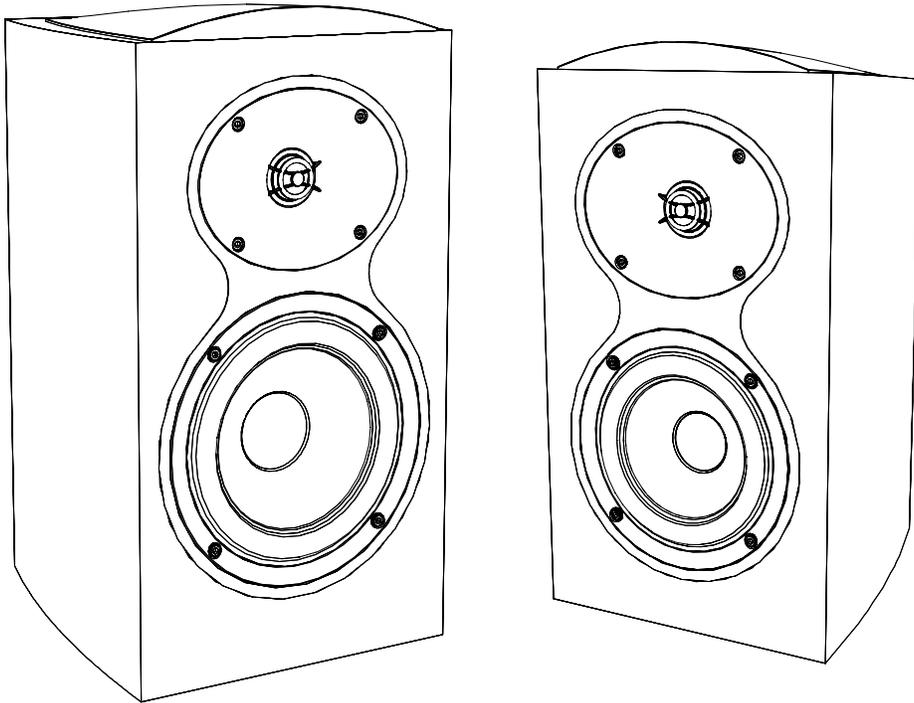


# REVEL<sup>®</sup>

## PERFORMA<sup>3</sup><sup>™</sup>

### M106/M105 Bookshelf Loudspeaker Owner's Manual



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### ABOUT REVEL PERFORMA3 BOOKSHELF LOUDSPEAKERS

Thank you for purchasing Revel Performa3 bookshelf loudspeakers. These true full-range loudspeakers feature small footprints and sleek designs, allowing them to blend-in easily with your existing décor. They deliver an impressive combination of wide frequency range, uncompressed dynamic range and low distortion across the entire audible spectrum.

Revel M106 and M105 low-frequency transducers feature distortion reduction mechanisms that stabilize the flux field during operation, assuring low distortion even at high listening volumes. These precision transducers utilize ribbed aluminum cones for ideal piston-like behavior that eliminates a major source of resonances that are clearly audible in most other loudspeakers. Their cast aluminum frames eliminate another source of resonances that is common in many lesser-quality loudspeakers. These loudspeakers employ a sophisticated fluid-model designed low-frequency port with identical flares on both ends. This greatly minimizes dynamic compression and port-generated noise, assuring low-distortion low-frequency performance.

The M106 and M105 tweeter has been created around a newly-designed motor and dome assembly that sets a new standard of transparency for speakers anywhere near the Performa3's class. The tweeter's integrated acoustic lens waveguide is based on a breakthrough mathematical approach that accurately matches the tweeter's dispersion to that of the low-frequency transducer in the crossover region. This gives the loudspeaker very smooth sound far off-axis – an important contributor to overall sound quality, providing consistent sound over an exceptionally wide listening area. In fact, this new waveguide actually increases the tweeter's dispersion at higher frequencies.

