Revel[®] Performa[™] BI5a Subwoofer

Owner's Manual



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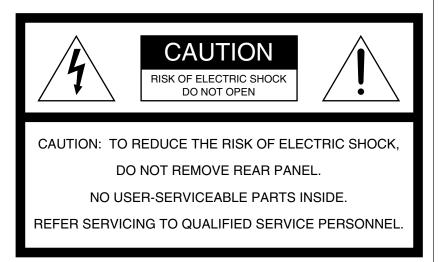
Part No. 352990-001 | Rev A | 01/04

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WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE.





The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance instructions in the literature accompanying the product.



IMPORTANT SAFETY INSTRUCTIONS

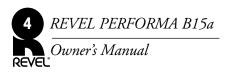
Please read all instructions carefully and completely before operating your Revel Performa B15a subwoofer.

- 1. Always disconnect ac power before connecting or disconnecting any cables, or when cleaning any component.
- 2. This product uses a three-conductor power cord, which includes an earth-ground connection. To prevent shock hazard, always connect it directly to a grounded outlet.
- 3. Never use any ac extension cord with this product.
- 4. Never use flammable or combustible chemicals for cleaning audio components.
- 5. Never remove the rear panel. No user-serviceable parts inside.
- 6. Never pour or spill liquids directly onto this unit.
- 7. Never block air flow through ventilation slots or heatsinks.
- 8. Never bypass any fuse.
- 9. Never replace any fuse with a value or type other than specified.
- 10. Never attempt to repair this product yourself. If a problem occurs, contact your Revel retailer.
- 11. Never expose this unit to extremely high or low temperatures.
- 12. Never operate this product in an explosive atmosphere.
- 13. Always keep electrical equipment out of the reach of children.



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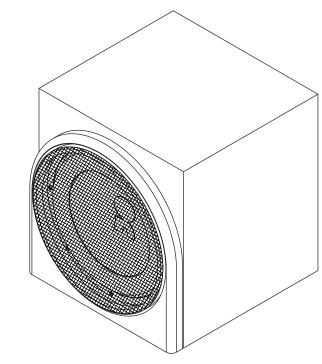
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INTRODUCTION

The Revel Performa B15a powered subwoofer system combines an outstanding 15-inch subwoofer with a 1,000-watt (rms) amplifier, capable of 1,400-watt peaks, for tremendous bass output. Moreover, the B15a subwoofer's stylistic form and compact size provide a surprisingly prodigious output and unprecedented tonal accuracy, even in the deepest octaves. Impressive features include a built-in 3-band parametric equalizer and adjustable crossover so you can customize and adapt this system in a wide variety of applications.

This tremendous flexibility results in superb integration with any Revel loudspeakers, or other manufacturers' speakers.



ABOUT THE MANUAL AND WARRANTY

To begin enjoying the Revel Performa B15a subwoofer, first read and then perform the instructions in this owner's manual. Maximum performance is dependent 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.

The Revel Performa B15a subwoofer is covered by a limited warranty, so save the bill of sale to protect your purchase and aid in any service-related questions.

Figure 1. The Revel Performa B15a subwoofer.

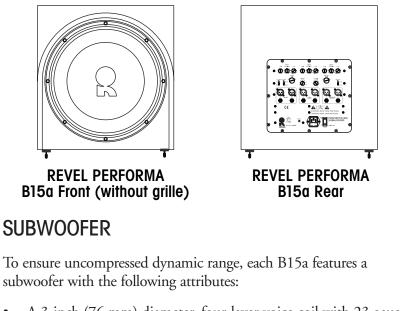






DESCRIPTION

The Revel Performa B15a powered subwoofer system features a unique transducer that combines brute-force capabilities unprecedented in home loudspeakers with a new level of low frequency nuance and refinement. Combined with the huge internal power capability, the result is a new standard of superb bass performance and adaptability for home entertainment systems.



- A 3-inch (76 mm) diameter, four-layer voice coil with 23 gauge copper wire is wound on a dual-laminated Kapton former for extraordinary power handling and freedom from compression.
- Extremely long-throw voice coil is capable of 2.5 inches (64 mm) of peak-to-peak linear excursion, and 3 inches (76 mm) of maximum excursion for uncompressed reproduction of deep sustained bass notes.
- A massive, 130-ounce (3.7 kg) magnet system produces 1.4 tesla of flux in the gap.
- Ultra-rigid Kevlar[®] pulp and alloy composite cone with an inverted metal dome operate as a perfect piston under all reproduction conditions.
- Modulation rings and a machined "T" pole-piece for extremely low distortion.
- The heavy wall, cast aluminum frame maintains alignment between the magnet structure and the moving elements, while offering excellent rigidity to eliminate basket resonances.



