BAREFOOT

MicroMain26

Owner's Manual

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1.0 Description

The MicroMain26 is a 4-way active system with 6 drive units housed in sealed enclosures spanning 30Hz to 45kHz with low distortion, wide dynamic range and ultra-fast transient response. The ring radiator tweeter is exceptionally detailed and produces very wide dispersion out to its highest frequencies. The 2.5" midrange is housed in a cutting edge 3D printed waveguide sealed enclosure. Its stiff and lightweight aluminum cone moves a s perfect piston out to 2.5 octaves past its intended frequency range. The 5.25" woofers feature a phalanx of advanced technology, yielding upper bass and lower midrange detail that rivals any driver on the planet.



Melding the system together is a powerful DSP based amplifier that took Thomas Barefoot more than 4 years to develop. The unit houses world class converters, powerful and transparent crossover filters and 7 individual 180 Watt amplifier modules that can generate short term peaks of over 1000 Watts.

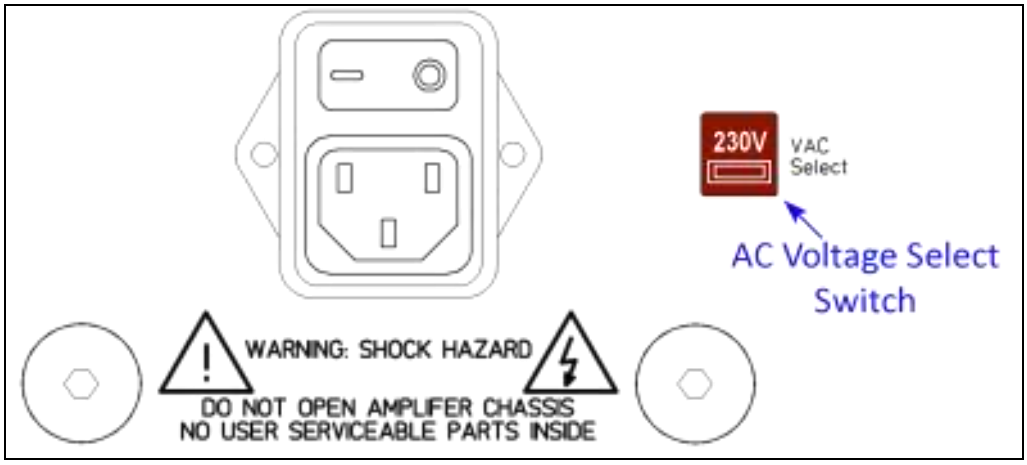


Barefoot's innovative Multi Emphasis Monitor Emulation™ technology, or MEME™ (*"meem"*) for short, enables the MicroMain26 to emulate the frequency, phase and transient responses, dynamic compression, distortion signature and overall translation characteristics of other classic studio monitors.

2.0 Warnings!

The Mains Voltage Select switch (VAC Select) on the rear panel must be in the 230V position for AC power line voltages over 132 VAC. Connecting the power cord to AC power line voltages over 132 VAC while the VAC Select switch is in the 115V position will damage the amplifier. Such damage is NOT covered under warranty.

Rear panel VAC Select switch location

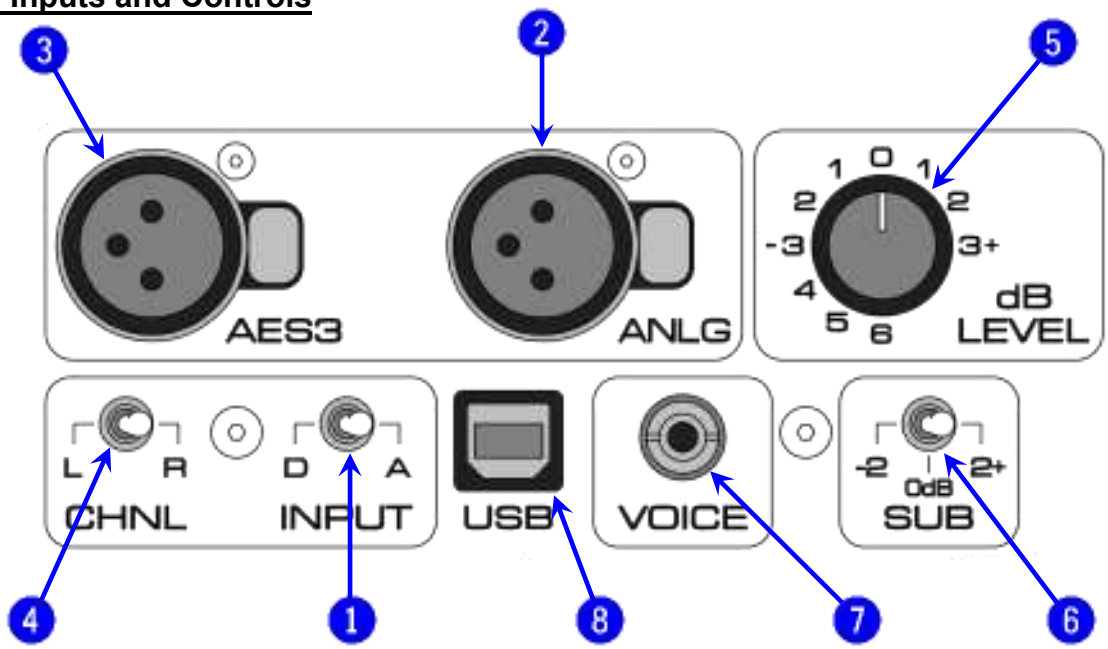


Please read and follow the safety information below:

- Do not remove the rear amplifier panel. There is a risk of electric shock. No user serviceable parts are inside. Please refer service issues to a qualified technician.
- Do not operate this device with an ungrounded mains power cable or a mains connection that is ungrounded. This may result in personal injury.
- Do not place open flames such as lighted candles on or near this device .
- Do not expose this device to water, rain or high humidity. Do not place objects filled with liquids, such as vases, on or near this device.
- This speaker requires adequate airflow to maintain proper cooling. Do not obstruct airflow around the speaker. Do not run the speaker upside down (mains power connector on top).
- Do not operate this device in ambient temperatures above 30°C (85°F). Over-temperature may cause device failure.

Caution! This speaker is capable of producing sound pressure levels in excess of 85dB which may cause permanent hearing damage. Always verify that input signal levels are attenuated before powering on the speaker.

3.0 Inputs and Controls



1. [INPUT] Toggle switch selects between the analog (A) and digital (D) inputs.

2. [ANLG] XLR connector is designed to receive analog balanced line level audio signal from sources such as preamplifiers, sound cards, monitor controllers and mixing consoles. Pin 1 is tied to chassis ground. Pins 2 & 3 are fully floating differential inputs. Pin 3 must be referenced to ground for single ended input signals. The analog signal is converted to 24bit/192kHz digital audio via a precision, ultra-high-fidelity analog to digital converter section inside the MicroMain26.

3. [AES3] XLR connector is designed to receive digital AES3 standard audio signal from sources such as sound cards and digital audio workstations (DAW). The digital signal must be attenuated at the source ("In The Box"). **Caution:** Non-attenuated digital audio will produce very high sound pressure levels that can potentially damage your hearing and/or the speakers. Each AES3 XLR carries both left and right audio signals. For stereo or multiple speaker operation the monitor output signal must be assigned to two or more AES3 output XLRs within the DAW. Otherwise, a passive AES splitter or an active AES distribution amplifier is required to deliver signal from a single AES output XLR. Use the CHNL switch on the back of each speaker to select appropriate left or right audio signal from the stereo AES signal.

4. [CHNL] Toggle switch selects between the left (L) or right (R) channel coming from the AES3 data signal. This switch is only active when the INPUT toggle is in the (D) position.

5. [LEVEL] Eight position rotary switch adjusts the level of both the Analog and Digital inputs in precise 1dB increments from +3dB to –6dB.

