

THE BRADEL TECHNIQUE

Introduction

The Bradel Binding, or “a ’la Bradel”, is an economic binding developed at the end of the 18th century by members of an important Paris binding dynasty, the Bradels. The technique is generally attributed to Pierre-Alexis, called Bradel l’Aine (the older), successor to his uncle Derom le Jeune (the young). His bindery was on rue Sain-Jacques before the revolution, then rue de Foin where it traded under the name of “Bradel pere et fils”. Bradel bindings are characterized by not having raised bands on the back and having a groove between the back and the boards. Books bound in this way open more easily.

Collate

Ensure everything is in the correct order.

Squaring up the Block

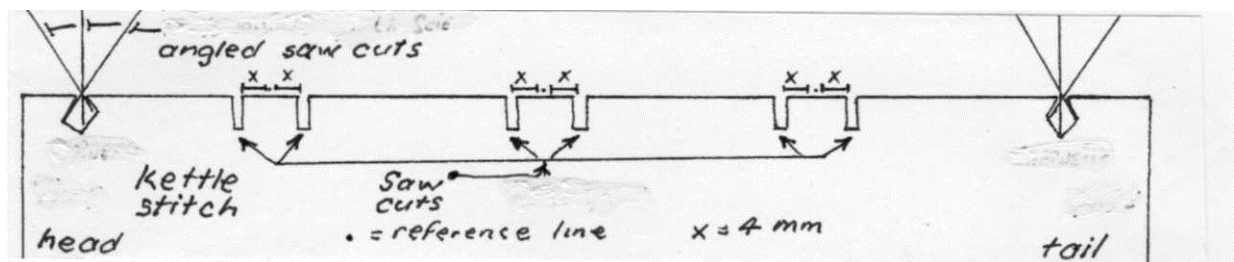
Using a footed square, square up the book block and press between smooth pressing boards. Leave in the press for a minimum of 24 hours.

Sewing

Cut two waste boards a little bigger than the bookblock. Square on head and mark.

Place the bookblock between the waste boards and knock up on head and spine.

Measure the height of the bookblock with a piece of paper and mark off the sewing holes with the aid of a template. Place the bookblock in a bench press with the back out of the jaws no more than 2 cms. Mark off the cut lines across the spine with the aide of a footed square.



Squeeze the bookblock whilst sawing the sewing holes. The depths of each hole should be just deep enough to cut the centre fold of the section, not more.

After sawing, dust.

Sewing

See Annex A for ways of fixing cords and threads.

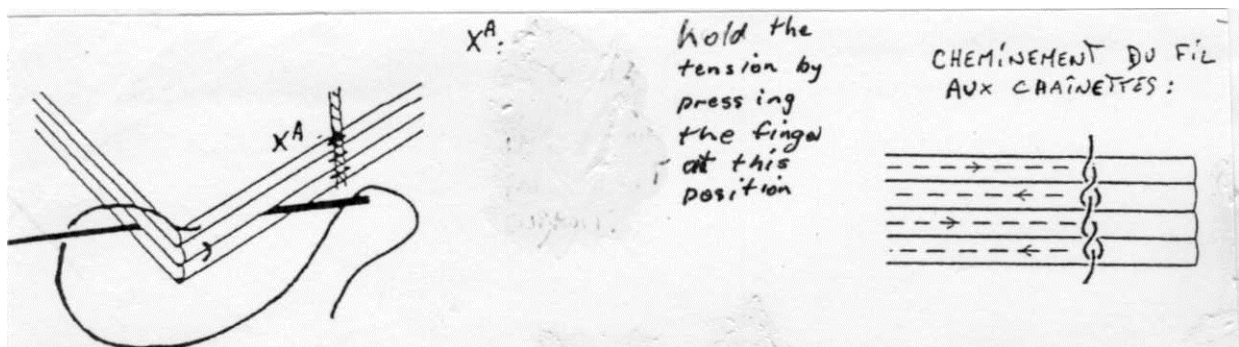
Set up sewing frame, using of the waste boards.

To choose the sewing thread, measure the thickness of the spine and count the number of sections.

Using the graph, Annex A, find the identification number of the thread. IMPORTANT, for the BRADEL, reduce the number of the thread by two numbers.

Take a thread of length equal to the height of six sections. Sew. Pack down with a wooden hammer after sewing each section.

Tighten the thread after the first section by pulling each end. After the second section, tie with a reef knot. (The end will be taken in the kettle stitch). After sewing the last section, make a normal kettle stitch and then go down another section and make another kettle stitch.



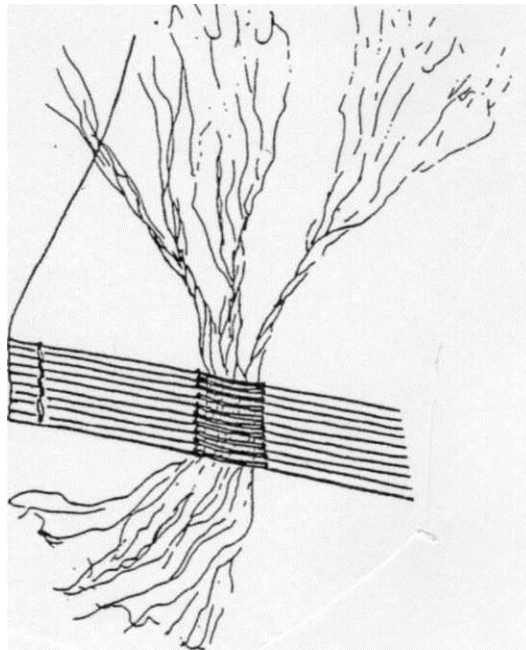
The thickness of the sewn back must be “plus a quarter” greater than the fore-edge. The table in the Annex gives a precise indication of the desired result.

Take the bookblock out of the sewing frame, leaving sufficient cord for following operations. Leave the book to rest overnight in order to “reinflate” (presumably to take a natural shape).

Generally one tries to sew with the least number of thread joins possible. Take care not to join the thread in the three or four first and last sections.

Fraying the Cords

Cut the cords leaving a minimum of 5 cms on each side. Fray out the cords up to the sewing threads. Fray out both sides. Pull the cords through and complete the fraying out over the back.



In order to fray out well, firstly separate the larger strands with your fingers, then separate the strands of each as much as possible. Each time that you pull on the strands to take out surplus and impurities it is necessary to support the cords near to the spine to avoid removing too much material. At the end of the operation, carefully smooth them out with the aid of a bone folder.

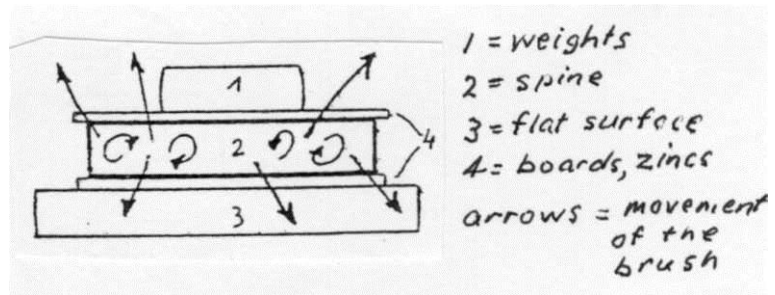
Adhesive on the Spine

Pull on the cords and pack the sections down on the spine and head. Check to ensure that the backs of the sections are in line. If not, knock up with a zinc plate in the middle of the section to rectify.

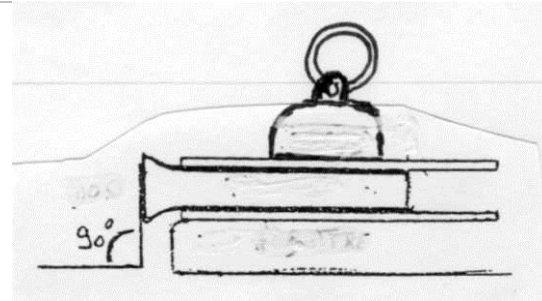
Having knocked up, place the spine on the stone towards you between two zinc/pressing boards and waste sheets. Ensure the cords are inside the waste boards.

