



Reference Series Dual 12" Subwoofer System

Model: RS1202



User Manual

Thank You...for purchasing the Dayton Audio RS1202 Subwoofer System. It will fill almost any home with the deepest, loudest, lowest distortion sub-bass imaginable. The opposed side-firing design ensures the 12" Reference Series drivers' prodigious output excites your senses and not the enclosure's structure. The RS1202 powered subwoofer is fully equipped with features that represent the kind of quality and performance that customers have come to expect from Dayton Audio, like:

- 2.1 cu. ft. true acoustic suspension cabinet
- Opposed side-firing drivers cancel cabinet vibration
- Heavily braced 1" and 2" MDF cabinet wall construction
- Dual high-Xmax Dayton Audio RSS315HFA-8 12" drivers
- Patented, ultra-efficient 950 watt RMS Class AB/Class G amplifier
- Auto on/off with standby mode
- User-adjustable gain and crossover frequency controls
- Parametric equalizer for optimum response and maximum integration circuit eliminates harsh overload conditions and protects drivers
- Low distortion, superior definition, and bone-rattling output—flat response to 27 Hz
- Gray vinyl matches modern A/V furniture and accessories

The RS1202 is available as a kit or fully assembled. In kit form, it can be assembled in less than 1 hour. The kit is fun and easy to assemble and will provide the bass you've been missing in your home theater or sound system.

Note: If you purchased the system pre-assembled please skip to the "Optimum System Equalization" section.

Parts Inventory

Your Reference Series RS1202 Subwoofer System should include the following:

- 1 Subwoofer cabinet
- 2 RSS315HFA-8 12" drivers
- 1 Subwoofer amplifier
- 2 1-lb. bags Acousta-stuf polyfill
- Cap head driver mounting screws
- Amplifier mounting screws (In amplifier box)
- 14 AWG wire

Installation Tools

The Reference Series Subwoofer System can be assembled with the following tools and materials:

- Phillips screwdriver
- 5/32" hex driver
- Wire cutters/strippers
- Spray adhesive
- Utility knife



Assembly Instructions

A. Install amplifier

Cut off connectors on amplifier output wires—be careful to leave enough wire length to connect the speaker. Feed wire through hole in divider. Insert amplifier into the back of the cabinet. The amplifier features a thick foam gasket that provides an airtight seal so no caulk is needed. Be sure to position the amp so that the controls and printing are oriented correctly. Using the supplied Phillips head screws, tighten down the amp in a "star" pattern.

B. Install stuffing

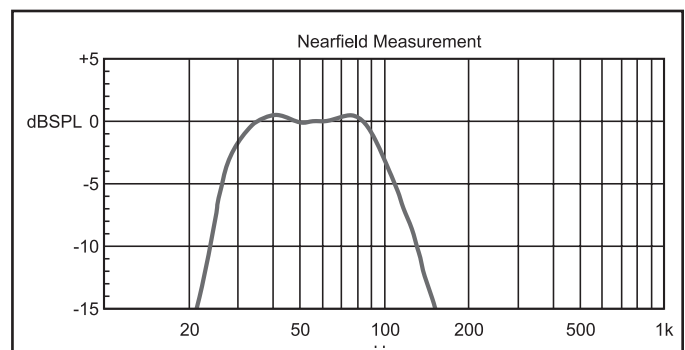
"Fluff" and apply approximately 1.7 lbs of the supplied 2 lbs., using spray adhesive – remember to add stuffing behind the window brace.

C. Install Drivers

Lay cabinet on one side. Be careful not to damage skirting! Insert driver 1 (it doesn't matter which side of the cabinet), align holes and tighten screws. **IMPORTANT: Match the mounting flange holes to the threaded holes in the cabinet. Insert each mounting screw one at a time and turn each by hand to start the screw into the threaded hole in the cabinet. You may need to move the driver from side to side to get each screw started. Do not tighten the screws until all the mounting screws have been started by hand. Be careful not to cross thread the screws!** After all mounting screws have been started, tighten the screws in a "star" pattern using a 5/32" hex driver. Carefully lay cabinet on other side. Using the wiring diagram on page 3 as a guide, strip amp wires and connect to driver 1 while observing polarity. Strip supplied speaker wire at both ends and connect to driver 1 while observing polarity. Connect remaining ends of speaker wire to driver 2 while observing polarity. Insert driver 2, align holes and tighten screws. Install the grills. You are finished with the assembly of the subwoofer system. Be careful, the assembled subwoofer system is very heavy!

