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# WORKSHOP DOBBY LOOM

## User's Manual



**16" Workshop Dobby Loom**



**24" Workshop Dobby Loom**

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# WORKSHOP DOBBY LOOM

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## TABLE OF CONTENTS

INTRODUCTION . . . . .	1
WORKSHOP DOBBY LOOM SPECIFICATIONS . . . . .	1
PARTS . . . . .	2
TOOLS YOU WILL NEED . . . . .	6
ASSEMBLY . . . . .	7
INTERCHANGEABLE DESIGN UNIT (IDU) . . . . .	10
HANGING THE HARNESSSES IN THE IDU . . . . .	10
BEATER . . . . .	12
• 16” WDL Beater . . . . .	12
• 24” WDL Beater . . . . .	14
TREADLES . . . . .	16
BEAMS . . . . .	17
• 16” WDL Beams . . . . .	17
• 24” WDL Beams . . . . .	19
• 2-Beam . . . . .	21
COMPU-DOBBY III . . . . .	23
CONNECTING YOUR COMPU-DOBBY III TO YOUR COMPUTER . . . . .	24
DRIVERS . . . . .	24
TRAVELING WITH YOUR WORKSHOP DOBBY LOOM . . . . .	25
• 16” WDL Disassembly . . . . .	25
• Reassembly . . . . .	28
• 24” WDL Disassembly . . . . .	28
• Reassembly . . . . .	30
• 2-Beam . . . . .	30
• Reassembly . . . . .	30
WARPING SECTION . . . . .	31
WARPING THE PLAIN BEAM . . . . .	31
Securing the Crosses . . . . .	31
Removing the Warp for the Warping Board . . . . .	31
Adjusting the Tension Device . . . . .	31
Attaching the Raddle . . . . .	31
Tying onto the Warp Beam . . . . .	32
Sticks in the Raddle Cross . . . . .	32
Feeding the Raddle . . . . .	33

Preparing the Paper . . . . .	33
Winding the Warp . . . . .	34
Threading Cross . . . . .	34
Remove the Raddle . . . . .	35
Routing the Warp . . . . .	35
2-Beam . . . . .	36
WARPING THE SECTIONAL BEAM . . . . .	36
Tying onto the Warp Beam . . . . .	37
Winding the Warp . . . . .	37
Routing the Warp . . . . .	38
2-Beam . . . . .	39
Threading, Sleying, and Tying On . . . . .	39
Threading the Harnesses . . . . .	40
Unused Heddles . . . . .	40
Threading the Reed . . . . .	40
Combing onto the Cloth Beam/Sandpaper Beam (16"/24" WDL) . . . . .	41
Tying onto the Cloth Storage Beam (24" WDL Only) . . . . .	42
Setting the Warp Tension . . . . .	43
WEAVING PROCEDURES . . . . .	43
Winding Bobbins . . . . .	43
Using the AVL Bobbin-Winding Guide . . . . .	44
Placing Bobbin in the Shuttle . . . . .	46
Feeding the Shuttle with Standard Tensioner/ Adjusting the Tension . . . . .	46
Feeding the Thick Yarn Shuttle/Adjusting the Tension . . . . .	46
Starting Your Weaving . . . . .	47
Advancing the Cloth . . . . .	47
LOOM MAINTENANCE . . . . .	48
1) Tightening the Bolts . . . . .	48
2) Lubrication and Cleaning . . . . .	48
3) Cleaning a Filter . . . . .	48
4) Checking Cords and Cables . . . . .	48
5) Tool Kit and Spare Parts . . . . .	49
TROUBLESHOOTING . . . . .	50
1) Harnesses . . . . .	50
2) Tension . . . . .	51
3) A Shed . . . . .	53
4) Beaters and Flyshuttles . . . . .	53
5) Dobby . . . . .	54
6) Left Treadle Issues . . . . .	54

## INTRODUCTION

Congratulations on your purchase and welcome to the AVL family. Your Workshop Dobby Loom (WDL) is designed to provide you with years of enjoyable service. And, with your purchase, you are entitled to AVL's world class loom support. Please contact us with any questions at [info@avlusa.com](mailto:info@avlusa.com) or 1-530-893-4915.

This manual provides setup and use information for all current WDL loom configurations, including:

- 16" weaving width (herein referred to the 16" WDL)
- 24" weaving width (herein referred to the 24" WDL)
- 8, 16, or 24 harness configurations
- Single or double Warp Beam configurations

Please read the entire manual before starting the assembly process. Also, please note which diagrams and sections are applicable to your loom.

## WDL SPECIFICATIONS

<b>Weaving Width</b>	16" (40.6 cm)	16" (40.6 cm)	24" (61 cm)	24" (61 cm)
<b>No. of Warp Beams</b>	1	2	1	2
<b>Height</b>	43-1/2" (110.5 cm)	43-1/2" (110.5 cm)	43-1/2" (110.5 cm)	43-1/2" (110.5 cm)
<b>Width</b>	30-1/2" (77.5 cm)	30-1/2" (77.5 cm)	35-1/2" (90.2 cm)	35-1/2" (90.2 cm)
<b>Depth</b>	39" (99.1 cm)	46" (116.8 cm)	39" (99.1 cm)	46" (116.8 cm)
<b>Weight</b>	47 lbs. (22 KG)	53 lbs. (24.1 KG)	77 lbs. (35 KG)	83 lbs. (37.7 KG)



**16" Workshop Dobby Loom**



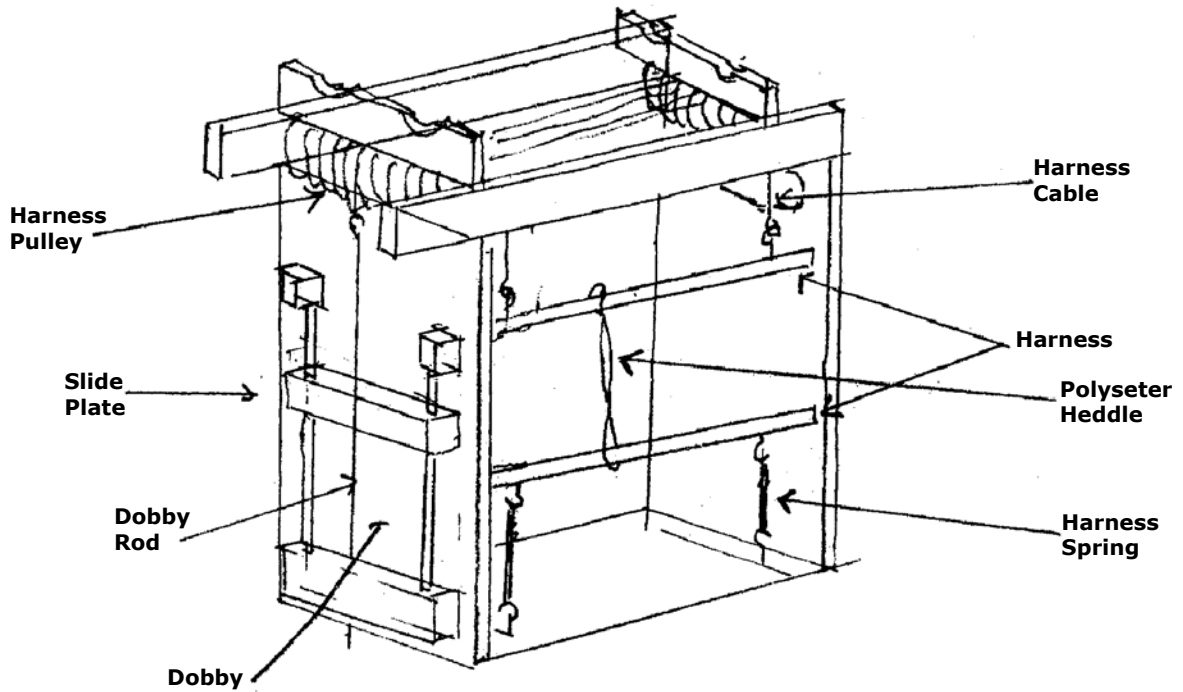
**24" Workshop Dobby Loom**

# WORKSHOP DOBBY LOOM

Please watch the enclosed 16" Workshop Dobby Loom Assembly and Use videos before you begin assembly.

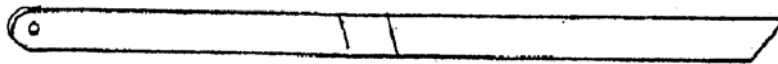
## PARTS

(1) Interchangeable Design Unit (IDU): harness pulley support, harnesses, and dobbie

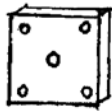


(1) Hardware Bag

(2) Leg Sets (left and right)

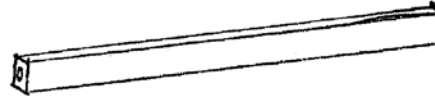


X-Frame Legs - Quantity Four marked as "A", "B", "C", and "D" (each having a different hole scheme)

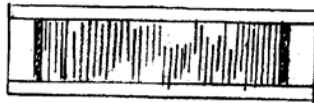


(2) Center Braces

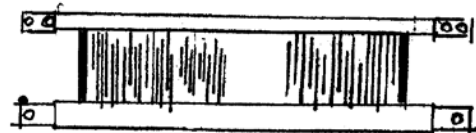
(1) Cross Brace, Birch hardwood plywood



(1) Reed Assembly - includes Reed, Beater Top and Beater Bottom (or Race for 24" WDL)



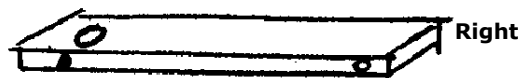
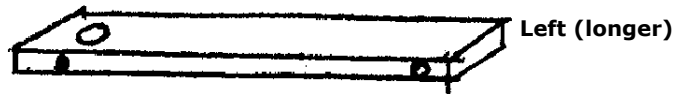
16" Reed Assembly



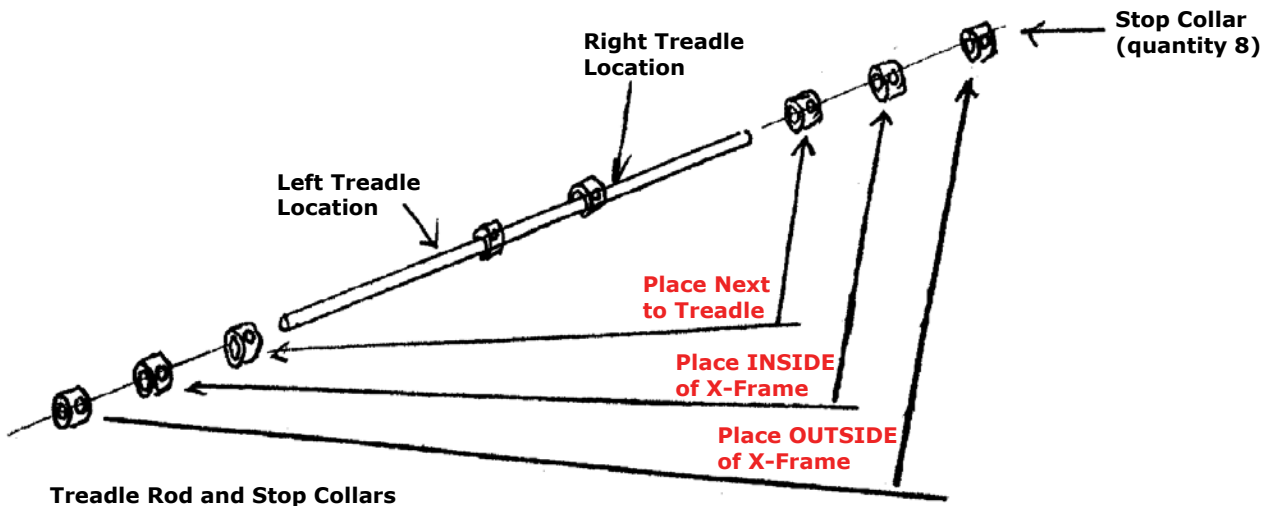
24" Reed Assembly

(2) Beater Legs

(2) Treadles (left and right)

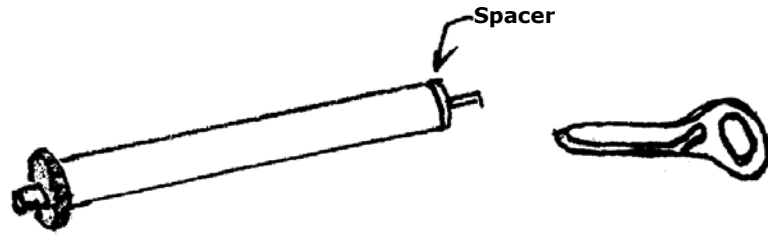


(1) Treadle Rod and Stop Collars (8)



# WORKSHOP DOBBY LOOM

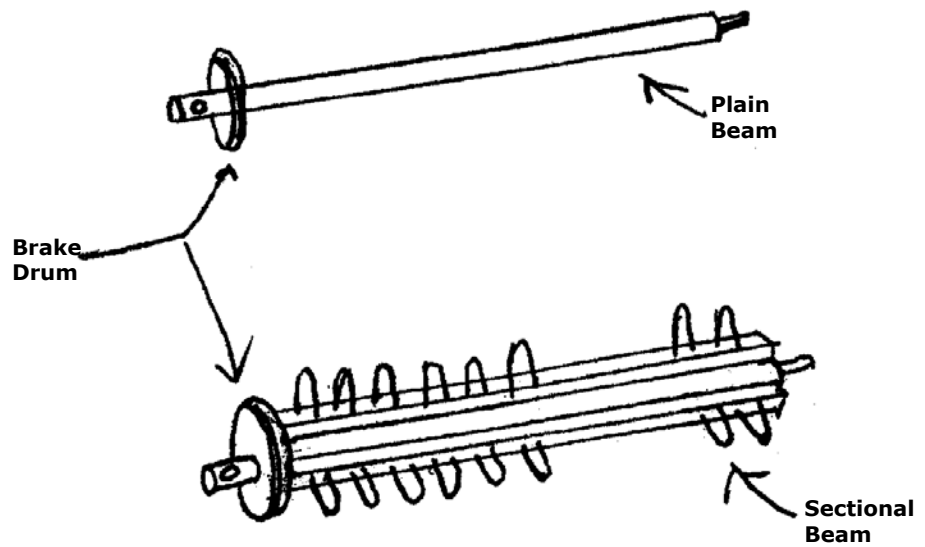
(1) Cloth Beam with Ratchet



(1) Cloth Storage Beam with Tie-On Rod & Attaching Cords - **FOR 24" WIDTH ONLY**

(2) Cloth and Cloth Storage Beam Ratchet Handles, aluminum - **FOR 24" WIDTH ONLY**

(1) Warp Beam with Brake Drum

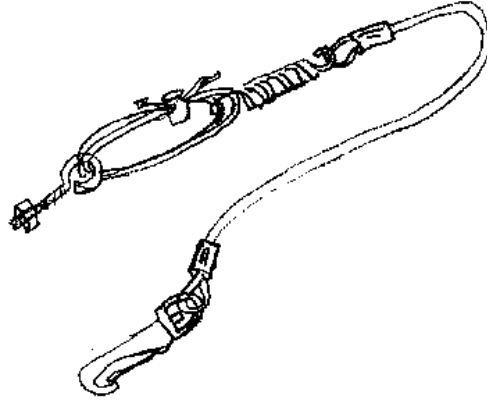


(2) Warp and Cloth Beam Handles, wood - **FOR 16" WIDTH ONLY**

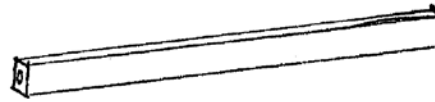
(1) Warp Beam Handles, wood - **FOR 24" WIDTH ONLY**