Figure 2. Transducer and connection locations for the Revel Performa B15a subwoofer.

ELECTRONICS

Each Revel Performa B15a contains an electronics section with the following attributes:

- An extremely low-distortion, 1,000-watt (rms) amplifier with 1,400-watt burst capability produces peak bass output up to 126dB at 30Hz in an average-sized listening room.
- Inaudible protection circuit to guard against thermal overload.
- Three independent parametric equalizers with variable frequency, bandwidth, and level controls allow you to precisely tailor the room response and tame unwieldy acoustic anomalies.
- 2-way crossover with variable frequency and phase controls and selectable slopes allow ideal response matching with other audio system components.

NOTE: For details on controls and connections, see "Rear Panel Layout" on page 13.

CABINET

The Revel Performa B15a cabinet is constructed of 1-inch (25 mm) thick MDF wall, optimally designed and internally braced with the aid of laser interferometry, for reduced cabinet-induced colorations. Adjustable spike footing is attached to the bottom of the cabinet for optimal stability, accommodating installations on tile, hardwood, and carpeted floors. Refer to the Adjustable Spike Footing section on page 9.

The cabinet's wood veneer 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 and a high-quality furniture polish. If a higher-gloss finish is desired, a high-quality wax can also be used.

To clean the cabinet:

- 1. Apply a high-quality furniture polish to a soft cloth.
- 2. Use the cloth to lightly wipe the cabinet surface.

To clean the grille:

1. Vacuum using a soft bristled brush vacuum attachment.



UNPACKING

The B15a 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.

Do not attempt to lift or move the B15a alone. Proper lifting requires at least two strong people. When lifting the B15a, stand as straight as possible using the leg muscles to lift. Do not attempt to lift the B15a while bending at the waist. When moving the B15a, carefully 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 identified in Figure 4 at the bottom of the next page for possible future shipping needs. Refer to the Obtaining Service section on page 26 for additional information.

- 1. Set the packaged Revel Performa B15a subwoofer on a soft towel or carpeted surface in the upright position. Open the top flaps as shown in Step 1 of Figure 3 (below). Set aside the power cord and other items located on the top pad.
- 2. With the top flaps folded back, roll the carton over onto its exposed top pad as shown in Step 2 of Figure 3 (below).
- 3. Lift the packing carton off the subwoofer as shown in Step 3 of Figure 3 (below). Use caution to avoid damaging the contents.

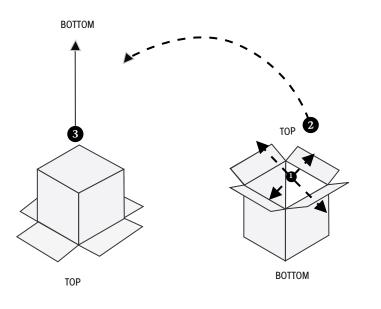
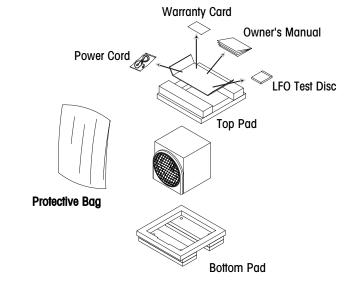






Figure 3. The Revel Performa B15a subwoofer packing carton.

Figure 4. The Revel Performa B15a subwoofer with its inner packing materials.



- Place the B15a in the upright position without allowing the protective bag identified in Figure 4 (above). to become "stuck" under the spike footing.
- 5. When the B15a is in the upright position, remove the protective bag.

Keep all packing materials for future shipping. In the unlikely event a product will need repair, it is strongly recommended to package the 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 Obtaining Service on page 26 for additional details.

ADJUSTABLE SPIKE FOOTING

When shipped, adjustable spike footing is attached to the bottom of the cabinet for optimal stability, accommodating installations on tile, hardwood, and carpeted floors. The B15a is shipped with spike footing attached as shown on the left side of Figure 5 at the top of the next page, with the round end protruding from the cabinet. The protective cap is placed over the round end to protect tile and hardwood floors.

NOTE: When moving the B15a, do not drag it across the floor.

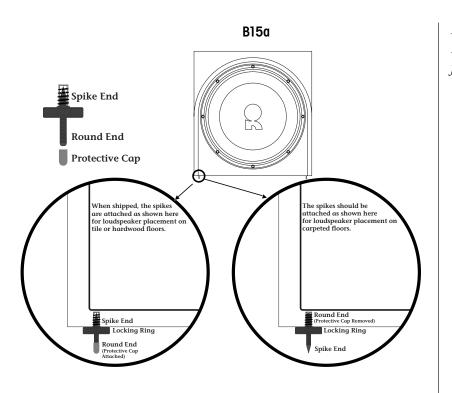
If the B15a is placed on a carpeted floor, the spike footing should be adjusted as shown on the right side of Figure 5 (next page), with the spike end protruding from the cabinet. If needed, follow the instructions that begin on the next page to adjust the spike footing.

