A-Series Dobby Loom Assembly Manual

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v. 1.1

List of Figures

INTRODUCTORY INFORMATION

SAFETY

Before Getting Started:

Please read the entire manual before using the loom.

Warnings:

WARNING:

EQUIPMENT SHOULD ONLY BE USED FOR TEXTILE MANUFACTURING. IF THE EQUIPMENT IS USED IN A MANNER NOT SPECIFIED BY THE MANUFACTURER, THE PROTECTION PROVIDED BY THE EQUIPMENT MAY BE IMPAIRED.

WARNING:

ELECTRICAL SHOCK HAZARD. DO NOT TAMPER WITH ELECTRICAL WIRES OR OPERATE THE LOOM WITH SAFETY PANELS OPENED OR REMOVED.

WARNING:

PINCH, CRUSH, AND FINGER CUT-OFF HAZARDS. DO NOT OPERATE THE

LOOM WITH SAFETY PANELS OPENED OR REMOVED. DO NOT PLACE HANDS IN MOVING MECHANISMS OR SCISSORS.

WARNING:
EQUIPMENT PANELS ARE AWKWARD AND HEAVY. TO AVOID MUSCLE STRAIN OR INJURY, USE PROPER LIFTING TECHNIQUES AND A HELPER.

WARNING:
DO NOT POSITION EQUIPMENT IN A WAY TO BLOCK OR IMPEDE ACCESS TO DISCONNECTING DEVICES, EMERGENCY STOPS, OR ON/OFF BREAKER SWITCHES

WARNING:
USE OF CONDUCTIVE FIBER OR YARN ON OR AROUND THIS EQUIPMENT WILL VOID WARRANTY AND MAY DAMAGE EQUIPMENT.

WARNING:
THIS EQUIPMENT IS CLASSIFIED FOR LIGHT INDUSTRIAL ENVIRONMENT ONLY. OPERATION OF HIGH-CURRENT DRAW EQUIPMENT (EX. MIG WELDER) ON THE SAME ELECTRICAL CIRCUITS MAY CAUSE EQUIPMENT FAILURE.

Safety Features:

Covers and shielding separate weaver from moving components where pinch hazards exist. Do not reach under a covers and shielding while the loom is operating.

INTRODUCTION

Congratulations on the purchase of your new loom! The A-series loom will give you years of dependable service. If you do run into any problems or just have questions, purchasing your loom from AVL entitles you to customer support as long as you own your loom. Contact us at sales@avlusa.com or 1-530-893-4915.

We know you want to start weaving on your new loom as soon as possible, but please consider reading the manual a vital first step. Following the instructions in this manual will allow you to put together your loom so that it works properly. We have designed the loom to be assembled easily even if you have no experience. Assembling the loom will also give you the knowledge and confidence to maintain your loom and quickly troubleshoot any minor problems that arise over the years.

Note:

For best results, build the loom as shown in this manual. Important information is pulled out into notes like this one. Please review the notes when working on each section.

We have included many detailed drawings and photographs in this manual to help clarify our instructions. Since not all of our parts are numbered, you can use these drawings to help identify certain parts.

This manual includes assembly instructions for A-Series looms. The A-series loom is extremely customizable and we have included instructions for common options. Ignore the instructions that don't apply to your loom. If your loom includes options not covered in this manual, you will receive separate instructions. It may be helpful to review the table of contents and highlight the instructions you will need, so you can quickly skip to the correct page.

LOOM FEATURES

The A-Series loom is highly configurable, so not all of the features discussed here will be present on your loom.

Tension Device

The tension device allows you to advance the warp without a brake pedal. This is the standard setup for the A-series loom. You will find that you can weave with less warp tension with a weight control than with the

conventional ratchet system. Once the correct tension adjustment is made, it will be maintained automatically as the weaving is advanced. For light, fragile warps, it may be necessary to use a lighter weight than the one that comes with the loom and for dense, heavy warps, you may have to add some weight to the arm. You can order half size weights from AVL Looms. This can be used by itself for very light tension or can be used with the existing weight if more tension is needed.

Brake System

A locking brake system is available for the A-series loom. This means that the Warp Beam will not release warp until you depress the Brake Pedal. If you have ordered the locking brake system, you will find instructions on installation and use in the appendix on page 144.

Cloth Storage System

The Cloth Storage System consists of the Cloth Storage Beam, the Cloth Storage Apron, and the Cloth Advance Handle and pawl. This system allows your woven cloth to be maintained under a separate tension from your warp.

Separation Roller

You will have one of these rollers for each warp beam. They serve to establish the warp in its horizontal plain.

Bottom Swing Beater

The Bottom Swing Beater is a standard feature of the A-Series Loom. You can choose to have the bottom swing beater replaced by an overhead swinging beater when you buy your loom. You can have a one-box flyshuttle system with the bottom swing beater.

Overhead Swinging Beater (Optional equipment)

The Overhead Swinging Beater can be purchased in place of the bottom swing beater for your loom. This beater allows for a one-box, two-box, or four-box flyshuttle system.

Beams

The A-series loom allows you to use two warp beams. You can customize the loom to use three beams. If you have done so, the setup of the beams and the tension system will be slightly different from the two-beam setup.

Sectional Beam

If you have purchased a Sectional Beam, you will find it to be extremely adaptable to your needs. Because each hoop is removable, you may create sections of any width of one-inch or more you like.

An AVL Sectional Beam with metal hoops has holes for the hoops at 1" sections. The beam comes with enough metal hoops to setup 2" sections. More hoops can be ordered from AVL if narrower sections are desired. For wider sections, remove as many metal hoops as needed.

You can purchase either a ½-yard sectional warp beam for the A-series, or a one-yard sectional warp beam. The one-yard sectional warp beam can only be used in the upper position.

Plain Beam

The Plain Beam is provided with an apron, which will allow you to maximize the length of your warp.

Dobby Head and Compu-Dobby

The Dobby Head works in tandem with the Compu-Dobby and together they provide the interface between your computer and loom.

You can purchase the A-Series loom with a mechanical dobby instead of the Compu-Dobby. In that case, the assembly will be different. Make sure you follow the instructions in the correct section on page 39.

Treadles, E-Lift, or A-Lift

The A-series loom can come with traditional treadles, an E-Lift, or an A-Lift.

The E-Lift is an electrical motor, which replaces treadles on your loom and allows the shafts to be lifted easily and smoothly by pressing a pedal.

The A-Lift is a motorized lift powered by an air compressor, which replaces treadles on your loom. It allows the shafts to be lifted easily and smoothly by pressing a pedal.

Both the E-lift and the A-Lift work independently of the Compu-Dobby.

Harnesses

You can order the A-Series loom with up to 40 harnesses. You will have either polyester or metal heddles on your A-series loom. The supporting

harnesses (or shafts) are different for the two heddle types: metal heddles, whether twisted wire or flat steel, are suspended from steel heddle bars mounted in rigid frames; polyester heddles are carried on Harness Sticks, top and bottom. In all cases, the harnesses are stabilized at the bottom by a series of springs. These hold the harnesses down and prevent your heddles from floating.

Some weavers like metal heddles because they feel these are easier to thread; others prefer the lighter and quieter polyester heddles.

Harness Springs

The harness springs provide tension for the harnesses and prevent harness float. If you have less than 32 harnesses, you will have a spring-lever system that connects to the harnesses with chains. For the 32 or 40 harness loom, you will have 2 long springs per harness that attach directly to the harness. For these looms, you can have either standard or heavy-duty springs.

BASICS OF ASSEMBLY

For best results in assembling your loom, please follow the detailed instructions in each section. The following steps give an overview of the assembly process.

1) Assemble each Side Frame. The instructions start on page 17.

2) Join the Side Frames starting on page 22.

3) Install the lift system components. If you have treadles, you will start on page 25. If you have an E-lift, you will start on page 27.

4) Install the Harness Pulley Support Assembly on page 36.

5) Attach the Dobby Back on page 37.

6) Connect the lift system to the Dobby starting on page 42 for treadles, or 47 for the E-lift.

7) Install the harnesses on page 51.

8) Add the beams on page 62.

9) Install the Cloth Storage System starting on page 75.

10) Install the beater. If you have a bottom swing beater, start on page 90. If you have an overhead beater, start on page 98.

11) Attach the Compu-Dobby and power your loom on. The final steps for attaching all your peripheries start on page 126.

12) Put together the bench on page 133.

Note:

If your loom includes options that were not covered in the main manual, check the appendix of optional equipment for instructions.
You will find instructions on using your new loom in the A-series Weaving Manual. Some of the features on AVL looms may differ from other looms you have used. Please review the Weaving Manual before beginning to use your loom.

THE LOOM

On the next two pages are pictures of the full loom. Depending on the options you have chosen, your loom may differ from the one shown here.

Figure 1 - Full Loom - Left Side

Figure 2 – Full Loom – Right Side

FRAME ASSEMBLY

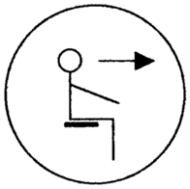
LOOM ORIENTATION

Before you get started, please take a minute to familiarize yourself with how we describe the loom in this manual.

The front of the loom is where you will sit; the back of the loom is where the warp beam is.

Everything is referenced as if you were sitting in the weaving position. The right side of the loom is the side to your right as you are sitting at the loom and the left side is to your left. A piece marked "bottom" would go toward the floor.

On some drawings, we have included a "weaver symbol" to help clarify the view of the drawing. This symbol shows a weaver seated at the weaving bench. The symbol is included only to help clarify the orientation of the drawing.



In this example, the weaver is sitting looking toward the right of the page. That would indicate that the front of the loom is to the left of the page and the rear of the loom to the right. If the arrow were pointing left, then the rear of the loom is to the left.

The right and left of the dobby head is referenced as if you were standing right in front of it.

TOOLS NEEDED FOR ASSEMBLY

There are a few tools you'll need before we can get started. These are:

- Philips head screwdriver
- Light hammer
- Pair of pliers
- 4" or 6" crescent wrench
- Measuring Tape (for squaring the loom)
- Small Level (for leveling the loom)
- Scissors or Box cutter (for removing packing materials)
- Ratchet/Socket set (optional)

A ratchet/socket set is very helpful and will speed up the assembly process, but it is not essential, except in the case of mounting the tension box track arms. For this assembly, you will need a 1/2"socket.

An Allen wrench is also used during the assembly. This is included with the hardware you received with the loom.

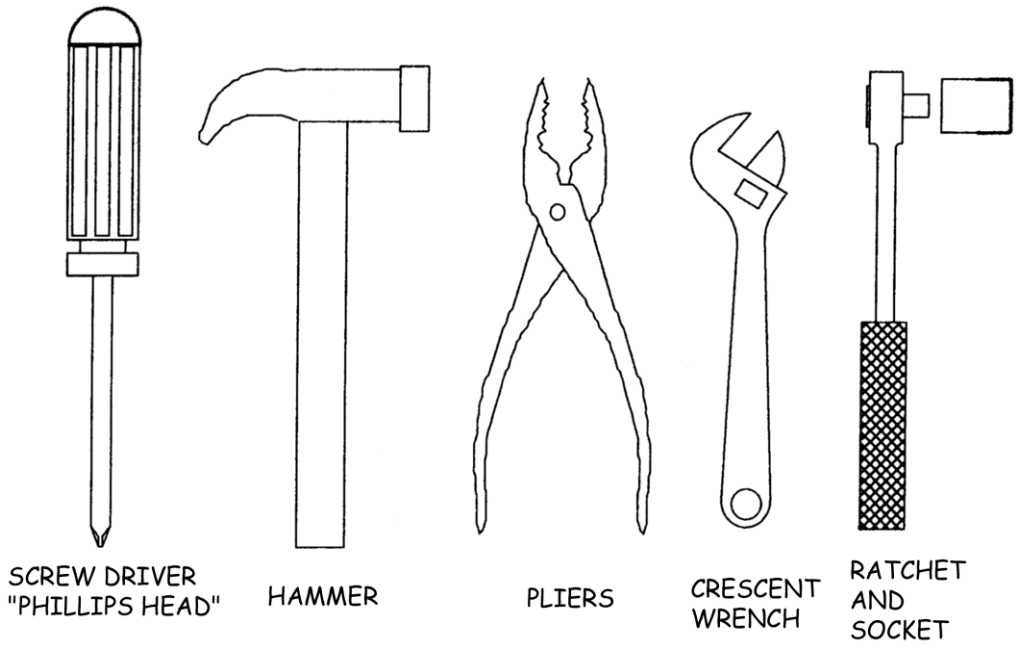


Figure 3 - Tools Needed for Assembly

UNPACKING

NOTE:

For easiest and safest assembly of the loom, please have someone help you. This loom is large and heavy; some sections will take two people to complete.

For protection in shipping, packing materials of several sorts are used around the pieces of your loom. Check the packing materials carefully for loom parts. You may want to keep all the shipping materials until the loom has been put together to make sure nothing is lost.

The boxes your loom comes in are custom made for shipping your loom. If you have space to store them, you may want to keep them for future shipping or moving. Please keep the box and packing materials for the Compu-Dobby if at all possible in case you ever need to ship it to us for repair.

Remove all strapping tape and bubble pack. Layout all of the parts so that you will be able to identify each one as they are identified in the instructions.

HARDWARE IDENTIFICATION

There are a number of different types of hardware that will hold your loom together. The following chart will help you familiarize yourself with the types of hardware you will encounter.

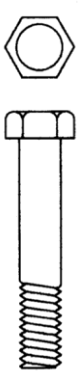


Figure 4 - Hex Bolt

These always get a washer between the head of the bolt and the wood.

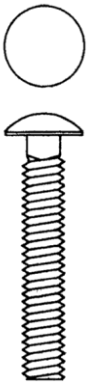


Figure 5 - Carriage Bolt

These never get a washer between the head of the bolt and the wood.

Figure 6 - Flat Head Machine Screw

You may not have machine screws depending on the options of your loom.

Figure 7 - Flat Washer

Figure 8 - Hex Nut

These always have a washer between the nut and the wood and they attach to hex bolts or carriage bolts.

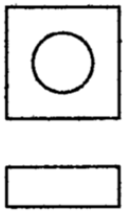


Figure 9 - Square Nut

These always go in a nut access hole. They attach with no washer between the nut and the wood, to hex bolts.

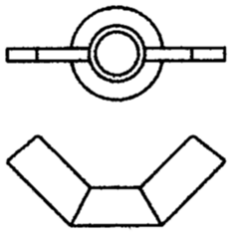


Figure 10 - Wing Nut

These always have a washer between the nut and the wood. They attach to carriage bolts.

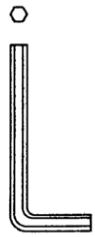


Figure 11 - Allen Wrench

Figure 12 - Black Knob

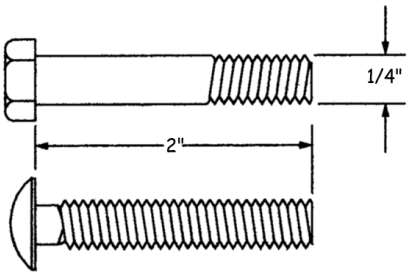


Figure 13 - Measuring Bolts

Figure 14 - Stop Collar

Stop Collars hold items securely on rods. They will usually be in place on an assembly however, you will need to adjust or remove them. Use an Allen wrench to loosen or tighten.

Bolt and Nut Hints

To assemble two pieces, place a bolt with a washer through the outside piece, into the next piece. Place the nut on the end through the nut access hole.

NOTE:

Given the limited space provided by the nut access holes, it can be challenging at first getting the nuts onto the bolt ends. You'll find it helpful to push each bolt in just until it just appears in the access hole. Move the nut into position over the end of the bolt and hold it with your finger. Slowly turn the bolt clockwise and when the nut engages, tighten it most of the way down.

If a bolt is a little tight going into a hole, give it a light tap with a hammer.

If your fingers are too big to comfortably manipulate the nut, try holding it with a flat blade screwdriver or needle-nose pliers.

Always have the larger "nut access hole" facing toward the inside of the loom unless otherwise specified.

Remember to put washers under the heads of the hex bolts and the exposed nuts (nuts that are not in access holes) to prevent damage to the wood. Do not place washers inside the nut access hole as this will prevent the nut from tightening completely.

The square part of the carriage bolt needs to be seated into the wood so that the round portion is flush with the surface. They often require a tap or two from the hammer to seat the square part of the bolt's head into the wood.

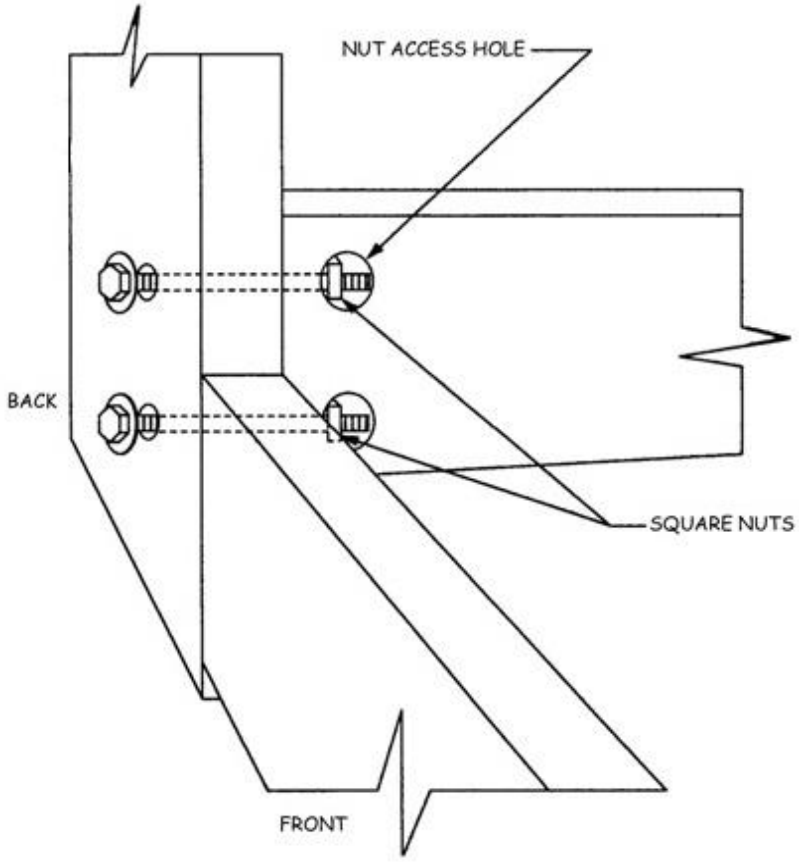


Figure 15 - Inserting Nuts

SIDE FRAME ASSEMBLY

The Side Frames for the loom are shipped disassembled. They must be assembled properly for the loom to operate. You will want to refer to the Side Frame illustrations periodically to check the assembly. Pieces for the right side will have the number plus "R," pieces for the left side will have the number plus "L."

1) Unpack Box #1 and lay the pieces out as shown below. Each piece has an identifying number stamped on it.

Note:

The numbers are located on the edges of the pieces and will not be visible when the loom is completed. The picture below has numbers added for reference.

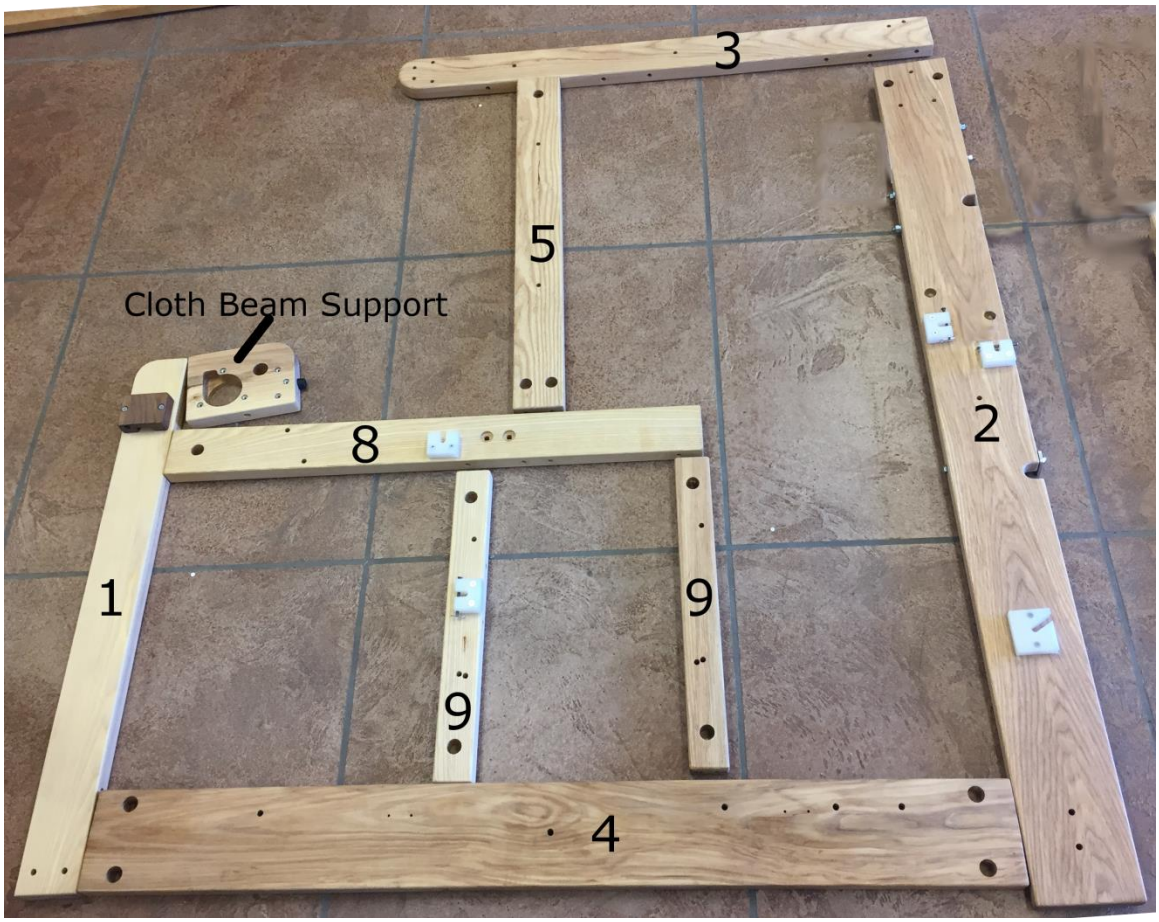


Figure 16 - Side Frame

1	Front Vertical (Left side with attached tool holder)
2	Rear Vertical
3	Top Horizontal
4	Bottom Horizontal
5	Castle
8	Lower Cloth Beam Support
9	Side Support (one with bracket, one without)
	Cloth Beam Support (not numbered but marked with L or R)

Assemble the side frame base

2) Find the hardware package and take out:

   a. Twenty (20) 5/16" x 5-1/2" hex head bolts

   b. Eight (8) 5/16" x 7-1/2" hex head bolts with washers and square nuts

   c. Two (2) 5/16" x 5" hex head bolts with washers and square nuts.

Note:
You will follow these instructions once for each side, using half the hardware you just removed on the right side, and half on the left side.

3) Using two 5-1/2"bolts, attach the front vertical (#1)to the front end of the bottom horizontal (#4), making sure that the nut access holes on both parts are positioned on the same side.

4) Attach the rear vertical (#2) to the rear end of the bottom horizontal (#4) with the 7-1/2" long bolts.

5) Attach the side support (#9) with the bracket already attached to it to the front of the bottom horizontal (#4) with a 7-1/2” long bolt. The bracket should be to the inside of the loom.

6) Attach the side support (#9) without the bracket to the rear of the bottom horizontal (#4) with a 7-1/2” long bolt.

Note:
Make sure the number stamps on the side supports (#9) are facing down or toward the bottom horizontal (#4) and the nut access holes and bracket are to the inside. The two holes that are close together on support #9 should be nearer to the bottom.

Figure 17 – Partially completed side frame

Complete the side frame

1) Find the lower cloth beam support (#8) and attach it to the side base with one bolt through the front vertical (#1) and with a 5½”long bolt in each of the side supports (#9).

2) Find the upper cloth beam support (#10) and attach it to the side base with one 5/16" x 5" bolt through the front vertical (#1).

3) Find the castle (#5). Attach it into the side frame with two 5½ long bolts through the lower cloth beam support (#8).

Note:

The end of the front vertical (#1) with the number stamp on it must be attached to the castle (#5) with one bolt, with the number stamp facing down. If this is done correctly, the two small holes on the top horizontal (#3) will be on the top as shown in the side frame drawings.

4) Find the top horizontal (#3). Using 5 ½” bolts, attach it to the top of the rear vertical (#2) with two bolts.

5) Attach it to the castle (#5) with a 5 ½” bolt.

Figure 18 - Top of side frame

6) Place the cloth beam support on the pin in the lower cloth beam support (#8).

7) Attach the cloth beam support to the front vertical (#1) with a 5 ½" bolt.

Add the Dobby Cam and Pulley (#20)

The Dobby Cam and Pulley assembly will be placed in the right side frame between the #9 supports. This assembly allows the treadles or e-lift to activate the dobby. There are cables are attached between the treadles or e-lift and the dobby. They will be installed later.

1) Find the dobby cam and pulley assembly.

2) Using the Allen wrench in the hardware package, loosen the outer stop collars and remove them.

Figure 19 - Dobby Cam Assembly for E-lift

3) Find the larger set of holes in the right vertical support members. Make sure one support is loose enough to pivot slightly.

4) Slip the rod through the hole so that the dobby cam and pulley are between the supports. Pivot the support enough to push the rod through.

Note:

Depending on your loom options, you will have one of the Dobby Cams pictured here. If you have a mechanical dobby, the dobby cam will be slightly different from those pictured.

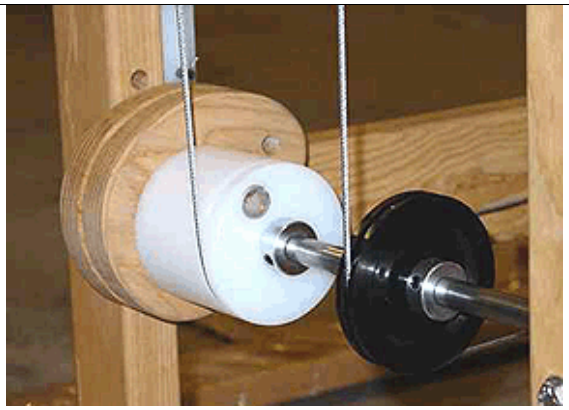


Figure 20 - Dobby Cam and Pulley for treadles

Figure 21 - A-Lift Pulleys

5) Slide the rod through the hole on the other vertical support. Place the stop collars on the rod outside the supports.

6) Using the Allen wrench, tighten the stop collar on the outside of the beams.

JOINING SIDE FRAMES

Once both side frames are complete, you will need to complete the frame by joining them with the cross members.

1) Find the cross member hardware package and take out:

   a. Four (4) 5/16"x2-3/4" Carriage Bolts

   b. Twelve (12) 5/16"x3-1/4" Hex Bolts

   c. Four (4) 5/16"x7-1/2" Hex Bolts

Install Upper and Lower Back

Note:

If you tighten the bolts too soon, you will not be able to insert the rest of the beams. Tighten the bolts in the order shown in the instructions.

1) Find the upper back (#5) and the lower back (#6).

2) Set your left and right side frames opposite each other with the lower back in-between.

3) Using four 5/16" x 3-1/4" hex bolts, attach the lower back to the side frames. Get the nuts started on the bolts, but don't tighten them yet.

Figure 22 - Lower Back Crossmember

4) Place the upper back (#5) between the left and right side frames.

Figure 23 - Upper Back Crossmember

5) Attach the upper back with four 5/16" x 3-1/4" hex bolts, washers, and square nuts.

Install Lower Front

1) Find the lower front (#7). There are nut access holes on the bottom face. If you have a treadle loom, there will be some hardware installed already.

Note:

Since the nut access holes are on the bottom of this piece, you will need to place the loom on its back for easy access. Please use care when doing this.

Figure 24 - Loom on its back

2) Place the lower front on the loom.

3) From the outside of the loom, insert the two 5/16" x 3-1/4" hex bolts into the holes in the left side frame, attach the nuts and tighten.

4) Insert the two 5/16" x 3-1/4" hex bolts in the right side frame through the lower front, attach the nuts and tighten.

Figure 25 - Attaching front crossmember

Note:

If your loom has treadles, leave the loom on its back for now. If you have an e-lift or an a-lift, you can place the loom on its feet again.

INSTALLING TREADLES

Removing Rods and Blocks

The treadles will fasten to the front of the loom. There are two wooden mounting blocks already attached to the top of the lower front cross piece. They hold one 3/8" steel rod and two round plastic spacers. These will need to be removed in order to place the treadles on the loom.

1) Remove both blocks and separate them from the rod (notice that the "rod hole" is off-set (slightly) away from the lower front). You will need to reassemble the blocks the same way.

Installation of Treadles

Note:

Your loom will have treadles, an E-Lift, or an A-Lift. For treadles, follow the instructions in this section. For an E-Lift, follow the instructions in the next section starting on page 26. Instructions for an A-Lift are in the appendix, go page 156.

1) Find the treadles. There are two treadles: one is shorter than the other. The longer one is on the left.

2) Take the rod that you took off of the lower front and slip it through the horizontal hole at the end of each treadle with both plastic spacers in place between the treadles.

3) Slip the treadle end blocks onto each end of the rod. The order of parts in the assembly now should be as follows (from left to right):

   a. left mounting block

   b. left treadle (the long one)

   c. two spacers

   d. right treadle

   e. right mounting block

Figure 26 - Treadles

4) You can now bolt this treadle assembly to the top face of the lower front and gently set the front of the loom back down on the floor.

TREADLE PULLEY SUPPORT (#12)

Note:

There are two small holes about a third of the way up from the bottom of the vertical support assembly. Use the lower (inner) holes for the Treadle Pulley or Lift Support (#12). The upper (outer) holes would only be used if you converted your A-series loom to a Jacquard Loom.

Treadle Equipped Looms

On a treadle equipped loom, the treadle pulley support consists of two rods connecting two wooden pieces. Each rod has a pulley on it.

1) Find the treadle pulley assembly (#12).

2) Place it so that the stamped words "BOTTOM FRONT" are on the front piece, facing down, and on the right side of the loom. This should put the two rods a little bit closer to the right side of the loom.

Figure 27 - Treadle Pulleys

3) Insert the 5/16" x 3-1/4" hex bolts with washers through the corresponding holes in the vertical support assembly (#9R and #9L), attach square nuts, and tighten securely.

A-Lift or E-Lift Equipped Looms

The #12 Lift Support will arrive as two separate wooden cross members.

1) The rear cross member will have a spring lever and "J" bolt attached. Place this piece with the spring lever / spring assembly facing forward and closest to the left side of the loom.

Figure 28 - Lift Support

2) Place the front #12 cross member so that the two holes in the beam are closest to the right side of the loom.

Note:

The holes in this beam will hold the e-lift. They should line up with the holes in the rear cross member.

3) Insert the 5/16" x 3-1/4" hex bolts with washers through the corresponding holes in the vertical support assembly (#9R and #9L), attach square nuts, and tighten securely.

INSTALLATION OF THE E-LIFT

The E-Lift replicates the action of treadling. When you activate the foot switch, the motor turns and selected harnesses rise or fall. The motion is smooth, quick, and precise and does not jar the harnesses.

Review Contents and Hardware. Please check that you were shipped all parts and hardware listed here.

Package Contents

- E-Lift motor-controller (1)
- mounting blocks (2)
- foot switch and attached cord (1)
- power cord (1)
- hardware package (1)

Installing the E-Lift Motor-Controller Assembly

1) The E-Lift will be mounted to the #12 Lift Support Cross members. Position the E-Lift under the cross members to align the holes in the E-Lift mounting plate with the vertical holes in the #12 cross members.