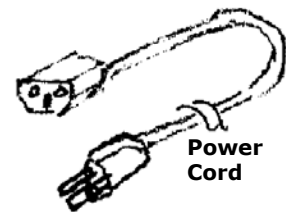
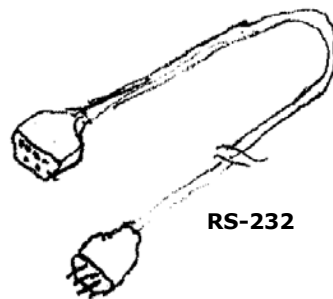
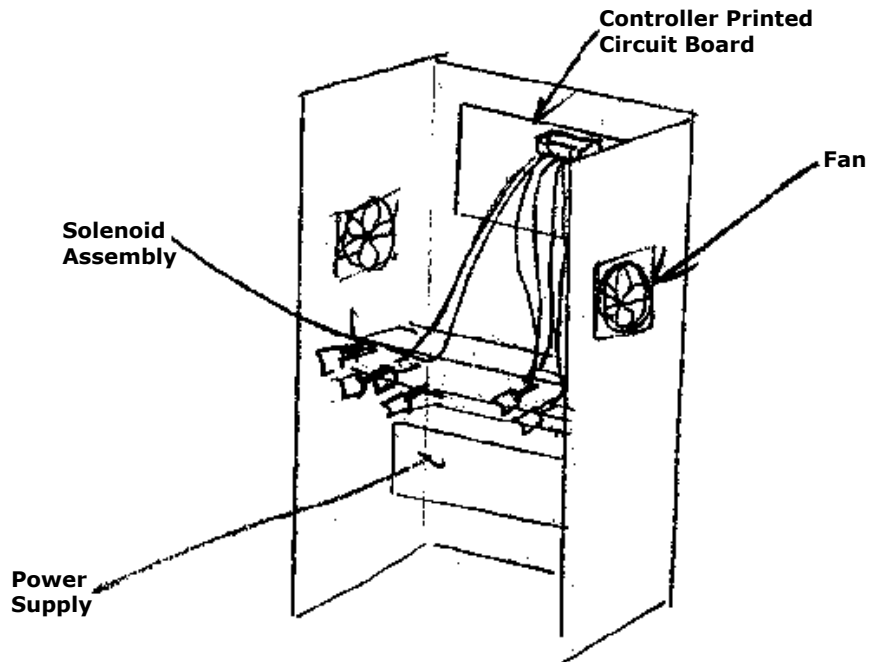
(1) Tension Tie-Up Assembly for Warp Beam



(1) Separation Beam, solid Ash hardwood



(1) Compu-Dobby® III with RS-232 Cable





## WORKSHOP DOBBY LOOM

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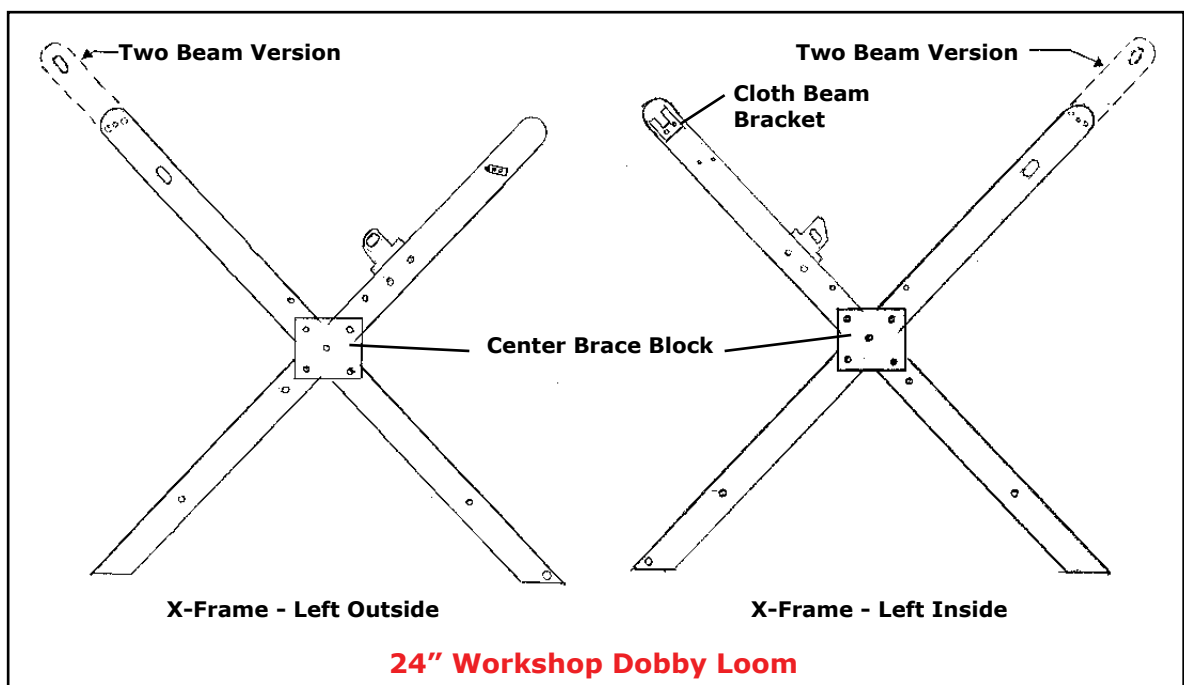
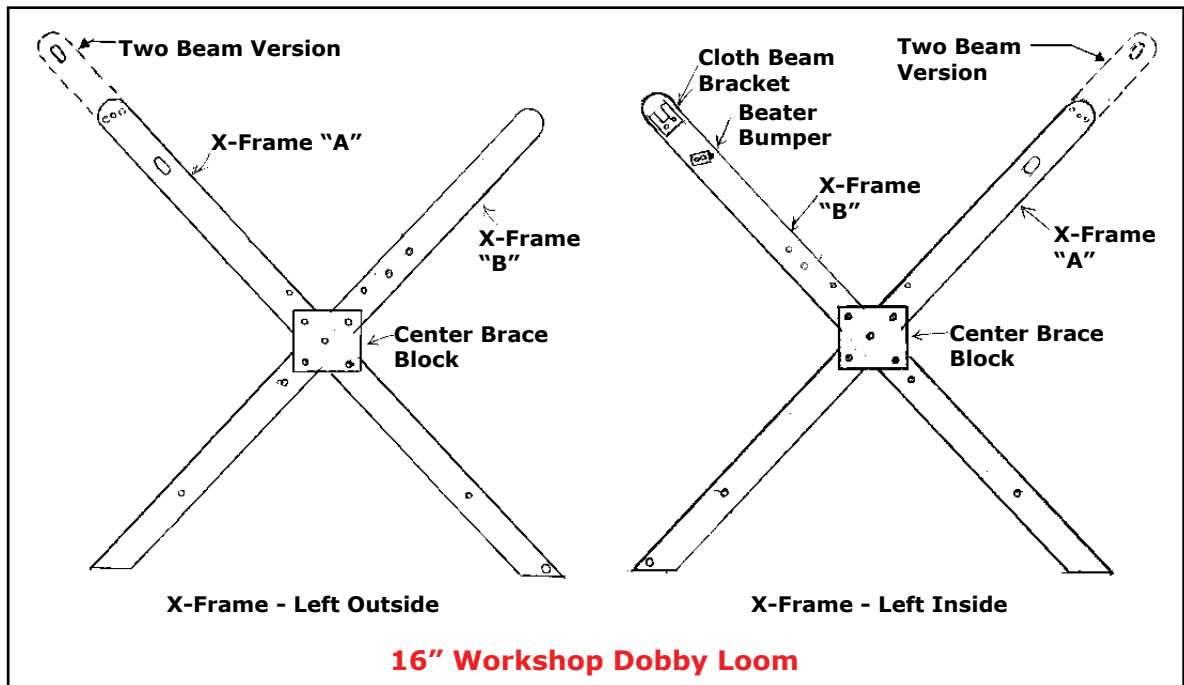
- (1) Travel Straps with Handle
- (2) Legs (left and right) - **FOR 2-BEAM SYSTEM ONLY**
- (1) Warp Beam with Brake Drum - **FOR 2-BEAM SYSTEM ONLY**
- (1) Tension Tie-Up Assembly for Warp Beam - **FOR 2-BEAM SYSTEM ONLY**
- (1) Separation Beam, solid Ash hardwood

### TOOLS YOU WILL NEED

- Allen wrench (provided)
- Socket wrench, with 7/16" socket
- Wrench (7/16")
- Philips screwdriver
- Hammer (optional)

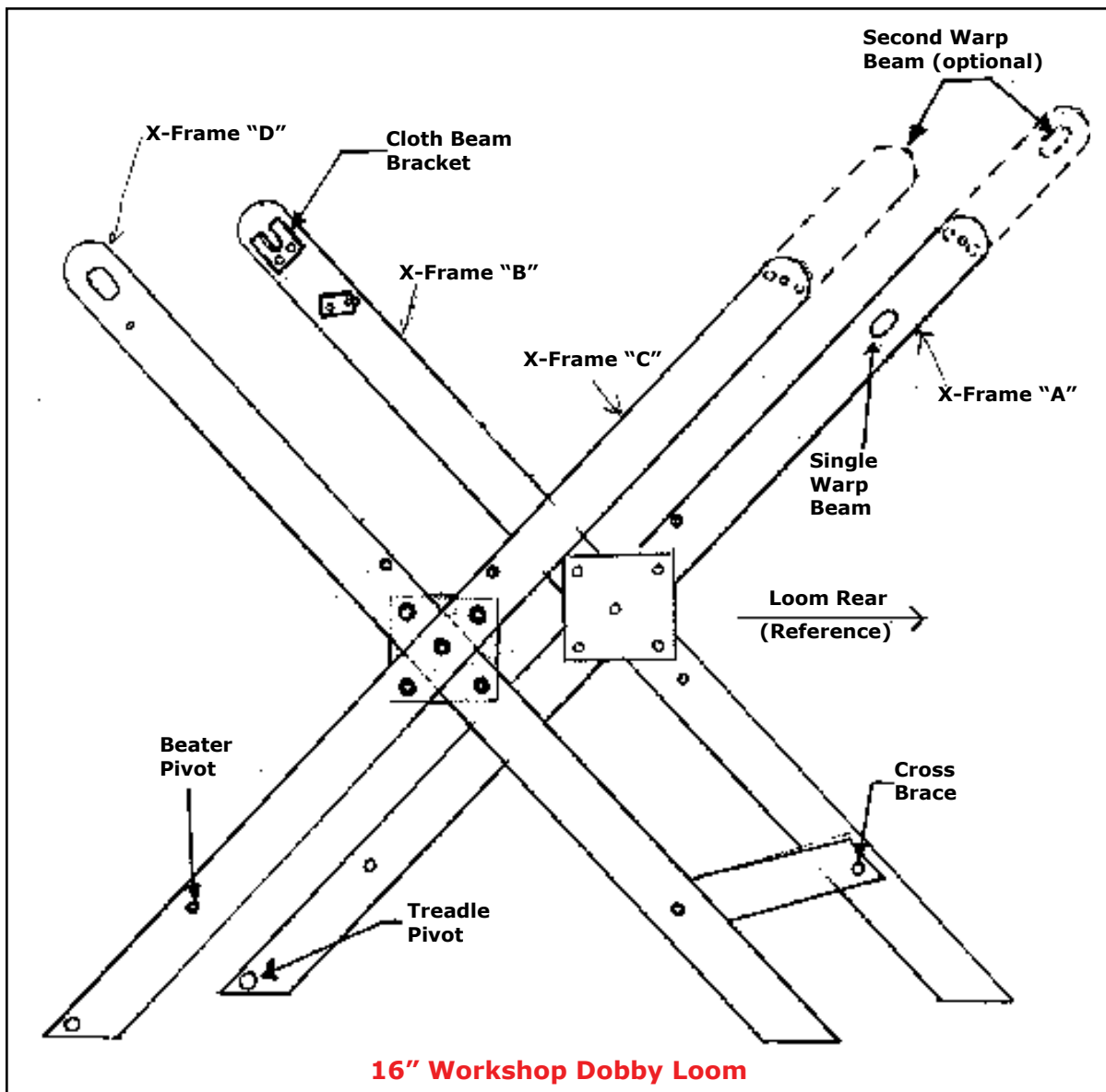
## ASSEMBLY

- 1) *Left Side:* Identify the left Leg Set. Using the image below fit the legs (A and B) together at the notch in the center. Slide a carriage bolt from the outside through the center hole at the crossing of the legs. For reference, the outside of the legs is identified as the side opposite of that on which the Cloth Beam Bracket is mounted. Slide a Center Brace onto the bolt. Install a washer and wing nut, and tighten to 'finger tight' condition. Repeat this process for the remaining four holes using the carriage bolts, washers and wing nuts to fully secure the Center Brace to the legs. This assembly is now referred to as the Left Side.

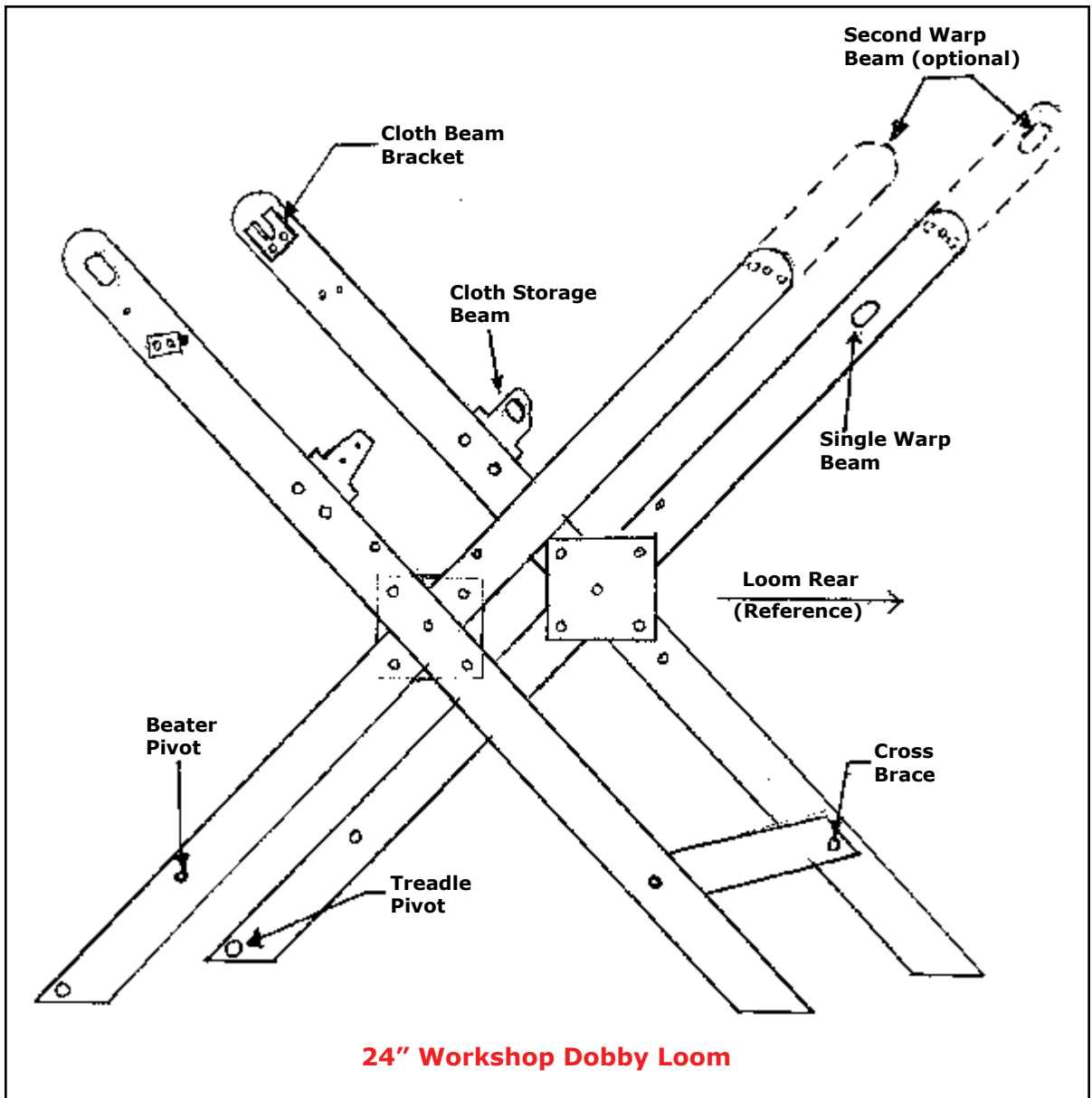


## WORKSHOP DOBBY LOOM

- 2) *Right Side:* Repeat Step #1 for the right Leg Set (C and D). This assembly is now referred to as the Right Side.



