
Installation Manual & User Guide

MobiusiB



Compatibility

This installation guide covers installation of the Amina MobiusiB Invisible loudspeakers into cavity walls and ceilings.

Other installation guides are available to download at www.aminasound.com for walls built with different construction methods.

Always choose the installation guide that matches the speaker and wall type for your installation.



AMINA

IMMERSIVE INVISIBLE SOUND

Amina MobiusiB Fully Concealed Loudspeakers

The Amina MobiusiB series of Loudspeakers is designed to deliver best in class audio performance in fully concealed in-wall and in-ceiling applications, preserving the interior aesthetic of any space.

Featuring an integrated Backbox housing, Amina MobiusiB products are designed for quick installation into cavity walls and ceilings of any construction type.

Wall Construction

This installation guide describes fully the installation of the Amina MobiusiB loudspeaker into cavity stud walls or ceilings constructed of gypsum plasterboard, cementitious boards, fibre reinforced cast plaster structures, marine ply, compressed bamboo pulp and many other surface types and materials where a gypsum or other wet medium is to be applied over the surface to achieve a high-quality surface finish.

Refer to www.aminasound.com to download installation guides for installation of the MobiusiB speaker into other wall types or contact the Amina support team for further advice.

What's in the box

The following items are included with each Amina MobiusiB loudspeaker -

- 1 x Amina MobiusiB loudspeaker
- 2 x Mounting strips
- 8 x Countersunk head, stainless steel fixing screws.
- 1 x Quick reference installation guide with installation template
- 2 x Lever splice connectors*

*Other connectors may also be included, allowing the installer to choose a preferred connection method.

Contents

Caution: Read before installing this product	1	Finishing, New Plaster	30
Metal Frame Ceilings	3	Preparing the speaker for plastering	30
Sound in your home	4	Cutaway view	32
Sound in your work or leisure environment	4	Finishing, Retro-Fit	33
Message from the Managing Director	5	Preparing the speaker for plastering	33
About the Manufacturer	5	Cutaway view	35
Introduction	6	Decorating	36
Installation options	6	Final Test	38
Unpacking	6	Maintenance and cleaning	39
Packaging	6	Re-decorating	39
Compatibility	6	Accessories	40
Installation methods	7	Subwoofers	40
New Plaster Method	7	Troubleshooting	41
Retro-Fit Method	7	Advice for testing	41
Method Indication	7	No or low sound output	41
Environmental	8	Distortion, buzzing or rattles at modest volumes	42
Overview	9	Intermittent high volume following very low volume output	42
Setup tips	10	Very low output after speaker passes electrical tests	42
Installation	13	Distortion at higher volume levels	42
Amina speaker protection devices	13	Specifications	43
Cutting the opening for the speaker	15	Mobius series - Plaster over products ...	43
Preparing a retro-fit wall	20	Fire resisting installation	44
Preparing the speaker	21	Warranty information	44
Fitting the speaker	22	Copyright information	44
Testing	28	Contact information	45
Testing the speaker	28		
Sweep test	29		
Music test	29		
Problems during test	29		

Caution: Read before installing this product



WARNING:

No attempt should be made to install this product within existing building structures unless you are certain that no electric cables, water pipes, gas pipes or supporting joists will be cut through.



FIRE PROTECTION:

When making an intrusion into an internal wall or ceiling to install an Amina loudspeaker be sure to check the appropriate regulations pertaining to the required fire rating. Depending on the location of the intrusion and the applicable regulations it may be necessary to build in or install additional fire rated components or products to enclose the speaker and back box. Amina Technologies take no responsibility for the correct specification and installation of any such fire protection system that is required behind their loudspeakers.



SPEAKER PROTECTION:

Amina loudspeakers must be installed with an electrical overload protection device, supplied or approved by Amina. These devices help ensure the loudspeaker operates reliably for many, many years ahead, by limiting and protecting against temporary excessive audio signals that could damage the product.

Common sense should always prevail though. Your product should never be operated at repeated or consistently excessive audio levels. Never operate your Amina loudspeakers at a level where audio reproduction sounds distorted.

For the ultimate in protection, Amina recommend using the Amina A100Q digital amplifier to drive your loudspeakers. It prevents unwanted and excessive electrical energy from reaching the speaker whilst allowing it to perform at its very best at all times.



MAGNETIC FIELDS:



This speaker contains powerful neodymium magnet structures. High magnetic fields can be harmful to wearers of pacemakers and other similar implant devices.

Implant device wearers should keep at least 30cm (12") from the speaker during installation or use.

Installers must advise this caution when handing over a new installation.

Caution: Read before installing this product

- To ensure optimal performance, please read this guide carefully and keep in a safe place for future reference.
- Install this product in a cool, dry, clean place - away from direct sunlight, cold bridges and heat sources, strong vibrational forces, chemical fumes, dust and moisture (steam).
- Do not expose this product to sudden temperature changes or locate it in an environment with high humidity. This is to prevent condensation forming inside which may cause damage to the product.
- Do not clean this product with chemical solvents as this may damage the finish. Use a clean, dry or damp cloth.
- Ensure that all installation mounting surfaces are able to support the weight of the product and any mounting accessories.
- After installation, avoid pushing on the wall or ceiling surface immediately in front of the speaker. Excessive excursion can crack the plaster around its perimeter and can damage the loudspeaker.
- Do not attempt to modify or repair the product. Contact your distributor or Amina if a fault should occur.
- When plastering over, ensure only 2mm of material covers the product. More than this will degrade the performance of the product and could lead to product failure.
- Avoid the use of silicone sealants within the area of the loudspeaker. Sublimation of silicone will deposit a thin layer of silicone material on the panel surface, severely degrading the ability of plaster to bond to its surface.
- You will require a minimum cavity depth of 76mm measured from the front of the wall or ceiling surface for installation of a MobiusiB.
- Prior to plastering, wipe the front panel surface clean with a damp cloth to remove dust and surface contaminants.

Metal Frame Ceilings

Timber based constructions are naturally heavy, solid and acoustically low energy or energy absorbing type structures, simply because of the characteristics of wood. In contrast, Metal Frame (MF) structures are substantially lighter and tend to be acoustically active (or 'ring') when excited by large amounts of mechanical (vibrational) energy.



When installing Amina products in MF ceilings we recommend the following actions be taken during ceiling construction. These are especially important where habitable spaces exist above such ceiling structures:

Secure mechanical fixing

All metal intersections in the MF ceiling structure should be fully mechanically fastened (i.e. screwed) together. The use of spring clamps at intersections should be avoided. Metal parts that are not fully secure can resonate against each other when vibrational energy is applied to the ceiling.

Clean thoroughly

Ensure the top side of the new ceiling is fully cleaned of debris and all cables are tied neatly and don't rest directly on the back of the ceiling or the speaker backbox. This will avoid unwanted rattles and buzzes.

Avoid cut ends

Try to avoid cutting into or cutting sections of the metal frame ceiling out altogether. If this is not possible, make sure cut ends themselves are not split and twisted upon each other as that could cause metal to metal resonances. We would recommend daubing any cut ends with a compliant type of construction mastic such as CT1/OB1.

Fixings near speakers

Use extra screws to secure the plasterboard in place to rafters, studs and rails around the perimeter of each speaker. This prevents plasterboard in that higher vibrational energy location from 'slapping' on the structural parts.

Framing the speaker fixing area

Consider lining the section immediately around the speaker with 2"x3" or similar timber framework. This helps stabilise the area around the speaker to create a long-term robust install.

Reduce resonance

An MF ceiling buildup of a single layer of plasterboard applied to the MF frame has limited stability allowing resonant notes to occur across the ceiling in general. A layer of OSB, ply, plasterboard, cement board or rubber backed high density gypsum board applied to the whole ceiling prior to the final plasterboard layer stabilises the full ceiling, creating an excellent structure to locate Amina products and generally reduce room generated sound transmission to other floors.

Minimise sound transmission

Airborne sound energy converts itself to mechanical impact energy when it reaches a solid surface. To minimise disturbance to floors above, consider building an additional sealed, solid containment (i.e. plasterboard and ply or double layer plasterboard) structure above but spaced off from the Amina backbox and from the floor above.

Absorption damping in the void

Ensure the whole of the cavity void between MF ceiling and floor above is filled with high density acoustic insulation material. (Rockwool etc. Recycled cotton, which by its very nature, has very high acoustic absorption properties as well as excellent thermal insulation properties, is a great option here).

Damping the MF channels

Consider applying Amina's 4mm thick, 50mm wide, energy absorbing 'HushMount'™ Tape within the MF steel channel or to the underside of the channel before boarding commences. This will adsorb mechanical impact energy from the structure of the ceiling.

Damping near speakers

Consider applying Amina's 4mm thick, 50mm wide, energy absorbing 'HushMount'™ Tape to the back of the plasterboard or ceiling build up surrounding the speaker location. This will help absorb unwanted mechanical impact energy generated by the loudspeaker.

Sealing the floor

Ensure the floor structure above the ceiling is completely sealed (i.e. no holes or gaps) to maximise reduction in airborne sound transmission to any habitable spaces above that floor.

Sound in your home

Amina products are widely applied in whole house audio systems and multichannel home cinemas to create the very best entertainment source while not impinging on the design of your home.

Never imagine though that sound reproduction is isolated to one room only and will not be heard elsewhere in the home. Sound from any audio source (a person talking, a conventional speaker, a TV or an Amina invisible speaker) will transfer in air through open doors, ventilation structures, gaps under doors etc, to other areas of the house. Sound will also pass mechanically through the structure of the building (a good example is the central heating boiler. Most homeowners know exactly when it is on!) to other areas quite some distance away.

Whole house/multi-room audio systems are designed to give you the very best audio experience in the space/room you might occupy at any one moment. This does not mean to say that occupiers of other rooms will not hear some of that sound at the same time. They are more than likely to experience it in some lesser level and lesser quality than the intended room.

Please remember therefore that it is not always possible to enjoy the full capabilities of your audio system when other members of the household want to remain undisturbed.

Sound in your work or leisure environment

Amina products are widely applied in prestigious retail, hotel, restaurant, office, spa and other leisure and work facilities.

The Amina Active Sound Board technology creates an incredibly even level of sound across an entire space.

This creates an entertaining yet naturally comfortable sound field for users and occupiers.

At the same time the physical embodiment of the speaker is totally unobtrusive, allowing interior designers complete freedom from technology.

Message from the Managing Director

Congratulations and thank you for purchasing an Amina Technologies high performance invisible loudspeaker.

At Amina we are proud of being at the forefront of flat panel Active Sound Board loudspeaker technology. All the components that make up your loudspeaker have been developed specifically to provide the ultimate in sound quality and reliability, while allowing you to decorate, furnish and enjoy your space in any way you wish without any visible 'clutter' from your audio system.

At the heart of an Amina loudspeaker is our high-performance vibrational panel driver, featuring a unique high power neodymium magnet motor system. This enables the product to provide high quality, high loudness levels from such a compact design. Please take a moment to read this guide which will help you achieve the best possible performance from your product.

Thank you and enjoy listening.

Richard Newlove

MD - Amina Technologies Ltd

About the Manufacturer

Amina Technologies Ltd is the world's leading designer and manufacturer of truly invisible loudspeaker solutions. Our flat panel loudspeakers have been used in a wide range of both commercial and residential applications for over twenty five years.

Luxurious hotels & spas, exclusive retail outlets and stunning private residences have all benefitted from using Amina invisible loudspeakers, not only for its' incredible aesthetic quality, but for its' absolute ability to reproduce sensationally clear audio across any space. Amina has created the very best discrete audio solution for architects, interior designers and design conscious clients.

See our website for more details about Amina and a selection of prestigious projects completed using our products.

Introduction

Thank you for purchasing Amina MobiusiB series invisible loudspeakers. Properly installed, these loudspeakers will provide high quality sound for many years, even decades, to come.

Installation options

Installation is simple, but should only be attempted by professional building trades with plastering experience and who have completed an Amina installation training course.

Please read the instructions carefully, particularly the Installation section.

Unpacking

Check that your carton contains the correct number of items and accessories.

Retain this Installation Guide. If you pass the unit on to a third party make sure you pass on the Installation Guide.



Ensure that the Amina MobiusiB is mounted using the stainless steel screws provided to avoid screw head rusting causing marks in the wet plaster.

Packaging



CAUTION:

Take care when removing the loudspeakers from the carton.

The packaging for Amina MobiusiB loudspeakers has been carefully designed to protect the product during transit. Please retain it in the unlikely event you need to return the product to your dealer or to Amina. Please recycle the packaging should you wish to dispose of it, having regard to any recycling regulations in your area.

The outer carton is made up of 80% recycled board.

Compatibility

This installation guide covers installation of the Amina MobiusiB range of Invisible loudspeakers into new cavity walls and ceilings of plasterboard construction and wet skim coated with a gypsum plaster finish.

Important Note: The Amina MobiusiB products can be installed in many different sheet materials. Where we use the word 'plasterboard' in this document, it can be substituted to read as almost any board type surface material. This includes gypsum board of any thickness, drywall, cementitious board, silicate board, cast plaster sections, lathe and plaster, marine ply, compressed bamboo board and many more, where it is to be finished with a skim coat of wet material such as gypsum, plaster of Paris, cement based compounds, resin based compounds.

