



**AUDIO SUITE**  
**OWNER'S MANUAL**  
SERIAL NUMBER \_\_\_\_\_

## **INTRODUCTION**

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### **PRODUCT CONCEPT AND DESCRIPTION**

The Audio Suite is a mainframe which accepts up to ten modular sections thereby permitting individualized selection of preamplifier features and functions. Its range of capabilities is almost limitless, making possible a completely flexible approach to state-of-the-art music system design and development.

There are two levels of modules available for the Audio Suite: "Basic" modules (beginning with the letter B) and "Premium" modules (beginning with the letter P). They provide two levels of performance and price. Premium and basic input modules may be used together in the same mainframe. However, Premium and Basic output modules may not.

Module types include the phono inputs (100 series): P101, P100, B100; the line inputs (200 series): P201 (CD, DAT, Digital Processor), P200 (Tape, CD, Tuner, Auxiliary, Video, DAT) and B200; the outputs (300 series): P301 and B301; and the Professional modules (600 series).

This modular flexibility enables the user to acquire an Audio Suite with any complement of modules initially and add to or upgrade as desired.

## **INSTRUCTIONS**

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### UNPACKING

Prior to opening, inspect the outside of the cartons for signs of shipping or handling damage. Report any evidence of abuse immediately. Open the cartons carefully and remove the contents from the packing. Take care not to scratch the surfaces of the unit. Save all packing material and boxes for reuse in the event the unit must be shipped in the future. Should the boxes become lost, replacement boxes are available from the factory.

Packing contents:

- Mainframe with selected modules and blank bays
- 9M DC cable

Accessories to be ordered and shipped separately:

- Cello Strings
- Master Supply - with AC cable and ground jumper

### CABLE AND ADAPTOR SELECTION

The Premium modules use 3-pin Fischer connectors for the highest quality balanced line input and output connectors. The Basic modules utilize high quality RCA connectors.

It is recommended that input and output connections be made using Cello Strings cable. Cello Strings are stocked in lengths of 1, 1.5, 2, 3, 5, 8, and 10 meters. Custom lengths are available on special order. Terminations are available to suit the particular components of the system.

Balanced lines may be converted to single ended operation. The best way is to use Cello Strings cable (which has three conductors and a shield) with a Fischer male connector on one end and an RCA connector on the other. This preserves the three-wire system from the amplifier to the source unit and provides better grounding and common mode rejection. If this is not convenient, adaptors are available for single ended operation.

To interface with XLR systems, it is recommended that Cello Strings cable be used with a Fischer connector on one end and an XLR connector on the other end.

ADAPTOR LIST (See appendix 1)

## INSTALLATION

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### MASTER SUPPLY OPERATION

The Audio Suite must be powered by an external power source: the Cello Master Supply. The Master Supply provides regulated DC voltage to the Audio Suite via a high quality five conductor cable harness. The conductors are color coded for easy installation.

Virtually silent operation of the Audio Suite is possible. Selecting the right grounding combinations will take very little time and will usually be done by the installers. If you change your system, you may need to change the grounding.

### USING ONE MASTER SUPPLY WITH AUDIO SUITE & AUDIO PALETTE

One Master Supply is capable of powering both units at the same time. The lowest hum and noise can be achieved in different ways depending on the system. If the Palette is connected between the Suite and the power amp or crossover, it is likely that the lowest noise will be achieved by connecting the Master Supply first to the Palette, then from the Palette to the Audio Suite. This is bulkier wiring but usually results in lower noise. The Palette has two sets of barrier strips. You can use both or double up on one strip with one set of wires leading down and the other leading up.

### GROUND JUMPER

A ground jumper several inches long with a blue end and a white end is supplied. With the power "OFF," try connecting this jumper between the blue and white connections on one barrier strip at the supply for lower noise. Do not short with any other terminals!

