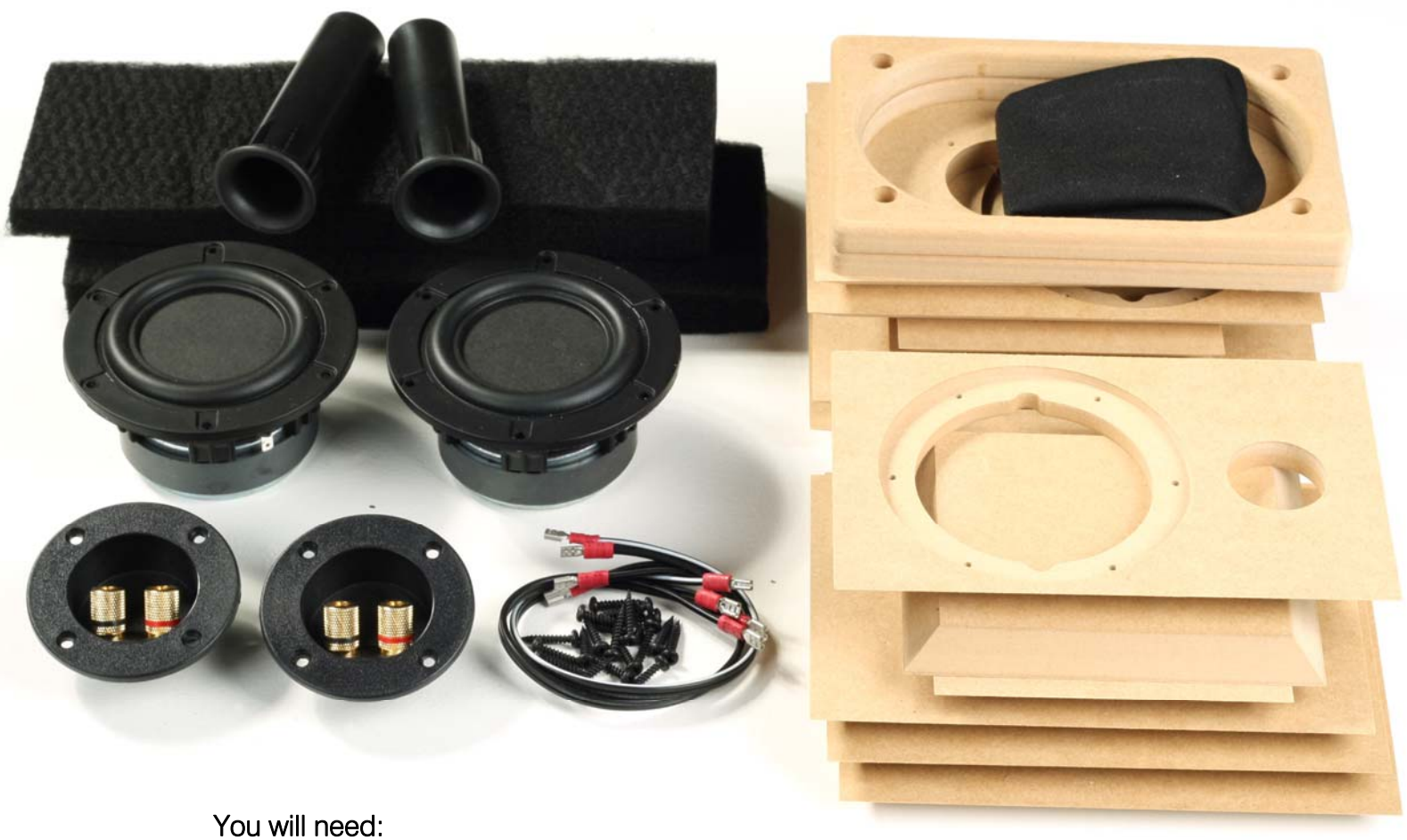
M3 Assembly Instructions

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 alone to apply pressure to the join as the glue sets.