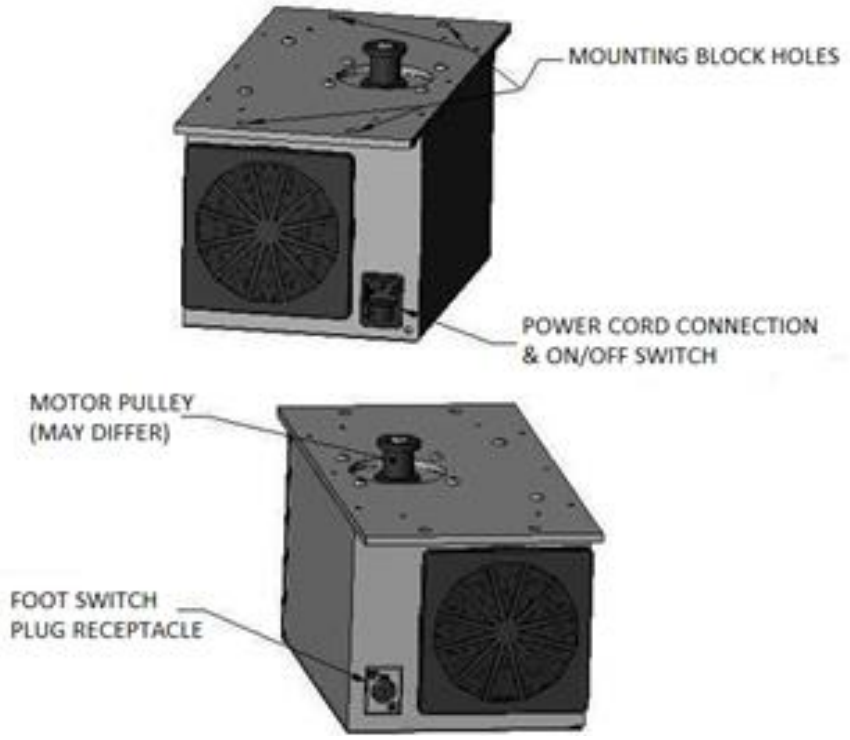


Figure 29 - E-lift

2) Make sure that the E-Lift power switch faces to the rear of the loom and the round foot switch connector faces the front of the loom.

Figure 30 - E-lift attached to supports

Note:

The motor box is quite heavy, so if you have a couple of pieces of 2" x 4" to slip under the motor box, this will help elevate it into position while getting the bolts and blocks in place.

3) From the top of the cross member, place one 5/16" x 6 1/2" hex bolt and flat washer into each of the four holes and let them hang with the exposed ends pointing to the floor.

4) Thread a mounting block onto each set of bolts and then engage the bolts in the corresponding holes in the E-Lift mounting plate.

5) Place a washer, a lock washer, and a hex nut on each bolt and tighten thoroughly.

Figure 31 – Lock Washer

Note:

The lock washer must be next to the nut in order to work correctly. It will prevent vibrations from the unit from causing the nut to come loose.

Figure 32 - E-lift installed

SPRING LEVER / SPRING PERCH ASSEMBLY (#11)

8 / 16 / 24 Harness Equipped Looms

1) Find the spring lever assembly. This assembly consists of two long pieces attached by rods with many short, thin, rectangular "spring levers" between.

2) Place this assembly so that the stamp "BOTTOM FRONT" is on the front facing the floor and on the right side of the loom.

3) Using four 5/16" x 3-1/4" hex bolts, washers, and square nuts, attach the spring lever assembly between the side frames, a foot or so above the treadle pulley assembly.

4) Find the springs with the attached chain.

5) Starting with the rear-most spring lever, attach the spring to the hook on one side and the chain to the hook on the other side.

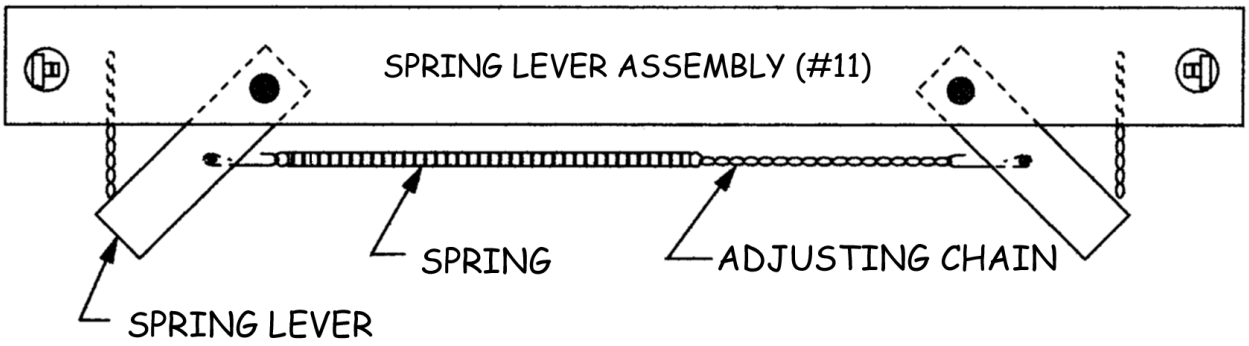


Figure 33 - Spring Lever Assembly

32 / 40 Harness Equipped Looms

1) Find the spring perch assembly. This assembly consists of two wood cross members with spring perch (with 64 or 80 eye hooks attached) spanning between the two boards.

2) Place the assembly so that the quarter circle cut-out faces forward and down.

3) Using four 5/16" x 3-1/4" hex bolts, washers, and square nuts, attach the spring lever assembly between the side frames, a foot or so above the treadle pulley assembly.

Figure 34 - 32/40 Harness Spring System

SQUARING AND LEVELING THE FRAME

Now that you have completely assembled the loom frame, it is time to make sure that the frame is square and level.

Please make a note of this process, as it is an important part of the maintenance of your loom. Your loom will perform better and give more years of service if this process becomes a part of your regular loom maintenance.

1) Using a tape measure, note these measurements. Make sure you are measuring from the same place on the loom on both sides.

   a. _____ The distance from the inside corner of the Rear Left Vertical (2L) to the inside corner of the Front Right Vertical (1R).

   b. _____ The distance from the inside corner of the Rear Right Vertical (2R) to the inside corner of the Front Left Vertical (1L).

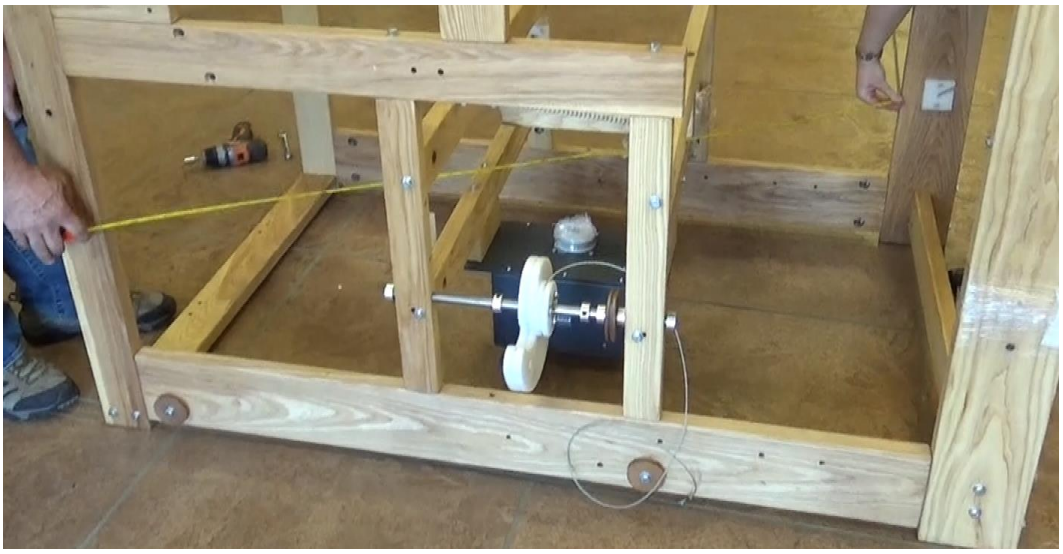


Figure 35 - Measuring for square

2) These two measurements should match. If they do not, you will need to adjust the frame slightly, by pushing and pulling at the corners, until they do match. The frame will then be square.

3) Now, using a level, check the verticals at the corners and the cross pieces at bottom and top. Depending on the flooring, you may need

to use shims under the four corner verticals in order to achieve level.

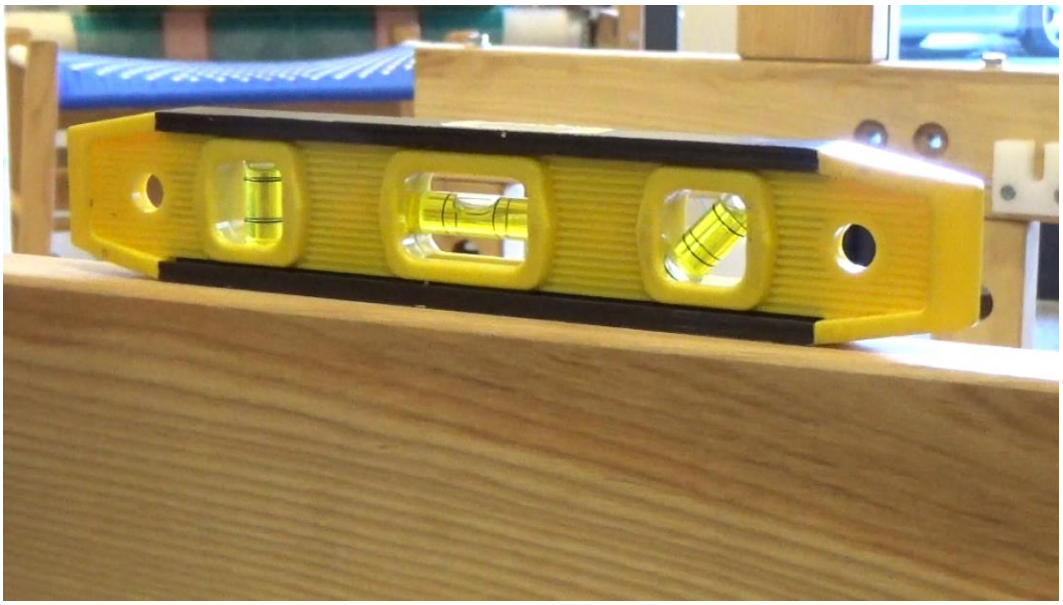


Figure 36 - Leveling the loom

4) Once the loom is square and level, check and tighten all bolts and nuts that connect the frame pieces.

Over time, due to the shaking and movement the loom experiences during use, these connections will shake loose, requiring periodic checking and tightening. Make a check of these components a regular part of your loom maintenance.

INSTALL THE INNER WORKINGS

HARNESS PULLEY SUPPORT (#10)

1) Find the harness pulley support. This assembly has three rows of pulleys between two long cross members.

2) Find four 5/16" x 7-1/2" hex bolts, washers, and hex nuts. You'll need washers under the hex bolts and the hex nuts.

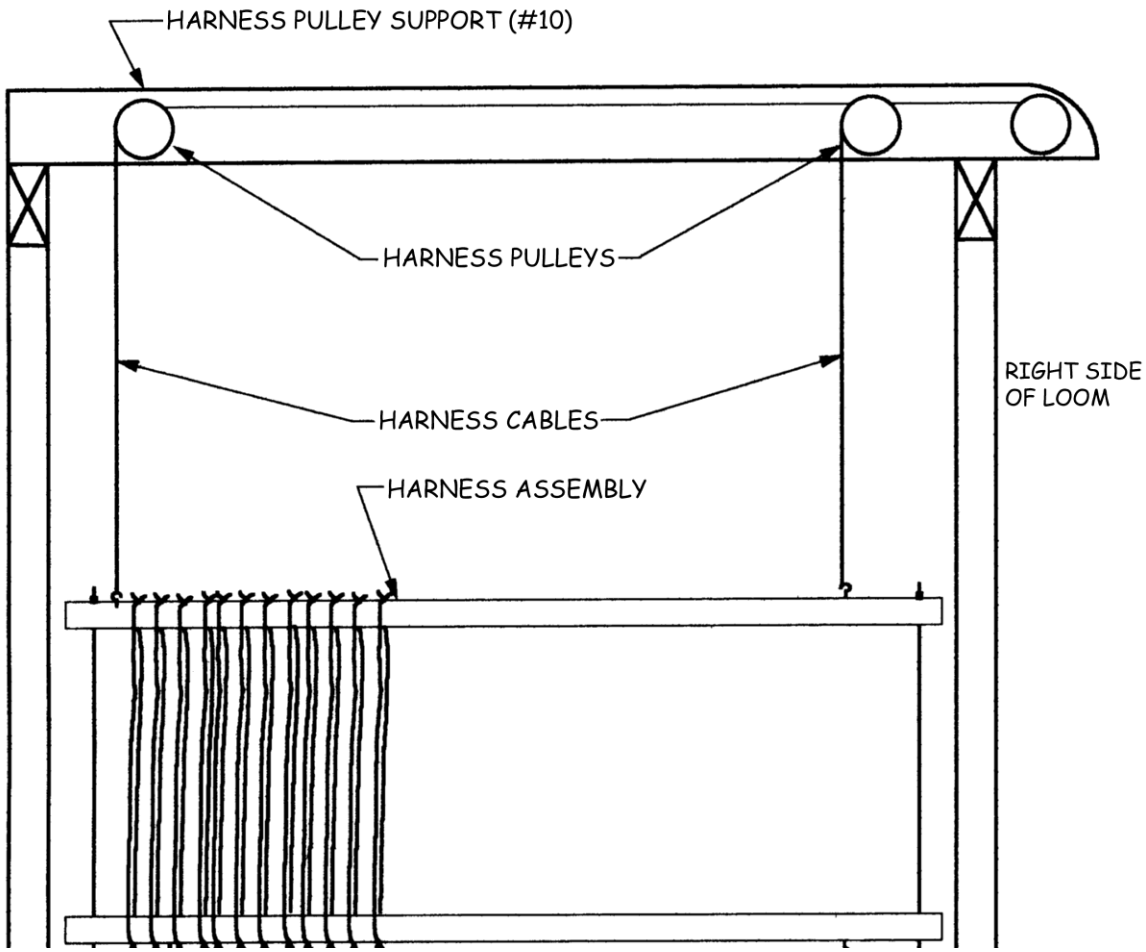


Figure 37 - Harness Pulley Support

3) Place the harness pulley support so that the left side is flush with the left side of the loom and the right side sticks out a few inches beyond the right side frame pieces.

4) Attach the support to the loom frame with the bolts.

DOBBY HEAD INSTALLATION

The Compu-Dobby will arrive in a separate box. The dobby is made up of two main parts: the dobby head (wood back plate with attached slide plate) and the Compu-Dobby (gray metal box with solenoids). Unscrew the black thumbscrews on the sides of the solenoid box and lift it off the dobby.

The cables on the dobby head correspond to the harness cables. The cable farthest to the left (closest to the front of the loom) corresponds to the first harness and the cable farthest to the right (closest to the back of the loom) corresponds to the last.

Please note, your dobby head will come with zip ties on the slide plate. These are in place for shipping only and must be removed prior to use along with the stretch wrap. If you move or ship your compu-dobby, please zip tie the slide plate in place and make sure that any parts which could move are strapped or wrapped in place.

Mounting the Dobby

1) On the back side of the dobby head you will find three bolts with washers and hex nuts attached.

2) Remove these washers and nuts making sure you don't unseat the carriage bolt heads on the top of the dobby back.

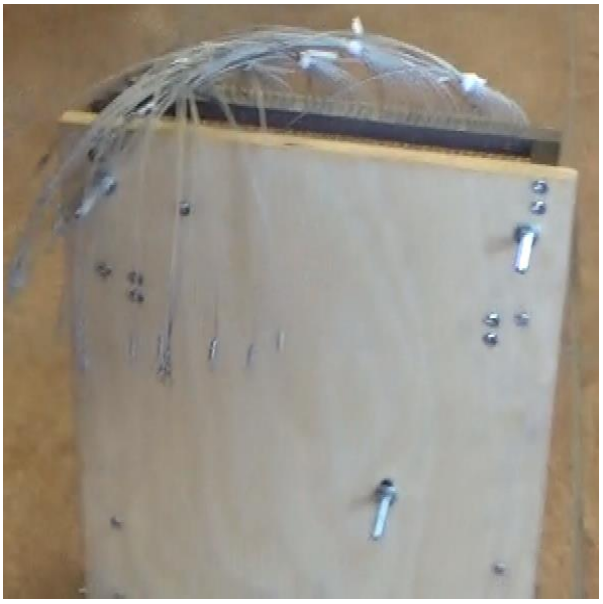


Figure 38 - Back of the Dobby

3) The dobby is placed on the right side of the loom under the harness pulley support. Bring the dobby into position.

Note:

If you have problems placing the Dobby head correctly, loosen the harness pulley support until you have the dobby head positioned and the bolts tightened.

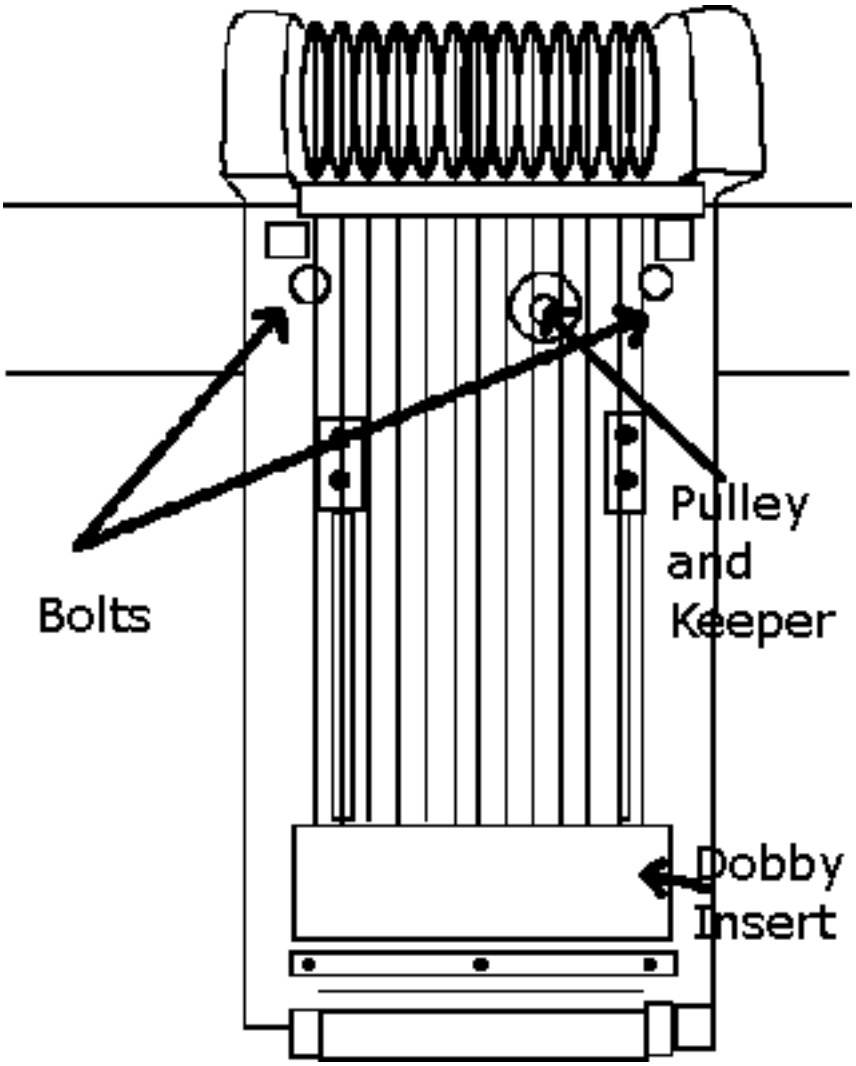


Figure 39 - Mounting the Dobby

4) Place the dobby head so that the two 5/16" x 2-1/2" carriage bolts in the top of dobby backboard go through the top horizontal. The bolt in the middle of the dobby back will go through the castle.

5) Secure each bolt with one washer and a hex nut.

6) Check that all the bolts and screws holding the dobby set up to the backboard are tight.

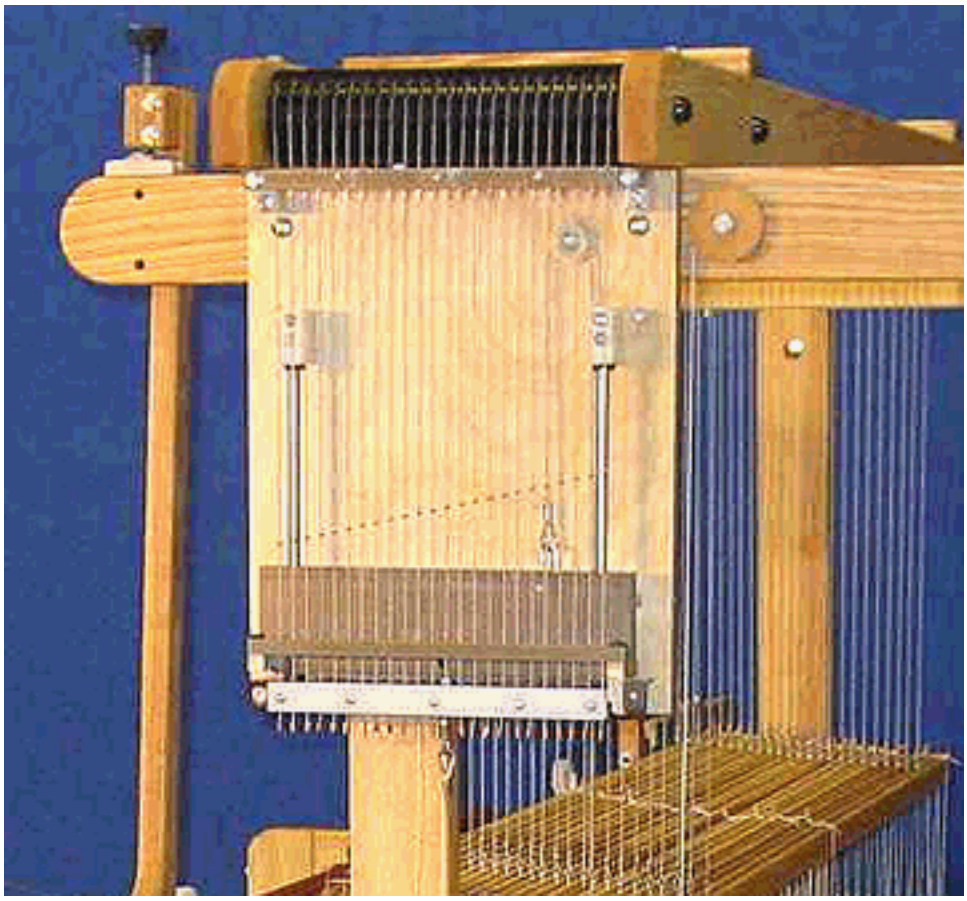


Figure 40 - Dobby on the Loom

Each of the dobby cables in the dobby needs to have some tension in order for proper selection by the Compu-Dobby. The tension translates through the attached harness cables all the way down to the harness spring system. Should you find incorrect harness selection by the Compu-Dobby, the cause is often due to harness float.

To address, simply increase harness spring tension by incrementally shortening up on the links at the spring lever, or for 32 and 40 harness looms, by adding a set of heavy duty (or second set of standard) harness springs for the floating harness

Install a Mechanical Dobby

1) On the back side of the dobby head you will find three bolts with washers and hex nuts attached.

2) Remove these washers and nuts making sure you don't unseat the carriage bolt heads.

3) The dobby is placed on the right side of the loom under the harness pulley support. Bring the dobby into position.

4) Place the dobby head so that the two 5/16" x 2-1/2" carriage bolts in the top of dobby backboard go through the top horizontal. The bolt in the middle of the dobby back will go through the castle.

5) Secure each bolt with one washer and a hex nut.

Mounting the Dobby Arm (#19)

1) Lift the dobby arm and support into place.

2) Using the 5/16" x 2 3/4" hex bolts provided, attach the dobby arm support to the outside of the right top horizontal. The heads of the bolts should be on the outside of the dobby arm support.

3) Attach the washers and nuts loosely as we will be making an adjustment to these later.

Checking the Springs

Sometimes during shipping, the springs on the dobby head come off their anchor pins.

1) Check your unit against the following figure to make sure all the springs are in their proper place.

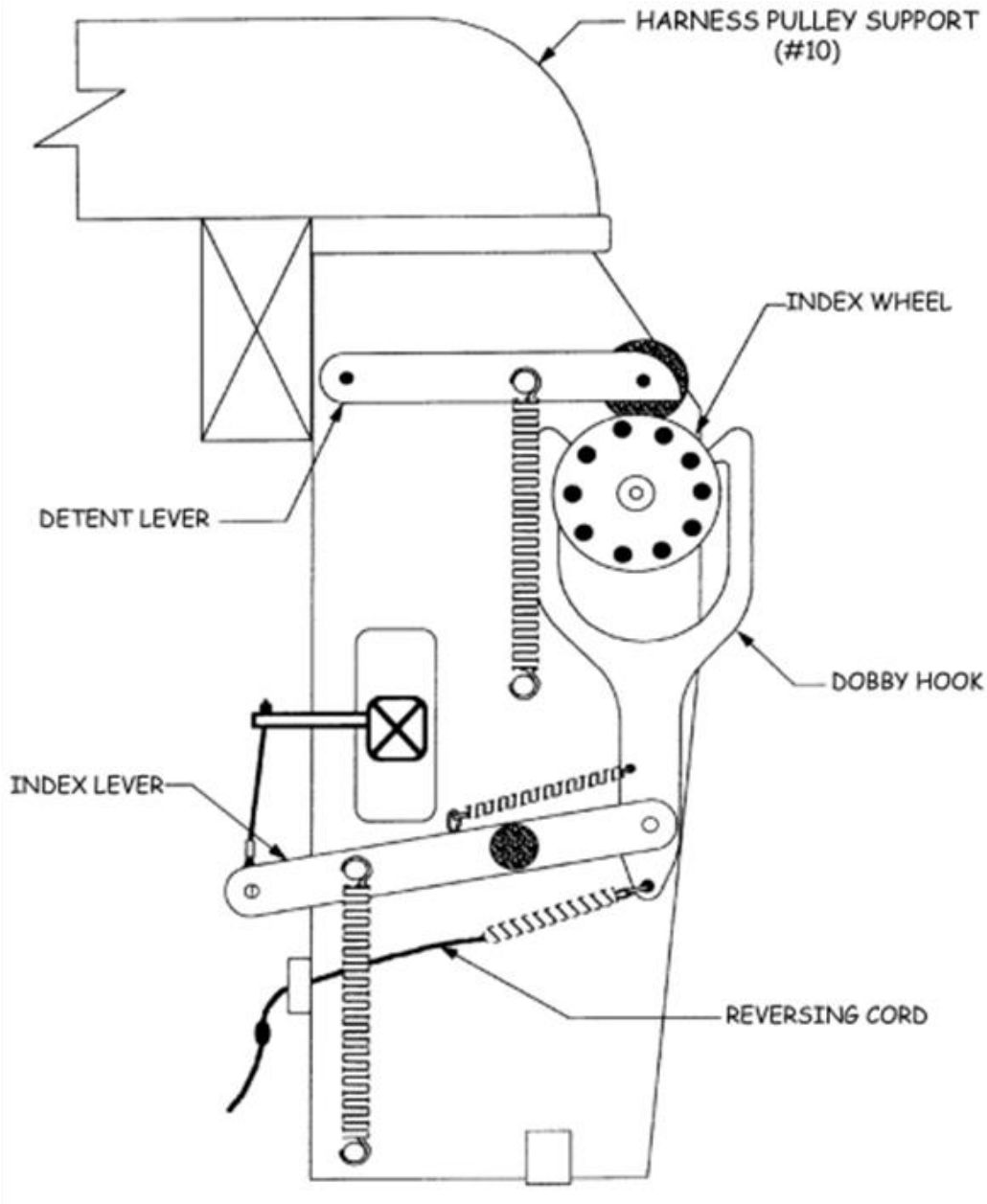


Figure 41 - Left side of the Mechanical Dobby with springs

TREADLE TIE-UP

If you have an e-lift, please skip this section and move on to the next section on setting up the e-lift cables.

Left Treadle

1) There are two cables coming out of the bottom of the dobby head.

2) Take the longest one and run it down to and under the groove of the pulley nearest to the rear of the loom in the dobby cam and pulley assembly.

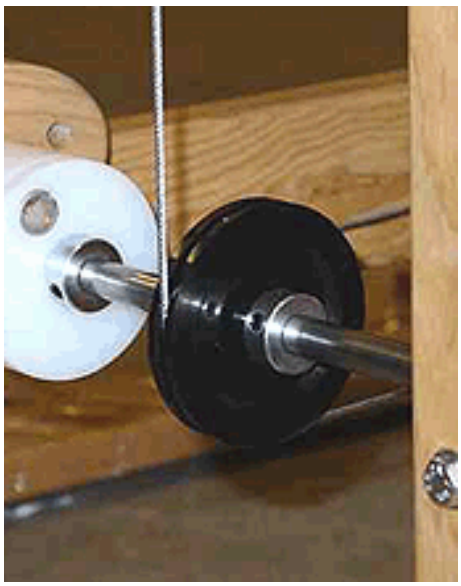


Figure 42 - Dobby Cam and Pulley

3) Continue routing the cable through the loom and over the far left pulley in the treadle pulley assembly down to the treadle. You may need to climb inside the loom.

Figure 43 - Treadle Pulleys

4) There is a bolt going through the large access hole near the far end of each treadle. Remove the nut from the bolt in the left treadle.

5) Back the bolt out so that the end of the bolt is at about the middle of the large access hole.

Figure 44 - Bolt for the Treadle Cable

6) Now slip the loop of the long cable you have just routed over the pulley over the end of the bolt.

7) Push the bolt back in and tighten the nut with a wrench. With the treadle hanging, the cable should be coming straight up from the bolt and over the left side of the left pulley.

Right Treadle

1) There are two cables wound around and taped to the cam cylinder.

2) Remove the tape and partially unwind the cable closest to the front of the loom.

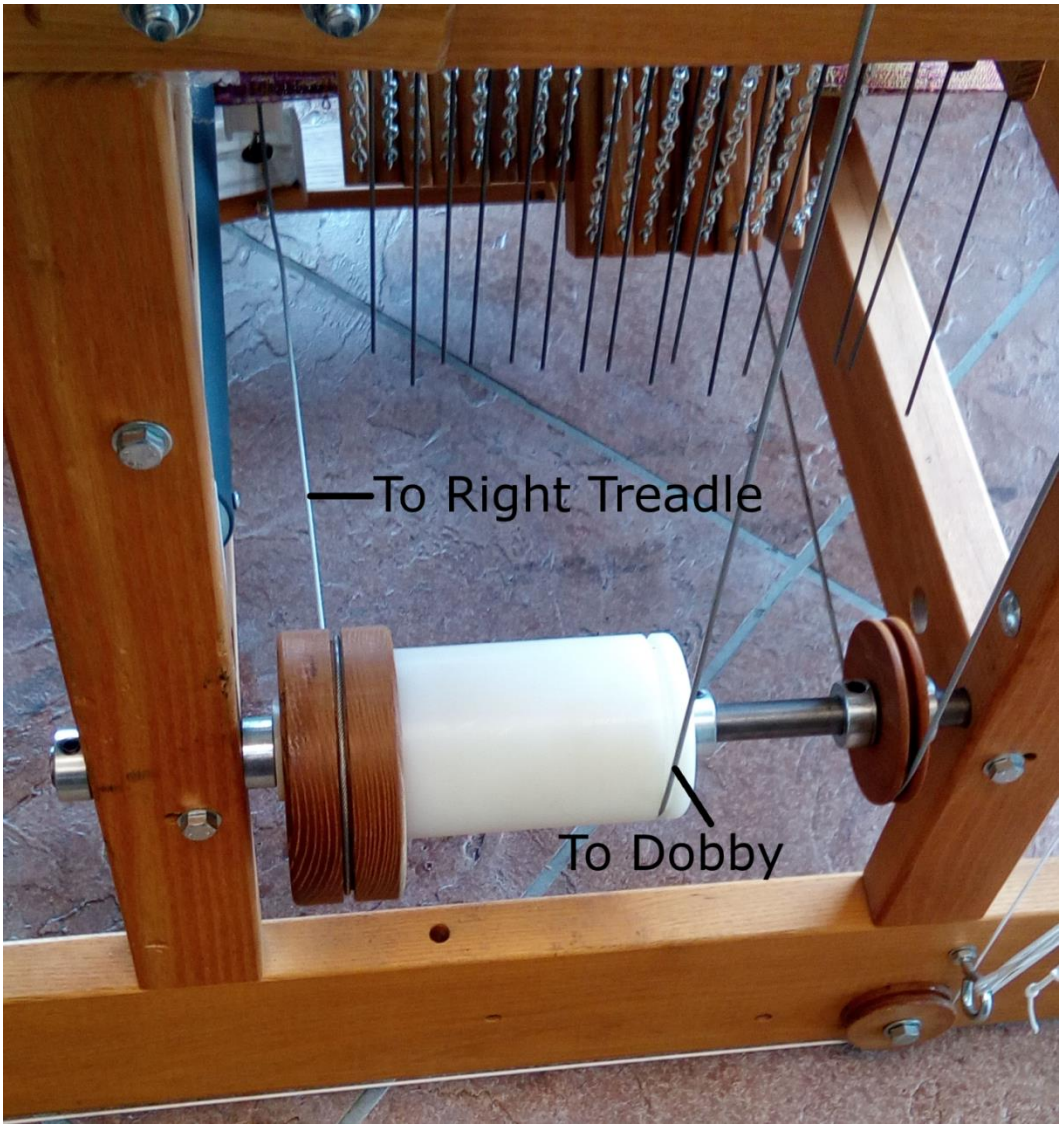


Figure 45 - Right Treadle Cables

3) Run the cable over the top of the pulley directly above the right treadle and down to meet the treadle.