Place a weight on top and square up the bookblock on spine and head with the aid of a footed square.

Press down whilst keeping the bookblock square and apply a coating of thick MC while pushing uniformly with the brush. Always go from centre to exterior, otherwise you risk to put the adhesive between the waste sheets and the bookblock.



Remove the excess adhesive with a bone folder. Rub the spine with the bone folder to push the adhesive down. Finish up by rubbing with your thumb to ensure a uniform thickness of adhesive. Remove the waste sheets and quickly clean the bases of the cords if they have adhesive on them.



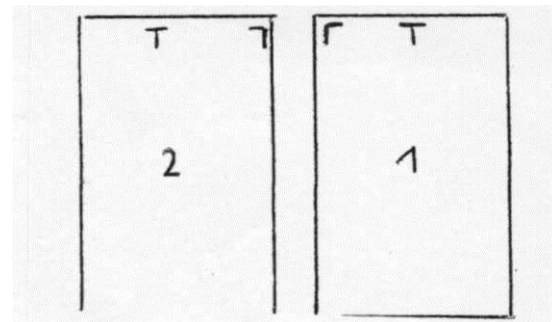
Again pack down the back on a waste sheet placed on the bench. Place the bookblock between two boards, under weights, and square up spine and head, leaving the spine a little outside the boards.

Leave for a minimum of four hours.

Cutting the Boards

Cut two boards, grain the right way, the size of the book plus 2 cm larger in height and 1 cm larger in width.

Mark the right angles on the corners at head and back. Also mark the boards front (1) and back (2).



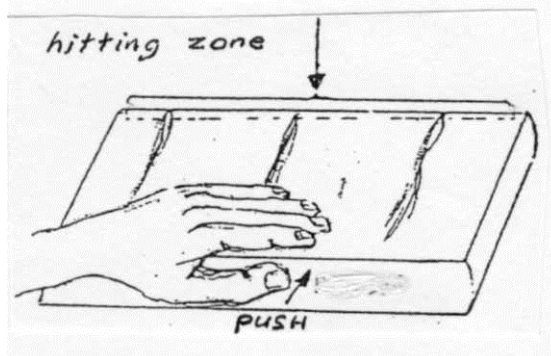
Calculate and mark the French Joint

Mark the French joint by placing the board level with the spine and tracing the thickness away from the back. Check after tracing.

Rounding

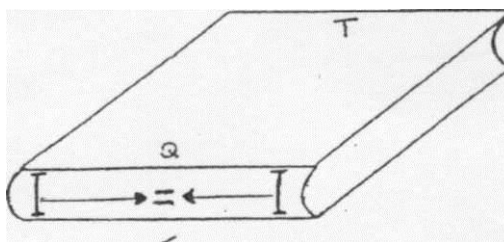
If necessary lightly wet the spine with a damp sponge. Place the book on a stone. Hold the book with the left hand, the thumb in the fore-edge.

Hit the base of the cords with the flat of the hammer. Flip the book over and repeat. Be careful to keep the book flat on the surface.



To finish, check the thickness of the book on head and fore-edge whilst lightly pressing the back. The two must be equal.

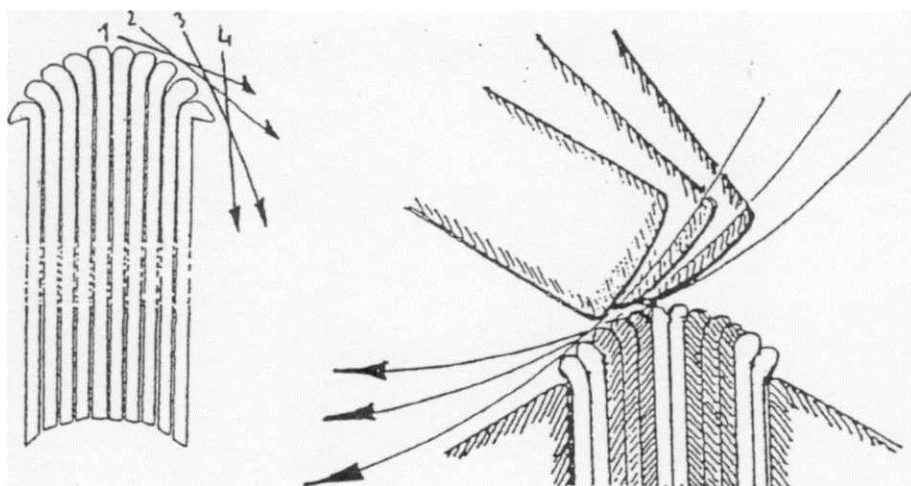
Place the book on a flat surface and place weights on the book. Square up the fore-edge and head.

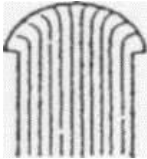


Backing

Take the book and, whilst maintaining its square, place it in the backing press down to the line of the shoulders. Close the press ensuring that the lines are level with the jaws of the press. Gently separate the sections on head and tail with a bone folder, with the finger nails, or the cross peen of the hammer. Lightly moisten the spine if necessary.

Tap with glancing blows across the spine, starting from the centre section progressively towards the outside section.



GOOD	BAD
	

Remove the book to check the shoulders by placing the boards in place. If the boards fit nicely and the thickness is correct, softly tap flat the edges of the shoulders, the same on the boards, then place the book under weights between two boards.

If the shoulders are too small, replace the book in the backing press and, before firmly tightening the press, slide a zinc plate under the offending shoulder corner or corners.

Remove the zincs and repeat the backing operation. Leave the book to rest for one night minimum.

Finishing the Shoulders

Place the book, without boards, in the backing press and re-work with the hammer if necessary. Coat the spine with MC then use the frottoir to make the back nicely smooth and round. Use the frottoir (rubbing stick) to remove excess adhesive. Remove the book from the press and leave to dry without boards under weights and well squared. Later, replace the boards with edges against the shoulders, and under weights.

NOTE: always clean the backing press after using.

Fixing the Cords

Cut the cords to between 0.5 and 1 cm. Place an acetate sheet under the first leaf (construction leaf) and apply PVA to the frayed out cords then, with the bone folder, adhere the cords to the construction page.

Adhering the Muslin (paper backed cloth)

Place the book in the lying press without the boards. Apply PVA to the spine. Fold the cloth in two along its length and place it along the centre. Then apply adhesive to the overhangs and affix them to the construction leaf. Carefully mark the shoulders.

Leave dry about 20 minutes if possible in the lying press.

To finish, place a blotting paper between the construction page and the acetate, then cover the boards with gladwrap and place them against the shoulders.

Leave dry for 24 hours.

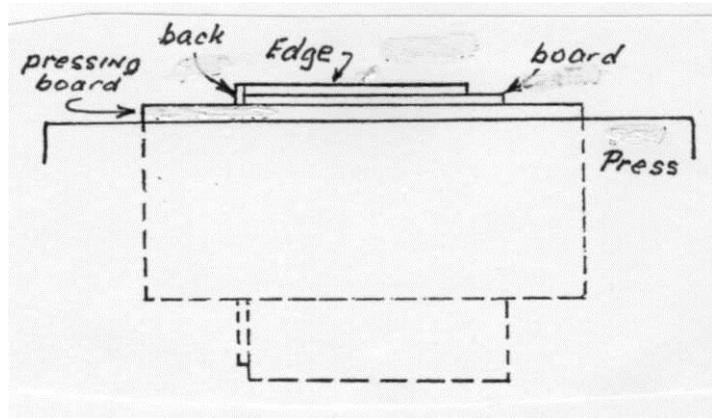
Reworking the Shoulders

Place the book in the backing press and correct the shoulders.

