

# OPITEC

111.851

## Stereo-Aktivbox



Version "Spacig"



Version "Easy"

### Necessary tools:

Pencil,ruler,set square

Fretsaw

Drills ø3/10 mm/ counter sink

Sandpaper

Soldering iron/solder

Side cutters/ Insulated pliers

Screwdriver

Wood glue /All purpose glue/Instant glue

Paint, brush

### Please Note

The OPITEC range of projects is not intended as play toys for young children.They are teaching aids for young people learning the skills of Craft, Design and Technology.These projects should only be undertaken and tested with the guidance of a fully qualified adult.

The finished projects are not suitable to give to children under 3 years old. Some parts can be swallowed. Danger of suffocation!

Part list				
	Quantity	Size (mm)	Description	Part-No.
Plywood	1	300x210x3	Housing	1
Circuit board	1		Ready made part	2
IC-holder	2		Ready made part	3
IC TDA 7052 A	2		Ready made part	4
Capacitor 470nF	2		Capacitor Code 474	5
Capacitor 220uF	1		Capacitor-watch polarity!	6
Capacitor 100nF	1		Capacitor/ Code 104	7
Capacitor 1uF	1		Capacitor/ Code 105	8
Cable,black	1	500	Wiring	9
Cable,red	1	500	Wiring	10
Loudspeaker	2	57	Loudspeaker	11
Potentiometer	1		Regulator	12
Battery clip	1	100	Battery connector	13
Micro slide switch	1	19x6	On off switch	14
Connector	1	200	Connection cable	15
Wooden wheel	1	15	Adjustment knob	16
Schraube	2	3x16	Circuit board fixing	17
Distance spacers	2	5	Circuit board fixing	18
Nuts	2	M3	Circuit board fixing	19

# INSTRUCTIONS

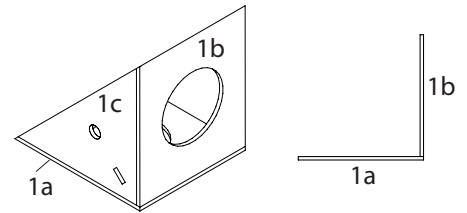
## General:

The housing of the Aktivbox can be made in two different versions. The "Easy" version is where the sides are all glued at 90 degrees. In the harder "Spacig" version the sides are set at 60 degrees.

## 1. Housing

### Version "Easy" (90 Grad)

Mark out all the parts according to the pattern (see page 2) on the plywood sheets. Saw and drill as shown in the pattern. Note the side part (1a) is 3 mm longer. Lay this part on a building board so that the shorter sides (1b) and the front (1c) can be added at right angles.



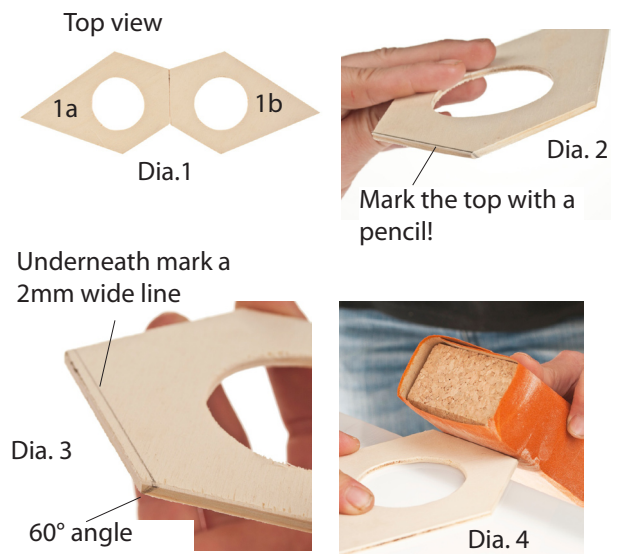
### Variation "Spacig" (120 Grad)

Mark out all the parts at 120 degrees as shown in the plan (See page 3) on the plywood. Drill and saw them out according to the plan.

The 120° patterns must be exact -- so please check before sawing! Assemble the parts (1a+1b) in a mirror fashion with these edges adjacent to each other (Abb.1).