4) Pull the bolt out beyond the access hole as you did for the left treadle and secure the cable to the treadle by holding the loop in line with the bolt (inside the access hole)and passing the bolt through the loop and on through the treadle.

5) Replace and tighten the bolt and acorn nut as you did on the left treadle.

The right treadle cable is now attached to the dobby cam cylinder. On the other side of the dobby cam cylinder there is another cable taped wound around the cylinder and taped down. This cable will connect to the cable coming from the bottom of the dobby head that has an eyebolt attached to a turnbuckle.

6) Remove the tape from the cable with the eyebolt.

7) Rotate the dobby cam assembly by hand in a clockwise direction (as you are looking at it from the rear of the loom). This will cause the short treadle cable to wind up on its pulley and raise the right treadle.

8) Keep rotating the pulley until the treadle comes all the way up and stops against the treadle pulley.

Note:

This may cause the cable that you have just released to get wound up on the dobby cam assembly. If it has, unwind the cable while you hold onto the dobby cam making sure that the right treadle stays up against the treadle pulley.

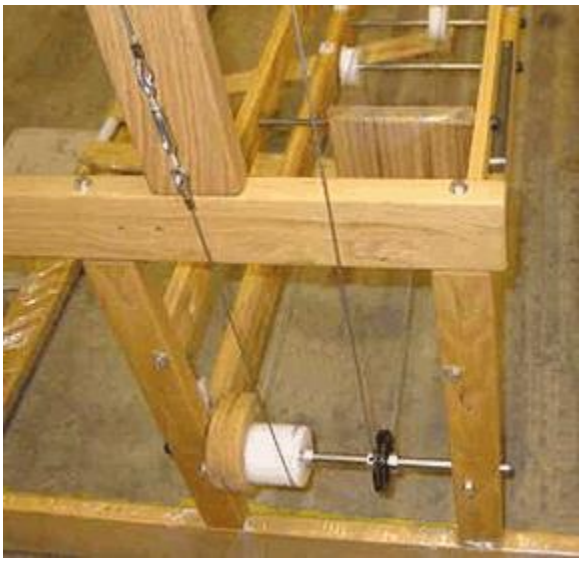


Figure 46 - Dobby Cam with Turnbuckle

9) Take hold of the end of the eyebolt and pull it up toward the dobby head. If you've done the assembly correctly, you should be able to make the treadle go up and down by pulling the eyebolt on the cable up and letting it down.

10) Take the turnbuckle completely off the dobby cable and then restart it again with no more than two turns.

11) Pull up the cable that makes the treadle go up and down and screw the turnbuckle to the eyebolt (this is a reverse thread so turn the turnbuckle in the same direction you did to start it onto the dobby cable eyebolt).

Note:

The purpose of the turnbuckle is to give a way to adjust treadle travel so that you get a full shed.

12) In order to get the proper adjustment, you'll need to tighten or loosen the turnbuckle until, when the left treadle is pushed all the way down, the slide plate raises and touches the upper bumpers in the dobby box.

13) At this point, the short treadle should stop about 1/2" to 1" below its cable pulley. When adjusted properly, the right treadle should stop approximately 1" to 2" from the floor on its down swing and 1/2" to 1" from the cable pulley on its upswing.

SETTING UP THE E-LIFT CABLES

If you have a treadle system and have followed the instructions in the previous section, you can move on to the next section.

Installing the Cam-Pulley Cables

1) There is a cable wrapped around the cam pulley that will go to the dobby slide plate. Route the cable around and under the pulley, then up the outside of the loom, to the dobby slide plate.

Figure 47 - Cam Cables

2) Slip the cable end through the hole in the bottom plate and connect the cable end to the lower eyebolt on the slide plate.

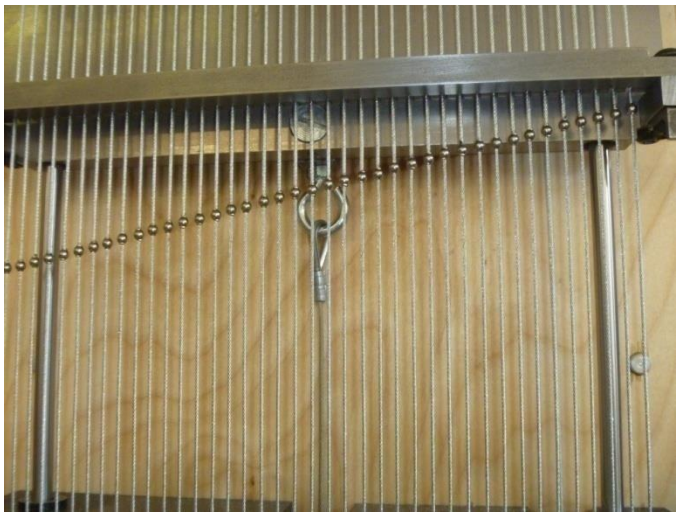


Figure 48 - Slide Plate Eyebolt

3) You will need to position the cam pulley correctly to vertically align the cable between the pulley and the slide plate. Loosen the stop collars around the cam-pulley and move the cam pulley as needed. Tighten the stop collars.

The dobby slide plate-to-spring lever cable is attached to the slide plate with a quicklink in the eyebolt on the upper back right corner of the slide plate. The cable goes over a small white plastic pulley with a retainer above it.

Figure 49 - Dobby Slide Plate to Spring Lever Cable

4) The cable will go down the right side of the dobby back. Guide the cable around the bottom of the return pulley on the cam-pulley axle, then into the center of the loom.

Figure 50 - Return Pulley Cable

5) Bring this cable over to the spring lever and loop it around the pulley on the side of the lever.

Figure 51 - E-lift Spring Lever

6) Now, you will need to pull against the spring in order to bring the looped end of the cable around the pulley on the lever and back toward the right side of the loom, to anchor it at the open J-Bolt.

Note:

You can also remove the spring and replace it once the cable has been anchored on the J-bolt.

7) Remove the tape from the E-Lift motor-to-cam cable, which is wound around the cam at the top of the E-lift.

8) Take the cable and guide the free end down and out of the loom and around the bottom of the nautilus lobe.

9) There is a small hole in the nautilus cam. Insert the cable end into the hole.

Figure 52 - Cable in Nautilus cam

10) Secure the cable in place with a hitch pin by placing it around the cable above the copper crimp.

Figure 53 - Secured Cable

ATTACHING THE HARNESS CABLES

Note:

For some of the steps in this process, you will need to access the top of the loom. You may need a small ladder or step-stool.

The Harness Cable has three ends, two that end with loops and one with a clip. The two ends with loops support the harness. The longer side goes to the left side of the harness and the shorter one is for the right side. The clip attaches to the corresponding cable on the dobby head.

On wider 32 and 40 harness looms, you will also have yokes that connect the harness wires to the harness. The yoke forms a "Y" by connecting to a pair of screw eyes.

1) Find the bag labeled harness cables. The cables will be fastened together. You can leave them fastened together until they are attached to the dobby head.

2) Attach the clip to the loop at the end of the first cable in the dobby head. The cable for the first harness is closest to the front of the loom.

Note:

To spread the clip, press the two sides together and slip the cable loop onto one of the exposed ends of the clip. You can use pliers to squeeze the hook. Now, work the cable loop toward the other side until it is free to move inside the clip and the clip sides are together again.

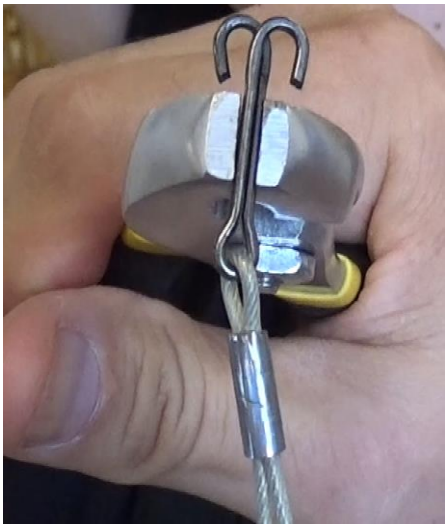


Figure 54 - Clip opened with pliers

Figure 55 - Berkeley Clips

3) Repeat this process for the remaining harness cables.

Laying the Harness Cables

Mounted on top of the harness pulley supports are two wooden crossbars with felt on their undersides. These are called cable retainers and they will need to be removed before you can lay the harness cables.

1) Using a Philips screwdriver, temporarily remove the cable retainers from the loom.

Figure 56 - Harness Cable Retainers

2) Take the first harness cable and route it over the pulley directly above it in the harness pulley support.

3) Bring both ends of the cable over the first pulley in the next set of pulleys. Let the short cable hang from this pulley.

4) Route the longer cable over the far pulley on the left side of the loom and let it hang.

Figure 57 - Harness cables hanging on loom

5) Repeat this procedure with each of the remaining cables until all of the harness cables are over all of the pulleys.

6) After all cables are in place on each pulley, check to see that no cables have crossed over each other.

7) Replace the cable retainer above the right set of pulleys, tightening the screws so that it almost touches the pulleys.

Note:

It is essential to the proper functioning of the loom that the cables be free to move. The cable retainer's purpose is to keep the cables from jumping off of their pulleys.

8) Replace and tighten the left cable retainer as you did the right one.

HEDDLES

Your loom may be equipped with either polyester or metal heddles. Choose the correct section below for your loom.

As of the publication of this manual, the A-series loom comes with 100 heddles per harness, although you can distribute them in any configuration you like. If you wish to order more heddles, please use our website, www.avlusa.com, or call us at 530-893-4915.

Number of Harnesses	Heddles per loom
8	800
16	1600
24	2400
32	3200
40	4000

Polyester Heddles

The polyester heddles come attached to each other and will need to be cut apart. The heddles are shipped in bundles of 100. There are two twist ties on the bottom and two twist ties on the top.

Figure 58 - Polyester Heddle Bundle

These go through the space for the harness. Do not remove the twist ties until you have placed the heddles on the harness. They will keep the heddles properly contained until they are on the harness.

Note:

You will need to cut the bundle of heddles apart. You can do that either before you place them on the loom, or after.

If you need to create smaller bundles of heddles:

1) Leave the twist ties on, and count out the number of heddles you want.

2) Put new twist ties around the smaller bundle.

3) Place enough ties so that all the heddles are contained before removing the original twist ties.

Harness Assembly

The harness sticks are long, thin pieces of wood with screw eyes on either end. There should be two groups. One group is labeled "tops". The bottom group is separated into two bundles. Each of the bundles of the bottom harness sticks are labeled with a "1" or "2". Leave the tape and number stamp on these until they are needed. On 40 harness looms, the bottom sticks are all the same.

Note:

The bottom harness sticks marked 1 go to the front of the loom, and the sticks marked 2 go to the back of the loom. We suggest you place the harnesses on the loom starting from the back.

The heddles need to be placed on the harnesses and the complete harness placed on the loom. We suggest you assemble the harnesses on a table.

Note:

The polyester heddles are part of the harness structure, so you must place at least two heddles (one at each end) on each harness before placing it on the loom.

1) Find the harness sticks, heddles, and harness wires.

2) Remove the tape from the bundle of harness sticks labeled "tops". Remove the tape from one bundle of the bottom harness sticks. We suggest you work from the back of the loom forward, so use the bundle marked 2.

3) Lay one of the tops on the table, about a foot and a half in from the edge, with the screw eyes facing away from you. Lay one of the bottom harness sticks close to you with the screw eyes facing you.

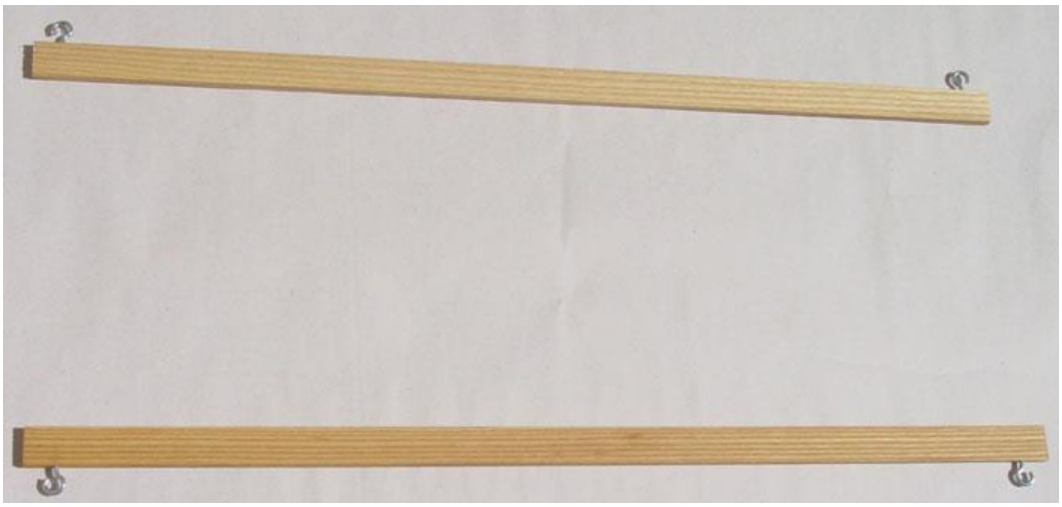


Figure 59 - Parallel Harness Sticks

4) Take a group of the heddles and insert each harness stick into one of the spaces created by the twist ties.

Figure 60 - Harness Sticks with Heddles

5) Once the harness is complete you can remove the twist ties and spread the heddles out. If you have not cut the heddles apart yet, you will need to do that now.

Note:

If you want to color code your heddles, this would be a good time. Take a colored marker and color the eyes of all the heddles on a harness so that you can easily tell what harness you are threading. For instance, you may use four colors of pen and mark the eyes on the heddles of harness 1 with purple, the eyes of harness 2 with red, the eyes of harness 3 with blue, and the eyes

of harness 4 with orange. Harness 5's code color will be purple, harness 6's code color red, and so on.

6) Now pick up your harness assembly by the top harness. Bring it over to your loom and hook a set of harness to the screw eyes in the harness stick.

Note:

We suggest starting from the back of the loom and working forward, however make sure you place the harness sticks according to the bundle of bottom harness sticks you are working from. Bundle 1 is for the front of the loom and bundle 2 is for the back.

7) Insert one harness wire into the hole at each end of the top harness stick and through the hole in the bottom harness stick. The copper stop on the harness wire will be at the top of the harness.

Figure 61 - Harness wire

8) Repeat the steps above for each harness assembly. Once you have completed the frames for the back, open the other set of harness sticks and complete those frames.

Metal Heddle Harness Frames

The metal heddle harness frames come fully assembled with the exception of the heddles themselves. The heddles should be installed onto the harness

frames before you hang them in the loom. There will be two bundles of frames. One is marked "1" and the frames should be placed to the front of the loom. The other is marked "2" and the frames should be placed to the back of the loom. The top of the frame is also marked.

1) Remove the clips from either end of the heddle rods and transfer the desired amount of heddles onto each harness.

2) After replacing the end clips on the heddles rods, you can hang the harness frames in the loom by connecting them to the waiting ends of the harness cables. Note which harness stick is the top before placing it.

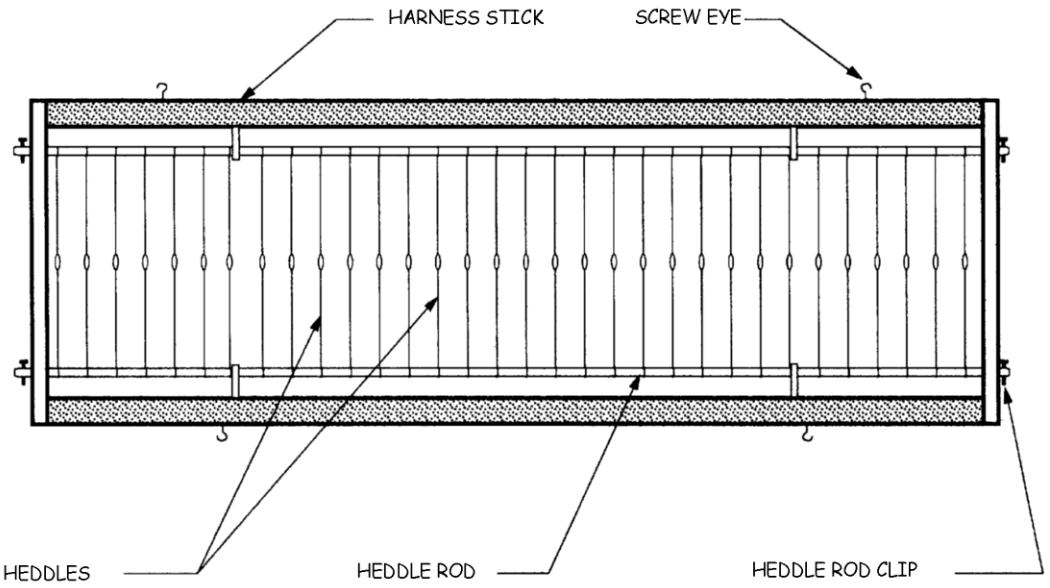


Figure 62 - Metal Heddle Frame

Spring Installation

8 / 16 / 24 Harness Equipped Looms

These looms have the spring lever system. You will have a wooden lever with a chain on one side and a hook the other. The chains will connect to the harnesses. The levers are connected with a spring between the hooks.

1) Near the outside end of each spring lever is a chain. Take the end link of your last spring lever on the left side and hook it to the left screw eye on the underside of the last harness stick.

2) Repeat for the right side.

3) Continue to hook up all of the harnesses in the same fashion.

Note:

The chain is for adjusting the harness tension. For now, attach the last link to the wire hook. When you put your first warp on, adjust the tension with the chain.

32 / 40 Harness Equipped Looms

Looms with 32 or 40 harnesses will have a system of springs that attach in a "V" shape.

1) After the harnesses are hung on the loom, find the harness springs.

2) Starting with the rear-most springs, attach the springs to the eye hooks on the bottom of the harness sticks.

INSTALLING BEAMS AND ROLLERS

WARP BEAMS

The A-Series comes standard with the ability to use two warp beams at a time. With this system, you can use a one-yard sectional beam in the upper position. You can use a ½-yard sectional or plain beam in either the upper or the lower position depending on the brake cable you have available. For the lower position, you will receive a brake cable marked #16. For a plain or ½ yard sectional beam in the upper position, you will have a brake cable marked #38P. For a 1 yard sectional beam in the upper position, you will have a brake cable marked #38S.

You can order the A-series loom with a three beam system. In this case, you can use a ½-yard sectional or plain beam in any position. You cannot use a one-yard sectional beam with the three beam system.

In either of the above options, installing the beams and tension systems are very similar. With three beams, the tension systems will be installed in different locations.

Another option is called a bustle, which allows you to use two one-yard sectional beams at the same time. If you have ordered this option, please refer to the appendix, page 149 for instructions.

INSTALL THE LOWER WARP BEAM

Either the plain warp beam or the ½ yard sectional warp beam can be installed in the lower position. The axle of the warp beam is locked in place by the beam retainers.

1) Lift up the warp beam, and with the large, round wooden drum to the left side of the loom, seat the beam axle into the slots.

2) Swing the retainers around to hold the beam.

Figure 63 - Beam Retainer

3) When the latches have captured the axle and are in a vertical position, tighten them down.

Warp Beam Handle

1) Find your warp beam handle (#42).

2) Remove the wing nut, washer, and bolt from the end of the handle.

3) Place the hole in the handle over the left end of the warp beam axle (making sure the handle faces away from the loom).

4) Line up the hole in the axle with the carriage bolt and push it through.

Figure 64 - Warp Beam Handle

5) Reattach the washer and wing nut and tighten.

INSTALL THE UPPER WARP BEAM

If you have ordered a one yard sectional beam, it can only be placed in the upper position. You can also install a second plain beam or ½-yard sectional beam in the upper position.

1) Lift the warp beam, and with the drum to the left side of the loom, seat the beam axle into the slots.

2) Swing the retainers and when they have captured the axle and are in vertical position, tighten them down.

3) Install the Warp Beam Handle.

Note:

If you are using three warp beams, install the third beam in the middle position with the brake drum to the right of the loom.

INSTALLING THE SEPARATION ROLLER (#39)

If you have ordered one beam, you will receive one separation roller. If that beam is a plain beam or a ½ yard sectional beam, the separation roller will go in the lower position.

If that beam is a one yard sectional beam, the separation roller will go in the upper position.

Install a separation roller for each beam you install on your loom.

1) Slip one end of the roller into its pinned slot.

2) Pull the pin out of the other bracket, drop the roller in, and replace the pin.

TENSION ARM INSTALLATION

Lower Position Tension Arm

In the lower position, you can only have a plain warp beam or a ½ yard sectional warp beam. The brake cables for the upper and lower position are different

Note:

If you only have one beam and it is a plain or ½ yard sectional, you will normally use the upper position for the beam, unless you requested otherwise when ordering your loom. If you are only using one beam and it is a one yard sectional beam, it must be in the upper position. Please refer to the next section for tension arm instructions.

1) Find the tension arm and place it so that the face of the pulley lies against the inside of the left rear vertical.

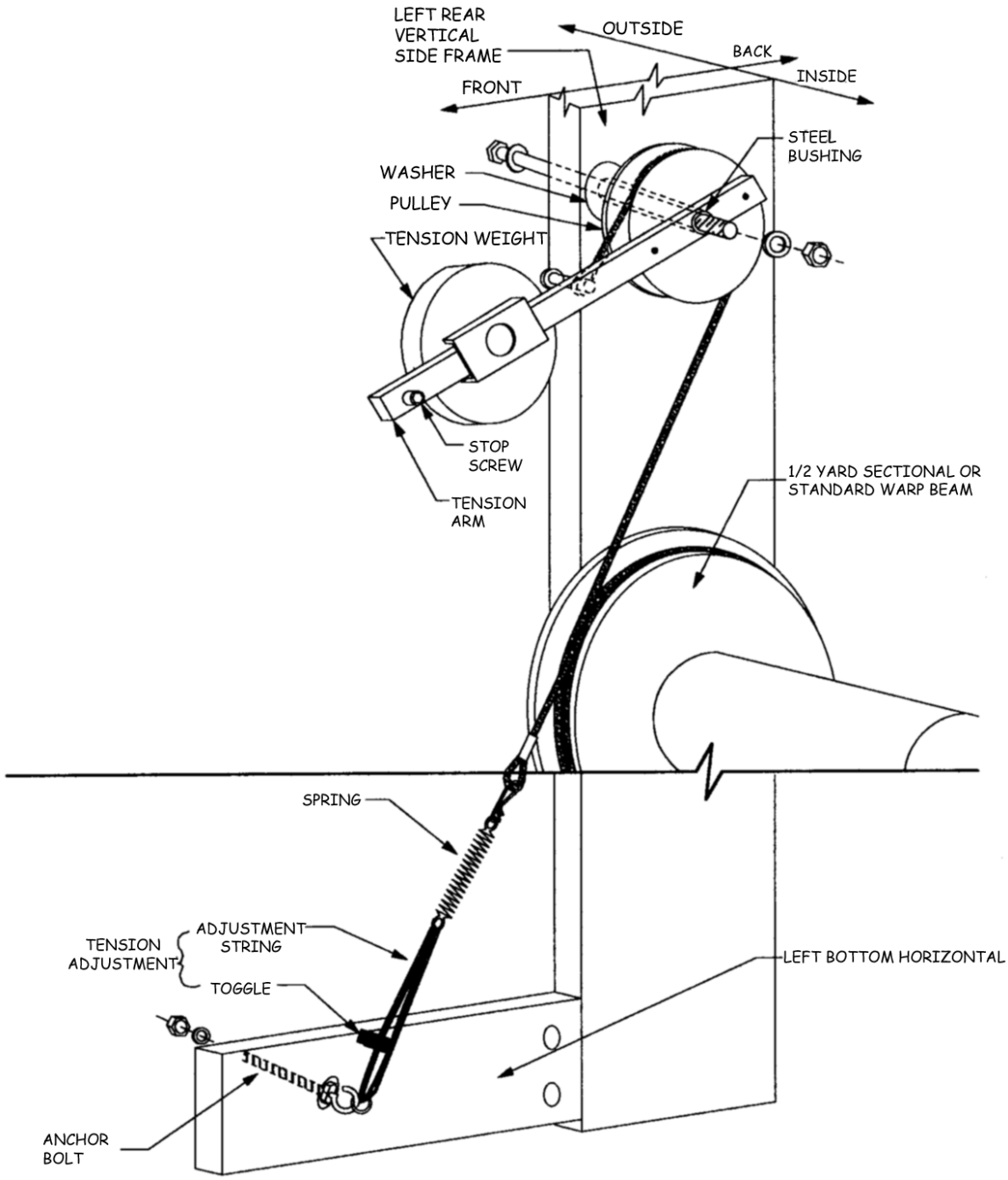


Figure 65 - Lower Warp Beam Tension

2) Remove the long bolt from the pulley end of the tension arm.

3) Keeping one washer on the bolt, push the bolt through the lower hole in the rear vertical from the outside for the plain beam. If you

are putting on a 1/2 yard sectional beam, insert the bolt from the inside to provide rotation clearance for the beam.

4) Put on another washer on and slip the tension arm, with its metal bushing, onto the bolt.

5) Add another washer and the hex nut, and tighten it down.

6) After tightening, check to make sure the arm swings freely. Now the cord tie-up can be attached.

Attach the tension arm cord

1) Find the tension arm cord labeled #16.

2) Attach this cord to the tension arm by removing the shoulder bolt (the bolt near the wooden pulley) using a 5/32" Allen wrench and place this bolt through the looped end of the cord.

3) Replace the bolt into the tension arm.

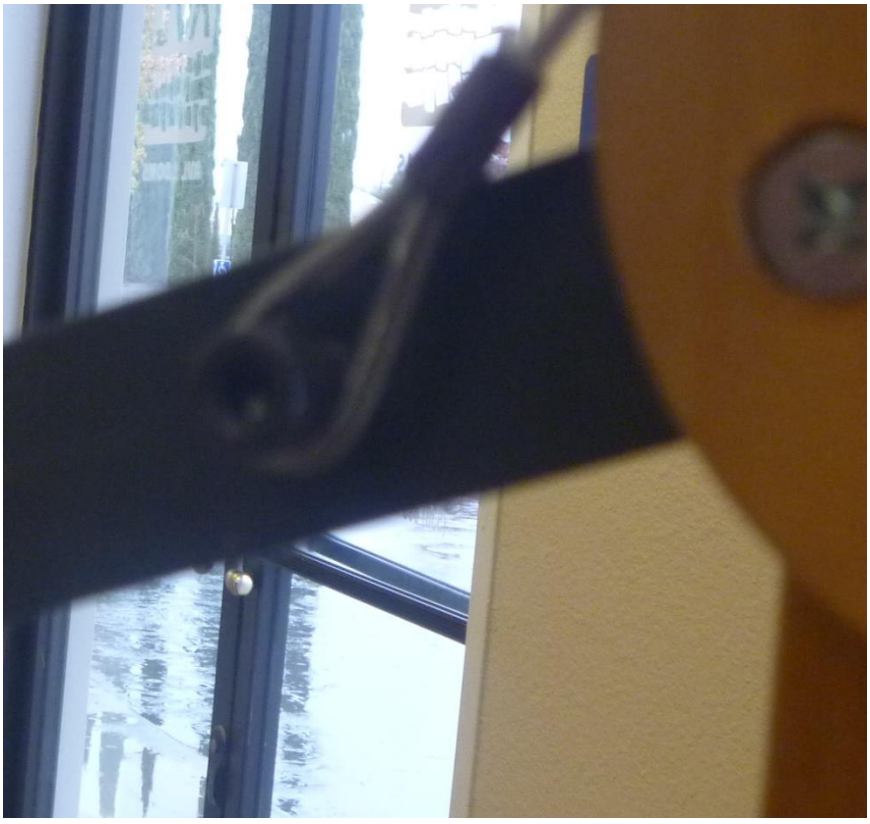


Figure 66 - Tension Arm Bolt

4) The cord comes from the bolt in the tension arm, over the top of the pulley, and down around the front side of the drum on the warp beam.

5) Wrap the cord around the warp beam drum three times with the first wrap toward the outside of the loom.

Tension Cord Adjustment

1) At the very end of the cord assembly is an eyebolt.

2) Remove one hex nut and washer from the eyebolt and insert it from the inside of the loom through the hole in the upper rear portion of the left bottom horizontal.

Figure 67 - Lower Beam Tension Cord

3) Replace the hex nut and washer on the outside of the loom and tighten the eyebolt, placing it so that it sets as far inward as possible. No threads should protrude beyond the nut on the outside of the loom).

Upper Position Tension Arm

You can have a one yard sectional beam, a ½ yard sectional beam, or a plain beam in the upper position. If you have a one yard sectional beam, the tension arm cable will be marked #38S and will be a coated cable. If you have a ½ yard sectional beam or a plain beam, you will have a cord marked #38P. Otherwise the setup is the same.

Note:

If you have a three beam system, install the upper tension arm so that it is on the outside of the loom rather than the inside. The hole for the tension cord eyebolt will be marked as it is further toward the front of the loom.

1) Find the tension arm and place it so that the face of the pulley lies against the inside of the left rear vertical.

