

INSTALLATION INSTRUCTIONS: REVOX INVISIBLE SPEAKERS



CONTENTS

PREAMBLE		3
	Basics Storage and transport Conditions on the building site Suitability of the installation site Preparing the cut-out for installation Surface connection Layer structure	
INSTALLATION		4
	Electrical connection Mounting the speakers Sound insulation Special use Installation in material panels	
INVISIBLE SPEAKERS		5–6
	Invisible speakers, types and dimensions Invisible speakers, accessories INV UNIT/SUB types and dimensions INV UNIT/SUB accessories	5 5 6 6
INSTALLATION IN LIGHTWEIGHT WALLS AND CEILINGS		7–14
	Direct mounting Direct mounting, UNIT/SUB Mounting with a mounting bracket	7–10 11–12 13–14
INSTALLATION IN SOLID WALLS AND CEILINGS		15–18
SPECIAL USES		19–21
	Installation in rooms with elevated humidity Installation in wall and ceiling panelling	20 21
GENERAL NOTES		22

INSTALLATION INSTRUCTIONS: REVOLX INVISIBLE SPEAKERS

PREAMBLE

You are advised to read the complete installation and mounting instructions carefully before installing the Invisible speakers. Our mounting and installation instructions contain information for the specialist installation firm. They are intended as information and advice and are based on the current state of the art. In view of the numerous installation scenarios, the structural characteristics and the materials used, these mounting and installation instructions do not constitute – within the meaning of statutory warranty regulations – any assurance in regard to the properties of the product they describe in the respective mounting type.

Basics

The Invisible speakers are intended for integration in walls, ceilings and material panels in the interior of buildings. Special Invisible speakers are designed for use in façades. The basics for use and the relevant regulations and standards that apply to each component must be adhered to in this regard. Use of the Invisible speakers in any way other than the intended use as described in this document will void any statutory warranty, liability and guarantee claims.

Proper storage and transport

The Invisible speakers must be stored in a dry place at all times. The permitted storage temperature is between 5°C and 35°C. When packaged, the Invisible speakers must be stored flat (max. stacking height: 12 boxes) or individually upright on an even surface without any additional load.

The Invisible speakers are packed in special cardboard boxes at the factory. The packaging is only intended for customary movement during transport. Improper transport and storage may damage the Invisible speakers. Under no circumstances may the boxes be thrown or placed down hard on their outer edges.

Conditions on the building site

The building site must be suitable and ready for installation in accordance with the special instructions that apply to the individual trades, e.g. fit-out and drywall construction as well as painting trades.

For instance, suitable conditions must be assured in regard to moisture (screed) or heat (e.g. caused by poured asphalt). Installation of the speakers may only commence once significant longitudinal displacement of the surfaces due to changes in humidity and/or temperature are no longer expected. (refer also to: www.gips.de/Merkblatt1).

Suitability of the installation site

The selection of a suitable installation location must take into account possible influences on the building physics (statics, thermal insulation, fire protection, sound insulation) such as those described in DIN EN 4103 and DIN EN 4109 as well as the relevant leaflets published by the associations and societies within the German building industry.

Preparing the cut-out for installation

The cut-out for installing the Invisible speakers must be dimensionally accurate, right-angled, level, load-bearing, solid, dry and exposed to neither frost nor dust. The correct opening dimensions are equivalent to the outer dimensions of the individual Invisible speaker plus 5 mm.

Example:

Invisible speaker dimensions	625 x 410 mm
Required opening dimensions	630 x 415 mm

The substructure must be tested in accordance with VOB/DIN and the recognised rules of technology and be ready for installation. Metal substructures, planking and accessories must be checked for resonance noises (e.g. due to mechanical load, knocking) and reworked if necessary. Parts that are placed loosely on top of each other must be avoided. Cavities behind the Invisible speakers must be kept as small as possible.

If necessary, the cavities must be muffled additionally using absorbent materials.

Surface connection

The requirements for connection to the surrounding surface must be assessed on a case-by-case basis, depending on the building materials and structural requirements. The circumferential joint must be at least 1 to 5 mm wide in its entire depth. The joint must be chamfered, load-bearing and exhibit uniform and low absorption capacity. Loose parts, dust, dirt and other components that impair adhesion must be avoided on all accounts or removed. Once this is done, a suitable filler is then applied and compacted in the full depth of the joint and then smoothed across the joint. Elastic joint bridging has proven to be a suitable method. Reinforcement that matches the specific property must be included (e.g. Kobau optitape SH). The area is sanded and primed after drying. The factory primer must not be removed and must be replaced if damaged. It is recommended to attach glass fibre fleece across the entire surface.

Other layer structure

The remaining coating depends on the processing specifications issued by the manufacturer of the individual laminate. Invisible speakers themselves have non-absorbent surfaces that are coated with an insulating and barrier primer for finishing plasters based on synthetic resin dispersion. It is filled with fine quartz sand, pigmented white and alkali-resistant.

Additional coating takes place after testing the hardness properties and compatibility of the laminate used. It may be necessary to apply further primers/bonding agents. The required drying times between individual steps must be adhered to on all accounts.

It is imperative that the entire layer structure be established with a form-fit and friction-locked connection and that it remains permanently in place. Compatibility must be ensured on all accounts due to the large number of different materials and their specific characteristics.

We recommend in every case that you perform adequate testing. In case of doubt, you should create suitable testing surfaces (sample panels are available on request).

INSTALLATION

Electrical connection

The Invisible speakers must be connected permanently and professionally by specialist firms for media technology, system technology or electrical engineering. The connection cable must not rest against the back of the Invisible speaker. The wires must be laid in a star-shaped arrangement. Cable lengths >35 m must be avoided.

The electrical parameters for the Invisible speaker (impedance and polarity) must be adhered to as a matter of urgency. Unless otherwise authorised, the specialist firm must include and install a high-pass filter with 120Hz/24dB/oct. in the signal path. This function must neither be bypassed, nor may it be alterable by unauthorised persons. The signal must not increase in volume above a set value. If necessary, a hard- or software audio processor (LIMITER) should be integrated in the signal path.

Mounting the Revox Invisible speakers

The Invisible speakers must be installed according to the following mounting and installation instructions with due consideration of the specific circumstances. A distinction is made between installation in lightweight and solid walls, in lightweight and solid ceilings and in material panels, including acoustic panels. The Invisible speakers must fit into the installation niches without tension. The niches must be reworked if necessary. The following applies to all installation scenarios in this case: The installation site must be clean, dry and free of separating agents. It must be cleaned and pretreated using suitable agents (e.g. degrease support profile, remove release lube, apply primer etc.). Open edges on the installation cut-out must be suitably primed.

Sound insulation

Requirements for sound insulation, in particular sound transmission dimensions for separating building components or longitudinal sound insulation dimensions for adjacent building components, must be assessed by a specialist if necessary. If Invisible speakers are installed in buildings with increased sound insulation requirements, a mandatory acoustic assessment must be carried out that unconditionally approves the speaker installation. Revox cannot be held liable for sound insulation deficiencies.

Special uses

The Revox Invisible speakers are also suitable for special uses. They include designs and coatings that are requested explicitly. The feasibility of these special uses must be coordinated with Revox in each case.

These mounting and installation instructions do not apply to custom special uses and customised products in all cases. It may then be necessary to adhere to separate recommendations.

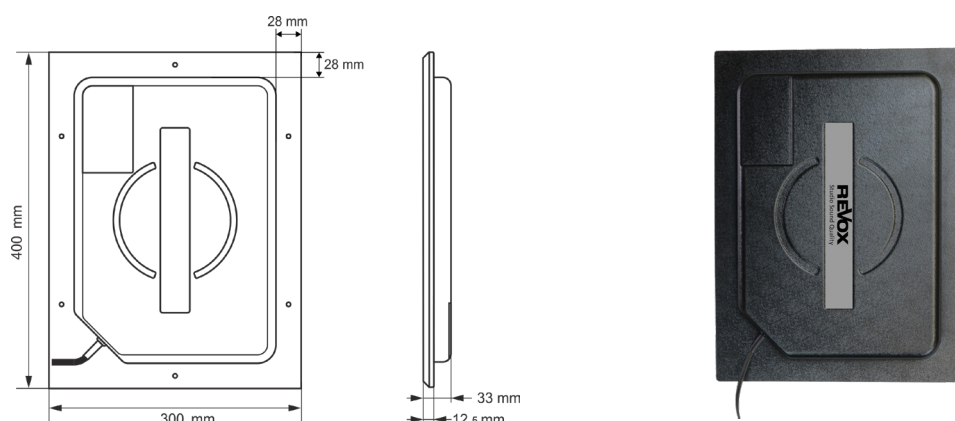
Installation in material panels

The entire surface of the Invisible speaker is glued into a rear well (created by the customer) in the material panel (residual material thickness 5–8 mm) or glued onto this panel, depending on the material and use. The adhesive is selected to suit the properties of the material panel. The specialist firm entrusted with installation is responsible for conducting necessary tests prior to use in order to determine the adhesive's suitability (sample panels are available on request).

