

EVERYTHING

you've
always
wanted to
know about
tying up a
counter-
march loom
without
really trying
...and with
perfect
success the
first time!

BY MADELYN van der HOOGT
WITH DAVID XENAKIS

You may have overheard and pitied owners of countermarch looms asking each other endlessly, "Do the long cords go in front or in back?"...or moaning..."All my harnesses fell down!...I can't get a decent shed!...It takes all day to tie up my loom!" Then one day *you* have a new countermarch loom, and standing among piles of boards and cords you wonder how you will ever make sense of them all. To help you on that day (because a countermarch loom *is* a wonderful tool) we have worked out a streamlined system that will give a good weaving shed from the start with little or no adjustment and allow tie-up changes to be made quickly and easily.¹

The instructions and diagrams given here are for Glimåkra looms but can be adapted to most other countermarch looms. The most significant factors that may differ from loom to loom and affect the measurements given in our tie-up system are: the distance from the floor to the bottom shaft bar, the length and width of the lams, and the heddle size (the distance between the heddle eye and the shaft bar). Measurements here will assume the use of 330mm (13") Texsolv polyester heddles and an approximate distance of 30" from floor to lower shaft bar when shafts are at rest and locking pins in place. If your loom differs from the Glimåkra or your heddle size is different, try the instructions first (except you will initially hang your shafts at whatever height places the warp in the center of the heddle eye) and make changes only if they appear to be necessary. The instructions assume treadles hinged at the back of the loom.

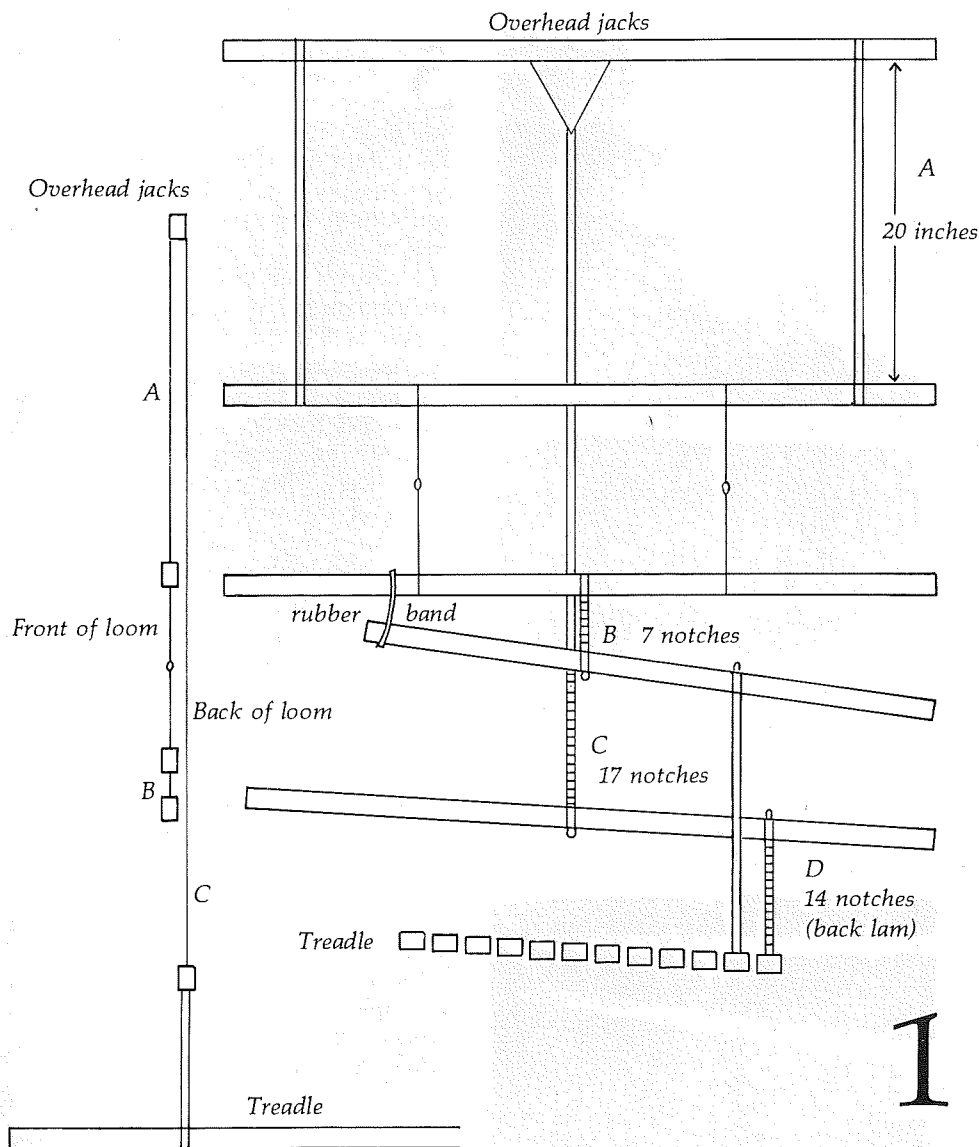
¹For four shaft weaving, countermarch tie-up is a simple matter. The short distance between the shafts and the web yields a sufficient weaving shed. The shed narrows and tie-up procedures become more critical the more shafts one uses. The method described here is designed for weavers intending to use frequent tie-ups requiring more than four shafts.

