



How to design and make a lamp shade for table lamps

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www.eschaefer.de/hobbys/starkl/starkl.html

This is a description about my way to make a lamp shade for a **Coleman** (or any other) table lamp.

I've tried to describe the work to be done step-by-step and complement it with pictures in order to provide help and good understanding and enable everybody interested to take this as a guideline and make a new experience him-/herself.

The first thing to be decided is the style and material one wants to use. Shades can be somewhat straight or much more slanted. This very much influences the size of material as well as the form of the "bow" to be cut. If very stiff parchment or similar material is chosen and the rings give stability to the shade, no further inner supports (vertical rods etc.) are needed. If a cloth shade is considered, a self-adhesive supporting carrier foil is necessary to stick the cloth on and give the shade the required stability.

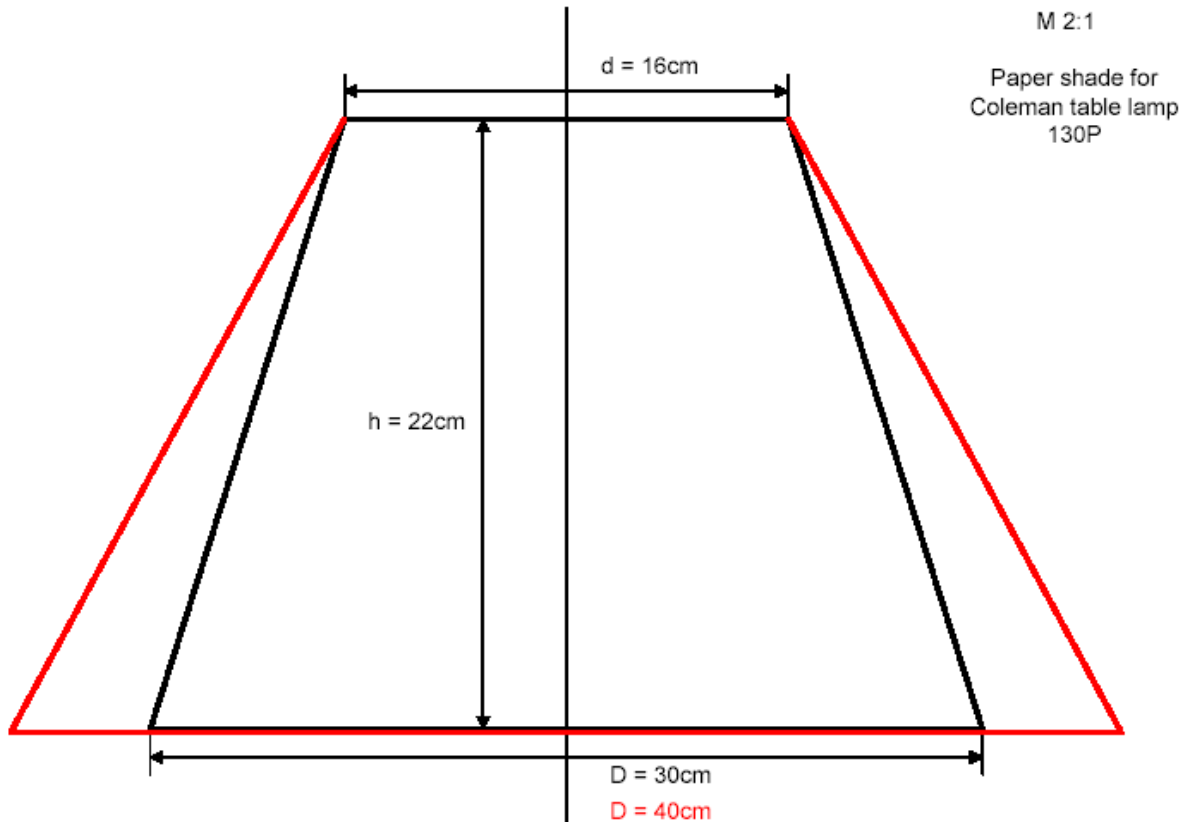
The required material for the shade is:

- One upper and one lower ring of required diameter (the upper with supporting rods and the centre plate to connect to the shade holder
- some paint to coat the rings to either match the color of the cloth or parchment material or just black to make it look somehow "invisible"
- Parchment, vinyl foil or any other stiff foil or plastic film, alternatively cloth of ones choice and self-adhesive carrier foil
- Fabric tape in matching color to tape the upper and lower shade rims to the holding rings
- applications to glue-on with appropriate glue (e.g. the upper printed layer of a paper napkin, properly cut-out and attached with special paper napkin-glue),
- Border trim for upper and lower border, if desired

Required tools:

- Marking tape for aux. lines and measures
- Pen / soft pencil
- Scissors
- Yardstick / ruler
- Large bow compass
- Protractor
- Eraser

Next thing is to decide on the size and shape of the new shade. Measurements (diameters and height) can be taken from an existing shade or can be decided to best suit one's own taste or best fit to the style of the lamp. An example with options is given in the following sketch (all measures in Centimeters):



After you've made your decision do the mathematics and calculate the details and the overall size of cloth or parchment required. I've provided an Excel spreadsheet to easily get the figures.

A screenshot of the program is on the next page. The file can be downloaded for own calculations from this site:

<http://www.eschaefer.de/div/lamp-shade-calc.xls>

Although both, Johannes Eckhold and I have taken great care in properly setting up the formulas, we don't assume any responsibility for accurateness or validity of the work. Using the file and cutting perhaps expensive cloth is solely your own responsibility. In case of any doubt try with some cheap material or paper first.

Please remember: All dimensions in the spreadsheet are in Centimeters or Millimeters but can easily be converted into Imperial units.

The Excel program is a European version. Perhaps you need to use dots as decimal separators in your spreadsheet instead of commas.

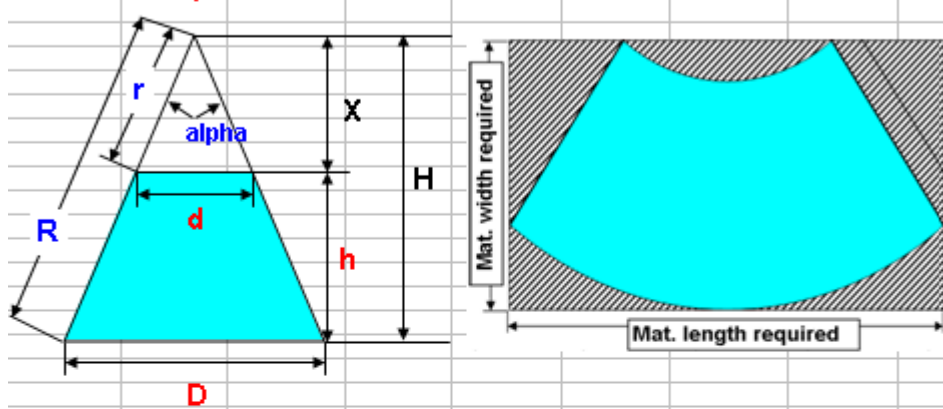
The rectangle with the truncated cone mantle at the right side of the page is only shown to demonstrate the shape and size of cloth or parchment required and is not to scale.

