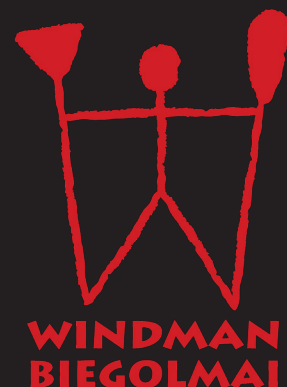


KITES FOR CONNOISSEURS

WOMBAG

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Kites for Connoisseurs is a collection of plans for kites designed by Andreas Ågren. These kites often have a unique technical twist. The plans can be found at <http://windman.se/kite-plans> and they may not be used for commercial purpose without written consent.



WomBag on the chest, ready to launch a kite train through the smaller top lid using the complete OMMP System.



Packing down a kite train through the larger front lid.

The WomBag kept in place by knees resting on the front lid.

WomBag and the OMMP System.

The **WomBag** is not a kite, just a bag that makes launching a kite train, like the *Nyoman Shimmy* or the *Acrux train*, more secure and less prone to hassle.

- The train elements are secured in a size optimized container.
- The body of the kite flier protects the train stack from sudden wind gusts.
- The kite flier is fully mobile and can move around while launching to avoid sudden obstacles on the kite field or in the sky.

For launching the kite flier wears the bag on the chest (or the belly) with a strap around the neck, leaving both hands free. The bag has two openings: One on the short end (top) of the bag for launching and one on the flat side (front) of the bag for packing/stuffing the kites. When packing the bag after flight it is horizontal on the ground, with the opened lid on the ground behind the bag.

OMMP System.

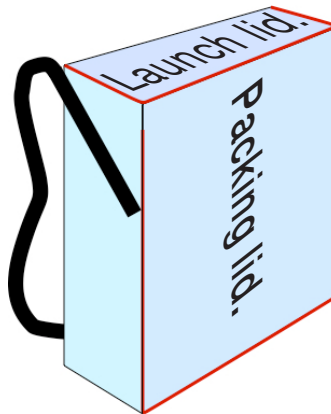
OMMP - *Omnia Mea Mecum Porto* ("All that is mine I carry with me"): To be fully mobile when launching a kite train the kite flier also needs to carry the line spool. Even when using a WomBag, both hands might be required for the kite train. The option of having the line spool lying on the ground would hinder quick relocations. Therefore a line spool hook with an integrated belt clip is included in the OMMP System.

Flat box.

WomBag is basically a rather flat “box” with two lids that both have a zipper on three sides.

Sewing zippers on bag with a lid is a craft by itself. This plan does not show the details on exactly how to do it; there are videos on Youtube for this. One basic video, that is pretty straight to the point without too much chit-chatting, is <https://youtu.be/CYUk283RSrM>.

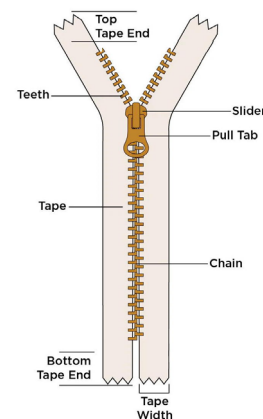
This plan thus only gives the basic material measurements and indicates the basic steps.



Principle of WomBag with zippers (red in drawing) for the two lids.

Zippers.

In this description zippers by meter with separated zipper tapes have been used; see the anatomy of a zipper below.



Rounded lid corners.

Sewing a zipper round a sharp 90° corner is difficult. Therefore all lid corners with zipper are slightly rounded. A suitable radius is 35 - 40 mm (diameter 70 - 80 mm). This will shorten the circumference of the lid and thus the length of the upper half of the zipper. To get the length of the lower half of the zipper to match the upper half the side edges of the “box” must be shortened. This is done by chamfering 7 -15 mm on each remaining corner in the “box”, starting 50 mm down the edge, see details below.

In this description there are plans for two different bags. One is for a rectangular bag, optimized for a train of 30 - 35 diamond kites measuring 48 x 48 cm and to fit in a kite bag with an interior width of 38 cm. The other is for a pentagonal kite, like the *Acrux*, measuring 40 cm. The description also contains a suggestion on how to use the bag with a line spool holder.