The guide also covers retro-fit of the Amina MobiusiB range into existing, plastered cavity walls and ceilings.

Installation of Amina Mobius products in solid brick, block and concrete wall structures is covered in a separate guide. Please see the download section of the Amina website.

While the Amina MobiusiB speaker is very suitable for drywall installations where a skim coat covers the speakers and feathered out over the surrounding drywall, the Amina EdgeiB product line is designed specifically for drywall installations requiring only the perimeter joint to be taped and filled

Installation methods

This installation guide covers two installation methods:

New Plaster Method

The New Plaster Method instructions are for fitting the MobiusiB speakers into new cavity walls or ceilings, yet to be constructed from plasterboard over wooden or metal studs and finished with a plaster skim.

Retro-Fit Method

The Retro-Fit Method instructions are for fitting the MobiusiB speakers into existing cavity walls and ceilings which have already been constructed from plasterboard over wooden or metal studs.

Method Indication

The pages of this Installation Guide include tabs at the right edge to show which method is described on the page. Many pages apply to both methods.

Follow all pages marked with tabs for the installation method you will be using.

Page indicator for a page that should be followed for New Plaster wall installations.



NEW PLASTER METHOD

Page indicator for a page that should be followed for Retro-Fit installations.

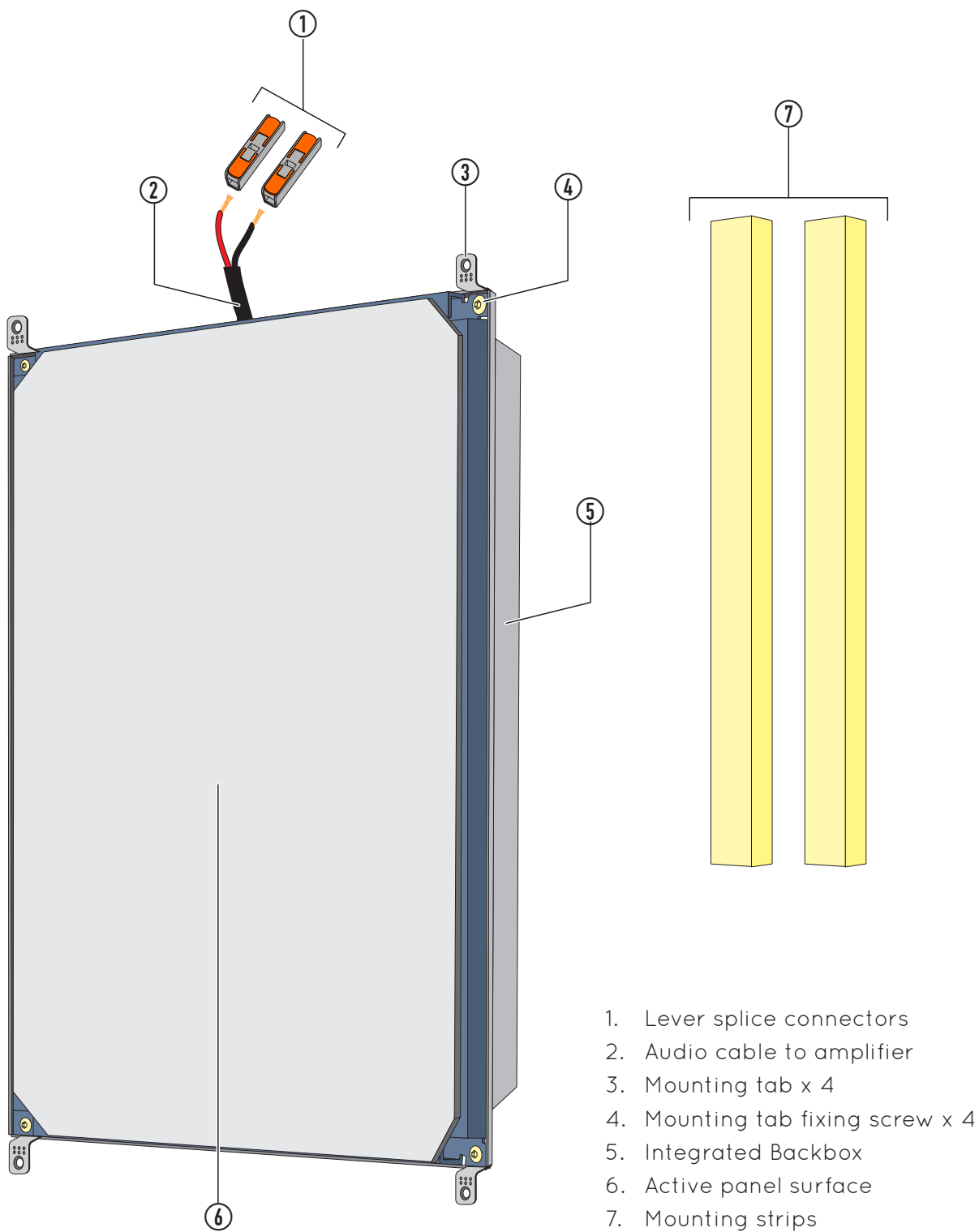


RETRO-FIT METHOD

Environmental

- Before installing, ensure that the building is environmentally sealed, de-humidified to a maximum of RH50%, and at a stable temperature of at least 16 degrees centigrade (61 degrees Fahrenheit)
- This product should not be used with single thick coat plaster solutions or with other finishing methods that take days (rather than hours) to dry out.
- Please be aware that when this product is fitted in simple (stud or rafter with plasterboard/floorboard attached on either side) stud walls or wooden rafter ceiling/floor structures, vibrational energy is inevitably transferred into the building structure. This energy can travel for some considerable distance up, down and along the structure. It is therefore recommended the product be fitted within acoustically isolated stud walls or ceiling sections where possible. Special care should be taken when installing the product in multi occupancy buildings.
- Completed and fully dried plaster surfaces should be finished with permeable coatings / materials, to allow moisture in that coating or the adhesives used to apply those materials, to dry into the environment, rather than trap moisture in the speaker.
- During installation take care to use appropriate and suitable joint filling compounds to fill the gap between speaker and the surrounding surface. This gap should be no less than 2mm and no more than 5mm in width.
Inappropriate compounds used in such a joint can shrink and crack excessively and lose strength.
Allow the joint to dry thoroughly before applying surface skim coats, as shrinking in the joint depth whilst drying could create a very slight embossed outline in the finished and decorated surface.
- As a general rule in the construction industry, any drying process should be gradual rather than forced with excessive heat otherwise materials can lose strength and can crack.
- Amina Technologies take no responsibility for inappropriate use of materials and environmental conditions under which they are applied.

Overview



Setup tips

Protection devices

Amina loudspeakers must always be installed with an electrical overload protection device, supplied or approved by Amina. These devices help ensure the loudspeaker operates reliably for many, many years ahead, by limiting and protecting against temporary excessive audio signals that could damage the product.

Please refer to the instructions supplied with the devices and full warranty information for further details.

Alternatively, use the Amina A100Q amplifier for the best protection and acoustic performance.

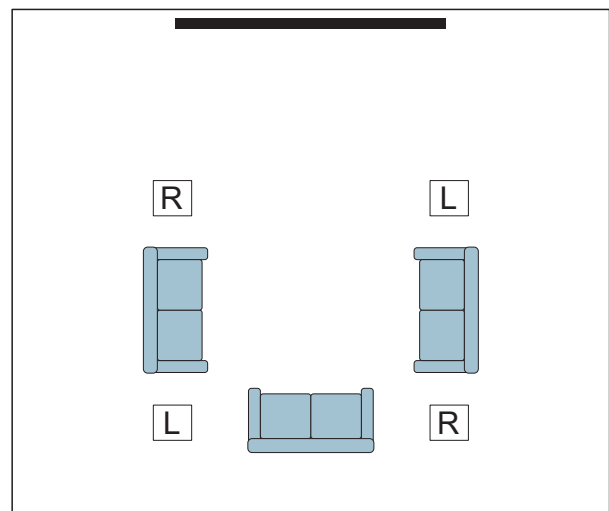
Wall or Ceiling Placement

Amina loudspeakers are suitable for both wall and ceiling installations. When the most uniform audio coverage in a room is required, space the loudspeakers evenly in the ceiling. However, if the room has a height greater than 4m (13'), Amina suggests installing them in the walls at a height of around 1.8m (6').

In dedicated listening rooms where loudspeakers are used in stereo or multi channel systems, position them in the walls so that the centre point of the speaker is approximately 1 – 1.8m (3.5 – 6') from the floor. This will give excellent results, but don't worry, if this is not possible to achieve in your room, the audio characteristics of Amina loudspeakers make exact positioning according to stereo, 5.1 and 7.1 conventions far less critical.

Alternatively, placing Amina MobiusiB products in a ceiling, located above either end of a sofa for example, provide an incredible enveloping sound field across the seated occupants.

The diagram below shows the overhead view of such a system where there are three sofas in the room. The four Amina speakers are positioned in the ceiling to cover the full seating area, driven by just the two (left and right) channels of a stereo system.



Optimal lounge ceiling speaker positions enabling all seats to enjoy incredible TV sound.

Setup tips

Audio Characteristics

Amina loudspeakers generate sound in a similar way to an acoustic musical instrument. The speaker's front face is effectively the "musical" soundboard and the sound waves generated from it are diffuse and are dispersed over a very wide angle. This means that loudspeaker positioning is far less critical than with conventional loudspeakers. Additionally, just like the acoustic musical instrument, Amina loudspeakers have excellent room filling abilities.

Amina loudspeakers are planar devices and this feature is further enhanced when flush mounted into your wall or ceiling. Being planar (or flat) means that the audio's arrival time to the listener is the same for all frequencies, i.e. there is very little phase distortion. Therefore Amina loudspeakers (and other planar devices such as electrostatic loudspeakers) can reproduce subtle nuances on a recording with incredible accuracy.

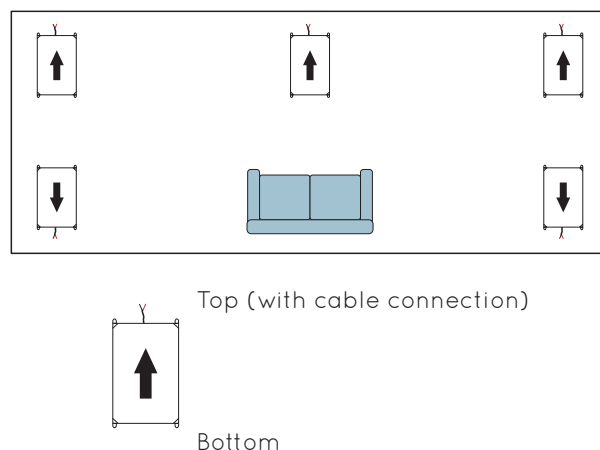
In addition to the above characteristics, the radiating surface of an Amina speaker is very stiff and undergoes very small amounts of movement in order to generate high sound pressure levels. This means that the loudspeakers are inherently "fast" making them highly articulate loudspeakers.

Speaker Orientation

Amina loudspeakers can be installed either in portrait or landscape orientations. Typically the spacing between wall joists will dictate portrait orientation and Amina have optimised the dispersion characteristics for this setup. Therefore when installing into walls Amina suggest portrait orientation for best sound quality.

For non-critical listening in ceiling installations the orientation of the speaker is not crucial.

For critical listening in ceilings, e.g. a 5.1 surround system, ensure that the orientation of all loudspeakers are the same relative to the main listening position and position the top of the speaker closer to the wall/ceiling boundary.



Boundary Loading

It is possible to increase the low frequency output of Amina loudspeakers by positioning them close (50mm - 150mm) to the corners of a room. This can be useful when no additional subwoofer (e.g. ALF80 or ALF100) is used.

Setup tips

System Requirements

From a system compatibility point of view your speaker (and it's accompanying Guardian protection unit) can be treated like any conventional low impedance (4-8 ohm) loudspeaker. Amina recommends you use a good quality amplifier so as to avoid driving them with high levels of distortion, which at best, will provide poor sound quality and at worst may permanently damage the loudspeaker.

The cable connectors supplied with the MobiusiB speaker require 12-18 AWG cable (0.8mm - 4mm). Amina recommends you connect your loudspeakers to your amplifier with 16AWG OFC (oxygen free) cable or 14AWG for runs over 10m to avoid any chance of reduced efficiency and restricted audio bandwidth.

For 2.1, 5.1, 7.1 and other multi-channel systems, always use the amplifier's crossover settings to divert frequencies below 100Hz to your subwoofer. This will improve the dynamic range and power handling of the system. (Guardian devices should still be used).

IMPORTANT: Amina loudspeakers are highly revealing of any shortcomings in the source or amplifier. Please be aware that some low cost zone amplifiers will produce high amounts of distortion well within their operating range and this will be ruthlessly revealed by Amina loudspeakers.

Sound Transmission

As with any speaker designed to be fixed to a structure within a wall or ceiling, careful consideration should be given to sound transmission into adjacent rooms or properties. We recommend specialist advice is taken if sound transmission into adjacent rooms needs to be minimised. Please talk to the Amina technical team for advice on reducing sound transmission as a starting point.

