M6S Assembly Instructions

Designed and manufactured in Australia by The Loudspeaker Kit
www.theloudspeakerkit.com

Email: sales@theloudspeakerkit.com

You will need:

- Phillips head screwdriver
- Woodworking glue
- Damp cloth
- Good quality masking tape
- Ratchet tie down strap (optional)
- Brick or other weight (optional)

Preparation

Lay the contents of the box out and check you have everything you need to complete the kit (see parts list on back page). Find a suitable work surface and make sure it won't be ruined if you spill some glue. If covering the work surface, avoid using newspaper as newsprint may rub off onto your kit. Baking paper is a good choice.

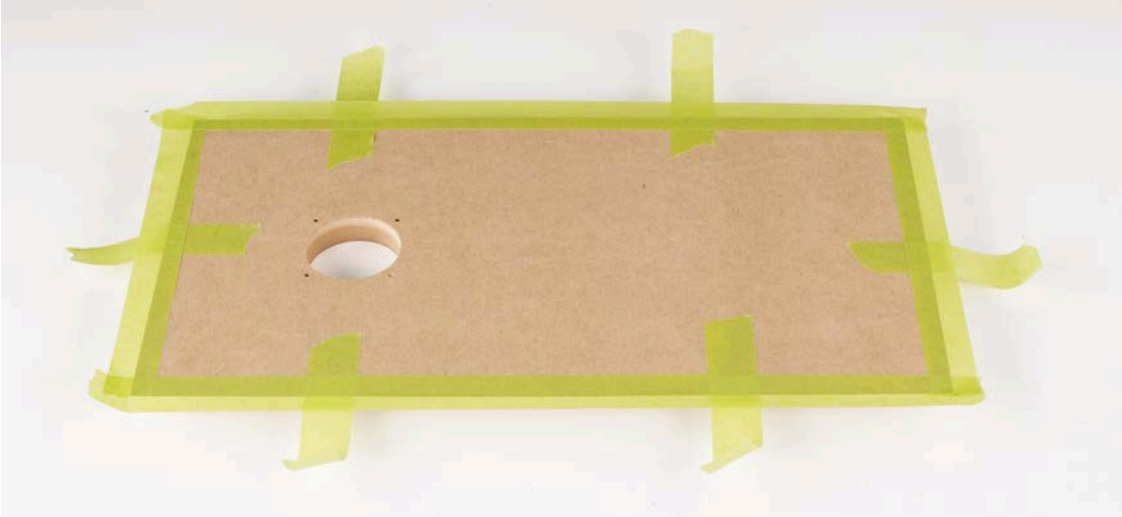
Easier assembly with mitres

LSK kits now employ mitre construction, which offers greater ease of assembly with much less sanding. Butt joints are eliminated, avoiding visible hairline cracks that often appear after painting. Mitre construction puts the join right on the edge where it is less visible. Most constructors avoid using mitres due to the difficulty in getting the angles correct. Our manufacturing process provides a level of accuracy that is very difficult to achieve in a home workshop.

Masking tape

We recommend avoiding cheap masking tape, which tends to break when applied under tension. If you aren't using the weight and ratchet strap, you are relying on the masking tape along to apply pressure to the join as the glue sets.

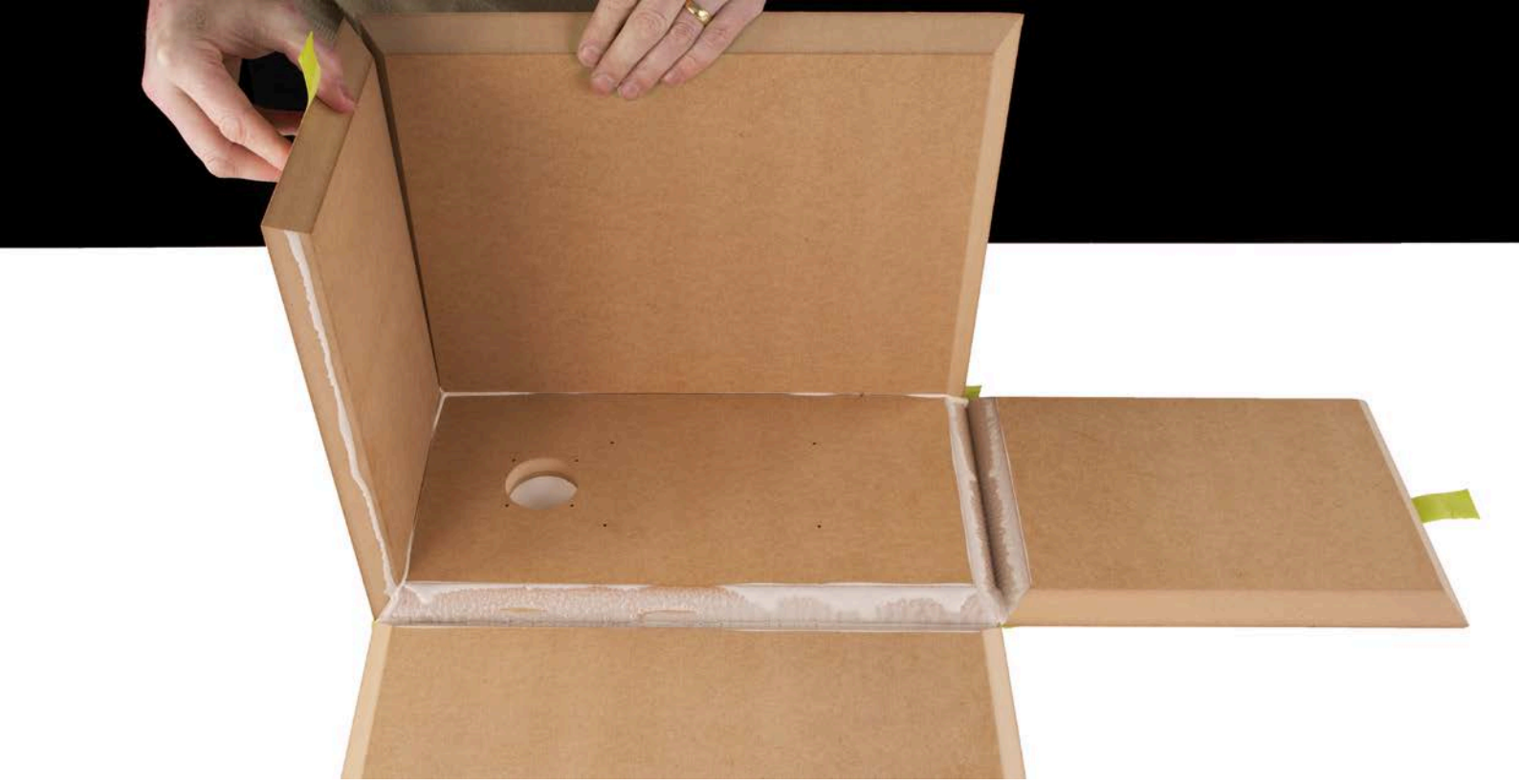
Lay out the rear panel and apply masking tape up as shown.



