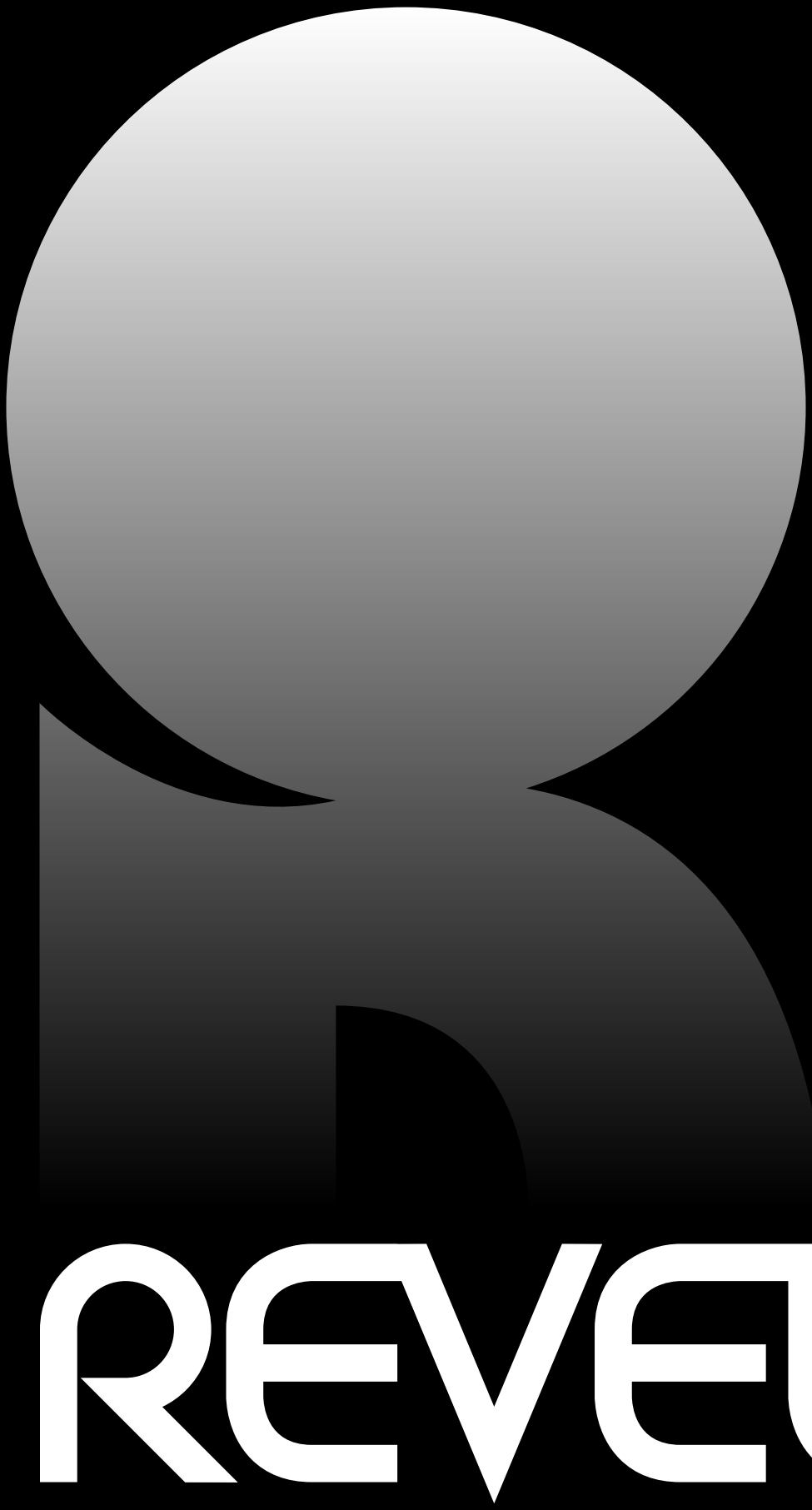
Revel® Performa™ M20 Loudspeaker



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INTRODUCTION

Revel® leads the loudspeaker world in research, advanced engineering techniques, and unique production processes. The REVEL PERFORMA™ M20 loudspeaker is the perfect demonstration of Revel's unparalleled engineering capabilities.

The REVEL PERFORMA M20 loudspeaker is a compact model with technology derived from advanced engineering used in Revel's famed Ultima™ loudspeakers. Each one has an inverted magnesium-alloy dome woofer and custom aluminum-alloy dome tweeter to achieve outstanding freedom from coloration. We also use our groundbreaking measurement process to seamlessly integrate the superb transducers with an optimized network to achieve stunning realism and superb dynamics.

As a result, the REVEL PERFORMA M20 loudspeaker sets a whole new standard in bookshelf loudspeaker sound quality. Its superior performance, assured by our ongoing research, will greatly contribute to the enjoyment of music or film sound in your home.

