

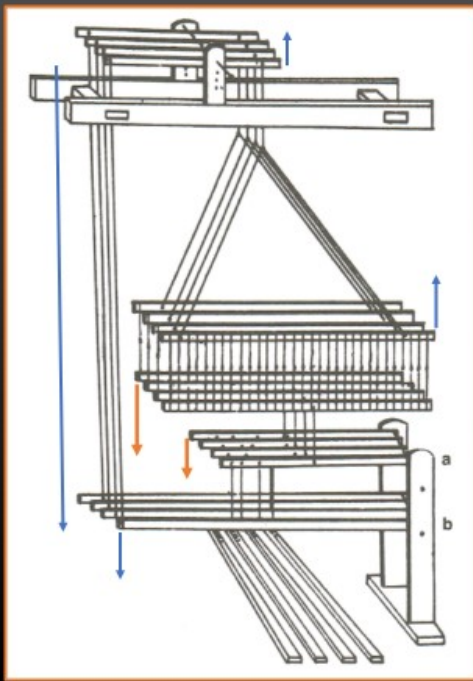
Understanding the Countermarch Loom



Prepared by:
Sara von Tresckow
The Woolgatherers
124 Meadowbrook Blvd.
Fond du Lac, WI 54935

info@woolgatherers.com

www.woolgatherers.com



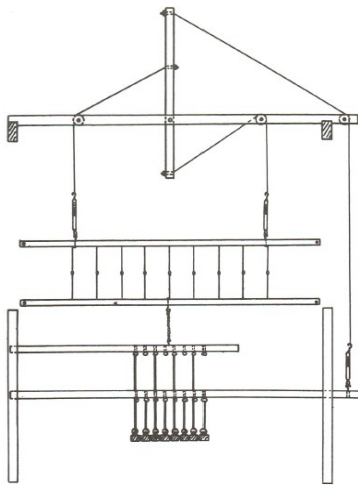
How does the countermarch loom form a shed.

LOWER LAMS LIFT THE SHAFT (Blue Arrows)

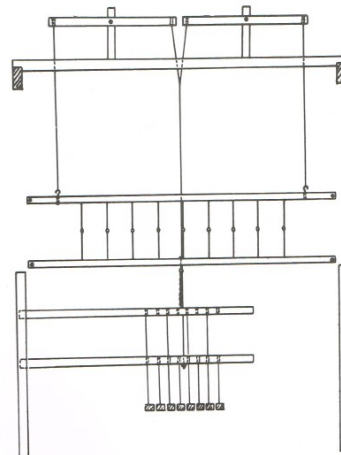
This is an older version of a countermarch loom as we saw earlier – the one set of coupers is mounted horizontally. When the connection to the lower lam is depressed, the outside edge of the couper (pivoting in the center) is lowered. The inside edge of the couper rises, lifting the attached shaft with it.

UPPER LAMS LOWER THE SHAFT (Red Arrows)

The upper lams are connected directly to the lower shaft bar. When the treadle depresses this lam, it pulls the attached shaft directly down.



8-38: Diagram of countermarch tie-up. Courtesy of Ulla Cyrus-Zetterstrom.



A shaft loom forms a „shed“ or opening to insert a shuttle that passes weft back and forth to form a weave.

The shed can be just one way – either rising or sinking. In this case certain threads are either lowered or lifted according to the threaded draft and the remaining threads stay in a neutral position.

Rising shed looms: jack looms and most table looms

Sinking shed looms: Louet David

The shed can also form by moving selected warp threads up and the rest of the threads down. This forms a “countershed”. This countershed can be opened by any mechanism allowed by loom design. The most common forms of countershed are COUNTERBALANCE and COUNTERMARCHÉ.

Counterbalance:

The counterbalance loom is the oldest documented horizontal loom with treadles. The earliest drawings come from around 1000 AD and show 2 or 4 shafts attached to pulleys being moved by treadles pulling on the shaft frames. When frames are attached to pulleys, the weaver need only pull down the selected shafts and the action of the pulley will naturally pull up the other shafts. This loom literally tips the balance of the shafts to create the shed. This loom type has proven very reliable and more cloth has been woven in human history on this loom type than any other.

Countermarche:

At some point before 1700 the countermarche loom comes into use. It pulls EVERY treadled connection meaning that there is no chance of the tug on the pulley not bringing up the other attached shaft evenly. The appearance of the countermarche loom coincides in part with the growing popularity of 5-end satin damask in European high society.

