

LEGACY



Owners Manual For The
Whisper HD
Loudspeaker System

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Owners Record

The serial number is located on the rear of the unit. Record this number in the space provided below. Refer to this when calling your dealer regarding this product.

Model: Whisper HD

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.

The Cabinetry / Our Commitment

Handcrafted

Beneath the surface of Whisper HD'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".



Warranty

Legacy Audio supports its customers and products with pride. We cheerfully warrant our loud-speaker products we manufacture from defects in materials and workmanship for a period of seven (7) years. Electronic components such as internal amplifiers and digital processors are covered for three (3) years. Please register your product with Legacy Audio. Should you require service Legacy will require a proof of purchase in order to honor the warranty - so please keep your receipt.

- The warranty applies to the original owner and is not transferable.
- The warranty applies to products purchased from an "Authorized Legacy Dealer".
- The warranty on active components such as digital processors or internal amplifiers is limited to three (3) years of coverage.
- The warranty on dealer stock will extend for a maximum of two years from invoice.

The warranty does not cover transportation costs of product to or from the customer, distributor or dealer, or related shipping damage.

Exclusions from Warranty

The following situations or conditions are not covered by the Legacy Audio warranty:

- Accidental damage, electrical abuse or associated equipment failure.
- Use inconsistent with recommended operating instructions and specifications
- Damage caused by modification or unauthorized service
- Costs associated with the removal and reinstallation of defective products. Consequential damage to other products.
- Normal wear such as fading of finishes due to sunlight.

Speaker Placement

Positioning Whisper for good performance is quite a bit easier than for most speakers. Remember that whisper is actually an acoustic gun with a highly controlled directivity pattern. Corner placements are actually quite workable though not necessarily optimal. Whisper will not become “boomy” like a conventional system and it will not interact strongly with the sidewalls of your room.

Simple Guidelines:

1. You may position the Whisper speakers farther apart than most other speakers. This will help to acoustically shadow the head properly and maintain better channel separation. Experiment with what works best in your room. As a starting point you might also try the following:

Ideal Speaker spread = 0.6 X Distance from speaker plane to listener position

2. Toe the speakers in more than with other speakers. In most circumstances crossing speaker axes just in front of the listener’s head works best. This will broaden your sweet spot horizontally. If dispersing into an L shaped seating arrangement you might find the best results by aiming the left speaker at the right most seating position, and the right speaker at the left most seating position.

3. Hearing the most ambiances in the recording and the least reflection from your room favors a listener position that is no farther from the plane of the speakers than two thirds the geometric width of your room. More simply, if the room is 16 feet wide then the sitting no farther than 12 feet will allow you to hear more of the recording and less of your room.

Hooking 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.



Hooking 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

The Terminal Plate

At the rear of each of your loudspeakers you will find a terminal plate housing two rows of jumpered binding posts. The upper row is the input to the "satellite" portion of the speaker. The lower row is the input to the "subwoofer" portion of the speaker. When left in place, the factory installed jumper bars allow the speaker to be driven with a single channel of amplification. (If biamping, or biwiring, be sure to remove the jumper bars.)

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



Speaker Connections

Biwiring

Biwiring allows one to minimize the cable losses between the amplifier and the loudspeaker. This is accomplished with a single stereo amplifier by running separate sets of cables to the satellite section and the subwoofer section from the same channel of amplification. When biwiring, we recommend the use of gold spade lugs or dual banana plugs. This can make the task much easier and safer than bare wire connections. Again, the major reasons for biwiring over conventional wiring are greater power transfer (improved efficiency) and tighter control over the drivers (better damping).

Uniamplication vs. Biamplication

Due to its high efficiency, the Whisper system performs well when driven by a stereo amplifier capable of 50 watts per channel. However, it will handle crescendos in excess of 500 watts at most frequencies. Audiophiles may opt for the flexibility that biamplication can offer. Should you elect to biampify Whisper, be sure to remove the jumper wires that join the high frequency binding posts (upper pair) and the low frequency binding posts (lower pair) at the rear of the loudspeaker before making your connections. The high frequency amp will be fed by the Fixed Outputs of the Processor, while the low frequency amp will be fed by the Variable Outputs of the Processor.

Speaker Connections

1. Vertical Biamping

Vertical biamplification requires the dedication of a single stereo amplifier for the left speaker, and another stereo amplifier for the right speaker. This configuration improves channel separation and can improve imaging slightly.

2. Horizontal Biamping

Any two stereo amplifiers may be utilized in horizontal biamplification. Many audiophiles prefer the "sweetness" of tubes on the satellite portion of the loudspeaker while favoring the "control and weight" of solid state amplifiers on the bass section. The biggest drawback of such a marriage of amplification is that the two amplifiers may have different input sensitivities or output polarities. Small differences in the input sensitivities may be overcome by using the Whisper Processor. It's also a good idea to check the owner's manuals to establish if the amplifiers are inverting or non-inverting. If the two amplifiers are of opposite polarity, then you should reverse the polarity at the inputs of either the subwoofer or satellite binding posts.

NOTE: This only applies to loudspeakers that incorporate the subwoofer and satellite section in a single enclosure. It does not apply towards the separate powered subwoofer/satellite configuration. You must always observe the polarity when connecting the speaker wire to a powered subwoofer.