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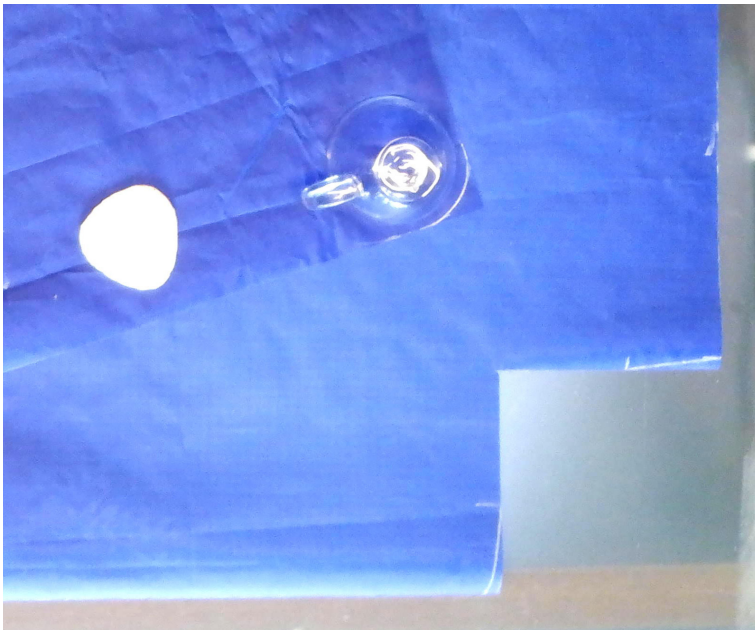
Rectangular bag.

Material for a rectangular bag for train elements sized 48 x 48 cm.

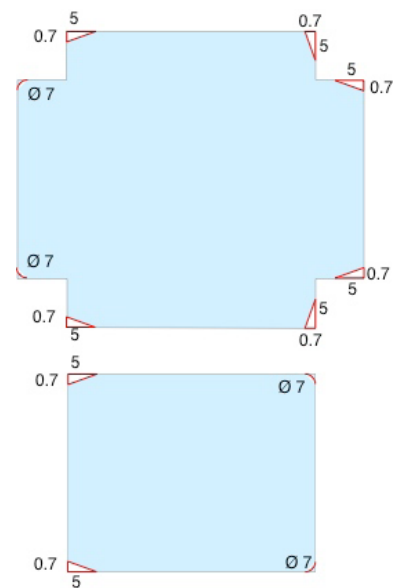
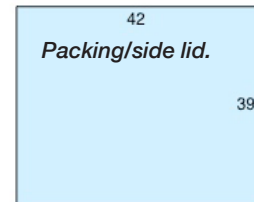
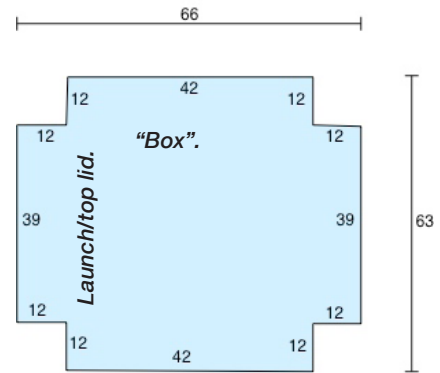
- Ripstop, approximately 70 x 100 cm.
- 2 bag zippers 70 and 130 cm long, or zipper by meter 220 cm, plus 2 sliders.
- Dacron tape, 3 x 150 cm.
- Lobster hook or velcro.

The height of the wall can of course be adjusted to fit the actual number of elements in the train. The height in this example is 12 cm, suitable for 30 - 35 elements.

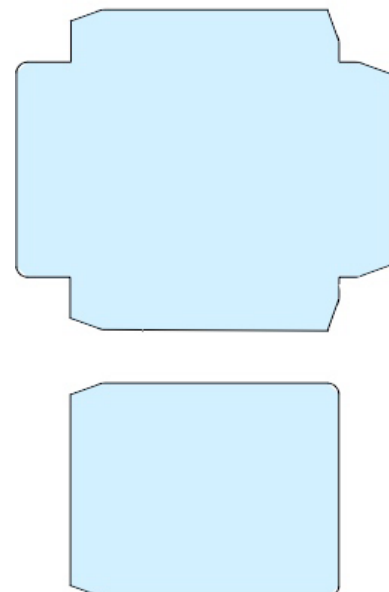
Chamferings



Marked corner chamferings. An espresso cup had the suitable diameter of 7 cm. The corner chamferings are made both on the lid part (top) and box part (bottom).



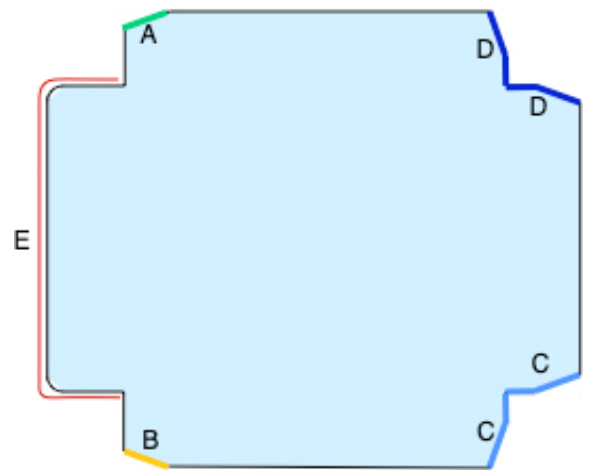
Measurements in cm - not so scale. The red triangles indicate the corners to be chamfered to adapt the length of the edge.



The two pieces of bag material with all corners chamfered.

Sewing order.

