

MAKE IT YOURSELF
DANISH CORD STOOL



*Skill Development:
Weaving a Danish Cord Stool*

 Lee Valley

MAKE IT YOURSELF

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#LVMadeByMe #LVLetsDoSomething

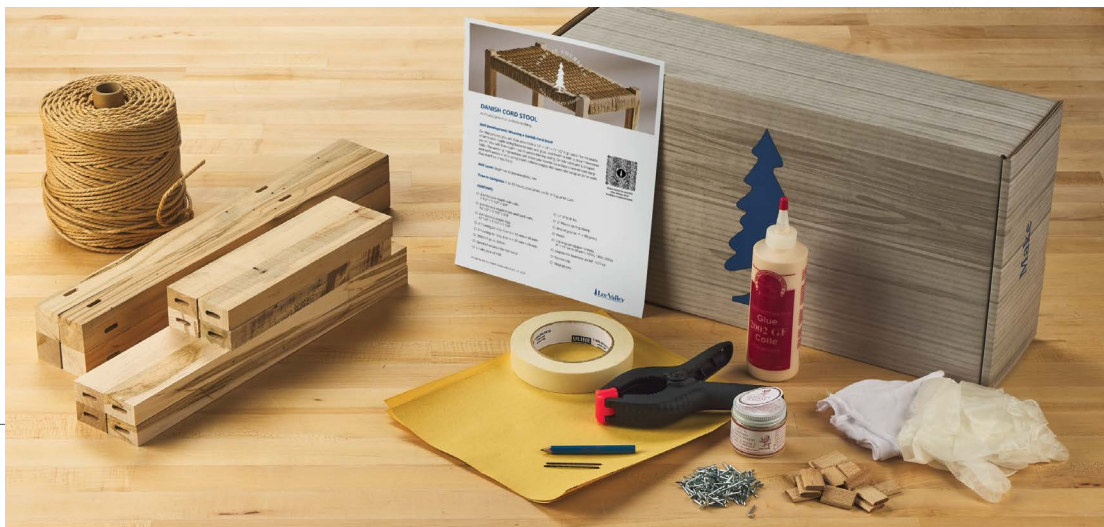
Skill Development: Weaving a Danish Cord Stool

For this project, you will first assemble a 12" x 18" x 17 1/2" high stool frame made of ambrosia maple using loose tenons and glue, and finish it with a cream beeswax polish. You will then learn how to weave the top using Danish cord and L-shaped nails. The weaving instructions will show you how to do a classic two-strand warp and weft weave that is completed in three stages: the warp, the wrap and the weft. (Say that five times fast!)

Skill Level: Beginner to intermediate; 14+

Time to Complete: 7 to 12 hours, plus 24 hours for the glue to cure.

***Tip:** While the estimated time to complete this project is based on our tests, we encourage you to take your time. Since you will be using repetitive movements that might not be familiar to your hands, you may need to take several breaks along the way to give your hands a rest. In fact, we encourage you to take breaks to appreciate the weaving process.*



CONTENTS

- 4 Ambrosia maple side rails, 9 1/2" × 1 1/2" × 3/4"
- 4 Ambrosia maple front and back rails, 15 1/2" × 1 1/2" × 3/4"
- 4 Ambrosia maple legs, 17 1/2" × 1 1/4" × 1 1/4"
- 8 Floating tenons, 5 mm × 19 mm × 30 mm
- 8 Floating tenons, 8 mm × 22 mm × 40 mm
- 2002 GF glue, 250 ml
- Spool of unlaced Danish cord
- L-nails, box of 100
- 1/16" Drill bit
- 2" Plastic spring clamp
- Masking tape, 1" × 60 yards
- Pencil
- 3 Mirka sandpaper sheets, 9" × 11" (one of each: 120x, 180x, 220x)
- Clapham's beeswax polish, 1.75 oz
- Cotton rag
- Vinyl gloves

Note: While Ambrosia maple is highly coveted for many projects because of its one-of-a-kind coloration, it is not a tree species in and of itself. Since it is the result of an infestation by the wood-boring Ambrosia beetle, it is also known as wormy maple. The wood from a soft maple tree that is infested with this fungus-carrying beetle becomes discolored with gray, bluish, tan, brown and black streaks, adding character to the maple's traditional clean creamy color and plain grain. The affected wood can also expose a series of small wormholes or trails where the beetle bored through the wood to deposit larvae. There's no need to fear using this sought-after wood; the beetles have not caused any structural damage and have long since been evicted when the wood was put through the kiln drying process. This wood's unique grain character is sure to catch someone's attention.