Holding them together, draw lines with a pencil at each end for the thickness of the wood (Dia. 2). Turn the piece over and join up the marks with a straight edge.

If you join the lines on the edge, you have a 60 degree angle! (Dia. 3)



Sand the 2mm edge so that an angle of 60 degrees is formed. Check it as often as possible so that it is accurate. Working slowly down to the pencil line (Dia.4).

Once you have sanded the part, assemble them on a building board. Check the angle with a set square so that together they make 120 degrees.

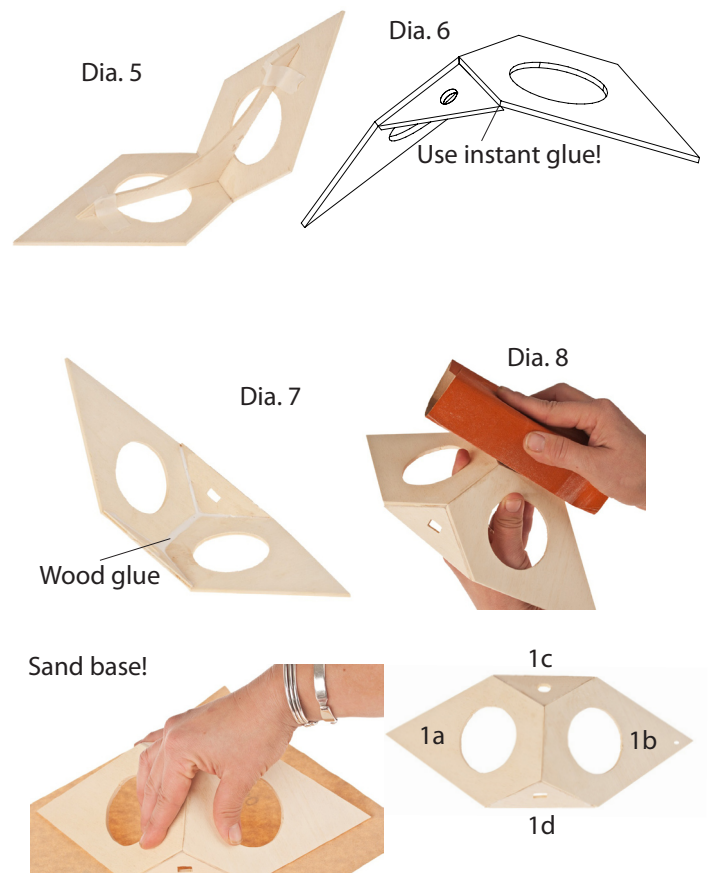
Glue them together using sellotape to hold the parts steady on the board. (Abb. 5)

Once dry, add the front (1d) and top triangle using an instant glue. (Dia.6)

Once dry, add a bead of wood glue along the joints on the inside to make the structure strong. (Abb. 7)

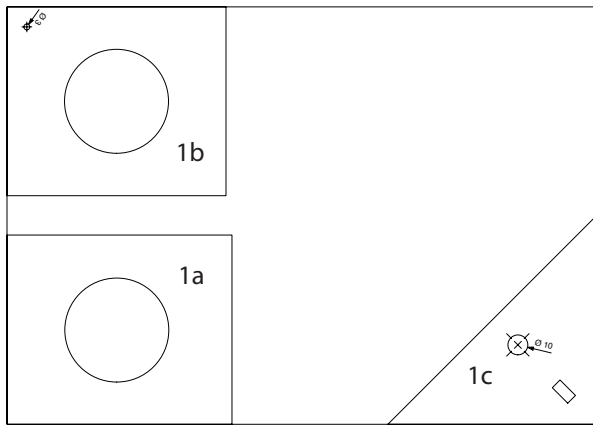
The edges from the sides, front, and top can be sanded according to the plan (Abb. 8).

Place the housing (according to version) on a sheet of glasspaper. Gently rub in a circle to ensure that the base is flat.

