

Voco-Loco[®] Mk2

Mic Preamp and Effects Loop



User Guide

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Radial[®] Voco-Loco[®] Mk2

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INTRODUCTION

Congratulations on purchasing the Voco-Loco Mk2! This is one of the most unique devices ever made and will surely bring a lot of fun, excitement, and creativity to your performance and likely change the way you approach your voice or instrument from here on.

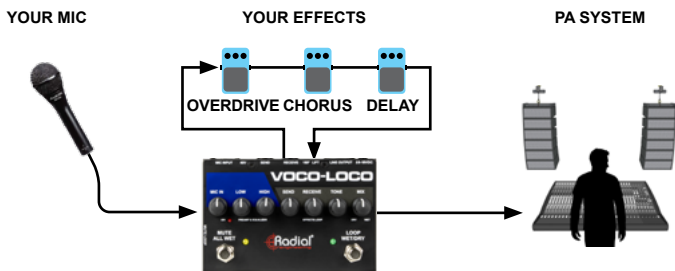
If you are a vocalist, you may have never used guitar effect pedals, so this will be new to you. If, on the other hand, you are a guitarist who also sings, this may be old hat. Either way, please take a few minutes to read through this short manual, as it will surely provide some insight on how to best approach using the Voco-Loco so that you get the most out of it.

If, after you have read it, you still have some questions, please take a minute to visit the Voco-Loco FAQ page on the Radial website. This is where we post the latest updates and questions from users. If you still have a question that is unanswered, feel free to send us an email at info@radialeng.com, and we will do our best to answer you in short order.

Now get ready to add a whole new dimension of character, excitement, and folly to your performance.

OVERVIEW

The Voco-Loco Mk2 is a mic-to-effects interface that enables the vocalist, sax, trumpet, or harmonica player to use pedals just like an electric guitarist. In other words, you connect your microphone to the Voco-Loco, and it converts the signal so that it may be used with guitar pedals. The signal is then sent to the PA system, where it is processed as usual.

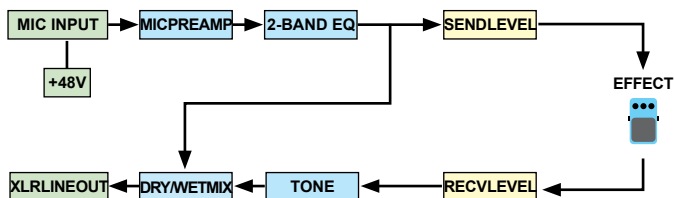


You simply prepare the effects in advance by turning on an echo and a chorus pedal, then, when ready, engage the pedal chain by depressing the effects loop footswitch. When the song is over, you stomp on the footswitch again to turn off the effects. In between songs, you set up the next effect with your pedals on standby, ready to be engaged as needed.

The cool thing about using the Voco-Loco with a variety of pedals is you can decide which effects you want to use for a given solo without having to necessarily follow a given path. This flexibility opens the door to unique and creative effects, which can enthrall an audience during a live performance or spur on creativity when you are jamming.

Understanding the signal flow

Following the block diagram below, the microphone feeds a studio-quality mic preamp, which then feeds a 2-band EQ. This is used for tone shaping the dry mic signal. The balanced signal is then converted to a 1/4" Hi-Z output that is suitable for guitar effect pedals. Separate send and receive controls let you optimize the signal-to-noise and eliminate distortion. The output of the effect pedals is then brought back into the Voco-Loco, where you adjust the tone and blend the original dry signal with the effects for the ideal mix. The final mix is then sent to the PA system via the balanced XLR output.



