

## ► Speaker City's PS10 Subwoofer Kit

By Julian J. Bunn



PHOTO 1: The PS10.

This kit comprises a black MDF cabinet, 200W amplifier module, a 10" woofer, acoustic damping, speaker gasket, and associated hardware (Photo 1). It arrived in two large boxes from Speaker City in Burbank.

The kit is advertised as requiring no soldering, and the construction as simple. There were no instructions included in either box. However, after an examination of the components, it was obvious how everything fit together. The amplifier module, the face plate of which is shown in Photo 2, clearly was intended to fit in the aperture at the rear of the pre-made MDF cabinet. The rear side of the amplifier contained some chunky capacitors and impressive-looking power transistors mounted on substantial heat-sinks (Photo 3).

The front of the cabinet (Photo 4) shows the heavy 10" woofer from Goldwood Sound, model GW-10PC/4, with a specification of 400W power between 39Hz and 5kHz, and 94dB SPL per meter squared at one meter distance. This was clearly intended to be mounted in the front of the cabinet, using the provided gasket and long screws.

I began by mounting the amplifier module in the cabinet and attaching the cabinet feet (Photo 5). I then used the acoustic stuffing to fill the rear section of the cabinet around the amplifier (a view of the interior of the enclosure is shown in Photo 6). At this point I noticed a small area of damage to the enclosure that had possibly occurred in shipping—not serious, but spoiling the otherwise perfect condition of the kit (Photo 7).

I was unsure how tightly to pack the stuffing, so I operated on the principle that half of the provided material should go in the rear section of the cabinet (between the amplifier module and the cross brace), and the remainder in the front half, behind the speaker. Photo 8 shows the fully stuffed cabinet before attaching the woofer.

I used the spade ends on the wires from the amplifier, rather than baring the wires and attaching them to the attractive gold banana plug sockets on the woofer (Photo 9). Finally, I carefully



PHOTO 2: Faceplate of the KG-5150 amplifier module.

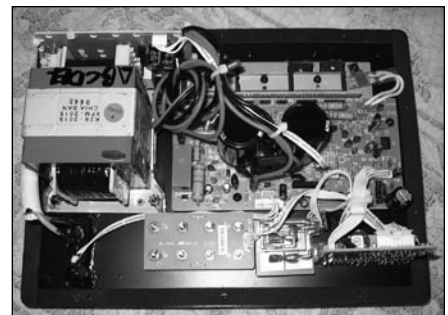


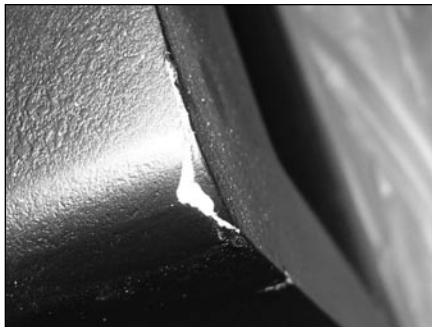
PHOTO 3: Circuit side of the amplifier module.



PHOTO 4: The front of the MDF cabinet, showing the woofer opening and two ports.



**PHOTO 5:** Amplifier mounted, and feet attached to the cabinet.



**PHOTO 7:** Small area of damage to the enclosure.



**PHOTO 6:** Interior of the enclosure showing the two ports and cross-shaped brace.



**PHOTO 8:** The fully stuffed cabinet, ready for mounting the woofer.

placed the gasket around the lip of the woofer and screwed it into the cabinet (**Photo 10**).

The total assembly took less than 45 minutes. For the listening tests, I added it to my existing system, placing it on the stone hearth centrally located between my Jean Marie Reynaud Millesime V loudspeakers, which are accompanied by my Acoustic Triangulators at the left and right rear positions. I cabled it to the subwoofer output of my Pioneer VSX-815 home theater amplifier's subwoofer line output, checked the connections, and applied power.

## SUBJECTIVE IMPRESSIONS

The controls on the faceplate at the rear of the subwoofer include an on/off switch, a toggle switch for selecting 0 or 180° phase (required when matching the phase to that of the main speakers), a toggle switch that enables a low-pass filter, and two potentiometers: one for the characteristic frequency of the low-pass filter between limits of 50Hz and 100Hz, and the other for setting the output level of the amplifier.

With the low-pass filter selected, it is sometimes difficult to tell whether the

woofer is operating at all: The amount of audible sound is, of course, much reduced. I attached a pink noise generator to the line inputs and was able to distinguish between the 50Hz and 100Hz settings of the low-pass frequency pot. With the low-pass filter out of circuit, there is much more signal, and I decided to leave it that way for some music listening tests.

I found the adjustment of the output



**PHOTO 9:** The Goldwood Sound 10" woofer.

level difficult: I wanted to turn it up so I could tell it was making a difference, but then all bass was too intrusive. After tinkering around for a while, I used the very handy automatic system provided by the Pioneer VSX-815, which uses a microphone input and a set of test tones to automatically set the levels for all speakers attached to it, and which involves placing the microphone at the usual listening position.

