

LEGACY

Owners Manual For The
Mist
Loudspeaker System



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Owners Record

The model and serial numbers are located on the rear of the unit. Record these numbers in the spaces provided below. Refer to them when calling upon your dealer regarding this product.

Model No. _____

Serial No. _____

Date of purchase: _____

Thank you for selecting a Legacy Loudspeaker System. These hand-crafted instruments will provide you with many years of listening enjoyment. Please take a few moments to read this brief manual to insure maximum benefit from your speaker system.

The Cabinetry / Our Commitment

Handcrafted

Beneath the surface of MiST's elegant exterior lies rigid MDF construction. Interlocking joinery maximizes the strength of the cabinet parts. Polyester fiberfill is selected for internal damping. A sharp rap on the enclosure will leave you with little more than bruised knuckles.

Each cabinet is impeccably finished on all exposed surfaces with select veneers. The exquisite finish is hand-rubbed several times to assure a patina at home with the most elegant decor.

Our Commitment

A great deal of forethought, love and satisfaction is instilled in each piece of Legacy workmanship. We take pride in getting to know many of our customers on a first name basis.

Your purchase of this product is backed by the renowned "Legacy Satisfaction Guarantee".

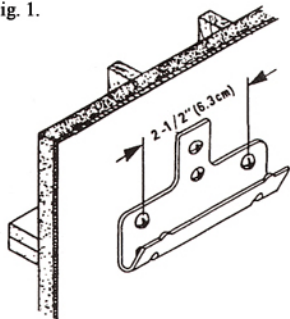


Unpacking Your Speakers

Your new speaker system has been very carefully packaged to insure that it travels to you safely. Each speaker is protected by a heavy outer carton with V-board corner protectors. Molded foam end caps are used to protect the elegant cabinetry, and a plastic liner is provided as waterproofing. Please save this packing for future transportation. If cartons become damaged or misplaced, new ones can be purchased from Legacy Audio.

Speaker Placement

Fig. 1.



A pair of MiST should be wall mounted approximately 6' high and to the sides of the listener. An optional third MiST may be used as a center rear channel by mounting the unit behind the listener. Because MiST is actually two independent, opposite facing, side-firing arrays in one cabinet, it behaves as a bipolar system. When used behind the listener it may be powered by both the left and right rear channel inputs.

Though the MiST requires only one channel of amplification per unit to drive it when configured in the standard mode, separate input terminals for each array allow for future steering versatility.

Instructions for attaching bracket to wall

1. Selecting a mounting site.

Note: Try to find a site with a solid wood backing.

2. Using one of the brackets as a pattern, mark four holes on the wall, aligning the vertical holes with a stud location.

3. Drill four 1/8" (.32 cm) diameter holes as marked.

4. Fasten one bracket to the wall with four wood screws provided. (See Figure 1)

Speaker Placement

5. Hang the speaker.

WARNING: Woodscrews provided may pull out of sheetrock or wall paneling without a wood brace. They might also pull out of thin speaker panels or perforated particle board. See Figure 2 & Figure 3 for alternate mounting hardware.

MOLY BOLT

Use on sheetrock, wall paneling or thin wood.

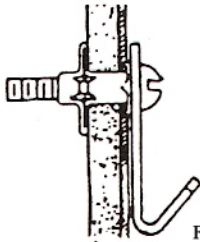


Fig. 2.

WOODSCREW W/PLASTIC SLEEVE

Use on brick, concrete or paneling with particle board back.

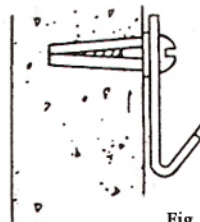



Fig. 3.

Hook Up Cables

The ideal conductor would have negligible resistance, inductance and capacitance. The table below shows how a few actual speaker cables measure up.



Cable	Ω s/ft	pF/ft	μ H/ft
12 ga.	0.0033	24	0.21
14 ga.	0.0048	17	0.13
16 ga.	0.0079	16	0.18
18 ga.	0.0128	28	0.21

Capacitance is considered insignificant in each cable because its effect is well out of the audio bandwidth; inductance can be decreased (at the expense of increased capacitance) by keeping the conductor pair closely spaced.

How long would a cable have to be before inductance effects would impinge on the audio spectrum? Approximately 300 feet of 12 gauge would be required to establish a corner frequency of 20 kHz with an 8 Ohm loudspeaker. As you see, inductance is not a problem for most of us.

Hook Up Cables

What about phase shift due to frequency dependent travel times down the speaker cable? Measurements show that 100 Hz waves will be delayed about 20 billionths of a second behind 10 kHz waves when traveling to the end of a 10 foot speaker cable. Since the cilia of the ear requires 25,000 times longer than this just to transmit phase information, phase shifting is obviously not the primary concern when considering speaker cables.

What about resistance? Finally we are getting somewhere. Resistance is the controlling factor of the amplifier/loudspeaker interface. Excessive resistance can cause major shifts of speaker crossover frequencies. The lower the impedance of the loudspeaker, the greater the effects of series resistance. A 20 foot run of 18 gauge cable can cause up to 10% deviations of crossover center frequencies. That same 20 feet can un-damp your damping factor and reduce your systems' output by one-half decibel.

In summary, there are no perfect cables. The best way to approximate the ideal would be to keep loudspeaker leads as short as is practical.