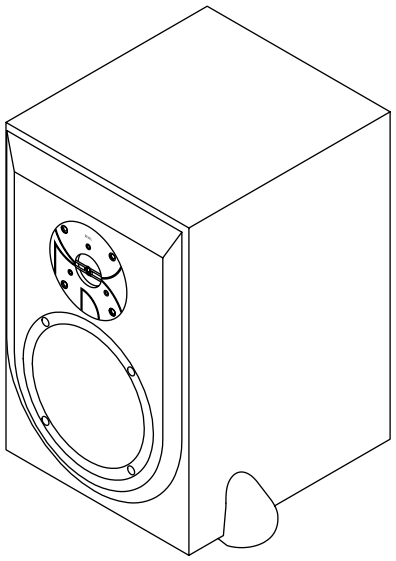


Figure 1. The REVEL PERFORMA M20 loudspeaker (without grille).

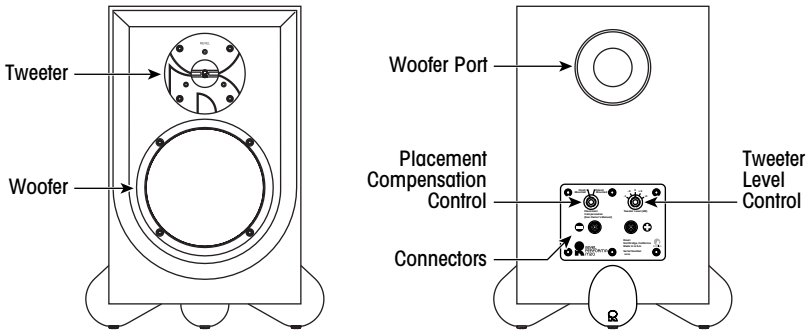
ABOUT THE MANUAL AND WARRANTY

To begin enjoying your new loudspeakers, first read and then perform the instructions in this owner's manual. Maximum performance depends on following all instructions described here, as well as those found in the owner's manuals of associated components in your audio system. Save these instructions for future reference.

REVEL PERFORMA M20 loudspeakers are covered by a limited 5-year warranty, so save the bill of sale to protect your purchase and aid in any service-related questions.

DESCRIPTION

The REVEL PERFORMA M20 loudspeaker features a transducer complement (see Figure 2) of one 6.5-inch (165 mm) woofer and a 1-inch (25 mm) tweeter.



REVEL PERFORMA M20 Front (without grille)

REVEL PERFORMA M20 Rear

Figure 2. Transducer and connection locations for the REVEL PERFORMA M20 loudspeaker.

Combined with an individually-optimized crossover network, this transducer arrangement results in a superior off-axis response that provides a large "listening window" and an uncolored in-room response, even in the presence of strong wall reflections.

WOOFER

The 6.5-inch (165 mm) woofer with an inverted magnesium-alloy dome features:

- True pistonic operation for increased freedom from coloration.
- Shielded magnetic circuits to prevent interference with video monitors.
- Butyl rubber surround for large, linear excursion capabilities.
- Vented center-pole piece for better cooling and low compression.
- Die-cast basket to eliminate resonances.
- 1.5-inch (38 mm) Kapton® voice-coil former with flat, edge-wound voice coil.
- 26-ounce (0.737 kg) motor system with flux shorting ring to dramatically reduce modulation distortion.

TWEETER

The 1-inch (25 mm) tweeter with aluminum-alloy dome features:

- True pistonic operation for increased freedom from coloration.
- Underhung with copper-clad aluminum wire for low distortion.
- Ferrofluid for better power handling with reduced compression.
- Shielded magnetic circuits to prevent interference with video monitors.
- Flux modulation ring for very low distortion

CROSSOVER NETWORK

Each REVEL PERFORMA M20 loudspeaker has an individually-optimized crossover network with:

- A high-order crossover at 2.2 kHz to optimize the on- and off-axis response of the system.
- Filter networks with carefully selected components for optimum performance with vanishingly low coloration and distortion.
- External Placement Compensation Control for optimizing the loudspeaker's response for flush-mount, bookshelf, or stand-mount applications.
- External Tweeter Level Control provides high-frequency compensation for a variety of room environments.

CABINET

The cabinet is constructed of 1-inch (25 mm) thick MDF walls with extensive internal bracing for unshakable performance. A rounded front baffle is sculpted to reduce diffraction, and three cast aluminum feet adorn the cabinet for superior coupling to any surface. The wood-veneer cabinet comes in finishes of Cherry, Sycamore, Rose, or Black Ash.

The optional REVEL PERFORMA PEDESTAL 1 is also available from your Revel dealer. This stand is designed to optimize the acoustical performance and enhance the appearance of the REVEL PERFORMA M20 loudspeaker. It attaches securely to the loudspeaker cabinet, and the loudspeaker feet attach to the base of the stand to create an integrated and attractive appearance (also see *Installing Stands* on page 8).

UNPACKING

IMPORTANT! To avoid injury, please use care during unpacking. Always stand as straight as possible and use your leg muscles to lift the REVEL PERFORMA M20 loudspeaker. Do not lift it while bending from the waist.

WARNING

Each REVEL PERFORMA M20 loudspeaker is packed in its own carton. To unpack it, perform the following steps:

1. Place a REVEL PERFORMA M20 loudspeaker onto its side.
2. Open the bottom flaps. Stand the unit in the up position.
3. Open the top flaps. Take out the spike foot kit and set it aside. Remove the top pad.