1. Sew the large lid onto the box by sewing the short (5 cm) slanted edges A to A (green) and B to B (orange).
2. Sew two corners of the "box": entire C to C (light blue) and D to D (dark blue).



E - upper part of the short zipper.

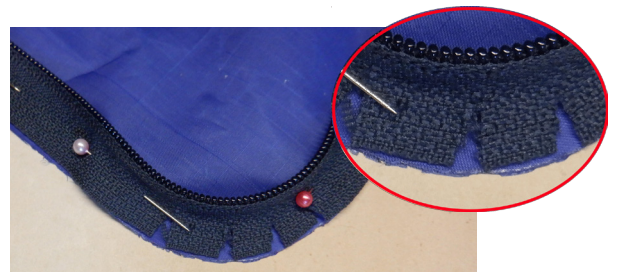


F - upper part of the long zipper.

3. Sew the first half of the short zipper along the edge E.
 - a. Put one half of the zipper with the teeth inwards and facing the lid material, and let the outer edge of the zipper tape follow the edge of the lid. Let the zipper tape end protrude 3 cm into the bag.
 - b. At 2 cm from the lid start and end, where the seam is to start and end, cut a short slit in the ripstop, in right angle to the edge, so the zipper and ripstop edge will be easier to fold (step d.)
 - c. At the rounded corner cut slits in the zipper tape.
 - d. Fold the zipper over to the backside of the lid so it is half hidden and the zipper teeth are facing out and up.
 - e. Sew the seam, starting 2 cm from the lid start and ending 2 cm from the lid end; this to be able to tuck in the zipper ends inside the bag.



The two material pieces sewn together into a "box".



The front of the zipper is facing the outside of the lid and the outer edge of the zipper follows the edge of the lid. The teeth facing inwards.



The zipper sewn around the lid corner.

4. Sew the second half of the zipper along the “box” edge. Here there are no rounded corners, just straight sewing.
 - a. Put the zipper tape on the outside of the “box”, with the teeth inwards and facing the box material, and let the outer edge of the zipper tape follow the edge of the “box”, aligning the end with the already sewn zipper half.
 - b. Fold the zipper over to the inside of the “box” so it is half hidden and the zipper teeth are facing out.
 - c. Sew the seam in the same way as above.
 - d. In one end of the sewn zipper parts cut the ends so the ends are equally long.



The front of the lower zipper part is facing the outside of the box and the edge of the zipper follows the edge of the box.



The zipper sewn around the “box” corner.

5. Continue in the same way (step 3) with the longer zipper along the edges of the larger lid F.
6. Sew the lower part of the zipper along the edge of the box in the same way (step 4).
7. Install the zipper sliders onto the zipper tapes for both zippers.
8. Tuck the zipper ends into the inside of the bag.
9. When both zipper sliders are in place block all zipper ends (by seams or by melting the plastic zipper teeth) so the zipper sliders can't accidentally run out of the zipper.
10. Sew seams across the zipper ends that are beneath the ripstop.
11. Sew a neck strap on the sides of the bag, slant across 30°. Adapt the length of the strap so the top of the bag is comfortably at about waist/chest level.



Neck strap in 30° angle on the bag side, from just below the top lid so it doesn't obstruct the train launching.

12. In one inner corner of the smaller top lid sew a hook for the line from the bottom train element, so that line is easy accessible when the flying line is to be attached.

Instead of a hook a piece of velcro can be used to hold the end of the start line from bottom element.



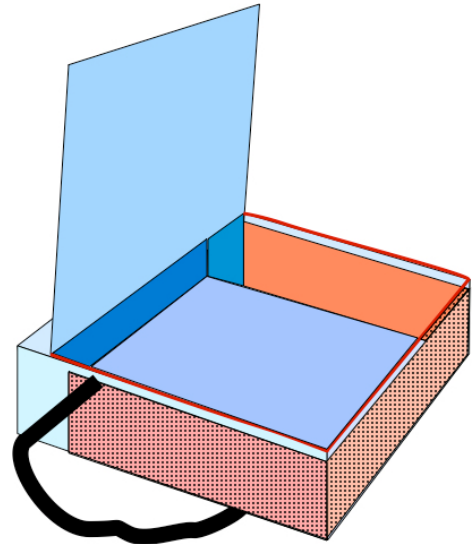
A lobster hook or a piece of velcro for the start of the train line (from the bottom element in the train), easy to open with one hand, and located out of the way in a corner of the top lid.



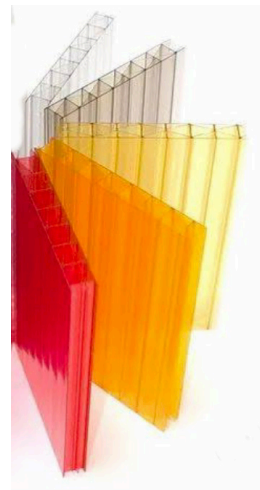
The connection line from the bottom train element secured in the lobster hook.