The bottom sketch is shown to assist in marking two aux. points (A and B) to more accurately draw a triangle for layout of the angle Alpha if a good protractor is not at hand.

For explanation details please refer to page 2 of the Excel spreadsheet.

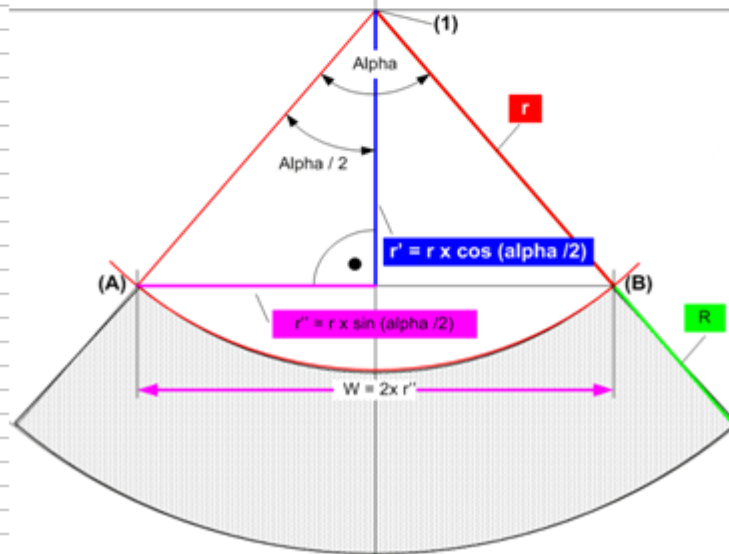
Input data ¹⁾			Calculated values				
D	d	h	x	H	R	r	Alpha °
30,0	16,5	22,0	26,89	48,89	51,14	28,13	105,60
			Width (R - r) =		23,01		
			Material width required =		34,13 (w/o overlaps)		
			Material length required =		81,46 (w/o overlaps)		

! May be you have to use commas as decimal separators !?



Baseline length "W" = 44,81

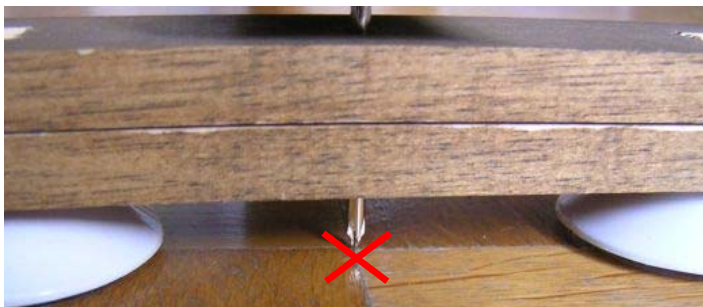
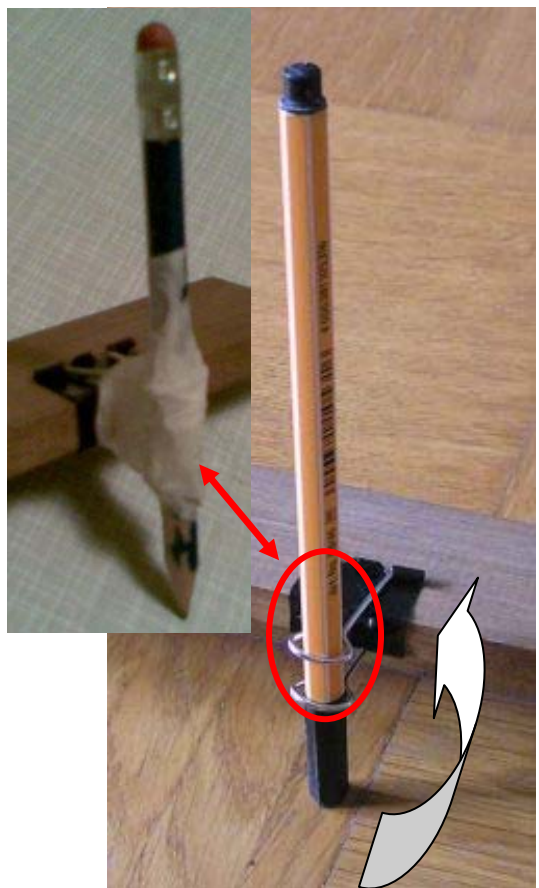
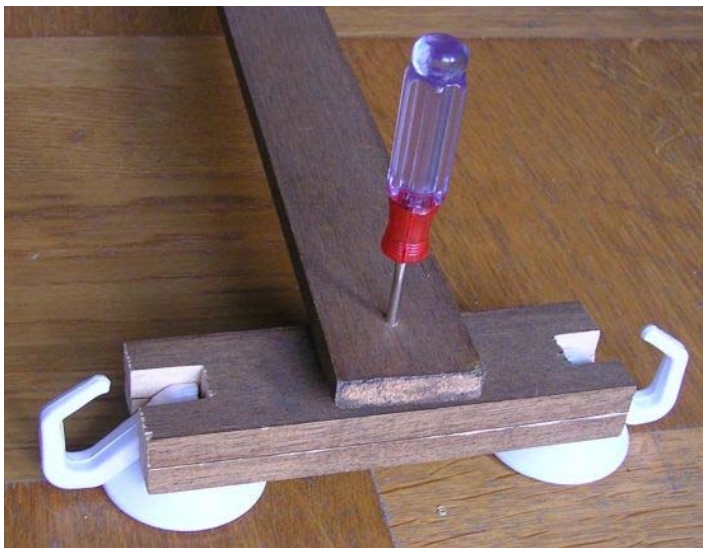
For explanation see page 2.



Now we're pretty much done with the preparation. 😊
Let's get started!

The following description is for using a stiff parchment or vinyl foil to make the shade without any other inner vertical support rods. The procedure for a cloth shade is a little different and is referred to at the end of this description.

The first difficulty one will experience is most probably the lack of a large bow compass as may have been used in school. Due to this I made myself a very simple construction out of a slat which is shown in the pics below.

