



## 2 How to make the parabolic AMSI solar cooker

It is not really difficult to make your own solar cooker if you have some experiences as metal worker and in welding. But to be successful all work has to be done carefully with **high precision**. This may take a lot of time at the beginning, but if the measurements are not taken accurately and the shape of the parabola cage is somewhat different, than it will be very difficult or impossible to fix the aluminium panels on the cage. If the shape is very bad it will not even be possible to reach the cooking temperature with the cooker!

So take your time, follow the instructions and plans carefully to make already your first cooker a success! **Think that only a good cooker quality is able to spread the idea of solar cooking and if only one bad cooker is sold then this was may be the last cooker produced!**

### 2.1 Materials needed for one cooker

Most of the material used for the cooker is available in the building material shops of Arba Minch. Not available are the aluminium panels which have to be imported from Germany for the time being. The panels can be bought from Mr. Ralf Wiegand from Kale Heywet Church who has promised to the AMSI on a non-profit basis. An other possibility is to ask Mr. Yamare, Yamare Solar Energy and Biogas R D (PLC), Addis Ababa, Telephone 01-710808 or to import the panels yourself from EG-SOLAR e.V., Neuöttinger Str. 64c, 84503 Altötting, Germany, Telephone 0049-8671-8028, Fax 0049-8671-84689.

The aluminium wire is available in Addis and can be brought by Ralf Wiegand as well, telephone wire should be available in Arba Minch. Rest material can be used as only pieces of about 4 cm length are needed.

Material	Amount
∅ 12 mm reinforcement bar	about 25 m
∅ 8 mm reinforcement bar	about 12.5 m
Sheet metal 150×100×3 mm	2 pieces
Sheet metal 100×100×3 mm	2 pieces
Water pipe 1/2 inch, 100 mm long	2 pieces
Iron wire ∅ 1 mm for temporary fixation	about 3 m
Aluminium wire ∅ 1.5 mm or hard telephone wire	about 8 m
Aluminium panels	36 large 12 small
Welding electrodes	about 20
Anti-rost paint	about 300 ml
White paint	about 200 ml
Metal screw, M 10, about 4 cm long, 3 nuts, 1 washer	1 piece
Big nail or ∅ 5 mm ferro	1 piece
Chord, 3 to 4 mm strong, 75 cm long	2 pieces
Marker for metal or chalk	1 piece
Washing powder to clean the paint brush	some

### 2.2 Tools needed for the cooker production

The cooker can be produced with the standard equipment of a metal workshop. But it might be somewhat difficult to bend the circles accurately, to cut the 3 mm sheet metall or to drill the four 14 mm holes in the sheet metall. Maybe the already drilled sheet-metal pieces or the rings can be ordered from a better equiped workshop, e.g. at the AWTI's metal workshop.



The work can be done by a single worker, but a helper during welding will speed up the operations.

<p><b>Tools absolutely needed</b></p> <p>Welding mashine, shield and welding hammer          Drill machine with <math>\varnothing</math> 14 mm metal-drill (or <math>\varnothing</math> 12 mm and round file)          Strong bice, 1.5 m long 1-inch pipe for bending of reinforcement bars          Hack saw to cut reinforcement bars          Length measure, wire brush, heavy hammer, paint brush, pincers or end-cutting pliers          Plane and horizontal place of at least 1.6×1.6 m          Platewood-model for the cooker construction (described later)</p>
<p><b>Tools additionally recommended for enhanced production speed</b></p> <p>Circle bending mashine for <math>\varnothing</math> 12 mm ferro          Hammer shears for <math>\varnothing</math> 12 mm ferro          Table drill press or bench-drill stand          Electrical sheet-metal cutter for 3 mm sheet metal          Tape measure 10 m          Water level          Round metal file <math>\varnothing</math> 1 cm and flat metal file          Electrical grinding mashine</p>

### 2.2.1 Preparing the working platform

For the quality control of the circles and the assembly of the cooker it is of great advantage to have an area of at least 1.6×1.6 m which is absolutely **plane and horizontal**. If no concrete floor is available, a stiff platform may be built out of supported plate-wood.

On this platform, the following help-line pattern consisting of one square with 4 concentric circles should be drawn accurate and good visible.

First draw the square and check that both diagonals are equal and 2.25 m long. Find the center, where the diagonals cross and mark it with small nail not completely beaten in. Fix one end of a thin wire on the nail and use it as compasses to draw the four circles with the radius 70 cm, 57 cm, 45 cm and 26 cm.

This platform will be used to check the size and shape of the rings, and to assemble the foot of the cooker.

### 2.2.2 The plate-wood-model for the cooker assembly

The wood model needs 2 pieces of plate-wood 150×50 cm of the same thickness (e.g. 12 mm). One long side of the plates should be perfect straight or a straight line has to be used as the basis for the parabola construction. The parabola shape with the equation  $y = x^2/1120 \text{ mm}$  can be constructes as follows:

1. Draw the y-axis vertical to the long straight side and in the middle of the side.
2. Beginning from this axis mark every 5 cm along the long side into both directions.
3. At these distances to both sides mark the following distances (vertical to the base line and parallel to the y-axis) with a point or little cross.

<b>x [mm]</b>	100	150	200	250	300	350	400	450	500	550	600	650	700	750
<b>y [mm]</b>	9	20	36	56	80	109	143	181	223	270	321	377	438	438