Other items you will need (not included):

- Safety goggles
- Hand drill
- Small hammer
- Tape measure or ruler
- Glue applicator (e.g., popsicle stick)
- Respirator/Dust mask
- Sanding block
- Screwdriver
- Pliers
- Nail set
- 2 or 3 tacks
- Small bowl of water

DAY 1: COVERS STEPS 1 AND 3

TIME TO COMPLETE: 3 TO 4 HOURS; ALLOW THE GLUE TO CURE FOR 24 HOURS.

1 SETTING UP YOUR WORKSPACE

- a. Select a clean, open work area.
- b. Remove the contents of the kit from the box and set them aside, but close at hand. Unfold the empty box (or any empty box you have around the house) and place it on top of your worksurface to protect it.
- c. If you haven't done so already, read all the product instructions to familiarize yourself with how each product is to be used.

2 SANDING THE FRAME

The sanding step serves two purposes: to prepare the surface for the wax finish and to break any sharp edges; that is, rounding over the arris ever so slightly to relieve the straight edges. For example, you may want to round over the top of the legs (so they won't dig into your thighs or buttocks when you sit on the stool), or chamfer the bottom edges of the legs (to prevent the legs from splintering in use). How much rounding of the sharp edges you do is up to you, and it's one way to make the stool your own.



Caution: Be sure to wear a mask when sanding to reduce the risk of developing respiratory problems.

- a. Cut a piece of the 120x sandpaper in half and fold that piece in half. Having grit on both sides makes it easier to hold the sandpaper. (Alternatively, you can install the sandpaper on a sanding block, if you have one. A sanding block distributes sanding pressure more evenly and maintains a flatter surface.) Sand in the direction of the grain as much as possible.



- b. Sand all the parts (the legs, the side rails and the front/back rails) with the 120x sandpaper.
- c. Round the top of the legs as much as you would like.

Tip: The legs have sharp ends, so you may want to shape the top to relieve that sharpness. Rounding the top of the legs is a personal choice. One way to do this is to lay out an octagon on the top of the leg and ease the four corners at about 45° with the 120x sandpaper. As you sand, skew the sandpaper at an angle as much as you would like on all four sides as you sand a curvature toward the top.



- d. Switch to the 180x sandpaper, then sand all the parts again.
- e. Switch to the 220x sandpaper and sand again.
- f. Finish sanding by adding a light 45° chamfer on the bottom of the legs to ease the sharp edges.

