



M-30CF-A

CLEAT FOLDER

OPERATION & MAINTENANCE MANUAL



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A Message from Lion Machinery

Thank you for purchasing the LION M-30CF-A (open end) Cleat Folder. The LION M-30CF-A Cleat Folder 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.
- All LION Machinery carries a 30-day labor and 6 month parts warranty.
- 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 the Mestek Machinery Service Department or contact the machinery dealer from whom you purchased the machine.
- All purchase orders must be in writing (warranty and non-warranty parts).
- Carefully read this instruction manual. It is written for owners, operators and maintenance personnel.
- 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.
- 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. Call 319.364.9181 or fax service & parts at 319.362.4946 or e-mail: service@mestek.com.
- Maintain your machine! Keep the machine out of areas where shavings, grinding dust, insulation, etc. may get into the machine. 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.
- The LION Cleat Folder is shipped covered in shrink wrap and enclosed in a wooden crate with lifting and shipping instructions clearly stenciled on the outside. If storage is necessary, the machine must remain wrapped as shipped from the manufacturer.
Should the machine arrive without a crate, contact the trucking company immediately to file a claim.
- When the time comes, repair and rebuild services are available by contacting Mestek Machinery (a certified LION repair company, at 319.364.9181.) Never send the machine without approval and scheduling through Mestek Machinery. Freight to and from Mestek Machinery is to be paid the customer. Payment must be made in full for work completed prior to return shipping.
- ALL WARRANTY WORK WILL BE HANDLED BY MESTEK MACHINERY.



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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.

SAFETY SUMMARY

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 MESTEK 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.

PROMOTE SAFETY

Develop a company SAFETY PROGRAM. Visit the Occupational Safety & Health Administration web site at www.osha.gov for sample safety and health programs.

Employers should consult the applicable OSHA standards for the specific requirements applicable to their workplaces.

COIL AND STRIP PROCESSING EQUIPMENT HAZARDS

The following hazards are associated with the operation of coil and strip processing machinery. The employer must address these hazards and be responsible for providing guards or barriers and establishing appropriate work procedures and training in the safe operation of the equipment.

- Open pits and depressions or raised areas in the floor.
- Space between machines, where strip edges and ends are exposed during feed-up, run and tail-out conditions. This includes carry-over tables and both roller and belt conveyors.
- Nip and pinch points of machinery, coils, and strip which may be exposed in feed-up, run and tail-out.
- Areas surrounding coil handling devices where coils are in motion, such as coil cars, conveyors, up-enders and turnstiles.
- Areas surrounding payoff reels and re-coilers, where clock-springing strip ends present a hazard during banding, un-banding, feed-up and tail-out conditions.
- Sheet and pack handling devices (*including conveyors*) where the motion, and shifting of sheets or packs, may present a hazard.
- The area surrounding sheet stacking devices, which must be approached for setup, but which should be clear of personnel during operation because of moving machinery or material.
- Areas associated with high temperatures, high pressure fluids (*hydraulic, air or water*) and electrical devices and connections.
- The vicinity of machinery which moves into or out of the line.



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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)

B11 Standards, Inc. (ANSI-accredited Standards Developing Organization)

Machinery and Machine Systems for the Processing of Coiled Strip, Sheet and Plate - Safety Requirements for Construction, Care and Use.

Coil-Slitting Machines/Systems Safety Requirements for Construction, Care and Use.

Shears: Safety Requirements for Construction, Care and Use.

National Fire Protection Association (NFPA)

NFPA 79

Electrical Standards for Industrial Machinery

European Union

Safety of Machinery Directive and CE Marking

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WARNING LABELS

Warning and safety related informational labels are placed on MESEK MACHINERY equipment at strategic points. It is important that these labels are not 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, if not avoided, will result in death or serious injury.



WARNING indicates a potentially hazardous situation which, if not avoided, could result in minor or serious injury.



CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.



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



It is important that the meaning of a safety sign is clearly understood by those who may come in contact with the hazard.

The ANSI Z535 committee encourages owners of facilities to post the above information on safety posters, safety bulletins or the like to increase the understanding of a safety sign and help in achieving a national uniform system for the recognition of potential personal injury hazards and accident prevention.