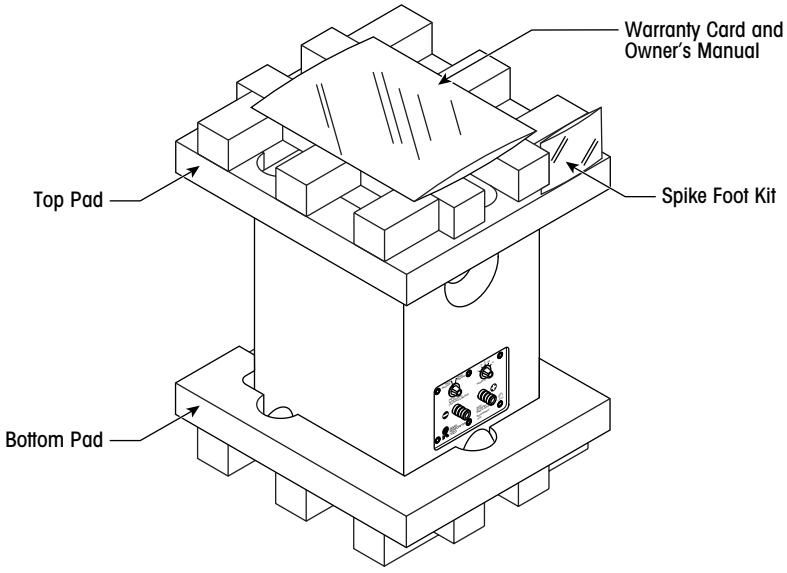


Figure 3. A REVEL PERFORMA M20 loudspeaker with its inner packing materials.

4. Lift the carton off the loudspeaker and set it aside, being careful not to damage the cabinet.
5. Grasping the cabinet on the sides, lift it up and remove the bottom pad. Use caution to avoid touching any of the transducers.
6. Repeat steps 1 through 5 for the other loudspeaker.

NOTE: Spikes can be installed as an option after determining final speaker placement. Installation is similar to instructions shown in Figure 7 on page 9.

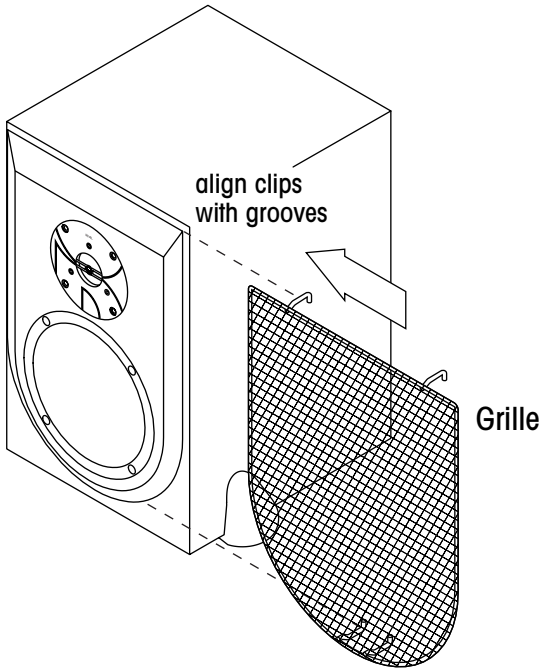
After unpacking both units, carefully inspect each one for possible damage due to shipping. If you discover any damage, immediately contact your Revel dealer for further assistance. When moving a REVEL PERFORMA M20 loudspeaker (e.g., when experimenting with placement), avoid touching the tweeter and woofer.

Keep all packing materials for future shipping. In the unlikely event a product will need repair, Revel will only accept a unit in its original shipping carton. Using any other packing materials may result in damage to the product and is not covered by the warranty. See *Service Information* on page 17 for additional details.

INSTALLING GRILLES (OPTIONAL)

If desired, install an optional grille onto each REVEL PERFORMA M20 loudspeaker, as shown in Figure 4 below.

Figure 4. Installing an optional grille.



INSTALLING STANDS (OPTIONAL)

1. Using a Phillips screwdriver, remove the REVEL PERFORMA M20 loudspeaker feet and screws (for later attachment to stand base). Locate the parts bag (packed with the loudspeaker) that contains spikes, lock nuts, covers, and a wrench. Set all parts aside.

2. Unpack a REVEL PERFORMA PEDESTAL 1 box. Start the stand assembly by fastening three upright bars to the bottom 'T' base with the enclosed 1/4-20 x 1" flat head screws, as shown in Figure 5.

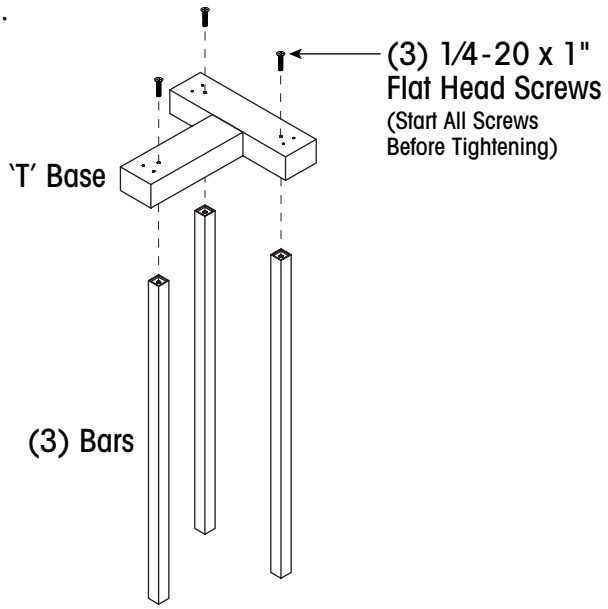


Figure 5. Installing bars onto the 'T' base for the REVEL PERFORMA PEDESTAL 1.

