

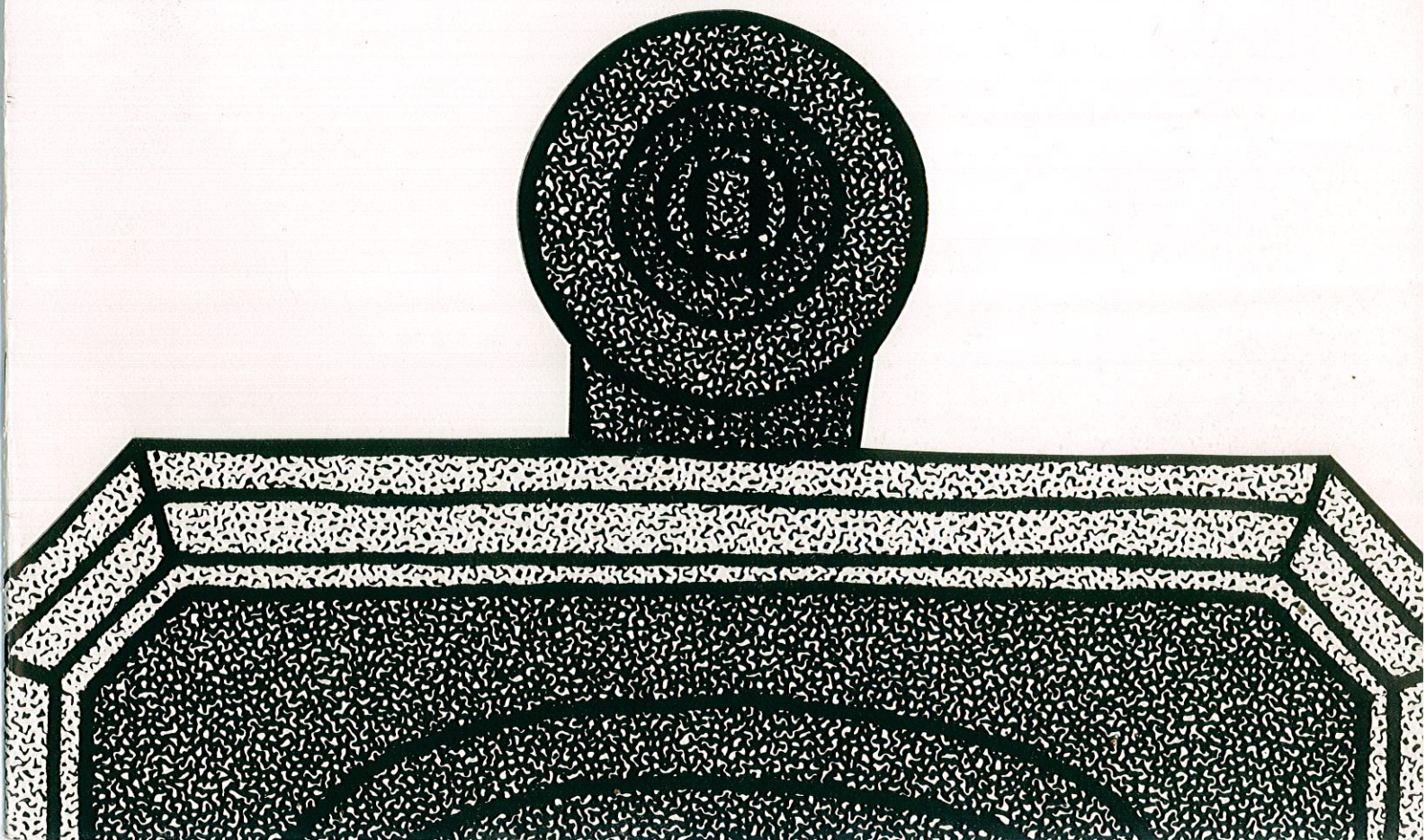


Ohm Acoustics Corporation

COHERENT AUDIO MONITORS

General Information and Owners Manual

Please read before set-up



Dear Valued Customer:

Congratulations on your choice of Ohm Coherent Audio Monitors. Your selection suggests that music is as important to you as it is to all of us at Ohm Acoustics.

In designing these speakers, I wanted to make them so you would be able to hear *all* of the individual details within the music. When I attend a live performance, I revel at every sonic detail. When these details add together in my head, the performance becomes very real and alive — I am hearing the sum of all the individual performers, not a homogenized average of the total sound.

When you are listening to these speakers, see if you can pick out the voices of individual performers in a good choral recording; the different notes in the bass line as someone goes up and down the frets of a bass guitar; or to clearly hear the difference between the bass drum and bass guitar. You might want to dig out some of those old recordings that you thought you knew all too well. I think they will surprise you with details you never heard before.

When I am listening to stereo loudspeakers, I always try to pinpoint the exact location of each instrument and performer and to visualize the size and character of the room in which the recording was made. It is also important to me that I never actually hear sound coming from one of the speakers. I expect the music to erupt from a tangible three-dimensional sound stage that spans one end my listening room.

