

Delta

Instructions for assembly



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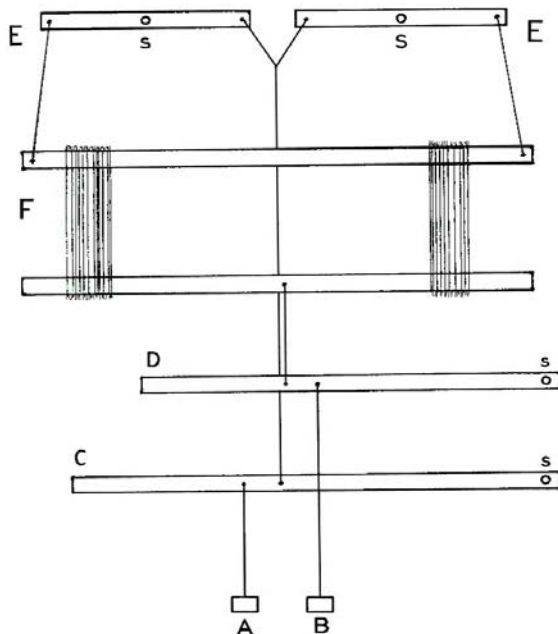
The parallel countermark system

In a countermark loom, every shaft is actively involved in each shed: Each shaft is either lifted or pulled down by each treadle.

Uneven sheds, for example a satin weave shed, where four shafts are lifted and one is pulled down, open cleanly every time. The warp ends on the fifth shaft do not tend to ride up as they often do with jack looms.

When the shed is made, the same tension is applied to the raised ends as to the lowered ones, resulting in the best shed in relation to the increase of the warp tension.

Traditional countermark system



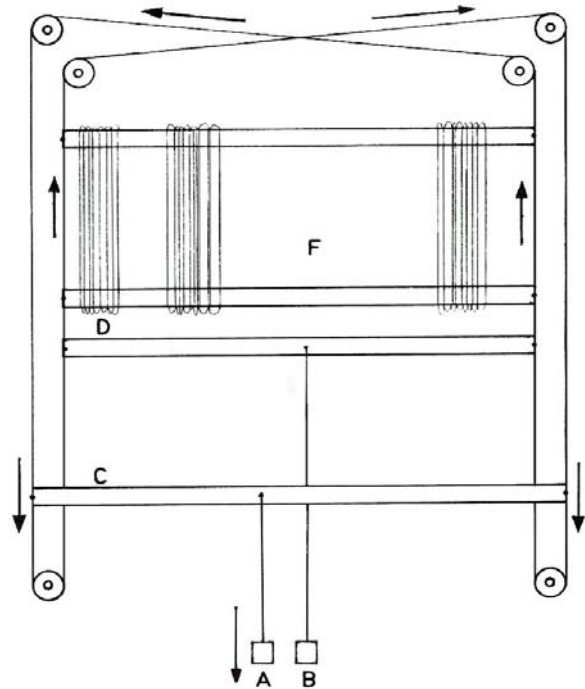
Look at the diagram to help you understand how a countermark loom works. The points marked S are the pivoting points for the lams C and D and the jacks E.

You will see that beneath each shaft, there are two lams associated with it. One of those lams is directly connected to the shaft and moves in the same direction as it does: when this lam is pulled down, the shaft moves down. When the other lam is pulled down, the shaft rises.

Parallel countermark

Each shaft is attached to a cord, which goes over all six rollers. The ends of the cord are joined, so the cord forms a continuous loop. When treadle A is pressed down, the lower lam C, attached to the outside part of the cord, moves downward, pulling the shaft F up. When

treadle B is pressed down, the upper lam D attached to the inside part of the cord, goes down, pulling the shaft with it.



Compared to the traditional countermark, the parallel countermark has five nice features: In contrast to the traditional countermark, the lams of the parallel countermark stay horizontal, while moving the same distance as the shafts. This means that the action of all treadles is the same, not depending on their location in the width of the loom.

The parallel countermark system is more compactly constructed, because the action space the lams need is less than pivoting lams and the rollers at the top take less space than jacks.

Shaft bars and lams cannot slant. Their ends are fixed to the cord and when the cord moves, all parts of the cord have to move the same distance.

There is no tie-up to the middle of the lower shaft bars, so the heddles can be moved freely over the shafts.

There are no cords, connecting the lams to jacks, running through the middle of the warp

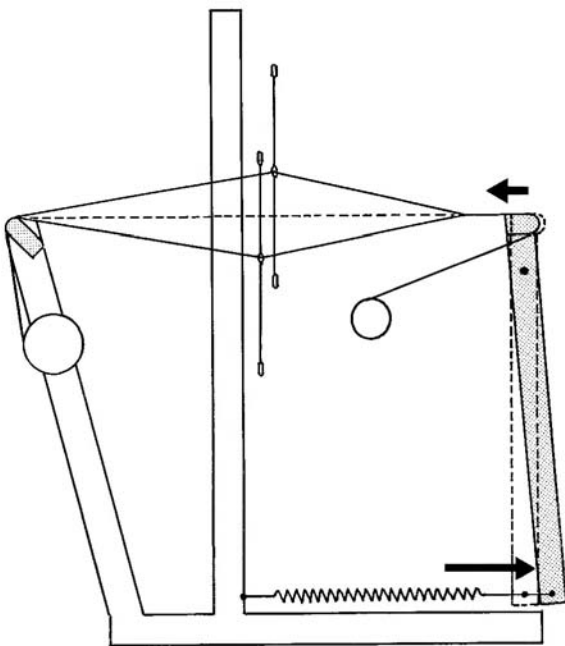
Because each treadle is tied to one of the lams of each shaft, twice as many tie-ups per treadle must be made, on the average, compared to looms with another system.

Before the advent of Texsol cord, the time required to tie up a countermark loom was daunting. Once the ties were made, there were still problems as knots slipped or had to be

untied to adjust the cords. Fortunately this drudgery is a thing of the past. The Texsolv cords neither stretch nor require knots. The Texsolv tie-up cords are attached to the lams and can be simply hooked onto the treadles. Changing the tie-up is easy and fast.

To improve the countermarch shed, to offer the best shed a shaft action system can provide, Louët invented an action system for another part of the loom that holds the warp:

The moving breast beam, controlling the warp tension



The moving breast beam allows the shafts to move more easily in their opposite directions. Looking at the diagram that shows the loom from the side, you will see that a shed is giving the warp a kind of parallelogram shape. Imagine, the warp is made of inelastic material, like metal wire, you will understand that making a shed is only possible if the distance between breast beam and back beam becomes smaller. When this distance is fixed, as it is on other looms, the shed depends completely on the elasticity of the warp. When the shed becomes wider, the tension on the yarns increases (enormously, in case of a less elastic warp). That causes heavy treading and may damage the warp.

The moving breast beam is held by springs, adjustable to give your warp the tension needed for your project. Besides improvement of the shed and protection of the warp, the springs

guarantee exactly the same warp tension each time you have to advance the fabric.

