



## *CELLO CHORALE PREAMPLIFIER*

OWNERS MANUAL



## Thank you for choosing the CELLO CHORALE PREAMPLIFIER

Your Chorale has been individually made, entirely by hand, from the finest parts and materials available. The Chorale utilizes proprietary circuitry and processes, developed by Matthew James' Showroom, L.L.C., that represent true state of the art in audio electronics. The Chorale contains the most recent thinking in analog interface circuitry. It offers sonic performance and reliability, and a great deal of flexibility. It accepts a large number of sources and provides optimized outputs for recording and listening without compromise. The Chorale and Master are designed to perform to specification for decades of enjoyment. Please read this information carefully, and care for your Chorale so that it will retain its value, appearance, and performance.

If you have any questions, contact your authorized Cello representative, or contact Matthew James' Showroom directly, via phone (860 349-5999) or email ([jjimm@matthew-james.net](mailto:jjimm@matthew-james.net)). It is our wish to assist you in any way possible to facilitate your enjoyment. These are the private, home office phone number and email address of Matthew James' Showroom's Managing Partner. As a result, you can rest assured that your concerns will be treated with the utmost urgency.

**WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK,  
DO NOT EXPOSE THIS COMPONENT  
TO RAIN OR MOISTURE.**

**RISK OF ELECTRICAL SHOCK  
DO NOT OPEN**

**CAUTION:  
TO REDUCE THE RISK OF ELECTRICAL SHOCK,  
DO NOT REMOVE COVER.**

**NO USER-SERVICEABLE PARTS INSIDE.  
REFER SERVICING TO QUALIFIED PERSONNEL.**



**Marking by the “CE” symbol (shown left) indicates compliance of this device with the EMC (Electromagnetic Compatibility) and LVD (Low Voltage Directive) standards of the European Community.**

**Please read all instructions and precautions carefully and completely before operating your Cello Encore power amplifier.**

- 1 ALWAYS** disconnect the entire system from the AC mains before connecting or disconnecting any cables, or when cleaning any component.
- 2** AC extension cords are not recommended for use with this product.
- 3 NEVER** use flammable or combustible chemicals for cleaning audio components.
- 4 NEVER** operate this product with any covers removed.
- 5 NEVER** wet the inside of this product with any liquid, or pour/spill liquids directly onto this unit.
- 6 NEVER** block airflow through ventilation slots.
- 7 NEVER** bypass any fuse or replace any fuse with a value or type other than those specified.
- 8 NEVER** attempt to repair this product. If a problem occurs, contact your Cello retailer.
- 9 NEVER** expose this product to extremely high or low temperatures.
- 10 ALWAYS** unplug sensitive electronic equipment during lightning storms or if the unit will not be used for a prolonged period.

## Product Concept and Description

In the 17th and 18th centuries, Italian master instrument makers developed and virtually perfected what we regard today as the modern string instruments. The name, Cello, embodies the spirit and concept of our products. We are dedicated to furthering the art of music reproduction by designing and building equipment of only the very highest quality, in limited quantities, by hand. Although we are developing and utilizing new technology, Matthew James is really continuing a very old, traditional approach used by artisans for hundreds of years. The justification for a great music system is the same as for a great instrument: it makes possible a musical experience that cannot be duplicated by lesser means.

This philosophy is evidenced completely in the Chorale preamp and Master power supply. They have been designed to provide sonic quality, consistent performance and reliability. The Chorale preamplifier contains ten precision audio amplifiers and four power supply regulators to provide the ideal analog interface for each source component's signal at the input. It converts the input signal to a high current, precision output for recording or listening, with an ideal complement of circuits and parts for those tasks.