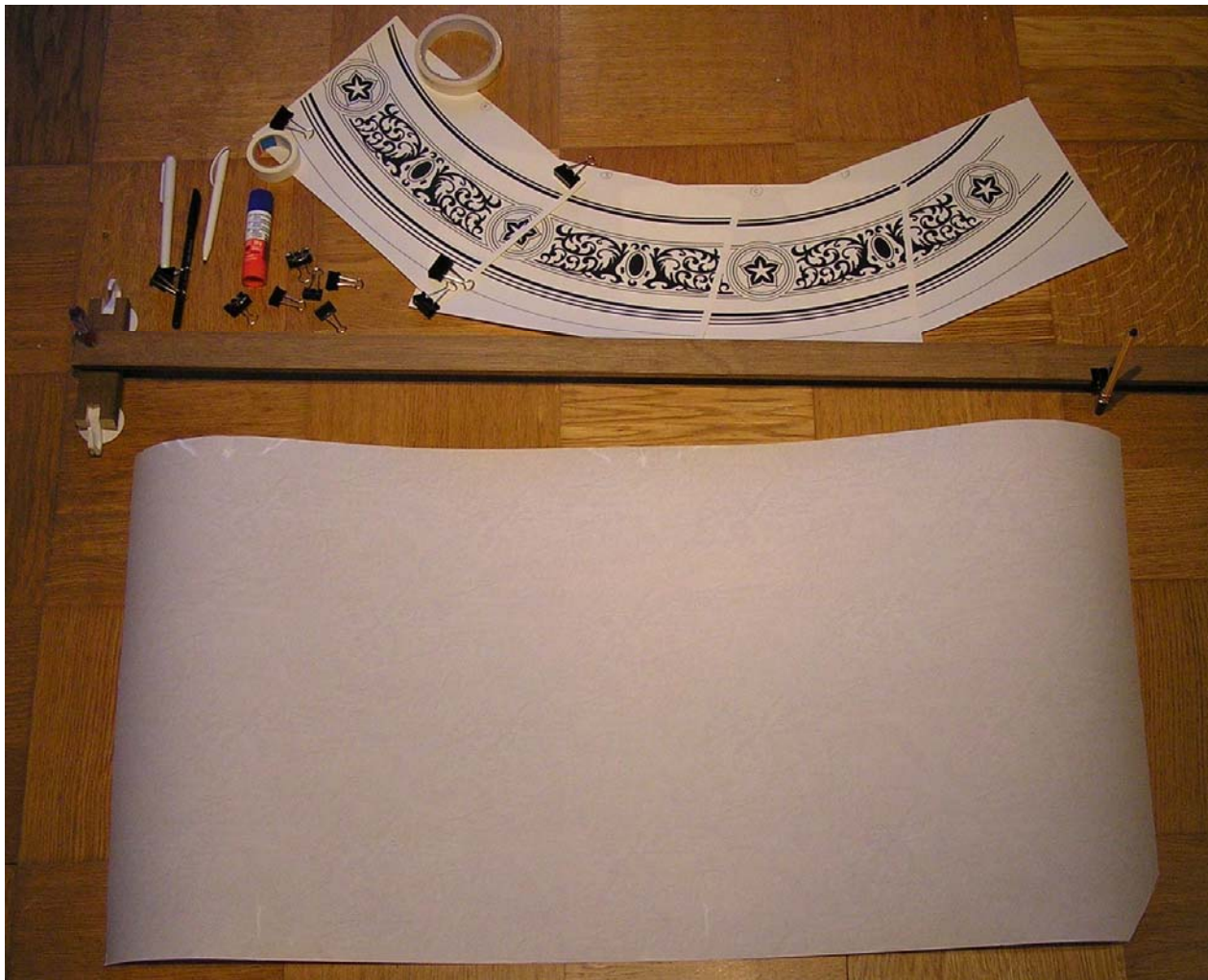


!!! Experience has shown that it is very important to properly fix the pen or pencil to the paper clip e.g. with lots of adhesive tape in order to avoid any backlash or tottering of the pen/pencil in order to avoid uneven circles!

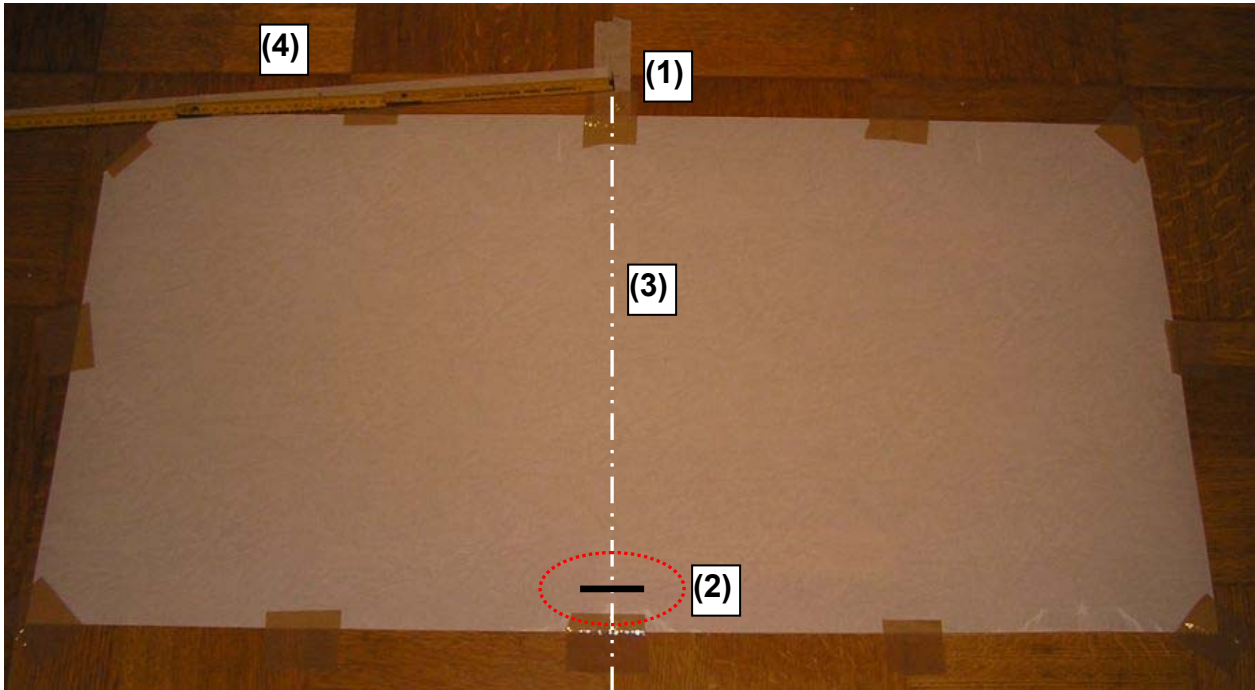
Now find some space on the table or on the floor to unfurl and place all parts.

Pls. remember that I probably picked the most difficult pattern I possibly could. Making a more or less "plain" shade with simple "stick-on" decorative elements would have been much easier. The shade itself is easy to make!!! The description below may seem more difficult than it is in practice.