### CONNECTION

#### • CONNECTING THE MASTER SUPPLY & AUDIO SUITE (DC)

The color coded conductor wires should be connected to the Master Supply and the Audio Suite only when the Master Supply is "OFF." An ON/OFF plunger switch is located on the rear of the Master Supply. A white band appears on the plunger shaft when it is pulled out indicating the power is off.

Connections may be made to either of two terminal strips on the rear panel of the Master Supply. L-brackets cover these barrier strips for safety. Read the safety precautions on the rear panel of the Master Supply before attempting any connections. Remove the terminal cover by loosening the screws at each end of the cover. Connect the color coded wires to their appropriate terminals, i.e. black wire to BLK, red wire to RED, white wire to WHT, yellow wire to YEL, etc. Repeat this procedure to connect

the other end of the DC cable to the Audio Suite terminal strip. Connect AC mains from the Master Supply to the AC wall outlet. Replace terminal covers before turning power on.

- **CONNECTING THE AUDIO SUITE (audio)**

The type of connections used depends on the modules installed in your mainframe: Fischer connectors or RCA connectors.

With all equipment OFF, connect the Audio Suite outputs to amplifier inputs. Connect record outputs to Tape or DAT. Connect all source units to corresponding inputs. When fully connected and with volume turned down, turn power "ON." The red light on the Master Supply will light immediately. However, sound will be possible only after the delay circuit cycles in 30 - 40 seconds. You will also see the LED on the output module come on at this time. Next, turn all source units ON, followed by the amplifier. You are now ready for listening. See operation.

If there is an Audio Palette in the system, the Audio Suite outputs should feed the Audio Palette inputs, and the Audio Palette outputs should feed the power amplifier or crossover inputs.

The Audio Palette may also be connected in the tape monitor loop of the Audio Suite. One P200 or P201 will be needed for the "return," if balanced lines are desired. The #4 or #5 inputs of a B200 module may be used for single-ended "return" or "monitor" function. Balanced lines should be maintained for the best sonic performance where ever possible.

## CHANGING MODULES

Turn the Master Supply OFF!

Remove the rear cover plate of the Audio Suite which has 6 torx screws holding it in place and the words "Audio Suite Mainframe Serial Number (xxxxxx)" on it.

Each module is held in place by small slotted screws at the rear of the modules and small thumb screws at the front. These screws make the audio and DC connections in addition to holding the circuit board in place. These screws go through bars fastened to the Delrin back panel. **DO NOT REMOVE THE SCREWS WHICH SIT ON TOP OF THE DELRIN.** These hold the bars to the Delrin. The screws which hold the modules fit so that the head of the screw is about flush with the surface of the Delrin. Be sure to remove all the screws for the module being removed. Even one screw will hold the module in the Mainframe. A single bay module has 12 screws and 2 thumb screws. Most dual bay modules have 24 screws and 4 thumb screws with the exception of the B301 which has 12 screws and 4 thumb screws.

Remove the finger-tightened dress fasteners from the front panel (two per bay).

Slide the module out carefully.

## INSTALLING MODULES

Slide in carefully.

Install all screws described above loosely before you tighten any of them. **DO NOT OVERTIGHTEN!!!** A good snug fit is correct.

## **OPERATION**

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### ADJUSTING LEVEL AND BALANCE

Level and balance are adjusted as with a normal preamplifier. The Output Level control is accurately calibrated in 1dB steps. The Balance Control is accurately calibrated in 0.25dB steps. If an Audio Palette is being used, set both output and balance controls of the Audio Suite to zero and make adjustments with the Audio Palette controls.

The Audio Suite balance control is provided on the P301 module. The B301 does not have a balance control. The extra-fine steps provided in the Premium modules will exactly center the left/right balance. Phono cartridges with channel imbalance (a common problem) can be used with the balance control set to the desired point.

### INPUT SELECTION

The Audio Suite has no chassis wiring or input selector in the conventional sense. Each module may be assigned to the MAIN or MONITOR buss by actuating a small toggle switch on the module. The MAIN/MONITOR toggle on the output module must then be set to the corresponding position.

