

Copyright 2009 Metasonix.  
All rights reserved.

-----

***READ THIS, DAMMIT!!!!!!!!!!***

**CAUTION:** to reduce the risk of electrical shock, do not remove the top cover. HIGH VOLTAGE INSIDE. No user serviceable parts inside. Refer servicing to qualified service personnel.

**WARNING:** to reduce the risk of fire or electrical shock, do not expose the KV100 to rain or moisture.

**DETAILED SAFETY INSTRUCTIONS:** All the safety and operation instructions must be read before the KV100 is operated. *If you don't read and HEED them, you are a MORON and you deserve to be CASTRATED.*

**RETAIN INSTRUCTIONS:** The safety and operating instructions should be retained for future reference.

**HEED WARNINGS:** All warnings on the KV100 and in the operating instructions should be adhered to.

**FOLLOW INSTRUCTIONS:** All operating instructions should be followed.

**WATER AND MOISTURE:** The KV100 should not be used near water (e.g. near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, near a swimming pool etc.). Care should be taken so that liquids are not spilled onto or near the enclosure.

**VENTILATION AND COOLING:** The KV100 normally operates warm to the touch. It MUST be situated so that its location or position does not interfere with convective cooling. The KV100 MUST NOT be used on a bed, sofa rug or similar surface which may prevent proper cooling. It is NOT a toy. If the KV100 is mounted in a rack or other built-in

installation, space *must* be left around it to allow convection cooling.

**HEAT:** The KV100 MUST be situated away from heat sources such as radiators, heat registers, stoves, or other devices (including power amps) that produce heat.

**DO NOT CLOSE THE LID while the KV100 is in operation !!!**

**POWER SOURCE:** The KV100 should be connected to a power supply ONLY of the type described in the operating manual or as marked on the KV100.

**DO NOT APPLY DC POWER TO THE KV100! It uses 12 volts AC ONLY !!**

**POWER CORD PROTECTION:** Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them.

**CLEANING:** The KV100 should only be cleaned with a soft cloth moistened with water. Unplug the power supply before attempting to clean.

**NON-USE PERIODS:** The power supply of the KV100 should be unplugged from the outlet when left unused for a long period of time.

**DAMAGE OR TUBE REPLACEMENT REQUIRING SERVICE:**

The KV100 should be serviced by qualified service personnel when:

--The power supply or plug has been damaged;

--The KV100 has been dropped, physically damaged, or subjected to force;

--Liquid has been spilled onto the KV100 or it has been exposed to rain;

--The KV100 does not appear to operate normally or exhibits a marked change in performance.

**SERVICING:** The user should not attempt to service the KV100. All servicing should be referred to qualified service personnel.

**METASONIX LIMITED WARRANTY**  
**and standard legal disclaimer**

**Thank you for purchasing this Metasonix product. The following terms and conditions apply:**

1. Warranty period is for ONE YEAR from date of purchase with proof of purchase submitted. Warranty covers electrical failure of vacuum tubes and gas-filled tubes, except in cases explained in 3 below.

2. Operating instructions must be followed. **This device was intended ONLY for use by AUDIO AND MUSIC PROFESSIONALS.**

**IT IS NOT INTENDED FOR USE BY ORDINARY CONSUMERS!!**

Product must not have been damaged as a result of defacement, misuse, abuse, neglect, accident, destruction or alteration

of the serial number, improper electrical voltages or currents, repair, alteration or maintenance by any person or party other than our own service facility or an authorized service center, use or installation of non-Metasonix replacement parts in the product, or the use of this product outside of the U.S.A. or Canada (except as a product distributed by an authorized Metasonix dealer), or modification of the product in any way, or incorporation of the product into any other products, or damage to the product caused by accident, fire, floods, lightning, or acts of God, or any use violative of instructions furnished by Metasonix.

3. Obligations of Metasonix shall be limited to repair or replacement with same or similar unit, at our option. To obtain repairs under this warranty, present the product and proof of purchase (e.g. bill or invoice) to the authorized Metasonix service center, transportation charges prepaid. When returning the product for repair, please pack it very carefully, preferably using the original packaging materials. Please also include an explanatory note.