13. The insides of the box should be lined with e.g. a piece of canal acrylic board (multiwall polycarbonate sheet) or plastic cell foam to give a certain stiffness to the box sides while packing the train elements.

The stiff edge should be a little bit lower than the height of the box wall, running along three sides. It can have velcro patches or double sided tape in the corners to keep it in place when stuffing the train.



WomBag lined on the inside along three sides with an edge of multiwall polycarbonate sheet.



Multiwall polycarbonate board.



Plastic cellfoam.

Pentagonal bag.

Material for a bag for train elements in pentagonal shape, sized 40+ cm.

- Ripstop, approximately 70 x 120 cm.
- 2 bag zippers 88 and 115 cm long, or zipper by meter, 205 cm, plus 2 sliders.
- Dacron tape, 3 x 150 cm.
- Lobster hook or velcro.

WomBag for Acrux 40 cm.

The Acrux train requires a pentagonal WomBag, which is made of four pieces of ripstop. It is slightly more complicated to sew than the rectangular bag, hence the more detailed step-by-step below. Full scale templates for the four pieces are included in this plan, but the measurements are also indicated on the full page drawing on page 12.

The height of the wall can of course be adjusted to fit the actual number of elements in the train. The height in this example is 12 cm, suitable for 35 - 45 elements.

For the sewing of zipper bands see the description of the rectangular bag. (Teeth inwards and downwards, slits at the curved corners etc.)

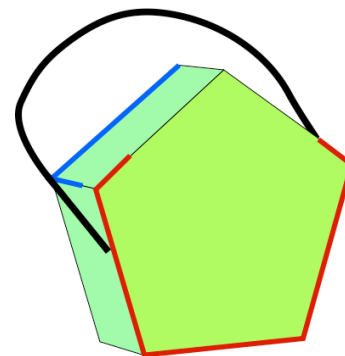
Since this is a four pieces box with an inside and an outside, be sure to keep track which is which when sewing pieces together.

1. Cut out the four bag pieces.

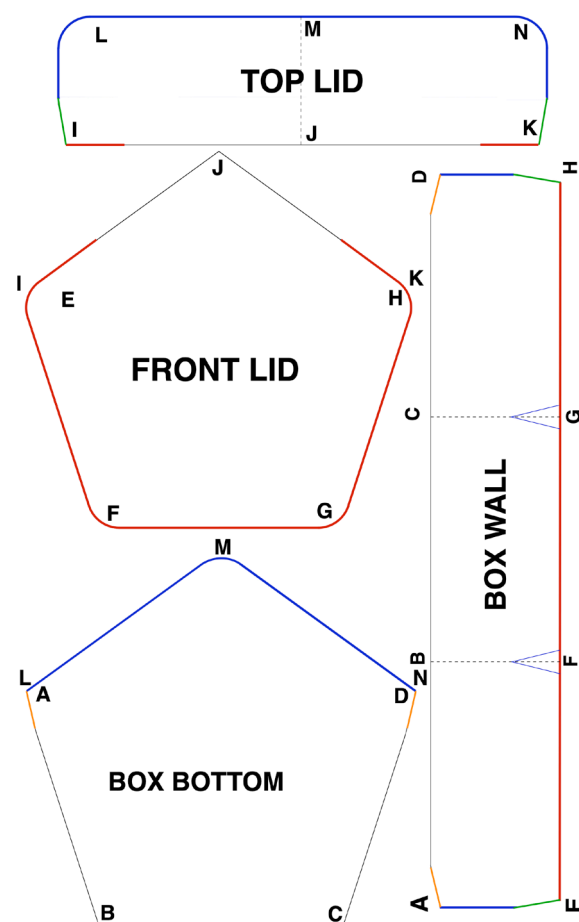
Note the chamferings in the drawing:

- *Green* - On the lower corners I and K of the top lid piece and the corners E and H of the box wall piece.
- *Orange* - On the upper corners A and D of the box bottom and the corners A and D of the box wall piece.

The chamfering colours denote which chamferings should be sewn together.



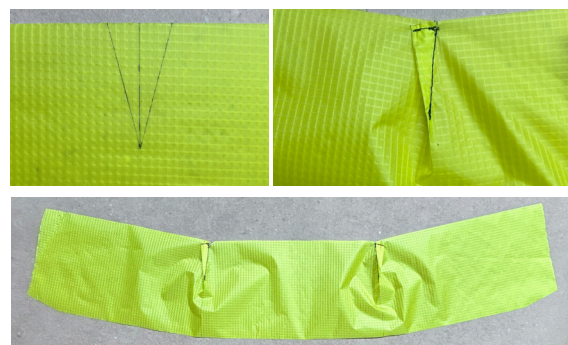
In the WomBag for the Acrux train the top lid (launching lid) opens in the opposite direction compared to the WomBag for Nyoman Shimmy: away from the body. Blue line indicates the zipper for the launching lid, red line indicates the zipper for the packing lid.



