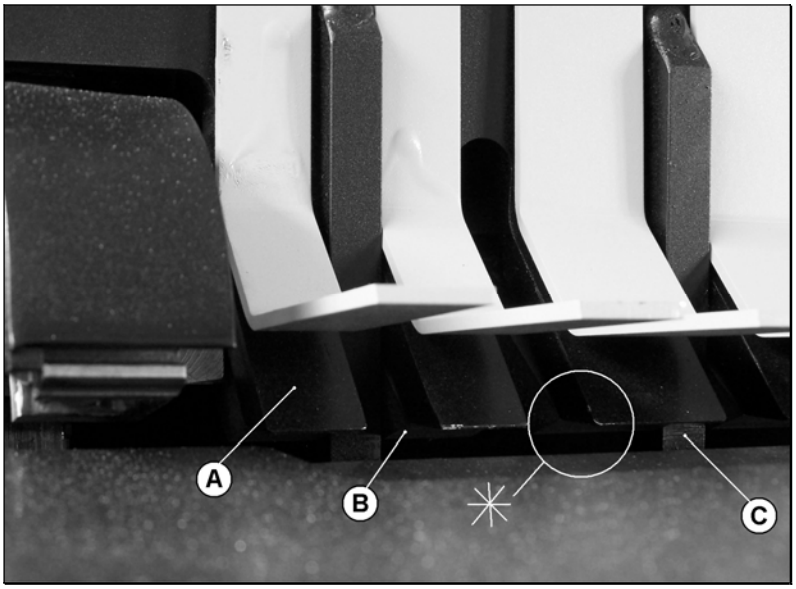

Figure 5-5 Hold Down Bar Adjustment

(1) Adjustment Procedure

1. Loosen the Clamp Bolt (Item **C**) on both ends.
2. Loosen the set screw (Item **A**) on both ends.
3. With the adjustment screw(s) (Item **B**), turn either clockwise or counter clockwise to raise or lower the Hold Down Bar.

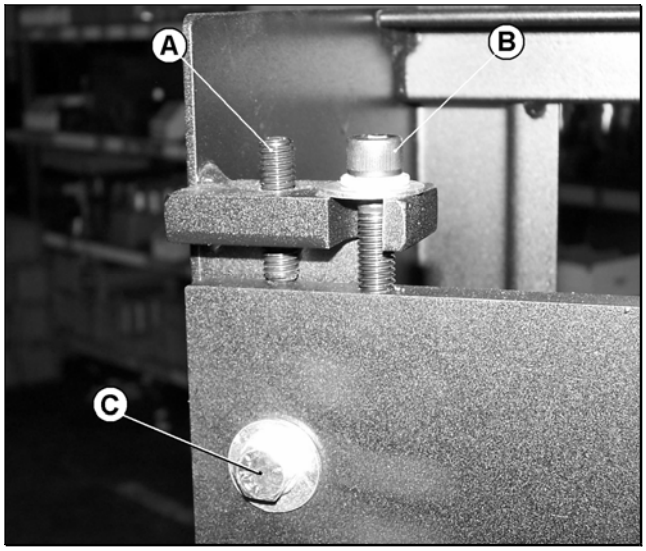

Figure 5-6 Hold Down Bar Adjustment Components

4. Adjust until the surfaces of both bars are flush.
5. Once the bars are flush, use the set screw (Item **A**) to secure the Hold Down Bar.
6. Then, retighten the Clamp Bolt (Item **C**).

H. BACK GAUGE ADJUSTMENT

The back gauge is moved in and out using the opposing bolts at the rear of the machine.

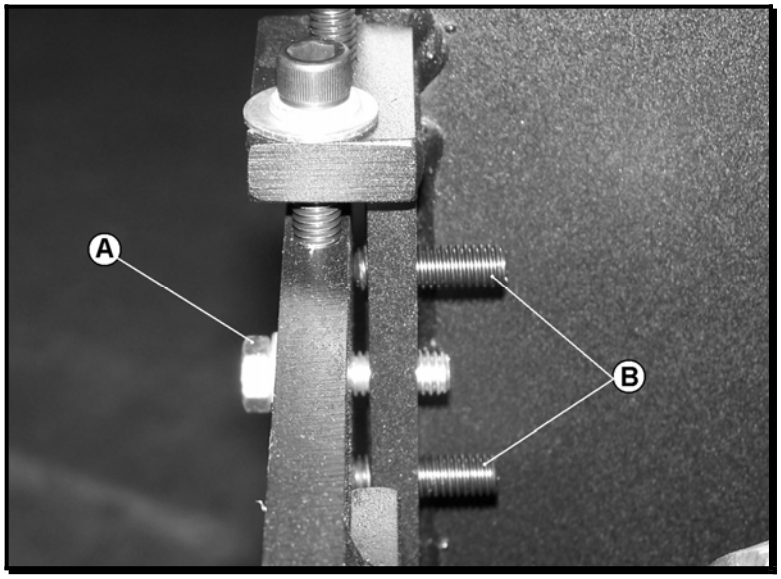

Figure 5-7 Back Gauge Adjustment

(1) Back Gauge Adjustment

1. Loosen lock bolt (**A**).
   a. To increase the depth of the bend, turn the adjustment screws (**B**) counter clockwise.
   b. To decrease the depth of the bend, turn the adjustment screws (**B**) clockwise.
2. Once the adjustment is completed, retighten lock bolt (**A**).

