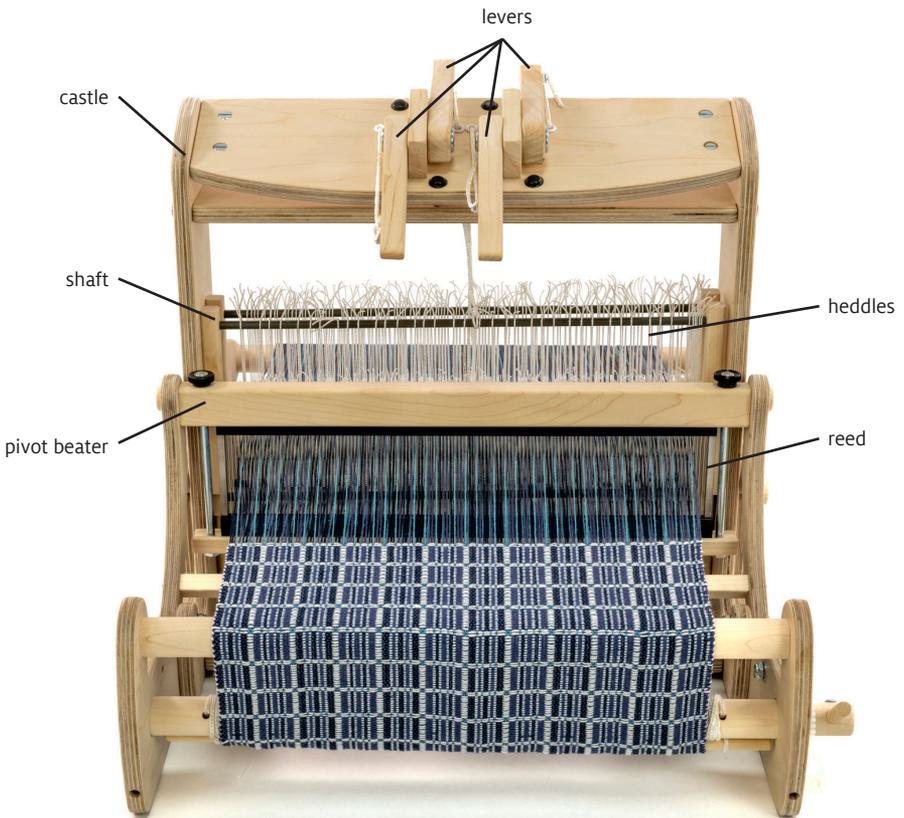


SL2045

# CRICKET QUARTET™

WARPING & WEAVING



Find out more at [schachtspindle.com](https://www.schachtspindle.com)  
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## WEAVING TERMS

**Balanced weave:** Fabric in which the number of warp ends per inch (see EPI) equals the number of weft ends, or picks, per inch (see PPI).

**Beat:** To push the weft threads into place with the beater and reed.

**Cross:** The figure 8 made at one end of a warp chain. It keeps the warp ends in order and helps prevent tangles.

**End:** One warp yarn or thread.

**EPI:** Ends per inch. The number of warp threads, or ends, per inch. Also called sett.

**Fell:** The last pick woven, where woven fabric meets unwoven warp.

**Heddles:** Loops of Texpoly that are held on shafts. Warp ends go through the heddles; when a shaft is raised, the warp ends are raised.

**Loom waste:** The parts of the warp that cannot be woven.

**Pick:** One pass of the weft yarn through the shed.

**PPI:** Picks per inch. The number of rows of weft per inch.

**Plain weave:** The most basic weave in which the weft is woven over and under, over and under warp threads. Also called tabby.

**Reed:** The slotted metal part that sits in the beater. It spaces the warp ends and beats the weft.

**Selvedge:** The edge warp threads on a piece of woven fabric.

**Shaft:** The rectangular frame that holds heddles. Warp ends go through the heddles; when a shaft is raised, the warp ends are raised.