3. Place the stand in its upright position. Install the top plate with three 1/4-20 x 1" flat head screws, as shown in Figure 6.

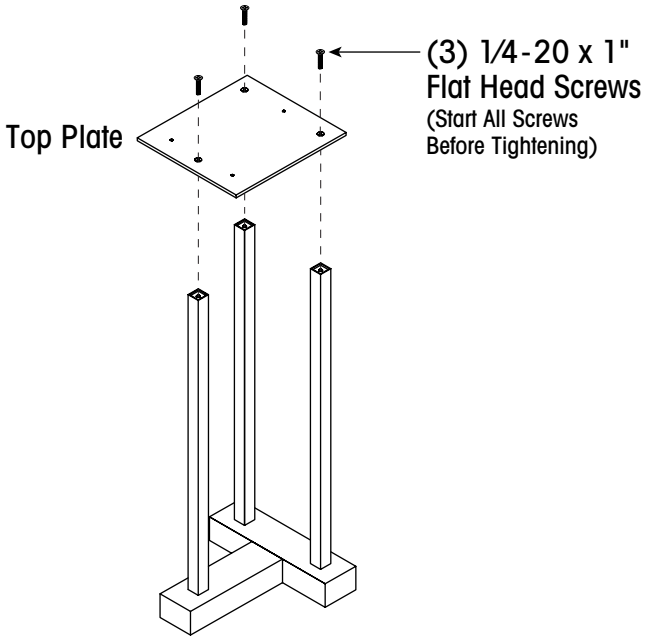
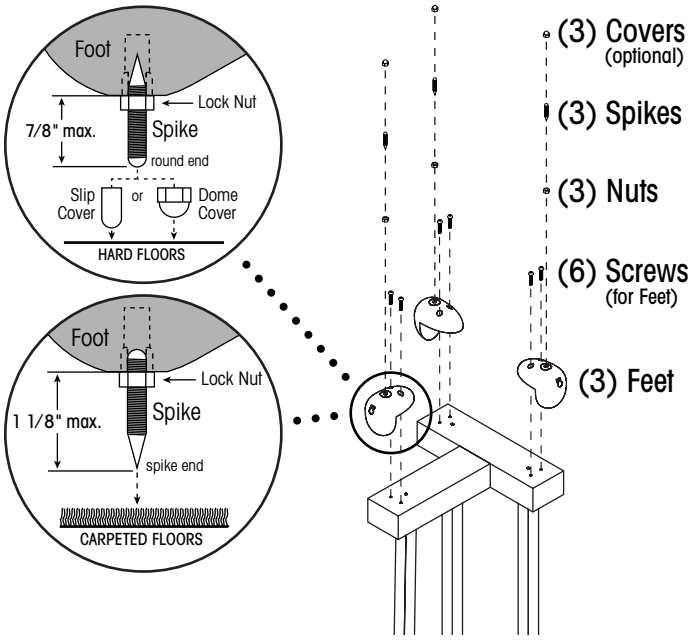


Figure 6. Installing the top plate.

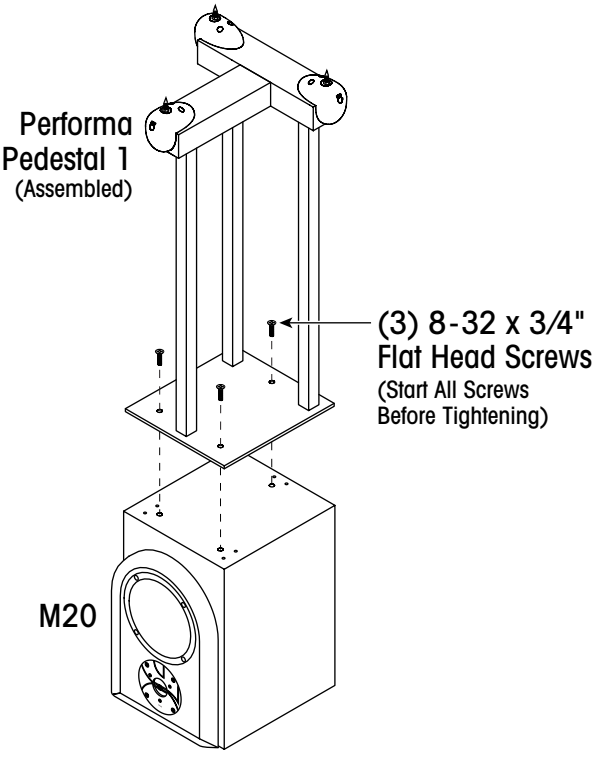
4. Place the stand as shown in Figure 7 and install the feet (from Step 1) onto the bottom of the 'T' base. Thread spikes about halfway into each foot and use the wrench to tighten each one with a locking nut (see details below).

Figure 7. Installing feet and spikes.