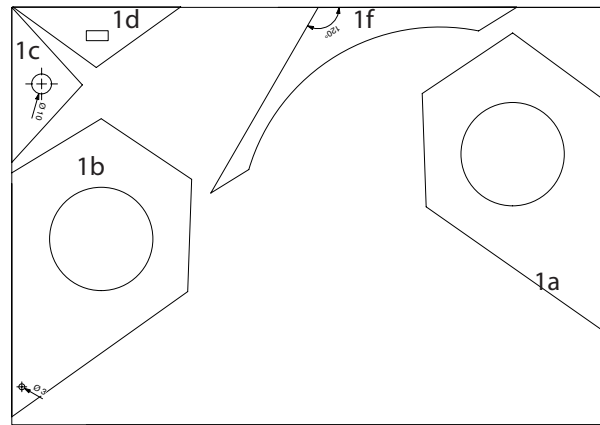


# INSTRUCTIONS

Cutting plan "Easy"



Cutting plan "Spacig"

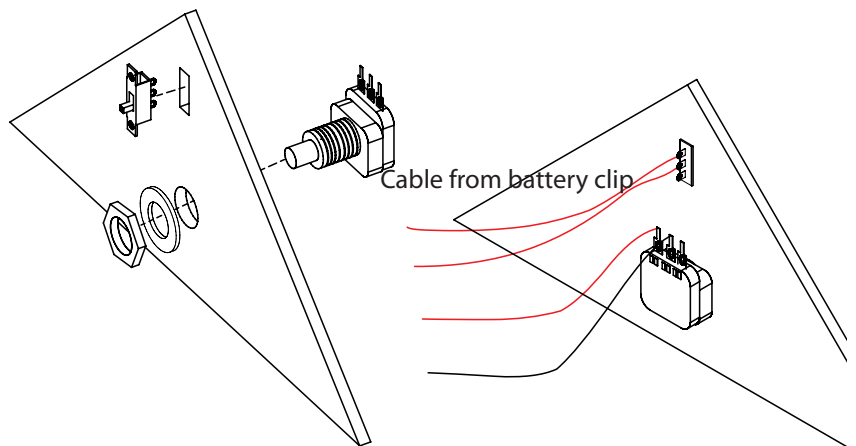


## 2. Adding the potentiometer, switch and loudspeaker.

Shorten the shaft of the potentiometer down to 10mm using a fine saw.

Before gluing the base on the housing add the potectiometer(12) Remove the fixing nut and insert it through 10mm hole, replace the washer and nut Then insert the slide switch (14) in the correct hole and fix it with an all purpose glue. The red cable from the battery clip (13) is soldered to the right hand side of the switch Cut two lengths from the red cable (10) and two from the balck (9) ca. 120mm long. Remove the insulation from the ends, twist and tin. A red lead 120mm long is soldered to the middle connection on the switch.

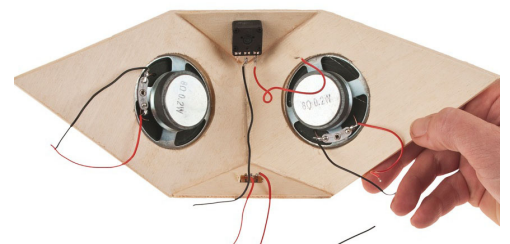
Simplified diagram!



Das 2. Solder a red cable to the left hand outer connector on the potentiometer , and the black cable to the middle connector on the potentiometer (See diagram; note version!)

Cut from the cables (9,10) 2 pieces each ca. 90mm long, remove the insulation from the ends, twist the wire ends together and tin the ends Solder a red cable to the plus on the speaker (11) and a black cable to the minus connection

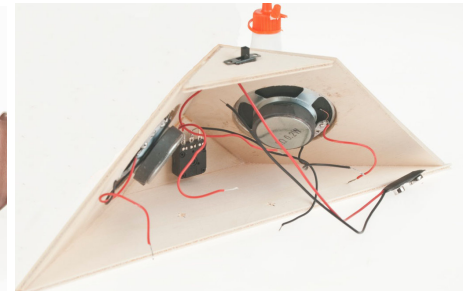
Glue the loudspeakers into the openings so that the wiring is facing inside the housing



Now you can place the housing on its base (Dia. Version " Spacig") and draw around the shape



Place the circuit board on the base and mark out the mounting holes ( From top)  
Drill the holes in the base (1b-Easy) Turn the base over and countersink the holes so that protruding screws heads do not damage any surface once finished.