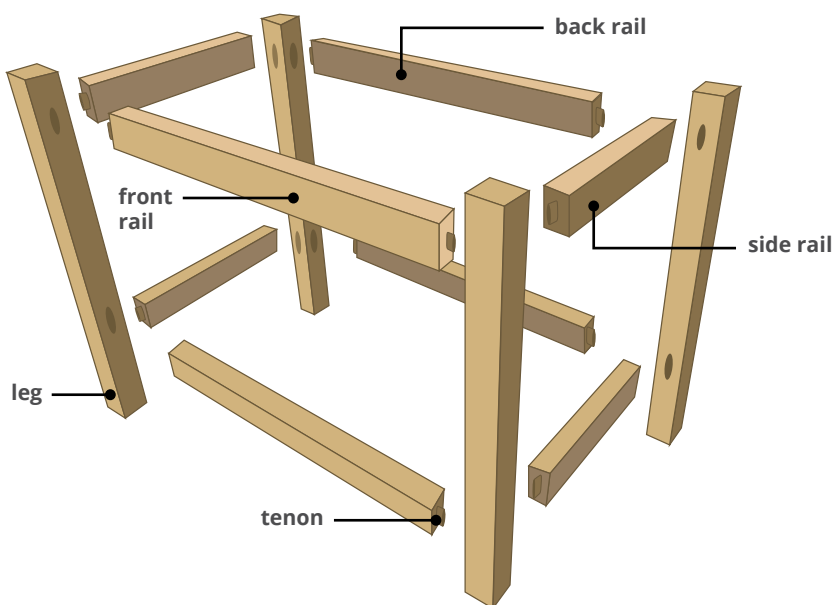


- g. When you have completed sanding with the 220x paper, wipe the parts with a damp cloth, and let them dry for about 30 minutes. This will raise the grain of the wood.
- h. Sand the surfaces one more time with the 220x sandpaper to make them as smooth as possible for applying the finish.

3 ASSEMBLING THE STOOL'S FRAME



Note: The stool's frame is assembled with what is called loose-tenon joinery. Each piece that needs to be joined with another has a mortise cut in either the side edge or end, and a tenon is glued between each mortise to connect the parts. This stool has mortises on two sides of each leg, one side for the side rails and the other side for the front/back rails. The mortises at the top of the legs are larger. Be sure to arrange a pair of legs so that the mortises are mirror images of each other.



Tip: Before gluing the parts together, it is a good idea to do a mock assembly. Arrange the parts where they should go so you know which side of the leg is to be joined to the side rails and which side should be joined to the front/back rails.

- a. Slip a pair of vinyl gloves on your hands. Use a small stick to apply glue onto eight of the tenons (four large and four small) and inside the mortises on each end of the four side rails. The two side rails with the larger mortises are for the top part of the assembly, while the two side rails with the smaller mortises are for the bottom part of the assembly. Insert the tenons into their mortises. You should be able to press these in.

Tip: *Keep a damp cloth nearby while you glue the joints so you can wipe away any glue squeeze-out, since any remaining glue can show when the wax finish is applied.*

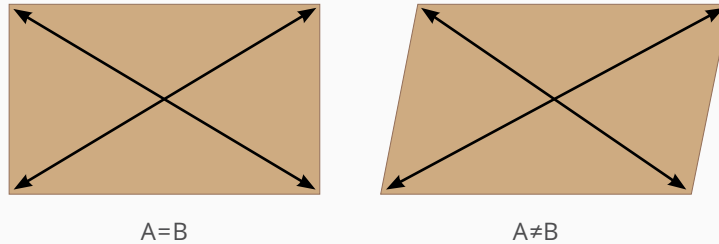


- b. Apply glue inside the mortises on one side of two of the legs, being sure to use the side of the leg that mirrors the other. Insert two of the glue-covered tenons on the side rails into each of those legs. (You should have something that looks like two mirrored capital letter Fs.)



- c. Apply glue into the mortises on one side of the two remaining legs, and insert the glue-covered tenons on the other end of the side rails into their mortises. You should now have two identical sides. Make sure that the joints are flush, straight and square. Wipe away any glue squeeze-out.

Tip: To check for square, measure the diagonals. If they are equal, then the assembly is square.



- d. Clamp the joints with masking tape and let the side assemblies dry for about 1 hour.
- e. Apply glue onto the eight remaining tenons and inside the mortises on each end of the four front/back rails. Insert the tenons into their mortises.
- f. Apply glue into the mortises on the right side of the stool. Insert the glue-covered tenons on one end of the front/back rails into their mortises.





- g. Apply glue into the mortises on the left side of the stool. Align the glue-covered tenons on the other ends of the front/back rails with the remaining mortises, and gently tap into place. Make sure that all the joints are flush, straight and square.
- h. Wipe any glue squeeze-out with a damp cloth.
- i. Use masking tape to clamp the joints and let the stool assembly dry for 24 hours.

