
Subject: Pi Speakers FAQ

Posted by [Wayne Parham](#) on Sat, 06 Oct 2012 04:15:02 GMT

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access all of it easily. However, this page offers introductory answers to frequently asked questions about our line of loudspeakers and the design philosophies we embrace. Click on a subject heading below to view questions and answers relating to your selection. Links throughout the answers will guide you to further information on our website or from other sources. Should you have any further questions, please ask in a related thread or write a new topic.

General Information

High-Fidelity Uniform-Directivity Loudspeakers

Uniform Directivity - How important is it?

Notes for the DIYer

Pi horn design philosophies

My personal opinions of various design philosophies

Corner pi speakers

Surround voicing and matching the mains

Models, Upgrades and Driver Characteristics

Info to compare Pi models

Options in a nutshell

Upgrades

Electro-mechanical properties and diaphragm motion

Magnet structures

Push-pull verses shorting rings

12pi push/pull benefits

Heat exchanger effectiveness

Speaker Voice Coil Cooling System Valve

Radiant Cooling System (Cooling Plug) Patent

Cabinet Design

Hoffman's Iron Law

Vented Speaker Systems

Response curves of closed vs. vented systems

Speaker damping - Overdamped, Underdamped or Critically Damped

Acoustic filter Q and PiAlign's "Qe"

Pi Alignments compared with B4, C4 and QB3

Helmholtz formula

Helmholtz frequency of each model

- Displacement calculations (or measurements)
- Cabinet design, port placement and internal standing waves
- Golden ratio for loudspeaker cabinets
- Trapezoid enclosures
- Damping material placement
- Altering dimensions

Horn / Waveguide information

- Basshorn or Transmission Line
- Midrange Horn
- Midrange horn shape in Pi cornerhorn
- H290C Horn/Waveguide
- Horn phase
- Pattern control and mouth size
- Horn/Waveguide dimensions and beamwidth
- Matching directivity in the vertical and the horizontal planes

Crossovers

- Speaker motors and passive crossover filters
- Crossover Electronics 101 Seminar Handout
- Phase angles, crossovers and baffle spacing
- Baffle spacing, phase angles and time alignment, revisited
- Tweeter circuits for constant directivity horns and waveguides
- Woofer size for uniform directivity loudspeakers
- Crossover configuration
- 4Pi crossover study
- Baffle Step

Room Effects and Loudspeaker Interactions

- Constant directivity verses on-axis EQ for non-uniform directivity (aka baffle step filters)
- Loudspeaker sensitivity and boundary loading
- Boundary conditions and room interactions
- Boundary conditions and floor bounce
- Floor Bounce
- In-wall Baffle
- Imaging, placement and orientation
- Speaker placement and wavefront launch
- Corners and frequencies
- Room modes, multisubs and flanking subs
- Helper Woofer Location
- Flanking Subs vs Helper Woofers
- Benefits of Flanking Subs

Simulations and Measurements

Spice crossover models
Determining mechanical reactance values for Spice models
Clarification of attenuation values
DI-matched two-way loudspeakers
Crossover optimization for DI-matched two-way speakers
Crossover optimization for DI-matched two-way speakers, revisited
The Acoustic Center: How it applies to Loudspeaker Measurements

Miscellaneous
Mounting Screws and T-Nuts
Gaskets
Midhorn Bracing

R11/R13 Fiberglass Insulation and Environmental Health