Therefore, don't be frustrated. Just try! 😊

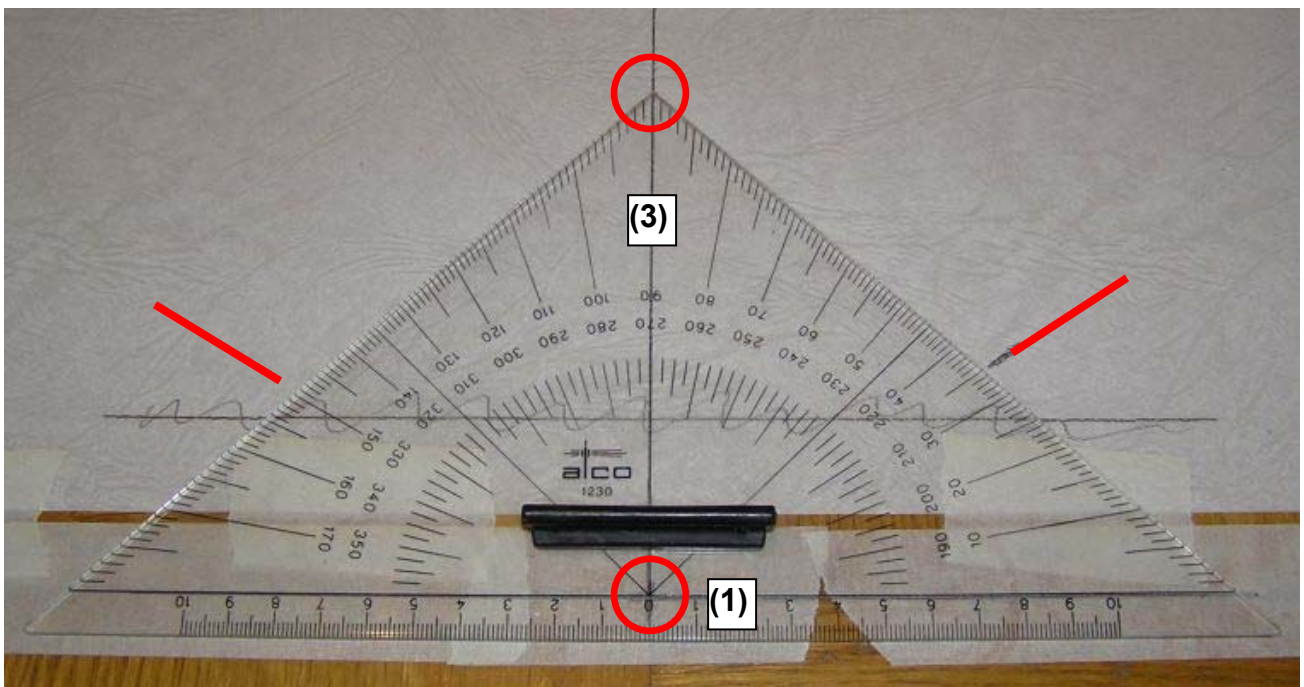


The sketch on the next page is provided with numbering for easy reference. The numbers will be referred to in the following description

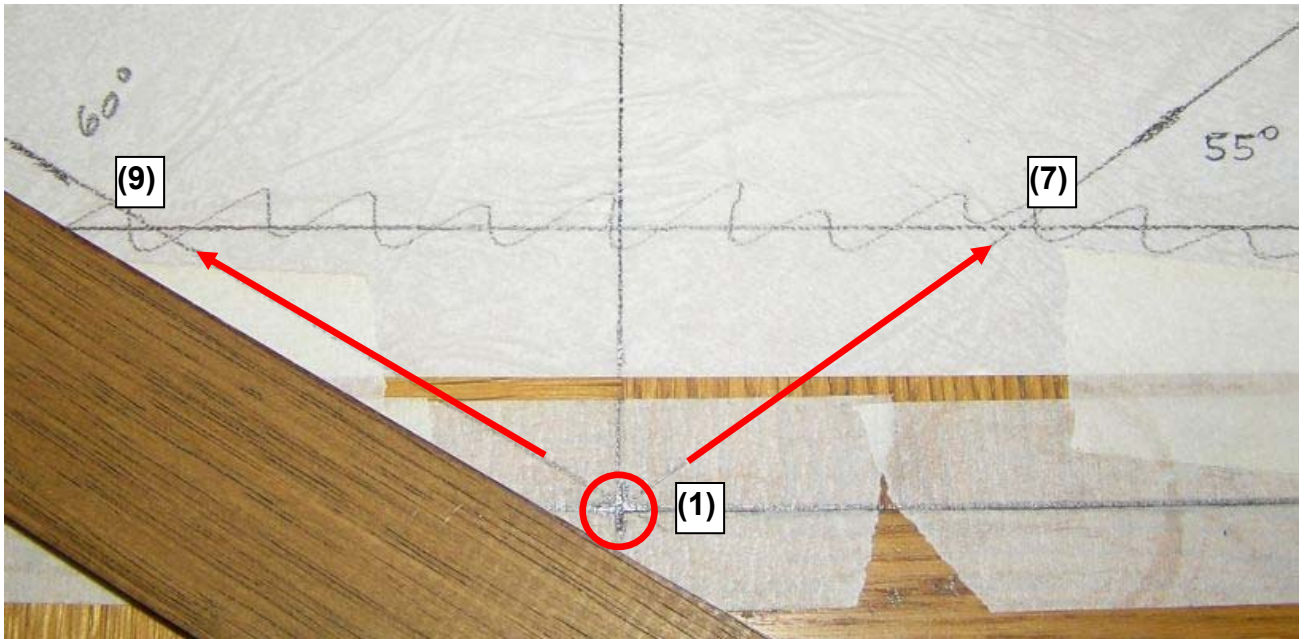


Here again, experience has shown that it is best to mark the angle Alpha first. This enables to check the proper measurements (distances) from the centre point on either side of the shade in order to guarantee perfect circles.

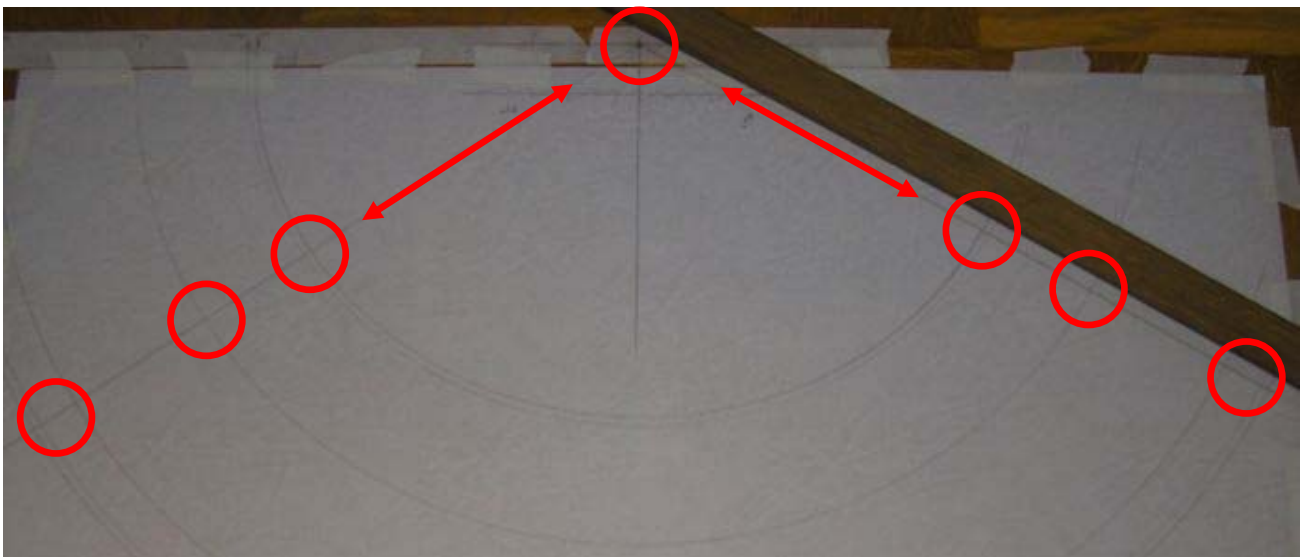
Now take the protractor, align at the centre point (1) and mark half of the angle Alpha to both sides of the centre line (3). One can give a little extra on either side for later overlap.