5. Place your REVEL PERFORMA M20 loudspeaker as shown in Figure 8 onto a carpeted surface or soft towel. Attach the assembled stand with three 8-32 x 3⁄4" flat head screws. Turn the unit upright. Repeat all steps for the other stand.

Figure 8. Installing the assembled REVEL PERFORMA PEDESTAL 1 onto the REVEL PERFORMA M20 loudspeaker.



PLACEMENT

Sound quality is heavily dependent on the accuracy of your loudspeakers, their placement in the listening room, and the acoustics of the room itself. Since the REVEL PERFORMA M20 loudspeakers are extremely accurate, experimenting with their placement is the most significant way to optimize their performance in a given environment. The following guidelines will help you obtain the best results:

NOTE: The REVEL PERFORMA M20 includes a user-adjustable placement compensation circuit that tailors the response for a desired application (e.g., stand mounting or mounted in or near a wall, such as on bookshelves or in a custom installation). See "System Optimization" on page 15 for details.

- For best stereo imaging, place the REVEL PERFORMA M20 loudspeakers at equal distances from the main listening position and in symmetry with the room, as shown in Figure 9.

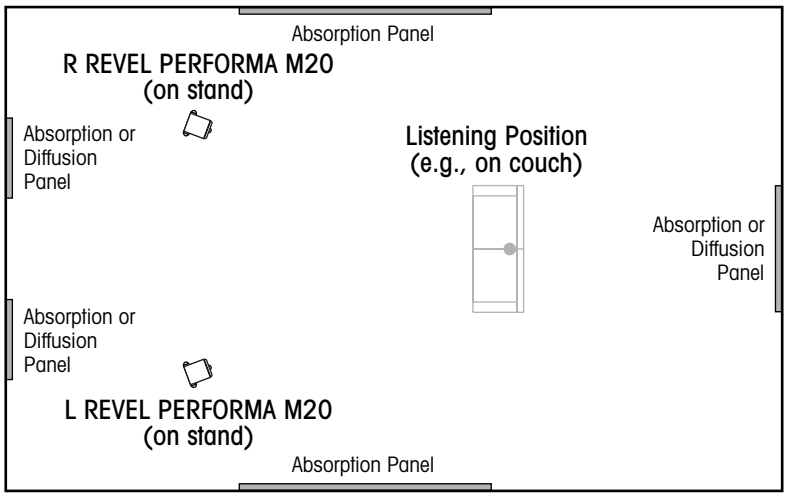


Figure 9. Typical placement of REVEL PERFORMA M20 loudspeakers for stereo. Note the suggested room treatments due to the primary reflection points.

- Optionally, use a pair of REVEL PERFORMA PEDESTAL 1s to solidly mount the REVEL PERFORMA M20s at an ideal height for seated listeners, as shown in Figure 10.

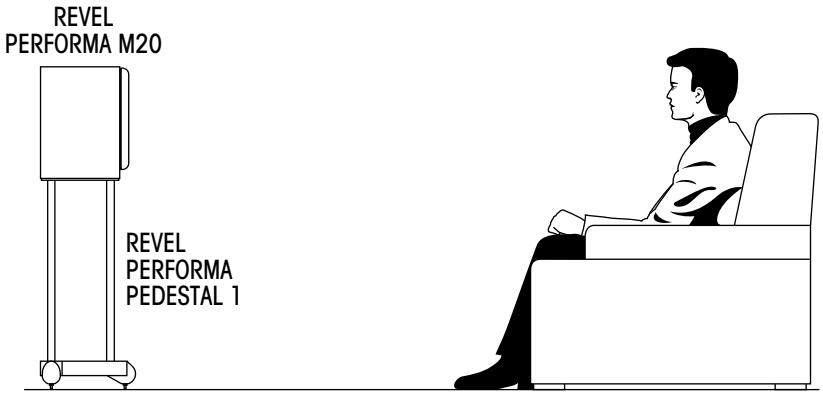


Figure 10. A REVEL PERFORMA M20 loudspeaker is shown placed on optional REVEL PERFORMA PEDESTAL 1.

- Optimum timbre and imaging precision is obtained with the loudspeakers pointing almost directly toward the prime listening position. Some listeners prefer a wider "soundstage," which is achieved by reducing the toe-in angle, perhaps to the point of aiming the loudspeakers straight ahead.
- Imaging and a sense of spaciousness will improve as the loudspeakers are moved away from the wall behind the loudspeakers and the side walls.

  NOTE: You may then need to move the listening position back to maintain the best stereo image.
- For more bass reinforcement, try moving the loudspeakers closer to the front wall or corners (also see *Room Acoustics* on next page).

  NOTE: You may then need to move the listening position forward to maintain an acceptable stereo image.
- For best results, make sure there are no objects between the REVEL PERFORMA M20 loudspeakers and the intended listening area (e.g., a coffee table in front of the listener will degrade timbre and imaging). If possible, avoid placing the loudspeakers near large objects, which can cause unwanted reflections.
- REVEL PERFORMA M20 loudspeakers can be also be placed on bookshelves or in a custom wall unit.
- Ideally, the listening room should be acoustically neutral, neither producing any distinct echoes nor sounding completely "dead" and lifeless (also see *Room Treatment* on the next page).