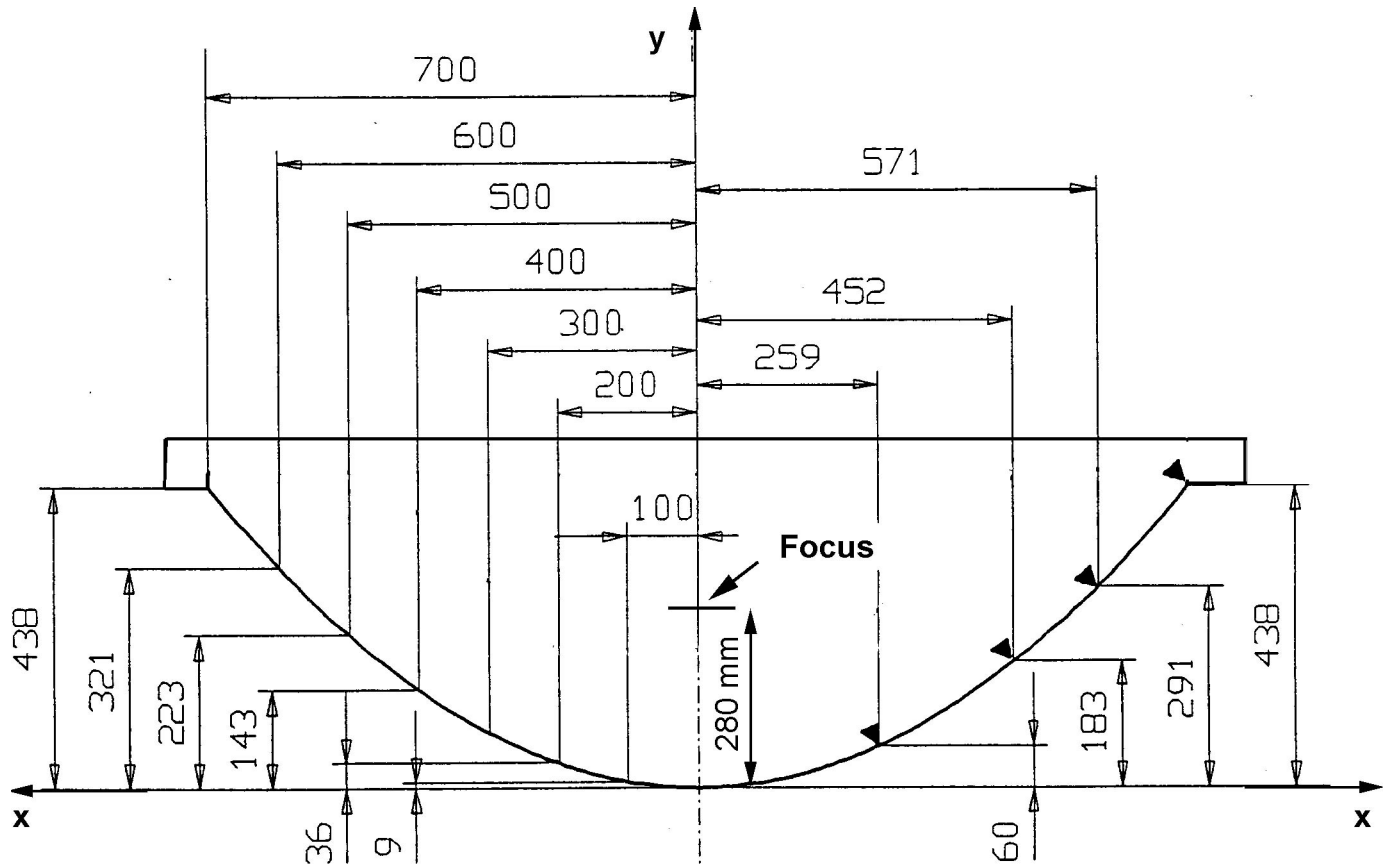


Figure 2: One part of the plate-wood model for the cooker assembly

Connecting these points by a (curved) line gives the shape of the parabola to be cut out.

The measurements in y-direction should be made using a right angle ruler. If no such ruler is available you may cut out a triangular piece of plate-wood with the three sides having a length of 33 cm, 44 cm and 55 cm.

- On the parabola curve, mark by a black triangle pointing to the curve the following points:

x [mm]	259	454	573	700
y [mm]	60	183	291	438

(see figure 2)

- Mark the focal point on the y-axis having a distance of 280 mm from the base line by a little line and cut along the parabolic line with a jig-saw (so that the line just stays visible on the model). The model should look then like on figure 2.
- Repeat the whole procedure for the second piece of plate-wood to have two identical pieces like on figure 2
- Cut out a strip having the width of the plate-wood along the x-axis from outside in upto the mark for the focal point, for the one piece beginning from the straight base line and for the other piece from the parabolic side to the focal point. Now the two pieces are different as shown on figure 3.
- Finally the two pieces can be pushed together cross-wise as a complete model of the parabola shape. The arrows are marking the exact positions of the four rings. The model keeps the

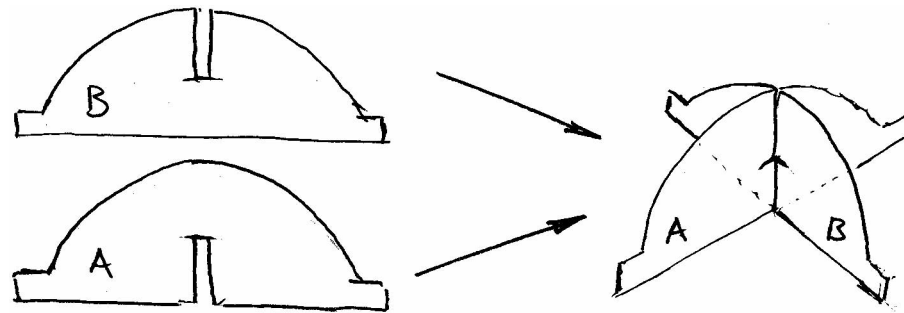


Figure 3: Both parts of the plate-wood model for the cooker assembly

rings in the right position until the whole parabola cage is fixed with wire and welded together and thereby guarantees the right shape of the cage.

### 2.3 Making the parabola cage

The parabola cage consists of four circles (3 circles  $\varnothing$  8 mm and 1 circle  $\varnothing$  12 mm), six connection bars ( $\varnothing$  12 mm) and 2 pieces of sheet metal  $100 \times 100 \times 3$  mm with a 10 mm hole in the center, half of a big nail ( $\varnothing$  5 mm).

#### 2.3.1 Making the circles

The precision of the circles (in combination with using the wood model) is the most important factor for the cooker quality. They have to be made with the highest possible accuracy! It is worth to spend much time on the elaboration of good circles.

Inaccuracy leads to a wider area of light concentration and lower reachable temperatures. As the overall amount of energy collected depends only on the mirror size, this means that the cooking pot is heated up as quick as with a smaller focal area, but at a certain point the heat increase in the pot stops, under very bad conditions even below 100 degree Celsius. While a good parabola shape guarantees for reachable temperatures above 200 degrees Celsius.

So making the circles is possible by bending roughly a circle from a piece of reinforcement bar and the adjusting the final shape by hammering on the circle on a stiff but not rigid underground. The shape has to be controlled by putting the circle on a circle-drawing made on a even surface (wooden plate e.g.). Adjusting has to continue until the circle exactly fits on the drawing with not gaps between the circle and the level ground!

For a production of cookers it is advisable to use a simple circle mashine to bend the circles, or you may want to ask any metal workshops to do the circles for you.

#### 2.3.2 Making the circles with a circle mashine

A circle mashine consists of three cylindrical metal wheels (supported with ball bearings) in a row, where the inner wheel can be adjusted in height above the connection line of the outer wheels to allow the setting different circle diameters. Either the inner wheel or better both outer wheels are connected to a crank or motor to transport the material to be bent (see sketch 4).

Using a circle mashine is the best and quickest way to make the 4 circles needed for the cooker. A helper is needed to hold and guide the ferro and the final circles during the bending process.

The following rules are important to know:

1. The first and the last 10 cm of the reinforcement bar will not be bended nicely. Therefore use a piece of bar which is 20 cm longer than the final length given in the table below and cut 10 cm from each side after bending and before closing the ring by welding.



- Never bend the material too much! Start by carefully trying with a large bending diameter and bend more **in several runs** until the right setting for this diameter is found. **Note the settings of the circle mashine for the next time.**

Feed the bars with a rifeled side up and log paralel ruffles to the sides! Keep the bended ring-material always straight up (vertical).

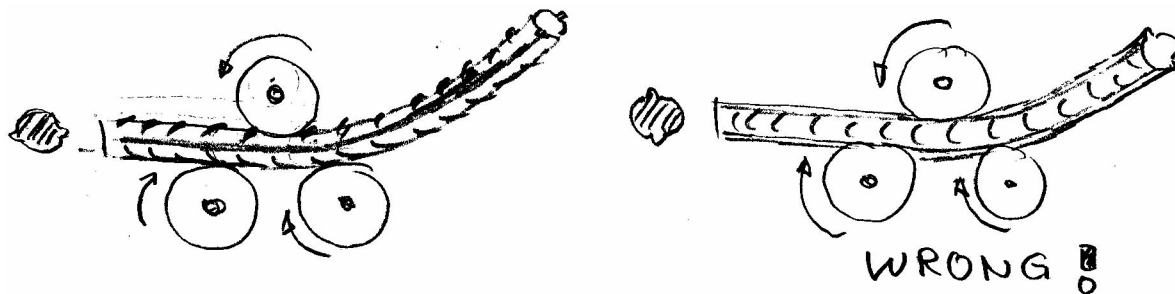


Figure 4: Proper feeding of the reinforcement bars into the circle mashine

- After welding the ring again run the circle through the circle mashine using the same setting as in before (or a little bit stronger bending).

It is best to use about 20 cm longer bar than needed for the perimeter if the ring and to cut both sides with a hack-saw to the right length, because the start and end will not come out good in the bending mashine.

Weld the ring by pressing the gap to close against a block to get the ends parallel. Chip the slack carefully to get a strong connection.