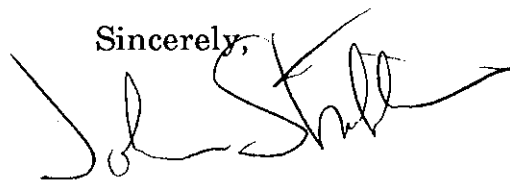
For me, solo female vocals are among the most pleasing types of music and also one of the most demanding of the tonal accuracy of a speaker. We spent hundreds of hours sounding these speakers so Joni Mitchell or the Metropolitan Opera Company would sound as we have heard them live.

We are very pleased with our new Monitors, and we hope you will get as much pleasure from listening to them as we did from designing them. We are confident that they will give you years of trouble-free musical enjoyment.

Before you unpack your Monitors, please read "Getting Started" in these instructions. There's a chance you'll throw away an important part with the packing if you don't. Beyond that, we have included many set up and adjustment pointers that will help you get the maximum enjoyment from your new Monitors.

Thanks for choosing Ohm. Good listening!

Sincerely,

A handwritten signature in black ink, appearing to read "John Strohbeen", written over a horizontal line.

John Strohbeen
President

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1. Getting Started

Unpacking Your Monitors

After you have opened one of the cartons and removed these instructions, you must find the Egg Tweeter (ET). It is located in a padded plastic bag attached to a cardboard panel in the top section of each box. Carefully lift the panel out of the box and remove the Egg Tweeter from its packaging. **Caution:** While the tweeter dome is well protected by the guard grills on the front of the egg, be careful not to damage the dome with any sharp instruments used to remove the packaging materials. Now, set the ET aside in a safe place.

You will now see that the Monitor is lying on its back in the carton. Remove the two cardboard sleeves that encompass it, and stand the box upright. You can now easily slide the speaker cabinet out of the box.

Repeat this process for the other speaker. Be sure to save all the packing materials in case you ever have to ship your Monitors.

Assembling Your Monitors

Assembly is simply a matter of inserting the plug on each of the Egg Tweeters into the connector jacks in the top of each cabinet.

While the grills are removable for inspection or service, it is recommended that they be left in place to avoid accidental damage to the speaker drive units. At the frequency range of the woofer, these grills are absolutely acoustically transparent.

Initial Tweeter Adjustment

Angle the Eggs so that they will point towards the center of your listening room. A 45 degree setting is a good place to start for good all around performance.



For your initial set up, angle the tweeters inward at about a 45 degree angle; angle them even more if you need a very wide sweet spot.

Preliminary Listening Set Up

Before you commit to a permanent speaker installation, it is a good idea to experiment with any possible speaker placement options in your room. Thanks to the unique design of these Monitors you will have many more placement options than you would have with conventional loudspeakers.

Connecting Your Monitors

Cut two lengths of speaker wire that will be long enough for any possible final installation, but don't run the wires behind furniture just yet. Be sure you have enough to experiment with for all possible locations, and also to go around the furniture plus plenty of slack for later moving of components.

Turn your hi-fi's volume control all the way down and unplug the amplifier or receiver. This will avoid accidental damage from sudden turn-on transients or accidental short circuits while wiring the Monitors.

Make sure that you have adequate speaker wire. We strongly recommend No. 16 lamp cord, especially for long runs of more than 8 feet. Remember the lower the wire gauge number, the thicker the wire (i.e., No. 16 wire is thicker than No. 18 wire). If your Ohm dealer did not provide you with wire, you should be able to buy some at any hardware store.

Your Monitors have push type connecting terminals on the backs of the cabinets that can accept either bare wire or banana plug connectors. For a bare wire connection, strip back no more than 1/2 inch of insulation at both ends of the wires with a wire stripper or a sharp knife. Twirl the strands of each of the exposed ends to prevent stray strands of wire from shorting out your Monitors.

Most wire is coded with ridges or colored stripes so the two strands of wire can be distinguished from each other. This allows you to connect the left- and right-channel positive (+ or red) terminals on your amplifier to the respective positive terminal on the left and right Monitors. Likewise, the negative (- or black) terminals on your amplifier must be connected to the negative terminals on the Monitors. If the wires are crossed, your Monitors will be operating out of phase with each other and a great deal of the performance would be lost.

Now go ahead and connect your Monitors as described above. Be sure to double check your connections before you proceed.

After double checking to make sure that the amplifier's power switch is turned off and the volume control is turned down, you can plug your amplifier into the wall outlet. Now, connect your amplifier to a CD player, turntable or other musical source, and slowly increase the volume to the desired level. If you don't hear anything by about 40 or 50 percent of the volume knob rotation, turn the volume all the way back down and check your switches and connections. These procedures will help prevent damage to the system from unexpected surges of power.

2. Setting Up Your Monitors.

Your Ohm Acoustics Coherent Audio Monitors can be readily set up to work well in a wide variety of listening room situations, including some you would not normally consider with conventional speakers.

In most ways, setting up these Monitors is easier than setting up conventional speakers because the Monitors offer many more options in terms of placement. Yet, this flexibility can be a double-edged sword, giving the user more options to consider and more possible adjustments to achieve the optimum sound stage.

You can place your Coherent Audio Monitors in almost any reasonable location and then adjust the orientation of the tweeters to achieve the best sound. While there are very few situations where it would be necessary to compromise between placement and sound quality, some arrangements will work better than others.