Flip over the panel to expose the mitres. Carefully position sides, top and bottom panels. Press the panels firmly along each join so that the masking tape on the other side adheres to the MDF. Now rotate up each of the four panels as shown below and press the masking tape firmly into the join.

Tip: Overhang a small strip of masking tape on each of the four panels. These strips will make it easy to lift the panels.

Apply a glue bead to all four joins between the rear and adjacent panels. This first bead of glue should be applied to the bottom of the mitre. Then apply a second bead in the middle of the mitre. This bead should be thicker than the first, as you can see below.



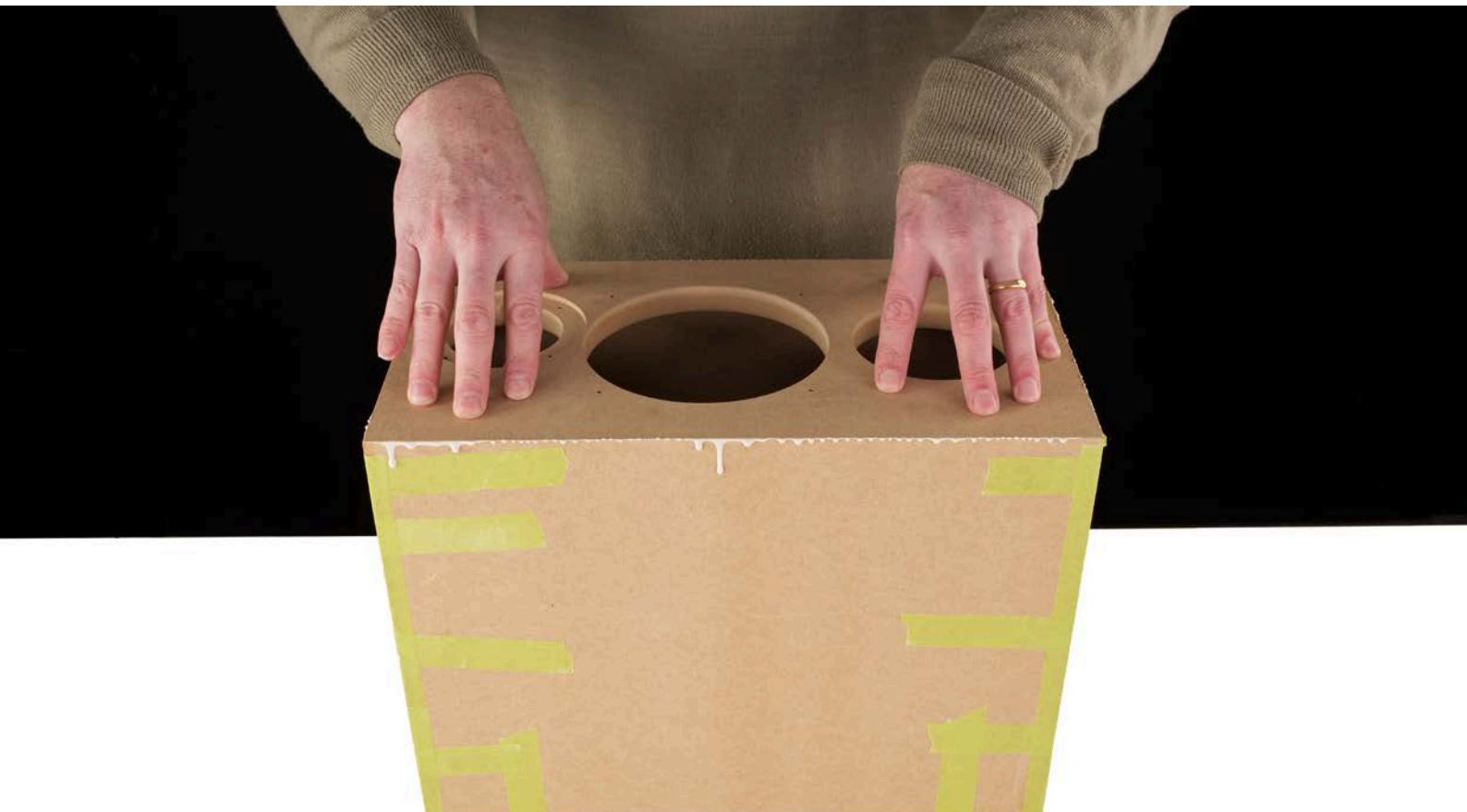
Confirm that the glue adequately covers the entire surface of the joins by folding up each pair of panels. Check the glue covers the entire surface and add more glue where necessary. Now apply glue to the joins between top, bottom and side panels.

