

LION SERVICES INC.

MODEL 1836 CLEATFOLDER

CINCINNATI PRECISION MACHINERY 513-880-4133

JULY 16, 1984

WARNING

THIS MACHINE CAN BE SAFELY OPERATED ONLY WITH ALL GUARDS IN PLACE!

- | | |
|-----------------|------------------------|
| 1. FINGER GUARD | 4. FOOT VALVE GUARD |
| 2. TOP COVER | 5. MACHINE TABLE |
| 3. BACK PANEL | 6. MACHINE FRONT PANEL |

DO NOT REMOVE ANY OF THESE GUARDS WHEN OPERATING THE MACHINE.

WHEN PERFORMING ANY MAINTENANCE OR ADJUSTING OF THE MACHINE OBSERVE THE FOLLOWING SAFETY PRECAUTIONS:

1. Remove the air supply line to the machine.
2. Depress foot valve to release air pressure in the table and bending cylinders.
3. Manually raise foot valve and depress several more times to be sure all the air pressure in the cylinders and valves is released.
4. Be sure all guards are in place before reconnecting the air line.

SET-UP INSTRUCTIONS----ALL MODELS

Remove the machine from the crate. After moving it to the location where it is to be used check to be sure the machine is sitting solidly on the floor. If the machine rocks, place shims under the angle clips until the machine is solid. Install anchors through the angle clips to the floor to keep the machine from "walking" when it is being used.

Run a 3/4 inch air main to the machine and connect it to the filter, oiler and pressure regulator assembly on the front panel of the machine

Turn on the air supply and using the pressure regulator on the front panel, set the air pressure to 100 psi.

TEST BEND MODEL 1836-0

Place a piece of metal from 3 to 36 inches wide on the table and slide it into the machine until it contacts the rear gage fingers. 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. 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. Refer to the instructions farther on in this manual if adjustments are required.

TEST BENDS MODEL 1836-1

First Bend

Place a piece of metal from 3 to 36 inches wide on the table and slide it into the machine until it contacts the moveable rear gage. Depress the foot pedal and immediately remove your foot from the pedal. The table bar beneath the table should slide forward and lock 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. 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. Refer to the instructions farther on in this manual if adjustments are required.

Alternate Bend

Move the red ball lever on the front of the machine in any direction as far as it will go. This sets up the machine for the alternate bend. Slide a piece of metal into the machine until it hits the back gage. Momentarily depress the foot pedal. Bending will begin as before. The table will pull back and the bending bar will reverse when the metal has been bent to the preset angle. The angle of the second bend is controlled by the red cam inside the panel on the right hand side of the machine. See the instructions for adjusting the angle of the second bend. The angle of the bend is related to the thickness and width of the work. Each different piece will require a test bend to determine the proper cam position.

TEST BENDS MODEL 1836-2

The Model 1836-2 machine bends a drive cleat edge or an alternate bend in the same way the 1836-1 operates. In addition the operator may pre-set the back gage for a second width of bend. See the instructions for adjusting the machine for the details on setting the back gage. The second bend width is selected by moving the lever with the red ball handle on either side of the machine toward the rear of the machine. If the handle is forward the bend will be 7/16 to 1/2 inch wide. If the handle is back the bend will be something greater than the forward setting. Most shops set the second width at 3/4 or 1 inch. The operator can then bend a 1/2 inch hem or 1/2 inch angle bend and by moving the back gage shift lever can also make a 1 inch wide hem or angle bend.

CINCINNATI PRECISION MACHINERY

SEQUENCE OF OPERATIONS

MODEL 1836-0

1. Insert metal until it contacts back gage.
2. Step on foot pedal and remove your foot from pedal.
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. As bending progresses the yellow cam on right side of machine (inside rear) depresses limit valve.
7. Limit valve causes table bar to retract.
8. Bending continues until black cam depresses limit valve.
9. Limit valve reverses bending bar motion.
10. Bending bar returns to upright position.
11. Metal is removed from machine.

CINCINNATI PRECISION MACHINERY 513-860-4133

SEQUENCE OF OPERATIONS

MODEL 1836-1

1. Insert metal until it contacts back gage.
2. Step on foot pedal and remove your foot from pedal.
3. Table bar slides forward and contacts limit valve under table.
4. Limit valve starts bending bar in motion.
5. Back gage swings down out of the way of the bending bar.
6. As bending progresses the yellow cam on right side of machine depresses limit valve.
7. Limit valve causes table bar to retract.
8. Bending continues until black cam depresses limit valve.
9. Limit valve reverses bending bar motion.
10. Bending bar returns to upright position.
11. Gage swings up to start position.
12. Metal is removed from machine.

Alternate Bend Sequence (see page 3)

1. Use bending procedures as above in steps one through five.
2. Table bar pulls back and bending bar reverses when red cam contacts limit valve.
3. Bending cycle ends as in steps ten through twelve above.