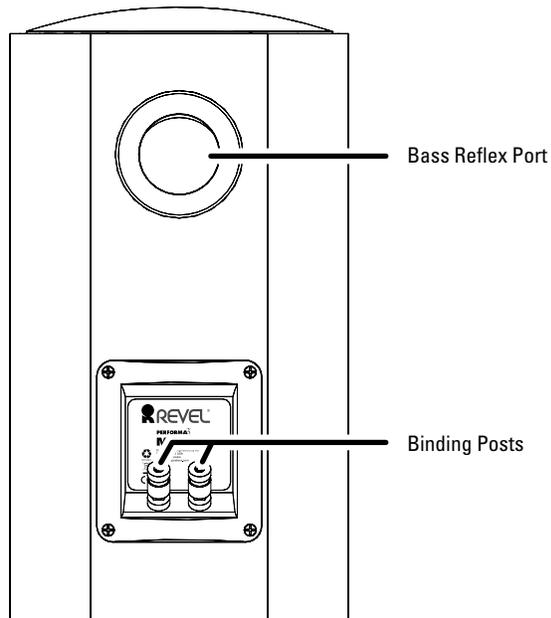
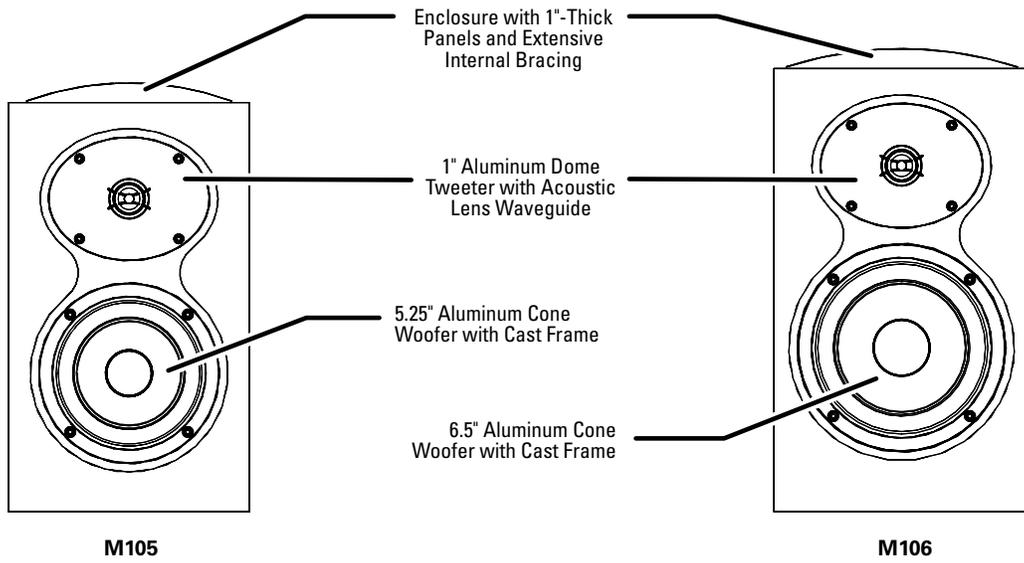
The M106 and M105 are housed in enclosures that are similar to our flagship Ultima2 Series. These fully-curved enclosures are inherently stiffer than conventional box shapes and are formed with contiguous wood layers that prevent splitting. They feature strategically-oriented bracing that eliminates the possibility of enclosure-induced coloration. These beautiful, modern enclosures are finished in high-gloss piano black, high-gloss piano white or genuine American walnut in a process (developed and overseen by Italian luxury cabinet makers)

that exceeds automotive finish quality. The loudspeaker grilles are designed to minimize sonic diffraction or veiling and provide a clean, subtle appearance. The magnetic grille attachment method completely eliminates ugly hardware on the loudspeaker baffle, so if you decide to use the loudspeakers without grilles they will look like they were designed to be used without grilles.

Revel Performa3 crossover networks feature carefully-selected components that contribute to great performance and benchmark-setting value. These high-order crossover networks dramatically reduce distortion and dynamic compression for clear sound that maintains the same quality over a very wide dynamic range. These precision networks optimize the speakers' timbral accuracy, enhancing musical enjoyment for listeners who are anywhere in the room, not only those seated on-axis to the loudspeakers.