**IMPORTANT:**

To save yourself unnecessary cost and inconvenience, please check carefully that you have fully read and followed the instructions in this instruction manual. This warranty is in lieu of all other expressed warranties, obligations or liabilities. ANY IMPLIED WARRANTIES, OBLIGATIONS, OR LIABILITIES, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, SHALL BE LIMITED IN DURATION TO THE DURATION OF THIS WRITTEN LIMITED WARRANTY. Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you. IN NO EVENT SHALL WE BE LIABLE FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR BREACH OF THIS OR ANY OTHER WARRANTY EXPRESS OR IMPLIED, WHATSOEVER. Some states do not allow

the exclusion or limitation of special, incidental or consequential damages, so the above limitation may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

METASONIX shall not be held liable for any incidental, consequential, or direct damages or expenses associated with the use or misuse of its products. The audio output of this product is capable of damaging some types of solid-state audio equipment; such use is entirely at the risk of the user. METASONIX does not guarantee that any of its products are designed for any particular use or purpose. The entire risk of suitability and performance of this product lies with the user. Products manufactured and/or sold by METASONIX are not authorized for use as critical components in devices used in life support and other systems whose failure or performance could result in compromised safety or danger to life or property.

Did we mention the  
**DANGEROUS HIGH VOLTAGES**  
inside the KV100?  
Well, here we mention it again.

**DO NOT OPEN THE**  
**TOP PANEL unless**  
**you're a service**  
**technician or a**  
**blithering suicidal**  
**idiot.**

***NOTE: All sales are FINAL, especially custom designs.***  
***Only a Metasonix authorized dealer is permitted to return products to Metasonix for a refund or exchange.***

## What it does:

The KV100 "Assblaster" is a combination of several of our classic vacuum-tube processing circuits, all optimized for general use in the professional recording studio. It contains:

- the preamp stage of our TM-7 Scrotum Smasher, without the 6N6 tube or the feedback loop;
- the waveshaping (pulsar) and ring modulation functions of our TM-1, minus the ring-modulator carrier oscillator;
- a VCO derived from our TM-3 (it is NOT intended for use as a synth pitch source, only as a special effect for signal degradation);
- an all-new wide-sweeping bandpass filter, with envelope filter function;
- an envelope follower, which also makes a gate signal;
- a noise gate on the output, which is always active and is driven by the gate signal.

Plus, the KV100 has three bypass systems.

The first is an overall true bypass, performed with a miniature low-bounce relay. It is activated with the switch labeled **ENABLE FILTER & RINGMOD**. If you wish to control the bypass with a footswitch, plug a conventional Fender-type single footswitch (**WHICH GROUNDS THE TIP TO THE SLEEVE**) into the jack labeled **FOOTSWITCH FOR ENABLE RING/FIL**.

Please note: there can be a dramatic change in volume when this bypass is enabled / disabled. The UN-bypassed signal might be louder than the processed signal. This is **NORMAL** and characteristic of the KV100's unique circuits.

The second switch activates the "pulsar" circuit for the waveshaping effect. This is a very drastic distortion effect--it is like an oscillator that is forced to synch to the input waveform, presuming the input has a distinct pitch. It is **DRASTIC** and **AGGRESSIVE**.

Unless you have owned one of our TM-1 effects, you have never heard this effect before. As with the bypass above, it is activated by the **ENABLE PULSER** switch, or by plugging a Fender-style footswitch into the adjoining jack.

The third is the enable for the built-in VCO. It is another oscillator that tries to synch to the input signal, but accomplishes this in a totally different way. The **ENABLE VCO** switch activates it, and the adjoining jack may be used with a Fender-type footswitch to enable/disable this effect. (Note that if the VCO is disabled and the VCO PAN knob is turned fully to the right, there will be no VCO signal and you will not be able to hear anything.)