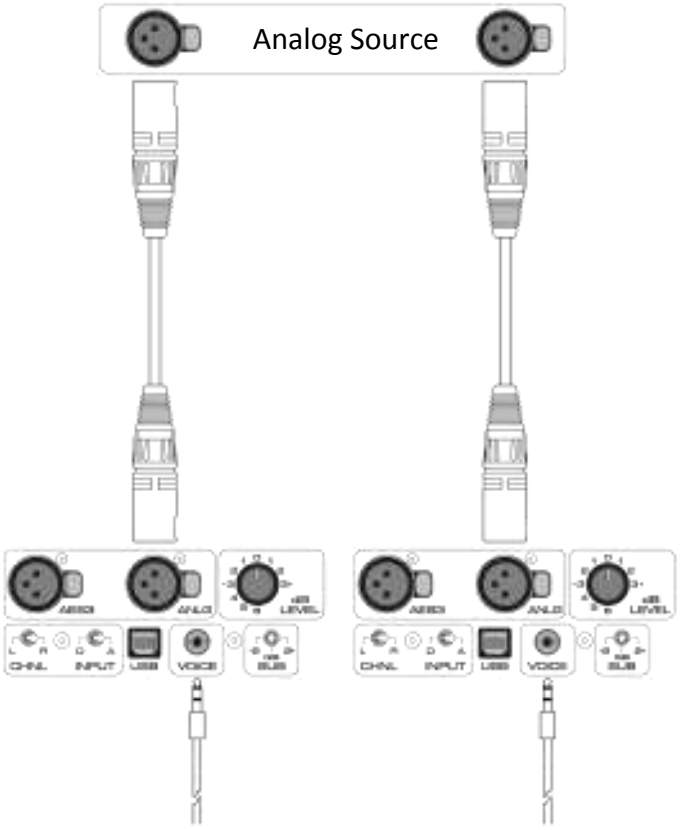
6. [SUB] Three position toggle switch adjusts the level of the subwoofers from 0dB to +2dB or –2dB.

7. [VOICE] 3.5mm stereo phone jack for connection to MEME™ Selector Switch. See Section 9 for MEME™ settings and connection details. The default setting with no switch connected is Flat.

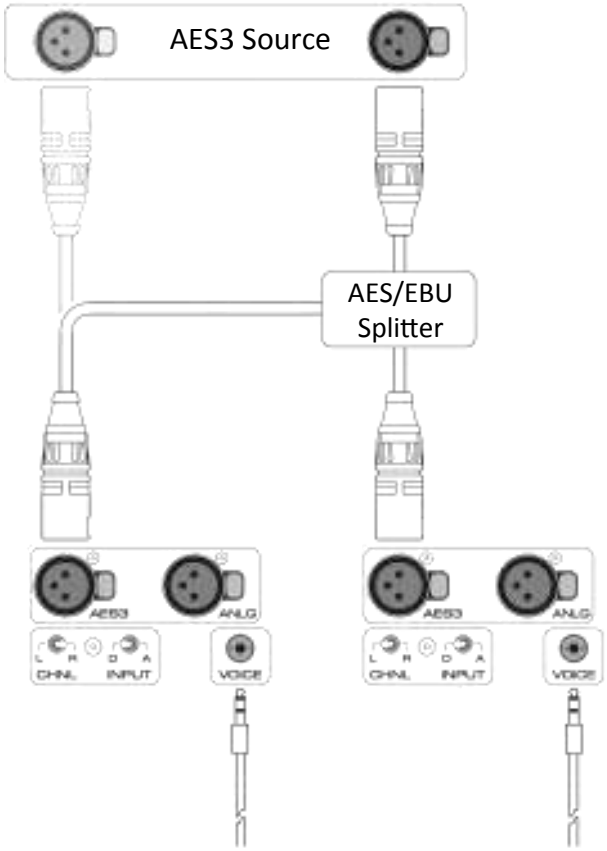
8. [USB] The universal serial bus connector is for factory adjustments and calibrations. This connector is NOT an audio input.

4.0 Connections

Analog:



Digital:



* See Section 11 for Voice connection details.

5.0 Startup

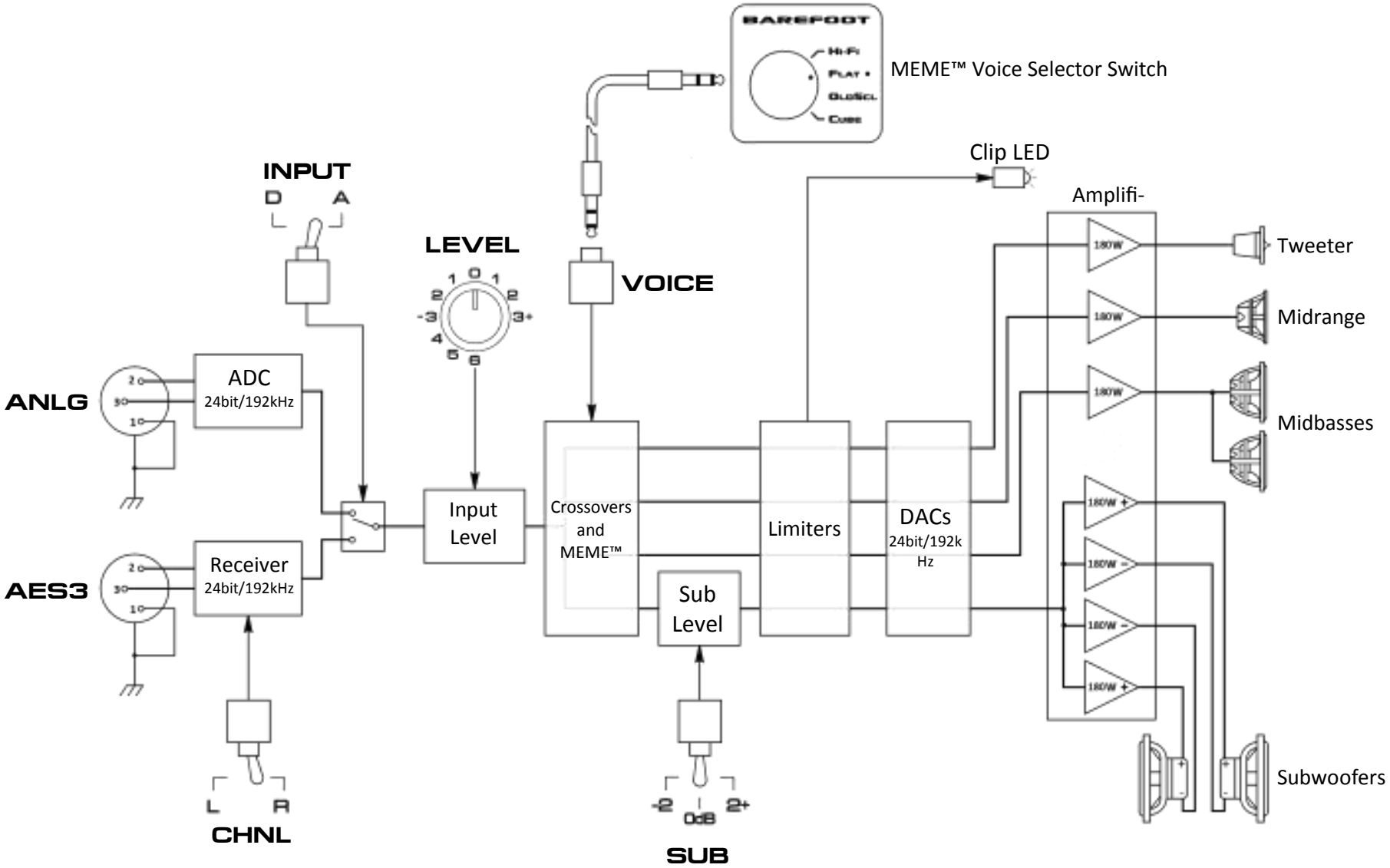
1. Verify that the AC Voltage select switch on the rear panel is in the correct position for the AC voltage in your facility (see warnings on previous page for details) then plug in grounded mains power cable.

2. Set Input toggle switch to either analog (A) or digital (D) depending on the type of source signal you are using. For digital signals also set the Channel toggle switch to left (L) or right (R) in accordance with the speaker position.

3. Ensure that the audio signal is fully attenuated (AES3 signal requires digital attenuation).

4. Power on the speaker with the rocker switch located on the rear panel above the mains connector. The LED indicator on the front of the speaker will illuminate Red for a couple of seconds then turn Aqua.

