

Revel® Concerta™ F12 Loudspeaker

Owner's Manual





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DOCUMENTATION CONVENTIONS

This document contains general safety, installation, and operation instructions for the Revel Concerta F12 Floor-Standing Loudspeaker. It is important to read this document before attempting to use this product. Pay particular attention to safety instructions.

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 or all of the product.

Note Calls attention to information that is essential to highlight.

This owner's manual assumes that two F12s are included in the loudspeaker setup.

ABOUT THE F12

Thank you for purchasing the Revel Concerta F12 Floor-Standing Loudspeaker. A full-frequency reproducer, the F12 delivers accurate performance with wide frequency range, low distortion and high output across the entire audible spectrum. F12 loudspeakers are ideally suited as main speakers in stereo system setups or as the front speakers in a multichannel surround home theater installation. Four proprietary transducers, sophisticated filter networks and an acoustically inert cabinet allow the F12 to achieve precise imaging and impressive performance befitting the most demanding home entertainment systems.

As a three-way loudspeaker, the F12 transducers effectively cover the entire audible spectrum. Two 8-inch (203.2mm) woofers deliver highly refined and dynamically authoritative low frequencies down to the lowest octaves. Housed in its own sub-enclosure, a 5.25-inch (133.35mm) midrange handles critical mid-band frequencies with natural tonal balance over a wide dynamic range. A 1-inch (25mm) dome tweeter reproduces high frequencies to above audible frequencies. The tweeter is mounted in a proprietary Controlled Acoustic Impedance waveguide which optimizes the off-axis response of the system. The result is superior coherency and musical realism.

Combining superior form and function, the F12 loudspeaker's proprietary drivers feature a distinctive design that allows for smoother frequency response. The woofer, midrange and tweeter cones are constructed with Organic Ceramic Composite diaphragm material which helps to reduce distortion. The spiders are constructed with a high-strength Nomex/cotton blend with optimized geometry for increased linearity. The woofer and midrange also include butyl rubber surrounds that provide for large, linear excursion capabilities.

The midrange is built with a 1-inch (25mm) voice coil with a high-temperature bobbin that enables high-power handling. The midrange features optimized and shielded magnetic circuits to minimize harmonic distortion and prevent monitor interference.

The woofer includes a copper voice coil wound on a 1.5-inch (38mm) Kapton® bobbin that enables higher power handling. The woofer is also constructed with a vented center pole for increased high-temperature cooling and low compression.

The tweeter dome is under-hung with copper-clad aluminum wire to prevent distortion. The tweeter's magnet contains Ferrofluid® which helps to achieve higher power handling with reduced compression. The tweeter is also magnetically shielded to prevent video monitor interference.

High-order filters at 575Hz and 3.0kHz optimize loudspeaker on-axis and off-axis response, helping to ensure smooth octave-to-octave balance and timbral accuracy. Removable shorting-straps and gold-plated binding posts accommodate single-wired, bi-wired and bi-amplified connections.

The F12 cabinet is constructed with medium-density fiberboard (MDF) walls to reduce cabinet-induced resonances. Rubber feet are attached to the bottom of the cabinet to accommodate installations on tile or hardwood floors. Optional (included) spikes can be inserted into the feet for placement on carpeted surfaces.

Since 1996, Revel has stood at the forefront of loudspeaker design. Backed by Harman International's extensive research and design facilities, the Revel Concerta Series Loudspeakers benefit from cutting-edge development tools. A multi-channel listening lab allows for double-blind listening tests. A laser interferometer enables detailed driver and cabinet analysis. Multiple large anechoic chambers provide for precise tests and measurements. Finite element analysis allows for advanced loudspeaker modeling. A stereo lithography apparatus aids in achieving tight tolerances.

Adding to the proud lineage of Revel's Ultima and Performa Series Loudspeakers, the Concerta F12 solidifies Revel's reputation as the leading designer and manufacturer of high-quality, high-performance loudspeakers.

HIGHLIGHTS

- True full-range reproduction
- Two proprietary 8-inch (203.2mm) Organic Ceramic Composite woofers
- Proprietary 5.25-inch (133.35mm) Organic Ceramic Composite midrange
- Proprietary 1-inch (25mm) Organic Ceramic Composite-dome tweeter
- Proprietary tweeter waveguide for greater high-frequency dispersion
- High output with low distortion
- Removable gold-plated shorting-straps
- Gold-plated binding posts
- Advanced woofer and midrange motor structure
- Magnetic shielding
- Large voice coils for wide dynamic range without compression
- Rubber feet/spikes
- Elegant cabinet design in a selection of high-quality vinyl finishes

PRODUCT REGISTRATION

Please register the F12 within 15 days of purchase. To do so, register online at www.revelspeakers.com or complete and return the included product registration card. Retain the original, dated sales receipt as proof of warranty coverage.

