

AsharpFretworks'

BiasPro VI Module (Plate Voltage/Cathode Current Combo Probe)

Operating Instruction for BiasPro VI-8C, VI-9C, VI-7591

Advantage of BiasPro VI module probe

Allow both the bias current and the plate voltage values to be measured simultaneously with a flip of a toggle switch. The plate voltage is measured at any output tube. It is not necessary to measure at every output tube as the plate voltage value is the same across all of them.

When the BiasPro VI module probe is at the “plate voltage” setting, the actual high voltage value (typically in the 400VDC – 600VDC) via built-in precision resistor network, is reduced down to mill-volts (attenuation of 1/10,000). For example; a lethal 453V is reduced to 45.3 mV. You’re now dealing with a safe DC voltage value in mill-volt range rather than in hundreds of volts.

The BiasPro VI-8C, VI-9C, and VI-7591 module probes are designed to be used with the Quadstage BiasPro Q10 and MQ13.

Safety Precaution and Common Sense

The amps contain high voltages and can be very dangerous. Use common sense and when the amp is powered on try not to touch the exposed components such as the transformers. No electronics knowledge is required but if you’re not comfortable let a qualified technician do the job.

Insert or remove the probe sockets gently as pins may bend. When removing the probe socket pull firmly but gently by the socket base, not the cables.

Supported Tube Type

WARNING: It is your responsibility to make sure you’re using the correct probe for the tube types listed under each BiasPro VI module probes listed below. If you plug an unsupported tube type to any BiasPro VI module probe or using a wrong BiasPro VI module probe (using BiasPro VI-8C for 7591 tube) damage to the tube, amp, and the probe most likely will occur.

- **BiasPro VI-8C module probe** for common 8-pin octal tube type: 12E13, 1622, 5881, 5871, 5932, 6550, 6CA7, 6L6, 6V6, 7027, 7184, 7D11, 7408, 7581, EL34, EL37, KT66, KT77, KT88, KT90
- **BiasPro VI-9C module probe** for common 9-pin miniature tube type: 10BQ5, 10P18, 15CW5, 16A5, 30P16, 30P18, 45B5, 6BQ5, 6CW5, 6P15, 7189, 7189A, 7320, CV10321, CV10709, CV2975, CV5094, CV8069, EL84, EL84M, EL84S, EL86, E84L, N119, N329, N709, PL82, PL84, UL84
- **BiasPro VI-7591 module probe** for 8-pin 7591/7355 tube type (Fisher, Scott): 7591, 7591A, 7355, etc.

Operation (Obtaining the plate voltage value)

1. Make sure the tube is listed in the “Supported Tube Type” section. Make sure you’re using the correct BiasPro VI module probe for the tube type.

2. **Turn off the amplifier** and allow the output power tubes to cool.
3. Pull out an output power tube; insert the *BiasPro VI* module probe socket into the amp's output power tube socket.
4. Insert the output power tube into the *BiasPro VI* module probe's socket.
5. Insert the *BiasPro VI* module probe cable to one of the *Quadstage BiasPro Q10* or *MQ13*'s RCA connector.
6. *For Quadstage BiasPro Q10 and stand-alone VI module probe owners; connect the banana leads to a voltmeter (red lead goes to "V/Ohm" and black lead goes to "COM"), power on and set the voltmeter to the DC milli-volts range (200mv or 300mv depending on your meter).*
7. Position the *BiasPro VI* module probe's toggle switch to "Plate voltage" setting.
8. Power up the amp normally. It is suggested that the amp be placed on stand-by for at least 30 seconds if it is equipped with the switch (stand-by switch off after 30 seconds). At this point you should be seeing the voltage displayed on your meter. Leave your amp powered on for about 2 minutes to let the tubes reach their operating temperature.
9. Read the value displayed on your display. A value is displayed in millivolts. For example; it may display **45.3 mV which corresponds to 453V actual plate voltage (ignore the decimal point).**
10. Power off the amplifier and let tubes cool before disconnecting the cable.

Bias (Cathode Current) Calculation

You'll need to know what the maximum power dissipation of your tube type is. The datasheets are available on the Internet.

For example; the tube 6L6's maximum power dissipation is 30W. The value of the plate voltage you measured is 453V.

The absolute maximum bias current that the tube (supposedly) can handle: $30/453 = 0.066$ (66.0 ma)

- Cool setting (50% of absolute max value): $0.066 * 0.50 = 0.033$ (33.0ma)
- Average setting (60% of absolute max value): $0.066 * 0.60 = 0.0396$ (39.6ma)
- Hot setting (70% of absolute max value): $0.066 * 0.70 = 0.0462$ (46.2ma)

Setting the bias current above the 'Hot setting' is discouraged.

Please visit asharpfretworks.com for replacement probes and more.