

# Conditioner: An Audiophile Line Filter

Build this power line cleanser for your audio system. **By Jim Hagerman**

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## Concept

Clean ac power is a necessity for high quality sound reproduction systems. Distorted and noisy ac power can corrupt and interfere with the proper operation of amplifiers, and at worst, impart buzz and radio signals directly into the sound. A line conditioner can help remove line noise caused by refrigerators, fluorescent lights, televisions, and other appliances sharing the same power feed. The *Conditioner* presented here is a simple but effective line filter that cleanses power for a typical audio system.



The *Conditioner* is built into the same chassis as used by the other “Constructor” series of products (*Clarinet* linestage, *Cornet2* phonostage, *Cymbal* power amp, *Chime* DAC). The compact aluminum chassis has extruded sides and panels, with sheets for the top and bottom; all very machinable.

The basic layout has a main power cord input and standard outlet sockets for the outputs. On the front panel is a master switch/breaker. The guts use professionally built ac line filters. These are very well designed and shielded devices.

The *Conditioner* is easy to build, and requires no circuit board. Parts are available from Mouser Electronics and Lansing Instruments. *Disclaimer: This project contains high voltages and should only be built by skilled and competent technicians!*

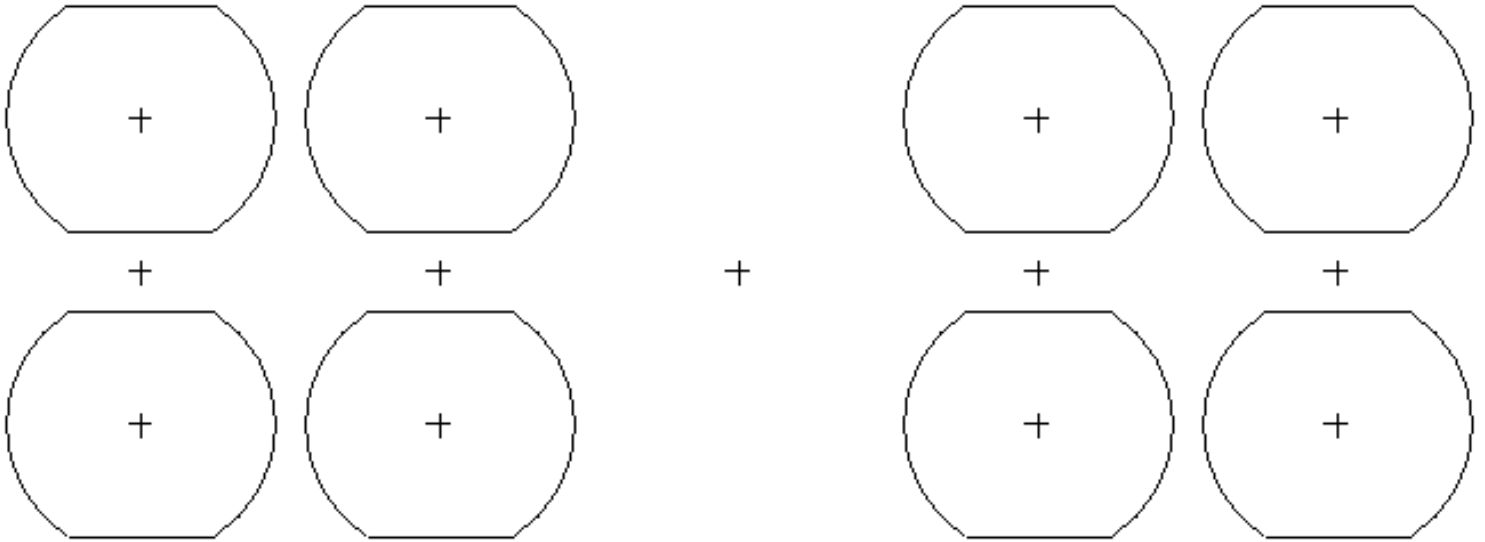
## Parts

You can substitute parts where desired. The following list gives recommended components. Outlets can be found at any hardware store, or upgrade to audiophile style outlets from your favorite dealer. You will also need 300V rated wire of substantial AWG (#14 or larger).

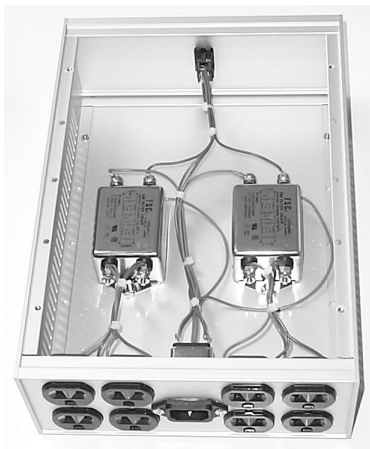
Component	Qty	Mouser	Lansing
Switch	1	629-AA111B31	
IEC Entry	1	437-10AF1	
Line Filter	2	437-10CA4	
Lugs	20	571-34122	
Outlets	4		
Chassis	1		B2H12-V01A

## Chassis

The rear panel should be cut so that the outlets can be mounted flush and clean. The IEC outlet and line filter in the center might need to be rotated 90 degrees for a better fit. Use the following guide, which is printed 1:1 scale.



The front panel needs to be cut for the optional power switch. Holes are drilled in the bottom panel for the main line filters. Place filters in the center of the chassis. Mount all components securely. The chassis is used as a common Earth ground.



## Wiring

Solder terminals to wires before connecting to screw terminals. It is best to use different colored wire to prevent mistakes. Safety standards specify LINE as brown, NEUTRAL as blue, and EARTH as green (with a yellow stripe). Keep wires nice and short, route as pairs and tie-wrap them along the bottom of the chassis. Spacing is maximized and loop area minimized to reduce field coupling. Run the LINE signal from IEC input to power switch before it goes to inputs of line filters. No fusing should be necessary if all circuits can handle a temporary load of 30 amps.

## Installation

The *Conditioner* serves as a power distribution and filtering module for your audio system. The left side outlets are isolated from the right side outlets, so use this advantage to power source components and preamplifiers separately from the power amplifiers.

The photo shows a typical “Constructor” installation with the *Conditioner* on the bottom. One great feature of these chassis is that a very low cost rack can be built using four pieces of wood using threaded holes on the sides.



### ABOUT THE AUTHOR

Jim Hagerman owns Hagerman Technology LLC, a supplier of unique DIY half-kits and high-end audio products. He's been designing analog circuits for 21 years.