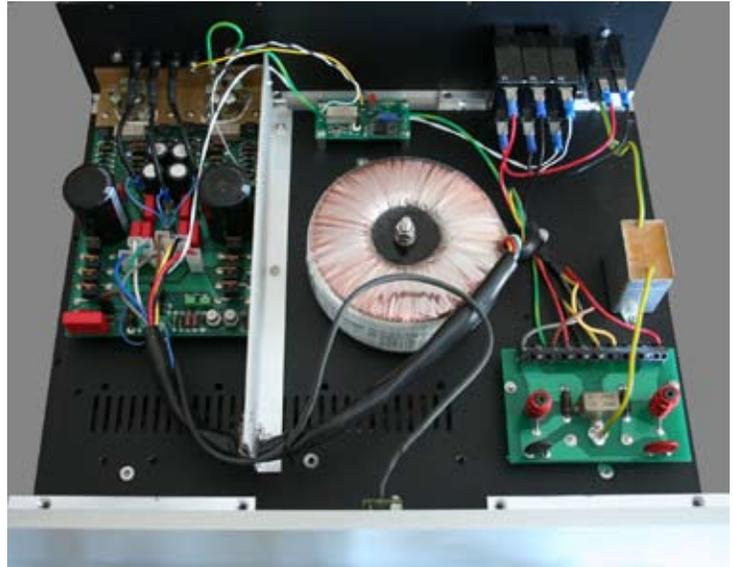
Chorale Preamplifier inside chassis

In the Chorale and Master, low noise, extremely stable parts are used throughout for highest clarity and maximum resolution. Beyond unsurpassed performance, we demand reliable implementation and longevity from individual component parts. Following their initial selection, we subject these parts to rigorous performance and reliability tests before they are assembled into the components. All printed circuit boards use traces that are drawn by hand, all parts are inserted into the board by hand, and individually soldered to the boards by hand, as each of these provide tremendously improved reliability and absolute maximization of performance. All internal signal cabling is hand-made from solid silver, and is shielded and grounded with extraordinary care.

The Chorale preamplifier is built on three levels of circuit boards. The first level is a motherboard that contains the ground and power supply routing. Extensive ground plane techniques minimize interference from radiated energies. Large printed circuit paths for DC power reduce detrimental voltage drops caused by resistance and inductance.

The second level is a second motherboard that contains precision parts and circuit wiring. The active circuitry is built on individual boards that make up the third level of circuitry and mount on standoffs made from extremely pure copper flashed with silver through which the signal flows to and from the various boards. This practice minimizes any losses and distortions of the signal, while improving contact reliability. Non-magnetic hardware, used throughout the Chorale, insures that signal flow will not be disrupted by magnetic interference.

The external Master power supply includes a mu-metal shielded 350VA transformer and an initial stage of regulation which produces + 30VDC. The DC signal is again regulated within the Chorale to provide + 25VDC individually to the input and output sections through separate regulators. Precision 10 turn trimpots allow exact calibration of tracking voltages. DC voltages are transported from the Master to the Chorale via substantial, Teflon shielded, copper cables terminated with a heavy duty connector at the Chorale and with substantial copper/rhodium spades at the Master.



Master inside chasis

All told, it requires 85 hours of labor to build, assemble and test a completed Chorale and Master.

The chasses of both the preamplifier and power supply are manufactured with heavy aluminum plates on all six sides. Front, top and side panels are of the traditional clear anodized finish that has been used in Cello products for the past 20 years.

Three specially designed feet, utilizing ball bearings of hardened steel and a precision coating, eliminate the possibility of surface-borne disruptions from affecting the performance of the circuitry. The feet reduce the broadband intermodulation distortion generated when the component is moved however slightly, and is effective down to a frequency of less than .5Hz. They are located at specific points under the components to maximize their effectiveness at isolation and allow performance to be unhampered by the environment.

Each of the incremental improvements brought to the Chorale and Master transform familiar recordings into new discoveries. The unaltered reproduction of the original attack, decay, harmonic structure, temporal relationships, and dynamics of a performance, reveal the true tonal quality of instruments and voices. The air and space around the instruments

are preserved and the exact location of every performer is discernable. Even the most complex musical passages are reproduced effortlessly, retaining the most delicate nuances. This level of performance is only attained by combining advanced technology with a purist's approach to design and execution.

In each completed product, superior quality has been assured, first by meticulous planning and design, next by the choice of the finest materials, then by highly skilled hand construction of each unit, and finally by exhaustive testing and sonic evaluation.

Music, for thousands of years, has been the inspired expression of human emotion and possibility. Over the centuries gifted artisans like Amati and Stradivari have enabled composers to more clearly articulate their vision through the perfection of musical instruments. The dedicated master musician insists on using an instrument made by a great craftsman. To reproduce music faithfully and exquisitely requires nothing less than the very best audio equipment. Each product from Matthew James is a blend of proven principles from the past and new technological understandings. Something new is added only if it proves meaningful in performance.