100/70V Option

For multi-speaker commercial installations, please contact Amina for their range of invisible loudspeakers supplied with 100V or 70V line transformers fitted.

Installation

IMPORTANT: Read this section carefully before attempting to install an Amina MobiusiB loudspeaker.

To avoid any possible damage to Amina invisible loudspeakers they must be connected using the correct accessories, supplied by Amina. The tables to follow list these accessories.

Amina speaker protection devices

Amina speaker protection devices are specifically designed to work with Amina invisible loudspeakers. They provide essential safe operating functions and include protection elements that constantly monitor the power fed to the speaker keeping it within safe limits should the need arise.

An Amina speaker protection device should be wired in-line with each Amina speaker, preferably in an accessible place, allowing this device to be replaced as necessary.



Amina speaker protection devices are designed to work with a single speaker. Never connect more than one speaker onto a single Amina protection device.

Refer to the table on the next page for more detail of protection options for short to medium periods of time.

However, common sense should always prevail. Your product should never be operated at repeated or consistently high audio levels. Never operate your Amina speaker at a level where audio reproduction appears distorted.

For the ultimate in protection and performance, use the Amina A100Q multi-channel amplifier.

Installation

Amina speaker protection devices

There are three types of protection device.

Type	Application	Image
Guardian ²	This sophisticated 2-stage active circuit design responds to RMS and peak audio events in an instant, eliminating any opportunity for Amina invisible loudspeakers to be overloaded with excess power from audio system events or user error, in an appropriately configured audio system.	
Guardian ⁸ and Guardian ¹⁶	Flexible multi-channel Guardian high pass filter and protection units in a 1U case for optional rack mounting. Provides protection for installations of up to 8 (Guardian ⁸) or 16 (Guardian ¹⁶) Amina MobiusiB loudspeakers of any type.	
A100Q amplifier	Absolute protection of a loudspeaker is possible by sensing and controlling output voltages within the amplifier driving that loudspeaker. The Amina A100Q amplifier integrates clean and powerful amplification (4 channels at 100W each) with sophisticated digital sensing and control technology to deliver the ultimate protection for your Amina invisible speaker. It both prevents excessive audio signals from ever reaching the speakers whilst allowing them to perform at their absolute peak at all times. This is achieved thanks to some clever internal digital signal processing software that knows exactly how to get the best from each speaker.	

Installation

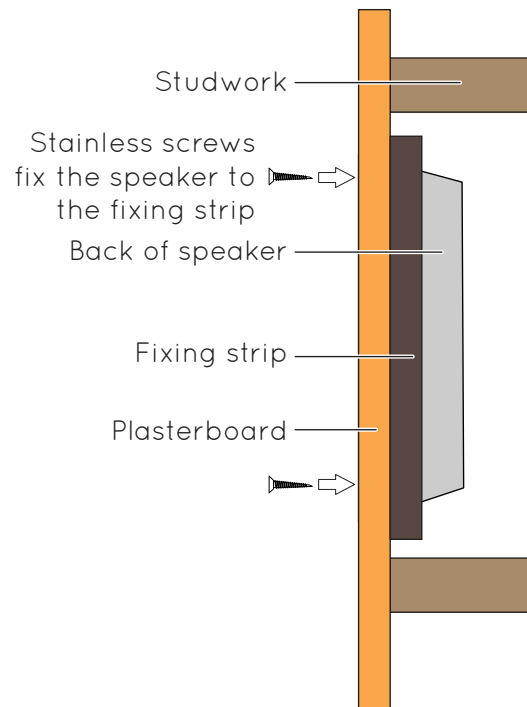
Cutting the opening for the speaker



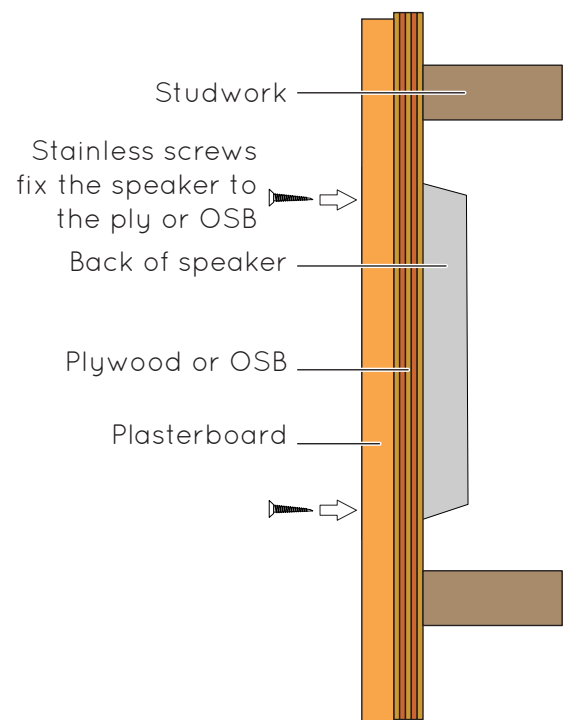
IMPORTANT:

The MobiusiB must be fixed to the plasterboard only, using the supplied mounting strips, suitable alternatives or into stud work or other supporting structures.

Top view of plasterboard wall



Top view of plasterboard wall backed with plywood/OSB



If your wall or ceiling structure involves a timber layer (ply or OSB) as shown, no mounting strips will be necessary.

Simply screw through the plasterboard into the timber layer.

Installation

Cutting the opening for the speaker

Locating joist work

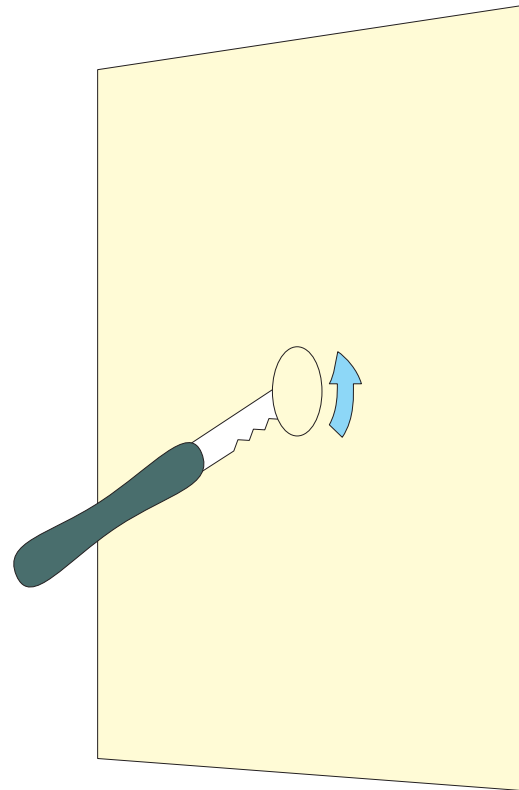
When you have chosen your speaker locations, and before cutting into the plasterboard, it is important that you locate the position of the wall studs/ceiling joists.

Ensure the spacing between them is at least 5mm greater than the width of the MobiusiB speaker.

The following method is highly recommended to measure the distance between the joists.

Check the width between the joists

Using a padsaw, holesaw or sharp knife, cut an opening in the centre of the area where the speaker will mount.



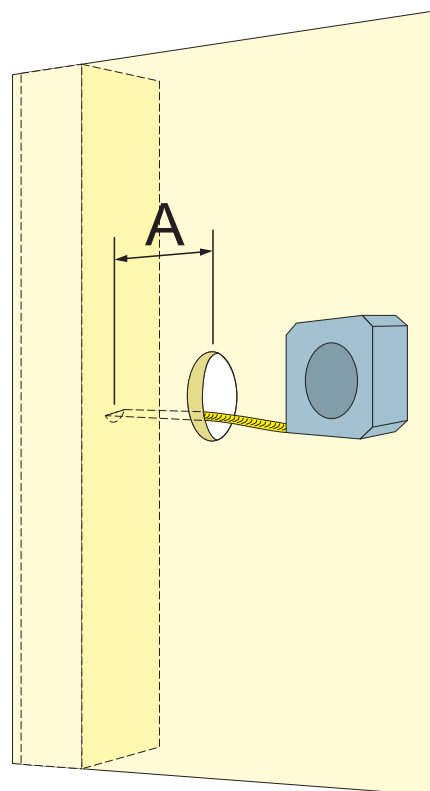
Installation

Cutting the opening for the speaker

Check the width between the joists

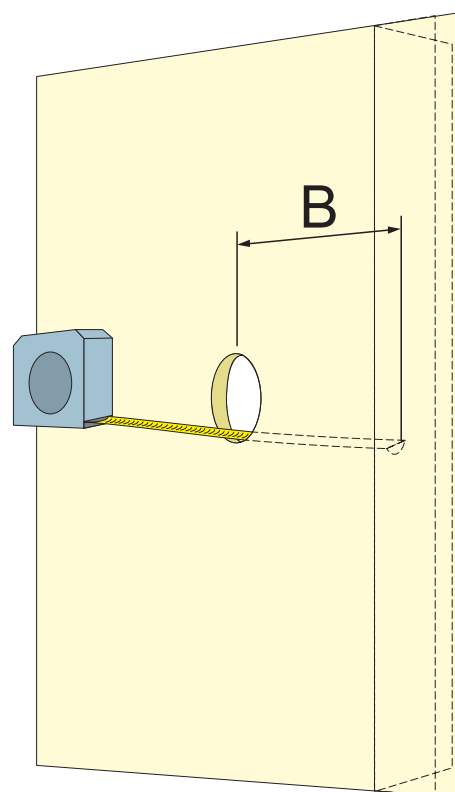
Measure from the centre of the opening to the joist on the left (A in the top image) and the joist on the right (B in the bottom image).

From these measurements you can establish the width and centre of the space between the joists.



Check that the total distance $A + B$ is greater than the dimension in the table to allow clearance for the speaker you are installing.

Speaker	Distance A+B
Mobius7iB	353mm (13 ⁷ / ₈ "")
Mobius5iB	353mm (13 ⁷ / ₈ "")
Mobius3iB	310mm (12 ³ / ₁₆ "")
Mobius5/S200iB	210mm (8 ¹ / ₄ "")
Mobius DualiB	353mm (13 ⁷ / ₈ "")



Installation

Cutting the opening for the speaker

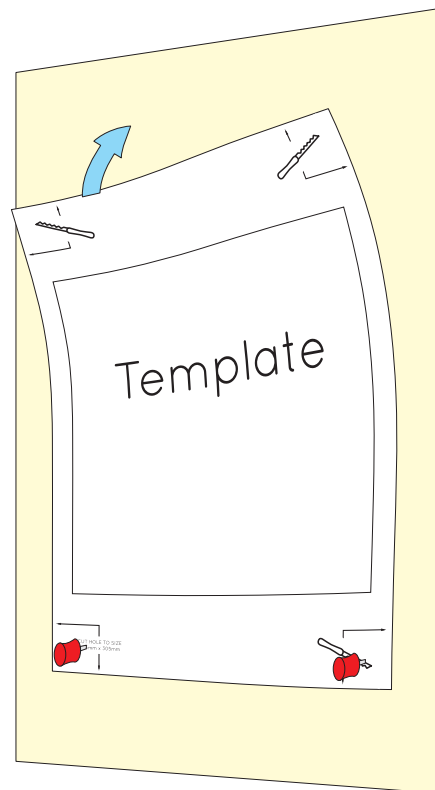


CAUTION:

We strongly advise that joists are not cut to make space for the speaker. Any activity of this sort may well influence the structural integrity of your property.

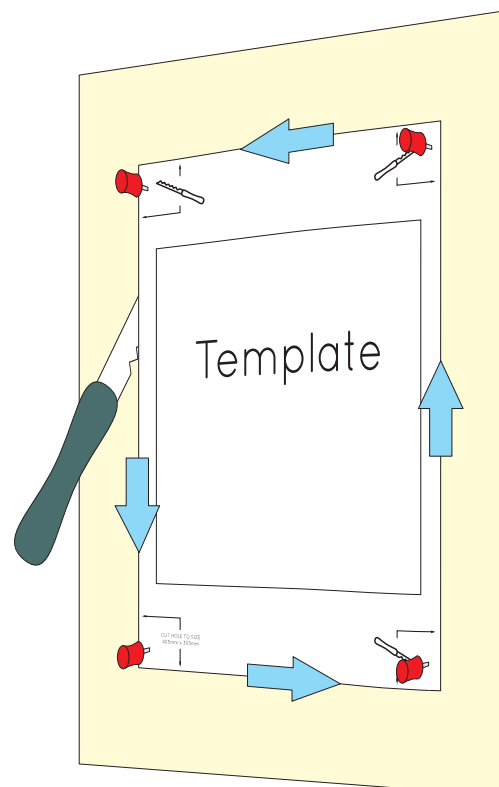
Fix the template to the wall

The speaker is supplied with a template. Tape or pin the template to the wall in the space between the joists.



Cut around the template

Neatly cut around the mark on the template using a knife or padsaw.