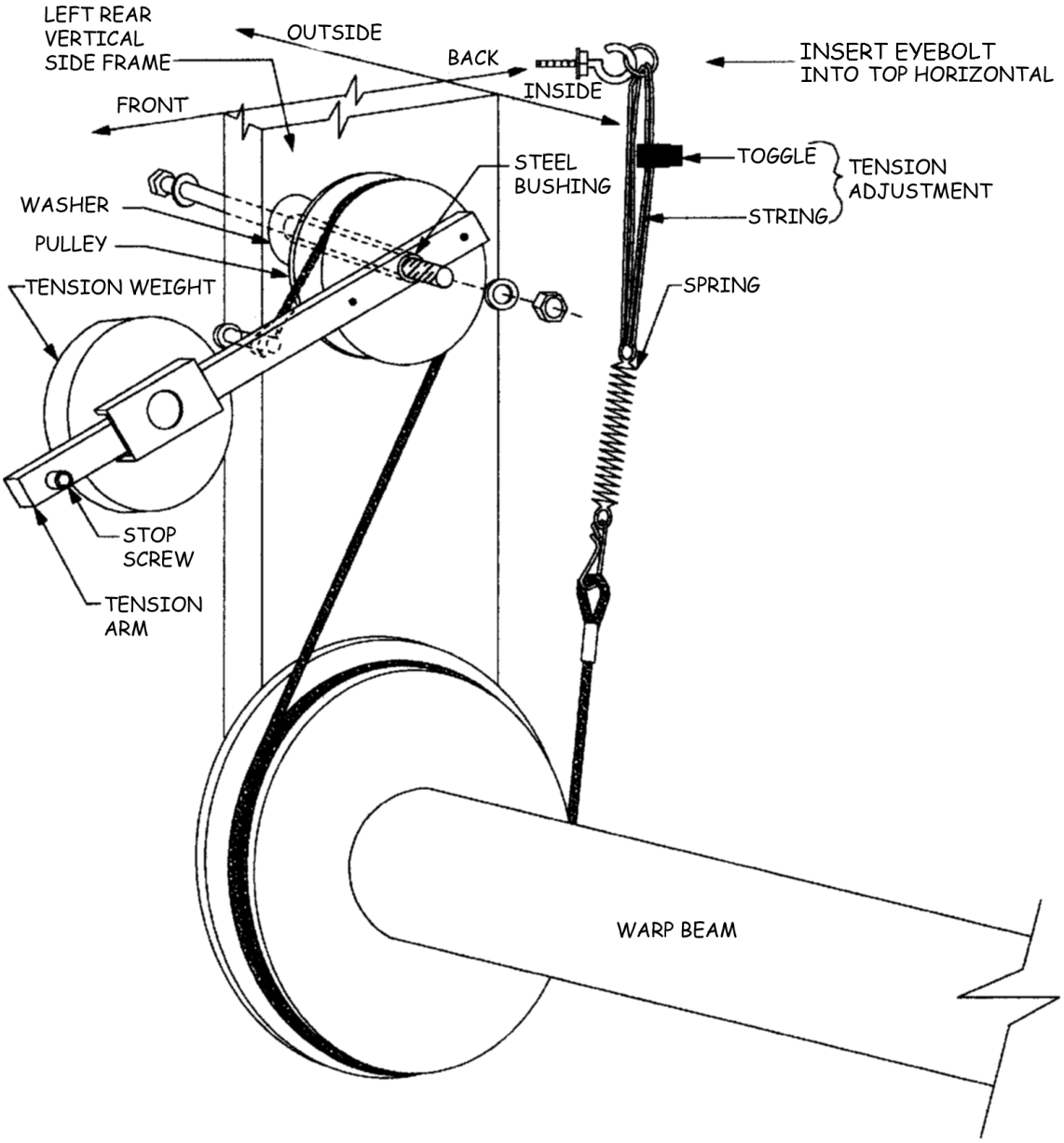


Figure 68 - Upper Position Tension

2) Remove the long bolt (with its nut and washers) from the pulley end of the tension arm.

3) Put one of the washers back on the bolt and push the bolt through the upper hole in the left rear vertical from the outside.

4) Put another washer on and slip the tension arm (with its metal bushing) onto the bolt.

5) Add another washer, then the hex nut, and tighten it down.

6) After tightening, check to make sure the arm swings freely.

Attach the Tie-up (Cord or Cable)

1) Find the tension arm cable (#38S) for the one yard sectional beam or the tension arm cord (#38P) for the ½ yard sectional or plain beam.

2) Attach the cable or cord to the tension arm by removing the shoulder bolt (the bolt near the wooden pulley) using a 5/32" Allen wrench and place this bolt through the looped end of the cable or cord and replace the bolt into the tension arm.

3) The cable comes from the bolt in the tension arm, over the top of the tension arm pulley, and down around the front of the sectional beam brake drum.

Figure 69 - Tension Cable around Brake Drum

4) Wrap the cable around the sectional beam drum three times (as shown) with the first wrap toward the outside of the loom.

Tension Cord Adjustment

1) At the end of the cable or cord assembly is an eyebolt.

2) Remove one hex nut and washer from the eyebolt and insert it (from the inside of the loom) through the hole at the very back of the upper left horizontal frame piece.

Figure 70 - Upper Tension Tie-up

3) Replace and tighten the hex nut and washer on the eyebolt.

Tension Arm Weight Instructions

The tension arm weight provides the weight for the tension arm assembly, allowing you to easily adjust the tension on the warp beams. Once the arm is installed on either position, adding the weight is the same.

1) Find the tension arm weight. It is a heavy black disk with a wooden bracket on one side of it.

2) To attach the weight to the arm, you will need to remove the black knobs and wooden bracket from the weight.

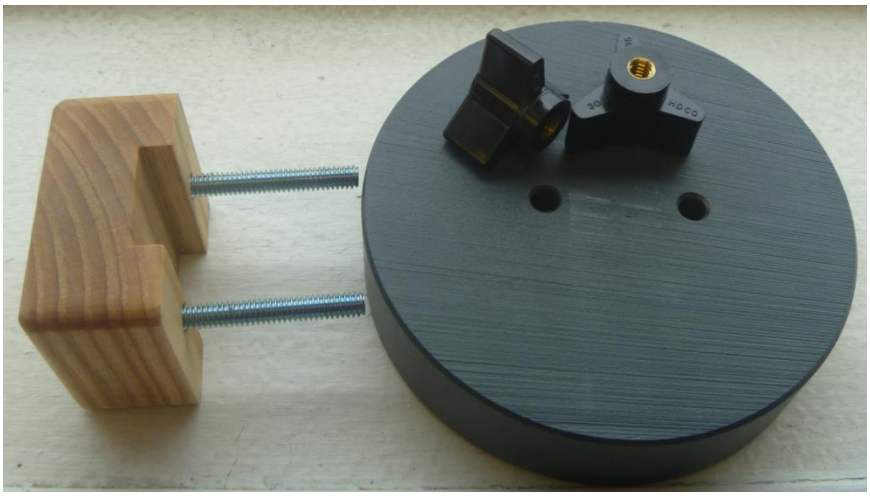


Figure 71 - Weight with wooden bracket removed

3) Position the weight so that the knobs will be accessible to you.

4) Slide the wooden bracket and bolts back through the weight (the arm should be in between the weight and bracket).

Figure 72 - Tension Arm with Weight

5) Re-attach the two black knobs and tighten down.

The weight will stay anywhere on the tension arm that you place it as long as you tighten the knobs on the weight. The screw at the end of the arm serves as a stop to keep the weight from accidentally slipping off. Proper adjustment of the tension arm is covered in the Weaving manual.

INSTALLING THE CLOTH BEAM

The cloth beam can be taken in and out of the loom simply and easily by removing the upper section of either cloth beam support. The cloth beam (or sticky beam) can have three different types of coating: sandpaper, softgrip, or smoothgrip. If you find you prefer a different coating than you originally received, you can contact AVL to order a different beam covering.

1) Remove the left upper cloth beam support from the loom.

2) Find the cloth beam, which has a ratchet on one end, your cloth beam handle, and plastic spacer ring (#25).

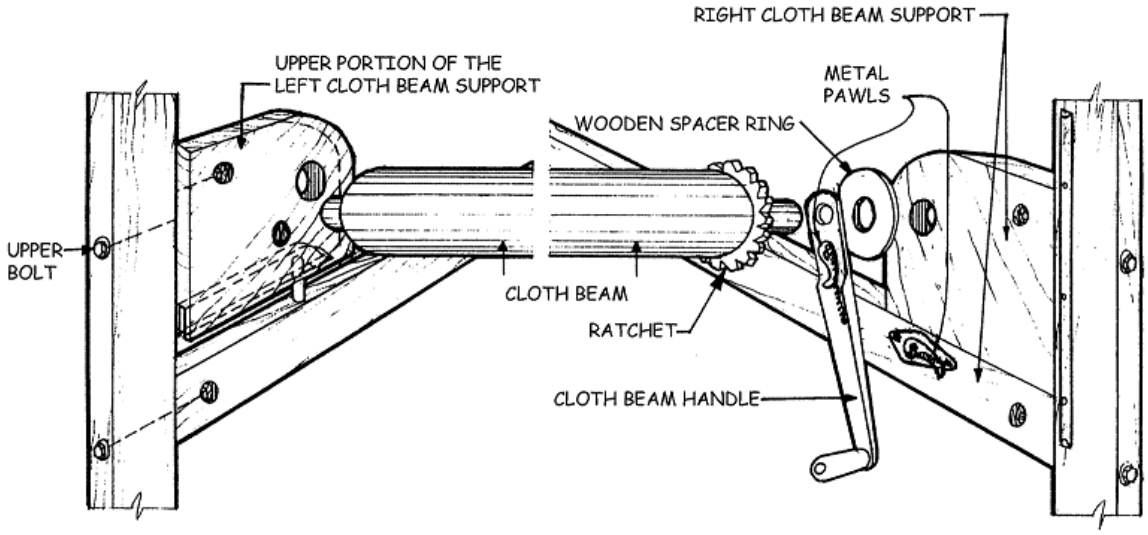


Figure 73 - Cloth Beam Assembly

3) Insert the ratchet end of the cloth beam into the hole in the cloth beam handle (with the wooden knob of the handle facing the inside of the loom), then into the spacer ring.

4) Insert the other end of the cloth beam into the large hole in the left upper cloth beam support.

NOTE:

Before installing the cloth beam on the loom, make certain that the metal pawl is in the "off" position or pulled back around so that it is out of the way of the cloth beam ratchet.

5) Slip the end of the cloth beam with the ratchet, handle, and spacer ring into the hole in the right cloth beam support.

Figure 74 - Right Side Cloth Beam Support

6) Now bring down the left end of the beam and fit the pin (belonging to the lower portion of the cloth beam support) into the slot (belonging to the upper portion).

7) Install the bolt and tighten the square nut on the left cloth beam support.

CLOTH STORAGE SYSTEM

Pressure Roller Assembly

The Pressure Roller adds increased capacity to the Cloth Storage System because it extends the contact of the woven cloth with the Sticky Beam beyond the point where it would otherwise leave the beam and move on to the Cloth Storage System. Another advantage is that you can cut off your work at any time without losing warp tension.

The Pressure Roller Assembly consists of:

- 2 Support Brackets with Spacers
- 1 Pressure Roller
- 1 Hardware Pack

4 5/16" x 3-1/2" Carriage Bolts
4 Washers
4 Hex/Jamb Nuts

Mounting the Pressure Roller Mount Brackets

1) Find the two diagonally spaced holes in the Lower Cloth Beam Support, below and slightly behind the Upper Cloth Beam Support.

2) Insert the carriage bolts, from the outside, through the Support and Bracket.

3) You will need to use a hammer to seat the carriage bolts in place. Tap on the head of the carriage bolt until the square part of the bolt is pressed into the wood.

4) Mount the oblong Spacer (without the claw) on the two bolts.

5) Mount the Support Bracket onto the bolts, so that the claw-like end is up and opens away from the Cloth Beam.

Figure 75 - Pressure Roller Bracket

6) Place one washer and one hex/jamb nut on the end of each bolt, in that order and tighten securely in place.

7) Repeat for the Bracket on the opposite side.

Installation of the Pressure Roller

1) Find the Pressure Roller.

2) Position it along the back of the Cloth Beam, aligning the pins at each end with the openings in the Mount Bracket "claws".

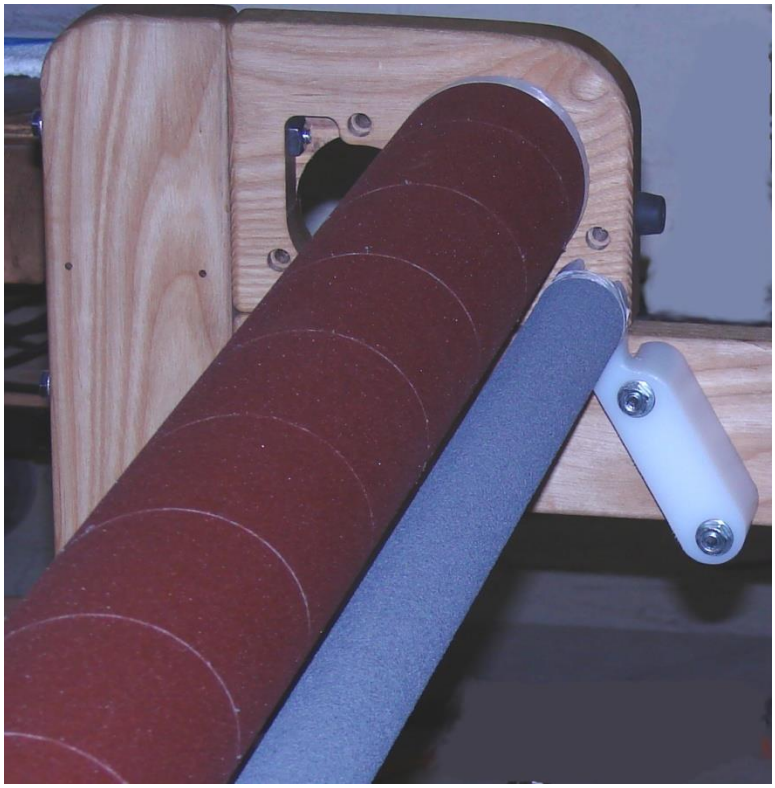


Figure 76 - Pressure Roller and Cloth Beam on Loom

3) Drop the Pressure Roller into place.

Rear Cloth Storage System Rollers

Upper and Lower Rollers

Now the roller tubes (#26) for the rear cloth storage system can be installed in the middle of the loom. At this time you will install the two cloth rollers marked #26. There is an additional roller (#28) which will be installed later.

1) Slip one end of the roller into the slot.

Note:
The brackets for the lower cloth storage roller have pins which will need to

be removed to position the roller and replaced to hold the roller in position. The upper roller is held in place by gravity and the warp.

2) Place the roller in the bracket on the other side.

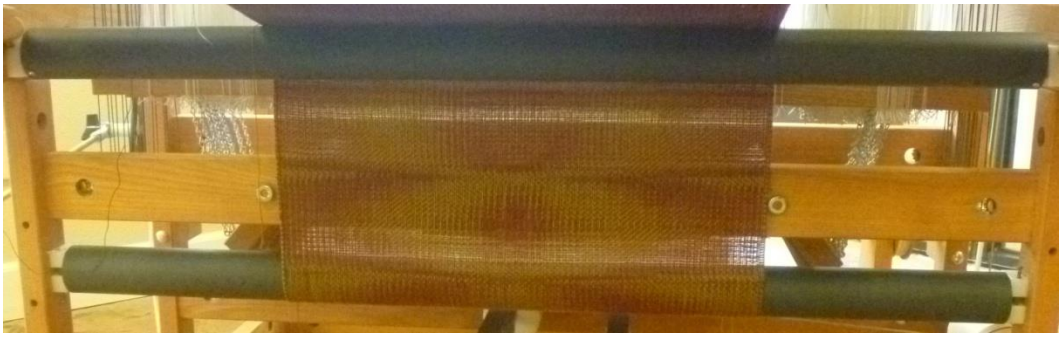


Figure 77 - Cloth Storage System Rollers

Cloth Take-Up Drum Assembly

1) Find the Cloth Take-Up Drum Assembly (#30). There is a metal ratchet and shaft attached to it. Using your Allen wrench, loosen the set screw inside the ratchet and remove the ratchet and one washer.

2) From the outside of the loom, insert the shaft that's coming out from the center of the drum, into the hole in the right front vertical side frame member.

3) Slide the washer, then the ratchet, back onto the shaft. The ratchet should be facing so that the large flat face is toward the loom.

Figure 78 - Cloth Take-up Drum

4) Now tighten the set screw and flip the wooden ratchet dog around to intersect with the ratchet teeth.

5) Find the Cloth Storage Drum Assembly (#29). There is a cloth storage drum with roller tube end and shaft attached to it. It will be mounted to the bottom of the right rear vertical on the outside of the loom.

6) Loosen the set screw inside the tube end and remove it with one washer from the shaft.

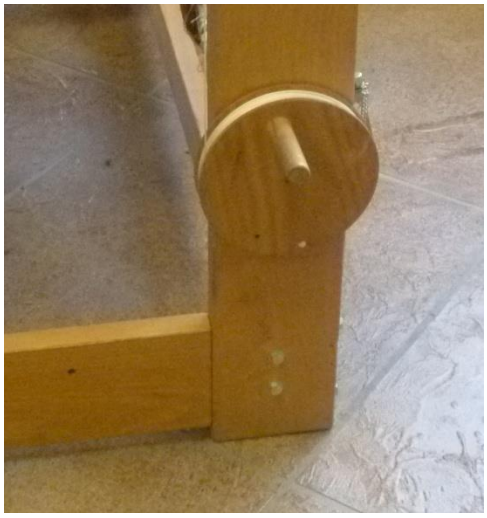


Figure 79 - Cloth Storage Drum

7) Insert the shaft through the rear vertical from the outside.

8) Replace the washer and the tube end. Tighten the set screw.

9) Route the cord from the cloth storage drum around the pulleys as shown in the photo.

   a. From the storage drum, route the cord up the rear vertical.

   b. When the end of the cord is between the two pulleys that are side-by-side on the upper horizontal, insert the cord through the metal counter weight pulley and continue routing over the last pulley on the upper horizontal.

Note:

While you are setting up the loom, leave enough cord so that the cloth storage weight is on the floor. You can also lock the weight in place by putting the retention pin through the cloth storage drum and the rear vertical.

   c. Route the cord all the way down to the pulley on the lower horizontal.

   d. Continue on past the next pulley on the lower horizontal, then up to the concave surface of the cloth take-up drum/handle assembly.

Figure 80 – Routing the Cloth Take-up Cord

10) Thread the cord end from the inside, through the hole at the base of the concave surface of the drum and tie a double-knot on the outside.

Figure 81 - Knot on Cloth Take-up Drum

11) There is a retention pin affixed to the rear vertical. Insert it through the hole in the cloth storage drum and the corresponding hole in the rear vertical of your side frame.

12) Attach the counterweight (a black cylindrical weight) to the loop on the counterweight pulley if it is not already on the pulley.

Storage Roller

When weaving long lengths of fabric, the material is taken around the front cloth beam and through the loom to the rear cloth storage roller which can accommodate a roll up to 20" in diameter. The cloth storage system is designed to automatically wind the cloth on to the storage roller as the warp is advanced. A looser tension is maintained on the storage roller than on the weaving. This eliminates any unnecessary strain or matting of the fabric.

The special abrasive surface of the cloth beam (either sandpaper, SoftGrip™ or SmoothGrip™) holds the proper weaving tension while allowing a lighter tension to be maintained for cloth storage. This also makes it possible to weave long lengths of fabric that have an uneven surface which would ordinarily cause poor tension because of the uneven build-up on the front beam.

1) You will need the long apron for this purpose. Stick the Velcro® (loop side) edge of the apron to the Velcro (hook side) on the storage roller.

2) Then wind the apron once around itself so that it holds itself in place.

3) Place a spacer, then the roller on the loom with one end on the cloth storage drum assembly.

4) Place the other end in the slot on the other side.

5) Route the apron over the rear cloth storage roller, under the lower roller, over the upper roller, and under the cloth beam, then up and over the top of the cloth beam.

Figure 82 - Cloth Storage Apron

6) Insert the apron rods and allow enough room between the reed and the cloth beam.

7) If necessary, gently wind the apron up until the metal apron bar is in the proper position for tying on to insert the retainer pin.

8) After tying on your warp, be sure to put on the weight before removing the retainer pin from the drum and rear vertical before weaving.

9) As the weaving proceeds and the cloth is wound forward, the weight on the pulley will gradually descend.

10) Before the weight hits bottom, wind it back up to the top using the take-up drum. This will happen about every 1-1/2 to 2 yards.

TEMPLE SYSTEM (TO PREVENT DRAW-IN)

The Temple System is used to maintain a good selvage and prevent draw-in. You'll usually deploy it after you've woven-off some fabric, once you have selvage enough to work with. It consists of two rollers (barrels), working in tandem, which grab the selvage and prevent it from drawing in.

Rotary Temple System Assembly

It is best to install the rod and side brackets before tying on your warp. The rotary temple cloth guides can be put on after you have woven enough yardage to get your apron rods around the front beam. Once you have gotten this far on your project, it's time for your rotary temples.

This device looks complicated, but is, in fact, relatively easy to work with.

1) On your upper cloth beam supports, there are three pre- installed hex nuts.

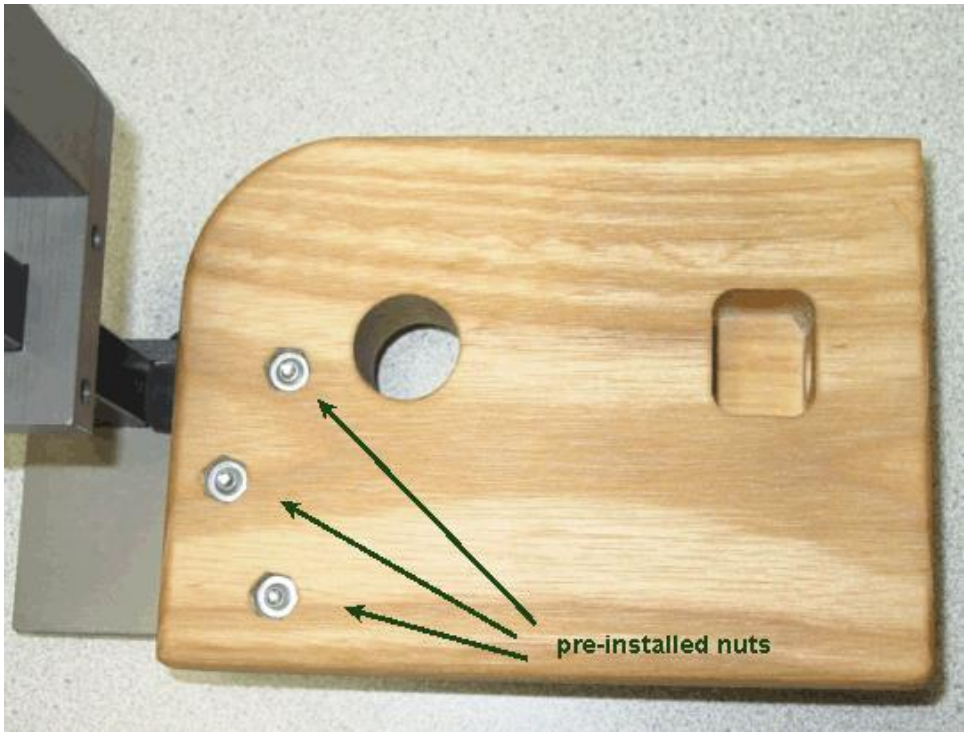


Figure 83 - Pre-installed Hex Nuts

2) Mount the temple rod brackets to the outside of the loom with the three bolts provided in your hardware packet.

3) Put on both brackets, then loosen the button head cap screws on the top of the bracket in order to insert the rod.

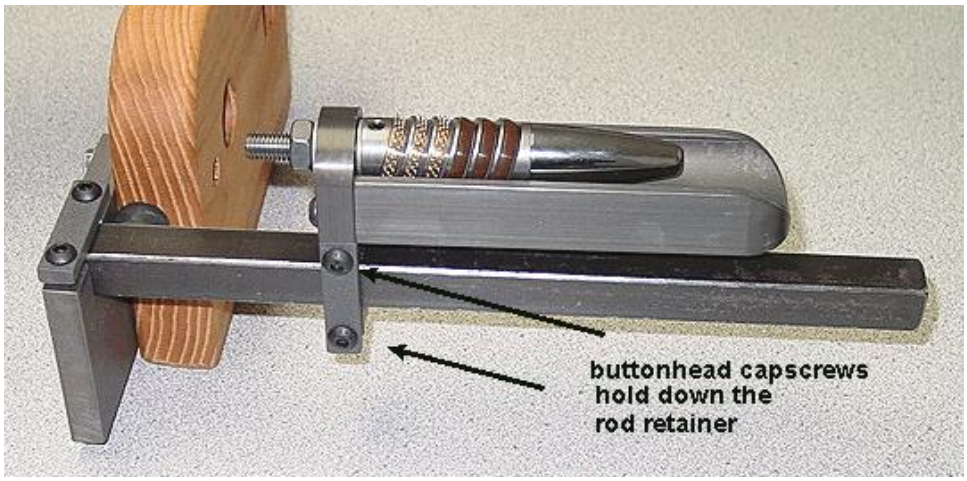


Figure 84 - Button Head Cap Screws

4) Once the rod is in place, tighten the cap screws securely.

5) Remove the rotary temple assembly from the packet.

6) Take the rotary temples off by undoing the nut at the end of the rod and set them aside.

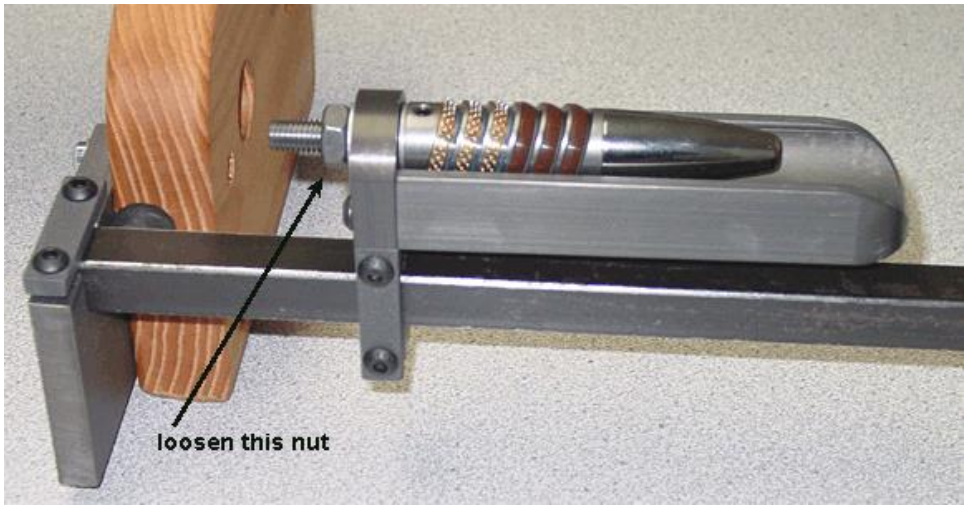


Figure 85 - Loosen Nut

7) Remove both button head cap screws on the side holding the rod retainer. This is the small strip of metal that will hold your rotary assembly in place.

8) Mount the temple cloth guide onto the rod. The rod retainer needs to face the back of the loom.

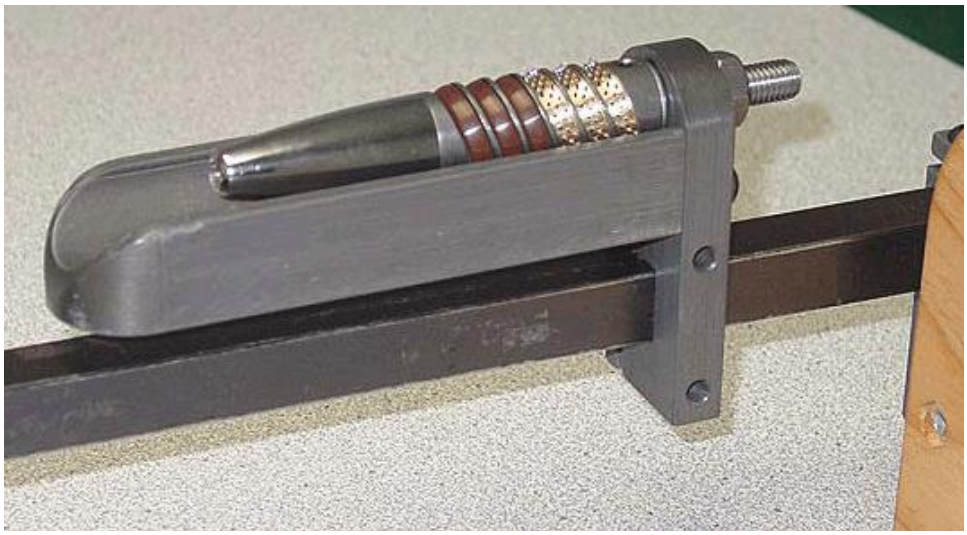


Figure 86 - Rotary Temple from Front

BOTTOM SWING BEATER

Note:

If your beater is of the "overhead" type, proceed to the next section on page 98, which covers overhead beaters.

NOTE:

When using carriage bolts, be sure that the square portion is seated in the wood. You may need to tap the bolts with a mallet in order to properly seat the bolts.

INSTALL BEATER BUMPERS

The beater bumpers are mounted to the cloth beam support. There is one for each side. The left is stamped "L" and the right one is stamped "R". Place one beater bumper following these instructions, then repeat for the other side.

1) Find the beater bumpers (#40).

2) Find 5/16" x 2-3/4" carriage bolts, washers, and hex nuts.

3) Place the beater bumper on the cloth beam support so that the bumper faces the front of the loom and the stamp faces the cloth beam support.

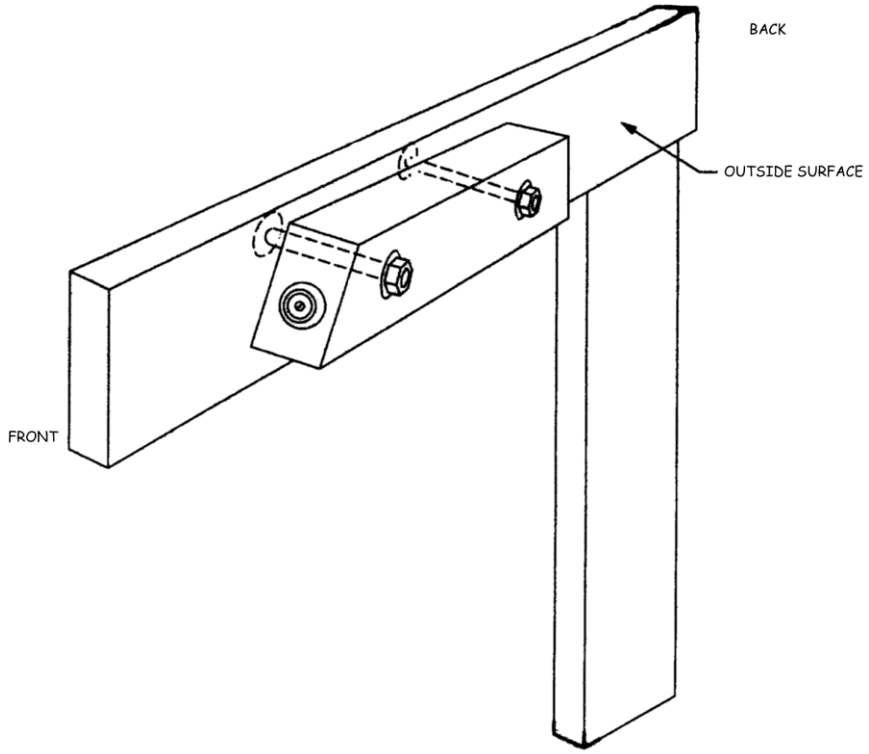


Figure 87 - Beater Bumper Block

4) Attach the carriage bolts so that the washers and nuts are to the outside of the loom leaving the smooth head of the carriage bolt on the inside of the loom frame.

BOTTOM SWING BEATER SUPPORTS

The beater supports can now be bolted to the loom.

1) Find your beater supports (#34). There's one for each side of the loom. Also take out two 1-1/2" long screws from the beater hardware package

2) Place the support so that the round spacers and metal pins are facing toward the loom and the spacer with the threaded rod and metal bracket is toward the front of the loom.