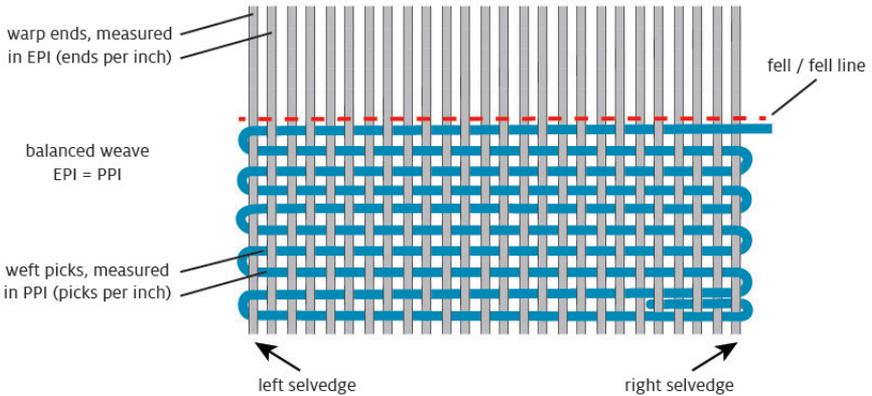
**Shed:** The space between raised and lowered warp threads through which the weft passes.

**Shuttle:** A tool for holding and carrying weft.

**Take-up:** The amount of warp and weft length "lost" during weaving. The yarns, instead of going in a straight line, actually curve over and under each other, and therefore extra yarn is required.

**Warp:** As a noun, the set of threads held taut by the loom. As a verb, the process of threading the warp onto the loom.

**Weft:** The threads interlaced with the warp threads.



## QUICK GUIDE TO WARP & WEFT CALCULATIONS

Let's say you're going to weave a table runner that is 12" wide and 40" long.

**A. Calculate the length of your warp.** The length of the finished piece is 40", but you will also need additional warp length for tying onto the loom and other loom waste. The average loom waste is approximately 24". You should also add another 10% (4") for take-up, which is the amount of warp length "lost" during weaving. It is a good idea to add another 10% (4") for possible shrinkage when washing the fabric after weaving. Add these four numbers to get the total length required for the warp:

$$\begin{array}{r} 40" \text{ (length of piece)} \\ 24" \text{ (loom waste)} \\ 4" \text{ (take-up)} \\ \underline{4" \text{ (shrinkage)}} \\ 72" \text{ (total length)} = 2 \text{ yards} \end{array}$$

**B. Determine the ends per inch (EPI).** There is a rule of thumb which is quite useful: simply wind the yarn you want to use as warp around a ruler for 1" so that there are no spaces between wraps. Then count the number of wraps in this 1" and divide by 2 for the number of ends per inch (for a balanced weave). Choose the reed which comes closest to this number. In our example, the warp yarn is set at 10 EPI.

**C. Calculate the total number of warp ends.** Multiply the width of your planned weaving times the EPI to get the total number of warp ends. In our example: 10 EPI x 12" weaving width = 120 total ends of warp yarn.

**D. Calculate the total amount of warp (in yards) needed.** Finally, to figure how many yards of warp you will need, multiply the 120 total ends by 2 (the length of each warp end in yards, calculated above). In our example, you will need a total of 240 yards for warp. Here's the simple formula (steps C and D above):

$$\text{Total warp ends} \times \text{length of warp (in yards)} = \text{total yards of warp}$$

**E. Calculate the weft yarn.** The amount of weft yarn you will need is determined by how firmly you beat your weft. For a balanced weave (the same number of wefts per inch as EPI), you'll need the same amount of weft and warp. For a weft-faced weave (where weft packs tightly and covers the warp), allow up to 5 times more weft than warp.

## INDIRECT WARPING

If you have warped your Cricket with the included warping peg, you have been using the **direct method**. For the Quartet, you will need a warping board or a set of warping pegs for the **indirect method**. Here you'll wind one or more warp chains, then bring them to the loom. We recommend warping the Quartet from front to back.

Before you wind any warp chains, calculate the length of your warp, warp width, and number of warp ends—see "Quick Guide to Warp & Weft Calculations" above.

- Use the **warp length** to set up the warping board or warping pegs.
- The number of warp ends in your warp chain or chains should equal the **total number of warp ends** for your project. It's often easier to warp with at least two chains. If your project uses different colors or yarns in the warp, you can wind a separate chain for each color or yarn.
- Use the **warp width** to center your warp in the reed.