WARNING LABEL REPLACEMENT

If for any reason the safety labels on your machinery become illegible due to cleaning solvents, everyday wear and tear or lose the ability to adhere to the surface they are mounted on, they can be replaced at no-charge by contacting the Mestek Machinery service department.

WARNING MESSAGES IN THIS MANUAL

- Throughout this manual various **DANGER**, **WARNING**, **CAUTION**, and safety related **NOTICE** appear. This is to alert operation and maintenance personnel to potential hazards. Important operation and maintenance details are emphasized with the **Note** heading.



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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 MESEK MACHINERY. Replacement and maintenance parts should be the same or equal to the original. Use of other parts may result in unsafe operating conditions. If there is a question as to the suitability of a part, MESEK MACHINERY service department should be consulted.

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.

Material Coils

Coils present numerous hazards. They may shift, roll or fall without warning. Some coils may spring open without warning. Sharp edges of the strip in the coil are hazardous. Stay clear of coils as they are being moved. Use extreme caution any time a coil is approached or handled.

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

MESEK MACHINERY has conducted hazard evaluation and risk analysis studies for their products. Safe guards are installed for the safety of all in the area of the equipment. 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 out and tagged out. 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 WELDING ON any 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.

CAUTION

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.

Safety is everyone's business!



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LOCKOUT GUIDE

An essential element of a *comprehensive* safety program includes the development and use of a written hazardous energy lockout procedure. The lockout procedure establishes the minimum requirements for the lockout of hazardous energy sources using an energy-isolating device whenever maintenance or service is performed on the processing line.

Review OHSA's *Control of Hazardous Energy Lockout/Tagout* at www.osha.gov/Publications/osha3120.pdf for details on safeguarding employees from the hazards of unexpected startup of equipment or release of energy during maintenance or service.

OSHA's *Safety and Health Management Program Guidelines* identify elements that are critical to the development of a successful safety and health management system. This and other information are available on OSHA's website at www.osha.gov.

LOTO (summary)

(1) Lockout

The placement of a lockout device on an energy-isolating device, in accordance with an established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

(2) Tag Out

The placement of a tag out device on an energy isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tag out device is removed.

CAUTION

Use of a tag in place of a lock does not adequately guard against accidental operation. Failure to observe this warning may result in death or serious injury.

(3) Servicing and/or maintenance

Workplace activities where employees may be exposed to the unexpected energization or start-up of the equipment or the release of hazardous energy requiring **LOTO** include but are not limited to:

- construction
- installation
- Set up
- adjustment
- inspection
- modification
- maintenance
- servicing
- lubrication
- cleaning
- tool changes
- unjamming

NOTICE

If more than one person is working on a machine, each individual must attach their own lock to the energy isolating devise.