SEQUENCE OF OPERATIONS

MODEL 1836-2

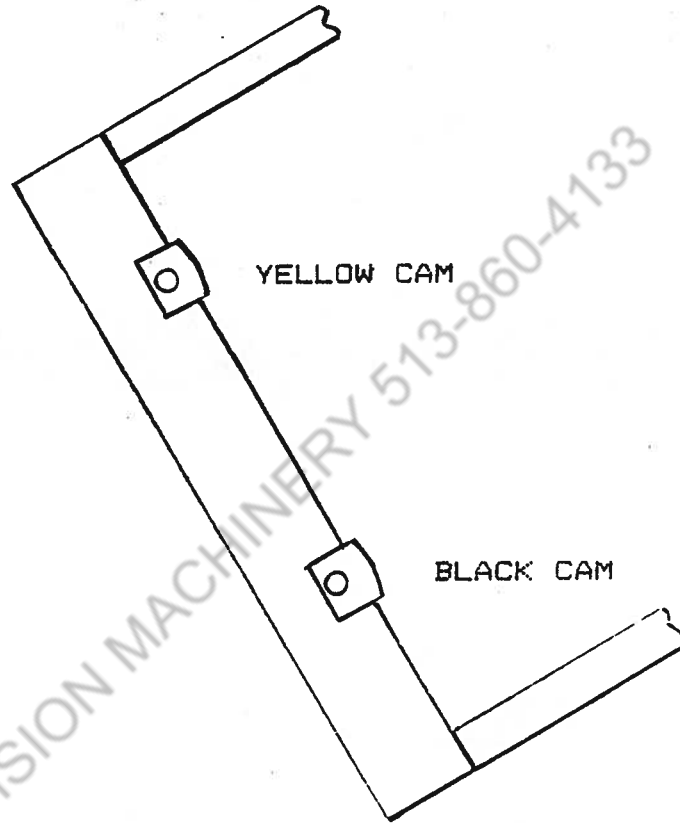
1. The sequence of operations on this model is identical to the sequence of bends on the 1836-1 machine.

Alternate Width bending.

1. Move the lever with the red ball on either side of the machine toward the back of the machine to move the back gage to the second width setting.
2. The bending cycle is the same as the cycle on the 1836-1 machine.

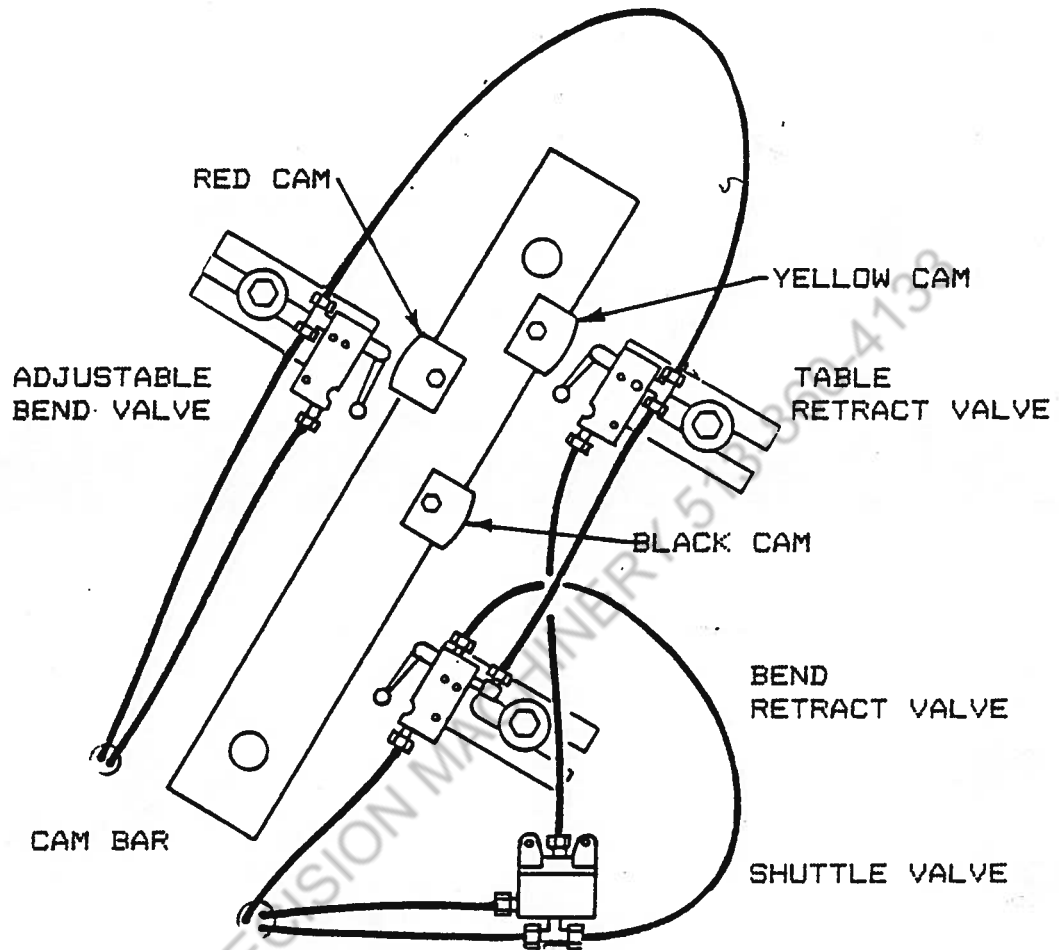
CINCINNATI PRECISION MACHINERY 513-8654133