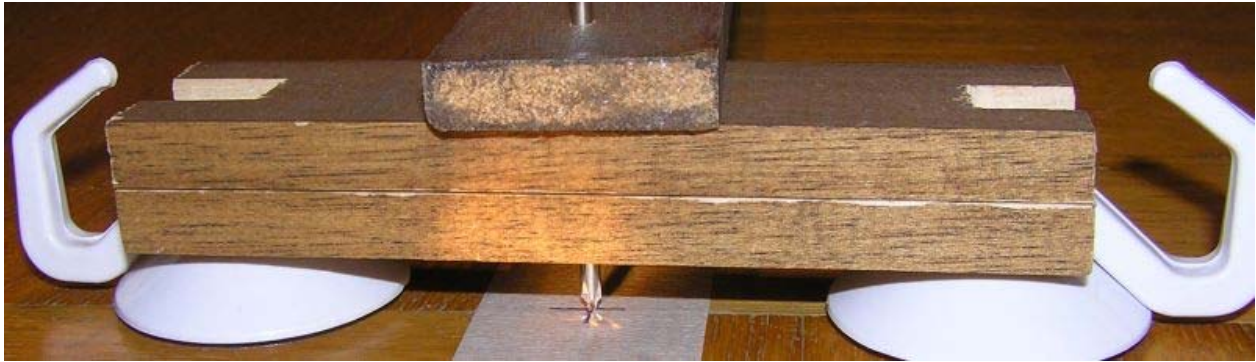
Next draw a line on each side from the centre point (1) all across the shade. This will give you the outer sides (7) and (9) of the truncated cone mantle where the shade edges will match later when wrapped around the rings. Give it a little wider angle on one side for the overlap (here 60° on the left side instead of 55°).



To make the circles as accurate as possible I highly recommend you to mark all measurements (r), (R), and aux. lines on both lines.

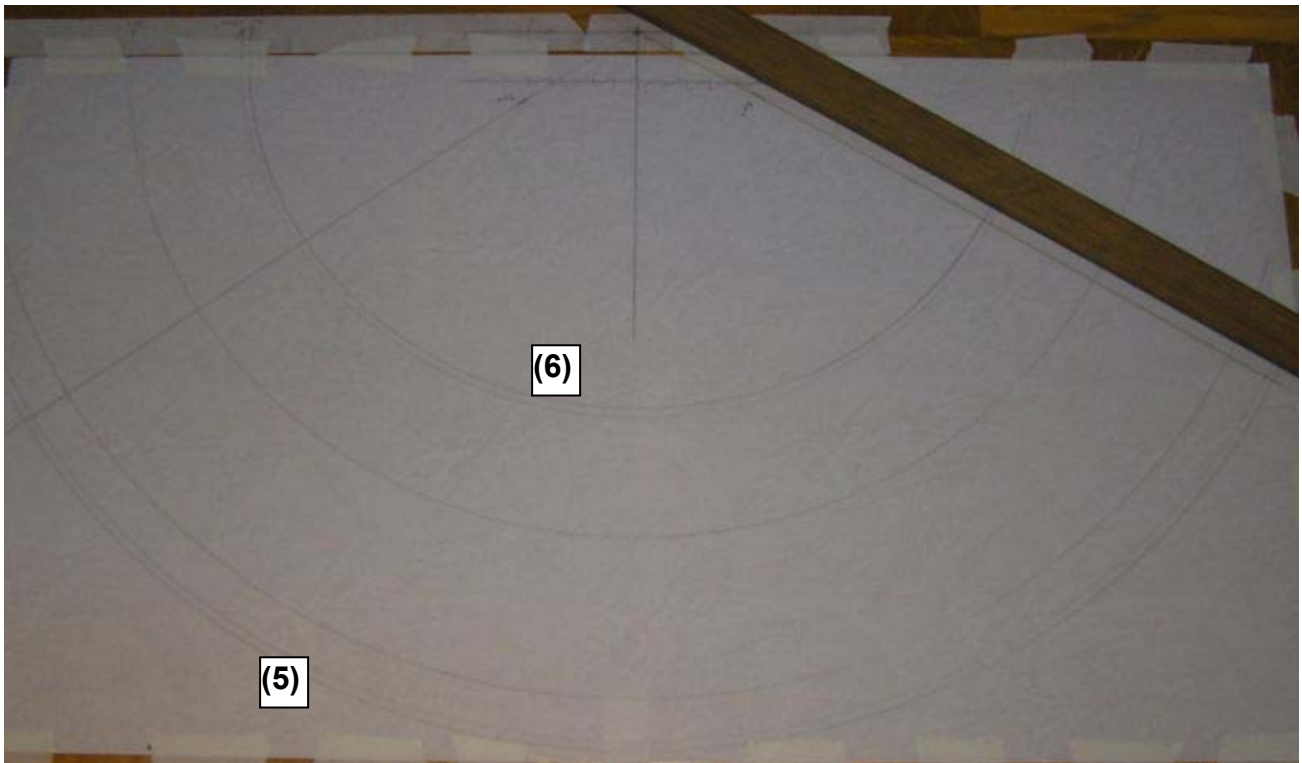


Now get the bow compass. Set it on the centre-point (1) and adjust the pen or pencil to one of the lines, e.g. the outer radius (R) at the outer rim (7).



!!! Before you start to draw the circle, check the pencil adjustment against the other side of the rim (9). If all positions and measurements are correct and there is no tottering of the pencil then it should exactly point to the same mark on the other side which will guarantee that the circle will be perfectly round and the rims will exactly match later !!! (See pic on page 8).

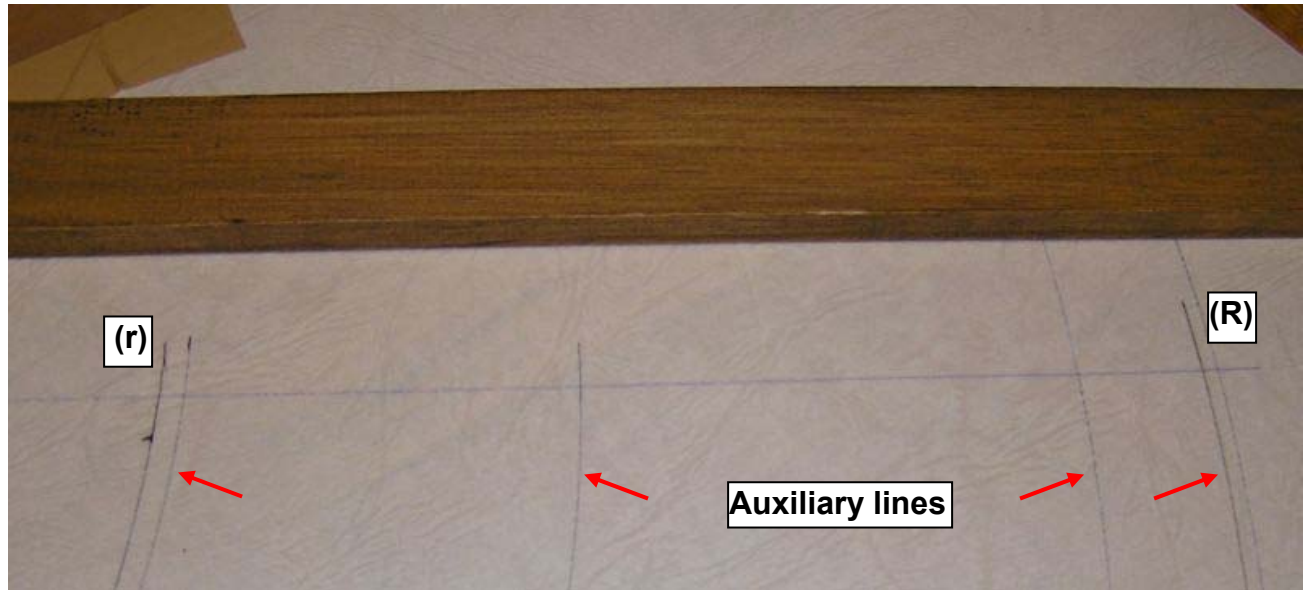
If that is the case, draw the first circle segment (5) on the material. Next adjust to the inner radius (r) and repeat (6). These are the upper and lower rims of the shade.



