

REVEL®

W970, W990

**In-Wall Architectural
Loudspeaker
Instruction Manual**



EC-DECLARATION OF CONFORMITY



Brand: Revel
Family Name: Architectural Series Speakers
Model Names: C360DT, C360, C560, C760, C560DT, W360, W560, W760, C380, C580, C780, W380, W580, W780, C540, W552L, C760L, W870, W890, W970, W990

We, Harman International, declare under our sole responsibility that the product, to which this declaration relates, is in conformity with the following directives.

I certify that the product identified above conforms to the requirements of the Low Voltage Directive 2006/95/EC as amended by 93/68/EEC and the Waste from Electrical and Electronic Equipment Directive 2002/96/EC RoHS and technical standards listed below:

IEC 60065:2001 – 7th Ed. & AMD1:2005 – Safety Requirements – Audio, Video, and Similar Electronic Apparatus
EN6000-6-3:2007 – 2nd ED (EMC) –Generic standards – Emission standard for residential, commercial and light- industrial environments.
EN6000-6-1:2005 – 2nd ED (EMC) –Generic standards – Immunity standard for residential, commercial and light- industrial environments.

HpAV, part of the Harman International group of companies, declares that the products produced under the aforementioned brand names are designed and produced as professional audio speakers and therefore outside of the intended scope of the European Commission Regulation (EC) 1275/2008 of 17 December 2008 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for standby and off mode electric power consumption of electrical and electronic household and office equipment.

Harman International expects our suppliers and business partners to be aware of their obligations under REACH and expects any substances or products within the scope of REACH to be pre-registered before December 1, 2008. Given those conditions, our current products are exempt from REACH pre-registration and later registration activities. We provide separate E.U. Reduction of Hazardous Substances documentation for our RoHS compliant products.

The WEEE directive (2002/96/EC) places an obligation on all EU-based manufacturers and importers to take-back electronic products at the end of their useful life. HpAV, through its agent, accepts its responsibility to finance the cost of treatment and recovery of redundant WEEE in accordance with the specific WEEE recycling requirements. All of our products are marked with the WEEE symbol; this indicates that this product must NOT be disposed of with other waste. Instead it is the user's responsibility to dispose of their waste electrical and electronic equipment by handing it over to an approved re-processor, or by returning it to HpAV's agent for reprocessing. For more information about where you can send your waste equipment for recycling, please contact your local distributor.

February 25, 2011
Elkhart Indiana, USA

Robert Chadderton
Director of Engineering, HpAV

.....
(Place and Date of issue)

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DOCUMENTATION CONVENTIONS

This document contains general safety, installation and operation instructions for the Revel® W970 and W990 in-wall loudspeakers. It is important to read this document before attempting to use this product. Pay particular attention to:

WARNING: Calls attention to a procedure, practice, condition or the like that, if not correctly performed or adhered to, could result in injury or death.

CAUTION: Calls attention to a procedure, practice, condition or the like that, if not correctly performed or adhered to, could result in damage to or destruction of part of or the entire product.

Note: Calls attention to information that aids in the installation or operation of the product.

ABOUT REVEL® IN-WALL SPEAKERS

Since the first Revel® speakers in 1996, Revel products have stood at the forefront of loudspeaker design and performance. Revel in-wall loudspeakers draw upon the same research, resources and unique perspective that put all Revel loudspeakers in a class by themselves. Revel in-wall loudspeakers provide unparalleled value and are known for their standard-setting low sonic coloration and their freedom from distortion over an extraordinarily wide dynamic range.