- 3) *Cross Brace:* **IMPORTANT:** The Cross Brace is plywood and should not be confused with the solid wood Separation Beam. Attach the Cross Brace to the inside of the Right Side and secure with black thumbscrew (long) from the outside of the leg. Stand the Left and Right Sides approximately 17" apart (for the 16" WDL) or 25" apart (for the 24" WDL) with Center Braces facing each other. Secure the Cross Brace to the Left Side with a black thumbscrew (long) from the outside of the leg. This assembly is now referred to as the X-Frame, which should now be standing without support.



## WORKSHOP DOBBY LOOM

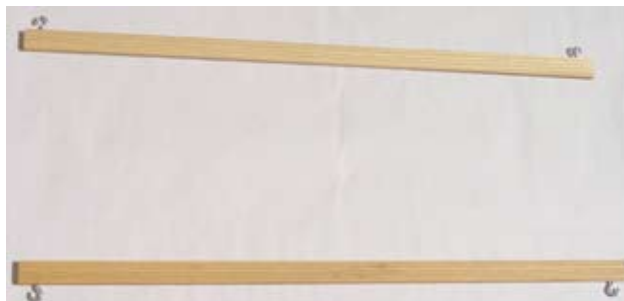
### INTERCHANGEABLE DESIGN UNIT (IDU)

### HANGING THE HAR- NESSES ON THE IDU

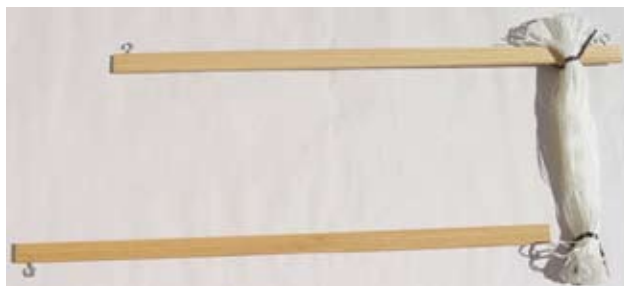
- 1) Set the IDU onto the Cross Braces inside the X-Frame. Face the IDU with the Dobby to the right side of the front of the loom. Secure the IDU to the X-Frame using (4) carriage bolts, washers and wing nuts. As before, the bolts are inserted from the outside through the X-Frame and through the IDU. Tighten all the wing nuts so that the square part of the carriage bolt head sinks into the outside of the X-Frame.

**NOTE:** Use a light tap with a hammer on the end of the bolt may be used to help seat the bolt.

- 2) Review the lay of the harness cables ensuring that they are arranged on their proper pulleys. Cable ends should be hanging freely over the pulleys and down inside the IDU.
  - a) Insert an Eye Hook Retainer Tube over each harness cable loop and up above the crimped Nico. These will be slid back down over the loop once it has been hooked into the harness stick eye hook.
  - b) Lay one harness stick flat on a table or floor with the screw eyes face away. Lay a second harness stick below so that the eye screws face in the opposite direction of the first harness stick.



Slide the top harness stick through the loop at one end of a 25 heddle bunch, then slide the bottom harness stick through the opposite loop of the heddles bunch. Now clip the loops of your heddles -- it is much easier to cut the loops when your harnesses are off the loom. This assembly is now referred to as the Harness.



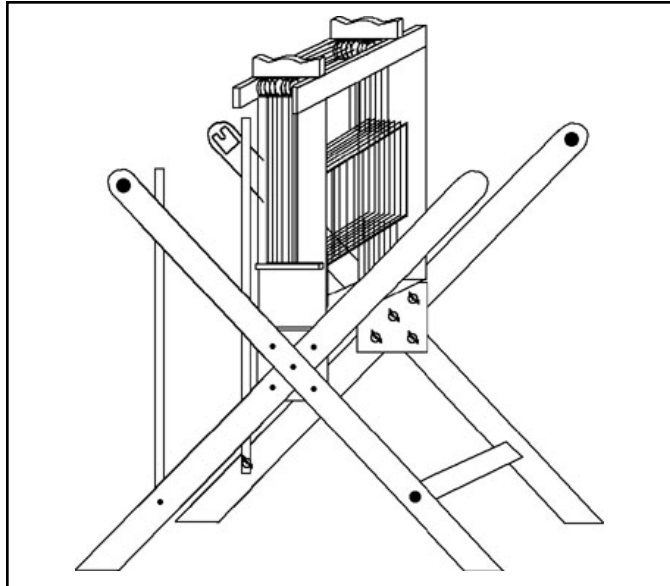


- c) When hanging the harnesses, start at the rear most harness position and work forward. Holding the top harness stick, lift the Harness and hook the first left harness cable to the eye hook on the left side of the harness stick and the first right harness cable to the right eye hook. Let the harness hang in the IDU. Attach harness springs to the bottom harness stick eye hooks. Hook each of the springs to the eye hooks directly below each spring on the bottom of the IDU.
- d) Repeat steps b) and c) for the remaining harnesses.

## BEATER

Locate the Beater Legs and Reed Assembly.

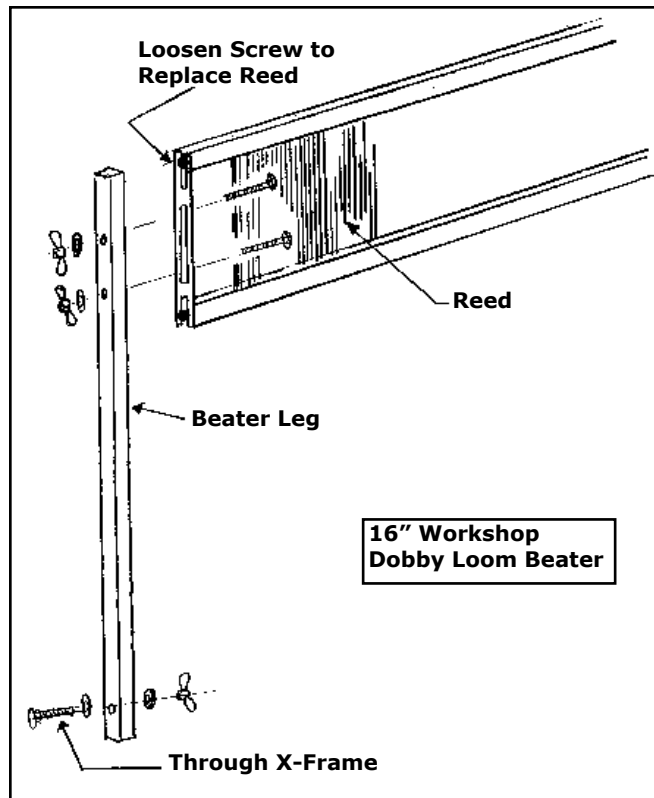
- 1) The Beater Legs are attached to the inside of the X-Frame on the 16" WDL and to the outside of the X-Frame on the 24" WDL. Attach each beater leg to the X-Frame using a carriage bolt, 2 washers and a wing nut. The carriage bolt is inserted from the outside on the 16" WDL and from the inside from the 24" WDL. One washer is placed on the bolt between the X-Frame and the Beater Leg. The other washer is placed on the bolt between the Beater Leg and the wing nut.



- 2) The following section is divided between the 16" WDL Beater assembly and 24" WDL Beater assembly processes.

### **16" WDL Beater**

- a) *16" WDL Right Beater Leg:* Slide a 1 1/2" bolt from the inside of the metal bracket on the Reed Assembly through the top hole of the beater leg. Then slide a washer and wing nut onto the bolt and tighten. Slide another 1 1/2" bolt from the inside of the metal bracket on the Reed Assembly through the bottom hole of the beater leg.

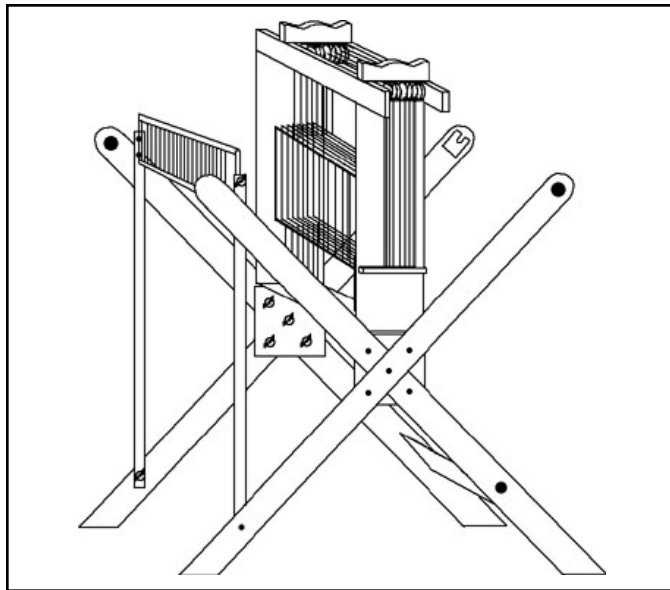


- b) 16" WDL *Left Beater Leg*: Repeat step #2a for the left side.
- c) If the reed is not installed in the Reed Assembly, perform the following steps. Loosen the screws holding the Beater Top Clamp and slide the Beater Top up to make room for the Reed. Insert and seat the Reed into the Beater Bottom, slide the Beater Top down to seat it on the Reed, and tighten the clamp screws to secure the Reed.

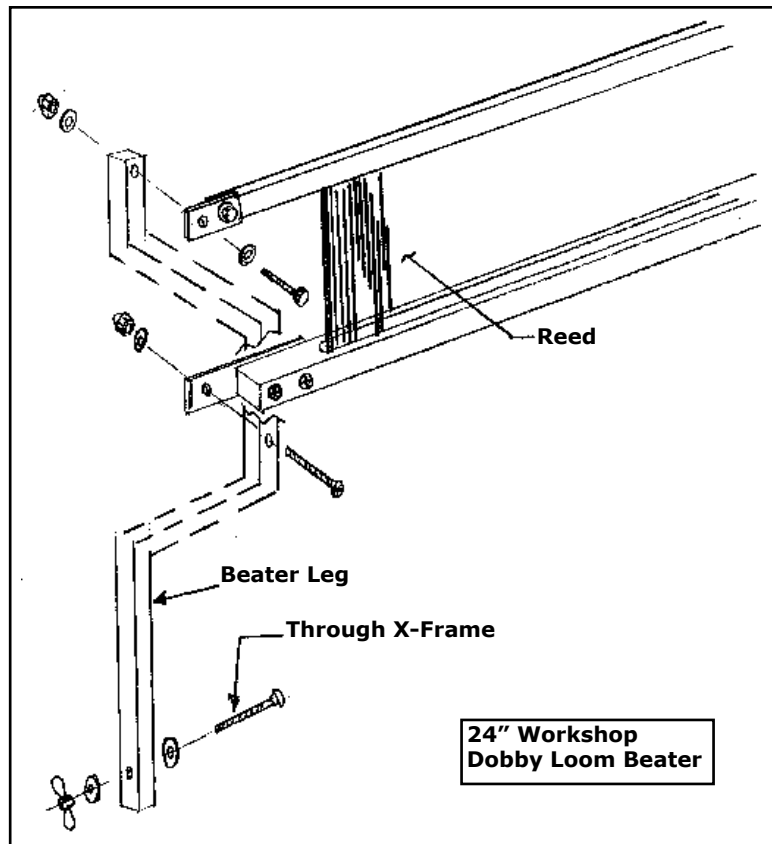


## 24" WDL Beater

The 24" WDL Beater Race faces the front of the loom and the bumpers on the Beater Top face the rear of the loom. A set of brackets secure the Beater Top and Race individually to the Beater Leg. The Beater Top brackets utilize 1 7/8" hex bolts, washers and nylock nuts. The Race utilizes Phillips-head screws, washers and nylock nuts. The Reed Assembly as typically delivered from the factory is the Beater Top, Reed, Race, bumpers and brackets preassembled and secured with strapping tape. The strapping tape should be removed once the Reed Assembly is attached to the Beater Legs.



- a) 24" WDL *Race*: Slide a Phillips-head screw through the front of the right Beater Leg in through the metal bracket on the Race. Insert a washer and secure with a nylock nut. Repeat this step for the left Beater Leg. Before tightening the hardware ensure that the bracket is parallel with the Beater Top. Now, tighten the hardware.



- b) 24" WDL *Beater Top*: Slide a 1 7/8" hex bolt through front Beater Top bracket, through the front of the right Beater Leg, then through the rear Beater Top bracket. Insert a washer and secure with a nylock nut. Repeat this step for the left Beater Leg. Before tightening the hardware ensure that the bracket is parallel with the Beater Top. Now, tighten the hardware.
- c) If the reed is not installed in the Reed Assembly, perform the following steps. Loosen and remove the bolts securing the Beater Legs to the Beater Top brackets. Lift off the Beater Top. Insert and seat the Reed into the Beater Bottom, slide the Beater Top down and seat it on the Reed. Re-install the hardware to secure the Reed.

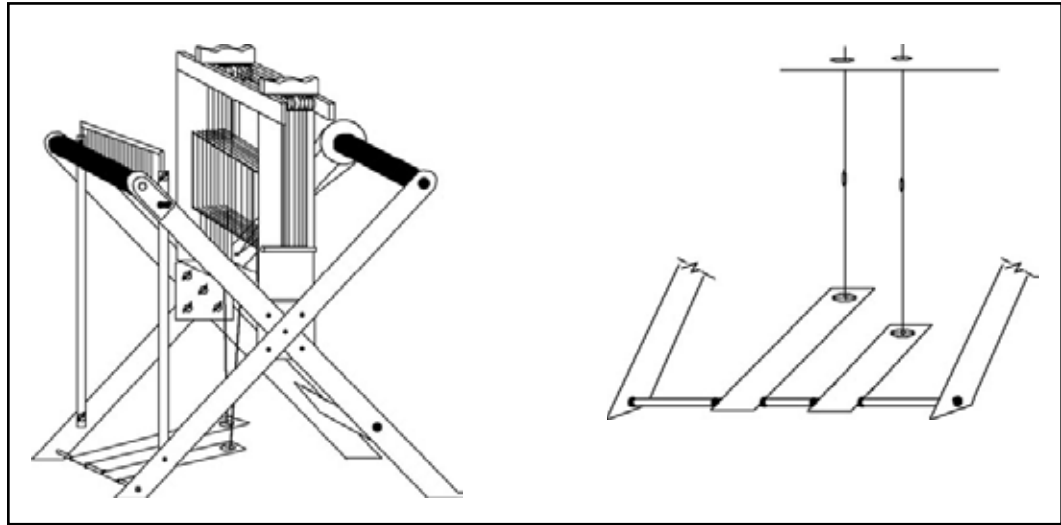
The assembled Beater Legs and Reed Assembly is now referred to as the Beater.