A major part of what makes this tie-up system so easy and fast is the use of Texsolv link-loop cord. To follow the instructions completely you will need more cord than is provided in the usual tie-up kit that comes with the loom. You can achieve a functioning tie-up using only that kit, but the investment in an extra roll of cord will repay itself often when you use the time-saving hints given below.

When not otherwise indicated, directions (right and left, front and back) are given as if you are facing the loom from the front (where the weaver sits). New loom owners will need Texsolv instructions to identify which cords go where and for other information not given here. If you have already been using your loom, disconnect all cords except those that hang the shafts from the overhead jacks (*A* in *Diagrams 1 and 2*).

It saves an amazing amount of time and lots of wear and tear on the weaver to install cords in the treadles that remain there permanently. These cords, in any given tie-up, will be tied to either a lower lam or an upper lam. To make them permanent, therefore, they must all be long enough to reach the upper lams (and this is where you will need that extra roll of cord). Because of the difference of our tie-up system from the one usually recommended, these cords will also need to be longer than the corresponding ones supplied in the tie-up kit. For best results, cut enough sections of cord 23"-26" long to fill all holes on the treadles.² Connect them to

²The cords reaching the lams at the right side of the loom (pivot end) do not need to be as long as those at the left. You can use the cords that were provided in the tie-up kit on that side, placing longer ones (26") at the left. Diagram 2 shows two methods of inserting the cords in the treadles. The arrow clip method has the advantage of requiring less cord. With it the cords will slide up and down in the treadles when tied and always appear straight rather than presenting the slightly messy appearance created by the loose, looped cords. It does, however, require two arrow clips for each treadle hole, the upper one necessary to keep the cord from leaving the treadle when not tied to a lam.

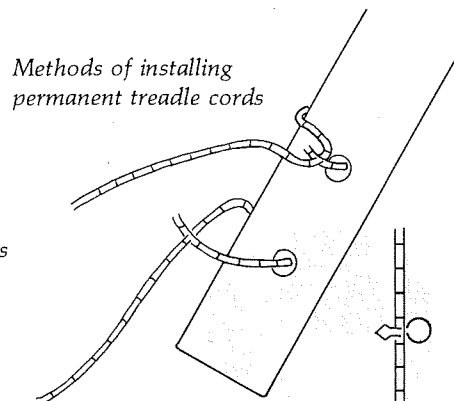


2 Side view of one shaft and connecting lams and treadle

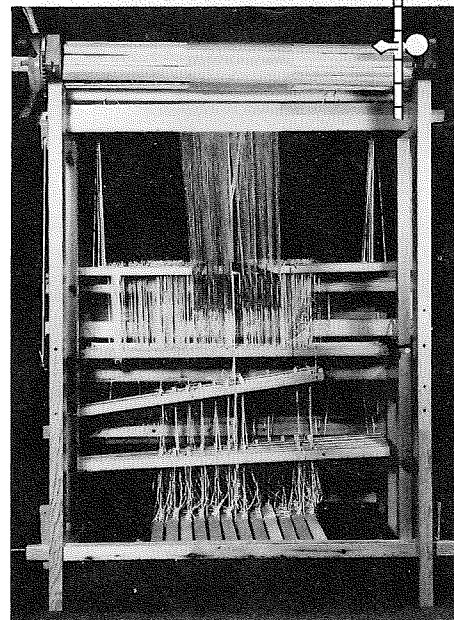
the treadles as indicated in *Diagram 3* and *Photo 2*. The cords not in use will hang from the treadles or when tied to the lower jacks will extend from them a bit messily in long trails, but the slick surface of the Texsolv cord will pre-

vent all tangling and interference. Besides the advantage of never having to move a cord once installed, all Texsolv clips are placed in position on top of the lams rather than under the treadles when tying up the loom.