END OF DAY 1

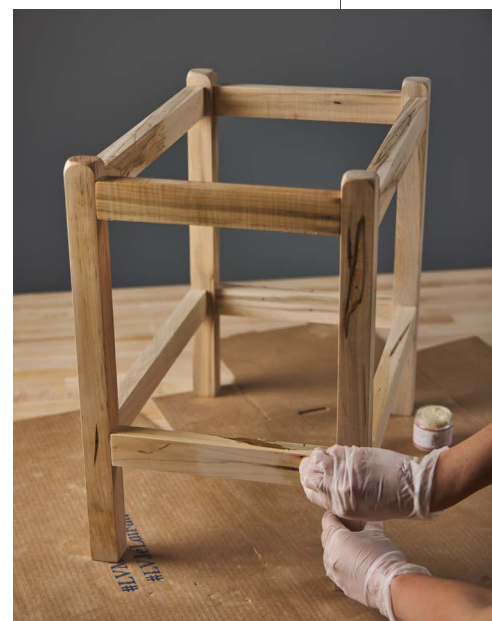
DAY 2: COVERS STEPS 4 TO 5

TIME TO COMPLETE: 1 TO 2 HOURS

4 APPLYING THE FINISH

Note: Clapham's beeswax polish is made in Canada from beeswax blended with a small amount of microcrystalline and carnauba wax. This light cream polish buffs to a soft sheen to bring out the natural beauty of the wood and even reveal some characteristics that were previously hidden.

- a. Use a clean, dry rag to apply a thin coat of the beeswax polish all over the frame: the legs, the side rails and the front/back rails.
- b. Allow the wax to dry for 5 minutes or so, until the wood no longer feels sticky, then buff the wood to a shine in the direction of the grain with the cotton rag. You may need to use a little bit of elbow grease to buff the surfaces out to obtain a soft sheen.



5 MARKING AND INSTALLING THE L-NAILS

Note: L-shaped nails are fastened to the inside of the stool's top rails to hook the return strands of Danish cord. The nails are spaced 1" apart on the front/back rails, and closer together, 1/4" apart and staggered, on the side rails.

Tip: Marking the location of the L-nails can be made directly on the wood. However, masking tape will make it easier for you to see where you need to drill, and will make clean holes. Remove the masking tape after the holes have been drilled.

- Mark the center (lengthwise) of each rail. On the 9 1/2" long side rails, this would be 4 3/4"; on the 15 1/2" front/back rails, this would be 7 3/4". Extend the center line so you will be able to see it later.
- Draw a horizontal line 3/4" down from the top on the inside of the upper rails.
- On the side rails, also draw a horizontal line 1" down from the top.
- On the upper front/back rails, and starting from the 7 3/4" center mark, make marks 1" apart all the way along the horizontal center line. You should have 15 marks per front/back rail.

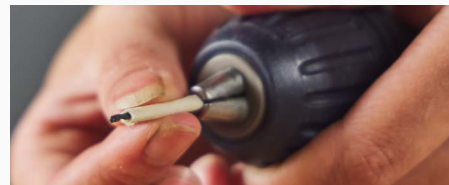


- On the side rails, and starting from the 4 3/4" center mark, begin by marking the 1/2" spacing on the 3/4" line. Then, on the 1" line and starting 1/4" away from the center line, mark the 1/2" spacing. Don't worry too much if your marks aren't staggered perfectly 1/4" apart. You should have 33 marks per side rail.

- f. Once the layout is complete, install the 1/16" drill bit in a drill. Make sure to fully tighten the bit in the drill chuck and that it is straight; otherwise, the bit may break as you drill.
- g. Pre-drill all the holes for the L-nails approximately 1/4" deep. Pre-drilling the holes will not only prevent the wood from splitting, but also make it easier to tap the odd shape of the L-nails into the rails.



Tip: To ensure you drill to a consistent depth, you can make a depth stop by wrapping a piece of masking tape 1/4" above the tip of the bit and around the shaft.



- h. Insert an L-nail into each hole, and tap these in, leaving a bit less than 1/2" protruding, making sure the L points up.

Tip: The L-nails are small and awkward to hold, especially when they are closely spaced. To help with tapping them straight into the wood without smashing your fingers, you can use a pair of pliers to hold the L-nail while you strike it with a hammer. On the side rails, where the L-nails are staggered, you might find it easier to insert them in the lower row first, and in the top row second. Also, you can place a piece of scrap wood less than 1/2" thick between the rail and the underside of the L to ensure the nails protrude evenly.