Sanding the Edges (head and tail)

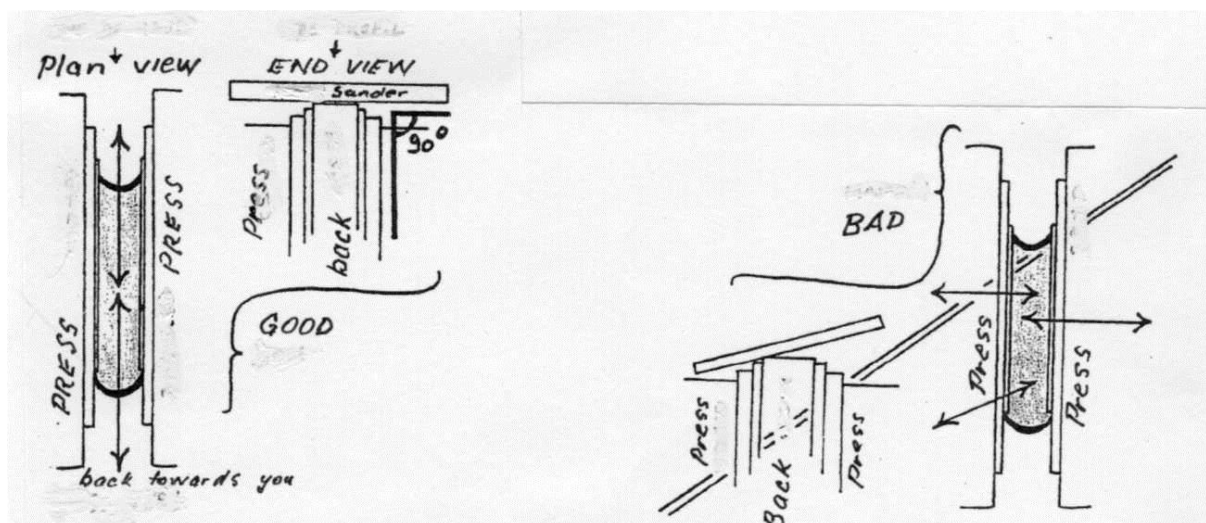
To sand EFFECTIVELY; never sand the paper vertically on the surface being treated. Work progressively without haste.

Place the book between its boards with 3 mm protruding at the head. Place the book and boards between two pressing boards. Position the assemblage in the press keeping it well squared up whilst tightening the press.



Sand the head towards you in order to obtain a surface which is horizontal and parallel to the boards.

Check before, during and after with the footed square to control and check your sanding.

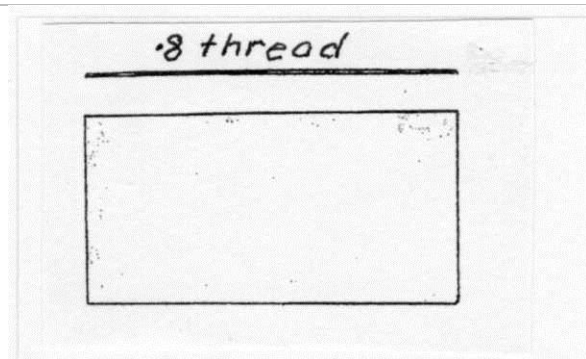


To check the head edge, take the book out of the press without removing the boards, blow and gently tap the book at the top on a flat surface to eliminate the paper dust.

Place the head edge on a clean flat surface. Slide the boards down level with the edge. Check to see if the head edge and the boards are against the flat surface all the way along. Lastly turn around the book and check the regularity of the work.

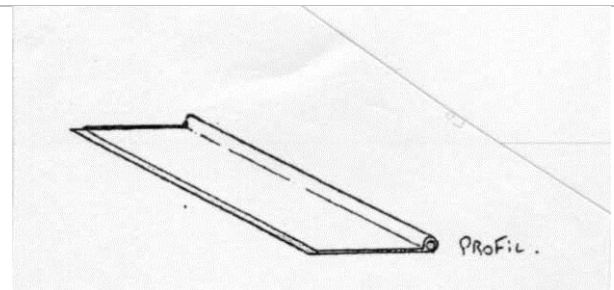
Proceed in the same way to sand the tail edge.

Headbands

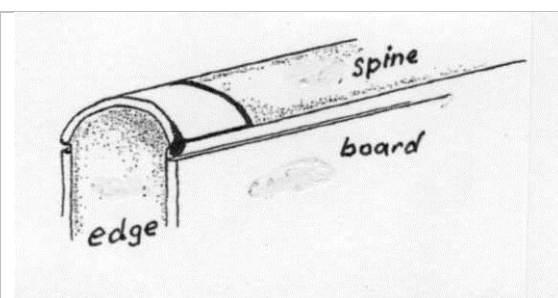
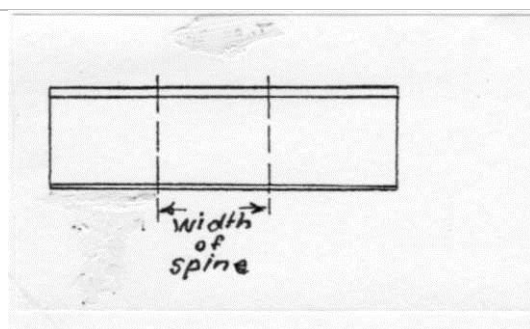


Take the cloth or piece of leather of your choice and cut to a width of three times the width of the spine and height 2.5 cms. Cut a piece of thread of length the same as the cloth width.

Apply PVA to the cloth or leather and place the thread in the middle. Fold the cloth in two. Mark along the fold with the bone folder.



The headband must be supple and must be exactly the size of the spine. Adhere to head and tail of the spine with PVA. Ensure that the ridge/rim created by the thread is well positioned along the edge.

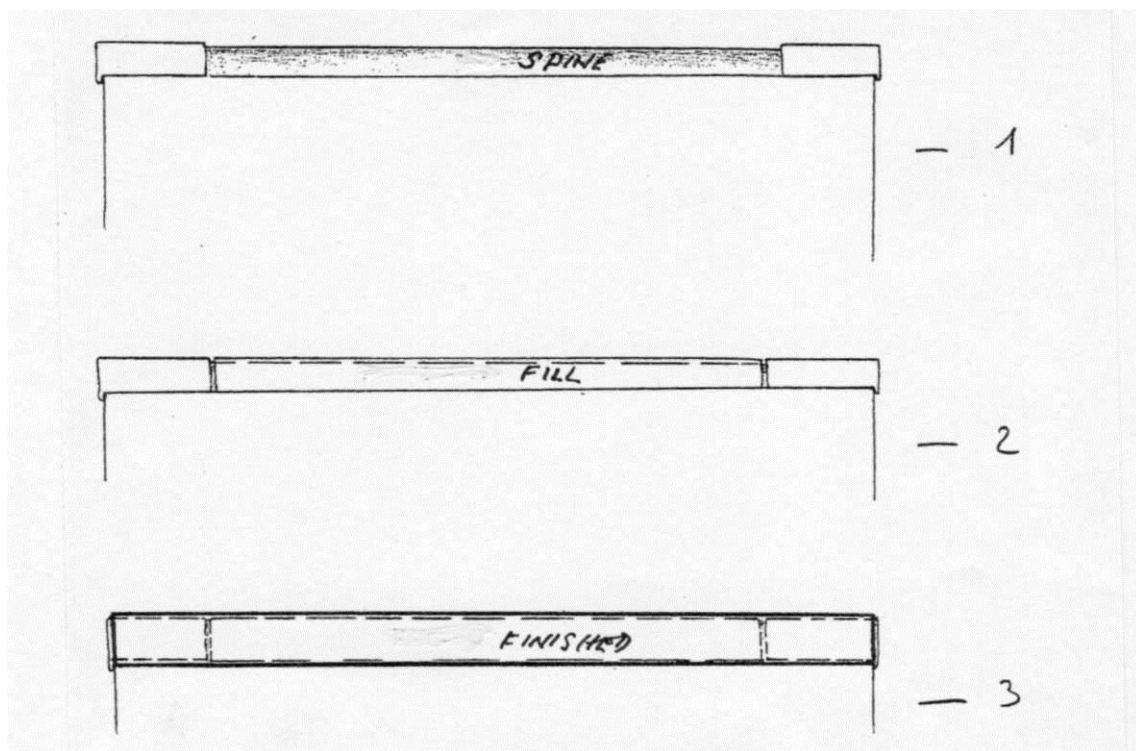


Filling in on the Spine

Place the book with its boards in the lying press. Measure the spine with a piece of paper and cut strips of paper-backed cloth to that size (height and width). Fill in the space between the headbands with one or two strips cut to measure. To do this, adhere the cloth side of the strips to the spine with PVA. Repeat as necessary to fill in to the level of the headbands. When level, finish the stage by adhering a strip from the top of the headbands.