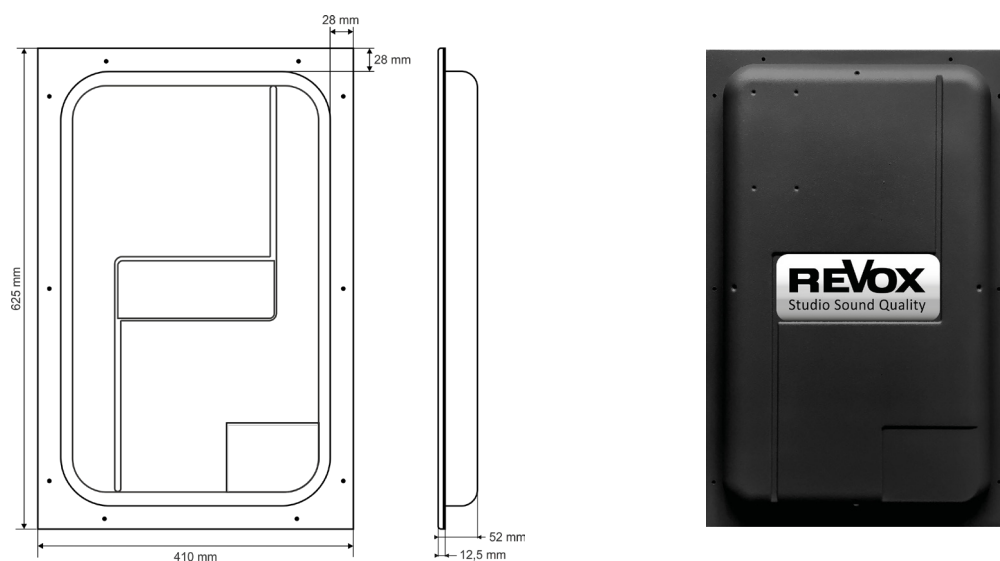
The processing instructions of the material or adhesive manufacturer must be adhered to on all accounts. This applies also to integrating the speaker in surfaces made of solid wood or mineral materials.

INVISIBLE SPEAKERS, TYPES AND DIMENSIONS

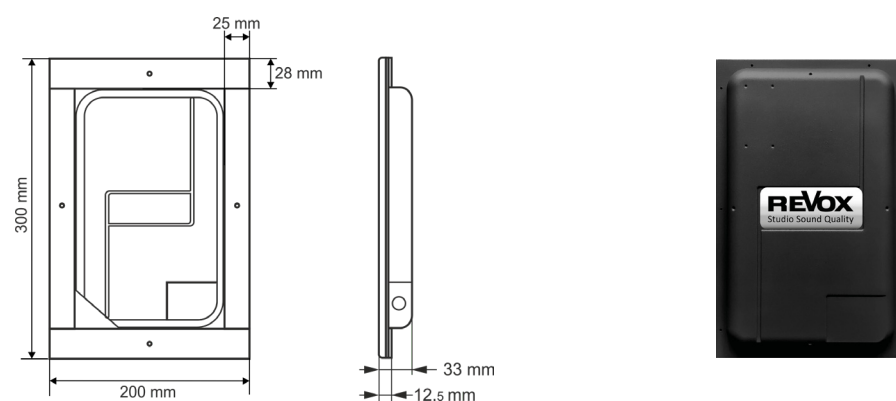
Types: INV 20 slim/INV 20 slim carbon/INV 40 aqua slim/INV 40 wood slim



Types: INV 40/INV 40 carbon/INV 40 stereo/INV 40 stereo carbon/INV 40 PE/INV 80/INV 80 carbon



Types: INV 20 mini/INV 20 mini carbon

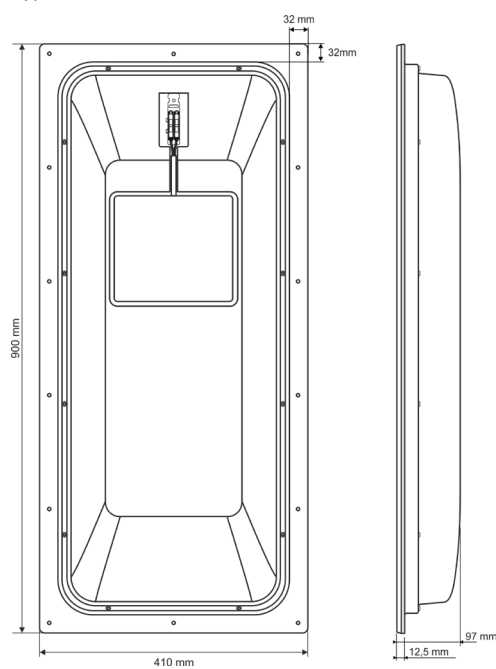


ACCESSORIES

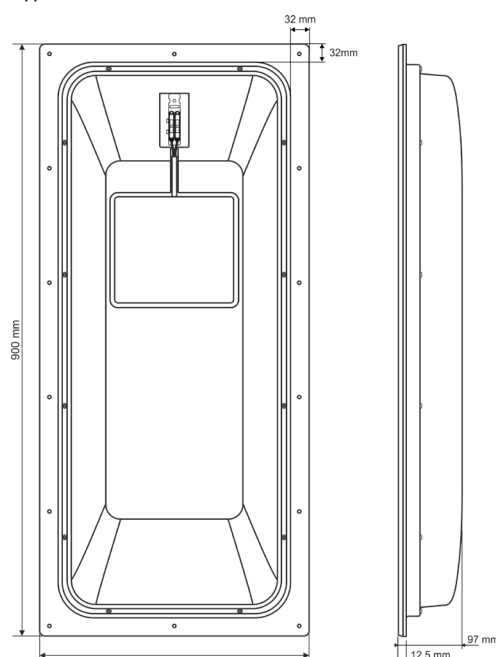
- Highpass Protection Unit, suitable for INV 40 and 80 Watt (4 or 8 Ohm)
- Invisible Installation Angle, drywall for INV slim (W300 x H400 x D33 mm)
for INV (W410 x H625 x D52 mm)
- Invisible Installation Frame, concrete for INV slim (W300 x H400 x D33 mm)
for INV (W410 x H625 x D52 mm)
- Invisible Pouring Housing, concrete for INV (W410 x H625 x D52 mm)
- Invisible 1K SMP Special Adhesive white 290 ml

INVISIBLE SPEAKERS UNIT/SUB: TYPES AND DIMENSIONS

Type: INV UNIT



Type: INV SUB

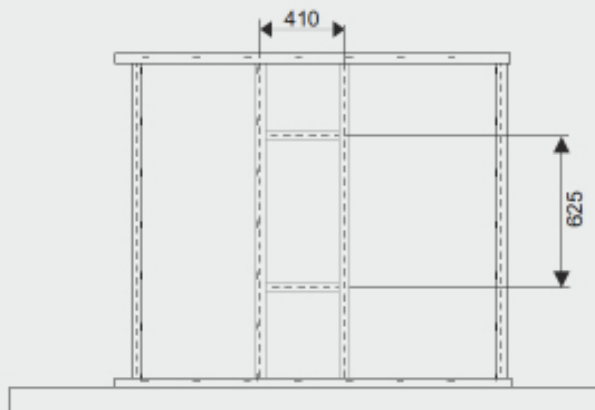
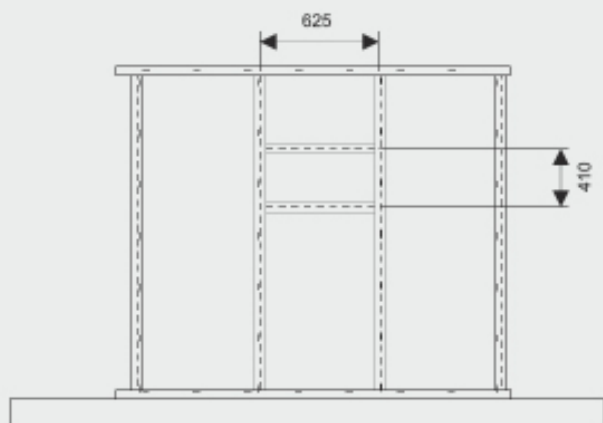