### Using a warping peg set

1. Clamp the single warping peg firmly in place to a work surface. This peg is your starting peg.
2. Measure out the distance needed for the warp length of your project. Clamp the double peg securely to a work surface at this point. These pegs are your cross pegs. The distance between the starting peg and the farthest cross peg should equal your warp length.

The three pegs should form a straight line, as shown in Figure 1. Make sure you can walk easily between the starting and cross pegs, and that the warp yarn will have a clear path between them.

3. Tie the warp yarn to the starting peg. Carry the warp yarn to the cross pegs. Wind a figure 8 around these pegs, as shown in Figure 2—this forms the cross to keep the warp ends in order. Bring the warp yarn back to the starting peg.
4. Continue winding from the starting peg to the cross pegs and back, until the total number of warp threads are measured. Every loop around the starting peg equals 2 warp ends. Cut the yarn from the yarn source and tie it around the starting peg (for an even number of warp threads) or the cross peg farthest from the starting peg (for an odd number of warp threads). Skip to Step 9.

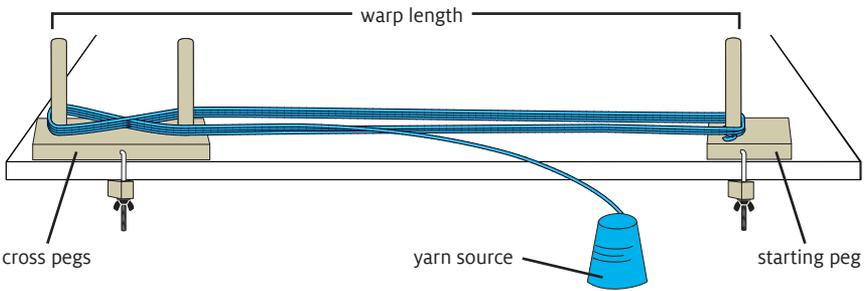


FIGURE 1: SETTING UP WARPING PEG SET

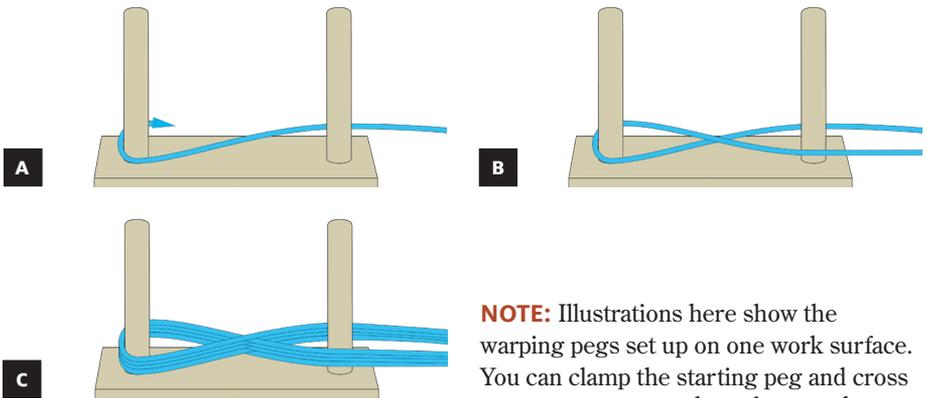


FIGURE 2: MAKE THE CROSS

**NOTE:** Illustrations here show the warping pegs set up on one work surface. You can clamp the starting peg and cross pegs to separate work surfaces, as long as all the pegs sit in a straight line.

### Using a warping board

**5.** Using a non-stretchy yarn in a color that contrasts with your warp, cut a guide string a few inches longer than your warp length. Tie one end around the left cross peg, as shown in Figure 3. Pass the guide string under the right cross string, then outside the next closest peg.

**6.** Work back and forth around remaining pegs on the board, adjusting which pegs to use until the guide string ends close to a peg. (Use more pegs for a longer warp or fewer pegs for a shorter one.) Tie the guide string around this peg—it's now the starting peg.