Once you have learned how to adjust the Egg Tweeter for various situations, the entire set up process becomes very straightforward.

Egg Adjustment

Generally speaking, the adjustable Egg Tweeter can do three things.

First, it can be adjusted so that good stereo imaging can be obtained over a very wide listening area.

Second, it can be adjusted to give the best possible stereo imaging in a specific position that could be a position where good stereo is ordinarily difficult to achieve, if not impossible, like very close to one Monitor and far from the other, or off the side of the pair of Monitors.

Third, rotating the Egg Tweeter is a way to change the high frequency balance of the speaker. Your Monitor will sound brightest with the ET's aimed at you and less so as they are turned away from you.

The Egg Tweeter usually will be used with the tweeter rotated toward the center of the listening area. In this situation, a listener closer to one Monitor than the other, will have the tweeter of the near Monitor aimed away from him, while the tweeter of the far Monitor is aimed at him. The focus of the far Monitor offsets the precedence of the near Monitor and allows both Monitors to contribute in a balanced way. Precise angling of the tweeters, adjusting for the distance between the Monitors and the distance that the listener is from them can create an amazingly broad area in which there exists a balanced stereo image.

If a mono signal such as a central soloist is off to one side, aim the Egg Tweeter on that side more toward the center (a higher angle on the scale) and the opposite Egg Tweeter more toward the listener (lower angle). This should move the soloist more toward the center. You can also engage the mono switch on your

amp or receiver to get this useful alignment signal. This technique can be used to fine tune the Egg Tweeter's rotation.

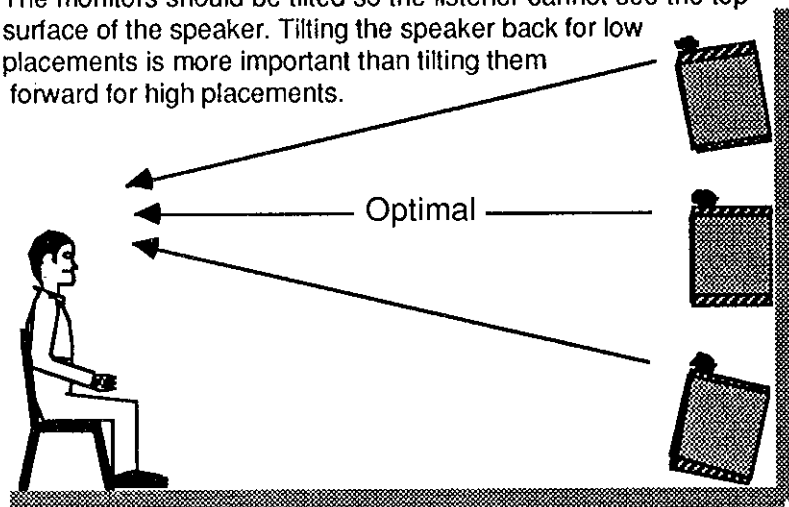
Adjusting the Height of Your Monitors in the Room

How high your Monitors are relative to the listener affects their optimum performance. The Monitors are designed to sound best when the fronts of the cabinets are at eye level. In this orientation, the low frequency and high frequency drive units in your Monitors are optimally aligned with each other and their output is timed so that all of the components of the musical spectrum arrive at your ears in perfect time and phase alignment.

If that is not the best position in your room, you can compensate for a different height by tilting the Monitors forward or back. The tilt should be such that the top surface of the Monitor is aimed just over the top of your head, so you cannot see the top surface of the speaker from your preferred listening position. Note: If you want good imaging from both seated and standing positions, it is better to align for the standing position.

Speaker Height Adjustments

The monitors should be tilted so the listener cannot see the top surface of the speaker. Tilting the speaker back for low placements is more important than tilting them forward for high placements.



Positioning your Monitors for the Best Bass

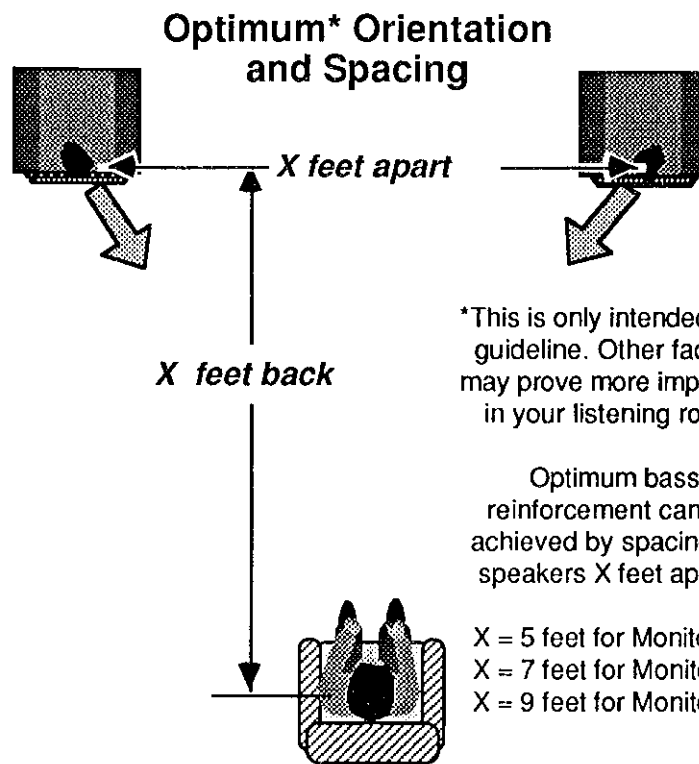
The two factors that will most affect the bass performance of these Monitors in your listening room are the positioning of the Monitors with respect to room walls and the spacing between the Monitors.