W970 AND W990 LOUDSPEAKER HIGHLIGHTS

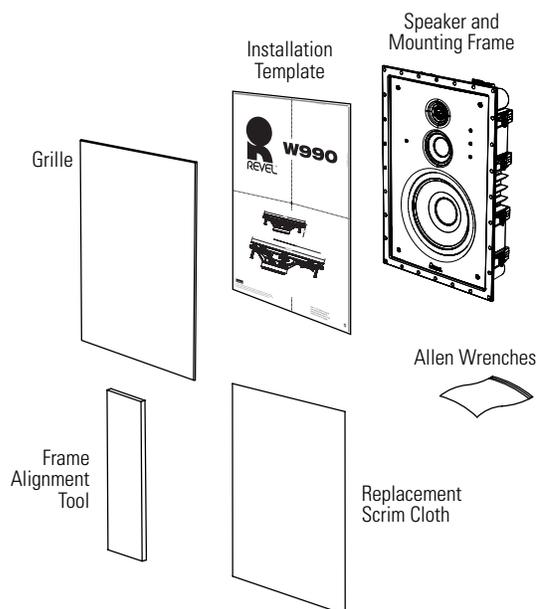
- Long-throw woofers with cast aluminum frames, MCC (Micro Ceramic Composite) cones and rubber surrounds provide high output with low distortion.
- 1-inch (25mm) aluminum-dome tweeter with an integrated waveguide provides optimized response both on and off axis.
- 3.5-inch (89mm) midrange (W990) handles critical mid-band frequencies with natural tonal balance over a wide operating range.
- High-order crossover network with premium-quality components delivers extraordinarily accurate timbre reproduction.
- Boundary compensation switch lets you adjust the speaker to maintain tonal accuracy when the speaker is placed near an additional wall or the ceiling.
- Three-position tweeter level control lets you adjust for optimum response in a variety of acoustical environments, or for using the speakers without grilles.
- High-frequency tilt and listener axis controls help compensate for less-than-ideal speaker placement.

PRODUCT REGISTRATION

Please take a moment to register your product on our Web site at www.revelspeakers.com. You'll enable us to keep you posted on our latest advancements and help us to understand our customers and build products that meet their needs and expectations.

BOX CONTENTS

Your Revel in-wall loudspeaker box should contain the following items:



UNPACKING THE SPEAKER

Carefully unpack the speaker. If you suspect damage from transit, report it immediately to your dealer and/or delivery service. Keep the shipping carton and packing materials for future use.

INSTALLATION CONSIDERATIONS

Your new Revel loudspeakers have been engineered to provide extremely accurate performance. However, any speaker's ultimate performance will be affected by the speaker's placement in the listening room and the acoustics of the room. Not all listening spaces can accommodate the ideal conditions of these two factors. Therefore, careful attention to the placement of your Revel in-wall loudspeakers will have a significant impact on the general performance of the loudspeakers.

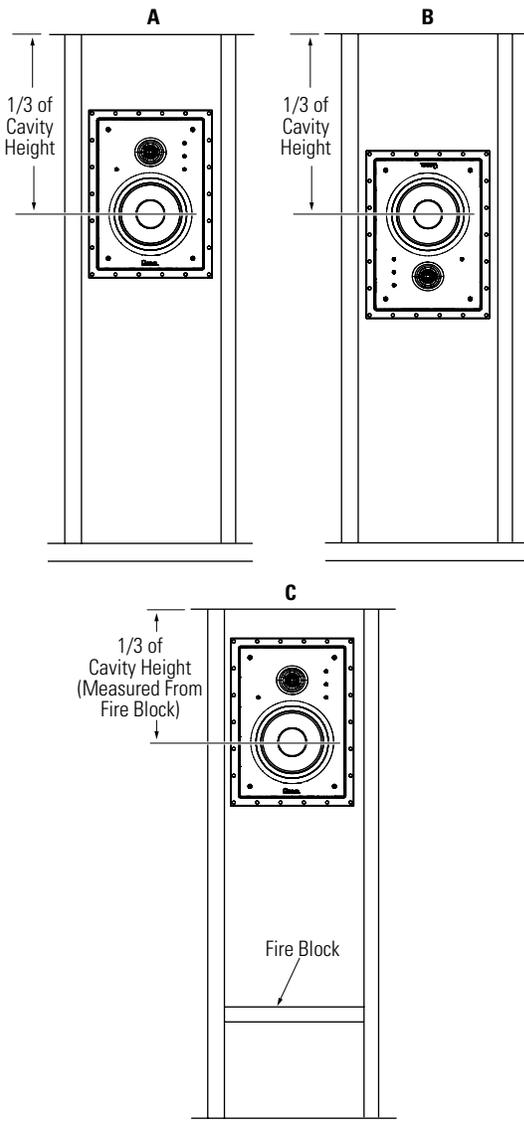


The high-order crossover networks employed in all Revel in-wall speakers provide very smooth response over a wide listening area, allowing you to use any model in any application with excellent results.