CAM ADJUSTMENTS MODEL 1836-0



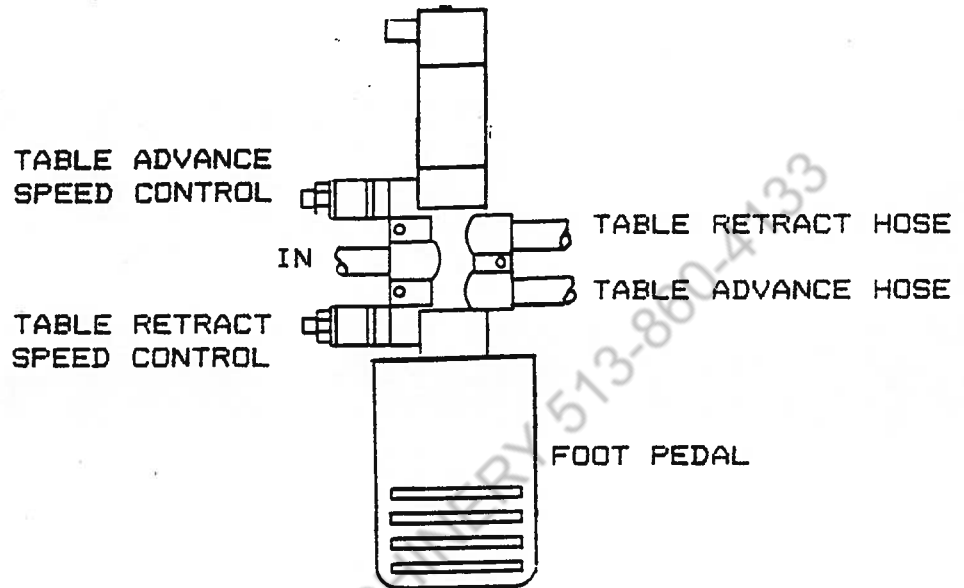
1. The control cams for the model 1836-0 machine are mounted on the inside of the right side of the machine at the rear. The rear cover should not be removed when adjusting these cams.
2. The yellow cam controls the point at which the table bar is pulled back during the bending cycle. The table bar should pull back just before the bending bar would pinch the metal and table and lock up the machine. If the bending bar seems to catch the table bar and delays the motion of the table bar; move the yellow cam down slightly from the factory set position. If the table bar pulls back too quickly during the bending cycle, incomplete bends will be made. If the bends do not finish move the yellow cam up slightly from the factory set position.
3. The black cam reverses the bending action. If the machine makes a complete bend and stops with the bending bar locked against the hem; move the black cam down to reverse the bending action sooner.

CAM ADJUSTMENTS MODEL 1836-1 and MODEL 1836-2



1. The red cam controls the alternate bend angle when the lever on the front panel is in the off center position. Moving the red cam down the bar causes it to contact the limit valve earlier in the cycle and results in a smaller angle of bend. Moving the cam up the bar delays the contact with the limit valve until latter in the cycle and causes a greater angle of bend.
2. The yellow cam controls the point at which the table bar is pulled back during the bending cycle. The table bar should pull back just before the bending bar would pinch the metal and table between the hold down bar and the bending bar and lock up the machine. If the bending bar seems to catch the table bar and delays the motion of the table bar; move the yellow cam down slightly from the factory set position. If the table bar pulls back too quickly during the bending cycle, incomplete bends will be made. If the bends do not finish move the yellow cam up slightly from the factory set position.
3. The black cam reverses the bending action. If the machine makes a complete bend and stops with the bending bar locked against the hem; move the black cam down to reverse the bending action sooner.

TABLE SPEED ADJUSTMENTS ALL MODELS



The speed of movement of the table is controlled by needle valves located on the exhaust ports of the foot valve.

One needle valve controls the speed at which the table moves forward. The other needle valve controls the speed at which the table retracts.