Continued on the next page...

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REVEL PERFORMA B15a





To adjust the spike footing:

- 1. Place the B15a on its side on a soft towel or carpeted floor.
- 2. Remove the protective cap from the round end of the spike. Save it for possible future use.
- 3. Rotate the locking ring counterclockwise to detach it from the spike. Save it for use in step 6.
- 4. Rotate the spike counterclockwise to remove it from the cabinet.
- 5. Rotate the spike clockwise into the cabinet, round end first, as shown on the right side of Figure 5 (above).
- 6. Reattach the locking ring, rotating it clockwise to firmly secure the spike to the cabinet.
- 7. Repeat steps 2 through 6 for the remaining three spikes.
- 8. When all four spikes have been reversed, stand the B15a in the upright position. If needed, repeat steps 1 and 6 to achieve a level balance.

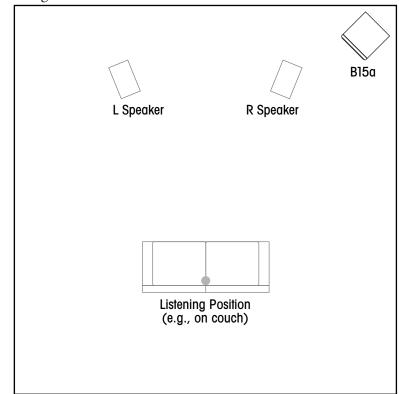


Figure 5. The Revel Performa B15a subwoofer adjustable spike footing.

PLACEMENT

Due to the long wavelengths being reproduced, low-frequency bass response from the Revel Performa B15a subwoofer is non-directional. However, optimum results can be obtained by making in-room measurements to determine the best locations for all of the speakers in your specific listening room (see *System Optimization* on page 21). Consult an authorized Revel dealer for assistance with placement and try the following ideas to enhance performance:

• Start with a corner placement for the B15a subwoofer. This will provide the best results in most rooms, especially in conjunction with the B15a's unique 3-band parametric equalizer. If you cannot measure the response (in order to find the best location), place the subwoofer in a front corner, as shown in Figure 6.



• For very large rooms (e.g., greater than around 4,000 to 5,000 cubic feet or 113 to 142 cubic meters), consider adding another Revel Performa B15a subwoofer for more bass output Consult an authorized Revel dealer for specific recommendations on your audio system.

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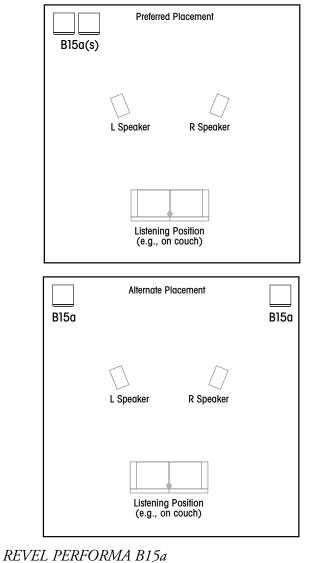
Figure 6. Typical placement of a Revel Performa B15a subwoofer in an average-sized room.

PLACEMENT (Continued)

However, if the room is not symmetrical, and you cannot make high-resolution measurements, only place the subwoofers together in one front corner.

NOTE: Using high-resolution measurements, low frequency performance is often dramatically improved by placing two (or more) subwoofers in carefully chosen asymmetrical locations.

- If you plan to use two B15a subwoofers and you cannot make high-resolution measurements (see System Optimization on page 21) place both subwoofers together in a front corner, side-by-side or stacked, or place a subwoofer in each of the front corners. (See Figure 7 and Figure 8 below).
- For best results, place the B15a subwoofer near solid walls to reinforce bass response, and avoid windows which can rattle and transmit sound to the outside.



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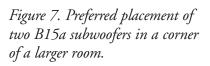
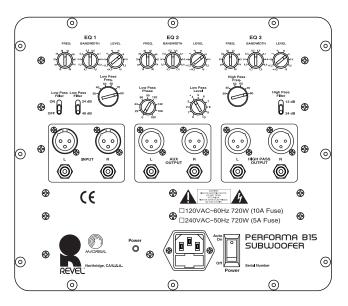


Figure 8. Alternate placement of two B15as in opposite corners. If the room is symmetrical and the L/R speakers and listening position are also symmetrical within the room, the B15a subwoofers can be placed in opposite corners

Figure 9. The B15a's rear panel layout shows locations of controls, as well as audio and power connectors.