UNPACKING

The F12 requires special care and handling during unpacking. Pay particular attention to the precautions that appear in this section and to other precautions that appear throughout this owner's manual.

WARNING

Do not attempt to lift or move the F12 alone. Proper lifting requires at least two strong adults. When lifting the F12, stand as straight as possible using your leg muscles to lift. Do not attempt to lift the F12 while bending at the waist. When moving the F12, rock it side-to-side into the desired position. Failure to follow these procedures may result in personal injuries and/or loudspeaker damage.

When unpacking, save all packing materials for possible future shipping needs. Refer to the Obtaining Service section on page 17 for additional information.

To unpack the F12:

1. Place the packing carton on its side and fully open the top flaps as shown in Figure 1 (page 7).

Figure 1: Unpacking the F12

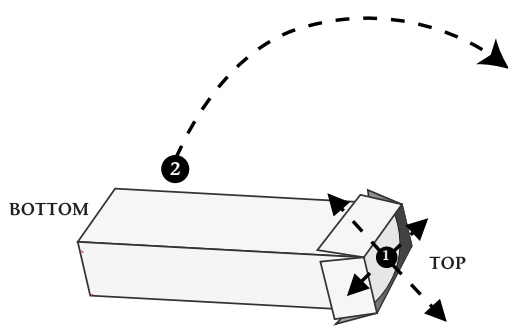
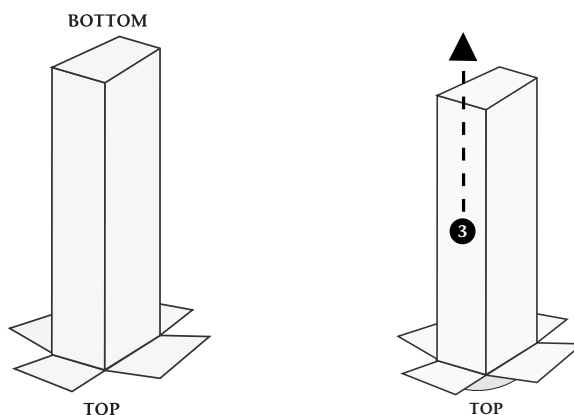


Figure 2: Lifting the Carton

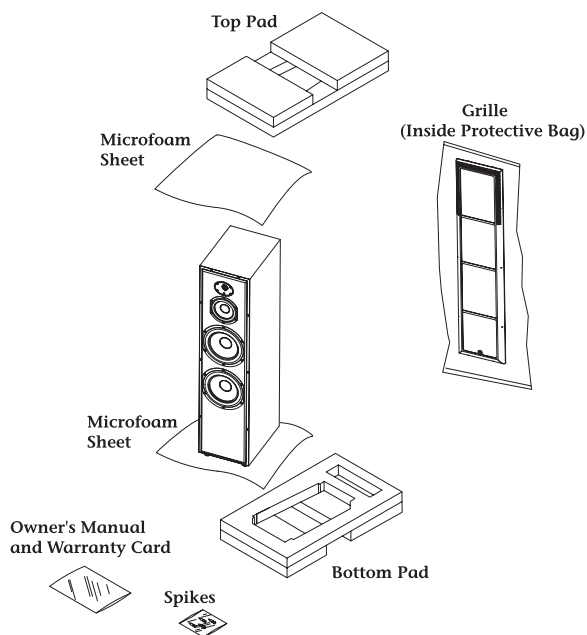


Unpacking (continued)

- Without allowing the top flaps to close, stand the packing carton upside-down as shown in Figure 1 (above).
- Lift the packing carton off of the loudspeaker as shown in Figure 2 (above). Use caution to avoid damaging the loudspeaker cabinet. At this point, the loudspeaker will be upside-down.
- Remove the bottom pad and the microfoam sheet. These items are identified in Figure 3 (right).

- When the F12 is in the upright position, remove the Owner's Manual, Warranty Card and Spikes.
- Remove the top pad and microfoam sheet.

