Watch the instructional videos on YouTube
https://youtu.be/zmoLk_ZXs_k

Note the bending head assembly has been changed since these photos were taken. Operationally the machine is the same.

ASSEMBLY

Attaching arm assembly to base
Place ¼ inch thin washers onto the ¼ - 20, 7/8 inch long hex head bolts and slide the bolts into the two holes in the back (pointing toward the back) and three holes in the center vertical (pointing toward the right) (photo 1). Spin on the black tee-nuts (thread bulge outward, in-set photo 1) until flush with the bolt end. Align the tee-nuts vertically (photo 2) and slide the arm assembly, with the body over base, onto the tee-nuts until the extrusion is flush with the back bottom (photos 3 and 4). Finger tighten all bolts. Wrench tighten the two back bolts and then the three center bolts.
Don’t pick up the binder by the handle on the press screw as the handle may become unattached and cause the binder to fall.

Mounting - optional
Center pivot – Machine can rotate on bench for easier access to the upper and lower bouts and the machine is securely mounted in the center. Rigid – Machine is securely mounted on either end. Hole spacing is 12.7/8 inch. There are holes provided in the base to mount the machine to a bench or table. ¼ - 20 bolts are required (bolts not included as we don’t know the thickness of your base or mounting platform). Add 1½ inch length for LMI bending base to use to the thickness of the base to which you are mounting the binder. 2, ¼ -20 locking nuts are provided for mounting the base.
Slide the temperature controller into the base until it rests in both the front and back openings. Lock the controller in place with the nylon set screw. (photo 5) Do not over tighten.
Mold Assembly

Slide the ¼ inch washers onto the 1¼ and 1½ inch hex head bolts and start the dowel nuts (photo 6).

Check fit the cross blocks to the center form and sides, noting that your mold may have different sized cross blocks (on smaller molds the upper bout cross block may be smaller) (photo 7).

Orient the center form, slots up, waist to the left.

Slide in a dowel nut/ 1¼ inch bolt set (slot side down) into the left hole/slot until it seats. (photo 8). Remove the bolt (you may need to support the dowel nut).

Slide the cross block on, engaging the dado and thru-bolt while pressing the block flush to top of cutout. Tighten to just snug. (photo 9)

Repeat this process for the other cross block (photo 10).

Lay the assembly onto the cross blocks waist left.

Slide the dowel nut / 1½ inch bolt sets (slot side inward) into the cross blocks (up side) until they seat (photo 11).

Remove the bolts/washers and align and engage the mold back (unengraved) pockets to the cross blocks. Thru-bolt the side to the cross blocks – until just snug. (photo 12).

Flip the assembly over and repeat for the mold front (engraved) (photo 13).

Place the assembled mold on a flat surface and all tighten all bolts being careful to not over tighten (photo 14).
SETUP
Center the selected bending mold, *engraved ID forward*, on the machine base. (photo 15). Slide a matching mold shoe, *engraved ID forward*, onto the 7 inch long ¼ inch diameter capped rod. Slide the rod over the bending head lower front spacer and into the two next shoes as you hold them in place. Continue sliding the rod over the second spacer and into the last shoe (photo group 16).

Center the top 0.008 inch slat over the mold and mark the waist location on each side of the shoe (using a grease pencil, Sharpie pen or tape) (photos 17 and 18).
The bending stack consists of the following (top to bottom):

- Top slat 0.008 inch thick (marked)
- Waist blanket centered on waist mark – power cord to front
- Waist blanket thermocouple (WBT)
- Wood - wetted slightly and wrapped in aluminum foil
- Full blanket thermocouple (FBT)
- Full blanket – power cord to left side
- Bottom slat 0.008 inch thick

Test your thermocouples prior to use. See the Temperature Controller Instructions for details.

See photo journal at right for an illustration of the following:

Build the stack using the top slat waist marks as reference. Position the FBT and the WBT thermocouples at the shoe edge marks. Clearly mark each thermocouple as they can be easily confused which could result in scorched or cracked sides. Use spring clamps to hold the components in place.

Spring clamp the assembled stack and place onto the mold. Align the stack side to side using the waist mark. Lower the bending head to the stack until just snug. Position the shoes according to the width of the material you are bending (the two outside shoes should be in about \( \frac{1}{2} \) inch from the edge of the side and all four shoes should be equadistant from one another). Align the stack’s front edge to the mold. Shift the spring clamps to the stack so they help hold the thermocouples in place.

Slide in the 5 inch wide waist support slat (0.020 inch thick) under the stack centered at waist and set parallel to the stack. If you like, you can place spring clamps at the ends of the stacks to keep the parts in contact, but this is not strictly necessary.
TEMPERATURE CONTROLLER SETUP
refer to temperature controller instructions

USE
Your goal is constant heat and even pressure on the sides.
Connect waist blanket and WBT to the controller. Turn the controller ON.
Set the controller to 320 degrees Fahrenheit (F) and turn blanket power ON.
When the blanket temperature reaches 300 degrees F on its upward climb, begin turning the handle 1/2 turn every 30 seconds - feeling the wood relax as you go - until the waist cauls bottom out. This process is as much art as science and these numbers are a guideline. If your wood bends easily (Indian Rosewood) you may be able to move more quickly. If you have a trickier wood (Bubinga) you need to move a little more slowly. Too slow or too fast and you can crack your wood. Learn to feel the wood through the handle. Be one with the wood! (photo 19)
Once waist is bent, turn the blanket power OFF and then the controller OFF. Disconnect the waist blanket and WBT.