The positioning of your Monitors with respect to room walls is significant because bass is non-directional. Your Monitors radiate bass frequencies in all directions. If the Monitor is placed in front of a wall, all of the sound that the Monitor would radiate to the rear, is reflected and added to the bass you hear. Placing the Monitor in a corner further doubles that effect and placing it on the floor (the floor is a wall surface) in a corner would increase the bass even more.

The bass would be the weakest when the Monitors are mounted away from all wall surfaces; and strongest where they are close to several wall surfaces. When there is a lack of bass reinforcement provided by room walls, the spacing of the Monitors from each other becomes more critical.

There is an optimal spacing for each of the various models for best bass performance. This spacing results in a coupling of long bass wavelengths that can effectively double the deep bass output. For the Monitor 16 that distance is about 5 feet; for the Monitor 32 it is about 7 feet; and for the Monitor 42 it is about 9 feet.

This spacing is most significant when your Monitors are not benefiting from the bass reinforcement provided by being placed against room walls or near corners.



Using Tone Controls

We encourage you to use tone controls to optimize the performance of your Monitors in your listening room. Great care was taken in the design of these Monitors to achieve tonally balanced performance. Their inherent tonal balance makes them very adaptable and adjustable. One aspect of the Monitor's performance is that they radiate sound very broadly and very similarly at all frequencies. Tone controls can then smoothly and subtly change the Monitors tonal balance without sounding harsh or unnatural.

Tone controls have another role in enhancing your Monitor's performance. There are some situations where the best setup of the Egg Tweeters for stereo imaging is to have them turned radically away from you. In this situation, you can compensate for the resulting loss of treble by turning up the treble control.

The loudness contour on your amplifier is also a tone control of sorts. At low listening levels [, i.e. below conversational levels,] it can compensate nicely for the tendency for music to sound thin and unnatural. At louder levels, it unnaturally boosts the bass and treble. At these louder levels we think it is better to use your tone controls rather than your loudness control.

Subsonic or, more accurately, infrasonic filters are good things and should always be used when they are available. They reduce the danger of damage to your Monitors caused by infrasonic (inaudible frequencies below 20 Hertz) information. Their use also improves midrange detail and clarity by preventing the amplifier and Monitors from doing unnecessary work reproducing sounds that you will not hear anyway.

3. Practical Placement Tips

No two hi-fi systems sound alike because essentially all listening rooms are different. By its interaction with the speakers, the room is a part of the sound system which in turn must be adapted to the room through careful choice of speaker location and alignment, and the use of tone controls. With their adjustable tweeter system, Ohm's Coherent Audio Monitors are much easier to adapt to any room because they greatly increase the number of possible speaker placement and alignment options. However, you should still position them in a location that is as close as possible to ideal.

As was explained on the preceding page, each model monitor has an optimum spacing corresponding to each model's bass characteristics. Of course, if you vary the spacing by one or two feet in either direction, there will be some change of bass, but it won't be devastating. Placing the speakers too close together will reduce the width of the stereo sound stage and increase the midbass output. Separating the speakers too much will create a hole in the middle of the sonic image. This latter problem can be effectively dealt with through the use of these Monitors' adjustable tweeters, or, if practical, by angling the speaker cabinets toward the center of the listening area.

Usually, the best location for the listener is to be about as far back from the speakers as they are apart and an equal distance from both of them. For example: if the speakers are 10 feet apart, then the listener should be 10 feet back from a point half way between both speakers.

With most conventional loudspeakers, you should try to remain as close to this ideal as is possible. With these Ohm Coherent Audio Monitors, you can make significant deviations from the "idea" with no sacrifice of sound quality.

The following are common specific problems and some suggested solutions.