PLACEMENT (CONTINUED)

ROOM ACOUSTICS

Listening rooms have a profound impact on sound quality, especially at low frequencies. In fact, a listening room can actually dominate the sound quality below about 300 Hz. Ideally, a new room being built from scratch would include optimized dimensional ratios to minimize the effects of standing waves.

However, most installations will be made in existing rooms. In these cases, your only solution is to take special care in selecting both the speaker and prime listening locations, which will pay off in superior low frequency performance. Often the difference between poor and excellent results is the result of relatively small adjustments in speaker and listener placements.

The interaction of loudspeakers and rooms is quite complex, as the loudspeaker and listener are affected by two mechanisms. First, nearby surfaces, or boundaries, cause large peaks and dips in low frequency response. These peaks and dips can often range 12 dB or more. Second, the loudspeaker and listener locations interact with the standing waves, or room modes. These standing waves, or resonances, also result in large response errors. There are no simple formulas that take both mechanisms into account. Most computerized room-acoustic programs only consider *either* the effects of room boundaries *or* standing waves, but not both at once. Since both factors are critical, such simplistic programs are of limited value.

Here's where real-world experience counts. We suggest consulting your Revel dealer for help in determining the optimum loudspeaker and listener placement for your listening room. They have been trained by Revel and have the most up-to-date information on proper loudspeaker placement.

ROOM TREATMENT

REVEL PERFORMA M20 loudspeakers have very accurate off-axis response, which minimizes any degradation caused by overly "live" rooms. However, far superior performance will be achieved by placing at least minimal acoustic treatment materials at the primary reflection points. Ideally, special acoustic absorbers should be placed at the first reflection points on the side and front walls along with either absorbers or diffusers at the first reflection points on the rear wall. Short of using acoustic treatment materials, even simple hanging rugs can be a great help in overly bright rooms.

Carpeting the floor area between the speakers and listener and placing irregular surfaces, such as bookcases, will also help break up strong reflections.

Since our ears and eyes are located on the same plane, we can use a mirror (also known as the "mirror method") to accurately determine the most important locations (the first reflection points) for material treatment, as follows:

1. After the loudspeakers are placed, the listener should sit in the prime listening position.
2. A second person should slide a mirror along the walls.
3. Note the locations at which the listener can see either of the loudspeakers. These will be the reflection points that would require acoustic treatment materials.

Using this method, find all treatment locations for side walls, front wall, and rear wall with side walls taking priority. Where possible, also determine the treatment locations for first ceiling reflections.

Your Revel dealer can recommend acoustic treatment materials, and can help determine the best plan for your room. If it is a dedicated listening room, qualified room treatment manufacturers or even acousticians may be consulted for optimum results. Remember, properly treated rooms provide dramatically better results with any loudspeakers than untreated rooms.

CONNECTIONS

For best results, please read the following points before connecting the REVEL PERFORMA M20 loudspeakers:

- Use high-quality speaker cable with a maximum total loop resistance (for each wire run) of 0.07 ohms or less. Use the chart in Figure 11 below to determine the maximum wire gauge.

  NOTE: A high loop resistance will result in mis-termination of the filter networks, and serious degradation of sound quality. Use high-quality connectors on the speaker cables. Consult your Revel dealer as to specific recommendations for your application.

- Turn off all audio system power before making any connections.
- Read the owner's manuals that were included with your audio components to confirm their connection procedures.
- Verify correct polarities (i.e., + to + and – to –) when making connections, as shown in Figure 12 on the next page. Failure to do so will cause poor imaging and diminished bass response.

WIRE GAUGE (AWG)	LENGTH (FEET)	LENGTH (METERS)
6	87	27
7	69	21
8	58	18
9	43	13
10	34	10
11	27	8
12	22	7
13	17	5
14	14	4
15	11	3
16	9	3
17	7	2
18	5	2

Figure 11. Wire gauge versus maximum wire run (with a maximum loop resistance of 0.07 ohms) for less than 0.2 dB response error.

NOTE: "Loop resistance" is the DC resistance measured at one end of a loudspeaker cable, with the other ends shorted together.

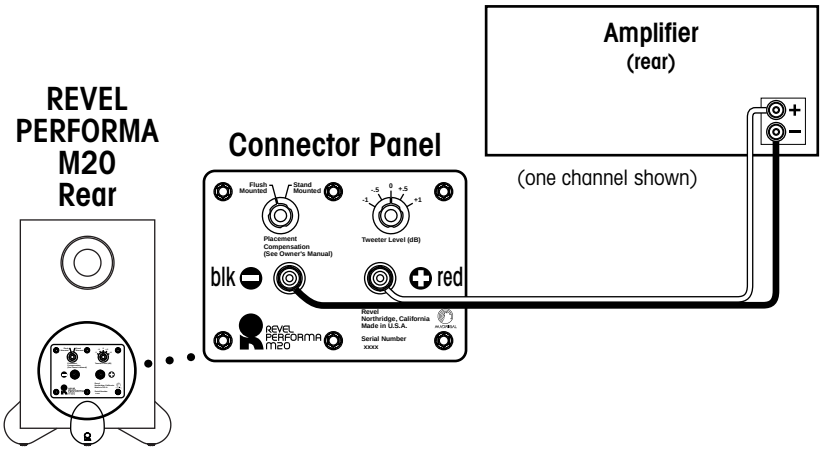


Figure 12. How to connect the REVEL PERFORMA M20 loudspeaker in a single-wired system.

