

## Knif V804 Pre Amp

The Knif V804 microphone pre amp is a truly unique piece of equipment. It combines utmost simplicity with the highest objective qualities obtainable from the minimalistic topology employed.

70 dB:s of gain is quite rare amongst tube pre amps, and in a two stage design it is very difficult to reach. It is even more difficult to do this while retaining superb linearity, high output levels and even frequency response.

Yet this has now been done. It requires perfect symbiosis between the components. Simple but challenging.

This is how it is done: (getting technical, jump over the next two paragraphs if you wish...)

High step up transformer is the first component. Only the best manufacturers are able to produce these. Lundahl does it with great success. Second component is a small signal pentode with enormous gain. At this point some of you cry out loud: "pentodes are noisy and therefore not suitable for mic pre amps. Well, some math: EF804S has input noise of 2 microvolts. With the 1:10 input transformer this is "seen" as 0.2 microvolts at the mic input. This is LOW, -132 dBu. Only the best solid state pre amps can reach similar figures – even the microphones them self (including most ribbons) have more self noise. Triodes produce less noise than pentodes, but the problem is that their higher capacitance requires lower step up transformers. Therefore one ends up with the same noise figures and 20dB:s less gain – clearly not the way to go in this topology.

The second stage is very important too. It has to provide a lot of gain, work into low impedances and have extremely low input capacitance. There is only one tube which fulfils all these requirements. When I found the tube type, I was able to squeeze 70 dB:s of pure gain from the topology. At this point of the evolution I'm not going to disclose the type number. Sorry.

## **V804 in use**

It doesn't get any simpler, does it? There is the knob for the gain. And phantom. And phase reverse. Warm up time is about 15 minutes. During this time currents and voltages in the circuit drift and finally settle. This can cause some pops if gain is adjusted. Of course tubes continue to warm even after 15 minutes, but the first minutes are most critical because some extra noise will be produced by the expanding tube innards.

Input impedance is a comfortable 1 kOhm, so there are no problems interfacing the pre with anything in your studio, including line level gear. The pad is automatically switched on for the 0-15 dB gain positions.

You can also use the amp in giving nice character to previously recorded tracks. Use it in passive summing. Experiment – whatever you do, you can not damage it!

## **Quality factors**

In all honesty, it is pretty hard to beat the specks of this tube pre. Even topologies with double the amount of active components usually can not beat any of the specks and so far I've not seen a tube pre which could beat them all. I measure my equipment with Audio Precision gear and provide the figures as they are. I don't "fix" any of the measured values nor do I pick just the good specs and leave everything else off the list. For some reason tube pre manufacturers usually don't disclose full specks for their products, or the measuring methods are not convincing. If you find that some important issues have not been covered in the speck sheet of V804 Pre, please, contact me. My intention is to provide you with completely honest information in order to help you use the in an optimum way and utilize its full capacity even in unconventional situations. Note that the distortion values are given at 22dBu output level. At 4dBu they are about 1/8 of these figures.

The case is all aluminium, all CNC-machined and ultra sturdy. Front legends are engraved – not silk screen printed. The sides are 10mm thick and all other plates are attached to them with machine screws.

The toroidal mains transformer has built-in magnetic shield and also an electrostatic shield between primary and secondary windings. The effect is to prevent any kind of common mode crap from other equipment entering the power supply from the outside. In these days

of omnipresent switched mode power supplies this is paramount for attaining a clean signal. No transformer hum or high frequency interference is present in the output of the pre.

The power supply is very straightforward. Plate supply is not regulated to keep regulator noise out of the circuit. (There are many other subjective and objective reasons to avoid modern type regulated power supplies on anode voltages) Both channels have a dedicated heavy CLCRC-filtering resulting in complete absence of noise in the supply and no power supply coupling between the channels.

Gain is adjusted with Elma rotary switches which also control the automatic pad.

Signal transformers are superb Lundahl units. Output trannies weigh 0.75 kilos (1.6 pounds) each. They provide huge headroom in the bass register.

It is very hard to say anything relevant About the “small” passive components, because the usual lore “1% metal film resistors, polypropylene caps, gold plated tube bases” etc. is both true and as information has zero value. Why? Because these components cost next to nothing any way, and any sensible designer uses them.

But the most important factor is the tubes. There are no better tubes. Really. Telefunken NOS EF804S is a special quality, very low noise, long life, low microphonic tube. Find a better one, and I'll gladly begin to use it. The second stage tube is and will remain a secret. All I can tell is that it too is an old German special quality pentode. It was designed for German Post and has a set of features that can not be found in any other tube in this combination. Connected as a triode it has super low noise, high transconductance, and above all, phenomenal linearity. Life span is also very long.

Subjective and objective factors are sometimes hard to correlate, and I will not praise the sonic qualities too much here. Shortly: Main character is clean and transparent. It is very “friendly” to mics and other sources that are a bit too harsh, but at the same time it is easily neutral enough for general purpose use. I would not hesitate to use it for classical recordings. It provides good stereo imaging and sense of depth.

Objective performance is flawless. It drives very high levels even to low loads and you just can not overdrive it before the next equipment in the chain goes crazy. There is a lot of gain available, and it is pure and noiseless up to the highest values. No compromises have been made.

## Warranty:

One year for parts and labour, except six months for the tubes

First owner only, not transferable

Requires registration

In case the unit has to be sent for repairs the owner must pay the freight costs to the factory or authorized dealer.

## Specifications

Gain	0-70 dB in 5 dB steps
Frequency response 0/-1 dB @ 20-60 dB gain, 50 Ohm source	better than 5 Hz - 45 kHz
Frequency response 0/-1 dB, any gain, 150 Ohm source	better than 12 Hz - 25 kHz
Noise (EIN) @ 60 dB gain, 50 Ohm source	unweighted -130 dBU A-weighted -133 dBU
Maximum output level into 10 kOhms	+32dBU
Maximum output level into 600 Ohms	+27dBU
THD+N @ 22dBU out, 10 k load, 100Hz-20kHz, 30-60dB gain	< 0.04%
THD+N @ 22dBU out, 10 k load, 50Hz-20kHz, any gain	< 0.15%
THD+N @ 22dBU out, 600 Ohms load, 50Hz-20kHz, 0-60dB gain	< 0.25%
Channel balance, 0-65dB gain	better than 0.15dB
Xtalk, any gain, @ 100Hz, 1kHz, 10kHz	better than -105dB, -100dB, -80dB
Output impedance	< 100 Ohms
Input impedance	1 kOhm