Connect the main blanket and the FBT. Turn the controller ON, verify the WBT is working and then turn the blanket power ON. The controller temperature should remain at 320 degrees.
Extend the roller body pivots to the indicator dots (requires a 7/16 inch wrench) (photo 20). If you are bending a lot of sides you may find a power driver or drill comes in handy for this.

Wear protective gloves for this part of the process. Place the roller assemblies, handles outward, next to the bending head (photo 21). Slide the 8 inch long ¼ inch capped rod into the front roller pivot, thru the mold slots and the into back roller pivot. Repeat with the second roller assembly (photo 22).
Once the blanket is at temperature, uniformly tension the lower bout roller assembly (left side) by turning the roller body hex heads clockwise until the top of the shaft collar is centered between the indicator dots. Tension the springs uniformly to avoid misalignment (photo 23).
Grasp the lower bout handle and begin rolling, paying attention to the feel of the wood under the roller as it relaxes. Roll about 4 inches each cycle and check the roller tension as it may drift once started (photo 24).

**Uniformly** tension the upper bout roller assembly (right side) allowing the wood to relax to the mold and the top of the shaft collar is centered between the indicator dots (photo 23 previous page).

Grasp the upper bout handle and begin rolling, paying attention to the feel of the wood under the roller as it relaxes. Check tension. Decrease rolling speed as upper bout curvature increases. A tight radius like a dreadnought might demand 1 inch/min or slower for a successful bend. Do not rush (photo 25).

Continue bending until the roller handles are below the mold centerline (photo 26).

Reset blanket temperature to 260 degrees F and hold for 15 minutes. Turn blanket power OFF and let the bent side cool to room temperature.

**UNLOAD**

Turn the controller OFF.

Remove some tension from the roller assemblies and roll them back to the head.

De-tension the rollers and remove the pivot rods and the roller assembly.

Raise the bending head.

Remove the slat stack and disassemble.

*Wipe your slats down after each use if rust is a concern to you.*

**Parts list**

Basic LMI Bending Machine:

1. Arm Assembly w/hardware
2. Bending machine base
3. Bending shoes w/rod
4. Roller assemblies w/rods
5. Mold form
   - (front, center, back and 2 cross blocks)
6. Waist blanket w/thermocouple
7. 0.008 inch thick blue spring steel slats
8. 0.020 inch thick blue spring steel waist support slat

Additional parts included with the Deluxe LMI Bending Machine:

1. Temperature Controller w/thermocouple, pigtail and power cord
2. Side bending blanket w/thermocouple

Hardware included:

- 5 1/4-20 x 7/8 inch hex head bolt
- 5 1/4 inch diameter thin washer
- 5 1/4-20 Tee-nut
- 2 1/4-20 hex flange lock nut (for mounting the base to your bench)
- 1 7 inch long, 1/4 inch diameter rod w/cap

- 2 8 inch long, 1/4 inch diameter rod w/cap
- 4 1/4-20 x 1 1/2 inch hex head bolt
- 2 1/4-20 x 1 1/4 inch hex head bolt
- 6 1/4-20 x 16mm dowel nut
- 6 1/4 inch diameter washer
- 2 Spring clamps
Important Hints

Thermocouple Placement

To avoid scorching or overheating when using your LMI bending machine, please review the following recommendations

Every temperature controller (TC) and thermocouple (TCTC) we sell is tested before shipment and the heating blankets are remarkably consistent and reliable. In our experience issues are more likely a result of improper setup and/or user error than a defective product.

• You should become acquainted with your bender using practice sides.

• It is very important that you do not take too long to bend your sides. It should only take you around 10 minutes for the entire bending operation. Longer will dry the sides too much and cause scorching and cracking.

• Your wood should be wrapped in either foil or baking/parchment paper.

• The thermocouple must be placed between the wood and the blanket for accurate temperature regulation.

• The thermocouple must sit snugly within the bending ‘sandwich’. It should take a firm tug to remove. If placed loosely, the temperature controller cannot control the blanket temperature and scorching/burning will result.

• If you are using a single blanket as in the old Fox style benders (the new LMI bender incorporates two blankets), we would recommend placing the blanket below the wood in the slat stack (SLAT / BLANKET / THERMOCOUPLE / WOOD / SLAT) as it is easier to limit blanket contact on the upper and lower bouts while bending the waist.

• The mass of the press screw and waist caul draw heat away from the “stack” which can make you think your stack is cooler than it is on average. For this reason you need to place the full blanket thermocouple (FBT) a minimum of 3” away from the waist caul to minimize this effect.