The countermarche loom uses a tieup system that is more difficult to change and was used primarily by professional handweavers who had apprentices to help maintain the loom until Texsol buttonhole cord was invented by Ulla Cyrus in Sweden. This cord makes the tieup now easy enough that weavers from an intermediate level up can easily work with the loom.

Let’s explore why the countermarche loom is an excellent choice.



Countermarche Looms Produce Quality Fabrics

First and foremost, a loom is constructed to weave fabric. The countermarche loom is ideal for producing high quality fabric in a wide variety of weights and techniques.

The even tension on both floor and roof of the shed aid in getting a consistent beat.

The overhead beater found on many looms of this type is perfect for both a very light touch where the weft is simply pressed in to having a high impact where a firm beat is needed.

Classic countermarche looms have a deep frame that exposes a generous portion of warp giving the warp room to move even under high tension.

Most countermarche looms have sturdy ratchet and pawl tension with many teeth for fine tensioning. It is also possible to convert the tension to live weight.

Countermarche Looms Have Even sheds

This may not seem terribly important, but with any loom that has a one way shed, there is a difference in tension between the top and bottom when the weft is beaten. On soft fabrics using coarse yarn and open sett, there may not be much difference. However, when firmer fabric is desirable as with table linens or rugs, the effect on the fabric becomes noticeable. Since there is no dip in the warp path, floating sheds will never happen.

Countermarche Looms Are Light treadling

Treadling the countermarche loom is not hard work because the treadles are pulling the shafts apart by tipping the balance. (Also, for counterbalance). Since the weaver is not lifting heavy shaft frames with every pick, the effort needed to weave a yard of fabric on the countermarche loom is considerably less than on a loom with a rising or sinking shed. Considered over a period of many years, the weavers' knees and hips will be spared excessive wear and tear.

Countermarche Looms Are Ergonomically Adjustable

The classic countermarche loom with hanging beater is adaptable to the human body. The beater can be adjusted in height – both to compensate for the reed height and to fit in the weavers' hand without strain. The distance from the beater to the breast beam is adjustable as well so that reaching for the beater bar is comfortable.

The bench should be height adjustable and have a rounded front corner. The weaver sits toward the front of the bench almost as if leaning, not sitting as on a piano bench.

The treadles also have a certain amount of adjustment built in in terms of height. In combination with bench height, the weavers' elbows should easily clear the loom frame.

When the rocking motion of riding the beater is learned, weaving rhythm on the countermarche loom becomes a fluid motion that is easy to maintain for longer periods.

Countermarche Looms Embody Excellent Design Features

Contrary to common clichés, the design of a classic European countermarche loom is refined and sophisticated though it does not have all the shiny features of jack or rising shed looms.

The treadles are centered close together to keep the action of each treadle optimal – if the treadle set gets too close to the outside of the loom frame, the treadling deteriorates. To compensate, the treadles are mounted with a swing that allows large feet to readily locate the correct treadle. The centered treadles also mean that the hip is not splayed at an odd angle when pressing the treadle.

The hanging beater hangs straight down – it does not need to be held back when weaving. The weaver “rides” the beater back and forth as weaving progresses. A bungee cord simply makes more work when the weaver pulls the beater to the fell line with considerable resistance.

There is no shuttle race – it is not needed because the shed floor is tight enough to allow the shuttle to pass without nosediving. The shuttle (preferably a curved Swedish style) is thrown in an arc to ride against the reed. This keeps the shuttle level and the return of the beater presses the shuttle out at a predictable place every time. It also creates an angled weft.

The shed is more than adequate. The loom is designed to use shuttles that take quills rather than bobbins. It can happen that some bobbin shuttles are too tall for your loom. This is an issue with the shuttles, not the loom.

Countermarche looms are built for back to front warping. Going the other way may be possible, but certainly not pleasant.

The idea that the tieup is very difficult is not entirely correct. One thing that a weaver can do to top minimize tie up changes is to plan projects such that you do not need to make major changes for each project. One way to maximize an existing setup is to use weaving software to change the treadling plan to fit what exists on the loom.

Countermarche tieup information

Countermarche tieup – treadles to lams.

Upper diagram: Note that the distance is roughly equal from treadle to lower lam to upper lam to shaft bottom.