2 Hang the shaft bars from the overhead jacks (locking pins in place) so that they are 20-20¼" from the jacks. There is no need to use the shaft holders supplied with the loom. For greater convenience in removing and adding heddles, you might want to install an eye hook and

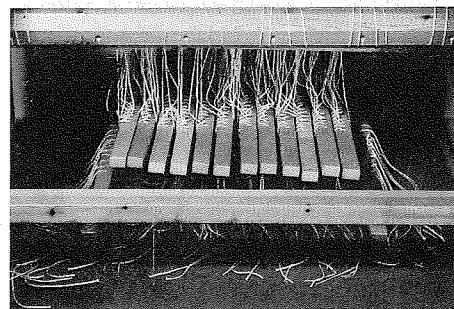


1. View of 44" Glimakra from the back. The warp beam has been lifted and placed on top of the loom so that the tie-up components may be seen.



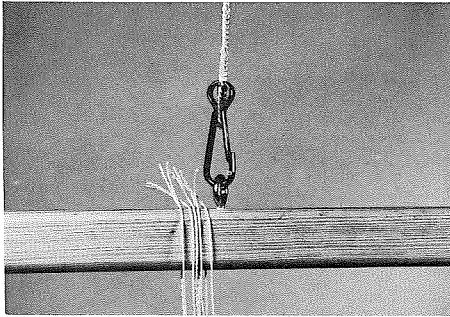
PHOTOGRAPHS BY HOWARD WILSON

2. Treadle cords remain installed in treadle holes permanently.



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snap clip to the shaft bar (*Photo 3*). Place heddles and lower shaft bars on each shaft.³

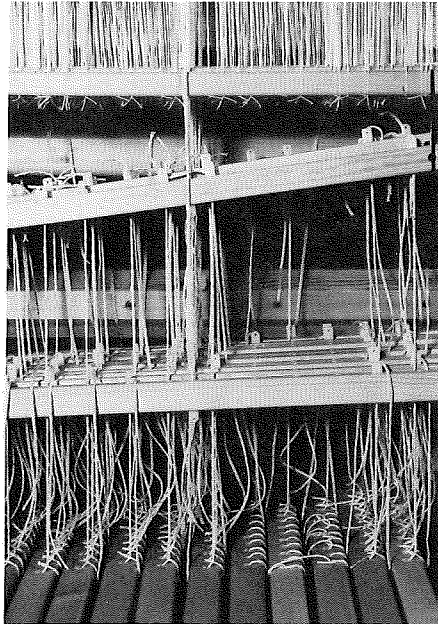


3. An eye hook and snap clip placed on the ends of the upper shaft bars makes adding and removing heddles quick and easy.

3 Loop the appropriate cord in position on the center of the lower shaft bar and attach to the upper lam with a clip so that 7-9 notches may be counted in the cord between the bottom of the shaft bar and the top of the lam. (7 notches for a narrow loom 44-48" and up to 9 notches for a wide loom 60-64".) The upper lams should be tied as closely as possible to the bottom shaft bar but still allow room to place Texsolv clips in position on top of the lam. If your lams are a different length than Glimåkra's standard, you may have to count a different number of notches, but the end of the upper lam should be about 1½ inches from the bottom shaft bar. The higher it is placed the more it will be able to move during treading without interference from the lower lam. (See *B* in *Diagrams 1 and 2* and *Photos 4a and 4b*.)

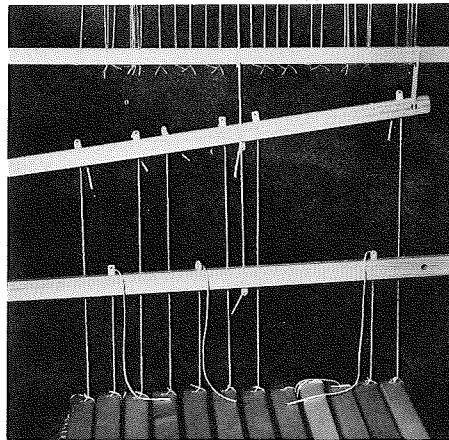
4 Tie the lower lams so that 15-17 notches may be counted between the bottom of the upper

³On a countermarch loom, adding and subtracting shafts/lams according to the number required for a given project is a simple process. We find it is easier in the long run to put in place only those shafts and lams needed rather than trying to rig up a method of keeping them all on the loom even when not in use (though this may be done).



4a. A close view of shaft to lam and lam to treadle ties from the back of the loom.

4b. A separated view of one shaft and its lam and treadle ties.



