K&K SOUND
NATURAL PICKUP POWER

PRODUCT MANUAL

PURE XLR MACH 2 PREAMP

Thank you for purchasing the Pure XLR Mach 2 Preamp. This preamp is handcrafted in the USA to extremely low noise specifications with excellent clarity, warm EQ, superb frequency range and maximum headroom. Due to its adjustable input gain and wide frequency range it features outstanding results with both piezo- and magnetic pickups.

DID YOU KNOW THAT ELECTRONIC CIRCUITS WORK MORE EFFICIENTLY WITH HIGHER POWER?

It's a fact that there is a direct relationship between power consumption and sound quality. This means that preamps that advertise 200 plus hours of battery life will have to compromise on sound quality. Generally, low power consumption equals less high-end response, less headroom (i.e., circuit overloads sooner) and less overall clarity and transparency. Phantom powered preamps, depending on their complexity, also compromise on sound quality issues because phantom power fluctuates and diminishes when more units are connected.

We always prioritize sound quality over battery consumption in our line of external preamps, but with the Pure XLR Mach 2 Preamp we went a step farther! The preamp runs on a voltage booster circuit that provides 18 volts to the internal components even though it uses only 9 - 12 volt as supply voltage. **The result is a clarity that simply cannot be achieved with a 9-volt circuit!**

The Pure XLR Mach 2 Preamp preserves harmonics and overtones and provides a true acoustic sound response. The additional parametric band allows you to fine-adjust the low mid / high bass band for optimum tone and feedback control.

92798 Cape Arago Hwy, Coos Bay, OR 97420 | 541-888-3517 | Toll Free 1-800-867-6863 | www.kksound.com

The LED light on the front-panel lights up when a mono ¼"plug is inserted into the INPUT jack. You can switch the unit off by unplugging the input cable.

ADJUSTABLE GAIN CONTROL

GAIN and ***VOLUME*** both have an effect on the output volume of the preamp, but they accomplish different tasks. The gain (also called input gain or sensitivity control) is located at the INPUT of the circuit. It sets the amount of pre-amplification before the signal enters the EQ section, DI etc. The volume control is located at the OUTPUT (the very end of the circuit) and simply allows you to adjust the volume.

It is very important to properly set the gain control to fit the instrument you are using. An instrument with a high output signal will require a lot less gain than one with a weaker output. To set the gain correctly, you have to connect your instrument to the Pure XLR Preamp and to your amplification system.

Start with the ***GAIN*** at low (about 9 o'clock on the dial) setting. The ***VOLUME*** knob on the Pure XLR Preamp has to be set to fully clockwise/right and the EQ should be about centered at this point. Adjust the volume at the amp until you hear a fairly low volume signal.

Now, play your instrument in your loudest dynamic range (play it hard) and slowly turn the gain up until distortion just begins to occur. Now back the gain off a little bit until the signal is clear again. This is the correct gain setting for this instrument.

Please keep in mind that excessive EQ boost applied after the initial gain setting procedure may introduce distortion, in this case you have to reduce the gain a little bit.

Generally, gain set this way provides the best high-end response and the lowest overall noise specifications. But sometimes you may want to soften the tone on purpose, in which case you can reduce the gain. Ultimately, you want to use the setting that sounds best to you!

PHASE SWITCH

Phase switches are usually marketed as a feedback-controlling device, but they accomplish more than just that. Phase determines at what point in time a sound wave has it's peak or bottom.

This picture shows two simple (identical) sine waves, but the wave on the bottom (2) is inverted in respect to the wave on top (1). Interestingly enough, if these 2 waves were played back simultaneously, they would cancel each other out and no sound be heard. Amplification systems and any foot pedal or effect unit may or may not invert the phase with respect to the signal sent in. In most cases the manufacturers do not specify.

Every acoustic instrument projects (acoustic) sound waves in a certain phase. The phase that is projected from the amplified speaker source needs to be "in phase" (not inverted) with the acoustic instruments' own sound waves or the result will not be optimal. If the amp projects the inverted phase, the acoustic instrument will fight its own sound and balanced tone cannot develop. Round and warm tone is only achieved when acoustic and amplified sound oscillate in the same phase.

The Pure XLR's phase switch allows for instant correction of this problem. Play your instrument and flip the phase switch back and fourth. You will experience a fuller and warmer tone one way or the other.

