

Warping basics: from front to back

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These directions are for warping “front to back,” i.e., slewing the reed and threading the heddles before winding the warp onto the warp beam. Follow these directions if you are using weaver-friendly warp yarns (smooth plied cottons, silks, linens, wools, etc.). Very sticky or highly overtwisted yarns (singles yarns are often slightly overtwisted) should be warped using the method on pages 5–7. To identify the parts of the loom mentioned here, see Figure 7, page 6.

Winding the warp

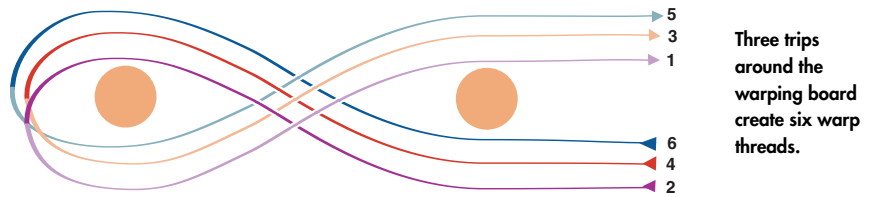
The first step is to wind the warp threads on a warping board or reel so that they are all evenly tensioned and do not twist around or cross each other. This aligns the threads in the order (and length) in which they will be placed on the loom. To keep track of this order, a cross (see Figure 1) is made at one end of the warp.

Planning the path of the warp

Let’s say you want to wind a warp that is seven yards long. Most warping boards are about 1 yard wide so that each pass from one side of the board to the other adds 1 yard of length to the warp. Boards are not consistent, however, so before you determine the path of your threads on the board, measure a guide string (in a color that contrasts with your warp) seven yards long (plus the amounts needed to tie to a peg at both ends). Tie the guide string to the top left peg and then wind back and forth from peg to peg so that it ends at a peg when you’ve run out of string. You can skip pegs or run the thread along a side for several pegs if necessary to get the required length.

When you wind the warp, you’ll follow the path of the guide string, going from first peg to last peg to first peg to last peg until all the threads in the warp are wound. When the warp is placed on the

1. The cross keeps the threads in order.



loom, the loops at the first and last pegs are cut so that the long unbroken winding thread becomes many individual warp ends. Each trip from first peg to last peg and back again produces two warp ends (see Figure 2).

If you are a brand new weaver, it is best to wind the warp by carrying a single thread around the warping board. After you have more warping experience, you can wind two threads together, keeping them separate with a finger. Some weavers wind as many as three or four strands together, separating them with fingers.

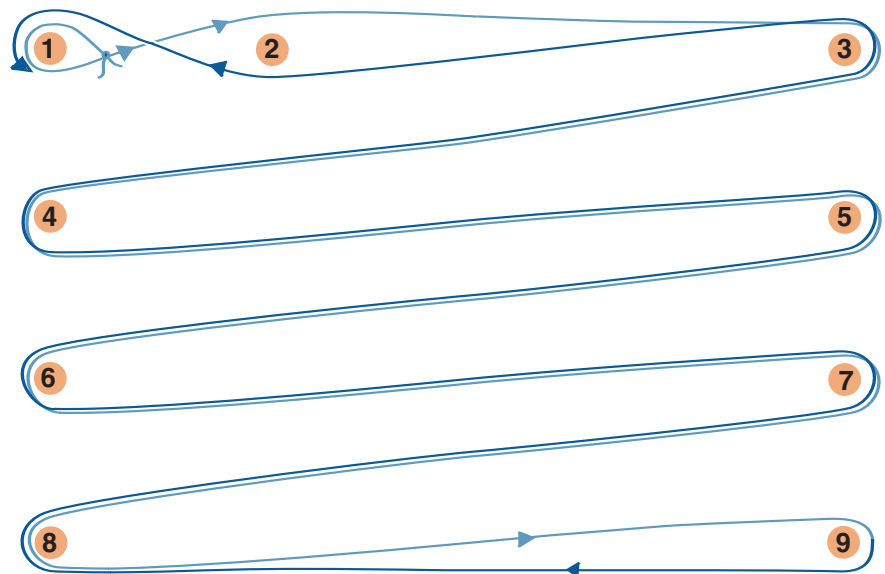
Winding the first thread

Secure the warping board on a wall at a position comfortable for winding. With the guide string in place, put the cone of warp yarn on the floor at the right side of the warping board (if the pegs are