Lay out the rear, side, top and bottom panels as shown with mitres facing the work surface. Align carefully and arrange so that all panels are touching at the edges, with no gaps.

Tape all four joints where the rear panel meets the side and top panels. It's a good idea to avoid covering the corners so that you can ensure all panels remain aligned during taping.

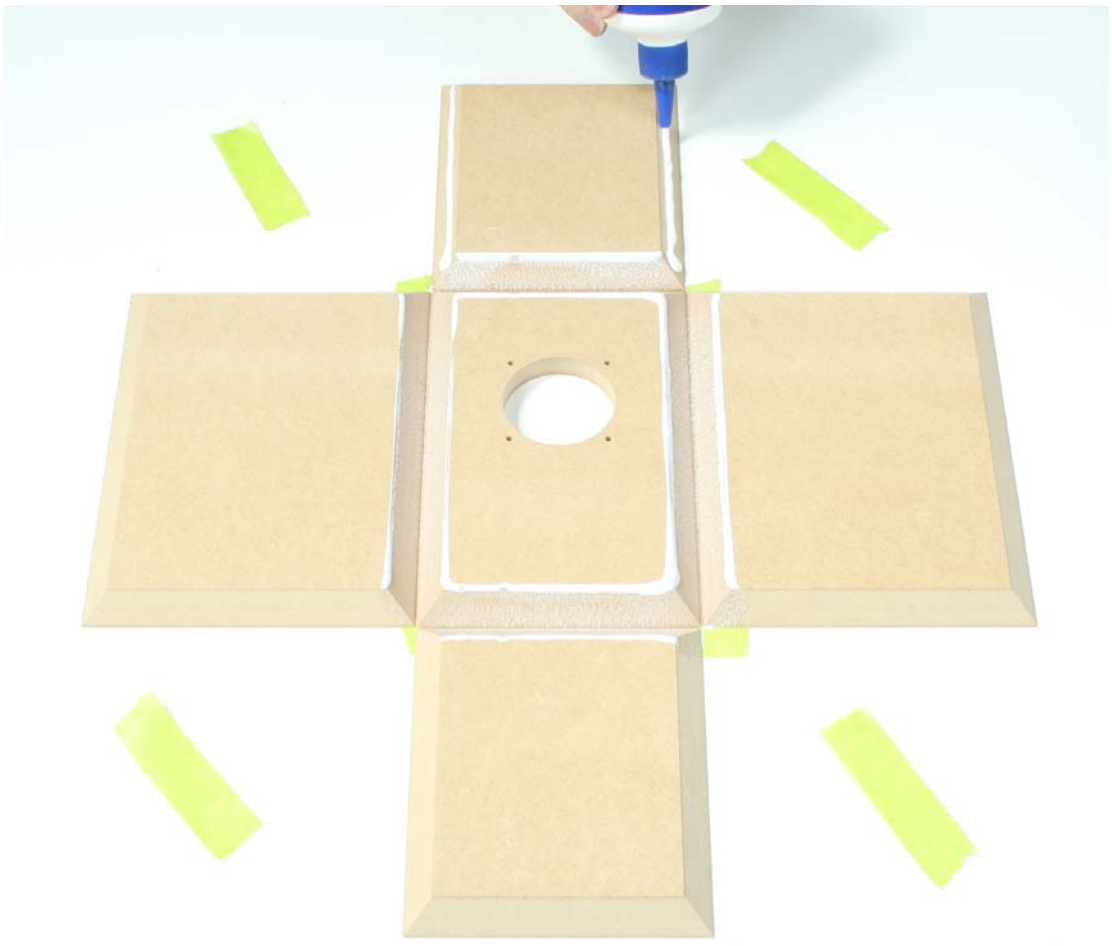
Lift the panels using the hole for the terminals, turning them over to the other side so the mitres are exposed.