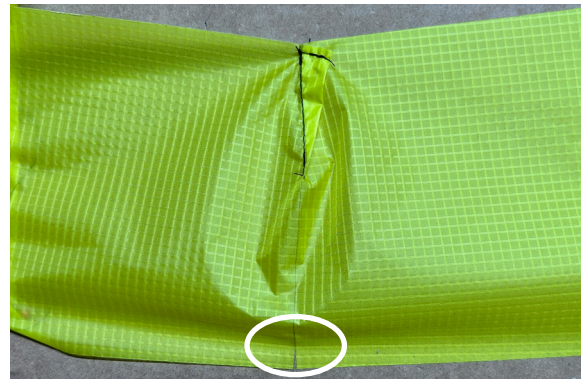
This part plan is reprinted on page 12 in full page size with all measurements indicated.

Blue line indicates the zipper for the launching lid, red line indicates the zipper for the packing lid.

2. On the box wall piece sew the two darts:
 - 29.5 cm from each chamfered end of the piece.
 - 6 cm long and 15 mm on each side of the centre.



3. Cut 1 cm deep slits opposite the darts on the box wall piece.



4. Sew a 115 cm long piece of zipper tape on the pentagonal front piece.
- Make marks on both sides of the top corner: 16 cm resp. 19 cm.
 - Place the zipper tape starting at the 16 cm mark from the top corner and then start the seam at the 19 cm mark.
 - Finish the seam at the 19 cm mark at the other end. The zipper tape will thus protrude some 3 cm towards the top corner and will be trimmed later.



5. Sew the the box wall onto the pentagonal box bottom piece, starting from the middle of the edge without darts (to ascertain symmetry), so the darts come on the inside of the box.

The corresponding middle on the box bottom piece is opposite the rounded corner.

The “orange” chamfering will be aligned on both sides.



6. Sew an 88 cm long piece of zipper tape on the top lid, with the start of the zipper tape aligned with the long straight edge and the seam on the zipper tape starting (and finishing) 3 cm from the edge.



7. On the top lid, cut 1 cm deep slits in the ripstop just where the seam for zipper tape starts and finishes.



Picture turned 90 anti clockwise from picture above.

8. Sew the top lid piece (with the just sewn zipper tape) onto the box wall edge with short seams along the chamfering, green in the drawing, starting from the straight edge till the zipper seam.

- Top lid corner **K** to box wall corner **H** and top lid corner **I** to box wall corner **E**.



The top lid piece on top of box wall piece.

9. Cut a 1 cm deep slit in the short edge of the box wall opposite the slits above (step 7) and fold over the 3 cm part and sew the second seam.

10. Repeat steps 8 and 9 for the other side of the lid.



1 cm slit with fold over seam.

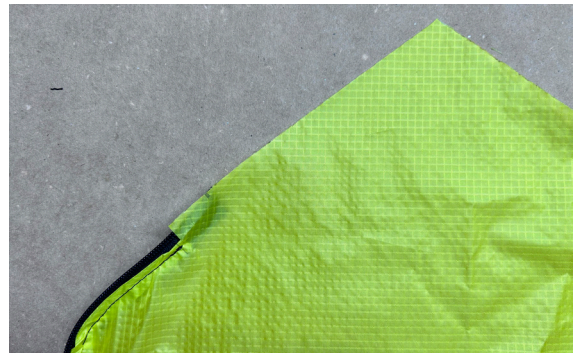
11. Sew the other half of the 88 cm top lid zipper tape onto the box, mirrored to the first half, with the starting end aligned with the first half and the zipper tape seam starting 3 cm in.



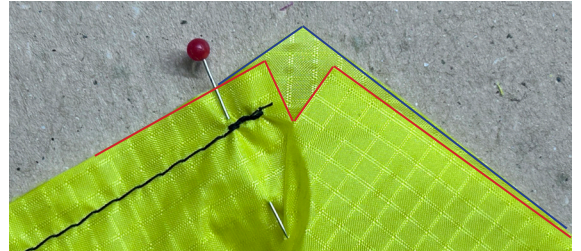
12. Cut a 1 cm deep slit in the middle of the long zipper free edge of the top lid.



13. On the pentagonal front piece (with the 115 cm long zipper tape) cut 1 cm deep slits just outside the zipper seams.



14. Sew the top lid onto the front piece, starting from the middle of the long zipper free edge (where the 1 cm slit is):
- "Open up" the top lid edge at the slit symmetrically around the front piece top corner.



The edge of the corner of the front piece is indicated with blue line and the slit (and opened) straight edge of the top lid is indicated with red line.

- Sew the seam about 18 cm down till the zipper tape on the top lid.
- Then sew also the other side.



In this picture the pieces are flipped over so the front piece is on top.

15. At the end of the seams, on the top lid, cut 1 cm slits where the corresponding slits in the front part are, fold over the ripstop double and sew the second seam.



The second part of the 115 cm long zipper tape will run along the edge of the box, starting and finishing a few cm in on the top lid.

16. Make a mark on the edge piece where the seam for the first part of the 115 cm long zipper tape starts on the front lid.