Figure 3: Packing Materials



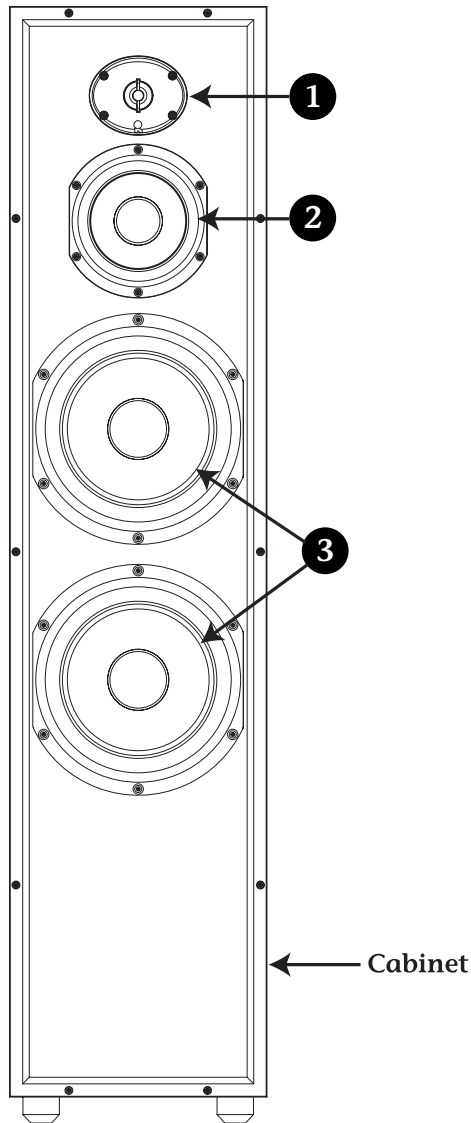
Note

If the F12 is to be placed on a carpeted floor, install the spikes while the loudspeaker is upside-down. Refer to the Feet and Optional Spikes section that begins on page 11 for instructions.

- Grasping the sides of the cabinet, place the F12 on its side. Then, place the F12 in the upright position.

LOUDSPEAKER OVERVIEW

Figure 4: F12 Loudspeaker (Front View)



The numbers in Figure 4 (above) correspond with the numbered items in the Driver Complement section that begins in the next column.

DRIVER COMPLEMENT

The numbers in Figure 4 (left) correspond with the numbered items below.

1. Tweeter
2. Midrange
3. Woofers

CABINET

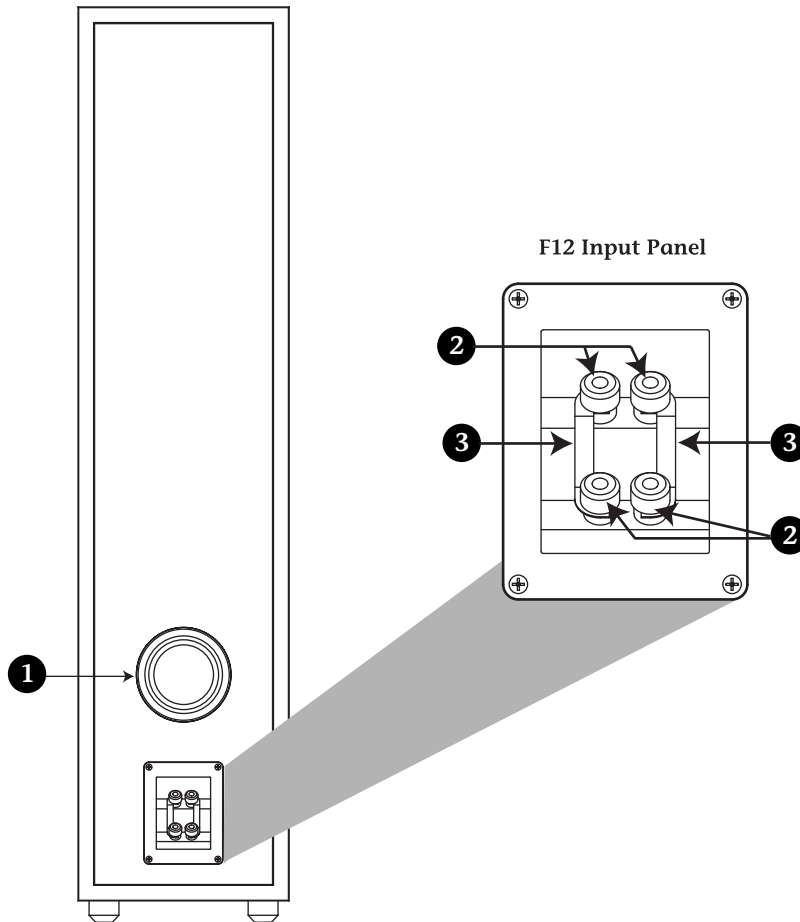
Reduces cabinet-induced colorations with MDF walls. Rubber feet/spikes are attached to the bottom of the cabinet for optimal stability, accommodating installations on tile, hardwood, and carpeted floors.

The cabinet's vinyl finish does not require routine maintenance. However, cabinet surfaces that have been marked with fingerprints, dust, or other dirt can be cleaned using a soft cloth.

CAUTION

To prevent cabinet damage, do not use a cloth made with steel wool or use metal polish to clean the cabinet. Do not use any cleaning products or polishes on the cabinet or grille.

Figure 5: F12 Loudspeaker (Rear View)



The numbers in Figure 5 (above) correspond with the numbered items in the Rear Panel section that begins below.

