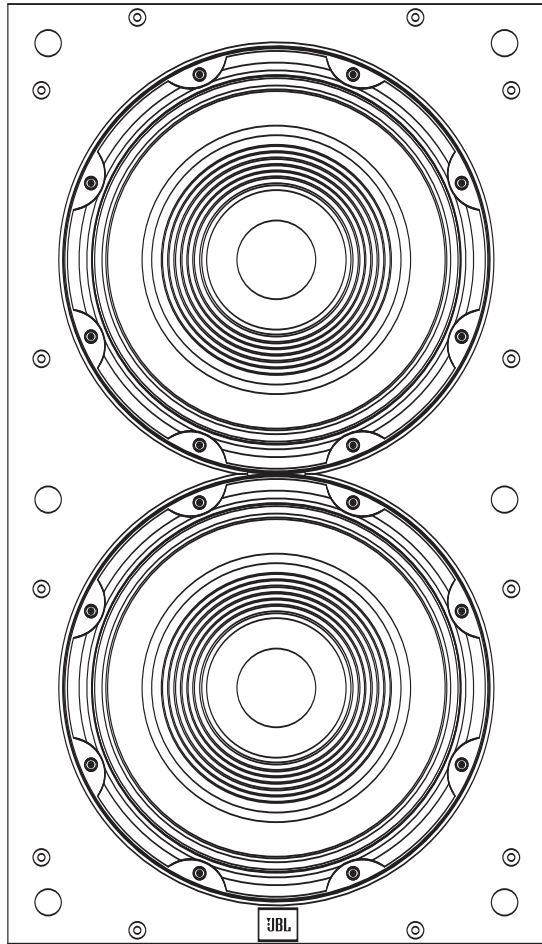


S Y N T H E S I S[®]

JBL



Two units minimum

JBL SYNTHESIS[®] FOUR
S4S
FLUSH-MOUNT
LOUDSPEAKER
OWNER'S GUIDE

THANK YOU FOR CHOOSING JBL®

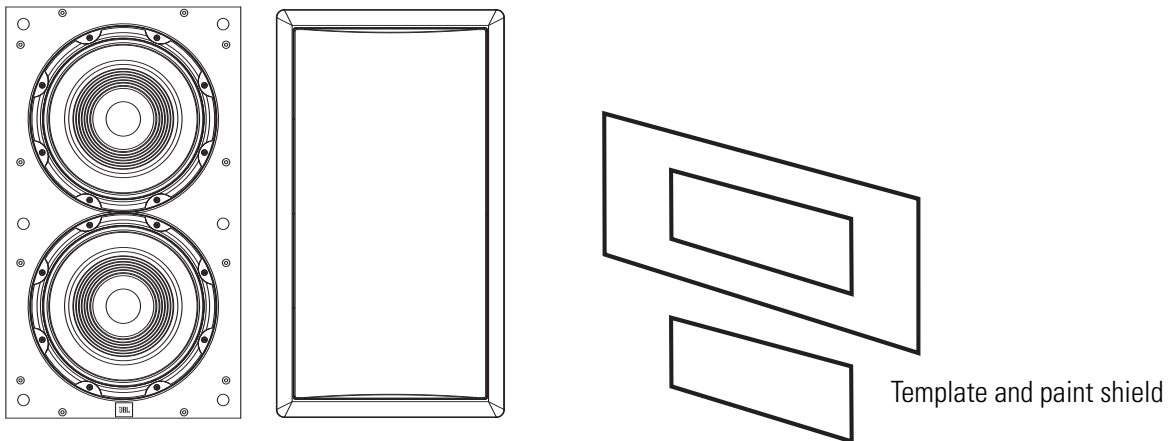
For more than 60 years, JBL has been involved in every aspect of music and film recording and reproduction, from live performances to monitoring the recordings you play in your home, car or office.

We're confident that the JBL Synthesis loudspeaker you have chosen will provide every note of enjoyment that you expect – and that when you think about purchasing additional audio equipment for your home, car or office, you will once again choose JBL.

Please take a moment to register your product on our Web site at www.jblsynthesis.com. This enables us to keep you posted on our latest advancements, and helps us to better understand our customers and build products that meet their needs and expectations.