SYSTEM OPTIMIZATION

1. After connecting the REVEL PERFORMA M20 loudspeakers, initially set the TWEETER LEVEL CONTROL on both rear panels to the "0" position, as shown in Figure 13.

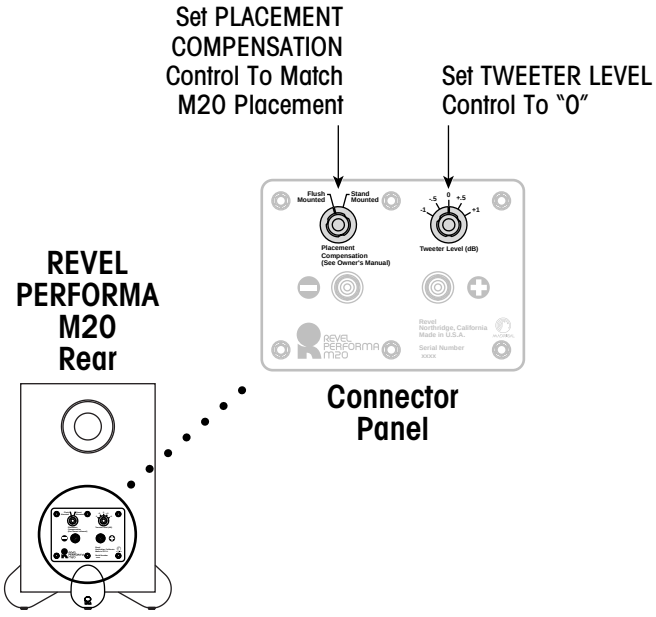


Figure 13. Locations of the PLACEMENT COMPENSATION CONTROL and TWEETER LEVEL CONTROL along with their initial settings for the REVEL PERFORMA M20 loudspeaker.

2. Initially set each PLACEMENT COMPENSATION control (see Figure 13) to match the application as follows:

   - Use the **Flush Mounted** setting when the loudspeakers are flush-mounted in a wall or custom-built "media wall", or are placed on bookshelves.
   - Use the **Stand Mounted** setting when the loudspeakers are placed on their (optional) stands.

SYSTEM OPTIMIZATION (CONTINUED)

3. Turn on the system power and play a favorite piece of music. Slowly increase the volume to a comfortable level and listen from your main listening position. If desired, experiment with placement (see page 10) to achieve the best overall tonal balance, image specificity, and spaciousness.

4. You may also wish to further adjust each TWEETER LEVEL CONTROL. Varying the control will change the high frequency balance and timbre. Differences in room acoustics often demand different level control settings.

   NOTE: Set the controls the same on both left and right channels.

CABINET CARE

Each cabinet for the REVEL PERFORMA M20 loudspeaker has a wood veneer finish and does not require any routine maintenance.

Occasionally, use a soft cloth, dampened with household furniture polish, to remove any fingerprints or dust. Clean the grille by gentle vacuuming.

LOUDSPEAKERS AND POWER

REVEL PERFORMA M20 loudspeakers use high-order crossovers with steep cut-offs to eliminate damage caused by "out of band" frequencies. Using this approach, in combination with carefully selected components and transducers, gives us confidence that a REVEL PERFORMA M20 loudspeaker will not fail, even under extreme conditions. However, there is a limit to how loud ***any*** speaker can play continuously. A good rule of thumb is to avoid playing the system at volume levels beyond where the sound is "clean." If the sound becomes distorted or strained, reduce the volume level immediately to avoid damage.

If you are unsure of the suitability of current or planned amplifier components, please ask your Revel dealer to review them before connecting your REVEL PERFORMA M20 loudspeakers.

SERVICE INFORMATION

In the unlikely event that your Revel component requires service, please contact your Revel dealer for immediate assistance. They will determine if it can be serviced locally or requires shipment to our factory or other service repair facility.

IMPORTANT: If factory service is required, please obtain a return authorization number before shipping the defective unit to us. Call the Revel Service Department at 1-818-830-8777 on any business day, from 9 A.M. to 5 P.M. PST.

- In order to repair the unit quickly, please provide us with the product's serial number and detailed information about the problem the unit is experiencing, especially if it is intermittent.
- If applicable, include a copy of the original bill of sale to verify the unit's warranty coverage.

IMPORTANT: Be sure to pack each unit to be returned in its original packing carton and mark the return authorization number(s) on the outer carton(s) for identification.

Your Revel dealer can order a new set of shipping materials if you no longer have the original cartons. Since there will be a charge for this service, we strongly recommend saving all packing materials.

SPECIFICATIONS

Revel utilizes proprietary measurement methods in the design and specification of our loudspeakers. Our research has developed a series of tests that represent a great leap forward in making measurements that dramatically contribute to our goal of accurately reproducing music or film.

Sensitivity:

87 dB SPL, with 2.83 V_{rms} @ 1 m (4 pi anechoic)

Sensitivity provides an indication of how much amplifier power is required for the loudspeaker to play at satisfactory volume levels. This conservatively-rated specification indicates moderate sensitivity and denotes that a REVEL PERFORMA M20 loudspeaker does not require huge amplifiers to achieve realistic levels in all but the largest rooms.