**7.** Tie the warp yarn to the starting peg. Follow the guide string to the cross pegs. Wind a figure 8 around these pegs, as shown in Figure 4A—this forms the cross to keep the warp ends in order. Follow the guide string back to the starting peg.

**8.** Continue winding from the starting peg to the cross pegs and back, until the total number of warp ends are measured (Figure 4B). Every loop around the starting peg equals 2 warp ends. Cut the warp yarn and tie it around the starting peg (for an even number of warp threads) or the cross peg farthest from the starting peg (for an odd number of warp threads).

### Secure the warp chain (board or peg set)

**9.** Tie the cross in five places with loose cross ties, as shown in Figure 5, using contrasting scrap yarn and overhand knots. Tie very tight ties (choke ties) in a second color of scrap yarn, placing them at about 18" inch intervals down the length of the warp chain. Tie all choke ties with tight bow ties to keep the chain from tangling.

**10.** Remove the chain from the pegs. If you wish, you can cut the non-cross end of the chain and tie the ends in an overhand knot.

**11.** Make additional chains as needed for your project. Bring all warp chains to the loom.

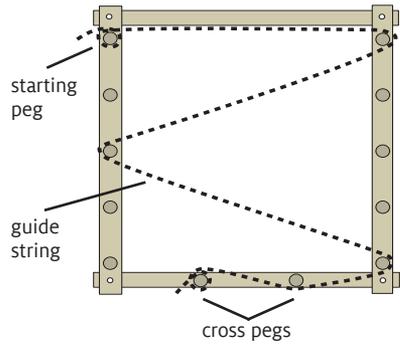


FIGURE 3: SET UP THE GUIDE STRING

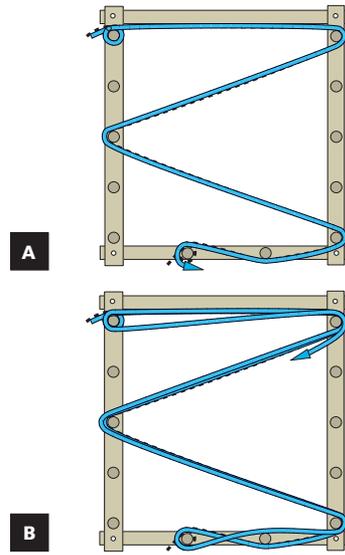


FIGURE 4: MEASURE THE WARP

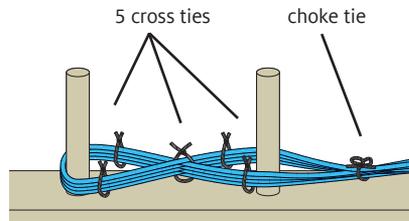


FIGURE 5: SECURE THE WARP CHAIN

### Sley the reed

**12.** Set up the Quartet with the reed for your project. You can always sley multiple ends through a dent or skip a dent to get the sett you want.

**13.** Find the center of the reed and then measure out to one side for half the width of your warp. For example, if your warp is 10" wide, measure out 5" from the center and begin slewing at this point. If you wish, tie loops of yarn around the reed at your starting and ending points.

**14.** Wrap the warp chain loosely around the front beam, leaving the cross end long enough to reach the rearmost shaft.

**15.** Hold the cross in your non-dominant hand, separating each section as in Figure 6. Cut the loops at the end. Remove the cross ties without cutting the warp yarn. Notice that the ends stack up Lincoln-log style.

**16.** Position your cross hand in front of the reed. Hold the threading hook in your dominant hand; position this hand behind the reed. Starting at the outermost edge of your weaving, pick up the top warp end from the cross and thread it through the reed. Sley across the reed until all warp ends are threaded. (You can sley from right to left or left to right.)

**17.** If you wound multiple warp chains, use all of them to sley the reed. You may want to tie groups of ends into loose overhand knots behind the reed, to keep all the warp ends secure.

**18.** Reaching from behind the reed, grasp all warp ends and pull them towards the back of the loom. Warp ends should reach beyond the rearmost shaft so you can thread the heddles easily. Leave the chain(s) secured to the front beam.