I. CLEARING JAMS

⚠WARNING!:
Review Safety Instructions before clearing jams.

1. Jams can occur when the operator pushes the work piece into the machine after a bend has been made but before the bending bar returns to the upright position.

a. The piece will slide between the bending bar and the hold down bar and get caught.

b. The piece may be removed by removing air pressure to machine, allowing bending bar to fall.

2. The machine may jam if the bending bar does not travel far enough to complete the bending cycle and locks the piece in the machine.

a. This type of jam may be cleared by pressing the push button on the left hand side of machine to send bending bar to upright position.

3. Do not get “Pittsburgh” edges caught under the fingers of the machine. Move “Pittsburgh” edges in between the fingers.

Model-A Cleatbender

6. Maintenance Instructions:

⚠WARNING!:
Do not remove guards or covers from the machine unless air supply is disconnected and air pressure has been released from all cylinders and valves. To bleed off the air pressure, depress the bleeder valve next to the regulator several times.

1. Drain water from the compressed air filter (**C**) at the start of work each day.
2. Ensure air regulator (**B**) is set at 90psi.
3. Set air lubricator (**A**) to deliver one (1) drop of oil for each ten (10) machine cycles using pneumatic tool oil.

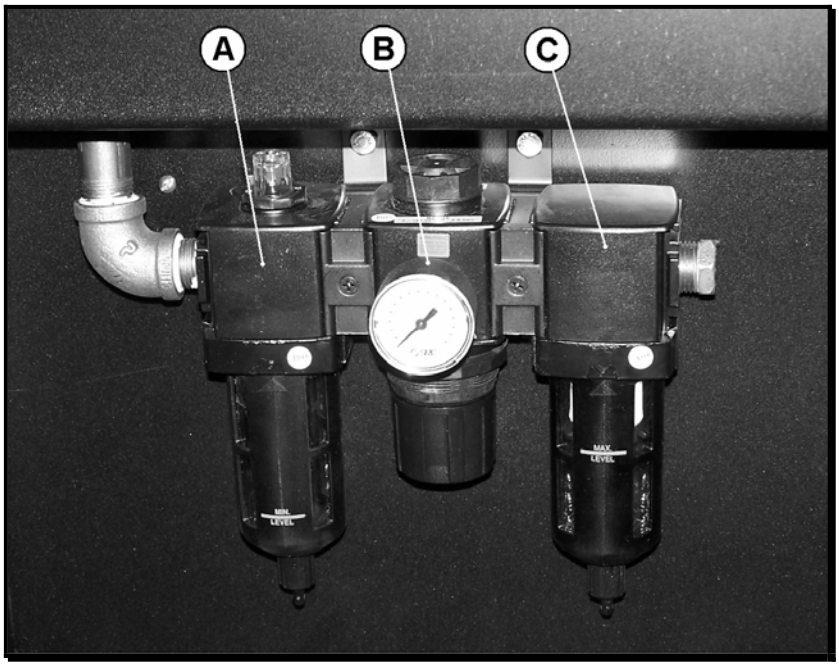

Figure 6-1 Air Filter/Regulator/Lubricator

4. Every three (3) months remove air supply and bleed air pressure from cylinders and valves. Remove the top cover and table.
5. Wipe any dirt and grime from the table guide bars, the gears and the gear racks. Apply a light coat of white lithium grease to the table bar gibs on the top and bottom of the table guide bar.
6. Oil the bending bar pins by dropping oil between the gears and the bearing blocks on the inside of the machine.
7. Apply a light coat of white lithium grease on each gear and rack. Put a drop of oil on each pivot pin in the table linkage mechanism. Oil all the points where the linkage members contact each other.
8. The speed controls have sintered metal filters to act as exhaust silencers and to prevent dirt from being drawn into the hoses and cylinders. Do not try to operate the machine without the speed controls and silencers in place. The sintered metal exhaust silencers will become dirty over a period of time and the speed controls will have to be

adjusted to allow for proper machine operation. If the silencers get completely plugged they should be replaced.

9. All air components are standard and available from many suppliers across the country. Seal kits for cylinders, O-rings for valves and all air controls and machine parts are available from LION Machinery through your local machinery dealer.

LION equipment is fully warranted. All parts and labor are guaranteed for a period of thirty days from the date of purchase. In addition, any parts found to be defective within two years of the date of purchase will be exchanged. NO warranty will be in effect if breakage is caused by customer or dealer negligence.

Model-A Cleatbender

ASSEMBLY DRAWING LIST

The following listed drawings are included in this manual. If replacement drawings are required, order by drawing number.

DRAWING NO.	TITLE

Model-A Cleatbender