JBL Synthesis

INCLUDED S4S



- (1) Loudspeaker with grille
- (6) Small grille spacers (for applications requiring one layer of wallboard)
- (6) Large grille spacers (for applications requiring two layers of wallboard)
- (6) Grille cups

IMPORTANT NOTE: A complete S4S loudspeaker system includes the S4S in-wall subwoofer and the S4SBB back box, which must be purchased separately. A high-quality, external two-channel power amplifier, such as the JBL Synthesis S800, is also required, and must be purchased separately. The amplifier should be capable of outputting up to 500 watts per channel with flat frequency response from 20Hz – 500Hz. Although this manual describes installation with reference to all three components, they must be purchased separately.

SPEAKER PLACEMENT

Low-frequency sounds are normally omnidirectional, meaning the listener can't tell where they are generated from. However, frequencies between 75Hz and 150Hz can be localized, especially at higher volume levels. Positioning your subwoofer as recommended will provide the most natural soundstage and imaging from your loudspeaker system.

It is generally recommended that you install your S4S in-wall subwoofer along the same wall as the front loudspeakers. The S4S subwoofer is not video-shielded and should not be placed near a video display. Installing the S4S near a corner will tend to maximize low-frequency output. Be cautious when installing in a corner, to avoid a "boomy" sound. Also take into consideration any unusual features of the room, such as an alcove, which may tend to create a localized node that may affect bass response in that area of the room.

It is also recommended that the speaker be installed so that the bottom of the speaker is approximately 12" from the floor. Using the S4SBB back box enclosure will ensure that the loudspeaker is installed at the ideal height. This is to help with the low-frequency loading (bass reinforcement). This also helps hide the speaker in a less visible place. In special circumstances it is acceptable to install the speaker at any height on a wall.

Remember that these are just guidelines. Since every listening room is different, JBL strongly recommends experimenting with the positioning of your subwoofer prior to cutting the wall to obtain the most pleasing results in your room. One technique that can help you find the ideal subwoofer location is to temporarily borrow a stand-alone subwoofer and place it near the main listening location. Then move around the room and determine where you hear the most pleasing bass performance. This would then be the ideal location for the subwoofer.

A single S4S subwoofer system meets THX® Select requirements for a 3000-cubic-foot room. However, to meet THX Ultra2™ requirements for a 3000-cubic-foot room, two or more S4S subwoofer systems are required, using a total of four woofers. For every additional 3000 cubic feet of room volume, it is recommended that one additional S4S system be added.

When using two S4S in-wall subwoofer systems, you may need to be concerned about phase, as the sound waves may cancel each other out. If bass response seems low, try inverting the polarity on one subwoofer – i.e., connect the (+) terminal on the amplifier to the (–) terminal on the speaker, and the (–) terminal on the amplifier to the (+) terminal on the speaker.

SPEAKER CONNECTIONS

Connection Tips



Speakers and electronics have corresponding (+) and (–) terminals. Most manufacturers of speakers and electronics, including JBL, use red to denote the (+) terminal and black for the (–) terminal. It is important to connect both speakers identically: (+) on the speaker to (+) on the amplifier, and (–) on the speaker to (–) on the amplifier. Wiring “out of phase” results in thin sound, weak bass and a poor stereo image. With the advent of multichannel surround sound systems, connecting all of the speakers in your system with the correct polarity remains equally important in order to preserve the proper ambience and directionality of the program material.

If two S4S subwoofers are used, the wires for both speakers should be the same length. If one speaker is placed closer to the amplifier than the other, hide the excess wire behind the wall. If bass response seems low, there may be a phase problem, with the sound waves from the two subwoofers canceling each other out. If bass response seems low, try inverting the polarity on one subwoofer – i.e., connect the (+) terminal on the amplifier to the (–) terminal on the speaker, and the (–) terminal on the amplifier to the (+) terminal on the speaker.

To use the push-type terminals on the S4S baffle, depress the colored cap until the pass-through hole in the binding post is revealed. While holding the cap down, insert the bare end of the wire, or a banana plug, into the pass-through hole. Release the cap and tug gently on the wire to ensure that it is secure.

To use the binding-post speaker terminals on the terminal cup located on the top panel of the S4SBB back box enclosure (sold separately), unscrew the colored knob until the pass-through hole in the center post is visible under the knob. Insert the bare end of the wire through this hole, then screw the knob down until the connection is tight. The hole in the center of each knob is intended for use with banana-type connectors.

Since the S4S is a passive loudspeaker, only speaker-level connections are available. Use the S4S with a high-quality dedicated subwoofer amplifier as recommended by your JBL Synthesis custom installer, such as the JBL Synthesis S800. The amplifier should be capable of outputting up to 500 watts per channel with flat frequency response from 20Hz to 500Hz.

