

# How to Build and Use a Warp Weighted Loom



## Building a full-sized Warp Weighted Loom out of Wood



All pieces cut from 2X4 lumber.

These measurements may be adjusted for a taller, shorter, wider or narrower loom as desired.

1 - 60 inch for beam

2 - 72 inch for uprights

2 - 52 inch for the upper and lower supports. Upper is placed behind the uprights and the lower is placed in front of the uprights. The supports are bolted in place with carriage bolts so the loom may be taken apart for storage.

2 - 10 inch to support the beam. a 45 degree angle is cut at one end of each support and attached to the upright with screws 10 inches from the top of the upright.

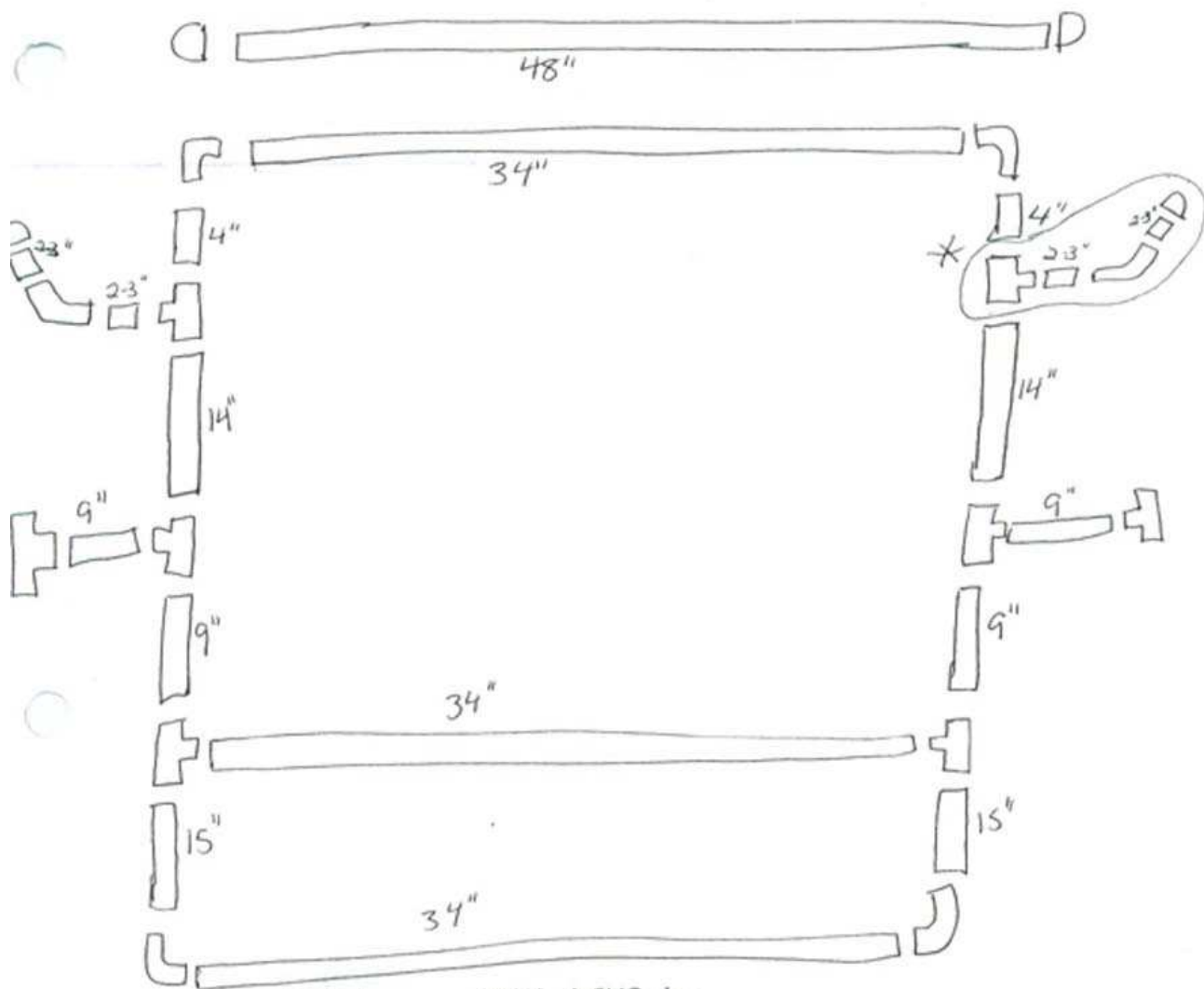
6 - 12 inch arms with a 1 inch notch cut out for the heddle bars to rest in. Attached to the uprights with screws, centered between the beam and the lower support. Period looms have a series of holes down the side in which the 2 arms are moved up and down the uprights.

