ClearView

Electronic Crossover©

Owner's Manual

CXR-22

All Assembled Versions for Bohlander-Graebener Radia

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Read this manual first !

Introduction

Every effort is being made to ensure that this manual is kept current. Read this manual fully before proceeding with the installation of the unit. If you have questions, please contact Audio-X-Stream for further assistance.

Features and Specifications

The CXR-22 allows for true biamplification of planar magnetic ribbon speakers, and direct connection of amplifier outputs to the ribbons and woofers. The necessary ribbon equalization, which compensates for frequency response peaks and dips inherent in this type of transducer, is incorporated in the high-pass section. The benefits of this arrangement include higher efficiency (by well over 3 db. in this system), much higher damping factor, and lower intermodulation distortion.

Acoustic Crossover frequency:	Adjusted for your ribbon
Crossover slope	18 db/octave, 3rd order
Alignment	Linear Phase, ribbon optimized.
Maximum output voltage:	> 6 volts RMS
Input impedance:	33 K ohms
Output impedance:	
Low-pass:	< 100 ohms
High-pass:	< 100 ohms

THD+N:	100 Hz	< 0.002 %
	200 Hz	< 0.004 %
	1 kHz	< 0.005 %
	10 kHz	< 0.01 %

About Ribbons

(Reading this paragraph is optional and may cause minor neurosis.)

Or more specifically, YOUR dipolar ribbon transducer. The planar magnetic ribbons all by themselves do not have a suitably flat frequency response for high fidelity audio reproduction.

There are several reasons for the ribbons' inherent inability to reproduce all frequencies at the same level. The ribbons emit radiation from both front and rear, and the rear being out of phase, some of the front radiation is canceled. This effect is most prevalent at low frequencies where the long wavelengths can find their way around the panel. Thus a boost in the drive level to the ribbon near its lower cutoff frequency, (which is also near the panel's cutoff frequency) is desirable. There are other equally important nasty response variations caused by the physical dimensions of the ribbon transducer which must be dealt with.

By now a prudent person must seriously wonder whether all the necessary tweaking is worth the effort. A quick listen to the wonderful transparent openness and ability of these loudspeakers to fool the brain into believing there is a live event in front of it will quickly dispel this thought. Try finding another speaker that sounds nearly the same whether you are standing or sitting. The reason for this characteristic, as well as the accurate imaging you have experienced, is the tall thin wave launch, tightly contained in the vertical dimension, covering a wider frequency range than almost any other type of acoustic transducer. IF you can find these characteristics in another speaker, try finding it at three times the price or less.

The existence of the aforementioned frequency response anomalies is why efficient biamped, direct connection of the drivers to the amplifier is not feasible unless sophisticated equalization circuitry is placed in the signal chain ahead of the amplifiers. The Clearview Electronic Crossover from Audio-X-Stream is the only equalizing crossover capable of providing this function.

The use of the CXR-series crossover you have purchased allows higher transient peak sound pressure levels, lower intermodulation distortion, and the use of smaller power amplifiers than needed in normal passive bi-wired (now you can call it bi-weird) mode or singly amplified mode. Another characteristic of this system is that the power amplifiers will now "see" a very constant impedance over their operating range.

About Amplifier Requirements.

Two stereo (or four mono-block) amplifiers will be needed. Depending upon the type of music, the power required will be quite evenly split between the ribbons and woofers. It is not necessary to have two amplifiers which are exactly the same. If they are not the same, use the amplifier with the highest power rating on the woofer. If they are the same, you may use one amplifier for the left speaker and one for the right. Or, you may use one amplifier for the low frequencies (woofer(s)) and one amplifier for the ribbon. The choice you make here is entirely up to you--which is the better method can be debated.

A four ohm power rating of between 60 and 400 watts per channel is recommended. BE AWARE that amplifiers driven into clipping or near clipping could conceivably destroy ribbons or woofers.

Level controls, while not absolutely necessary, are useful in some situations especially if one amplifier has more gain than another. If you are buying new amplifiers, getting matching ones is the safest way to go. As an approximate comparison with a non-biamped loudspeaker, add the power of all your four amplifier channels together. Now double this. The figure you have calculated is approximately equal to the amount of power needed in non-biamped configuration to achieve the same sound pressure level you will with the biamped system. In other words, if you have four 100 watt amplifier channels, this will produce the same level as a 400 watt per channel stereo amplifier (800 watts). There are two reasons for this. One is that there is no longer a lossy passive crossover. The second reason is the same one most large concert systems are multi-amped. Simply put, when there is a bass transient, power is not "stolen" from the amplifier which may be needed for a simultaneous treble transient, and vice-versa.

Speaker Preparation

The instructions below are for users installing the Clearview crossover with third party manufactured ribbon/woofer assemblies.

The idea is to remove the passive crossover and/or passive notch filter, and gain access to the two wires leading to the ribbon and the two wires leading to the woofer(s) on each speaker. If it is not clear how to proceed for your particular unit, contact us with the specifics and we'll try to provide specific instructions for your specific driver unit.

Install 5 way binding posts as needed. They are available from all quality audio parts stores.

System Connection

Disconnect AC power from all equipment first. By the way, the CXR- crossover does not have a power switch if you've been looking for one. This is for the following reasons:

a) you already have enough switches in your audio system
b) a switch would require more AC wiring running around inside the CXR, to the detriment of its fidelity
c) a switch would require de-thumping circuitry in the signal path
d) you probably have a switched outlet somewhere
e) if you don't have a switched outlet, we don't care if you leave your crossover plugged in and ON all the time.

The input of the crossover is consequently connected to the pre-amplifier. The outputs of the crossover are connected to an amplifier for the planar magnetic drivers and a suitable amplifier for the woofer system. Please pay attention to proper routing of the signals.

Gold plated RCA connectors are recommended as they are highly corrosion resistant and require minimal maintenance.

Speaker-to-Amplifier Connection

Review the CXR-to-amplifier connections to make sure which is right, left, high frequency, and low frequency (woofer). Then, connect the + amplifier outputs to the + wires or red posts. Connect the - amplifier outputs to the - wires or black posts.

Installing the ClearView Crossover in the system.

Proper installation of the ClearView requires it's power cord to be connected to an AC outlet. A switched preamplifier or amplifier outlet is preferred. If not available, any AC outlet will do as long as it is connected to the same phase as the other audio equipment. This may not be obvious, but connection multiple pieces of audio equipment across different AC phases may introduce noise and ground loop problems.