ACCESSORIES

- Invisible Installation Frame, concrete for INV SUB/UNIT (W410 x H900 x D97 mm)
- Invisible Pouring Housing, concrete for INV SUB/UNIT (W410 x H900 x D97 mm)
- 1K SMP special adhesive, white, 290 ml

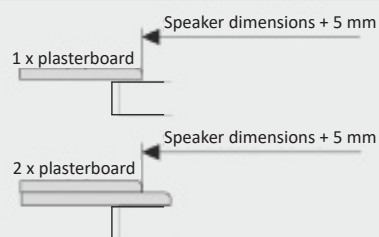
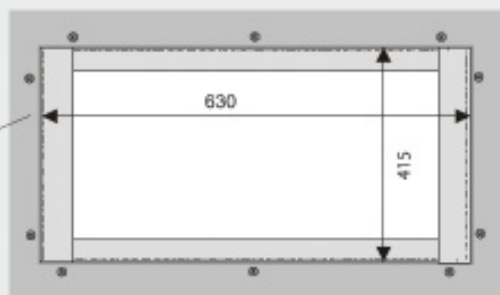
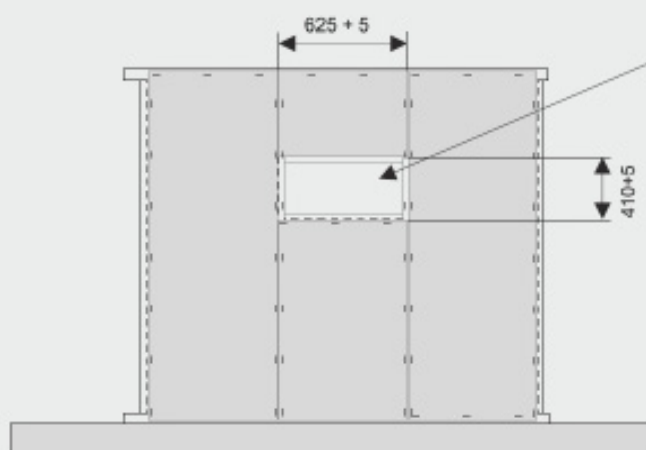
Example 1)

Example 2)



Standard substructure for CW profiles, axial dimensions 625 mm (example 1) or 410 mm at the installation location (example 2). One circumferential shelf must be produced for each Invisible speaker.

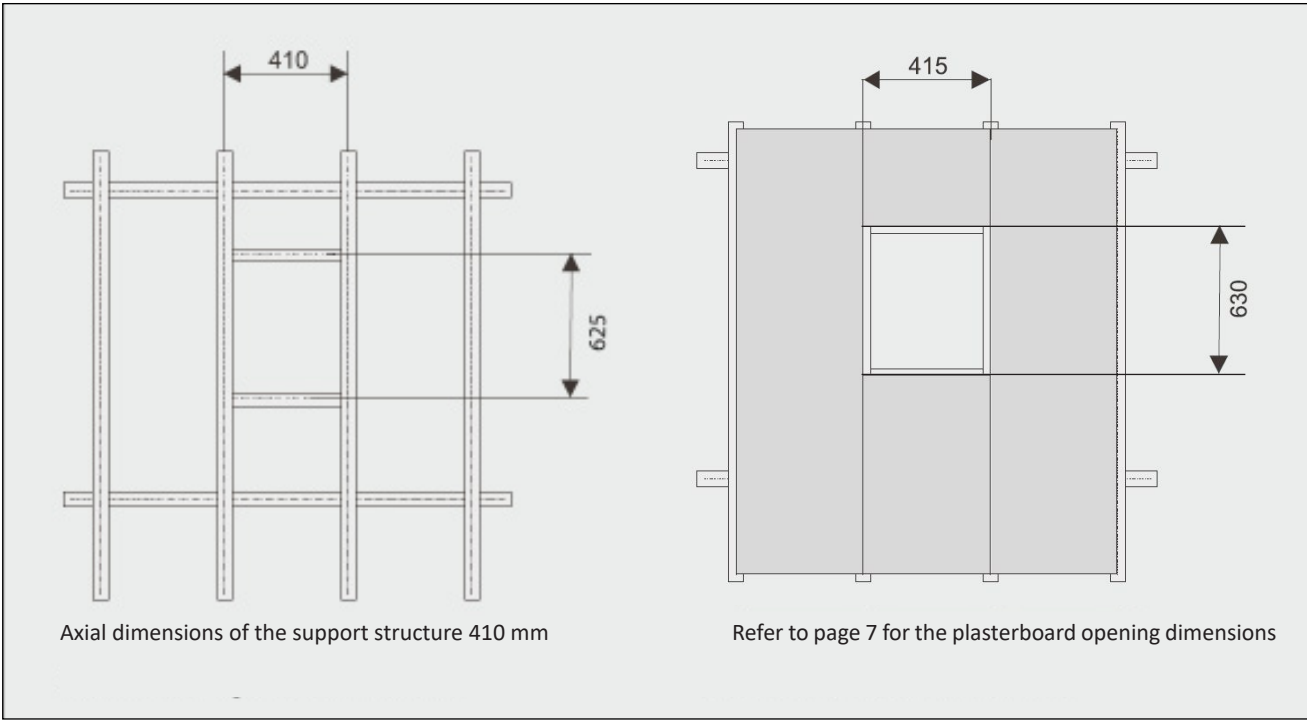
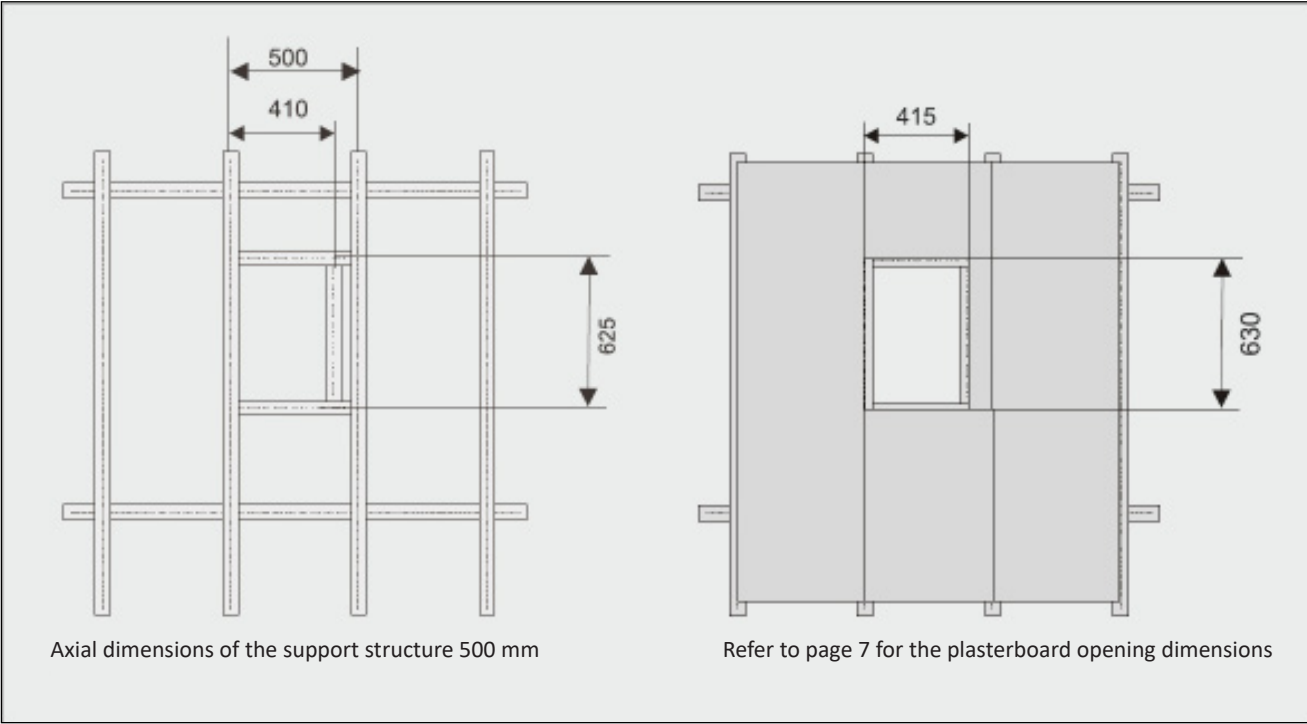
Example 1)