During development, every Revel loudspeaker model is compared to competitive models in our unique position-independent double-blind listening lab. This process utilizes the latest psychoacoustic research to assure that these listening tests are valid, enabling us to verify that all Revel loudspeakers are superior to their competitors before they are allowed to go into production.

# M106/M105 OVERVIEW



## INSTALLATION CONSIDERATIONS

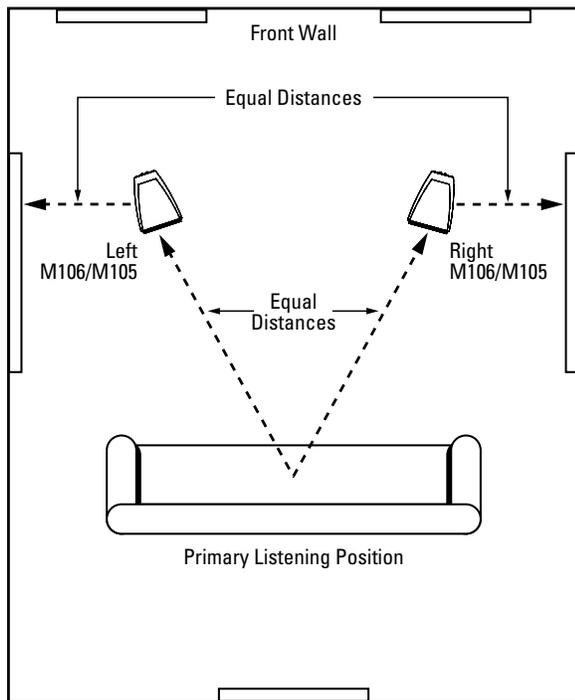
Loudspeaker fidelity depends on the following three factors: loudspeaker accuracy, loudspeaker placement and listening room acoustics.

Advanced Revel design features allow the M106 and M105 to achieve exceptional acoustical precision. As a result, experimenting with loudspeaker placement and listening room acoustics will have the most significant impact on the loudspeakers' performance.

### LOUDSPEAKER PLACEMENT

The following are important loudspeaker placement considerations for the M106 and M105:

- Remove all obstructions between the loudspeaker and the primary listening position. For instance, a coffee table between the loudspeaker and the primary listening position will create reflections that will degrade stereo imaging and timbre. Placing the loudspeakers near large objects may also cause unwanted reflections.
- For the best stereo imaging, place the loudspeakers so that they are both the same distance from the primary listening position and so they are both the same distance from the side walls, as shown in the illustration below.



- For optimal stereo imaging and timbre, aim the loudspeakers almost directly toward the primary listening position as shown in the illustration above. If you wish to widen the stereo soundstage you can reduce this toe-in angle, even to the point at which the loudspeakers are pointing straight forward.
- Moving the loudspeakers farther from the front and side listening room walls will improve stereo imaging and the sense of spaciousness in the listening space.
- Moving the loudspeakers closer to the corners or walls of the listening room will increase bass response.

- For best results, place the speaker so the tweeter is aligned with a seated listener's ears, approximately 36" (91cm) above the floor.



- Optional Performa3 M Stand pedestal stands are available for the M106 and M105 that place the speakers at the proper height for seated listeners. Refer to the assembly instructions that are included with the stands for additional information.

**CAUTION: When placed on the optional pedestal stands, loudspeakers such as the M106 and M105 have a high center of gravity, which may cause them to fall if tipped or improperly positioned. To avoid this, anchor the stand to the floor and/or wall using the same procedures and hardware used to anchor bookcases, wall units, and other furniture. HARMAN International Industries, Inc. assumes no responsibility for proper selection and installation of hardware or for any personal injuries or product damages resulting from improper installation or a fallen loudspeaker.**

### LISTENING ROOM ACOUSTICS

Listening rooms have a profound impact on sound, particularly at lower frequencies. In fact, the effect of the listening room can dominate sounds below about 400Hz. Ideally, listening rooms would include optimized dimensional ratios to minimize the effects of room resonances. But in reality, most listening rooms are not designed to enhance loudspeaker performance.