2 - 68 inch legs (optional not period but handy when you don't have a tree or wall at events to lean the loom against) attached to the back of the uprights with screws and hinges.

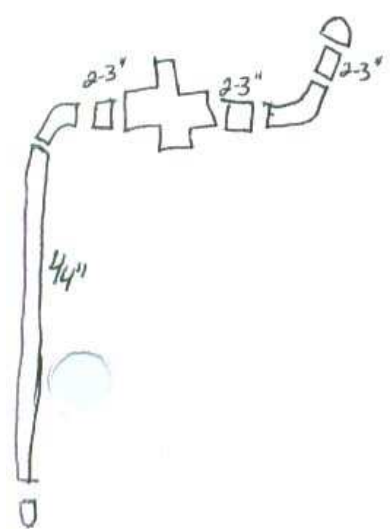
Heddle rods may be made from extra long dowel rods. You need one for tabby weaving and 3 for twill.



## Building a Portable Warp Wrihted Loom out of PVC



\* alt legs



\*\*\*All pieces are 1/4 inch PVC pipe. Use a pipe cutter to cut the pieces.

These lengths may be adjusted for making a taller or wider loom depending on the purpose for which the loom is intended.

- 1 - 48 inch pipe for the beam
- 3 - 34 inch pipe for top, bottom and lower middle bars

- 2 - 4 inch pipe side pieces
- 2 - 14 inch pipe side pieces
- 4 - 9 inch pipe for side pieces and arms
- 2 - 15 inch pipe for side pieces
- 4 - 2-3 inch pipe for attaching various pieces (2 additional pieces if using legs)
- 2 - 44 inch pipes for legs (optional)
- 8 - "T" connectors for attaching brace, arms and beam holders (If using legs substitute "+" shaped connectors for the top 2 "T" connectors.
- 4 - 90 degree corner connectors for the corners
- 2 - 45 degree angle connectors for the beam holders (2 additional pieces if using legs)
- 4 - end caps (2 additional if using legs)



## Set up and Weaving Instructions

### Making Weights

Weights can be made from anything that can be attached to the warp threads; rocks, sandbags, water bottles, clay donut shapes made from sculpy or fimo clay. I like water bottles and sand bags the best because you can adjust the weight easily. I usually use 6 or 8 oz plastic orange juice bottles and hide them inside a draw string bag. I can also put the extra warp in the bag to keep it from getting dirty at outdoor events. I attach 10 to 15 warp ends to each bottle of water. I have also seen 20 oz coke bottles used as weights filled about half with water.

### Making the Header Band

First you need to weave a band and create the warp. this band will be attached (sewn) to the beam and the warp threads will hang from it. This band can be made by several methods: card (tablet) weaving, inkle, rigid heddle. Which ever way you choose (card weaving will be used in the example), instead of weaving back and forth with the weft threads, you will pull loops of the weft through the card woven warp and make each loop the length you want the final warp to be. These now weft threads will become the warp threads in the final product.

Remember when setting up the warp for this band, to make it long enough to be the width you need for the warp weighted loom piece.

This band does not have to be very wide. It can be as narrow as half an inch in width. When card weaving a band, I usually use 4 or 6 cards depending on the thickness of the threads.

I usually weave my header between two sticks stuck in the ground (if I am inside, I use the backs of 2 chairs), placed far enough apart to allow the length I need (the width of the finished piece). Then a third stick (or chair) is placed at right angle to the card weaving, at the length the warp threads need to be. I always pull through the warp loop from the left side and loop it around the stick (or chair) on my right. This is just my preference. It doesn't really matter which side as long as all the warp threads are pulled through from the same side. Instead of the weft moving back and forth, each time a new shed is made with the cards, you pull through another loop from the left side of the card warp.

Once this band is complete, you can cut the warp loops at the bottom.

If you do not know how to card or inkle weave, rigid heddles can be made from popsicle sticks and a glue gun. Drill holes into the center of the popsicle sticks and hold them in place by gluing another popsicle stick to the top and bottom, front and back of the sticks with the holes in them. You thread a warp end through each hole and another end between each popsicle stick so that when you raise and lower the popsicle sticks it pulls every other thread up and down creating two different sheds.

### Warping the Loom

Sew the header band to the beam of the warp weighted loom. Your stitches will loop all the way around the beam. Some people use a blanket-like stitch and others simply lash it around. Your stitches need to be every 1/4 inch or so apart.