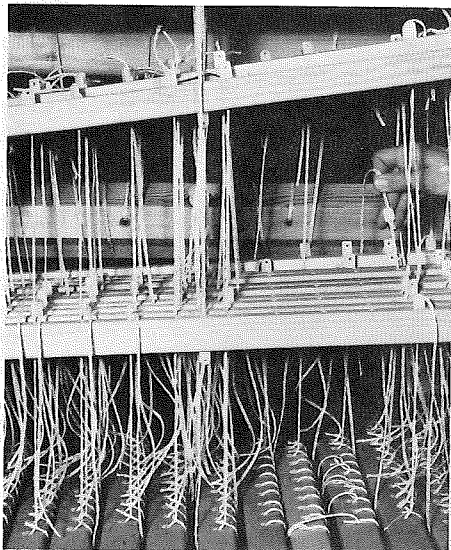
lam and the top of the lower lam (15 notches for wide looms to 17 notches for narrower ones). The cord for this tie comes from the V cord in the center of the overhead jacks, passes down behind the corresponding shaft, behind its upper lam to clip at the center of the lower lam. (See *C* in *Diagrams 1 and 2* and *Photos 4a and 4b*.)

5 Begin the treadle tie-up with the treadle at the left (farthest away from the lam pivot point). Sitting under the warp at the back of the loom, pull the cord in the last treadle hole (for the last shaft you are using in your tie-up) through the corresponding hole of the lam indicated in the tie-up (the bottom lam if the shaft is to rise, the top lam if it is to sink) to place the treadle at 8½" to 9" from the floor at the end to be pushed down. (See *D* in *Diagram 1*.) The wider the loom, the lower this treadle may need to be to prevent interference with the long lower lam. This cord determines the height of the treadle and is the only cord that will remain taut.

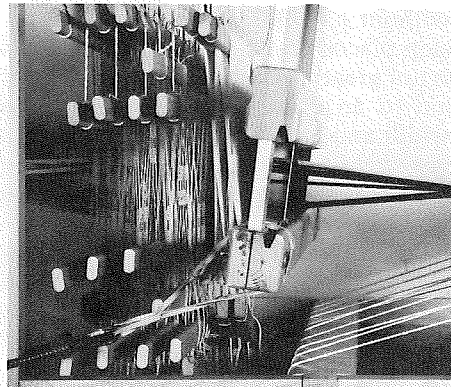
Complete all ties on that one treadle, clipping either to upper or lower lam (as indicated by your tie-up) using the following formula: For the next to the last shaft's cord, pull the cord through the lam hole to taut, then clip loosened from taut by 1 notch. Do the same (1 notch from taut) for the third cord from the back. For the next, clip 2 notches from taut, the next 3, then 3, 4, 5, 5, 6, 7, 7 (if you have 12 shafts to tie). You may, if you wish, write these numbers in pencil on the ends of the lams.

Memorizing these notch numbers is a simple matter and knowing them makes a tie-up change equally simple. When changing shaft 4 in a 10 shaft tie-up, for example, to go up instead of down, pull the cord from the upper lam and put it through the hole in the lower lam, setting the clip 4 notches from taut (*Photo 5*). No other tie will be affected. Since you will change only the ties that are *different* in a new tie-up, the time required for a tie-up change is greatly reduced.

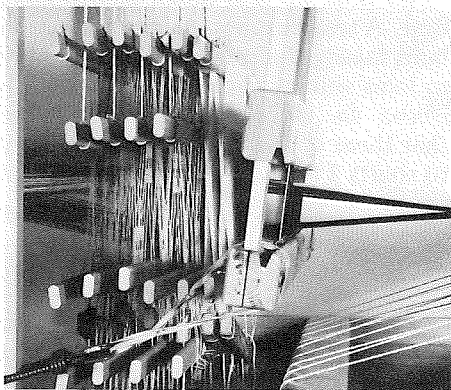
Continue tying the rest of the treadles in the same way. Because of the relationship of the distance from the lam pivot point and the arc through which the lam must move to raise and lower shafts an equal amount, the treadles need not be tied as high toward the lam pivot end. A simple way of achieving gradually lowered



5. A tie-up cord is pulled taut and then loosened a specified number of notches and then clipped to the lam.

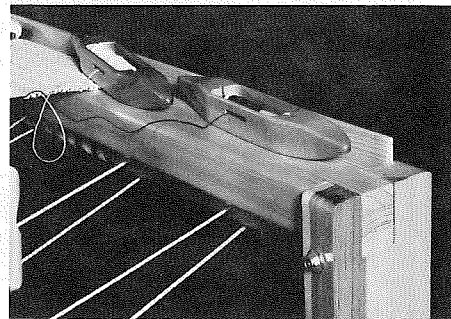


6a. Shaft 4 does not rise sufficiently.



