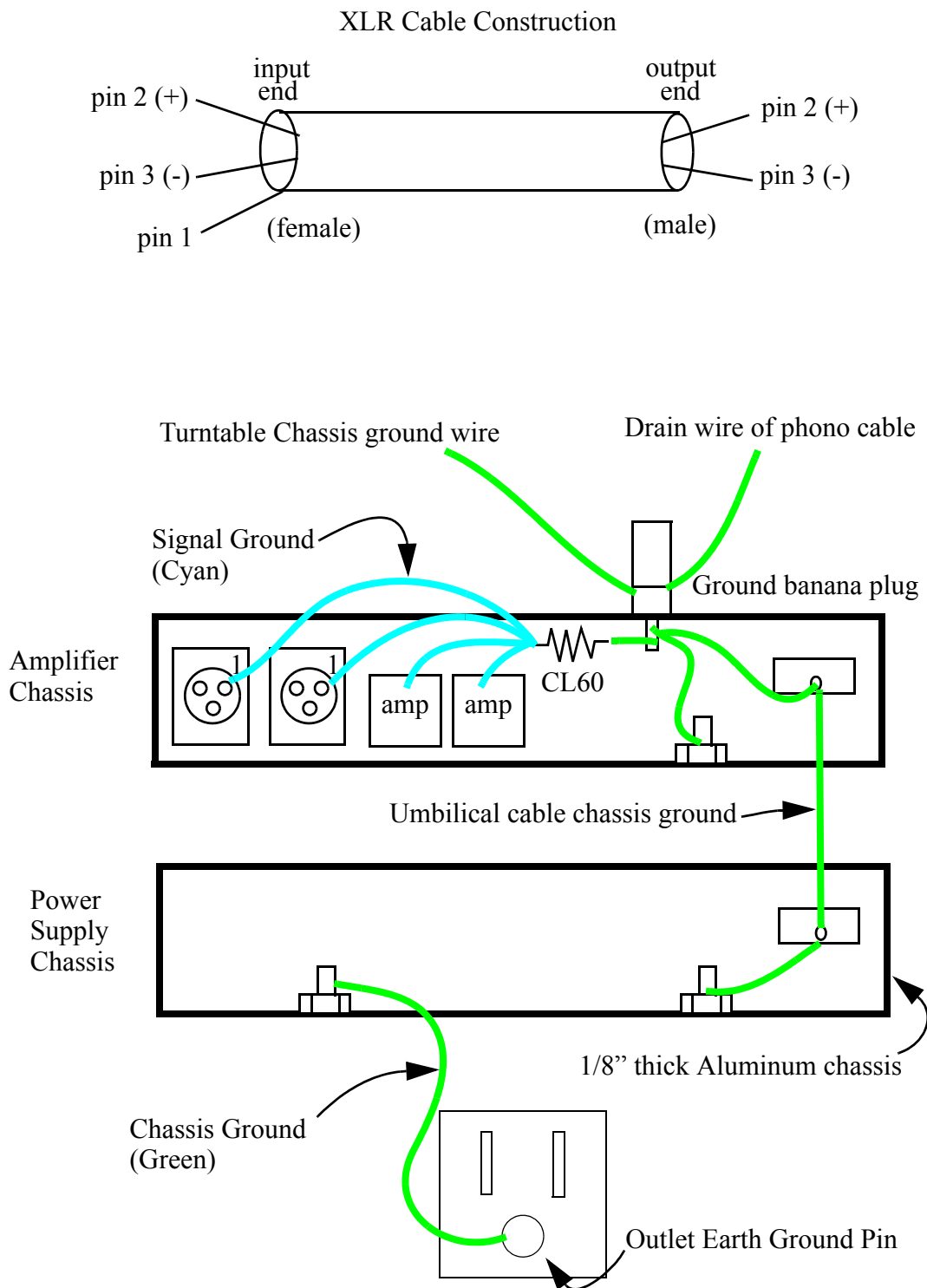


## Phono Preamplifier Ground Connections



Notes on eliminating hum in very high gain phono preamplifier system:

It is seen that the signal ground for the amps is not connected anywhere in the power supply chassis, and there are 3 conductors for power for each amp (ie, V+, V-, SGND) if you have completely separate power supplies as I have. The only connection to ground is a takeoff point on the amp PCB, at the signal output location. So, the umbilical connection between the 2 chassis requires seven conductors: chassis ground, plus for each of the 2 amps: positive supply, negative supply, and signal ground.

In my preamp, the input XLR pin connections are to the chassis ground, per an article I read advising to always connect the XLR shield conductor to chassis ground at both ends of the cable (Rand Corporation). With the hindsight of experience and further reflection, I believe this to be bad advice because it leads to large ground loops formed between the chassis ground connections at the power cord, the chassis (plural) in question, and the XLR shields. My response to this is to lift the ground connection in the cable at the output (male plug) end. If you buy your cables you may not be able to change what you have, but I make all my own cables so I can have what I want. In my later made cables, the shield is connected to pin 1 of the output XLR (male) at the source component only (as shown in the diagram). In my setup, simply changing cables from one with pin 1 connected at both ends to a cable with the ground lifted at the male plug resulted in remarkable reduction in hum.

I do not know why, but having the drain of the phono cable connected into the node which connects the amps and cable ground outputs results in significantly more hum than having the phono cable isolated by the thermistor. This is the opposite result of the connections for the XLR output cable shield connections, and why I can't make sense of it yet.

I always have the chassis grounds properly connected with a low impedance path to earth ground, connected to the power distribution system. To lift this ground (although it may make hum problems disappear) is easy, but unsafe. If there is ever a problem with the hot connections in the power supply chassis, there is nothing to stop the full current carrying capacity of the power mains being delivered from the chassis. Not a good idea. If the chassis is properly grounded, a dangerous potential at the chassis will never be reached, and the action of current returning directly to ground will result in extremely large current, which will cause the fuse or circuit breaker to blow, which is the desired action. This is why the Pass Labs user manuals say "do not defeat this ground".

I'm not advocating that this is the only low noise (ie hum) answer to the problem - but I did have several other configurations which at first glance seemed like they should work, but didn't. There may be other connection methods that work just as well. If you have one that works better, please post it.

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