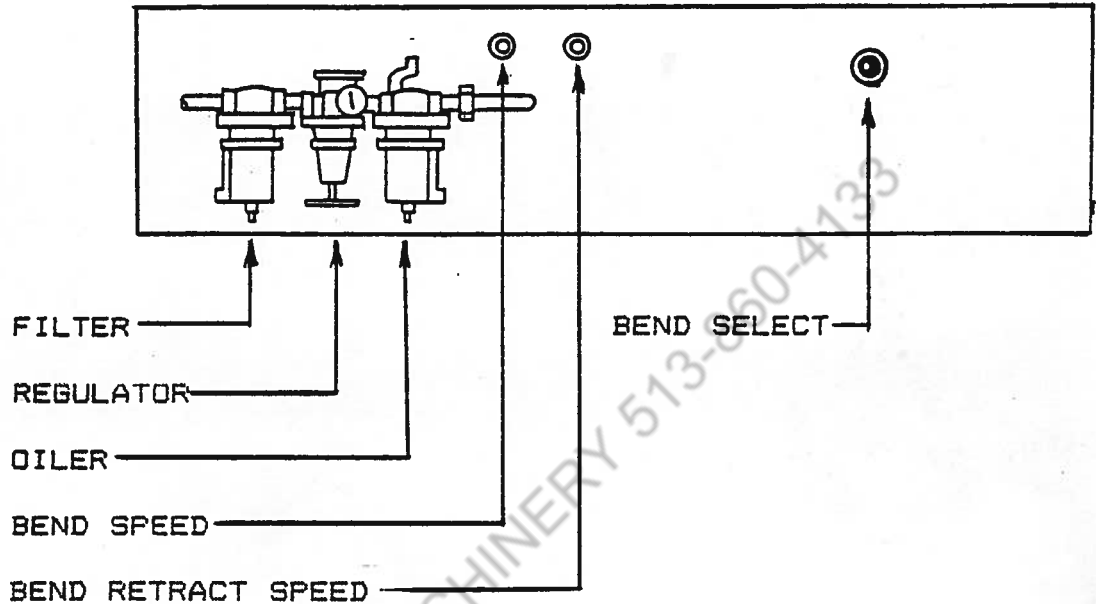
To increase the table speed loosen the locknut and turn the screw counterclockwise. This opens the valve and allows the table to move faster. Remember to tighten the locknut after the adjustment has been made.

To slow table motion turn the screw clockwise.

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 yellow cam determines the point in the bending cycle when the table starts to move. The needle valve allows speed control of the table to insure that the table will not be pinched by the bending bar.

BENDING BAR SPEED ADJUSTMENTS ALL MODELS



The speed of movement of the bending bar is controlled by needle valves located on the front panel of the machine.

One needle valve controls the speed at which the bending bar bends. The other needle valve controls the speed at which the bending bar retracts.

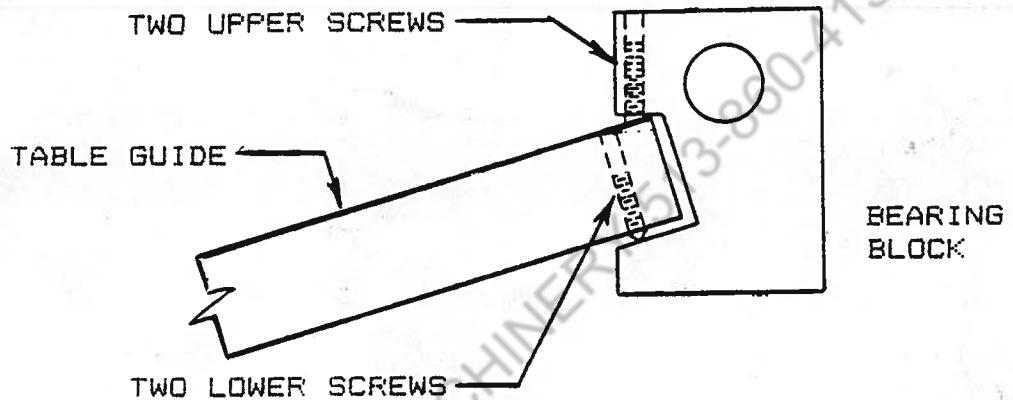
To increase the bending bar speed loosen the locknut and turn the screw counterclockwise. This opens the valve and allows the bending bar to move faster. Remember to tighten the locknut after the adjustment has been made.

To slow the bending bar speed turn the screw clockwise.

The speed at which the bending bar advances determines the total length of the bending cycle. The total cycle should take three to four seconds. The bending portion of the cycle should only take one to one and a half seconds.

The speed at which the bending bar returns to the start position is not critical. The metal may be removed as soon as the bending bar reverses.

TABLE HEIGHT ADJUSTMENT ALL MODELS



The height of the table is adjustable to accommodate various metal thicknesses.

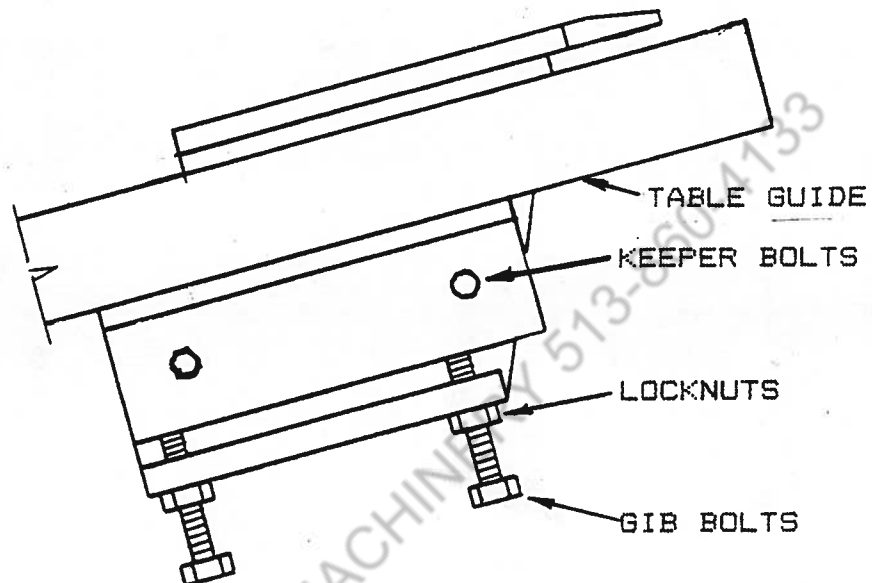
The table height is factory set with a single thickness of 18 gage metal inserted between the table and the hold down bar.