FILTER NETWORK

Optimize loudspeaker on-axis and off-axis response with high-order filters at 575Hz and 3.0kHz, helping to ensure smooth octave-to-octave balance and timbral accuracy. Removable shorting-straps and gold-plated binding posts accommodate single-wired, bi-wired and bi-amplified connections.

REAR PANEL

The numbers in Figure 5 (above) correspond with the numbered items beginning below.

1. Woofer Port

Enhances low-frequency extension. Computer-optimized internal and external flares minimize distortion resulting from air turbulence.

2. Input Connectors

Provide high and low-frequency input connections from the associated power amplifier(s). Two high-frequency and two low-frequency gold-plated binding posts are available. These inputs can be configured for single-wired, bi-wired or bi-amplified connections. Refer to the Making Connections section that begins on page 13 for additional information.

3. Shorting-Straps

Two gold-plated shorting-straps are installed for single-wired connections. The shorting-straps must be removed when the system is configured for bi-wired or bi-amplified connections. Refer to the Making Connections section beginning on page 13 for additional information.

INSTALLATION CONSIDERATIONS

Loudspeaker fidelity depends on the following three factors:

1. Loudspeaker accuracy
2. Loudspeaker placement
3. Listening room acoustics

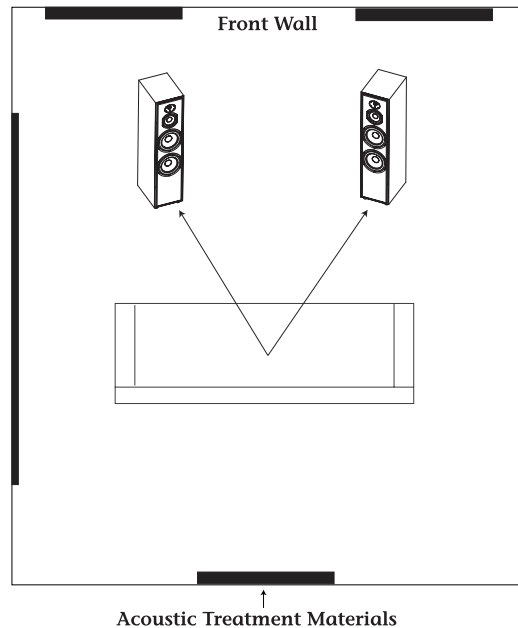
Advanced Revel design features allow the F12 to achieve exceptional acoustical precision. As a result, experimenting with loudspeaker placement and listening room acoustics have the most significant impact on the F12 loudspeaker's performance.

LOUDSPEAKER PLACEMENT

The bulleted items that begin below indicate important loudspeaker placement considerations for the F12.

- Remove all obstructions between the F12 and the primary listening position. For instance, a coffee table between the F12 and the primary listening position will degrade stereo imaging and timbre. Placing the F12s near large objects may also cause unwanted reflections.
- For the best stereo imaging, place the F12s at equal distances from the primary listening position and in symmetry with the room as shown in Figure 6 (right).
- For optimal stereo imaging and timbre, point the F12s almost directly toward the primary listening position as shown in Figure 6 (right). The toe-in angle can be reduced to widen the soundstage, even to the point at which the F12s are pointing straight forward.
- Move the F12s farther from the front and side listening room walls to improve stereo imaging and the sense of spaciousness in the listening space.

Figure 6: Loudspeaker Placement



- Move the F12s closer to the corners or walls of the listening room to increase bass response.

LISTENING ROOM ACOUSTICS

Listening rooms have a profound impact on sound quality, particularly at lower frequencies below 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, depending on two important factors that affect the loudspeaker and the listener.

Listening Room Acoustics *(continued)*

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

Unfortunately, there is no simple solution that considers both 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 still 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. If you have questions, contact an authorized Revel dealer for assistance.

Acoustic Treatment Materials

The F12 features high-order filters at 575Hz and 3.0kHz that optimize loudspeaker on-axis and off-axis response, minimizing degradations that occur in overly “live” rooms. Placing minimal acoustic treatment materials at 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 front wall, rear wall, and ceiling.

To determine reflection points using the mirror method:

1. Once the F12s have been placed, sit in the primary listening position.
2. Ask another person to slide a mirror along the listening room walls.
3. Note the locations at which the person sitting in the primary listening position can see either F12. Be sure to look for both F12s 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 to reduce degradation in overly “live” rooms. Carpeting the floor between the loudspeakers and the primary listening position and placing irregular surfaces such as bookcases at first reflection points will also help minimize strong reflections.

FEET AND OPTIONAL SPIKES

When shipped, rubber feet are attached to the bottom of the cabinet for optimal stability, accommodating installations on tile and hardwood floors. The F12 is shipped as shown on the left side of Figure 7 (next page).