Now one should see all outer lines of the truncated cone mantle as shown in the Excel sketch (page 3) with blue color.

For equal placement of decorative applications and as guiding lines one can now draw some more aux. circle segments with fine/thin lines.

Also draw 2 thin lines on the upper and lower rim (less than half the width of the fabric tape) in order to have a guiding line for applying the fabric tape in an even manner later.



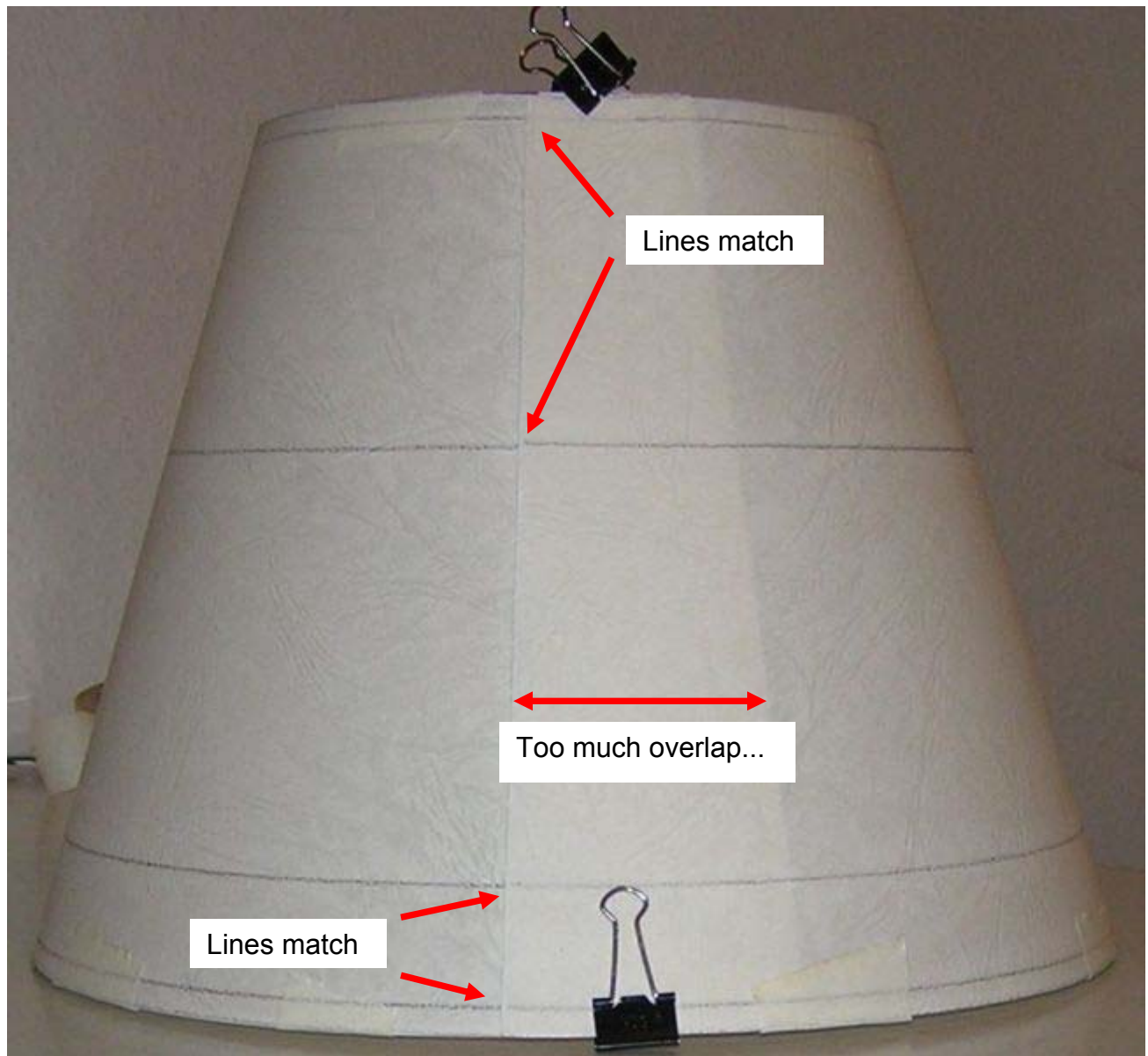
Double-check all measurements (which I didn't the first time ☹), compare with the calculations and make sure there is no error in the drawing.

If everything is ok, the fixing tape can be removed from the shade.

One can now cut the final shape out of the material.

