

Power Cap Bleeder Guide

Why a bleeder matters, how to size one, and how to install it safely.

Filter supply safety · RC discharge

A bleeder resistor across the filter supply drains stored charge after power-down so the chassis is safer to open. Size it for a sensible discharge time without wasting excessive idle heat.

Safety. Bleeders reduce residual voltage but are not a substitute for measuring. Always verify 0 V with a DMM before working inside. A failed open bleeder leaves the caps charged with no warning.

1 · Why a bleeder matters

Stored energy

Filter caps hold B+ long after the switch is off — enough to shock or damage tools and parts.

Predictable decay

A known R across the supply gives a predictable RC time constant instead of hoping leakage does the job.

Service habit

Combined with a discharge tool and DMM verification, bleeders make routine service less hazardous.

2 · Sizing (orientation)

Discharge is governed by the RC time constant of the filter capacitance and the bleeder resistance. Higher R = less idle dissipation but slower decay. Lower R = faster decay but more continuous heat.

Use the site's Bleeder Resistor & Discharge Time Calculator for concrete R, wattage, and time-to-safe-voltage estimates. Size resistor wattage for continuous dissipation at full B+ with comfortable margin (often 2× or more the calculated idle watts).

Placement. Typically across the main reservoir / first filter node to chassis. Follow the amp's topology and keep leads short and clear of hot parts.

3 · Install procedure

01 Power down & verify

Unplug. If caps may still be charged, discharge with a proper tool and confirm 0 V.

02 Choose R and wattage

From the calculator (or design target): resistance for acceptable discharge time; wattage for continuous B+ with margin.

03 Install

Mount so heat can escape. Secure leads. The resistor itself is non-polarized.

04 Cold check & first power-up

Confirm the expected resistance path from B+ to ground. Power up with a load and current limiter on a fresh install.

4 • Good practice

Never skip the meter

Bleeder present $\neq$ safe. Measure.

Heat

Wirewounds and cement resistors get hot — keep clear of electrolytics and wiring insulation.

Fail-safe thinking

A single bleeder can open; critical work still uses a discharge tool.

Document

Note the value and location on the schematic or a service tag inside the chassis.

Companion to the online guide at **dimastro.com**. Does not replace tube datasheets or amplifier service literature. Always verify voltages with a trustworthy meter and follow professional high-voltage practice.

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