Connect your main receiver or processor’s line-level subwoofer output to the line-level input on your subwoofer amplifier.

After you have installed the S4SBB back box enclosure as described in the next section, connect the speaker terminals on your subwoofer amplifier to the speaker input terminals in the terminal cup located on the top panel of the back box, making sure to observe the correct polarity.

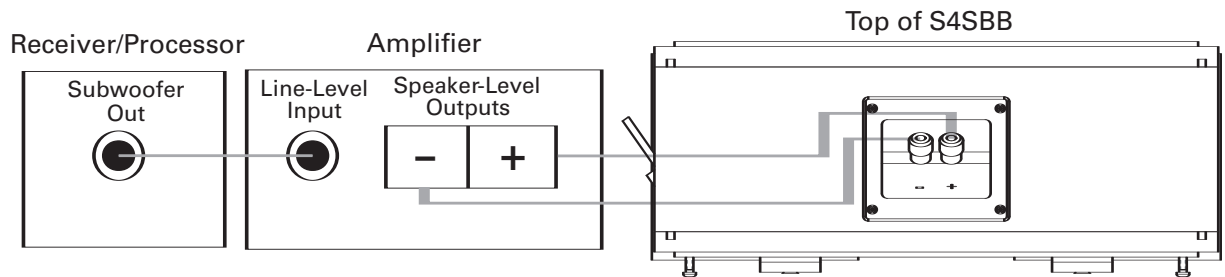
You will observe two wires hanging down into the opening of the S4SBB enclosure. These are to be connected to the terminals on the back of the S4S loudspeaker baffle just before installing the S4S in the enclosure. Again, remember to connect the wires to the correct terminals to maintain polarity. The solid black wire is to be connected to the negative (–) terminal on the baffle, and the solid red wire is to be connected to the positive (+) terminal on the baffle.

You may prefer to use two S4S subwoofer systems in Stereo mode for improved performance and superior imaging, and to meet THX Ultra2 requirements. Use two mono subwoofer amplifiers, each connected to either the left or right subwoofer output on your receiver/processor, or use a single two-channel subwoofer amplifier and connect the left and right line-level subwoofer outputs on your receiver/processor to the corresponding inputs on your amplifier. Then connect the positive and negative terminals for each channel to one S4S subwoofer system.

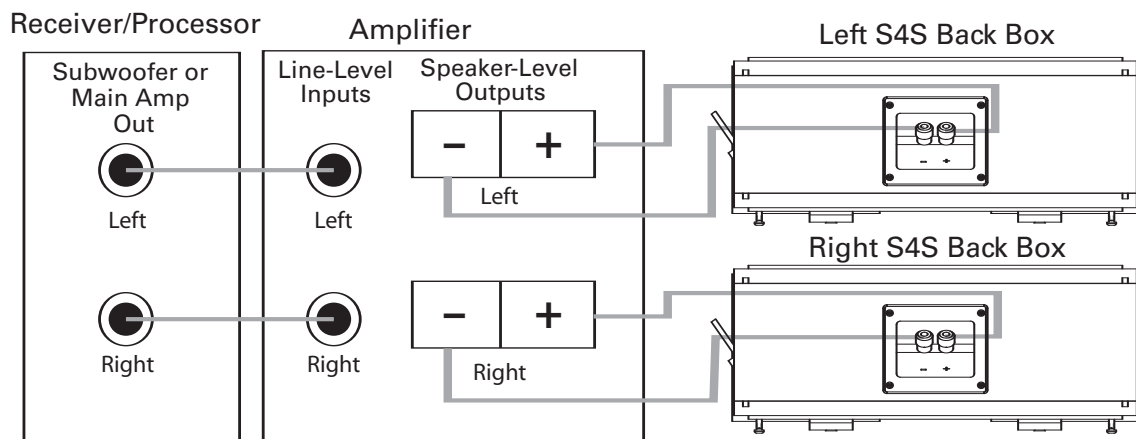
Wire Length	Recommended Size
Up to 20 ft.	16-gauge
Up to 30 ft.	12-gauge
Greater than 30 ft.	10-gauge

SPEAKER CONNECTIONS

Using One S4S Loudspeaker in Mono Mode



Using Two S4S Loudspeakers in Stereo Mode



INSTALLATION

A complete S4S loudspeaker system includes the S4S in-wall subwoofer and the S4SBB back box. These components are packaged separately.