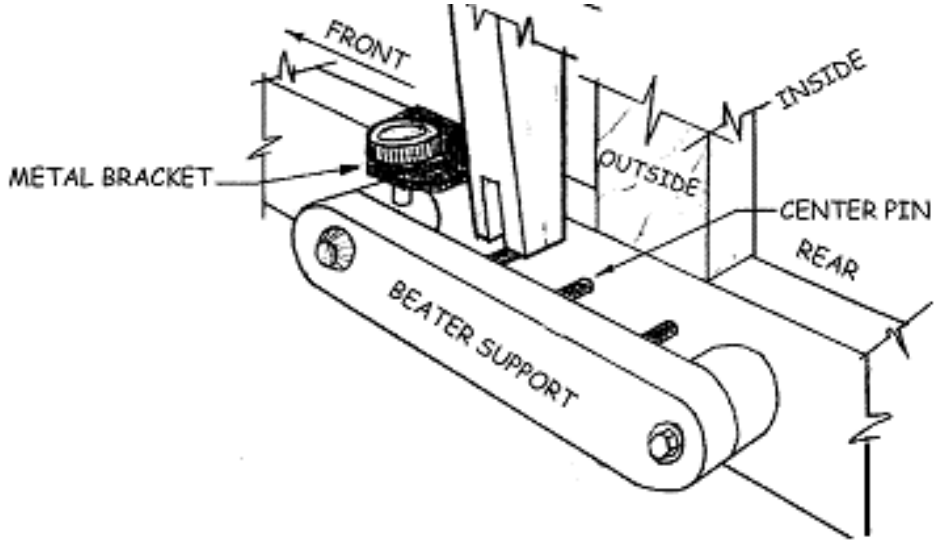


Figure 88 - Beater Support

3) Remove the hex nut and washer from the rear spacer and insert the bolt through the right lower horizontal.

4) Slip the washer and nut back on and tighten the nut just to the point where is almost cinches the two parts together. You want to leave it a little bit loose so that the beater supports can pivot during adjustment. Since the nut is a locknut, it will not loosen.

5) Position the metal bracket that's attached to the front of the beater support over the two holes and insert the screws. Tighten them down.

Figure 89 - Bottom Swing Beater Support

6) Repeat these steps for the other side.

BOTTOM SWING BEATER

The Bottom Swing Beater can be ordered with a one-box flyshuttle. You can also add a flyshuttle system to your loom at a later date if desired.

If you received a one-box flyshuttle with your loom, put together the beater according to the following steps, then setup the flyshuttle system according to the next section. Note that the flyshuttle boxes will already be attached to the shuttle race.

1) Find the following loom pieces:
   a. Shuttle race
   b. Beater top
   c. Two legs (marked left and right)
   d. reed
   e. reed support
   f. hardware
2) Find the following hardware:

a. Four 5/16" x3-1/2" carriage bolts with washers and hex nuts

b. Six, seven, or nine (depending upon the width of your loom) 5/16" x 3-1/4"carriage bolts with washers and wing nuts attached

c. 1/4" x 2-1/4" carriage bolts

3) Place the shuttle race so that the lengthwise groove is to the top and is facing toward the rear of the loom. Rest it on the cloth beam supports between the cloth beam and the harnesses until you attach the legs.

4) Take one of the legs and position the small notch at the bottom end of the leg over the center pin in the beater support. The tapered side of the leg will face away from the loom. Place it so it is behind the shuttle race.

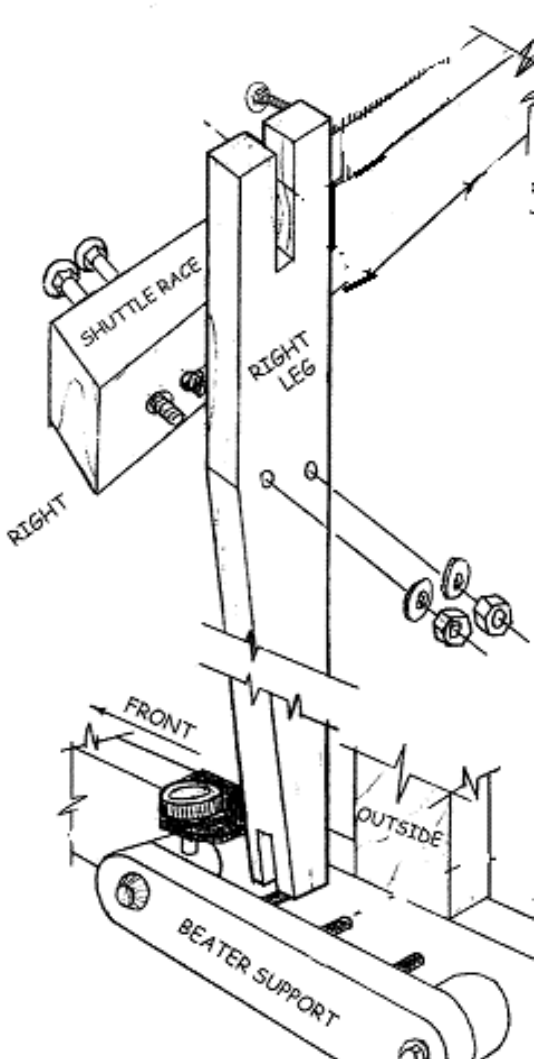


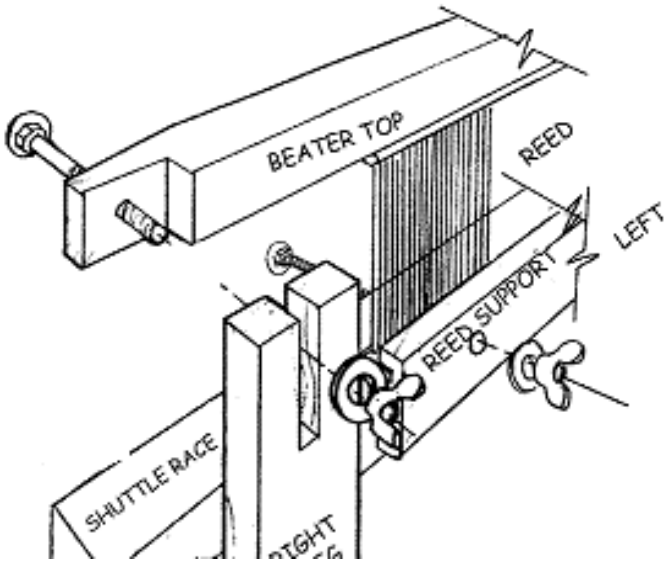
Figure 90 - Beater Leg

5) Insert two of the 5/16" x3-1/2"carriage bolts, from the front of the race, through the race, and into the two innermost holes in the beater leg. Use the carriage bolts with the hex nuts.

6) Attach the washers and nuts and tighten slightly. Leave the nuts slightly loose until you have completely assembled the beater.

7) Repeat this procedure for the other side of the loom making sure that the tapered side of the leg is facing away from the loom.

8) You will use the carriage bolts with the wing nuts to attach the shuttle race to the reed support. Remove the wing nuts and washers.



9) Push the carriage bolts through the race so that their heads sit flat on the front of the beater race (don't be afraid to use a hammer to tap these bolts in place).

10) Now carefully slide the reed support onto these bolts so that the lengthwise groove in it faces the groove in the race.

11) Leave enough room so that you can fit the reed between the race and the reed support. Once the reed is in and centered, the washers and wing nuts can be fitted onto the carriage bolts and tightened.

12) Place your beater top over the reed so that the groove is facing down and the cut outs at either end are facing toward the rear of the loom.

13) Insert 1/4" x 2-1/4" carriage bolts into the holes at each end from the front. Place them through the slot at the top of the beater leg. Make sure the reed is secure and tighten the wing nuts.

14) Now securely tighten the carriage bolts that attach the legs to the race.

15) Center the beater assembly in the loom and tighten the bolts that attach the beater legs to the shuttle race. Centering the beater will make sure that the legs will not rub on the loom frame.

If your loom has a single-box flyshuttle, your completed beater will look like this:

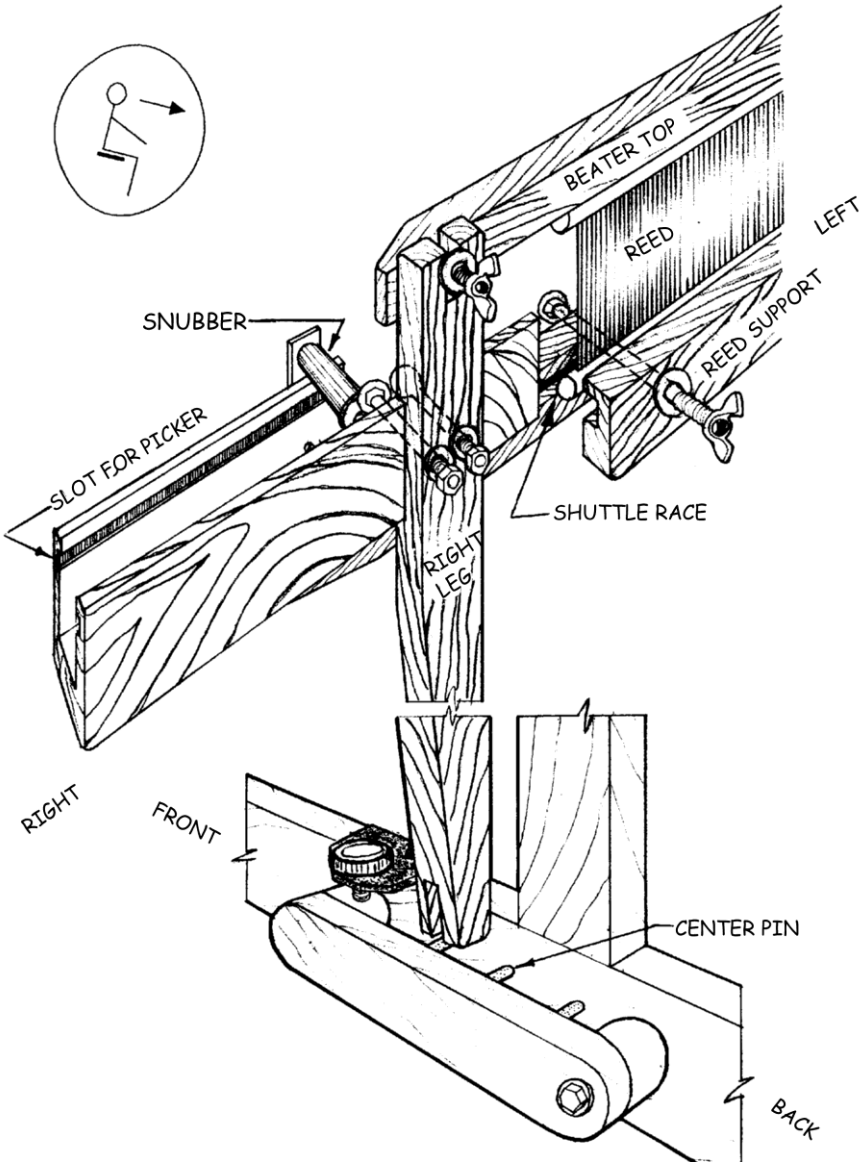


Figure 91 - Single-box Flyshuttle Beater

Add the reed to the beater

1) Find the reed support. It is the long, thin, wooden part with several holes and a slot similar to the one in the shuttle race.

2) Attach the reed support to the back of the shuttle race with the slot to the top and facing the shuttle race using the 5/16" x 3-1/4" carriage bolts inserted from the front with washers and wing nuts behind.

Figure 92 - Beater Reed Support

3) Before attaching the nuts, install the bottom edge of your reed in the void created by the slots in the reed support and shuttle race.

4) Center the reed between the two uprights and tighten the wing nuts.

5) There is a slot in the underneath side of the beater top which slides over the top edge of the reed.

6) Push the beater top down on the reed and tighten the wing nuts which hold it in place.

SINGLE-BOX FLYSHUTTLE TIE-UP (OPTIONAL)

1) Find the following parts:

   a. string tie-up and handle

   b. flystring supports (#43)

2) Find the following hardware:

   a. Screweye

   b. two 5/16" x 2-1/4" carriage bolts

3) Place a flystring support on the inside face of a top horizontal side frame piece. Insert a 5/16" x 2-1/4" carriage bolt from the outside of the top horizontal directly above the beater assembly. Attach a washer and hex nut and tighten.

4) Repeat this on the other side. These supports should hang down from the top horizontal with the screweye end on the bottom. Tighten the supports securely.

5) Take the screweye from the hardware package and screw it into the center hole on the underside of the front harness pulley support so that no screw threads are showing.

6) The handle has a screweye at the top and one at each side with cords attached. There is a clip attached to the cord at the top of the handle. Attach this clip to the screweye on the front harness pulley support.

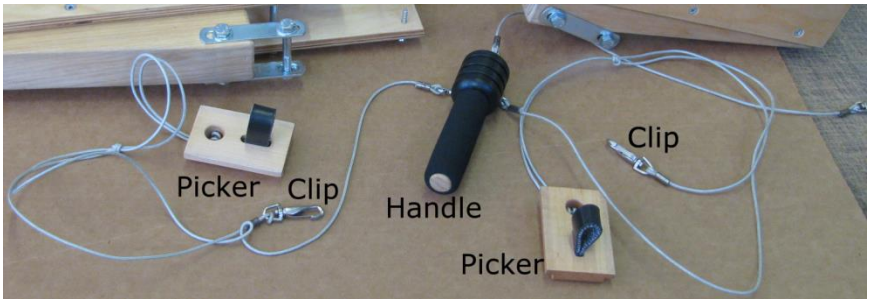


Figure 93 - String tie-up and handle

7) There are two pickers hanging below the handle. These are wooden pieces which have a leather loop and cord attached. Take one of these and place it so that the leather loop is toward the bottom.

8) Slide the picker into the slots on the top of one flyshuttle box. The leather loop should be down and to the outside.

9) Attach the clip at the end of the cord coming from the picker to the screweye on the flystring supports that you just installed. Make sure the cord goes over the top of the snubber. The snubber is a small, round plastic piece above the shuttle box.

10) Repeat for the other side making sure that the picker loop is down and toward the outside.

OVERHEAD BEATER (OPTIONAL)

OVERHEAD BEATER (OPTIONAL EQUIPMENT)

NOTE:

When using carriage bolts, be sure that the square portion is seated in the wood. You may need to tap the bolts with a mallet in order to properly seat the bolts.

The Overhead Beater can come with or without a flyshuttle system. The overhead beater flyshuttle system can include a single-box, double-box, or four-box. The installation of the overhead beater is the same whether or not it includes a flyshuttle system. If your loom includes a flyshuttle system, there will be additional steps to complete to add the boxes and tie-up.

This system is shipped partially disassembled to facilitate packing. Follow the instructions below to complete the assembly.

Overhead Beater Axle Mounting Blocks

1) Find the package from box #3 marked "axle blocks". These blocks have a large hole in them.

2) Using the 5/16" x 5" carriage bolts in the package, mount these blocks to the back edge of each rear side support.

Figure 94 - Axle Block on loom

Mount the Beater Retainer

The beater retainer will be attached to the inside face of the left cloth beam support.

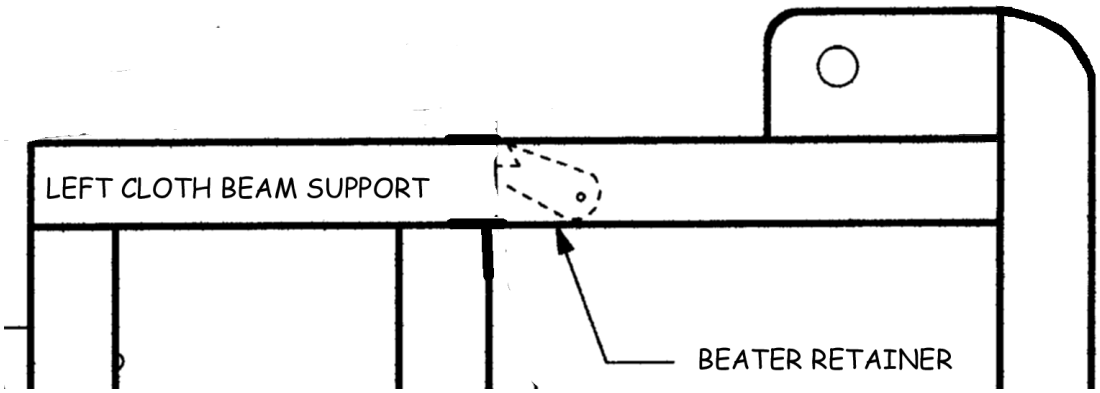


Figure 95 - Beater Retainer

1) Insert the #12 x 1-1/2"flat head wood screw through the beater retainer and into the pre- drilled hole on the inside of the left cloth beam support.

Figure 96 - Beater Retainer

2) Leave the screw just loose enough so that the retainer is allowed to pivot around the screw.

Attach the Beater Pivot Base

Note:
You may need a small ladder or stepstool to install the Beater Pivot Base.

1) Place the beater pivot bases on the upper edge of each top horizontal on the assembled side frames of your loom so the notched ends face upward.

2) Insert the #8 x 3/4" pan head wood screws from the top of the beater pivot bases and screw them into the pre-drilled holes.

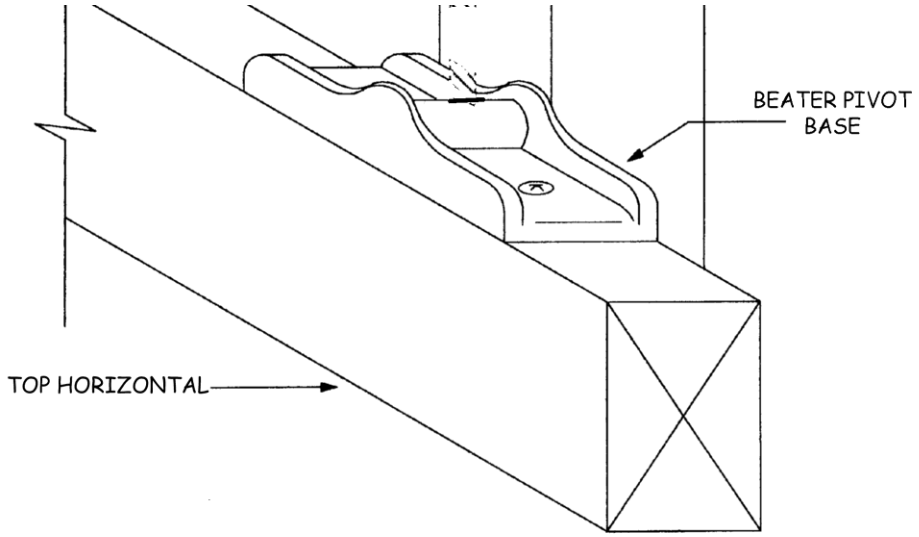


Figure 97 - Beater Pivot Base

Assemble the Beater

1) Find the two uprights and lay them on the floor spaced apart a distance that is approximately equal to the width of your loom. The ends with the metal brackets will be the top of this assembly. The metal rods should be pointed inward or toward each other.

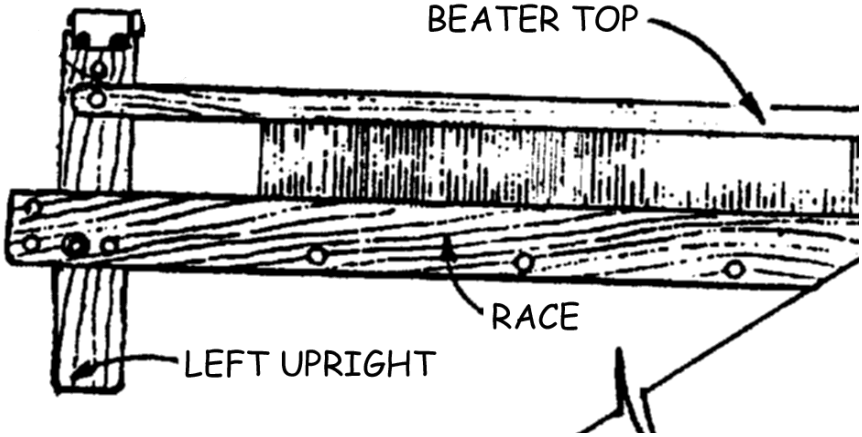


Figure 98 - Overhead Beater

2) Lay the shuttle race on top of the two uprights so that it covers the two holes in the face of each upright. The groove in the shuttle race will be to the top and back when the beater is on the loom. For now it should face the floor.

Note:

If you have the single-box flyshuttle, the two rear plywood box sides should fit into the notches on the front face of each upright. If you have a two-box or four-box flyshuttle, there is a metal pulley attached to the back face of each upright. These pulleys should now be touching the floor.

3) Attach the shuttle race to the uprights with a 5/16" x 3-1/2" carriage bolts on each side using the innermost hole on each end.

4) Place the washers and hex nuts on these carriage bolts, but do not tighten them yet.

5) The beater top will be attached to the same side of the uprights as the shuttle race with the long groove facing downward. Temporarily attach the beater top to the uprights with two 1/4"x 2-1/4" carriage bolts with washers and wing nuts behind the uprights.

Figure 99 - Overhead Beater Uprights

6) Insert the carriage bolts through the holes near each end of the beater top and then through the slots that are just below the metal bracket of each upright.

7) Place the beater in the loom. For now, it will just sit in the loom resting on top of the cloth beam supports just in front of the

harnesses. It may tend to fall forward or backward until it is attached later in this process.

Mount the Hanging Arms

The hanging arms are marked right and left. Make sure you install the correct arm for each side.

1) Using a 1/8"Allen wrench, remove the 3/8" stop collars from the metal shafts at the top of the upright on the beater.

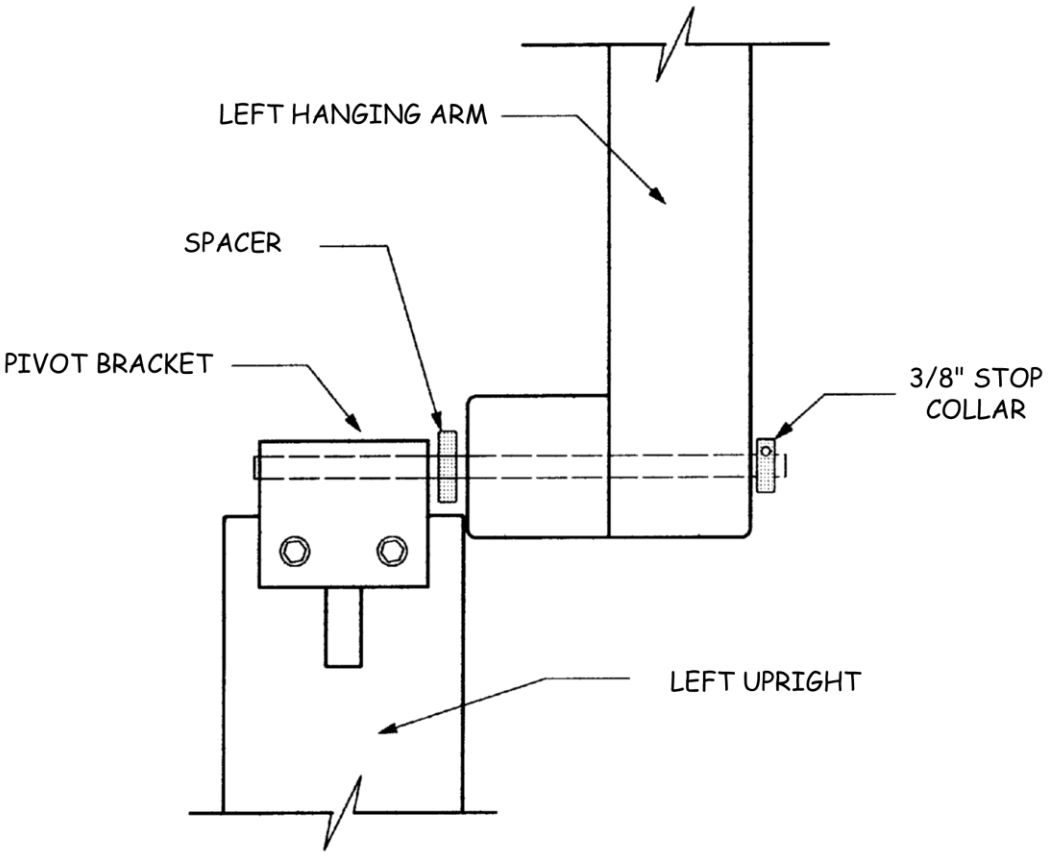


Figure 100 - Mount hanging arms

2) Put a spacer, than a hanging arm onto the shaft

3) Replace and tighten the stop collar. Make sure to leave enough clearance for this pivot point to swing freely.

4) Install the other arm in the same way.

5) On the other end of the hanging arm there is a block of wood that the beater adjustment screw goes through.

6) Set the foot at the bottom of the beater adjustment screw into the notch in the center of the beater pivot base.

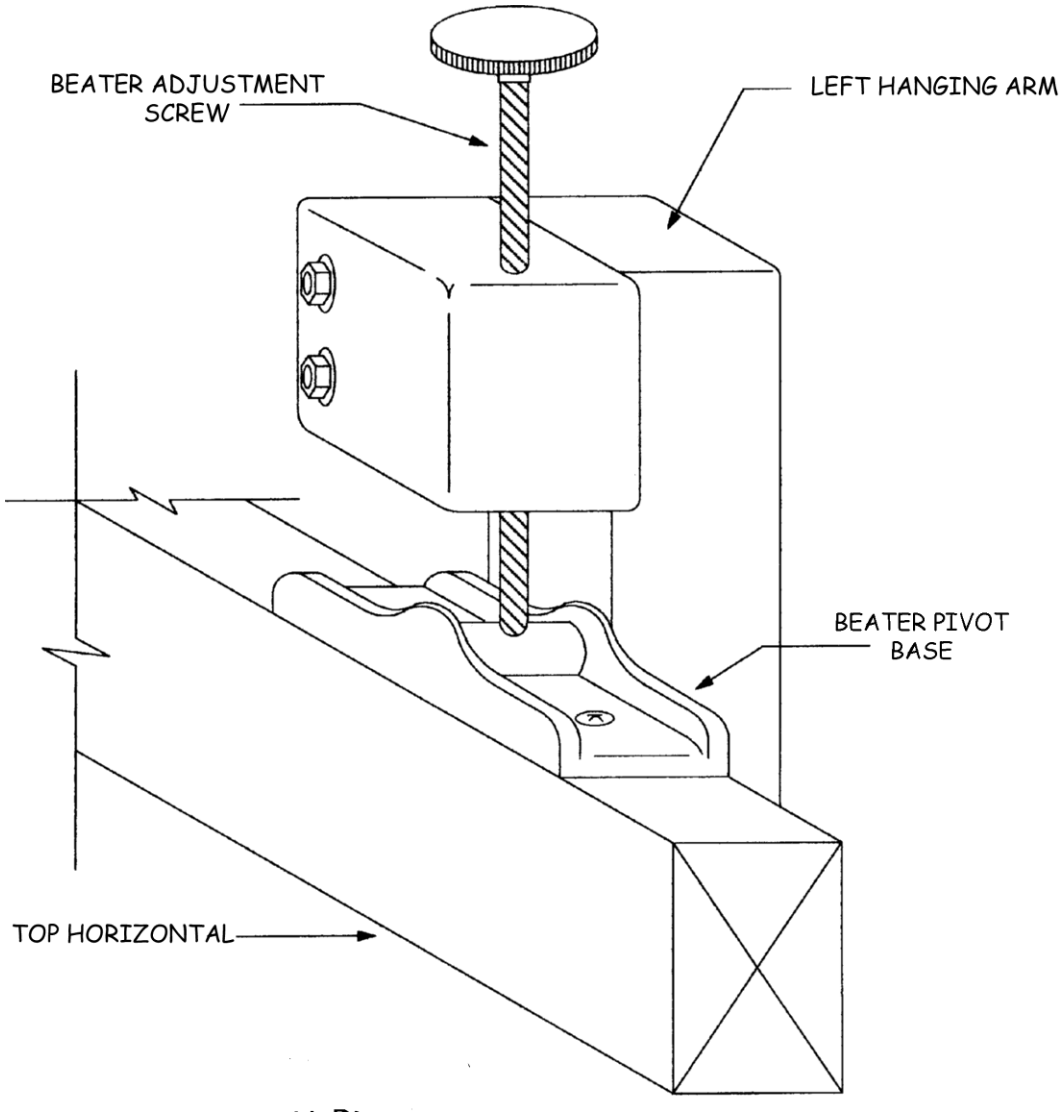


Figure 101 - Place Hanging Arms on Loom

7) Once you have both of the beater adjustment screws in place, the assembly of the hanging arms is complete.

Note:

You can use the beater adjustment screws to adjust the height of the beater. Make sure to adjust them equally so that the beater is level.

Insert the axle and the tilting arms

The axle is a long, black pipe that goes through the axle mounting blocks at the bottom of the loom. It will hold the tilting arms for the overhead beater, which are marked right and left. The tilting arms have a beater return spring assembly consisting of a spring, cord, and eyebolt. This is attached later in the process.

1) Center the axle in the loom and place an axle spacer (a round, plastic piece) on each end of the axle.

2) The hole at the larger end of the tilting arm will be pushed onto the axle.

Figure 102 - Beater Axle

3) Attach the tilting arm with 5/16" x 3" hex bolts using the washers and hex nuts provided.

Note:

These are called "racking adjustment bolts". Do not tighten these bolts yet.

4) Repeat these steps for the other side.

Add the push arms

1) Mount the push arm to the back face of the upright.

2) Insert two 5/16" x 5" hex bolts, washers, and square nuts through the shuttle race and uprights into the nut access hole of the push arm.

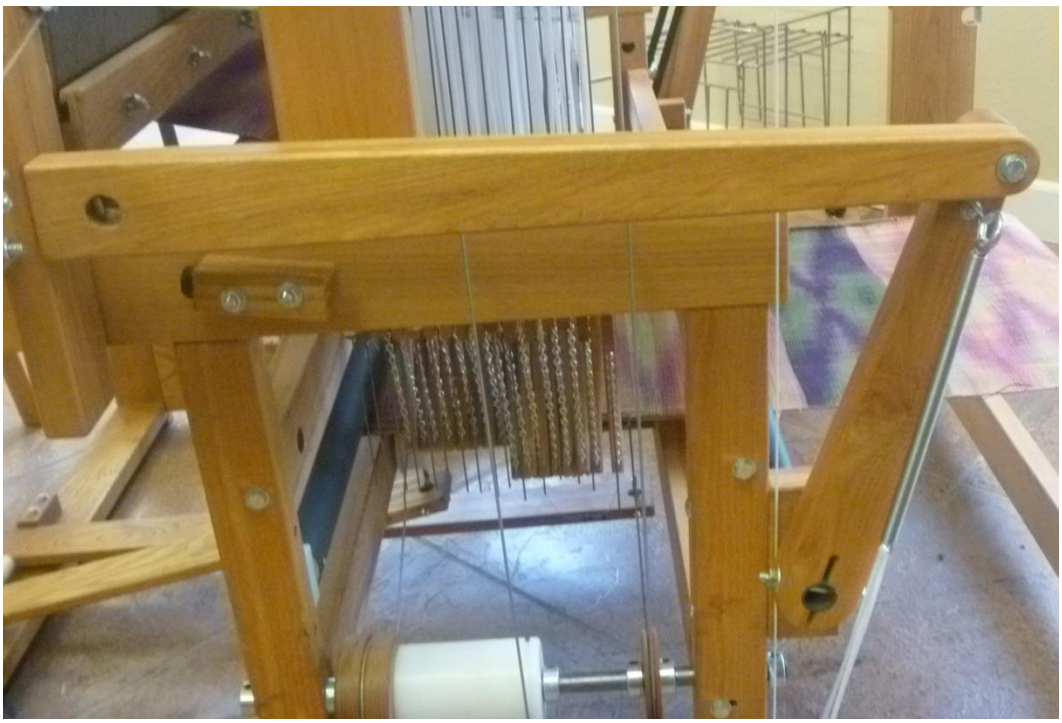


Figure 103 - Push Arms and Tilt Arms

3) Tighten these bolts making sure that the outer face of each push arm is flush with the outer edge of the uprights.

4) Repeat for the other side of the loom.

Tighten bolts

1) At this point you can tighten the bolts on the beater, except for the racking adjustment bolts. Make sure the beater is relatively square and centered in the loom.

Rack the Beater

You will rack the beater to make sure it is square to the loom so that it beats your fabric properly. You can tell if the beater is square to the loom by seeing if the beater hits one bumper before it hits the other. If the beater should come "out of square" in the future, you will need to repeat this adjustment, loosening the bolts before you start and tightening them securely after.

Note:
You will need two people to complete this operation.

1) The racking adjustment bolts should be tightened while the entire beater is being held firmly against the beater bumpers.