The Texsolv system

Texsolv cord and heddles are Swedish products, crocheted out of polyester yarn.

Cotton heddles have the advantage of being silent in use. Metal heddles, flat or wire, have the advantage of having open eyes. Texsolv heddles combine these features. A bundle of Texsolv heddles is a continuous line of 100 heddles folded into a zigzag. Each bundle is fastened in four places. These ties make it easy to pass the shaft bars through the upper and lower loop of the heddles. Do not remove the ties from the bundles, until the heddles have been slipped onto the shaft bars or the loops of the bundles are inserted by sticks, to protect the heddles from becoming entangled.

If you need to remove heddles from a shaft, first tie them as they were originally. Use a pair of sharp scissors to cut the heddles apart.



Texsolv cord consists of two cords, which are connected every 12 mm, forming loops in between. If needed, the cord should be cut between two loops. To prevent unraveling, the ends should be singed. Be careful not to overdo the melting and be aware that melted polyester is very hot and will burn the skin.

By mentioning the first or last loop in these instructions, the loop is meant, next to the one where the cord is cut, because when that loop remains after cutting, it has no strength and should not be used.

Delta assembly tips and information

List of parts

1. assembled middle part
2. six, ten or fourteen treadles
3. warp beam
4. back beam
5. breast beam with protecting lath
6. foot rail
7. treadle bar
8. lower beater bar
9. top beater bar
10. two beater supports
11. two floating arms
12. left and right middle side pieces
13. left and right base sides
14. left and right front uprights
15. left and right sloping posts
16. two extenders
17. brake disc
18. brake pedal
19. crank for warp beam
20. cloth beam lever
21. beater handle
22. two cross sticks
23. two apron bars
24. sixteen warp sticks
25. hardware bags 1, 2, 3, 4 and 5
26. screws, washers and pins for mounting the treadles.
27. tie-up cords for the treadles
28. locking pin
29. 1200 or 1400 Texsolv heddles 33 cm
30. cloth beam

Barrel nuts

For the assembly of the looms, we use barrel nuts and bolts or threaded ends to connect two parts. These cylinder shaped nuts have a slot on one of the flat sides. Always insert the barrel nut into the wooden part, so that the slot in the barrel nut is visible. The slot shows the direction of the threaded hole in the nut. With a flat screwdriver you can turn the barrel nut so that it is positioned properly to catch the bolt. If you have a problem inserting the bolt into the barrel nut, try turning the barrel nut 180 degrees. This usually helps.

Carriage bolts

In other locations, we use carriage bolt to assemble wooden parts. These bolts have a square enlargement (neck) under the bolt head. When you tighten the nut on the bolt, this square neck locks into the wood to prevent the

bolt from turning. In some instances, you will notice, that the bolt is just a little too short for assembly with the washer and nut. We advice you to put the nut on the bolt without the washer, then tighten the nut sufficiently, so that the square neck pulls into the wood. At this stage, unscrew the nut, install the washer and then replace and secure the nut again, tightly. Alternatively, you can carefully tap against the bolt head with a hammer, until the bolt head is secured into the wood.

Washers and spacers

For the proper operation of the loom, it is very important that you follow the correct assembly sequence of the bolts, washers and spacers. Please carefully follow the instructions.

To help you, we have assembled all the washers and spacers in the hardware bags in the right sequence.

Wood screws

Where wood screws are used, we have pre-drilled holes in the wood. The screws will cut their own thread into these holes. Please note however, that the screws are very sharp, and will cut into the full wood outside the pre-drilled holes, if you miss the pre-drilled hole during assembly. However if this happens, you will notice that after a couple of turns, it becomes very hard to turn the screw. There is even a chance that the screw will twist off. Moreover, the parts will be assembled in the wrong location.

If you have to assemble and disassemble the loom several times, make sure that the wood screw turns in the same thread again which was cut the first time. If you do not follow this instruction, the hole in the wood will become too large for the screw. To find this screw thread, turn the screw anti clock wise, until you "feel" the screw "drop" into the threaded part in the wood.

Tools

All parts used for the loom are metric. To facilitate the assembly, we have included two wrenches (10 mm for m6, 13 mm for m8), a socket-head screw wrench and a pz2 cross head screwdriver (not a Phillips head!).

