

## **Will Adding a Subwoofer to my 901s *Really* Make a Difference?**

*An EQ901 equalizer with subwoofer crossover brings powerful realism and low distortion to your Bose 901 system*

Adding a subwoofer is the most powerful way to bring dynamic, deep bass to your Bose 901 stereo system. Integrating that subwoofer with an [EQ901 equalizer](#) using modern DSP crossover technology will energize your 901s with last octave bass extension, reduced overall distortion and power handling. Not to mention added clarity, imaging and dynamics.



## Why Does it Matter?

In addition to adding deep bass response, pairing a subwoofer with your 901 speakers addresses three key attributes of your stereo system: distortion, dynamic range and amplifier power. The EQ901 equalizer's active high pass crossover for the Bose 901s and low pass subwoofer crossover brings dimensionality and clarity to your listening experience.

**Lower Distortion.** Excessive cone excursion of the 901's 4.5" drivers is minimized by adding a high pass filter to cut the deep bass to the 901s. With the low bass being handled by the subwoofer, the total harmonic distortion of the system is significantly reduced.

These harmonic distortion plots illustrate before and after the high pass filter is implemented.

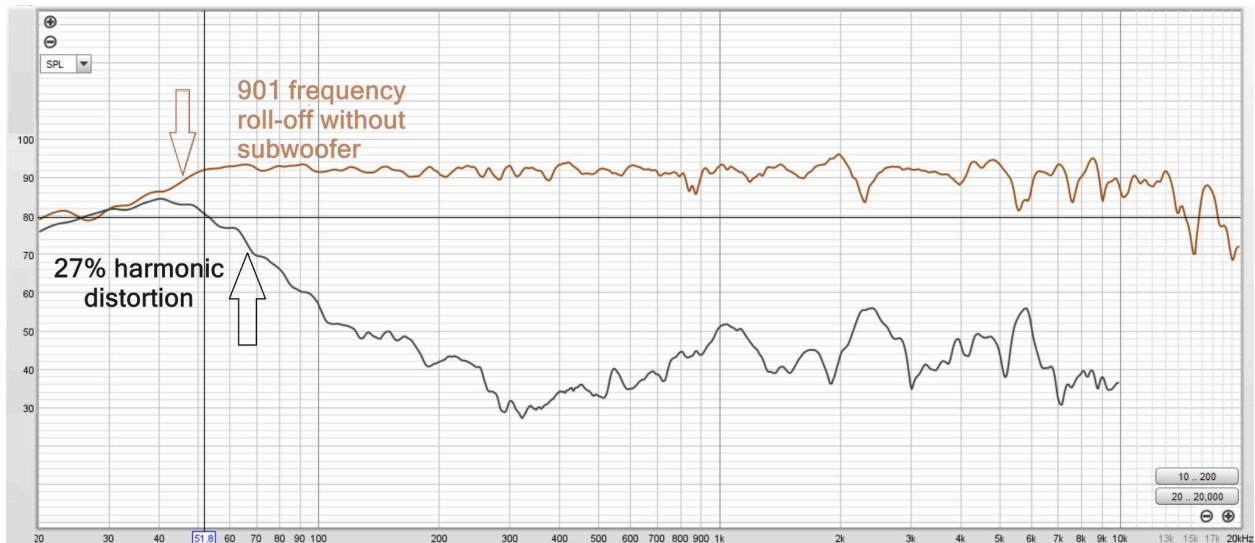


Diagram 1. High 27% harmonic distortion before adding a high pass filter and bass roll-off without subwoofer