For example, to play a record you would set the MAIN toggle in the upward position to MAIN. Set the MAIN/MONITOR toggle on the output section to MAIN.

### **MAKE SURE THAT ALL OTHER TOGGLE SWITCHES ON OTHER MODULES ARE "OFF."**

Since the Audio Suite operates on the summing buss (mixing) principle, any number of inputs which are "on" will mix. You can not hurt anything that way, but you could get some startling effects mixing your phono and FM! The advantage of the summing buss principle is that it allows a great deal of flexibility for residential and professional applications with no "modifications" required.

When you turn up the Output Level control you will hear the phono source.

If you want to hear the Tuner, set the Phono MAIN toggle to OFF. No sound should be heard from the speakers. Set the Tuner MAIN toggle to ON. The Tuner should be heard.

## I RECORDING WITH THE AUDIO SUITE

Assume you want to tape a record on cassette. Set the Phono MAIN toggle to MAIN. The phono signal is now appearing on the MAIN buss. You can hear this by setting the MAIN/MONITOR toggle on the output section to MAIN.

Set your TAPE 1 module (cassette) so that the MONITOR toggle is set to monitor.

When you switch the toggle on the output section to MAIN, you are hearing your source. When you switch to MONITOR, you are hearing the tape.

## INDICATOR LIGHTS

A red LED lights when a Premium module is assigned to MAIN or MONITOR.

The P301 and B301 have red LED indicators which light when power is on after the delay circuits have cycled.

The B100 and B200 have no indicator lights.

## DELAY CIRCUITS.

Audio Suite output modules have built in delay circuits which prevent thumps and other noises associated with turn-on and turn-off of power. The power supply can be turned on, off, or unplugged and reconnected to the wall with no noises. The red light on the output module will come on only after a delay of 30-40 seconds. This gives circuits a chance to stabilize in the Suite and in preceding equipment.

## MIXING

Assigning more than one input module to the MAIN or MONITOR buss will cause mixing and makes many special effects possible. Modules with level controls are included in the 600 series (professional modules) for recording and studio applications. Information is available and will be supplied on request.

## INPUT IMPEDANCE, GAIN, & GROUNDING

The Audio Suite offers different input impedances depending on the module chosen. The P201 line input offers 2 MegOhms or 10 kOhms loading. The P200 line input offers 100 kOhms or 10 kOhms loading.

The P100 Phono and B100 Phono offer 50 kOhms loading.  
The P101 Phono offers 1 kOhms loading.

The P200 & P201 line input modules have switchable features which determine their input impedance, gain, and grounding characteristics.

The audio ground is separate from the chassis ground in the Audio Suite. Lowest noise connection is usually attained by connecting the audio and chassis grounds. The Audio Suite provides this option at several points. A switch on the P200 and P201 allows the audio ground to be connected to the chassis ground on each channel individually or "floated" (kept separate). When in the float position, the audio ground is isolated from chassis ground by 10 Ohms (see Figs. 1 & 2).

The input impedance of the P200 is normally 10 kOhms balanced each side to ground. High impedance equipment such as vacuum tube tuners and preamplifiers are often designed for termination with 100 kOhms or more. The P200 can be switched to 100 kOhms impedance (audio + ). The audio (-) remains 10 kOhms grounded in single ended wiring.

The gain of the P200 is switchable. See fig. 1 for switch location and settings.

The input impedance of the P201 is normally 1 MegOhms for high impedance single ended operation. The P201 can also be set for 10 kOhms balanced operation.

The gain of the P201 is switchable. See fig. 2 for switch locations and settings.

## OUTPUT IMPEDANCE

The MAIN and RECORD outputs of the Audio Suite can drive 5 kOhms with ease. Please consult the factory for 600 Ohms drive. The Audio Suite is capacitor coupled through 10 microfarads (precision polystyrene type) for best AC and DC protection characteristics on both MAIN and RECORD outputs.

## SERVICE

If you believe that your Cello product is not functioning properly, please contact our Customer Service Department at the factory.