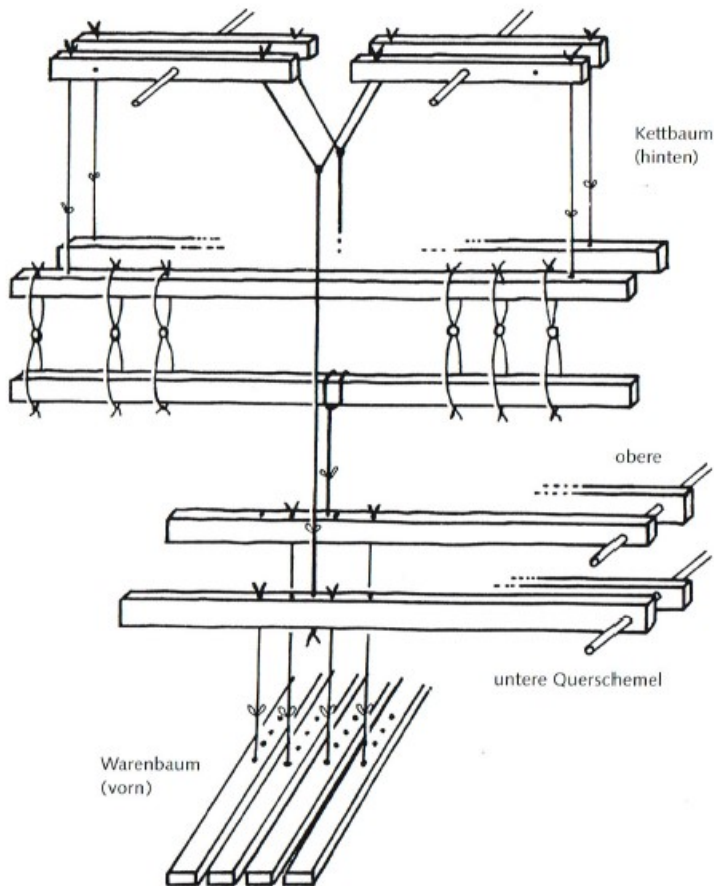
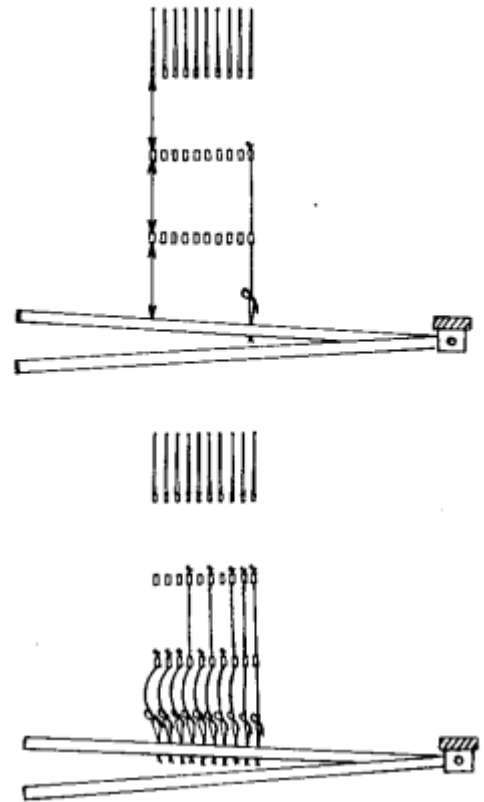
Slight variance is fine and may need some tweaking for your loom.