For tabby weave, divide the warp, placing every other thread in front of the lower cross bar and letting the others hang behind it. This gives you a front warp and a rear warp.

Tie weights to hang a few inches off the ground. Put a weight on every 8-12 warp threads. I use a slip knot and then put the extra warp into the drawstring bag the weight is in, to keep it from getting dirty. Do this for the front and rear

warps.

Chain a spacing thread across both warps a few inches above where the weights are hanging. This will keep the proper even spacing between the threads. I use a crochet hook appropriate to the weight of the thread and make a basic chain stitch around each warp thread. I also like to use a contrasting color but it's not required. Be careful not to make the chain too tight. You want it snug to a little bit loose, so that you can move it down the warp as you work. Also, be careful to keep the same tension as you chain across the warp. Do this on the bottom of both warps.

The first shed is the natural one that you have just created by dividing the warp into two parts. The second shed is created by adding a heddle bar in front of the front warp. String heddles will then be tied from this bar to the rear warp threads (the heddles will be between the front warp threads) so that when this bar is pulled forward to rest on the arms of the loom, the rear warp will be pulled through the front warp and there will be enough room to pass the shuttle between the warps in front of the front warp. This is the second shed. You can use a continuous thread wrapped around the heddle bar and looped around the rear warp threads. Or, you can use individual heddle strings. Required heddle length will vary with the individual loom, what's important is that the heddles are all about the same length and that when the heddle bar is at rest against the sides of the loom, the first shed is large enough to pass the shuttle through comfortably and when the heddle bar is forward, that there is enough room to pass the shuttle through the second shed comfortably as well.

### Weaving a Tabby Weave

Take your weft thread and wind on a shuttle or make a smaller ball of it so that it can pass easily through the sheds.

Begin weaving with the first shed (the one that falls naturally with the heddle bar at rest against the front warp). Pass the weft shuttle through the shed, push it firmly in place against the header band. You can use a sword beater, yard stick, ruler, fat comb to beat the weft into place or you can shift the heddle bar to the opposite position and pull the warp threads apart to tighten the weft thread in position. I usually do a little of both.

Pull the heddle bar forward to create the second shed (if you have not already done so). Pass the weft back through the second shed and again use your beater to push the thread into place.

Continue moving the heddle bar back and forward and passing the weft each time to weave the piece. If you need more weft thread, lay a new weft thread, next to the end of the old weft, overlapping them a few inches, change the shed and continue weaving with the new weft ball.

Be careful about your tension. Too tight and the sides of the piece will be narrower than the ends; too loose and the edges will be wavy. Some people like to use a card woven edge on both sides of the warp creating a selvedge.

As your finished piece gets longer, you will need to roll the finished cloth onto the beam and untie the weights and retie them lower on the warp threads. Also remember to push the spacing chain down on each of the warp ends.

When finished, remove the spacing chain, remove the weights or cut them off leaving a few inches of warp threads at the bottom. The warp threads are tied together or finished in a way that will keep the piece from unraveling.

## Weave Structures

Two Shaft Structures - One natural shed and one shed formed with a single heddle bar.

Tabby - The weft goes over one warp thread and under the next, alternating with each row. Every other thread is part of the natural shed and every other is part of the heddle bar.

### Basket Weave

The first and second threads go in the natural shed, the third and fourth threads go on the heddle bar, the fifth and sixth threads go in the natural shed, the seventh and eighth threads go on the heddle bar, continue threading every 2 threads alternating between the natural shed and the heddle bar. Weaving alternates between the two sheds.

### Rib Weave

The first thread goes on the heddle bar, the second, third and fourth threads go in the natural shed, the fifth thread goes on the heddle bar, the sixth, seventh and eighth threads go in the natural shed, continue threading this pattern. Weaving alternates between the two sheds.

Four Shaft Structures - One natural shed (1) and 3 sheds formed with 3 heddle bars (2, 3 and 4) The warp ends are threaded onto the heddle bars in order, every 4th thread. The first thread becomes part of the natural shed. The second

thread goes on the #2 heddle bar, the third on the #3 heddle bar, the fourth on the #4 heddle bar, the fifth is part of the natural shed, the sixth goes on the #2 heddle bar, the seventh goes on the #3 heddle bar, the eighth goes on the #4 heddle bar, the tenth is part of the natural shed, and so on. Shed #1 is always the naturally formed shed separated by the lower support bar on the loom.