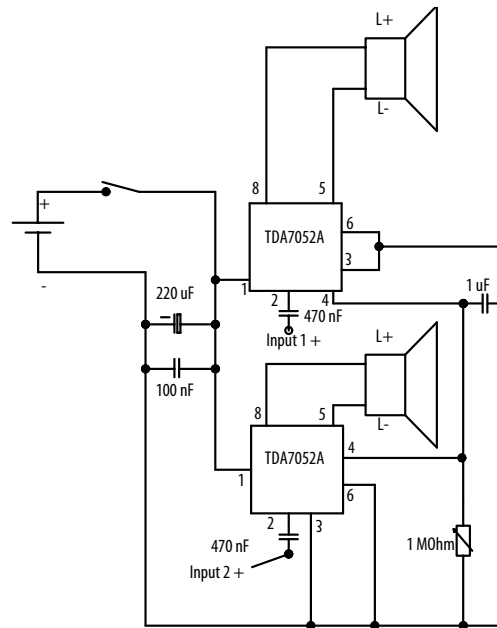


Finally saw out the base. Sand the edges and glue making sure the countersunk holes are underneath

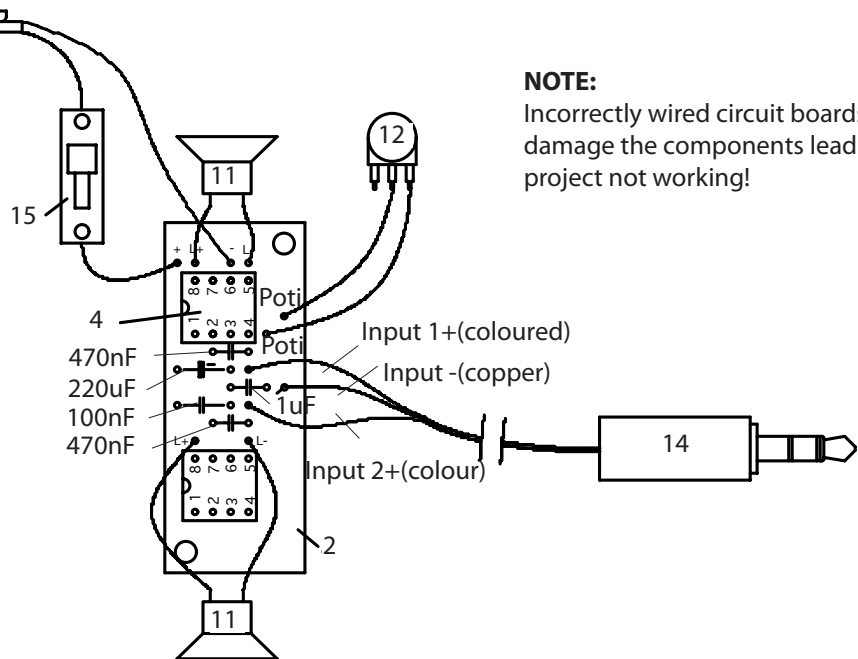
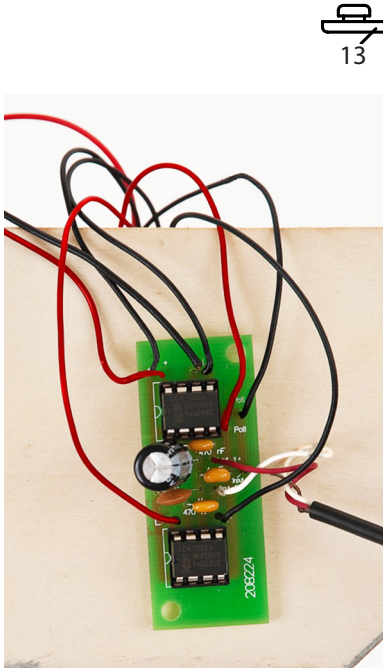
Once dry and the edges