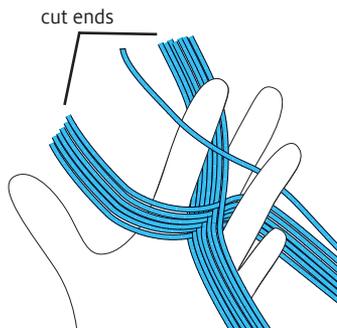


FIGURE 6: HOLD THE CROSS

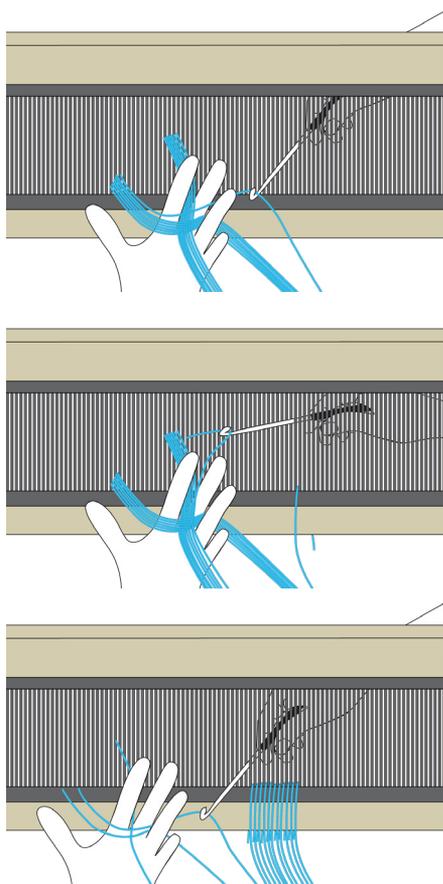


FIGURE 7: SLEY THE REED

## SLEYING REEDS FOR DIFFERENT SETTS

In the top row, find the reed size you own. Follow that column down until you reach the sett (ends per inch) you want. Follow that row to the left; sley the reed using the indicated order of sley.

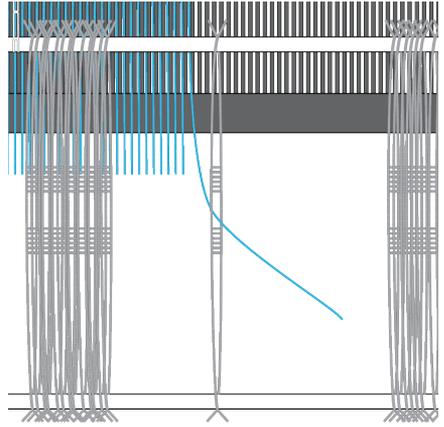
	Reed Dent (ends per inch)				
Order of sley	6	8	10	12	15
0-0-1	2	3	3	4	5
0-1	3	4	5	6	7.5
0-1-1	4	5	7	8	10
0-1-1-1	4.5	6	7.5	9	11.5
1	6	8	10	12	15
1-1-1-2	7.5	10	12.5	15	19
1-1-2	8	11	13	16	20
1-2	9	12	15	18	22.5
1-2-2	10	13	17	20	25
1-2-2-2	10.5	14	17.5	21	26
2	12	16	20	24	30
2-2-2-3	13.5	18	22.5	27	35
2-3	15	20	25	30	37.5
2-3-3	16	21	27	32	40
2-3-3-3	16.5	22	27.5	33	41
3	18	24	30	36	45
4	24	32	40	48	60

Example: I want to weave at 20 EPI in my 12-dent reed. This table gives me the sleying order 1-2-2. The first dent in the reed gets 1 thread; the second dent gets 2 threads; the third dent gets 2 threads. I will repeat this sleying order across the warp to get a sett of 20.