Installation

Cutting the opening for the speaker

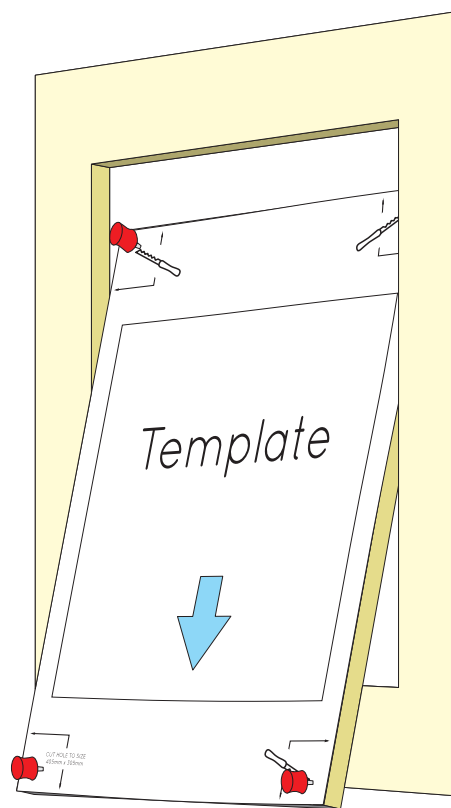
Remove the cut section

Lift out the cut section of the wall.

Check the size of the opening.

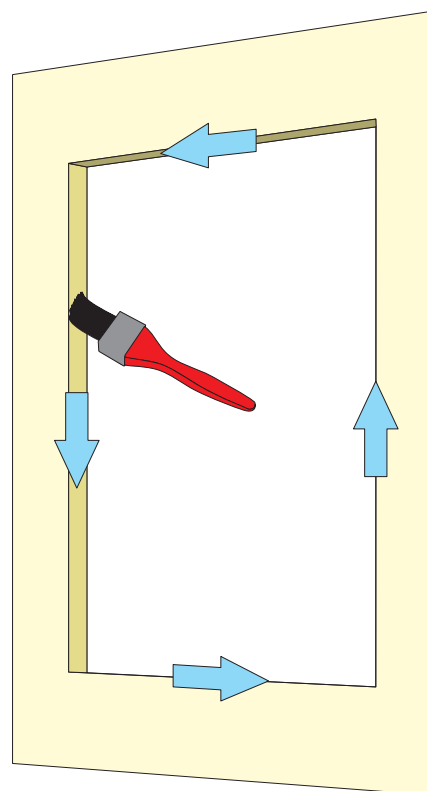
This should measure -

Speaker	Opening size
Mobius7iB	460mm x 353mm (18 1/8" x 13 7/8")
Mobius5iB	460mm x 353mm (18 1/8" x 13 7/8")
Mobius3iB	406mm x 310mm (16" x 12 3/16")
Mobius5/S200iB	460mm x 210mm (18 1/8" x 8 1/4")
Mobius DualiB	460mm x 353mm (18 1/8" x 13 7/8")



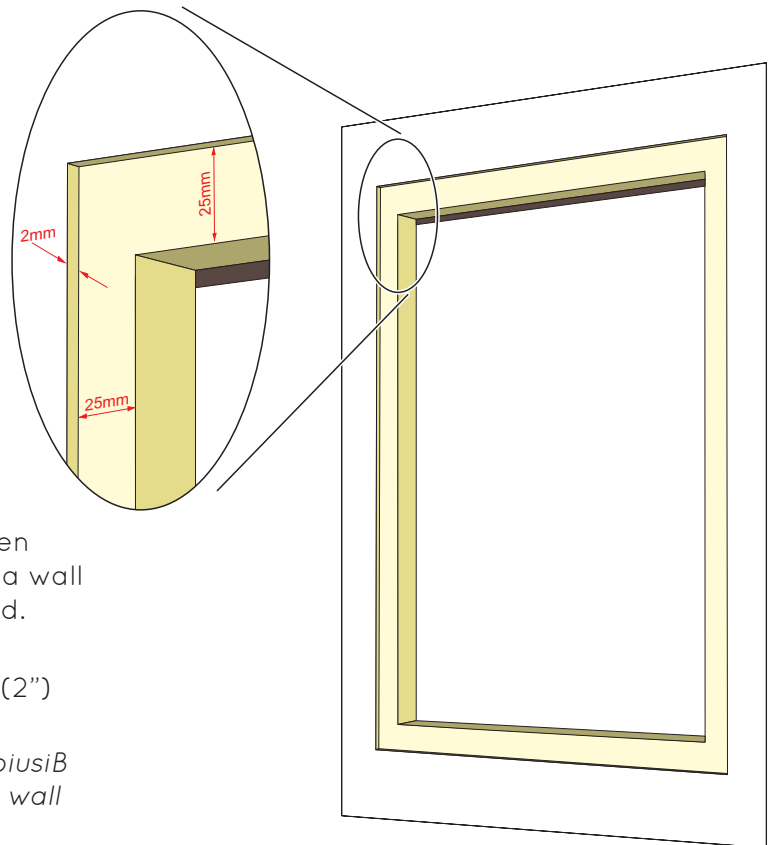
Seal the cut edge

- For optimum results, seal the cut edge of the plasterboard with a plaster primer. This will enhance the strength of the future filled joint.



Installation

Preparing a retro-fit wall



This step is only necessary when fitting a MobiusiB speaker into a wall that has already been plastered.

- Cut a recess around the speaker opening to approximately 25mm (2") width and 2mm ($\frac{1}{16}$ ") depth.

This will provide a seat for the MobiusiB speaker, set slightly back from the wall face.

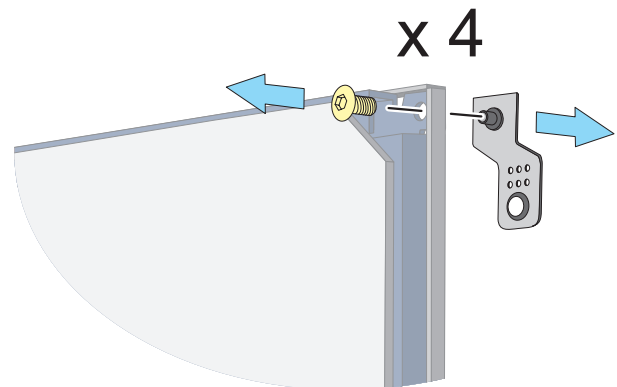
Installation

Preparing the speaker

Prepare the speaker brackets

The speaker brackets are supplied in their shipping position.

- Remove the 4 bracket fixing screws from the corners of the speaker and separate the brackets from the speaker chassis.

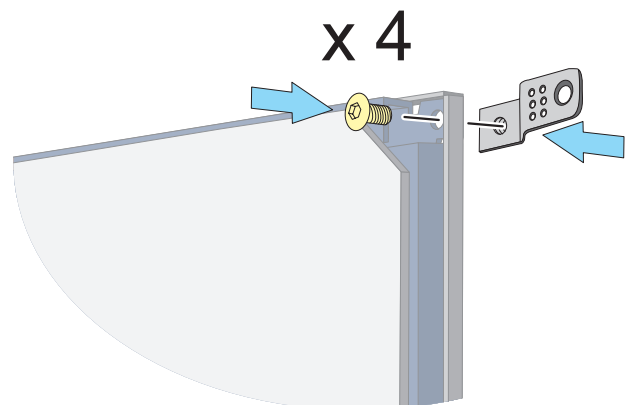


Speaker brackets positioning options

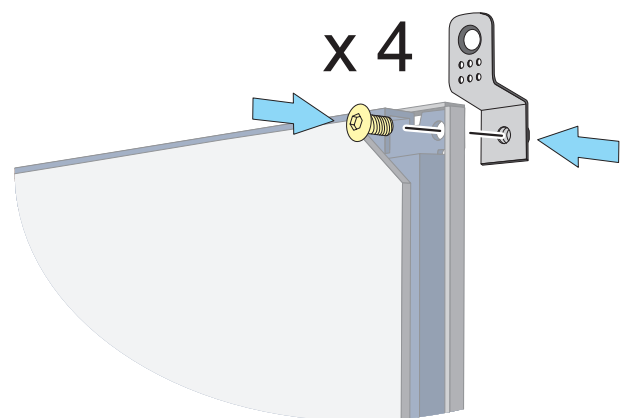
The speaker brackets may be fitted extending to the sides, or above and below the speaker chassis.

- Choose the assembly option that works best for your installation.

If the studwork inside the wall is close to the edge of the speaker, choose side fixing. With this arrangement, the speaker can be mounted directly to the studs at either side.



If the studwork is clear of the speaker mounting area, choose top mounting and fix the speaker directly to the plasterboard using the supplied fixing strips.



Installation

Fitting the speaker

Fitting the mounting strips

Speaker mounting strips will be required for installations where the brackets extend above and below the speaker for fixing directly to the plasterboard.

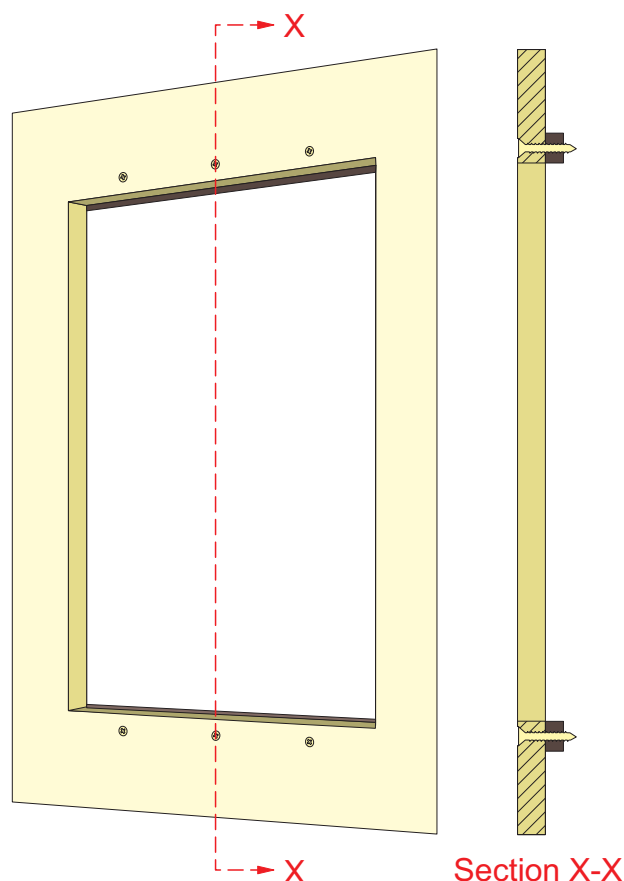
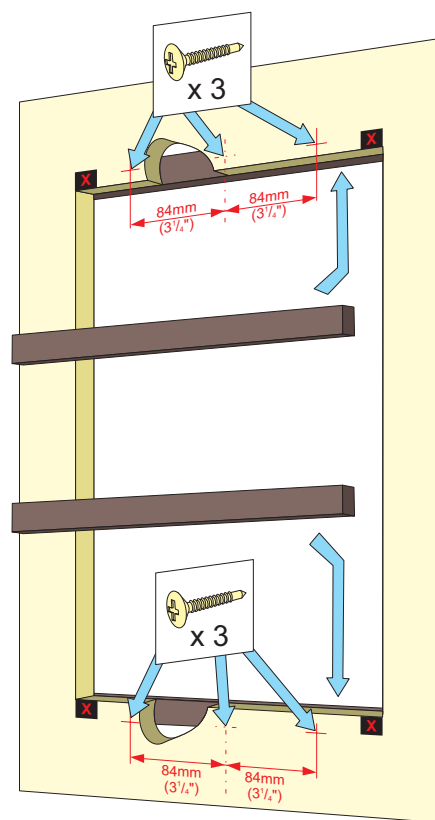
Skip this step if the brackets extend to the sides of the speaker for fixing directly to the studs.

The MobiusiB is supplied with two mounting strips. These are secured behind the upper and lower edges of the opening cut for the speaker. The mounting screws for the speaker will fasten into these mounting strips.

- Mark the positions for three screws, centred and spaced by approximately 84mm (3 1/4") above and below the opening to fix the upper and lower mounting strips as shown in the image.
- Hold one of the mounting strips in position behind the upper edge of the opening and secure it in place.
Regular plasterboard screws are suitable for fixing the strips.
- Hold the remaining mounting strip in position behind the lower edge of the opening and secure it in place.

NOTE: The screws supplied with the speaker are stainless steel and should only be used to secure the speaker. Surplus stainless steel screws can also be used to secure the mounting strips.

- Refer to the Section X-X view which shows the correct fixing positions of the mounting strips.