After going through that process, I settled down to listen carefully. One passage that I usually play when evaluating sound systems is the Allegro non Troppo movement of Shostakovich's 8th Symphony (Haitink, Concertgebouw Orchestra, Decca 411 616-2), which was especially impressive with a noticeably fuller and more exciting big drum sound at the end of the movement. Following that, I tried a change of mood, selecting the track "Sorrow" from Pink Floyd's "A Momentary Lack of Reason" (EMI CDP 7 48068 2), which contains some of the most fruity, bassy, and deeply distorted electric guitar that Gilmour produces. Again, I was most impressed by the extra sensations the subwoofer produced. It was a definite enhancement to the musicality of the whole system.

Over the next weeks and months, I listened to many different types of material. The most "in your face" difference is definitely experienced when watching movies; there are many very deep rumbles, atmospheric noises, and such that simply go unnoticed without the subwoofer. Explosions, of course, become moving experiences (literally), and several times while watching action/adventure films I feared for the foundations of my house, or wondered whether there was an earthquake.

In conclusion, I remain very impressed and pleased with this subwoofer. It does its job well, and simply worked well from the outset, after an easy construction procedure. My only complaint is its uninteresting shape, blackness, and size. I suppose if you want deep bass, you need to sacrifice space in your living room for something big like this.

## OBJECTIVE MEASUREMENTS

For these measurements I used the Ivie Technologies IE45 Real Time Analyzer system ([www.ivie.com](http://www.ivie.com)), equipped with

a Type II calibrated microphone. The setup is shown in **Photo 11**. The microphone, inserted in the IE45 jacket, was positioned about 2" from the face of the subwoofer. The IE45 software, running on a Samsung Q1 Ultra Mobile PC, was set up in 1/12 octave RTA mode, with power averaging of the dB levels in each band of the spectrum. The

IE45 software was also simultaneously instructed to generate a pink noise signal on the output jack of the PC, which was fed to the line input on the rear of the subwoofer.

Using this arrangement, I made several measurements, and the results can be seen in **Fig. 1**. The vertical scale shows dB SPL at the microphone. The curve

(A) shows the response with the subwoofer's low-pass filter disabled (turned off). The curve peaks at around 100Hz with a level of 90dB or so, and falls off either side with frequency. There is still appreciable output over 1kHz. (Note that the curve is not weighted, and that the broadband dB SPL at the microphone is 101.7dB, as shown in the lower right-hand window on the display.)

The curve (B) shows the response with the low-pass filter enabled, and the frequency pot adjusted to its maximum, which is marked 100Hz. The curve (C) shows the response with the pot adjusted midway (75Hz), and the curve (D) with it adjusted to minimum (50Hz). As you can see, this pot appears to simply alter the frequency at which the rolloff begins. The rolloff appears to be about 20dB/octave. *ax*



PHOTO 10: The woofer mounted in the cabinet.



PHOTO 11: Measurement setup, showing the subwoofer, the Ivie Type II microphone, inserted in the IE45 jacket, and connected to an ultra mobile PC running the IE45 RTA software.

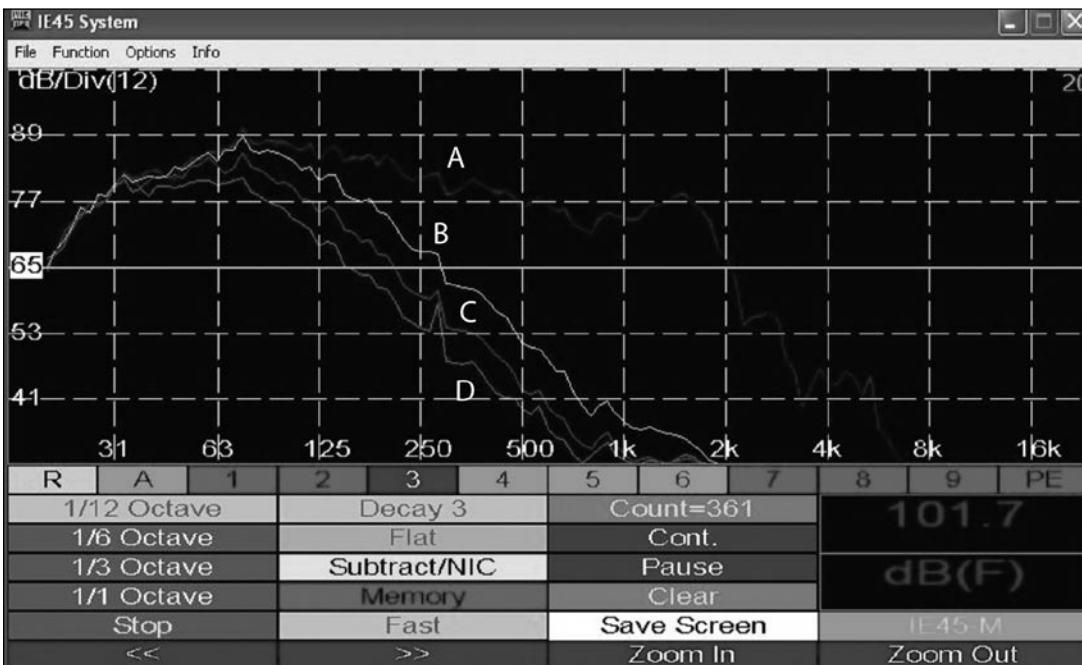


FIGURE 1: The IE45 RTA software showing measurements of the subwoofer's measured response to a pink noise signal.