6.0 Signal Flow Diagram



7.0 Protection

Limiters

Peak Limiter
The Subwoofer, Midbass and Tweeter channels have individual Peak Limiters designed to protect each driver from high amplitude, short duration audio input signal spikes that might cause damage due to over excursion of the voice coil. These limiters are implemented digitally within the DSP in such a manner that they have zero effect on the audio signal below their thresholds. The front LED indicator light will flash RED when a Peak Limiter on any of the driver channels is triggered. The duration of such events is only a fraction of a second. Therefore, the LED flash may appear pink or orange as the eye naturally blends the normally aqua-blue color of the LED with the red.

RMS Limiter
The Subwoofer, Midbass and Tweeter channels have individual RMS Limiters designed to protect each driver from long duration, high amplitude audio input signals that might cause thermal damage due to the voice coil. These limiters are implemented digitally within the DSP in such a manner that they have zero effect on the audio signal below their thresholds. The front LED indicator light will flash RED when a RMS Limiter on any of the driver channels is triggered.

Caution: Signals large enough to trigger any of the limiters can generate very high sound pressure levels that may result in permanent hearing damage.

Over Current

In the event of a large audio input signal that might damage the amplifiers or power supply due to current overload, the power supply is designed to enter into Over Current protect mode. This state typically results from a large, broadband input signal burst that flat lines the limiters on all four channels simultaneously. While the fault persists the amplifier power rails shut down, the speaker goes quiet, and the front panel LED turns red. Once the audio input signal is turned down the speaker should reboot within a few seconds. If the speaker fails to reboot or the LED light goes out completely, disconnect the audio input cable and power cycle the speaker. Verify the signal level is attenuated before reconnecting audio input cable.

Caution: Signals that cause Over Current protection to trigger can generate very high sound pressure levels that may result in permanent hearing damage.

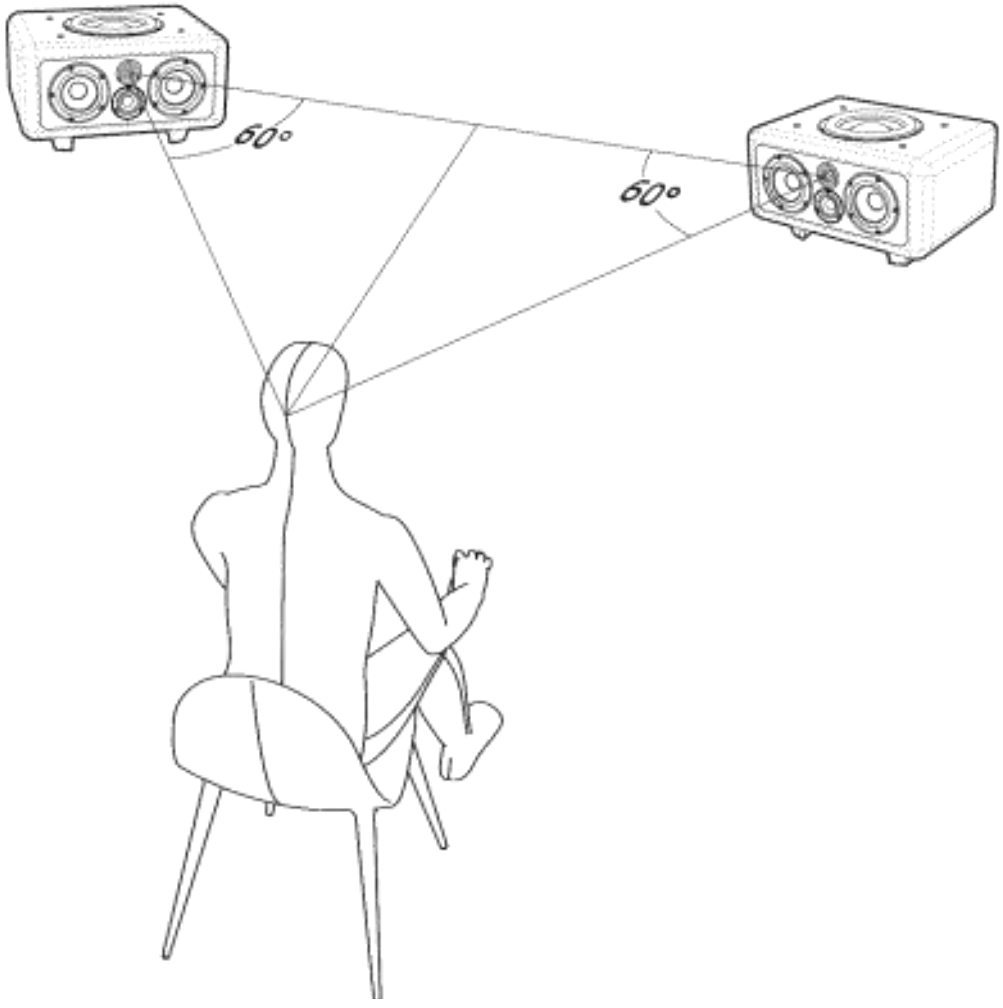
8.0 Positioning

The acoustic center of the MicroMain26 is located at the center of the tweeter. The MM26 is designed to work equally well as a nearfield or mid-field monitor. The minimum recommended listening distance is 1 meter (39.4”). This provides enough distance so the sound waves from the individual drivers can coalesce and the speaker sounds like a single source. While speaker positioning can often be dependent on the nature of the room, a good starting point is to create an equilateral triangle between the two speakers and the listening position. The speakers should be angled inward so the tweeter axes aim towards the listener’s ears, crossing a few inches behind the head.

A “typical” placement scenario might have the speakers positioned 2 feet (60cm) from the front wall, the tweeters at ear level and the speakers and listening position forming an equilateral triangle with 5 feet (150cm) sides. However, every room has its unique characteristics. Therefore, the optimal listening distances, speaker height and distances from walls are a matter for experimentation. The MM26 is well equipped to work at a variety of listening distances.

The horizontal cabinet orientation yields the widest horizontal dispersion and “sweet spot.” Since we tend to move around much more from left to right than from sitting to standing, a wide sweet spot is usually more useful than a tall sweet spot. Therefore, the horizontal cabinet orientation is preferred.

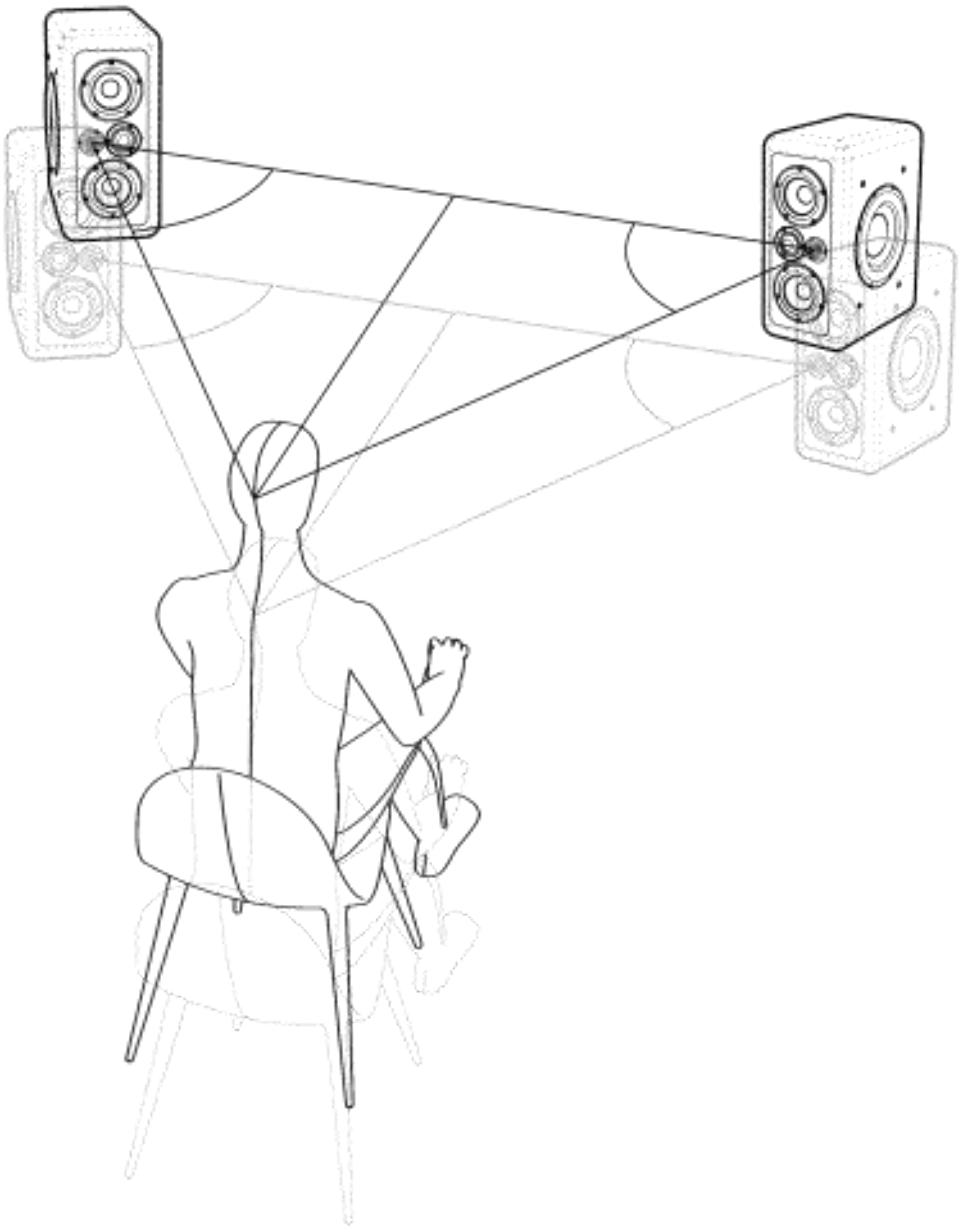
Example: Preferred stereo arrangement.