REAR PANEL LAYOUT



- EQ1-EQ3 Controls: Three parametric equalizers includes variable controls for FREQ., BANDWIDTH, and LEVEL. Use these controls to modify the frequency response at three points, adjustable from 18 to 80Hz, across a bandwidth from 0.1 to 1.0 octaves, with level boost up to 6dB or cut down to -14.5dB.
- 2 Low-Pass/High-Pass Filters: The low-pass filter has an ON/OFF and 24/48dB slope switches, and variable controls for frequency, phase, and level. The high-pass filter is always on and has a variable frequency control and 12/24dB slope switch. Use the controls to precisely set a two-way crossover point from 30 to 80Hz, with symmetrical 24dB slopes or asymmetrical 24/12 or 48/12 dB slopes, and low-pass phase shift from 0 to 180 degrees.
- **3** INPUT: Use stereo XLR (balanced) connectors or RCA (unbalanced) jacks to connect from preamplifier outputs, or front outputs of a multi-channel decoder. Both inputs are 0dBv (nominal)/+20dBv (maximum). The XLR input is pin 2 high.
- 4 AUX OUTPUT: Use stereo XLR (balanced) connectors or RCA (unbalanced) jacks to loop input audio signals to additional REVEL PERFORMA B15as (if present). Both outputs are 0 dBv (nominal)/+20 dBv (maximum). The XLR input is pin 2 high.
- HIGH PASS OUTPUT: Use stereo XLR (balanced) connectors or RCA (unbalanced) jacks for (high-pass) connection to the main amplifier's inputs. Both outputs are 0dBv (nominal)/+20dBv (maximum). The XLR input is pin 2 high.

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REAR PANEL LAYOUT (Continued)

- **6** Fused power connector for (enclosed) detachable IEC power cord. If needed, replace the fuse with same type, as follows:
 - For 120V units, use a 10A fast-blow fuse.
 - For 220V units, use a 5A fast-blow fuse.
- **7** POWER Switch: Press OFF to completely turn off power to the B15a subwoofer. Press AUTO ON to set the subwoofer to enter and exit standby mode automatically. Internal sense circuits will continually detect the presence of audio signals and will turn on the subwoofer when needed. After some time, when audio is no longer present, the same circuits will instruct the subwoofer to enter the standby mode to conserve energy.

CONNECTIONS

Audio interconnection to your main amplifier or home theater controller can be any combination of unbalanced or balanced terminations, with full balanced connections offering the best noise rejection.

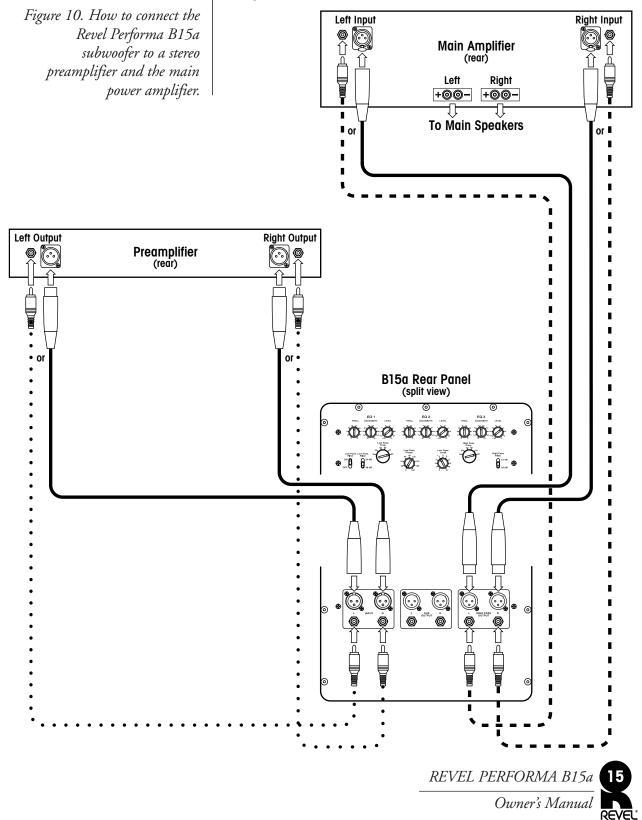
Please read the following six applications (starting on the next page) before proceeding with the actual connections. For clarity, power connections are not shown. Also, be sure to observe the following:

- 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.