Apply a bead of wood working glue to the bottom of the mitre join.

Apply a second bead. Since the glue will tend to run down towards the bottom, it's a good idea to apply the glue above half way up to ensure even coverage.

Confirm the amount of glue applied by folding up the first panel. The glue should cover the entire surface in contact. It's preferable to see the glue ooze beyond the join slightly. This provides visual feedback on whether the glue has set. Once set, PVA glue becomes transparent.

Apply a single larger bead of glue to the remaining sides on the top and bottom panels.



Lift up the panels and hold together with pressure, securing them in position with masking tape. Apply the masking tape with firm pressure so that the panels are held together with moderate pressure.

Wipe off any excess glue with a damp cloth.

Apply a thick glue bead around the internal surfaces of the mitres. You may prefer a zig zag pattern with a thinner bead. It's a good idea to remove the panel and confirm even coverage.

Note: the orientation of the front baffle is determined in the next step. Before gluing the baffle in place, please check the instructions carefully.

Baffle orientation

The orientation of the front baffle relative to the terminals on the back is important. The port and speaker terminals are both located towards the bottom of the enclosure.

Press the front baffle into place. The glue should ooze out around all joints.

Wipe off any excess glue at the join. Then apply tape with tension to firmly hold the baffle in place. Tape should first be applied perpendicular to the join.

All joints should be covered. If pressure is applied when taping, no further clamping is required.

Clamping could be used but we advise caution since incorrect techniques can cause damage or force the panels apart.

An alternative option is to use a ratchet tie down to apply pressure to the top/bottom/sides. Care is required to avoid undue pressure and we recommend protecting the MDF with a cardboard strip where metal parts come into contact with the enclosure.

Here we've also used a brick to apply extra pressure on the top. Note also the use of cardboard as protection.

No ugly grille clips!

Concealed neo magnets in the baffle and grille provide a minimalist front baffle. Our kits come with the magnets already installed for a quick and easy build.

Drying time

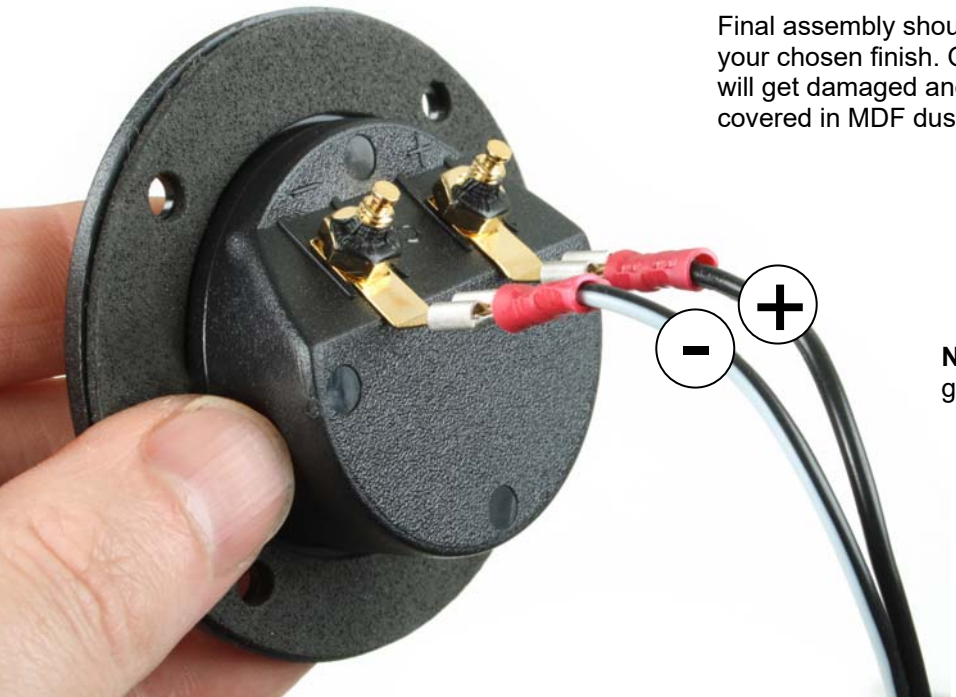
Typical wood glues can achieve moderate strength in as little as 30 minutes. If you are using PVA glue then a good indicator that it has set is the transparency. PVA becomes transparent once set. Ideally it's best to leave the enclosure clamped over night before moving on to assembly or finishing.