Installation

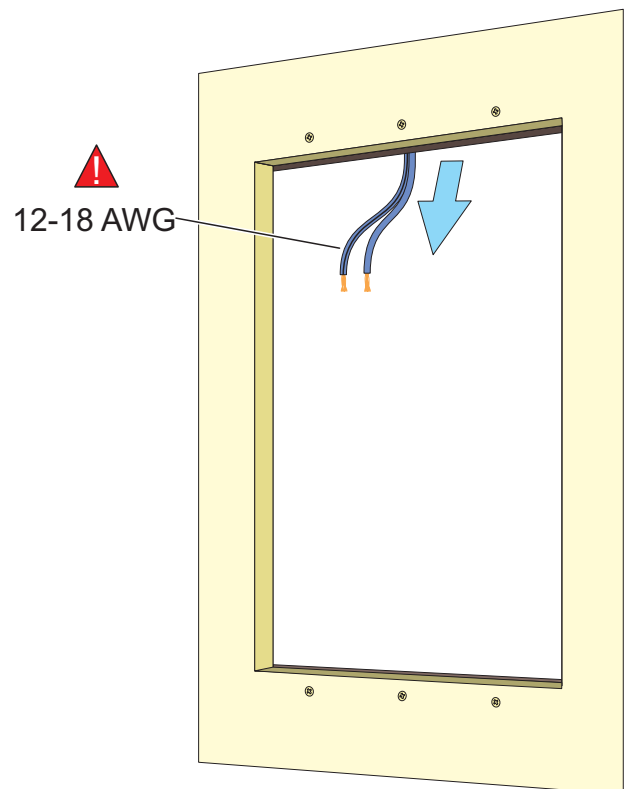
Fitting the speaker

Feed the cable

- Feed the cable from the amplifier to the opening where the speaker will fit.

NOTE: Cable gauge must be between 12AWG and 18AWG to ensure compatibility with the connector splices provided with the loudspeaker. Alternatively, you will need to source a suitable connector for your cable diameter.

14AWG is advised for longer cable runs.



Installation

Fitting the speaker

Lever splices

Amina MobiusiB speakers are supplied with lever splices to join the cable from the amplifier to the speaker wires.

Prepare the wires

- Strip the insulation from the ends of the cable and twist the strands together.
- Identify the polarity of your cable. This will be indicated by a stripe, colour or rib to indicate the positive wire.

Connecting the positive wires

The positive wire will connect to the red wire from the speaker.

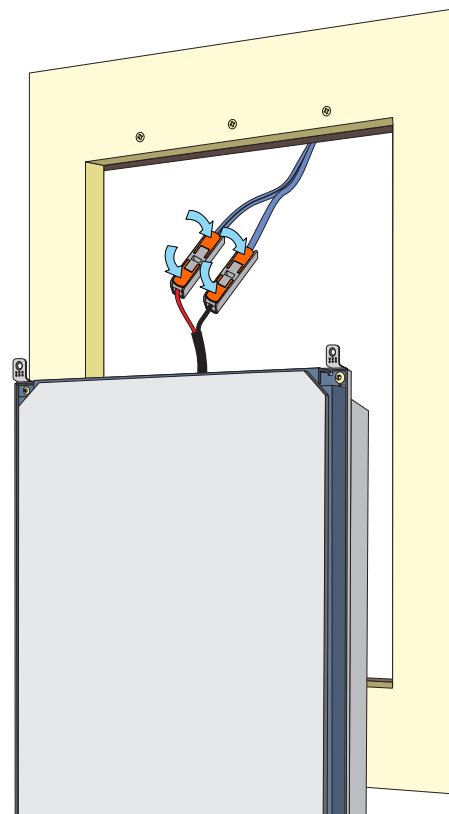
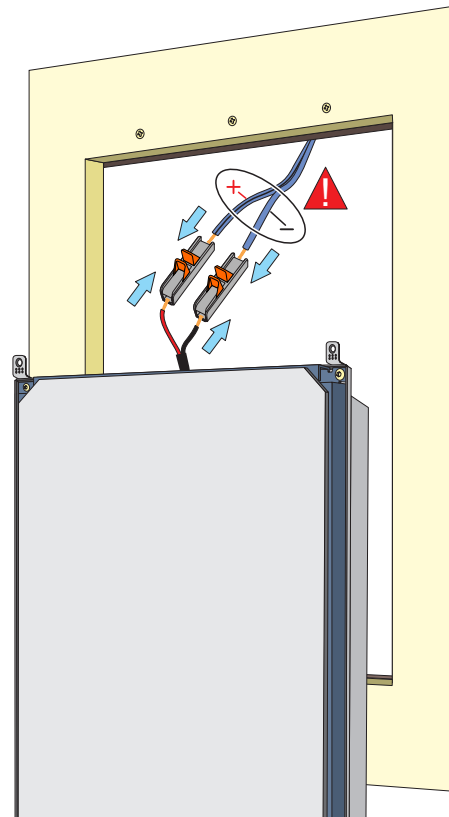
- Feed the positive wire from your cable and the red wire from the speaker into one of the lever splices as shown.
- Push the wires fully into one of the lever splices.

Secure the positive wires

- Press down the latches on the lever splice to lock the positive wires in place.

Connecting the negative wires

- Repeat the last two steps to connect the negative wire from your cable to the black speaker wire using the second lever splice.
- Check that all wires are securely retained in the splices.



Installation

Fitting the speaker

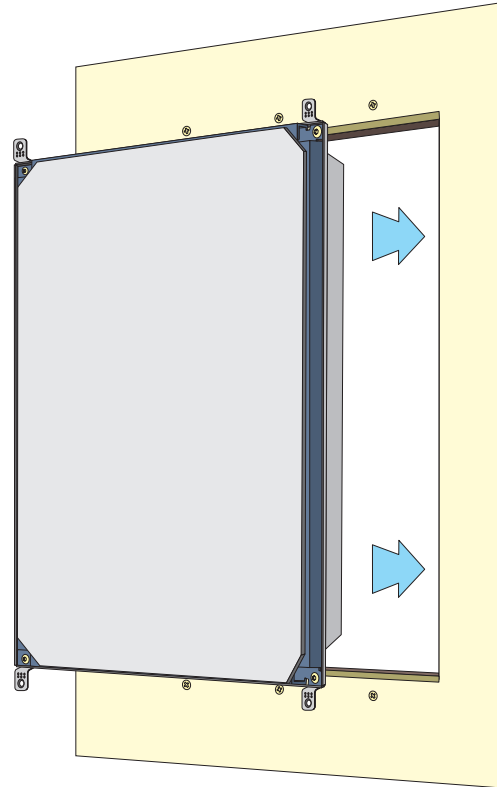
Fit the speaker into the wall



CAUTION:

Before fitting the speaker, check the routing of your speaker cable. The cable and splices should be positioned clear of the speaker back box.

- Secure the cable to an adjacent joist if necessary.
- Fit the speaker into the opening.



Installation

Fitting the speaker

Fix the speaker into the wall

The speaker is fixed through the plasterboard and into the mounting strips behind the opening.

- Secure the speaker in place with the four stainless steel, countersunk screws (supplied).

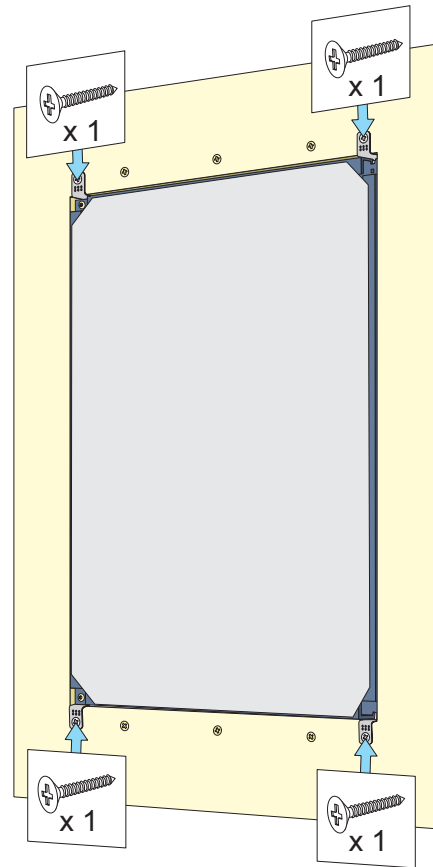


CAUTION:

Ensure that the screws remain perpendicular to the wall as they are driven in.

- Tighten the screw sufficiently to pull the countersunk section of the fixing tabs into the plasterboard or plaster surface of the wall/ceiling.

Ensure that the rear of the tab sits fully down onto the surface of the plasterboard and the screw head sits below the top surface of the tab.



Installation

Fitting the speaker

Check the brackets

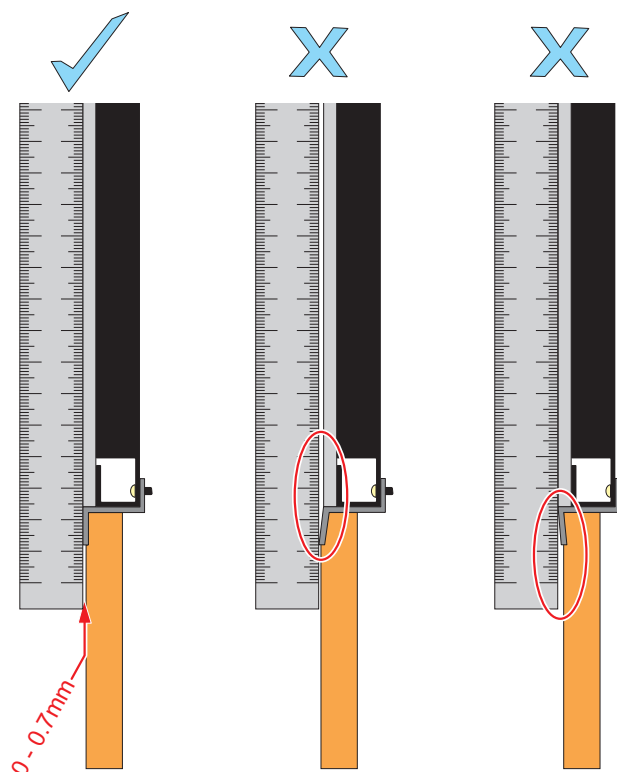
Before proceeding, check the alignment of the brackets carefully.

Refer to the section views of the speaker fitted into the wall.

- Check that the bracket faces sit flush to the wall as shown with a maximum 0.7mm height above the wall surface.
- Check that the brackets are not distorted.

This will also cause misalignment of the speaker.

If any misalignment is found, remove the speaker and rectify this before proceeding.



Check the screw fixings

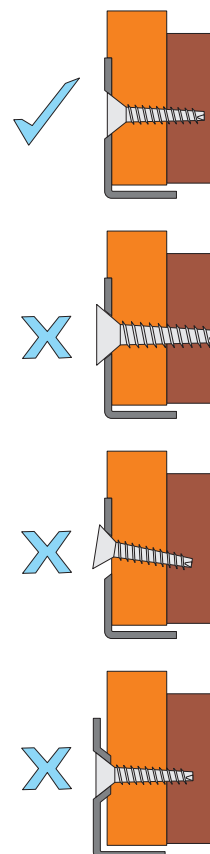
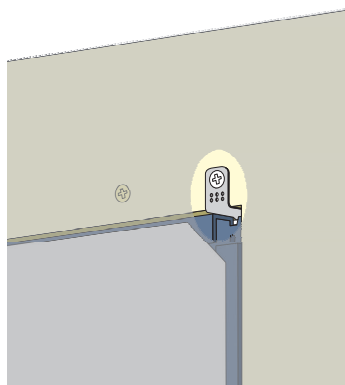
Refer to the section views of the brackets and fixing screws.

- Check that the screw heads are fully located into the recesses in the fixing brackets.

If the screws used to fix the speaker are too large or screwed into the wall at a slight angle, this may cause the screw head(s) to protrude.

A protruding screw or bracket may show through the final skim coat when the installation is finished.

- If you find that the screw heads are protruding or that any of the fixing brackets are not fully seated to the surface of the wall, rectify this before proceeding.



Testing

Testing the speaker

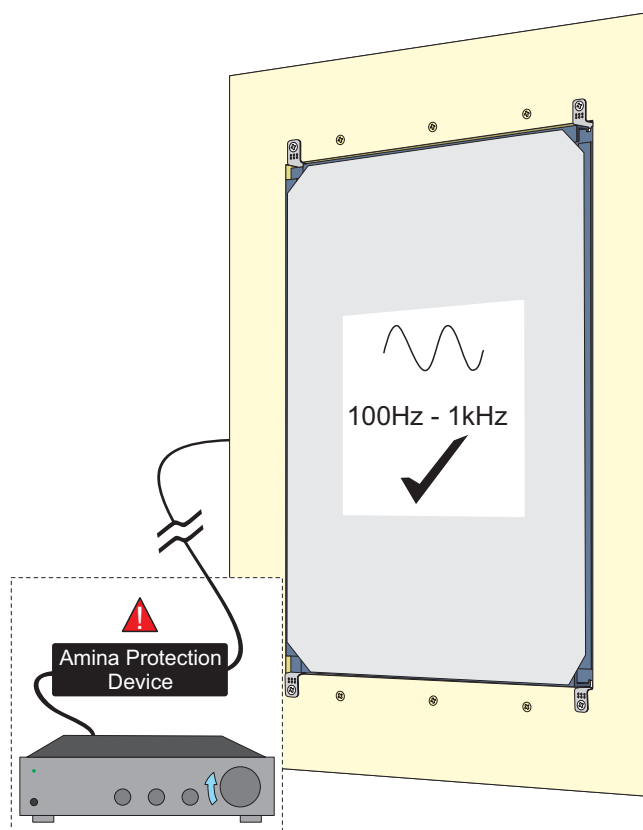
At this stage the speaker must be tested. If any problems are found the speaker can be easily removed before plastering.



