



Owners Manual For The

CALIBRE & CALIBRE XD

Loudspeaker System



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Owners Record

Thank you for selecting a Legacy Loudspeaker System.
These handcrafted instruments will provide you with many years of listening enjoyment.

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: CALIBRE or CALIBRE XD

Serial No: _____

Date of purchase: _____

Register your product at legacyaudio.com/register

Share your Legacy speakers with the Legacy community. Post your Legacy experience and system photos at facebook.com/LegacyAudio
Like the page to continue receiving the latest Legacy announcements.

The Cabinetry / Our Commitment

Handcrafted

Beneath the surface of CALIBRE'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.

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 double-wall outer carton with heavy V-board corner protectors. Custom fitted foam end caps are used to protect the elegant cabinetry, and a custom bag is included to provide further protection. Please save this packing for future transportation. If cartons become damaged or misplaced, new ones can be purchased from Legacy Audio.

Speaker Placement

Recommended stand height: 30 inches

To allow more flexibility in seating arrangements, your Calibre system is designed for broad lateral coverage. Optimal listener position is actually about 5 to 15 degrees off the axis normal to the loudspeaker baffle. Assuming a listener distance of about ten feet, begin by placing the speakers approximately 7 feet apart and about 1 – 3 feet from the wall behind them. In most rooms this will afford a speaker position at least 2 feet or more from the side walls. The amount of recommended "toe-in" is a function of the listening angle. As the overall listening angle increases from 40 degrees, the amount of toe-in should increase. Your Legacy speaker is optimized for a flat response in the far field. Best results are obtained vertically with the listener's ear at tweeter level with the loudspeakers *gently* toed in toward the listener. Increasing the degree of toe-in is recommended when placement next to sidewalls is required.

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 onehalf 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 15 watts per channel should drive them to a level satisfactory for background music. 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.

Calibre Rear Panel



Connections:

At the rear of your loudspeakers you will find two rows of jumpered binding posts.

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.

When driving Calibre with a single channel of amplification, you may use either set of jumpered binding posts. When bi-wiring or bi-amping, remove the jumper strips completely.

Dual banana plugs or gold plated spade lugs are recommended means of termination. Be sure you observe polarity when making the connections.

Speaker Connections

Bi-wiring

Bi-wiring 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 bi-wiring, 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 bi-wiring over conventional wiring are greater power transfer (improved efficiency) and tighter control over the drivers (better damping).

Passive Bi-amping

This option can yield even better results than bi-wiring due to broader distribution of power requirements. Passive bi-amplification allows low frequency current to be routed to a separate channel of amplification, reducing strain on the satellite amplifier and preventing subwoofer back-EMF from modulating with the upper frequencies. There are two types of passive bi-amplification; Vertical bi-amping (which requires two identical stereo amplifiers or four MonoBlocs) and Horizontal bi-amping (which does not require identical amplifiers).

Speaker Connections

1. Vertical Bi-amping

Vertical bi-amplification 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. If your preamp does not have two sets of left/right outputs, you will need a pair of Y-adapters or a signal splitter, such as a dual amp balancer, which will also allow adjustment of subwoofer/satellite input levels.

2. Horizontal Bi-amping

Any two stereo amplifiers may be utilized in horizontal bi-amplification. 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 subwoofer section. The biggest drawback of such a marriage of amplification is that the two amplifiers may have different input sensitivities or output polarities. Differences in the input sensitivities may be overcome by using a dual amp balancer. This unit allows independent balancing of the left subwoofer/satellite ratio and right subwoofer/satellite ratio. 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.

Speaker Connections

Maximize Performance

The Calibre loudspeaker may also benefit from active bi-amplification and the virtues of DSP room correction. Adding the Legacy Wavelet processor can extend bass response, prevent excursion overload, and avoid room resonances.

The versatile Wavelet processor can also integrate a subwoofer or stereo pair of subwoofers with the Calibre. Please contact our technical staff with any questions you may have.



Calibre XD Enhances Versatility Adding 500 Watts of Internal Power

The Legacy Calibre is now available in both the standard version and the powered XD version. Be careful to understand the Calibre XD is not a replacement for the Calibre, but a more versatile internally amplified version of the same, facilitating both passive and active bi-amplification. The fully passive Calibre will continue to hold its position in the Legacy line-up.

The new Calibre XD version includes a high quality internal 500 watts amplifier which provides some unique performance options:

- Use this internal ICEpower amp with its 30 amp peak current capability to drive the entire speaker full range via the passive internal crossover. Merely a source and a preamplifier are required to drive Calibre XD to breathtaking levels. This is a common configuration for studios and those with DAC/Preamps.
- Allocate the internal amp's 500 watts entirely to the bass section to power the top firing 8" woofer of Calibre XD, while driving the upper section with your external amplifier. This method of passive bi-amplification minimizes current demands from the upper range amplifier and reduces the presence of back EMF from the woofers. Your amplifier will work less hard and the speaker will sound more effortless.
- Utilize an external crossover such as the Legacy Wavelet or Wavelaunch processors. Link the woofer directly to the internal amp, eliminating the passive crossover from the path. This improves coupling with the woofers and increases drive efficiency by nearly 30%. Both the Wavelet and Wavelaunch processors are presently available with customized settings for the Calibre XD.