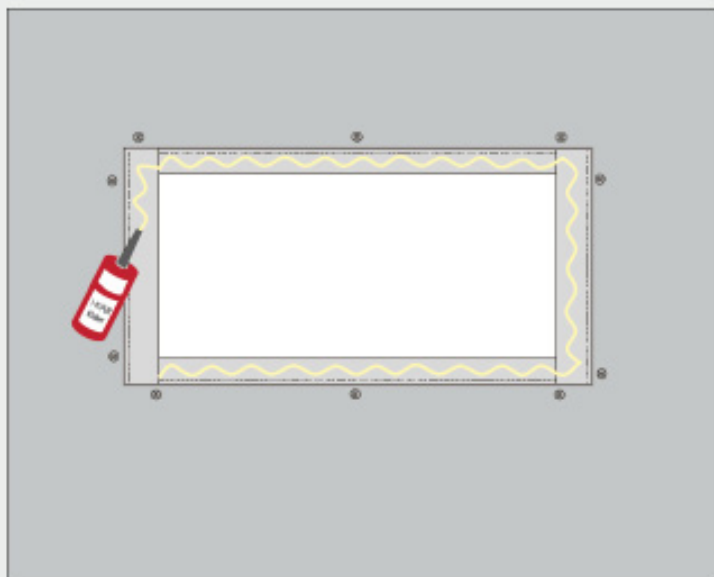


The size of the opening in the plasterboard is approx. 5 mm larger than the dimensions of each Invisible speaker (630 x 415 mm). In cases of double planking, the first layer forms the speaker shelf and the second layer of plasterboard has the opening dimensions as stated above.

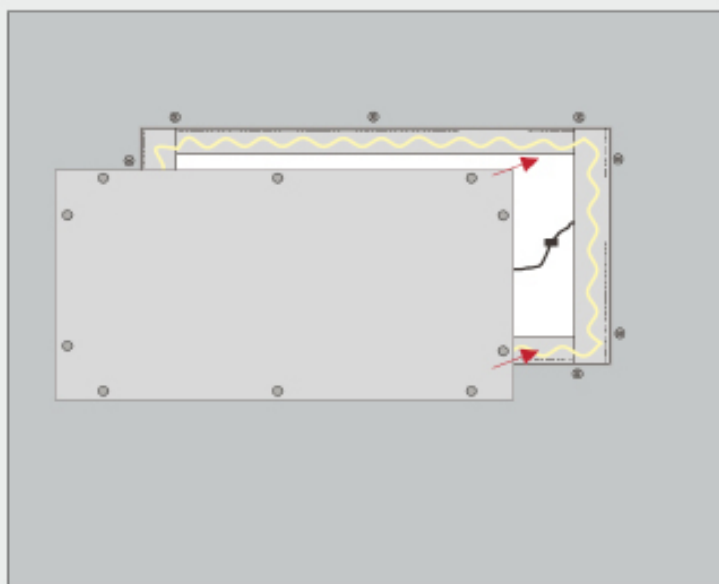
INSTALLATION IN LIGHTWEIGHT WALLS AND CEILINGS – direct mounting

Preparation of the substructure of a lightweight wall for vertical installation of INV 80

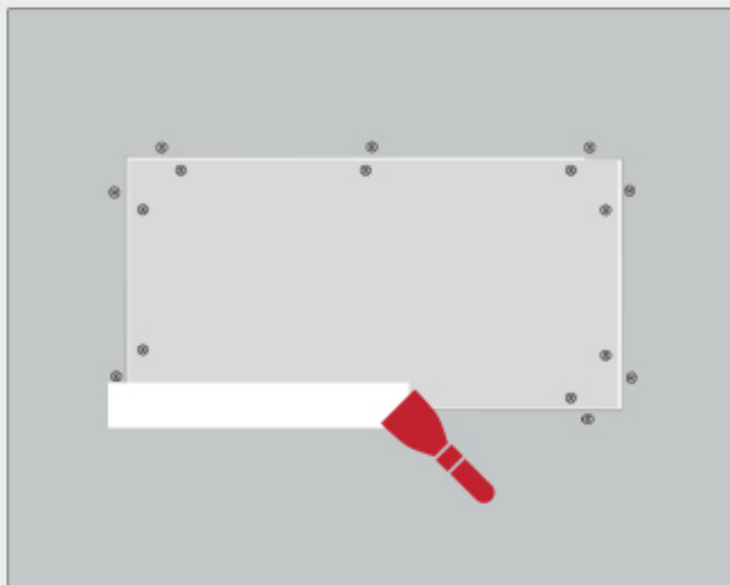




1K SMP special adhesive apply a wavy line to the profile frame.

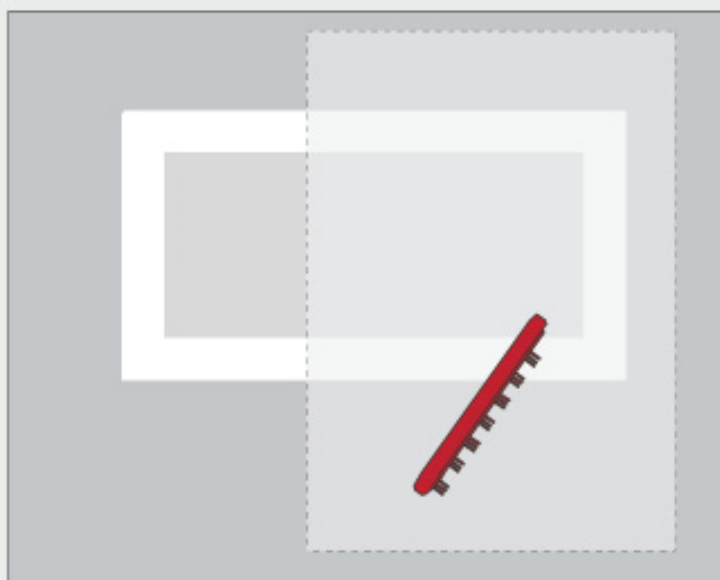


NOTE:
Permanently connect the speaker cable (e.g. using WAGO clamps). Check that the connecting cable is in good working order (short circuit, interruption, earth fault) and perform an acoustic test on the speaker. Press the Invisible speaker frame into the centre and flush with the surface and attach in place on all sides using drywall screws. The connecting cable must not touch the back of the speaker.



NOTE: This should only be carried out by a specialist form if possible

Chamfer the joints and treat with deep primer. Check the surface adhesion and treat with adhesive primer. Fill the joints and screw heads. Fit elastic joint covering on all sides. Pay attention to the drying time.