Note: The W990 and W970 can be used in either horizontal or vertical orientation.

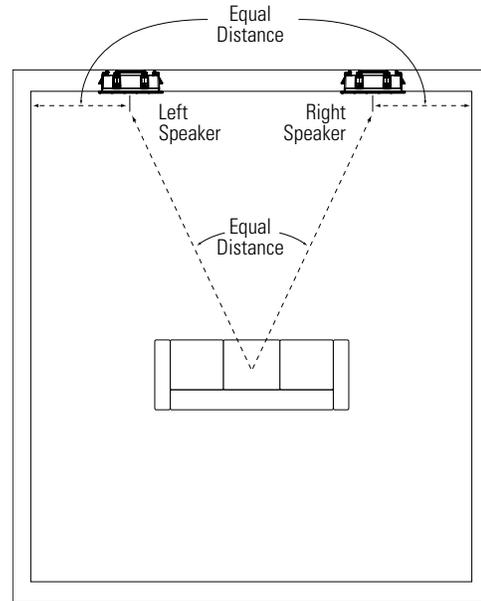
IMPORTANT: The location of the woofer within the stud bay relative to the entire length of the bay is critical because of standing waves created within the cavity.

- Before installation, determine the height of the stud bay cavity. (There might be a fire block that makes it shorter than the entire height from the floor to the ceiling). Avoid placing the speaker's woofer at 1/4 or 1/2 the distance from either end, or at the top or bottom of the cavity, as this would cause a serious cancellation of low-frequency output.
- The ideal location for the woofer (whether the speaker is mounted upright or inverted) is at the one-third distance point as shown in examples A and B. If that is not feasible, then two-fifths, or one-fifth of the height are the next best alternatives. The least desirable position to place the woofer is at one-half or one-fourth of the height.
- If a fire block completely divides the bay, the measurement would be from the fire block – not the floor or ceiling – as shown in example C.



LOUDSPEAKER PLACEMENT FOR TWO-CHANNEL STEREO

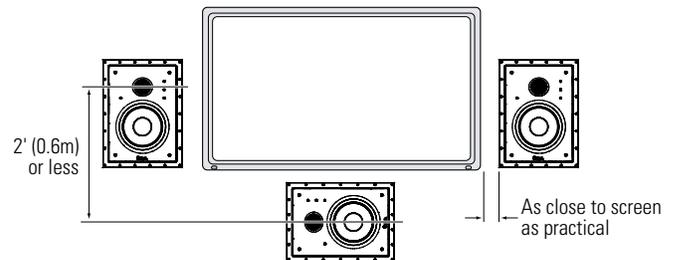
Place the left and right loudspeakers the same distance from the primary listening area (or as close to the same distance as possible). The distance from each speaker to its nearest side wall should also be the as close to the same distance as possible.



Ideally, the distance between the left and right loudspeakers should be slightly less than their distance from the primary listening area.

LOUDSPEAKER PLACEMENT FOR HOME THEATER

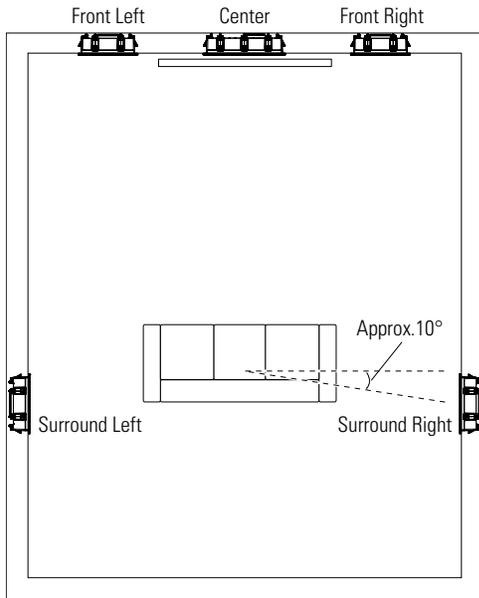
- The front left and front right loudspeakers should be located on either side of the video display, with their tweeters as close to ear level as possible.