Assembly of the Delta

The complete assembly of this loom will take you approximately 3 hours

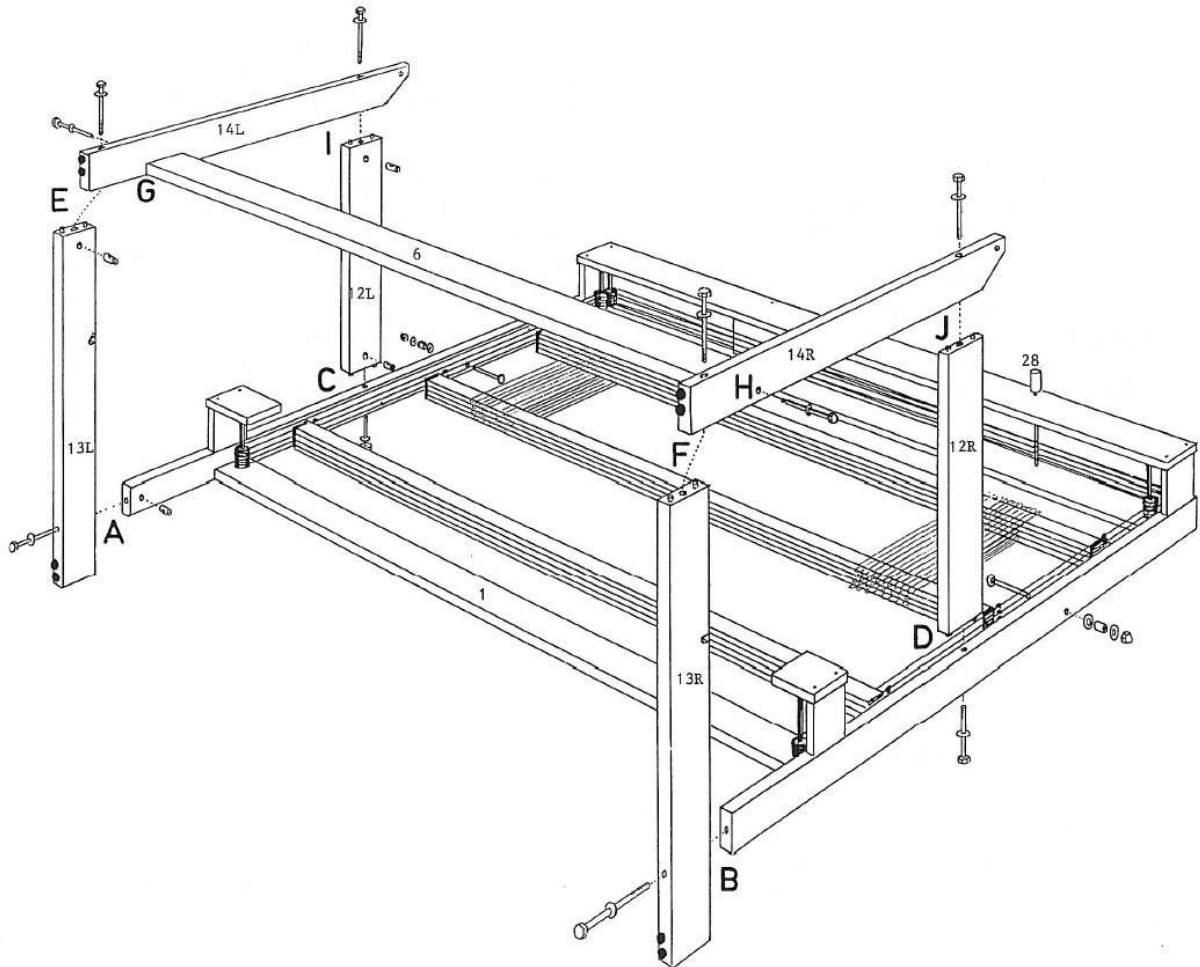
Assembly of the frame

Use hardware bag 1, containing:

- 6 bolts m8 x 130 mm with washer Ø8-25 mm and barrel nut m8
- 2 bolts m8 x 110 mm with washer Ø8-25 mm and barrel nut m8

- 2 bolts m8 x 70 mm with washer Ø8-25 mm and barrel nut m8
- 2 carriage bolts m8 x 65 mm with 2 washers Ø8-25 mm, bushings Ø8-12 x 22 mm and cap nut m8
- screwdriver
- wrenches 10 and 13 mm

The parts of the frame show corresponding letters: A, B, C, etc., at places where they have to be assembled.



Place the already assembled middle part of the loom, with its front downwards on the floor, lift the bottom side and mount the base sides to the main vertical pieces, using bolts m8 x 130 mm with the washers and barrel nuts (connections A and B).

Mount both the middle side pieces to the main verticals of the middle part (connections C and D). Use bolts m8 x 110 mm, washers and barrel nuts.

Now you have to assemble the front uprights to the fronts of the four side pieces (connections E, F, I and J). Use bolts m8 x 130 mm, washers and barrel nuts.

Put the frame back on its "feet" and install the foot rail underneath between the front uprights (connections G and H). Fasten the connections with bolts m8 x 70 mm, washers and barrel nuts.

The remaining carriage bolts with washers, bushing and cap nut are the supports for the extenders of the foldable back part of the loom. They have to be fastened to the main uprights of the frame. Tap the carriage bolts from the inside in the holes of the uprights, slip on a washer, a bushing and a washer again and fasten these parts with the cap nut.

Assembly of the back section of the loom

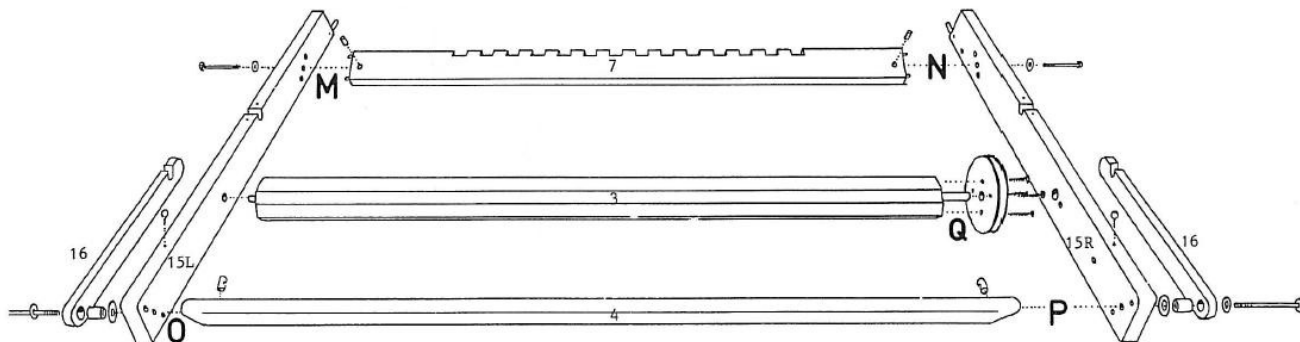
Use hardware bag 2, containing:

- 4 screws 5 x 40 mm
- 2 bolts m6 x 70 mm with washer Ø6-17 mm and barrel nut m6
- 2 bolts m8 x 100 mm with washer Ø8-17 mm
- bushing Ø8-12 x 22 mm, washer Ø8-25 mm and barrel nut m8
- 2 screws 4 x 30 mm
- 2 screw eyes Ø6 mm

Slip the brake disc on to the longer pin of the warp beam (connection Q) with the countersunk

sides of the holes pointing from the beam. Fasten the disc with the four screws 5 x 40 mm.

Bring the parts that will form the back section of the loom, together with the warp beam: The back beam, the treadle bar and both sloping posts. You will recognize them from their connection marks: O, P, M and N. Lay them on the floor, facing their marks. The round edge of the back beam and the notches of the treadle bar should point to the outside.



Assemble the connection N of the treadle bar and the post with bolt m6 x 70 mm, washer and barrel nut.

Assemble the connection P, together with an extender: First slip the small washer onto the bolt m8 x 100 mm and then the bushing. Insert them into the extender, the bushing into the hole and then slip on the big washer. Watch the notch in the extender; if you inserted the extender from the wrong side, you can use it at connection O, so put it there, take new hardware and the other extender. Now connect back beam and post at point P, tightening bolt and barrel nut.

Insert the longer shaft of the warp beam into the hole of the post, that you have just connected.

Slip the other post onto the shaft at the other end of the warp beam and assemble it to the treadle bar (M) and together with the other extender to the back beam (O).

At the back of the posts, close to the back beam, two small holes are located. The two screw eyes have to be screwed into these holes. The eyes are for attaching the cross sticks while weaving.

The remaining screws in the hardware bag will be used in next stage to attach the assembled back section onto the loom.

Assembly of the treadles to the treadle bar and the back section to the loom

The required hardware bag is packed with the treadles containing pins, screws and washers. Their number depends on the number of treadles.

The treadle bar is provided with notches for 14 treadles. If you have to mount fewer treadles, place them in the middle of the bar, leaving the same number of notches unused at each side.

At the bottom of the bar, a groove is situated, in which the pins of the treadles have to be attached with the screws and washers. There is one pin for each two treadles, so a pilot hole for a screw is located after every two notches.

Insert the screws, with washers, into the holes and only tighten them sufficiently to hold the treadle pins in place in the groove.

Take up the back section and place it on the back of the loom, with the flexible rods completely inserted into the holes of the base sides. Let the sloping posts rest against the main uprights of the loom.