The interaction between loudspeakers and listening rooms is complex, with two important determinants that affect the loudspeaker and the listener:

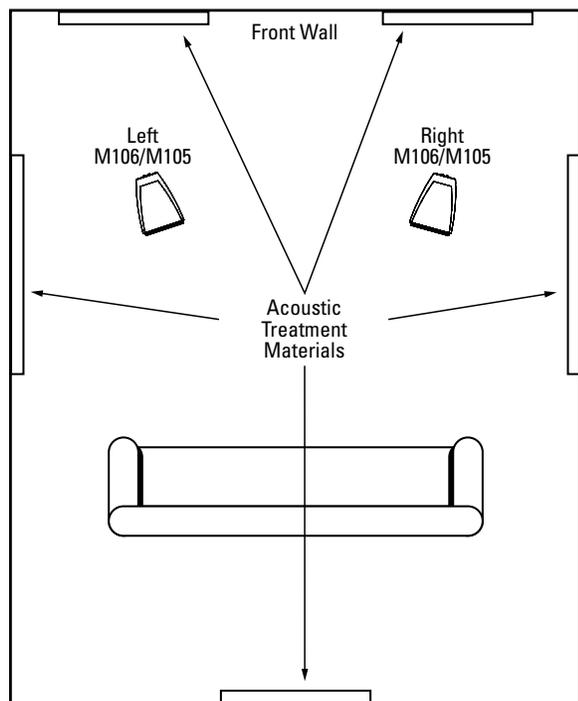
- Surfaces and other boundaries often cause large peaks and dips in low-frequency response. These peaks and dips can often range 12dB or more.
- Standing waves (also known as room modes or resonances) interact with both the loudspeaker and the listener, resulting in large errors in frequency response.

Unfortunately, there is no simple solution that addresses both of these factors. Even computer software programs that examine one or both factors may not calculate proper primary listening position or loudspeaker placement values.

In most cases, proper selection of the primary listening position combined with proper placement of the loudspeaker can result in superior performance at lower frequencies. The difference between superior and inferior results is often just a small adjustment of the primary listening position or loudspeaker placement. Contact your authorized Revel dealer for assistance.

## ACOUSTIC TREATMENT MATERIALS

The M106 and M105 feature high-order filters that optimize the loudspeakers' on-axis and off-axis response, minimizing sonic degradations that occur in overly "live" rooms (those with surfaces that are acoustically reflective). Placing minimal acoustic treatment materials at the room's primary reflection points will reduce these distortions even further. Ideally, acoustic absorbers should be placed at the first reflection points on the front and side walls and either acoustic absorbers or diffusers should be placed at the first reflection points on the rear wall.



Because the listener's eyes and ears are on the same plane, the "mirror method" is an accurate determinant of critical reflection points. This method can be used to determine reflection points for side walls, rear walls, front walls, and even the ceiling. Applying acoustic treatment materials to the side walls is most important, followed by the ceiling, front wall and rear wall.

To determine reflection points using the mirror method:

1. Once the loudspeakers have been placed, sit in the primary listening position and ask another person to slide a mirror along the listening room walls.
2. Note the locations at which you can see either loudspeaker in the mirror from the primary listening position. Be sure to look for both loudspeakers in the reflection on each room boundary. These are reflection points that require acoustic treatment materials.

If acoustic treatment materials are not available, hanging a rug over the reflection points will help reduce sonic degradation in overly "live" rooms. Carpeting the floor area between the loudspeakers and the primary listening position and placing irregular surfaces such as bookcases at the first reflection points will also help minimize strong reflections.

## MAKING CONNECTIONS

**CAUTION: Never make or break connections unless all system components are powered off.**

### OBSERVE PROPER POLARITY

Connect the amplifier's positive (+) terminal to the positive (+) terminal on the corresponding speaker; connect the amplifier's negative (-) terminal to the negative (-) 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 stereo imaging and diminished bass response.

### SPEAKER CABLE

Use high-quality loudspeaker cable with a maximum total loop resistance of 0.07 ohms or less for each wire run. Refer to the table below to determine the appropriate wire gauge for your installation.