Note: We know you are just itching to get to the fun part: weaving. However, this is a good time to take a break. Not as much for you, as for your fingers.

END OF DAY 2

DAY 3: COVERS STEPS 6 TO 8

TIME TO COMPLETE: 3 TO 6 HOURS

6 WEAVING THE WARP LAYER

Danish cord is a weaving material often associated with mid-century Danish Modern furniture design. The Danish cord included in this kit is made of three plies of tough paper interwoven and twisted for added strength and wear resistance. The plies of the natural-colored unlaced cord are loosely twisted, and when woven, create a smooth texture and a unified look. The 3 mm cord has a break strength of 54 kg. Our weaving instructions show you how to do a classic two-strand warp and weft weave that is completed in three stages: the warp, the wrap and the weft.

The warp layer consists of the front-to-back cords. This first layer will leave gaps between the pairs of cords. These are filled in by wrapping cord between the gaps. The weft step fills in the side-to-side cords and creates the weaving pattern. The warp and weft always have an odd number of rows to ensure that when you weave the cord across the warp, you end up with the same pattern on both side rails.



The warp



The wrap



The weft



Tip: Before you get started with weaving, take a moment to consider cord management so that it doesn't get all tangled. Since the loose end of the cord is on the outside and the cord is wrapped around a cardboard tube, you can make a simple spool holder with a dowel attached to a base. This option is worthwhile if you are considering making more projects with Danish cord. Alternatively, you can keep the spool in a small box or a basket.

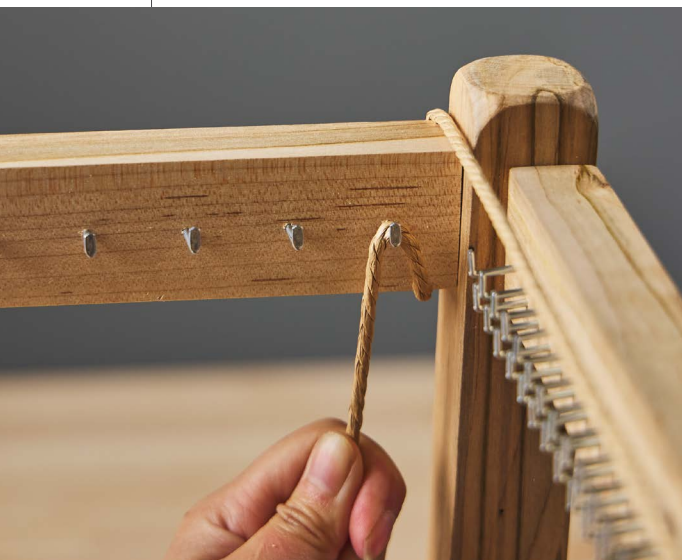
- a. Place the stool's frame on a flat surface and at a height that is comfortable for you.
- b. For the warp layer, you will not be cutting the cord to a particular length; you will be working right off the spool and unwinding the cord as you go.
- c. Begin by looping the end of cord over and under several nails on the front rail just to keep it in place; it will get trapped in as you work; there is no danger of it slipping.



- d. Guide the cord under and over the front of the rail and carry it across the top to the opposite side, then down and under the back rail. Loop the cord over the nail closest to the leg. Be sure not to twist the cord.



- e. Bring the cord under and over the back rail, then across to the top toward the opposite side, then down and under the front rail. Keep the tension taut, but not excessively tight. Pull just enough to eliminate the slack.



- f. On the rail closest to you, loop the cord over the nail closest to the leg, and bring the cord back up to the front, across to the opposite side and under, again, keeping the tension taut, but not excessively tight.
- g. Repeat the three previous steps one more time, using the same nails, such that you have four strands on the edge nearest the legs. Be sure not to twist the cord, and always loop in the same direction.
- h. The next row and each row between the rails will have two strands.
- i. On the back rail, loop the cord over the next nail then bring the cord up to the front of the back rail. Bring it back across to the top of the opposite side and under the front rail. Be sure not to twist the cord, and always loop in the same direction.
- j. On the front rail (the rail closest to you), loop the cord over the previous nail and across to the next nail. Bring the cord back up to the front, across to the opposite side.