FEATURE SET

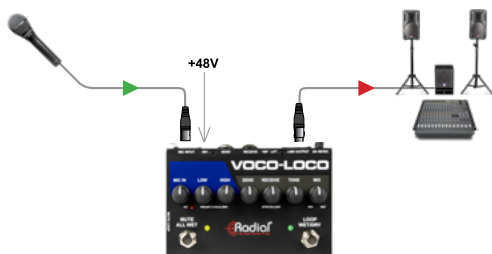


1. MIC INPUT: Balanced locking XLR input for your microphone.
2. 48V: Recessed switch turns on 48V phantom power for condenser mics. When turned on, the 48V LED indicator illuminates.
3. SEND/RECV: Unbalanced 1/4" jacks used to send the signal to effect pedals and return it back to the Voco-Loco.
4. 180°: Recessed switch is used to reverse the polarity of the effects loop to ensure guitar pedals are in phase with the microphone.
5. LIFT: Disconnects the pin-1 ground connection at the XLR output to help eliminate noise caused by ground loops.
6. LINE OUTPUT: Male XLR output, used to connect to the PA system.
7. POWER: Connection for the included 15VDC power supply, or for use with 9V-18V pedalboard power supplies. (see pg. 3 for further details)
8. MIC IN: Sets the input level of the Voco-Loco's mic preamp section.
9. LOW / HIGH: Dual band EQ used to adjust the tone of your mic.
10. SEND/RECV: Individual send and receive controls let you adjust the level going to the pedals to optimize signal-to-noise and reduce distortion.
11. TONE: Lets you tame the harsh tone certain pedals produce.
12. MIX: Adjusts the mix between the dry mic signal and the wet effect signal.
13. LOOP WET/DRY: Primary footswitch toggles on or off the effects loop.
14. MUTE/ALL WET: Left footswitch can either mute the output or activate the 'all wet' mode.
15. MUTE-LOOP: Recessed switch allows you to choose the function of the left footswitch. Set inward, the footswitch will mute the output of the Voco-Loco. Set outward, the footswitch will engage the 'all wet' mode.

MAKING CONNECTIONS

A 15VDC power supply is included with the Voco-Loco Mk2; however, it can also be powered by standard pedalboard power supplies ranging from 9V to 18V, so you can easily integrate it onto your pedalboard. If you are using a pedalboard power supply, you will need to ensure that you feed enough current to the Voco-Loco: it requires a minimum of 500mA with a 9V supply, 375mA at 12V, and 250mA at 18V. You can use power supplies with either center-pin negative or center-pin positive polarity, as both are compatible with the Voco-Loco.

Connect your microphone to the Voco-Loco's XLR-female input. If you are using a condenser microphone, activate the 48V phantom power by depressing the rear panel switch. This is recessed in order to prevent accidental turn-on which could cause a loud pop in the PA system. Use a small screwdriver to activate the phantom power. The +48V LED indicator on the top panel will illuminate when phantom power is on. The XLR output of the Voco-Loco is a line-level signal designed to feed a channel on the PA system.



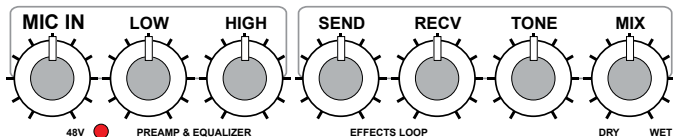
If you hear distortion, lower the level on the Voco-Loco or reduce the sensitivity of the mixer's input channel.

Connect your pedals from the 'SEND' jack to the pedal chain and back to the Voco-Loco via the 'RECEIVE' jack using standard 1/4" guitar cables.



SETTING UP THE DRY SOUND

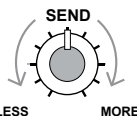
Start with both footswitches turned off. Check the LED indicators and make sure they are also off. Set all the Voco-Loco controls to the 12 o'clock position to start.



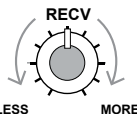
Turn on the PA system and slowly increase the level while speaking into your mic. Always test at low levels for safety. If you encounter buzz or hum, push in the recessed ground LIFT switch on the rear panel. This disconnects pin-1 on the XLR, which often eliminates noise caused by ground loops. Adjust the MIC IN level and use the LOW and HIGH equalizer controls to adjust the tone of your mic. Keep in mind that adding excessive lows or highs can lead to feedback or unwanted resonance.

Setting up the wet sound

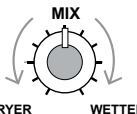
Turn on the effects loop by depressing the right-hand footswitch. The LED will illuminate, indicating the effects loop is active. Now try turning on one of your effect pedals. It is a good idea to test with one effect at a time, as this will make it easier to troubleshoot should something not be connected or not working properly. Using an effect such as a delay or chorus is usually a good place to start, as you can easily gauge if the Voco-Loco is overdriving the effect and causing it to distort. If it is, simply turn down the SEND level and increase the RECV level controls to compensate. Rotate the wet/dry MIX control from one extreme to the other to compare the original dry signal with the wet signal. Adjust the mix so that it sounds right, and you are set to add more pedals.



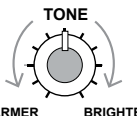
Increases or decreases the level going to the effect pedal.



Increases or decreases the level received from the effect pedal.



Mixes the original dry signal and the wet effect signal together.