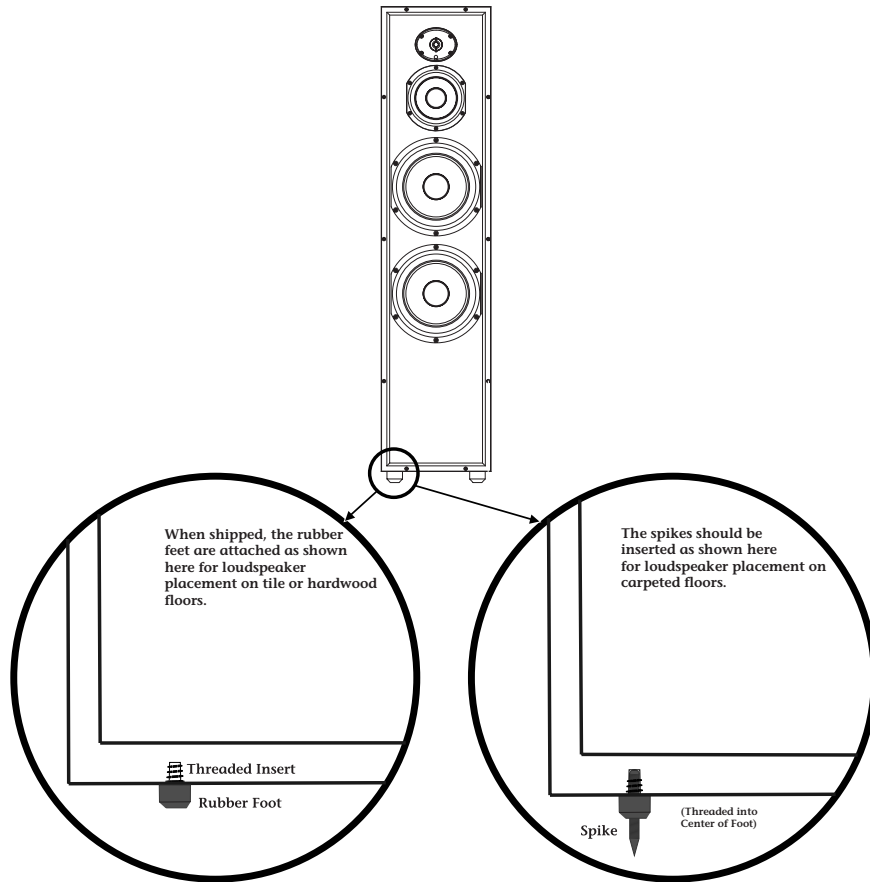
Note

When moving the F12, avoid dragging it across the floor, as this will damage the feet, the spikes, and/or the wood cabinet itself. Always lift the F12 and carry it to its new location

Four metal spikes are included for use when the loudspeaker is placed on carpeted floors.

Insert the spikes into the threaded inserts at the bottom of the feet as shown on the right side of Figure 7 (next page), so that the spikes protrude from the cabinet.

Figure 7: Adjustable Spike feet



To install the spikes:

1. Place the F12 on its side on a soft towel or carpeted floor.
2. Rotate the spike clockwise into the threaded insert in the center of a rubber foot, round end first, as shown on the right side of Figure 7 (above).
3. Repeat step 2 for the remaining three spikes. Make sure to thread each spike fully to achieve a level balance.
4. When all four spikes have been installed, stand the F12 in the upright position.
5. Repeat these steps to install the spikes on the other F12.

CAUTION

Floor-standing loudspeakers such as the F12 have a high center of gravity, which may cause them to fall if tipped or improperly positioned. To avoid this, anchor the loudspeaker to the floor and/or wall using the same procedures and hardware used to anchor bookcases, wall units, and other furniture. Harman Specialty Group assumes no responsibility for improper selection and installation of hardware or for any personal injuries or product damages resulting from improper installation or a fallen loudspeaker.

MAKING CONNECTIONS

The F12 features gold-plated binding posts and shorting-straps that allow it to be configured for single-wired, bi-wired or bi-amplified connections.

CAUTION

- **Never make or break connections unless all system components are powered off.**
 - **Remove the input panel shorting-straps identified in Figure 5 (page 9) before making bi-wired or bi-amplified connections. Failure to do so may cause damage to some power amplifiers.**
-

Before making connections, note the following:

- Make all connections observing the proper polarity, positive-to-positive (+) and negative-to-negative (-). Connections that do not observe the proper polarity will cause poor stereo imaging and diminished bass response.
- The standard connection method uses a single loudspeaker wire. The F12 is equipped with two pairs of input terminals to allow for bi-wiring or bi-amplification. While we do not endorse one particular connection method over another, these additional connection options are available if desired. The design of this loudspeaker is such that optimal performance can be attained using the standard connection method.
- Vertical bi-amplified connections must be made with identical power amplifiers. Horizontal bi-amplified connections can be made with identical or dissimilar power amplifiers with identical “gain factors.”
- When making bi-amplified connections, both power amplifiers must receive identical input signals from the associated pre-amplifier. A “Y” adaptor is required if the associated pre-amplifier does not offer two connectors per output

channel. Otherwise, each power amplifier can be connected to a separate connector for the same output channel of the pre-amplifier.