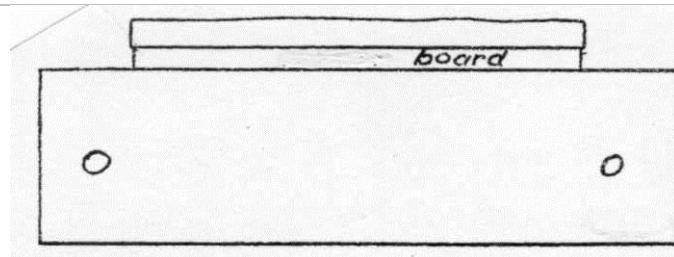
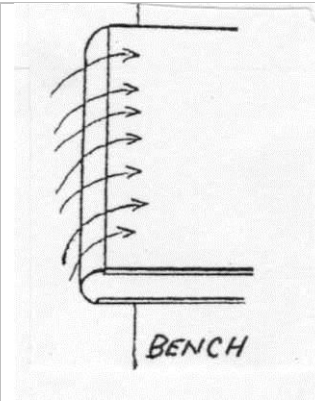
VERY IMPORTANT: rub down each strip with your bone folder when first positioned.

Leave dry under weights without disturbing the back (minimum 4 hours).



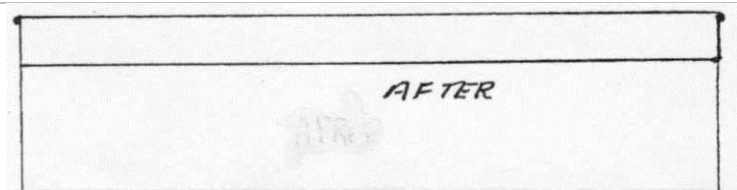
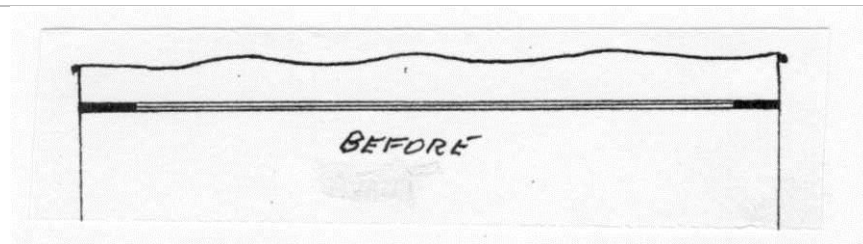
Sanding the Back

After the filling-in of the back is dry, the shape of the back needs to be rectified. Take the book and put the boards in place against the shoulders. Place book and boards on the edge of the bench and sand both sides as per the diagram.



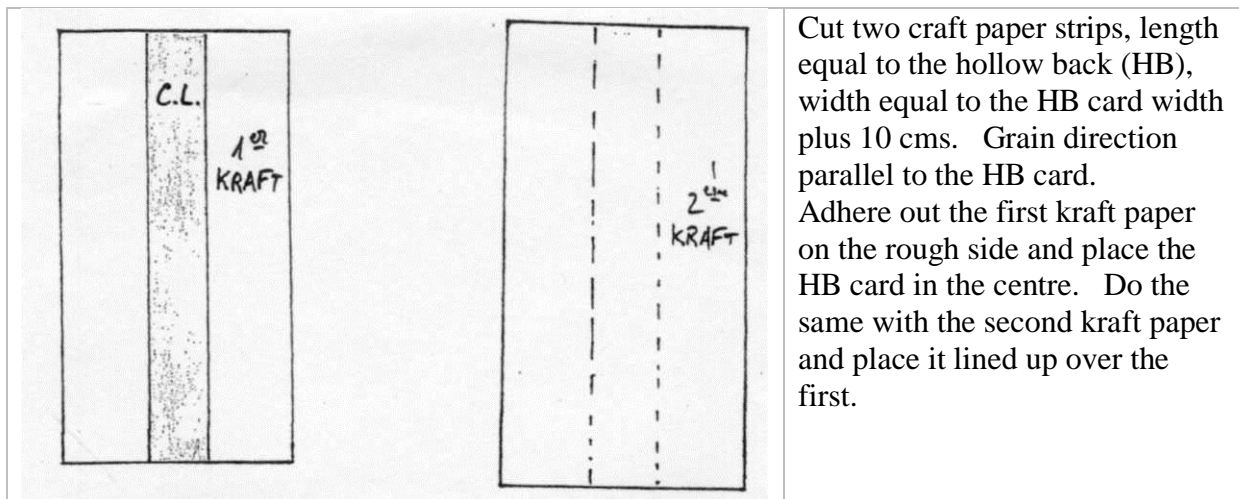
Then, place the book in the lying press, boards in place. (Attention: do not put all the book in the press – see diagram).

The time has come to eliminate the bumps of the cords and obtain, controlled with the aid of a straight edge (i.e. a ruler), a level back along its length and around its width. Sand gently.



Preparation of the Carcase (hollow back assembly)

Measure the exact width of the spine at head and tail with the aid of the strip of paper. Take the larger and cut the 0.3 mm card to that width, length 2 cms longer than the back, grain direction long grain.



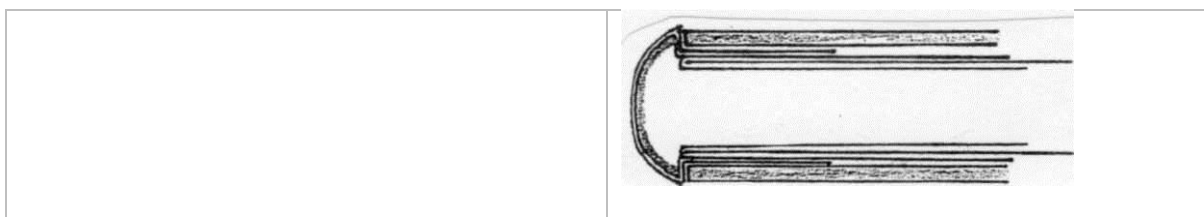
Mark the edges of the HB card with the bone folder on one side only. Give a nip in the press.



Roll the assembly in a “flag” with the folder marks up.



Mark the head on the inside of the HB assembly. Place the HB assembly in position on the spine, equal overlaps head and tail. When the HB assembly has been pushed down to the level of the back, place the first board in the shoulder above the kraft paper. On the edge of the bench (first board on the bench), lightly pull on the kraft paper to position the second board. Hold firmly and mark the shoulders by sliding the bone folder along the spine, being careful not to scrunch the card at head and tail.



To finish, place the acetate sheet under each construction page and replace the boards protected by the paraffin paper. Leave dry 4 hours under weights.