Fold up the first pair again, wipe excess glue then firmly press the panels together as you hold them in place with masking tape. Initially, one strip of tape across the join will hold them in position. Continue with the other three panels.

Secure the last of the sides, top and bottom with masking tape as shown below.

Apply one thick glue bead to the mitres on the front baffle. Confirm the amount of glue by pressing into position. The entire join should be covered in glue – apply more glue where necessary. The photo above shows a second bead being applied after checking the glue cover.

Now press the baffle firmly into place. Wipe excess glue and secure with masking tape. Use firm pressure when applying the tape. The tape holds the panels together as the glue sets and should cover all joints.



An optional step for improved clamping pressure is to secure top, bottom and side panels with a tie down ratchet strap. Avoid damage to the surface of the MDF by placing cardboard strips under the straps at all four corners. Be careful to avoid applying excessive force, which can damage the corners of the MDF or even collapse the cabinet.

Use a brick or any convenient weight to apply downward pressure on the baffle, with protection between weight and MDF panels.

Drying time

Typical wood glues can achieve moderate strength in as little as 30 minutes. If you are using PVA glue then a good indicator that it has set is the transparency. PVA becomes transparent once set. Ideally it's best to leave the enclosure clamped over night before moving on to assembly or finishing.

Grille assembly

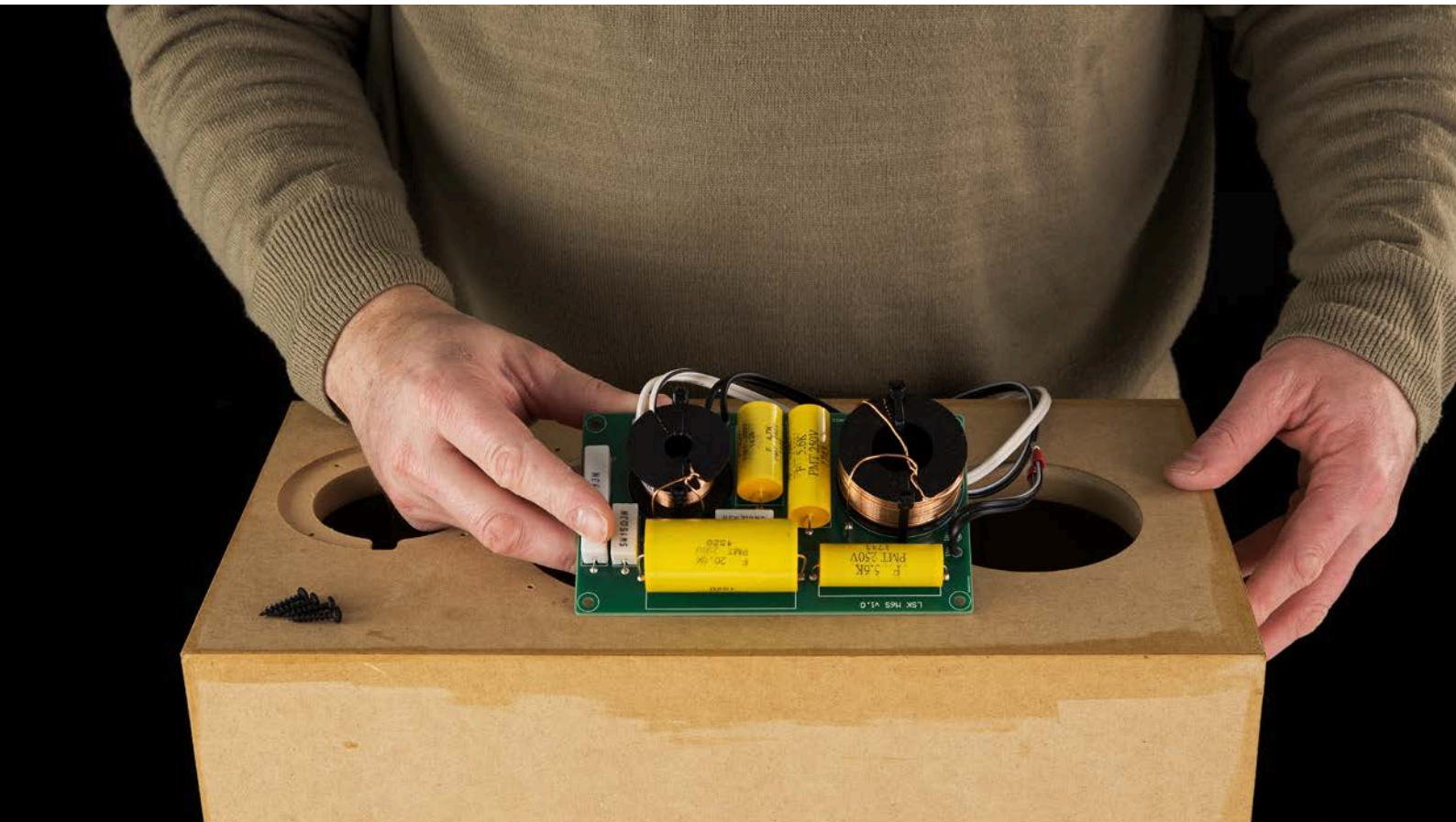
This kit uses a clever neo magnet attachment system that avoids the use of traditional grille clips. Flat packs contain neo magnets which have been concealed in the front baffle and grille.