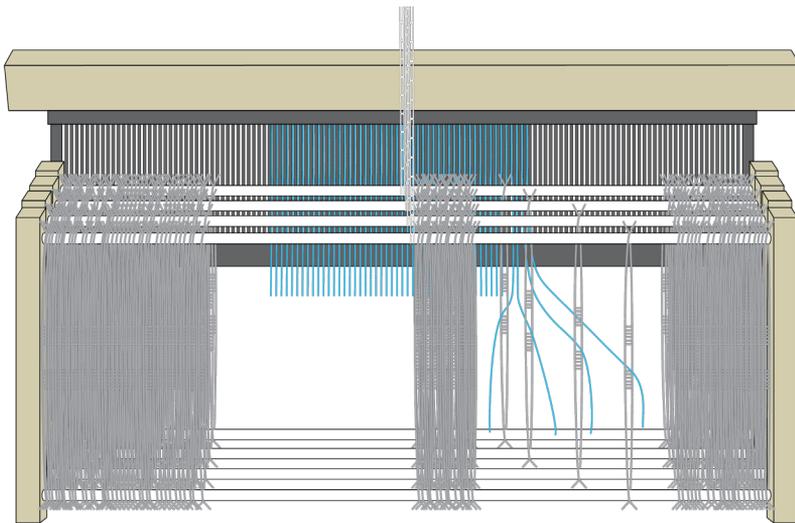
**Thread the heddles**

**19.** Make sure each shaft contains enough Texsolv heddles for your weaving pattern. If you need to add more heddles, do so now. Once you start threading, there is no easy way to add more heddles—you have to undo the threading to remove shafts.

**20.** Sit at the back of the loom, at a height where you can easily see the warp ends coming from the reed. Thread the heddles following your pattern draft. See page 9 for instructions on reading pattern drafts.



*FIGURE 8: THREADING A TEXSOLV HEDDLE*



*FIGURE 9: THREADING FOUR SHAFTS*

## READING PATTERN DRAFTS

There are three parts to any pattern draft: the threading, the tie-up, and the treadling. You can weave any 4-shaft pattern on the Cricket Quartet, using levers instead of treadles. Pattern drafts convey a lot of information in a brief, simple graphic format.

**Threading** is given at top left. This is the first piece of information we use to set up a loom, telling us how to thread the heddles. Each shaft has its own line, starting at the bottom row with the first shaft (front shaft). Read the threading from right to left, as its arrow indicates. On both the drafts below, the first thread is threaded on shaft 1, the next thread goes on shaft 2, and so on. When you get to the end of the threading repeat (4 threads for plain weave or 6 threads for 2/2 point twill), go back all the way to the right and begin again. **NOTE:** We used numbers to indicate the shafts; other pattern writers use an X, a dot, or some other symbol. If a project uses different warp colors or yarns, the threading may also indicate warp color order.

The **tie-up** appears on the top right, showing how to tie up the treadles or which levers to raise on the Cricket Quartet. Each treadle has its own column.

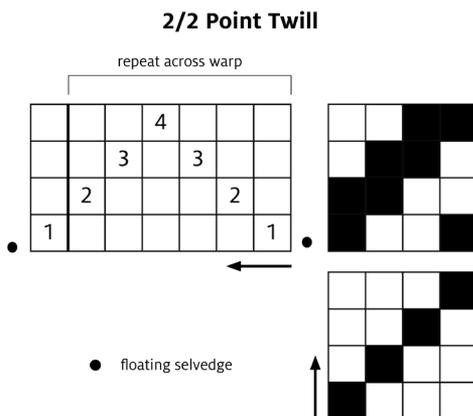
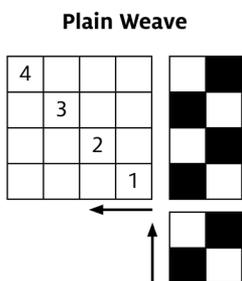
Finally, the **treadling** at bottom right indicates how to weave the project once the loom is warped. If a project uses different weft colors or yarns, the treadling may also indicate how they are used. Read the treadling from bottom to top, as its arrow indicates.

The Cricket Quartet is a direct tie-up loom, with levers like a table loom instead of treadles like a floor loom. You will know how to weave from the tie-up and treadling parts of the draft—don't let the terminology confuse you.

Look at treadling for the plain weave draft below: it has a 2-step repeat (one step per row). The tie-up has 4 rows for the shafts (marked in the threading) and 2 columns that line up with the steps of the treadling repeat. The black boxes in these sections tell you what to do. On the first row of the pattern repeat, raise shafts 1 and 3. On the second row, raise shafts 2 and 4. Repeat these rows to weave the fabric.

