

# Polifemo



# Your personal Room Tuner

# Phemo



Polifemo and Phemo are a pressure/resonance device with a variable system to fine tune its resonant frequency. Designed for the world of Hi-Fidelity and the Studio, it is a modern way to apply Helmholtz's physical principles in a listening room. Refined and unique technical solutions make it possible to adjust the resonant frequency and tune it to the corresponding resonance of a specific room. A mechanical iris diaphragm is Polifemo's eye and together with the port in the base (with its adjustable opening system) tune the resonator to the room. It is an infallible and quick process. Polifemo and Phemo adaptability is unlimited. Furthermore, whether changing your listening room or loudspeakers, its effectiveness will be maintained and never be redundant. The effective range of Polifemo and Phemo begins at 26Hz, and is effective up to over 60 Hz, working with powerful effect on either a narrow frequency window or a broader and smoother wide frequency window range. Polifemo and Phemo clearly improve low frequency resolution and gives the medium and high frequencies a much better sense of "floating" over the bass (rather than sinking into and being overwhelmed by it), the soundstage becomes wider while maintaining perfect instrument focus with gains in realism and micro detailing, a performance with extraordinary dynamic contrast without any listening stress.

#### How to use Polifemo and Phemo adjustment features

- Both on Polifemo and Phemo, with the variable port in the base the main resonant frequency can be set between 25 and 60Hz.
- On Polifemo only, with the adjustable Iris port the Q value and the amount of energy that comes back into the listening room can be adjusted.
  - On Polifemo only, with the internal membrane, adjustment of the internal dampening is made possible.

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# POLIFEMO and PHEMO POSITIONING AND SET-UP

All the following suggestions and instructions about Polifemo, apart those concerning the adjustment and orientation of iris port and internal paddle damper, are valid for Pheмо also.

## Positioning

- 1) In most installations Polifemo and Pheмо have shown the best general performance (effectiveness at low frequencies, Improvement in tonal balance, width and depth of soundstage, and focusing) positioned along the lateral walls in close proximity to the loudspeakers (with a minimum distance of about 30 cm). So two Polifemos or Pheмос are necessary in rectangular shaped rooms and one or two in irregular rooms.
- 2) Positions along the wall behind the loudspeakers (area of the first rear reflections) have also offered very good results. In comparison to the lateral wall position a more interesting dynamic result is frequently observed, along with a more complex control of tonal balance. In both of the previous two cases, Polifemo will return energy to the under-powered frequency areas, effectively “filling in the valleys” in a wide bandwidth (well over 300 Hz), draining the excess energy from the “peaks”.
- 3) Polifemo or Pheмо placed in the corners produces more powerful control of the resonant “peaks” and “boom” but with a less effective “redistribution” of energy. Therefore “equalization” action is reduced and adjustment becomes more critical.
- 4) Positioned in the middle of the wall behind the loudspeakers, Polifemo or Pheмо can offer excellent or quite poor results depending on the distribution of acoustic energy in the listening room and from the typology and positioning of the loudspeakers. (See point 6 below)
- 5) Positioned in the middle of lateral walls Polifemo or Pheмо have a positive effect on low frequencies, increasing both control and dynamics.
- 6) **IMPORTANT:** both in regular rooms, but especially in irregular ones, the **BEST** place to put a Polifemo or a Pheмо is **ALWAYS** where it is evident that through normal listening a strong excess of low frequencies is evident in a general location within the room. Tumultuous and confused energy clearly perceptible in one or more points of the room that dramatically disappears when we move only a few centimeters outside the zone is a clear sign of the confluence of standing waves that are combining to create a “peak” that quickly becomes a “trough” a short distance away. By placing a Polifemo or Pheмо within the “peak” area the excess energy is smoothed out and most importantly the “phase” of each low frequency transient will be corrected lending the presentation a transparent and lively feel. Very often there are circumscribed areas that can easily be discovered walking around the room while listening carefully and playing a track rich in low frequencies. Of course an SPL meter can always be utilized to precisely locate areas of excessive energy but this is often self evident with a brief walk around the room.