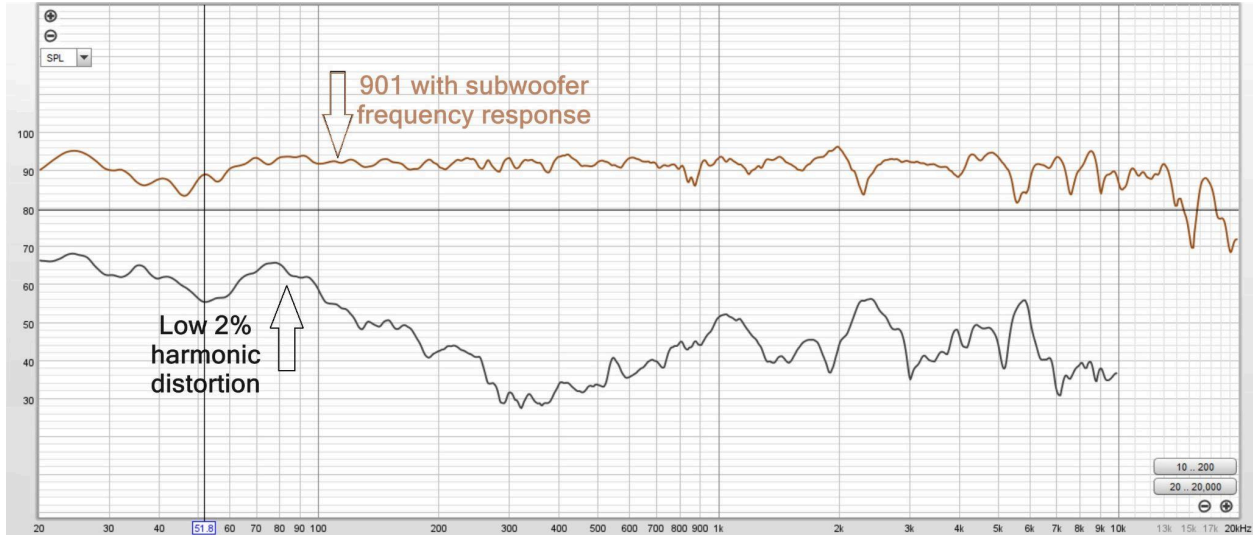


Diagram 2. Low 2% harmonic distortion with active subwoofer crossover and deep low bass response

You can see the distortion is reduced from 27% to 2%, while the frequency response is accurately extended down to 20 Hertz. This illustrates how adding a subwoofer and high pass filter lets you play your 901s at all levels with far less distortion, so you can truly experience the lowest frequency ranges.

**Increased Dynamic Range.** The same principle is true for system dynamic range. As excessive cone motion is minimized, the drivers are free to produce the higher frequencies with greater impact and clarity.

**Increased Effective Amplifier Power.** Bose 901s tend to be inefficient at very low frequencies, due to their design. After subwoofer integration, your amplifier will have much greater equivalent power because the duties of low frequencies have been given over to the subwoofer.



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## Adding a Subwoofer to Your 901 System

The EQ901 Subwoofer Series is a turnkey solution created to seamlessly integrate a subwoofer into your 901 system. By adding the subwoofer option to the [EQ901 Elite](#) or [EQ901 Platinum](#), you gain active high and low pass crossovers along with the Bose 901 equalization curves.

The EQ901 Subwoofer Series provides:

- Seamless integration of the last audio spectrum octave
- Increased power handling capability
- Significantly lower overall system distortion