Are you starting to understand now? The KV100 is **UNIQUE**. It **IS NOT** like any other multi-effect system on the market. It is **DEVIANT**, and you cannot expect it to behave like familiar effects, or to be completely stable and repeatable. You want *new* sounds, right? Here they are!

## INITIAL SETUP

Plug the AC adapter into the KV100 power inlet, and press the power switch. You should see the first tube light red, it is backlit with an LED when power is on. You might also see some tube heaters glow, although it varies with different tube brands and production eras. You might also see the other tubes light up with their own LEDs.

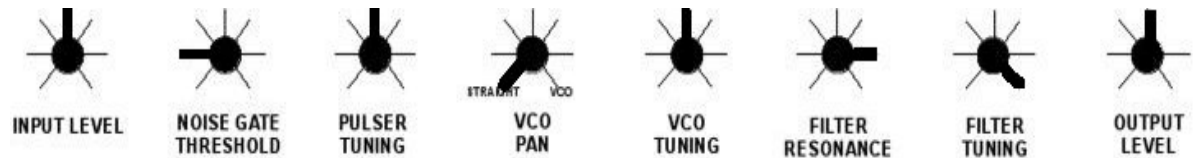
**THE SECOND TUBE FROM LEFT** lights when the filter/ringmod is activated. Make sure it is activated by using the ringmod/filter switch.

**THE MIDDLE TUBE** is the pulser, and lights when the pulser is activated. Deactivate the pulser for now.

**THE SECOND TUBE FROM RIGHT** is the VCO. It should be deactivated for now (light off).

**THE RIGHTMOST TUBE** is the filter, it is lighted when the noise gate is open.

The diagram shows the beginning settings.



Set the knobs as shown above. Plug your source signal into the **AUDIO INPUT**, and run the **AUDIO OUT** to a suitable monitor amplifier or mixer input (turn the output volume **DOWN** first, especially if you're using a guitar amp).

Make some noise on the input. You should see the rightmost tube light, this indicates the noise gate is working and the signal level is good. Adjust output level for comfortable listening without clipping the monitor amp.

You can then adjust the **NOISE GATE THRESHOLD** for best noise-gate operation. If you are playing guitar thru the KV100, adjust so the gate is closed when not playing, and opens at the level you desire.

Then you can try the filter controls, **FILTER RESONANCE** and **FILTER TUNING**. Set resonance so you get a good fat bandpass-filter effect, without the filter oscillating. **BE CAREFUL**. The oscillation is very loud.

By adjusting the **INPUT LEVEL** and **NOISE GATE THRESHOLD**, you can control the envelope-filter effect. Because this varies with signal level, this will require some experimentation.

Now try the **ENABLE PULSER** switch. Adjust the **PULSER TUNING** knob to hear the (drastic) distortion induced by the pulser. The input signal affects it, so try different pitches. You might try setting **PULSER TUNING** just below the point when the pulser oscillates.

Disable the **PULSER**, and enable the **VCO**. Adjust the **VCO PAN** to midpoint, and **VCO TUNING** as desired. Like the pulser, your input pitch affects the VCO's pitch. But it sounds totally unlike the pulser.

Enabling both the pulser and the VCO will give massive, out-of-control distortion effects. Use them sparingly, unless you want your sound completely destroyed.

## USING THE EXTRA INS AND OUTS

The FILTER CV INPUT can be driven with control voltages produced by a modular or other analog synthesizer. The usable sweep range is 0-6 volts, and depends on the setting of FILTER TUNING.

You can use the KV100's filter as a TUBE WAH effect--one of the very few ever made. Plug the stereo jack from an expression pedal, such as the Moog Music EP-2, Proel PVP16, or Roland EV-5, into the FILTER CV INPUT. Adjust FILTER TUNING while sweeping the pedal to obtain the best wah effect. (Plugging a jack into FILTER CV INPUT disables the built-in envelope filter function.)

VCO PITCH CV INPUT is similar to FILTER CV INPUT, but only affects the pitch of the VCO. You can drive this input with a 0-5v CV, or an audio signal, for different effects on the VCO's pitch. Or use an expression pedal.