17. On the second part of the 115 cm long zipper tape chalk a mark 3 cm from the end.
18. Align this mark with the seam start mark and sew the zipper tape onto the box edge, finishing the seam at the same point as the first seam.

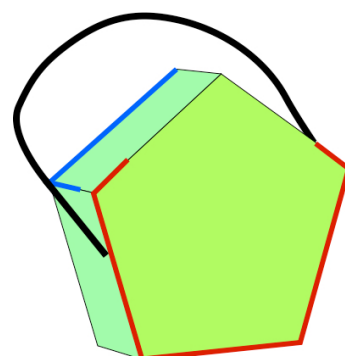


Install the zipper sliders onto the zipper tapes for both zippers, tuck the ends of the zippers into the bag, trim the length of the zippers and block/close the ends as described for the rectangular WomBag.



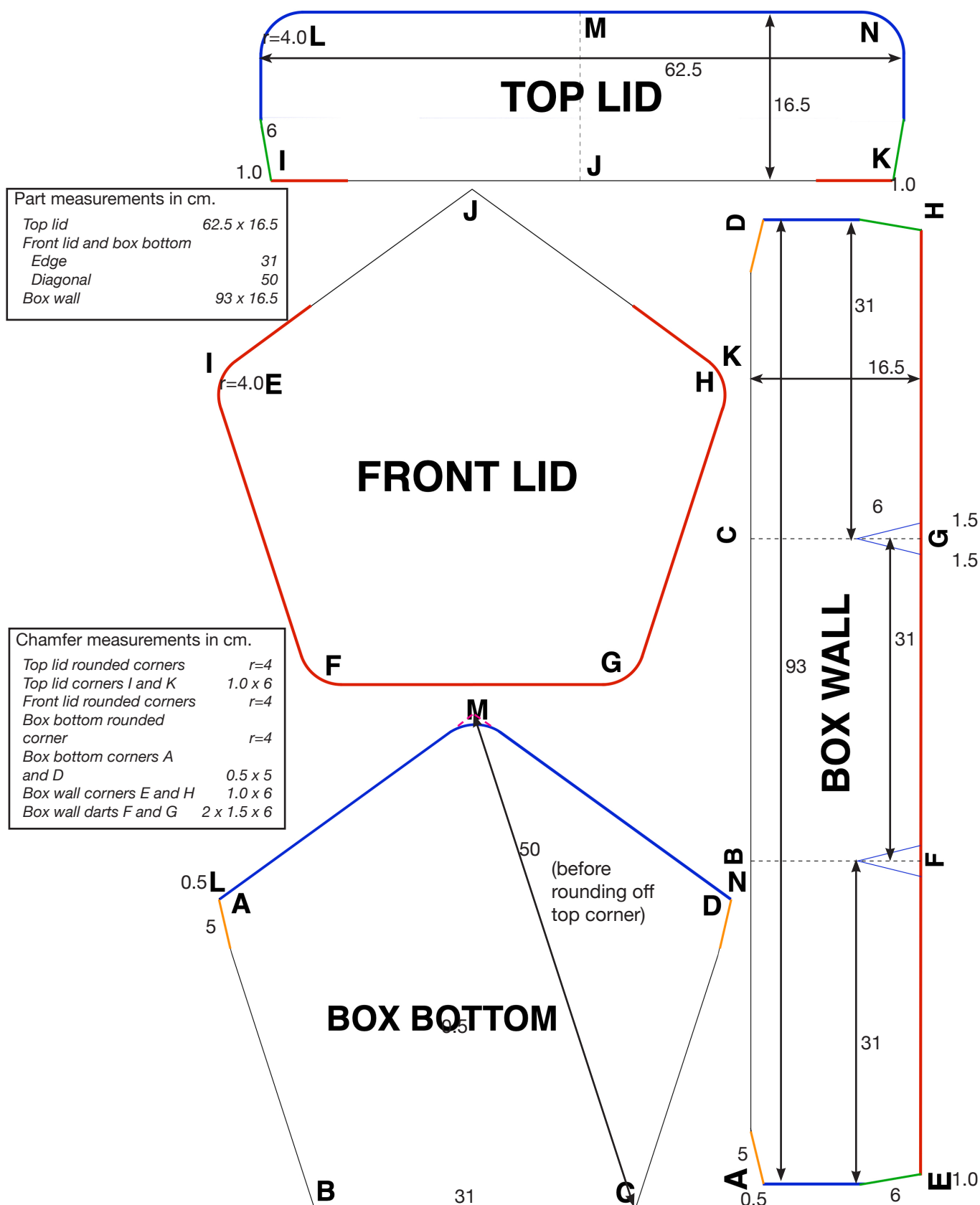
Finished bag (without neck strap).

Sew the neck strap and line the inside as described for the rectangular WomBag.



Sew the neck strap so the box bottom will rest on the chest and the top lid will open away from the chest when the bag is hung around the neck.

Parts for pentagonal WomBag for a 40 cm Acrux train.