Note:
When racking the beater, the beater must touch both the left and the right bumpers at the same time.

2) Push on the upper end of each tilting arm and while the beater is in contact with both of the bumpers, securely tighten the "racking adjustment bolts".

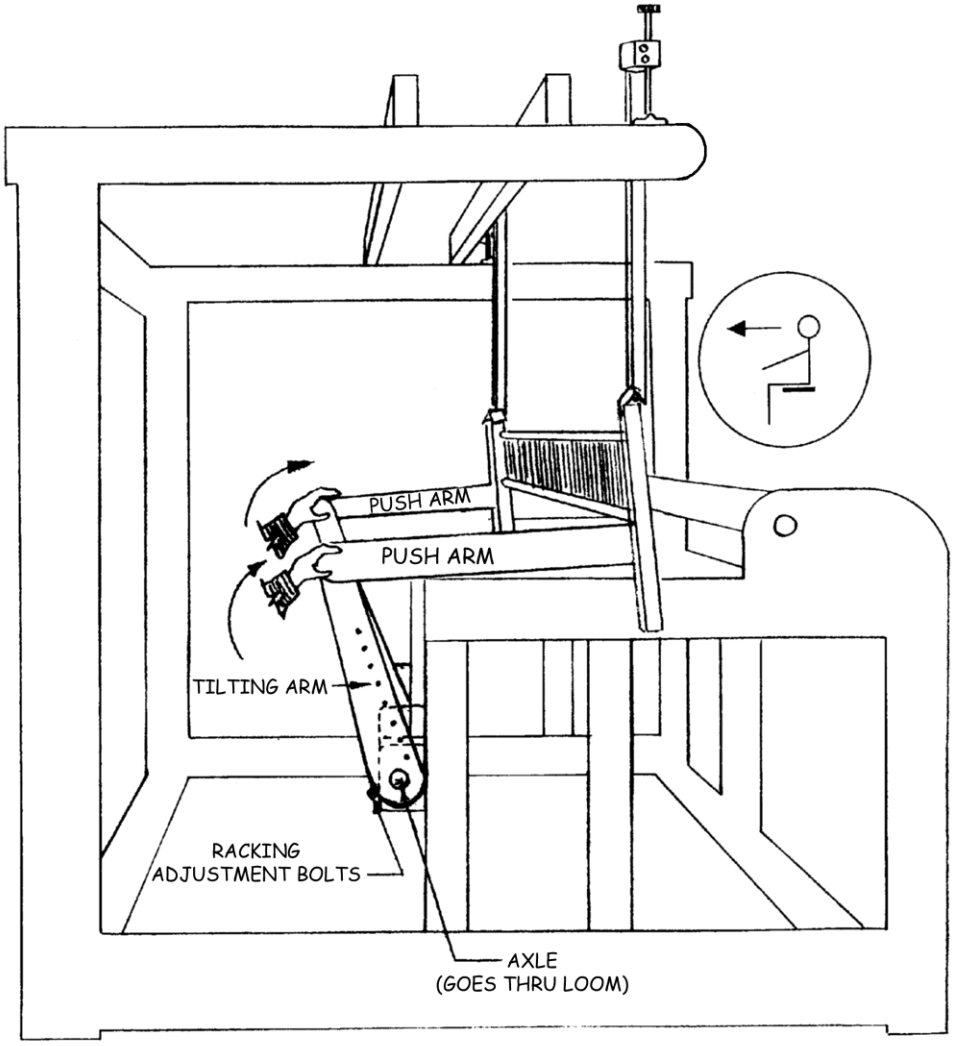


Figure 104 - Racking the Overhead Beater

Attach the Beater Return spring assembly

This assembly is used to assist the weaver in returning the beater to the back position. It is not intended to hold the beater in this position as that is the purpose of the beater retainer.

The beater return spring assembly is adjustable. It is tightened by pulling on the ends of the white cord while squeezing the black, minicord lock on the assembly. Whenever an adjustment is made on one side of the beater, a similar adjustment should be made on the other side as well. The amount of tension you set these springs at is strictly a matter of preference.

Generally speaking, the stronger the tension, the harder you will have to pull against these springs to beat. At the same time, however, it will be easier to hold the beater away from you while opening a shed and throwing the shuttle.

You may wish to experiment with these adjustments in order to come up with a setting that works best for you and any particular warp.

Note:

If you will be installing a two-box or four-box flyshuttle, you may want to add the boxes before attaching the Beater return spring assembly.

1) Remove one hex nut and washer from the eyebolt.

2) Place the eyebolt through the hole provided on each bottom horizontal of the side frame assembly with the eye of the bolt on the outside of the side frame.

Figure 105 - Beater Return Spring Assembly

3) Replace the washer and hex nut and tighten securely.

Add the reed to the beater

1) Find the reed support. It is the long, thin, wooden part with several holes and a slot similar to the one in the shuttle race.

2) Attach the reed support to the back of the shuttle race with the slot to the top and facing the shuttle race using the 5/16" x 3-1/4"

carriage bolts inserted from the front with washers and wing nuts behind.

Figure 106 - Beater Reed Support

3) Before attaching the nuts, install the bottom edge of your reed in the void created by the slots in the reed support and shuttle race.

4) Center the reed between the two uprights and tighten the wing nuts.

5) There is a slot in the underneath side of the beater top which slides over the top edge of the reed.

6) Push the beater top down on the reed and tighten the wing nuts which hold it in place.

OVERHEAD SINGLE-BOX FLYSHUTTLE BEATER TIE-UP (OPTIONAL EQUIPMENT)

NOTE:

The single-box flyshuttle system now incorporates removable shuttle boxes. This allows the weaver to completely remove the boxes and flystring tie-up from the loom any time that handshuttle weaving becomes necessary. It also makes it much easier to convert any other AVL beater system to a single-box flyshuttle beater. The boxes are already installed.

1) Find the following parts:

a. string tie-up and handle

b. flystring supports (#43)

2) Find the following hardware:

a. Screweye

b. two 5/16" x 2-1/4" carriage bolts

3) Place a flystring support on the inside face of a top horizontal side frame piece. Insert a 5/16" x 2-1/4" carriage bolt from the outside of the top horizontal directly above the beater assembly. Attach a washer and hex nut and tighten.

4) Repeat this on the other side. These supports should hang down from the top horizontal with the screweye end on the bottom. Tighten the supports securely.

5) Take the screweye from the hardware package and screw it into the center hole on the underside of the front harness pulley support so that no screw threads are showing.

6) The handle has a screweye at the top and one at each side with cords attached. There is a clip attached to the cord at the top of the handle. Attach this clip to the screweye on the front harness pulley support.

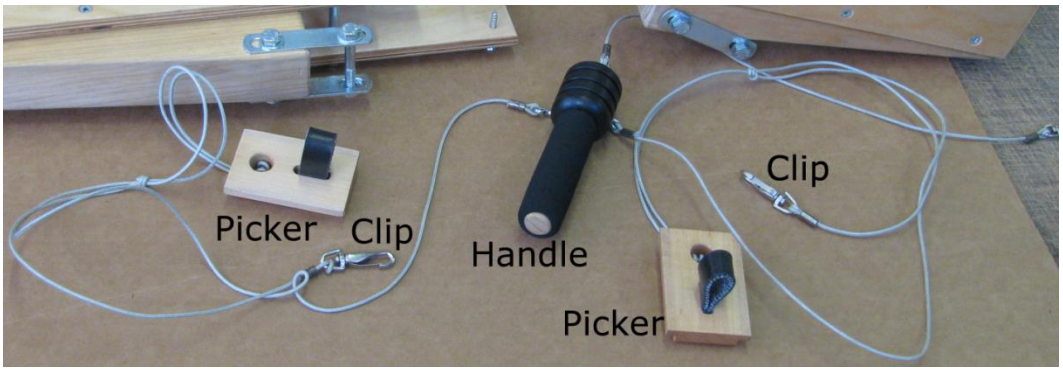


Figure 107 - String tie-up and handle

7) There are two pickers hanging below the handle. These are wooden pieces which have a leather loop and cord attached. Take one of these and place it so that the leather loop is toward the bottom.

8) Slide the picker into the slots on the top of the flyshuttle box. The leather loop should be down and to the outside.

9) Attach the clip at the end of the cord coming from the picker to the screweye on the flystring supports that you just installed. Make sure the cord goes over the top of the snubber. The snubber is a small, round plastic piece above the shuttle box.

10) Repeat for the other side making sure that the picker loop is down and toward the outside.

OVERHEAD MULTI-BOX FLYSHUTTLE BEATER (OPTIONAL EQUIPMENT)

The following section applies to both the two-box flyshuttle and the four-box flyshuttle. You will find instructions for completing each assembly later in this chapter.

Add the Pulley Assembly

1) Position the pulley support and wedge at the pre-drilled holes in the harness pulley support. Place them together so that the pulleys and the thick edge of the wedge face the rear of the loom.

2) Use the two #10 x 1" pan head screws to attach the upper pulley assembly to the bottom front of your harness pulley support.

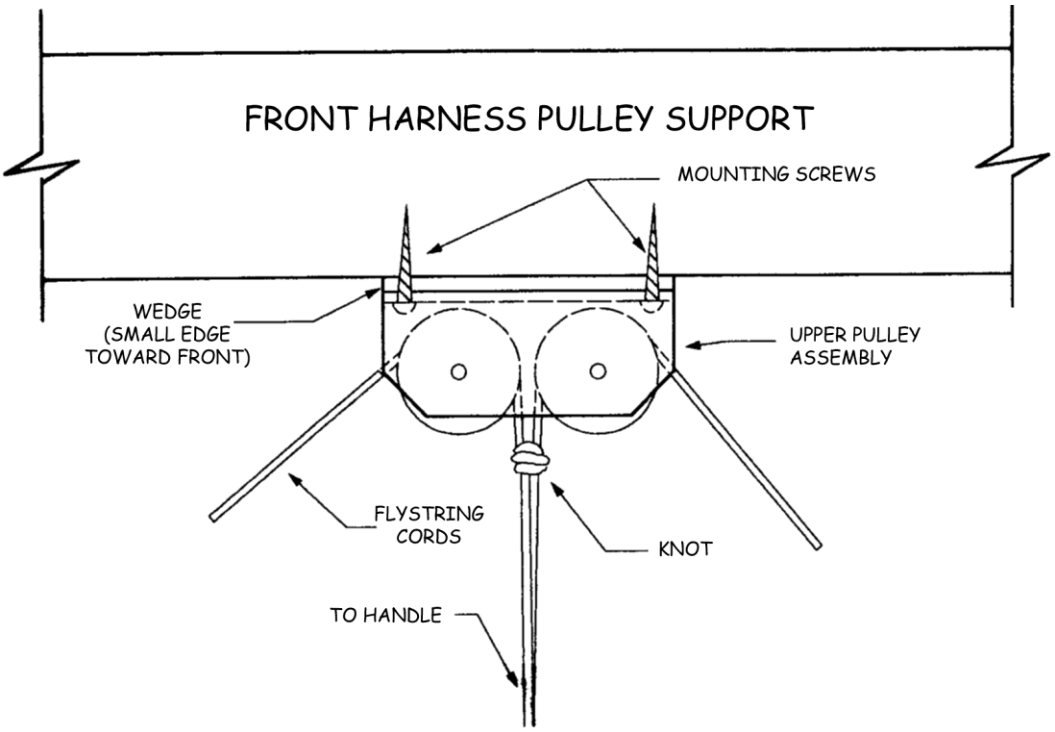


Figure 108 - Vertical Pull Upper Pulley Assembly

Add the drop box assembly to the beater

The Drop box assembly is marked left or right.

1) Find the left drop box assembly. There are two holes through the back plate in the lower right corner and a nut access hole in the upper right corner.

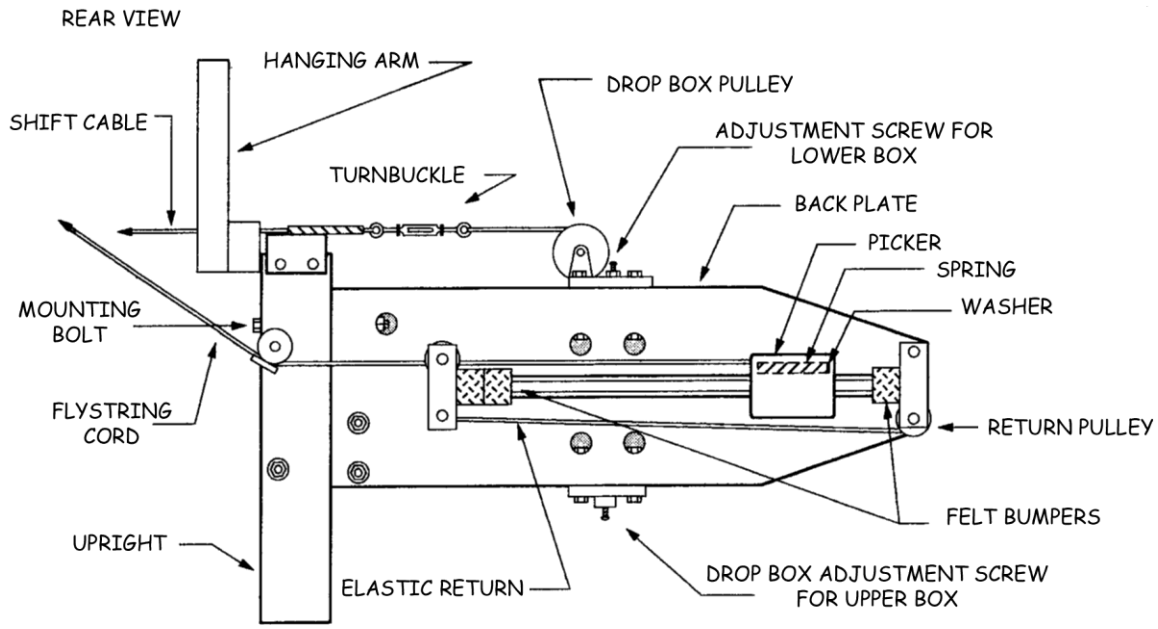


Figure 109 - Drop Box Assembly from Rear

2) On the left upright, there is a horizontal hole through the width of the upright just below the slot for the beater top. This hole is offset to the front of the shuttle race side of the upright.

3) Take a 5/16" x 5" hex bolt with a washer on it, insert it through the hole in the upright from the inside through the nut access hole in the upper right corner of the drop box assembly. Thread a square nut onto the bolt.

4) Do not tighten this yet. Your drop box assembly should now be attached to the upright with this one bolt with the moveable boxes in the front.

5) Attach the drop box assembly to the shuttle race with two 5/16" x3"carriage bolts inserted from the front with washers and hex nuts behind the back plate.

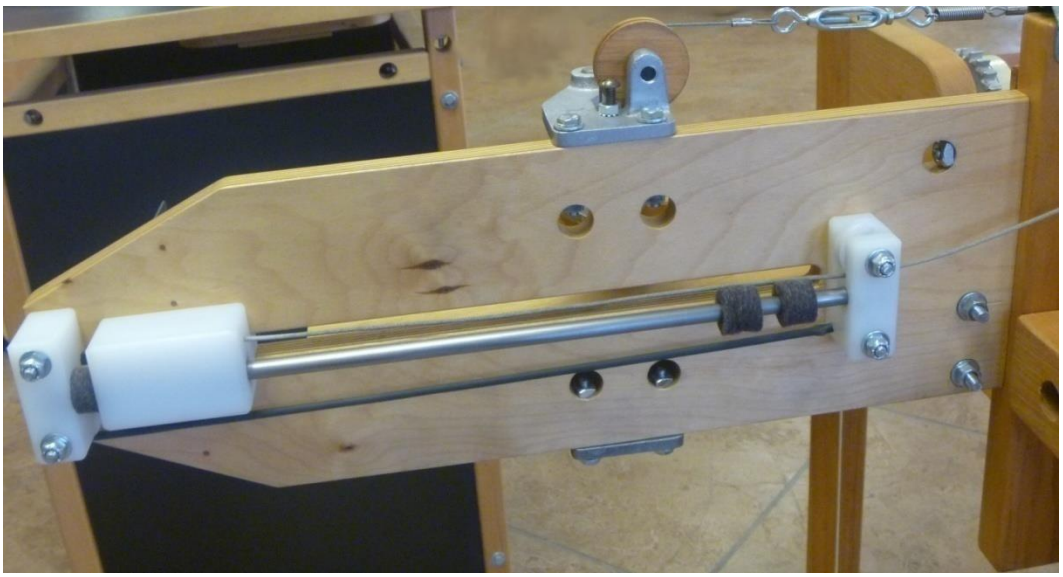


Figure 110 - Flyshuttle Box from back

6) Now tighten all bolts holding the drop box assembly to the beater.

IMPORTANT:

The face of the back plate must be precisely flush with the face of the upright. Check this alignment by laying a straight edge across the two surfaces.

7) Repeat this procedure for the right drop box assembly.

VERTICAL PULL FLYSTRING TIE-UP

The flystring tie-up cord should come with the handle already attached in the middle. You will route the flyshuttle cord from the middle of the loom to one side, then do the other side.

Attach the Flyshuttle handle

If the flyshuttle handle is not attached to the cord already, follow these instructions to attach it.

1) Locate the flyshuttle handle. It is a small, dark colored piece of wood with a hole and a brass pin through the center of it.

2) Form a tight loop at the center of the cord.

3) Feed the loop down from the top of the handle through the hole on either side of the brass pin that divides the hole.

4) Now feed the loop back through the hole on the other side of the brass pin. Form a larger loop (6” or so) and put the handle through this loop. Bring the string of the loop all the way back up to the top of the handle.

Figure 111 - Flyshuttle on cord

5) Pull straight down on the handle, tightening the cord around the brass pin. This procedure should automatically center the handle on the tie up.

6) You will tie an overhead knot in the cord between the two upper pulleys. Tie a simple overhand knot with the handle already in place.

Figure 112 - knot on flyshuttle cord

Route the flyshuttle cord

There is a hole in each picker that is larger on the outside than it is on the inside. This hole is about 3/8" in diameter on the outer side of the picker and about 1/8" in diameter on the inner side

1) From the middle of the loom, route the cord over one of the pulleys attached to the Harness Pulley Support. The knot above the handle should be about an inch below the pulley.

Note:

If the knot was placed correctly, the pickers should still return to the end of the picker rod at each end of the beater and the cord should stop before the knot stops the cord from moving any farther.

2) Take it under the pulley on the back face of the beater upright, under the pulley on the inner picker rod support.

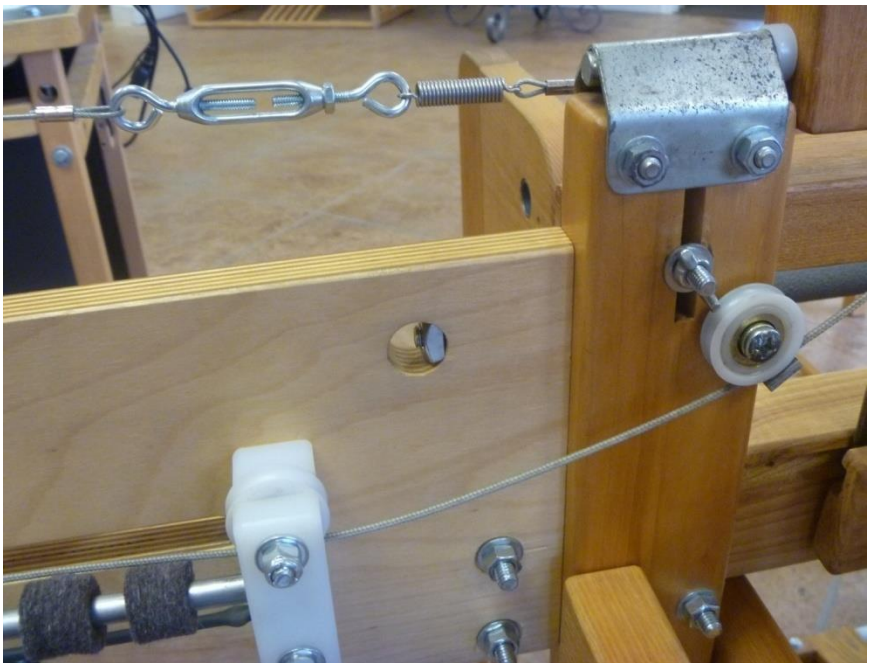


Figure 113 - Routing Flyshuttle Cord

3) Thread the cord through the hole in the picker, from the small side to the larger outside part.

4) After the cord has gone through the picker, add the small spring, then the washer from the hardware packet to the cord

Figure 114 - Spring and washer on Flyshuttle cord

5) Tie a knot in the cord.

Note:

The positioning of this knot will determine the operating height of the flystring handle, so make sure that you are satisfied with its position before tying the knot. If there is more than an inch or so of cord left beyond the knot, you may want to snip off the excess cord.

6) Repeat these steps for the other side of the loom.

TWO-BOX FLYSHUTTLE – DROPBOX MOVEMENT

Attach the shift handle

The shift handle allows you to switch between boxes.

1) On each side there is a cable attached to the drop box which has an eyebolt on the end. This cable is routed over the top of the drop box pulley and the eyebolt threads into the turnbuckle on the end of the cable coming from the shift handle.

Adjust the movement of the dropboxes

Note:

You can adjust the movement of the boxes both with the adjustment screw

and with the turnbuckle on the shift handle cables. Adjust each as needed until the boxes are in the correct position.

The boxes slide up and down on a metal rod which is fixed at both ends to cast metal pieces in order to change the box. There is a brass adjustment screw with a lock nut. These brass screws provide a stop for the boxes at their upper and lower extremes of movement.

1) Adjust the top screw so that when the boxes are all the way up, the lower box is in precise alignment with the shuttle race.

2) Adjust the bottom screw so that when the boxes are all the way down, the upper box is in precise alignment with the shuttle race.

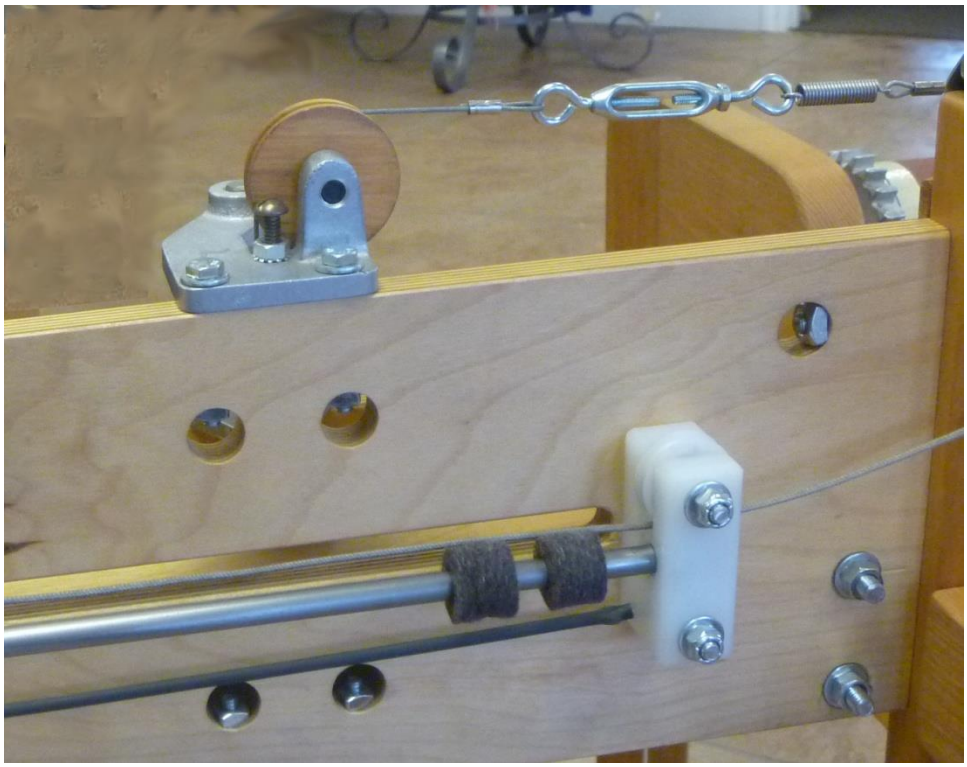


Figure 115 - Flyshuttle adjustment screw

Note:

This adjustment is critical. Please make it carefully. It is wise to lay a straight edge across the shuttle race and drop box when doing this to assist you in getting the two perfectly aligned.

3) When you have it properly adjusted, secure the lock nuts on the brass screws. Do these adjustments on both the left and right drop boxes. If your shuttle flight is erratic, re-check these adjustments.

4) To make sure that the adjustment screws stay in place, you might want to purchase a small tube of a thread locking agent (such as Loctite) and apply a drop or two to each of these screws where the screws go into the cast metal brackets.

Adjust the shift handle cables

1) With the shift handle shifted to its rightmost, adjust the left drop box turnbuckle so that the box is against its top stop and the spring at the turnbuckle is slightly extended.

Figure 116 - Flyshuttle Turnbuckle

2) Shift the handle to the left and adjust the right turnbuckle in the same manner.

ATTENTION!

When shifting, the leading end of the handle must be raised first. If the trailing end of the handle is lifted first, the handle will lock up and not shift. Also, you want to make sure that the turnbuckles are not adjusted so tightly as to not allow the boxes to drop to their full down position. Once properly adjusted, tighten the lock nut of each turnbuckle to keep them from moving.

FOUR-BOX FLYSHUTTLE DROPBOX MOVEMENT

Attach the drop boxes to the shift handle

There is a long, dark, wooden handle at the top and center of the beater top. This is the shift handle. By moving this handle laterally, you will be able to shift from one shuttle box to another, but first you will have to attach the handle to each set of drop boxes.

Give yourself slack in the cable

Note:

This will hold the box in the upper position and both of your hands will be free to adjust the cable.

1) To give yourself some slack in the cable, it may be helpful to raise the drop box on the side you are working on to its uppermost position.

2) To hold it in this position, you can insert one of your shuttles halfway into the box that is now aligned with the shuttle race.

Attach the cable

1) Unwrap the cable that is attached to the top of each drop box.

2) Run each cable over to the shift handle.

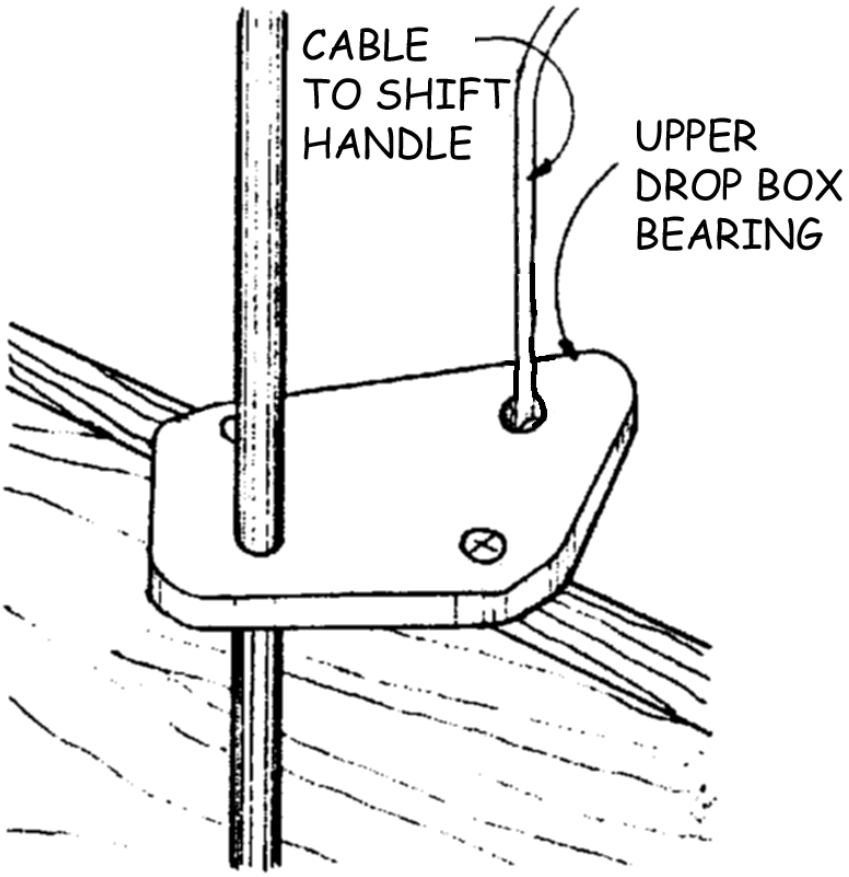


Figure 117 - 4-box Shift Handle Cable to Drop Box

3) At the end of each cable, there is a threaded eyebolt with a lock nut. Thread each eyebolt into the metal bracket on the ends of the shift handle.

4) Once the cable is attached to the drop box assembly, run the cable over the drop box pulley on the larger cast metal piece directly above the drop box assembly and under the small pulley near the end of the beater top.

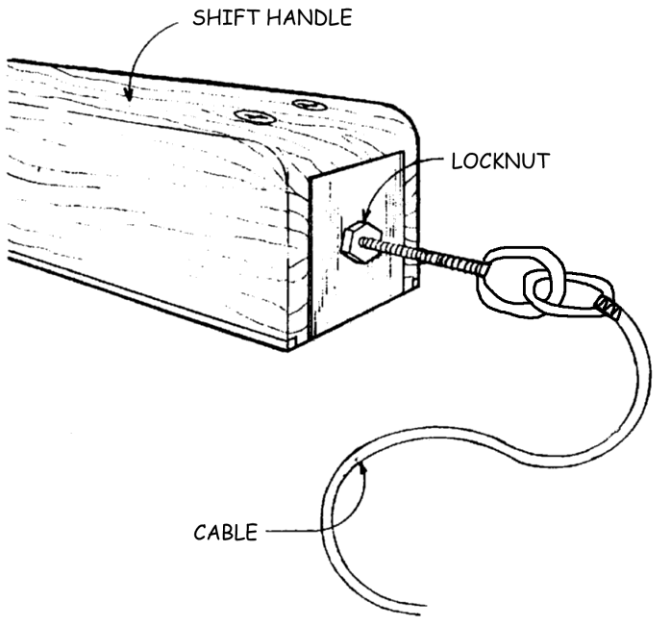


Figure 118 - 4-box Flyshuttle Beater Shift Handle

5) Repeat this procedure on the other side of the loom.

6) Once both cables are attached, you will need to adjust the cable lengths.

Note:

When you slide the shift handle back and forth, notice that there are four detents (or places where the shift handle can be stopped). Each of these four detents corresponds to the four shuttle boxes.

7) The best way to adjust these cables is to slide the shift handle to either the far left or far right detent position. This will put one drop box in the upper position and the other one in the lower position.

8) Loosen the lock nut and you can shorten or lengthen the cable by screwing this threaded end into or out of the plate at the end of the

shift handle. Adjust the cable so that the drop box shelf is at the same height as the top of the shuttle race.

9) It may help you to lay a straight edge across the shuttle race and drop box when doing this to assist you in getting the two perfectly aligned.

10) When you have it properly adjusted, secure the lock nuts.

11) Once you have adjusted both cables, it's a good idea to put the shift handle in each detent position and check the boxes on each side for alignment.

Note:

It is possible that there will be some slight variation in the spacing of the drop box shelves, so you may not get absolutely perfect alignment. If this is the case for you, go for an average adjustment.

FINISH SETTING UP YOUR LOOM

COMPU-DOBBY BOX

NOTE:

Each solenoid has a concave tip (a half circle) that must capture its corresponding dobby cable. Make sure the tips are oriented in the same direction before placing the Compu-Dobby on the loom.