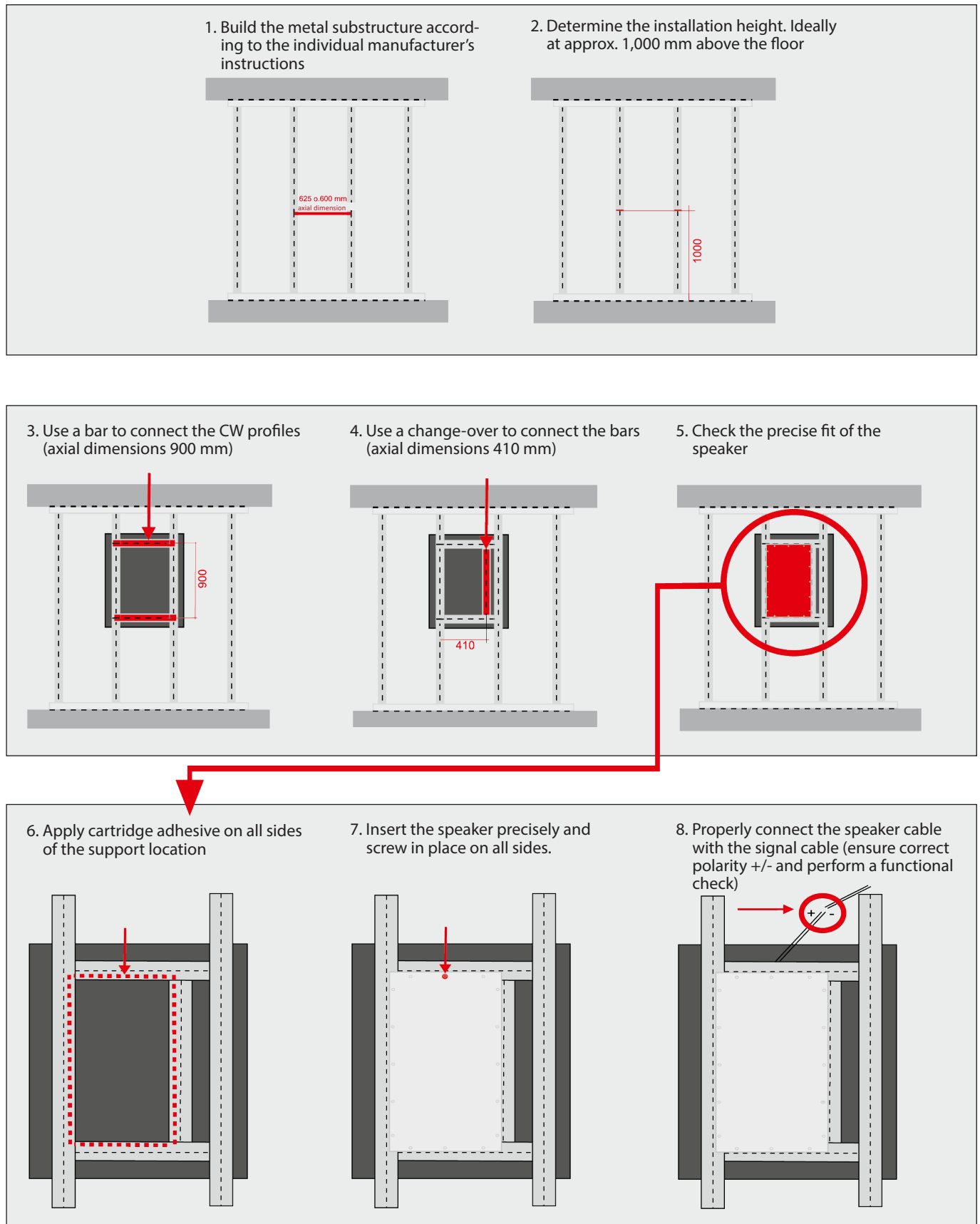


NOTE: This should only be carried out by a specialist form if possible

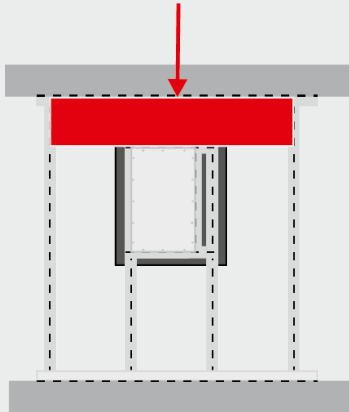
Installation of glass fibre fleece on the entire wall surface is recommended. Pay attention to the drying time. Proceed with layer structuring.

INSTALLATION IN LIGHTWEIGHT WALLS AND CEILINGS – DIRECT MOUNTING OF THE UNIT/SUB

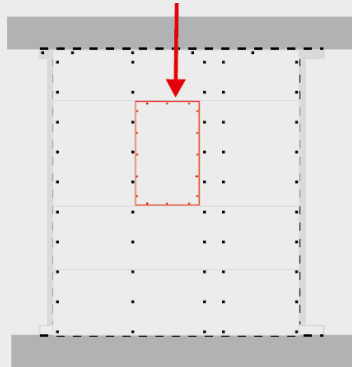
Preferably for drywall/wall facing (steps 1 to 14 are each highlighted in **RED**)



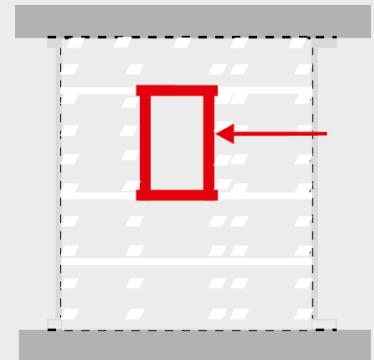
9. Panel the surface, e.g. 12.5 mm plasterboard. Joint around the speaker max. 3 mm. Substructure is minimally visible.



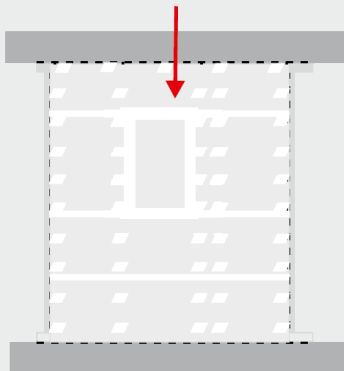
10. Fasten to the substructure using drywall screws. Prime the cut edges with depth primer. Pay attention to the drying time.



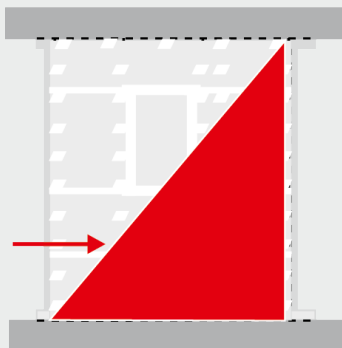
11. Apply adhesive primer to the surface. Pay attention to the drying time. Pack joints and screw holes completely with filler. Pay attention to the manufacturer's instructions. Apply joint cover strips around the speaker according to the manufacturer's instructions.



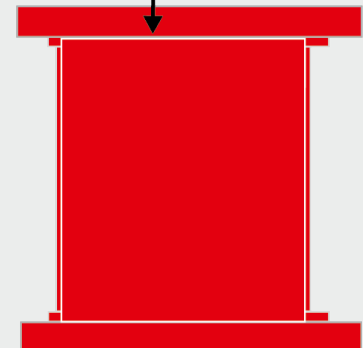
12. Once final filling is complete, apply adhesive primer again across the entire surface. Pay attention to the drying time. Apply fleece across the whole speaker, i.e. refer to Point 14.



13. Apply fleece to the entire surface.



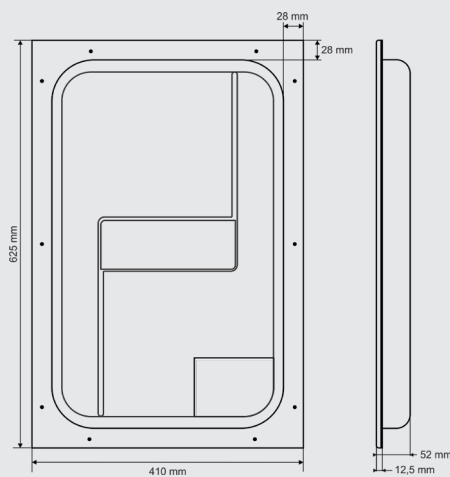
14. Coat the surface with plaster/filler/wallpaper according to the individual manufacturer's instructions. Layer thickness max. 5 mm.



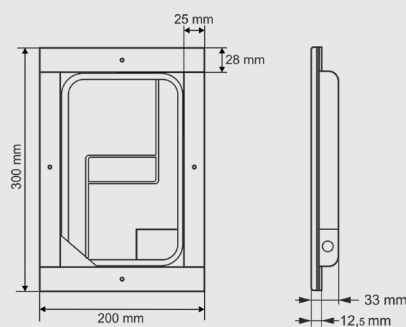
INSTALLATION IN LIGHTWEIGHT WALLS AND CEILINGS – using a mounting bracket

Example:

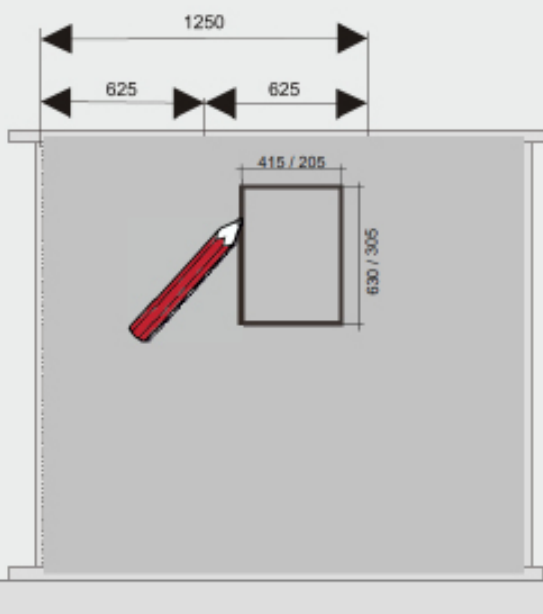
Mounted between the stud or support profiles using a Revox mounting bracket for drywall, format 625 x 410 mm (image on the left) or format 200 x 300 mm (image on the right)