Tip: If you need to take a break, and to prevent the warp rows from unravelling, you can clamp the cord to hold it taut.

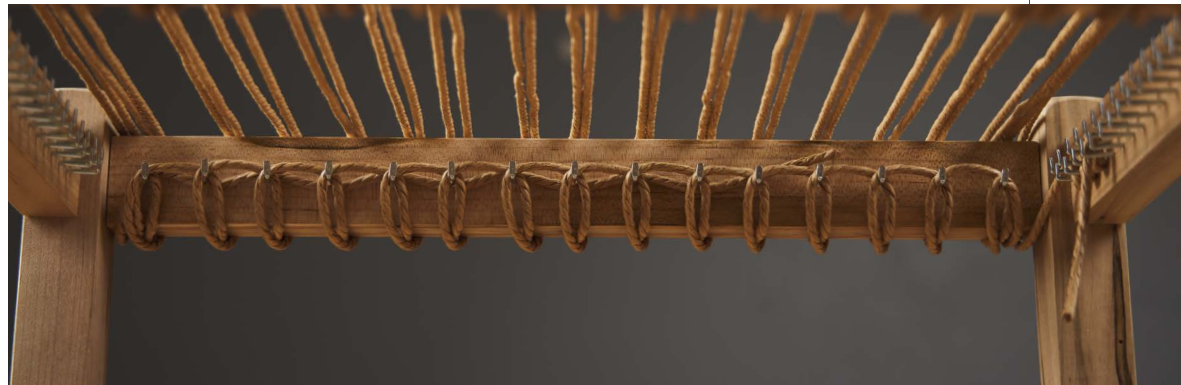




Back rail

Tip: Loop cord on one nail on the back rail, but loop across two nails on the front rail.

Front rail



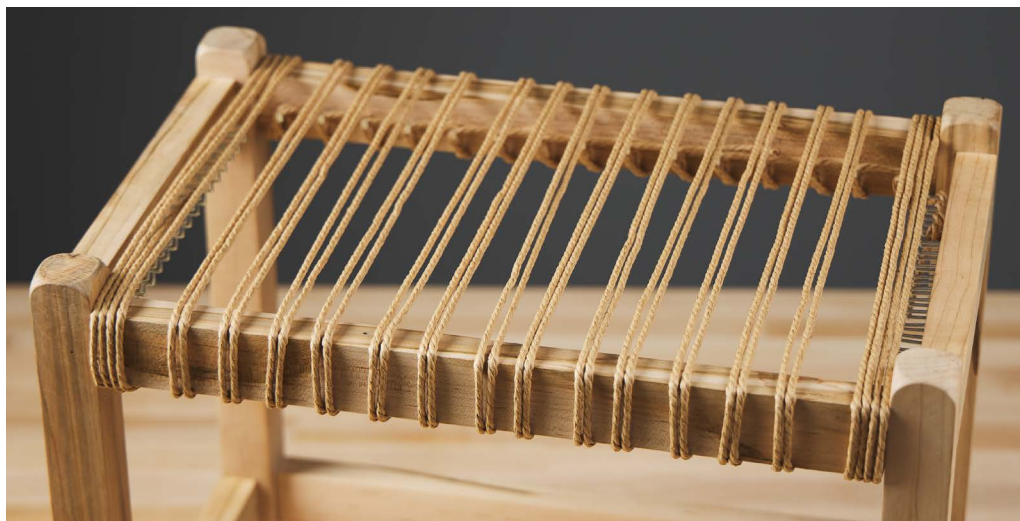
- k. When you reach the end of the rail, complete the left side with four strands to match the four strands on the right side.

Note: You may need to use a screwdriver to persuade the cord on the nail.

- l. Weave the cord over and under a few nails in the side rail, then cut the cord.



- m. Examine your warps and make sure the cords do not overlap and that the spacing between the two cords is fairly even.



- n. Turn the stool over and tap all the nails home, except the nail in center, on the front/back rails to securely trap the cord.