Cutting the Boards to Height (This step may be done earlier)

Measure the book height (including headbands) and add twice the thickness of the boards to obtain the height of the boards.

Before cutting the boards to this height, trim off the edge which is to go against the shoulders and then trim the head, thus giving a nice square corner.

Cut the boards to the finished height.

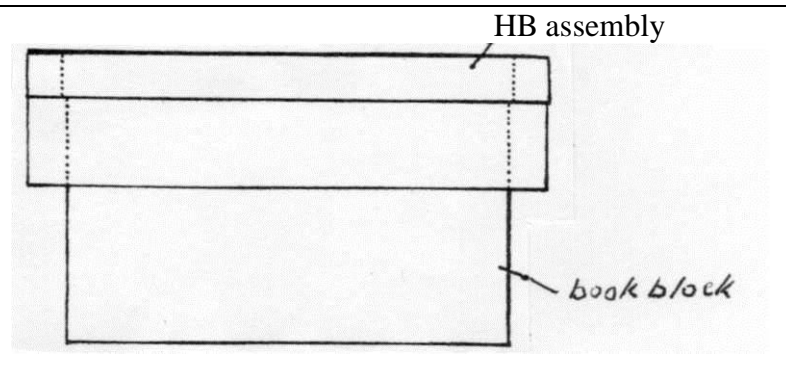
Trim a little off the fore-edge to make both boards the same, but still oversize, in width.

Cuts must be neat and clean.

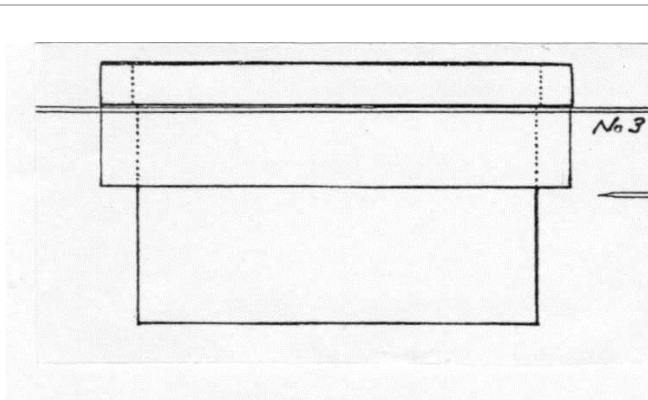
Fixing the Boards

Attention: before continuing, mark on the interior of the HB the level of the head.

Firstly ensure that the HB assembly is well fixed to the book with the aid of three small drops of PVA, at the level of the boards, on the muslin. Position the HB assembly on the back of the book with equal overhangs head and tail.

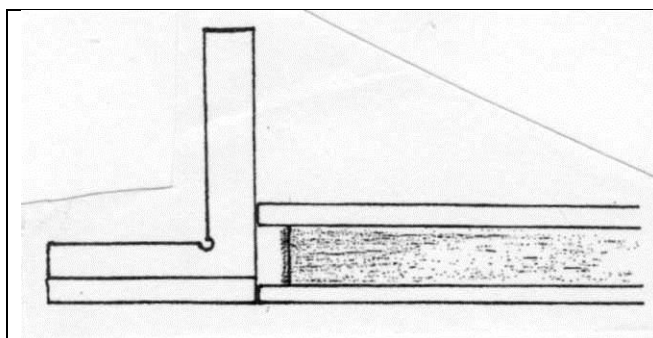
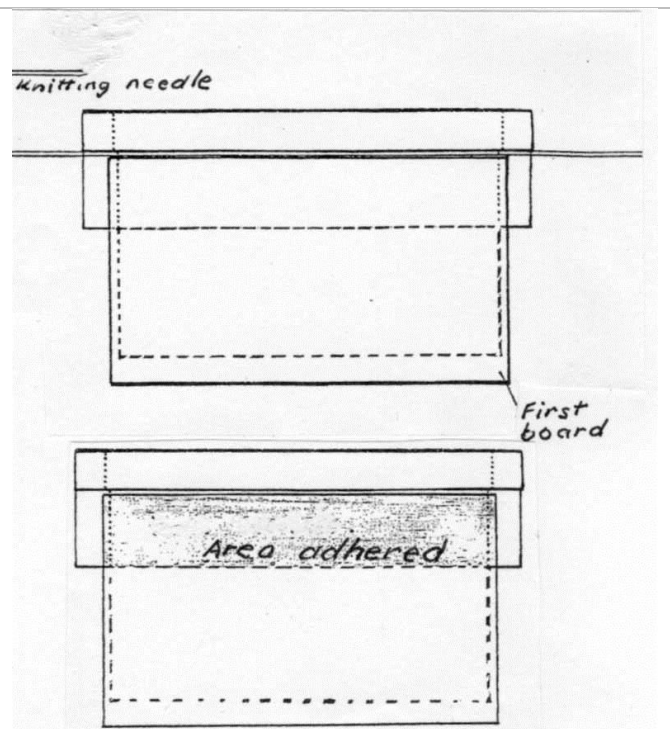


Place a No 3 knitting needle against the shoulder and then position a board against it. Hold the board in place, remove the needle, and draw a line on the kraft paper along the board edge. Do the same on the other side.



Using PVA, adhere out the verso of the first board to a maximum width of the line to the edge of the kraft paper (the boards are fixed to the HB assembly only).

Replace the needle, place the first board against it on the line and check that the booksquares are equal



Turn over the book and do the same with the second board ensuring this time to check both boards are square and booksquares are correct.

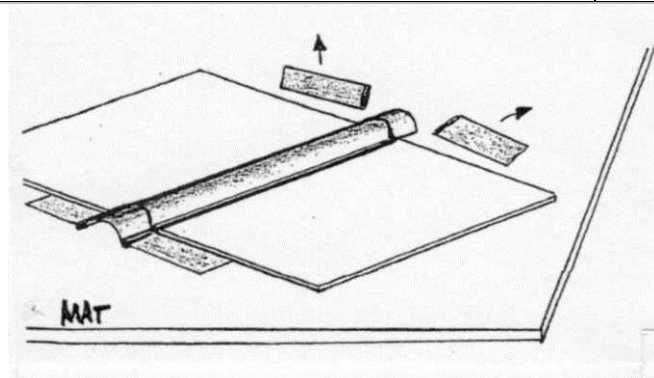
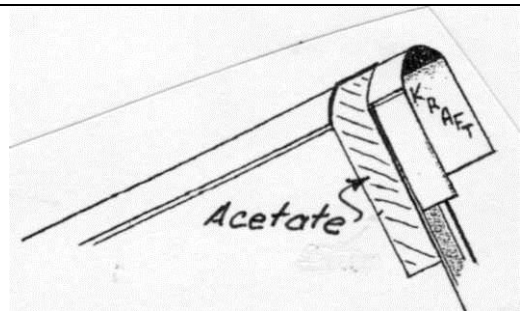
To finish, check that the HB assembly and the boards are not adhered to the construction pages. Place two acetate sheets and leave to dry between pressing boards and under weights.

Drying time + 4 hours.

Trimming the HB Assembly

Place a long band of acetate at the level of the boards at the head in order to trace a line at that level across the HB assembly

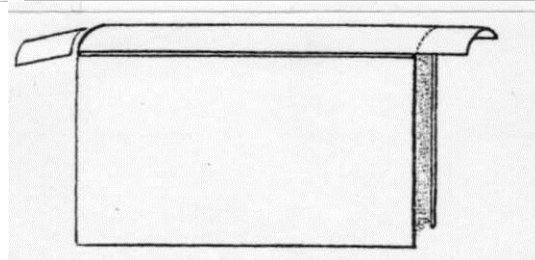
Do the same on the tail.



