

## RIAA Circuit Board Gain and Loading Instructions

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### 1.0 Introduction

The RIAA circuit board for Allegro's Concerto™ preamplifier can be configured for either moving coil (MC) or moving magnet (MM) cartridges. It can provide any loading from 10 ohms to 47 k-ohms, and any gain desired up to about 60 dB (1000 X). Larger gains are feasible, but may result in unacceptable noise or possible overload. The factory will deliver RIAA circuits customized to your requests, and will change them for a small shipping and handling charge.

### 2.0 Pre-set configurations

The board comes pre set in one of two ways, MM or MC:

	MM	MC
input resistance ( $\Omega$ )	47K	100 ohms
input capacitance (pF)	300 pF	300 pF
gain @ 1 kHz	34+ dB	60 dB

### 3.0 Loading

Loading is accomplished by setting a resistor (R1) to the value recommended by your cartridge manufacturer. Almost all MM type cartridges suggest a 47K -ohm input resistance. Moving coil type cartridges vary greatly, from as little as 10 ohms to as much as several hundred ohms. With no R1 present, the input impedance is 47k-ohms. All added resistors are **in parallel** with 47k-ohms.

### 4.0 Setting loading

To set the loading, first determine the best value for your cartridge. Generally, the manufacturer's specifications provide the best performance, but you may experiment as well to achieve the best results.

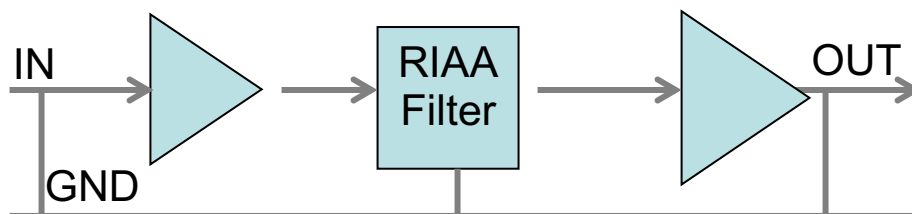
Once the best value has been determined, **TURN OFF PREAMP AND REMOVE THE RIAA BOARD FROM THE PREAMP.** At this point, the existing R1s (in both the left and right channels) are removed and replaced with the proper value. A proper value may be determined experimentally by removing the "old" R1s and substituting new values in the sockets provided. These sockets are coded "R1A".

### 5.0 Setting gain

MC cartridges generally have a lower output than MM types do. However, there are "high output MCs" which have similar output levels to MMs.

The gain of the circuit is set by changing four resistors: R6 and R15 in both channels.

The entire phono stage is made up of 3 stages. The first stage is a buffer and gain stage. The second stage performs RIAA equalization, and has a fractional gain of 0.15x. The 3<sup>rd</sup> stage is identical to the first. So the gain of the entire phono section is Gain (stage 1) x 0.15 x Gain (stage 2). In general the gain for stage 1 and stage 3 should be set the same.



Therefore, R6 and R15 should be set, for each channel, to a value between 1k and 15k, using the sockets provided. The table below shows the gains that result from various resistance choices. In general, raising the value of these resistors increases the gain, lowering it lowers the gain.

VALUE R6 & 15 ( $\Omega$ )	Overall Gain	Gain (dB)	Gain (each stage) <sup>1</sup>
1 k	33x	30 dB	14.8x
2.21k	56x	34 dB	19.3x
TBD k	64x	36 dB	20.8x
15 k	1000x	60 dB	81x

### 6.0 Reinstalling the RIAA board in your preamp

The RIAA board is installed by lining the board connectors up with those on the motherboard and pressing firmly down over the connectors. THE POWER SHOULD BE OFF. Be sure that the circuit is oriented correctly; the labels on the motherboard connectors and the RIAA board connectors should match. The input side (R1) should face the rear of the preamp.



<sup>1</sup>Gain, per stage. There is fractional gain  $\sim 0.15$  in the intermediate stage, the passive RIAA filter