This is the old snitch knot tieup – a

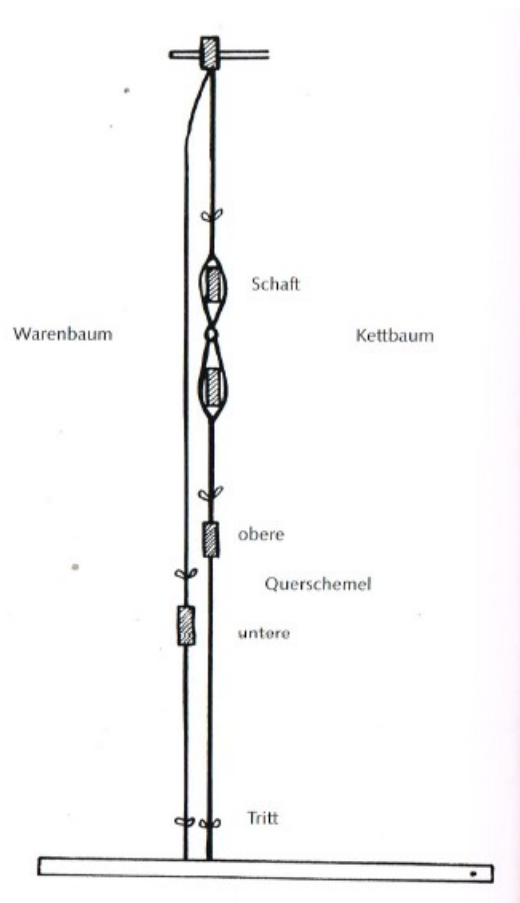
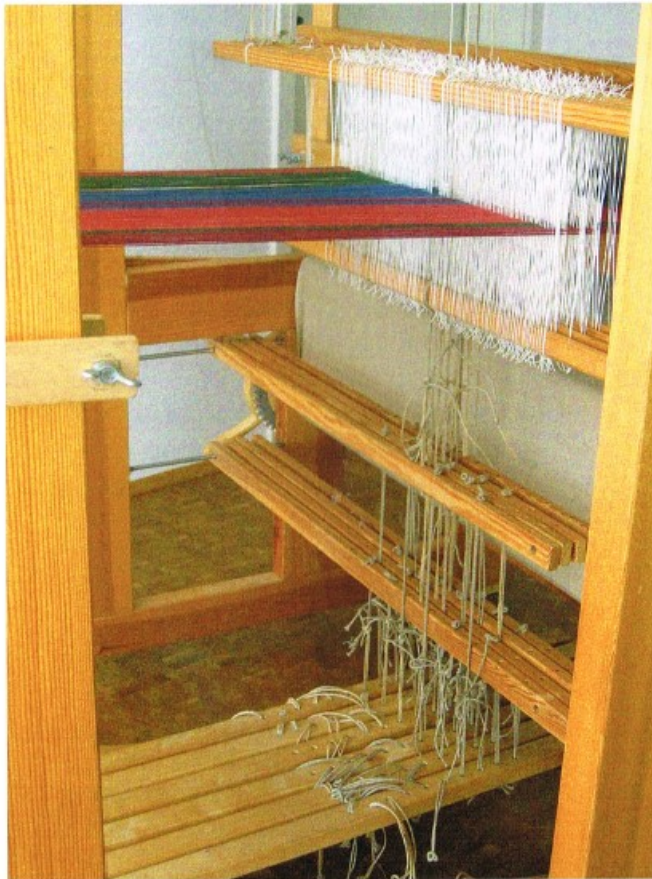
cord comes up from the hole in the treadle and your cords are one piece and simply fit through the holes in the lams.

Lower diagram. This diagram shows the progressive slack needed for a good even countermarche shed. The connection at the rear of the treadle is taut and supports the treadle. The cords are pegged successively looser until the attachment of the first shaft is quite a bit looser.

The reason for this is that the pivoting treadle travels in an arc. At the back of the treadle, the treadle travels less distance than at the front of the treadle. The different cord lengths assure that the shafts rise or sink equally.



There are several ways to achieve this tieup. Pictured here is the old snitch knot method. There are permanently attached cords coming up from each hole in the treadle. From the lams, upper and lower, are cords hanging down. Each connection is tied with an adjustable snitch knot that can be changed easily by the weaver (or his apprentice) at any time during the weaving process. It is a reliable system and with moderate skill building can be mastered. The biggest obstacle to going back to this method is the absence of suitable cord. Linen loom cord (stretched and sized and durable) is no longer easy to find.



Here are clear photos showing this method of tying up. Note that there is no work done UNDER the treadles – the ties are all made between the treadle and the lam. Note also, that once the plugs are inserted into the treadle holes, they are firmly anchored and remain there even if that treadle/lam/shaft connection is not used for a project.

The side view above shows the relationship of the knots top to bottom on the loom.

Counter-march loom with 8 shafts tied up with linen loom Cord. Note that only 4 shafts and 6 treadles are in use, Yet the treadle cords for all 8 shafts remain affixed to the treadles.

