INTRODUCTION

Adding a subwoofer is the most dramatic (and often the most satisfying) way to improve the performance of a stereo system.

The obvious appeal of a subwoofer is its powerful, skin-thumping low-bass impact. The PSB Subwoofer 1 produces uniformly strong, undistorted deep-bass tones down to 25 Hz and below—far lower than many other so-called subwoofers.

A subwoofer provides indirect benefits that may be even more important in the long run: more flexible placement, improved stereo imaging, and increased midrange clarity.

A built-in crossover network matches the PSB subwoofer to PSB stereo speakers and to other speakers of similar sensitivity. As a result, installation of the PSB subwoofer in an existing stereo system is extremely easy; there is no complex wiring and no fine-tuning required.

WHY A SUBWOOFER?

Deep bass. A "sub"-woofer is a loudspeaker designed to produce the lowest audible frequencies, particularly the octave or so below the bass limit of conventional woofers. Some so-called subwoofers, sold for use with small "satellite" speakers, actually have the same 40–50 Hz bass limit as an ordinary woofer. The PSB Subwoofer 1 is not merely the bass module of a three-piece mini-satellite system; it is an authentic sub-woofer that produces fundamental tones as low as 20 Hz.

The difference between 20 and 40 Hz may seem slight on paper, but this "missing octave" of fundamental bass makes a dramatic difference. Hearing (and, equally important, feeling) the tonal foundation of musical sound can be very satisfying, whether the sound is a Bach fugue, a Mahler symphony, big-band jazz, hard-driving rock, or a Dolby Stereo film soundtrack.

Flexible placement. Any "full-range" speaker system is a compromise between conflicting requirements. Its woofer needs a large cone and a large volume of enclosed air in its cabinet to be effective at low frequencies. To couple its bass energy into the room efficiently, the woofer should be located near the walls, floor, or ceiling.

But for good stereo imaging, speakers should be small and should be installed so that the tweeters are located near ear-level, at exactly equal distances from the listener, and away from room boundary surfaces (to minimize the image-muddying effect of reflections). Often the practical result of this compromise is that full-range loudspeakers are inconveniently large, visually obtrusive, and placed at awkward locations in the living room.

By relying on a separate subwoofer for bass, you are free to choose small, inconspicuous stereo speakers to handle the midrange and highs, locating them wherever is most convenient. Since the ear's perception of deep bass is non-directional, the subwoofer can be placed in an out-of-the-way spot against a wall or in a corner; it can even be used as an end-table, making the most efficient use of available floor space.

Improved imaging. Since you will no longer need to depend on your stereo speakers for bass, they can be placed away from any walls as to produce a clear first-arrival sound at the ear before any image-muddying reflections arrive from the boundary surfaces. The result is a dramatic opening-up of the stereo image, increasing its clarity, "depth," ambience, and inner detail. This may be one of the most important benefits provided by the subwoofer—especially if you have been accustomed to placing your main stereo speakers near walls for bass support.

Clear stereo. Powerful bass notes require large back-and-forth motions of the woofer cone. But in a full-range speaker the woofer cone also has to produce subtle midrange waveforms; the result is that bass notes modulate the midrange, muddying the sound. (In a three-way design with a separate midrange driver, the bass notes vibrate the entire cabinet, including the midrange unit.)

A subwoofer frees your stereo speakers from the burden of reproducing low bass. Often the result is a striking improvement in overall clarity, depth, and resolution of inner detail. (The crossover network in the PSB Subwoofer 1 rolls off the low bass in the stereo speakers at a nominal rate of 6 dB/octave. For a more dramatic reduction in bass distortion, especially at high volume levels, you can upgrade to an electronic crossover and a separate amplifier.)
THE PSB SUBWOOFER 1

The PSB subwoofer is actually two subwoofers in one: a complete stereo pair of eight-inch subwoofers in a double-size cabinet. In most applications the PSB subwoofer will be used with a pair of stereo loudspeakers, and the built-in stereo crossover network makes it very easy to wire the system this way. Simply connect wires from your stereo amplifier to the two lower sets of terminals on the rear of the subwoofer; then connect wires from the upper terminals to the corresponding stereo speaker on each side.