7

FILLING IN THE GAPS

Note: Filling in the gaps with cord after the warp layer is the easiest approach for someone who has not used Danish cord before.

- a. Cut two 30-foot lengths of cord. Put one aside and fold the other in half.

Tip: To calculate the length of cord you need, as for another project, begin by wrapping a length of cord as many times as required to fill the gap, say four times. Hold the end and measure the length. That is the amount of cord you need to fill one gap. For example, if one gap requires 24" of cord, multiply this by the number of gaps in the front rail, and add a safety margin of about 24". For this project, there are 14 gaps to fill on the front rail.
 $24" \times 14 = 336" + 24" = 360" = 30'$

- b. Find the center nail in the front rail.
- c. Drop the cord's center loop onto the nail in the center of the front rail. Tap the nail in.
- d. Start winding the cord around the rail, pulling the cord through and keeping a good tension on the cord as you do, while making sure not to twist the cord. Work your way to the right, and wrap the cord four times between each section. This is a lengthy process that requires a lot of cord pulling.



- e. When you have filled the gap between a section, cross the cord on the inside back such that it catches the hook and then crosses to the next gap on the right. This keeps the upper part of the wrap neat and straight. Continue winding the cord around the rail. For this stool, you will wrap the cord around the rail the same number of times between each gap (four wraps between sections).

- f. When you reach the leg side, clamp the last section of wrapped cord and weave the free end of the cord over and under several times on the L-nails on shorter side rail, then cut the cord.





- g. Repeat steps d to f, winding the cord from the center to the left on the front rail.
- h. Wind the cord between the spaces on the back rail the same way as you did the front, using the other 30' length of cord, folding it in half and wrapping that center loop on the nail in the center back rail. (Tap the center nail in.)

8 WEAVING THE WEFT LAYER

- a. For the final weft layer, you will once again be working directly from the spool.
- b. Turn stool on its side and wrap the end of the cord over and under several nails on the right side rail. You may need to use a screwdriver to persuade the cord into the nail in the corner. Pull the cord tight and turn the stool right side up.
- c. Bring the cord under and up the outside of the rail.
- d. Make a two stranded folded loop long enough to go the full length of the stool.
- e. Holding the cord at the fold, start weaving the double strand under the first four cords, then over the next pair of cords, going under and over between the spaces and across the length, finishing with going under the last four cords.



- f. When you get to the end of the row, pull the cord through so you have enough cord to go over the rails and under so you can hook the loop on the first nail in the corner. (You may need to flip the stool and use a screwdriver to grab the loop from under. Note that the cord will go over the end of the cord from the wrap layer.)



- g. Adjust the first horizontal strand so it is close to the front rail, making sure that the cord is not twisted anywhere along that row. Pull the remaining slack and move the second strand next to the first, trying to get that row fairly straight.

Tip: You can use the clamp to hold the double strands of cord while you weave them in so you have both hands to adjust the cord.



- h. Make another two-stranded folded loop long enough to go the full length of the stool. For this second row of weaving, you will start by weaving the double strand over the first four cords, then under the next pair of cords, going over and under between the spaces and across the length, finishing with going over the last four cords.