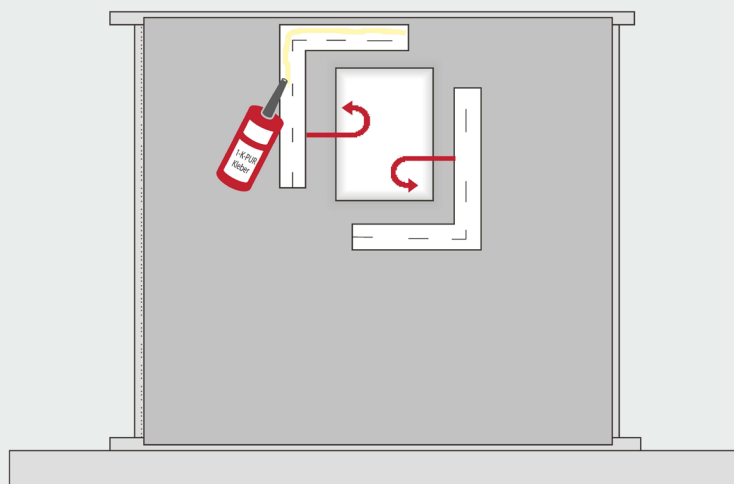
INV 40/INV 40 carbon
INV 40 PE/
INV 40 stereo/INV 40 stereo carbon
INV 80/INV 80 carbon



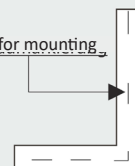
INV 20 mini/INV 20 mini carbon



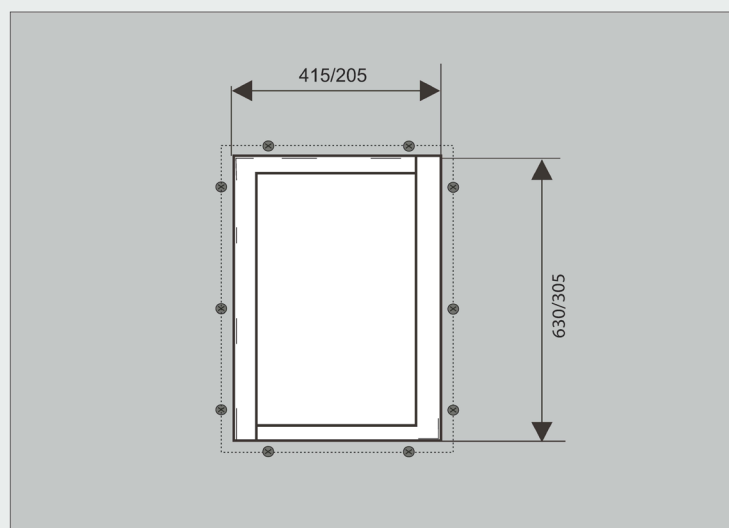
Assemble the metal stud wall or ceiling substructure according to the manufacturer's instructions. Define a position for the Invisible speaker.
Mark the speaker dimensions plus 5 mm and cut out the plasterboard.



Bracket with marking for mounting



Attach the mounting bracket to the plasterboard on all sides using 1K SMP special adhesive. The mounting mark on the bracket parallel to the edge of the plasterboard edge is barely visible.



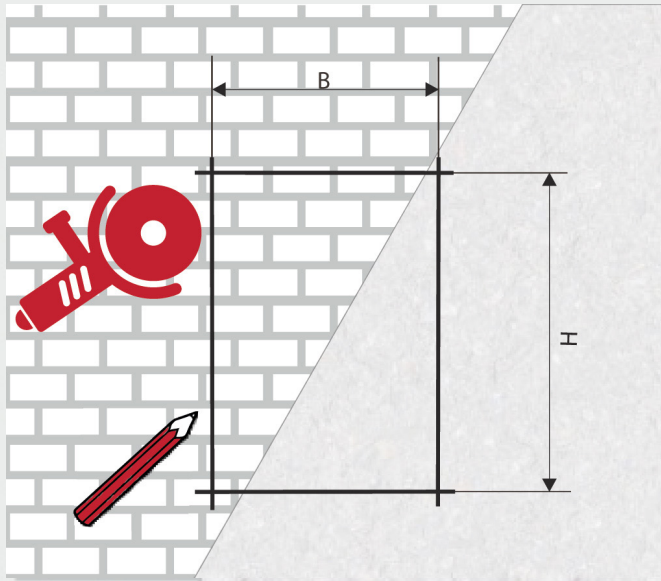
Use drywall screws to fasten the mounting bracket. Refer to page 7 et seq. for instructions on mounting the Invisible speakers and further installation.

INSTALLATION IN SOLID WALLS AND CEILINGS

Manufacturer's recommendation for installation in solid walls and ceilings

Where possible, we recommend installing the speakers in lightweight walls and ceilings.

1. Installation in solid walls and ceilings requires an installation niche, which may affect the building statics and which must therefore be coordinated with a specialist.
2. Lightweight construction provides more possibilities for acoustic decoupling and therefore improves the ability to counteract unwanted structure-borne sound transmission.
3. Acoustic efficiency in solid structures may be lower than with the lightweight construction, as the speaker membrane has less ability to excite the adjacent surface.



Select an installation position.

Transfer the speaker dimensions to the surface plus 5 mm and make the cut-out in the specified W x H dimensions.

Types: INV 20 slim/INV 20 slim carbon/INV 40 aqua slim/INV 40 wood slim: W = 305mm; H = 405mm; D = 40–50mm

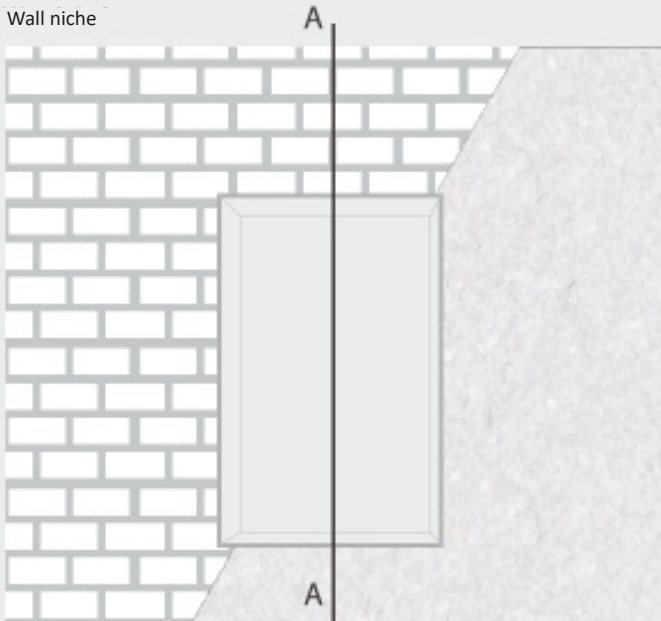
Types: INV 40/SB 40 carbon/INV 40 stereo/INV 40 stereo carbon/INV 40 PE/INV 80/INV 80 carbon: W = 415mm; H = 630mm; D = 60–70mm

Types: INV 20 mini/INV 20 mini carbon: W = 205mm; H = 305mm; D = 40–50mm

Types: INV Unit/SUB: W = 415mm; H = 905mm; D = 100–110mm

NOTE: The cut-out may affect the component statics. This must therefore be coordinated with the specialist in each case (refer also to the leaflet "Slots and recesses" from the Deutsche Gesellschaft für Mauerwerksbau e.V. dated 2002).