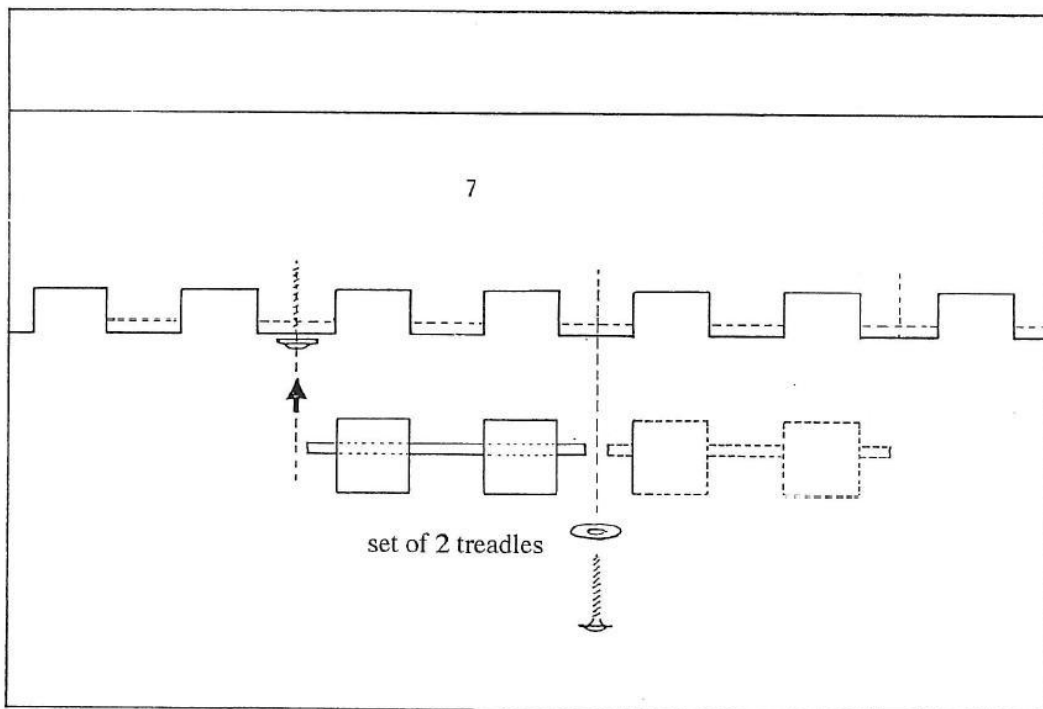
Fix the flexible rods by screwing the left over screws from hardware bag 2 into the pilot holes of the base sides.

Unfold the back section, turn or lift up the extenders and place them over the supports at the sides of the main uprights of the loom, Fold the back part again and lift the extenders with their dowels over the supports. These dowels will keep the back part in its folded position.

Insert a pin into two treadles and put it into the groove of the treadle bar, in between two

screws, positioning each treadle into a notch. Tighten the two screws just enough for the washers to stop the pin from coming out again, but leaving enough space at one side to fit the next pin. Tighten all the screws completely after you mounted all the treadles the same way.

Unfold the back section of the loom and position it by placing the extenders, with their notches, onto the supports.



Assembly of the floating arms, springs and cords, that control the moving breast beam

Use hardware bag 3, containing:

- 2 carriage bolts m8 x 75 mm, with washer Ø8-25 mm, bushing Ø8-12 x 33 mm, washer Ø8-17 mm and cap nut m8
- 6 screws 4 x 17 mm
- 2 springs with Texsolv cords, 140 cm in lengths
- 2 Texsolv cords, 19,5 cm in lengths

Assemble the two floating arms to the inside of the front uprights. There is a difference between front and backside of the arms; the letters K and L will help you to mount them correctly. For this pivoting connection, use the carriage bolt, inserted into the arm, the big washer in between the arm and front upright, the bushing inserted

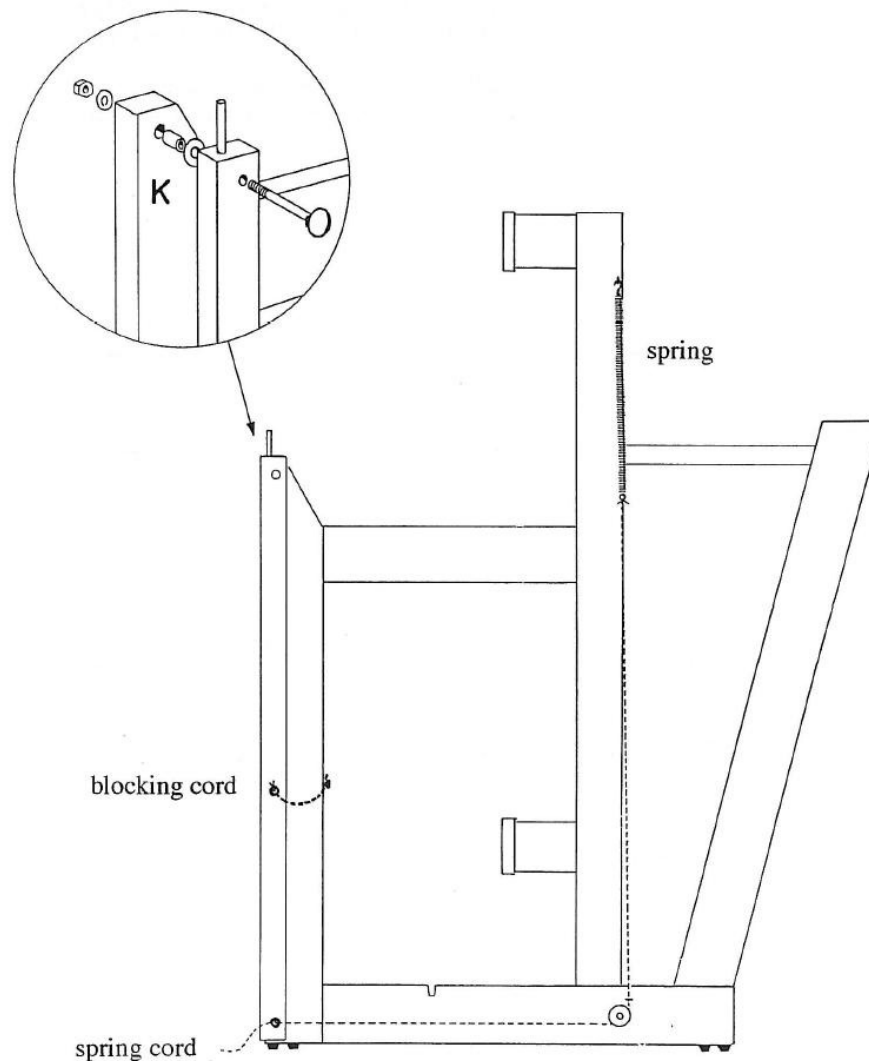
into the hole of the upright and finally the small washer and cap nut to tighten the connection.

The six little screws now have to be screwed into the six pilot holes, two into each of the floating arms and one into the back of each of the front uprights. Screw them only so far that their heads protrude about 4 mm (3/16").