NOTE: The THX Ultra2 standard requires that the S4S baffle be mounted vertically.

Installation requires access to the space between the wall studs. Therefore, in new-construction applications, the S4SBB back box is installed before the wallboard.

For existing construction, carefully remove a section of wallboard that reveals the studs on either side of the bay where the back box will be installed, enabling the board to be screwed back onto the studs after installation is complete. Store the wallboard in a safe place until the speaker installation is complete.

Included with the S4SBB:

- (10) 5" deck screws
- (10) polyurethane bushings
- (10) 1/4–20 flat washers
- (12) #8 x 3/4" wood screws
- (2) wood centering bars
- (4) #10 32 x 1-1/2" flat-head screws
- (2) Styrofoam™ blocks

1 Terminal Cup: Connect the speaker wires from your subwoofer amplifier to these terminals.

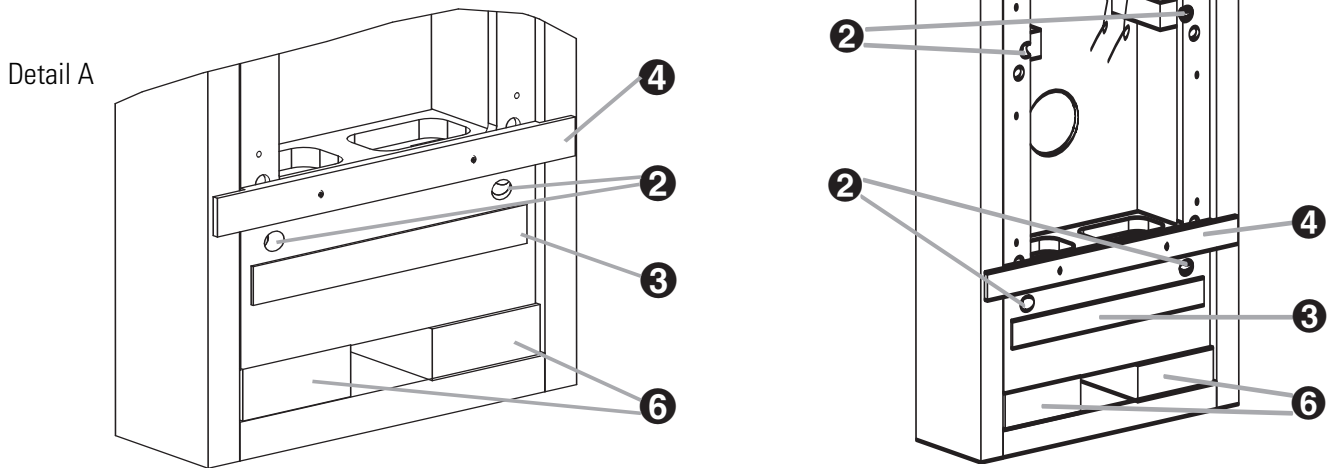
2 Mounting Holes for Bushings: The S4S uses a system of bushings to act as springs that isolate the speaker from room and wall vibrations. Mount the bushings in each of these holes as described in Step 5 on page 7.

3 Damping Pads: These pads are part of the isolation system to prevent unwanted resonances. They should be left in place as is.

4 Centering Bars: Screw these bars onto the S4SBB back box using the included flat-head screws, and then attach them to the wall studs to hold the S4SBB in place during installation.