**NOTE:** Now that you have the Reed Assembly attached and properly aligned on the Beater Legs, it is generally easiest to remove and replace the assembled Beater as a whole unit assuming you can accommodate the assembled Beater when traveling.

## WORKSHOP DOBBY LOOM

### TREADLES

The metal Treadle Rod comes with eight stop collars. The inner-most two stop collars are pre-located for your convenience. They are *not* symmetrically placed on the Treadle Rod.



- 1) Remove the outer six stop collars. Slide the right Treadle (shorter treadle) onto the shorter end of the Treadle Rod with the Treadle Cable aligning up. Slide the left Treadle (longer treadle) onto the longer end of the Treadle Rod with the Treadle Cable aligning up. Slide a stop collar onto each end of the rod and loosely position them next to the treadles. Tighten the stop collar into place using an Allen Wrench. This assembly is now referred to as the Treadle Assembly.

**NOTE:** There should be enough space left between the stop collar and the treadle to avoid binding the treadle movement.

- 2) Place the Treadle Assembly under the front of the loom with Treadle Cables facing up and directly beneath the IDU. Slide another stop collar on each side of the Treadle Assembly, and leave it loose for later adjustment. Slide the left end of the rod into the hole on the lower front left X-Frame leg; slide the right end of the rod into the hole on the lower front right X-Frame leg. Then slide a stop collar onto each end of the rod. The X-Frame legs should be sandwiched by stop collars. Adjust the for stop collars until they are snug against the X-Frame and tighten.

- 3) Unclip the cables from under the IDU. Clip the left hanging cable from IDU to the left Treadle Cable and the right hanging cable from IDU to the right Treadle Cable. These cables connect the treadles to the dobbie. Depressing right Treadle raises the Harnesses. Depressing the left Treadle signals the Compu-Dobby® III to advance to the next pick.

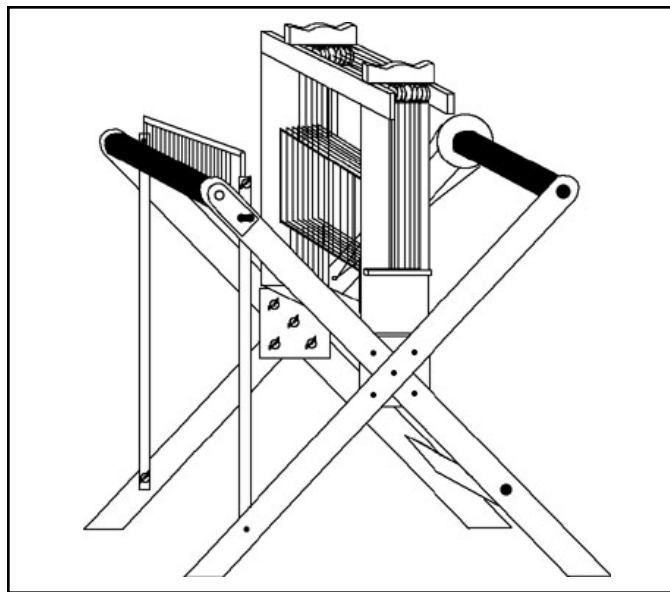
**NOTE:** While rare, it has been noted that the Treadle Cables pulleys located inside the bottom shelf of the IDU can loosen during travel and/or very heavy weaving. It is a good practice to routinely check the pulley bracket screws for tightness and verify that the cable retainer brackets are seated flush on the pulley and their retaining bolts are also tight.

The following section is divided between the 16" WDL Beam assembly and 24" WDL Beam assembly and 2-Beam assembly processes.

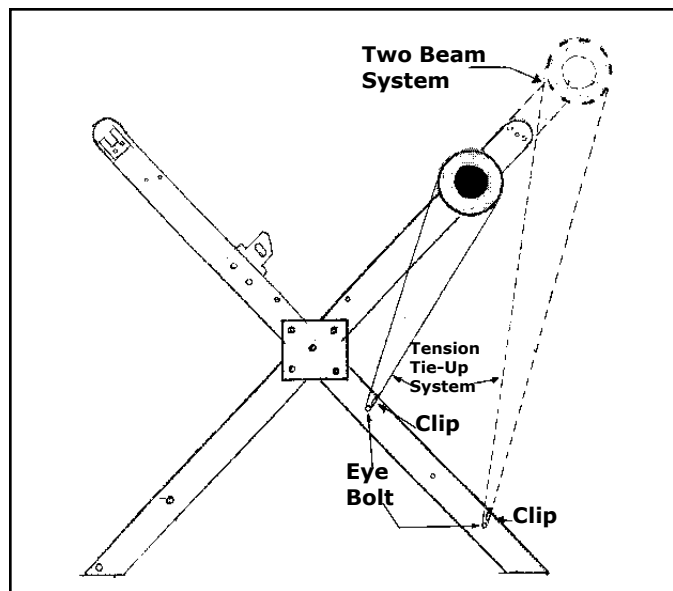
## BEAMS

### 16" WDL Beams

- 1) The Cloth Beam (or sandpaper beam) with Ratchet is inserted in the front of the loom. Slide the right beam end with the plastic ratchet into the oblong hole on the front frame leg and then slide the other end of the beam into the Cloth Beam Retainer Bracket on the other leg. Insert the retainer pin into the Cloth Beam Retainer Bracket and secure with a small hair pin.



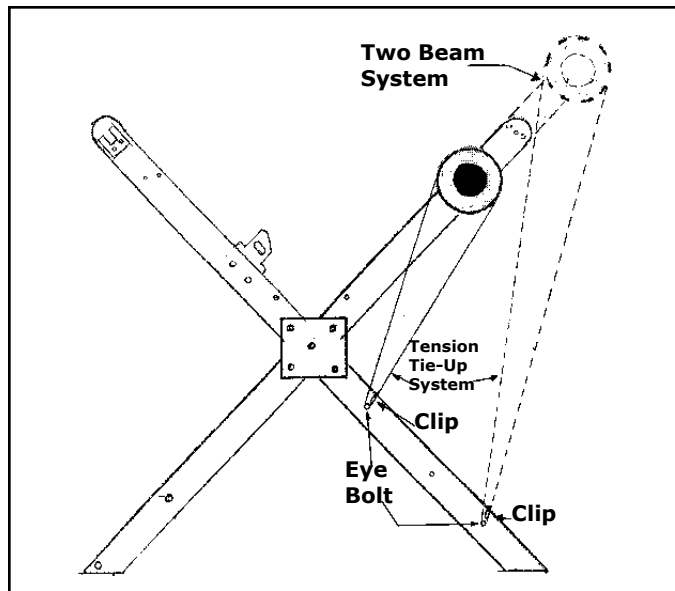
- 2) The Warp Beam goes to the back of the loom. Slide the beam end with the brake drum into the oblong hole on the back frame leg and then slide the other end of the beam into the Cloth Beam Retainer Bracket on the other leg. Insert the retainer pin into the Cloth Beam Retainer Bracket and secure with a small hair pin. Place a washer on the Tension Tie-Up Assembly eye-bolt. From the inside of the X-Frame, insert the eye-bolt of the Tension Tie-Up Assembly into the hole near the IDU on the lower left leg of the X-Frame and secure with another washer and nut. Wrap the Tension Tie-Up cord over and down the rear side of Warp Beam Brake Drum. Wrap the cord around the drum twice working towards the center of the loom. The cord wraps counter-clockwise if you are looking at the drum from the left side of the loom. Extend the cord back down to the eye-bolt and clip it on. **NOTE:** The cord should not overlap itself on the drum.



- 3) The Separation Beam is located at the upper rear of the X-Frame and is secured with Phillips-head screws. **IMPORTANT: The Separation Beam is solid wood and should not be confused with the plywood Cross Brace.** Insert the Separation Beam between the upper rear members of the X-Frame and secure with Phillips-head screws from the outside of the leg.

### 24" WDL Beams

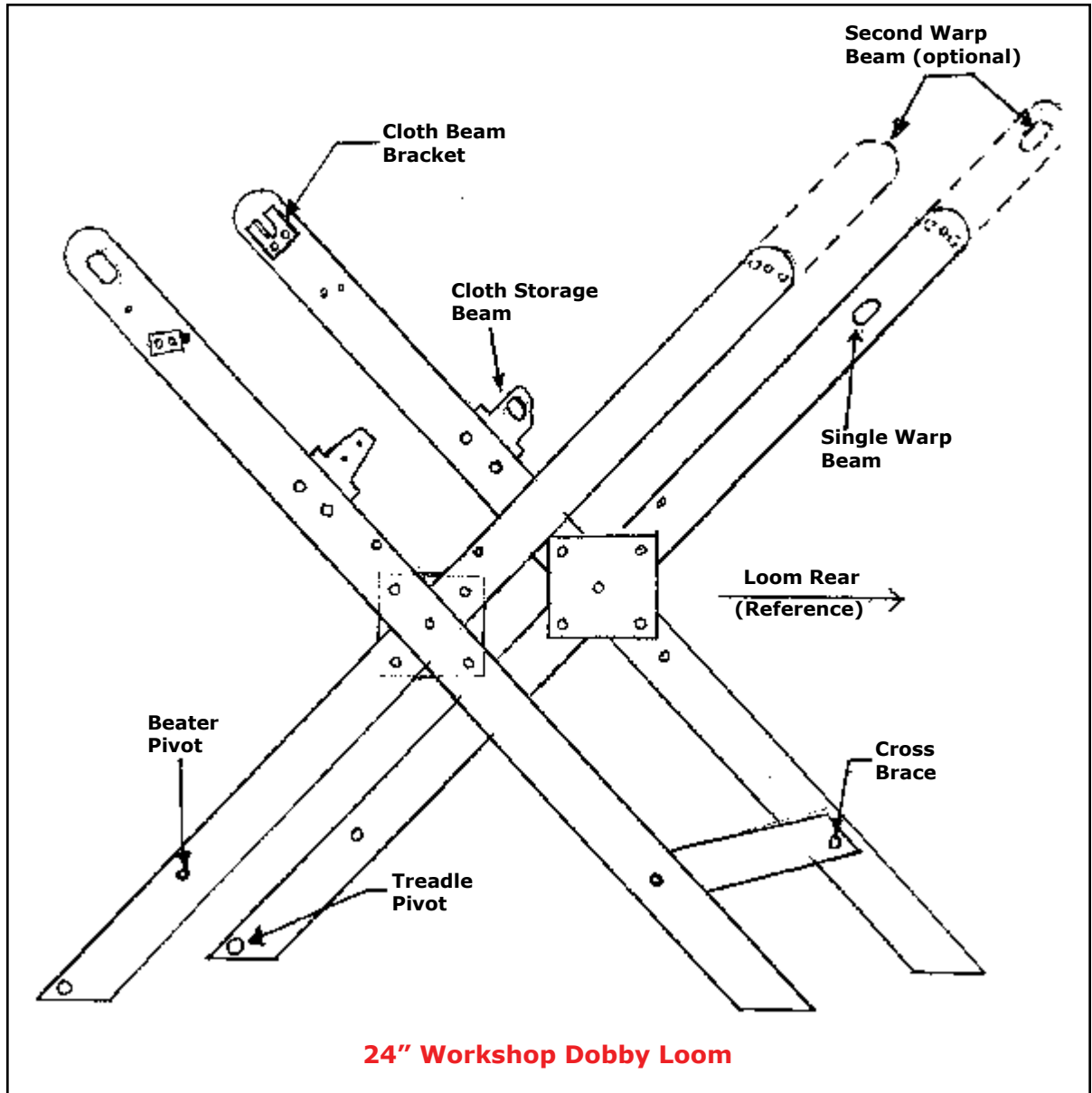
- 1) The Cloth Beam (or sandpaper beam) with Ratchet is inserted in the front, upper position on the X-Frame. Place the spacer with the small hole on the Cloth Beam side opposite the ratchet. Place a Ratchet Handle on the ratchet side of the Cloth Beam so that the Ratchet Handle will engage with the ratchet teeth. Slide the right beam end with the plastic ratchet into the oblong hole on the front frame leg and then slide the other end of the beam into the Cloth Beam Retainer Bracket on the other leg. Insert the retainer pin into the Cloth Beam Retainer Bracket and secure with a small hair pin.
- 2) The Cloth Storage Beam is inserted in the front, lower position on the X-Frame, just in front of the IDU. Place the spacer with the small hole on the Cloth Beam side opposite the ratchet. Place a Ratchet Handle on the ratchet side of the Cloth Beam so that the Ratchet Handle will engage with the ratchet teeth. Slide the right beam end with the plastic ratchet into the oblong hole on the front frame leg and then slide the other end of the beam into the Cloth Beam Retainer Bracket on the other leg. Insert the retainer pin into the Cloth Beam Retainer Bracket and secure with a small hair pin.
- 3) The Warp Beam goes to the back of the loom. Slide the beam end with the brake drum into the oblong hole on the back frame leg and then slide the other end of the beam into the Cloth Beam Retainer Bracket on the other leg. Insert the retainer pin into the Cloth Beam Retainer Bracket and secure with a small hair pin. Place a washer on the Tension Tie-Up Assembly eye-bolt. From the inside of the X-Frame, insert the eye-bolt of the Tension Tie-Up Assembly into the hole near the IDU on the lower left leg of the X-Frame and secure with another washer and nut. Wrap the Tension Tie-Up cord over and down the rear side of Warp Beam Brake Drum. Wrap the cord around the drum twice working towards the center of the loom. The cord wraps counter-clockwise if you are looking at the drum from the left side of the loom. Extend the cord back down to the eye-bolt and clip it on. **NOTE:** The cord should not overlap itself on the drum.



- 4) The Separation Beam is located at the upper rear of the X-Frame and is secured with Phillips-head screws. **IMPORTANT: The Separation Beam is solid wood and should not be confused with the plywood Cross Brace.** Insert the Separation Beam between the upper rear members of the X-Frame and secure with Phillips-head screws from the outside of the leg.

**2-Beam**

The 2-Beam system consists of longer left and right upper rear legs for the X-Frame, Warp Beam, Tension Tie-Up Assembly and Separation Beam.



