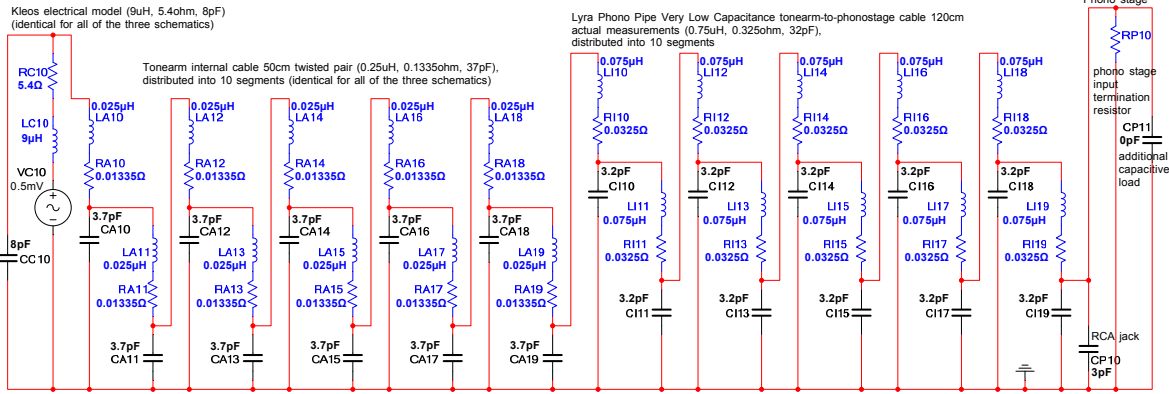


Phono stage input termination with Lyra Phono Pipe (very low-capacitance tonearm cable) and Lyra Kleos

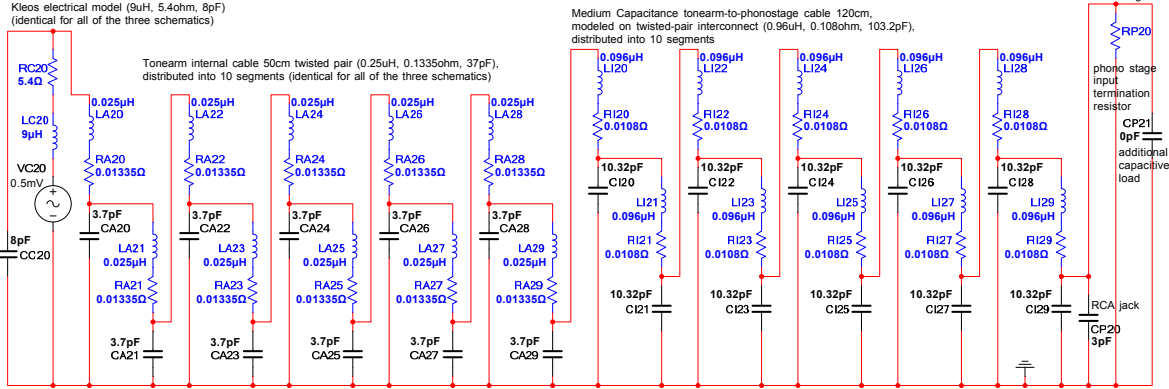


Lyra Phono Pipe is a tonearm-to-phonostage interconnect cable that is made with very low capacitance as a top priority. It enables the use of fairly high-value phono stage input termination resistors, and thereby avoids unnecessary degradation of the cartridge's dynamics, resolution, and tracking ability.

The signal coils of the cartridge have inductance, while the signal cabling between the cartridge and phono stage has capacitance. The cartridge inductance reacts with the cable capacitance to form strong resonant peaks at high frequencies.

The resonant peaks have too high of a frequency to hear directly, but the magnitude of the peaks and their high frequencies are likely to cause decreased stability and increased distortion and noise in many phono stages. Some phono stages will be fairly insensitive to these ultrasonic peaks, while other phono stages will show bigger effects.

Phono stage input termination with medium-capacitance tonearm cable and Lyra Kleos



Controlling the reactive peaks requires that their resonant energy be dissipated resistively, and this is what the phono stage input termination resistor accomplishes.

The amount of capacitance in the cable affects the frequency of the resonant peak, and will alter the effectiveness of the phono stage input termination resistor at controlling the peak.

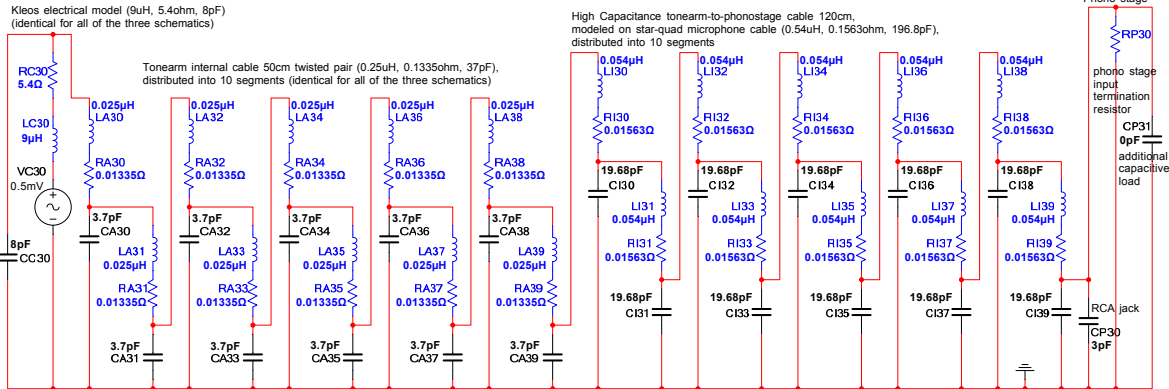
To show what happens, we simulate how the signal amplitude (including resonant peaks) at the phono stage input changes when the capacitance of the tonearm-to-phonostage cable is altered from low, to medium, to high.

We also analyze how much resistance is needed at the phono stage input to suppress the resonant peaks, again for low-capacitance cable, medium, and high.

The three types of tonearm-to-phonostage interconnect used were: very low capacitance (Lyra Phono Pipe), medium capacitance (twisted-pair interconnect) and high capacitance (star-quad mike cable).

Resistor values that minimized the amplitude increase to +6dB, +3dB, and 0dB were derived. A resistor value of 47kohm was also simulated for comparison.

Phono stage input termination with high-capacitance tonearm cable and Lyra Kleos



No additional capacitive loading was used at the phono stage input.

Comparing the simulations of the 3 cables shows that higher capacitances in the tonearm-to-phonostage interconnect cable demand lower resistor values at the phono stage input to control the resonant high-frequency peaks. This, in turn, reduces the cartridge's dynamics and resolution, and can also worsen tracking ability.