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1. SAFETY INSTRUCTIONS

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

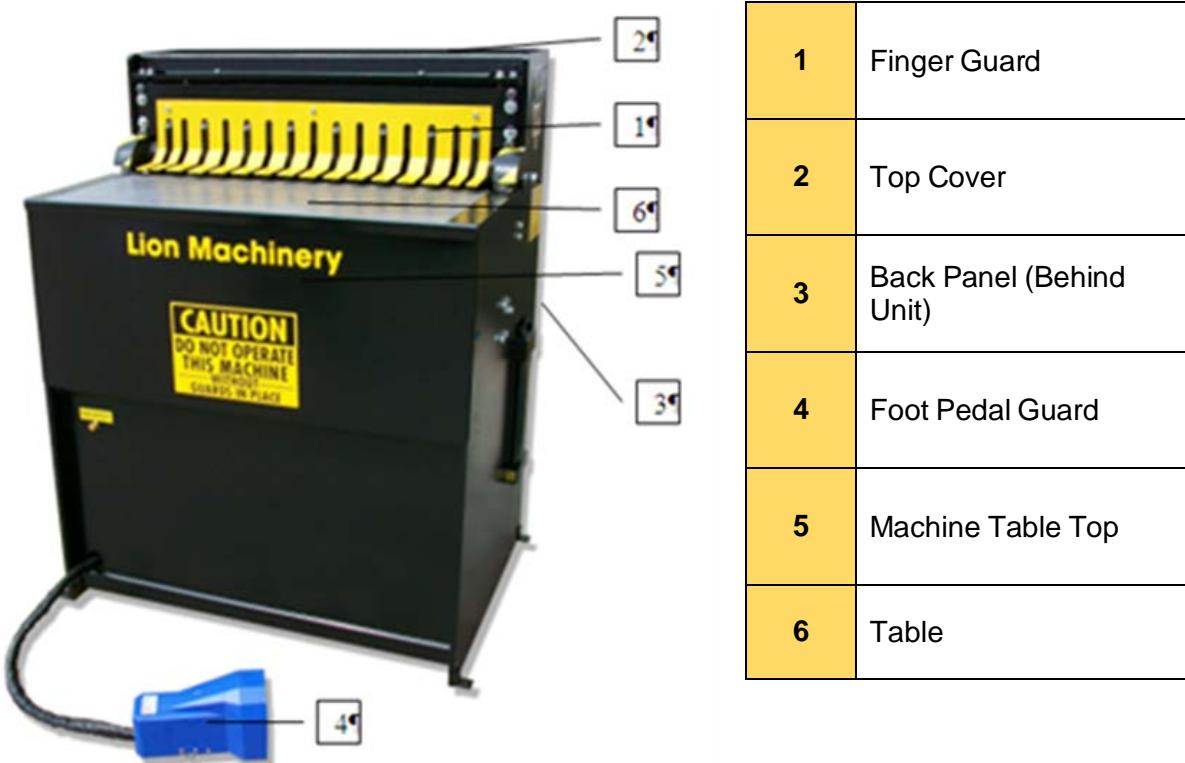


Figure 1 Cleat Folder Components

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.



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2. Depress foot pedal several times to release air pressure in the table and bend cylinders.
3. Depress the small valve next to the 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.

1. SYSTEM OVERVIEW

A. DESCRIPTION

The LION M-30CF-A Cleat Folder offers an economical way of producing 180° drives on L shapes, pre-formed ducts and flats. This a light weight unit engineered for years of dependable service.

This machine is easy to setup and minimal maintenance is required. The maximum capacity of the M-30CF-A is 20-gauge mild steel, with a bend length of 3 to 23 1/4" or 29 1/4", depending upon the model purchased. The bend width range is 7/16–1 inch.

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

Installation

When the LION M-30CF-A Cleat Folder arrives from the Mestek factory, ensure the following tasks are completed before attempting to use the machine.

1. Ensure ALL operators have read and understand this manual.
2. Carefully remove the machine from the crate.
3. Move the Cleat Folder to the location where it is to be used.
4. Check to ensure the machine is set solid and level on the floor.
5. Place shims under the machine feet until the machine is solid and level if it rocks.
6. Install anchors to the floor to keep the machine from *walking* during use.
7. 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.
8. Fill the oiler with pneumatic tool oil Mobil Almo 525 or equivalent (available at most hardware stores.)
9. Turn on the air supply.
10. Use the pressure regulator on the front panel to set the air pressure to 90 psi.
11. Cycle the machine by depressing the foot pedal momentarily.
12. Use the knob on top of the lubricator to adjust the oil flow to give one drop of oil every ten machine cycles.

Once the machine is properly secured to the floor and oil flow and air supply is established, it is ready to begin the test bend procedure. This procedure will ensure the



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LION Cleat Folder is ready for operation.

Sequence of Operation

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

B. TEST BEND PROCEDURES

To ensure the machine is forming the desired bend, complete the following test bend procedure.

Test Bend Procedure

1. Place a piece of metal 3–23 ¼ or 29 ¼ inches wide (depending on the 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 momentarily to start the bend cycle.
3. **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.

4. Check this drive cleat edge just made for width, tightness and angle of bend.

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

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

Note

If this is the first time adjusting the machine or you have not adjusted the machine in some time, call the Mestek Service Department for assistance.

The person doing the actual adjustments should call...message relay for adjustments has not been effective in the past. We must talk to the person doing the adjustments!

NOTICE

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. VALVE ADJUSTMENT

The M-30CF-A utilizes two valves which are used to control the table bar during the bending cycle and when the bar returns to its home position after the bend.

Valve Adjustment Procedure

The control valves for the M-30CF-A are mounted inside the back cover of the machine and are individually adjustable. The top valve, **B**, controls the table retract valve and the lower valve, **C**, controls the bend retract valve.