**24" Workshop Dobby Loom**

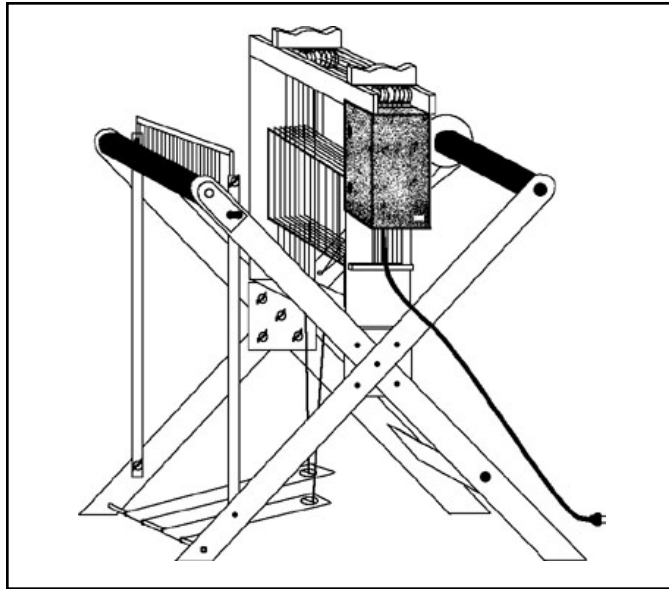
- 1) Remove the IDU, Treadle Rod/Treadle Assembly and all Beams. Disassemble the X-Frame.
- 2) Replace the upper rear left and right legs with the longer legs provided and re-assemble the loom following the directions provided in the *Assembly*: sections to this point in the manual.



- 3) Slide the 2<sup>nd</sup> Warp Beam end with the brake drum into the upper oblong hole on the back frame leg and then slide the other end of the beam into the Cloth Beam Retainer Bracket on the other leg. Insert the retainer pin into the Cloth Beam Retainer Bracket and secure with a small hair pin. Place a washer on the Tension Tie-Up Assembly eye-bolt. From the inside of the X-Frame, insert the eye-bolt of the Tension Tie-Up Assembly into the hole near the foot of the lower left leg of the X-Frame and secure with another washer and nut. Wrap the Tension Tie-Up cord over and down the rear side of Warp Beam Brake Drum. Wrap the cord around the drum twice working towards the center of the loom. The cord wraps counter-clockwise if you are looking at the drum from the left side of the loom. Extend the cord back down to the eye-bolt and clip it on. **NOTE:** The cord should not overlap itself on the drum.
  
- 4) The Separation Beam is located in the higher set of holes in the upper rear of the X-Frame and is secured with Phillips-head screws. **IMPORTANT: The Separation Beam is solid wood and should not be confused with the plywood Cross Brace.** Insert the Separation Beam between the upper rear members of the X-Frame and secure with Phillips-head screws from the outside of the leg.

## COMPU-DOBBY III

The Compu-Dobby® III will have come packed with a wood backing plate. The wood backing plate also serves as the shuttle tray when set upon the IDU. The Compu-Dobby is installed on the right side of the IDU.



- 1) Remove the wood backing plate from the Compu-Dobby by removing the 4 black thumbscrews (short). Place the wood backing plate on the top of the IDU with the metal dowels facing down and inserted in the matching holes on the IDU.

**NOTE:** Always travel or ship the Compu-Dobby with the wood backing plate in place to provide the best possible protection. Thus, take care to save the barrel nuts inserted in the backing plate as these are used with the thumbscrews to hold the board to the Compu-Dobby III.)

- 2) Align each plastic solenoid tip in the Compu-Dobby such that the “U” or concave indentures of the tips aligns in a vertical orientation. **NOTE:** In this orientation, the solenoid tips will cradle the Dobby Wires and ensure that the solenoids properly capture and engage the Dobby Wires.
- 3) While carefully avoiding jostling the solenoid tips from their orientation, mount the Compu-Dobby onto the IDU and secure with the 4 black thumbscrews (short). **NOTE:** There are two holes on each side of the box that will line up with the two holes on either side of the IDU.

## WORKSHOP DOBBY LOOM

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### CONNECTING YOUR COMPU-DOBBY III TO YOUR COMPUT- ER

- 1) Plug the female end of the Compu-Dobby power cord into the Compu-Dobby. Plug the male end of the Compu-Dobby power cord into your power source (wall outlet). **NOTE:** AVL strongly recommends that you use a surge protector with your Compu-Dobby.
- 2) Attach the RS-232 cable into the Compu-Dobby III and your computer.

### DRIVERS

Many software providers have developed drivers for the AVL Compu-Dobby III. Some have divided the drivers by the number of harnesses and thus require a different driver. If you choose to use one of these packages, ensure that you are getting the correct driver for your Compu-Dobby III and for your number of harnesses.

AVL offers two of the most feature rich design and loom control programs: *WeavePoint* and *WeaveMaker Mi*. Both come with the exact driver needed to run the Compu-Dobby III with your number of harnesses. *WeavePoint* is for the PC and *WeaveMaker Mi* is available for Mac or PC. These two programs are the top two sellers for AVL owners, but don't take our word for it. Try out the free demo by downloading:

- WeavePoint - <http://www.weavepoint.com/wdemo6.html>
- WeaveMaker Mi - <http://www.weavemaker.com/downloads/>

If you have already chosen either *WeavePoint* or *WeaveMaker Mi*, please refer to the software manual for help setting up the software.

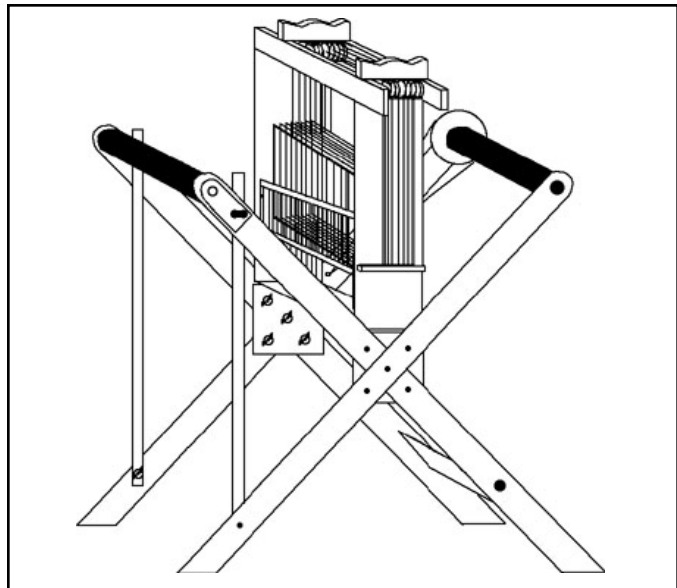
### TRAVELING WITH YOUR WORKSHOP DOBBY LOOM

When traveling with your WDL, it is a good idea to place any loose hardware on to the item on which it is used or to place it in a sealable plastic bag and pack it with your tools.

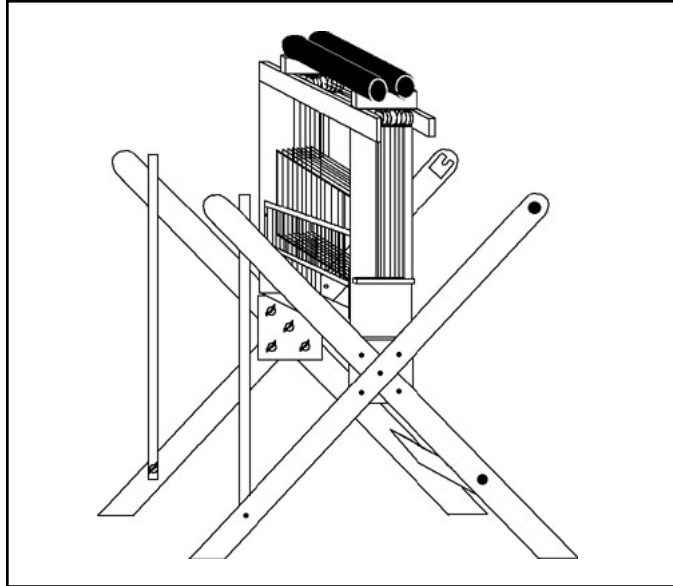
**NOTE:** If you plan on traveling with your WDL and would like some help in making packing easier, please contact AVL for information on custom travel cases.

#### 16" WDL Disassembly

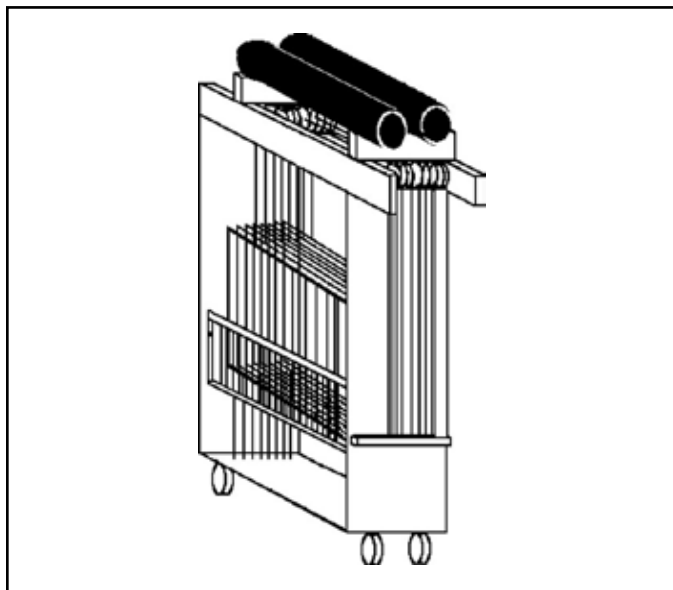
- 1) Turn off the Compu-Dobby, unplug the power cord from your outlet and the Compu-Dobby and coil up the power cord for travel. Disconnect the RS-232 cable from the Compu-Dobby and your PC and coil it up for travel.
- 2) Remove the Compu-Dobby III from the IDU and set it down. Remove the shuttle tray/wood backing plate from the top of the IDU (the one that originally came attached to the back of the Compu-Dobby III). Attach the wood backing plate to the back of the Compu-Dobby.
- 3) Remove the bolts securing the Reed Assembly to the Beater Legs. You may need to slide the reed to the right or left to remove the bolts. Holding the Reed Assembly, hang it from the open screw eyes inside the IDU. Make sure the Reed Assembly is hanging vertically.



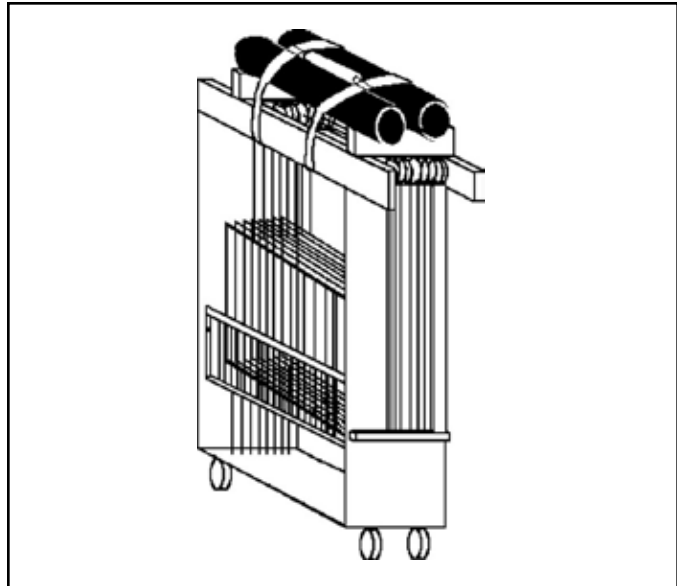
- 4) Remove the handle from the Cloth Beam. Disengage the ratchet. Remove the Cloth Beam and place it on top of the IDU in the front beam rest cradle.



- 5) Unclip the Tension Tie-Up from the screw eye on the back right leg and unwrap it from the Warp Beam Drum. While keeping the warp under tension remove the Separation Beam from its mounting. Use the Separation Beam to keep tension on the warp while rolling the loose warp onto the Warp Beam. Remove the Warp Beam and place it on top of the IDU in the rear beam rest cradle.



- 6) To hold the beams in place, loop the two straps under the IDU and around the beams. Then feed the loose end of the straps into each of their buckles.



- 7) Unclip the left and right Treadle Cables from the IDU. Unscrew the 4 wing nuts holding the IDU to the X-Frame. Lift the IDU out of the X-Frame and place on the ground on its rollers. It is now ready to roll.
- 8) Loosen the 2 outside stop collars on the Treadle Rod. Remove the Treadle Assembly from the X-Frame. If you need to break down the Treadle Assembly further for travel, remove the next two sets of stop collars and remove the Treadles. Always leave the inner stop collars on the Treadle Rod to avoid having to adjust these at re-assembly. For packing, replace the stop collars back onto the rod and tighten the outside stop collars to retain them.
- 9) Remove the Cross Brace and Separation Beam from the X-Frame. Disassemble the X-Frame. **NOTE:** The X-Frame can be completely disassembled and re-packed into the box it was shipped in.

Now, you are ready to pack up your WDL for travel.

### Reassembly

When re-assembling your beams, keeping tension is important. Install the Warp Beam first. Then, install the Cloth Beam by carefully unrolling the warp as you bring it from its IDU cradle to its mounting location.

**NOTE:** During this process, keep the warp square and with some tension to create as little disturbance to your warp as possible.

### 24" WDL Disassembly

- 1) Turn off the Compu-Dobby, unplug the power cord from your outlet and the Compu-Dobby and coil up the power cord for travel. Disconnect the RS-232 cable from the Compu-Dobby and your PC and coil it up for travel.
- 2) Remove the Compu-Dobby III from the IDU and set it down. Remove the shuttle tray/wood backing plate from the top of the IDU (the one that originally came attached to the back of the Compu-Dobby III). Attach the wood backing plate to the back of the Compu-Dobby.
- 3) Remove the bolts securing the Beater Top to the Beater Legs and remove it from on top of the Reed. Lift the Reed out of the Race and hang it from the open screw eyes inside the IDU. Make sure the Reed Assembly is hanging vertically.
- 4) Disengage the Cloth Beam ratchet. While keeping the cloth under tension remove the Cloth Beam from its mounting. Use the Cloth Beam to keep tension on the warp while rolling the loose fabric onto the Cloth Storage Beam. Disengage the Cloth Storage Beam ratchet. Remove the Cloth Storage Beam and place it on top of the IDU in the front beam rest cradle. Set the Cloth Beam aside for packing.

- 5) Unclip the Tension Tie-Up from the screw eye on the back right leg and unwrap it from the Warp Beam Drum. While keeping the warp under tension remove the Separation Beam from its mounting. Use the Separation Beam to keep tension on the warp while rolling the loose warp onto the Warp Beam. Remove the Warp Beam and place it on top of the IDU in the rear beam rest cradle.
- 6) To hold the beams in place, loop the two straps under the IDU and around the beams. Then feed the loose end of the straps into each of their buckles.
- 7) Unclip the left and right Treadle Cables from the IDU. Unscrew the four wing nuts holding the IDU to the X-Frame. Lift the IDU out of the X-Frame and place on the ground on its rollers. It is now ready to roll.
- 8) Loosen the two outside stop collars on the Treadle Rod. Remove the Treadle Assembly from the X-Frame. If you need to break down the Treadle Assembly further for travel, remove the next two sets of stop collars and remove the Treadles. Always leave the inner stop collars on the Treadle Rod to avoid having to adjust these at re-assembly. For packing, replace the stop collars back onto the rod and tighten the outside stop collars to retain them.
- 9) Either remove the Beater Assembly as a whole if you can transport it, or unbolt the Race from the Beater Legs. Remove the Cross Brace and Separation Beam from the X-Frame. Disassemble the X-Frame. **NOTE:** The X-Frame can be completely disassembled and re-packed into the box it was shipped in.

Now, you are ready to pack up your WDL for travel.