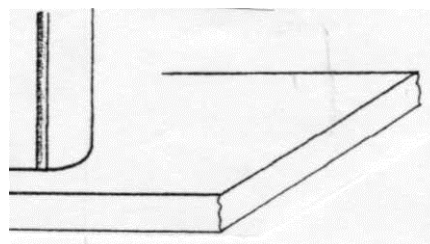
Carefully unpick the HB assembly and cut off the PVA dots.

Place it on a cutting mat and cut the kraft paper to the level of the boards.

To cut the card to size, place the HB assembly fore-edge down on the bench and trim with scissors. Check on a flat surface and rectify if necessary with a sanding block.



Check on a flat surface and rectify if necessary with a sanding block.

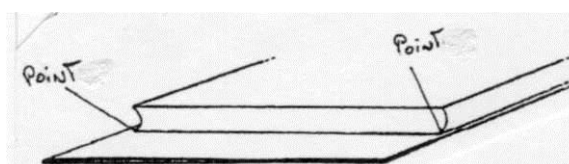


To finish, replace the HB assembly on the book and check that the headbands are not higher than the HB assembly.

Cutting the Fore-edges

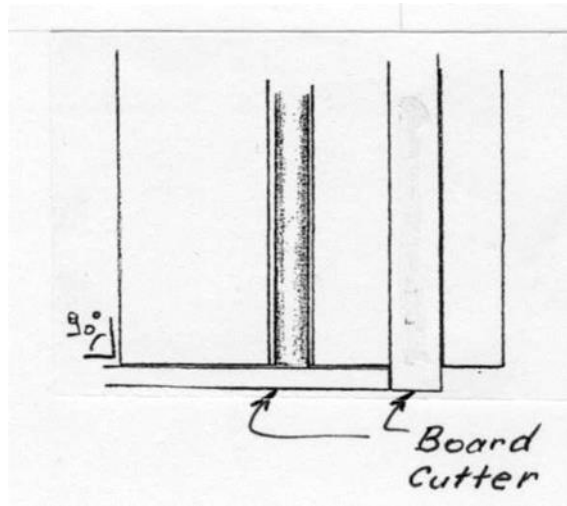
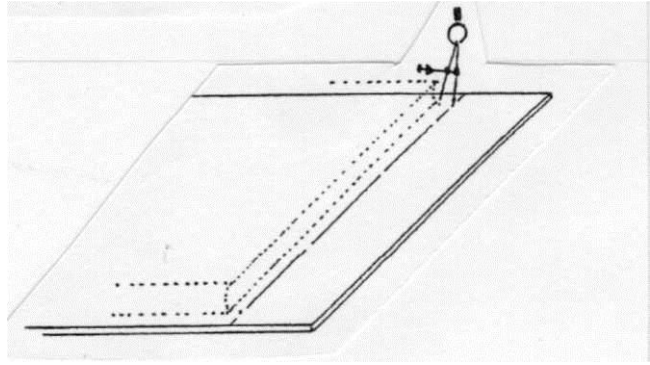
Position the HB assembly on the bookblock so that the booksquares on head and tail are equal.

Mark the four corners of the bookblock on the boards.



Use the dividers to mark off the head and tail booksquares on the fore-edge.

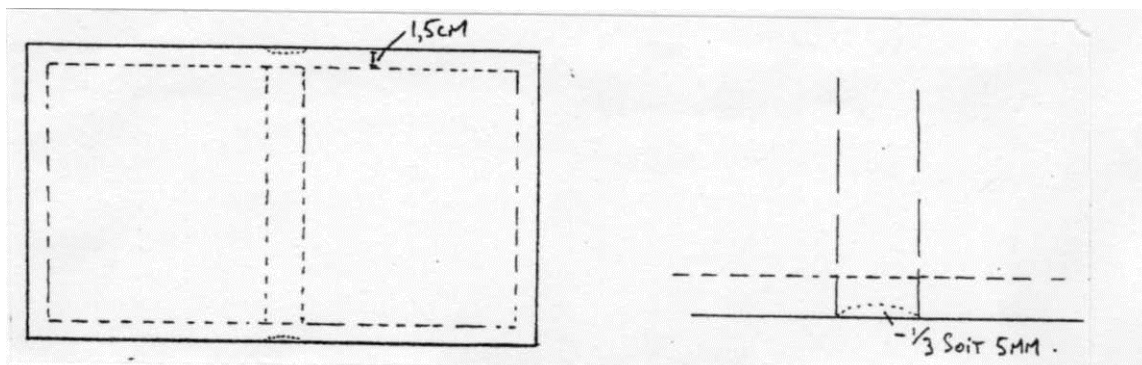
Draw pencil lines, place the bookblock in its case and verify the lines of the fore-edge booksquare.



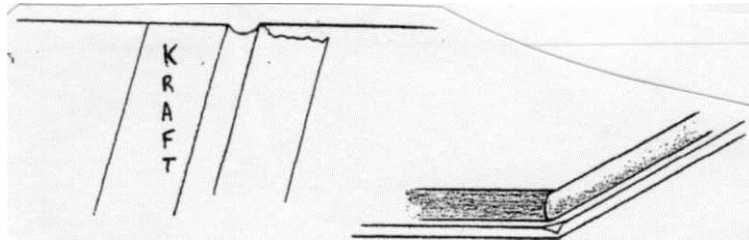
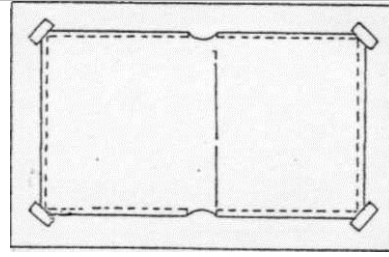
Cut the fore-edge in the board cutter.

Covering

Cut cloth: Height = boards plus 3 cms
 Width = twice boards plus back plus 3 cms



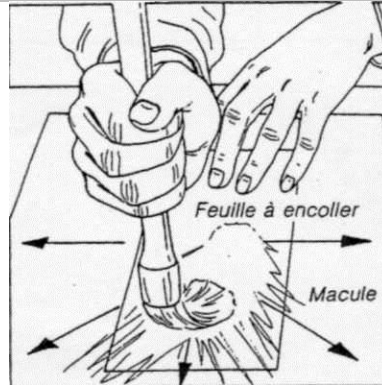
Fix the cloth to a large waste sheet with sticky tape at the corners. Draw in the outline of the case.



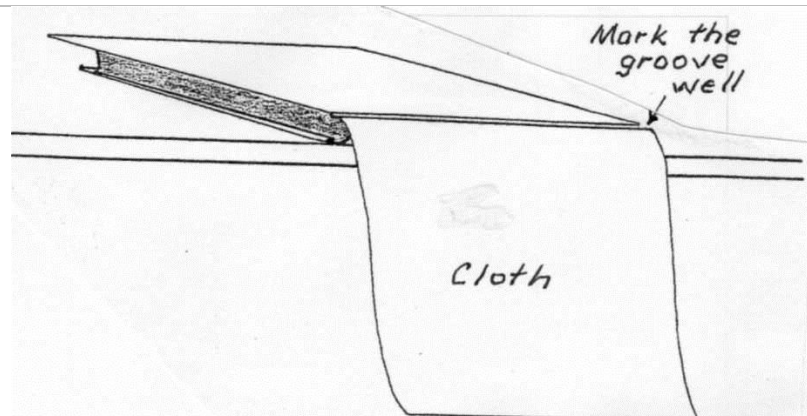
Lightly sand the kraft paper at the interior of the HB assembly at the areas where the turn-ins will go. Cut a small bevel at the interior of the corners to avoid them being too thick after covering.

Prepare a mix: 1/3 PVA, 2/3 paste (MC).

Adhere out the cloth going from the centre to the edge. (The sticky tape prevents the cloth from curling).



Place the closed book in the outline of one board on the cloth and remove the sticky tape. Get rid of the waste sheet. Quickly turn the book over and place it on the edge of the bench with the overhang of cloth over the edge. Smooth down the cloth with the palm of the hands then lightly lift the cloth in order to reposition it to the groove at the shoulders.