CAUTION:

Do not use a battery or DC voltage supply to check continuity or phase check as there is no forward or backward movement of the panel.

DC voltage can damage the speaker.



Resistance test

Using a multimeter and without the Amina protection device connected, check the nominal impedance (DC resistance) of the speaker at the amplifier end of the speaker cable.

Allowing for approx. +10% for cable resistance, the measured impedance should coincide with the values on the respective loudspeaker datasheets.

If it measures significantly differently, check for breaks or shorts in the cable.



CAUTION:

Amina protection devices

Once the resistance test is successfully completed, connect the Amina protection device at the amplifier end of the cable, where it will be accessible, before proceeding with further tests.

Testing

Sweep test

Amina recommends a tone sweep be used at a moderate volume level (0.5 Vrms). Such a test will quickly highlight any buzzes or rattles that could be caused by loose screws, cables touching the speaker or loose elements/studs within the wall/ceiling itself.

NOTE: A tone sweep test must be run initially as it is the most reliable test for buzz and rattle. Music tests are useful, optional tests for final confirmation.

Sweep testing tip:

Tone sweeps may be generated by apps, such as

- Signal Gen by Mediapunk Studios
For iOS & Android
- Tone Generator by TMSOft
For iOS & Android
- Online Tone Generator by T. P. Szynalski
For Web browser

Generating a controllable tone sweep, allows you to focus on specific frequencies that may be highlighting issues in the install or surrounding materials, while you identify the source of the issue.



CAUTION:

Never over-drive the speaker with a single tone or expose your hearing to loud, single tones during this test.

Music test

Play music to check for buzzes and rattles during transient peaks: if these are apparent, check the above points again. The overall speaker performance must be clean and distortion free.

Problems during test

If you encounter any rattling or buzzing problems during test, check the following section to resolve these issues.



CAUTION:

Never proceed with plastering until the speaker has passed both sweep and music tests.

The following list may help you trace the cause of any rattling or buzzing problems.

Insecure plasterboard

If the plasterboard is not securely fastened to the joists, this could create a buzz or a rattle. Apply more screws to secure the plasterboard if necessary - particularly around the speaker location.

Metal frame constructions

Ensure all crossover points within the metal frame sections are secured together. This can be achieved by applying drywall screws through the plasterboard surface and through the metal crossover points.

If they are not secure this may well lead to audible vibrations and rattles.

Refer to our advice on metal frame construction techniques on page 3.

Cable buzzing

Ensure that the speaker cable is not touching any part of the speaker as this can lead to buzzes and rattles. To avoid this it is advised to lay the cable behind mineral wool, recycled cotton, polyester or other wadding.

Lighting fixtures

Ensure lighting fixtures, especially those closer to the loudspeakers are of a solid construction and are firmly fixed in place.

Finishing, New Plaster

Preparing the speaker for plastering

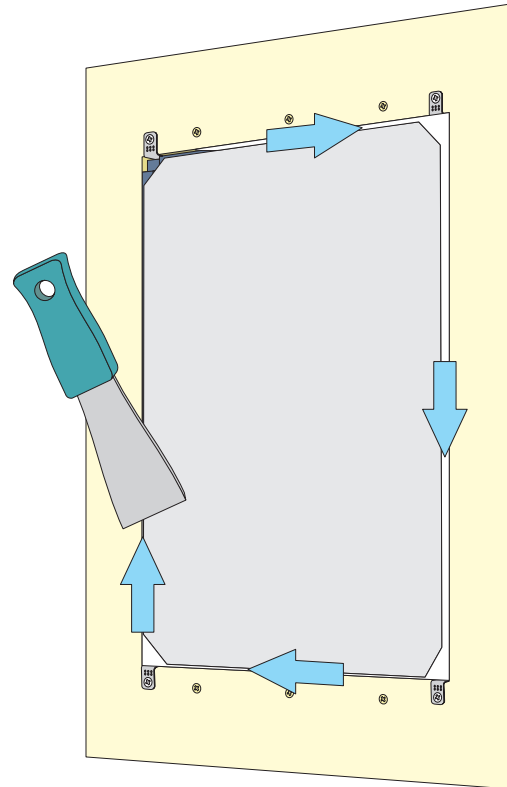
Filling the perimeter

- Before proceeding, check that the gap around the speaker is approximately 2mm all the way around. Use a sharp knife to shave away the surrounding plasterboard to increase the gap if necessary.
- Fill the gap with joint filler to bond the edge of the panel to the edge of the plasterboard.



The joint filler should significantly penetrate the edge gap.

- Wipe away filler from the panel surface.
Use a low shrinkage repair plaster such as British Gypsum Gyproc-Joint-Filler or other similar joint compound.

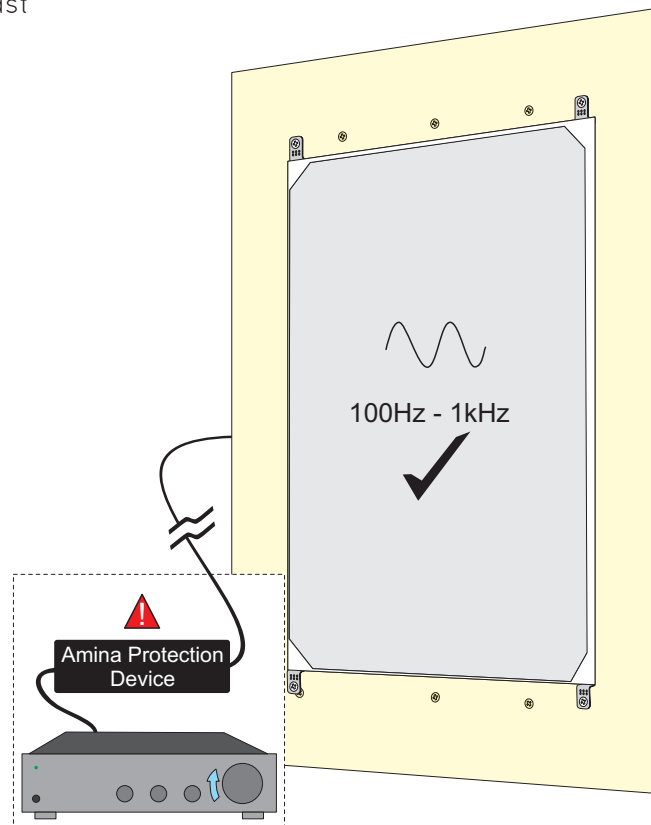


24 HOURS

- Allow the filler to dry completely for at least 24 hours.

Re-test the speaker

- Once the filler is dry, re-test the speaker.



Finishing, New Plaster

Preparing the speaker for plastering

Taping the joints and panel surface

- Prior to taping, wipe the surface clean with a damp cloth and allow it to dry.
- Apply plaster jointing scrim tape across the face of the speaker as shown.

This can be achieved with full width sheets or by placing strips of narrow width joint tape.



CAUTION:

Filled joints may continue to shrink slightly if not fully dry at this point. This may result in a slightly embossed outline appearing around the finished speaker installation at a later date.

Full plaster skim coat



CAUTION:

Never proceed with plastering until the speaker has passed both sweep and music tests.



CAUTION:

The maximum total plaster thickness must be no more than 2mm.

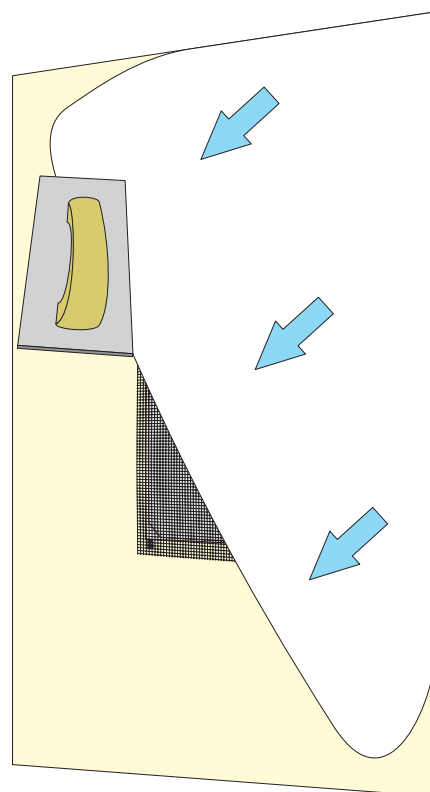
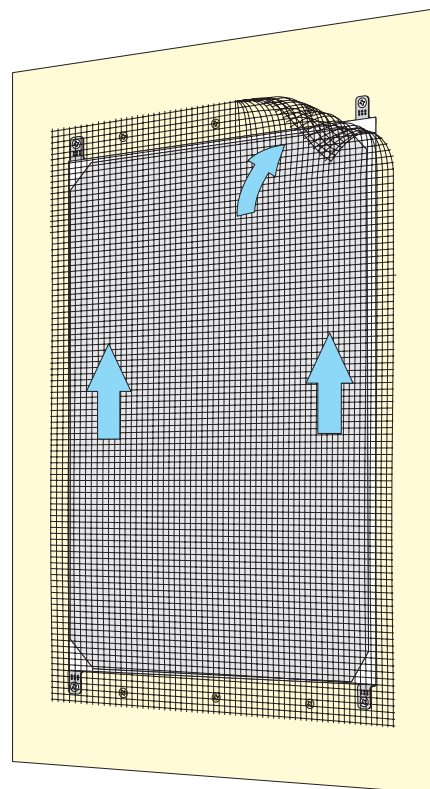


CAUTION:

The working environment must be dry enough to allow the plaster finish coat to dry within hours, not days.

- The wall can now be fully plastered across the surface, including the speaker.

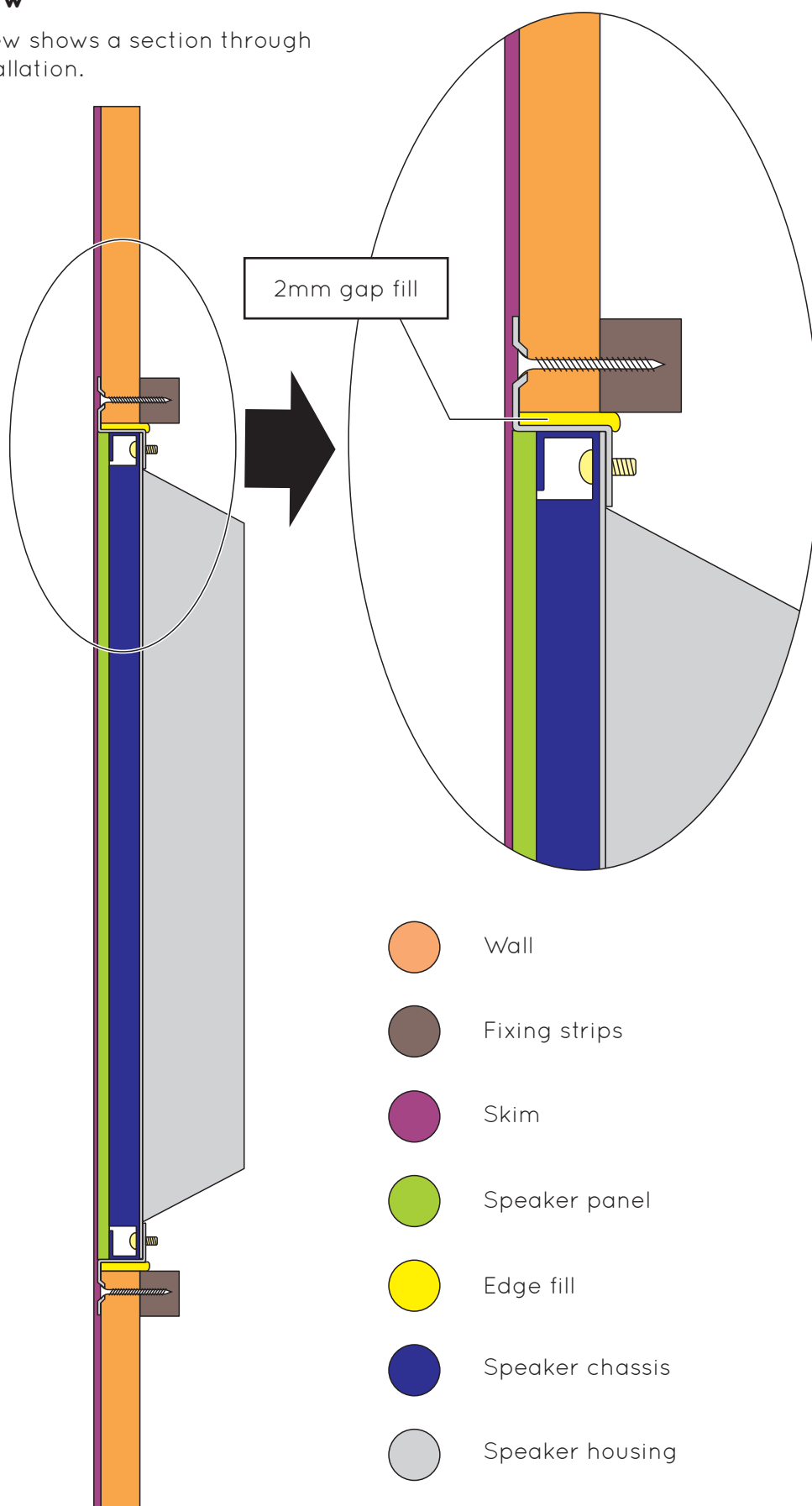
Use British Gypsum Multifinish when applying a full skim coat to your wall or ceiling. If just patch plastering, use Gyproc joint filler followed by a final coat of fine surface filler to achieve a very high quality finished surface. Sand lightly in between coats.