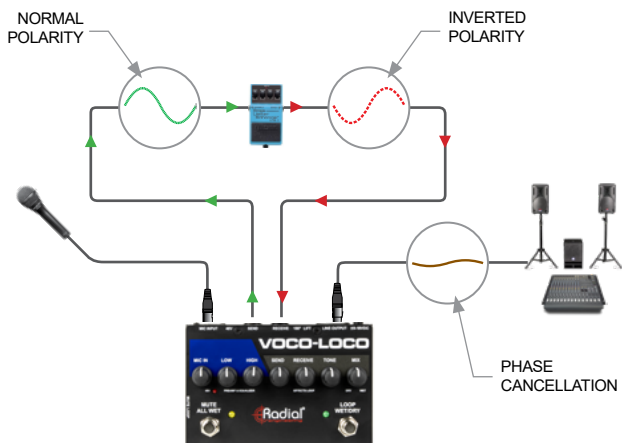
Controls the overall tone of the wet effect signal.

Adjusting the tone control

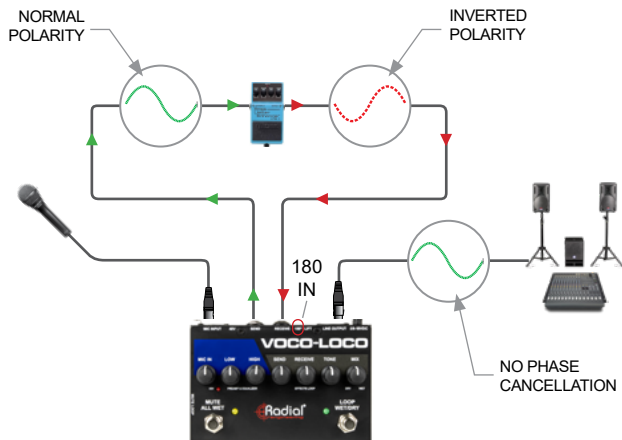
The tone control is a post-effects loop EQ that is designed to smooth out excessively bright or harsh-sounding pedals. Keep in mind that most guitar pedals are designed to go through the 12" loudspeaker in a guitar amp. There is no tweeter to reproduce high frequencies. With a PA, you have a full range system that now has mid-range horns and tweeters to reproduce the high end, so you may need to compensate. Simply try it and set it to where it sounds best to you.

Using the polarity reverse

If you notice that the signal becomes weak when you blend the wet with the dry signals using the MIX control, one of your pedals is likely reversing the polarity, which in turn is causing phase cancellation when mixed with the original dry signal.



This is common with guitar effect pedals, as manufacturers rarely pay attention to absolute phase. If the sound is weak because an effect pedal is inverting its output, compensate by pushing in the recessed 180° polarity reverse. This will invert the wet signal and bring it into phase with the dry signal to create a full sound.



USING THE LEFT-HAND FOOTSWITCH

The left footswitch can be assigned as either a 'Mute' switch or as an 'All-Wet' effect loop. The function is selected using the recessed MUTE/LOOP switch on the left side. Use a small screwdriver to change the position of the switch between inward and outward.



MUTE/LOOP MODE CONTROL
ON SIDE PANEL

Using the mute mode

When the MUTE/LOOP switch is set outward, the left footswitch functions as a 'mute'. Used in the mute mode, the left footswitch allows you to turn off the Voco-Loco's XLR output when not in use. The LED indicator illuminates when the mute function is on.

Muting is most commonly employed between sets. By turning off the output, you also help eliminate feedback and bleed, which, of course makes it easier for the engineer to mix. The left footswitch will override the right footswitch. This allows you to prepare the effect loop either on or off as you like while the output is muted.

Using the 'All-Wet' mode

When the MUTE/LOOP switch is pushed inward, the left footswitch engages the 'all-wet' mode. Used in the all-wet mode, the left footswitch turns **on** the effect loop and turns **off** the dry signal so that the Voco-Loco's output is 'wet signal only'. The LED indicator illuminates when the All-Wet mode is on.

Engaging the All-Wet mode is the same as reaching down and turning the MIX control fully clockwise to 'wet' for a full-on effect sound. This lets you create an effect when you need it without having to change your preset wet/dry mix. An example would be a fully distorted sax solo, or maybe creating the effect as if your voice is coming through a telephone.

Using the footswitches together

The left footswitch will override the right footswitch, allowing you to preset the state of the right footswitch while the 'All-Wet' mode is engaged. For instance, you can move from a 'dry' sound to 'All-Wet' and then to a 'mix of wet and dry' signals using the two footswitches together.