The table height should be raised for production bending of lighter gage metals.

To raise the table remove the upper locking screw using an allen wrench. Then loosen the second upper screw. Next remove the lower locking screw and tighten the second lower screw to raise the table guide. Use a piece of metal of the same thickness to be bent as a feeler gage between the table bar and the hold down bar. Tighten the second upper screw down to the table guide and replace the upper and lower locking screws.

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.

GIB ADJUSTMENTS ALL MODELS



The gibs at either end of the table bar will not need adjustment until wear allows the table bar to move up and down excessively.

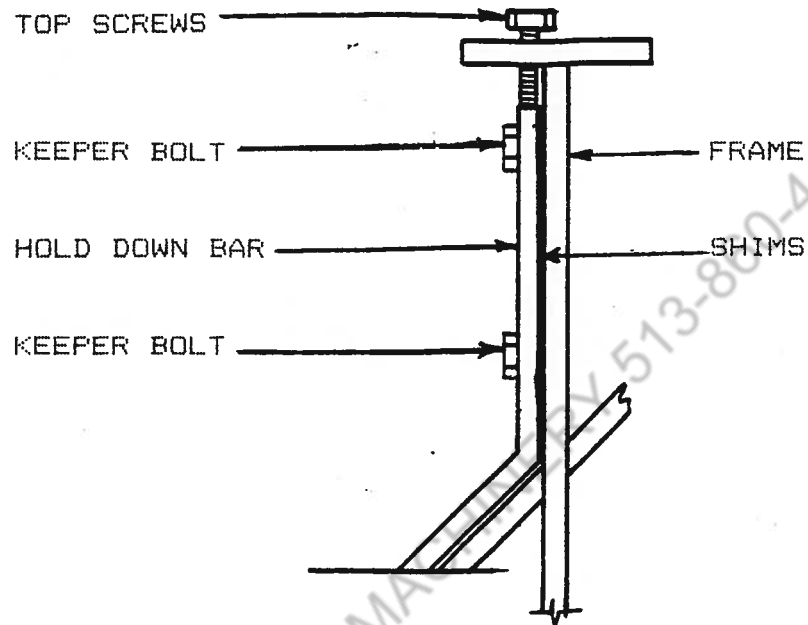
The gibs may be tightened against the table guide bar using the following procedure.

1. Loosen the two gib keeper bolts slightly.
2. Loosen the two lock nuts.
3. Insert a 22 gage shim between the table guide bar and the lower phenolic gib
4. Tighten the two gib bolts.
5. Tighten the two locknuts and the two gib keeper bolts.

If the table does not slide freely the gibs are too tight.

Loosen the gib bolts a quarter turn at a time until the table slides easily.

BACK GAGE ADJUSTMENT 1836-0



The width of bend is adjusted by inserting or removing shims between the hold down bar and the frame of the machine.

To change the width of bend remove the top cover and remove the hold down bar by removing the four keeper bolts. DO NOT change the setting of the two top screws.

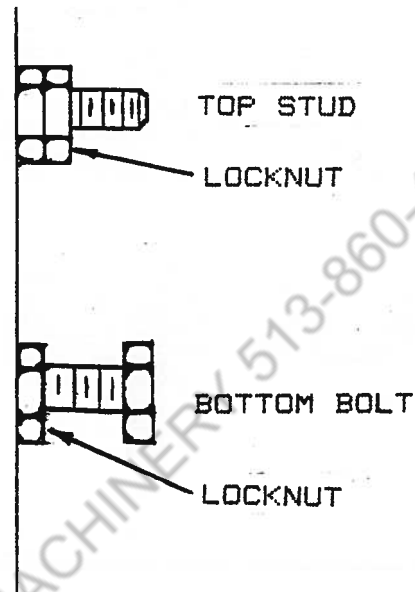
To make a smaller bend add shims of the proper thickness to the space between the hold down bar and the frame.

To make a wider bend remove shims from the space.

When the proper shims have been selected, replace the hold down bar. Thread the keeper bolts into the holes hand tight. Then using a pry bar raise the hold down bar up tight to the top screws. With the hold down bar held up in position tighten the keeper bolts with a wrench.

The machine is shipped with two sets of shims. Shims of other thicknesses may be used.

BACK GAGE ADJUSTMENTS MODEL 1836-1 AND 1836-2



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

To adjust the back gage on the 1836-1 loosen both locknuts. Use the bottom bolt to push the gage forward and the top inside nut to pull the gage to the rear. Tighten both locknuts after adjusting the gage.

To adjust the back gage on the 1836-2 loosen both locknuts. With the gage shift lever toward the front of the machine turn the inside nut on the top to move the gage in or out for the minimum width setting. With the gage shift lever toward the rear of the machine turn the bottom bolt to move the gage in or out for the maximum bend width setting. Tighten the locknuts after adjusting the gage.