Optimum System Equalization

The RS1202 was designed to deliver optimum results through the use of carefully determined parametric equalization settings. The initial configuration, which will provide the specified performance in most listening rooms, is set thusly—Frequency: 25 Hz, Bandwidth: 0.2, and Level: +6 dB. Variations are of course at the user's discretion; for more information about the parametric equalizer, please review the Parametric Equalizer section as detailed on page 3.



Nearfield measurement with the following settings: Frequency = 25 Hz; Bandwidth = 0.2; Level = +6dB; Low Pass Filter = 90 Hz.

Control Panel



Left/Right inputs:

RCA style jacks that will accept standard line level inputs from a pre-amp level source. They will accept a stereo signal and internally combine it into mono. Both left and right input jacks should be connected to the source in order to drive the amplifier to full output. The use of a "Y" cord is suggested if a mono source is all that is available.

LFE direct input:

RCA jack that will accept a signal from the mono LFE (Low Frequency Effects) output on a pre-amp or receiver that is equipped with a dedicated sub bass output. This input bypasses the amplifier's own internal low pass filter circuitry, relying instead on the processed output provided by the source equipment. This would be the recommended connection for most home theatre surround sound receivers and pre-amps. We would also suggest the use of the LFE input when an external line level electronic crossover or frequency dividing network is used.

Low Pass, Gain:

Will match the amplifier's input sensitivity to the output of the preamp source. If the source output has a variable control, we recommend that the user spend a moment or two determining the best balance between the two controls. When a balance is found between low noise, linear level control, and sufficient level to drive the amp to the required output, the gain knob can be considered to be the "volume control" for the subwoofer system.

Low Pass, Frequency:

This control is used to establish the highest frequency that the subwoofer will reproduce and has a range between 30 and 200 Hz. If your main speakers have good bass capability, you could set the control to a fairly low value at 40, 60, or even 100 Hz. If the main speakers are smaller or do not have much bass output, set the control higher. Experiment with the amount of "overlap" that you will experience when all speakers are playing in the same range. This can be helpful when integrating the subwoofer with the rest of the system and with the room.

Power input:

This unit features an IEC grounding type power input connector. The IEC connector allows the user to quickly exchange the power cord if it is damaged, or if a longer cord is desired. The IEC inlet connector also features an integrated fuse holder that contains the AC line fuse.

Power LED:

When the power switch is moved to the "on" position, the LED will illuminate a bright green, to indicate that the amplifier is fully operational and ready to receive typical music program. As the input signal increases to the onset of clipping the LED will turn from green to a yellow color and finally to red, which indicates that the clip limiting circuitry is activated. If an input signal (3 mV or greater) is not detected for 10 to 15 minutes, the amp will go to "stand by" mode and the LED will change to a dim green.

Phase:

This two-position (NOR = 0° phase and REV = 180° phase) switch helps to compensate for differences in the acoustical and electrical characteristics between the subwoofer and the main system speakers. The relative locations of speakers in the system can cause significant disturbances in speaker interaction due to time delay issues, or the destructive phase interferences that can occur at certain frequencies. The use of this switch in conjunction with altering the location of the subwoofer can have a dramatic effect on system integration. The "NOR" setting would be considered the normal or default setting, but be sure to experiment during system set-up.

Parametric Equalizer

The amplifier features a fully parametric equalizer to help you to achieve the best possible subwoofer performance. Professional sound engineers have for many years considered the parametric EQ to be one of the most accurate, versatile, and high fidelity tools for audio enhancement. A greater degree of control can be achieved when using the EQ's unique ability to vary the frequency to be affected, the amount of boost or cut, and the width or narrowness at the selected frequency. The equalizer can be configured for either broad, gentle tone shaping or precise correction, it's up to you!

EQ-Frequency:

Establishes the specific frequency at which EQ boost or cut may be applied between 18 Hz and 80 Hz.