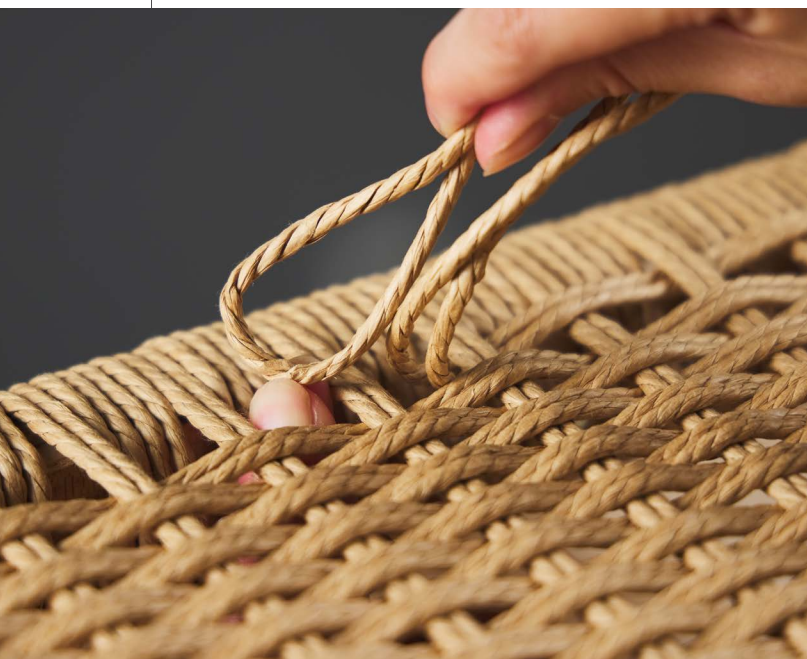
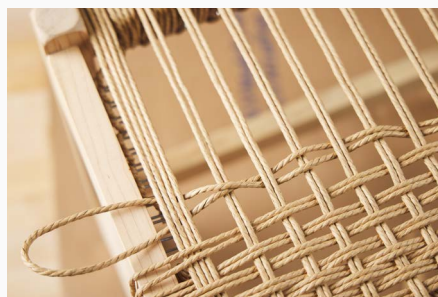


Note: The end of each row will always be a mirror image of the beginning of the row.

Tip: As you complete each side-to-side weave, be sure to pay attention to how the cord is oriented on the underside of the side rails, and that you maintain the alternating over and under pattern. Each time you complete a side-to-side weave, take a moment to check that you did not make a mistake. It is much easier to fix any errors in weaving if these are caught sooner rather than later.

The key to good weaving is to not have any of the wood from the stool's rails showing between the cord.

Every now and then, you may need to push the rows toward the front rail. You can use a screwdriver to adjust the rows as required.



- i. When you get to the end of the row, pull the cord through so you have enough cord to go over the rails and under and then hook the loop on the next nail. (You may need to flip the stool and use a screwdriver to grab the loop from under.)
- j. Continue weaving, alternating between under and over/over and under rows, until you reach the back rail. For the last row, you may need reach for the strands from under the stool or use the screwdriver to help you weave to the end of the row.

- k. Wrapping the last bit of cord around the last nail is easier said than done. You may need to loosen the last nail in order to pry the cord into place with the screwdriver. You may also need to use pliers to pull that last row of cord tight. Hook the cord on the last nail, then weave it between several nails before cutting the end.
- l. If you want, you can tack the end of the cord against the edge of the side rail such that it pierces the cord. Use two or three tacks to be on the safe side. Trim the remaining cord end.



- m. Tap all the nails on the side rails home. Adjust the rows of weave as required to achieve uniform spacing.

Tip: If you are using a regular hammer, you may need to use a nail set to hit each staggered L-nail in the row.



END OF DAY 3

CARING FOR YOUR DANISH CORD STOOL

Danish cord is a natural material that will develop a pleasing patina over time and can last for many years. The woven top does not need a sealant, and needs nothing more than a regular dusting (or vacuuming) to prevent any dust buildup. The paper cord is treated with a thin layer of wax that helps prevent stains. However, since liquids or foods may discolor the cord, immediately dab as much of the liquid off with a dry absorbent towel, being careful not to spread it to unaffected areas of the stool. If necessary, use a soft (barely) damp towel to dab at the spot. Do not let the Danish cord get wet, as it will break down the fibers of the paper, resulting in fraying and degradation of the cord.

NOW WHAT?

The tools and supplies in this kit are reusable. We hope that you will be inspired to find other projects where you can incorporate weaving with Danish cord. For example, you can reweave chair and stool seats, or makeover a headboard, privacy screen and cabinet door panels.

Additional **Danish cord** and **L-nails** are available on our website.

You can reassemble the box and store the tools and supplies in it so you know where to find them when the need for them arises. The more you make, the more the tools will be of continued service.



CREATED BY LEE VALLEY. MADE BY ME.

Now that you have completed your Danish cord stool, we would love to hear about your experience and see the finished project.

#LVMadeByMe #LVLetsDoSomething



MK106 Danish Cord Stool

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