Measurements to the back gage may be made from the front edge of the table bar. The table bar travel is two inches, so to set the back gage for 1/2 inch measure 2-1/2 inches from the edge of the table bar to the back gage.

TABLE POSITION ADJUSTMENT

The table bar position may be adjusted using the 1/2 inch hex nuts located under the main table.

The entire table bar assembly is moved by using the hex nuts located at the welded angle mounts on the sides of the machine.

Unlock the outer nuts and use the inner nuts to move the assembly forward or back.

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.

CLEARING JAMS

Jams can occur when the operator pushes the work piece into the machine after a bend has been made and before the bending bar returns to the upright position. The piece will slide between the bending bar and the hold down bar and get caught there.

The piece may be removed by actuating the bending bar and pulling it out while the bending bar is in motion.

To actuate the bending bar, press the brass push button on the front of the machine

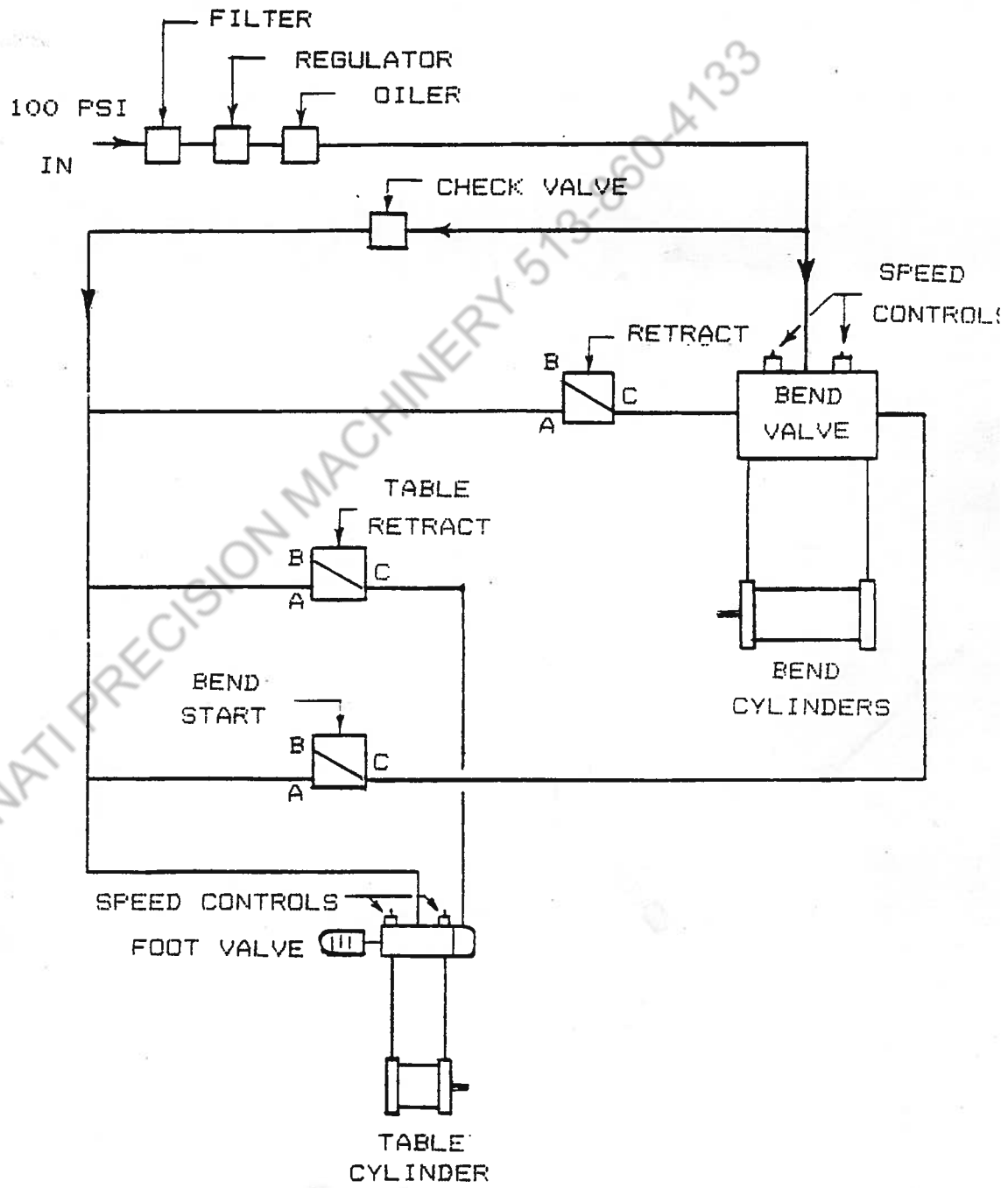
The machine may jam if a double thickness of metal is caught between the table bar and the hold down bar. In this case the table bar will not travel forward far enough to start the bending cycle.

Manually raise the foot pedal to free this type of jam.