To weave these patterns, open the sheds in the specified order, pull the weft ball through, beat it in place, close the shed, open the next shed in the specified order.

**1/3 Twill** (the weft will go under one and over three threads)

shed 1  
shed 2  
shed 3  
shed 4  
repeat

**2/2 Twill** (the weft will go under 2 and over 2 threads)

sheds 1 and 2  
sheds 2 and 3  
sheds 3 and 4  
sheds 4 and 1  
repeat

**3/1 Twill** (the weft will go under three and over 1 threads)

sheds 1, 2 and 3  
sheds 2, 3 and 4  
sheds 3, 4 and 1  
sheds 4, 1 and 2  
repeat

**Vertical Herringbone or Reverse Twill**

shed 1  
shed 2  
shed 3  
shed 4  
shed 3  
shed 2  
repeat

**Herringbone or Point Twill**

For this pattern the heddles must be threaded in a mirror pattern: first thread goes in the natural shed, second thread goes on the 2nd heddle bar, third thread goes on the 3rd heddle bar, fourth thread goes on the 4th heddle bar, fifth thread goes on the 3rd heddle bar, sixth thread goes on the 2nd heddle bar, seventh thread goes in the natural shed, the eighth thread goes on the 2nd heddle bar and so on. 1, 2, 3, 4, 3, 2, 1

shed 1  
shed 2  
shed 3  
shed 4  
repeat

**Diamond Twill**

For this pattern the heddles must be threaded in a mirror pattern: first thread goes in the natural shed, second thread goes on the 2nd heddle bar, third thread goes on the 3rd heddle bar, fourth thread goes on the 4th heddle bar, fifth thread goes on the 3rd heddle bar, sixth thread goes on the 2nd heddle bar, seventh thread goes in the natural shed, the eighth thread goes on the 2nd heddle bar and so on. 1, 2, 3, 4, 3, 2, 1

shed 1  
shed 2  
shed 3  
shed 4

shed 3  
shed 2  
repeat



## Tapestry Weaving

Weave an even background (like tabby), then another weft is woven on top, usually in a tapestry stitch like soumak between each row of tabby to form a design.



## Continuous Warp Weaving

If you want to weave a continuous warp on your warp weighted loom, you'll need to add a floating bar between the beam and the lower cross bar. The warp is then wrapped from the floating bar to the beam to the lower cross bar to the floating bar, to the lower cross bar, back to the beam, to the floating bar and back to the beam, repeating for the entire width of the piece. Tie the last end to the floating bar. The warp can then be pulled around the beam and the lower cross bar, creating a continuous warp that will be double the height of the loom. This method is really good for rug weaving. Adding the floating bar, converts your warp weighted loom into a salish loom. See The Off-Loom Weaving Book by Rose Neumann and Raymond Hull for more information on weaving on a salish frame.



### Bibliography of books with information on weaving in the Middle Ages

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Crowfoot, Elisabeth. et al Medieval Finds from Excavations in London: vol 4 Textiles and Clothing c. 1150-1450 Museum of London/Boydell Press: Woodbridge, 1992, 2001. ISBN 0-85115-840-4

Hoffman, Marta The Warp-Weighted Loom. Robin and Russ Handweavers 1964 ISBN: 82-00-08094-3

### Bibliography of books with information on general weaving, not necessarily historical information

Burningham, Veronica. Weaving Without a Loom Turnbridge, Kent: Search Press 1998. ISBN 0-85532-818-5 (If you ever have to do children's activities, this book is a must have.)

Chandler, Deborah. Learning to Weave Loveland, Co: Interweave Press 1995 ISBN 1-883010-03-9 (Excellent resource for beginners, explains everything in simple terms, easy to understand.)

Handwoven Magazine. Weaver's Companion Loveland, Co: Interweave Press, 2001. ISBN 1-883010-81-0 (general reference, more for people with large looms)

Held, Shirley E. Weaving A Handbook of Fiber Arts Orlando, FL: Harcourt Brace and Co. 1999. ISBN 0-15-501512-5 (Excellent how to book, the further I get into weaving, the more often I come back to this book for reference. Maybe not the best for beginners though.)

Naumann, Rose and Hull, Raymond. The Off Loom Weaving Book New York: Charles Scribner's and Sons, 1973. (info on basic how to's for weaving on simple types of frame looms, card weaving, inkle, salish looms, etc.)

Scarlett, James D. Tartan Weaver's Guide London: Shephard-Walwyn 1985 ISBN 085683-078X (Contains sett for 144 tartans with advice for weavers, this book for advanced weavers who are ready for 4 shed patterns.)

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