Hook the ends of the short Texsolv cords onto the screw heads: One end to the screw head half way up the arm and the other end to the screw head at the back of the upright.

Hook the springs onto the screw eyes, located inside at the top of the main uprights.

Lead the cords of the springs through the screw eyes at the base sides of the loom, then underneath the rollers and hook on the ends of the cords to the screw heads at the ends of the floating arms.



Assembly of the brake on the warp beam, installation of the breast beam, cloth beam and the tie-up cords to the beams

Use hardware bag 4, containing:

- 2 screw eyes Ø12 mm
- 1 carriage bolt m8 x 75 mm with washer Ø8-25 mm, bushing Ø8-12 x 33 mm, washer Ø8-17 mm and cap nut m8
- 1 spring
- 1 carriage bolt m8 x 55 mm with washer Ø8-25 mm, bushing Ø8-12 x 12 mm, washer Ø8-17 mm and cap nut m8
- 1 brake cable with threaded eye m8 and barrel
- nut m8
- 10 tie-up cords
- 1 ratchet wheel
- 4 screws 4 x 30 mm

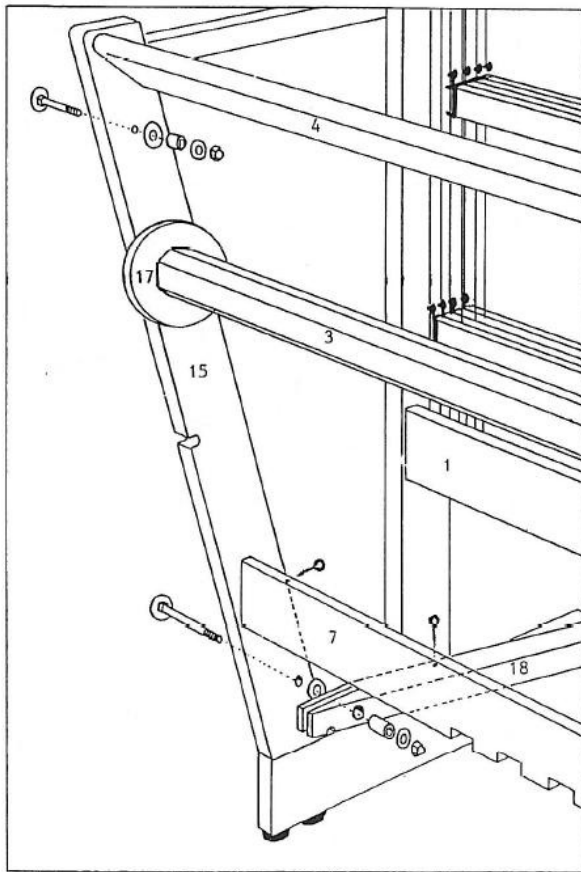
Screw one screw eye into the pilot hole of the brake pedal and the other screw eye into the pilot hole at the edge of the sloping post. Both

screw eyes should be screwed in so far that their shafts almost completely disappear into the wood. The eyes should be turned parallel to the direction of the wood.

Attach the brake pedal to the sloping post: Insert the longer carriage bolt from the outside into the hole in the post, slip on the big washer, then the bushing. Push the pedal over the bushing and finally tighten the connection with the small washer and cap nut. Hook the spring onto both the screw eyes.

Assemble the carriage bolt, washers, bushing and cap nut to the sloping post, just underneath its connection to the back beam: Insert the bolt from the outside into the hole, slip on the big washer, the bushing, the small washer and tighten the cap nut.

Hook on the brake cable. Loop its end twice over the cap nut and washer that you have just tightened. Wrap the cable once around the brake disc, starting and ending at its front.



Press the brake pedal down and hook the threaded eye at the cable end, with the barrel nut, to the other end of the pedal. The threaded shaft fits into the groove; the barrel nut fits into the half hole at the bottom.

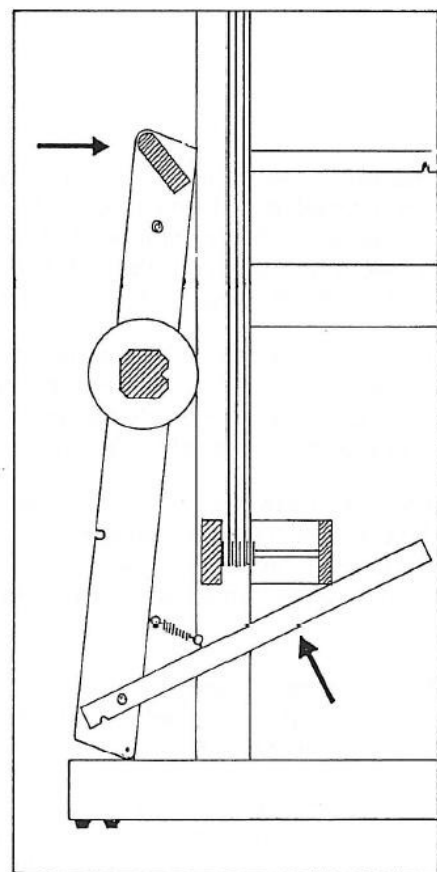
Now when you release the pedal, it should be approximately horizontal. Check this after pulling the pedal upwards helping the spring to stretch the cable. The higher the pedal, the less the spring is stretched and the lower the tension on the cable holding the warp beam.

You can adjust the position of the pedal with the barrel nut: If the pedal position is too high, press the pedal down and screw the barrel nut further on the threaded shaft.

After the loom is in use for some time, the pedal may need adjustment.

The ratchet wheel for the cloth beam, the four screws to attach it and ten tie-up cords to tie the apron rods to the warp beam and to the cloth beam, are still in hardware bag 4. On a Delta 110 only eight of these cords are needed.

Attach the ratchet wheel to the cloth beam, using the four screws, at the end with the longer