Whisper Wave Launch Processor

The high definition Digital Wavelaunch Processor hosts a LEGACY custom algorithm which automatically loads when the processor is powered on. Factory settings are 'plug and play', and do not require a computer to utilize. Connections between the preamp and power amplifier should be as below.

Function Routing

	Input	Output
Proper equalization of the left Whisper speaker	1	1
Proper equalization of the right Whisper speaker	2	5
Equalization capabilities for a Center channel	3	3
Equalization capabilities for LFE subwoofer	4	7
Equalization capabilities for stereo + LFE mix		
Left subwoofer (Lmain + LFE)	1,4	2
Right subwoofer (Rmain + LFE)	2,4	6

(Note: factory configuration for Whisper does not utilize outputs 4 or 8)

(Note: a different routing pattern is required for program 4)

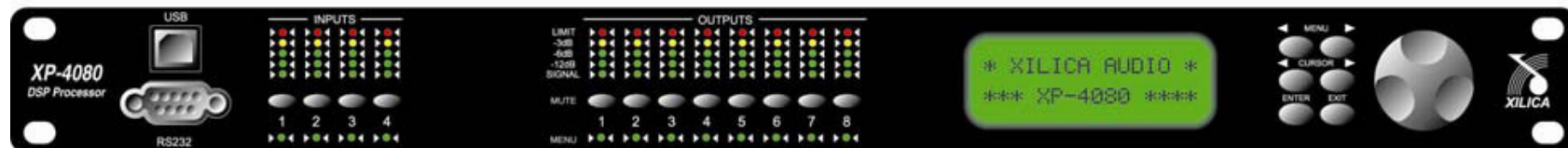
Programs

- | | | |
|---|--------------|--|
| 1 | Whspr Normal | standard settings for flat response |
| 2 | Bass Plus | (increases bass, +2 dB) |
| 3 | Bass Minus | (shelves bass, -2 dB) |
| 4 | Whspr Biamp | (includes digital crossover filtering) |
| 5 | Subs added | (Stereo Subs) |

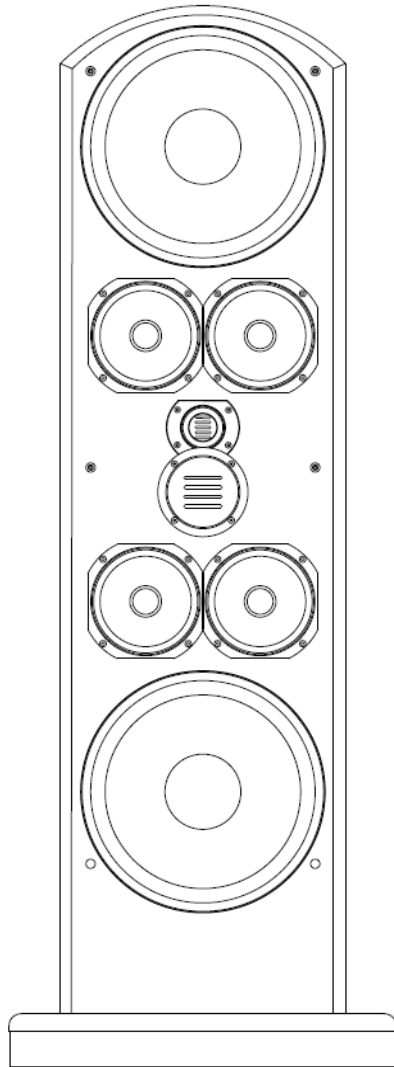
Selecting the Program

1. Press the MENU left arrow
2. Scroll through the programs using the job wheel
3. Press enter to select the program of choice
4. Press enter again to confirm selection. The program will now load.

Users are welcome to load the included software and learn to make individual adjustments as desired. However it is recommended that any changes be saved as Program 6 or higher to avoid overwriting the factory settings.



Specifications



System Type:	10 drivers, 4 way
Tweeter:	1" dual pole neo ribbon, folded Kapton diaphragm
Midrange:	3" dual pole neo ribbon, vapor deposited kapton diaphragm
MidWoofers:	4 x 7" Rohacell reinforced Silver Graphite, cast frame
Subwoofer:	4 X 15" cabon/pulp composite
Low Frequency Alignment:	2nd Order Differential
Frequency Response:	22Hz – 30 kHz includes 24 bit processor
Impedance:	4 Ohms
Sensitivity:	95 dB
Recommended Amplification:	10 - 600 Watts
Crossover Frequency:	300, 3K, 10K
Dimensions (H x W x D):	63" X 17" X 13"
Weight:	210 pounds each

CE Declaration of Conformity

Legacy Audio

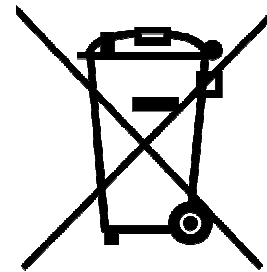
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Springfield, IL 62702 USA
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States that this product is in conformity with the
with the essential requirements and other relevant
provisions of:

Low Voltage Directive 2006/95/EC
EMC Directive 2004/108/EC



WEEE Compliance



Product Disposal—
Certain international, national
and/or local laws and/or
regulations may apply regarding
the disposal of this product. For
further detailed information,
please contact the retailer where
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the Legacy Audio Distributor in
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www.legacyaudio.com
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Notes:



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