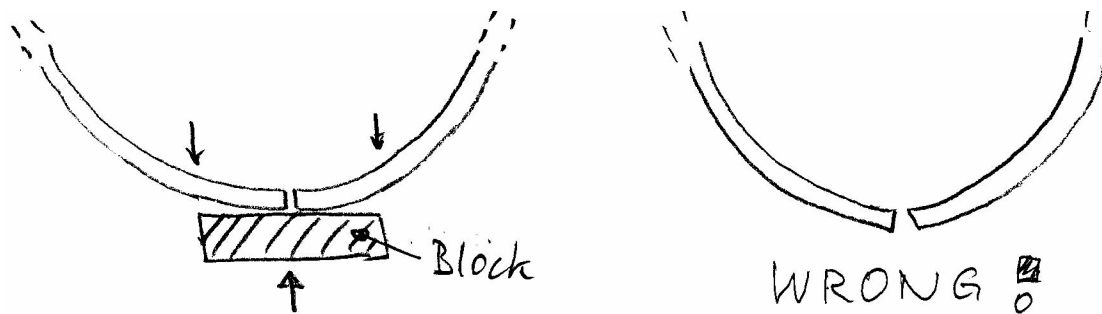


Figure 5: The closure of the rings by welding

- As a last step the circle has to be carefully adjusted to be perfectly plain and round (using the drawing on the working platform).

It helps to run the closed circle again through the circle mashine

Inner circle $\varnothing$	Material $\varnothing$	Final length	Part description
140 cm	12 mm	440 cm	parabola cage part I
114 cm	8 mm	361 cm	parabola cage part O
90 cm	8 mm	285 cm	parabola cage part N
52 cm	8 mm	165 cm	parabola cage part M
35 cm	12 mm	110 cm	pot holder ring part T2



### 2.3.3 Making the cage

1. Cut a piece of bar of the final length plus 20 cm, but mark clearly the final length on the bar (minus 10 cm from each side).
2. Feed the piece into the circle mashine and bend it slightly, **don't try to bend it to the final circle in one step!** Repeat the feeding with increased settings for the bending until one end can be feeded again before the other end leaves the mashine. The circle setting is right if both final end mark are on the same place.
3. After the circle has been bended the 10 cm overhead on both sides has to be cut of with a metal hack saw to the final length, and the ends have to be welded together very well.
4. Feed the welded circle again into the circle mashine and make several turns with the last circle setting (or maybe very little stronger setting).
5. Check the circle quality on the working platform and make adjustments if needed. The circle should exactly follow the circle drawn on the platform and there should be no gap between the platform and the circle! (At no place the smallest finger may fit between ring and platform) Turn the ring upside down and check again until everything fits.
6. Mark the positions of the 6 connection bars and the axis of the pot holder permanently on the largest ring.
7. After all circles are checked to be ok, the circles are positioned on the plate-wood-model on the positions of the black triangles.
8. Place the 100×100×3 mm sheet metal (L, see figure 8) with the 10 mm boring in the center on the top center of the model.
9. Cut seven pieces of 90 cm length and  $\varnothing$  12 mm for the ring connection bars (part K). First bend only one bar according to figure 7. Then try it out at the wood-model with the rings. The connection bar has to touch all the 4 circles and the sheet metall without any force and without moving the rings! Normally several little corrections of the bending angles are needed until it fits.

If the connection bar fits mark it with color as your model piece and keep it together with the wood-model for the next cooker production.

Now make six connection bars using the model to adjust the right bending angles.

10. Take one connection bar after the other, make corrections until the bar fits nicely (see figure 7), put it in one position marked on the largest ring and fix the connection bar with iron wire and pincers. Be very carefully not to move the ring during the twisting of the wire!
11. Make a last quality check that the rings are still in the arrow positions and the connection bars are fixed in the right position.
12. Then **punctual** weld the connection between connection bar and the sheet-metal. Be carefully only to weld short time and may be to put an other sheet metal piece under it, not to burn the model.
13. The wood-model now can be carefully removed and the wire connections can be replaced by welding. First weld all connections punctual and then finally.
14. All except of one piece of the connection bars which are longer than upto the largest ring have to be burned off by heavy welding. On the remaining end a sheet metal 100×100×3 mm for the solar indicator has to be welded to be about parallel to the largest ring. Weld the piece of the thick nail or a ferro  $\varnothing$  4 mm vertical in the center of the sheet metal.

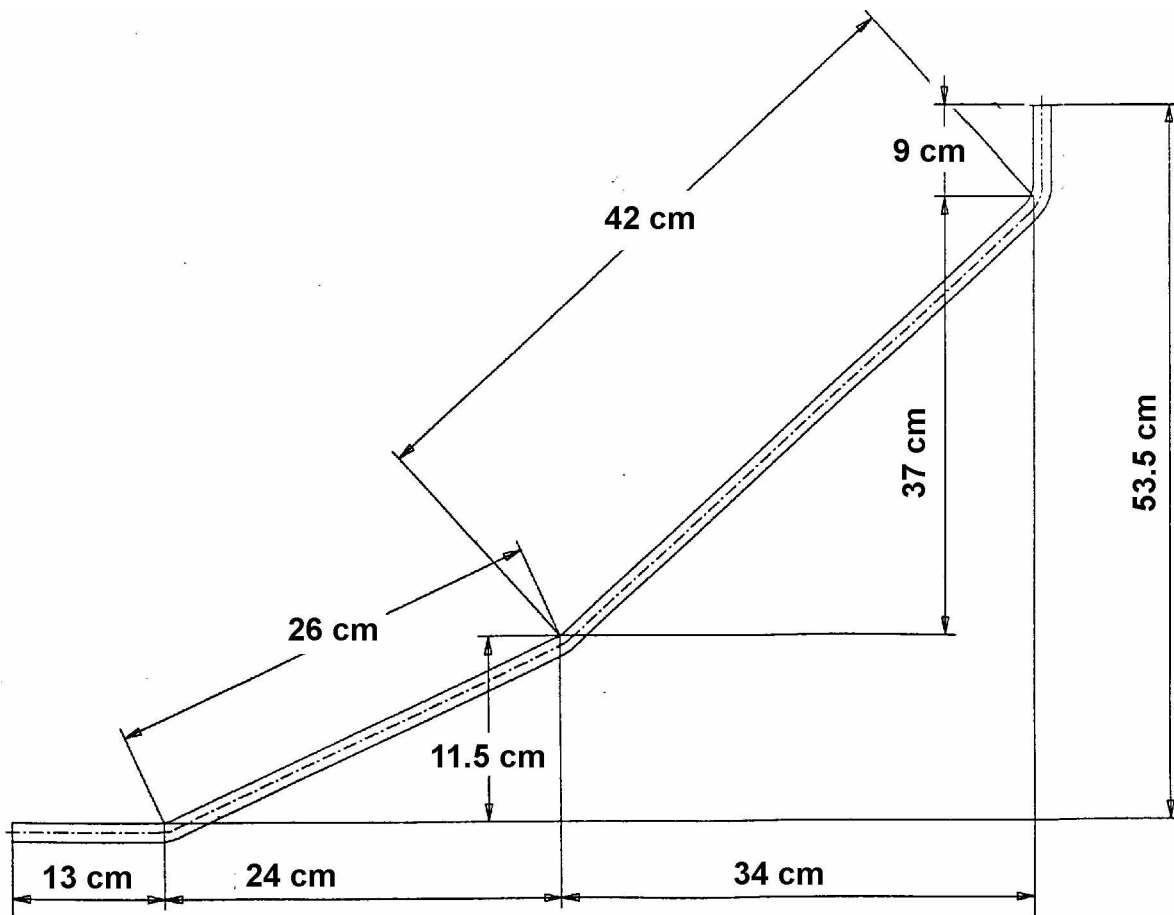


Figure 6: The measurements of the connection bar K

## 2.4 Making the pot holder part

The pot holder part consists of the main bearing bar ( $\varnothing$  12 mm), 2 sheet metals  $150 \times 100 \times 3$  mm, the central circle ( $\varnothing$  12 mm) and the pot grid ( $\varnothing$  8 mm).