Grille assembly

This kit uses a clever neo magnet attachment system that avoids the use of traditional grille clips. Neo magnets are recessed into the front baffle and grille frame. For full details on how to assemble the grille, please refer to our grille manual.

Sequence tip

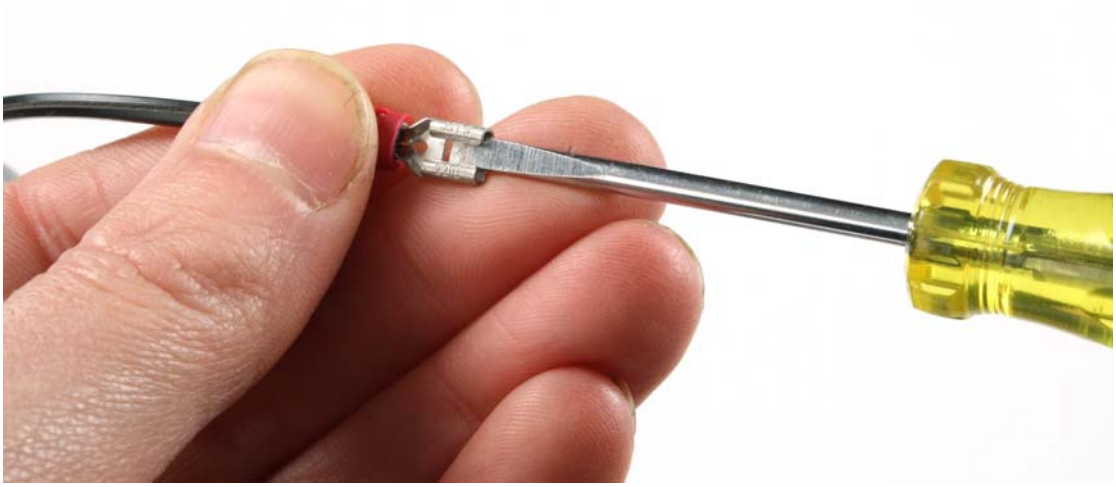
Final assembly should be done after you have applied your chosen finish. Otherwise, drivers and terminals will get damaged and the internal lining will be covered in MDF dust.



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

Installing terminals

Push faston speaker connectors onto the speaker terminals. It’s often necessary to open out the connector slightly with a flat head screwdriver, since the fit is quite tight.

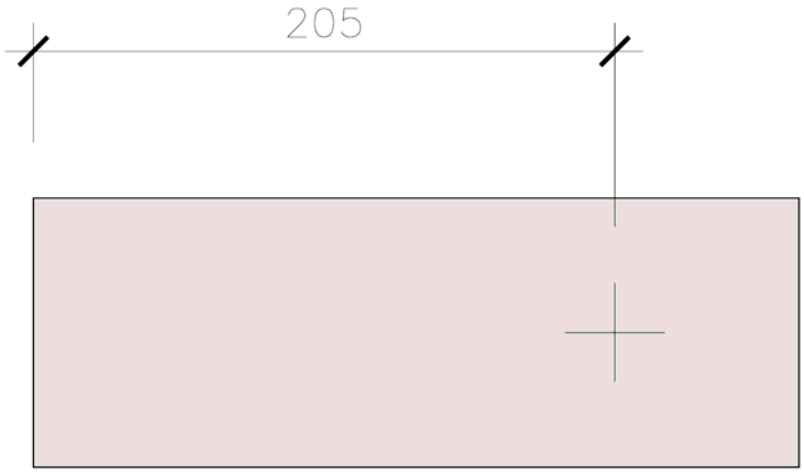


Screw in the terminals with the wire loom already attached.