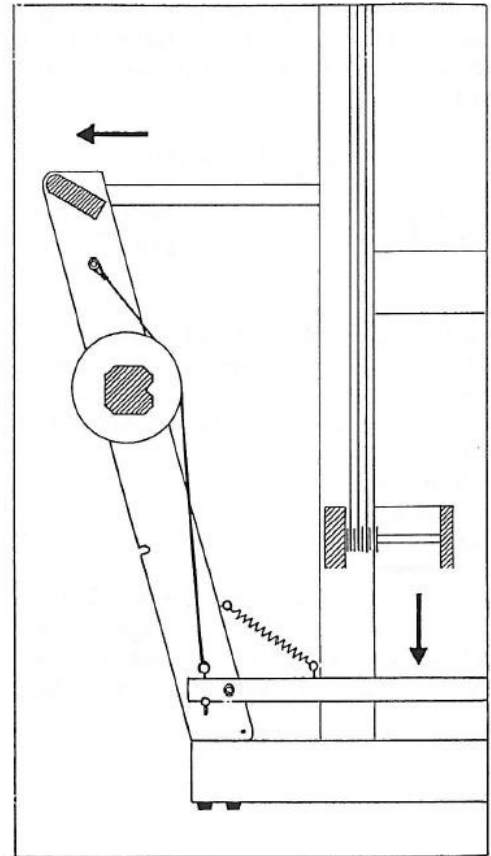
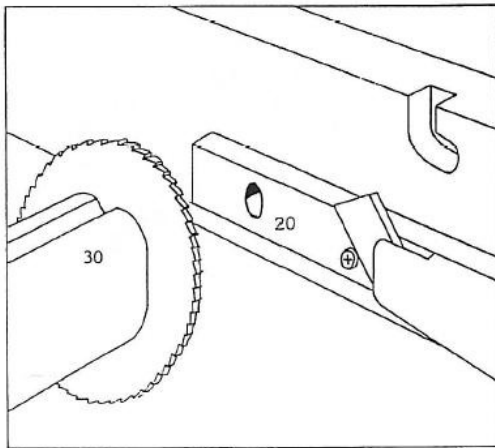
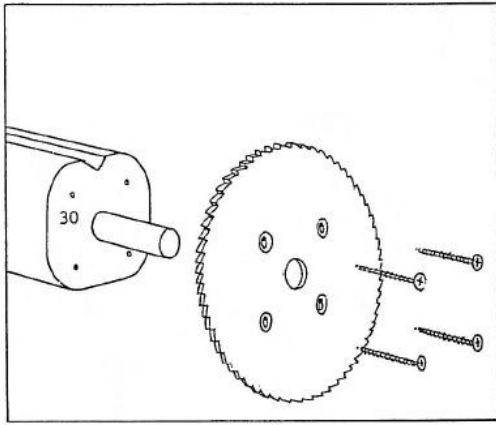


pin. Ensure that the screw heads countersink into the holes of the ratchet wheel.

Slip on the cloth beam lever and position the cloth beam into the loom; the pins into the notches of the middle side pieces. The buffer at the front upright should support the cloth beam lever.

Place the breast beam with its holes on the iron rods on top of the floating arms, the attached protecting lath should face forward.

Attach the tie-up cords to the screw heads of the warp beam and cloth beam. The cords are cut at a connection between two cord loops. That first loop at the melted end, if it is still closed, has no strength and should not be used.



Assembly of the beater

Use hardware bag 5, containing:

- 2 swivelling feet
- 2 buffers
- 2 screws 4,5 x 45 mm
- 2 bolts m6 x 75 mm with washer Ø6-17 mm and barrel nut m6
- 2 lag bolts 8 x 90 mm
- 2 bushings Ø8-12 x 33 mm
- 4 washers Ø8-17 mm
- 2 carriage bolts m6 x 80 mm with washer Ø6-17 mm and wing nut m6
- thin cardboard strips

Screw a buffer to the middle side pieces at both the sides of the loom; for a Delta with 4 or 8 harnesses, use the holes that are furthest back, and for 12 harnesses the pilot holes more to the front.

Assemble the beater as shown in the diagram. With the swivelling feet, screwed into the bottom of the beater supports, you can adjust beater height. The top beater bar is attached with carriage bolts, washers and wing nuts into grooves on top of the beater supports. These grooves allow you to use reeds of different heights.

Install the beater into the loom: Lift it up and keep it slanted above the middle side pieces of the loom. Let the swivelling feet pass the middle side pieces one by one and place them into the notches of the base sides.

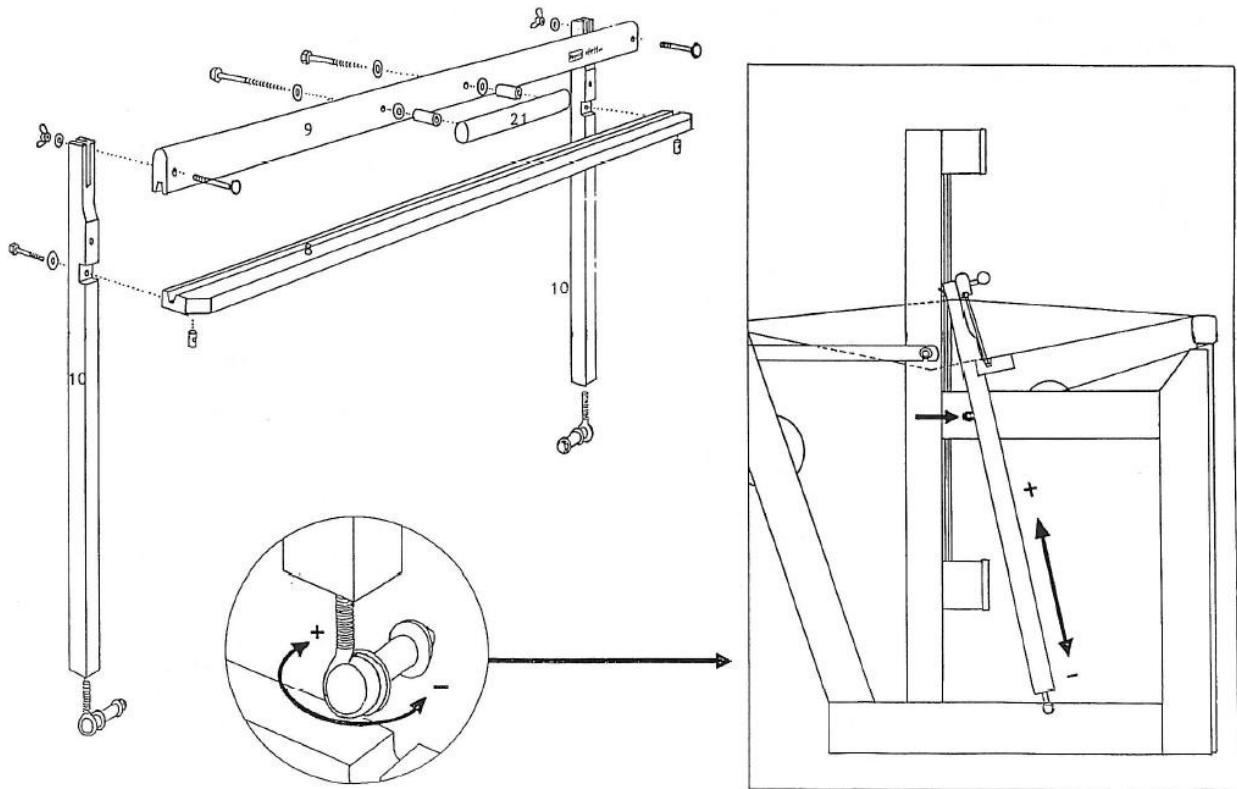


Check if the beater is even and make a correction if necessary, using the thin cardboard strips. Take the beater by its handle and pull it towards you 1-2". If the beater is even, both uprights will leave the buffers at the same moment and also touch the buffers at the same

time when you let the beater go back and rest against them. If this is not the case, the beater is not even and you will correct that with the small cardboard strips from the hardware bag.