## Reassembly

When re-assembling your beams, keeping tension is important. Install the Cloth Beam first. Then, install the Warp Beam. Lastly, install the Cloth Storage Beam by carefully unrolling the warp from the Cloth Storage Beam as you bring it from its IDU cradle around the Cloth Beam to its mounting location. **NOTE:** During this process, keep the warp square and with some tension to create as little disturbance to your warp as possible.

## 2-Beam

The disassembly process for the 2-Beam setup is almost identical as with a single Beam, with the exception of removing a second Tension Tie-Up, Separation Beam and Warp Beam.

- 1) Complete steps 1-4 as noted above for your loom.
- 2) Complete step 5 for the upper Separation Beam and Warp Beam.
- 3) Complete step 5 for the lower Separation Beam and Warp Beam and place the Warp Beam on top of the two beams on the IDU creating a pyramid.
- 4) Proceed with steps 6-9.

## Reassembly

Follow the Reassembly instructions as noted above. Install the top Warp Beam from your pyramid into the lower beam position in the X-Frame. Then, install the second Warp Beam to the upper position in the X-Frame.

### WARPING SECTION

Learning to warp and weave on an AVL loom will mean learning some new procedures and techniques even for the experienced weaver. Since the looms will not function at full capacity unless care is taken to dress and operate them properly, it is worth your while to study the following instructions in detail. The time taken to make these procedures your own will result in increasing your weaving speed and efficiency as well as enhancing your enjoyment of the entire weaving experience.

If, however, you still feel the need for more understanding, then we heartily urge you to look into taking a class at the AVL Weaving School. Complete information and a current class schedule can be obtained by phoning the AVL office (1 800 626-9615 or 530 893-4915) or on-line at [www.avlusa.com/index/workshop](http://www.avlusa.com/index/workshop).

### WARPING THE PLAIN BEAM

#### Securing the Crosses

Before removing the warp from the board or the reel, secure the crosses. Use four ties to secure each cross. These ties go on each side of both pegs holding the cross.

It is usually a good idea to use different color threads for the ties on the tops of the pegs and another color to tie the bows underneath the pegs. By color coding your ties, you are less likely to twist the warp later.

#### Removing the Warp for the Warping Board

Remove the warp from the warping board by chaining or by winding on the kitestick. Start from the threading cross and proceed to the raddle cross.

Since the capacity of the warping board is limited, for wide warps you will end up making a number of mini-warps and taking them off individually.

#### Adjusting the Tension Device

Before winding on the warp, there are a few small things to take care of on the loom. First, check the tension device to make sure the rope is wrapped twice around the tension drum and that the rope end is clipped to the eyebolt. This will prevent the warp beam from slipping backwards during winding and threading.

#### Attaching the Raddle

Now secure the raddle to the back of the loom.

## WORKSHOP DOBBY LOOM

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### **Tying onto the Warp Beam**

To tie-on to the Warp Beam you will want to use a permanent set of extension cords. Extension cords are also called apron cords and have the same function as the apron on the old plain beam. They give you “reach” from the warp beam and allow you to weave every possible inch until the end of the warp touches the last shaft you are using. Make them out of a strong non-stretchable linen or cotton cord. You will need to make one extension cord for each section in your warp. This number is frequently the same number of sections on your warp beam. For example, a 16” warp beam will likely have eight sections.

For each extension cord, cut a piece of cord. Take the two ends of the cord and knot them together. Measure to make sure that they are long enough to reach all the way to the harnesses. All extension cords should be exactly the same size. When measuring the length of the cords, also check to be sure that when the cords are wound on to the beam, the end of the loop and any knots in the cords fall between the crosspieces of the warp beam, not on them. That way you can keep the warp smooth on the beam without going over the knots of threads.

Route the extension cords in a “Z” shape, from under the Warp Beam up and over the Separation Beam to the rear of the loom and under the Warp Beam, when looking from the left side of the loom.

### **Sticks in the Raddle Cross**

Place two lease sticks in the raddle cross and secure together with string through the holes in the ends of the sticks. Now remove the ties from the raddle cross and spread the warp out on the sticks.

Measure the center of your raddle to use it as a center of your warp. The warp threads should go through the middle of the raddle.

**Feeding the Raddle**

To feed the raddle, distribute yarns through the raddle by dropping each raddle cross group into a dent in the raddle.

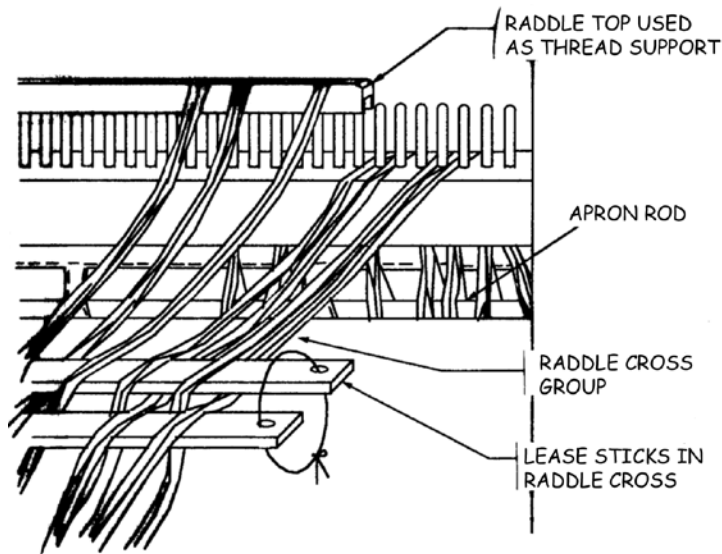
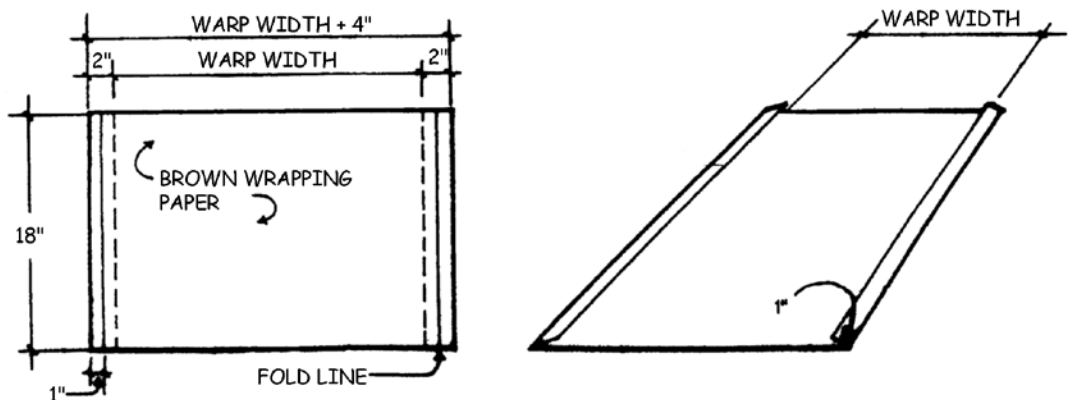


FIGURE 4W

If you are using an AVL raddle with a sliding cover, slide it on after the raddle is threaded and secure it with two or three cord ties so it can't come off. Remove the raddle cross sticks when this is completed.

**Preparing the Paper**

Prepare the paper for winding between the warp layers. Again, for the most professional results, and fewer tension problems, we suggest that the warp be as smooth, tight, and compact as possible. This would mean not using corrugated paper or sticks as they will make the warp too fat and/or lumpy. Corrugated paper is just too soft and the warp can never be wound tight enough with it. Heavy wrapping paper works well; seventy pound craft paper is good. If you are going to be using smooth, slippery warp yarns like fine linens or perle cottons, the edge yarns are going to need extra help in order not to slip off themselves.



PREPARED PAPER WITH FOLDED EDGE

FIGURE 5W

### Winding the Warp

To do this, cut your paper 4” wider than the warp width and then fold over the edges an inch on each side. Be sure the warp is wound between the two folded edges not overlapping them.

**NOTE:** From the left side of the loom, the warp is wound onto the beam by turning in the counter-clockwise direction.

Before you start winding the warp onto the warp beam, attach the section of the warp to an extension cord, tie an overhead knot in the warp threads from one section and slip that knot into the opening of the larkshead knot you created in the extension cord. Pull it tight.

When winding the warp on from the back, i.e., with the warp spread out in back of the loom, turn the crank in a counterclockwise direction so that the warp comes in from the bottom.

Remember, wind the warp on **tightly** under a lot of tension. This will vary with each warp material, but a good rule to remember is that the tension of the wound on warp must be greater than the tension during the weaving operation. You will need one person to hold a warp under tension on the back and one person to wind the warp on the beam using a handle. The person winding the warp can also insert the paper.

If you have to do it yourself, you can use the jerking method. Make one turn around with your beam crank and then go to the back of the loom and jerk one section at a time to make the warp that is already on the beam tight. The idea of this method is that the warp does not need to be under tension all the time, but the part that is on the beam has to be tight. Make another turn, go to the back of the loom and jerk all the sections again and so on. If you have a wide warp, you might need to do up to ten jerking motions after each turn.

### Threading Cross

When you come to the end of your warp, insert lease sticks in your threading cross.

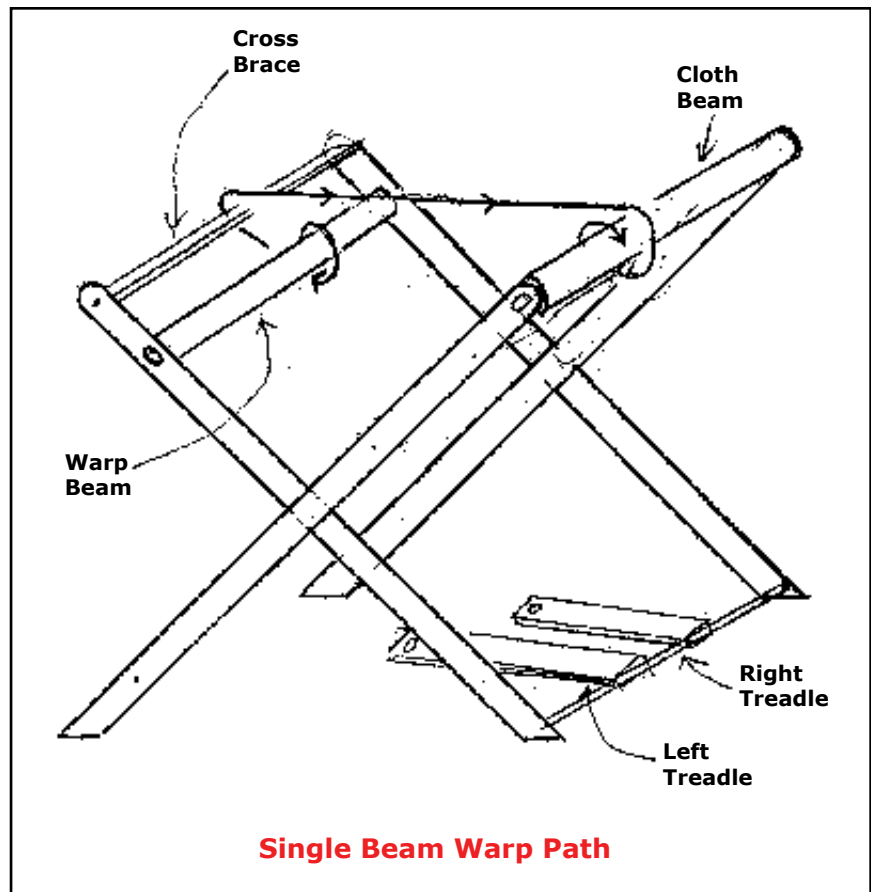
## Remove the Raddle

Now remove the ties from each individual threading cross and spread the warp out on the sticks.

When the warping is completed, free the warp from the raddle. If you have an AVL raddle, first untie the security strings, lift the raddle top off, and remove the warp from the raddle. Afterwards, replace the top on the raddle and leave it in its place on the back of the loom if so desired as it will not interfere with the weaving process. Then be sure to bring the end of the warp around the separation beam so that it now travels into the loom.

## Routing the Warp

Routing the warp for threading is different than for winding on. The warp goes rearward under the bottom of the warp beam, then up over the Separation Beam toward the heddles forming a clockwise arc when viewed from the left side.

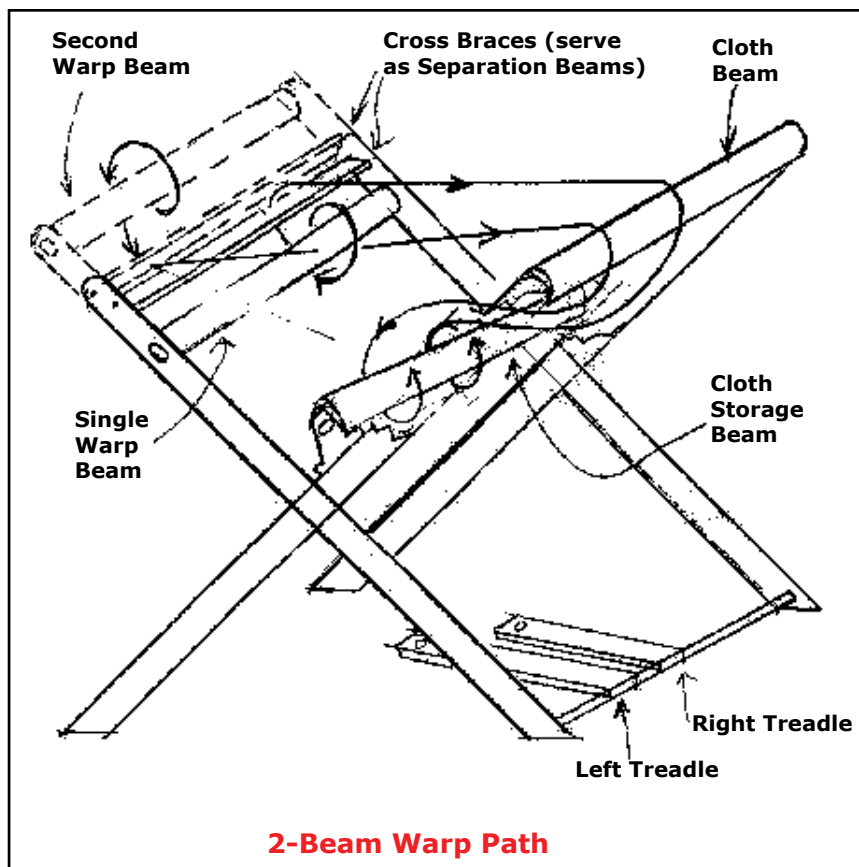


# WORKSHOP DOBBY LOOM

## 2-Beam

For those who ordered the 2-Beam, it is wound on in exactly the same manner as the first warp beam except in the upper position, the warp goes under Separation Beam and up to the top warp beam.

Routing the warp for threading is different than for winding on. The warp on the upper beam goes forward over the top of the warp beam, then down under the upper Separation Beam toward the heddles forming a “Z” when viewed from the left side.



## WARPING THE SECTIONAL BEAM

The WDL Sectional Beam is designed to be warped in sections using a Warping Wheel. For directions on using a Warping Wheel, refer to the Warping Wheel video or to the Warping Wheel manual. Throughout the warping process, the Warping Wheel automatically keeps a constant and uniform tension on the warp. Not only does it save time, the Warping Wheel can hold the capacity of a WDL Sectional Beam section.