Safe installation tip

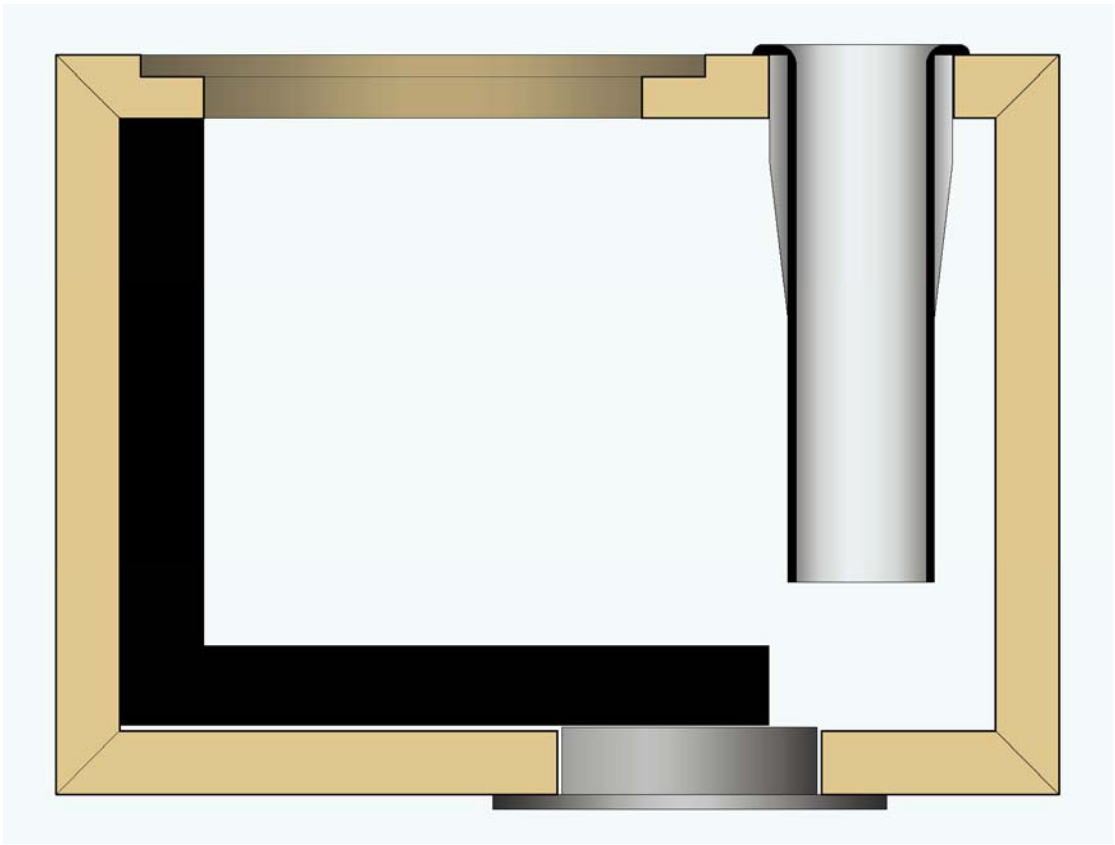
We recommend using a Phillips head screwdriver, as some powered drivers are more likely to cause damage if the head slips off the screw head. Impact drivers should be avoided. If using a powered driver, it’s best to use one which has a clutch, so that once the screws are adequately tightened, the driver will not over-tighten. 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 avoid slipping.

Before inserting the acoustic lining, cut an opening in the shape of a cross with a sharp blade. The cross should be centred 205mm from the top end.