1. Cut a  $\varnothing$  12 mm bar of 1.80 m length. Mark the center and the points in 17.5 cm and 75 cm from the center.
2. Add the 2 sheet-metal pieces (F, see figure 8)  $150 \times 100 \times 3$  mm to the bar on both ends by pushing the bar through the 14 mm holes.
3. Bend both ends outside of the 75 cm mark into the same direction by 90 degrees so that the sheet metals are within the bends. This is the main bar.
4. Put the main bar on the floor so that the ends are pointing vertical up. Place the  $\varnothing$  12 mm pot-holder ring horizontal and central (using the 17 cm marks) on the bar and weld the contact points **very strong**. The sheet metals have to be outside of the ring, one on each side. (see figure 9)
5. Burn out the piece of the main bar which is inside the pot holder ring and check if the ring and the main bar is welded together **very strong**.
6. After finishing the whole cooker check with a white paper, — while the cooker is adjusted nicely to the sun, — in which depth below the ring the focus of the mirror is (where the white paper shines the brightest, wear sun-glasses for thid test!!)

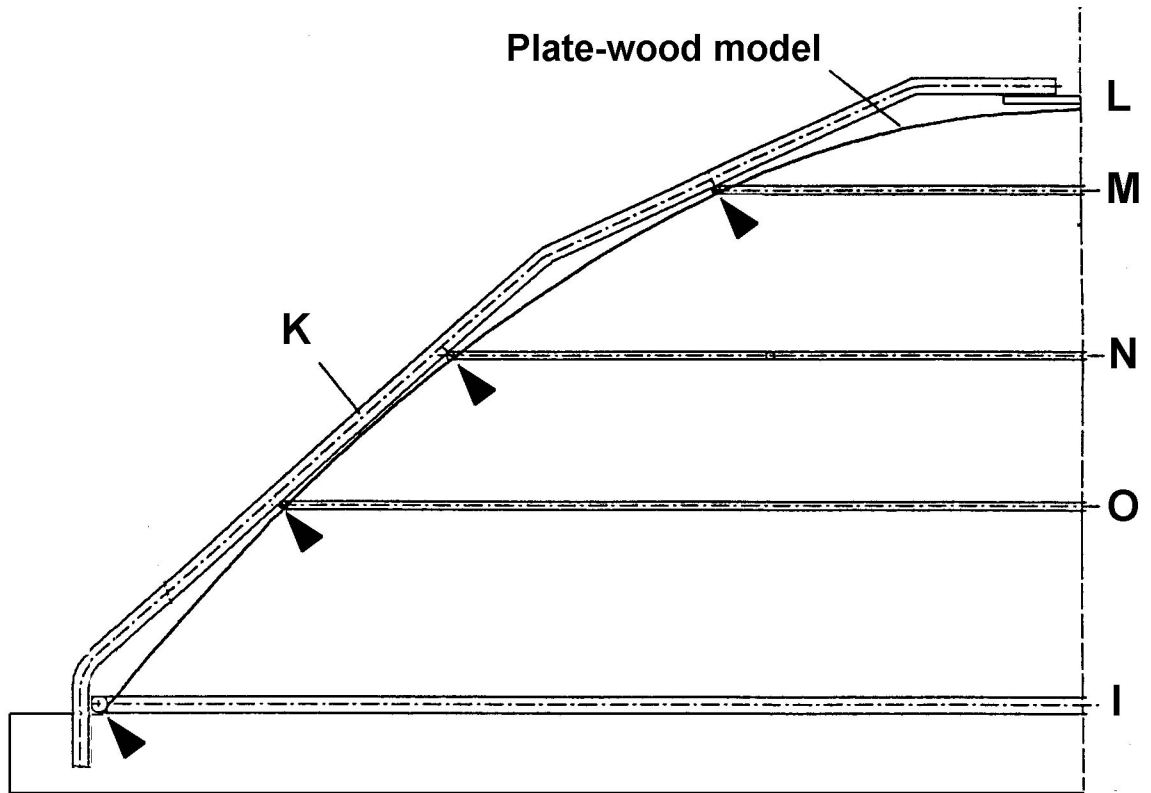


Figure 7: Connection bar K perfectly attached to the circles on the wood model

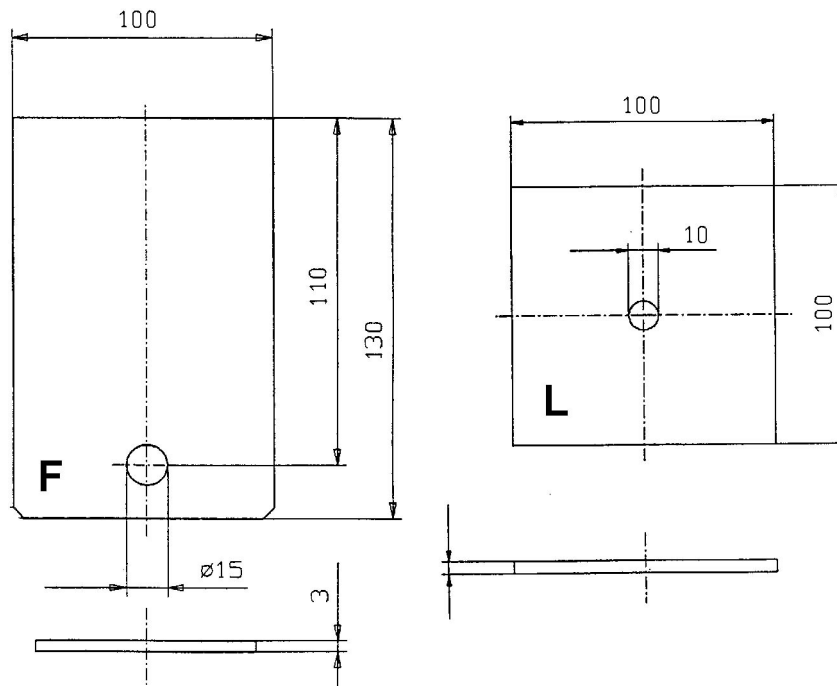


Figure 8: The sheet metal parts F and L

Then make the pot grid out of  $\varnothing$  8 mm bars. Make a  $\varnothing$  12 cm circle and weld two 35 cm long pieces parallel and central to both sides. Place this ring central to the pot holder circle. Marke where to bend up the ends that the ring can be placed in the focus depth below the





ring. Finally bend back the ends according to the right depth to get a pot holder for the Ethiopian coffee pot as shown below.

In a similar way pot-holders for different pot sizes can be constructed according to the wishes of the user.

## 2.5 Making solar cooker foot

The solar cooker foot consist of 2 triangular sides, 2 straight connections of 1.5 m length, 2 handles (all pieces  $\varnothing$  12 mm), the 2 pipe pieces and two chord clamps ( $\varnothing$  8 mm).

1. Cut 2 straight pieces of  $\varnothing$  12 mm material 1.5 m long. These are the parts A1 (see figure 11).
2. Cut 2 straight pieces for A2 of  $\varnothing$  12 mm material 2.61 m long. Mark the center of the length and mark to both sides of the center the distances 37 cm and 112 cm (about 18 cm should be the remaining length to the end of the bar piece).

Bend first at the 37 cm points to get a triangle where the ends are crossing each other at the 111 cm points. then bend the short ends after the 111 cm point to be parallel and vertical to the base side of the triangle (see figure 11)

After making the two triangles check if they are of equal shape by putting them next to each other. Turn one triangle by 180 degrees and check again. If the triangle agree in both ways the short upper end is vertical.

3. Weld the two 16 cm ends of the triangles (A2) together and weld one piece (A4) of 1/2 inch pipes parallel to the ends on one side of each triangular foot, so that the upper ends of pipe and foot agree.
4. Cut 2 straight pieces for A3 of  $\varnothing$  12 mm material 1.7 m long. Mark the two points 74 cm from the ends of the pieces and bend there both ends about 50 degree into the same direction so that the end points are 77 cm apart from each other (see figure 11).