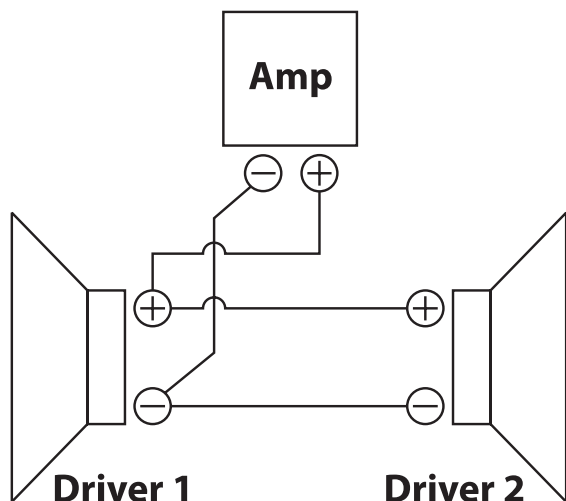
EQ-Bandwidth:

Determines how narrow or wide the EQ curve will be within a range of 0.1 to 1.0. If for example a frequency of 60 Hz were selected along with a Q of 0.1, the frequencies to either side of 60 Hz would be less affected. This is a narrow bandwidth that could be useful for "surgically" removing an offending peak without disturbing adjacent frequencies. At the other extreme, a Q of 1 would result in a much broader effect which could be used for smooth overall bass boost or cut, to balance the overall tone character of the sub.

EQ-Level:

Permits the application of up to 6dB of boost or 14.5dB of cut at the selected frequency and bandwidth. **Setting the control at the 0 position effectively removes the EQ from the circuit path.** It is good to remember that high levels of boost reduce amplifier headroom; it is the same as turning up the low pass gain control but only at the selected EQ frequencies. It would be helpful to reduce or increase the low pass gain control to balance the amount of cut or boost applied by the EQ.

Wiring Diagram



Installation

Please be aware that the RS1202's powerful woofer motor assemblies can emit stray magnetic fields, and these fields can have a detrimental effect on CRT type TV and computer screens, and magnetic storage media such as videotapes, audio cassettes, and computer data storage discs like floppies and zips. Try to maintain a safe distance of 2 to 3 feet from any of these items to prevent damage, or the loss of recorded data. The side of the subwoofer that includes the control panel should be kept at least 2 to 4 inches from a wall or other surface, but special care should be taken to avoid close proximity to upholstered surfaces or drapes. Please make sure that the control panel has enough free air space around it so that proper cooling can take place. Refrain from using the system in wet or rainy outdoor locations.

Connection/Configurations

Most pre-amps and receivers have a stereo line output that follows the output level that is set by the system master volume control; these outputs would connect to the line-level inputs on the subwoofer amp control panel. Many newer multi-channel receivers have a dedicated mono subwoofer output, usually labeled LFE or Low Frequency Effects. The use of this output will permit you to have separate control over the bass output of the source, and it also permits you to set a crossover frequency. When using an LFE output, use a single cable to connect to the LFE input on the sub amp; keep in mind that this input bypasses the internal low pass filter on the amplifier. For either configuration, the system will operate with the greatest linearity and least noise if all gain controls are balanced; that is, no single gain control is operating at much more than 50% of its total range. If one output is set at 10% and it feeds a corresponding input that ends up at 90% then hum, noise, and overly sensitive control characteristics may result.

The RS1202 comes shipped standard for 110V U.S. operation; simply connect the included IEC power cord to your wall outlet. For 220V input, remove the fuse holder, rotate 180 degrees, and re-install. In most 220V applications a separate power cord will be required and is not included. When connecting your subwoofer for the first time, it is important to remember to start with the amplifier OFF and the gain control set at minimum. Start some source program that contains good bass material, apply AC power to the subwoofer, and slowly increase the gain on the sub amp. You should hear a gradual increase in deep bass output as you bring up the volume. When the overall balance between low and high frequency seems close, adjust the phase switch and keep it set where the sub-bass response sounds best in your listening location. You may then use the parametric equalizer to finish off the general contour of the low frequencies, or to correct a troublesome room mode or resonance. These steps to achieve an optimum room response should be used in conjunction with the steps described in the next section, because the physical location of the speaker components in the system can affect performance as much as the electronic adjustments.