5 Speaker Wires: Connect these wires to the terminals on the back of the S4S subwoofer baffle as described on page 4.

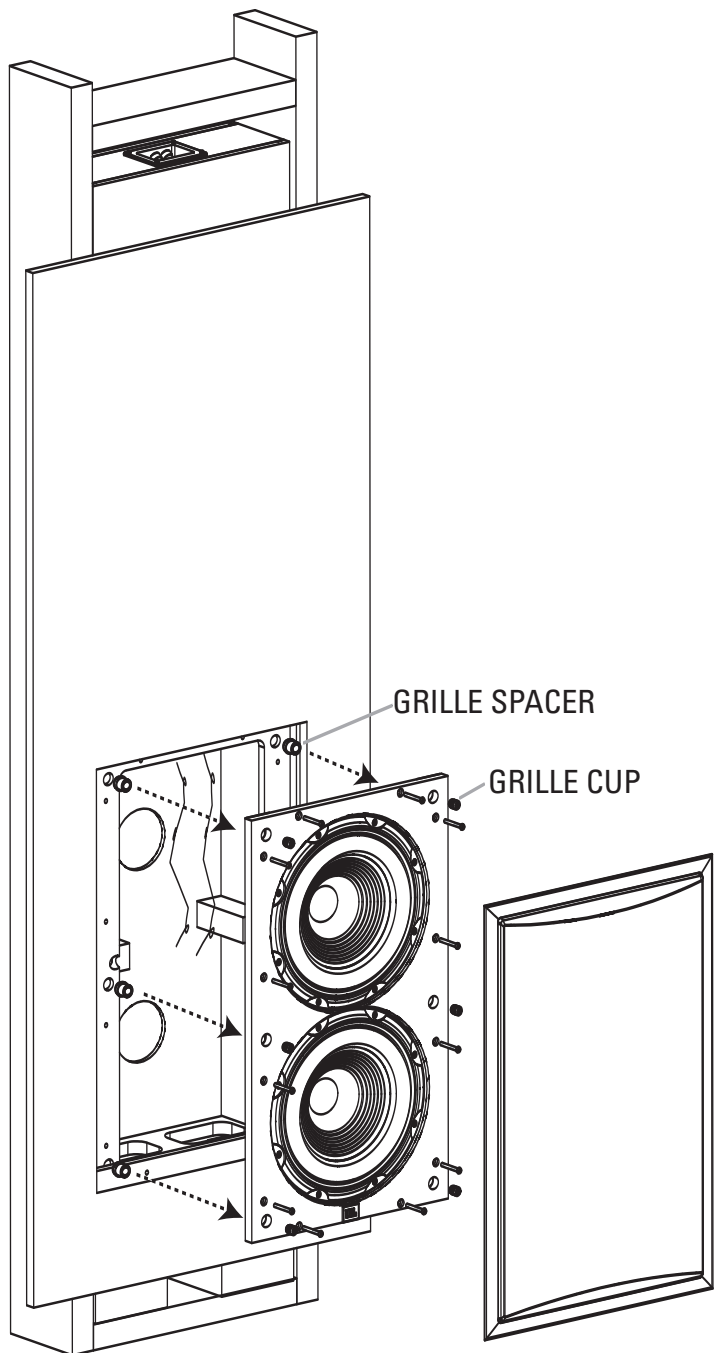
6 Styrofoam Blocks: These blocks support the S4SBB back box and ensure that it is mounted within the stud bay at the correct height for optimum performance. They also help to isolate the speaker system from room resonances.