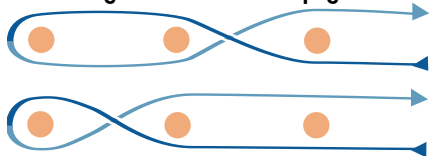
arranged as in Figure 2). The cone should be placed on a cone stand or in a container to prevent it from falling over. If you are winding from a spool or ball, place it in a deep bowl or gallon jar.

Tie a loop in the end of the yarn coming from the cone that is larger than the diameter of the pegs on the warping board. Slide the loop onto the top peg at the left (peg 1 in Figure 2). Pass the thread over peg 2 and over and around peg 3. Then continue from side to side following the path of the guide string (pegs 4–9). Return to peg 1, retracing the same path. To form the cross on the return, take the thread under peg 2 and over and around peg 1. Repeat this process for all of the threads in the warp. Remember that each time you wind from the first peg to the last peg and back to the first peg again, you have wound two warp ends.

2. One complete trip around the warping board creates two warp threads.



3. Making a cross with three pegs



Counting the threads

Some sources advise counting the threads in groups of a certain number as you are winding the warp and then chaining a counting thread around each of these groups. You can do this, but it saves time simply to wind a *lot* of threads and then count them all at once.

Count the threads on the last peg (peg 9 in Figures 2 and 4) since each loop represents two warp threads. I separate the threads on this peg in groups of ten with my thumbnail. When I have five groups (100 actual threads) I push them to the base of the peg and separate five more groups and push them to the base of the peg, etc. When I've counted all the threads on the peg, I loop a contrasting-color thread around them, and write down the total number of threads. Next I wind what I estimate to be about the number I still need, count them, and write down that number. I may have to remove a few threads or wind a few more to finish.

Securing the warp

Secure the strand coming from the cone or spool by winding it around the end peg several times, and cut.

Tie the cross in four places as in Figure 4. Tie a thread around the warp near the last peg. Make the first half of a square knot around the warp near the right-hand top peg, but instead of wrapping one thread around the other once, wrap it two

Where to put the choke

The choke is tied to the front beam so that the threaded ends hang 10–12" from the heddles behind the shafts. Measure the distance between the front beam on your loom and a point 12" below the heddle eyes on the last shaft. Measure this distance from the top left peg of your warping board and tie the choke there.

Tips for winding a warp on a warping board

■ Tension on the threads should be relaxed, *not tight*. If the threads are wound under tight tension, they will stress and bend the pegs of the board as you add threads and push them toward the bottoms of the pegs to make room for more.

Getting the tension right is a function of how you hold the yarns. Don't pull the thread from side to side with one hand. Instead, keep your right hand on the right side of the warping board so that the thread passes loosely through its fingers. The right hand guides the thread so it comes straight up from the cone or spool. For each trip of the thread to the left side of the board, with the index finger and thumb of the left hand encircle the yarn just above the right hand and move the yarn to the peg on the left, making a fold in the yarn. Place the fold on the left peg, and then bring the left hand back to the right side to take another fold of yarn after the right hand has placed the yarn on the right peg and moved downward.

Continue this way until reaching the last peg marked by the guide string and then return to the top using the same motions but moving upward.

■ With practice, the hand motions for making the cross can also be done so that the right hand remains almost en-

tirely on the right and only the left hand moves back and forth. If the right hand moves the thread down while the left hand lifts the thread up, the path of the thread can be directed under the right peg and over the left peg of the cross. Exchanging the position of the hands places the thread in the opposite position.