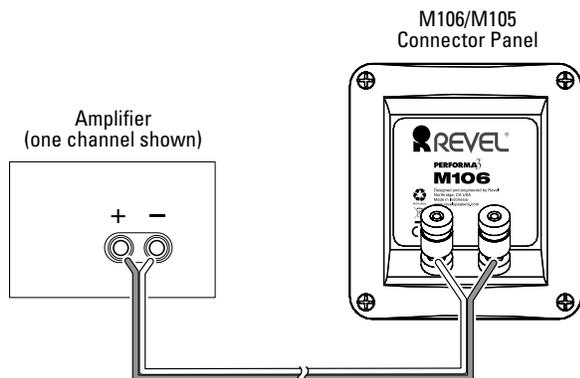
### MINIMUM WIRE GAUGE

Maximum Wire Length (Feet)	Maximum Wire Length (Meters)	Minimum Wire Gauge (AWG)
< 87	< 27	6
< 69	< 21	7
< 58	< 18	8
< 43	< 13	9
< 34	< 10	10
< 27	< 8	11
< 22	< 7	12
< 17	< 5	13
< 14	< 4	14
< 11	< 3.5	15
< 9	< 3	16
< 7	< 2	17
< 5	< 1.5	18

**NOTE:** High loop resistances that exceed 0.07 ohms (for each wire run) will cause the loudspeaker's filter network to be mis-terminated, resulting in considerable degradation of sound quality.

## M106/M105 CONNECTIONS

The M106 and M105 feature gold-plated binding posts that provide secure connection for speaker cables terminated with banana plugs, spade lugs, pin connectors or bare wire.



Connect both loudspeakers using the same method, using speaker cables of the same length for each speaker.

- Review the owner's manuals for all associated audio components to determine their correct connection procedures.

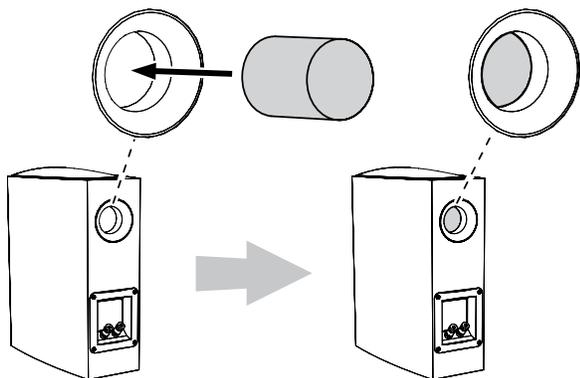
## OPTIMIZING PERFORMANCE

### PORT PLUGS

Revel Performa3 bookshelf loudspeakers include a pair of foam port plugs that can be used to adjust the loudspeaker's low-frequency performance in certain installation situations.

If your loudspeakers are built into an entertainment center or shelving unit, or if the loudspeaker is located less than about two feet (0.61m) from walls or other large objects, inserting the port plugs into the loudspeaker's port openings can reduce the overly-aggressive bass output that can be created by the speaker's proximity to large surfaces that reflect bass energy.

Insert the port plug into the loudspeaker's port tube opening far enough so that the end of the plug is flush with the inside end of the port tube's flared section.



**CAUTION: Be careful not to insert the port plug so far into the port tube that it falls inside of the speaker.**

## ADJUSTMENTS

1. Begin playback of a familiar music or film source.
2. Listen from the primary listening position, increasing volume to a comfortable level.
3. Experiment with the loudspeakers' placement to achieve the best overall tonal balance, stereo image precision, and sense of spaciousness in the listening room. Refer to the Installation Considerations section on page 4 for additional information about loudspeaker placement.
4. Experiment with the port plugs to achieve the best low-frequency performance for your particular listening room and installation.

## LOUDSPEAKER VOLUME LEVELS

The high-order filters employed in Revel Performa3 series loudspeakers include steep cut-offs to reduce potential transducer damage from "out-of-band" frequencies. Combined with carefully selected transducers and filter network components, this approach helps the Performa3 Bookshelf loudspeakers maintain their performance under extreme operating conditions.