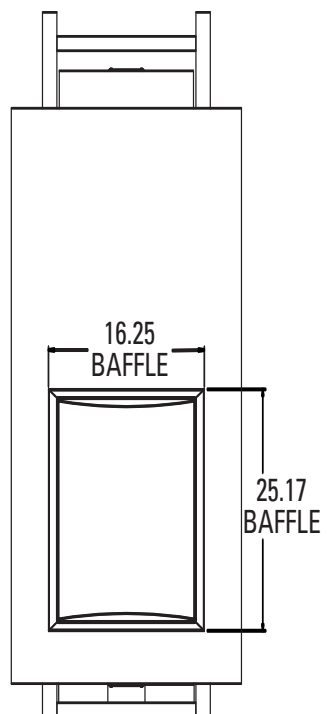
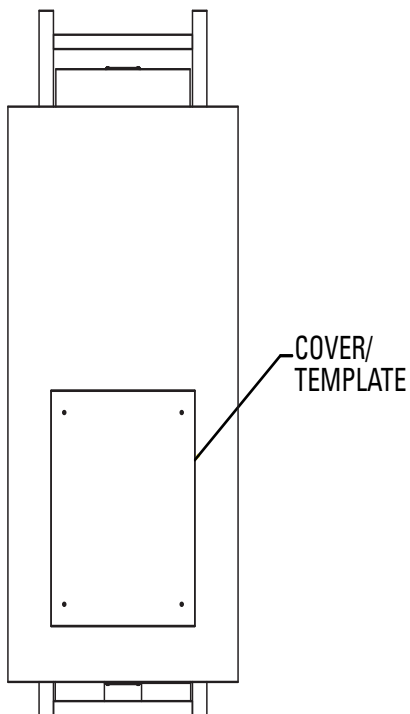
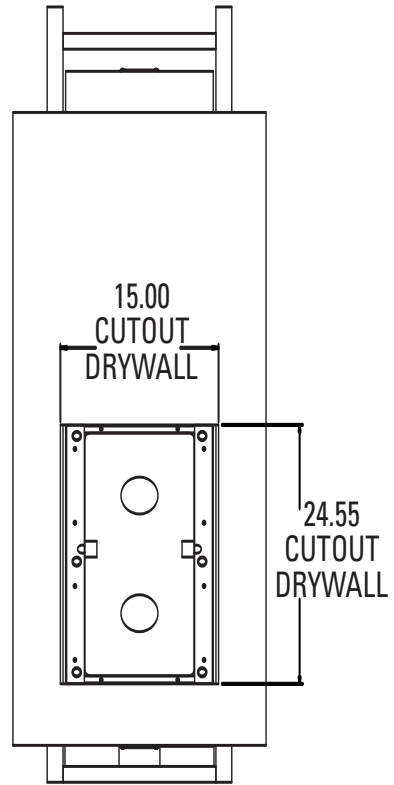
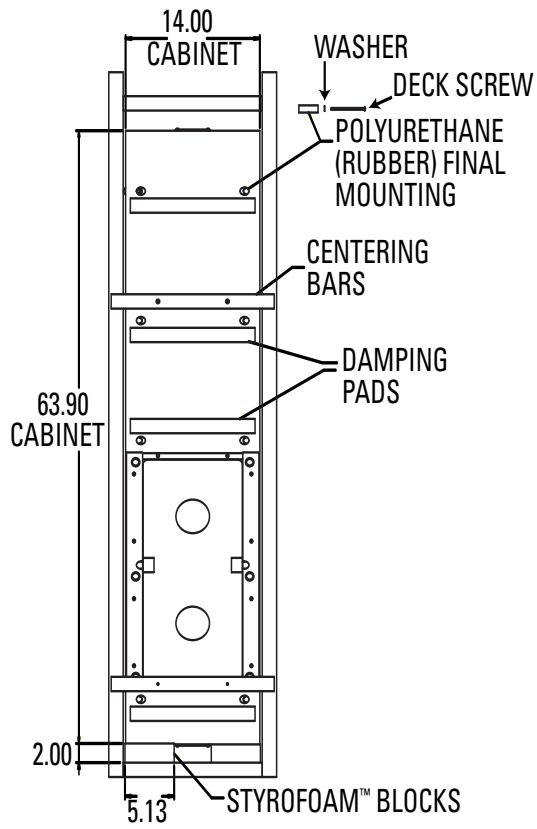
INSTALLATION

Installation:

1. Place the Styrofoam™ blocks on the bottom plate of the stud bay. The S4SBB back box will rest on top of the blocks.
2. Install the two centering bars as shown in Detail A on page 6. The centering bars are for setting the depth of the enclosure. They also help locate the horizontal position of the enclosure as they are mounted into the studs at the left and right to hold the enclosure in the correct location.
3. Fit the enclosure into the wall. The bottom of the S4SBB back box will rest on top of the Styrofoam blocks ⑥ that you put on the baseboard two-by-four in Step 1.
4. At this time, you may want to screw through each side of the wood centering bars to mount the enclosure to the studs. This will hold the enclosure in position.
5. Install each of the ten bushings into their mounting holes ②. Insert one end of the rubber bushing into the hole, then place a flat washer on top of the bushing and screw the supplied 5" deck screw through the washer and into the bushing.
6. The enclosure is now installed and ready for the wallboard to be installed over it. Remove the wood centering bars and use the wood screws to close up the holes in the S4SBB back box. The drywall cutout dimensions are 24.55" (H) x 15" (W) (624mm x 381mm).
7. Insert the six plastic grille spacers into the large holes in the S4S baffle. Select either the small or large grille spacers, depending on whether your application requires one or two layers of wallboard. The grille spacers are inserted from the back side of the S4S baffle. Then insert the grille cups into the grille spacers from the front of the S4S baffle.
8. Make the connections from your receiver/amplifier to the S4SBB back box connections panel, and to any other speakers as appropriate for your system, following the instructions on pages 4–5. Connect the wires hanging in the opening of the S4SBB back box to the correct terminals on the S4S loudspeaker (see pages 4–5).
9. Install the S4S baffle into the S4SBB back box using the twelve screws, as shown in the illustration at right.
10. The grille pegs mount in the grille cups to complete the installation.