REVEL PERFORMA B15a SUBWOOFER AND A STEREO POWER AMPLIFIER

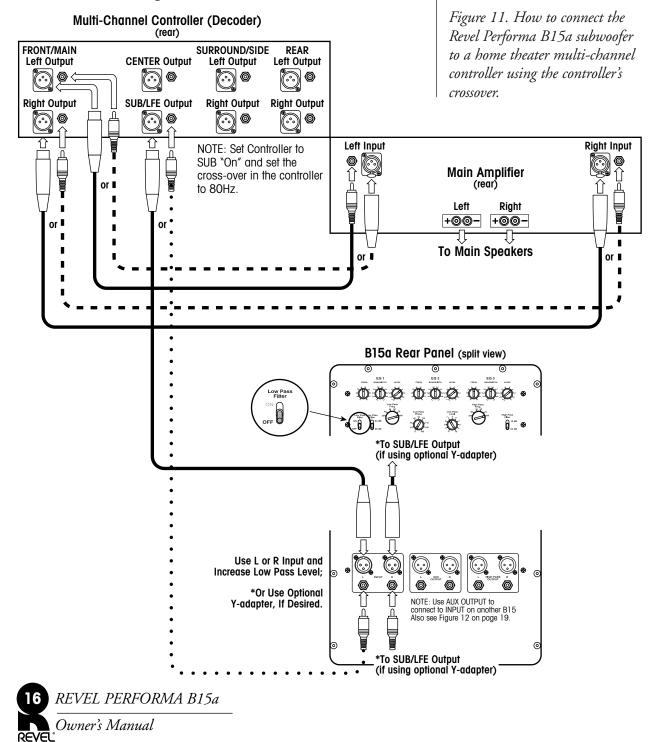
A common application is interconnecting the B15a subwoofer between a stereo preamplifier and the main power amplifier, as shown in Figure 10.



CONNECTIONS (Continued)

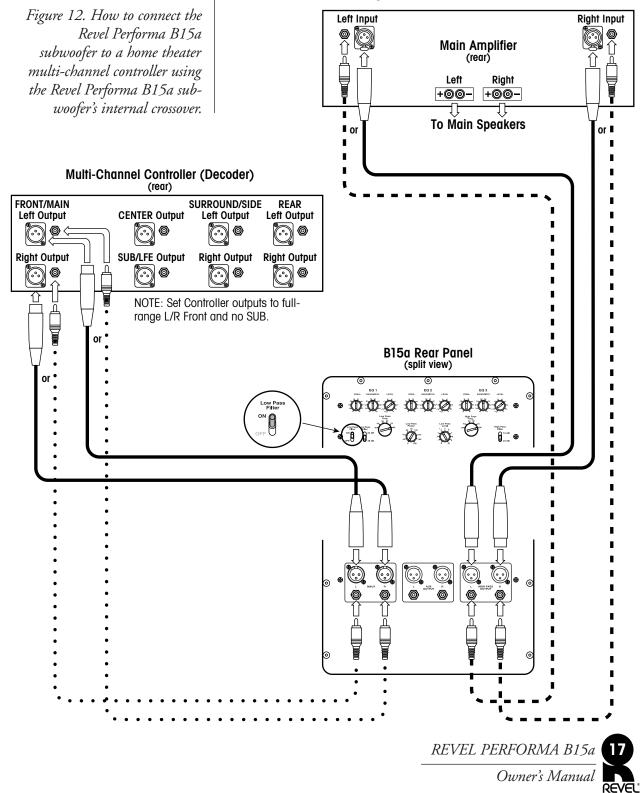
REVEL PERFORMA B15a SUBWOOFER AND A MULTI-CHANNEL CONTROLLER USING THE CONTROLLER'S CROSSOVER

In this application, the B15a subwoofer's internal low-pass filter is bypassed and the multi-channel controller's crossover is used instead, as shown in Figure 11.



REVEL PERFORMA B15a SUBWOOFER AND A MULTI-CHANNEL CONTROLLER USING THE B15a's INTERNAL CROSSOVER

In this application, the Revel Performa B15a subwoofer's internal crossover is used to interconnect a home theater multi-channel controller, as shown in Figure 12.