## **Unpacking**

The packing box for the Chorale preamplifier should arrive in good condition. Please inspect for damage to the carton, although this is unlikely due to the strength of the carton construction. Open the packing carefully and save all foam pieces and boxes for re-use in the event the Chorale or Master needs to be shipped in the future. Should the box become lost, please contact your dealer for replacement carton and packing material.

*Each Chorale carton should contain:*

- (1) one Cello Chorale preamplifier
- (1) one DC cable with (5) five color coded connectors
- (1) one owner's information sheet.

An important part of the Cello philosophy is found in the physical separation of the power supply from the active circuitry of either the preamplifier or the amplifier. The external Master power supply includes a mu-metal shielded transformer and power supply regulation. DC voltages are transported from the Master to the Chorale via substantial, Teflon shielded, copper cables terminated with a heavy duty connector at the Chorale and with substantial copper/rhodium spades at the Master.

Each Master carton should contain:

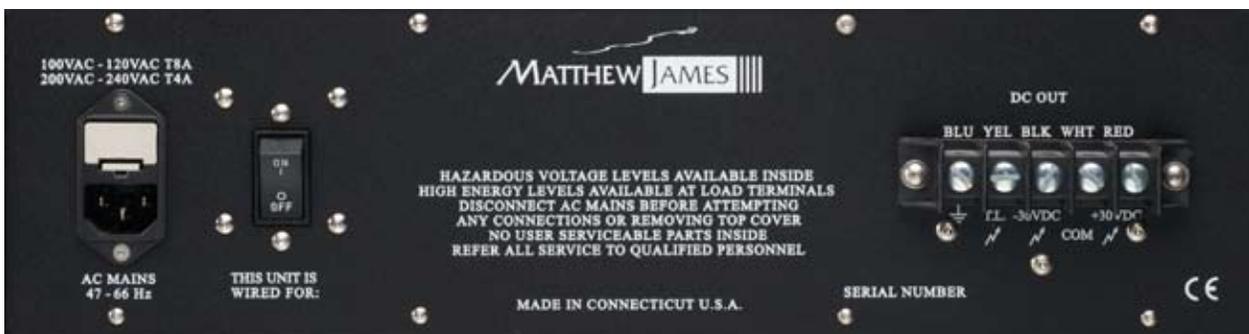
- (1) one Cello Master power supply
- (1) one AC cable.

## Installation

Be certain that the Chorale preamplifier and Master power supply are installed so that they have proper ventilation. The ambient temperature should not exceed 122 degrees F (50 degrees C).

Check to make certain that the Master power supply is set to be used at the voltage available in your installation. There is a small label on the rear panel, at the bottom left, near the AC IN receptacle, which indicates THIS UNIT IS WIRED FOR, followed by a sticker indicating the voltage at which the unit has been set.

The Chorale preamplifier and Master power supply are connected with a DC cable that is two meters in length. The Chorale and Master can be situated anywhere, relative to each other, allowed by the two meter length of the DC cable. The cables are terminated with a heavy duty, 5 pin connector at the Chorale and with substantial copper/rhodium spades at the Master.



Connect the DC cable to the Chorale by lining up the 5 pins of the connector, labeled DC IN, with the matching slots on the receptacle terminating the DC cable. Connect the DC cable to the Master using the individually colored strands of cable to the screw-connected terminal block with the color coded system as labeled on the back of the Master.



Looking at the rear of the Chorale preamplifier, the DC IN connector is to the far left. Moving across the rear panel, the various outputs from the preamp are situated immediately to the right of the DC IN connector.

There are (3) three sets of VARIABLE outputs (LEFT L on the top and RIGHT R on the bottom): (1) One pair of balanced outputs via XLR connectors, and (2) two pairs of single-ended outputs via RCA connectors. The VARIABLE outputs are controlled by the 59-position LEVEL control, centered on the front panel, in 1dB steps.

The balanced output contains four individual, discrete amplifiers for the plus and minus signals for each channel, providing Class A, symmetrical output to drive power amplifiers with balanced inputs.

There are also two pairs of fixed outputs, both via RCA connectors. These can be connected to the input of a recording device, or as an input to an audio processor, or to another system.

Moving to the right side of the rear panel, there are the (4) four line level inputs, the balanced input and the phono input and ground. Connect the source components to the appropriate inputs on the preamplifier.

Connect the AC line cord from the IEC connector on the rear of the Master power supply to the power outlet in your home.