DIMENSION DRAWINGS



PAINING THE SPEAKER FRAME AND GRILLE

The S4S loudspeaker can be painted to match any décor. If you wish to change the color, the satin finish on the grille and frame will function as a primer coat. Before painting, install the plastic paint shield securely into the baffle. This will protect the speaker components and baffle from paint residue. Use a high-quality spray paint, and apply a thin coat of color. Paint the grille separately from the baffle before installing it.

Be certain the grille perforations remain free of paint. Filling them with paint will diminish the sound quality.

TROUBLESHOOTING

SYMPTOM	SOLUTION
If there is no sound from any of the speakers:	<ul style="list-style-type: none">• Check that the receiver/amplifier is on and that a source is playing.• Check all wires and connections between the receiver/amplifier and the speakers. Make sure all wires are connected. Make sure none of the speaker wires are frayed, cut, punctured or touching each other.• Review proper operation of your receiver/amplifier.
If there is no sound coming from one speaker:	<ul style="list-style-type: none">• Check the Balance control and channel output level settings on your receiver/amplifier.• Check all wires and connections between the receiver/amplifier and the speakers. Make sure all wires are connected. Make sure none of the speaker wires are frayed, cut, punctured or touching each other. In multichannel applications, make sure that your receiver/processor has been configured to enable all channels that you are using.
If there is low (or no) bass output:	<ul style="list-style-type: none">• Make sure the connections to the speaker inputs have the correct polarity (+ and –). If you are using two S4S subwoofers, try inverting the polarity on one subwoofer as described on page 4.• Consider adding a separate power amplifier to drive the S4S subwoofer.• In Dolby® Digital or DTS® modes, make sure your receiver/processor is correctly configured. When using a power amplifier with your S4S subwoofer, make sure the subwoofer output of the receiver/processor has been enabled. See your receiver/processor's owner's manual for further information on correct speaker configuration in Dolby Digital, DTS and other surround sound modes.
If the system plays at low volumes but shuts off as volume is increased:	<ul style="list-style-type: none">• Check all wires and connections between the receiver/amplifier and the speakers. Make sure all wires are connected. Make sure none of the speaker wires are frayed, cut, punctured or touching each other.• If more than one pair of main speakers is being used, check the minimum-impedance requirements of your receiver/amplifier.
If you are hearing midrange frequencies (such as vocals) through the subwoofer:	<ul style="list-style-type: none">• When using the THX mode, make sure the subwoofer crossover is activated on your processor/receiver.• When using the Normal mode, adjust the crossover frequency on your electronics to a lower frequency.

SPECIFICATIONS

S4S

Frequency Response (-6dB)	20Hz – 150Hz (THX®/LFE mode)
Maximum Recommended Amplifier Power†	500 Watts per channel
Impedance	4 Ohms nominal
Sensitivity	88dB (2.83V/1m), both woofers driven
Woofer	Dual 10" polymer-coated aluminum cones w/rubber surrounds
Dimensions (H x W x D, mounted in S4SBB enclosure, not including Styrofoam™ blocks)	64" x 14" x 5.1" (1626mm x 356mm x 130mm)
Mounting Cutout Size (W x H)	15" x 24.55" (381mm x 624mm)
Weight per Speaker	24 lb (10.9kg)

All features and specifications are subject to change without notice.

† The maximum recommended amplifier power rating will ensure proper system headroom to allow for occasional peaks. We do not recommend sustained operation at these maximum power levels.

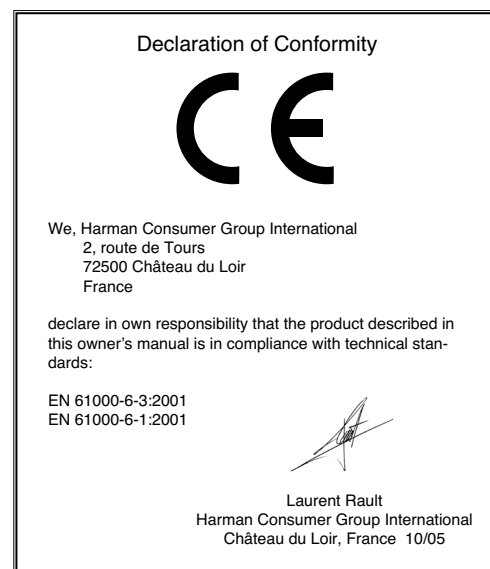
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