Insert the lining, feeding the cable through the cross shaped cut out.

The lining covers the top and rear internal walls of the enclosure, as shown in the sectional drawing below. You may choose to secure the lining in place with contact adhesive or a hot melt glue gun.



Note: the clearance around the port is essential to retain the correct tuning.

It’s now time to install the driver. Push the connectors onto the driver tabs. Correct polarity is important but this is made easy by using faston connectors that are sized to avoid mistakes. The larger negative connector goes to positive and the smaller negative connector goes to the other. Avoid excessive force, which can damage terminals. If you find the fit is tight, you can use a small flat head screwdriver to open them out slightly.

Now lower the driver into the recess. Rotate the driver so that the terminals are aligned with the cutouts as shown below.

Screw the driver into place with a Phillips head screwdriver, securing the shaft with the other hand. Pushing the port into place completes the assembly. Your new kit is now ready to rock!

Grille assembly

Lightly sand the grille frame so that the edges are slightly rounded over. This provides a more appealing effect when the grille fabric is in place. Shown below is the original grille prior to sanding (bottom) and then the grille after sanding (on top).

Painting

Although the grille frame will be covered with black cloth, it’s best to paint it black to ensure the lighter colour of the raw MDF won’t be seen. You can use any paint that is suitable for MDF. In this manual we show the use of a very handy paint which many DIYers use as a finish for their speaker boxes as well. It is a textured paint which can be applied direct without any priming. It can be brushed, rolled or sprayed. It’s also a very fast drying paint, which allows you to move on to gluing the cloth to the frame much quicker than other options.

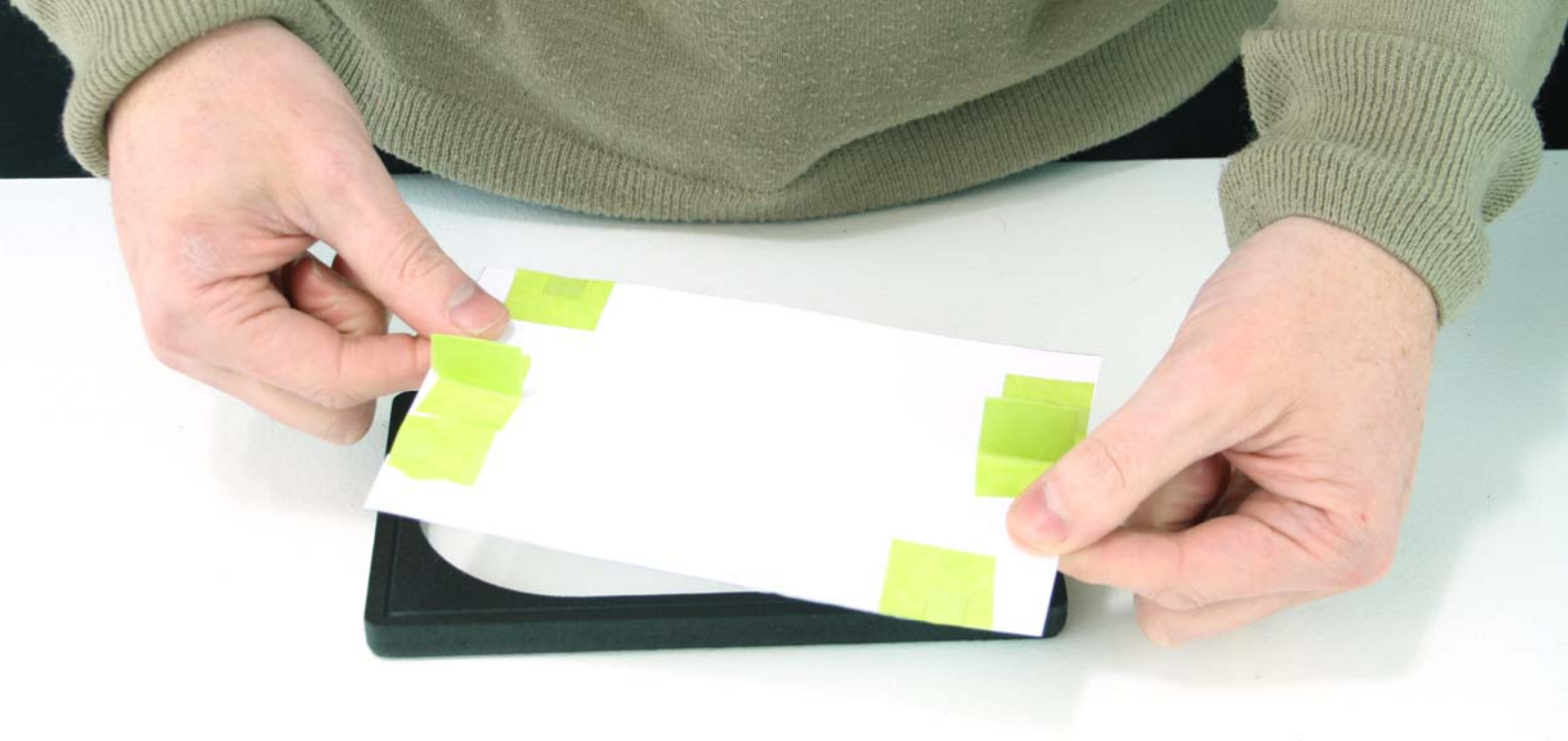
If you prefer to use a spray can, don’t skip priming as most spray paints won’t provide a very good finish when applied to raw MDF. For best results with a spray can, we suggest two prime coats and then two top coats, being careful to observe the recommended time between coats. Typically spray painting will take longer than 4 hours. By contrast, the texture paint we use allows you to start gluing on cloth in as little as 30 minutes. This can vary depending on climate.