- The front left and front right loudspeakers should be relatively close to the sides of the video display. For example, front left and front right loudspeakers used with a 50-in (1.3m) video display should generally not be more than 80 in (2m) apart.
- The center loudspeaker should be aligned with the center of the video display. Its tweeter should be no more than 2 ft (0.6m) above or below the tweeters of the front left and front right speakers.

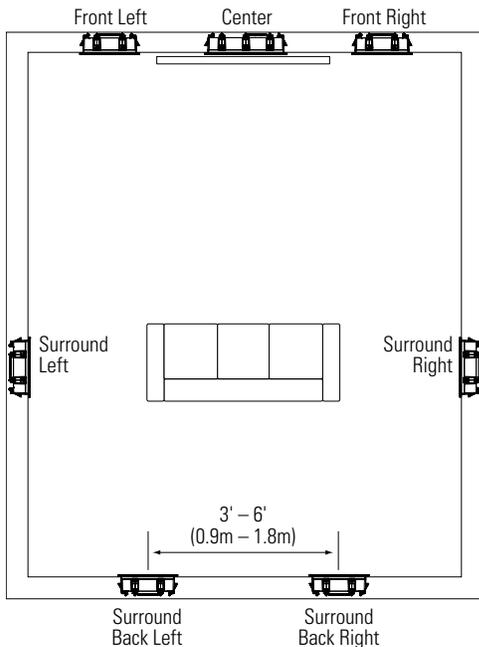
5.1-Channel Surround Speaker Placement

- In a 5.1-channel system, the surround left and surround right loudspeakers should be located to the sides of the main listening area, 5 ft – 7 ft (1.5m – 2.1m) from the floor.



7.1-Channel Surround Speaker Placement

- In a 7.1-channel system, the surround left and surround right loudspeakers should be located directly to the sides of the main listening area, 5 ft – 7 ft (1.5m – 2.1m) from the floor.
- In a 7.1-channel system, the surround back left and surround back right loudspeakers should be located on the rear wall, 3 ft – 6 ft (0.9m – 1.8m) apart and at 5 ft – 7 ft (1.5m – 2.1m) from the floor.



INSTALLATION INSTRUCTIONS

Revel architectural speakers are the most easily installed in-wall loudspeakers on the market. However, if you are unable to understand and follow the instructions in this manual clearly and fully, or if you are unsure of your ability to install these loudspeakers properly, please contact your dealer or a qualified installer.

WARNING: HARMAN International assumes no responsibility for improper installation of hardware or for any personal injuries or product damages resulting from improper installation or a fallen loudspeaker.

CONNECTING TO THE AMPLIFIER

CAUTION: REMOVE POWER

You must connect the speaker wires before the speaker is fully installed. To protect the audio system from damage and yourself from injury through accidental electrical shorting and surges during installation, turn all audio system power OFF before beginning the speaker installation.

Speaker Wire

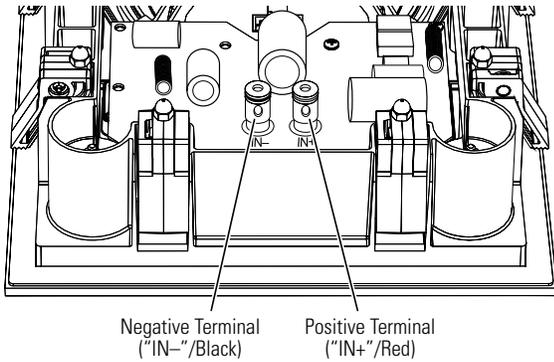
Use high-quality speaker wire to obtain the best performance from your Revel in-wall speakers.

- For wire lengths of less than 50 ft (15m), use at least 16-gauge speaker wire.
- For wire lengths between 50 ft and 100 ft (15m – 30m), use at least 12-gauge speaker wire.
- For wire lengths of greater than 100 ft (30m), use at least 10-gauge speaker wire.

Note: All speaker wires must comply with all local building and safety codes for use in in-wall applications.