RINGMOD CARRIER INPUT accepts a line-level audio signal. It mixes with the main

input signal in the second tube of the preamp, producing a (bad) ring-modulation effect. Feed this input with the same signal as the main input for some wild effects.

TIP=VCO OUT RING=PULSER OUT is a stereo jack with two 'raw' signal outputs you can use in separate processing equipment. They are pretty hot signals, and only work when the VCO and pulser are activated, respectively.

ENVELOPE CV OUTPUT is mostly intended for interface with modular synthesizers. It produces a 0-10v CV that varies with the input signal strength, so the INPUT LEVEL setting affects it.

You can cross-patch some of these ins and outs to each other, for different effects. Remember: ins to outs only. Don't connect outs to outs or ins to ins. It won't work.

*Please note that these extra ins/outs require some advanced knowledge of analog synthesizer applications.*

## MAINTENANCE

Powering the KV100 requires a power supply producing 12 volts AC ONLY, at 1.5 amps (when first powered on, the KV100 briefly draws greater current, so be aware of this is using a power supply to run it plus other devices.) DO NOT apply DC power to the KV100 power jack. For USA/Canada and other countries having 120v power, we recommend the Jameco 167151 AC-AC adapter. It has the correct 2.1mm power connector already attached. If you are in a country that has 100v, 230v or 240v AC mains power, you must obtain a power adapter locally that produces 12 volts AC. A 2.1mm coaxial power jack is needed to apply power to the KV100. The power packs used to run 12v halogen lamps are suitable for the KV100 and easy to find.

The tubes in the KV100 are being run VERY conservatively. They should last for tens of thousands of hours of normal use. Still, the KV100 produces a lot of waste heat, so we recommend shutting it off when not in use.

**UNLESS YOU KNOW EXACTLY  
WHAT YOU ARE DOING, DO NOT  
REPLACE OR SUBSTITUTE THE  
TUBES YOURSELF!**

Please note: not all tubes have easily visible heaters. If you can't see a heater glowing, DO NOT assume that tube is bad. We get a lot of foolish complaints like this!

The first tube (from left) is a 6AK5 pentode. It is the first preamp stage. The second tube is another 6AK5 pentode, and acts as a further gain stage plus the ring modulator (by modulating the screen grid). We do not recommend substituting different tubes in these slots, with one exception: if you want a slightly cleaner overdrive tone, replace BOTH of them with 6AU6s. These two tubes must both be the same type because their heaters are in series.

The middle tube is the pulser. It is a 6BQ7-type dual triode. Use only a member of the 6BQ7 family here, do NOT try to use a 12AX7, it won't work. 6BQ7 members that

will work include 6BC8, 6BS8, 6BZ7, 6BK7, 6BZ8, 6BX8 and 7803. You can also use 5BK7/5BQ7 types in a pinch, as this tube is run with 5v heater voltage.

The fourth tube from left is the VCO. It is a miniature gas-filled thyratron. The KV100 is wired to accept either 5696 or 5663 type thyratrons in this slot. There is a small jumper wire on the bottom of the main PC board which allows selection of one type or the other. DO NOT use one type if the board is wired for the other. If it is wired for one type and you must install the other type, take the KV100 assembly out of the plastic carrying case (UNPLUG POWER FIRST!), and use a soldering iron to remove the jumper and change it to the other tube type. The pads are clearly labeled on the PC board.

The tube on the far right is the filter. Use a 6GH8, 6U8 or 6678 here. These are among the most popular triode-pentodes ever made, so they should be very easy to find.

You can also use a 5GH8 or 5U8 in a pinch. 6EA8 should also work. Don't expect different tubes to sound drastically different, so "tube rolling" might not get you very much.

**If you are confused or have ANY technical questions, feel free to contact us.**

***METASONIX***

PMB 109, 881 11TH STREET  
LAKEPORT CA  
95453 USA  
707-263-5343  
synth@metasonix.com, www.metasonix.com

(Cartoons used by permission of David Lovelace, copyright 2008.)

# KV100 Block Diagram