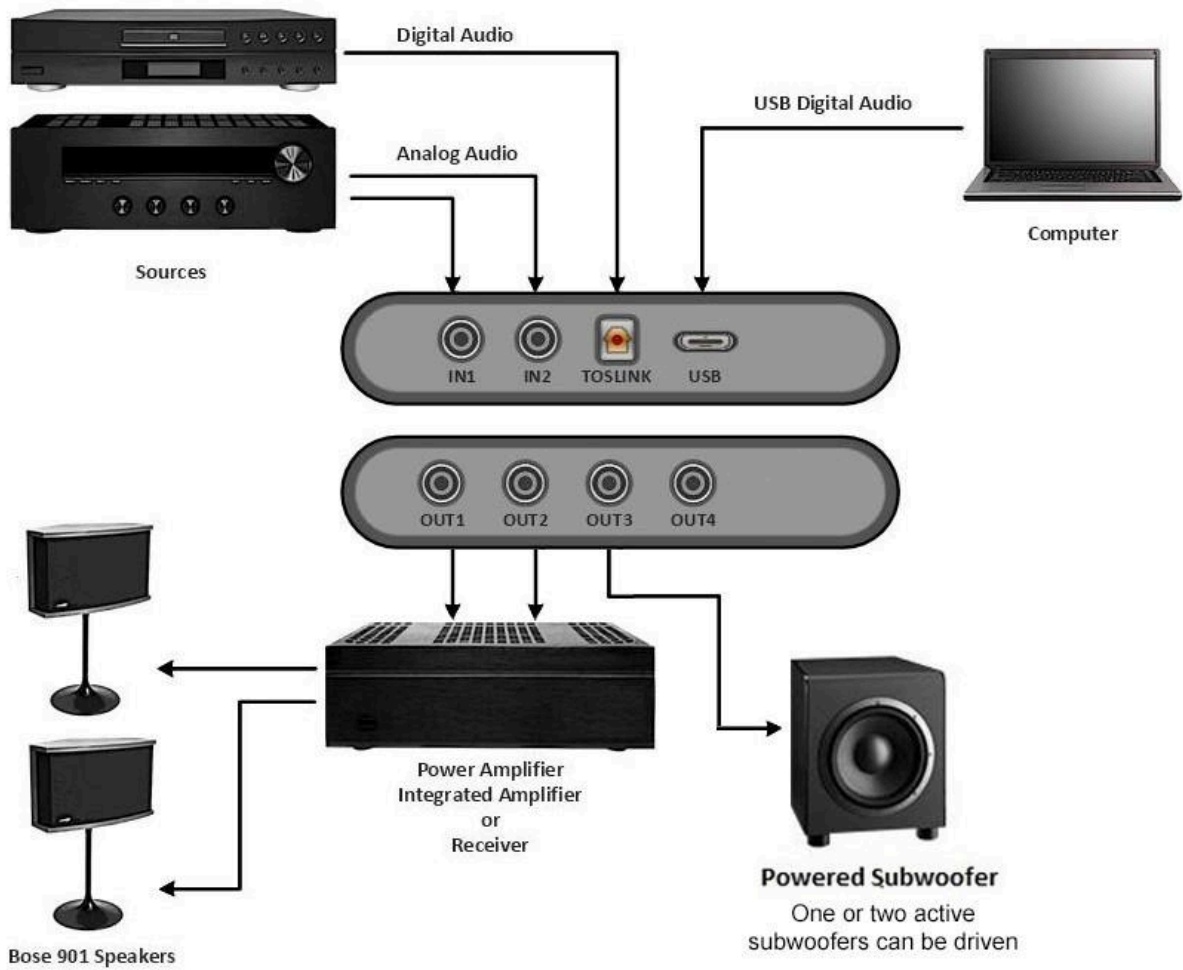


Diagram 3. The EQ901 Elite with subwoofer option is an elegant solution for properly adding a subwoofer to your Bose 901 system