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

Maximum Wire Gauge

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

Note

High loop resistances that exceed 0.07ohms (for each wire run) will cause the filter network to mis-terminate, resulting in considerable degradation of sound quality.

- Review the owner’s manuals for associated audio components to determine their connection procedures.
- If you have questions about the suitability of associated power amplifier components, contact an authorized Revel dealer for information.

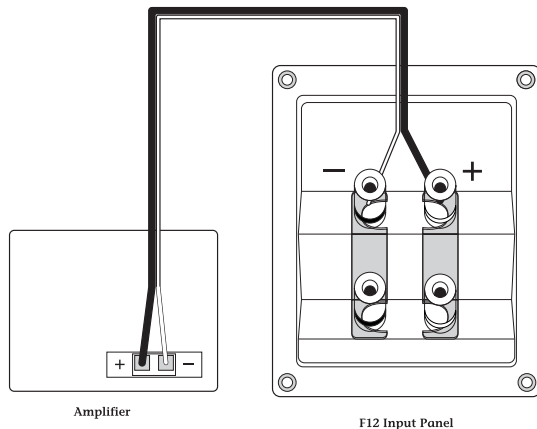
SINGLE-WIRED CONNECTIONS

Single-wired connections are made between one F12 input channel and one power amplifier output channel as shown in Figure 8 (below).

To make single-wired connections:

1. Leave the shorting-strips identified in Figure 5 (page 9) in place as shown in Figure 8 (below).
2. Connect one pair of loudspeaker wires to the desired F12 input connectors. Then, connect the same pair of loudspeaker wires to the desired power amplifier output connectors.
3. Repeat step 1 to connect the second F12 to a separate power amplifier.

Figure 8: Single-Wired Connections



Note

The actual F12 rear panel does not have labeled input connectors. The binding posts have red (positive) and black (negative) inserts to indicate polarity. In Figure 8 (above) the polarity symbols of the inputs are identified for clarity. In Figure 9 (right), Figure 10 (page 15) and Figure 11 (page 16), the F12 input connectors are labeled as either HF (High Frequency) or LF (Low Frequency) to illustrate proper connection procedures.

BI-WIRED CONNECTIONS

Bi-wired connections are made between both F12s and one power amplifier as shown in Figure 9 (below).

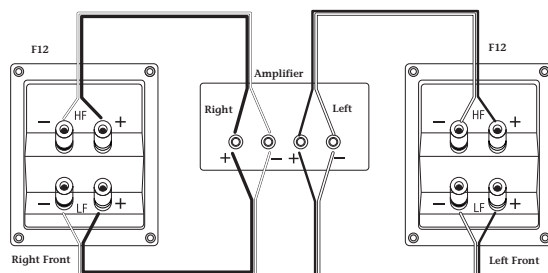
To make bi-wired connections:

1. Remove the shorting-strips identified in Figure 5 (page 9).
2. Connect one pair of loudspeaker wires to the F12 input connectors labeled HF (High Frequency) in Figure 9 (below). Then, connect the same pair of loudspeaker wires to the desired power amplifier outputs.
3. Connect another pair of loudspeaker wires to the F12 input connectors labeled LF (Low Frequency) in Figure 9 (below). Then, connect the same pair of loudspeaker wires to the same power amplifier outputs that were selected in step 2.
4. Repeat steps 2 and 3 to connect both input connectors on the second F12 to a separate power amplifier.

Note

For all bi-wiring and bi-amplifying connections, the wire gauge for all wires should be identical.

Figure 9: Bi-Wired Connections



VERTICAL BI-AMPLIFIED CONNECTIONS

Vertical bi-amplified connections are made between both F12s and two separate power amplifiers. Each F12 is connected to its own power amplifier, which sometimes increases sonic performance. These power amplifiers must be identical. Vertical bi-amplified connections are shown in Figure 10 (below).

Note

When making vertical bi-amplified connections, both power amplifiers must receive identical input signals from the associated pre-amplifier. A “Y” adaptor is required if the associated pre-amplifier does not offer two connectors per output channel. Otherwise, each power amplifier can be connected to a separate connector for the same output channel of the pre-amplifier.