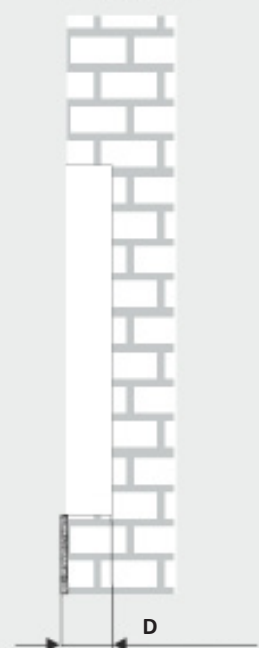
Wall niche



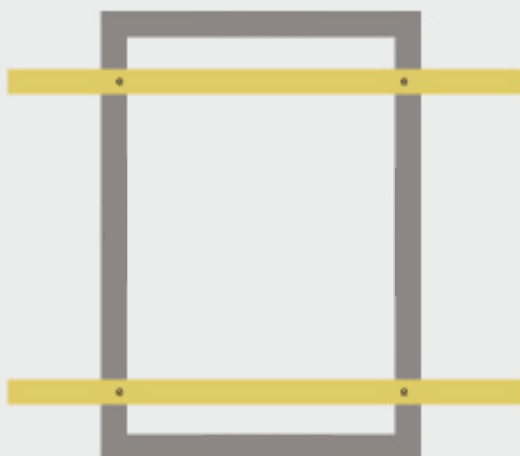
Cut A-A



Cut A-A

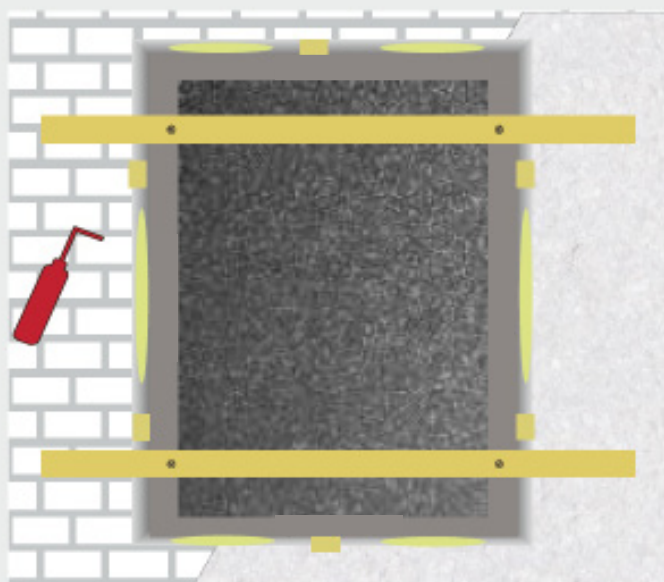


Revox installation frame for solid walls and ceilings



Wooden wedges to fix the installation frame in the niche

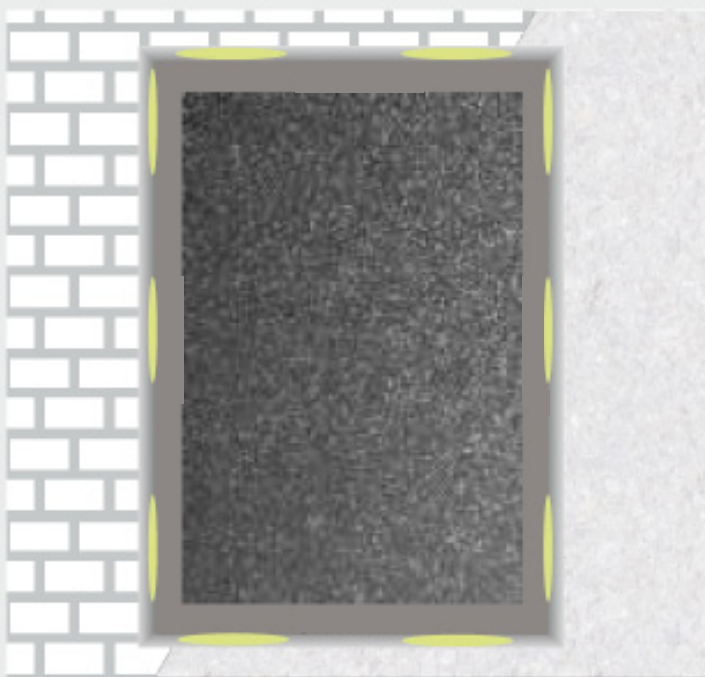
6 x 



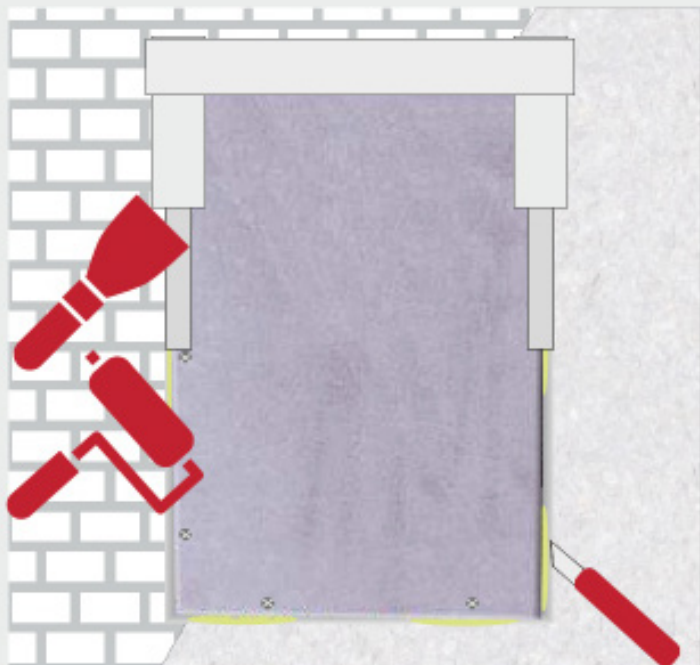
The mounting strips rest flush with the wall surface. If the surface has already been plastered, the Revox Invisible speaker should preferably be mounted flush with the surface. In this case, the base plaster should be reduced all around before treating the joints.

The mounting foam (provided by the customer) is dosed and foamed into the joint at points between the cut-out and the mounting frame.

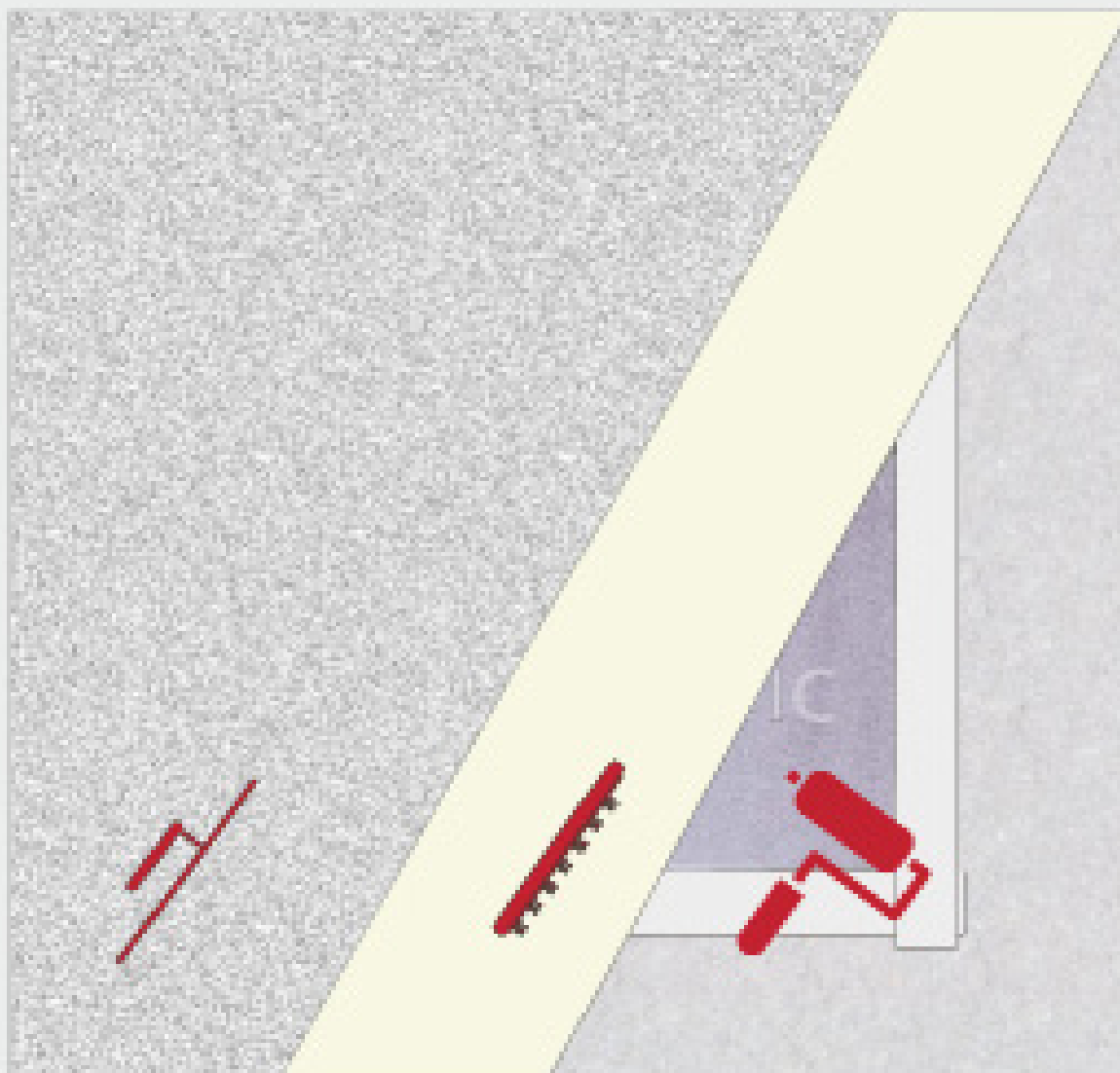
Leave the mounting foam to dry completely. Remove the mounting strips and make sure that the mounting frame is firmly attached.