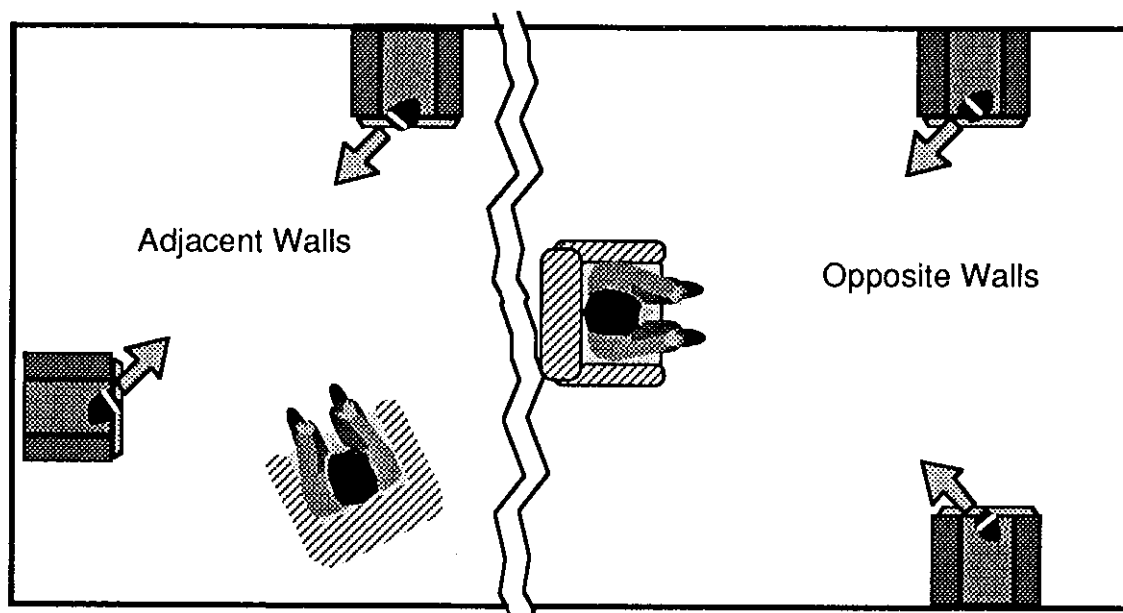
Two Monitors on the Same Wall Facing the Listener

In this most common situation, the Tweeter Eggs should be aimed so that their focus crosses slightly in front of the center listening area, allowing a listener who is off to the side to be in a line of sight with the opposite speaker's tweeter. In extreme cases, where the listener might be to the right of the right speaker or to the left of the left speaker, stereo imaging can be maintained if the far tweeter is aimed at the listener and the near tweeter is aimed away from the listener.

Two Monitors on Adjacent Walls

In this situation, we recommend aiming the Egg Tweeters at each other. This will give the broadest listening area with good stereo. If you generally listen from a specific spot, experiment with the rotation. Generally, aiming the near tweeter away from you, and the one far tweeter toward you will broaden the sound stage.

Preliminary Tweeter Alignments for Use on Adjacent or Opposing Walls



Two Monitors on Opposing Walls

In this situation, the positioning of the Egg Tweeters depends on your position with respect to the Monitors. If the Monitors are opposite each other at the end of a long room and you are sitting at the other end of the room, it would be best to rotate the tweeters toward you about 45 degrees. However, if the Monitors are in the middle of the listening area, the best setting is to have the Egg Tweeters aimed at each other (not illustrated). Experiment with different settings.

On Bookshelves and Wall Units

First place your Monitors as far forward on the shelf as possible so the adjacent shelf surfaces won't hinder dispersion. If you mount the Monitors very high up, tilt the speaker slightly forward. If the speaker is on a low shelf, you can tilt it back as necessary to keep the top surface of the speaker out of view.

On Stands

In some rooms, positioning these Monitors on stands out away from a wall can be very satisfying, although you may find a slight boost of the bass control will be necessary in such situations.

Floor Mounting

If you place your Monitors on the floor, be sure to tilt them back to preserve the time and phase alignment of the drivers. Remember, the top surface of the speaker should not be visible from your normal listening position. Floor mounting will also provide a significant bass boost. In fact, some listeners may want to tone down the bass in such installations.

4. Final Hook Up

Once you are satisfied with the positioning and sound quality of your Ohm Coherent Audio Monitors, you are ready to make your installation more permanent.

Running the Wires

Turn down the volume and switch off the power on your amplifier. If it is necessary, carefully disconnect the speaker wires and run them out of sight behind the furniture, under carpets, through walls, etc. Leave lots of slack in the wire so that the components can be moved around without straining the connections. As we mentioned earlier, be sure to use at least 16 gauge wire.

Connections

Be sure the wire is carefully stripped back about 1/2 inch from the end and each conductor is twisted to keep the strands from fraying. Most important, be sure you maintain the correct polarity, with the amplifier's [+] or Red terminals connected to your Monitors [+] or Red terminals, and the [-] or black terminals similarly connected together. Use the speaker wire's ribbing as a guide to keeping the polarity correct. A good memory device is the phrase "red ribs"— connect the ribbed wire to the red terminals and the other wire to the black terminals.

Fine Tuning Your Tweeters

Once the system is back up and running, you can further experiment with the adjustment of the tweeters. Each tweeter has an angle scale to let you record settings used during your experiments. This way, you can always go back to a preferred setting.

5. Caution!

The power handling capacity of your loudspeaker has been conservatively rated for use with high powered amplifiers; from 85 watts for the Monitor 16, 125 watts for the Monitor 32 and 200 watts for the Monitor 42. Ferrofluid™ cooling as well as thermal overload devices are built into the drivers to absorb momentary overloads.

Ohm's unique Lock Gate™ circuit audibly alerts you with a loud snapping sound should you have exceeded the maximum safe power input level of the speaker. If you hear such a sound, turn the volume down immediately.