However, all loudspeakers have limits when it comes to continuous playback. To avoid exceeding these limits, avoid playback at volume levels that distort or strain the sound.

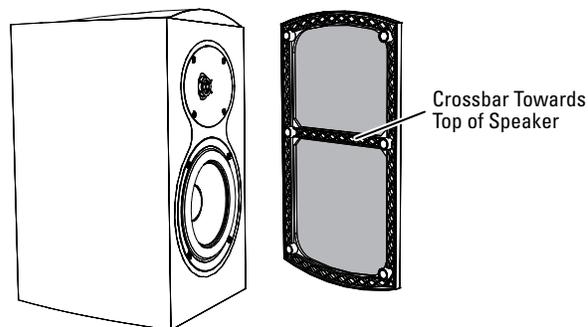
**CAUTION: To avoid damage, reduce volume level immediately if the loudspeaker sound is not clean and clear.**

## CARING FOR YOUR LOUDSPEAKERS

### GRILLES

Revel Performa3 bookshelf speakers feature grilles with a magnetic attachment method that eliminates unsightly attachment hardware from the speaker baffle, so if you decide to use your speakers with the grilles removed they will retain their elegant appearance.

When installing the grille on the speaker, orient it so that the plastic frame's crossbar is more towards the top of the speaker cabinet.



## CABINET FINISH

The cabinet's wood finish does not require routine maintenance. Cabinet surfaces that have been marked with dust, fingerprints, or other dirt can be cleaned using a soft cloth – preferably micro-fiber, and high quality auto wax. Take care not to come in contact with the transducers.

- Use caution to avoid contacting the rubberized trim on the sides of the loudspeaker with auto wax. If necessary, the rubberized trim can be cleaned with denatured alcohol on a microfiber cloth.

To clean the grille, gently vacuum it using a soft-bristled brush vacuum attachment with the vacuum cleaner set to the lowest possible suction.

**CAUTION: To prevent cabinet damage, do not use a cloth made with steel wool or metal polish to clean the cabinet. To prevent possible transducer damage, do not apply furniture polish directly to the cabinet.**

## SPECIFICATIONS

### M106

Type:	2-way 6-1/2" bookshelf loudspeaker
Low-frequency transducer:	6-1/2" (165mm) aluminum cone, with cast frame
High-frequency transducer:	1" (25mm) aluminum dome, with acoustic lens waveguide
Recommended amplifier power range:	50 – 150 watts
Low-frequency extension:	39Hz (–10dB); 54Hz (–6dB); 59Hz (–3dB)
Nominal impedance:	8 ohms
Sensitivity (2.83V/1m):	87dB
Crossover frequency:	2.3kHz
Enclosure type:	Bass-reflex via rear-mounted port
Inputs:	Gold-plated binding posts
Available finishes:	Piano black, high-gloss walnut
Dimensions (H x W x D):	15" x 8-1/4" x 11" (381mm x 210mm x 278mm)
Weight:	18.5 lb (8.4kg)

### M105

Type:	2-way 5-1/4" bookshelf loudspeaker
Low-frequency transducer:	5-1/4" (130mm) aluminum cone, with cast frame
High-frequency transducer:	1" (25mm) aluminum dome, with acoustic lens waveguide
Recommended amplifier power range:	50 – 120 watts
Low-frequency extension:	44Hz (–10dB); 56Hz (–6dB); 60Hz (–3dB)
Nominal impedance:	8 ohms
Sensitivity (2.83V/1m):	86dB
Crossover frequencies:	2.3kHz
Enclosure type:	Bass-reflex via rear-mounted port
Inputs:	Gold-plated binding posts
Available finishes:	Piano black, piano white, high-gloss walnut
Dimensions (H x W x D):	14" x 7-7/8" x 9-3/4" (356mm x 200mm x 248mm)
Weight:	15.7 lb (7.2kg)



## LIMITED WARRANTY

Revel Series speakers are warranted against defects. The duration of the speaker's warranty depends on the laws in the country in which it was purchased. Your local Revel® retailer can help you determine the length of your warranty.

**HARMAN**

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