### Tying onto the Warp Beam

To tie-on to the Warp Beam you will want to use a permanent set of extension cords. Extension cords are also called apron cords and have the same function as the apron on the old plain beam. They give you “reach” from the warp beam and allow you to weave every possible inch until the end of the warp touches the last shaft you are using. Make them out of a strong non-stretchable linen or cotton cord. You will need to make one extension cord for each section in your warp. This number is frequently the same number of sections on your warp beam. For example, a 16” warp beam will likely have 8 sections.

For each extension cord, cut a piece of cord. Take the two ends of the cord and knot them together. Measure to make sure that they are long enough to reach all the way to the harnesses. All extension cords should be exactly the same size. When measuring the length of the cords, also check to be sure that when the cords are wound on to the beam, the end of the loop and any knots in the cords fall between the crosspieces of the warp beam, not on them. That way you can keep the warp smooth on the beam without going over the knots of threads.

Route the extension cords in a “Z” shape, from under the Warp Beam up and over the Separation Beam to the rear of the loom and under the Warp Beam, when looking from the left side of the loom.

### Winding the Warp

**NOTE:** From the left side of the loom, the warp is wound onto the beam by turning in the counter-clockwise direction.

Before you start winding the warp onto the warp beam, attach the section of the warp to an extension cord, tie an overhead knot in the warp threads from one section and slip that knot into the opening of the larkshead knot you created in the extension cord. Pull it tight.

**NOTE:** From the left side of the loom, the warp is wound onto the beam by turning in the counter-clockwise direction.

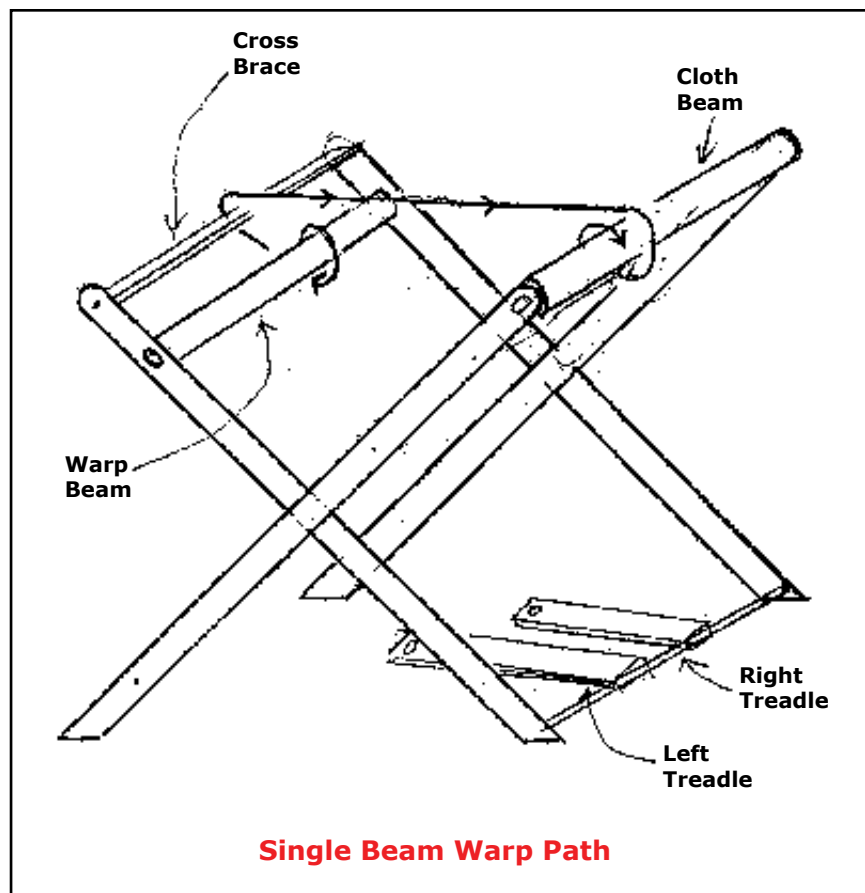
Before you start winding the warp onto the warp beam, attach the section of the warp to an extension cord, tie an overhead knot in the warp threads from one section and slip that knot into the opening of the larkshead knot you created in the extension cord. Pull it tight.



When winding the warp on from the back, i.e., with the warp spread out in back of the loom, turn the crank in a counterclockwise direction so that the warp comes in from the bottom. Warp tension will be set by the Warping Wheel. When you reach the end of the warp section, remove the threads from the Warping Wheel catch being careful not to drop any. Stroke the threads to achieve uniform tension on the threads, then continue winding while maintaining tension on the thread ends with your hand. When you reach the Warping Wheel Reed, grab the threads on the other side of the Warping Wheel reed with your other hand without losing tension on the Warp Beam and release the threads from the other side of the reed. Switch hands and pull the warp through the Sectional Beam Reed. Tie the warp ends into a slip knot and continue winding onto the beam.

### Routing the Warp

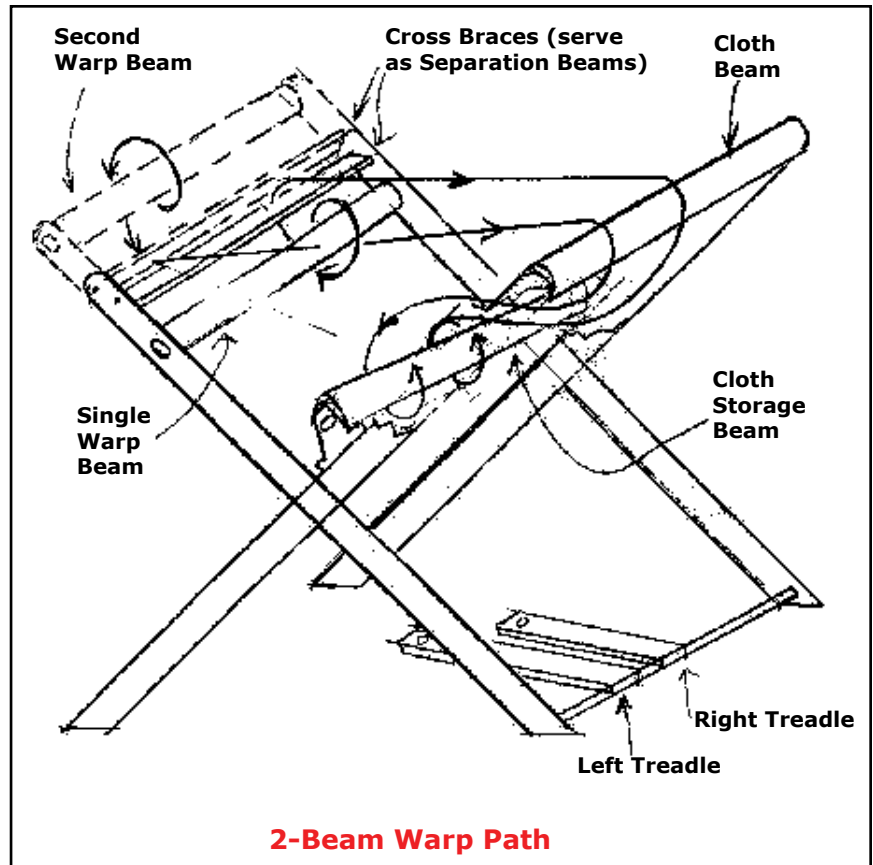
Routing the warp for threading is different than for winding on. The warp goes rearward under the bottom of the warp beam, then up over the Separation Beam toward the heddles forming a clockwise arc when viewed from the left side.



**2-Beam**

For those who ordered the 2-Beam, it is wound on in exactly the same manner as the first warp beam except in the upper position, the warp goes under Separation Beam and up to the top warp beam.

Routing the warp for threading is different than for winding on. The warp on the upper beam goes forward over the top of the warp beam, then down under the upper Separation Beam toward the heddles forming a “Z” when viewed from the left side.



**Threading, Sleying and Tying On**

Remove your beater from the loom and place a stool (or exercise ball) in front to place yourself closer to and at the height of the heddles.

## WORKSHOP DOBBY LOOM

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### **Threading the Harnesses**

Now we're ready to thread the loom. If you are right-handed, it is recommended to start at the right side of the warp. Grasp one group of ends in your left hand and your sley hook in your right hand. Direct the "hook end" of the sley hook through the "eye" of the first heddle you need to thread. Pull the thread through (for example, if you had a straight draft on eight harnesses, your first thread would go through the eye of a heddle on the 8th harness. The second thread would be threaded through the eye of the heddle on the 7th harness, the third thread through the 6th harness, and so on).

### **Unused Heddles**

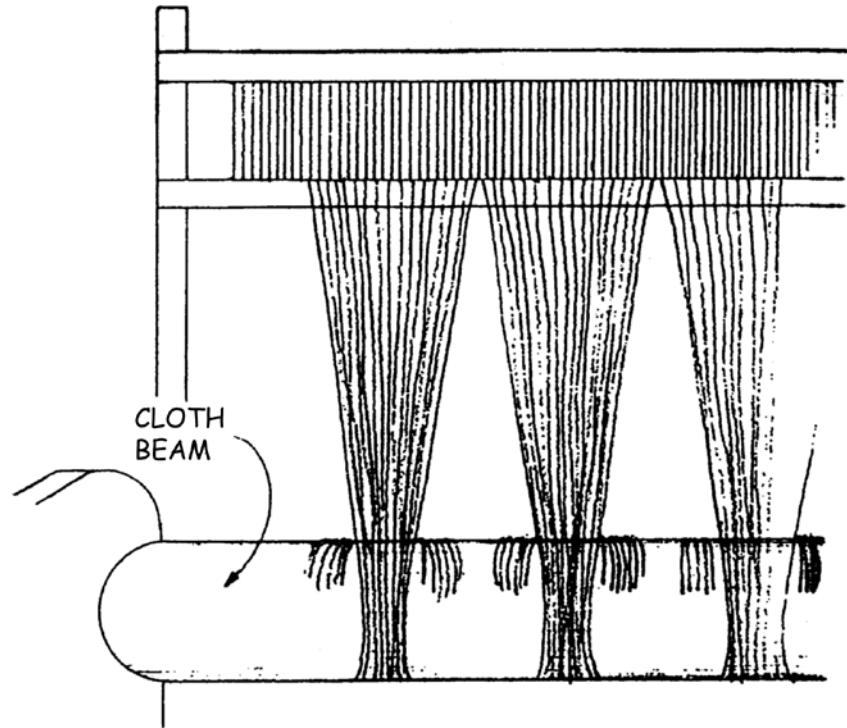
After threading is complete, make sure that the unused heddles are all pushed to the far sides of the harness sticks between the screw eyes and the ends of the harness sticks. For balance, there should be approximately equal numbered groups of unused heddles on both sides of each harness. In the first six months of using a new loom with polyester heddles, the heddles stretch out to adjust to the harnesses and the heddles on each harness get stretched out to different sizes. For this reason, we do not recommend removing heddles from the loom for six months. When heddles are removed, they should be marked so they can be returned to the same harnesses. For the same reason, once the heddles have been on the loom for awhile, it is not a good idea to switch heddles to different harnesses. Mixing them up once they have been stretched would affect the evenness of the shed. What some weavers do with wide warps, in order to avoid having to take off extra heddles, is to distribute the unused heddles among the threaded heddles as the threading is taking place.

### **Threading the Reed**

Now sley the warp ends through the reed. Some weavers start from the right side; some from the left; some in the middle. But, in all cases, be sure to measure accurately before starting so that the warp will be centered in the reed. Weavers have various ways of positioning the reed for sley.

**Combing onto the Cloth Beam/Sandpaper Beam (16" or 24" WDL)**

Take a group of ends about 3" wide with one hand and use the other hand to comb them "flat". This can be done using a common hair comb. Starting at the reed, gently comb the yarn toward the ends until the yarn is flat and spread out. Now gently pull with the other hand to give it a little tension and lay it over the abrasive surface of the cloth beam (see Figure #20w). Repeat this procedure all the way across the warp. Now that you have nice even tension, you can wrap the ends (that were hanging down) around the bottom of the cloth beam.



**WRAPPING WARP AROUND CLOTH BEAM**

**FIGURE 20W**

If you find that you are having trouble with this method, a thin stick, an aluminum blind slat or something similar can be used as an aid. Place the stick across the top of the beam and slide it around the in the direction of the loose warp ends, clockwise if viewed from the left side of the loom, until the stick has reached the underside of the warp where the warp first touches the Cloth Beam. Check that this action has not distorted your even warp tension. If it has, repeat the step. While continuing to hold the stick, rotate the Cloth Beam to wind on the warp and trap the stick under the warp.

## WORKSHOP DOBBY LOOM

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### Tying onto the Cloth Storage Beam (24" WDL Only)

Unwind the Tie-On Cord and Rod from the Cloth Storage Beam and route around the Cloth Beam towards the reed. This appears as a counter-clockwise arc when viewed from the left side of the loom.

Now tie the ends to the metal rod. Starting from the middle, bring a first bundle toward you over the apron rod, then around and under it. Divide it in half and bring one half up on each side of the bundle. Use the ends to tie a surgeon's knot. It is the same as the first tie you make tying a shoelace, except you loop the end through twice. This kind of knot is very good for readjusting the tension.

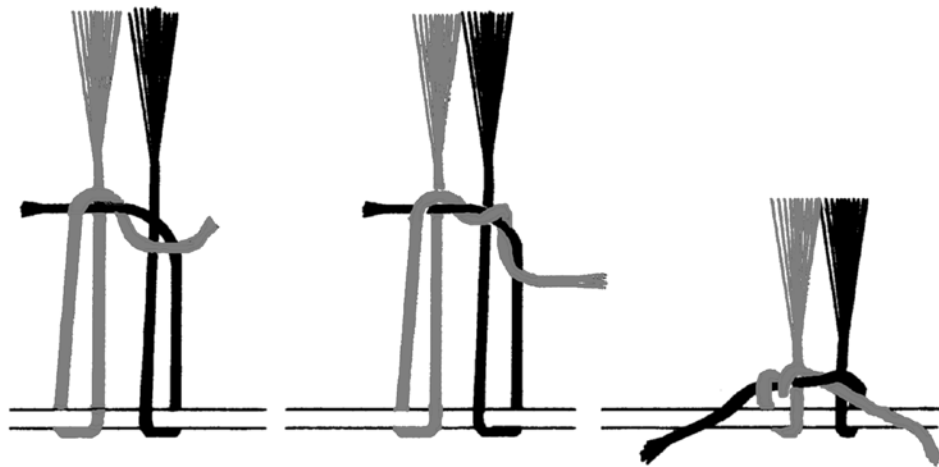


FIGURE 19W

Start with one section in the middle, then the far right and the far left outside ones. Work your way in.

By now, the sections that were tied first are quite a bit looser than the ones tied last. To correct this, you do not need to untie the knots, simply grasp the ends and pull them away from you, then re-tighten the knots. Repeat this until all of the sections are at approximately the same tension.

**Setting the Warp Tension**

Ensure that the Cloth Beam and Cloth Storage Beam (24" WDL ONLY) pawls are set in the ratchets. To establish tension, wind the warp forward slowly and just a small amount using the Cloth Beam or Cloth Storage Beam handle. Now feel the warp for tension. If the warp is too loose, pull the two loose Tension Tie-Up Cord ends to tighten. Wind the warp forward a little and check it again. If the tension becomes too tight, squeeze the button holding the Tension Tie-Up Cord to release it.

**NOTE:** Avoid using too much tension as over-tensioning the warp will stress the fabric and potentially cause warp end breakage.