Now consider the 2/2 point twill draft. This treadling has a 4-row repeat, so the tie-up has 4 columns. For the first row, raise shafts 1 and 2. For the second row, raise shafts 2 and 3. For the third row, raise shafts 3 and 4. For the fourth row, raise shafts 4 and 1.

You can weave any pattern on the Quartet that calls for 4 (or fewer) shafts. Even if the tie-up has more than 4 columns, you can weave it: each column of the tie-up shows you which shafts to raise for each row of the treadling.



### Tips for threading

- Poke the warp end through the middle (eye) of the Texsolv heddle, as in Figure 8 on page 8.
  - Push heddles out of the way until you're ready to thread a section (see Figure 9 on page 8). If you're threading right to left, push heddles to the left on the shafts, as shown here. You can also thread left to right; push heddles to the right.
  - Make certain that warp ends do not cross each other between the reed and the shafts, or between the four shafts (Figure 9).
  - Work in small sections, checking each section for mistakes. Once you have checked a section, tie its ends in a loose overhand knot behind the shafts—this knot will keep your threading safe and
- it will be easy to remove if necessary.
- Every so often, leave an empty heddle in the middle of the threading: if you make a mistake, you can use one of these “spares” without unthreading the entire shaft.
  - You can also fix threading errors with a repair heddle. Cut an 18” length of a sturdy, non-stretchy yarn. At the point where you need an additional heddle, loop the yarn around the bottom shaft bar of the harness. Tie a tight overhand knot level with the bottom of the Texsolv eyes. Then tie another tight overhand knot level with the top of the Texsolv eyes. Finally, tie a firm square knot around the upper shaft bar of the harness. Trim the ends of this square knot.

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### Wind the warp onto the warp beam

**21.** Bring the back apron bar around and **over** the back beam. Make sure you've gone over the back beam, not under it, or you will not get a shed when you start weaving.

**22.** Tie groups of warp ends about 1" wide in overhand knots across the entire warp. Then tie each group around the back apron bar and secure this second knot by tightening it up to the first knot (Figure 10).

**23.** Wind the warp onto the warp beam by turning the crank handle clockwise. When the warp has been rolled around the beam once, insert heavy paper between the layers of warp threads to separate them. As you wind the warp on the beam, insert more paper to maintain separate layers.

**24.** Continue rolling the warp and paper onto the warp beam. Stop every so often to pull hard on the warp chain(s) to tighten the paper and warp on the beam. Remove choke ties as you come to them.

**25.** Stop winding when the front end of the warp is about 10" from the reed. If you haven't already cut loops at the end of the warp chain, hold all the ends in one hand and cut them with scissors.

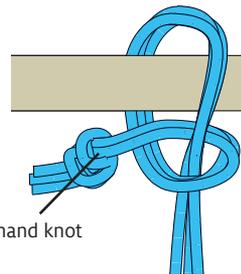


FIGURE 10: TIE ONTO BACK APRON BAR

### Tie onto the front apron bar

**26.** Bring the front apron bar around and **over** the front beam so that it is about 6" from the reed. Make sure you've gone over the front beam, not under it.

**27.** Select a group of warp ends about 1" wide at the center of the warp and bring them over the top of the apron bar, dividing them in half and tying together around the apron bar using a surgeon's knot (Figure 11A). It's like starting to tie your shoes, except the threads go around twice.

**28.** Alternate tying 1" groups to the right and left of center until all groups are tied.

**29.** Work back and forth across the warp, tightening all the groups. Start in the center and work outwards on each pass. Pat across the warp to check if all groups have equal tension. The tension should be even, but doesn't need to be very tight. (Once the warp is evenly tensioned, you can increase the weaving tension as needed.)