How to determine the correct phase on a guitar:

- Low frequencies tend to display phase problems clearer than higher notes.
- On the low e string play the E, F, F#,G, G#, A and Bb (chromatically up) and listen to each note with both phase switch settings.
- Usually in one phase setting all tones develop evenly and in the other there are slight differences in sustain or feedback behavior. One note may be okay but on another note the sustain may be somewhat cut off and yet another wants to start to feedback.
- You will hear a fuller, warmer and more balanced tone one way. This is the correct phase setting. **Set the phase first then fine-tune the tone with EQ!**

3 BAND EQ

Your Pure XLR Mach 2 Preamp is equipped with K&K's proprietary 3 band EQ, ***BASS***, ***MID*** and ***TREBLE***. It features a specifically designed extreme wide-band ***MID*** EQ with an extra strong +/-20dB cut/boost. Turn the dial counterclockwise to cut and clockwise to boost frequencies. Center position is flat. Please note that you may want to dramatically cut ***MID*** when you are using the Pure Mini or 12-String pickups.

NOTCH FILTER - PARAMETRIC EQ

This filter consist of 3 dials and a bypass switch. The dials are ***NOTCH FREQUENCY***, ***NOTCH CUT-ZERO-BOOST*** and ***NOTCH WIDTH***. It allows you to select a frequency between 150Hz and 700Hz and cut or boost it. This is very useful to attack boominess or low frequency feedback or for general tone issues in this frequency spectrum. It processes the frequencies between the BASS and MID control of the 3 band EQ.

- Select the frequency you want to cut or boost on the ***NOTCH FREQUENCY*** dial.
- Use the ***NOTCH CUT-ZERO-BOOST*** dial to cut or boost the selected frequency. In the center position (no cut or boost) the notch filter is inactive.

- The ***NOTCH WIDTH*** dial on the back of the unit adjusts the bandwidth of the notch filter.
    - In the full + (plus) position the filter covers 2.5 octaves and it will appear most active.
    - In the full – (minus) position it pinpoints the adjusted frequency very specifically (0.15 octave) and will have much less overall effect on the tone. This is most useful if you want to attack a feedback at one specific frequency but do not want to affect the overall tone.
    - In the center position it covers 1.5 octaves.

NOTCH BYPASS SWITCH

Press to activate the notch filter circuit. Release it to bypass.

This switch completely bypasses the (rather complicated) circuitry of the notch filter. If you do not need the notch filter we recommend you bypass it. This way the signal does not have to pass through all the components of the notch filter circuit. Our philosophy is: if you can get a good result with less rather than more, it is usually better!

OUTPUTS

The ***XLR BALANCED OUT*** (active DI out) and the ***¼" LINE OUT*** can be used simultaneously. They both carry the same signal, but technically speaking, the line output uses only one leg of the two balanced output legs.

The ***TUNER OUT*** is always "on" – it is not routed via the volume pot, the notch filter, or the phase switch. It allows you to connect a tuner "open ended," completely independent from the house-sound signal path. This helps to keep your house-signal-path as clean and direct as possible. Use the volume knob to turn the house volume down when you tune. Or use a foot switch on the ***MUTE SWITCH*** jack. You need a normally closed switch that connects with a mono ¼" plug.

POWER SUPPLY

The included K&K QBS power adapter is a 12-volt switching power supply with center plus on the DC plug. Wrong power supplies can cause a hum noise or simply do not work. The Pure XLR Mach 2 Preamp circuit includes a DC voltage booster that internally cranks the supplied voltage up to 18 volts.

TECHNICAL SPECIFICATIONS

Components: Class A
BASS EQ: +/-20 db @ 100 Hz
MID EQ: +/-20 db @ 1500Hz super-wide-band
TREBLE EQ: +/-20 db @ 10000 Hz
Parametric EQ: +/-15 db 150Hz – 700Hz, with Q10- Q0.5
Input impedance: 1M
Output impedance XLR: 100 Ohm
Output impedance ¼" line out: 100 Ohm
Frequency response: 15-30000 Hz
Power requirement: 9-12 volt DC switching (low ripple voltage) power supply, center plus, 100mA min.
Internal voltage: 18 Volt DC
Power Supply model: K&K QBS