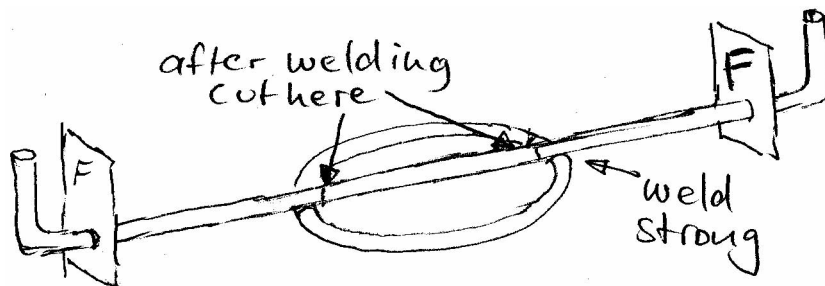


Figure 9: The pot holder part

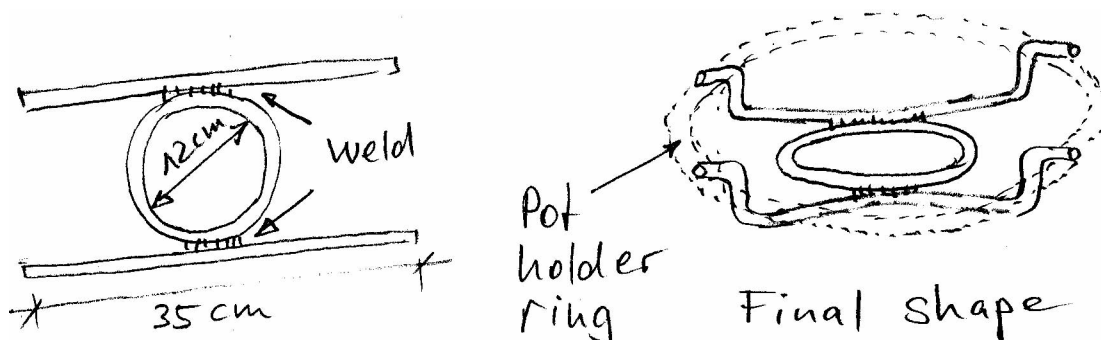


Figure 10: The pot holder grid for small pot and the Ethiopian Jabena

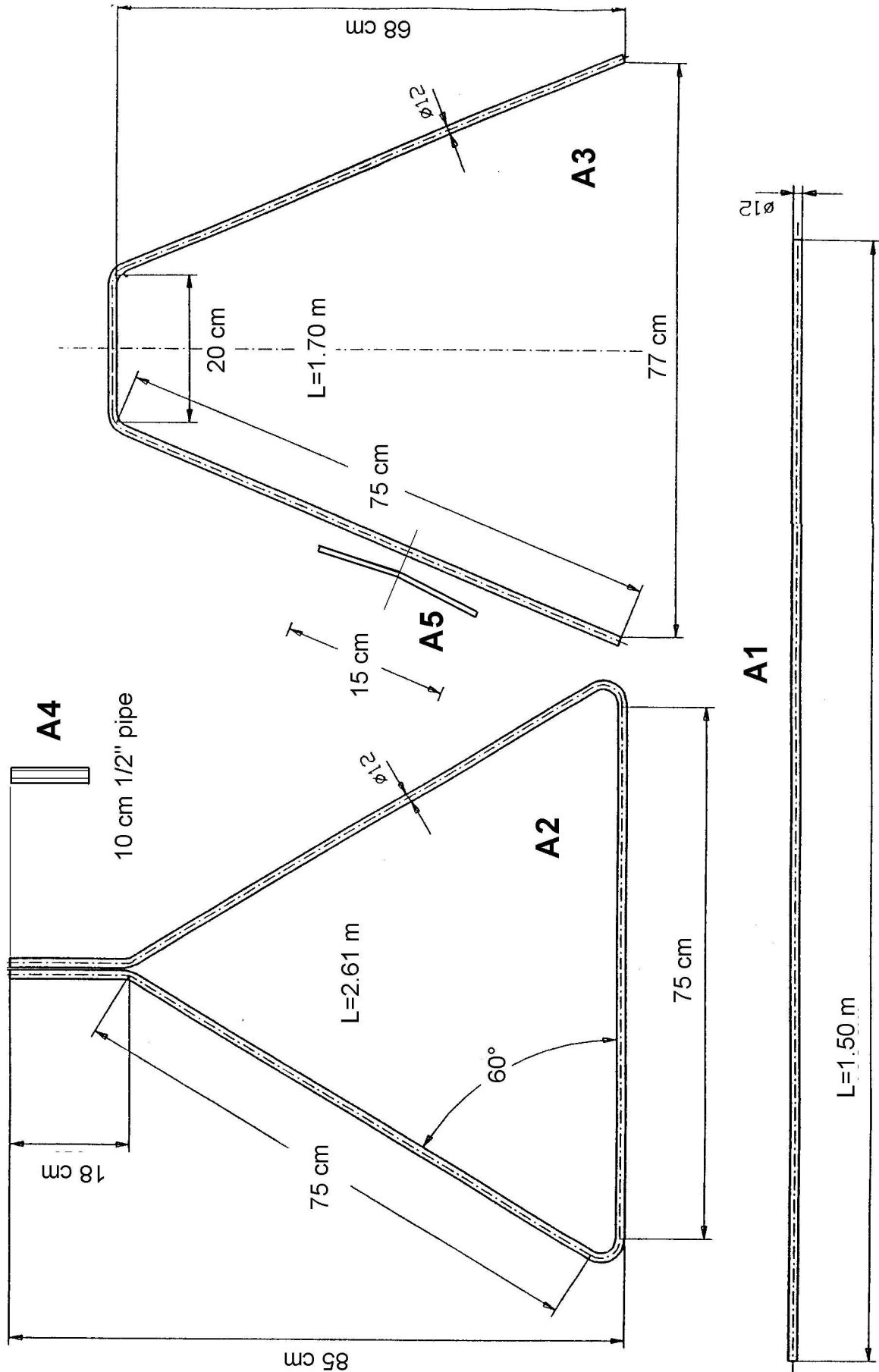


Figure 11: Parts A1, A2, A3, A4 and A5 needed for the cooker foot



5. place the two triangles (A2) on the working platform on the square lines with the pipes (A4) to the outer sides and set the pot holder into the pipes. Connect the two straight parts (A1) with wire at the inner side of the triangle bend. Adjust the foot so that both triangles and one straight bar cover three lines of the square on the platform.
6. Attach the handle bars (A3) on both sides in the triangle so that the connection between the handle and the straight bar (A1) has a distance of 40 cm from the triangles (A2) and the triangles are vertical, and fix all connections with wire.
7. Move the foot from the platform and weld every connection first punctual and then finally, **but don't weld the pot holder bar to the pipes!**
8. Finally add a chord clamp (A5) piece  $\varnothing$  8 mm and 15 cm long to the lower third of the handle bars on diagonal opposite sides.

## 2.6 Finalising the metal work

To finalize the metal work, the parabola cage has to be welded to the pot holder part, and the solar clock has to be fixed. With a water level it has to be checked, that the ring of the pot-holder is horizontal.

1. Check where the marks for the axis are on the largest ring of the cooker and push at this positions the pot holder bar through the cage, between the largest and the next smaller ring.
2. Lift the pot holder together with the parabolic cage and install the pot holder bar in the pipes of the foot.
3. Adjust the sheet metal pieces vertical up with the hole at the bottom and lift the parabolic cage with the largest ring on the edge of the sheet metal, so that the center of the sheet metal agrees with the marks on the ring for the axis. weld the ring to the sheet metal in this position.

The pot holder bar should now be close to the second ring, the sheet metals should be vertical and the parabolic cage in equilibrium should be horizontal.

4. Adjust the parabolic cage so that the sheet metals have the same distance from the pipes. Weld 2 short  $\varnothing$  8 mm pieces on the pot holder bar so that they just touch the sheet metal on the side of the pot circle. **Don't weld anything to the sheet metal!**

## 2.7 Painting

Often the cooker might be exposed to rain and the metal will corrode if not protected. To get a good corrosion protection and a nice outlook the following steps are recommended.