## Adjustment of Polifemo and Pheмо

This consists of 4 phases:

- 1) adjustment of the opening in the base; center frequency of absorption
- 2) adjustment of the iris opening; level of attenuation and dispersion (on Polifemo only)
- 3) adjustment of the internal membrane inclination; damping and bandwidth (on Polifemo only)
- 4) orientation of the Polifemo; fine tuning of staging information (on Polifemo only)

### 1) **Adjustment of the opening in the base (setting by ear)**

Start by rotating the Plexiglas disk, after having loosened the two transparent screw knobs that hold it rigid, making it coincide with the port. This will begin the center frequency tuning process at the lowest note. Be sure that the iris on the front of Polifemo is completely open during this process! Play a track on the system that is rich in low frequencies (electric bass, etc.) or a test track containing frequencies between 20 and 300 Hz. Slowly rotate the Plexiglas disk in the base decreasing its open cross section until you hear less strength or boom in the low frequencies with cleaner articulation. With this simple and infallible process the set-up of Pheмо is end. On Polifemo, if you don't hear distinctive variation in the quantity and quality of bass energy repeat this exercise with the iris port closed. If you still don't discern variations, leave the port in the base fully open and gently lock the Plexiglas disk using the two transparent knobs and go on to the next adjustment.

If two Polifemo or Phemo are placed along the lateral walls in symmetry with the left and right loudspeakers it is not a hard and fast rule that both devices must be tuned identically; on the contrary often due to intrinsic asymmetries in the room or system a different set-up for each device is required. Obviously it is possible for one to perform a fine tuning of the base port by instrumental measurement using a sound level meter instead of doing so by ear.

## **2) Iris port adjustment**

Consider Polifemo's iris as a passive loudspeaker and the knob that controls its opening size as a volume control. With the iris fully open the Polifemo processes more energy across a wider bandwidth making the presentation more open and clear. With the iris fully closed Polifemo exclusively works on the lowest note of the bass frequency transient with little effect on higher frequencies. Changing the iris opening will alter the spatial dimension of the soundstage and the tonality of voices. Carefully adjusting the iris opening of two Polifemos placed on the wall behind the loudspeakers or along left and right lateral walls it is possible to correct soundstage asymmetries and phase shifting between the right and left sides of the listening room thus creating a more solid and "fast" sound. Obviously the tuning of the iris also influences the presentation of low frequencies but their main regulation is through the opening or closing of the base port. So first choose the size of the base port opening with the iris fully opened or fully closed and with "Polifemo's eye" oriented toward the listener. Rotate the knob controlling each Polifemo iris to get the tonality and energy that is desired from that side of the soundstage. We suggest making adjustments gradually from the optimum listening position utilizing a well known recording with a focused central voice.

## **3) Adjustment of paddle damper**

While the iris setting has an influence over a wide frequency range, the internal paddle membrane inclination angle affects only the area between 150 and 250 Hz. Adjustment of the paddle allows either more or less freedom of constantly oscillating vertical air motion within the body of Polifemo. With the paddle in a horizontal position (parallel to the floor) the sound will be fast and dry, while in a vertical position (perpendicular to the floor) the sound will be smoother and more reverberant. Any position between these two extremes is acceptable depending upon the overall presentation and taste of the listener. It is best to start fine tuning with the paddle in the vertical position (perpendicular to the floor).

## **4) Orientation**

After the correct opening of the base port and iris are decided and the preferred membrane inclination settled, an important step in the Polifemo set-up is its rotation relative to the listening point and to the surrounding walls. Where the eye of the iris points determines the speed of the low frequencies and this in turn influences soundstaging and focusing. Let's discuss only the case of a Polifemo placed along the side wall. Generally with the iris oriented toward the neighboring wall timing will improve, low frequencies will become drier and the soundstage will become wider. With the iris oriented toward the listener energy will increase, but with a rounder and less dry bass; the soundstage will be more forward and "in your face". With the iris oriented toward the loudspeakers energy is more focused but rounder and more forward, as in the previous case. With the iris oriented toward the corners behind the loudspeakers the soundstage will gain more "breath" and there will be a clear increase in stage depth. This orientation generally produces better timing of low frequencies and a well controlled energy balance.

# POLIFEMO and PHEMO suggested positions