The upright that leaves the buffer last when you pull the beater, is the one that needs one or

more cardboard strips in its slit connection with the lower reed holder. Unscrew the m6 bolt several turns, so that some play is created in this connection. Slide a cardboard strip completely into the slit at the bottom and fasten the m6 bolt again. Check for evenness again, adding strips in the slit as necessary.



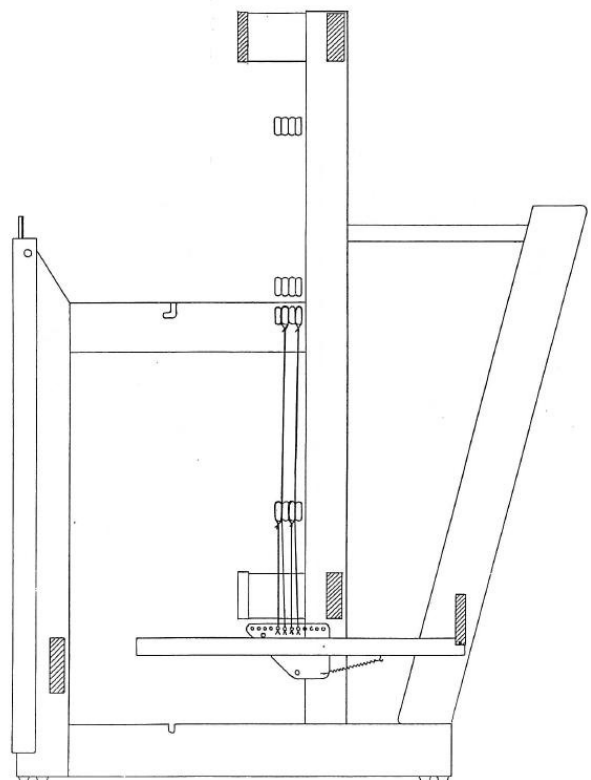
Tying the treadles

The tie-up cords for the treadles are pre-cut in the correct lengths and packed with the treadles. By mentioning the first or last loop in this instruction, the loop is meant, next to the one where the cord is cut, because when that loop remains after cutting, it has no strength and should not be used.

When tying-up the treadles, it is convenient to remove the breast beam and cloth beam first.

The longer cords should be used to connect the upper lams to the treadles; the short cords should be used to tie the lower lams.

If a harness is tied to a treadle by means of its upper lam, the treadle will pull the harness down, so the tie-ups to the upper lams correspond to the X marks of a weaving draft. If a lower lam is tied to a treadle, the treadle will lift its harness up, so these tie-ups correspond to the O marks.



Tying-up a countermarch loom, using a weaving draft for a singular tie-up, that only shows X marks, the blank squares are the tie-ups to the lower lams and the other way around, if the weaving draft is showing only O marks, the blank squares are the tie-ups to the upper lams.

The tie-up cords to the upper lams have to pass the lower lams. As a rule these cords pass in front of the lower lam, associated with the same harness. That will help you to avoid the error of tying-up both the lams of a harness to the same treadle: Behind each cord passing the lower lams, the groove in the lower lam should not be used for a tie-up.

The cords should be tied to the screw heads on a treadle in a sequence, corresponding to the harnesses.

Loop the cord around the lam and pass one end through the last loop in the other end. Tighten it after the cord is positioned in the groove in the lam, right above the treadle to be tied.

Slip the last loop of the cord onto the corresponding screw head of the treadle.

When all the tie-ups are made, check if all the cords are about the same tightness. If there are big differences, you probably misjudged which loop was the last loop of one or more cords.

Another cause may be that one or more lam is not fixed to the right level (see next subject).

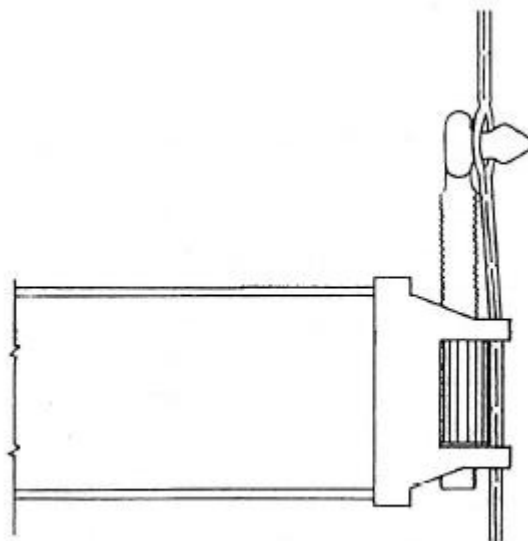
All harnesses will be tied to all treadles used, some to rise and some to fall. If you want to change the tie-up, only unhook the cords from the screw heads and slide the cord over the lam to the groove where you need it. On some lams you will need to add more cords, on some lams they will be left over. You may leave that cord looped over the lams at the sides.

Adjusting the harness bars and lams

Harnesses and lams are already adjusted of the correct height. They may need a correction after some time.

You can check the correct level after putting the locking pin into the hole at the top of the castle and through the marked loops of the parallel cords. Now the whole system is locked in its neutral position. If the marks on the cords fade, mark them again with a felt pen.

The adjustment of harness bars and lams can be done in steps of 12 mm, by clicking them into next loop of the cord. For finer adjustment you have to turn the white nut that adjusts the hook, attached to the cord.



The correct height of harnesses and lams is easy to understand and therefore easy to keep in mind:

In their neutral position the harnesses have to be fixed at the height, that the warp on the loom passes through the middle of the heddle eyes.

The distance between the harness bars should be far enough to keep the heddles stretched, but remain moveable along the bars.

The lams should be at such a height, that their tie-ups to the treadles keep the treadles of the same level as the foot rail. The difference in height of the upper and lower lam has to correspond to the difference in length of the tie-up cords to the treadles.

Adding or removing heddles

If your warp doesn't need the whole weaving width of the loom, you can leave the heddles that you don't use on the harnesses at the sides.

If you need to remove a number of heddles from a harness, first tie them together at four places.

Pull the hook that connects the upper harness bar to the cord, out of its cord loop. Take off the upper part of the heddles and push the hook back into the same loop again. Repeat this with the lower harness bar. Naturally, reverse the steps to add heddles.

Clicking the hook out or into the cord is easier after you release its tension by taking the cord out of one or two rollers at the castle top. By releasing the tension this way, the whole cord changes place a bit and you have to pay attention to use the same loop, pushing in the hook again. The potential error shows up when you replace the cord onto the rollers: The harness bar differs in level. To avoid errors you could mark the loop with a felt pen.

The cross sticks

If you are used to leaving the cross sticks in your warp while weaving, the cross sticks should be tied to the screw eyes at the back of the sloping posts. By doing this, you will avoid the cross sticks following the warp toward the harnesses, when you advance the fabric.

Cross sticks in between the back beam and harnesses reduce the usable depth of your loom.

The raddle

The plastic raddle strip on top of the castle has 2 dents to 1 cm (5 dents to the inch).