- **Table Retract (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 (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.

Table Position Adjustment, page 8

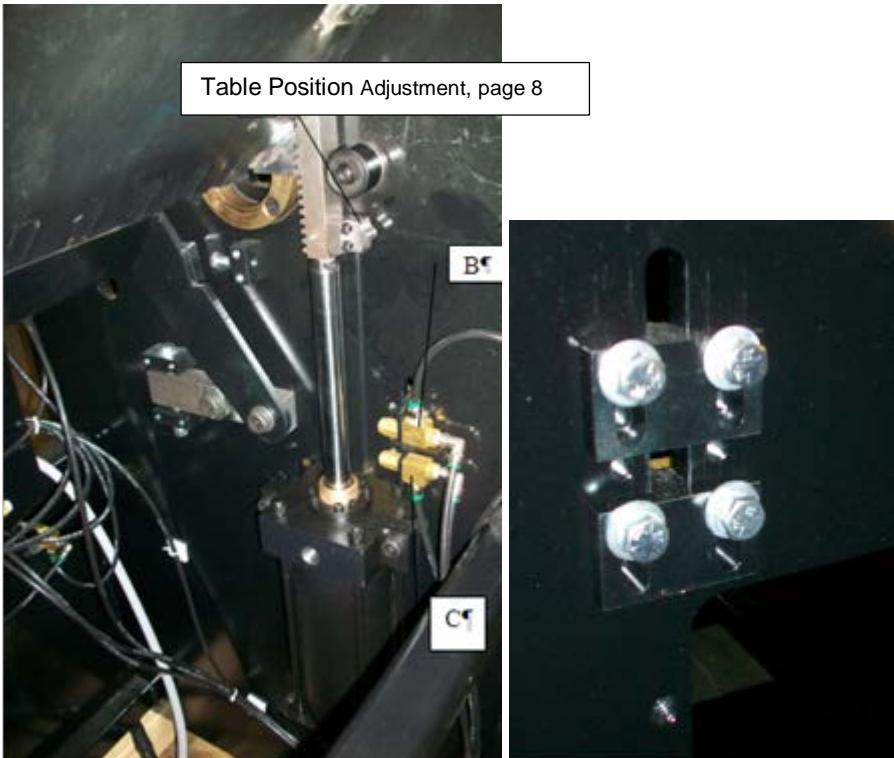


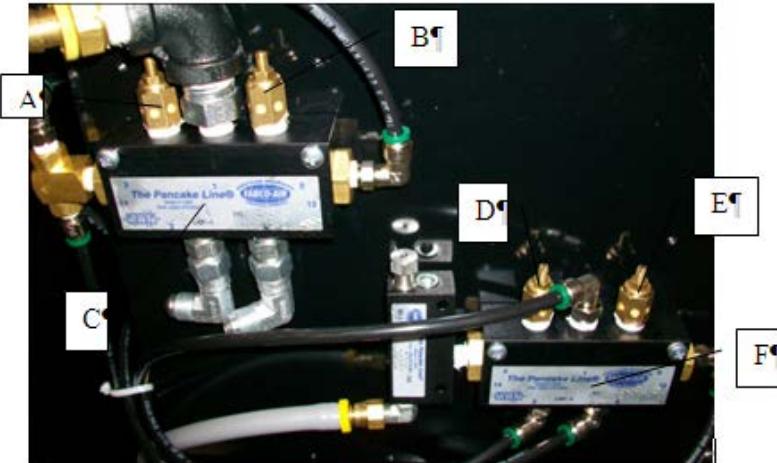
Figure 2 Valve Adjustments



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D. TABLE & BENDING BAR SPEED ADJUSTMENT PROCEDURES

The speed of movement of the table and bending bar is controlled by a control valve located on the exhaust ports of the table valve located just left of center under the table of the machine.



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

Figure 3 Pneumatic Valve Assemblies

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 retracts 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.

- To increase the extend table speed: Loosen the locknut on adjustment screw (**D**) and turn the screw to the left (counterclockwise). This opens the speed control and allows the table to move faster.
- To slow the extend table speed: Turn the screw to the right (clockwise). Ensure the locknut is secured after the adjustment has been made.
- To increase the retract table speed: Loosen the locknut on adjustment screw (**E**) and turn the screw to the left (counterclockwise). This opens the speed control and allows the table to move faster.
- To slow the retract table speed: Turn the screw to the right (clockwise). Ensure the locknut is secured after the adjustment has been made.