Calibre XD Rear Panel

Connections:

Before configuring the Calibre XD and making cable connections, be sure both the internal amplifiers and any external amplifiers are powered completely off. Disconnect from AC outlet if uncertain.



Configuration: Full Range Powered

The internal amplifier will power the entire loudspeaker.

1. With the AC power switch in the OFF (0) position, set the rocker switch of Calibre XD in the downward position.
2. Connect the female end (with 3 holes) of a balanced XLR cable to your Preamplifier's LEFT channel balanced output. Be sure it is pressed in fully
3. Connect the male end (with 3 pins) on the same cable to the BALANCED INPUT receptacle on the rear panel of the Left Calibre XD rear panel.
4. Connect the female end of a balanced XLR cable to your Preamplifier's RIGHT channel balanced output.
5. Connect the male end of the same cable to the BALANCED INPUT receptacle on the rear panel of the RIGHT Calibre XD rear panel.
6. Turn on your preamplifier, leaving it in a mute mode, or without source playing.
7. Connect the provided power cord into rear AC receptacle of both Calibre XD,
8. Connect the other end of the power cords into a household AC receptacle (100-240 VAC, 50-60Hz) or power center.
9. Flip the rectangular rocker switch on the rear AC socket to the ON (1) position to turn-on power to each speaker, thus illuminating the blue LED in the top corner of the panel.
10. Activate the music source taking your preamp out of mute mode, raising the volume slowly to verify all connections.

Configuration: Bi-Amplification with Internal Passive Crossover

The internal amplifier will power the bass section and your external amplifier will be driving the upper range.

1. Set the rocker switch of each Calibre XD in the upward position.
2. Connect the female end (with 3 holes) of a balanced XLR cable to your Preamplifier's LEFT channel balanced output. Be sure it is pressed in fully. You may require a signal splitter (balanced Y-adapter, available for Legacy Audio) if you do not have dual outputs on your preamplifier.
3. Connect the male end (with 3 pins) of the same cable to the BALANCED INPUT receptacle on the rear panel of the Left Calibre XD rear panel. Be sure it is pressed in fully.
4. Connect another cable from the same Preamplifier output (or Y-adapter) to the LEFT input of your external amplifier.
5. Connect the female end of a balanced XLR cable to your Preamplifier's RIGHT channel balanced output.
6. Connect the male end (with 3 pins) of the same cable to the BALANCED INPUT receptacle on the rear panel of the RIGHT Calibre XD rear panel.
7. Connect another cable from the same Preamplifier output (or Y-adapter) to the RIGHT input of your external amplifier.
8. Connect the speaker cables from your external power amplifier's LEFT channel output to the LEFT Calibre XD binding posts. The red post is positive and the black post is negative.
9. Connect the speaker cables from your external power amplifier's RIGHT channel output to the RIGHT Calibre XD binding posts.
10. Turn on your preamplifier, leaving it in a mute mode, or without source playing.
11. Connect the provided power cord into rear AC receptacle of both Calibre XD.
12. Connect the other end of the power cords into a household AC receptacle (100-240 VAC, 50-60Hz) or power center.
13. Flip the rectangular rocker switch on the rear AC socket to the ON (1) position to turn-on power to each speaker.
14. Power on your external amplifier.
15. Activate the music source taking your preamp out of mute mode, initially raising the volume slowly to verify all connections.

Configuration: Bi-amp with Legacy Wavelet or Wavelaunch DSP units

You will be using the processor as an external crossover to divide the music spectrum to the two amplifiers. The internal amplifier will power the bass section and your external amplifier will be driving the upper range.

Using the Wavelet Processor

1. Begin with all equipment turned off.
2. Set the rocker-switch to the upward position on both left and right Calibre XD.
3. Connect the Processor's OUTPUT 1 to the BALANCED INPUT of the Left Calibre XD.
4. Connect the Processor's OUTPUT 2 to the external amplifier's Left input.
5. Connect external amplifier's Left channel output to the left Calibre XD binding post (observing correct polarity).
6. Connect the Processor's OUTPUT 5 to the BALANCED INPUT of the Right Calibre XD.
7. Connect the Processor's OUTPUT 6 to the external amplifier's Right input.
8. Connect external amplifier's Right channel output to the Right Calibre XD binding post (observing correct polarity).
9. Power on preamp, processor, external amp and Calibre XD internal amps in sequence. Turn on any streaming device last.
10. Play music bringing up the level gradually to verify connections.

