



## Tip #49 The Remarkable H-PAS AT-2 Bookshelf Speaker

How do you follow up one of the most highly-reviewed speakers—our floorstanding AT-1— in audio history? You scale it down to bookshelf size and turn everything on its ear once again.

Presenting the remarkable AT-2 bookshelf loudspeaker with patented H-PAS™ Bass technology.

Our H-PAS bass technology, certainly won more than its fair share of amazing critical acclaim in the AT-1:

*Stereophile: Class B recommended (One category down from “cost no object”)*

*Home Theater: “. . . will put many a more expensive speaker to shame. . .”*

*Wide Screen Review: “The AT-1s produce more bass than my reference loudspeakers.”*

To refresh: H-PAS combines several speaker technologies— acoustic suspension, bass reflex, inverse horn, and transmission line—in a unique and innovative fashion to produce amazingly deep bass from small drivers in a compact enclosure. H-PAS breaks the previously unbreakable “Iron Law” of loudspeakers that said, “You can’t have deep bass extension, good system sensitivity, and reasonable enclosure size all in one design. Pick any two at the expense of the third.”

Now we’ve scaled down all that technology into a compact bookshelf speaker that performs like none before it.

### Here’s how it works:

Employing our special cabinet design (see figure 2), the elements of the different speaker technologies are cascaded one to another in such a manner so as to pressurize and accelerate the lowest frequency back waves as they travel through the cabinet. These waves

then radiate into the room through a vent at the lower front of the cabinet.

Think of it like this: when you have a water hose and you turn on the water, it flows limply out of the end of the hose. Turn the water up higher, and it flows out of the hose a little faster, but not much. That’s a conventional speaker.

But . . .if you put your thumb in the stream of water, you really increase the pressure at the end of the hose, and now the water leaps out of the hose with great force. It easily reaches 20 feet away, whereas before, the water only dribbled a few inches away from the hose, at most.

What a difference! That’s the H-PAS advantage.

Each of the cascaded speaker technologies contributes their own attributes to the sound—driver control, low-bass tuning, high efficiency, clarity and low distortion. The internal bass trap literally “peels off” the distortion harmonics before they exit the cabinet, ensuring a clean, detailed sound. Playing full-range music on the AT-2, you’re aware not only of the depth and power of the bass, but also the detail and ‘snap.’

It all adds up to amazing sound—sound that “breaks the rules”—incredible bass, compact enclosure, no on-board electronics, no special amplifier requirements. Unbelievable.

### Other Tech Tips:

- Tip 45: Impedance
- Tip 46: Series vs. Parallel Wiring
- Tip 47: Go Wireless
- Tip 48: Three in a Row

Figure 1 AT-2 pair



Figure 2 H-PAS chambers



Figure 3 Proprietary H-PAS algorithms