8.1 Vertical Orientation

While the horizontal cabinet orientation is preferred, in some cases it may be desirable to stand the MM26 in the vertical orientation. This will result in sacrifice to the width of the sweet spot. Place the speakers as mirror images with both tweeters either to the outside or the inside of the stereo field.

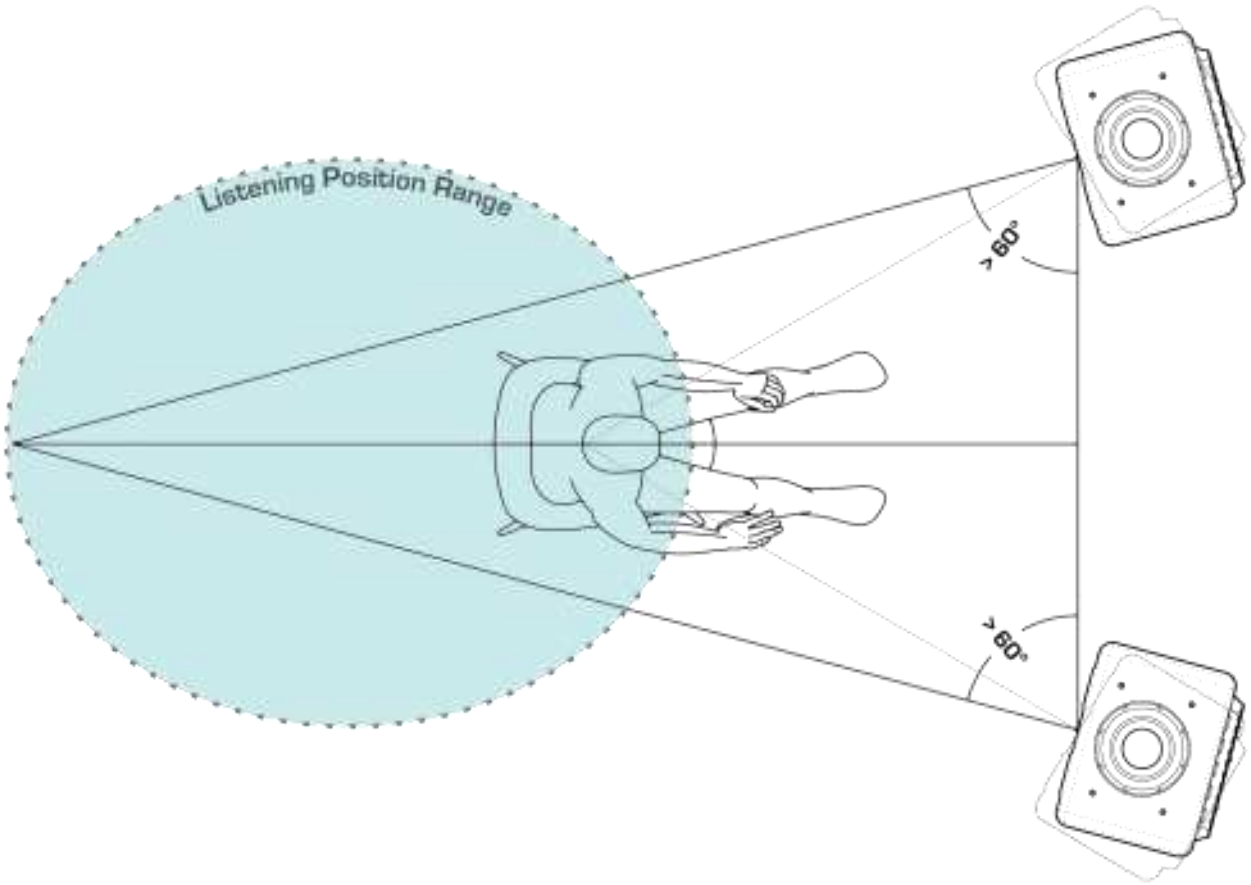
Example: Symmetrical stereo arrangements for the vertical orientation.



8.2 Widening the Stereo Field

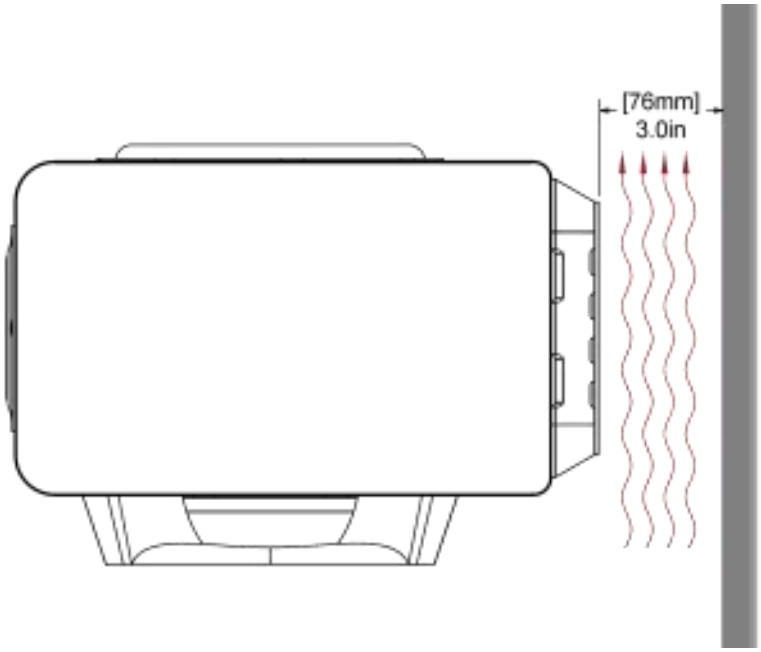
We generally recommend angling the speaker axes in towards the listening position to create an equilateral triangle as described above. This yields the most accurate high frequency response and the sharpest stereo image at the center listening position. In some cases, however, the listener might change positions frequently. Or there might be multiple listeners. In such situations it may be desirable to have a wider and less focused stereo field which provides better coverage over a range of listening positons. This can be achieved by aiming the speaker axes more forward such that the axes cross further behind the center listening position. The figure below illustrates the general principle and is not meant to be an exact measure of speaker angles or optimal listening positions.

Since the MicroMain26 has such wide off-axis dispersion, the angle relative to the listener can be changed by up to 10 degrees with less than 1 dB variance in the frequency response across the audible spectrum. Angling the speakers forward in this manner will somewhat defocus the center stereo image while providing generally better imaging over a range of listening positions. For some users this may be an acceptable compromise.



8.3 Cooling

While the amplifier modules that drive the MicroMain26 are very efficient, the speaker still generates a significant amount of heat that must be dissipated. This heat is transmitted to the air via convection from the rear amplifier plate. In order to ensure proper airflow, a minimum of 3" (76mm) clearance should be maintained between the speaker and any large obstructions like walls. An ambient room temperature below 30°C (85°F) should be maintained. Over-temperature may cause speaker to overheat and shut down.