1. Clean all dirt and loose corrosion particles from the metal by a wire brush.
2. Paint all parts at least once with anti-rust paint! Don't use old and already thick paint for the first cover. The paint has to be thin-liquid and special care has to be taken that the paint reaches all little holes and gaps especially at the points of welding. Be sure that everything is covered and that the paint is completely dry before painting again.
3. To improve the outlook of the cooker make a final cover with white paint. Don't use a dark color as then the metal heats up too much in the sun.

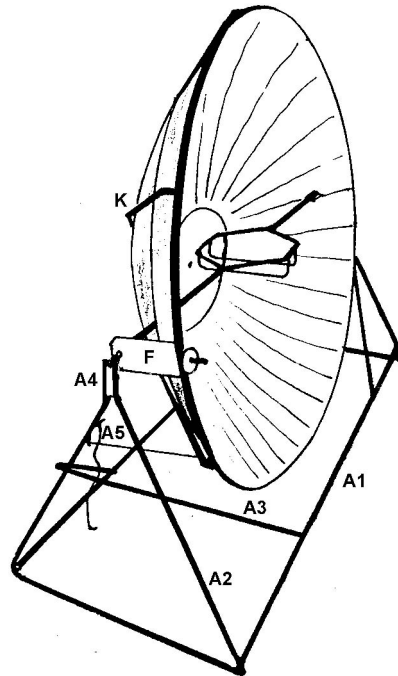


Figure 12: Finalized cooker showing the assembly of the foot parts

## 2.8 Mounting the aluminium panels

If the parabolic cage has the right shape, then the installation of the mirror panels is easy. The more the shape is different from the right form the installation becomes a hazzel! At the position of each of the rings the panels have two little holes to be placed on each side of the ring and the holes of neighboring panels should come to the same position. For fixation the wire is meant to pass through the lower holes of the neighboring panels, around the cage ring and then trough the upper holes of the neighbouring panels.

Using the  $\varnothing$  1.5 mm aluminium wire seems the best way for fixing the panels if the shape of the cage is good. In difficult situations using the telephone wire might be more versatile.

The mirror side of the panels is protected by a thin plastic cover which has to be removed **before** installing the panels.

1. There are 4 of the 36 long aluminium panels where an edge of the long side is cut out. This panels have to be fixed first on both sides of the parabolic cage, so that the pot holder bar passes through the mirror in the center of the cut out part. Fix these panels at the smallest and at the second largest ring.
2. Now fix all other 32 long panels on the smallest ring in a lose way, always joining 4 holes with one wire. For the last panel to fit it may be neede to pull the other panels as far apart from each other as possible.
3. Next connect all penal loosely with the second largest ring. Again pull the panels as far apart from each other as possible.
4. Now the connections with the outer and middle ring can be done as well, and the connections to all but the smallest ring can be already fixed finally.
5. Finally the 12 inner triangular panel can be fixed. Pull off all protection foil and put the screw with the washer from the shining side trough all panels. Loosely add a nut to hold the hole pile together, put the screww into the central hole in the cage and loosely fix the screw with an other nut.

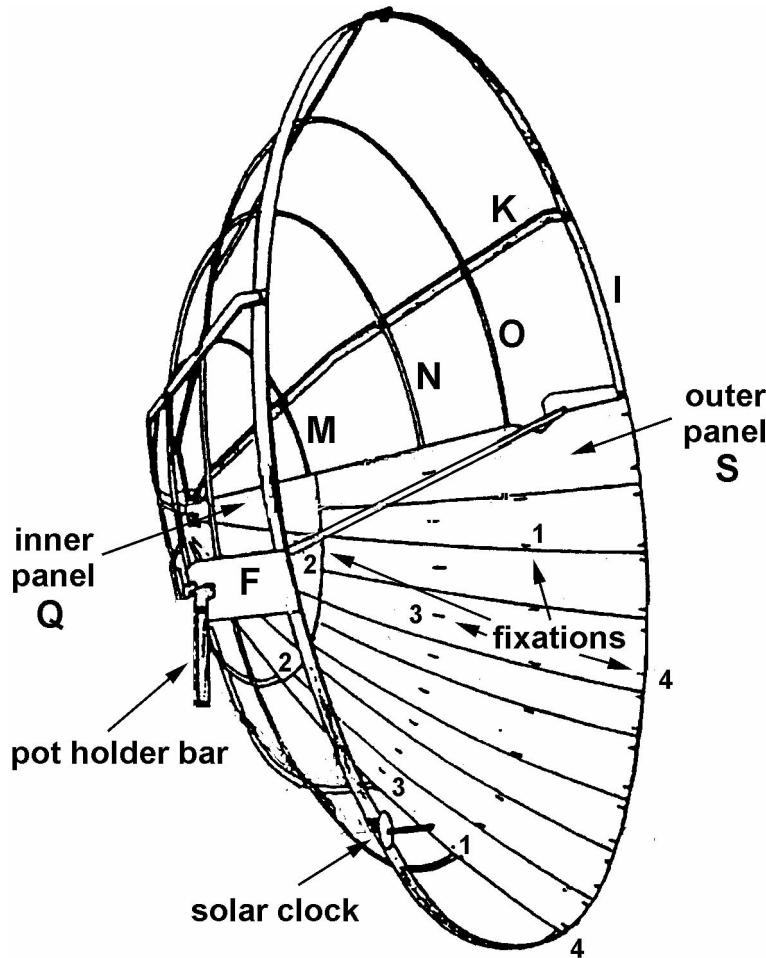


Figure 13: The fixation points of the aluminium panels

The panels now can be spread to just cover each other. The outer holes should agree with holes of the long outer panels. To fix the panels remove the wire from the long panels and fix all three panel with the same wire. Or add a new wire to fix the inner panel, but it might be sometimes difficult to place two wires through the holes.

6. Fix the nut of the central screw and add an other nut to ceep the screww from getting loose.
7. Fix all wires on the back of the mirror nicely cutting ends which are longer than needed.

**CONGRATULATIONS!**

### 2.9 How to make the mirror panels?

For the beginning it is advisable to buy a prefabricated set of mirror panels which can be ordered from *EG-SOLAR e.V., Neuöttinger Str. 64c, 84503 Altötting, Germany.* or from the EG-SOLAR home page:

<http://home.t-online.de/home/eg-solar/eg-sol~1.htm>

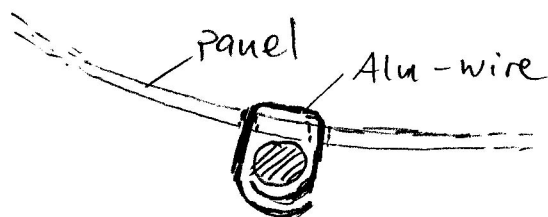
If you really want to make the panels yourself as well the design od the inner and outer aluminium panels are given on the pages 16 and 17.

### 2.10 Testing and adjusting the cooker

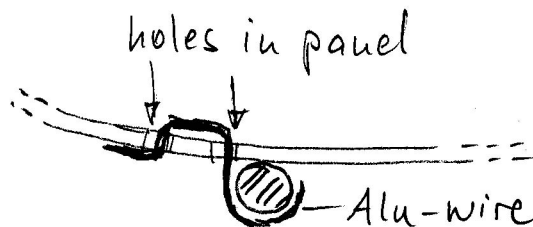
Testing and adjusting is only possible in bright sunshine with clearly visible shadows.

second largest ring.