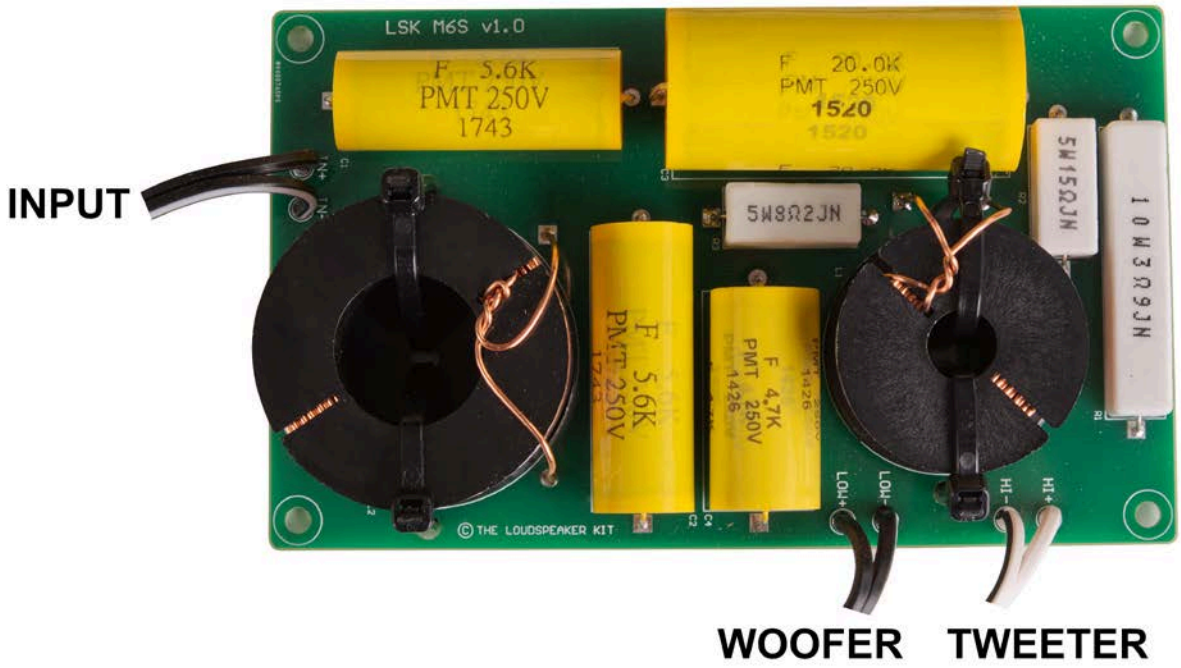
Sequence tip

Final assembly should be done after you have applied your chosen finish. Otherwise, drivers and terminals will get damaged and the internal lining will be covered in MDF dust.

Insert the crossover board

Insert the crossover board into the enclosure through the woofer hole and then position so that the four holes in the crossover board align with the four pilot holes in the internal rear surface of the enclosure.





Installing the crossover board

There are three sets of cables:

- **Input terminals:** located near the larger inductor on the end of the board.
- **Tweeter output:** easily identified by the white cable (HI+ HI -)
- **Woofer output:** black cable next to the tweeter outputs (LOW+ LOW-)

The board is fixed in place with 4 short button head self tapping screws. It's best to screw them in place with a screwdriver by hand. Orient so the input loom is near the terminal cutout.

How to identify positive and negative cables

All negative cables have a stripe. The white tweeter cable has a black stripe. The black woofer and input cables have a white stripe.

To ensure positive and negative speaker outputs are not reversed, the spade connectors have different sizes to prevent mistakes. However, extra care is required with the input cable, since the terminals for this are both of the same size.

Sequence tip: Normally this step would follow finishing the speaker. Otherwise sanding will get MDF dust over the crossover.