Making Connections

Connect each channel's positive (+) terminal on the back of the amplifier or receiver to the positive ("IN+"/red) terminal on the corresponding speaker; connect each channel's negative (-) terminal on the back of the amplifier or receiver to the negative ("IN-"/black) terminal on the corresponding speaker. Do not reverse polarities (that is, do not connect + to -, or - to +) when making connections. Doing so will cause poor imaging and diminished bass response.



Press down on the top of the terminal to open the hole; insert the bare end of the wire into the hole; and release the terminal to secure the wire.

CAUTION: To avoid short circuits that may damage your equipment, be certain that positive and negative wire strands do not touch each other and do not touch metal parts such as the speaker frame.

MOUNTING THE SPEAKERS

For New Construction

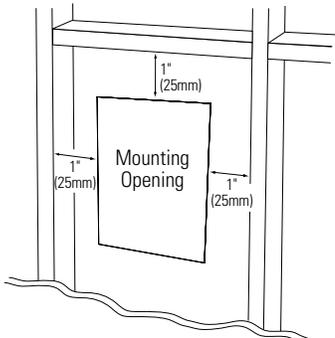
If you wish to pre-install a pre-construction frame for the speakers before the drywall is installed in new construction, you will need to purchase the correct rough-in frame kit for your loudspeaker model from your authorized Revel dealer. Detailed mounting instructions are supplied with the rough-in kit. After the drywall is installed, follow the installation instructions in *For Existing Construction*, below.

For Existing Construction

Note: The installation procedure is the same for all models covered by this manual.

1. Ensure that the drywall, plywood or other wall material is 1/2 in – 1 in (13mm – 25mm) thick and capable of withstanding the weight of the speaker being installed.

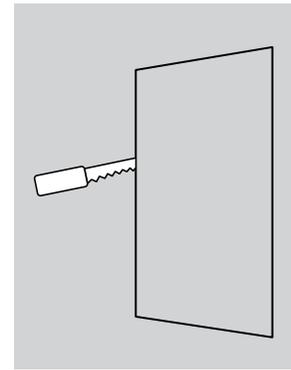
Make sure to allow at least 1" (25mm) between the edge of the supplied installation template and any studs or other obstructions behind the wall, so the speaker's locking mechanism will have room to engage fully. Perform an obstruction survey to be sure that there are no studs, lengths of conduit, pipes, heating ducts or air returns in the stud bay that could interfere with the speaker.



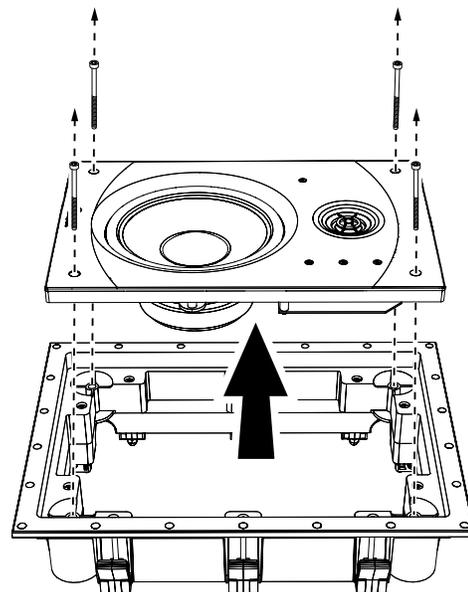
2. Determine the correct speaker location and use the template included with the speaker to mark the wall material.



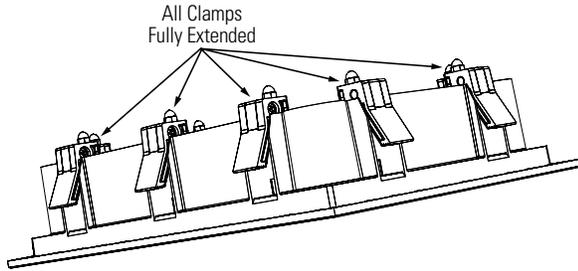
3. Cut the drywall along the mark you made in Step 2 to create the mounting opening.