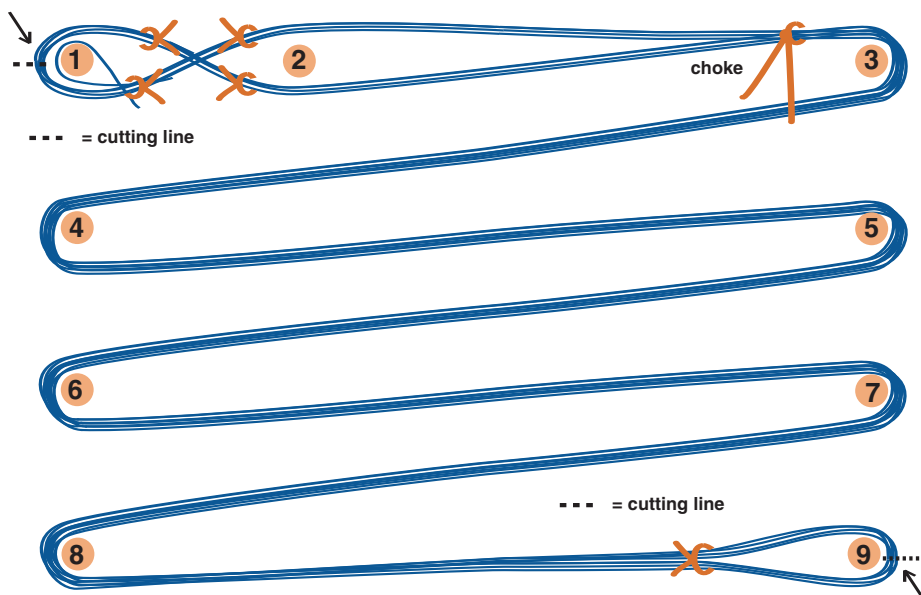
■ The threads should not overlap each other on the pegs. If the threads criss-cross each other, as you beam the warp on the loom the threads may stick or tangle at the reed or heddles as they try to straighten themselves. Simply place each thread toward the top of the peg and push it toward the bottom as you place the next thread.

■ If the pegs for the cross are on the right side of your warping board, reverse the directions given here.

■ Some warping boards have three pegs for the cross. Group two together, either the first two (placing the cross further from the end of the warp) or the second two (placing it closer to the end); see Figure 3.

■ If the warp is much narrower than the width of your loom, detach the apron-rod cords on both sides of the warp to prevent the apron rod from bending under tension.

4. Securing the warp before chaining it from the warping board



times. This will be a choke tie that you will make *very* tight later (I use a doubled strand of carpet warp since it is strong and does not slip). Leave the ends of the half square knot dangling until you are ready to complete the knot as directed below.

Chaining the warp from the board

Cut the loop in the warp threads at the last peg; see Figure 4. You are now ready to chain off the warp. Chaining is like crocheting with your hands. Form a loop of all the threads at the end of the warp and pull a new loop through it, then pull a third loop through the second, a fourth loop through the third, etc.

In the chaining process, if you always pull the new loop through the old one in the same way with the same hand, each new loop will cause the chained warp to make a one-quarter turn. The chain will then have to be untwisted as the warp is wound on the warp beam. To prevent adding this twist, alternate hands as you pull the loops: first use the left, then the right, then the left, then the right, etc.

Chain up to the second peg from the top on the right side (peg 5) and hang the newest loop on that peg. The tension on the remaining warp will be loose.

Now tie the second half of the square knot to make the choke. If you had done this earlier, tension would have prevented tying it tightly enough. The choke must be so tight that *no warp thread can ever slip through it*. With its extra wrap, the first half of the knot will hold as you pull very, very tightly on both tails and tie the second half of the knot.

Cut the loop at the first peg, chain the warp to the choke, and remove the warp from the board.

Some weavers tie chokes at every yard on the warping board. Unless your materials are extremely slippery or wiry, this only adds the task of removing them during beaming. The threads are all happy to stay in the close relationship they formed on the warping board.