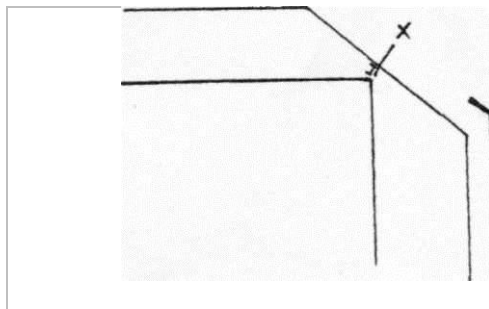
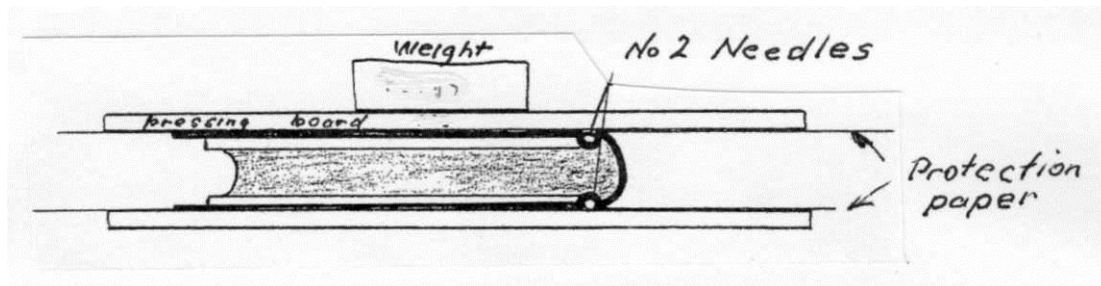


Mark the shoulders groove with a bone folder over a protection paper (or use a Teflon bone folder). Then wrap the cloth around the back and rub well.

Turn over the book and hold the cloth high with the left hand. Push down gently and mark the shoulder groove. Finally place in position the remainder of the cloth and rub down well.



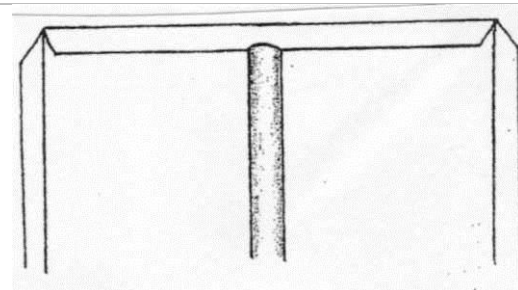
Check and place your book under weights between two pressing boards for 10 minutes and with No 2 knitting needles in the shoulder grooves. Protect the book with a clean sheet under the pressing boards.

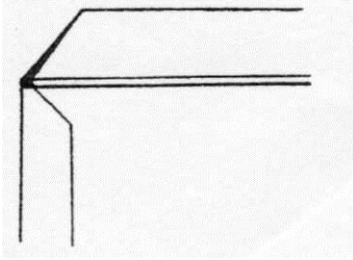


For the turn-ins, remove the bookblock from the case.

Cut the cloth corners a board thickness plus 1 mm away from the board corners.

Adhere out the turn-ins again. Turn in at head and tail without deforming the shoulder grooves. To turn in, mark well the edges of the boards in order to have sharp folds.





For the turn-ins on the fore-edge, form well the fold on the boards with a pointed bone folder so that there is not too much thickness in that area. Push hard with the bone folder after finishing.

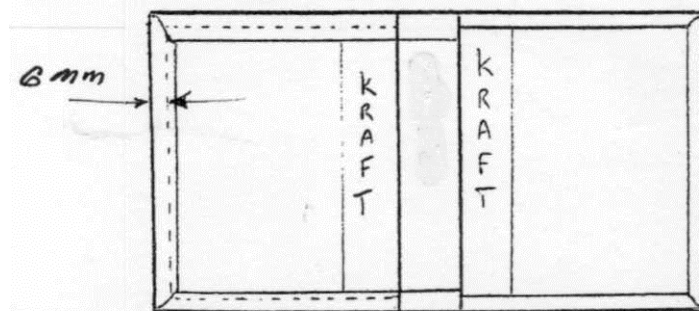
Replace the bookblock in its case. Insert acetate sheets and blotting papers to protect your book from moisture. Again wrap up your cover and replace the knitting needles before putting it all between pressing boards and under weights. Leave dry one night.

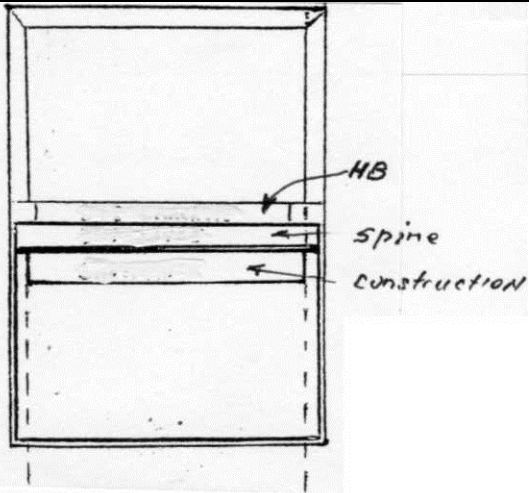
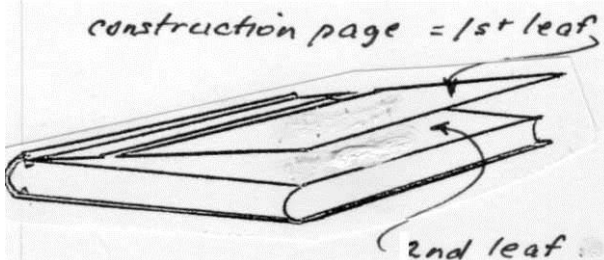
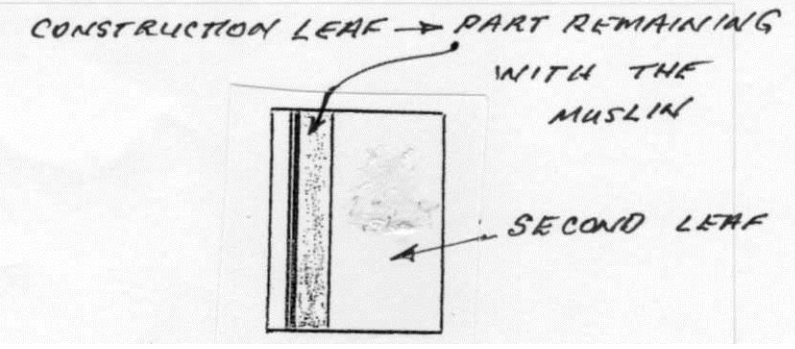
Case-ing In

Trim the turn-ins to 6 mm.

Carefully lift the surplus cloth.

Sand the kraft paper.



 <p>HB</p> <p>Spine</p> <p>Construction</p> <p>Extend the trimming cut lines of the turn-ins</p>	<p>Replace the bookblock in its case and line up the booksquares. Without fully opening the book, mark on the construction sheet the extension of the trimmed turn-ins so as at the time of the adhering of the construction page, it would not cover the turn-in, but on the contrary, lay perfectly between.</p>
<p>Remove the case and cut the construction page while keeping only the parts adhered to the muslin. Ensure the same width for the two construction pages.</p>	 <p>construction page = 1st leaf</p> <p>2nd leaf</p>
<p>Recut equally on head and tail following the last direction. Keep the offcuts of the construction leaves.</p>	 <p>CONSTRUCTION LEAF → PART REMAINING WITH THE MUSLIN</p> <p>SECOND LEAF</p>

Place the book precisely in its case. Open one side without disturbing its position and adhere out with PVA. Slide under a zinc and waste sheet. (DO NOT ADHERE THE SPINE). Once adhered, take out the zinc and waste sheet and reclose placing the off cut of the corresponding construction leaf, then half open gently and with the bone folder, adjust precisely the positioning of the piece adhered.