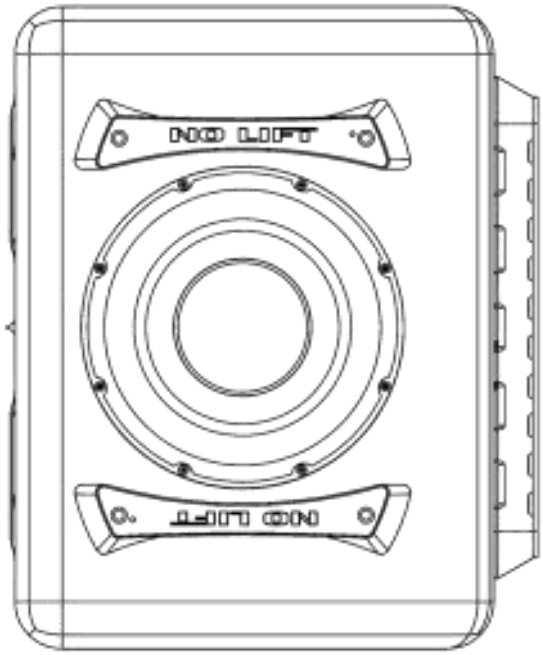


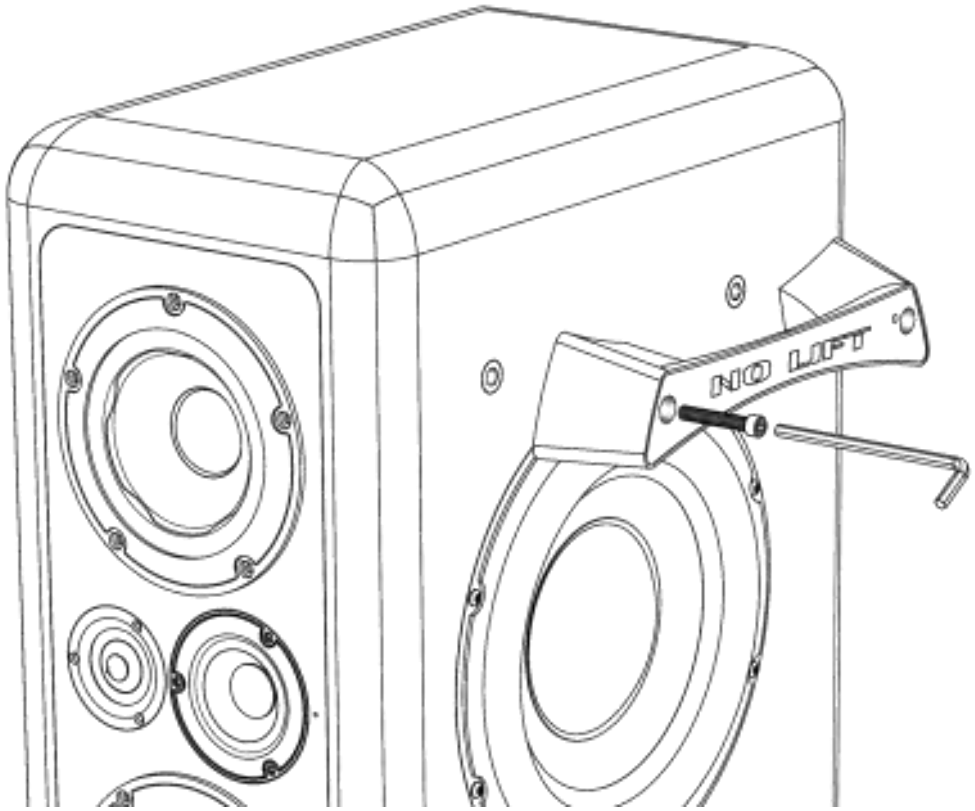
9.0 Pedestal Attachment

Caution: The pedestals should never be used to lift or suspend the MM26.

Each MM26 is supplied with two pedestal legs. The pedestals provide clearance for the down firing subwoofer while the speaker stands in its normal horizontal orientation. Stand the cabinet in the vertical orientation. Attached the pedestal by positioning it over the mounting holes on the bottom of the speaker cabinet. Insert the 5/16"-18 x 1.25" cap head screws and tighten using the 3/16" hex key.

Do not over tighten! Over tightening can strip out the threaded cabinet inserts and/or damage the finish of the cabinet. Such damage is not covered under warranty.





A good way to ensure you do not over tighten the screws is to put the long end of the hex key into the screw and turn it using the short end. Tighten the screws using no more force than you can apply to the short end of the hex key while holding it in the tips of your thumb and index finger. The tops of the pedestals should pull snug against the cabinet. Test the fit by pulling the base of the pedestals gently from side to side. As long as the pedestals do not rock against the cabinets they are tight enough.

10.0 Maintenance

Exterior surfaces of this product may be cleaned using a non-abrasive lint-free cloth lightly damped with water. Disconnect the mains power cable when cleaning to avoid risk of electric shock. Do not use alcohol-based cleaners.

Driver active surfaces such as diaphragms and surrounds may be cleaned using dry soft bristle brushes. Driver diaphragms are very delicate and easily damaged. So, proceed with great care. Clean new sable artist brushes or cosmetic brushes work well for this task. Gently brush dust away from the surface starting at the center of the driver diaphragm and moving radially outward. Avoid applying inward pressure to the driver diaphragm.

Repairs, maintenance, or other servicing of this product when its interior compartment is exposed should only be performed under specific advice from Barefoot Sound by a qualified technician or by the Barefoot Service Center. There are no user-serviceable parts inside this product.

11.0 MEME™ (Multi Emphasis Monitor Emulation)

Barefoot MEME (pronounced “meem”) technology allows you to box up your secondary reference monitors for good. Despite the numerous advantages of high-resolution monitors like the MM26, many engineers still rely on their NS10s and mix cubes as secondary references. These speakers have long traditions and people find them familiar and useful for focusing in on certain aspects of their mix. However, it's also a fact that crowding your console with those extra boxes degrades the sound field of the primary reference monitors. Not to mention, these speakers are no longer manufactured, need amplifiers, require cable runs, and consume more studio space. MEME offers an elegant solution by emulating the sound and translation characteristics of those other classic monitors.

Voices:

FLAT - Optimal setting for accuracy, transparency and outstanding translation. Setting has a flat frequency response and extremely fast transient response. This is the default voice when the Voice Selector Switch is not connected.

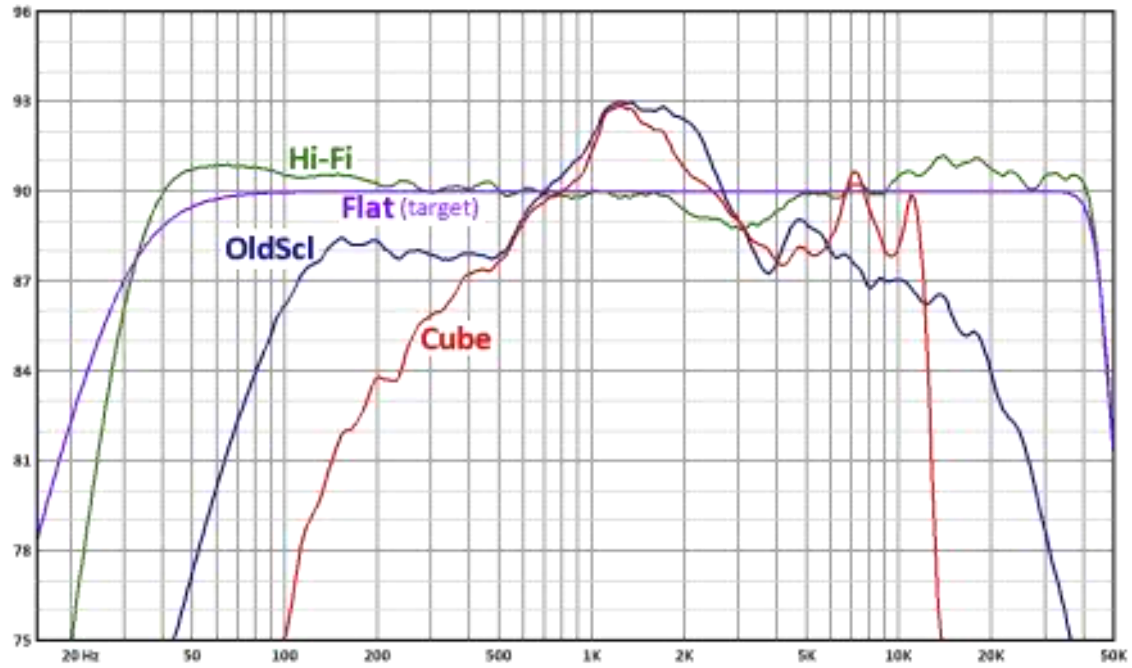
HI-FI - While it does not emulate any one speaker in particular, this setting is indicative of “hi-fi” in the colloquial sense of the term. The midrange is a bit scooped and highs are a little accentuated. The bass response is altered to have less damping yielding a hybrid character somewhere between the fast, tight, articulate sound of a sealed cabinet and the slower, fatter sound of a ported speaker. A touch of tube amplifier warmth has also been added. The result is a sweeter more forgiving sonic character.