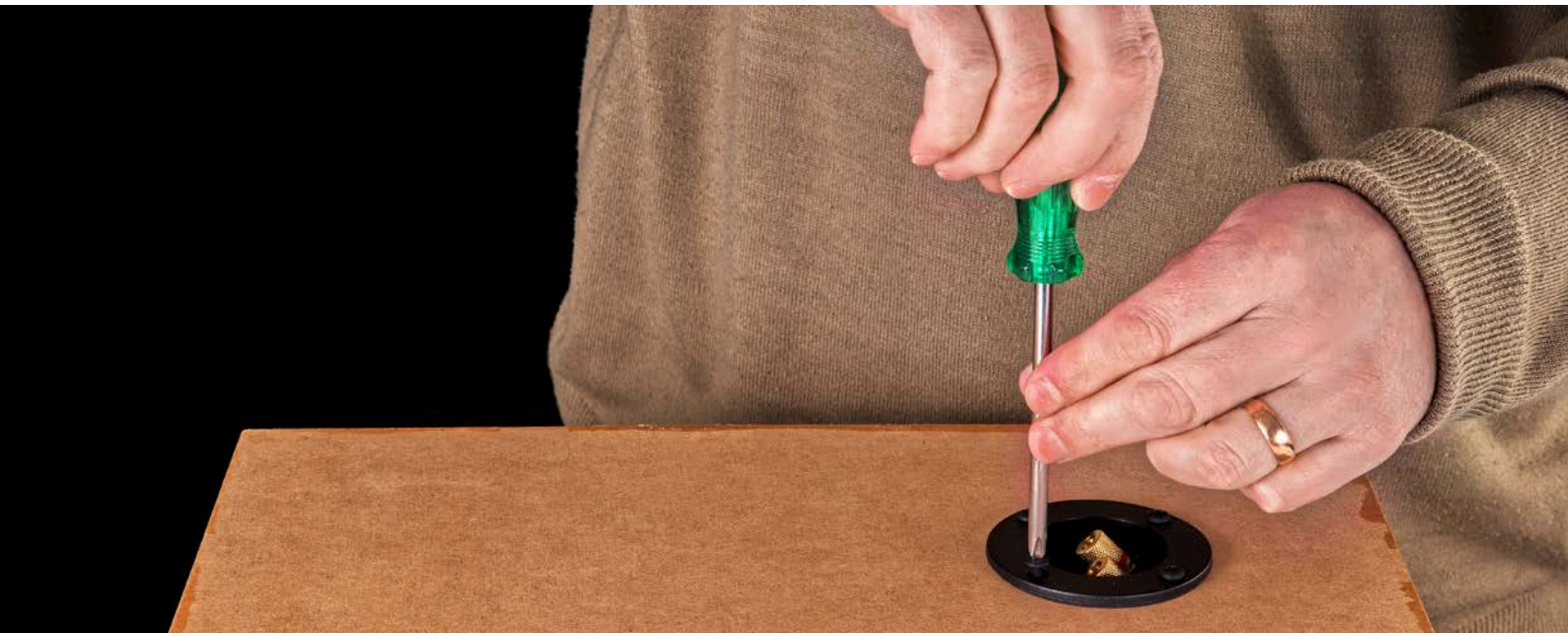
Note: The cable with the white strip goes to the negative terminal

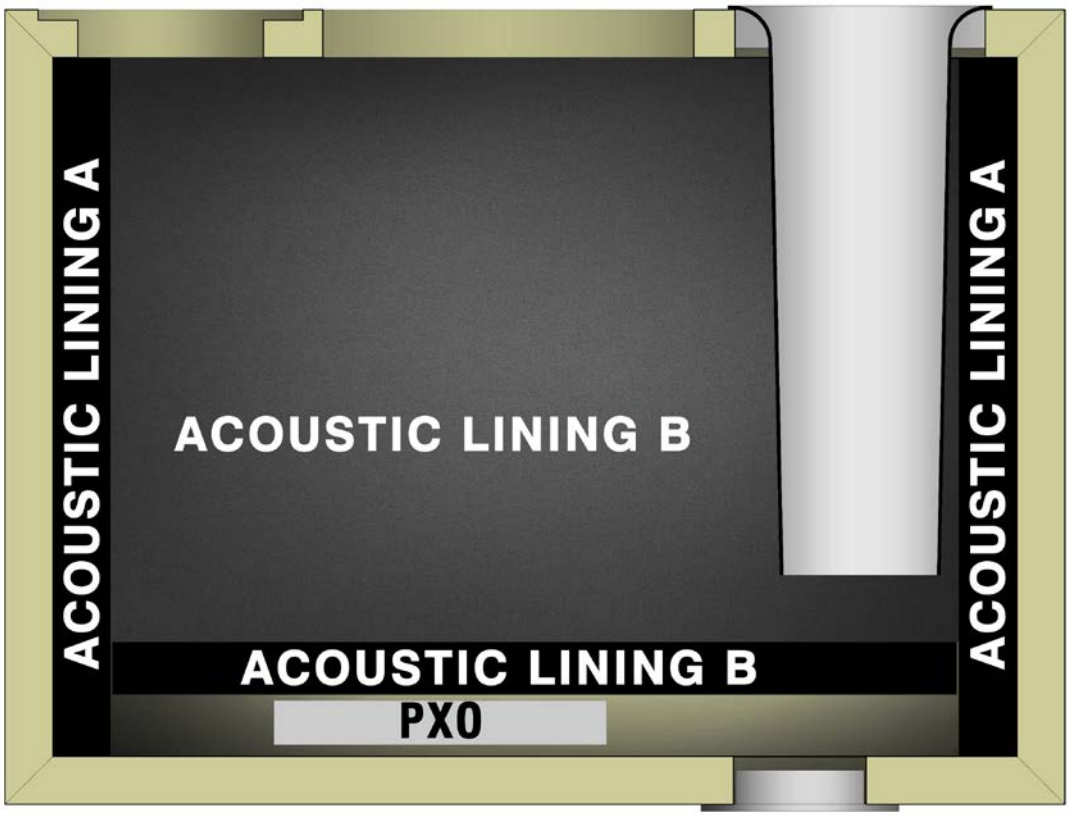
Since the terminals are located behind the port, the gold lugs must be bent towards the crossover board. Otherwise the cable will push the lining closer to the internal port exit.