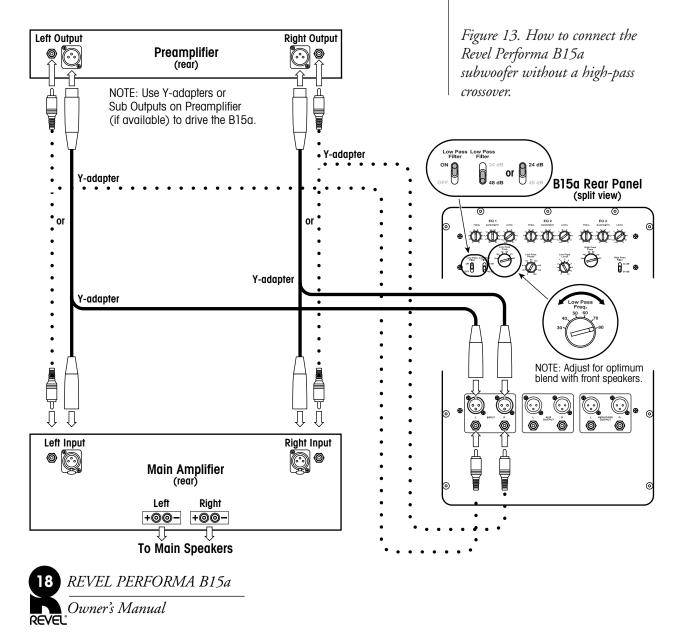


CONNECTIONS (Continued)

REVEL PERFORMA B15a SUBWOOFER WITHOUT HIGH-PASS CROSSOVER

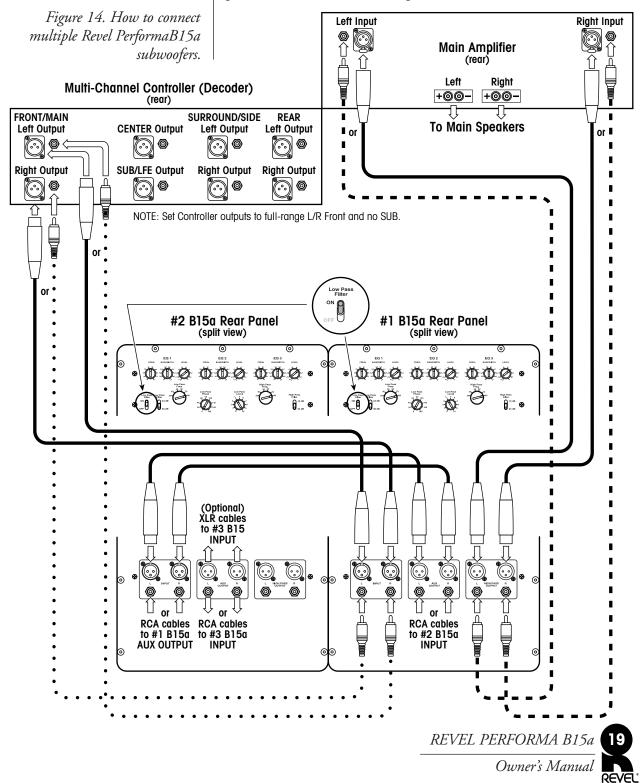
Revel strongly recommends using both a low-pass and high-pass crossover with any "main" left and right loudspeakers of any size. The use of a high-pass crossover greatly reduces distortion, increases dynamic range, and optimizes the transition from the B15a subwoofer to the main loudspeakers. If needed, your Revel dealer can help with the proper crossover settings.

If the B15a subwoofer will be used without a high-pass crossover (see Figure 13), contact your Revel dealer for help in setting the crossover controls so the main speakers and the B15a subwoofer(s) will produce an optimum combined response.



REVEL PERFORMA B15a SUBWOOFERS IN MULTIPLE OPERATION

Multiple B15a subwoofers (using their own crossovers) can be connected in a "daisy-chain" with a multi-channel controller and power amplifier, as shown in Figure 14. If all subwoofers are placed next to each other or in symmetrical room locations, set all level and phase controls for the same respective values.

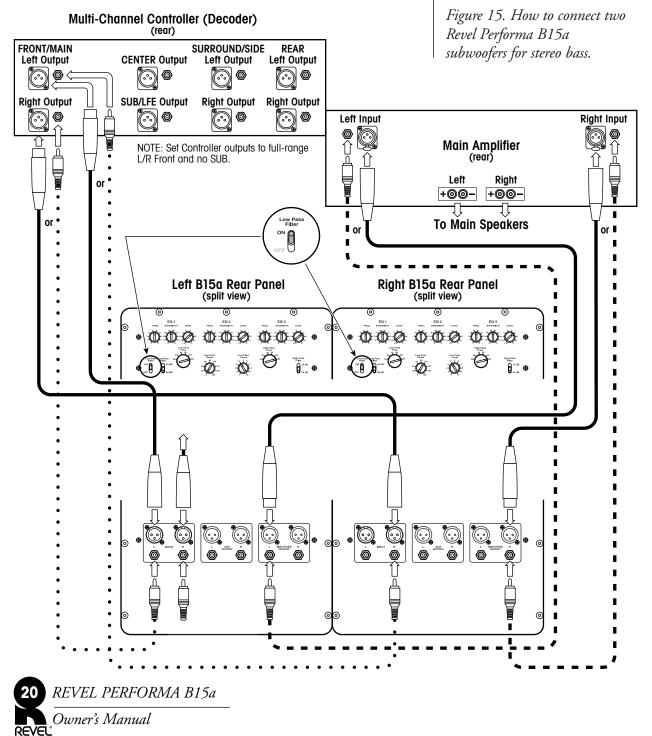


CONNECTIONS (Continued)

REVEL PERFORMA B15a SUBWOOFERS AND STEREO BASS

Two B15a subwoofers can be interconnected with a preamplifier and power amplifier for stereo bass (see Figure 15).