Although your Ohm Coherent Audio Monitor speaker has high power ratings, it is possible to damage your loudspeakers with underpowered amplifiers. **Do not use amplifiers rated at less than 15 watts per channel.**

A small, low-power amplifier driven to distortion is more dangerous than a large amplifier playing within its normal operating range. Heavy rock, the crescendos in classical music, dropping a tone arm on a record or switching stations with your amplifier turned up can cause your amplifier to produce an inordinate amount of distorted power; as much as ten times the rated amount. CD and LP test discs also contain signals that can be harmful if they are used improperly.

The key to operating your Monitors safely, then, is operating your amplifier within its low distortion range. This low distortion range is not that easy to determine. Most amplifiers will begin to distort when the volume control is at about the one o'clock position. The extra range in the volume control is there to allow the amplifier to play an unusually low signal like a weak FM station or a quietly recorded tape at full power. With a normal signal, anything past one o'clock is usually distorted. Equalizers, tone controls and loudness contour buttons also can tell the amplifier to play louder. Boosting bass severely and pushing in the loudness button can cause the amplifier to deliver full power at an even lower volume control setting.

There is a way to tell when you have exceeded the maximum undistorted power limit. Listen for the point at which the dominant part of the music such as a vocalist stops getting truly louder but begins to sound harsh. That's the point at which clipping distortion in the amplifier begins. The extra loudness that you hear beyond that is all distortion. Distortion does make the music sound louder, even though the music really isn't louder.

Your Ohm Coherent Audio Monitor is equipped with a Thermo Guard™ protection device. When the Monitor approaches thermal overload, which is the result of playing the Monitor loudly for extended periods of time, Thermo Guard reduces the Monitor's output drastically. Turn your amplifier down, let the system cool, and the circuit will reset in two minutes or less. You can then resume playing the Monitor at normal levels. Thermo Guard eliminates the need for any external fuses.

6. Troubleshooting.

This troubleshooting guide is designed to help you in the unlikely event that your monitors are not functioning properly. Most problems are easily solved — a 'tape monitor' switch in the wrong position, a disconnected phono cable, etc.

However, if there is something wrong with one of the monitors, you should return it to your dealer who will repair it under the terms of the warranty, or send it directly to Ohm if the dealer can't handle the problem. If the speaker is no longer under warranty, you can ask the dealer to repair it at his regular rates, or you can ship it directly to Ohm for repair at a nominal charge for parts and labor. If you follow this troubleshooting guide, you may only need to send the Egg Tweeter or woofer and not the whole speaker cabinet.

On the Monitor 32 and 42, the woofer is the top-most element in the speaker cabinet. The large, speaker-like device below it is actually a passive radiator with no electrical parts and no likelihood of failure. The woofer can be easily removed from the cabinet by undoing the four screws around the rim, and carefully disconnecting the speaker wires on the back of the driver. The woofer can now be sent back separately to reduce shipping and packaging problems. The woofer or a replacement will be returned to you with instructions for reinstallation.

No Sound From Either Speaker

1. Check all the switch settings on your stereo system.
2. Check all connections between the components and the speakers.
3. It is statistically improbable that both speakers would be totally inoperative, and these situations invariably prove to be a hi-fi system problem. Don't go to the trouble of returning the speakers until you have checked the system with speakers you know work elsewhere.

No Sound From One Speaker

1. Check speaker connections for that channel.
2. Check system component connections for that channel.
3. Make sure the balance control is centered.
4. Swap speaker wires with other speaker.
 - A. If the previously-good speaker now does not work, then the problem is with that channel of the stereo system and not the speakers.
 - B. If the other speaker works okay, and the original problem speaker fails to operate using the other channel, then it should be returned for repair or replacement.

Speaker Shuts Down While Playing

1. You have probably greatly exceeded the normal operating limits of the speaker and triggered the Thermo Guard protection circuit. Turn off your hi-fi system and allow the speaker to cool down for a few minutes, then try again; do this several times before you give up. If it still doesn't work, return it for repair or replacement.

Loud Knocking Sound While Playing

1. A sudden dynamic musical peak has exceeded the speaker's safe operating range. Turn the volume down a bit. If the speaker still functions normally, no harm was done.

Speakers Don't Sound Right

1. Rotate the balance control from fully left to fully right to identify which speaker doesn't sound right.

Sounds Tinny, No Bass.

1. If the speaker sounds tinny and lacks bass, the woofer is probably at fault. Unplug the tweeter and listen for sound coming from the woofer. If there is no sound from the woofer, return it for repair or replacement.

Rasping Sound.

1. If the woofer emits a rasping, distorted sound you have a faulty woofer. Return it for repair or replacement.

Static From Tweeter.

1. If the tweeter emits a lot of static, pull the tweeter up and down and spin it around a few times to improve the electrical connections.
2. If that doesn't work, swap tweeters with the other speaker to see if the problem is in the tweeter or in the cabinet connections. Return the faulty component, either the ET or the cabinet, for repair or replacement.

Sounds Muffled, No Highs.

If the speaker sounds muffled, put your ear next to the Egg Tweeter, which is mounted on top of the cabinet, and listen for the hissy, high frequency sounds that should be coming from it.