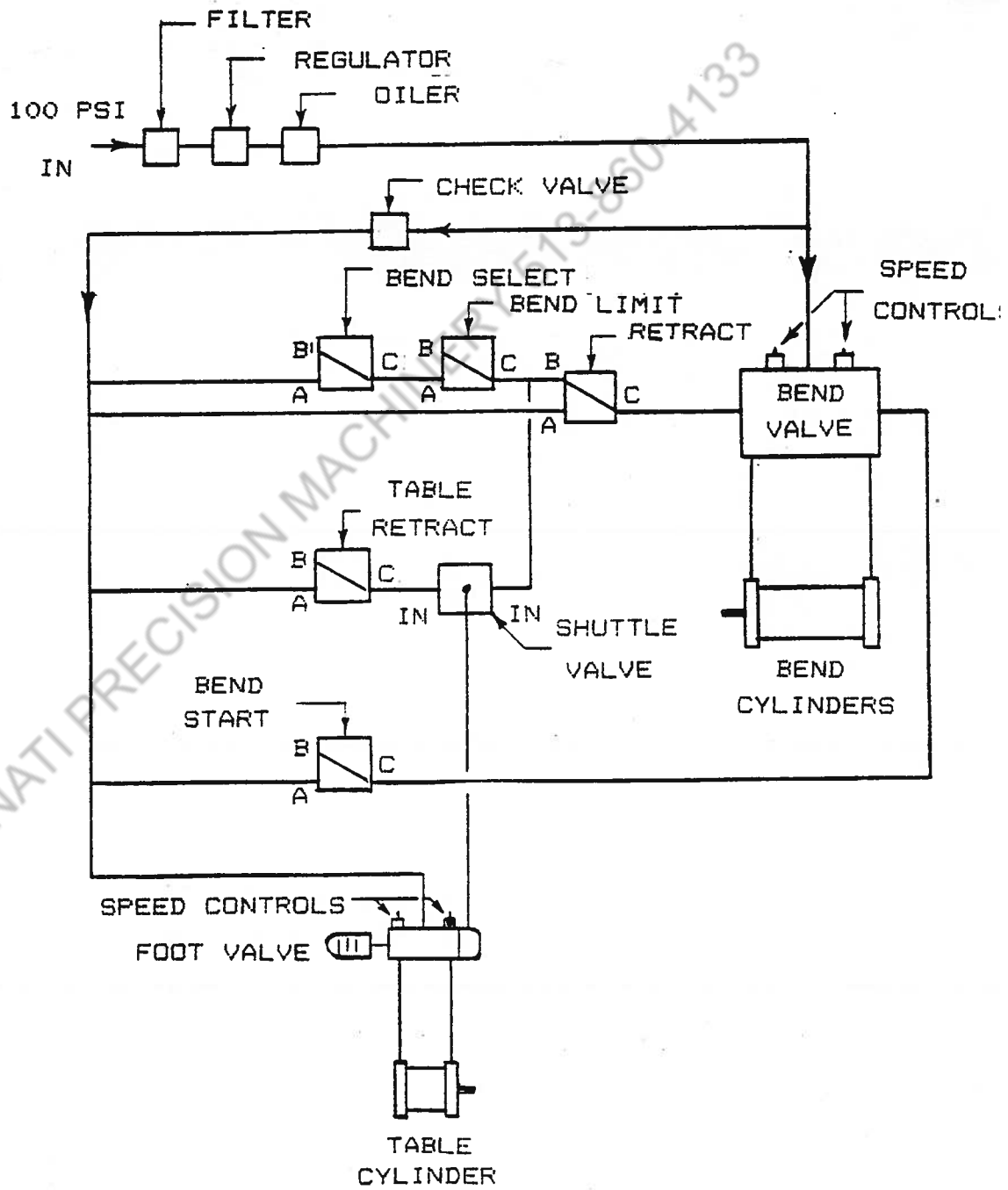
A third type of jam may occur if the bending bar does not travel far enough to complete the bending cycle and locks the piece in the machine.

This type of jam may be cleared by disconnecting the air supply hose and manually raising and depressing the foot pedal to bleed off the air pressure in the cylinders. When the pressure drops the bending bar will drop down and the piece may be removed