To make vertical bi-amplified connections:

1. Remove the input panel shorting-straps identified in Figure 5 (page 9).

2. Connect one pair of loudspeaker wires to the F12 input connectors labeled HF (High Frequency) as shown in Figure 10 (below). Then, connect the same pair of loudspeaker wires to the desired power amplifier outputs.
3. Connect another pair of loudspeaker wires to the F12 input connectors labeled LF (Low Frequency) as shown in Figure 10 (below). Then, connect the same pair of loudspeaker wires to separate outputs on the same power amplifier.
4. Repeat steps 2 and 3 to connect the input connectors on the second F12 to another, identical power amplifier.

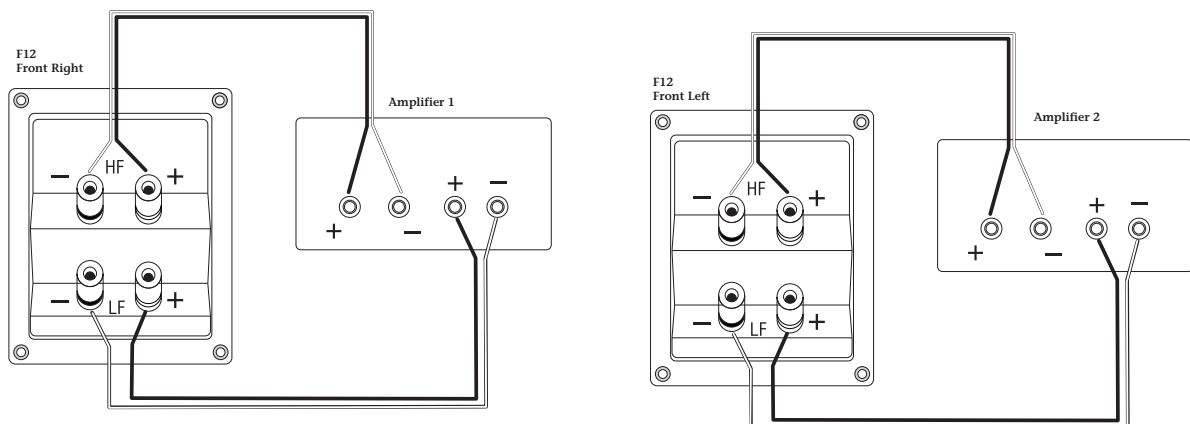
Note

Vertical bi-amplified connections must be made using two identical power amplifiers.

CAUTION

- Failure to remove the shorting straps may damage the associated power amplifiers.
-

Figure 10: Vertical Bi-Amplified Connections



Vertical
bi-amplified connections require
IDENTICAL power
amplifiers!

HORIZONTAL BI-AMPLIFIED CONNECTIONS

Horizontal bi-amplified connections are also made between both F12s and two separate power amplifiers. The F12 input connectors labeled HF (High Frequency) are connected to one power amplifier, while the F12 input connectors labeled LF (Low Frequency) are connected to another power amplifier, which sometimes improves sonic performance. These power amplifiers can be identical or dissimilar, but must have identical “gain factors.” If the gain factors are dissimilar, a means of adjusting the input level of at least one power amplifier is required. Horizontal bi-amplified connections are shown in Figure 11 (below).

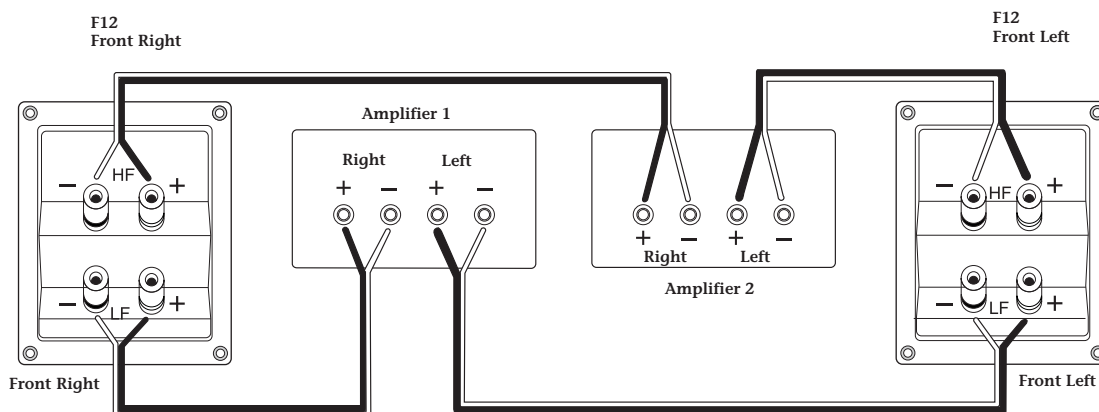
Note

When making horizontal bi-amplified connections, both power amplifiers must receive identical input signals from the associated pre-amplifier. A “Y” adaptor is required if the associated pre-amplifier does not offer two connectors per output channel. Otherwise, each power amplifier can be connected to a separate connector for the same output channel of the pre-amplifier.