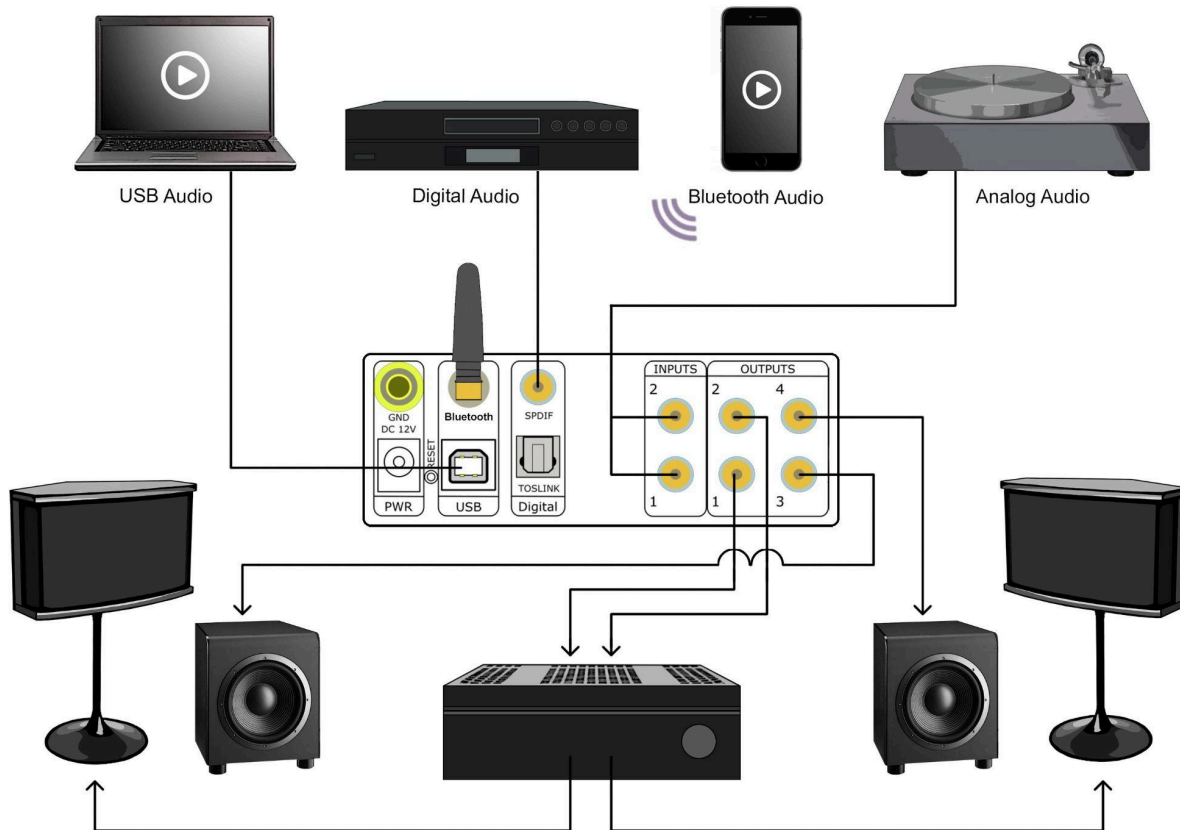


Diagram 4. The EQ901 Platinum with subwoofer option acts as a fully functional system preamplifier, equalizer and active crossover

The two primary elements of the EQ901 Subwoofer Series are the active crossover and the Bose 901 EQ curve.

### Active Crossover

An active crossover with high pass for the Bose 901s and low pass for your subwoofer is implemented concurrently with the 901 EQ curves. The crossover filters in the EQ901 have been optimized to seamlessly integrate the sound of your subwoofers with your 901s.