Room Placement/Integration

The requirement for the room location of a subwoofer is substantially different than what we would expect for full range speakers. Due to the omnidirectional nature of sub bass, we are not concerned with stereo imaging, and bass tends to fill a room with little bearing on positioning the subwoofer in direct line-of-sight. Bass energy is easily reinforced by reflection, and as those reflections recombine, the resulting buildup can cause very irregular response in the room in the form of peaks. Similarly, phase cancellations can occur when the sound waves at a specific frequency cause destructive interference and cancel each other out, and create holes or nulls in the response. Keeping the subwoofer out of the center between two opposing walls, and also out of corners, will help to achieve the most even, consistent response. Some listeners may prefer the "boomier" sound that results from placing a sub in a corner, or need the increase in gain to compensate for some other factor. It is generally a good idea to avoid placing the subwoofer where it is perfectly centered between any two opposing parallel planes (two walls; or the floor and ceiling). In some cases, moving the enclosure just a few feet can make a noticeable difference.

Aligning the subwoofer along a line drawn between the left/right main speakers will help to keep the speakers in the same time domain and will improve coherence. When properly integrated, the actual location of the subwoofer will disappear and the bass will seem to be coming from the main left/right speakers on either side. Test tones and measurement equipment can help you with your system setup, but good results can also be achieved by spending time with a couple of well recorded CDs with which you are especially familiar. You may find it useful to have an associate make adjustments to the various system controls, or even move speaker enclosures, while you remain in a consistent listening position. After satisfying yourself that your primary location is OK, move around a bit to make sure that the wider soundstage is acceptable. There's no good reason why a single high quality subwoofer cannot be used for both home stereo and home theatre applications. Each person has his or her own individual preference as far as tonality, loudness, range, or definition is concerned, and the biggest difference between home theatre and home stereo is not the hardware as much as how the hardware is used. A typical home theatre system will tend to have the output of the subwoofer turned up a bit more than what would be appropriate for home stereo. Most cinema soundtracks are mixed with the sub-bass dialed in to create both musical support and dramatic special effects. It is up to you to decide how much you want the Imperial Battle Cruisers to shake your house.

Troubleshooting

Hum:

The addition of a new active sub to an existing system can sometimes result in the subwoofer beginning to hum. While it would be easy to assume that the new product is at fault or even defective, it is usually just an indicator that it is time to take a closer look at the overall grounding of the audio system. To start with, verify that all audio equipment in the system is on the same AC power circuit. The outlets in a listening area may or may not all be on the same breaker, some could even be on a completely different breaker panel. Always make sure that all equipment grounds are in good condition, and NEVER remove the ground pin from a power plug. There are some cases where the actual power line has some form of interference but the most common cause of noise is a ground loop, meaning that the system's different ground points lack a common potential. The cable TV line can be the cause of hum in multi-source home audio/video systems. Just temporarily disconnect the cable line, and if the hum stops then the use of an inline isolation transformer is suggested. Other situations may require the installation of an improved earth ground (connection to a metal water pipe or grounding rod) in the vicinity of the audio/video system. The key is to proceed slowly and step by step, taking care to identify which cables or combinations of cables cause noise when connected.

Weak Bass Output:

If bass output seems low, consider the different parts of the system that can contribute to gain or volume. Try moving the subwoofer to a corner. Confirm that the bass output control of the receiver is set correctly (if so equipped). Be sure to use a "Y" cord to connect both line level inputs if you are using a mono source. Verify that the source that is feeding the subwoofer does not have a crossover of its own that is set to a lower frequency than the one in the subwoofer speaker.

RS1202 Specifications

Frequency Range:	20Hz-180Hz
SPL:	Exceeds 120 dB from 30 to 90 Hz
Amplifier Power Output:	950 Watts RMS
Signal to Noise Ratio:	98 dB A-weighted
Input Impedance:	12K ohms
Dimensions:	21" H x 27-3/8" W x 17-1/2" D (including bottom trim)
Net Weight:	169 lbs.
Power Requirements:	User switchable 115V/230V, 50-60 Hz. (10A GMA fuse)