As shown above, driver cutouts provide access to fix the passive crossover board in place. Using the shorter screws, fix the board in place with a Phillips head screwdriver. Avoid over tightening. Ensure the board is oriented so the inputs with the shortest cable pair are near the terminal cut out.

Installing terminals

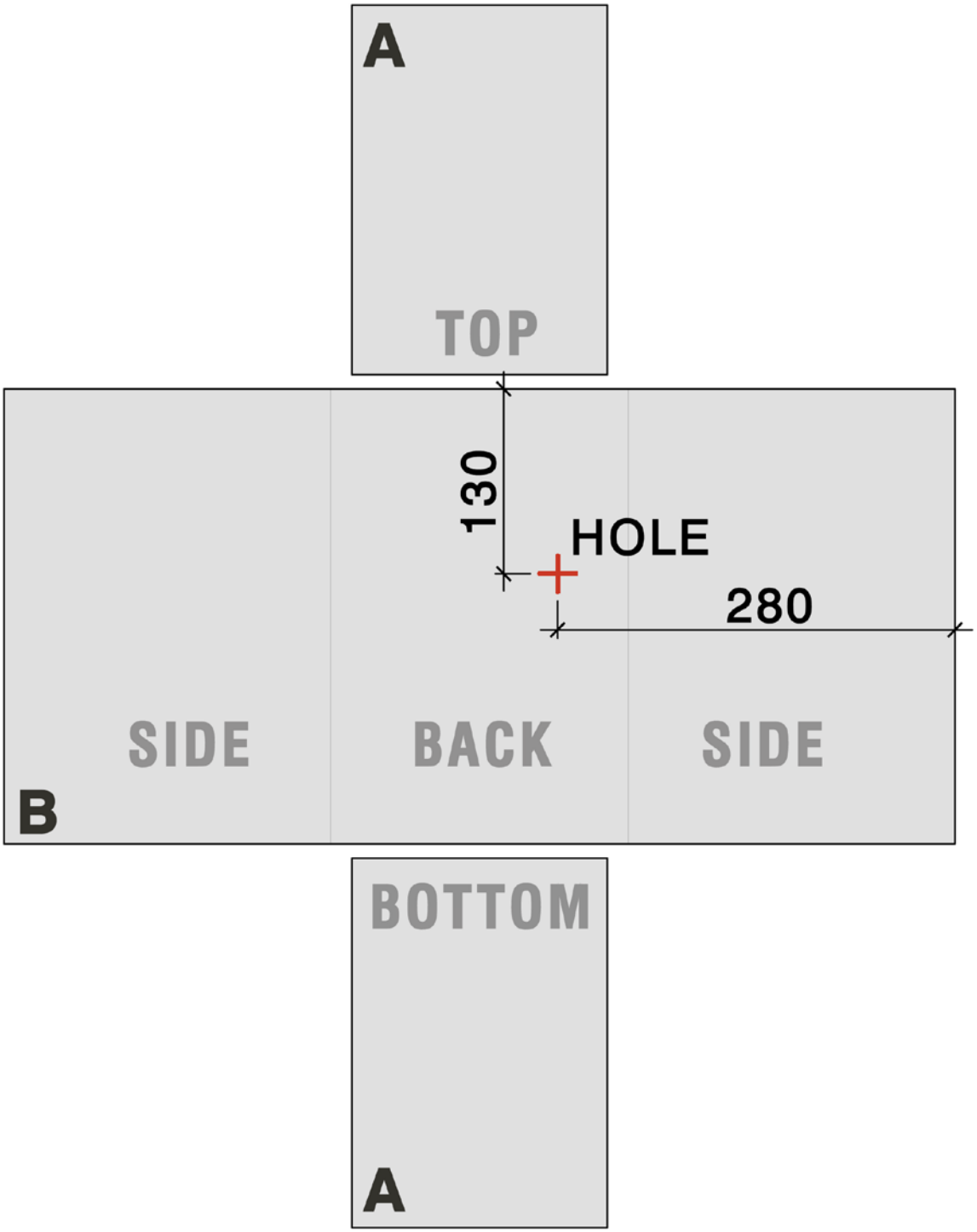
Find the shortest pair of cables on the crossover board and feed them through the rear terminal cutout. Orient the box with the rear cutout facing upwards. Open out the spades with a flat head screwdriver. This avoids using excessive force when connecting the spades, which can damage the lugs. Push spades onto the terminal lugs, ensuring the negative cable with the strips is connected onto the negative terminal. The polarity of the terminal lugs is shown on the back of the terminal with a large + and – as seen on the previous page.





Acoustic lining

The acoustic lining provided with the kit covers all internal cabinet walls. Each of the smaller pieces (A) cover the top and bottom walls. The larger pieces (B) are folded to cover side and rear walls. To insert the lining, roll it up and insert through one of the woofer cutouts. No adhesive is necessary to keep the lining in place.