Once adhered, close the book and once again mark the shoulders and push on the exterior board. Do the same on the other side.

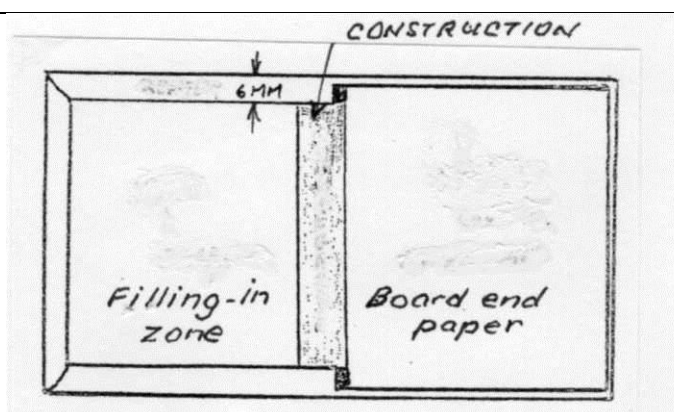
To finish place an acetate sheet and blotting paper between the adhered construction page and the coloured endpaper, each side. Replace the exterior protection and No 2 knitting needles and leave to dry between two pressing boards under weights for a minimum of 4 hours without opening.

Interior Filling-in

Using the same type of paper used to fill in the spine, fill in the spaces on the inside of the boards between the trimmed turn-ins and the edge of the construction leaf.

Cut a piece bigger than the area to be filled in with a right angle marked. Recut to the exact size.

Adhere out with PVA and leave a little time for the paper to stretch. Place it in and check that it goes perfectly in its place. Rub well to ensure there are no air bubbles.



Leave to dry under weights closed with a zinc or acetate sheet and blotting paper. 12 hours minimum.

Adhering the Coloured Endpapers

Board Endpapers

Slide a zinc, a waste sheet under the endpaper, open well the board and paste out with MC covering well over all the endpaper so that the coverage will be regular and the paper stretches evenly.

After, get rid of the waste sheet, close the book twice pushing hard on the board into the shoulder whilst holding it at 90° pushing down against the adhered area without relaxing.

Immediately after, turn the book over, lift a minimum in order to ensure the absence of folds and air bubbles. If there are, smooth out the sheet with the flat of your hand. Now place an acetate sheet and blotting paper in the place of the zinc.

Do the same on the other side and leave to dry under weights, preferably with knitting needles in place.

Coloured Flyleaves

If they are just plain coloured papers, leave them as they are. Otherwise, if they are decorated papers, adhere the flyleaves to the first white page in the following way.

Cut two waste sheets to the following dimensions:

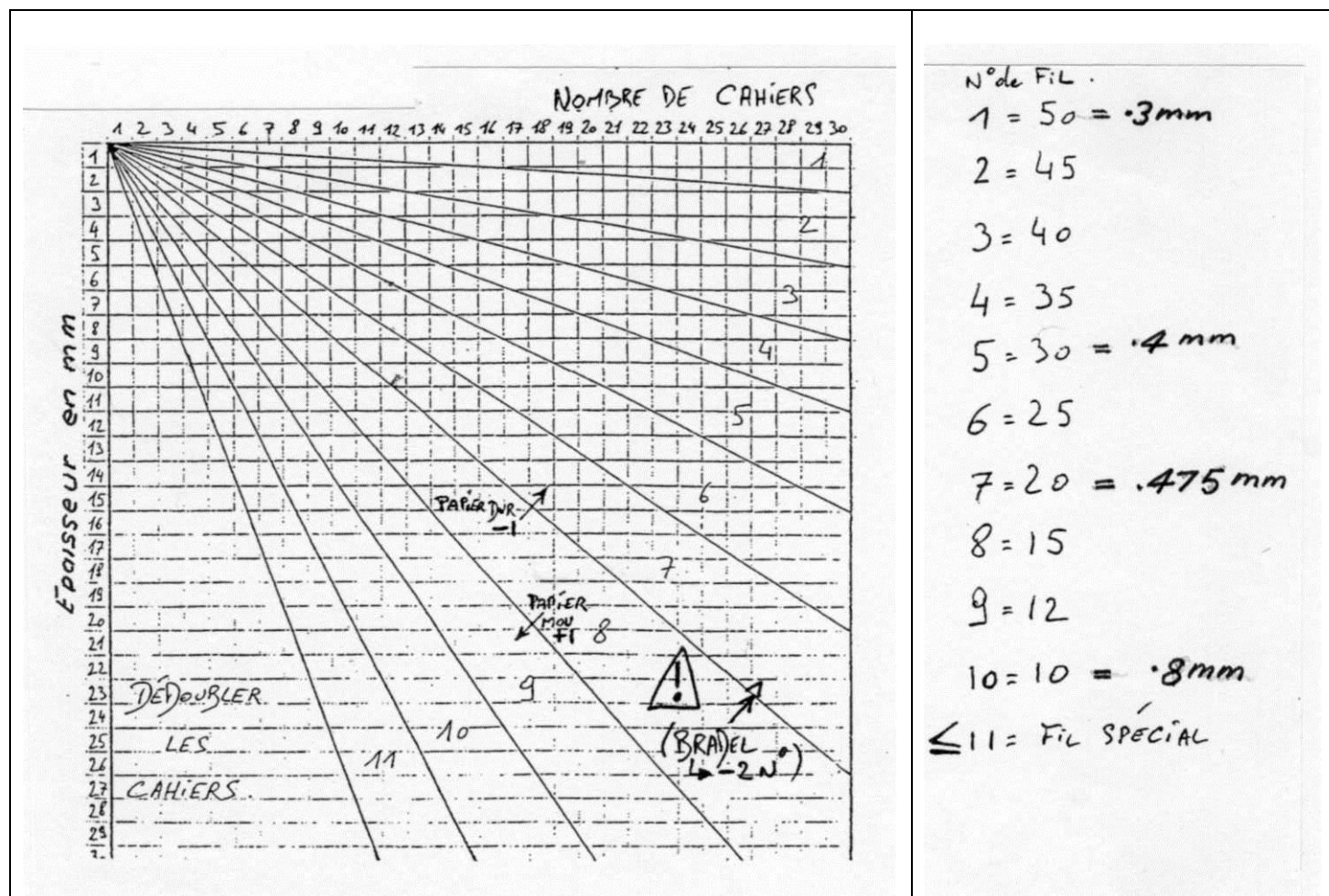
HEIGHT = height of a white page minus 1 cm
 WIDTH = width of a white page (first leaf) minus 0.5 cm.

Slide a zinc and waste sheet under the first white page. Position the trimmed waste sheet ON the first white page so that there is a 0.5 cm margin on head, tail and fore-edge.

Adhere out the three margins with PVA and then remove all of the waste sheets. Leave the zinc in place and close the flyleaf onto the white sheet, being careful to position it perfectly. Once correctly adhered, replace the zinc with an acetate sheet and blotting paper, and place another blotting paper and acetate sheet on the flyleaf.

Close the book and do the same on the other side.

Leave dry under heavy weights for a minimum of 12 hours.



DOS INITIAL	DOS COUSU	EN MILLIMÈTRE.	DOS INITIAL	DOS COUSU
5	6,25		23	28,75
6	7,5		24	30
7	8,75		25	31,25
8	10		30	37,5
9	11,25		35	43,75
10	12,5		36	45
15	18,75	take the difference + divide by the number of sections	37	46,25
20	25		38	47,5
21	26,25	ie 2.75 ÷ 12 mm	39	48,75
22	27,5		40	50

NOTES