Lay out the grille on a suitable covering to protect your work surface. It's a good idea to use disposable gloves for rolling the grille. The paint we use here is Acry-tech DuraTex which can be purchased through Cannon the Australian Distributor. The ideal roller has a 5mm short nap – and is small to avoid soaking up too much paint into the roller. Here we're using a sample roller. Although you can purchase a texture roller designed for Duratex, we don't recommend it for grilles as the texture is quite coarse.

Handy tip: Avoid extra clean up and paint waste by dipping the roller directly into the paint tub. You can use a scrap of cardboard as shown above to ensure the paint is even spread around the roller.

A few points to note:

- If you are painting a number of grilles at a time, start with one side for all of them. By the time you have done one side for all of them, you may be able to progress to the underside.
- Avoid applying the paint too thick – thinner application with a low nap roller provides a smoother finished result
- Texture can be improved by rolling over previously applied paint that has not yet dried – as the paint starts to become tacky the texture can be better controlled
- Two coats are ideal for grilles
- The second coat can be applied when the first is touch dry. If the first coat is thin, often the first grille will be ready for the second coat as soon as you have painted the other.



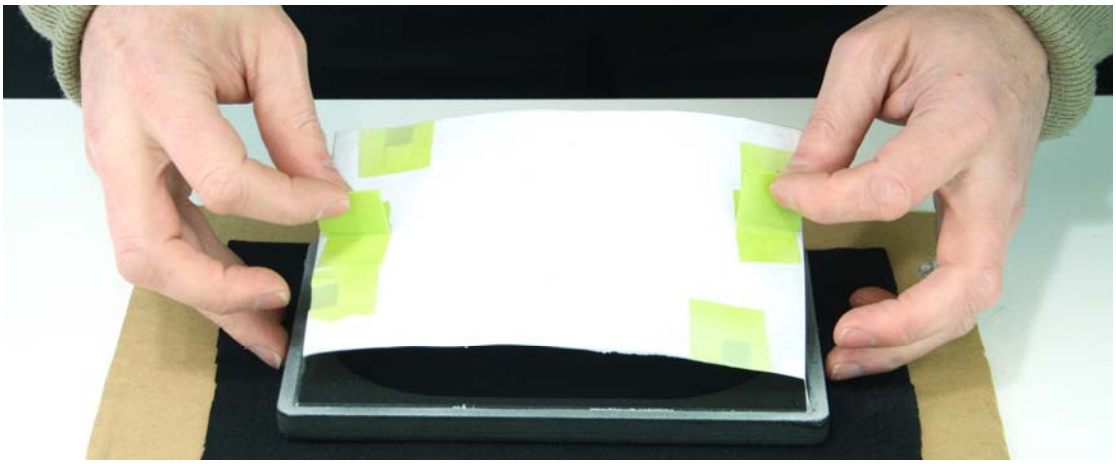
Masking

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. This allows you to use spray contact adhesive, which provides flat and even coverage in addition to a fast application. You can measure and cut your own masking or download the PDF template file (print 100% scale on an A4 sheet). Or you may prefer to simply use masking tape.

A few features of our mask:

- Masking tape tabs to lift the mask after glue application
- Sticky tabs where the masking tape holds down the mask to the frame

Spray contact adhesive is the simplest and quickest to use and it goes on evenly. Be sure to carefully follow the instructions on the can as each one is slightly different.



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

Allow a suitable setting time for the glue. This is different for each product. If you attempt to attach the cloth too soon, the results may be less than ideal.