All rounded corners have a radius of 4 cm.

Blue line indicates the zipper for the launching lid, red line indicates the zipper for the packing lid.

The letters A - N are paired to indicate where points in the material pieces meet, e.g. A in the inside left corner of the box bottom meets the A in the bottom left corner of the box wall piece, and the L at the outside left corner of the box bottom meets the L at the rounded upper left corner of the top lid.

The two pentagons are of the same size, only with different chamferings.

OMMP System.

Not only the kite train bag should be fully mobile on the kite field, but also the spool/reel with the flying line should be mobile as this flying line is to be connected to the start line of the train before launching starts. One can of course have the line spool/reel lying on the ground when launching, but if one has to change position quickly it is better to also carry the line spool.

Holder for the line spool.

A holder for a line spool can easily be made from a PVC tube, using a hot air gun to heat the PVC and make it bendable into suitable shape.

Here is an example of a spool holder made of 11.4 cm Ø PVC tube with hook for the spool and an integrated clip for the belt.

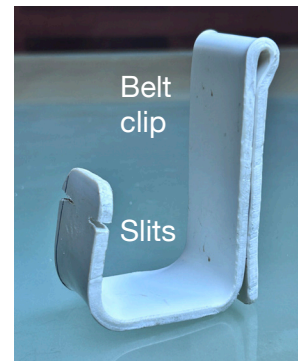
The spool hook is clipped around the belt or trouser waistband.

To avoid that the line unintentionally rolls off the line spool while launching there are slits in the top of the hook where the line can be secured.

Optionally the spool hook can be fitted with a lanyard so it not accidentally gets lost on the kite field.



PVC tube, 4" (11.4 cm) Ø, with a 4 cm cut off piece to make a spool holder.



Spool holder with hook for the spool, clip for the belt and slits to keep the line in place while launching.



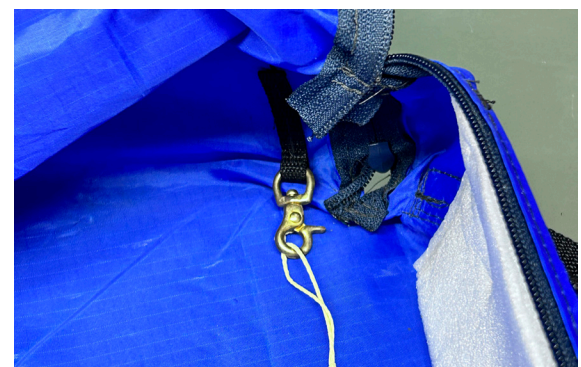
To avoid that the spool holder slips off the belt and gets lost, a lanyard with a carabiner can be added to the spool holder.

Packing train elements in a WomBag.

The secret of hassle free launching of a kite train is, apart from selecting a suitable launching spot, a careful packing of the elements, much like when packing a parachute. Without careful packing the line parts between the elements can get tangled or stuck around train element corners and hinder the launching, which can be a nuisance for the solo kite flier. However, the way the elements are packed in the bag when bringing down the train after a flight is not so important, especially if there is a hurry, but before next launch the train should be re-packed in a careful way.

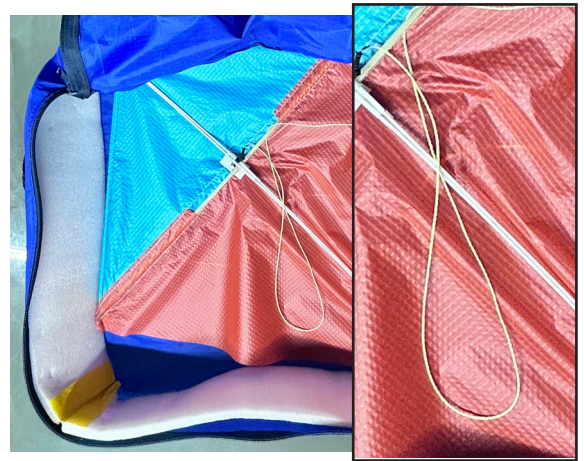
Packing before launch (and re-packing after field packing).

1. Hook the start of the train line from the bottom element in the lobster hook (or velcro strap) in the launch lid.



Start line from the bottom element secured in the top lid for easy access.

2. Place the bottom element at the bottom of the bag with the top corner to either the left or the right of the top corners of the bag.
3. Pull down the line part to next element in a loop behind the cross spar on that side of the spine which is nearest to the top of the bag. Pull down the line loop to the bottom of the bag.
This is to avoid that the full length of the element line is free to tangle or get stuck in the bag during transport.
4. If the elements have tail, swoop up the tail and place it on top of the element.
5. Collect the rest of the element line on top of the element.
6. Continue with the next four elements in the same way.
For each five element change direction of the element, i.e. shift the top corner of the element to the other top corner of the bag.
This is to avoid that the thickest part of the elements are all on top of each other.
7. Shift also which side of the spine the line loop will be pulled down (see step 3).
8. Keep shifting direction of the element spine for each five element until all elements are packed.