Because the raddle is built up from 10 cm strips with half an opening at each end, you will lack one opening for a loom wide warp. In that situation you have to add some more warp ends into the openings at the outside.

The middle of the raddle is marked as a guide for starting to thread the warp.

Threading through

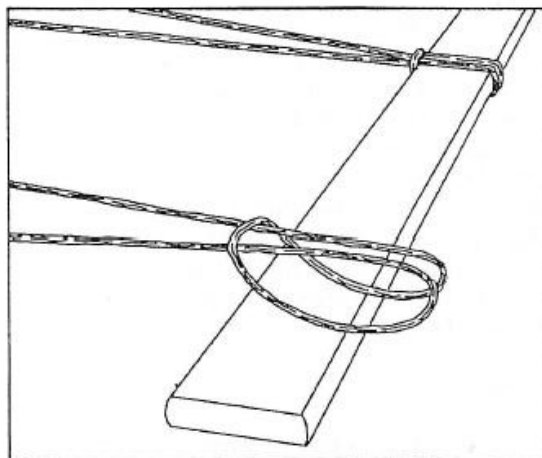
The warp always should be threaded through the heddles of at least four harnesses. Using only two harnesses for a tabby, you will overload the harness bars and lams. Lock the harnesses, not in use, in their neutral position.

By means of the locking pin, you can hold the harnesses in any position. To avoid errors in threading through, it helps to hold the ascending harnesses: When you pull tight the warp ends, which you have just threaded, the differences in height indicate the threading sequence.

Tying the warp to the beams

The shorter apron rod belongs to the cloth beam, so it can pass the floating arms. Care should be taken that the rod doesn't stick behind one of the arms.

The apron rods are marked at the spots where the cords have to be attached. The diagram shows the usual loop to do this.



After the warp is threaded through the heddles and the reed, the warp ends have to be tied to the apron rod of the cloth beam. For this job the breast beam should be blocked, otherwise it is impossible to get an even tension on all warp ends: Every time you tighten a bundle of threads, the breast will move and release all the other warp ends. When you take the spring cords off the floating arms, the short cords you installed to connect the arms to the loom will block the breast beam.

Before tying the warp to the apron rod you have to disassemble the protecting lath from the breast beam by unscrewing the curled head bolts at both sides. After advancing the fabric, when the apron rod has passed the breast beam, the protecting lath can be mounted again.

Adjusting the warp tension

Release the warp tension after you have tied the warp to the apron rod of the cloth beam, by pushing the brake pedal of the warp beam.

By attaching the spring cords to the screw heads at the floating arms you can adjust the tension on the warp: The tighter you tension the cord, the more tension you will get on the warp. If the tension is too high for delicate warp material or a small warp, even if you hooked on the cords at their very end, then you may attach the cord to the screw heads half way to the floating arms, that also hold the locking cords. Now the springs pull with less force at the warp. Be sure to adjust about the same tension on both sides.

The warp tension should always be judged with the floating arms in the vertical position. The

arms move to the front when you advance the cloth beam, and move backwards when you push the brake pedal.

To advance the fabric while weaving, first push the brake pedal. Due to the springs, the breast beam moving toward to you, will pull some warp from the warp beam. Advancing the fabric using the cloth beam lever, you will bring the floating arms back in their vertical position. Now the moving breast beam demonstrates its other feature: The warp tension is automatically the same as it was before you advanced the fabric.

If you advance the fabric too far, first you have to release the warp tension by pushing the brake pedal, than you can take both the ratchets out of the ratchet wheel of the cloth beam. Turn the cloth beam back and put in the ratchets again. Now stand at the side of the loom and push down the brake pedal turning the warp beam backwards.

Adjusting the height of the beater

The beater feet are screwed with their threaded ends into the bottom of the beater supports. This construction allows you to adjust the beater level: Turn the beater feet in- or outwards. The beater height should be adjusted, so that the lower shed just touches the lower beater bar. So

if you use a smaller shuttle for fine yarn, you may adjust the beater a bit higher, because a big shed is not needed. Always be sure that the beater has the same height at both sides. You can check this by making a shed and watching the lower warp ends touch the lower beater bar.

Folding the back section

To fold up the back section of your Delta, first you have to move the beater towards the breast beam, next lift the extenders at both sides from their supports. Move the back section towards the loom, until the dowels at the bottom of the extenders touch the supports. Lift them up over the supports. The dowels will prevent the back section from falling backwards.

If there is a warp on the loom, it will hang slack, after folding the back section. You may tighten it a bit with the cloth beam. Before you fold out the back section again, release the warp. Unfolding the loom, you always have to be sure that the extenders are fixed with their notches onto the supports.

Folded, you can move the Delta through most doors; the extending cloth beam lever at the front will turn down when you push the cloth beam backwards.

Maintenance

Your Delta loom is easy to maintain. One month after you assembled it, retighten screws, bolts and nuts of the construction, including the part that was already assembled. Don't forget the bolts underneath at the bottom of the base sides. Thereafter, check all bolts, screws and nuts once a year.

Check points for proper functioning of your Delta loom

- Check the level of the harnesses, lams and treadles, while the parallel cords are locked by the pin in their marked loops.
- Check that the parallel cords run through the grooves in the black plastic ends of the lams and harness bars.
- Check that the extenders at both sides of the loom are fixed with their notches onto the supports.
- Check that both the spring cords run in the grooves of their rollers.

When things do not work smoothly

The shed is poor or hard to make.

May be caused by:

- The treadles are tied too high or too low.
- The lams aren't adjusted at the right level.
- The beater is adjusted too high.
- The cross sticks are in the warp between the harnesses and the back beam.
- The fabric should be advanced.
- The tie-up cords to the treadles cross each other.

A treadle cannot be pushed down.

May be caused by:

- The locking pin is still in the parallel cords.
- An error in tying-up the treadle: The treadle is tied-up to both the upper and lower lam of the same harness.

During tying the warp to the apron bar of the cloth beam, the tension on the warp stays irregular.

May be caused by:

- The spring cords have not been unhooked from the screw eyes of the floating arms.
- One of the extenders is not fixed onto its support.
- The brake cable doesn't run properly over the brake disc or the cable needs to be tightened.
- One of the short cords doesn't block the floating arm.

The warp wouldn't come off from the warp beam.

May be caused by:

- The brake pedal has to be pushed further down.
- The brake pedal is adjusted too low: release the cable a bit.
- While weaving with a very low warp tension, the warp wouldn't pass the cross sticks: Take them out. If that doesn't solve the problem, you have to beam the warp beam by hand, while pushing the brake pedal down.

The cloth is slanted.

May be caused by:

- One of the extenders is not fixed onto its support.
- The beater is not adjusted on the same level at both sides.
- The tension of the springs is not the same on both sides.
- One of the spring cords has slipped of the roller.

The cloth cannot be advanced.

May be caused by:

- One of the ratchets of the cloth beam is not in the ratchet wheel.
- The apron bar of the cloth beam is caught on one of the floating arms.