

WHY PHASE-R

Chances are, you've looked and listened to a lot of loudspeakers recently.

Perhaps you know someone who's owned speaker after speaker in pursuit of the best sound they can afford. The engineers at Phase Research followed that same path. They acquired mirror image speakers, transmission line speakers, time-phased speakers, horn loaded speakers, all costing \$500 to \$3,000 a pair plus thousands for amplifiers to drive them. All had some good sounding characteristics but none created the whole of the musical illusion, the kind of sound that gives you the feeling that the performers are there, in the room with you.

Phase-R combined the elements of the world's most highly regarded loudspeakers with an **exclusive Phase-R innovative design** and blended those elements into a superb bookshelf size loudspeaker and floor standing model. Both sound great even with modestly priced electronics because of their ability to play at high levels with little power. Please read on and we will try to explain why a combination of all of the following design features is necessary.

ONLY PHASE-R COMBINES ALL THESE FEATURES:

EFFICIENT TRANSMISSION LINE BASS — FEATURING PHASE-R'S EXCLUSIVE —

- **"PATENT PENDING" COMPRESSION LINE LOADING** for massive wave fronts and exceptional dynamic range *with system matched*
- **"PATENT PENDING" RESONANCE HARMONIC DISTORTION LINE FILTER** filters out distortion for unprecedented bass clarity
- **NON-RESONANT CONSTRUCTION** hear the music, not the cabinet
- **TIME PHASED** for sharply focused detailed sounds
- **MINIMAL DIFFRACTION** for spatial accuracy and three dimensional depth
- **INAUDIBLE BAFFLE REVERBERATION** eliminate smearing effects for naturalness of tonal quality
- **MIRROR IMAGED WITH MATCHED VALUE CROSSEOVERS** for a precise staged location of all instruments and vocalists
- **QUALITY MATCHED COMPONENTS** with Phase-R's unique loading for optimum sensitivity, balance and dynamic range

MISCONCEPTION

The most commonly misunderstood concept of a loudspeaker's operation is that the raw components create the sound we hear from that speaker. In fact, these components, whether they are horns, domes, electrostatics, woofers, etc., **do not make one peep**. These components are designed to **vibrate air** and depending on how fast or slow that vibration, the tonal frequencies we hear are created. Therefore, **the paramount issue in loudspeaker design is, the stimulation and movement of air, with linearity from low frequencies to high, and in unrestricted movement away from the cabinet**. If this is accomplished, the results will be a smooth wide range frequency response, accurate tonal quality, and a life-like spatial illusion. **It is to this issue of air movement that Phase-R addressed itself in its design pursuit of an accurate, high quality, loudspeaker system.**

COMPRESSION LINE LOADING A PATENT PENDING EXCLUSIVE

Because transmission line designs are considered to be more linear and to go lower in frequency, with minimal distortion, many of today's most highly regarded speaker systems utilize this innovation. When Phase Research set out to build a better mouse trap, this was the only logical choice. No one argues the fact, however, that transmission line designs are power hungry. Our efforts to incorporate all of the advantages of a transmission line while filling the need for increased sensitivity, therefore dynamic range, led to the invention of "Compression Line Loading" (patent pending).

If any one parameter clearly dictates the major difference between loudspeaker reproduction and live sound, it is a loudspeaker's typical inability to reproduce live dynamic range intensity particularly in the bass region. In music, dynamic range is the difference between the softest and the loudest output delivered by an instrument at some distance. Why is the need so great for dynamic range? See **Figure 1** which lists the actual measured dynamic range of several live instruments at 10 feet. For example,

Figure 1

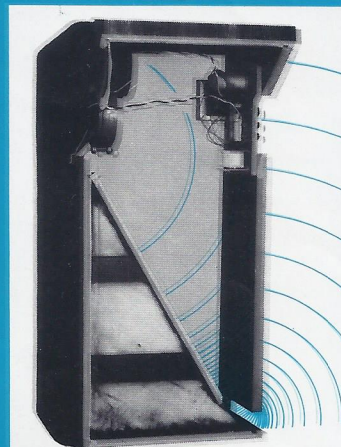
Piano	60 to 100 dB
Organ	35 to 110 dB
Bass drum	35 to 115 dB
Trumpet	55 to 95 dB
Violin	42 to 95 dB
Tympani	30 to 110 dB
Cymbal	40 to 110 dB

The above intensities are measured at a distance of 10 feet from the instrument.

the wavelength of a sixty-cycle note is almost 19 feet long. To really feel the dynamic intensity of this long wavelength requires the ability to move a lot of air with incredible force. Phase-R loudspeakers are the world's only systems capable of *efficient* transmission line bass. In fact, they are capable of playing three to four times louder (6-12db more efficiently) than typical transmission line loudspeakers, producing effortless bass that becomes part of the room as though environmentally alive. **How? Pressure!**

Imagine you have a glass full of water and a straw. If you point the straw at the surface and blow, you will splatter the water surface, but only the surface. Now, place the straw down inside the water and blow. What happens? All of the water in the glass is powerfully moved (more dynamic range) and with much less effort (more efficient). What has taken place is a density, *pressure* change result-

Figure 2



Air waves being compressed in chamber then forcefully released for better coupling with room air.