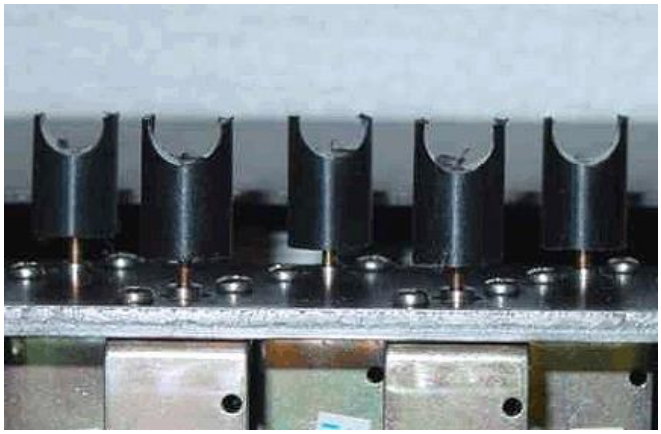


Figure 119 - Solenoid Concave Tips

1) Take the Compu-Dobby solenoid box and thumbscrews to the loom.

2) Slide the Compu-Dobby box over the dobby head, rest it on the support pins and hold it in place while you line the side holes of the box up to the holes in the dobby backboard.

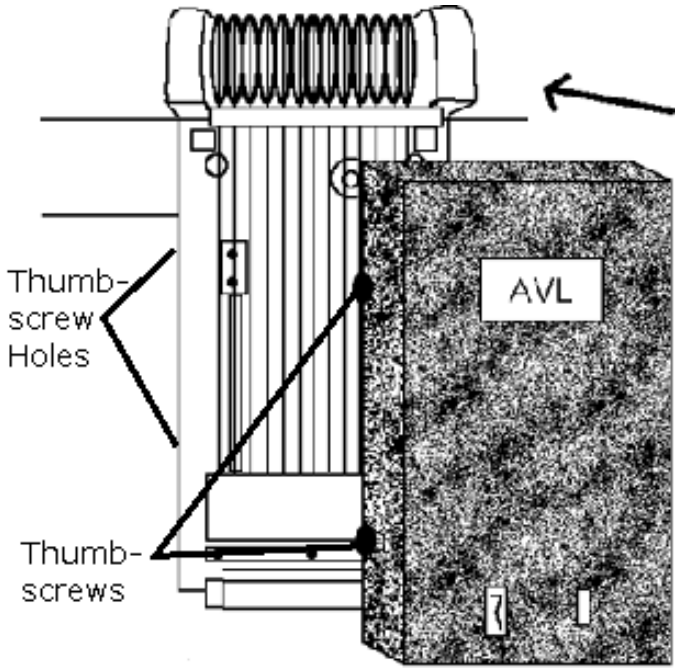


Figure 120 - Compu-Dobby Installation

3) Insert each of the four thumbscrews through the holes and into the barrel nuts.

4) Tighten each one.

Note:

If the thumbscrews do not screw in easily, adjust the barrel nut using a straight slot screwdriver.

Adjusting the Solenoids

If you find that the solenoids do not push the corresponding cables, then a small adjustment is needed. Find the two screws on the front of the Compu-Dobby. Loosen them slightly. Now, from above the Compu-Dobby, look down the cables to where the solenoids are. Make sure they are still lined up with each of the cables. Slide the Compu-Dobby box to the right or left for alignment. When aligned, retighten the screws on the outside front of the box.

It is also crucial that each one of the dobby cables is lined up with the slots in the dobby arm insert. Remember, one cable for each slot; one solenoid for each cable.

Surge Protectors and UPS

Surge protectors are electronic protection devices that limit the amount of electrical current that can be delivered to your equipment. UPS (Uninterruptable Power Supply) offer short term backup power in the event of a black or brown out. Though your power supply is regulated by your utility company, occasional load fluctuations can result in power spikes and black/brown outs. Electrical events such as these can do great harm to sensitive electronic equipment, your computer or Compu-Dobby, for example. We strongly recommend that you install a surge protector between your electrical socket and computer/Compu-Dobby. In areas with frequent loss of power, we also recommend a UPS.

Power Cord

Now, you can connect the power cord to the Compu-Dobby and your AC power source.

At Compu-Dobby startup, you will notice a series of clicks. This is the Compu-Dobby self-test. You must wait until completion before attempting to connect your weaving software to your Compu-Dobby.

1) Connect the female end of the power cable at the back of the housing (be sure it's completely inserted).

2) Plug the male end of the power cable into a surge-protected power strip, preferably the same one as used for your E-lift as this will allow you to turn on the loom more easily.

Connecting the Compu-Dobby to Your Computer

Your Compu-Dobby comes with a standard USB cable. Before connecting your computer, install all computer software, including USB device drivers if needed.

While software setup is left for the specific software manual, these instructions will provide some tips to help with the setup.

The Compu-Dobby supports USB communications, which requires drivers be installed onto your PC. AVLDrive automatically installs this driver. The WeavePoint CD-ROM includes a driver self-installing .exe file that must be executed separately from the WeavePoint installation. Other loom control software may require that you download the driver from the AVL website: http://www.avlusa.com/resources/library/

Driver installation on Windows systems can take up to 45 minutes to associate the USB driver with the loom. This is especially true for PCs with slower processors and older operating systems. For the first time communicating after installing the USB driver, it is best to wait 45-60 minutes with the PC and Compu-Dobby powered and connected by USB cable.

The everyday start up protocol is:

1) Turn on the Compu-Dobby.

2) Start up the PC and loom control software.

3) Wait 60 seconds after the completion of the Compu-Dobby self-testing pattern (the powering of each solenoid to verify operation).

4) Enter weaving/loom control in the loom control software and begin weaving.

Some loom control software is better than others at clean USB communications. Additionally, poor performing PCs can drop USB communications during what the PC thinks are idle moments. Recovery from these issues requires re-establishing communications by rebooting the Compu-Dobby, then waiting 60 seconds before trying to reconnect. The rule of thumb is to do this whenever you have a USB communications failure or error message.

MECHANICAL DOBBY SETUP

Once there is some tension on the harness cables, the dobby arm can be aligned with the dobby cables. Attached to the dobby arm is a black metal piece with several slots cut into it. The arm needs to be aligned so that the slots exactly line up with the dobby cables. The dobby won't work properly unless this alignment is absolutely perfect.

1) Loosen the two bolts that attach the dobby arm to the top right horizontal just enough so that the dobby arm can be shifted back and forth slightly by tapping on it with the side of your fist.

2) Lift the right end of the dobby arm so that it touches the rubber bumper in the top of the slot in the right side of the dobby head.

3) Look inside your dobby head so that you can see the dobby arm straight on and position yourself directly in front of cable number 1.

4) While continuing to hold the dobby arm up against the bumper with your right hand, tap the other end of the dobby arm with your left hand and sight down the number 1 cable and slot until perfect alignment is achieved.

5) Retighten the dobby arm attaching bolts. Check to see that the alignment is still perfect.

6) Move the dobby arm up and down in the slot to be certain it doesn't bind.

   a. If it does, you'll need to loosen the two bolts again.

   b. Put a paper shim in between the dobby arm support and the top right horizontal.

   c. Realign the dobby arm with the cables and tighten down the bolts.

7) If, after you've tightened the bolts, the alignment is perfect and the dobby arm doesn't rub or bind on the sides of the slots in the dobby box, then tighten the nuts down until you're certain they won't slip.

E-LIFT OPERATION

Setting the Home Position

Before you use the E-Lift you must set the "home" position. Home position is the position of the E-Lift motor spindle at power up and it relates to programmed starting position. Everything the E-Lift does will be in relationship to this home position.

IMPORTANT:

When you set home position you need to ensure that dobby slide plate is in the correct position for harness selection. If the slide plate is set too high or low, it will cause incorrect harness selection and possibly motor stalling.

1) Turn off the E-Lift power switch.

2) Unwind the E-Lift pulley to allow the dobby slide plate (or arm) to move to its upper most position.

Note:

Viewing is achieved through the side windows on the Compu-Dobby.

However, you may want to remove the Compu-Dobby from the loom in order to more clearly see the slide plate positioning.

3) Rotate the E-Lift motor pulley clockwise to take the slack out of the cable. Ensure the cable does not overlap onto itself.

4) Continue rotating the pulley while observing the slide plate. Make sure the following conditions are met:

   a. The slide plate is no more than 1/16 inch off the upper slide plate bumpers.

   b. The dobby insert is at least 1/8 inch above the highest dobby cable ball.

5) When you have finished, the tip of the nautilus will be facing two o'clock when viewed from the rear of the loom.

6) Power on the E-Lift to set this position as your home position.

Note:
Customers have found it advantageous to create a visual cue on the Cam to identify Home position. This enables you to more quickly and easily set it without having to look up to the dobby.

7) Using a 2" strip of masking tape, apply the tape vertically at the 12 o'clock position on the rear of the Cam.

8) Draw a vertical arrow on the tape pointing to 12 o'clock. You will then be able to tell at a glance if the home position is set correctly.

Adjust Return Spring with the turnbuckle

If the slide plate does not move up to the upper slide plate bumpers, the turnbuckle on the return cable will need adjustment.

1) Loosen the jam nut on the turnbuckle.

2) Rotate the turnbuckle while holding the cables on each end to draw the eye bolts in the turnbuckle closer together.

3) It is best perform one turnbuckle rotation and then test, repeating one rotation at a time until the slide plate will move up to the slide plate bumpers after pulling it down ½ inch.

4) Tighten the jam nut to lock in this turnbuckle position.

Mode Selection

The E-Lift is programmed with two modes: double or single shed selection. At power on, the E-Lift begins in the Double-Shed™ mode. Double-Shed ends every lifting cycle with the shed open with one tap of the foot or hand switch. For example, you've just completed a pick and the shed is still open. You depress the foot switch, which initiates the shed to close, the dobby to advance to the next pick, and the shed to re-open in the next pick -- all as a single continuous movement. This is the best mode for developing a weaving rhythm.

Note:

When shutting off the loom, you will want to switch to single shed mode and close the shed before powering off the e-lift. If you don't, the harnesses will fall when the power is shut off.

In Single Mode, you activate the foot switch once to open the shed; and again to close the shed. In other words, you achieve one action per activation.

Switching Modes

1) Press and hold the foot switch for 10 seconds. If you are in single-shed mode, you must be transitioning to an open shed.

Maintenance

Periodically clean the air filters on the front and rear of the E-Lift housing.

1) Unsnap and remove the plastic baffle.

2) Remove the foam element and carefully wash it in warm soapy water.

3) Be sure the element is completely dry before you replace it.

Inspect and tighten hardware monthly when in regular use, and immediately before use upon prolonged idleness.

Inspect the cables for wear, especially where they move over a pulley. Do this monthly when in regular use, and immediately before use upon prolonged idleness.

ASSEMBLING THE BENCH

The bench comes disassembled to facilitate shipping. The contents of the box are:

- one bench top with two metal brackets attached
- two legs
- two feet
- one lower crosspiece
- one hardware package
- instructions

1) Attach the feet to the legs using the 3" bolts.

2) Bolt the crosspiece to the legs using the 3-1/4" bolts (the square nuts should go into the nut access holes of the crosspiece and the bolts should be tightened securely once you've made sure the assembly is square).

3) Attach the bench top to the legs with the 2-1/4" bolts. There are several holes near the top of each leg. Choose the holes that are best for your height.

Figure 121 – Bench

Note:

The angle of the bench top is adjustable. Set it to the amount of tilt that you prefer and tighten the two nuts and bolts that attach the brackets to the legs.

There are two holes on one edge of the bench top which can be used to mount the AVL bench bag. This bag, which can be ordered separately from AVL, gives you a handy place to store shuttles, bobbins, and other weaving accessories.

APPENDIX I: OPTIONAL EQUIPMENT

RADDLE

The raddle (#41) is inserted into the holes in the back edge of the rear vertical side frame members. You can mount the raddle here for warping the standard beam in either upper or lower positions. Make sure that the removable portion of the raddle is to the top. Once mounted into the holes, the raddle is not only held firmly in place, but is also perfectly centered and can be left in place while weaving.

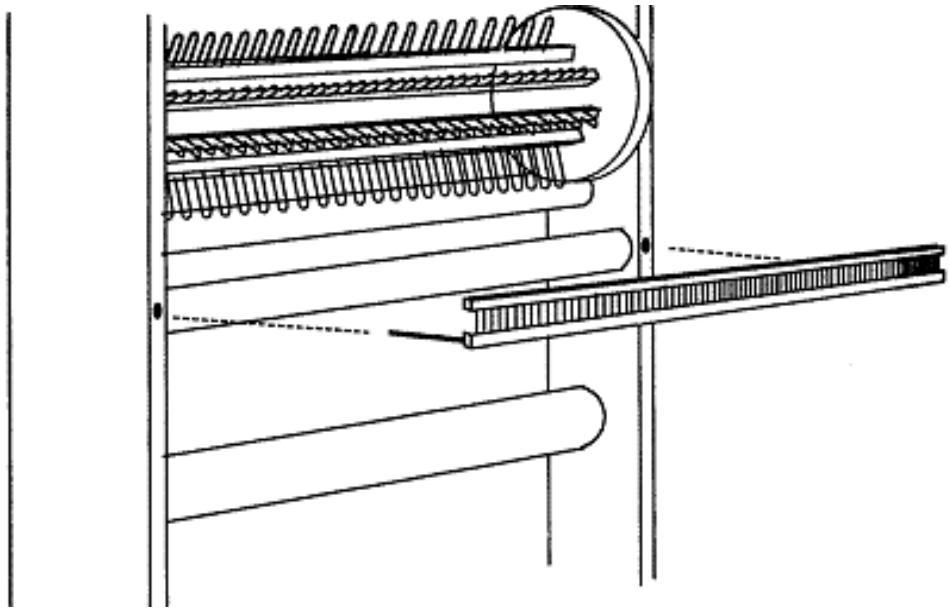


Figure 122 - Raddle Position

TENSION BOX

Find your tension box track, hardware, and tension box.

Installing Tension Box Mounting Studs

1) In your tension box hardware bag, find four 5/16" x2-1/2" carriage bolts, black discs and bushings, washers, and hex nuts. They are called track arm mount studs.

2) Install this assembly, from the outside of the loom, through one of the two holes provided on either rear vertical.

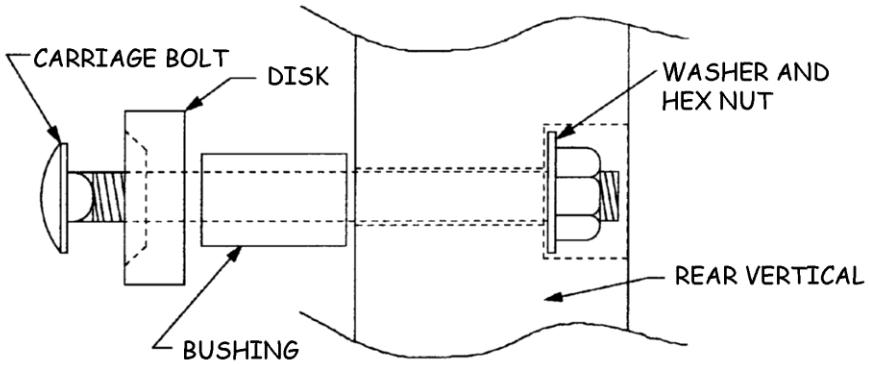


Figure 123 - Tension Box Mounting Assembly

3) Slip the washer and nut on the inside of the loom frame and tighten with a 1/2" socket wrench.

4) Repeat this process with the remaining bolts.

Attaching the track to the track arms

1) Place the track so that the lengthwise groove is on top.

2) Mount the track to the brackets on the track arms using two 5/16" x 2-1/2" hex bolts, washers, and square nuts on each side.

Figure 124 - Attach Track & Mount Arms

Mounting the Track and Mount on the Loom

The AVL tension box track mounting system now employs a quick release.

1) To install the track/arm assembly, place the track arms between the two externally mounted studs that you attached to each rear vertical of the loom.

2) The track arms should initially go in at an angle with the front stud fit into the notch on the upper edge of the track arm.

Figure 125 - Inserting Track & Mount

3) Then lower the track/arm assembly to a horizontal position at which point the lower notch on the track arm should align with the rear stud.

Figure 126 - Track & Mount on Loom

4) This will hold your tension box in place while warping your loom. When you are finished with the tension box, the track can be removed easily.

Figure 127 - Tension Box on loom

AUTO ADVANCE SYSTEM

Parts

- Bearing Housing Assembly and Arm
- Beater Leg Bracket with Connecting Rod
- Overhead Beater Tilt Arm Bracket with Connecting Rod
- Bottom Swing Hardware:

  one hex bolt (3/8" x 2-1/4”), two washers, and a nut
  one hex bolt (3/8" x 2”), two washers, and a nut

- Overhead Beater Hardware:
- two hex bolts (3/8" x 1-3/4”), two washers, and a hex nut on each

Assembly

Note:

These instructions assume that you are installing the Auto Advance you received with your new loom. If you are upgrading your existing loom with a new Auto Advance, there may be additional steps to complete. Refer to the Automatic Advance Manual you received with your new Auto Advance.

1) Remove the cloth beam from the loom and remove the spacer on the right. This spacer is not used with the Auto Advance, but please keep it safe in case you want to remove the Auto Advance system.

2) Screw the large gear to the left end of your cloth beam with your Phillips screwdriver.

3) Find the Bearing Housing Assembly and Arm. This will have gears with a triangular bracket on one end. Remove the plastic spacer on one side. This spacer is used to engage and disengage the auto advance. You will remove it now to have enough room to attach the assembly to the loom.

4) Attach the triangular bracket to the upper left cloth support bracket. The bolts will be inserted into the pre-installed nuts.

5) Replace the cloth beam onto the loom.

6) Replace the spacer onto the auto advance on the inside of the loom.

7) Using your 7/16" wrench, slightly loosen the bolt that secures the metal triangular bracket to the wood cloth support.

Adjust the gears

1) Insert a strip of paper between the gears and roll the cloth beam towards you to roll the paper between the gears. The paper provides a small amount of space between the gears so that they don't bind during adjustment.

2) Return to the triangular bracket and push the bracket part toward the beater. Tighten the bolts.

3) Remove the paper from between the gears by gently rolling the cloth beam towards you.

4) To check the adjustment, disengage the gears (Bearing Housing) by snapping off the plastic spacer on the outside of the assembly.

5) Push the gear rod in toward the inside of the loom. This will disengage the gears.

6) Gently roll the cloth beam towards you. Re-engage the gears by sliding the small gear back under the large gear. Roll the cloth beam toward you, cycle it all the way around to make sure there are no tight spots. Redo if necessary.

For Bottom Swing Beaters: Attach the Beater Leg Bracket to the beater leg

1) There should be eight holes already drilled into the beater leg.

2) Holding the Bracket with the slide adjustment opening to your right, line up the bottom hole with the first hole on the leg; the middle hole on the Bracket aligns with the top (eighth hole) on the beater leg.

3) Put one washer on the hex bolt (3/8" x 2-1/4") and put the bolt through the top Bracket hole; then put on the second washer and secure with the nut.

4) Repeat this process with the shorter hex bolt (3/8" x 2") and the bottom hole on the Bracket.

For Overhead Beaters: Attach the Tilt Arm Bracket to the Tilt Arm

1) There should be eight holes already drilled into the Tilt Arm.

2) Holding the Bracket with the Side Adjustment opening to your right, line up the bottom hole with the first hole on the Tilt Arm; the middle hole on the Bracket aligns with the top hole on the Tilt Arm.

3) Put one washer on each bolt. Put one bolt through the Top Bracket hole; then put on the second washer and secure with the nut.

4) Repeat this process for the bottom hole on the Bracket.

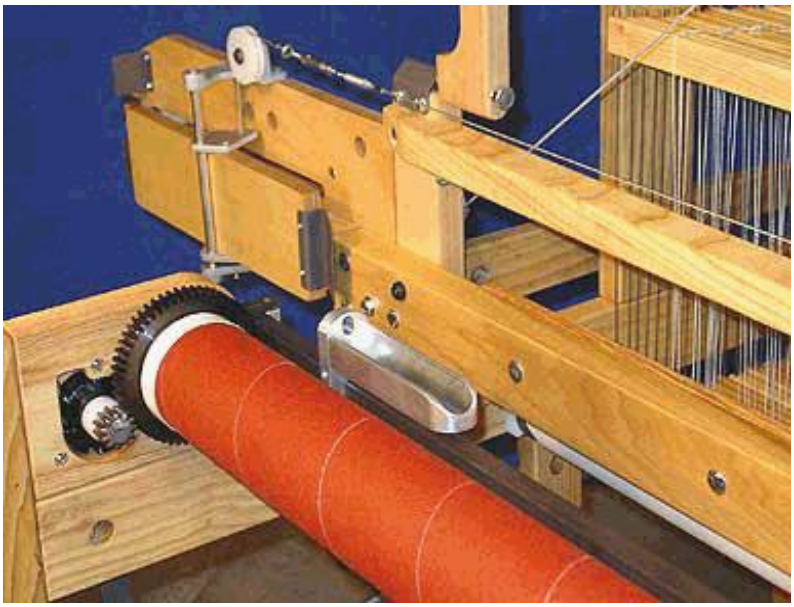


Figure 128 - Automatic Advance Gears in Place

Connect the Bracket to the Arm

1) The Connecting Rod that is attached to the Bracket can now be connected to the Arm. Unscrew the black knob and remove the spacer, washer, and bolt. Move the Rod up toward the middle hole on the outside of the Arm.

2) Put the washer on the bolt and put bolt through the slot on the Arm and Rod end. Put the spacer on and screw the knob back on.

Figure 129 - Auto Advance on loom

LOCKING BRAKE

The locking brake can be used in place of the tension arm to provide warp tension. To release the tension on the warp and advance, you must press the brake pedal. Depending on the side you want the locking brake on, or if you will use a locking brake on two sides, you may need to reverse the warp beam on the loom so that the brake drum is on the correct side.

1) Find the wood pedal assembly with the eyebolt, spring, nylon cord, and brake cable attached. There is a rubber bumper on the bottom front of the pedal. If the assembly is not attached to the pedal, follow these steps to attach it.

    a. Remove the Nylock and slide the Bolt out until the end is visible in the ¾" vertical hole, at the rear of the pedal.

b. Thread three loops of the Tension Tie-Up, from above the Pedal, onto the Bolt, followed by one end of the Spring, from below the Pedal.

c. Reinsert the Bolt and secure with the Nylock.

2) Orient the wood Pedal Assembly inside the loom, along the Horizontal, so that the Rubber Bumper is facing downwards.

Figure 130 - Locking Brake

3) At the end of the spring on the pedal there is an eyebolt. Remove the first Nylock and the first Washer from the Eye Bolt, leaving the spring attached. Finger-tighten the remaining Hexagonal Nut fully to the end of the thread of the Eye Bolt.

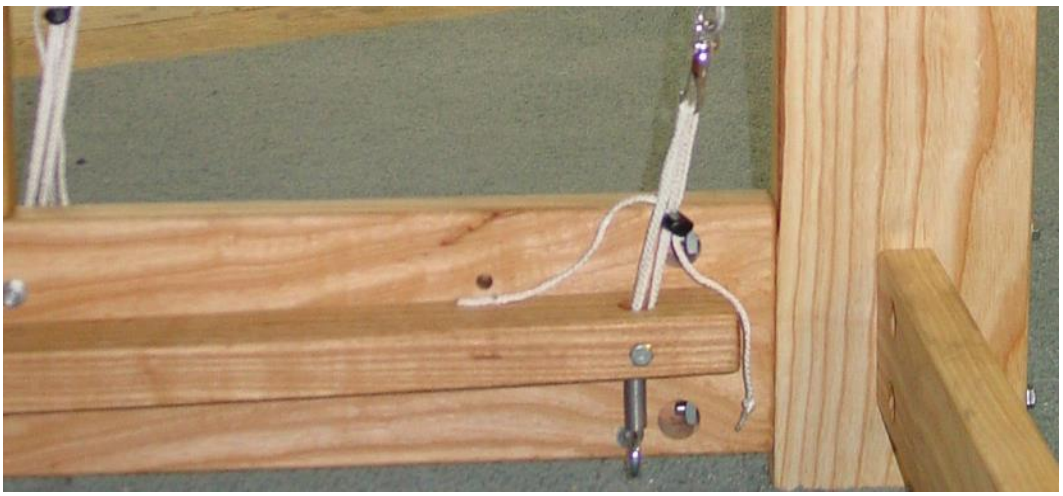


Figure 131 - Locking Brake with tieup

4) Insert the Eye Bolt (with Hex Nut) from the inside of the loom, through the hole in the bottom horizontal.

5) Place the washer and Nylock on the bolt. Check that the bolt is oriented vertically and tighten securely in place.

Install the mounting bolt for the locking brake

Note:

For Bottom Swing Beaters, you must first remove the rear Hex Bolt from the Beater Support/Beater Support Spacer, along with the two Washers, Hex Nut, and ¾" Pedal Spacer. You will then replace it with the bolt in step 1 below.

1) Insert the new 5/16"-18 x 6 5/8" Bolt (with one washer) through the hole near the center of the bottom horizontal.

2) Slide the ¾" Pedal Spacer onto the Bolt, followed by one Washer, and then mount the Pedal to the bolt via the left side countersunk hole at the center of the wood Pedal.

3) Place the second Washer and the Nylock on the tip and tighten against the Pedal using the ½" wrench.

4) Once tightened, test the Pedal for smooth movement. If it seems to bind, back the Nylock off slightly, until freedom of movement is achieved.

Installation of the J-bolt for lower and upper positions

1) Remove the Nylock and first washer from the J-Bolt and finger tighten the remaining Hex Nut fully to the end of the thread of the Eye Bolt.

2) Insert the Bolt from the inside of the loom, through the existing hole (previously used by either Tension Arm) located in the Rear Vertical Beam of the Side Frame, above the Brake Drum.

3) Secure the J-Bolt (with nut) to the Side Frame by replacing the Washer and Nylock on the outside of the loom and tighten in place.

Completing the tie-up

Note:

The tie-up for the locking brake is completed in the same way whether you are using the upper or lower position. Make sure you are using the correct cable for the position.

1) Route the Cable for your Lower Position Locking Brake from the Pedal, upwards inside of the loom, over and around the rear of the Brake Drum.

2) Loop around the bottom of the Brake Drum and then up, to secure it by slipping the cable loop onto the J-Hook above the Drum.

Figure 132 - Locking brake tieup

Installation of the Locking Brake Kit is now complete. Adjust brake tension by squeezing the Mini-Toggle Lock. Tighten tension by pulling on the two ends of the Cord and adjusting the loops by squeezing the Toggle. Release tension by moving squeezing and moving the Toggle up and down on the cord, allowing the length of the Cord to feed out. Releasing the Mini-Toggle will retain the new tension adjustment.

BUSTLE

The Bustle allows you to have two 1-yard sectional beams on the loom at the same time. It is an addition to the back of the loom.

1) Find the two cross members that make up the support for the second beam.

2) Attach the long piece to the shorter piece using a bolt through the pre-drilled hole near the slot for the warp beam. Insert a nut through the nut access hole and tighten.

3) Position the assembly with the shorter piece over the location for the second beam on the frame. The nut access hole on the leg should face to the inside of the loom.

Figure 133 - Bustle Assembly on loom

4) Insert two bolts from inside the loom frame. Add the nuts through the nut access hole and tighten.

5) Place the warp beam in the slots and add the tension device.

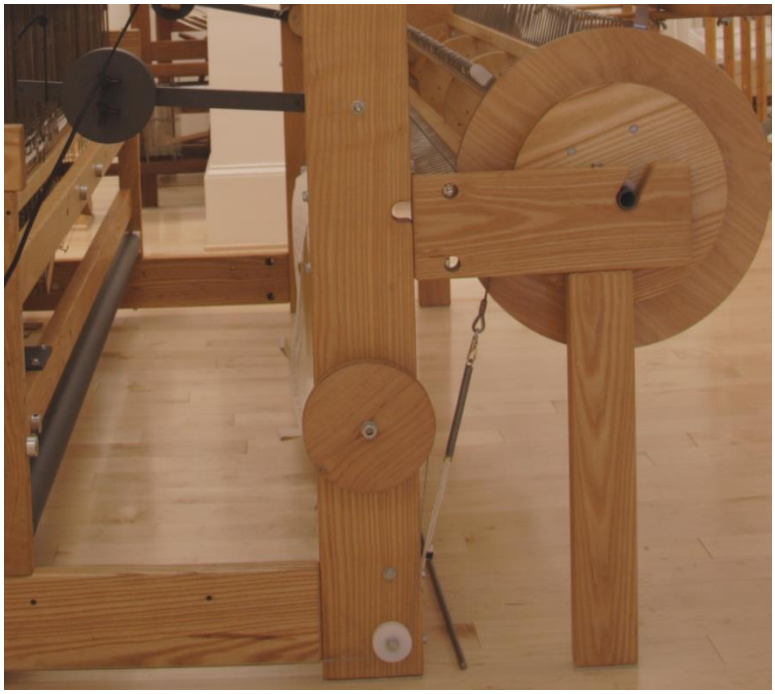


Figure 134 - Bustle with tie-up

APPENDIX II: AIR ASSIST OPTIONS

Note:
These options are not available in Europe.

AIR COMPONENT INFORMATION

Compressor

A machine which compresses, stores, and delivers air to an air system.

Air Cylinder

A sealed tube that contains a movable shaft. This shaft is caused to move in or out by the action of compressed air.

Exhaust Valve:

The work in your Air Shuttle is done by compressed air. This air comes into the system via the compressor, is forced through the cylinder, and is then vented from the system. An exhaust valve is the door through which the air leaves.

FRL

This is a filter and regulator together in a single device. The air that comes from your compressor feeds directly into the FRL where it's conditioned and its pressure regulated.

Piloted Valve

This valve directs the flow of air to and from different parts of the system.

Rod End:

The working end of an air cylinder. It connects to the mechanism that needs to be moved.

AIR COMPRESSOR REQUIREMENTS

Compressors are rated according to the volume of compressed air they can delivery in one minute. This rating is known as C.F.M., cubic feet per minute.

DEVICE	USAGE	UNITS	PER	COMPRESSOR RATING *	UNITS	NOTES
A' Loom Dobby (all models) A-Lift	1.25	CFM @ 100 PSI	Loom	4	CFM	Rated @ 60 PPM
Air-Assisted Shuttle Boxes	0.47	CFM @ 100 PSI	Loom	2	CFM	Rated @ 60 PPM

PPM = Picks Per Minute

CFM = Cubic Feet Per Minute

PSI = Pounds Per Square Inch

We suggest sizing a compressor for worst case scenarios like 50% duty cycle. When using a 50% duty cycle, doubling the usage rate is the first step, then adding another 50% will insure the compressor is not working at maximum capacity, making it last longer and delivering reliable compressed air to AVL products.

Note:

If you will be using multiple air components, make sure your air compressor is sized to handle all of them.

Exceptions to the above sizing methods are products that may use compressors other than the reciprocating type. Screw type compessors are often used in higher volume applications such as IDL's, or a Jacquard with several heads.

The choice of a compressor is yours. In general, we advise you to buy a compressor that can deliver more air than you actually need -- it will run more efficiently, last longer, and allow the addition of future air components.

Nearly all compressors have storage tanks. Here, too, size is important. We recommend that you consider a compressor with at least a twenty gallon tank.

INSTALLING THE FRL

All of the Air components require a Filter/Regulator/Lubricator (FRL) to be installed on the loom. This component connects the air compressor to the air components on your loom. Depending on the configuration of your loom, the FRL may differ from what is shown here.

1) Install the Filter/Regulator/Lubricator (FRL) in the pre-drilled holes using the screws provided onto the left rear side support.

2) Install the air component(s) for your loom according to the directions in this appendix.

3) Connect the FRL to the correct color coded air line from the coil of tubing with the air cylinder. The air lines have been connected to their fittings by pushing them into place. They will not come out. In fact, the harder you pull, the harder it will hold.