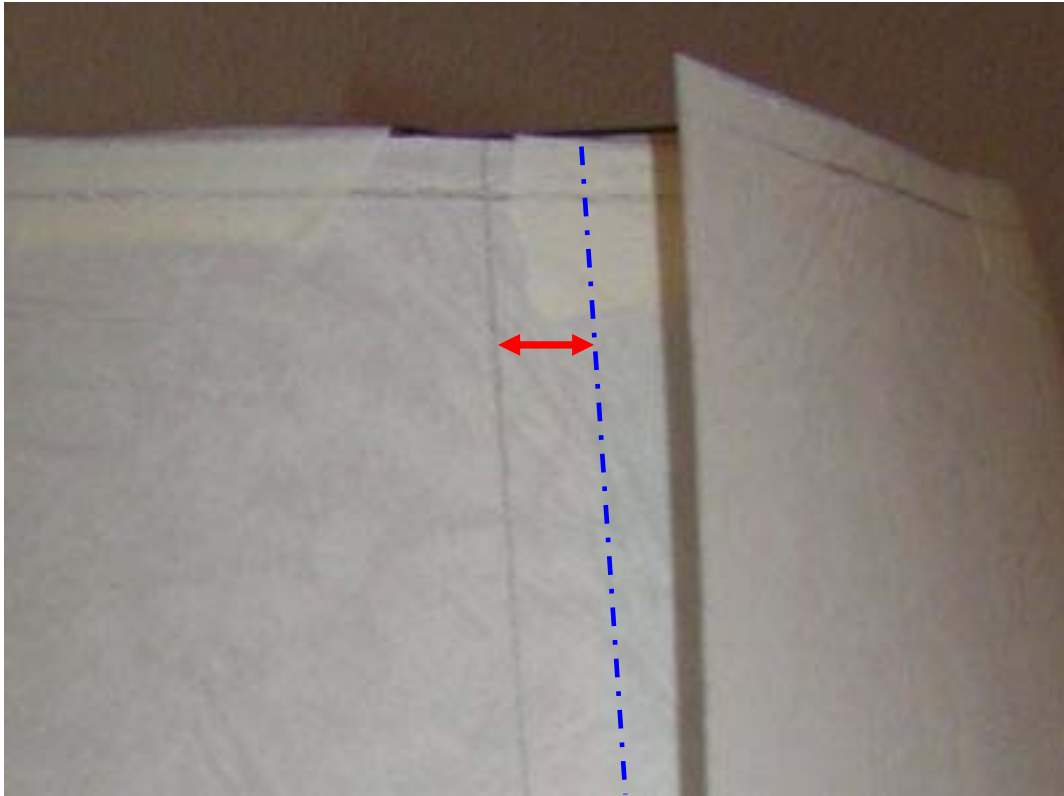


Now the shade can be brought into shape and loosely fixed with tape and/or clips. If the circles were accurately drawn then the parchment should nicely fit around and the lines should match.



Next the fabric tape for taping the metal rings should be applied. This is easier if the shade is already rolled into the final shape as the thin aux. lines are much straighter now than compared to the material laying flat on the floor. Leave the clip(s) on the larger diameter (lower side of shade) and apply the tape on the smaller diameter (upper side) inch-by-inch first.

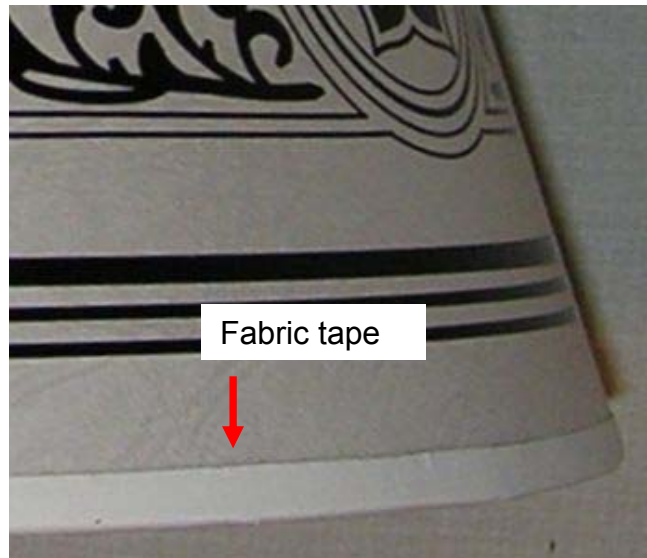
Now fold the tape to the inside. Cut small pieces out where the horizontal rods of the upper ring are. Leave the ends where the shade overlaps open about two or three inches for final trim of the material on the vertical side, if required. Now it should be pretty stable. Next repeat the same procedure with the larger diameter (lower side).



When that is almost done, check the overlap and decide if to leave it or to cut the overlap smaller. In that case mark the outer rim of the upper layer and cut the lower layer to the desired width (e.g. 1/2").

Glue the overlap with some transparent glue but avoid glue squeezing out of the seam to the outside. It will make the surface in that area a little dull or dirty and less attractive.

After this complete taping the rings.



Now the shade has its final shape and should look similar to this (in my case with the applied pattern already).



Congratulations!!! You're (almost) done.

With this shade it was a bit difficult as the pattern for the 130P table lamp had to fit exactly (!) around the circumference.

Therefore I had preliminarily set-up the shade (see pic. with paper clips on p.11) in order to correctly mark the vertical "overlap line" and define the exact circumferential lengths of the aux. lines to properly apply the pattern. Then I'd taken it apart again, accurately stuck the prepared pattern onto the shade, properly adjusted on the aux. lines.

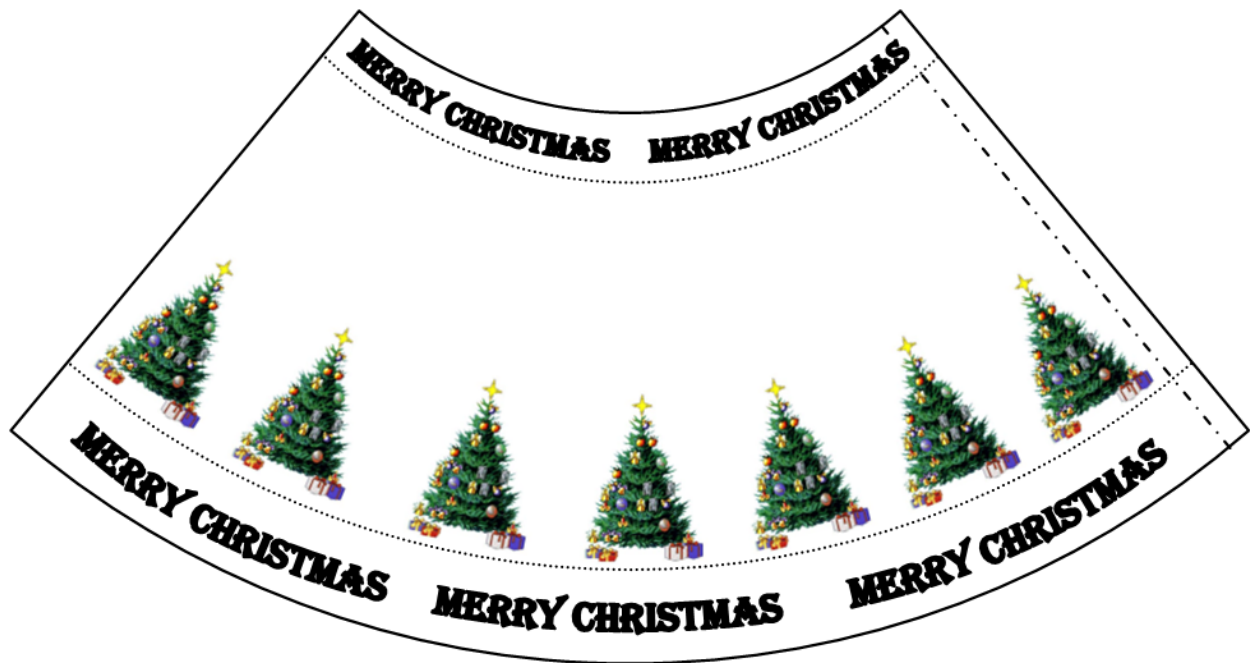


If you have worked on a plain shade so far, the only things missing might be the decorative elements/applications, if you want to apply some.

If you have single elements (e.g. flowers, trees or other single elements) cut them out and prepare them thoroughly and finally apply along the aux. lines. Then erase the thin lines.

If you are going to use patterns from printed paper napkins (example below), use common transparent glue or even better some special paper napkin glue. Apply the applications as required. Paper napkin elements should again be covered with the special glue in order to fully soak into the paper and provide additional surface protection.