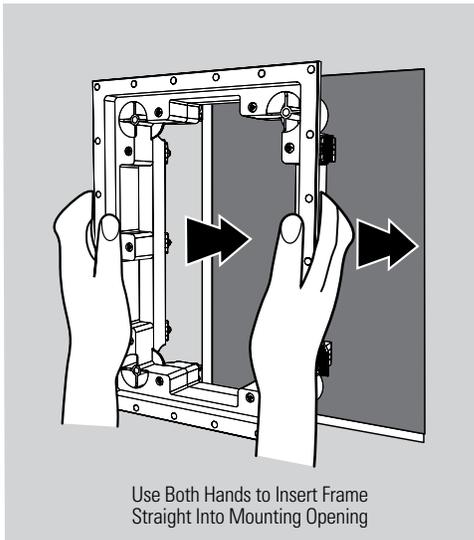
4. Using the supplied hex wrench, remove the four hex screws that attach the speaker baffle to the mounting frame and remove the baffle from the frame. (You will use the screws later, so put them in a safe place.)



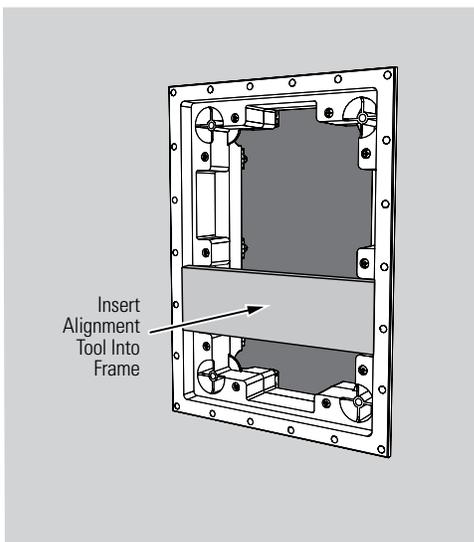
5. Make sure that all of the mounting frame's spring-loaded clamps are in their fully-extended positions. Loosen any clamp screws as required to fully extend all of the clamps.



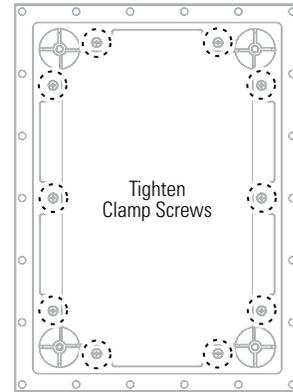
6. Use both hands to snap the mounting frame into the mounting opening.



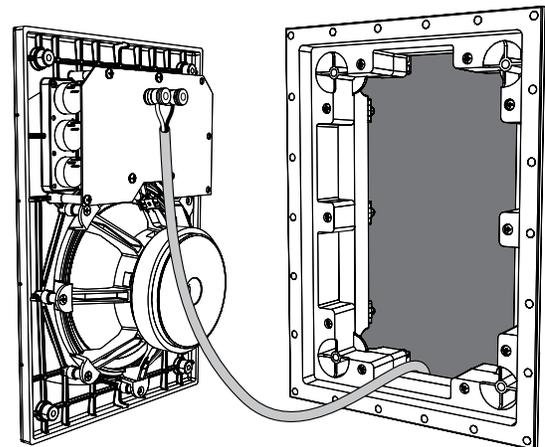
7. Insert the supplied Frame Alignment Tool horizontally across the frame. This tool prevents the frame from warping while you tighten the clamps.



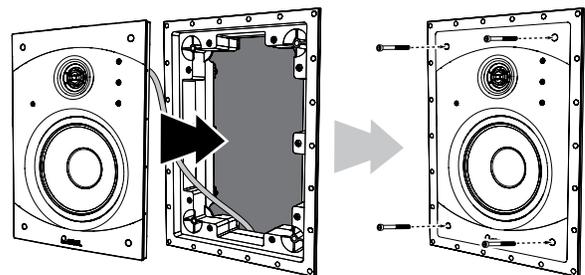
8. Starting from the lower right corner and working in a diagonal torque sequence, use a power screwdriver to tighten each of the clamp screws *only until almost snug*. If necessary, adjust the mounting frame while you tighten the screws so it remains level and centered in the opening.



9. Securely hand-tighten all of the clamp screws all the way and double-check each screw to make sure it is fully tightened to prevent rattles. Remove the Frame Alignment Tool.
10. Bring the speaker wire out through the mounting opening and connect it to the speaker baffle assembly as explained in *Making Connections*, on page 6.

