Subject: Re: Will Longer Wires Reduce Sound Quality?
Posted by Bill Epstein on Wed, 16 Mar 2011 19:27:12 GMT
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This could be endlessly debated so I'll just leave it with the most extreme case, that of a Moving Magnet phono cartridge cable and this quote from KT88, an EE and well-known component builder, on the Steve Hoffman Forum

KT8805-02-2010, 03:40 PM
OK Bill, you've opened the door, now give us more of your expertise! I know a bit about MC resistance loading, but not MM capacitance loading.

Does adding capacitance make the sound brighter or duller? If you were to make your tonearm cable longer, or add an extension to it, is that adding or subtracting capacitance? If one were to buy capacitors to tune the sound, what kind/spec capacitor should one be looking for for phono use?

Your knowledge is always appreciated.

Thanks, Stephen. It is rather complex. Doug has it right for microphone cable but not for phono cartridges. Oddly, it behaves in the reverse way with reducing capacitance in a MM phono cable or circuit reducing brightness. Inversely, adding capacitance makes things brighter. The reasoning is as Metralla suggests, a resonant peak in which the output of a MM phono cartridge has a steep HF rise. MC cartridges can also behave this way but require different loading and it can be mostly, so you'll see most advice to just ignore it as being insignificant and that the cartridges are not really sensitive to capacitive loading. I have even given this advice and for most people, it is accurate in terms of practice. In theory or in cases of very sensitive equipment, it can make a difference. I am not sure where the addition of capacitance resulting in increased brightness rolls off or even reverses (once overcoming the resonance to basically conform again to the standard as Doug indicated), but generally a phono stage adds 100pf to 300pf of capacitance in parallel to the cartridge input to try and keep the response flat. The problem is that most all cartridges are a little bit unique and one shoe doesn't fit all. So in practice, for a Mm cart, all you really need to know is that less capacitance results in a warmer or duller sound, while more capacitance results in a brighter or more clear, open sound.

So getting to your question about cable, interconnect cable has capacitance in itself. It is measured per foot and this is standard for all cable, of all types, all brands. So by reducing the length of the cable, you are reducing capacitance. In a MM phono connection from turntable to phono preamp, you are increasing brightness by increasing length. In a microphone cable, guitar or other instrument cable, or XLR cable, you are decreasing brightness by increasing length. So the MM phono connection is unique and has caused some confusion over the years. It doesn't matter if you make the cable yourself or it comes dangling from the table, all cable behaves this way.

One thing that every type of signal shares when it comes to cable length is signal loss. Irrespective of capacitance, there will be signal loss with additional cable length. With most signals, you can look at it as a pretty typical effect of losing HF first as the legth increases and then distortion and noise throughout the band. There can be RF (ultrasonic) and ground plane

artifacts (60, 120hz hum and buzz) added also. So not only do you risk losing signal, but adding noise. In a nutshell, longer cable results in lower SNR. Now that is just the electrical theory of it, again, in practice the opposite can occur. You can have situations where a shorter cable simply does not perform as well as a different type of cable of a greter length. Now that I've gone over all of that, let's remember that MM phono is unique and that it does not behave just like all of the other other signals when it comes to HF transmisson. So, that case gets a little weird in that increasing length still causes signal loss like in all other cases, and it can also be subject to external noise interference by RF and ground issues, but it will also get brighter as the length is increased. So you'll end up with more noise and a brighter sound with peaks around 10khz or so. That is why a lot of people obsess over phono cable. Most of the better phono cables and turntables equipped with cable take this into account however and use well shielded, low capacitance cable. So while it's interesting to talk about, it is generally not an issue unless you have a difficult match.

A difficult match is what I would describe as two items that behave in a way that accentuates the effect. For instance, connecting a known brighter sounding cartridge via a longer cable to a phonostage with a fairly high capacitance loading (250pf +), can result in a brighter than neutral sound and in some systems, it can be very bright. Of course, the opposite situation can also be found where a system can be assembled that sounds overly dark.
-Bill