6b. The shed is corrected by tightening the tie to shaft 4.

“One day you have a new countermarch loom, and standing among piles of boards and cords you wonder how you will ever make sense of them all... Do the long cords go in front or back? You can't get a decent shed? All your harnesses fell down? Here's help.”



7. The raised cloth protector makes a handy ledge out of the cloth beam for shuttles.

treadles toward the pivot point is to tie each treadle the same number of notches when inserting the first clip in a lower lam tie (± 14 notches—see *Photo 4b*). The treadles will then follow the slight decline made by the lower lam toward its pivot point. Optimum treadle height will depend on the width of the loom, the length of the lams, and the number of treadles in use, but adjustment to prevent interference between treadles and lower lams should be minimal.

6 Remove locking pins. Check each shed by depressing each treadle. Some minor adjustment may be necessary. To adjust, in each shed determine which shaft, rising or sinking, is not moving enough (tighten the clip to the corresponding lam one notch) or is moving too much (loosen one notch). In *Photos 6a and 6b* a cord is tightened two notches to correctly raise shaft 4.

Don't be alarmed if, when you remove the locking pins, the shafts sag a bit. The shafts and their attached lams and treadles just weigh more than the lams and treadles balancing against them. It helps the balance to have as

many treadles tied up as is convenient, so when a tie-up requires few treadles, I leave others from previous projects tied up that I won't be using.

If you are tying up your loom for the first time, some settling and stretching of cords may take place. A final adjustment may need to be made after you have woven for a bit.

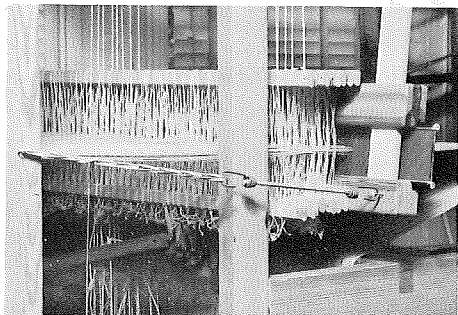
With this system if you wish you can make an original complete tie-up for 10 or 12 shafts and never alter the position of the lam and treadle ties even when adding and subtracting lams and shafts. When fewer shafts are used, the treadles will drop to make taut the cord of the last lam tied, and the 1, 1, 2, 3, 3, 4, etc., formula will still operate. When adding lams and shafts, you will raise each treadle from the back so that the notch progression is maintained.

► **Some additional tips.** Sometimes with this system the upper lams move out of the aligned position with their corresponding shaft bars and hit adjacent ones. When this happens, it can be corrected by looping a large rubber band around the end of the lam and the shaft bar (see *Photos 4a and 4b*).

Especially helpful when weaving with more than one shuttle is David's idea of inserting a small (1" long) piece of $\frac{1}{4}$ " dowel into the slots provided for the cloth protector, raising it an inch. It acts as a barrier against which the shuttles rest during beating instead of falling to the floor (*Photo 7*).

Much time can be saved during weaving with David's system of "bungie" cords and rubber bands pulling the beater back automatically. The shuttle may be inserted for each pick

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8. Rubber bands and "bungie" cord pull beater back to clear the full shed.

without handling the beater. The tension placed on the beater by the bands is not great, but provides an additional aid to an even beat across the warp width and to a consistent one. When a very light beat is needed, rubber bands may be removed to add resistance (Photos 8a and 8b).

Be brave and inventive. Sometimes the way a loom has always been used makes us feel that it's the only way it can be. A skeleton tie-up may be used on a countermarch loom if you remember that two treadles being depressed together may not ask a shaft to go both up and down at the same time. A treadle may also be tied only to lams raising shafts (lower lams) or only to lams sinking shafts (upper lams). In Photo 4a, for example, you can see that three of the treadles are tied only to shafts 1 and 2: two of them to form

tabby with those shafts and the third to raise them both. They are used successively with the other treadles tied to shafts 3-10 (the stitcher shafts in a piqué tie-up). Treadles may also be added to the usual 12. I've used as many as 16 on a 44" loom though the treadles next to the lam pivot point (at the right) require more effort to move the lams. The wider the loom, the greater the number of treadles one can comfortably use. When wanting to try a quick idea, I've also tied cords from one treadle to only selected lower lams to raise their corresponding shafts (leaving the others at rest) creating a split, but weavable, shed.

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