NOTE: Although stereo bass requires symmetrical placement, asymmetrical placement also has advantages (see "Placement" on page 11).



IMPORTANT

SYSTEM OPTIMIZATION

The Revel Performa B15a subwoofer includes a built-in 3-band parametric equalizer for use with sound measurement equipment having at least 1/10 -octave resolution at 20Hz. Do not use crude measurement devices, such as real-time or 1/3 -octave analyzers, to measure low frequency performance in a listening room. Room boundaries often cause modes or standing waves with very narrowband peaks and dips that are beyond this equipment's measurement-resolution capability. Adjusting the parametric equalizer based on this data can result in very misleading results and degraded sound quality.

PLACEMENT OVERVIEW

Below 300Hz, the relationship of loudspeaker placement and listener location has a profound impact on the way sound is reproduced. All rooms have "standing waves," where certain frequencies are emphasized or diminished. Their complex patterns, along with the effect of surfaces near the loudspeakers or listeners, can combine to introduce tremendous sound coloration at low frequencies.

Revel's unique parametric equalization system offers a powerful tool to help compensate for these effects. However, no electronic system alone can fully compensate for the dramatic effects of room acoustics. Every room will have locations where "nulls" at specific frequencies occur. These cancellations of the sound are like "black holes," which no amount of equalization can fill.

The best results are always achieved through careful placement of both the loudspeakers and the listening position. Optimum placement can be determined through the use of computer modeling programs, or by trial-and-error measurements. If at all possible, find the best loudspeaker and listener locations before proceeding with adjustments of the Revel parametric equalizer.

To help determine good locations for the subwoofer(s) and the listener(s), we recommend making high-resolution in-room response measurements using the REVEL LOW FREQUENCY OPTIMIZER (LFO). This system provides the high-resolution data needed for useful low-frequency measurements. Traditional real-time analyzers (RTAs) or 1/3-octave measurements have inadequate resolution, often resulting in misleading data and degraded sound quality. Simply use the REVEL LFO test signals disc and the LOW FREQUENCY OPTIMIZER will plot the results of the measurement at each speaker or listener (microphone) location.

Continued on the next page...

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SYSTEM OPTIMIZATION PLACEMENT OVERVIEW (Continued)

The REVEL LOW FREQUENCY OPTIMIZER provides a convenient way to save each set of measurements and to make notes so that the effect of various locations can be compared.

Other sound measurement systems may also be used to help determine speaker and listener locations, as long as the selected equipment provides at least $\frac{1}{10}$ -octave resolution at 20Hz.

GENERAL PLACEMENT GUIDELINES

- As a general rule, placing a subwoofer in the corner of a room will result in the maximum number of "peaks" and minimum number of "dips" in the response. Most dips cannot be equalized, but they can be minimized through optimum placement of subwoofer(s) and the listening position. The resulting peaks can be corrected through the use of our powerful built-in parametric equalization.
- If you plan to use more than one subwoofer, try placing them both in one corner or use a modeling program or trial-anderror measurements to determine locations that will further minimize response dips due to standing wave cancellation.
- Placing other system loudspeakers in the listening room will also affect the way sound (below 300Hz) is reproduced. Just as is the case with subwoofers, use a modeling program or trial-and-error measurements to determine the best locations
- Since the listening and loudspeaker locations are equally important, the trial-and-error process can be time-consuming. However, the sonic rewards are great. Remember that peaks (below the subwoofer crossover frequency) can be eliminated by the proper adjustment of the B15a subwoofer EQ controls, but most dips cannot be corrected. Therefore, the objective is to find the best locations that result in the minimum number and severity of dips.