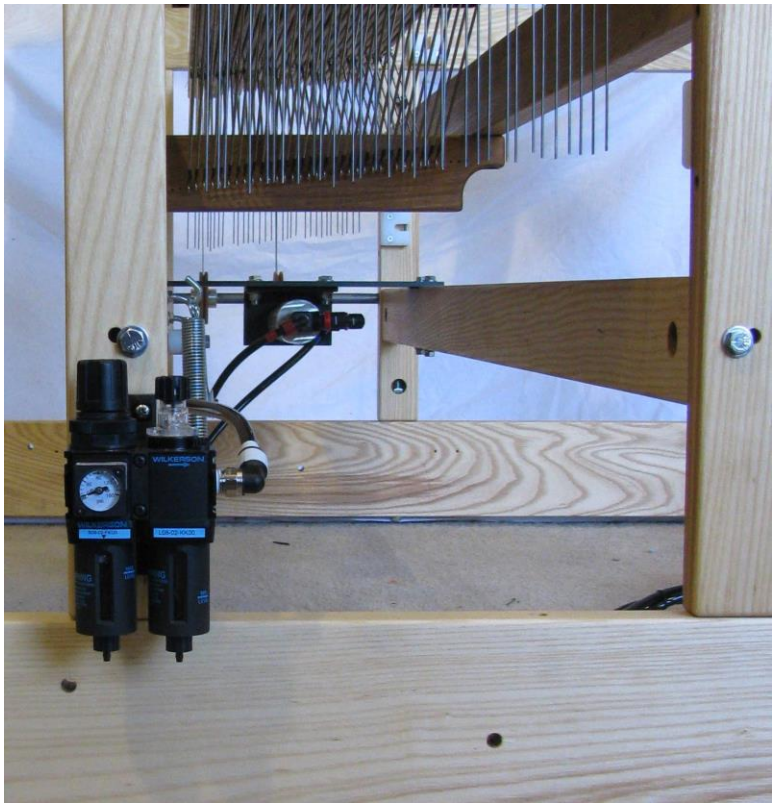


Figure 135 - FRL Placement

INSTALLING AN A-LIFT

The A-Lift replicates the action of treadling. When you activate the foot switch, the cylinder retracts and selected harnesses rise or fall. The motion is smooth, quick, and precise and does not jar the harnesses. Once you have installed the A-Lift, see the section on connecting your components on page 172 to connect it to your air compressor.

Air Requirements

In order for this air-activated system to work, you will need to have compressed air available at the loom. The A-Lift will consume approximately 1.25 CFM (Cubic Feet per Minute) of air at 100 PSI (pounds per square inch) when weaving a maximum speed. We recommend a compressor rated at double this consumption with a minimum 5 gallon tank.

This system has been designed to operate from a line pressure between 60 PSI and 100 PSI. The pressure within the system can be adjusted depending upon how many harnesses you will be lifting within a given weave.

Contents

Remove all the contents from the shipping box and check to see that you have the following items:

- Filter/Regulator (FRL) with mounting bracket and hardware package
- Foot pedal with tubing attached

Installation

1) You should have already assembled the #12 Treadle Pulley Crossmembers (with A-Lift cylinder and mounting plate pre-assembled) onto the loom frame. If not, do so now.

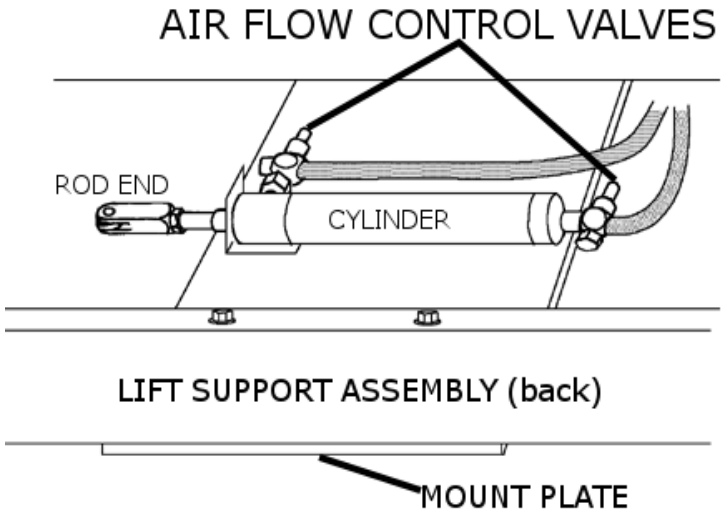


Figure 136 - Air Flow Control Valves

Foot Pedal

1) Place the foot pedal under the loom near where your feet will be when you're sitting on the bench.

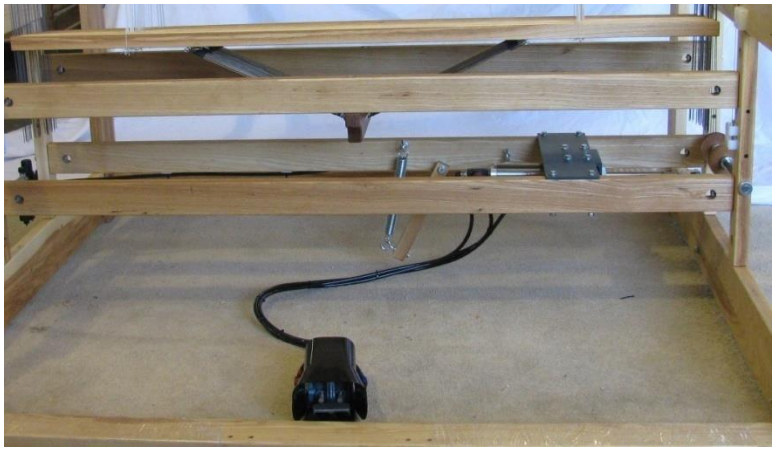


Figure 137 - A-Lift Foot Pedal

2) Connect the correct color coded air lines to the foot pedal.

Return Cable

The dobby slide plate-to-spring lever cable is attached to the slide plate with a quicklink in the eyebolt on the upper back right corner of the slide plate. The cable goes over a small white plastic pulley with a retainer above it.

Figure 138 - A-Lift Return Cable

1) The cable will go down the right side of the dobby back. Guide the cable around the bottom of the return pulley on the cam-pulley axle, then into the center of the loom.

Figure 139 – Position the Pulley

2) Bring this cable over to the spring lever and loop it around the pulley on the side of the lever.

Figure 140 - Spring lever

3) Now, you will need to pull against the spring in order to bring the looped end of the cable around the pulley on the lever and back toward the right side of the loom, to anchor it at the open J-Bolt.

Note:

You can also remove the spring and replace it once the cable has been anchored on the J-bolt.

4) Position the pulley on the axle so that the line of the cable from the dobby to the pulley to the spring lever is straight. The cable should not be at a diagonal.

5) Secure the pulley in place by tightening a stop collar on either side of the pulley.

Return Spring Adjustment

If the slide plate does not move up to the upper slide plate bumpers, the turn buckle on the return cable will need adjustment.

1) Loosen the jam nut on the turnbuckle.

2) Rotate the turnbuckle while holding the cables on each end to draw the eye bolts in the turnbuckle closer together.

3) It is best perform one turnbuckle rotation and then test, repeating a single turn each time until the slide plate will move up to the slide plate bumpers after pulling it down ½ inch.

4) Tighten the jam nut to lock in this turnbuckle position.

Lift Cable

1) Guide the lift cable attached to the bottom center of the slide plate down to the left pulley on the axle.

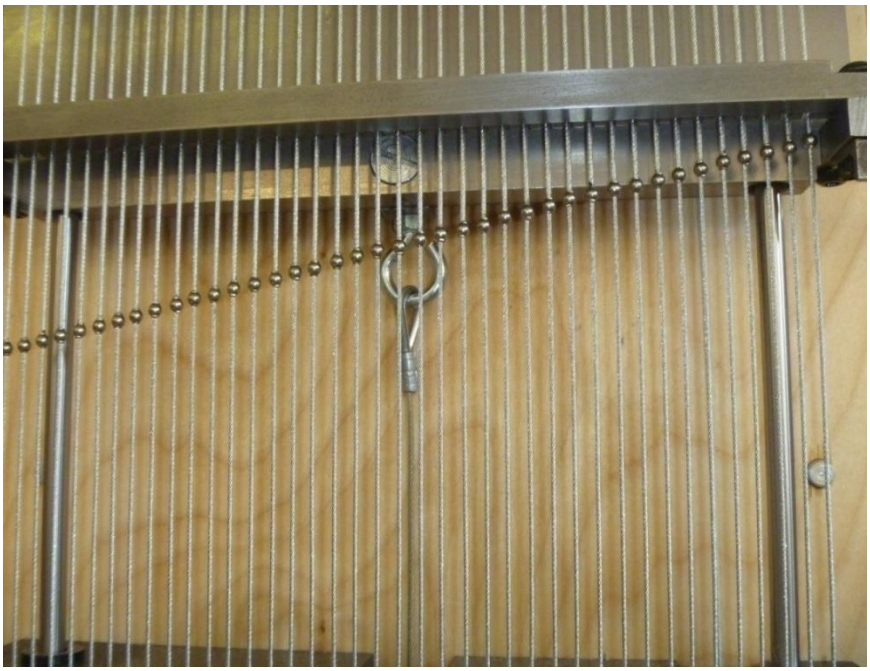


Figure 141 - Slide Plate Eyebolt and cable

2) Clip the end of the cable to the rod end of the cylinder.

3) The line of the cable from the dobby to the pulley should be straight. The cable should not be at a diagonal from any point to point.

4) Slide the pulley into position on the axle and secure it into place by tightening a stop collar on either side of the pulley.

5) You can also adjust the tension of the cable by turning the turnbuckle on the cable.

INSTALLING AN AIR SHUTTLE

The Air Shuttle is only available with the Overhead Beater. Follow the instructions in the section for the Overhead Beater Assembly starting on page 98 to install the beater and flyshuttle boxes. The uprights for the air shuttle system are longer than usual and have a bracket attached to them. Make sure the bracket is facing out from the loom when installing the uprights. You will not need to follow the tie-up instructions.

Assemble the Picker Cylinder and Picker Stick

The Picker Stick Assembly consists of the picker stick attached to a wooden piece with nut access holes on the opposite end from the picker stick.

1) The Picker Stick is attached to the green picker on your flyshuttle box.

2) Place the nut access holes on the attached wooden piece against the corresponding holes on the upright and attach it with carriage bolts.

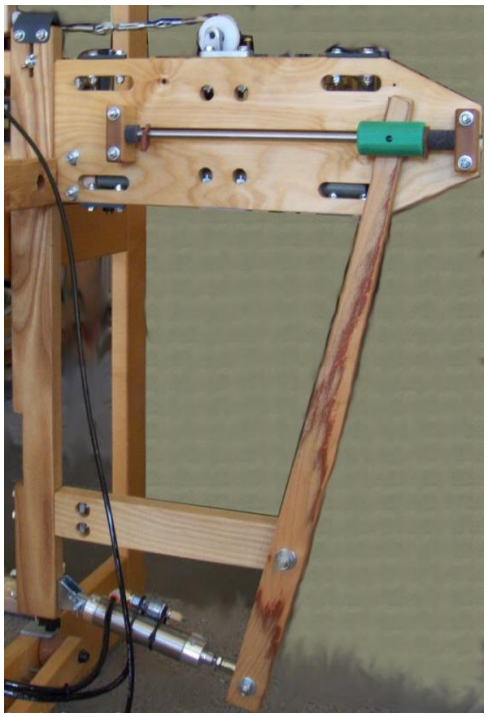


Figure 142 - Picker Stick Assembly

3) Find the picker cylinder.

4) Place one end of the picker cylinder on the bracket on the upright. Place the pin through the bracket and the picker cylinder and secure it with a clevis pin.

5) Bolt the other end of the picker cylinder to the end of the picker stick.

Figure 143 - Picker Cylinder

Mount the Air System

1) Unpack the box of components and tubing. Locate and layout the components and tubing inside the loom in their general locations.

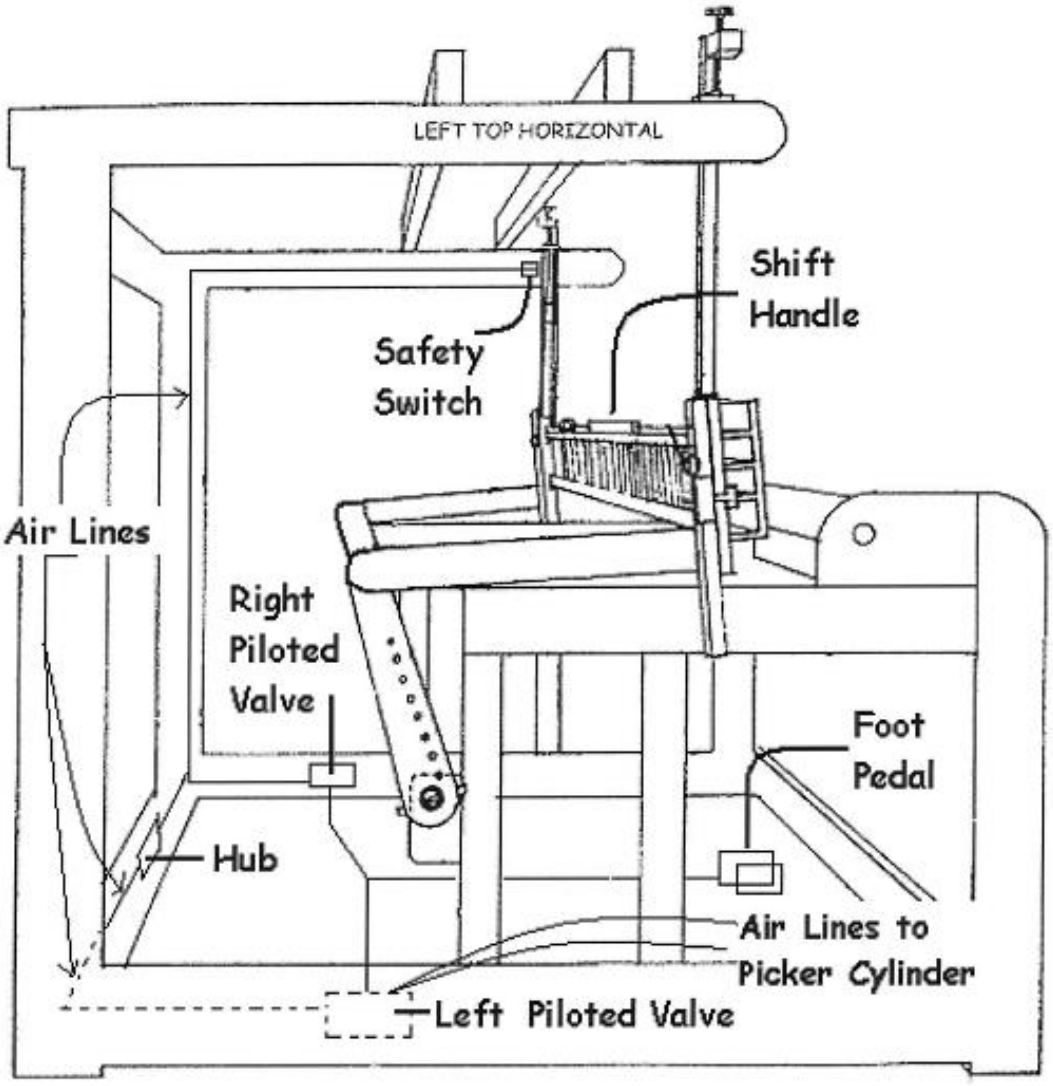


Figure 144 - Air Tubing Diagram

2) Mount the plastic tie-downs and secure them to the loom with #6 x 1/2" screws provided.

Mount the Left and Right Piloted Valves

The Piloted Valves will be secured to the inside of the left and right Bottom Horizontals. They are already affixed to their mounting brackets. If you

followed the previous instructions, you've already placed the valves on the floor near their mounting places.

1) Select three #8 x 1" pan head sheet metal screws from the hardware pack and use them to mount the left Piloted Valve in the holes on the left bottom horizontal.

2) Repeat for the right valve.

Figure 145 - Piloted Valve (right)

3) Matching the color coding tape, connect the plastic tubing from the Piloted Valve to the picker stick cylinder on each side.

Air Shuttle switch

You will have a switch on the shift handle to activate the shuttle. The switch will already be installed on the beater.

Figure 146 - Shift Handle Switch

1) Connect the correct color coded air lines to the foot pedal or to the shift handle switch.

Mount the Safety Valve

The Safety Valve will prevent your shuttle from firing unless the Beater is in its rearmost position. It is activated by contest with the Beater and must be correctly installed and adjusted if it is to work properly. It will mount on the right top horizontal or to the right lower cloth beam support. There should be a small metal plate clipped to your valve assembly. This is a striker plate. It provides wear protection to the beater leg or upright.

1) Locate your Safety Valve. It consists of a mounting bracket, a brass block with several fittings, a small spring loaded arm, and the striker plate.

2) Position the valve so that the small metal arm points to the front of the loom. The ninety degree connector on the top of the valve will point to the inside of the loom.

Figure 147 - Safety Valve

3) Use three #8 x 1" pan head screws to secure the valve to the Right Top Horizontal.

4) Place the striker plate on the back of the right hanging arm, immediately opposite the Safety Valve. The small plastic wheel on the valve arm should strike the plate at about its center. Mark and drill two holes with your 9/64" bit and mount the plate using two #8 x 3/4" flat head screws from the hardware pack.

Adjust the Safety Valve

Important:

You will still need to adjust the position of the safety valve relative to the beater. This adjustment is essential to safe operation.

1) Use your 5/32" allen wrench to loosen the two allen screws on the outside of the valve body. This will allow you to move the valve forward or backward.

2) Move the valve to the far left side of its bracket (towards the back of the loom).

3) Push your beater to its rearmost position (away from the weaver).

4) Now move the Safety Valve back towards the beater leg or hanging arm.

5) You want to locate the valve so that the plastic wheel on the valve arm contacts the strike plate.

6) Continue to move the valve until the small plunger in the valve body is fully depressed.

7) Hold the valve in this position and retighten the allen screws. You may need to move the beater forward to relieve tension on the valve while you secure it.

8) Move the beater back again and see that the valve is still correctly positioned.

9) If the Safety Valve is working properly, the shuttles will only fire when the beater is pushed all the way back. Test with the beater in both positions.

Note:
DO NOT USE YOUR SYSTEM UNLESS THIS DEVICE IS IN PLACE AND OPERATING.

Binder Clip Tensioning

The wooden binder blocks, in the sides of your drop boxes, act to brake your shuttle and keep it properly positioned. These blocks are kept under tension by thin strips of spring steel, two per block. If the binders are properly adjusted, the shuttle will come into the box and will not rebound. If a block is under too much tension, it will impede the travel of the shuttle so that it doesn't cover the full length of the race.

Much depends on the speed of the shuttle which in turn depends on the amount of air pressure in your system. Make adjustments to air pressure before adjusting the binder clips. You'll need to make a few shots in order to assess the behavior of each binder. If you need to adjust the binder clips, follow these instructions.

Note:

PLEASE TAKE CARE NOT TO CUT YOURSELF.

1) Slip the clips that hold the block out of their holding brackets.

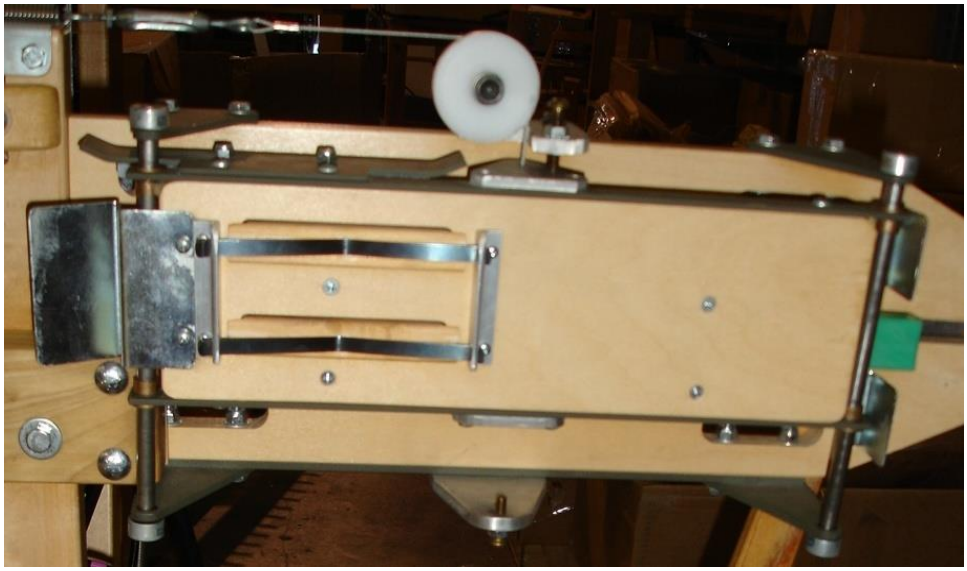


Figure 148 - Binder Clips

2) If you need more tension, slightly increase the degree of bend in each clip. If you need less, decrease the bend.

3) As an alternative, you may decrease tension by removing one of the clips.

4) Again, check the action of your shuttle against the newly tensioned block. Continue to adjust as necessary.

Calibrating

In addition to the few mechanical adjustments you just made, you'll need to make some settings at your FRL and at both your Piloted Valves. The regulator on the FRL controls the air pressure in the system. The Piloted Valves control the action of the pickers and allow you to fine tune the speed at which they deploy your shuttles.

Before you can make these calibrations, you'll need to have connected the FR to your compressor. See the section on connecting your components on page 172.

The Air Pressure

Look closely at the FRL. There is a large cone-shaped knob on the top left side. This knob regulates the air pressure in the system. The amount of this pressure is indicated by the gauge at the front of the unit.

You may wish to read through the FRL Operation Manual provided by the manufacturer before proceeding.

We will assume that your compressor is now delivering air to your FRL.

Adjust the knob until the gauge reads 70 p.s.i. This is a good starting position.

The Piloted Valves

You'll find a regulator at the Piloted Valves and a pressure gauge immediately adjacent. This is where you set the speed of your shuttles.

1) Pull the yellow locking ring up and turn the knob. As with all these settings, you'll need to play around a bit until you've tuned the system to your particular need. We recommend that you begin with a pressure setting of 40 p.s.i. If the shuttle doesn't make it completely across the race, increase the pressure (or loosen the binder clips). If it bounces out of the box, decrease pressure (or tighten the clips).

2) When you've finally found the pressure setting that works best, reset the locking ring.

AIR SHUTTLE OPERATION

Before using your air shuttle, make sure that:

- The main air line is connected to the FRL.
- The safety valve is installed and adjusted.
- The air pressure at the FRL is set.
- Each of the Piloted Valves is adjusted to a low air pressure setting (40 p.s.i.).

1) Load the boxes with shuttles.

2) Use your shift handle to select a shuttle.

3) Treadle to create a shed.

4) Push the Beater back against the Beater Bumper Blocks.

5) Depress the plastic rocker switch (or foot pedal).

6) The shuttle with fly across the race into the opposite box.

If you have a problem, it will likely be in the travel of the shuttle. You may need to increase the pressure at the Piloted Valves or adjust the tension in the binder clips.

AIR BEATER

The Air Beater is only available for the Overhead Beater. Follow the instructions in the section for the Overhead Beater Assembly starting on page 98 to install the beater. The axle and axle blocks will be an assembly composed of plastic blocks with a metal rod with some additional component. It will install in the same way as the normal axle block, although you may need some additional assistance when attaching it.

Mount the Beater Air Cylinder

The Air cylinder for the beater will be secured to the inside of the right Bottom Horizontal. It is already affixed to its mounting bracket.

1) Select the screws from the hardware pack and use them to mount the Beater Air Cylinder in the holes on the right bottom horizontal.

Figure 149 – Air Cylinder

2) Bolt the other end of the cylinder to the end of metal arm attached to the axle.

Foot Pedal

1) Place the foot pedal under the loom near where your feet will be when you're sitting on the bench.

Figure 150 – Beater Foot Pedal

2) Connect the correct color coded air lines from the FRL to the foot pedal.

3) Connect the color coded air lines from the foot pedal to the Beater Air Cylinder.

CONNECTING THE COMPONENTS TO COMPRESSED AIR

Your loom is now ready to be hooked up to a compressed air line. This line will be connected to the FRL unit. You need to purchase a fitting to hook up to your air line. For convenience, we suggest that you use a "quick disconnect" type fitting which can easily be released from the loom without any tools. You will need to buy a male fitting with either 1/4" or 3/8" pipe threads to thread into the FR. A corresponding *female* connector will be needed for the hose end.

1) Once the loom has been hooked up to an air line, set the regulator to a pressure range that will operate the cylinder to your satisfaction.

2) Start at 40 to 50 PSI. You may wish to change this adjustment when you change weaving patterns as you will find that a higher pressure is needed when you are lifting more harnesses.

3) The cylinder can now be activated by depressing the foot valve. The speed of how quickly the harnesses lift (your weaving speed) can be further altered by adjusting the flow control valves.

4) The left valve adjusts inward and the right valve adjusts outward of the rod in the cylinder.

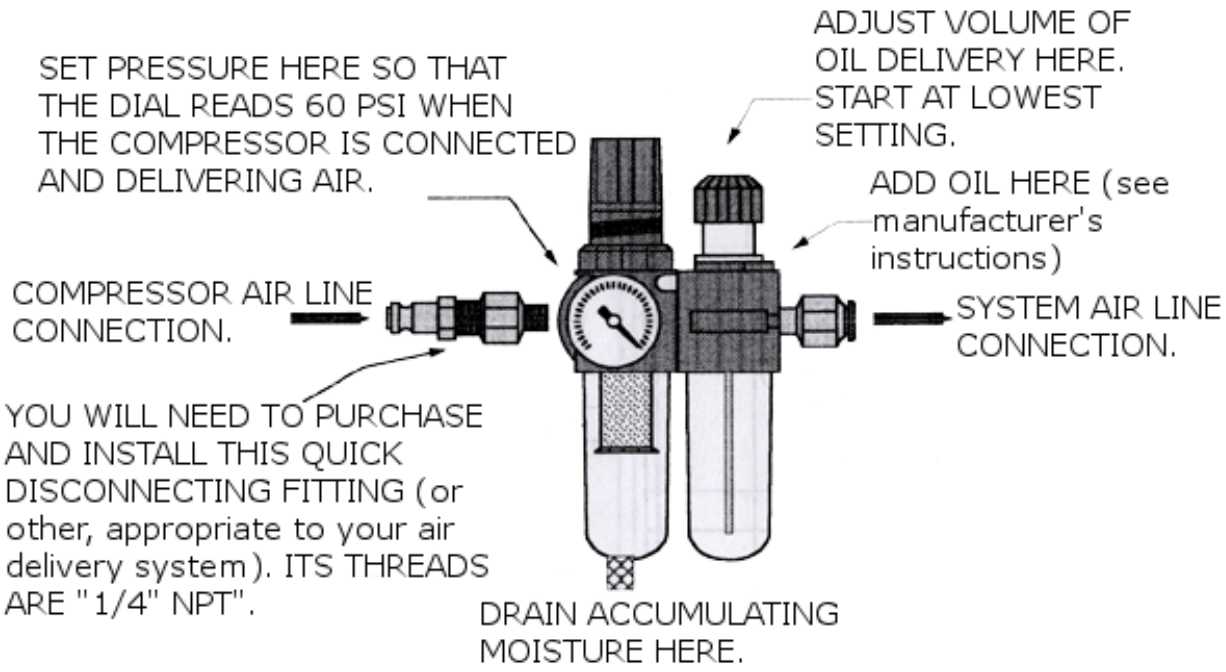


Figure 151 - FRL Detail (may vary)

MAINTAINING YOUR SYSTEM

1) Check the FRL weekly (if you use your loom daily).

2) Drain the filter bowl if you note a build up of condensation. There's a drain plug at the bottom of the bowl.

3) Wipe the shuttle box slide rods clean of lint.

4) Wipe the picker slide rods clean of lint regularly.

5) The shift handle may get sticky after a while. A lubricating spray can be applied to the pivot mechanism. Periodically blowing or brushing lint out is recommended.

6) Check and tighten the bolts as needed.

7) Adjust the various mechanisms as needed.

NOTE:

Please disconnect the air from your compressor before you drain your system.

THE FINE PRINT

AVL CUSTOMER SERVICE

AVL offers free technical support to the original owner of all our looms. This means if you ever have a problem, you can call, fax, or e-mail us and we'll help you find a solution. Please take advantage of this service; your satisfaction is extremely important to us.

Customer Service Phone: (530 893-4915)
Fax: (530) 893-1372
E-Mail: sales@avlusa.com

AVL WARRANTIES

Your loom carries a full warranty on parts and labor for two years from the date we ship it to you. Your Compu-Dobby is fully warranted for two years. If a part wears or breaks during this period, we will replace or repair it at our discretion, but at no charge to you.

AVL Returns Policy

All goods, excepting software, may be returned for refund within thirty (30) days of the shipping date.

A 15% restocking fee will be assessed for all but defective items.

AVL will pay all shipping costs for defective items within the continental United States for the entire warranty period. Special provisions apply for the return of looms (please contact your sales person for more information).

AVL will generally return repair or replacement items via UPS Ground service. Additional charges for expedited shipping are the responsibility of the customer.

NOTICE TO USERS IN THE EUROPEAN UNION

Products bearing the CE mark are in conformity with the protection requirements of EC Council directives 2004/108/EC, 2006/95/EC, 1999/5/EC, and 2009/125/EC on the approximation and harmonization of the laws of the Member States relating to electromagnetic compatibility, safety of electrical equipment designed for use within certain voltage limits, radio equipment and telecommunications terminal equipment and on the ecodesign of energy-related products.

Compliance is indicated by the CE marking.

The manufacturer of this product is: AVL Looms, Inc., 2360 Park Avenue, Chico, CA 95928 USA. A declaration of conformity to the requirements of the Directives is available upon request from the Authorized Representative. This product satisfies the Class B limits of EN 55022 and safety requirements of EN 60950.

CERTIFICATE & DECLARATION OF CONFORMITY FOR CE MARKING

Company contact details:
AVL Looms, Inc., 2360 Park Avenue, Chico, CA 95928, USA
Tel: 530-893-4915 Fax: 530-893-1372

AVL Looms, Inc. declares under their sole responsibility that their:
Textile Producing Looms listed as follows

A-Series Looms with the following part numbers:
A30-8H-CD4, A30-16H-CD4, A30-24H-CD4, A30-32H-CD4-E, A30-40H-CD4-E, A40-8H-CD4,A40-16H-CD4,
A40-24H-CD4, A40-32H-CD4-E, A40-40H-CD4-E, A48-8H-CD4, A48-16H-CD4, A48-24H-CD4,
A48-32H-CD4-E, A48-40H-CD4-E, A60-8H-CD4, A60-16H-CD4, A60-24H-CD4, A60-32H-CD4-E,
A60-40H-CD4-E, A72-8H-CD4, A72-16H-CD4, A72-24H-CD4, A72-32H-CD4-E, A72-40H-CD4-E

V-Series Looms with the following part numbers:
V30-16H-CD4-E, V30-24H-CD4-E, V30-32H-CD4-E, V30-40H-CD4-E,V40-16H-CD4-E,
V40-24H-CD4-E, V40-32H-CD4-E, V40-40H-CD4-E

SDL looms with the following part numbers
2010, 2030, 2010-30, 2030-30
(where the 2010 is a 20" weaving width with 16 frames, the 2030 is a 20" weaving width with 24 frames,
the 2010-30 is a 30" width with 16 frames and the 2030-30 is a 30" width with 24 frames)

Workshop Dobby Looms with the following part numbers:
3010, 3020, 3030, 3040, 3050, 3060 (where the 3010 is a 16" weaving width with 8 frames, 3020 is 16" with 16 frames,
3030 16" with 24 frames, 3040 is 24" with 8 frames, 3050 is 24" with 16 frames and 3060 is 24" with 24 frames)

comply with the Essential Requirements of the following EU Directives:
Machinery Directive 2006/42/EC Low Voltage Directive 2014/35/EU EMC Directive 2014/30/EU
Radio Equipment Directive 2014/53/EU RoHS 2 Directive 2011/65/EU

and further conform with the following EU Harmonized Standards as applicable:
EN ISO 11111-1:2016 EN ISO 4414:2010 EN 60204-1:2006 + A1:2009
EN 61000-6-3:2007+A1:2011 EN 61000-6-1:2007 EN 300 328 V2.1.1

Dated: 16 June 2017 **Position of signatory:** President **Name of Signatory:** Theodore Kruger
Signed below:
on behalf of AVL Looms, Inc.