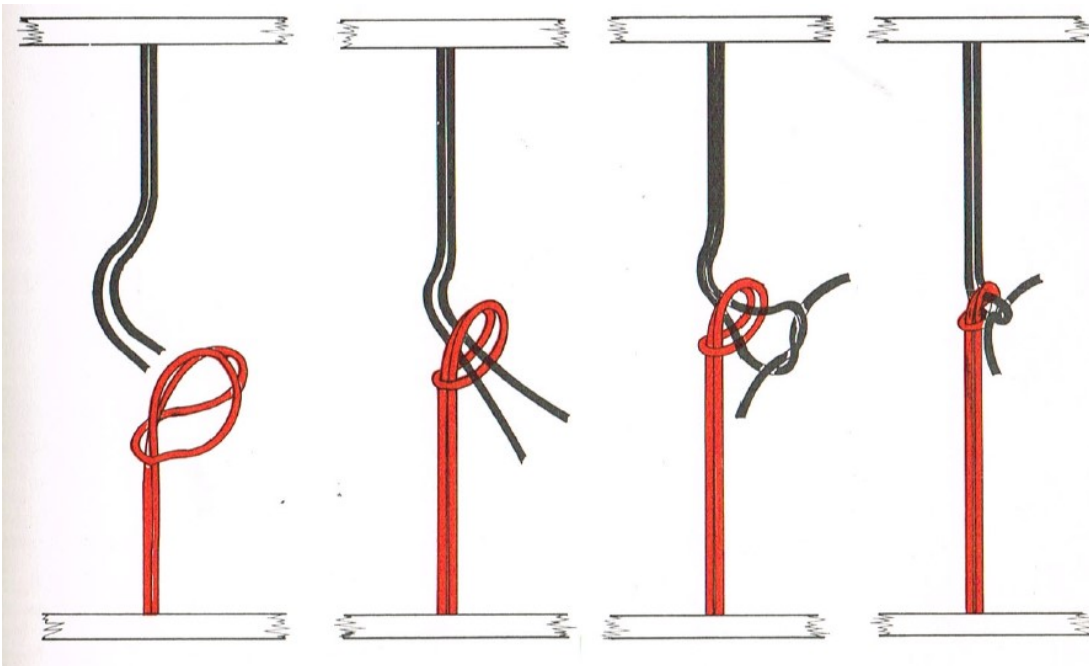
And here is the **SNITCH KNOT** that makes this tieup possible.



The cord A at left is threaded through the treadle hole and plugged firmly to make the lower portion of the knot.

The cord B at right is threaded through the hole in the lam (long or short as needed) and tied together with cord A at the right height to make a good shed.

This is where the slack from back to front is adjusted.



From left to right the diagram shows how to make the snitch knot. It does take a bit of practice, but served weavers for centuries with accuracy. Recently I have had inquiries about this tieup method and am now including it in this document. Linen loom cord is available from The Woolgatherers and from Lankava Oy in Finland.

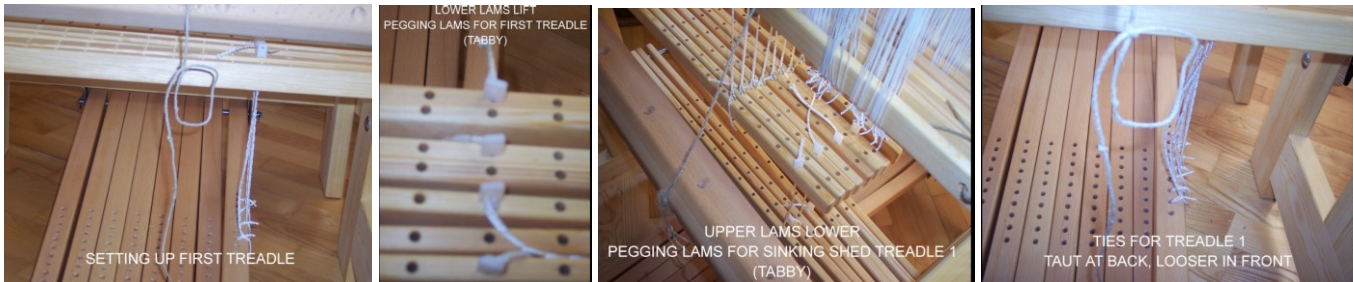
Texsolv Cord and Long Cord Tieup Method

When Texsolv buttonhole cord came on the market, the general method employed was to loop the cords (long and short) around the holes in the lams and run them down through the corresponding hole in the treadle, securing the cord

with a 2-legged peg from Texsol. Since the cords with the snitch knot system couldn't run through both sets of lams, the convention was that the long cords from the upper lams ran behind the corresponding lower lam.