The diagram above shows the arrangement of the acoustic lining. As shown on the photo on the previous page, an opening in the lining must be made with a blade, to allow the wire looms for tweeter and mids to pass through.

Avoid blocking the port

Since the input terminal is located behind the terminus of the port, the lugs on the terminal should be bent towards the location of the crossover board. This avoids pushing the lining too close to the port terminals, which can affect the tuning.

Installing drivers

We recommend using a Phillips head screwdriver, as some powered drivers are more likely to cause damage if the head slips off the screw head. Impact drivers should be avoided. If using a powered driver, it's best to use one which has a clutch, so that once the screws are adequately tightened, the driver will not over-tighten. Choose the lowest setting on the clutch and then increase as needed for the right amount of force. This avoids stripping the MDF pre drilled holes or damage to the screw heads. If using a screwdriver, your left hand can hold the shaft to prevent the head slipping off and damaging the drivers.

Connectors

The connectors are designed to prevent mixing up positive and negative terminals. Avoid excessive force, which can damage terminals

Tip: The spades on the crossover cables have a very tight fit and damage to the driver terminals is likely if too much force is used. Use a small flat head screwdriver, as shown below, to open out the spade until the spades can be pushed on without excessive force.

Tweeter

Find the white wire loom for the tweeter and push the connectors onto the driver tabs.

Caution: tweeter terminals are fragile – observe instructions on the previous page about how to safely connect the cable without causing damage

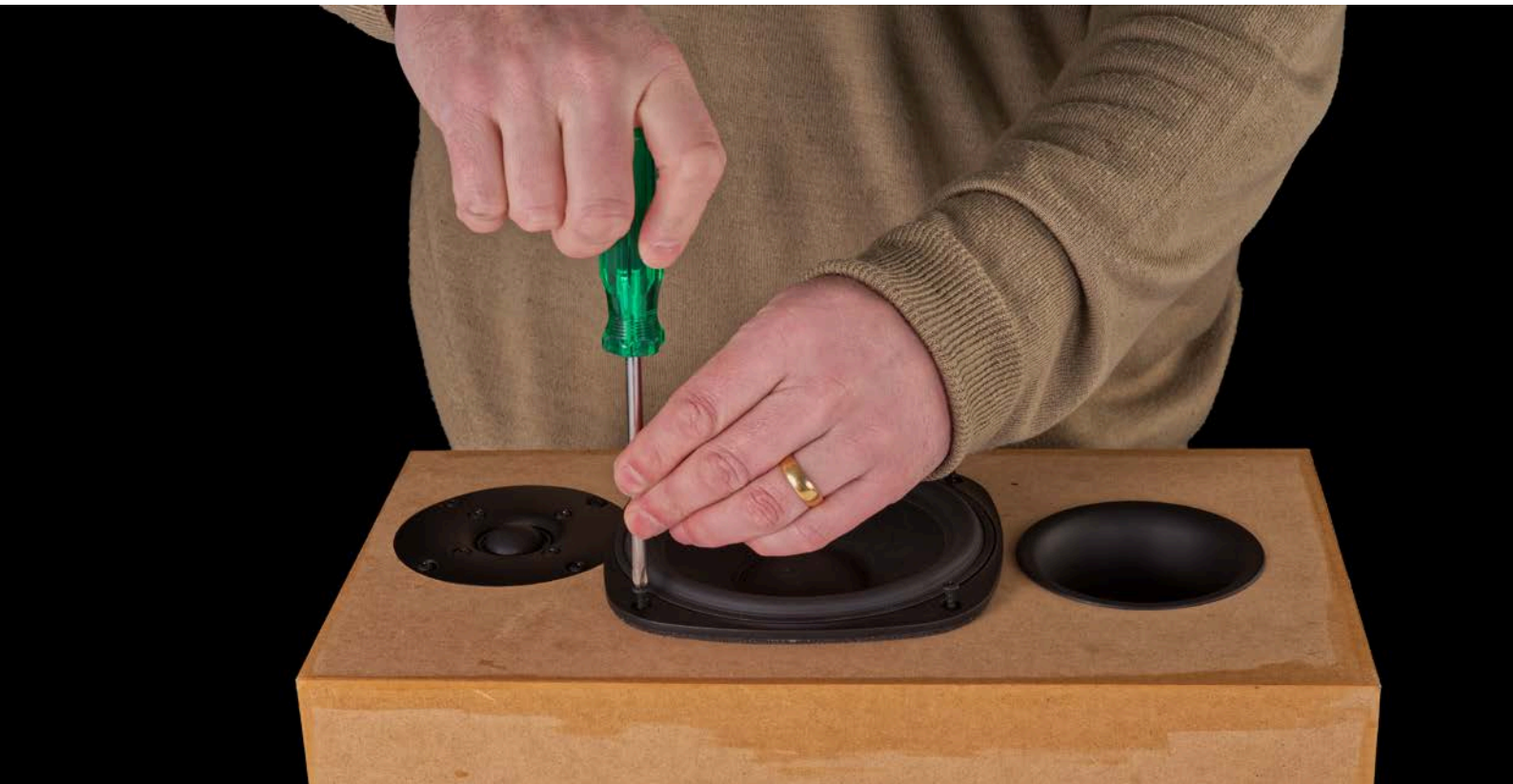
Insert the provided screws into position and tighten with a Phillips head screwdriver as shown below. Note how the connectors align with the slots in the cutout above.