Impedance:

6 ohms (nominal), 4.4 ohms (minimum)

Impedance indicates whether the speaker system presents a "hard" or "easy" load on the amplifier. A minimum impedance value of 4.4 ohms, together with moderate phase angles, signifies that any competently-designed amplifier can easily drive a REVEL PERFORMA M20 loudspeaker.

Filters (Crossover):

2-way, high-order, in-phase at 2.2 kHz

The steep filter slopes ensure good acoustical behavior in the crossover regions, with a minimum of acoustical interference, along with low distortion and wide dynamic range. The filters feature specially selected components. Woofer and tweeter filter boards are physically independent and include external controls for tweeter level and placement compensation.

Frequency Responses:

In-Room Response;
± 1 dB from 46 Hz to 16 kHz

In-room response is a breakthrough measurement that, in a single curve, closely correlates to sound quality and has been a goal of loudspeaker engineers for years. Research, and simple observation, reveals that ubiquitous "on-axis" response curves often cannot distinguish between two loudspeakers with radically different sound quality. This specification for the REVEL PERFORMA M20 loudspeaker is even more powerful when it is taken in context with the other measurements presented here.

In-Room Response Relative to Target Response;
± 0.75 dB from 46 Hz to 20 kHz

A target response is the ideal response goal and is not flat at the frequency extremes and is used when the ideal reference is not a "flat" line. A target response must be tailored to the loudspeaker's intended application and takes into account the acoustic impact of the loudspeaker's location, such as freestanding, or placement near a wall.

First-Reflections Response;
± 1.5 dB from 45 Hz to 15 kHz

First reflections response is a measure of the response a listener hears that is contributed by the first reflections from the walls, floor, and ceiling. This superb specification indicates that REVEL PERFORMA M20 loudspeaker will remain accurate, even in the presence of strong reflections.

Frequency Responses: (continued)

Listening Window Response;
± 1.5 dB from 45 Hz to 16 kHz

This improved "on-axis" measurement reduces the visual confusion of inaudible local interference, yet still retains full accuracy without using "spectral smoothing" which results in significant data loss.

Low Frequency Extension;
-3 dB @ 44 Hz, -6 dB @ 38 Hz, and
-10 dB @ 33 Hz

Studies have shown that the -10 dB low frequency extension specification is the one that best correlates to controlled listening tests. At low frequencies, most loudspeaker/room combinations will exhibit significant "room gain", which is an increasing rise in level as frequencies decrease. In addition, the -10 dB specification reflects the steepness (i.e., order) of the low-frequency roll-off, which is not significantly indicated in -3 dB specifications.

Dimensions: *15½"H x 10"W x 12¼"D (no grille* or feet)*
393.7 mm H x 254 mm W x 311.2 mm D
(see Figure 14 below for dimensions with feet)
**Add 7/16" (11 mm) to depth for grille*

Weight, Loudspeaker: *45 lb (20.4 kg) net (without packing)*
48 lb (22 kg) net (shipping weight)

Weight, Stand: *33 lb (15 kg) net (shipping weight – pair)*

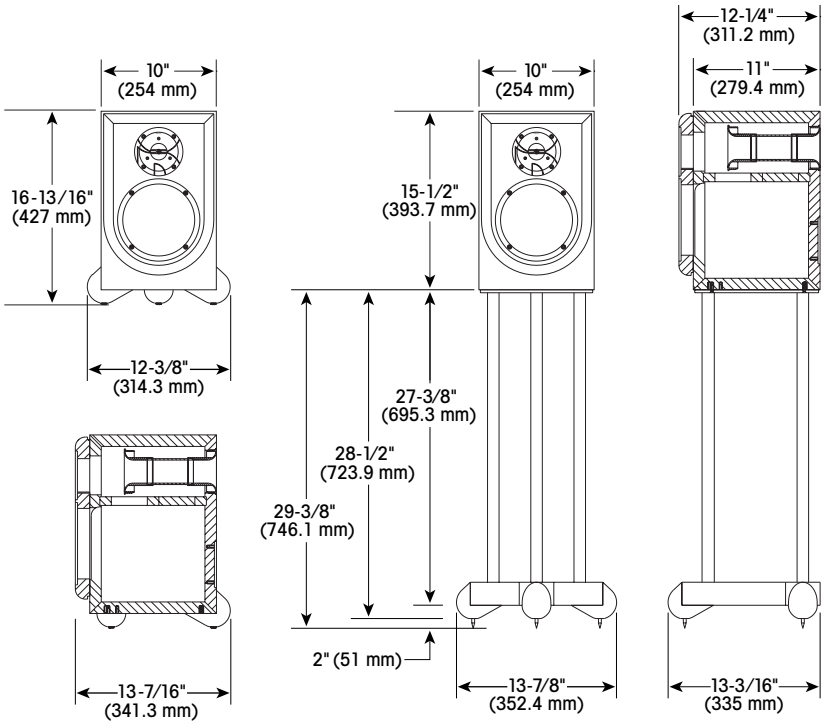


Figure 14. Overall dimensions for the REVEL PERFORMA M20 loudspeaker (without grille) and the REVEL PERFORMA PEDESTAL 1.

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