Amplification



Ideally the loudspeaker would be among the first components selected when assembling a playback system. This would allow the user to choose an amplifier capable of delivering adequate amounts of current into the frequency dependent load presented by the loudspeaker. However, when upgrading a system, audiophiles may find themselves matching their new loudspeakers to their existing amplification. For this reason, extensive measures have been taken to ensure that each Legacy speaker system represents a smooth, non-reactive load to virtually any amplifier.

Often there is much confusion regarding amplification and loudness levels. It should be understood that the role of the amplifier goes beyond that of driving loudspeakers to a given sound pressure level. The amplifier should be able to CONTROL the loudspeakers across the entire music spectrum. This means that parameters such as damping factor (values greater than 60 are acceptable) and dynamic headroom should not be overlooked when comparing amplifiers.

Amplification

How much power will your new speakers need? That ultimately depends on your listening environment and musical tastes. As little as five watts per channel should drive them to a level satisfactory for background music. A typical 45 watt per channel receiver may fill a room with the compressed mid-band energy of “heavy metal,” but seem to lack weight or control with classical recordings. Some audiophiles feel that 200 watts per channel is the bare minimum to avoid audible clipping distortion when reproducing music at “live” playback levels. Your Legacy speakers are designed to take advantage of “high-powered” amplifiers, so don’t be afraid to put them through their paces.

How much is too much power? Rarely is a drive unit damaged by large doses of music power. More often than not the villain is amplifier clipping distortion. Even through decades of refinement, loudspeakers are still notoriously inefficient transducers, requiring huge amounts of power to recreate the impact of the live performance. Typically less than 1% of electrical power is converted into acoustic output. (For example, an omnidirectional transducer with an anechoic sensitivity of 90 dB @ 1w/1m has a full space efficiency of only 0.63%)

Amplification

When an amplifier is unable to fulfill your loudspeakers demands, a damaging harmonic spike may be leaked to the high frequency drivers.

Another important point regarding loudness is that the dB scale is a logarithmic one. This means that a 150 Watt amplifier will potentially sound only twice as loud as a 15 Watt amplifier. If all of this discussion of power and loudness seems a bit abstract, consider the example below.

The average acoustical power developed by a person speaking in a conversational tone corresponds to a mere 0.00001 Watts. The power that would be developed by the entire population of the city of New York speaking at once would barely illuminate a single 100 Watt light bulb.



Speaker Connections



At the rear of your MiST you will find a terminal plate housing jumpered pairs of five-way binding posts. Connect the output of the rear channel amplifier to the loudspeaker via the gold five-way binding posts provided. Dual banana plugs or gold spade lugs are recommended means of termination.

Be sure that you observe polarity when making the connections. The positive (+) terminal (red) of the amplifier should be connected to the positive terminal of the loudspeaker.

The negative (-) terminal (black) of the amplifier should be connected to the negative terminal of the loudspeaker.

Bi-Amping MiST

Because MiST is a configurable design, it may be driven as a progressively steered signal array. More specifically, one may wish to drive one input with a **side** signal and the other input with a side **rear** signal. This is useful in smaller spaces or in DSP controlled distribution.

Designer's Note (From Bill Dudleston)

MiST

MiST is a configurable rear channel loudspeaker system designed to accommodate any of the existing formats* such as DTS, DTS ES, Dolby Digital and Dolby Pro Logic.

MiST utilizes specialized drivers in its two side firing arrays.

Each array consists of a premium quality 5.25" KEVLAR composite driver and a 1" Ferro fluid cooled Titanium tweeter.



Unlike most wall mount speakers, MiST is internally equalized for on-wall placement. This results in a very smooth frequency response. Its specialized polar pattern prevents “glare” by reducing output by 6 dB on axis, allowing a more heightened sense of ambience. The dynamic capabilities of MiST will show off the demanding range of today’s soundtracks.

Designer's Note (From Bill Dudleyston)

Conventional direct firing speakers placed to the sides of the listener can create a “hot spot,” overcooking the listener seated in proximity and thus drawing attention to itself. Mounting the speaker higher on the side wall can reduce this problem but may lead to vertical lobing error in the polar pattern.

Dipolar arrays offer an improved sense of ambience, but can appear phasey when positioned to the side of a near listener. Small movements of the listener’s head within the high Q null region can result in tonal aberrations and abrupt apparent level changes as a function of position. Such arrays also suffer from reduced dynamic range and poor bass extensions due to the anti-phased woofers.

Our research has shown that a controlled directivity quasi-bipolar array can result in a radiation pattern which minimizes such phasiness and provides better continuity in the ambient field. MiST takes advantage of a directivity controlled bipolar array to fill dead spots and prevent near field listener burnout. The polar characteristics of MiST are similar to that of a figure-of-8 microphone arrangement combined with a center omni at -6 dB, reminiscent of **Mid-Side Technique** that audiophiles have touted for decades.

Specifications



System Type: Configurable 2-way bipolar array.

Dimensions: 11" W x 17 3/8" H x 7 1/4" D

Crossover Frequencies (Hz): 2.8k

Frequency Response: 79-25 kHz +/-3 dB

Sensitivity: 90 dB on axis with each array.

Impedance: 8 ohms/array, 4 ohms with inputs in parallel (jumped)

Weight: 24 lbs

**Dolby Digital and Pro Logic are trademarks of Dolby Laboratories Licensing Corporation.
DTS and DTS ES are trademarks of Digital Theater Systems.*

Notes:



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