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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.

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

E. TABLE HEIGHT ADJUSTMENT

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

Table Height Adjustment Procedure

The height of the table is adjustable to accommodate various metal thicknesses. The table height was set at the Mestek 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, follow the recommended step by step procedure below.

NOTICE

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



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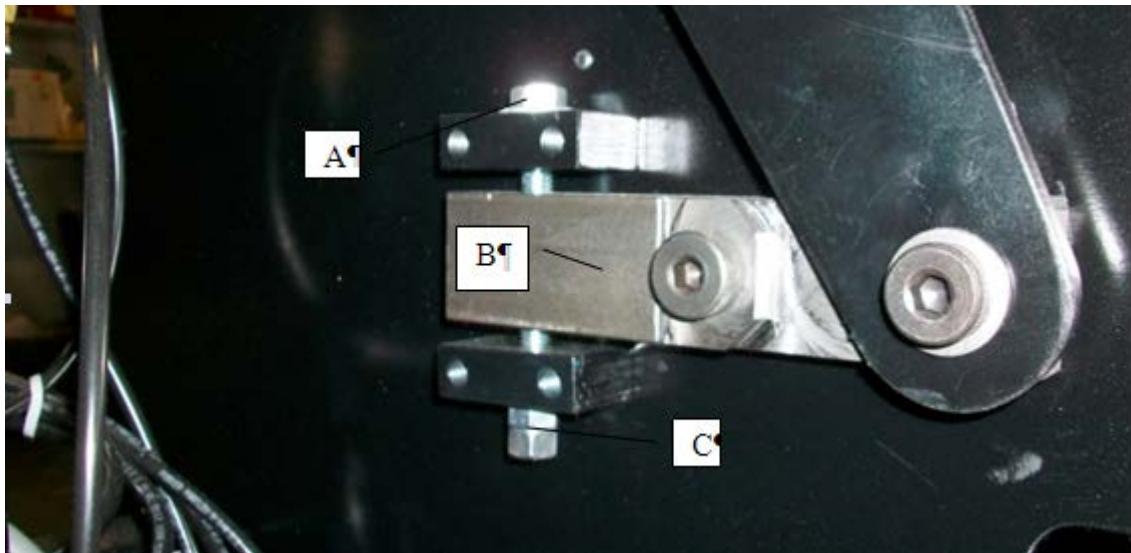


Figure 4 Table Height Adjustment

- ✓ To raise the table:
 1. Loosen both lock nuts (**C**) on adjusting screw **A**.
 2. Turn adjusting screw (**A**) counter clockwise raise table.
 3. Retighten both lock nuts once the proper clearance is set.
- ✓ To lower the table:
 1. Loosen both lock nuts (**C**) on adjusting screw **A**.
 2. Turn adjusting screw (**A**) clockwise to lower table.
 3. Retighten both lock nuts once the proper clearance is set.

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F. TABLE BAR POSITION ADJUSTMENT

The table bar position is adjusted using the adjustment hex bolts 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. This adjustment is factory set and should not normally need to be adjusted.