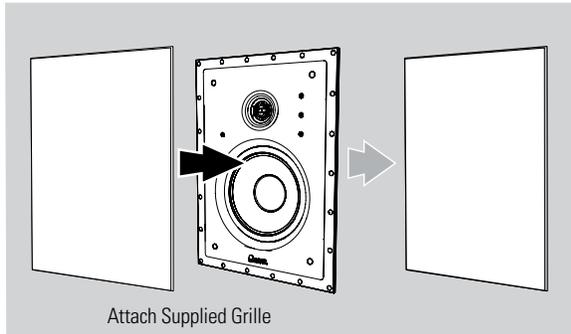


11. Slide the speaker baffle assembly into place in the mounting frame. Insert and finger-tighten the four screws you removed in step 4 into the holes in the baffle.



NOTE: To prevent buzzing, make sure that the speaker wire is not touching the woofer cone.

- Use the supplied hex wrench to fully tighten the baffle into the mounting frame.
- Attach the supplied grille. Powerful magnets in the speaker frame will securely hold the grille in place. Be sure that it is attached evenly, and that the edges of the grille extend over the baffle on all sides.



Painting the Grille

Revel architectural loudspeaker grilles can be painted to match any décor. If you wish to change the grille's color, its satin finish will function as a primer coat. For the best results follow this procedure:

- Gently remove the scrim cloth from the back side of the grille before painting.
- Use a high-quality spray paint and apply a thin coat of color. Ensure that the grille perforations remain free of paint. Filling them with paint will diminish the speaker's sound quality. If any perforations are plugged, use compressed air to blow the paint out of the perforations.

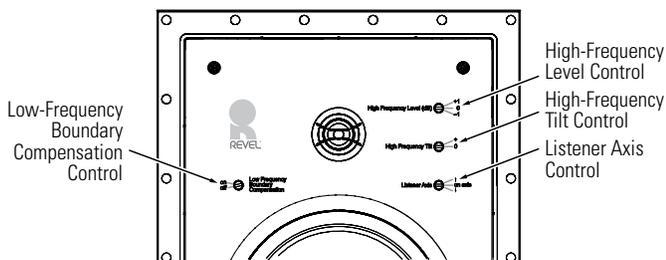
Note: If you find any grille perforations that are plugged with paint after the paint has dried, carefully use a straight pin or sewing needle to remove the paint.

- We have included a replacement scrim cloth. After the paint has dried, apply a light coat of spray adhesive to the inside of the perforated grille and attach a new scrim cloth. **IMPORTANT:** Never spray adhesive on the cloth.

USING YOUR SPEAKERS

ADJUSTMENTS

Revel W970 and W990 speakers provide several adjustments that allow the speakers to achieve the best possible performance in a wide variety of listening environments. We encourage you to experiment with these controls to determine the settings that work best for your listening room and personal taste.



Low Frequency Boundary Compensation Control

The Boundary Compensation control reduces the speaker's bass output level to compensate for the greater reflection of bass energy when the speaker is installed near an adjacent wall or ceiling.

When possible, avoid mounting the speaker within 2 ft (0.6m) of an adjacent wall or the ceiling. If such placement is unavoidable, set the Boundary Compensation control to the "On" position.

High-Frequency Level Control

The High-Frequency Level control lets you fine-tune the speaker's high-frequency output to compensate for various acoustical environments. The control has three settings:

+1: Increases high-frequency output. Set the switch to this position if the room has many features that absorb high-frequency sound energy, such as thick carpeting, drapes and fabric-covered furniture.

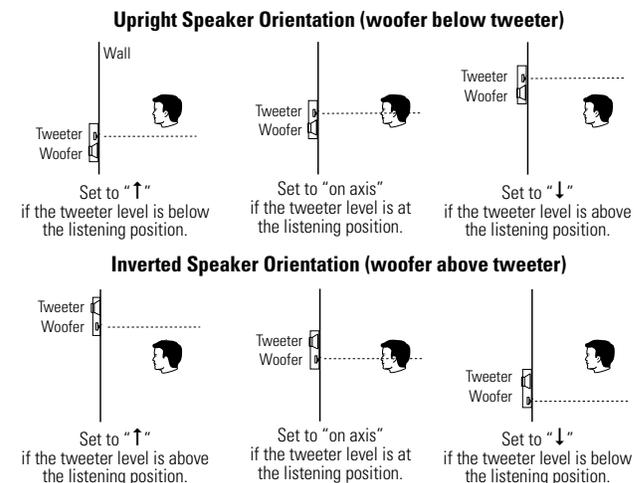
0: Normal high-frequency output. Set the switch to this position for most installations.