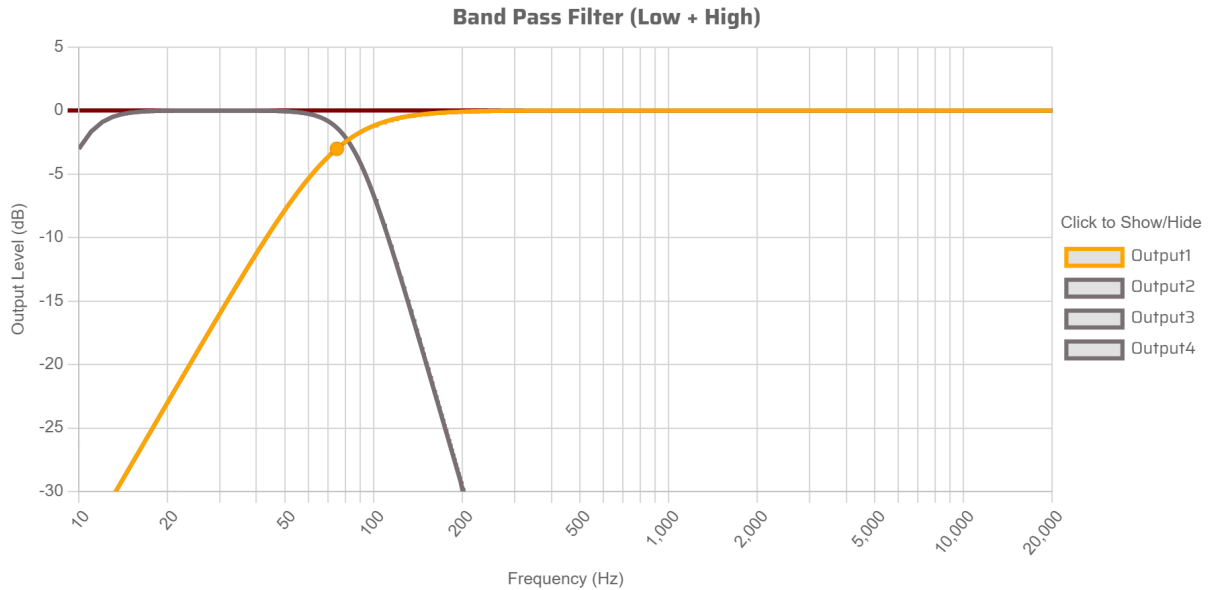


Diagram 5. High and low pass active crossover filter curves

## The Bose 901 EQ Curves

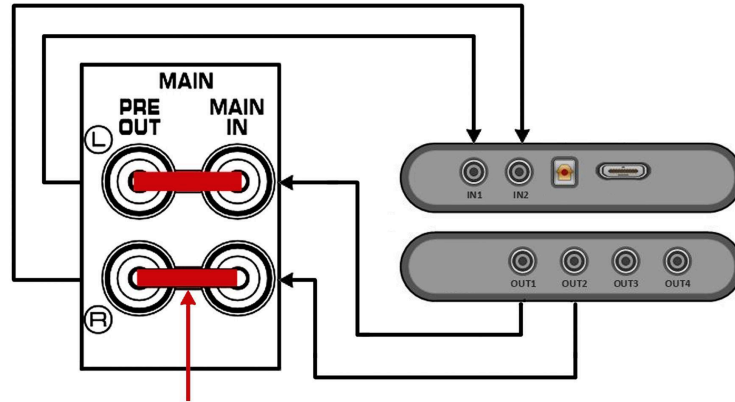
The EQ901 series of equalizers have been designed to closely reproduce the factory EQ response, with additional enhancements in dynamic and frequency range for lower noise and distortion.

The Bose 901 equalization curve and the active crossover filters are implemented in a 32-bit digital signal processing (DSP) engine that has greater dynamic range and provides excellent audio performance. The EQ901 Elite and EQ901 Platinum also include three other tone modes that can be used without a subwoofer.

## Subwoofer Volume Tracking

The EQ901 equalizer crossover allows your master system volume knob to simultaneously control both the main Bose 901s and the subwoofer.

To allow tracking between the 901s and the subwoofer, it is required that the EQ901 Subwoofer Series be implemented in a Pre Out Main In loop or between your preamplifier and power amplifier.



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Diagram 6. Pre Out Main In setup

During the initial setup your subwoofer settings are set to nominal, as shown in the following table.

Crossover	Max Hz / Off
Phase	0°
Gain	0 db / mid level / 12 o'clock
Equalization	Off / bypassed
Power Mode	Always on (not auto on)

Diagram 7. Baseline subwoofer settings

After you have the system up and running, you can adjust the subwoofer volume for optimal listening enjoyment. Once the subwoofer is adjusted, the entire setup will be controlled by your system volume knob.

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Check out our full line of [EQ901 Equalizers](#). For user guides and tech notes about our EQ901 series, explore our [Resources Library](#). If you have questions or want to discuss in more detail, feel free to give us a call or drop a line.