OLDSCL - This setting emulates the frequency, phase and transient response, along with the dynamic compression and distortion signature of the NS10M.

CUBE - This setting emulates the frequency, phase and transient response, along with the dynamic compression and distortion signature of classic mix cubes.

MEME™ Voicing Frequency Responses:

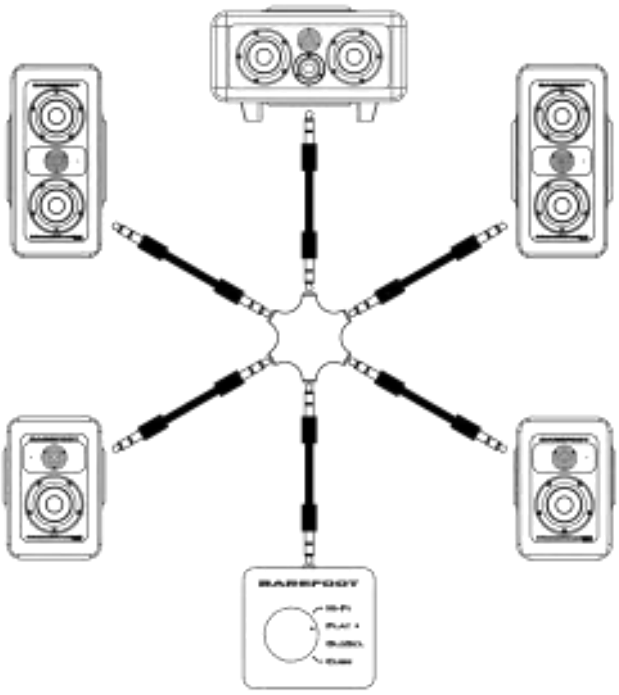
dB SPL at 1 meter, -15 dBV input (attenuator = 0db)



MEME™ Voice Selector Connection:

The MEME™ Voice Selector switch box is connected to the Voice jack of the speaker via any standard 3.5 mm stereo phone cable. The included 6-way splitter can be used to control the Voice Emulation of up to 5 speakers. Furthermore, the input impedance of the Voice jack is very high. So, additional splitters can be daisy chained in order to control virtually any number of speakers with the MEME™ Voice Selector switch.

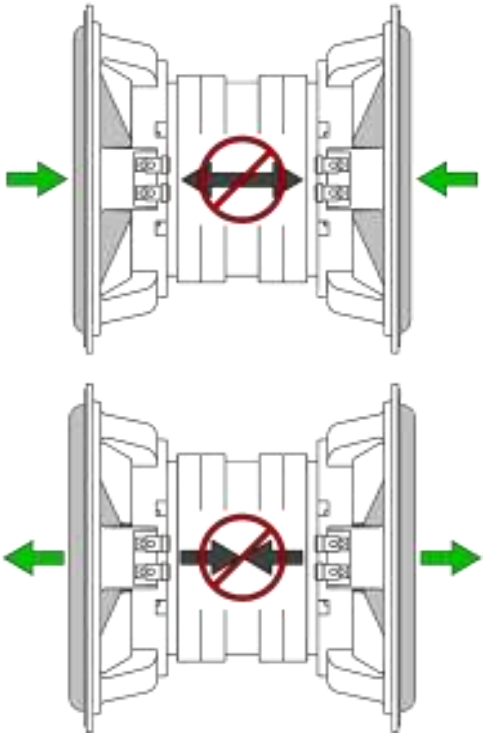
Caveat: Plugging the speaker into different mains outlets can potentially cause erratic behavior in the MEME™ control. The safety grounds of different outlets can sometimes have ground potential differences of a few volts of more. The resulting voltage spread between the grounded chassis of various speakers can cause the MEME™ control inputs to read incorrect settings or become unstable. Care must be taken with the studio mains power and safety ground layout. If this is a concern, please consult a qualified electrician.



Example: 5 channel MEME™ Voice control layout.

12.0 Force Cancellation

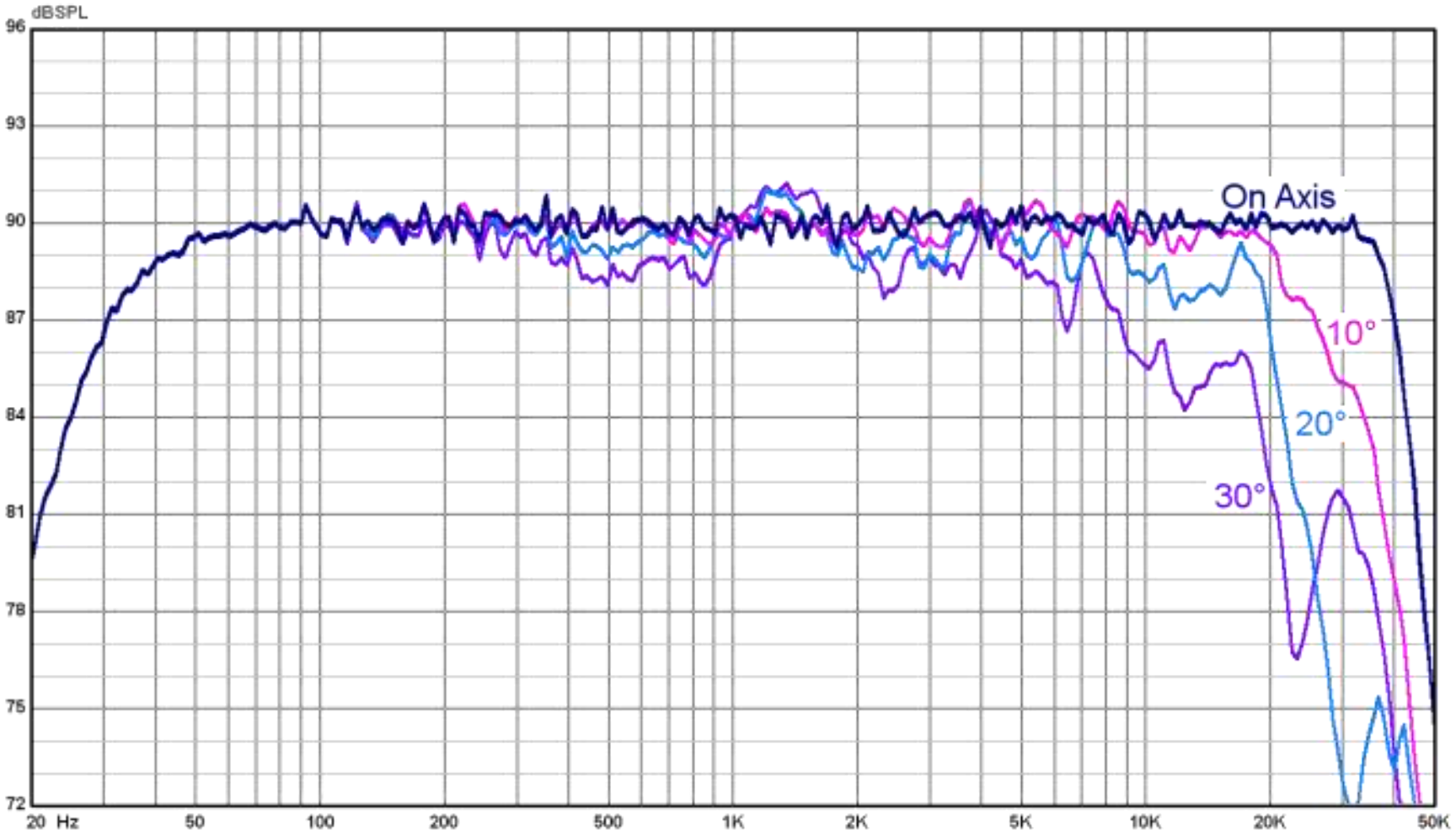
Cabinet vibrations are a significant source of distortion and coloration in most loudspeakers. The primary mechanism that generates cabinet vibrations is simple Newtonian action and reaction. As the driver motor (magnet and voice coil) forces the cone to move back and forth in order to generate sound, the cone exerts an equal and opposite force on the motor. This force is transmitted through the driver frame to the cabinet, vibrating the cabinet walls and coloring the sound emitted by the cone. This effect is most especially prevalent in the low frequency drivers where the cone motion is greatest.