Finishing, New Plaster

Cutaway view

This cutaway view shows a section through the finished installation.



Finishing, Retro-Fit

Preparing the speaker for plastering

Filling the perimeter

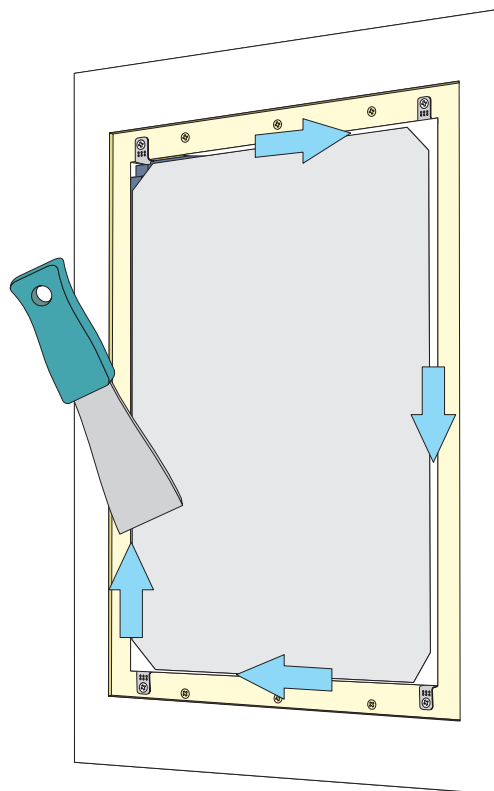
- Before proceeding, check that the gap around the speaker is approximately 2mm all the way around.
- Fill the gap with joint filler to bond the edge of the panel to the edge of the plasterboard.



The joint filler should significantly penetrate the perimeter gap.

- Fill the recesses around the speaker brackets.
- Wipe away filler from the panel surface.

Use a low shrinkage repair plaster such as British Gypsum Gyproc-Joint-Filler or other similar joint compound.

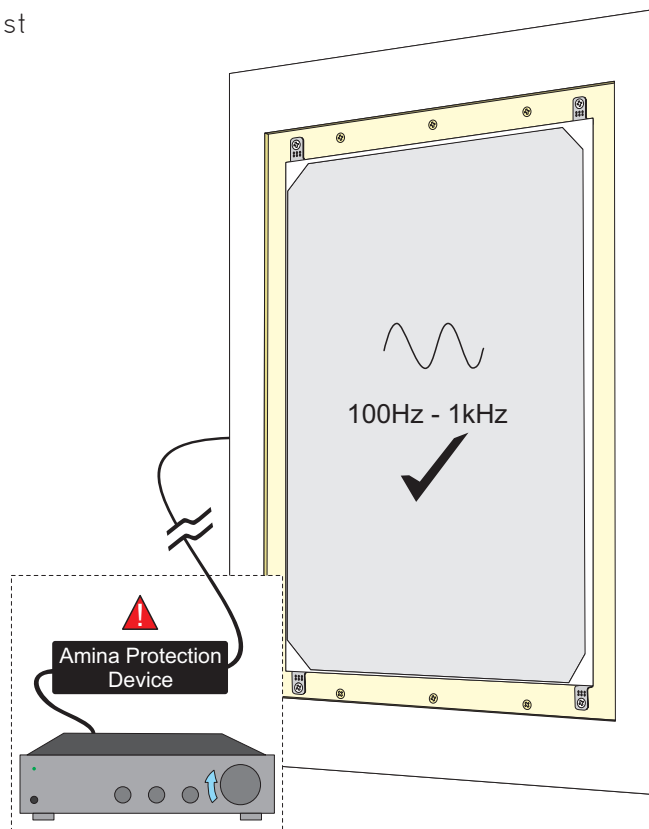


24 HOURS

- Allow the filler to dry completely for at least 24 hours.

Re-test the speaker

- Once the filler is dry, re-test the speaker.



Finishing, Retro-Fit

Preparing the speaker for plastering

Taping the joints and panel surface

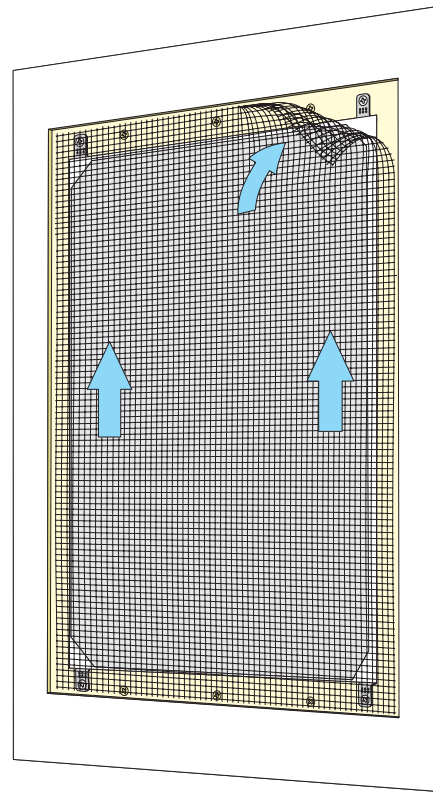
- Prior to taping, wipe the surface clean with a damp cloth and allow it to dry.
- Apply plaster jointing scrim tape across the face of the speaker as shown.

This can be achieved with full width sheets or by placing strips of narrow width joint tape.



CAUTION:

Filled joints may continue to shrink slightly if not fully dry at this point. This may result in a slightly embossed outline appearing around the finished speaker installation at a later date.



Plastering over the speaker

Patch plastering



CAUTION:

Never proceed with plastering until the speaker has passed both sweep and music tests.

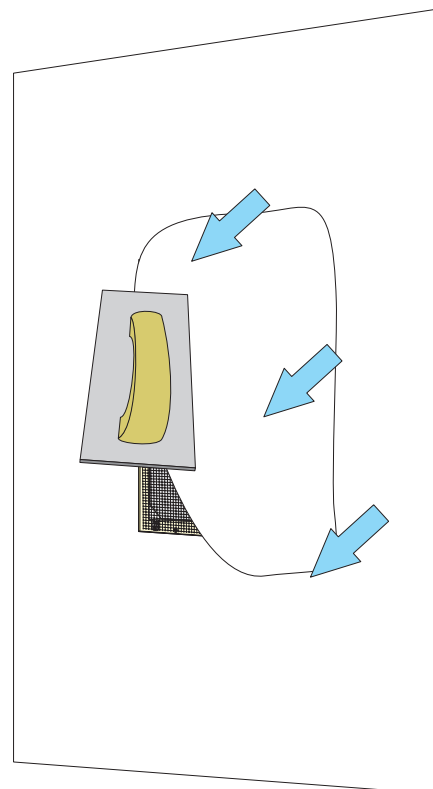


CAUTION:

The working environment must be dry enough to allow the plaster finish coat to dry within hours, not days.

- Patch plaster the area over the speaker, feathering into the existing plaster at the edges.

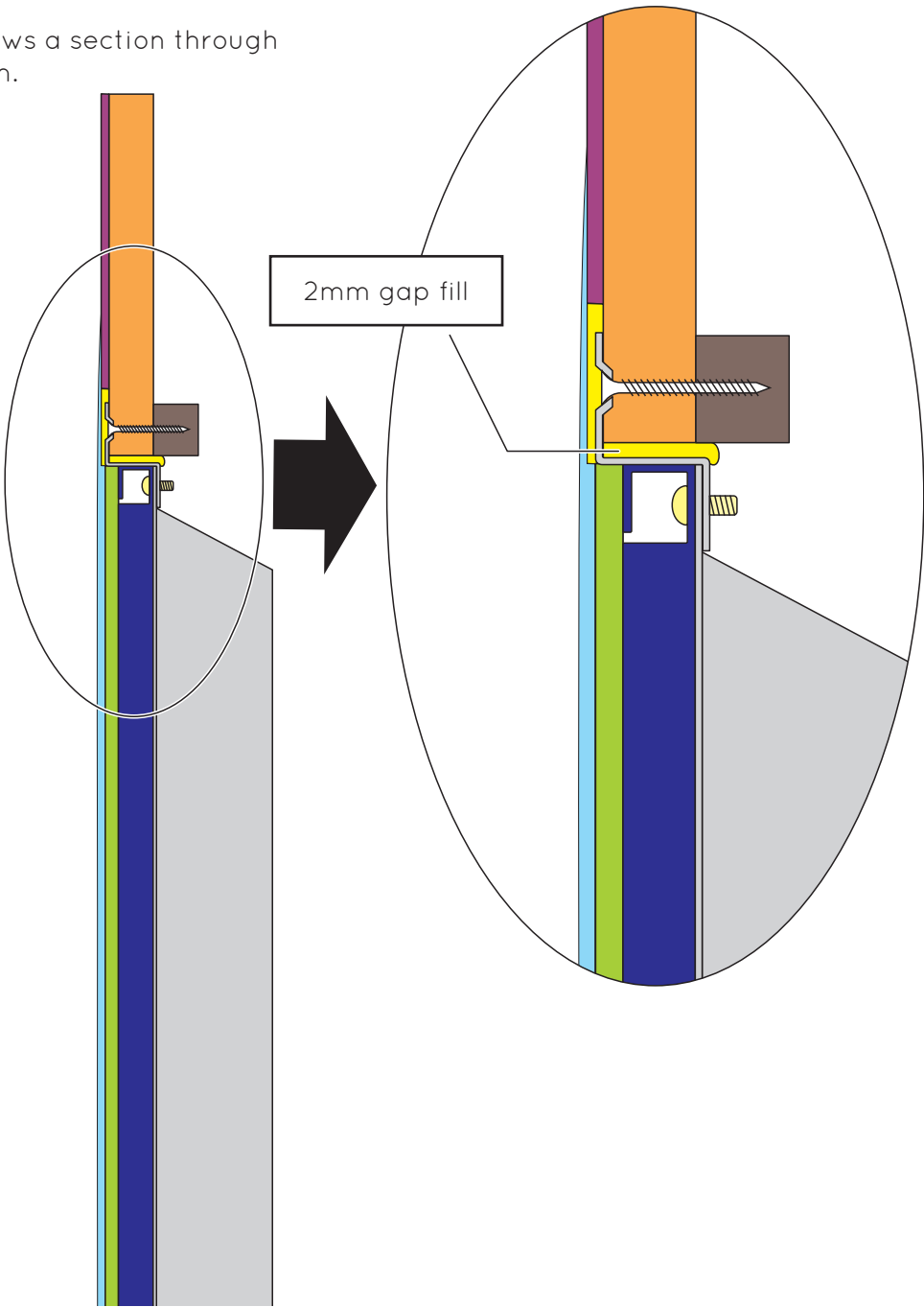
When patch plastering, use Gyproc joint filler followed by a final coat of fine surface filler to achieve a very high quality finished surface. Sand lightly in between coats.



Finishing, Retro-Fit

Cutaway view

This cutaway view shows a section through the finished installation.



Wall



Fixing strips



Original plaster



Speaker panel



Edge fill



Patch plaster



Speaker chassis



Speaker housing

Decorating

Drying

- Allow your plasterwork to dry completely.

Re-test

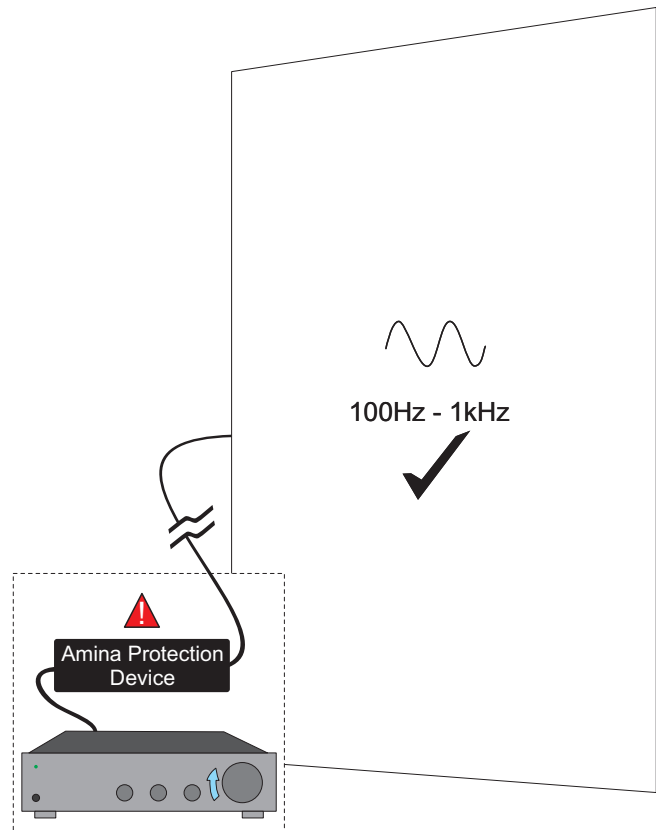
Before decorating, test the speaker again with a frequency sweep and music.