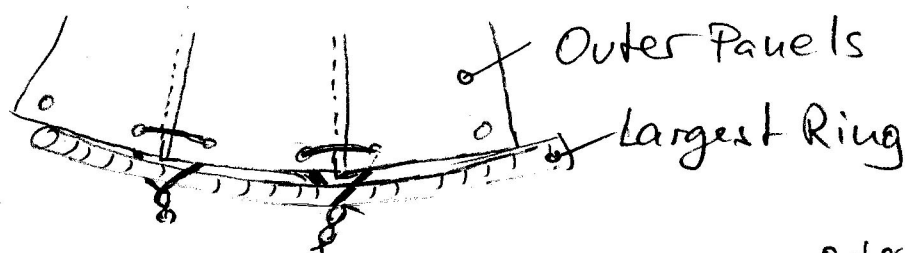
### Outer Panels :



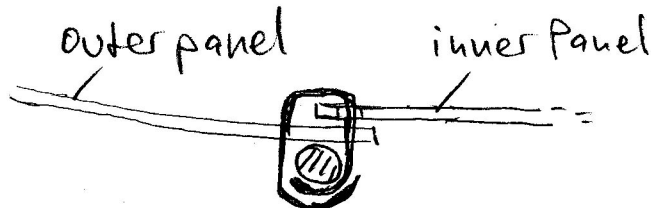
normal connection if Panel fits



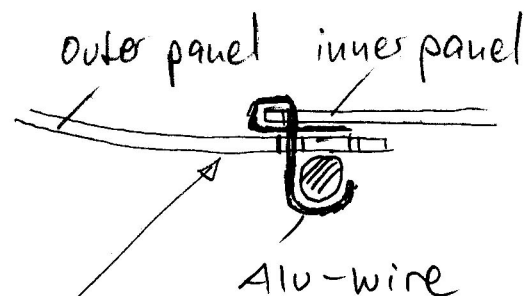
connection if holes in Panel are not fitting well



### Inner Panels :



normal connection



inner panel fixed with second wire in normal connection as shown above

Figure 9: Some tricks, which to fix the panels with the wire if the holes in the panels do not fit perfectly

Figure 14: Some tricks, how to fix the panels with the wire, if the holes in the panels do not perfectly fit

The solar clock has to be adjusted to indicate the best focusation of the light into the cooking area. It should be possible to inflame a white paper or at least a newspaper. One liter of water in a black metal pot should boil in 8 to 10 minutes.

1. Adjust the opening of the chord clamps to ceep the chor in position when wrapped around.
2. Adjust the cooker foot on the floor in the sun direction. Turn the foot on the ground until the vertical part of the triangular side makes shadow on the horizontal side of the triangle on the ground.
3. Attention: For this step sun-glasses are recommended. Put a white sheet of paper on the cooking area and adjust the inclination of the mirror to get the brightest and smallest possible

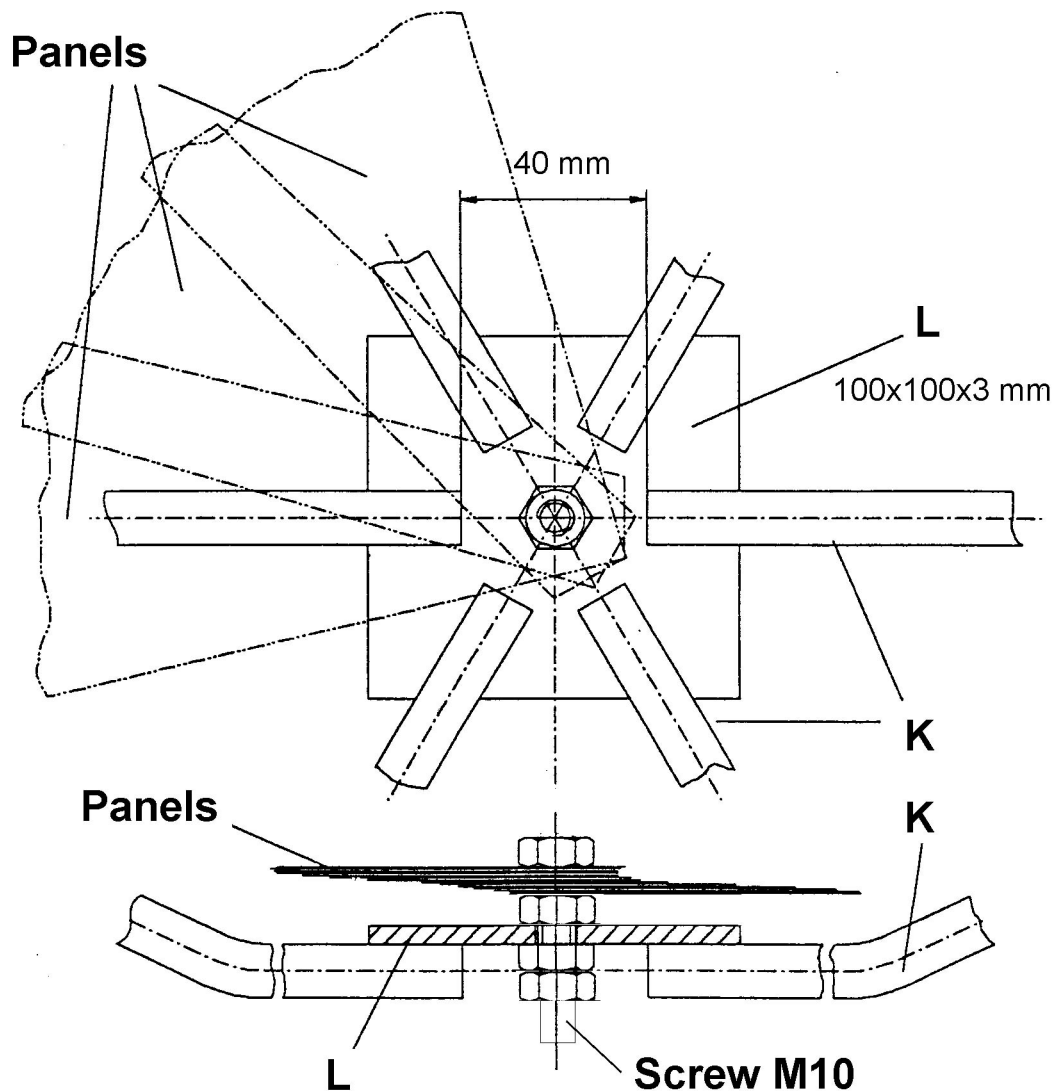


Figure 15: Fixation of the inner panels with an M10 screw

light-spot on the paper. Fix this position with the cord. Now bend the nail of the solar clock so that the shadow of the nail becomes a single small spot.

4. Check several times if the solar clock now gives the position of the cooker where the light spot in the cooking area becomes the brightest.

### 3 Usage instructions

- Use **black** pots preferable with a lid. Clay pottery is ok too, but cooking then takes a bit longer time.
- Keep the mirror clean and avoid scratching the mirror surface.
- Use **only liquid cleaning aids and only use a clean cloth without sand or mud sicked to it.**
- When the cooker is not used, tur the mirror completely upside down so that the reflecting side points to the ground and does not catch rain and dust.