While, the MicroMain26 is built with a massive and well braced cabinet, we also tackle the problem at its source by eliminating vibrations before they even begin. This is achieved through our innovative force cancellation design. The low frequency drivers are mounted on opposing sides of the cabinet and their motors are locked together. As the cones are driven in and out in opposite directions the forces exerted on the motors cancel one another. The vibrations never make it to the cabinet because they are not allowed to develop in the first place.

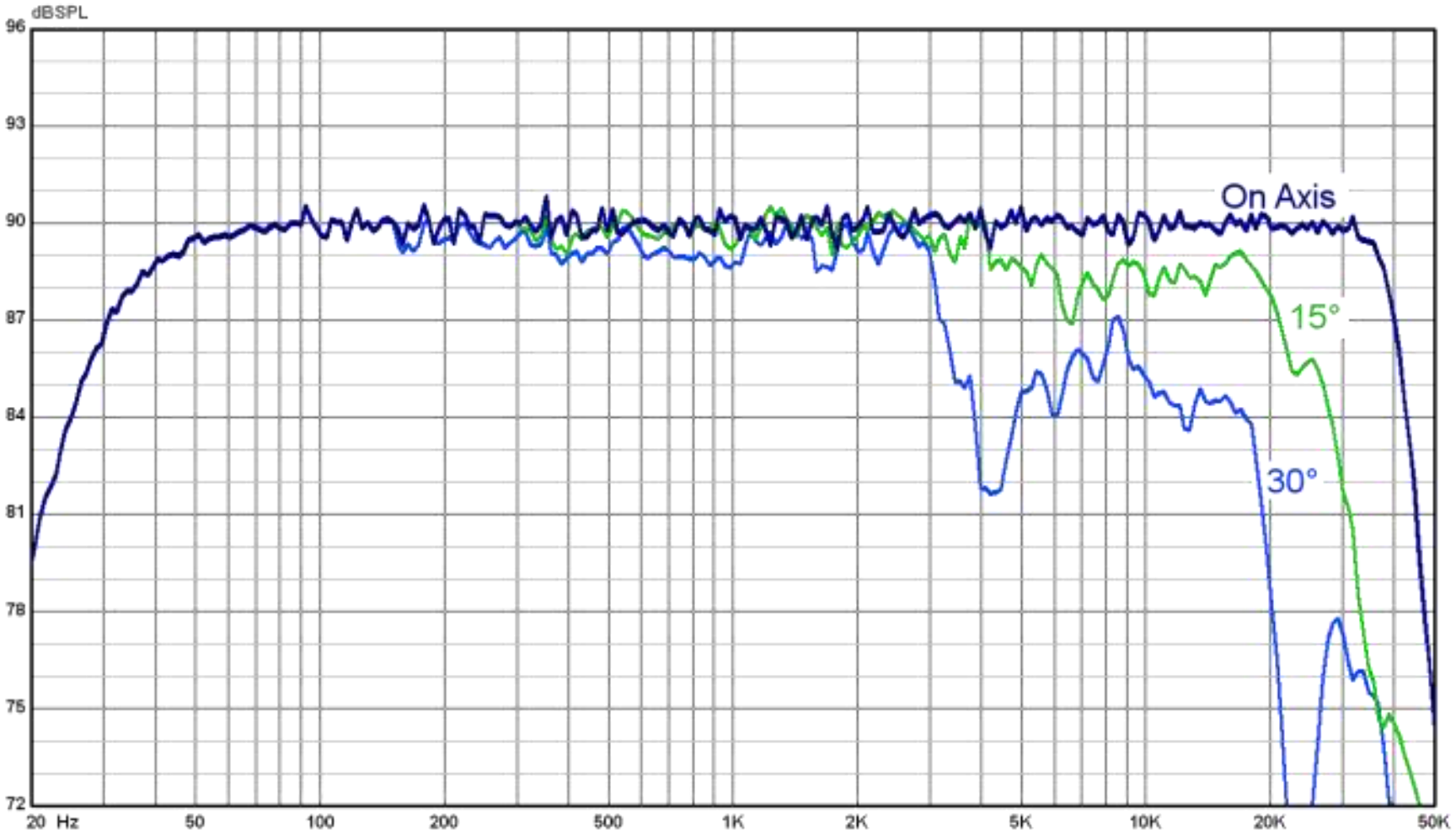
This layout has further benefits. Since the drivers are locked together, the motors and frames function as a massive internal metal cabinet bracing. And because the wavelengths generated by the subwoofers are much larger than the speaker cabinet dimensions, the subs radiate as if they were a single point source located on axis with the tweeter.

13.0 **MicroMain26 Frequency Response** (Horizontal plane)



dB SPL at 1 meter, free field, -15 dBV input (attenuator = 0db)

13.1 **MicroMain26 Frequency Response** (Vertical plane)