Now you can enjoy your newly made shade. 😊



That's it !!!

Differences for a cloth shade

The whole procedure described above is also valid for making a cloth shade with some exceptions.

The cloth itself is usually very soft and will not give the shade suitable stability without extra support.

Here again, the truncated cone will be marked and cut out as described above. However, the material to be used in this case is a self-adhesive, stiff carrier foil.

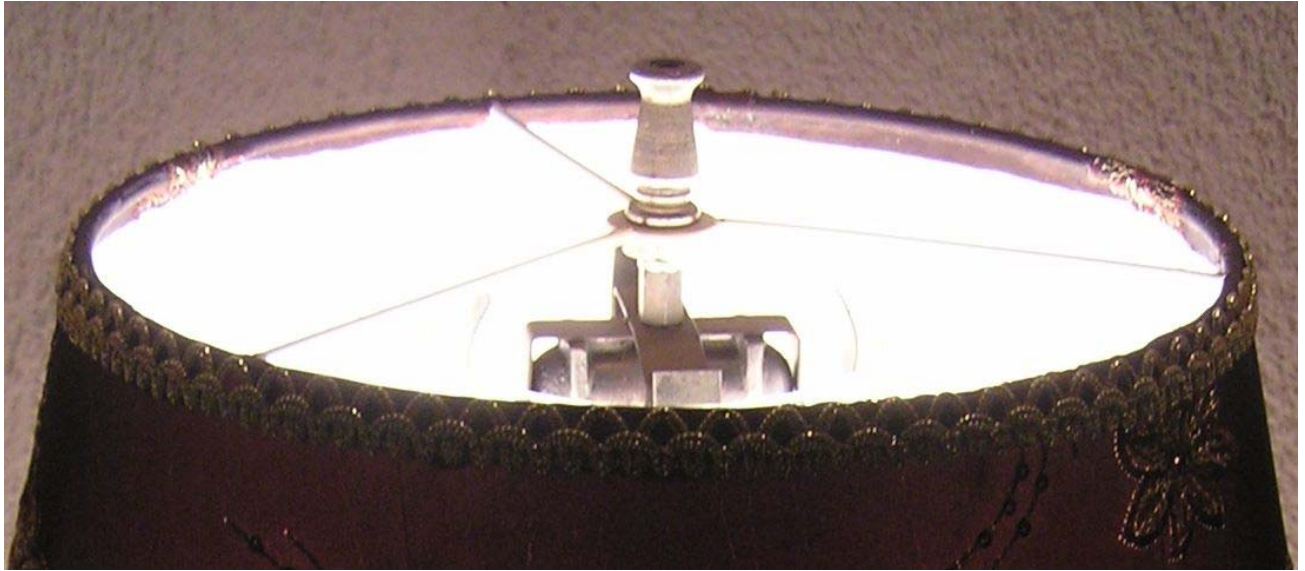
After the correct size is cut out from this carrier foil, peel off the protection sheet, hold the decorative cloth (which must be suitably larger on all sides) above the adhesive side, set it down on one side and gently apply it over the whole foil under straightening-out of the folds.

Once it's set one can't correct anything anymore.

Now cut the cloth in shape, but leave an overlap of abt. 1/2" on the inner (r) and outer radius (R) sides and abt. 1/4" on the outer vertical rim which will later overlap the inner layer.



White carrier foil with applied cloth.



The upper cloth overlap folded inside and glued around the ring.



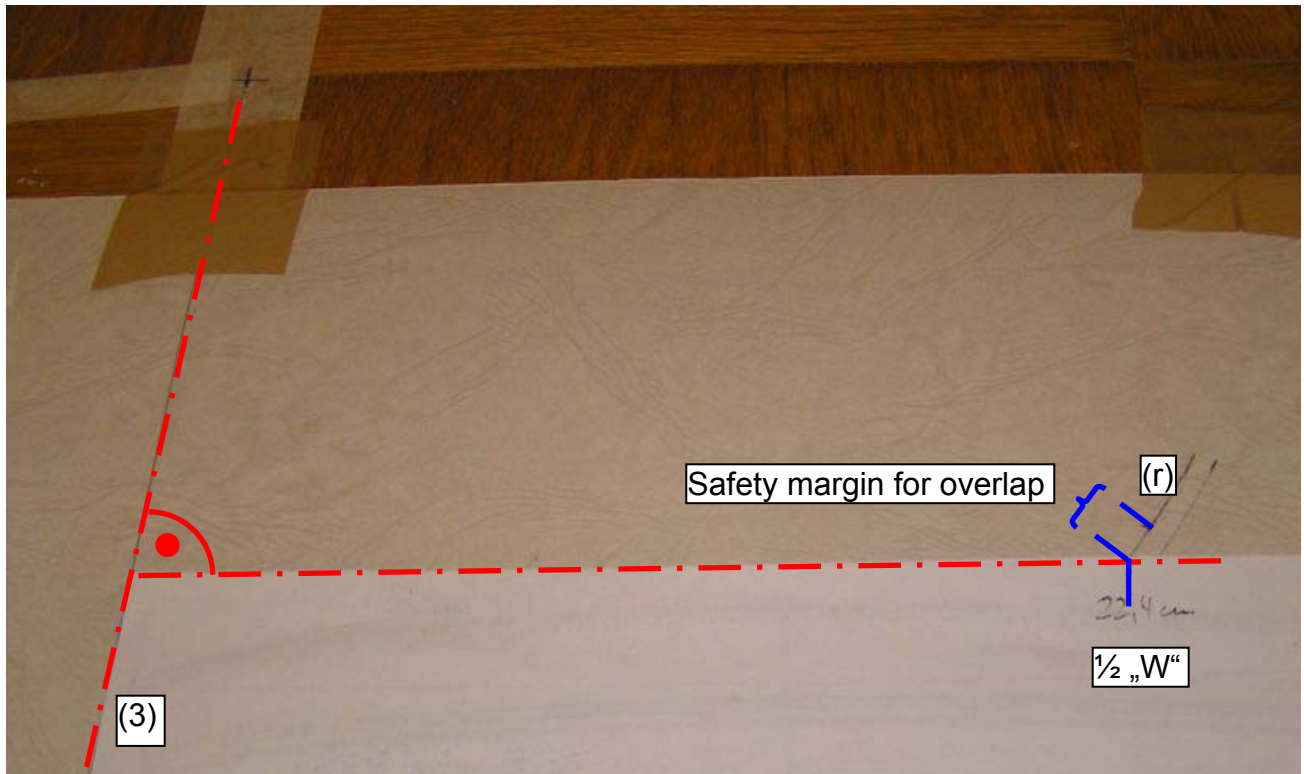
The finished shade with additional border trim on a 132A table lamp.

One more hint:

If a protractor with good readability is not available one can use an aux. triangle [(1) – (A) – (B), see Excel graphics on page 3] to define the required angle.

Mark half of the length "W" on a piece of paper, align rectangular to the centre line (3), slide down until the length (1/2 W) matches the inner radius (r) and mark the "end" as points (A) and (B) to both sides.

Add some safety margin for the overlap and trim the shape later as described above.



Have fun with your new shade!!!

Erwin.