Should you need to return your component, you will be given a return authorization (R/A) number. This number must appear on the outside of the shipping box(es). Returns without R/A numbers will not be accepted.

Returns received in original Cello packing will be returned in original packing. Returns received in non-Cello packing will be returned in new Cello packing at the owner's expense. If you need replacement packing materials, please contact the Customer Service Department at the factory.



## [ WARRANTY

- **CELLO LIMITED WARRANTY**

**PARTS AND LABOR:** 100% lifetime coverage for electronic parts including labor. Five years 100% coverage for all mechanical parts including labor.

**SHIPPING:** One year-100% coverage for all shipping and insurance charges pre-paid to and from the factory from anywhere in the world via reasonable carrier. Special freight or rush shipments will incur customer charge.

Years 2-5, units coming into the factory must arrive with shipping charges pre-paid. Return shipping charges will be paid by the factory.

Cello will not pay freight if units are returned without a return authorization number (R/A#). Cello will not pay freight if units are found to be in perfect working order.

- **WARRANTY OF REPAIR WORK PERFORMED**

Any specific repairs or modifications effected by the factory or authorized service facility shall be guaranteed for 100% parts and labor for the remainder of the warranty period on the unit or one year, whichever is longer, except for electronic parts which carry a lifetime warranty.

- **PRODUCT REGISTRATION AND TRANSFERABILITY**

All products must be registered. When sold, new owners must be registered with the factory by dealers or distributors. All of the above warranties are transferable to any succession of subsequent registered owners. Please contact your nearest Cello System Designer or the Customer Service Department at the factory for details of subsequent owner warranty registration.

- **TAMPERING**

Any modifications, repairs or tampering with any Cello product that is not authorized by the Cello Customer Service Department will void the product warranty.

- **ABUSE/MISUSE**

Any indications of obvious owner abuse, negligence or improper usage, as determined by the factory, shall be grounds to void the warranty.

## PHYSICAL SPECIFICATIONS

### • AUDIO SUITE DIMENSIONS

Mainframe dimensions:

|                  | English  | Metric  |
|------------------|----------|---------|
| Height (chassis) | 8.5 in.  | 21.2 cm |
| Height (max.)    | 8.8 in.  | 22.3 cm |
| Width (chassis)  | 16.9 in. | 42.8 cm |
| Width (max.)     | 19.0 in. | 48.3 cm |
| Depth (foothold) | 10.3 in. | 26.2 cm |
| Depth (chassis)  | 12.0 in. | 30.5 cm |
| Depth (max.*)    | 14.1 in. | 35.7 cm |

\* Measurement from the rear of terminal strip covers to front plate.

Box Dimensions: 22.0" x 22.0" x 10.5"

55.9 cm x 55.9 cm x 26.7 cm

Weight\*: net. 15 lbs. (6.8 kg), boxed 30 lbs. (13.6 kg)

\* Audio Suite weight will vary with choice of modules. The above weights are for empty Audio Suite chassis. All weights are approximate and do not include exterior cabling.

Cello Adaptor List - Appendix A

C Series Adaptors

- C1 Male Camac to Male Fischer "K"
- C2 Male Camac to Female Fischer "K"
- C3 Male RCA to Male Fischer "K"
- C4 Male RCA to Female Fischer "K"

E Series Adaptors

- E1 Female Camac to Male Fischer "S"
- E2 Female Camac to Female Fischer "S"
- E3 Female RCA to Male Fischer "S"
- E4 Female RCA to Female Fischer "S"