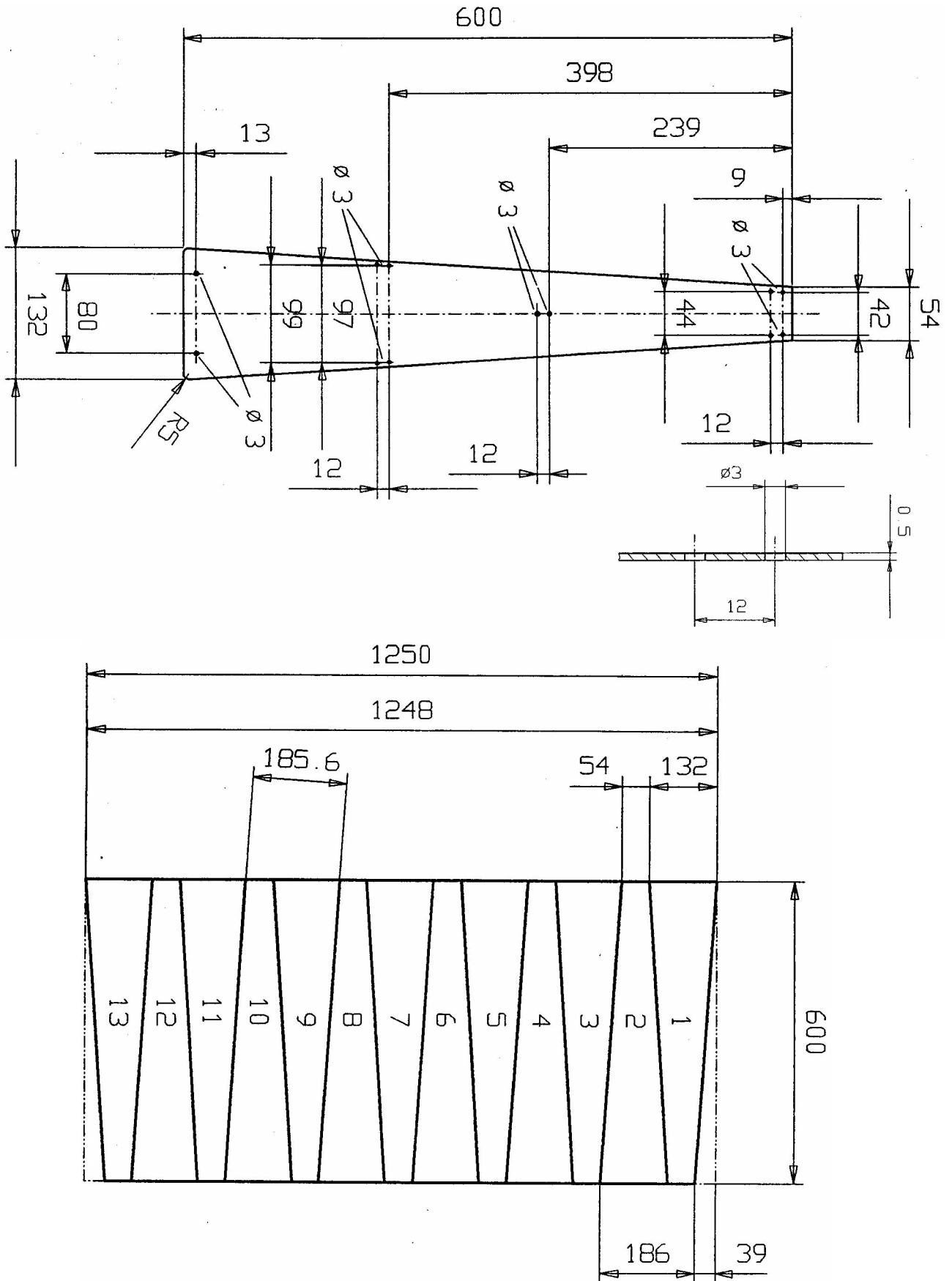


Figure 16: The 36 long mirror panels S



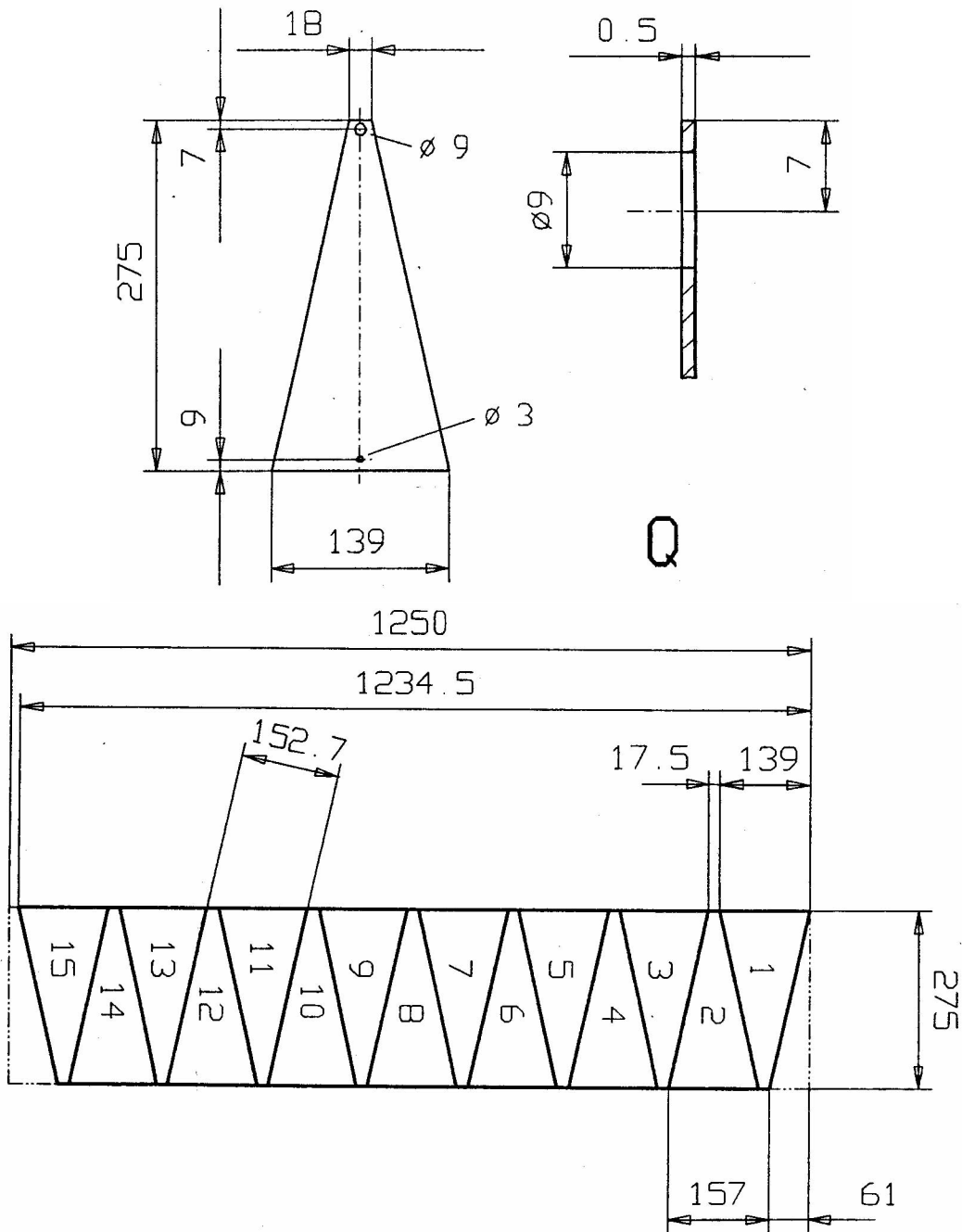


Figure 17: The 12 short mirror panels Q



- While cooking avoid shadow on the mirror, step aside when stirring in the pot for a long time.
- Regulate the cooking temperature (switch the cooker on and off) by adjusting and deadjusting the mirror to the sunlight, using the integrated solar clock.
- For full cooking power re-adjust the mirror to the moving sun about every 10 minutes, using the integrated solar clock.
- Wear sun-goggles (sun-glasses) if you need to look into bright reflexions **for a long time** or if it is more convenient for you. The light reflexions coming from the mirror are not brighter than the light coming from the sun (unless you are putting your head right into the focus in the cooking area) and our eyes are able to look into the sun for a short time without damage, but putting something bright white (like a sheet of paper) into the focal point and looking at it for a long time may lead to problems.
- Make a shade next to the cooker for convenience, so you can stay in the shadow while the cooker gets full sunlight, ore use an umbrella.
- For cooking operation it is best to place the cooker on level and horizontal ground with not easy inflammable material like dry gras, paper or kerosine in the next surrounding.
- Re-adjust the cooker every 10 to 15 minutes to get optimal results. Cooking stops automatically after some time if the cooker is not re-adjusted to the sun.
- During operations at the cooking pot like sirring, adding food ore moving the pot, the mirror can be de-adjusted (vertical) to avoid looking into reflexions and to polute the mirror surface by dropping food.
- Don't move the whole cooker with a full pot on it.
- If possible use a lid on the cooking pot, which gives more heat in the pot.
- In windy regions use a wind protection, as wind is cooling the cooking pot, reducing the available heat.
- Small pots are more effective, because large pots (or Injerra-Plates) are making by them selves too much shadow on the mirror.
- For baking use two pots, one inside the other with an air gap all around the inner pot or baking tin.



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