1. If there are no sounds coming from the tweeter, make sure the Egg Tweeter plug is pressed all the way into the connector socket. When looking from the side, you should not be able to see the central shaft of the plug.
2. Be sure the music you are listening to has some treble in it and that the treble control is not turned down.
3. Spin the tweeter around a few times to improve the electrical connection.
4. Swap tweeters with the other speaker and see if the suspect tweeter works properly when plugged into the other speaker cabinet.
 - A. If the problem tweeter is now okay and the formerly good tweeter no longer fails to operate, then the problem is with the internal wiring. The main speaker enclosure, not the tweeter, should be sent in for repair.
 - B. If the tweeter is bad no matter which speaker it is used with, then you should return the faulty tweeter for replacement.

7. Other Features

Ohm Acoustics Coherent Audio Monitors are noticeably different from conventional loudspeakers, the most obvious difference being Ohm's unique, rotatable Egg Tweeter. However, in addition to the ET's already documented imaging characteristics, the separate mounting of this tweeter eliminates the baffle board reflections that play havoc with the sound of conventionally mounted tweeters. At treble frequencies, the tonal character of the sound is greatly effected by reflections from adjacent surfaces, especially the conventional front baffle boards into which most speakers' tweeters are mounted.

Few people realize how serious this problem is. Ask a friend to talk while holding his hands open next to his mouth to form a sort of baffle board. You will instantly hear how significantly the sound quality changes when his hands are moved in place or removed. For the very short treble wavelengths, the tweeter is mounted sufficiently far above the cabinet so that it is free of the cabinet's effects.

Perfect Time and Phase Alignment

In any loudspeaker design it is desirable to have the sound from all of the drivers arriving at the listener's ears at the same time and in perfect phase alignment. By locating the tweeter behind and above the woofer, the sound from these drivers will be perfectly aligned for a listener whose eyes are level with the top of the speaker. Furthermore, because the tweeters axis of rotation is offset, this time and phase alignment is maintained when the tweeters are rotated.

Heavily Braced, Low Diffraction Cabinet Enclosure

Acoustically transparent (especially since only bass drivers are behind them), frameless grills and beveled cabinet edges cut down unwanted cabinet reflections.

Speaker designers intend for sound to radiate only from the speakers drivers, any sound radiating from the flexing of the cabinet walls adds distortion and coloration to the sound of the speaker. Dense, strategic bracing stiffens the extra heavy cabinets. You'll notice the lack of the sense of sound coming from the box. Rather you'll hear music realistically staged in your listening room.

High Efficiency & Power Handling Capability

These rugged Coherent Audio Monitors are designed to deliver a high acoustic output with modestly powered amplifiers, yet they are engineered to withstand the abuse of high powered amplifiers and wide dynamic range digital sources.

The tweeter is a 3/4" Ferrofluid- cooled polycarbonate dome with a huge 50mm magnet. Its egg shaped housing contributes greatly to the openness and airiness by being an optimum shape for the radiation of high frequencies into a broad area.

The woofers have polypropylene cones and Tufflex™ sound absorbing material lining the inside of the woofer's frame to dampen unwanted reflections

from the frame. Their resulting freedom from one of the main causes of speaker coloration allows them to sound more natural and resonant free than other speakers.

Further protection by the Thermo Guard circuit breakers, Lock Gate current sensitive protection circuits, rugged speaker coils and Ferrofluid cooling insure that these are speakers that you'll be able to enjoy for years to come.

8. Specifications

	MODEL 16	MODEL 32	MODEL 42
Frequency Range (± 4 dB):	46 to 20,000 Hz	39 to 20,000 Hz	32 to 20,000 Hz
Recommended Power:	15 to 85 watts	15 to 125 watts	15 to 200 watts
Sensitivity:	89 dB	90 dB	91 dB
Impedance:	8 ohms	8 ohms	8 ohms
Enclosure Volume:	16 liters (0.56 cu ft)	32 liters (1.13 cu ft)	42 liters (1.48 cu ft)
Tweeter:	19 mm (3/4 in)	19 mm (3/4 in)	19 mm (3/4 in)
Woofer:	165 mm (6-1/2 in)	165 mm (6-1/2 in)	205 mm (8-1/2 in)
Passive Radiator:		250 mm (10 in)	300 mm (12 in)
Height:	438 mm (17-1/4 in)	565 mm (22-1/4 in)	673 mm (25-1/4 in)
Width:	229 mm (9 in)	324 mm (12-3/4 in)	375 mm (14 in)
Depth:	279 mm (11 in)	279 mm (11 in)	279 mm (11 in)

9. Glossary

alignment The relative physical relationship between two speaker drivers and their outputs. If two drivers in a speaker system are properly aligned, both sound waves will arrive at the listener at exactly the same time and in the same phase.

baffle or baffle board The panel on which the speaker drivers are mounted.

balance The relative left to right output of a system. A balanced system has an equal proportion of the sound coming from left and right. (see tonal balance)

banana plug Electrical connector that has a springy connecting pin that presses tightly against the walls of a matching plug to make a firm contact.

bass Sounds on the low frequency end of the audible spectrum. Generally considered to be below 500 Hz. Examples: large drums, string bass, tuba and the low end of organ range.

brightness Term used to describe the relative amount of high frequency energy in music. A speaker that is too

bright is over emphasizing the high frequencies.