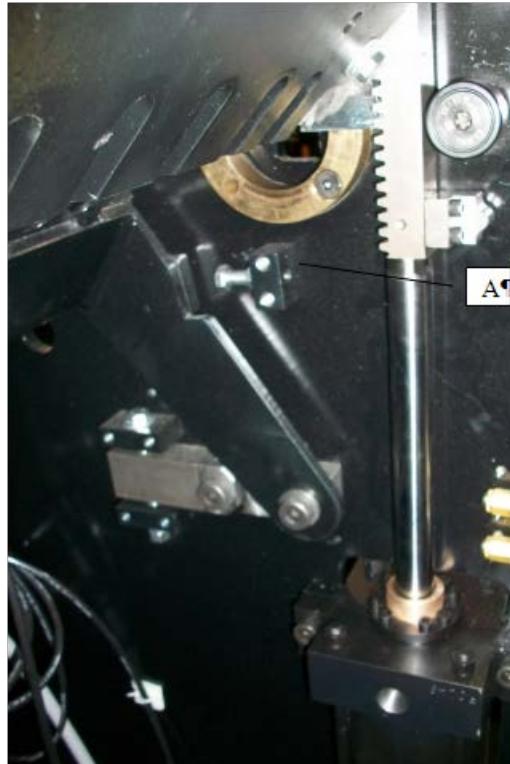


Figure 5 Table Position Adjustment

- ✓ To adjust the table position:
 1. Loosen the jam nuts for the table position adjustment, **A**, on both sides of the table.
 2. Rotate the hex adjust bolt to the right or left (clockwise or counterclockwise) and adjust as needed.
 3. Secure both jam nuts when finished.

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.



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G. HOLD DOWN BAR ADJUSTMENT

The bottom surface of the hold down bar (**A**) and the bottom surface of the bending bar (**B**) should be close to flush *. (See *Figure 6*.)

To re-align the Hold Down Bar and the Bending Bar, follow the recommended procedure below.

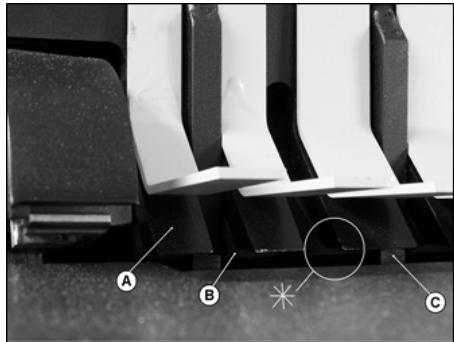


Figure 6 Hold Down Bar Adjustment



Figure 7 Bars Nearly Flush

Adjustment Procedure (*Figure 8*)

1. Loosen the Clamp Bolts (**C**) on both ends.
2. Loosen the jam nuts on both bolts, **A** & **B**, on both ends.
3. The push-pull adjustment screw(s), **A** & **B**, raise or lower the Hold Down Bar.
To raise the bar: Loosen **A** (turn left, CCW) and tighten **B** (turn right, CW).
To lower the bar: Loosen **B** (turn left, CCW) & tighten **A** (turn right, CW).
4. Adjust until the surfaces of both bars are approximately flush. (See *Figure 7*.)
5. Insure both bolts **A** & **B** are tight once the bars are nearly flush.
6. Tighten down all the jam nuts on both sides.
7. Tighten the Clamp Bolts **C**.

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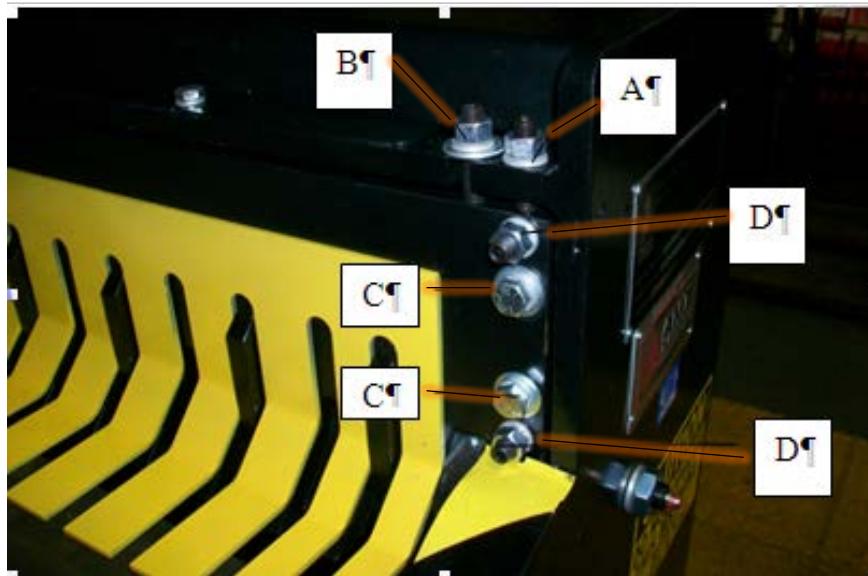


Figure 8 Hold-down Bar/Back Gauge Adjustments

H. BACK GAUGE ADJUSTMENT

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

Back Gauge Adjustment (See Figure 8)

The back gauge adjustment is done by using the push/pull type method using the bolts **C** & **D** on both sides to change the depth.