Sleying the reed

The next step is to sley the reed. This is easier to do sitting at a table than bending over the loom. Prop the reed verti-

Sleying many ends in a dent

For smooth threads at one or two ends per dent, there is no need to keep the cross once the reed is sleyed; you can thread from their order in the reed. For more ends or for sticky or over-twisted yarns, a cross of individual threads must be transferred to the side of the reed that faces the shafts—look for more information on this process in future articles.

cally between heavy books or large cans of food or place in reed holders. Mark the center of the reed. Measure from the center toward the right edge a distance half the width of your warp and mark this dent.

You can put lease sticks in the cross openings for sleying or use your fingers as lease sticks and sley directly from your hand. To do this, put your index finger through the top opening, your ring finger through the lower opening, and your middle finger behind the cross. Hold the cross on the side of the reed closest to you.

Remove the ties that secured the cross. Using a reed hook that slides easily through the dents, with your right hand slip the hook from the back of the reed through the marked dent and pull the first thread through. (If you're new at this, separate the thread from the cross with the fingers of your right hand and then pull it through the dent with the reed hook.) Rest your left elbow on the choke so you can pull the thread against it.

If you are left-handed, reverse the positions indicated above.

Threading the loom

When you have finished sleying the reed, group the sleyed ends into several large slip knots, remove lease sticks if you used them, take the reed and warp to the loom, and place the reed in the beater with the sleyed ends towards the shafts. Tie the choke to the center of the breast beam, rest the chain on a clean sheet or piece of plastic placed on the floor, and untie the slip knots.

Take extra time to make your threading position behind the heddles comfortable. Sometimes it helps to brace the

loom so that it slants up toward you for better access and view. Use good light.

Examine the draft. Before you start threading, count the threads on each shaft and make sure each shaft has enough heddles. If you are right-handed, begin threading at the right side. Move all the heddles to the left (if there are a lot more heddles on each shaft than you need, push half of those you won't be using to the right before threading so that the extra heddles will be evenly distributed on both sides of the warp).

Select the first thread from the first dent on the right and put it through the eye of the first heddle to your left on the shaft indicated by the draft. Use a threading hook or fold the strand into a loop and thread it with your fingers. If there are two threads in a dent, choose either one first, but be sure to sley all the threads in a dent before moving to the next dent. *Most important: Do not to pull on any thread so hard that it slips in the choke!*

Continue, taking each thread in order and pushing the threaded heddles to the right as you proceed. When you have threaded about ½" (measured at the reed) and checked carefully for accuracy (after this check you won't need to check these threads again), tie the ends of the ½" group in an overhand knot (the ends will be even without needing adjustment when pulled gently against their secured position at the choke). This overhand knot will never be removed. Continue until the threading is completed.

Tying onto the back apron rod

All of the warp threads are now hanging down from the heddles in ½" groups tied with overhand knots. The groups on the sides are probably shorter than those in the center because of the longer distance the side groups have to travel from the choke. If the side groups are very short, release the choke from the front beam.

You can tie the groups directly to the back apron rod at this point—or, if your loom is large and this would mean bending uncomfortably over the back beam, you can tie the warp to a separate rod as you sit behind the shafts and then tie that rod to the back apron rod.

Begin with a pair of knotted groups in the center of the warp and bring them over and around the rod and back up to tie over themselves in a square knot, leaving tails of about 1" (see Figure 5). Then tie a pair at each edge leaving tails the same length. The rod is now held by the three pairs. Tie the rest of the pairs in the same way, always leaving 1" tails. Tension on the pairs will vary from tighter at the edges to looser in the center.

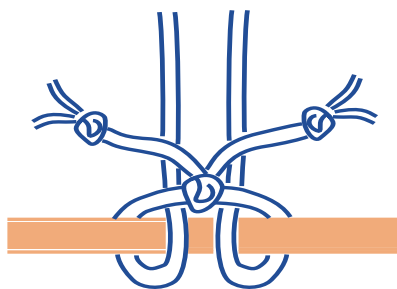
Beaming the warp

Go to the front of the loom and carefully cut or untie the choke. Pull firmly on the warp below the choke to straighten the threads. Then, with a finger, divide the warp into halves (from the center of the reed, run your finger between the two halves of the warp all the way down to the chain resting on the floor). Then similarly divide the halves into halves until the whole warp is divided into sections about 2" wide from the reed to the floor.