Later it was discovered that with the new cords, the material didn't abrade if the cords went through the holes in both lams on the way to the treadle – this organizes the cords a bit better and it looks tidier.

Somewhere, at least 15 years ago, during a long discussion on WeaveTech, it was considered an improvement to loop the cords around the holes in the treadles and peg the cords in the correct hole in the corresponding lam. Also, if the cords were all cut long enough to reach the upper lams, they could also be pegged at the lower lam when needed. This dual purpose long cord eliminates the need to change out whole cords when that connection changes from rising to sinking.



Loop cord around hole in treadle and bring the Texsol cord through the hole in the lower lam for rising sheds. Loop cord around hole in treadle and bring the Texsol cord through the hole in the lower lam followed by the hole in the corresponding upper lam for sinking sheds.

The reason for the extra cord is to make all connecting cords the same length as the long cords that came with your loom. When you have all long cords on your loom, to change from rising to sinking shaft means only changing which lam has the Texsol peg in it. Do not mount the short cords, but use the extra short cord for any other purpose that may come up – and there are many uses. When cutting the new cords, singe both ends of each cord to a small bead, or better yet to a point – this goes through the holes better.

If you are having difficulty threading the Texsol through the holes, a simple Bobby pin for ladies' hair works as a cheap threader.

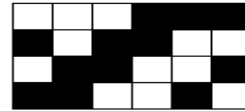
Tieup Suggestion for Your First Project

If you are new to countermarche looms, here is a tieup for 4 shafts and 6 treadles that will weave tabby, twill, overshot, monks belt, and many other structures before you need to change it. This tieup will weave about 75% of all the patterns in Davison's "Handweavers Pattern Book" – you might need to change the treadling order on your loom to comply with the tieup, but for starters, this setup will take you several months into weaving on your loom without worrying about the tieup.

Since this tieup has only 24 connections, it is much easier to troubleshoot. It frequently happens that some of the connections need a little tweaking and finding which of 64 for 8 shafts is causing trouble is more difficult.

If a shed is inexact, it is the shed floor that is most important. To even out the shed floor, if one shaft is sinking too far, note treadle/shaft combination and shorten the connection by one hole. If one shaft is rising too far, lengthen the affected connection – no need to redo the tieup.

U	U	U	L	L	L
L	U	L	L	U	U
U	L	L	U	U	L
L	L	U	U	L	U
X	X	X	X	X	X
1	2	3	4	5	6



X = Hole left unfilled

U = upper lam pegged for sinking shaft

L = Lower lam pegged for rising shaft

Tying up all 8 shafts without lots of difficulty for your first warp.

Having extra shafts that you do not use means that you need to anchor each shaft to the treadles with 2 ties to keep them from falling down when you release the locking pin.

For your first warp, I'd suggest following:

X	X	X	X	X	X	X	X
L	X	X	X	X	X	X	U
U	X	X	X	X	X	X	L
L	X	X	X	X	X	X	U
U	X	X	X	X	X	X	L
L	U	L	U	U	L	L	U
U	L	U	U	L	L	U	L
L	U	U	L	L	U	L	U
U	L	L	L	U	U	U	L
X	X	X	X	X	X	X	X

1 2 3 4 5 6 7 8 Treadle Numbers

X = Hole left unfilled

U = upper lam pegged for sinking shaft

L = Lower lam pegged for rising shaft

Treadles 2 and 7 are tabby – 1,3 and 2,4

Treadles 3-6 are a straight 2/2 twill.

A straight draw threading on 4 shafts will allow a large number of treadling variations on any projects.