SOUND MEASUREMENT GUIDELINES

- If you are using a modeling program, begin by placing the microphone at ear height at the recommended listening position, with the subwoofer placed at the calculated position. Choose a location that has been used for listening in the past. Otherwise, select a location that is most desirable for aesthetic or other considerations. If the locations are to be determined by trial-and-error, begin with one Revel Performa B15a subwoofer in a front corner of the room (nearest the main loudspeakers).
- As a starting point, avoid selecting listening locations that are near the middle, or at one-quarter or three-quarters of the room's length (front-to-back), where large cancellation dips often occur. If the installation allows, choose the prime listening position so it is away from the exact center of the room's width. This will generally result in smoother low frequency sound.
- Use care when locating the listening position away from the center of the room's width, as imaging characteristics may be degraded. Off-center locations will usually work only when the side walls are acoustically treated with absorbent materials, or if the room is exceptionally wide.
- For best results, use a camera tripod with a Sound Level Meter, or a microphone stand for the microphone.





TROUBLESHOOTING

If the Revel Performa B15a subwoofer sounds distorted, stops playing, or otherwise seems to be malfunctioning, first determine whether the problem is in the subwoofer, the wiring, and/or other audio components. If the problem also affects the main speakers, the cause is most likely in your electronics. If it is only noticed in the subwoofer, make sure that all connecting cables are correct and in proper working condition. Make sure the subwoofer is plugged in and turned on.

If everything seems to be in good working order and the subwoofer still malfunctions, contact an authorized Revel dealer for assistance (see *Obtaining Service* on the next page).

Do not attempt to repair the Revel Performa B15a subwoofer yourself.





SPECIFICATIONS

Revel utilizes proprietary measurement methods in the design and specification of our subwoofers. 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. Revel Performa B15a specifications for the subwoofer and amplifier are as follows:

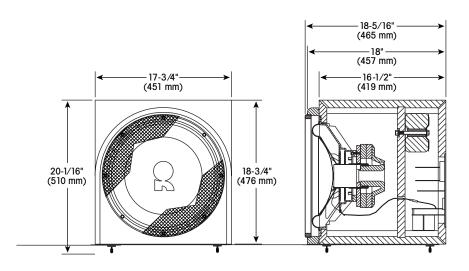
SUBWOOFER

Low Frequency Extension:	-3 dB @ 18 Hz (up to full-rated power)
Frequency Response:	20 Hz to $f_c \pm 0.5$ dB, - 3 dB @ 18 Hz
True Linear Volume Displacement:	275 in ³
Overall Dimensions:	20 ¼16"H x 17¾"W x 18 ½16"D 510 mm H x 451 mm W x 465 mm D (includes grille and spikes – see Figure 16 below)

110 lb (49.9 kg) net, including carton.

Weight:

Figure 16. Overall dimensions for the Revel Performa B15a powered subwoofer.





AMPLIFIER

Output Power:	1,000 W _{rms} , 1,400 W _{peak}
Equalization – Type:	Three independent parametric equalizers
Frequency:	Continuously variable from 18 to 80 Hz
Bandwidth:	Continuously variable from 0.1 to 1 Octave
Level:	Continuously variable from -14.5 to +6 dB
Low-Pass Filter – Type:	Low pass with ON/OFF switch
Slope:	Selectable 24 or 48 dB per octave
Frequency:	Selectable at 30, 40, 50, 60, 70, or 80 Hz
Phase:	Continuously variable from 0 to 180°
Level:	Continuously variable
High-Pass Filter –	
Туре:	High pass, always on
Slope:	Selectable 12 or 24 dB per octave

OBTAINING SERVICE

Before returning a product for warranty or non-warranty service, contact Harman Specialty Group Customer Support to determine the extent of the problem and to obtain a Return Material Authorization (RMA) number. No products will be accepted without an RMA number issued from Harman Specialty Group.

If a Revel product must be returned for repair, Harman Specialty Group will assume no responsibility for the product during shipment from the customer to Harman Specialty Group, whether the product is or is not covered under warranty.

All returns must be:

- well-packaged using the original packing materials (if possible)
- properly insured and consigned
- pre-paid to a reliable shipping agent

Continued on the next page ...



The following information must be included when a product is returned for service:

- name
- company name
- street address, city, state, and zip code
- telephone number, including area code and country code (if applicable)
- product serial number
- a detailed description of the problem
- the preferred method of return shipment
- RMA number clearly marked on both the inside and outside of the package

Do not return accessories such as power cord and owner's manuals unless instructed to do so.

To contact Harman Specialty Group Customer Support:

Telephone:	781-280-0300
Service Fax:	781-280-0499
Sales Fax:	781-280-0495

www.revelspeakers.com





3 Oak Park, Bedford, MA, 01730-1413 USA | Telephone: 781-280-0300 | Fax: 781-280-0490 | www.revelspeakers.com **Customer Support:** Telephone: 781-280-0300 | Sales Fax: 781-280-0495 | Service Fax: 781-280-0499 Please contact Customer Support for information about product shipments.

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