Push the rear panel circuit breaker power button to turn the unit on. Your Chorale and Master should now be functioning and the LED on the front panels should be red in color.

## Operation

Looking across the face of the Chorale there are five switches, all controlled by knobs that are hand milled from solid rods of aluminum and specially processed to offer operational ease and enduring cosmetic appearance. As a final touch, all nomenclature is laser engraved for elegance and longevity, imparting a level of craftsmanship reflective of every other aspect of the product.



These knobs can rather easily displace the set screw which holds them in the correct position relative to the shaft and the rest of the switch controlled. When adjusting the INPUT, MONITOR, +dBL and +dBR controls, go slowly and definitively from position to position when making a change to any of these switches.

## **LEVEL:**

Centered on the face plate is the output level control. The output level is at its lowest position, no variable output, when the indicator line is centered at the bottom of the knob. Output level is variable between lower than -40dB of the source signal at the softest level and greater than +10dB of the source signal at the loudest level.

Only the highest quality parts are used throughout the Chorale preamplifier and it contains many parts not found in any other preamplifier on the market. Sometimes this has required us to invent a part that does not have an equal otherwise. For more than 25 years, the 59 position Cello volume control has set the standard for sonic excellence, reliability, and precision tracking. Matthew James' Showroom has changed the contact material of the wiper in this control from what was used previously to a silver alloy that contains 10% gold and 10% platinum developed for guidance systems for military hardware and satellite communications. Its resistance to corrosion and tarnish made it attractive to us and it is guaranteed for 50 years of continual service with stable contact resistance for low noise. The latest generation of this continues to set the standard for sonic excellence, reliability, and precision tracking as it has for more than 25 years. Remote control of any kind diminished performance and so could not be included.

This decision, freeing us from consideration of remote control, in turn led to our being able to consider the large, hand soldered rotary switches that are used for input selection and monitoring functions available on the left side of the faceplate, and for the individual balance/gain controls available on the right side of the faceplate.

These switches offer superior performance and reliability through positive indexing and electrical contact systems. While other types of switches allow for sources to be selected and volume to be controlled via remote control, none of these offer the sonic excellence of the switches chosen. Again, any convenience, which detracted from sonic performance, was not considered for inclusion in the Chorale.

## **INPUT:**

The control that is farthest left is the INPUT selector. The Chorale has a total of six inputs including phono (labeled P), a balanced line input (B), and four single-ended line inputs (1, 2, 3, 4).

P (PHONO): P selects the phono input to which the output from a cartridge/toner/turtable should be connected. Within the Chorale preamplifier the gain and input impedance of the phono section are programmable to accommodate any cartridge.

This preamplifier has been set to 60dB of gain with 50kOhms / 220pf loading in the phono stage. Instructions for making changes to these settings are contained at the end of this Owner's Sheet.

Phono performance is enhanced since the RIAA circuitry is buffered from all loading by the 1MegOhms buffer amps. The Chorale may be ordered with or without phono section activated.

B (Balanced): B selects the balanced input which makes possible the major advantages of balanced lines for any source component. Although balanced outputs provide 6dB more level and other potential advantages, balanced inputs alone allow common mode rejection. Even with unbalanced drive they can offer good rejection if used correctly. Within the Chorale preamplifier the gain and input impedance of the balanced line inputs are programmable to accommodate any source.

This preamplifier has been set to 0dB of gain in the balanced input section and is provided with 10kOhms loading for both the + input impedance and the – input impedance of this signal. This is how most users will connect a source with a balanced signal to perform to its full potential with the Chorale.

Instructions for making changes to these settings are contained at the end of this Owner's Sheet.

1, 2, 3, and 4: Selects the (4) single-ended, line level stereo inputs, all with a 1 MegOhms input impedance, with very small amounts of capacitance in parallel for RF filtering and circuit compensation, are provided. The 1 MegOhms input buffer amplifiers allow all line level sources to perform with the lowest distortion, maximum clarity and depth of imaging. These buffer amplifiers, which accept the signal from the input selector and drive the Monitor control switch, also prevent recorders or processors connected to the Chorale's fixed outputs, from adversely affecting the performance of line level sources.

## **MONITOR**

The Chorale allows for listening directly to a source component, listening to a source component while recording or processing its audio signal, or listening to the recorded or processed signal.

Next to the INPUT selector is the MONITOR selector through which single-ended inputs 1 and 2 function as monitor inputs in addition to normal inputs. This allows deck to deck dubbing, as well as simultaneous recording with two machines.