-1: Decreases high-frequency output. Set the switch to this position if the room has many features that reflect high-frequency sound energy, such as large uncovered windows, bare tile floors and large expanses of bare walls, or if the speakers are used without grilles.

LISTENER AXIS CONTROL

The W990 and W970 will deliver the best performance when the speakers are mounted so that their tweeters are at the same level as the listeners' ears. The listener axis control will compensate when the speakers are mounted in locations that place their tweeters above or below the listener's ears.

To set the listener axis control, refer to the illustrations below. Note that the controls operate in the opposite manner when the speakers are oriented inverted (with their woofers above their tweeters).



HIGH FREQUENCY TILT CONTROL

If the speakers are mounted in locations that place their tweeters well to the sides of the main listening position, set the high frequency tilt control in the "+" position to help restore proper high-frequency balance.

EXCESSIVE OUTPUT LEVELS

Your Revel loudspeakers feature custom-designed transducers and high-quality network components featuring high-order filters with steep cutoffs that reduce the potential of damage to individual speaker drivers and help the loudspeakers maintain their performance even under extreme operating conditions. However, all loudspeakers have limits when it comes to continuous playback. To extend these limits, avoid playback at volume levels that result in distorted or strained sound.



OBTAINING SERVICE

To obtain service, contact an authorized Revel dealer. Refer to *Limited Warranty*, below, for more information.

DIMENSIONS

	Mounting Opening Dimensions (H x W)	Mounting Depth	Overall Dimensions (w/grille, H x W x D)
W990	19-1/8" x 12-1/2" (486mm x 318mm)	3-3/4" (95mm)	20-11/16" x 13-7/8" x 4-1/16" (525mm x 353mm x 103mm)
W970	14-7/8" x 10-1/2" (378mm x 267mm)	3-3/4" (95mm)	16-3/8" x 12-1/16" x 4-1/16" (416mm x 307mm x 103mm)

Dimensions are subject to change without notice.

For complete performance specifications, please go to the Revel Web site: www.revelspeakers.com.

LIMITED WARRANTY

A valid serial number is required for warranty coverage. This Revel warranty protects the original retail purchaser for a period of five (5) years (parts and labor) from any failure as a result of original manufacturing defects so long as:

1. The Revel products were purchased within the 50 United States, its territories or Canada.
2. The dealer from whom the Revel products were purchased was authorized to sell such products at the time of the original purchase.
3. The original, dated Bill of Sale is presented whenever service is required during the warranty period.

The balance of this warranty is transferable only if the used product is purchased from an authorized Revel dealer. This warranty is only valid for service within the United States, its territories and Canada; please contact an authorized Revel dealer for warranty and service information.

Any Revel product not performing satisfactorily may be returned to the factory for evaluation. Return authorization must first be obtained by either calling or writing Customer Service prior to shipping the product. The customer is responsible for shipping charges to the

factory. Customer Service will pay return shipping charges within the United States only in the event that the product is found to be defective as mentioned above. There are other stipulations that may apply to shipping charges.

There is no other express warranty on this product. Neither this warranty nor any other warranty, express or implied, including implied warranties of merchantability and fitness, shall extend beyond the warranty period. No responsibility is assumed for any incidental or consequential damages, so that the above exclusion or limitation may not apply.

This warranty provides specific legal rights. Other states may provide additional rights. This warranty is applicable in the United States, its territories and Canada. Outside of the United States, its territories and Canada, please contact an authorized Revel dealer for warranty and service information.

The information this document contains is subject to change without notice. In the event that there are differences between this warranty and the provisions of any advertisements, documentation, product brochures or packaging cartons, the terms of this warranty will prevail.

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www.revelspeakers.com

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