See the Wavelet operator's manual for further control features such as level matching, room correction and tonal contouring.

Wavelet Connections



Designer Notes

"I had but one thing in mind with Calibre - to build the highest resolution compact speaker available anywhere. Merely three inches taller than our Studio HD, it uses our high power handling 4" AMT ribbon, a precision 7.5" custom midrange/midbass built in Florence, Italy and the best 8" bass driver available with a full inch of displacement capability.

Offering extreme dynamics and wide bandwidth, the clarity is the best I've ever heard in a compact design. While efficient, it is designed to sail along with 500 watt peak inputs. Legacy has always been known for our huge soundstage - but this time it's coming from a small box."

Bill Dudleston, Chief Designer, Founder of Legacy Audio

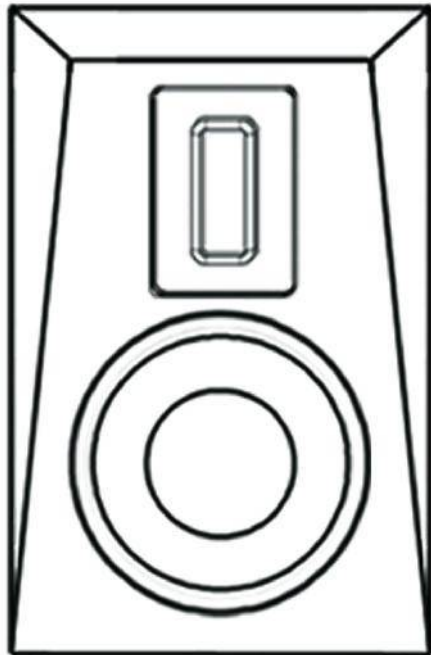
With the addition of the 500 watts of internal power, users can take full advantage of bi-amplification benefits: Lower harmonic distortion, reduced back EMF (better damping), greater dynamic range and reduced intermodulation.

Additional Notes for Calibre (passive/standard) Users

Owners of the Calibre standard design (all passive crossovers without internal amplifier) have no need to feel left behind. You may upgrade to XD level performance a number of ways:

- Passively bi-amp by adding a Legacy Powerbloc2 with 500 watts of power to the bass section of each Calibre, while driving the upper section with your external amplifier. This method of passive bi-amplification minimizes current requirements from the upper range amplifier and reduces the presence of back EMF from the woofers. Your amplifier will work less hard and the speaker will sound more effortless.
- Or power both top and bottom with the four channel Legacy Powerbloc4. This assures perfect level matching to the upper and lower range.
- Actively bi-amp by adding Legacy's Wavelet or Wavelaunch processors and a Powerbloc2 amplifier. This improves coupling with the woofers and increases drive efficiency by nearly 30%. Both the Wavelet and Wavelaunch processors are provided with customized settings for the Calibre XD. This requires a simple factory authorized modification. Contact the factory for details.

Specifications



System Type:	3 driver, 3 way
Tweeter:	4" AMT
Midrange:	7.5" accordian edge with 6lb magnetic structure
Bass:	8" Extended Throw
Sub-Bass Radiator:	(2) 8" Mass Loaded Pneumatic
Low Frequency Alignment:	6th order mass loaded radiator
Internal Amplification:	XD: 500 Watts/channel
Frequency Response:	38-30k (+/- 2dB, Hz)
Impedance:	4 Ohms
Sensitivity:	90.5 dB
Recommended Amplification:	45-400 watts XD: 25-300 watts for upper range
Crossover Frequency:	200Hz, 2.5kHz
Inputs:	2 pair binding posts XD: 1 pair binding posts for upper range 1 Balanced XLR for full-range or biamp
Mounting:	Stand or shelf
Dimensions (H x W x D, inches):	16.25 X 10 X 15.25
Cabinet Weight:	50 lbs each
Shipping Weight:	56 pounds each

CE Declaration of Conformity

Legacy Audio

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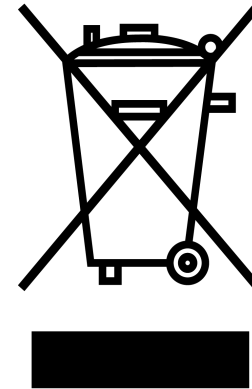
States that this product is in conformity with the with the essential requirements and other relevant provisions of:

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



All information contained in this manual is accurate to the best of our knowledge at the time of publication. In keeping with our policy of ongoing product improvement, we reserve the right to make changes to the design and features of our products without prior notice.

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 you purchased this product or the Legacy Audio Distributor in your country. A listing of Legacy Audio Distributors can be found on the Legacy Audio website www.legacyaudio.com or by contacting Legacy Audio at: 3023 E. Sangamon Ave., Springfield, IL 62702, USA—Phone: +1 217 544-3178.

Notes:



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