The joints between the Invisible speaker and the niche wall are prepared for filling; refer to page 10 (Mounting the Invisible speaker). Treat the circumferential joint with deep primer. Connect the cables. Then attach to the installation frame flush with the edge using adhesive and drywall screws.



Chamfer the joints and treat with deep primer. Check the surface adhesion and treat with adhesive primer. Fill the joints and screw heads. Install the joint corner strips on all sides. Pay attention to the drying time.



Continue building the layers according to the processing guidelines. Here, for example, treatment of the complete surface with primer. Apply shielding fleece and then thin-bed plaster. Pay attention to the drying times specified by the manufacturer.

CUSTOM MOUNTING IN VARIOUS SURFACES

Integration is possible in:

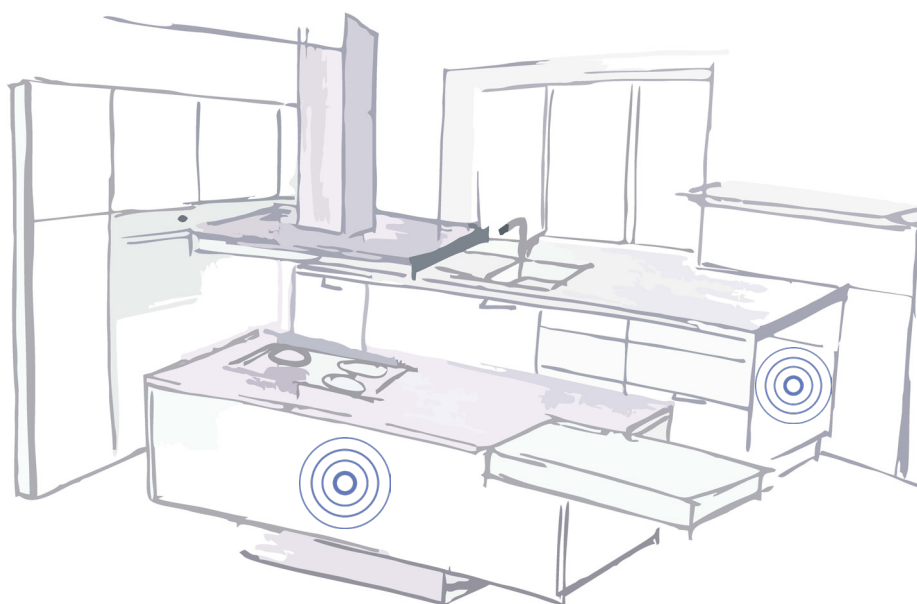
- Polymer surfaces
- Wood-based panels
- Wooden surfaces
- Metal surfaces
- Mirror surfaces
- Natural stone and ceramic surfaces
- and others

We will gladly prepare other custom solutions on request.



Use cases:

- Installation in rooms with temporarily elevated humidity: INV 40 aqua slim/bathroom
- Installation in wall and ceiling panelling: INV 40 wood slim/kitchen



INSTALLATION IN ROOMS WITH TEMPORARILY ELEVATED HUMIDITY

Examples: INV 40 aqua slim, format: 300 x 400 mm

- 1.) in the suspended ceilings of swimming pools etc.
- 2.) in mirrors, shower cabins, walls and ceilings

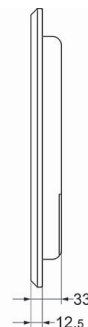
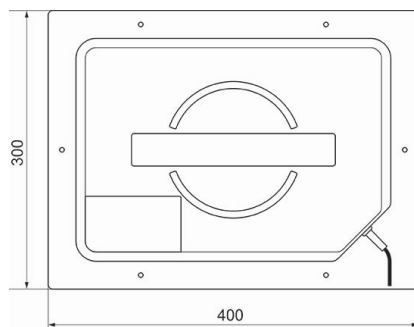
Example 1.)



Example 2.)

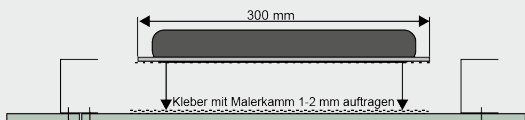


INV 40 aqua slim



Mounting

e.g. on an absorbent ceiling sail



1. Remove dust from the ceiling tiles and apply the adhesive evenly over the entire surface using a 1-2 mm graining comb-trowel, at least across a surface equivalent to the size of the speaker.
2. Contact the manufacturer to check the adhesive's suitability if necessary.
3. Insert the speaker into the open side of the ceiling between the supporting structure and press the entire surface on to the flat adhesive bed. Pay attention to the setting time specified by the adhesive manufacturer.
4. The speaker must not touch the supporting structure. Firmly connect the signal cable and perform a function test. The cable and cable connector must not touch the rear of the speaker.

INSTALLATION IN WALL AND CEILING PANELLING

Examples: INV 40 wood slim, format: 300 x 400 mm

- 1.) in real wood wall panelling
- 2.) in kitchen units and cupboard sides

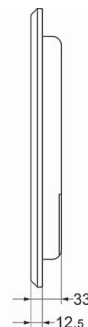
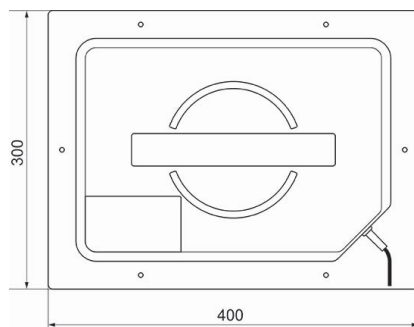
Example 1.)



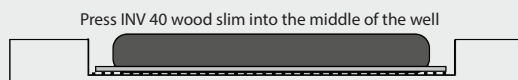
Example 2.)



INV 40 wood slim



Mounting



1. Wood or wood-based panel: milled well on the back, 3 to 6 mm remain, depending on the panel type – milling format 305 x 405 mm.
2. Remove dust from the flat surface of the well and spread the adhesive evenly over the entire surface using a 1–2 mm graining comb – contact the manufacturer to check suitability if necessary.
3. Press the dust-free and dry INV 40 wood slim onto the adhesive surface (do not press hard) and adhere to the adhesive manufacturer's instructions for the setting time (max. 5 mm gap all around).
4. Function test prior to wall or ceiling installation.

GENERAL INSTRUCTIONS

In view of the numerous installation scenarios, the structural characteristics and the materials used, these brief instructions do not constitute – within the meaning of statutory warranty regulations – any assurance in regard to the properties of the product they describe in the respective mounting type. Use of the Invisible speakers is based on the relevant regulations and standards that apply to each component.

The following instructions must be adhered to as a rule:
(in addition to the preamble to these installation instructions)

1. Proper storage and transport of the speakers
2. Conditions on the building site
3. Suitability of the installation site
4. Preparing the lightweight and solid walls and ceilings. The instructions on pages 15 et seq. apply to installation in solid walls and ceilings.
5. Professionally correct surface finish and layer structure
6. The detailed instructions for electrical connection, mounting the Invisible speakers, sound insulation and special uses.



designed,
developed and
made in Germany

Revox Deutschland GmbH | Am Krebsgraben 15 | D-78048 Villingen | Tel.: +49 7721 8704 0 | info@revox.de | www.revox.com
Revox (Schweiz) AG | Eichwatt 3 | CH-8105 Watt-Regensdorf | Tel.: +41 44 871 66 11 | info@revox.ch | www.revox.com
Revox Handels GmbH | Josef-Pirchl-Straße 38 | AT-6370 Kitzbühel | Tel.: +43 5356 66 299 | info@revox.at | www.revox.com