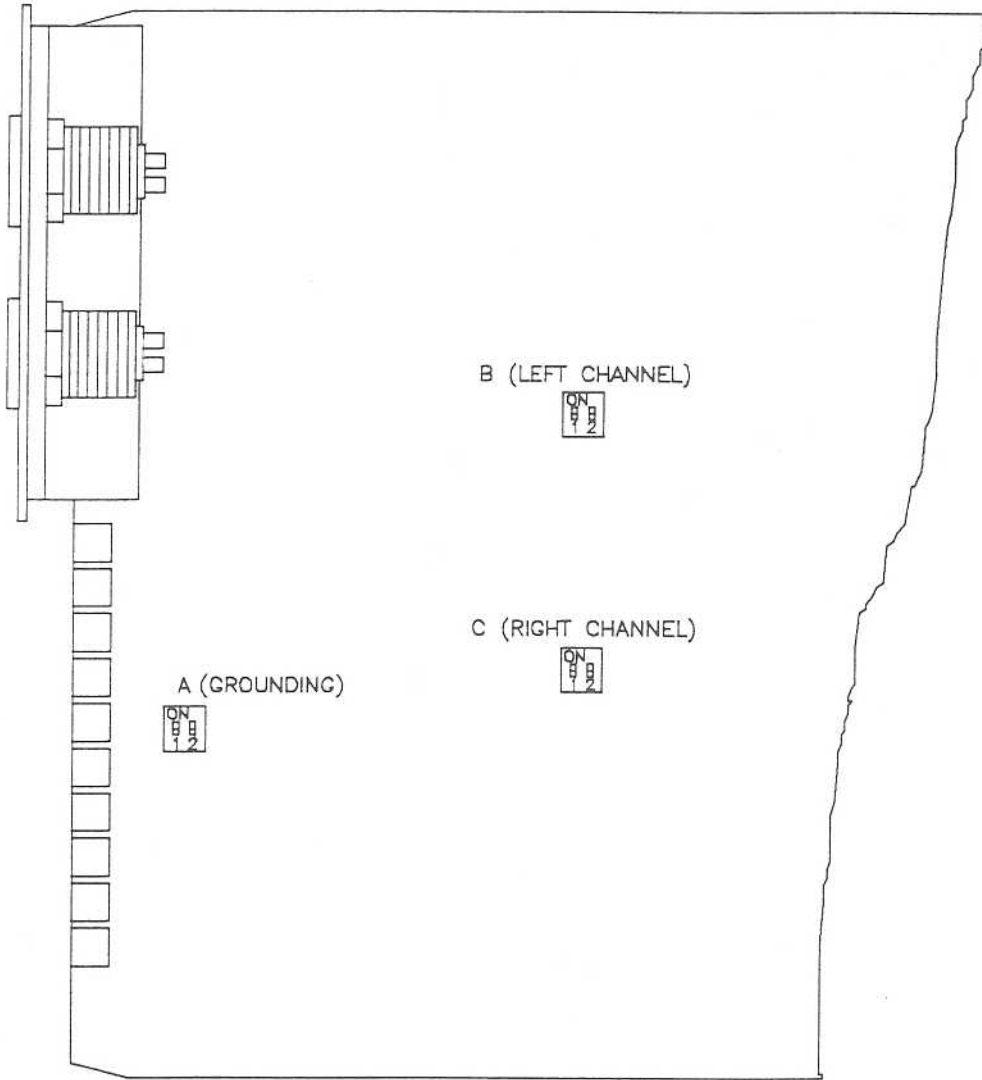


FIGURE 1: P200 SWITCH LOCATER

ROCKER SETTINGS FOR SWITCHES B & C

| 1   | 2   | GAIN | IMPEDANCE         |
|-----|-----|------|-------------------|
| ON  | ON  | 12dB | 10K SINGLE ENDED  |
| ON  | OFF | 0dB  | 10K BALANCED      |
| OFF | OFF | 6dB  | 100K SINGLE ENDED |
| OFF | ON  | 18dB | 100K SINGLE ENDED |

SWITCH A ROCKER SETTINGS

|     |     |                              |
|-----|-----|------------------------------|
| ON  | ON  | AUDIO AND DC GROUND TOGETHER |
| OFF | OFF | AUDIO AND DC GROUND SEPERATE |