For a recording or processing device that has an analog input (cassette deck, reel-to-reel tape recorder, vcr, dat, cd-r, equalizer, processor), it's analog input should be connected to the Chorale's FIXED outputs. The source component's analog output should be connected to the Chorale's single-ended inputs labeled 1 or 2.

INPUT should be selected to make a recording of, or otherwise process, the audio signal from the input selected.

1 or 2 should be selected to listen to the recorded or processed audio signal.

OFF is position selected when you are just listening to the source component in the most straightforward fashion. The fixed outputs are disconnected to prevent loading from recorder or processor inputs when these components are not turned on.

## **+dB LEFT and +dB RIGHT**

The left and right output amplifiers have switchable gain from 1 to 10dB in 1dB steps, controlled individually, by channel, from the front panel with the +dBL and +dBR knobs. For the most efficient systems 0dB line gain is ideal. For systems with less efficiency, or amplifier input sensitivity, 10dB gain is more appropriate. The ability to add left and right gain individually allows for channel balance control as well. From a sonic point of view, the individual gain controls permit the optimization of system performance. The two sets of single-ended fixed outputs, designed to drive an audio recorder or processor's inputs, are not affected by the +dBL and +dBR controls.

## **Service**

If you believe your Cello Chorale preamplifier is not functioning properly, please contact your dealer / distributor. If you need to return your component, you will be given a Return Authorization Number (RA#). This number must appear on the outside of the shipping carton. Returns without RA#s will not be accepted. Returns received in original packing material will be returned in original packing. Returns received in non-original packing material will be returned in new packing at the owner's expense. If you need new packing material to return your Chorale or Master, please contact your dealer / distributor.

## **Maintenance**

The finish of the Cello Chorale preamplifier is machined aluminum that has been brushed (top, sides, face), and powder coat painted (rear and bottom). Ammonia based glass cleaner, or a (3 to 1) three to one mixture of Grain Alcohol and distilled water, applied with a soft white, lint free cloth, works well to remove fingerprints and other dirt. Take care when cleaning the rear panel as excessive rubbing may remove the silk-screened lettering. Be sure that the preamplifier and power supply are turned off and disconnected from the AC line before cleaning and always try to keep excess cleaning fluid from getting inside the preamplifier.

## **Limited Warranty**

Matthew James' Showroom, L.L.C. warranties all mechanical and electrical parts of the Cello Chorale preamplifier and Master power supply for (5) five years from original date of manufacture. Labor expenses associated with the service of the Cello Chorale preamplifier and Master power supply are the responsibility of the dealer or distributor, if applicable, except as follows:

Any defect in the Chorale or Master within the first (2) two years from the original date of manufacture shall be repaired by the dealer / distributor with labor expenses paid by Matthew James' Showroom, according to factory rates for a given repair. At Matthew James' Showroom's discretion, or if the dealer / distributor is unable to perform the repair, the unit may be returned to the factory for service using agreed upon airfreight. After repair the unit will be returned by the same carrier or equivalent. During years (3-5) three through five, if the dealer / distributor is unable to perform the repair, Matthew James' Showroom will pay the return airfreight from the factory by agreed upon carrier, provided the unit was shipped to the factory with airfreight prepaid.

Matthew James' Showroom will not pay freight costs if the unit is returned without a Return Authorization Number (RA#).

Matthew James' Showroom will not pay the freight if the unit is found to be in working order.

There is no reason to register your warranty. It is done so automatically by the factory. We respect owner's privacy and don't try to gather information without the owner's knowledge and consent. Warranty is automatically transferred to a subsequent owner who may wish to verify date of manufacture and remaining warranty period. If you want to register to receive product information, or find out more about Matthew James' Showroom or Cello products, we invite you to visit our web page at either [www.matthew-james.net](http://www.matthew-james.net) or [www.cello-audio.net](http://www.cello-audio.net).

## Warranty of Repair Work Performed

Any specific repairs or modifications effected by Matthew James' Showroom, or authorized service facility, shall be guaranteed for 100% parts and labor for the remainder of the original warranty period for this particular unit, or (1) one year, whatever is longer.

## Tampering, Abuse or Misuse

Any unauthorized modifications, repairs or tampering, and/or any indication of owner abuse, negligence or improper usage, as determined by Matthew James' Showroom, will result in the voiding of the warranty. There are no user serviceable parts inside the Chorale nor the Master. Any changes should be made by Matthew James' Showroom or its authorized representative.