1. Loosen the jam nuts on bolts **D**.
 - a. To increase the depth of the bend, turn all 4 push set screws **D** left, **CCW** the same amount.
 - b. Turn right, **CW** and tighten all 4 Clamp bolts **C**.
 - c. To decrease the depth of the bend, turn all 4 pull Clamp Bolts **C** left, **CCW** the same amount.
 - d. Turn right, **CW** and tighten all 4 set screws.
2. Once the adjustment is completed, retighten all 4 set screw **D** jam nuts.

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.



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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 the *Pittsburgh* edges caught under the fingers of the machine. Move the *Pittsburgh* edges in between the fingers.

NOTICE

Clamping the gap and bend may require adjustment depending on material thickness.

2. MAINTENANCE

⚠ 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 BEND START and TABLE RETRACT push buttons 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.

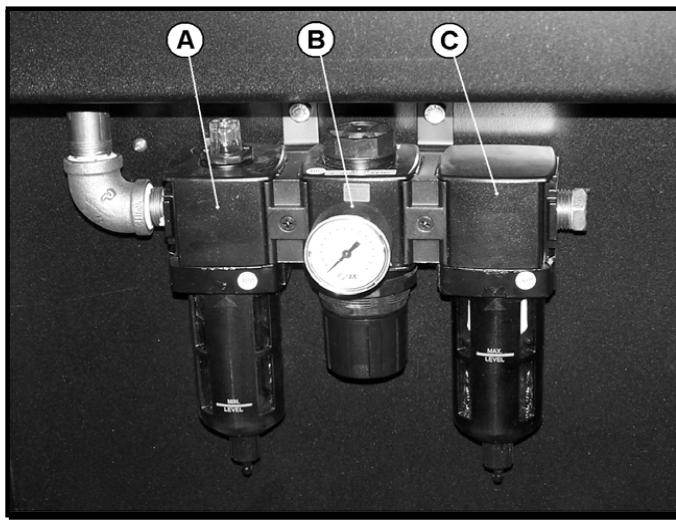


Figure 9 Air Filter/Regulator/Lubricator

- 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.

M-30CF-A Cleat Folder



- 6- Oil the bending bar pins by dropping oil between the gears and the bearing blocks on the inside of the machine.

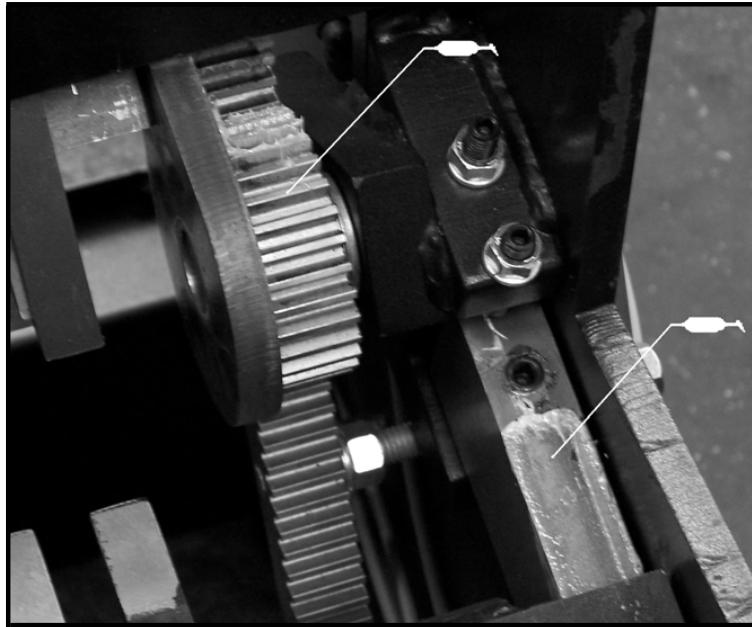


Figure 10 Lubrication Points

7. On models with more than one back gauge position, place a drop of oil on the back gauge shaft at the bronze bushings on either side of the machine. Also oil the return strap at the point where it contacts the cam bar support on the right hand side of the machine.
8. 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.
9. 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.
10. 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.