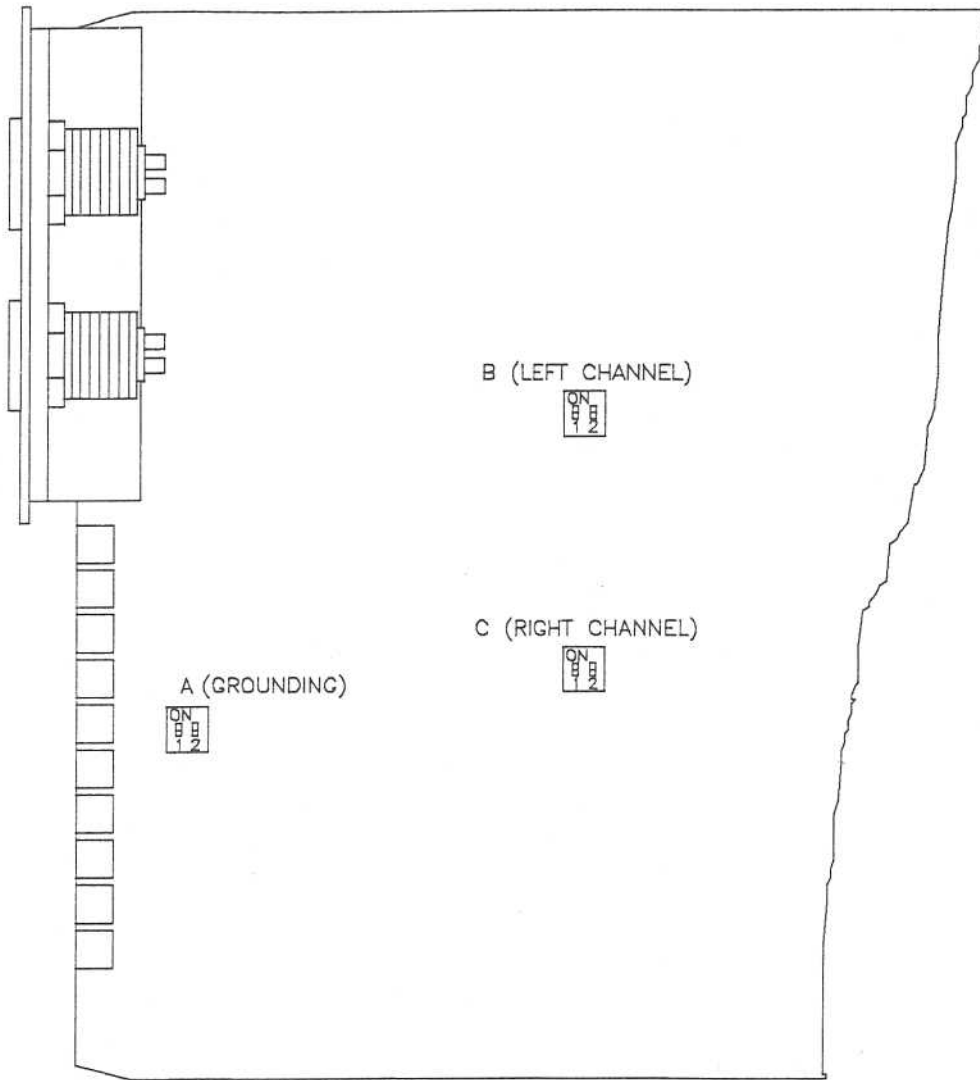


FIGURE 2: P201 SWITCH LOCATER

## ROCKER SETTINGS FOR SWITCHES B &amp; C

| 1   | 2   | GAIN | IMPEDANCE         |
|-----|-----|------|-------------------|
| ON  | ON  | 20dB | 10K SINGLE ENDED  |
| ON  | OFF | 6dB  | 10K BALANCED      |
| OFF | OFF | 6dB  | 1Meg SINGLE ENDED |
| OFF | ON  | 20dB | 1Meg SINGLE ENDED |

## SWITCH A ROCKER SETTINGS

|     |     |                              |
|-----|-----|------------------------------|
| ON  | ON  | AUDIO AND DC GROUND TOGETHER |
| OFF | OFF | AUDIO AND DC GROUND SEPERATE |

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