## Dimensions:

Chorale: W: 43cm (17.05") x H 14.5cm (5.70") x D 39.4cm (15.51"). Weight: 32lbs.

Master: W: 43cm (17.05") x H 14.5cm (5.70") x D 41.3cm (16.25"). Weight: 36lbs.

## Specifications

We do not print specifications because they really do not provide meaningful information. However, there is some importance to knowing what we do measure for, and what adjustments are made to qualify a preamp as ready for shipment.

There are Lower and Upper Limits established for all measurements, and there are typical measurements that can be determined through production samples. The following are specifically checked in all Chorales 48 hours after all adjustments have been made, these adjustments themselves having been made 96 hours (at least 4 days) after initial production:

1) For the line level inputs we check:

GAIN at the FIXED outputs, the Lower Limit (L) is 0.3dB, Upper Limit (U) is 0.1dB. Typical measurements are 0.0987dB.

INTERMODULATION DISTORTION at the FIXED outputs, the Upper Limit (U) is 0.003%: Typical measurements are 0.0022%.

CCIF at the FIXED outputs, the Upper Limit (U) is 0.005%: Typical measurements are 0.0002%.

Channel Crosstalk at the FIXED outputs, the Upper Limit (U) is -70dB: Typical measurements are -74.9dB.

2) For the Phono Stage we check the same parameters: GAIN at each of the 3 available settings.

At 36dB Gain the Lower Limit (L) is 36.1dB, Upper Limit (U) is 36.5dB: Typical measurements are 36.2040dB.

At 47dB Gain the Lower Limit (L) is 47.3dB, Upper Limit (U) is 47.7dB: Typical measurements are 47.4382dB.

At 60dB Gain the Lower Limit (L) is 60.5dB, Upper Limit (U) is 60.9dB: Typical measurements are 60.6506dB.

INTERMODULATION DISTORTION, the Upper Limit (U) is 0.03%: Typical measurements are 0.0150%.

CCIF, the Upper Limit (U) is 0.1%: Typical measurements are 0.0330%.

Channel Crosstalk, the Upper Limit (U) is -45dB: Typical measurements are -53.5dB.

3) For the Balanced Input we check the same parameters:

GAIN with the Lower Limit (L) at 0.0dB and Upper Limit (U) at 0.4dB: Typical measurements are 0.2739dB.

INTERMODULATION DISTORTION, the Upper Limit (U) is 0.0050%: Typical measurements are 0.0025%.

CCIF, the Upper Limit (U) is 0.02%: Typical measurements are 0.0044%.

Channel Crosstalk, the Upper Limit (U) is -60dB: Typical measurements are -83.5dB.

4) Finally, we check the same parameters for the + and the - legs of both the Left and Right outputs:

GAIN at the + and - Output with the Lower Limit (L) at 9.6dB and Upper Limit (U) at 10.0dB:  
Typical measurements are 9.9056dB for the + output.  
Typical measurements are 9.8790dB for the - output.

INTERMODULATION DISTORTION, the Upper Limit (U) is 0.0050%:  
Typical measurements are 0.0013% for the + output.  
Typical measurements are 0.0014% for the - output.

CCIF, the Upper Limit (U) is 0.02%:  
Typical measurements are 0.0120% for the + output.  
Typical measurements are 0.0101% for the - output.

Channel Crosstalk, the Upper Limit (U) is -50dB:  
Typical measurements are -61.6dB for the + output.  
Typical measurements are -61.7dB for the - output.

It is Matthew James' hope that the Chorale preamplifier and Master power supply provide evidence of our desire to develop products that are responsive to the audio requirements of the 21st century marketplace, while maintaining our long-held commitment to the highest levels of sonic performance, stability under actual real-world conditions, and unsurpassed long-term reliability.

## **Making Changes to the Phono and Balanced Input Settings**

The chassis of the Chorale preamp and Master power supply are manufactured with heavy aluminum plates on all six sides. In order to reduce the deleterious effects of vibration, each individual piece is securely connected to those pieces adjacent. However, the tops/faces/sides assembly connects to the bottom/back assembly, and so the tops/faces/sides assembly needs to be removed from the bottom/back assembly in order to access the internal switches.