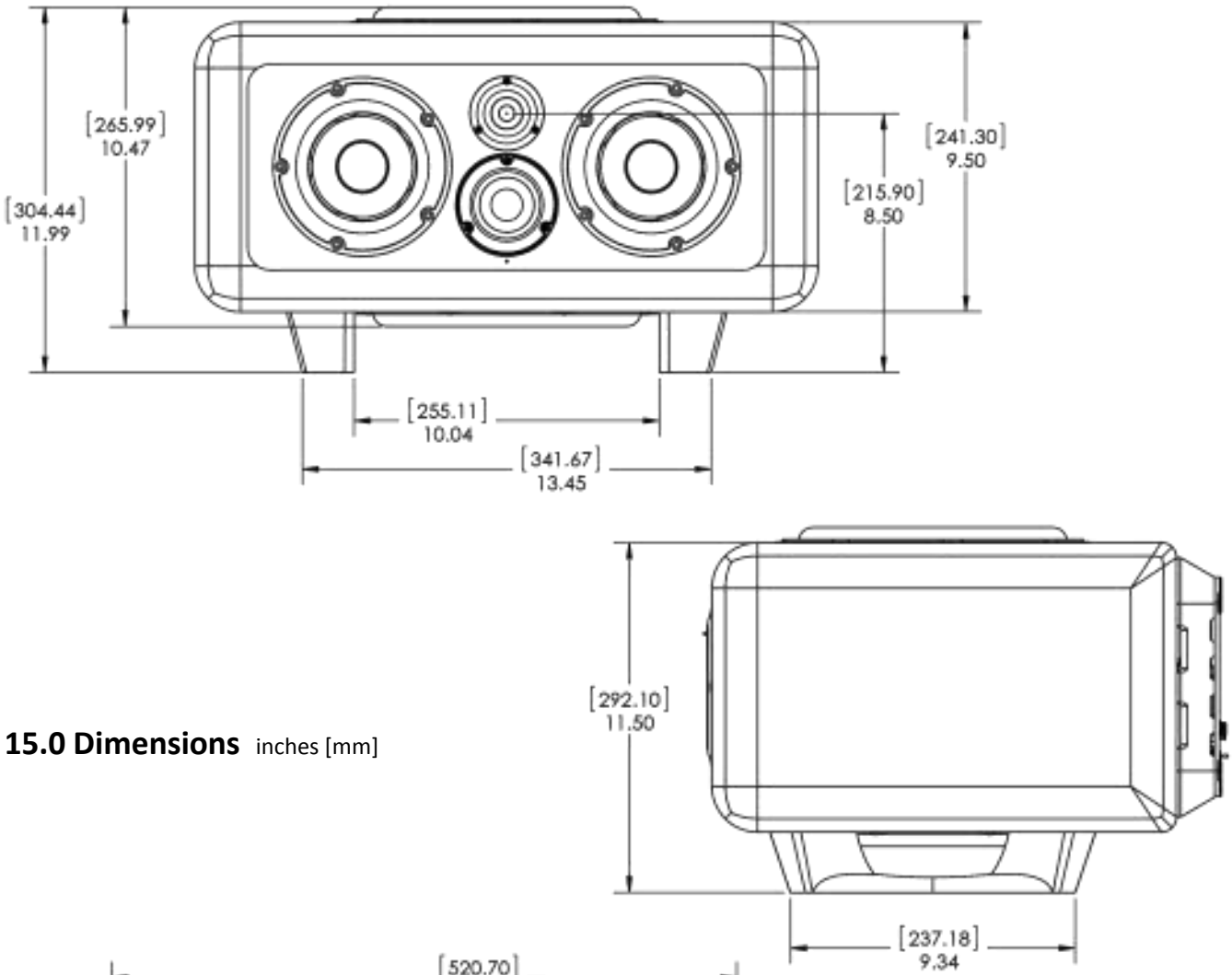


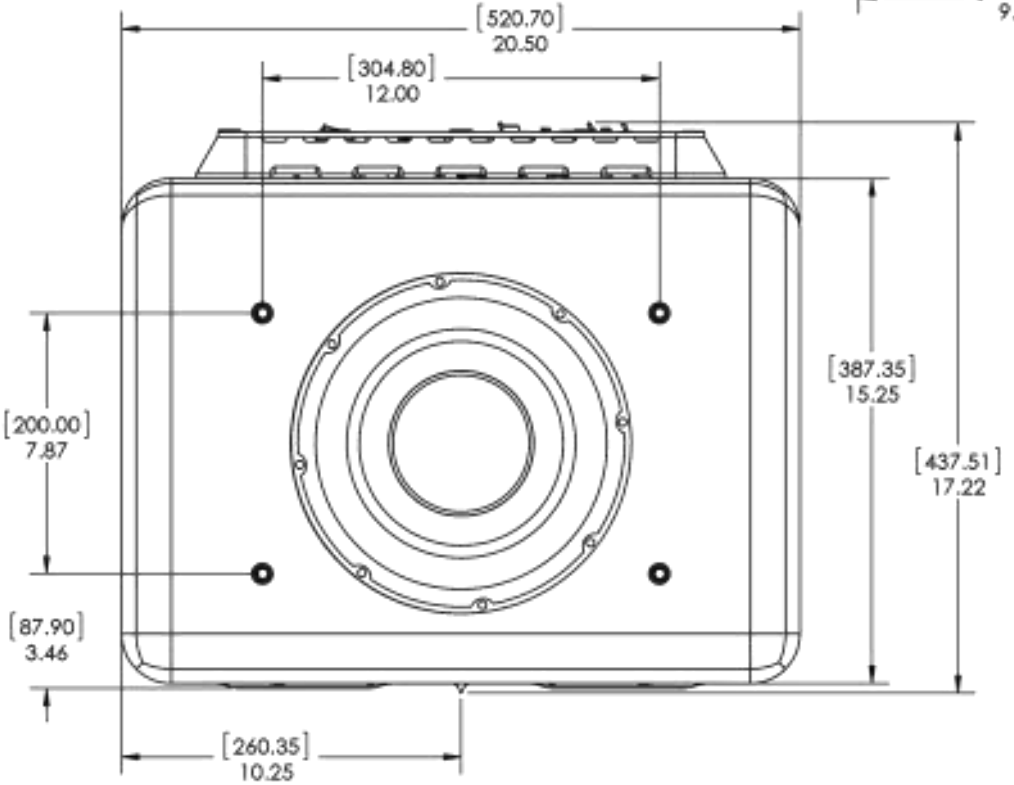
dB SPL at 1 meter, free field, -15 dBV input (attenuator = 0db)

14.0 Specifications

Analog Input	XLR female, Pin 1 ground, Pin 2 positive, Pin 3 negative Input Impedance = 50k Ohms Input Sensitivity (1m) = 90 dB @ -15 dBV (pass band)
Analog to Digital Conversion	Word Length: 24 bit Sample Rate: 192 kHz Oversampling = 128x Signal/Noise ≥ 125 dB
Digital Input	XLR female AES/EBU (AES3 standard) Input Impedance = 110 Ohms Word Length: 16,18, 20 or 24 bit Sample Rate: 32 kHz to 192 kHz Signal/Noise ≥ 133 dB
Frequency Response	30 Hz - 45 kHz (+/- 3 dB), 40 Hz - 40 kHz (+/- 1 dB)
Bass Response	-3 dB @ 30 Hz Q = 0.707 Slope = 12 dB/octave
Cabinet	32 liters total internal volume Sealed subwoofer, midbass and midrange enclosures Machined aluminum baffle plate Aluminum subwoofer frames function as lateral cabinet bracing Long fiber wool acoustic damping throughout
Crossover Frequencies	100 / 800 / 4000 Hz
Tweeter	1" ring radiator with Advanced neodymium motor Rear waveguide chamber Amplifier: 180W Hypex
Midrange	2.5" aluminum cone with Advanced neodymium motor +/- 2 mm linear excursion Amplifier: 180W Hypex
Midbasses	2 x 5.25" poly/paper cone with Advanced neodymium motor +/- 5 mm linear excursion Amplifier: 250W Hypex
Subwoofers	2 x 10" aluminum cone with low distortion motor +/- 13 mm linear excursion Amplifier: 500W Hypex
Power	Mains Voltage Input: 115 or 230 VAC selectable Idle Power Consumption = 30W Maximum Power Consumption = 650 W
Weight	Speaker: 71 lbs each (32 kg) Shipping: 83 lbs each (38 kg)
Dimensions HxWxD	Cabinet: 9.5 x 20.5 x 15.25 inches (241 x 521 x 387 mm) Overall: 12.0 x 20.5 x 17.2 inches (305 x 521 x 438 mm)

15.0 Dimensions inches [mm]





16.0 Warranty

This product is under limited warranty as described in the following conditions. The warranty period commences on the date of purchase from the authorized dealer. Barefoot Sound reserves the right to request your original purchase receipt as proof of the date of purchase. The warranty follows the product and is transferable to any subsequent owner(s) as long as a copy of the original purchase receipt from the authorized dealer can be provided.

Electronic components and cabinetry of the product are warranted for a period of three (3) years against manufacturing defect, covering parts and labor for necessary repairs. Moving speaker components are warranted for a period of one (1) year against manufacturing defect.

The manufacturer's warranties are limited to physical defects in the materials, parts and workmanship used in making the product. Misuse, incorrect installation, connection or handling, repairs or modifications performed by unauthorized persons, abnormal conditions, deliberate abuse, damage due to accidents such as power surges, water, fire, or any other are excluded from any warranty claims. In addition, faulty or unsuitable ancillary equipment, accessories, or options are fitted at owner's risk.

Barefoot Sound warrants all service repairs and replacements for 180 days from the date of return to the customer/owner. This warranty specifically excludes unrelated additional defects or failures. Otherwise the same general provisions of the limited product warranties apply.

Technical Support and Service

For warranty service and assistance, contact the original authorized dealer/distributor to arrange for return and/or repair of the product. Barefoot Sound will strive to satisfy all service requests in the fastest manner possible. Under the warranty, Barefoot Sound will repair, or at its discretion, replace the product at no charge, provided it is returned (postage paid) to an authorized Barefoot Sound service center. Any shipping or duties incurred are the customer's responsibility. Products should be returned suitably packaged to protect from shipping damage, or in their original packaging. Barefoot Sound shall be the sole and final authority to determine the validity of all warranty issues. All non-warranty repairs for current products will be charged according to the service repair pricing schedule. Repair prices will either be based on a flat fee for repair or replacement, or will be estimated depending on the repair deemed necessary.

Barefoot Sound LLC
http://barefootsound.com
2016