The built-in crossover has been optimized for use with PSB 50R loudspeakers. The PSB subwoofer blends seamlessly with the low end of the 50R, extending its effective response down to subterranean frequencies with no perceptible change in tonal character.

The PSB subwoofer can also be used with the PSB 30R speakers; this combination is a "best-buy" full-range system that dramatically out-performs virtually any system of conventional speakers at the same total cost. Yet, thanks to the compact dimensions of the 30R and the flexible placement of the subwoofer, this system can be almost invisible in the room.

The PSB subwoofer will also work effectively with many other speaker brands and models, as long as they have a rated sensitivity between 86 and 92 dB at one meter for a one-watt input.

For the ultimate in performance, especially when extra-high playback levels are required, two complete PSB Subwoofer 1 systems can be used, one in each channel. For this purpose, the two woofers in each unit can be bridged into mono simply by altering the connections to the terminals.

In most cases, you can add the PSB subwoofer to an existing stereo system without investing in a new amplifier. The system will work with amplifiers rated from 30 to 200 watts per channel. However, to fully appreciate the authoritative low-frequency performance of the PSB subwoofer, an amplifier power of at least 60 watts/channel is strongly recommended.

WHY IS IT SO BIG?

The laws of physics dictate that a subwoofer cannot be a small device. Its cone area must be substantial, to fill your living room with bass energy at low distortion, and the volume of air enclosed in the cabinet must be large in order to produce a low resonant frequency.

Many so-called subwoofers are smaller, but at a considerable sacrifice in performance. Making the PSB subwoofer smaller would have one of three consequences: (1) Its response would roll off at a higher frequency, so it would no longer be a true "sub"-woofer. (2) Its power-handling capacity would be reduced, producing either less-powerful bass or more distortion. (3) It would be less efficient, no longer able to blend with PSB and other satellite speakers through a simple passive crossover; matching would then require an electronic crossover and a second power amplifier, at a considerable increase in system cost.

For listeners who are willing to accept these compromises, other subwoofers are available. The PSB Subwoofer 1 is a best-buy system for those listeners who want outstanding bass performance at moderate cost.

The PSB Subwoofer 1 is nearly two feet square, which may seem awkwardly large for your living room. But that impression may be deceptive. Remember that the subwoofer can be installed in an out-of-the-way corner, semi-concealed under a record cabinet, bookcase, or decorative plant; it can be placed next to a sofa and used as an end-table; you could even put seat-cushions on it, to provide informal seating for occasional guests. In an audio-video system the subwoofer can be concealed behind a floor-standing television console. If the TV is a tabletop monitor receiver, the subwoofer can be placed directly under the TV.

ABOUT PSB:

The PSB name stands for firm bass, extended highs, precise imaging, and midrange definition that faithfully reproduces the acoustic signature of each musical voice and instrument. Music has an unequalled ability to impart pleasure, and hi-fi equipment works best when it lets that pleasure flow. That is our goal—and the PSB Subwoofer 1 is in keeping with this, allowing you to experience the music fully and without compromise.

SPECIFICATIONS—PSB SUBWOOFER 1

- Frequency range: 20 Hz–100 Hz
- System resonance: 26 Hz
- System design: Tuned port
- Drivers: Two eight-inch (200mm) extra-long-throw woofers with black-anodized aluminum voice coils.
- Sensitivity: 88 dB SPL at 1 meter for 1 watt input
- Crossover frequency: 100 Hz
- Impedance: 4Ω in stereo mode (one woofer per channel)
- Power handling: This speaker will handle the power of amplifiers rated from 30–200 watts RMS (30–400 watts if wired for mono) driven to clipping less than 10% of the time.
- Dimensions: 56 cm (22-inch) cube, resting on a 50mm (2-inch) riser.
- Net weight: 41 kg (90 lb.)
- Finish: Barton Hickory or Black Ash

NOTE: All specifications are those in effect at the time of printing. PSB reserves the right to change specifications or designs at any time without notice.

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