

Equipment Modification Guidelines For Bybee Quantum Purifiers

Bybee Quantum Purifiers have proven effective in numerous locations for every type of audio/video component and loudspeaker. Among the most common are AC power, audio/video inputs and outputs, and digital inputs and outputs.

A good general principle for all installations is to place the Bybee Quantum Purifier as near as possible to the destination end of the AC or signal path.

It is recommended to use the large purifiers for AC and loudspeaker modifications if physical space permits. Where space is limited, for instance with some source components, the small purifiers may be substituted as long as the current flow through them and does not exceed 4.3 A. It is typically more convenient to use small purifiers in modifying analog and digital circuits, although large purifiers may be used in those applications if space permits.

AC Upgrades:

The simplest AC modification is to **primary power**: Place the purifiers between the AC input -- typically an IEC socket -- and the transformer input. For best results the recommended procedure is to put a purifier on both the hot and the neutral leg; besides yielding better sound, this will ensure full quantum purification even if the component is connected to an incorrectly wired (out of polarity) AC receptacle. If it is certain that the wall outlet is wired with correct polarity, the purifier on the neutral leg may be omitted, with some decrease in sonic performance. **Note:** If the equipment is used in a location that has **balanced AC power**, both the hot and neutral legs must be modified, and a third purifier on the ground leg will result in optimal improvement.

The amount of voltage passing through a purifier is inconsequential. More important is the amount of current. The large purifiers are rated for **15 A**, the small for **4.3 A**. (These ratings reflect the capacity of the copper leads.)

An even more effective AC treatment is to **secondary power**: Place purifiers between the transformer and the rectification diodes. The number of purifiers required may vary according to the circuit design of the component. One purifier should be used for each transformer tap utilized. Some users have reported even more impressive results from placing purifiers after the diode bridge.

Note: Treating secondary power is NOT recommended for designs utilizing tube rectification. In such cases it is preferable to modify the primary AC input. Also, when trading secondary power in tube amplifiers, **DO NOT** place a purifier on the filaments transformer tap.

Audio, video and digital inputs and outputs:

For optimum performance improvement with RCA jacks, connect a purifier at (or as close as physically possible to) the positive terminal of the jack, and a second

purifier on the return leg. Treating only the positive leg will also enhance performance, but to a lesser degree.

For **XLR balanced input** jacks, both hot and neutral must be treated. For XLR output jacks, best results will come from additionally treating the ground -- although here too, the purifier for the ground may be omitted, with some lessening of the performance improvement.

The **best results** come from treating inputs and outputs. However, if that approach is too expensive, excellent results can still be achieved. As a rule, placing the purifiers at inputs is slightly more effective than putting them on outputs. **Note:** When upgrading a preamplifier, the input modification should be placed **after** the selector switch, so that the input signals from all source components get the benefit. In addition to the standard modifications described above, there are other locations that can be modified to further improve performance. Bybee Technologies can provide consultation on these other performance-enhancing modifications if a schematic for the circuit is available.

Loudspeakers

To modify **dynamic** loudspeakers, the best possible results are obtained by connecting a purifier at both the positive and negative terminals of each driver. A less costly -- and less effective, although still worthwhile -- modification is to place a large purifier at the positive and negative inputs to the crossover network, so that all drivers get the benefit. If access to the crossover is difficult, the large purifiers may be placed between the end of the speaker cable and the positive and negative input terminals. (Be careful to avoid a short between the positive and negative input terminals.)

Note: For all of the above examples, very good improvements can be realized even if the purifiers for the negative side are omitted. A good compromise is to put purifiers at each transducer's positive terminal and use a single purifier at the negative crossover input or speaker terminal.

For modifying **electrostatic loudspeakers**, primary power can be treated as described above. In addition, placing a purifier on the positive and negative stator wires is even more effective.

AC wall outlets with a maximum current draw of 15 A or less may be modified by placing a large purifier on both the positive and neutral connections. This should be done **only** by a qualified electrician, as there is danger of injury from electrical shock.

For more information, visit www.soundlabsgroup.com.au/bybee
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