# INSTRUCTIONS

Wiring plan:



## 3. Mounting the components on the circuit board



The circuit board has two different sides. The top of the board is drilled and printed and the underneath has the connections where the components are soldered

The IC holder 3 is soldered to the board in the position shown. It is inserted in the top of the board, taking care not to bend any of the legs. Solder the legs to the underneath of the board. NOTE the holders has a small notch at one end this must be the correct way around as it is a guide for the IC itself. See the wiring plan

The amplifying IC's are added last of all once all the other components have been soldered in place

The 470 nF Ceramic capacitor (5/Code 474) is added to the board and soldered underneath. To stop it falling out when soldering spread its legs slightly

The capacitor 100 nF (7/ Code 104) and the 1 uF Capacitor (8/Code 105) can be soldered on the board in the correct place

The Electrolyte capacitor 220 uF (6) must be inserted the correct way around (polarity) "-" The polarity is marked on the component and board.

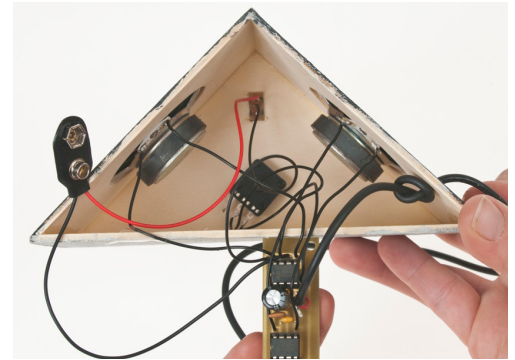
Check that it is in the correct position then solder it in place. Snip off any protruding wire legs on the components. Solder the cables from the loudspeakers in the correct holes in the top of the circuit board. Watch the polarity!

# INSTRUCTIONS

Remove the insulation from the wiring of the 3.5 mm connector (15) Do this carefully so as not to damage the earth connection. The earth connection is the minus. The wires must be twisted together so that they fit in the circuit board. Guide it into on the side of the board. Tie a knot after 100mm to stop the the cable being pulled out

The two coloured cables are inserted in input 1 and input 2 and soldered in place.

To finish the minus pole cables are soldered in place.



The following points should be followed in order to avoid any errors in making the circuit:

Check all the connections underneath the board to make sure that there are not any stray pieces of solder making bridge between components that shouldn't be there.

Are all the components in the exact place according to the plan. Are they the correct way around (polarity) ?

Once you have carefully worked through this stage you can insert the IC in its holder. Do this carefully as it is easy to bend one of the legs underneath.

Make sure it is the correct way around

Turn the potentiometer to the central position (middle volume) turn on the MP3 setting the volume to the middle position, insert the 3.5mm connector.

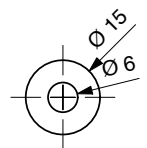
Now add the 9 V Block battery and slide the switch to the on position

You should hear music from both speakers.

If it does not work remove the battery and check through all the points described at the beginning once more.

## 4. Final assembly:

Drill the adjustment knob (16) in the middle with a 6mm dia hole. Paint it as you wish and glue it to the shaft of the potentiometer



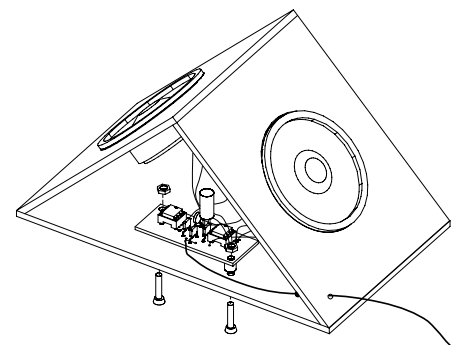
Insert the two countersunk head screws (17) from underneath the base, add the spacers (18) and fix the circuit board in position with the two nuts (19) finally tighten.

### Note:

The heads of the screws must be countersunk underneath the base to avoid scratching any polished surface on which the speaker is stood!

Decorate as you wish

Have fun with your stereo speaker, and your MP3, Laptop, PC or mobile phone





Pattern  
"Easy" version  
M 1:1