Push the rear panel power button on the Master power supply to turn the unit OFF. Disconnect the AC line cord from the power outlet in your home and from the IEC connector on the rear of the amplifier. The LEDs on the front panels should not be illuminated.

Disconnect the DC IN connector on the rear of the Chorale preamplifier. Lay the Chorale on its top. As you can see, there are set screws that hold the knobs on the front of the unit to the shaft and the switch behind the faceplate. In order to take the top/front/side assembly off, the knobs must first be removed. Loosen the set screw in each of the 5 knobs with an appropriately sized Allen wrench and remove them from the Chorale.

On the bottom plate of the Chorale, there are four (4) screws across the front of the unit and four (4) screws down each side. Remove these twelve (12) screws.

On the back plate of the Chorale there are four (4) screws across the top. Remove these four screws.

The red front panel LED that illuminates when the Chorale is powered on, is also connected to the rest of the unit, but it has an in-line connector to facilitate making changes. Slide the black portion of the Chorale away from the top/face/side assembly just an inch or two. Once the Level control has cleared the chassis, disconnect the in-line connection for the front panel LED. You can now freely remove the black portion of the Chorale, from the top/face/side assembly.

### **PHONO:**

There are two switches for each left and right channel in the phono section, with two on/off rockers each, mounted to motherboard two, inside the Chorale at the left front. These are labeled, on motherboard 2, as SW1 and SW2.

The first, SW1, allows for gain of the phono stage to be adjusted.

Rocker 1 OFF and Rocker 2 OFF results in 36dB of gain in the phono stage.

Rocker 1 ON and Rocker 2 OFF results in 47dB of gain the phono stage.

Rocker 1 ON and Rocker 2 ON results in 60dB of gain in the phono stage (unless otherwise specified when ordered, this is how the factory sets the phono gain when the Chorale is first shipped).

SW2 allows for loading of the cartridge for best electrical performance.

Rocker 1 OFF and Rocker 2 OFF results in 50kOhms/220pf loading of the cartridge in the phono stage (unless otherwise specified when ordered, this is how the factory sets the loading when the Chorale is first shipped).

Rocker 1 ON and Rocker 2 OFF results in 10kOhms/220pf loading of the cartridge in the phono stage.

Rocker 1 OFF and Rocker 2 ON results in 1kOhms/.01uf loading of the cartridge in the phono stage.

## **BALANCED INPUT:**

There is one switch for each left and right channel in the balanced input section, with two on/off rockers each, mounted to motherboard two, inside the Chorale at the left rear. This switch is labeled, on motherboard 2, as SW3.

When a balanced line level source signal is connected to the Balanced input (XLR to XLR connectors on the cable) of the Chorale, a 10kOhms load for both the + input impedance and the – input impedance is provided for this signal.

Rocker 1 ON and Rocker 2 OFF results in 10kOhms loading (relative to ground) of both the + and the – portions of the balanced input signal, with no extra gain added to the signal. This is how the factory sets the balanced line level loading when the Chorale is first shipped, as this is how most users will connect a source with a balanced signal to perform to its full potential with the Chorale.

However, systems that do not contain a balanced source may want to connect a single ended, line level source component to the balanced input of the Chorale, to take advantage of a number of performance related loading and gain options. This will require the cable to be terminated with RCA type connectors at the output of the source component and with Male XLR connectors at the Chorale's balanced input. Pin #2 of the XLR connector should be connected to the "hot" audio signal and Pin #3 should be short-circuited to Pin#1.

By setting SW3's Rocker 1 OFF and Rocker 2 OFF the + input impedance is set at 1MegOhms, the – input impedance is set at 10kOhms, with 7dB of gain added to the signal.

Many audio enthusiasts know that certain types of recordings benefit from additional gain added to the source signal. Extra gain allows low output, single ended source components to be converted to studio type output for recording and monitoring. Again, this will require the cable to be terminated with RCA type connectors at the output of the source component and with Male XLR connectors at the Chorale's balanced input.

As mentioned at the beginning of this section, the most likely scenario is for a balanced signal to be presented to the balanced input, and the source component with balanced output will perform to its full potential when connected to the balanced input of the Chorale with SW3 set as it is tested and shipped from the factory.

A balanced signal should never be connected to the Chorale with SW3 set any way other than with Rocker 1 ON and Rocker 2 OFF.

Cello products are designed and built by hand in  
Connecticut, USA by

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Middlefield, CT 06455

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