

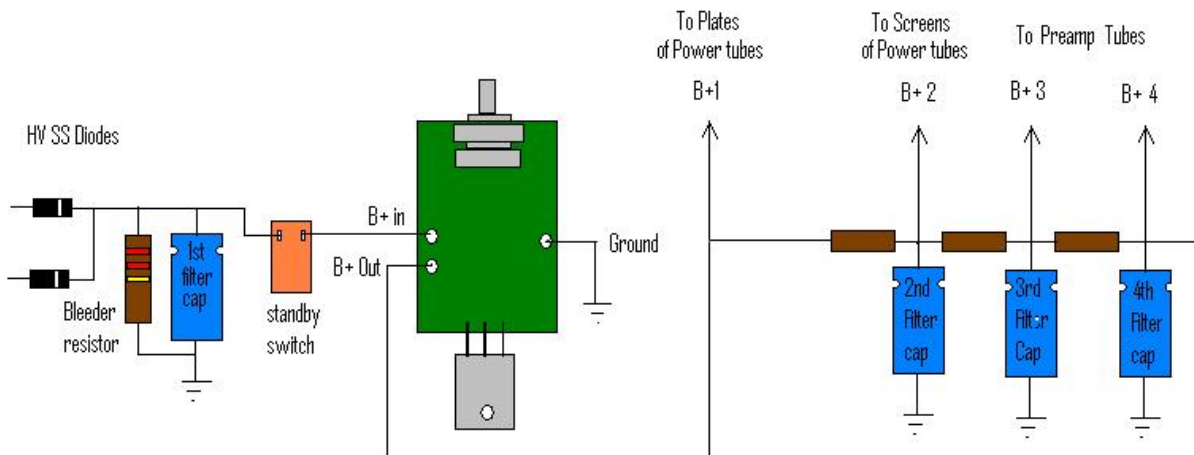
## Installation Instructions

### Cathode Bias vs Fixed Bias.

There are two different Bias circuits used in amps. The cathode bias method uses a resistor in series with the cathode of the power tube(s). As current flows through the tube it develops a voltage across the cathode resistor making the cathode positive in respect to the grid of the tube. Looking at it a different way, it also makes the grid negative in respect to the cathode providing a negative bias on the grid. The bias sets the operating point of the tube on a linear portion of it published curve charts provided by the manufacturer in their data sheets. Cathode bias is sometimes called self bias. In a cathode biased amp, as you turn down the B+ voltage using a VVR it causes the tube to draw less current. This in turn causes the voltage drop across the cathode resistor to change, changing the bias point of the tube automatically.

With fixed bias, you have a “Bias supply” that is just like a HV supply in your amp only it creates a negative DC voltage that is applied to the grids of the power tubes. This bias voltage is usually adjustable so that you can dial in the best bias voltage for the tubes you are using. Unlike the Cathode bias the fixed bias doesn’t change when you change the B+ voltage in your amp. This makes it a little more complicated to install a variable voltage regulator because you now have to turn down the bias voltage in proportion to the amount you turn down the B+ voltage. The VVR2 has additional circuitry on the board to do just that.

We will talk about installing the board in a cathode bias amp first. The installation is the same in both types of amps as far as regulating the whole amp or just the power section. There are additional components that may need to be installed to make each one work.



Pictorial Diagram of VVR2 Installed regulating the whole amp