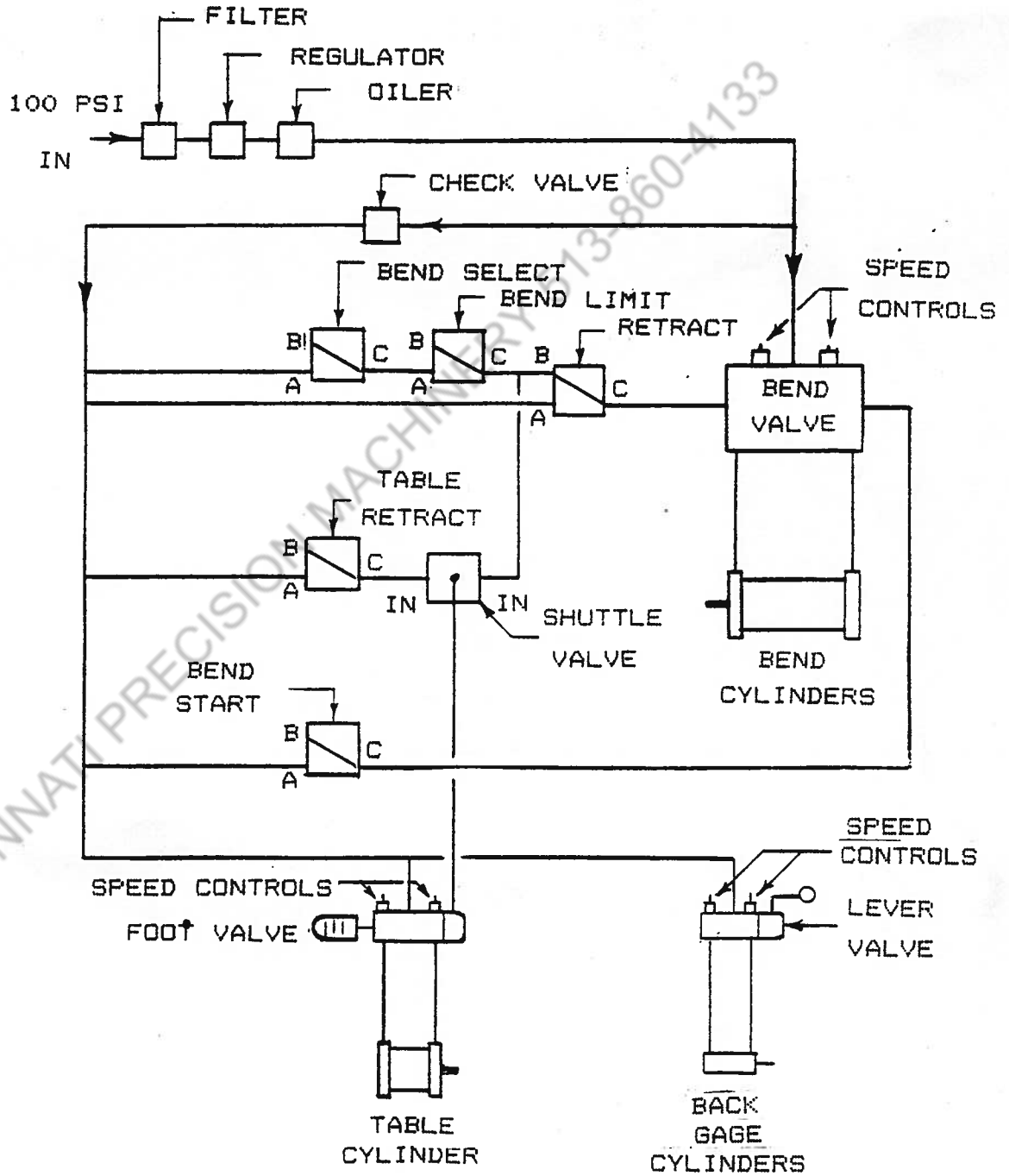
SCHEMATIC PIPING DIAGRAM MODEL 1836-0



SCHEMATIC PIPING DIAGRAM MODEL 1836-1



SCHEMATIC PIPING DIAGRAM 1836-2



MAINTENANCE INSTRUCTIONS

ALL MACHINES

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 relieve air pressure manually raise and depress foot valve several times.

Drain water from the compressed air filter at the start of work each day.

Be sure air regulator is set at 100 PSI.

Set air lubricator to deliver one (1) drop of oil for each twenty (20) machine cycles. Use only non-detergent and non-penetrating mineral base lubricating oil with a viscosity of 150 SUS at 100 degrees F.

Every three (3) months remove air supply and bleed air pressure from cylinders and valves. Remove the top cover and table. Wipe any dirt and grime from the table guide bars, the gears and the gear racks. Oil the table bar gibs on the top and bottom of the table guide bar. Oil the bending bar pins by dropping oil between the gears and the bearing blocks on the inside of the machine and by placing a drop of oil between the pins and the bronze bearings on the outside of the machine.

On the 1836-1 and 1836-2 machines place a drop of oil on the back gage shaft at the bronze bearings 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.

Put several drops of oil 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.

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.

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 SERVICES, INC. through your local machinery dealer.

PARTS LIST OF AIR COMPONENTS

ALL MACHINES

ITEM	QUANT.	NAME	PART NO.
1	1	Foot valve	VAF-4302-150
2	1	Foot valve guard	McKibben #1
3	3	Limit valve	LSC-3200-LL41-LSS
4	1	Filt-Oiler-Reg	WATTS 18A57
5	4	Silencer	ASP-2SC
6	1	Check valve	CP20-B
7	1	Table cylinder	240 x 6"
8	2	Bend cylinder	1960 x 6"
9	1	Bend valve	VAP4302-150-15-31

MODEL 1836-1 AND 1836-2 ONLY

10	1	Shuttle valve	P54351-1
11	1	Lever valve	BHK3208-S
12	1	Bend limit valve	LSC3200-LL41-LSS

MODEL 1836-2 ONLY

13	2	Back gage cyl.	DAP 125 x 1
14	1	Back gage valve	VZH4302
15	2	Silencer	ASP-2SC

CINCINNATI PRECISION CHINER 513-810-4133