**WEAVING PROCEDURES**

**Winding Bobbins**

The AVL loom's shuttles use stationary, open end bobbins. The advantage of using this type of bobbin over the conventional spinning bobbin is that as soon as the shuttle is caught, thread stops coming off the bobbin, whereas the spinning bobbin tends to keep spinning and unwinding thread even after the shuttle is caught. The stationary bobbin allows the weaver to more easily obtain a clean selvage edge.



EMPTY BOBBIN



FIRST LAYER OF THREAD



SECOND LAYER OF THREAD



FULL BOBBIN

WINDING THE BOBBIN

FIGURE 28W

Stationary bobbins are wound quite differently than spinning bobbins. They are not wound back and forth from one end of the bobbin to the other, so please practice the following technique until you feel comfortable with it.

Use a standard size bobbin winder. A hand winder will work, but an electric one is better and some sort of tensioning device is ideal since the thread should be wound very tightly (wearing a heavy leather or fabric work glove will help you to pull the thread tighter).

If you are right-handed, hold the tensioning device with the right hand for easy positioning of the thread onto the bobbin and with your left hand (have a glove on), hold the thread for tension purposes only. Make a few winds of the thread over itself at the far end of the bobbin (the end near the large coned shaped part) and then place it on the winder. To start, wind a thin layer going back and forth in one area, about 2" long at this far end. It should cover three quarters of the cone shaped part of the bobbin. Consider this the first layer of thread. Then move down 1/4" and start a new layer which will overlap 1-3/4" of the last layer. For each layer, wind the thread tightly and quickly back and forth covering a 2" area until that layer is complete. Then move down 1/4" and start a new layer which will overlap 1-3/4" of the last layer. Keep repeating these tapered overlapping 2" layers until there is 1/2" left at the end of the bobbin. You will soon learn when each layer is complete.

If the layers are too fat, the bobbin won't fit into the shuttle. If they are too thin, you won't get as much thread on the bobbin and it will have to be changed sooner.

### Using the AVL Bobbin-Winding Guide

The AVL Bobbin-Winding Guide (BWG) can help you to create a perfect size "package". It will allow you to get as much yarn as possible on the bobbin, but it will not touch the side of the shuttle. One critical element in winding a bobbin is to maintain a uniform diameter of yarn around the bobbin.



FIGURE 29W

The AVL Bobbin-Winding Guide should be used with a bobbin winder equipped with a foot switch because the guide should be held with one hand while the other moves the yarn back and forth.

First, it must be noted that at all the basic principles for winding an end-feed bobbin apply to the BWG. That is, feed the yarn in small increments from the cone end to the small end of the bobbin.

You will begin the winding at the flared cone end. Feed the yarn through the BWG's slot and push the guide toward the cone end. Keep the slot facing you so that you can observe the yarn as it winds onto the bobbin and make any necessary adjustments.

Turn the bobbin winder on, slow at first, then up to full speed. Swing the yarn from side to side and try to keep as strong tension as possible on the yarn. For the most part, the tighter the better. When holding the BWG with your left hand while winding the bobbin, give some resistance to the left. Do not attempt to move it to the right side.

As the yarn builds up on the bobbin, it will naturally push the BWG down toward the end. The pressure on the BWG should be just enough to keep it in contact with the yarn underneath. Be careful not to over wind at the end because it can cause extra loops which can get tangled in the tip of the shuttle. You should stop winding when the right side of the BWG reaches the end of the bobbin.

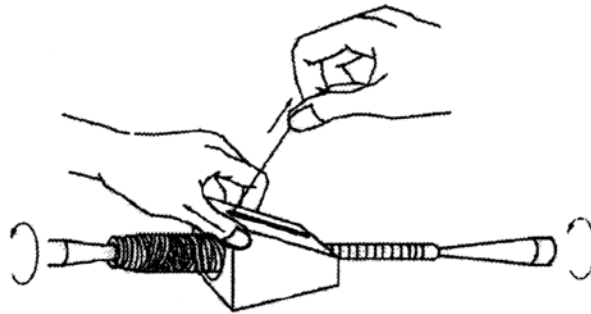


FIGURE 30W

Wind many bobbins at once so it won't be necessary to stop and wind bobbins while weaving.

A properly wound bobbin is essential to the correct operation of the flyshuttle. If the weft thread does not come smoothly off the bobbin, if the shuttle jerks and pulls the selvage edge too tightly, or if the shuttle fails to move lightly across the shuttle race, look to an improperly wound bobbin as the cause of your troubles. If a bobbin is not working properly, do not waste time trying to correct it. There is nothing you can do about it. Place it aside and use another bobbin.



## WORKSHOP DOBBY LOOM

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### **Placing Bobbin in the Shuttle**

Now pull up the metal rod in the middle of the shuttle and slip the large end of the bobbin onto it (it might be a little stiff at first) and then push the bobbin all the way down to the end of the rod so that the groove in the end of the bobbin straddles the retaining pin in the bottom of the shuttle.

### **Feeding the Shuttle with Standard Tensioner/Adjusting the Tension**

Uncoil some thread from the front end of the bobbin and push it down between the two metal plates of the tensioning device. Slip it down the groove that runs toward the point of the shuttle and out the hole in the side.

The tension device on the shuttle can be adjusted by turning the screws inside the holes on each side of the shuttle with the screwdriver provided. For fine yarns which need a tighter tension, turn the screws so that the metal plates are tight against each other. For large yarns, loosen the screws so that the metal plates loosen up.

Throw a few weft shots with the shuttle and then check your selvages. If the selvages are too loose, increase the tension. If the tension is too great and the selvages are drawing in, reduce the tension. It may take a little experimenting to get it just the way you want it.

### **Feeding the Thick Yarn Shuttle/Adjusting the Tension**

If you have an AVL shuttle with two tension springs and plates to hold the yarn, to thread it simply pull the filling thread off the end of the bobbin. Use a small hook (perhaps a crochet hook or make one from a paper clip) to get the thread in between the plates and through the side hole.

The tension adjustment is just the same as in the shuttles with a standard tensioner. The only difference is that instead of the screwdriver, you will be using an allen wrench for the adjustment. This kind of shuttle with the spring tensioning system is especially useful for novelty yarns where diameters of the yarn changes across the yarn and, therefore, more flexibility is needed.

### **Starting Your Weaving**

At the onset of weaving, first weave in 1” of a strong, medium weight weft with a tabby weave. Check the tabby weave for errors. Any errors in the threading or sleying will show up here and it is an excellent time to make corrections.

### **Advancing the Cloth**

To advance the cloth, you simply wind it forward by using the ratchet handle while the beater is in its forward position. Make sure the fell of the cloth does not go beyond the front of the beater in order not to have to wind it backwards. This easy, rapid method of advancing the cloth makes it practical to advance the cloth about every 2” of weaving. By maintaining this 2” weaving space, the swing of the beater and the shed angle are kept more nearly constant and this makes it much easier to weave a uniform fabric.

## WORKSHOP DOBBY LOOM

### LOOM MAINTENANCE

#### 1) **Tightening the Bolts**

The single most important thing you can do to extend the life of your loom, and preserve its operation, is tighten the bolts that hold its frame together. These will loosen over time, due to changes in its environment and to your own creative exertions. A loom which is allowed to become loose-jointed will certainly cost you weaving time, perhaps affect the quality of your work, and definitely become older than its years.

#### 2) **Lubrication and Cleaning**

There are several mechanisms on your loom which will benefit from the occasional light application of an appropriate lubricant. Not all lubricants are suitable in the weaving environment. Machine oils and greases, for example, may provide plenty of slick, but they also capture yarn dust and will, over time, actually impede the action of your loom.

<b>Loom Parts</b>	<b>Lubrication and Cleaning</b>
Shuttles, Shuttle Race, Single-Box Flyshuttle Picker Grooves	Paste Wax
Slide Rods (bobbin winder)	Steel Wool
Axles (pulleys)	Silicon Spray
Warp Beam Metal Rods (where metal works against the wood frame)	Paraffin
Warp Beam Brake Drum	Sandpaper

#### 3) **Cleaning a Filter**

The Compu-Dobby fan filter performs two functions: it cools the unit and it removes dust from the air before it is drawn into the fan.

#### 4) **Checking Cords and Cables**

Check those cords and cables. All machines wear and cords are usually the first things that fatigue on a loom.

## 5) Tool Kit and Spare Parts

Here's a list of the basics, nice-to-have-around items:

### a.) Minimum Tools

- socket wrench with
- 7/16" socket
- 6" or 8" crescent wrench
- 4-1 screwdriver or medium phillips and standard screwdrivers
- paste wax
- 0000 steel wool pad
- 220# sandpaper
- paraffin wax

# WORKSHOP DOBBY LOOM

## TROUBLESHOOTING

### 1) Harnesses

Your AVL will have polyester heddles. The polyester heddles are carried on transverse harness sticks, top and bottom, and stabilized at the bottom by a series of springs. These hold the harnesses down and prevent your heddles from *floating*.

On occasion you will find that one or more of your harnesses will misbehave. There are a finite number of things that can cause these problems.

**TABLE 1 / HARNESSSES**

Sympton	Possible Cause	How to Fix It
A) One or more <b>top harness stick collapses</b> ; it assumes a diagonal angle and one leg of the harness cable from which it is suspended goes slack.	1) Your heddles are bunched together towards the center of the harness or on one side only. This is a problem because the heddles are part of the harness structure.	Move a few heddles to each end of your harness sticks; just to the inside of the harness wires that connect the top and bottom sticks. That way your harnesses will be balanced.
	2) The harness cable supporting the shaft has come out of its pulleys at the top of the loom.	Trace the cable back through its pulleys in the Harness Pulley Support and make sure that the cable is properly seated. Check the action of the Dobby Cable as well. Make sure that it moves easily up and down. If the Dobby Cable seems to bind, check for debris in the hole where it comes through the Dobby Top. You may need to use a very thin piece of wire to dislodge accumulated yarn dust or other debris.
B) The <b>heddles float</b> ; they are lifted upwards by the warp thread when you tension the warp and your shed is not even or not large enough.	1) The tension in your warp is greater than the tension in the springs that hold the harnesses down.	Reduce the warp tension at the Tension Tie-Up or add additional springs to the harnesses.

**TABLE 1 / HARNESSSES (cont'd)**

<b>Sympton</b>	<b>Possible Cause</b>	<b>How to Fix It</b>
<b>C) One or more harnesses that are supposed to raise don't.</b>	1) Left treadle isn't being pressed all the way down.	Concentrate on getting both treadles all the way through their travel.
	2) Dobby Cables out of solenoid tip slots.	Rearrange the cables according to the assembly instructions.
<b>D) Harnesses don't raise properly.</b>	1) Harness cables have been hooked to the wrong harness.	Rearrange the cables.
	2) Springs have been hooked to the wrong harnesses.	Rearrange the springs.
<b>E) Harnesses jam up on each other.</b>	1) Heddles are not distributed evenly over the harness sticks.	Redistribute the heddles evenly on both sides from the center of the harness sticks.

**2) Tension**

**TABLE 2 / TENSION**

<b>Sympton</b>	<b>Possible Cause</b>	<b>How to Fix It</b>
<b>A) Your Warp Beam just won't hold tension.</b>	1) Your Tension Tie-Up has loosened.	Readjust the tie-up and either tie a bow in the cord ends or bind it tightly with a double wrap of cord.
	2) You have mis-routed your brake cable. If you have just installed the system, disconnected your Brake Cable, to move the loom, or warp the beam, you may very well have incorrectly replaced it.	Review the cable routing as shown in the Assembly Section of your manual.
	3) You may have warped your beam backwards. Go to your manual and consult the Weaving Section which illustrates how your warp should be routed.	If you did warp your beam backwards, you will need to reverse your tension cable. Unclip the cord, loosen the cable, and wind it in the opposite direction. This is not a permanent fix. Use it only to weave off the warp you wound backwards.

## WORKSHOP DOBBY LOOM

TABLE 2 / TENSION (cont'd)

Sympton	Possible Cause	How to Fix It
	4) The sandpaper on your Cloth Beam is not grabbing the warp and pulling it around as it should	You'll very likely need to add SoftGrip or another kind of beam cover in order to get satisfactory warp tension.
	5) The surface of the Brake Drum has become polished and no longer offers sufficient friction to grab and hold the Brake Cable	Disconnect and unwind the Brake Cable. Lightly sand the surface of the groove in the Brake Drum with your #220 sandpaper. Replace the cable (but be sure about its routing!).
B) Your <b>warp tension is different</b> in different places <b>over the width of the warp.</b>	1) It is not indicative of a tensioning problem. It is a matter of not having maintained even tension when warping the beam and there's no redress from the Tension System. It's just too late for this warp to be well tensioned.	You should have used a Warping Wheel for sectional warping or craft paper for plain beam warping. If you do not want to waste this warp, place something (folded paper or cloth) in the areas on the beam where your tension is looser. You will have to move your paper everytime you advance the warp and also keep adding more since it will probably become looser and looser.
C) <b>Excessive tension on the warp.</b>	1) Tension Tie-Up too tight.	Adjust the Tension Tie-Up Cord.
	2) The tension rope has gotten crossed over itself on the warp beam brake drum.	Straighten out the rope.

3) A Shed

AVLs are designed with a shed which exactly meets the need; not too wide, not too narrow. And there is, of course, a reason for this precision. Raising harnesses higher than you need may give you a larger shed, but it's also a waste of time and effort. You only need enough warp separation for the shuttle to pass freely. However, because the shed on AVLs is so precisely calibrated, you do need to be sure that you're getting all that the loom can deliver. There are three likely causes for restricted sheds:

TABLE 3 / A SHED

Sympton	Possible Cause	How to Fix It
A) <b>Restricted Sheds.</b>	1) Treadle cables fell off the pulleys.	Replace the treadle cables so they go over the pulleys.

4) Beaters and Flyshuttles

TABLE 4 / BEATERS AND FLYSHUTTLES

Sympton	Possible Cause	How to Fix It
A) <b>Shuttle flying off the track.</b>	1) Tensioner in your shuttle is not adjusted.	The advantage of an end-feed shuttle is that it allows you to tension the feed of your yarn. Most shuttles of this design have adjustable tensioners. Be sure yours is set to match the characteristics of the yarn used.
	2) Bobbins not wound consistently.	If it's soft on the end and the wraps collapse and pull into one another, you will have to wind it again. Use an AVL Bobbin-Winding Guide.
B) One side of your fabric is beaten more tight than the other, even if you are holding your beater in the middle. You have a <b>diagonal beat line</b> rather than horizontal.	1) Your beater is out of alignment.	To check, push your beater all the way back against the Beater Bumper Blocks, it should strike both sides at exactly the same time. If it doesn't, you'll need to rack the beater.



### 5) Dobby

TABLE 5 / DOBBY

Sympton	Possible Cause	How to Fix It
A) <b>Dobby skips.</b>	1) Pressing too hard or too quickly on the treadles.	Press the treadles with a smooth, rhythmical motion.
B) <b>Dobby slide plate jams.</b>	1) Left treadle out of adjustment.	Check routing of left treadle cable. Make sure it is still in the pulley with keeper inside the Compu-Dobby box.

### 6) Left Treadle Issues

If you do not fully depress the left treadle each time you lift, you will experience problems with your harnesses. Because the left treadle is unweighted, it's easy to forget that you need to do this. However, this treadle does something very important — it releases the harnesses that were engaged for the previous pick, but only in the last fraction of its stroke. So, if you seem to be experiencing harness lifting problems, your use of the left treadle is the first thing to suspect.