Pull firmly on each section. Never pull or otherwise handle or comb individual threads even if a few look slightly out of place. These will come into position as you beam. (However, if a thread was pulled badly out of alignment at the choke during threading, try to hold its knotted group behind the heddles in one hand and pull on the section of warp beyond the unaligned area near the warp chain with the other hand to bring the thread back into alignment—this might be a time to call in a helper. If you cause or allow a thread to be gravely unaligned from its neighbors, you will have to manipulate that thread throughout the beaming of the warp. It takes much less time to fix the thread before beaming—but be careful not to disturb any others!)

Move the beater to the front beam. Begin winding by turning the crank on the warp beam. When you see threads becoming tangled at the reed, go to the front and pull firmly on each of the sections, grabbing them where the threads are still smooth. When the warp almost completely encircles the warp beam, insert heavy paper at least 2" wider than your warp or warping sticks 2" longer than warp width to pack between the layers.

5. Tying the warp on the apron rods



Use smooth paper that comes in long sheets or rolls rather than short pieces or torn paper sacks. One-sided corrugated cardboard also works well but takes up space on the warp beam so that it prevents using a very long warp. Wallpaper (not pre-pasted) from a discount store makes good warping paper. If you use sticks, allow about two per turn and space them so they don't stack on each other.

It is extremely important that the warp go on the beam at exactly its width in the reed. It will spread out as it travels from reed, to heddles, to back beam, to warp beam. Since the spreading happens mostly at the edges, it will build up less on the edges as it winds on the warp beam, resulting in a difference in tension between edge and center threads. Tie two very heavy cords or place two C-clamps around the back beam on each side of the warp. Push them against the warp to narrow its width to $\frac{1}{4}$ "– $\frac{1}{2}$ " narrower on each side than its width in the reed. The warp will then go on the warp beam at the correct width.

It is also important to wind the warp on the beam very tightly so that the threads cannot change their tension in relation to each other throughout the weaving. After each full turn of the beam, pull on each of the 2" sections very firmly. I like to wrap each section a couple of times around a smooth stick and pull on the stick to save the skin on my hands.

Then move the beater back to the front beam, return to the back of the loom and crank again. Again, when the threads have trouble sliding through reed and heddles, return to the front of the loom, run your fingers down to the floor to separate the sections, and pull on each section very firmly. Vary the order in which you pull: from the center out, from right to left, from left to right.

The warp on the warp beam should form a cylinder with the same diameter throughout. Never comb the threads with your hands or use a comb—any thread you realign will require time-consuming effort for the length of the warp. The threads are already where they should be in the warp chain—keep them that way!

Clear any tangles by picking up a section of warp near the floor in one hand, pulling to apply tension to the threads, and then strumming the threads under tension with the other hand without allowing them to change their position in the hand that is holding them.

Continue this way until the warp is completely wound and the ends are 10–12" from the reed. Their lengths might vary slightly from each other. The more similar they are, the more evenly you pulled on all the sections and the more evenly tensioned the warp is on the beam. With weaver-friendly yarns, some difference will not be a problem.

Tying onto the front apron rod

Tie the warp onto the front apron rod in very small groups, about $\frac{1}{2}$ " each. Starting in the center, take two $\frac{1}{4}$ " sections of warp and pass them over and around the front apron rod and tie the first half of a square knot on top. Continue, working from the center out, alternating sides. When all of the threads are tied onto the rod, go back and complete the square knots. Do not make these knots tight. If you do, each succeeding knot will be tighter than the previous one. Instead, take a tail from the first half of the knot in each hand, lift them toward the reed to eliminate slack, pull them down to snug the knot against the rod (think "snug," not "tight"), and tie the second half of the knot. Notice how this feels, and make each knot feel the same way.

Beginning to weave

Tighten the tension by turning the crank on the cloth beam or warp beam. Begin weaving with the intended weft—you do not need to use toilet paper or thick yarn for a header if you have tied on in small groups. It will take about $\frac{1}{4}$ – $\frac{1}{2}$ " of weaving to bring the threads into position.