Woofers

Find the white wire loom for each woofer and push the connectors onto the driver tabs.

Caution: Observe instructions in this manual regarding how to safely connect the cable without causing damage.

Insert the provided screws into position and tighten with a Phillips head screwdriver as shown below. Now press both ports into position. No glue is necessary as the cutouts are precisely machined for a tight fit.



Grille assembly

Masking

On the backside of the grille, you will notice a trench inset from the edges. This is the cut line and defines the area where the cloth will be glued to the frame. The area inside this line needs to be masked, so the spray adhesive is applied only to the strip around the edge. This allows you to use spray contact adhesive, which provides flat and even coverage in addition to a fast application. To protect from overspray, cover your work surface.

Adhesive

Spray contact adhesive is the simplest and quickest to use and it goes on evenly. Be sure to carefully read the instructions on the can as each one is slightly different. Shake the can for at least one minute or longer if specified on the can. Spray contact adhesive onto the small strip (approx 8mm wide) between the cut line and edge. Hold the can at a distance indicated on the can and move fairly quickly, applying two or three passes until you get good coverage.

When you’ve finished spraying, turn the can upside down and spray briefly until you notice the amount of spray reduces. Usually after about one second, the paint stops but the solvent continues. This cleans out the nozzle and avoids blocking next time you want to continue using it. Check the nozzle to ensure that it looks clear. If you see any glue there, wipe with a clean cloth with mineral turpentine to clean.

Glue is only required on the back surface as shown here – no glue is required to the sides or the front.

You can start applying the grille cloth right away but we recommend waiting 2 minutes. Peel off the mask with care. A small flat head screwdriver is helpful here to prevent the frame from lifting up or flipping over as you remove the masking tape. Hold the frame down with the screwdriver in one hand, gently pulling back the tape with the other. Then lay the frame over the grille cloth as shown below.

Now press the cloth onto the glue on the back of the frame. Start with one side and then follow with the opposing side, stretching the cloth so that wrinkles are seen, indicating the tension is adequate. These will be removed when tension is applied in the next step over the page. Avoid contact of the cloth around the corners. It’s important that these are done last.

Above you can see the wrinkles across the grille which indicate sufficient tension has been applied. Now press the grille cloth to the frame on the third side, avoiding contact around the corner. Then finally, press the cloth to the final side of the frame. In this step, all wrinkles from the tension should be gone.

We now move onto the corners, where greater care is required to avoid wrinkles.

The biggest challenge in assembling a grille is the corners. If not done correctly, these will bunch up. With a little care, you can avoid this problem and get a professional looking grille.

Gather the fabric at the corners with both hands, as shown above. Pull the cloth at a 45 degree angle to each edge, stretching the fabric to eliminate as many wrinkles as possible. You can see in the photo above that there are some potential wrinkles here, which we can remove in the next step.

Keeping the tension on the cloth, transfer the fabric to one hand, so that your other hand is free. Press out any wrinkles with your finger as shown below.

If there are some wrinkles you can’t press out this way, the adhesive provides some work time during which you can lift up the cloth and press it down again. When lifting up the cloth from the frame, stretch the cloth more tightly then before. Then press it down again. Avoid lifting any more of the cloth than necessary.

You may have several wrinkles around each corner. Work through each one until you have pressed out all wrinkles.

Now at this point, you should have removed all wrinkles between the edge of the frame and the cut line.

Trim the cloth

Now you can use your thumbnail to find the cut line. Pressing your nail into the trench, score all the way around. This helps to confirm that you've effectively avoided wrinkles. Then with a sharp blade, slowly and carefully cut away the grille cloth, using the trench as a guide.

Tips for a better cut:

- Choose a knife with snap off blades like the one below – Stanley knifes are usually too blunt for the job
- Start with a new blade – snap off the previously used part of the blade
- Cut with multiple passes – avoid the temptation to try to cut all the way through in one pass
- Cut slowly and carefully, ensuring that the blade stays on track
- Cut with a shallow angle as shown below – this avoids any tearing away at the fabric

This step completes the build.

Parts List:

- 2 x 6” Woofers (SB16PFC25-08)
- 2 x 1” Tweeters (SB26ST-C0005)
- 2 x Crossover Networks
- 2 x Round input Terminals
- 12 x Panels CNC machined 18mm MDF panels
- 2 x CNC machined 12mm MDF grille frame
- 2 x Grille cloth (320mm W x 500mm L)
- 24 x Self tapping Screws (18mm length)
- 8 x Self tapping Screws (12mm length)
- 2 x 70mm Tuning Ports
- 6 x Pieces of Acoustic Lining (4 x 180mm W x 260mm L, 2 x 320mm W x 670mm L)

SPECIFICATIONS:

Tweeter	1” SB Acoustics SB26ST-C0005
Woofer	6” SB Acoustics woofer SB16PFC25-08
Frequency Response	45 Hz - 20 kHz
Impedance (nominal)	8 ohm
Sensitivity (2.83V)	87 dB
Power handling (AES)	40W
Power handling (program)	80W
Recommended amplifier	30 - 100W
Dimensions (mm)	400 mm high x 220mm wide x 300mm deep
Weight	8 kg