At this point, the advantage of using the mask becomes clear. You can quickly remove it with the masking tape tabs and move on to the next step, without excess glue causing problems.

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. When stretched with adequate tension, you will see ripples in the fabric between the two points of contact on the frame. These will be stretched out when the cloth is attached to all sides of the frame. Without adequate tension, the grille cloth may tend to sag. Too much tension applies undue stress on the glue holding the fabric in place.

Avoid contact of the cloth around the corners. It’s important that these are done last.

Repeat with the other pair of sides. When the final end is pressed into place, all wrinkles should be removed.

Always be careful to avoid contact between cloth and frame around the corners.

Wrinkle free corners

The biggest challenge in assembling a grille is the corners. If not done correctly, these will bunch up with many wrinkles. The secret is to stretch the fabric into place.

Hold the cloth with both hands, then pull it back over the frame. Stretch it firmly, pulling back into the correct position. After stretching it into place, press down to the glue area.

If you find that you have wrinkles on first attempt, you can remove it and try again. It’s important to work without interruption at this stage, as there is a limited work time involved with the adhesive.

Now you can use your thumbnail to find the cut line. Pressing your nail into the trench, score all the way around. Then with a sharp blade, slowly and carefully cut away the grille cloth, using the trench as a guide.

Tips for a better cut:

- Cut with multiple passes – avoid the temptation to try to cut all the way through in one pass
- Cut slowly and carefully, ensuring the the blade stays on track
- Cut with a shallow vertical angle – this avoids any tearing you can get if the blade is too vertical

Parts List:

- 2 x 3” Full range drivers
- 2 x Round input Terminal
- 2 x Wire looms
- 14 x Panels of CNC machined MDF
- 20 x Screws
- 2 x 25mm Tuning Ports
- 2 x Pieces of Acoustic Lining
- Grille cloth fabric

SPECIFICATIONS:

Woofer Size:	3”
Woofer Cone:	Paper
Frequency	Response: 68 Hz (-3dB) to 19 kHz, +/- 10.5dB
Recommended Amplifier:	10 - 30W RMS
Sensitivity (2.83V/1m):	79 dB
Power Handling:	20W RMS Continuous, 60W peak
Impedance:	Nominal 8 ohm (minimum 6.5 ohm)
Dimensions:	190mm high x 120mm wide x 155mm deep (including grille)