**30.** Secure the ends of each group with a bow or square knot (Figure 11B). You are now ready to weave.

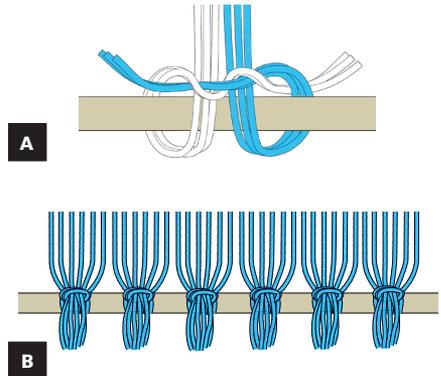


FIGURE 11: TIE ONTO FRONT APRON BAR

### WEAVING

As in rigid heddle weaving, you will pass the weft through sheds, alternately going left to right and right to left. However, with the Quartet, you will make sheds by raising one or more levers.

#### Weave a header

Before beginning your project, weave a header with scrap yarn (Figure 12). It will spread the warp out evenly so that your weaving project can begin on an even, uniform warp. Use scrap yarn about the same size as your project yarn. Weave 3 rows without beating and then press these in place with the pivot beater. Repeat if needed until the warp is evenly spread.

Examine the header for threading mistakes—if you spot a mistake, you can correct it with a repair heddle (see page 10).

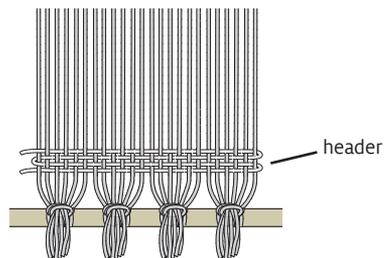


FIGURE 12: WEAVE A HEADER

#### Wind a shuttle

You will need a shuttle for weaving. You can wind a bobbin for a boat shuttle,

or you can use a stick shuttle about the same width as your warp. Wind the weft yarn around the shuttle in a figure 8 (Figure 13). You can wrap both edges of the stick shuttle.

### Weave your project

To weave fabric on your loom, lift the lever(s) indicated by your pattern draft. For plain weave, raise the levers for shafts 1 and 3, weave across with the shuttle, then beat the weft into place with the pivot beater. This is the first pick. For the second pick, raise shafts 2 and 4, returning the shuttle to the other side of the weaving.

As weft yarn comes off the shuttle, lay it at about a 30-degree angle so that it doesn't draw in your selvages (Figure 14). Your weft should be snug at the selvedge but should not pull in.

### Advance the warp

After you have woven a few inches, you will notice that you have less room for the shuttle. Disengage the rear ratchet dog by turning the rear crank handle away from you and pulling up on the ratchet dog.

Turn the front crank handle toward you to wind fabric onto the cloth beam. Stop when the woven edge of your cloth is 1" to 2" away from the front beam. Push the ratchet dog back down on the ratchet gear. If the warp is not tight enough, turn the rear crank handle away from you to tighten. Your woven cloth will be more consistent if you advance the warp about every 2".

### Remove your project from the loom

When you can't weave any farther or have finished your project, weave a few rows with waste yarn and cut the warp off from the back of the loom. Unwind the fabric from around the cloth beam and untie or cut off the warp from the front apron bar. **Be careful not to cut the apron cords.**

Finish the woven fabric according to your project instructions. ■

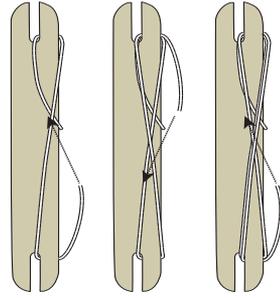


FIGURE 13: WIND A STICK SHUTTLE

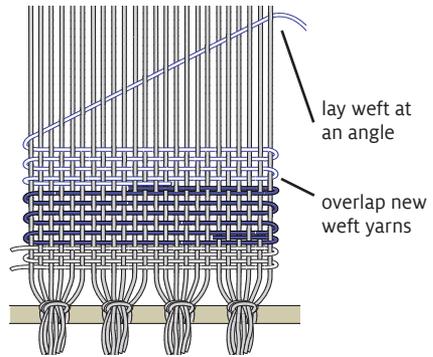


FIGURE 14: WEAVE YOUR PROJECT

**If a ratchet dog will not rotate easily, do not force it. Instead, loosen the screw that attaches it with a 7/16" (or adjustable) wrench and a #2 Phillips screwdriver. Hold the lock nut inside the loom with the wrench, then loosen the screw slightly with the screwdriver.**