Packing elements 1 - 5 with element top corner in left corner of the bag and the line sling pulled down behind the cross spar to the right of the spine.



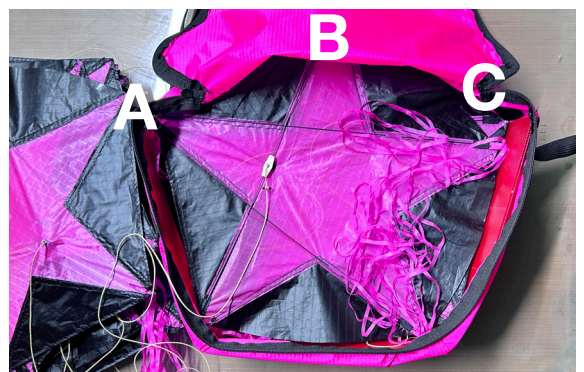
Packing elements 6 - 10 with element top corner shifted to the right corner of the bag and the line sling pulled down to the left of the spine.

Packing pentagonal box with Acrux train.

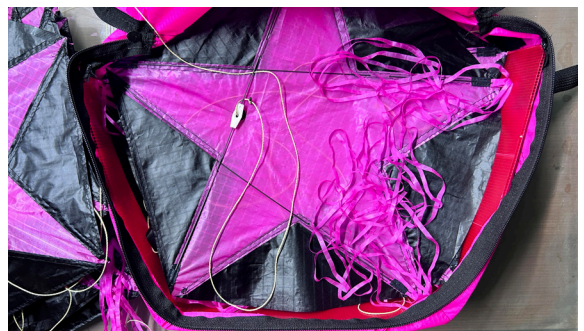
The packing of an Acrux train is done in mostly the same way as for a rectangular bag, only the pentagonal bag has three top corners. Keep alternating the top of the element between left, top (centre) and right corner of the box.

Since the top corner of the bag is still covered by the lid even when the lid is open it is usually easiest to slide in the train element into that corner, regardless of if the top of the element goes to the left, centre or right corner.

9. Slide the corner next to the top point of the element into the top corner B of the bag.
10. Place the top point of the element in one of the two side corners A or C.
11. Place the tails on top of the element.
12. Pull down the element line behind the upper cross spar.



Element with tails in the bag.



Element line pulled down behind cross upper spar.

13. After placing five elements in the same direction in the bag change the direction for the next five elements, etc.



New packing direction for the next five elements.

14. For protection during travelling a piece of thick cardboard can be placed at the top of the bag.



Card board protection when travelling with bag.

Launching.

15. Clip the spool holder to the belt (or trouser waistband).



16. Put the WomBag strap around the neck so the bag rests on the chest.

17. Open the launch lid fully.
- For the rectangular WomBag the lid opens towards the chest and it should be tucked behind the bag.
 - For the pentagonal bag the lid opens outwards from the chest, and the upper corners of the bag should be turned inside out

18. Hook off the start line from the hook (or velcro strap) in the launching lid and connect it to the flying line.



Launch lid on rectangular bag opened towards chest and tucked in, start line attached to flying line on spool.

Top element carefully pulled out.



The launch lid of the pentagonal WomBag opens outwards from the chest. Both top side corners of the bag should be twisted inside out.

19. Put the line spool in the spool holder and secure the line in the line slit with as little slack as possible on the line.



20. Carefully pull out the top element from the bag. If the element has a tail make sure it is not tangled.
21. Release the top element while holding the element line.
22. Let the top element get airborne to gently pull out the line to the next element till that element is pulled out of the bag, making sure no element corner gets stuck in the bag. Again, if that element has tail, check that the tail is not tangled.
23. Repeat for all elements in the bag.
24. When the last element has been released, unhook the line spool from the spool holder.



Packing up after flight.

25. Close the launching/top lid.
26. Place the bag on the ground and open fully the packing lid of the bag so the lid comes on the ground.
27. Kneel down on the lid to keep the bag in place while stuffing the elements. (By this the lid is also protecting the knees if the ground is pebbly or hot.)



Kneeling on the opened lid to keep the bag in place. Alternate the direction of the spine.

28. Stuff the elements without any particular care, only by altering the direction of the spine for each five elements.
- For the rectangular WomBag alternate the spine direction between left and right top corners.
 - For the pentagonal bag alternate the top of the kite between the three top corners A, B and C.



For the first five elements the top of the Acrux goes into corner A of the bag. Usually it is easiest to always first insert the kite corner in bag corner B.



29. Re-pack when indoors (especially tucking in the tails separately for each element) as described above for as hassle free next launch.

For the next five elements the top of the Acrux goes into corner B of the bag, then five elements into corner C and then start over into corner A. The tails can be left outside of the bag till all elements are packed. Then all tails are swooped into the bag for later repacking (each tail with its own element).



*A **Wombat** is a marsupial, just like the kangaroo: it has a pouch where it protects its young.*