channel Referring to either the left or the right electrical or acoustic output of a stereo system. Quadraphonic and surround-sound have even more channels, but most recorded music has only two.

clipping A type of distortion caused when an amplifier tries to produce a sound louder than its capability. The amplifier cuts off the loud part, generating excessive audible distortions — speaker drivers can also clip when driven beyond their operating limits.

coherent Referring to a state of alignment, where two or more elements are moving side-by-side and in-step with each other. Two sound waves from two drivers simultaneously reproducing the same input signal are coherent when the peak of one wave arrives at the same time as the peak of the other wave.

distortion Any unwanted change of a sound from the original. There are several types of distortion, which are generally measured as a percentage of the deviation from the original.

driver Term used to describe an individual sound generating device within a speaker system. A tweeter is a driver, a woofer is a driver. A speaker system is made up of one or more drivers in an enclosure.

enclosure The cabinet, including the baffle board, which contains the bass/midrange speaker drivers and prevents the rear output of the drivers from escaping in an uncontrolled manner.

equalizer A electronic device that can boost or cut the output level of a segment of the audio frequency range. For example, it could add a 6 dB boost to a 200 Hz wide band centered at 1000 Hz

Ferrofluid An oil-like ferromagnetic (substance that is attracted to a magnet) liquid that fills the circular speaker coil gap between the magnetic poles. The fluid clings to the magnets and conducts heat away from the coils and dissipates it into the surrounding structure. The exact formulation of this unique and very expensive substance is a secret.

frequency The number of repetitions of an event in a given period of time. Generally measured as the number of repeating cycles per second. See Hertz.

frequency response A specification used to define the useful frequency range of an audio product by giving the lower and higher extremes that can be reproduced. An ideal frequency response has no deviation throughout the audio frequency range from 0 to 50,000 Hz.

grill or grille Acoustically transparent cover that protects speaker drivers and enhances the cosmetics of speaker.

harsh A subjective term used to describe an excessive level of upper midrange and treble energy.

Hertz (Hz) A unit used to describe the frequency of oscillation. It indicates the number of cycles per second of an oscillating sound or electrical wave.

infrasonic Term used to refer to sounds with frequencies below the audible threshold of 20 Hz. (Often, incorrectly called subsonic). Infrasonic sound is largely felt in the ribs and gut, rather than heard through the ears. Cannons, thunder and heavy machinery such a diesel locomotives generate a lot of infrasonic and sonic energy.

infrasonic filter Electronic circuit that blocks infrasonic frequencies, allowing the amplifier and speakers to operate more efficiently, and to reduce acoustic feedback to turntables.

midbass A segment of the bass frequency range, roughly from 120 to 240 Hz. The low end of the male vocal range.

midrange Sounds in the middle of the audible spectrum. Generally considered to be between 500 and 2,500 Hz. Represents the main range of spoken voice and most musical instruments.

midrange driver A speaker designed to be an efficient midrange reproducer.

monitor A loudspeaker of sufficient accuracy to meet the demands of recording studio engineers, who need to compare recorded sound quality to that of the original

live performance in the recording studio.

openness A subjective term used to describe a loudspeaker with excellent treble response that is very free of distortion.

passive radiator A unpowered speaker-like diaphragm that works in concert with the woofer at low frequencies to produce up to three times the acoustic power of a woofer working alone.

phase The relative orientation of two sound waves with respect to each other. In speaker design this refers to the relative phase alignment of the sound from different speaker drivers.

polarity When the same signal is played through two speakers, the speaker cones should move in and out at the same time. This requires that amplifiers and speakers be connected positive pole to positive pole and negative to negative to avoid reversing the output of one speaker.

speaker coils A wire, wound loosely around a magnet, through which the audio signal passes. An oscillating audio signal interacts with the magnetic field and the coil moves back and forth driving an attached diaphragm back and forth to create sound.

stereo imaging Describes the ability of a hi-fi component or speaker to recreate a realistic three-dimensional sonic image of the original performance.

subsonic See infrasonic/infrasonic filter

sweet spot The area in a listening room where the listener perceives he is hearing equal sounds from the left and right speaker systems, with the three-dimensional sonic image spread equally across the space between the speakers.

tonal balance The relative levels of low, mid and high frequency sounds. A tonally balanced speaker has an equal proportion of all parts of the musical spectrum as well as an absence of pronounced peaks or dips in the frequency range.

tone controls Electronic circuits that adjust the output level only over a specific frequency range, individually boosting or cutting the bass, midrange and treble as needed. The effected band width is much wider than an equalizer.

treble Sounds in the high frequency end of the audible spectrum. Generally considered to be those above 2,500 Hz. In music, most treble consists of overtones and harmonics of the primary tones. Snare drums, cymbals and mechanical noises are rich in treble.

tweeter Device designed to reproduce high frequency sounds with maximum accuracy and efficiency

wavelength Sound is transmitted by alternate compression and expansion of the air. The distance between one part of this oscillation to the point where the cycle repeats is one wavelength. It equals 1100 feet per second (the speed of sound in air) divided by the frequency of the sound in Hz.

woofer A speaker driver designed to reproduce bass sounds most efficiently. It is generally the largest diameter driver in a speaker (a passive radiator, which is not a driver is usually larger).

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