With 10 treadles, you can tie 1 and 10 as tabby

Then 2 and 3 and 8 and 9 hold 3/1 twill (only 1 shaft rises to have the firmest shed floor)

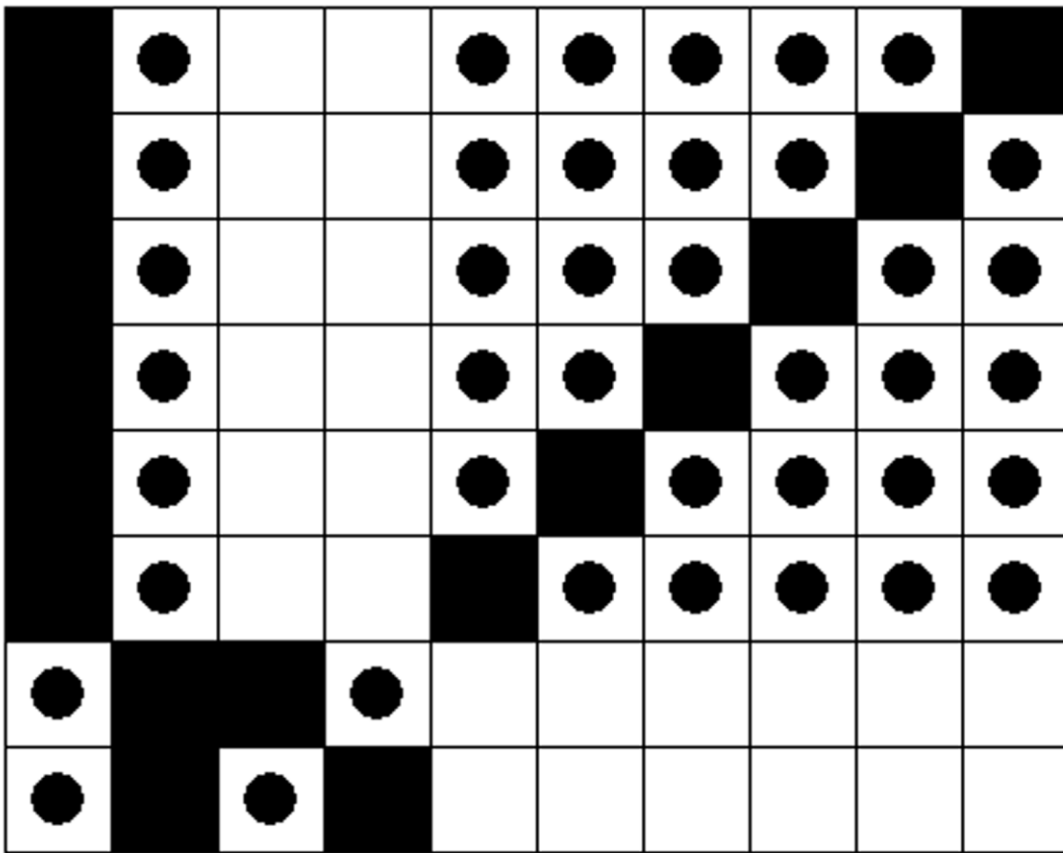
Treadles 4-7 are for the 2/2 twill as pictured above.

Skeleton Tieup for Countermarche Loom

(Note, for clarity, squares marked in black are RISING – if you wish to change this, feel free)

The small dots are tied for sinking shafts and blank squares are NOT tied.

Tieup for 8 shafts and 10 treadles – summer and winter with two shafts for tabby and 6 pattern blocks.



Tabby A	Tabby B	Tabby for pattern row A	Tabby for pattern row B	Treadles 5-10 Each treadle has one shaft rising to lift the assigned pattern block. This treadle is depressed together with one of the two tabby rows defined by treadles 3 and 4.
1	2	3	4	

This diagram is for a summer winter weave where there are 6 defined pattern blocks.

The treadling for a unit of block represented by treadle 5 would be

1 then 5 and 3 together then 2 then 5 and 4 together

The treadling for a unit of block represented by treadle 8 would be

1 then 8 and 3 together then 2 then 8 and 4 together

This requires a bit of planning and thinking while weaving, but does offer a way to make more treadle combinations possible on a countermarche loom. I have shown only the rising connections – definitely not that many. It IS necessary to connect all the other connections.

Some sources show the rising/sinking combination differently. I have chosen to display the majority of the connections as sinking – the upper lams are easier to reach when setting this up and if the majority of threads sink when treadled, the shed floor (without a shuttle race) is sturdier.

References:

Laila Lundell – “Big Book of Weaving”

Joanne Hall – “Tying Up the Countermarche Loom”

“Warping Your Loom”

Becky Ashenden – “Flippy Book”

“Dress Your Loom the Swedish Way” (video)

Eriksson, Gustavsson, Lovallius – “Swedish Weaving”

Asa Parson & Amica Sunstrom – “The Weaving Handbook”