To make horizontal bi-amplified connections:

1. Remove the input panel shorting-straps identified in Figure 5 (page 9).
2. Connect one pair of loudspeaker wires to the F12 input connectors labeled HF (High Frequency) in Figure 11 (below). Then, connect the same pair of loudspeaker wires to the desired power amplifier outputs.
3. Connect another pair of loudspeaker wires to the F12 input connectors labeled LF (Low Frequency) as shown in Figure 11 (below). Then, connect the same pair of loudspeaker wires to the desired outputs on another power amplifier.
4. Repeat step 2 to connect the input connectors labeled HF (High Frequency) as shown in Figure 11 (below) on the second F12 to the same power amplifier that was selected in step 2.

Figure 11: Horizontal Bi-Amplified Connections



Note

Horizontal bi-amplified connections can be made using identical or dissimilar power amplifiers. However, these power amplifiers must have identical “gain factors.” If the gain factors are dissimilar, a means of adjusting the input level of at least one power amplifier is required. Contact an authorized Revel dealer for assistance.

5. Repeat step 3 to connect the input connectors labeled LF (Low Frequency) on the second F12 to the same power amplifier that was selected in step 3.

CAUTION

- **Failure to remove the shorting straps may damage the associated power amplifiers.**
-

OPTIMIZING PERFORMANCE

To optimize the F12 for best performance:

1. Make connections with power amplifier(s). See the Making Connections section beginning on page 13.
2. Begin playback of a familiar music or film source.
 - It is recommended to listen to well-recorded dialogue from more than one film source, as sound quality varies from film to film.
3. Listen from the primary listening position, increasing volume to a comfortable level.

4. Experiment with the F12 loudspeaker's placement to achieve the best overall tonal balance, image precision, and sense of spaciousness in the listening room. Refer to the Loudspeaker Placement section that begins on page 10 for additional information about loudspeaker placement.
5. Repeat these steps to optimize performance of the second F12.

LOUDSPEAKER VOLUME LEVELS

High-order filters include steep cut-offs to reduce potential damage from “out-of-band” frequencies. Combined with carefully designed transducers and filter networks, this approach helps the F12 to maintain its performance 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 distort or strain sound.

CAUTION

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

OBTAINING SERVICE

To obtain warranty or non-warranty service, contact your authorized Revel dealer. Refer to the included Revel Warranty Card for warranty information.

SPECIFICATIONS

Specification	Value	Definition
Sensitivity	90.5dB SPL with 2.83V @ 1m (2 pi anechoic)	Indicates the amount of power the associated power amplifier must deliver to drive the loudspeaker at reasonable volume levels. Conservatively-rated specifications indicate moderate sensitivity, meaning that a massive power amplifier is not required to drive Revel loudspeakers to reasonable volume levels in large listening spaces.
Impedance	6Ω (nominal), 3.7Ω (minimum @ 188Hz)	Indicates whether the loudspeaker presents a “difficult” or “easy” load on the associated power amplifier. Combined with moderate phase angles, a minimal impedance specification of 3.7Ω allows a reasonably designed power amplifier to drive Revel loudspeakers.
Filter Network	Three-way, high-order @ 575Hz and 3.0kHz	Indicates the acoustical characteristics of the filter network. Steep filters indicate an optimized filter network that produces minimal acoustical interference, low distortion, and expansive dynamic range.
In-Room Response	±1.5dB from 55Hz to 15kHz	Indicates sound quality in context with other specifications. A breakthrough measurement, this specification closely correlates to sound quality in a single curve – a long-standing goal of loudspeaker engineers. In-room response is measured through the use of large anechoic chambers. The speaker’s response is measured every 10 degrees horizontally and vertically for a total of 72 response measurements. The in-room response curve is a prediction of how the speaker would measure in a typical room. Research and observation reveals that ubiquitous “on-axis” response curves cannot distinguish between two loudspeakers with radically different sound qualities.
Low-Frequency Extension	-10dB @ 28Hz, -6dB @ 40Hz, -3dB @ 52Hz	Indicates the low-frequency response of the loudspeaker. Studies have shown that the -10dB specification best correlates to controlled listening tests. At low frequencies, most loudspeaker and listening room combinations demonstrate significant “room gain,” which produces an increase in levels as frequencies decrease. Unlike the -3dB specification, the -10dB specification reflects the steepness of low-frequency roll-offs.
Height	42.28 inches (107.39cm) (including feet)	
Depth	14.27 inches (36.25cm) (including grille)	
Width	9.75 inches (24.77cm)	
Weight	62.60 pounds (28.39kg) (including grille)	

Specifications are subject to change without notice.



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