CAUTION:

Do not use a battery or DC voltage supply to check continuity or phase check as there is no forward or backward movement of the panel.

DC voltage can damage the speaker.



Decorating

Materials

Completed and fully dried plaster surfaces should be finished with permeable coatings / materials to allow moisture in that coating or the adhesives used to apply those materials, to dry into the environment quickly.



CAUTION:

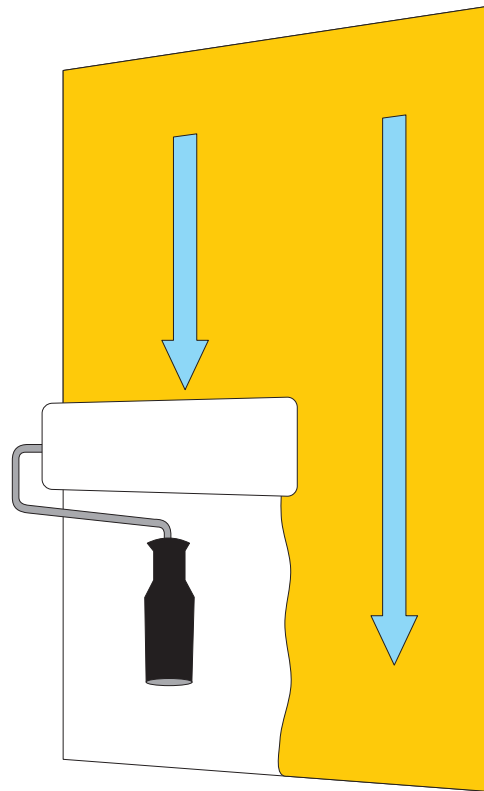
Non-permeable coatings

The use of impermeable coatings and materials should be considered carefully and with caution.

Oil based coatings and other non-permeable surfaces will trap moisture in the plaster surface for many days and even weeks. This has the potential to work its way back to the Amina loudspeakers exposing them to an unacceptably damp environment for an extended period.

Bare plaster surfaces must be pre-treated with a primer / sealing coat that is permeable during its drying process. The entire surface must then be fully dry (this may take some weeks) before applying the impermeable coating or material.

Ensure the building is environmentally sealed, de-humidified (to a max of RH 50%) and at a stable temperature of at least 16°C (61°F).



Final Test

Checking the completed installation

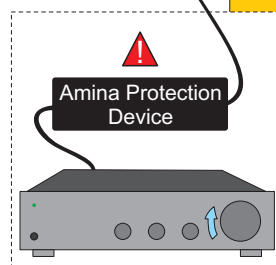
- With decorating completed, run a final test of all the speakers in the system independently.



CAUTION:

Do not use a battery or DC voltage supply to check continuity or phase check as there is no forward or backward movement of the panel.

DC voltage can damage the speaker.



Maintenance and cleaning

Once your speaker is plastered into your wall or ceiling, it requires no physical maintenance. Your wall or ceiling can be cleaned with products appropriate to the finish finally applied to the plaster surface.

Re-decorating

The wall or ceiling can be painted or redecorated any number of times, but please be aware that sound output will reduce very slightly with each coat.

Extreme care should be taken when removing wallpaper type coverings to ensure the panel surface is not damaged.

If damage to the plaster work occurs, use repair plaster to restore the plaster surface prior to re-decorating. Amina Technologies Ltd recommends British Gypsum Gyproc-Joint-Filler as a repair plaster.

Avoid pushing the wall or ceiling surface immediately in front of the speaker. Excessive excursion can cause the plaster to crack around its perimeter and can damage the loudspeaker.

Accessories

Subwoofers

ALF80 (not available in North America)

100W passive subwoofer with unique adjustable port design allowing the product to be installed within joinery, behind kick boards or within ceilings or other voids. Highly discrete, powerful and deep bass response is achieved with only a small opening for the port required within the room.



ALF100SM/ALF100CV

The 200W ALF100 design is available in two variants, the 'plaster over' ALF100SM which mounts to the face of the wall studs in a 4" wall cavity or the ALF100CV which mounts behind the wall board, inside a wall cavity (requires a 5" stud wall), above a ceiling or below a floor. The ALF100CV can also utilise the space below kitchen island cabinets behind the kickboard, or simply locate under a sofa or other furniture.



Troubleshooting

Thorough testing of the loudspeakers should be carried out both prior to and after plastering to avoid time consuming repairs or modifications at a later stage. Should you encounter any problems at either of the test stages the following guide is designed to help determine possible problem areas.



CAUTION:

Do not use a battery or DC voltage supply to check continuity or phase check as there is no forward or backward movement of the panel.

DC voltage can damage the speaker.

Advice for testing

- When testing always use a basic sound system (amp, source, loudspeakers) to eliminate the possibility of faults with other, more sophisticated components, such as control systems.
- Test at low and medium volumes and be careful not to exceed the specific speaker model's recommended power. Using tone sweeps or music as test material, listen for distortion, buzzing or rattles at appropriate levels. Using test discs or music, confirm that all channels are in-phase.
- Ideally, professional test equipment should be used to record a full frequency response of the loudspeaker before and after plastering.

No or low sound output

- Check continuity of all cables.
- Check that all cables and connections are made correctly, are intact and that all channels have the correct polarity (+ to + and - to - from amp to speaker).
- The Amina Guardian is an in-line high-pass filter and over-voltage protection unit that protects the speaker, and is designed to reset automatically when the voltage applied to the speaker is reduced. The Guardian may fail if exposed to extreme power levels for extended periods of time, and present a constant high impedance or open circuit. Both conditions will protect the loudspeaker panel. To check, remove the Guardian from the circuit and test the speaker at low volume or meter as below. If the speaker works or measures correctly, replace the Guardian by ordering an appropriate replacement from Amina.
- Check that the 5V USB power supply for the Guardian is connected to mains power and is correctly connected. If the Guardian is not powered, it will not pass a signal though to the speakers.
- Using an impedance meter, check the nominal impedance of the speaker (Guardian must not be connected) both at the loudspeaker and the amp end of the cable. Do these measurements match each other? (Allowing for the small impedance increase of less than 1 ohm along the wire length) Do they match the stated nominal impedance on the loudspeakers specification label? If the nominal impedance, measured at the loudspeaker is dramatically different to the product's stated impedance, a speaker driver may be open circuited or short circuited. If so, the product may need to be returned to Amina for repair or replacement.
- If the nominal impedance at the end of the cable is very different to the impedance at the speaker, check your cables. Cuts or nicks in the cable along its length can dramatically increase impedance or create a short circuit, dramatically lowering the impedance.

Troubleshooting

Distortion, buzzing or rattles at modest volumes

- Try to identify the location of the buzz or rattle. It may be caused by a loose screw or other mechanical object. Check the wall or ceiling and speaker assembly and ensure screws and fixings are tight.
- If the rattle persists, remove the speaker from the wall and check your wiring to the product. Ensure that wires, with the speaker in the final location, are not resting against the back box of the speaker, causing vibrations.
- With no audio signal applied, lightly push the speaker face in and out at its centre. Feel and listen carefully for rubbing on the driver, which may sound like scratching. This may indicate the speaker has been over driven and subsequently damaged. The speaker will need to be sent to Amina for repair or replacement.

Intermittent high volume following very low volume output

- The Guardian protection device is operating to protect the speaker causing a very low volume output. In quiet sections of the recording the Guardian will release the protection mechanism allowing full volume output, but will reengage the protection mechanism again in louder sections of the track. Reduce the power level from the amplifier into your system. Consistent sound output will resume.

Very low output after speaker passes electrical tests

- With no audio signal applied, lightly push the panel in and out at its center. Feel and listen carefully for rubbing voice coils on the driver, which may sound like scratching. This may indicate the speaker has been over driven and subsequently damaged. The speaker will need to be sent to Amina for repair or replacement.

Distortion at higher volume levels

- Diffuse source panel loudspeakers of this type have an extremely fast response, articulating the signal from your audio system very accurately. Take your system back to the bare minimum (amplifier, source and loudspeakers) to eliminate distortions introduced by other components.
- When using your amplifier at maximum power levels, or if the input of your amplifier is being overloaded, the signal level may be 'clipping'. With some conventional loudspeakers this may not be evident, but with a diffuse source panel speaker you are much more likely to hear the distortion. Consider adjusting or upgrading your system.



NOTE: Excessive pressure on the front of the speaker panel may cause cracking in the plaster which may need to be filled.

Specifications

Mobius series - Plaster over products

Model number	Mobius3iB	Mobius5iB	Mobius7iB
Dimensions (excluding fixing tabs)	402mm x 304mm x 80mm (15 ⁷ / ₈ " x 12" x 3 ³ / ₈ "	452mm x 349mm x 80mm (17 ³ / ₄ " x 13 ³ / ₄ " x 3 ³ / ₈ "	452mm x 349mm x 80mm (17 ³ / ₄ " x 13 ³ / ₄ " x 3 ³ / ₈ "
Weight	3.3kg	3.8kg	4.2kg
Nominal impedance	4Ω	4Ω	4Ω
Frequency response	90Hz - 16kHz	65Hz - 30kHz	55Hz - 30kHz
Sensitivity (@ 1m/2.83Vrms)	84dB	86dB	87dB
In-line protection unit (dual channel)	Guardian ² - AGP3	Guardian ² - AGP5	Guardian ² - AGP7
In-line protection unit (multi-channel)	Guardian ⁸ / Guardian ¹⁶	Guardian ⁸ / Guardian ¹⁶	Guardian ⁸ / Guardian ¹⁶
Power handling (continuous)	30 W	50 W	75 W
Power handling (peak)	60 W	100 W	150 W
Operating temperature range	16°C - 40°C	16°C - 40°C	16°C - 40°C
Manufacturer limited warranty	10 years	10 years	10 years

Model number	Mobius5S200iB	Mobius DualiB
Dimensions	452mm x 204mm x 80mm (17 ³ / ₄ " x 8" x 3 ³ / ₈ "	450mm x 345mm x 35mm (17 ³ / ₄ " x 13 ⁵ / ₈ " x 1 ³ / ₈ "
Weight	2.5kg	4.3kg
Nominal impedance	4Ω	2 x 8Ω
Frequency response	110Hz - 20kHz	105Hz - 20kHz
Sensitivity (@ 1m/2.83Vrms)	86dB	87dB
In-line protection unit (single channel)	Guardian ² - AGP5	Both channels of Guardian ² - AGP3
In-line protection unit (multi-channel)	Guardian ⁸ / Guardian ¹⁶	Guardian ⁸ / Guardian ¹⁶
Power handling (continuous)	50 W	2 x 30 W
Power handling (peak)	100 W	2 x 60 W
Operating temperature range	16°C - 40°C	16°C - 40°C
Manufacturer limited warranty	10 years	10 years

Fire resisting installation

Fire resisting installation is generally required in multi-level buildings such as offices, apartments and flats where the ceiling and any fittings in the ceiling must maintain a 60 minute barrier to fire.

The standard installations described in this guide for Amina MobiusiB series invisible speakers will not meet the requirements of an installation that requires fire resistance.

If an installation does require fire resistance then it will be necessary to install an Amina fire hood with each Mobius speaker, or create a fire-resisting compartment to the rear of the loudspeaker.

If you are in any doubt concerning the selection or installation of Amina speakers or accessories in an installation that requires fire resistance, contact Amina Technical Support.

Warranty information



Limited Warranty:

Amina loudspeakers are designed to operate reliably for many years. Correctly installed in accordance with these instructions, Amina warrants the loudspeakers against defective materials and manufacturing workmanship for a period of ten years in residential and five years in commercial applications.

At the end of the speaker's useful life and in compliance with the European directive on waste electrical and electronic equipment (WEEE), this product is to be returned to your supplier, or directly to Amina for recycling. If you have any questions please contact Amina Technologies Ltd.

* Please refer to our full warranty statement for details, available on our website, or alternatively contact us via email.

Important Note: This product has not been tested to European Construction Products Regulations EN 54-24 and therefore must not be used in voice evacuation systems located within the European Union.

Amina offer a specific product range which is EN54 certified for European life safety applications. Please contact Amina for details.

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E: info@aminasound.com - general enquiries and career opportunities

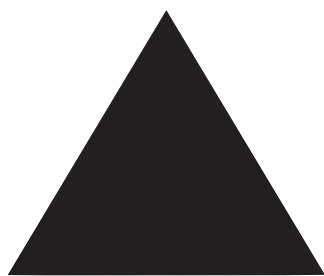
E: support@aminasound.com - expert technical advice

E: sales@aminasound.com - sales team

W: www.aminasound.com

Registered in the UK, company no: 3656822

WEEE Registration no: WEE/AK0004ZR



AMINA

IMMERSIVE INVISIBLE SOUND

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