USING THE VOCO-LOCO MK2 WITH VARIOUS EFFECTS

Adding distortion to a vocal or instrument

Adding distortion can be a lot of fun! Although you may automatically think of bands like Nine Inch Nails, you do not necessarily need to use full-on distortion. A touch of distortion is often inserted in the studio to add a little character and grit, giving pure vocals a bit of 'smoker's hair'. Adding distortion to a solo instrument can create amazing guitar style effects, especially when combined with an echo. Distortion pedals come in three general categories:

- **Fuzz:** The first pedals to cause distortion were called fuzz pedals, and they arrived on the music scene in the late 1960s with players like Jimi Hendrix. Fuzz pedals tend to produce a distinct buzzy effect that is filled with odd or harsh-sounding harmonics. Guitarists use fuzz pedals for special effects.
- **Distortion:** In the 1970s, the first distortion pedals began to show up from companies like MXR. These attempted to simulate a guitar amp driven hard. They generally employ a couple of gain stages in series to create the distortion. Distortion pedals are often used by heavy metal bands where more harmonic generation is needed.
- **Overdrive:** In the 1980s, players like Stevie Ray Vaughan and Eddie Van Halen took the scene with overdrive pedals. These employed a single gain stage, but when combined with an amp that was driven hard, they created a very natural-sounding distortion. Overdrive pedals generally produce less distortion than the others.

Using the Voco-Loco Mk2 with modulating effects

Pedals that cause modulation are those that introduce a warble or vibrato to the signal. They generally have two controls: *intensity* sets the amount of effect, and *speed* sets the frequency of the modulation. There are several types of modulating pedals:

- **Vibrato:** This effect causes a pitch shift or warble. Vibrato effects first appeared on guitar amps in the 1960s. This causes the frequency to modulate up and down.
- **Tremolo:** This is similar to the vibrato, only it increases and decreases the amplitude or loudness of the signal. This effect also began to appear on certain guitar amplifiers in the 1960s and was popularized by surf music and songs like Crimson & Clover.
- **Phase shifter:** This type of effect was accidentally created when two tape machines were playing the identical tracks, and one machine was speeding up and slowing down. It was electronically reproduced in the 1970s by MXR with the Phase 90. It causes a 'wash' or 'wind' effect over the voice.
- **Flanger:** This is similar to the phase shifter, only the intensity is increased. The Mutron Biphase was the first to really capture attention in the 1970s, as it introduced a 'jet' effect into the signal path.
- **Chorus:** Roland introduced the Jazz Chorus amplifier in the 1970s. It had a stereo amp with a delay that modulated between two or more speakers to create a rotating Leslie speaker effect. By the late 1970s, the chorus effect became available in a pedal format.

Voco-Loco Mk2 with delay & reverb

The most common use for the Voco-Loco is adding traditional effects such as echo and reverb to the mic. Doubling up a vocal with a slight delay can add depth, modulation, and perceived loudness when performing live. Adding reverb to your sax will add a sense of space. Keep in mind that as you increase the intensity of time-based effects, you also risk losing the distinctiveness of each note in a sea of wash. In larger venues, the signal can get totally lost. The MIX control lets you blend your dry signal with effects to set up the ideal balance.

Voco-Loco Mk2 with octavers and subharmonic generators

There are a number of octave-dividing effects that can artificially introduce an octave above or below the fundamental voice frequency. This can be used to create 'monster' effects or harmonics.

Voco-Loco Mk2 with envelopes & filters

Wah-wahs are basically narrowband EQ's with accentuated mid frequencies. The foot controller lets you change the center frequency to create a wah effect. This can be done manually or automatically using an envelope generator pedal. Opening a wah-wah pedal from dark to bright can create distinctive effects.

Voco-Loco Mk2 with equalizers

All kinds of effects can be performed using an EQ. For instance, you can thin out a voice by eliminating all of the bass or focus the voice by accentuating the mid range to create a megaphone effect.

Voco-Loco Mk2 with digital modeling

Digital modelers often combine many effects into one. These multi-effects processors can be used on a voice or instrument. The options are unlimited!

Combining effects

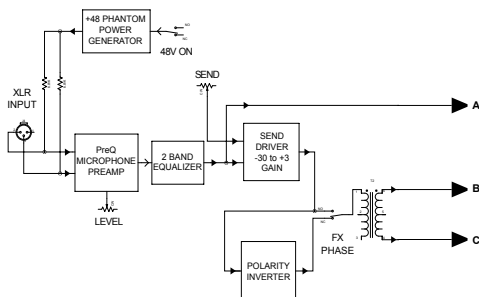
Where things get crazy is combining several effects together to create an all-new sound. For instance, combining a distortion with a narrowband EQ can create the sound of being on a telephone. This is where you let your creativity shine through and have fun!

Notice: Use of any third-party or non-approved power supply with the Voco-Loco is at the user's own risk. Radial Engineering Ltd. makes no representations or warranties regarding the safety, performance, or compatibility of third-party power supplies. The user is solely responsible for ensuring that any external power supply complies with applicable safety standards and provides the correct voltage and current.

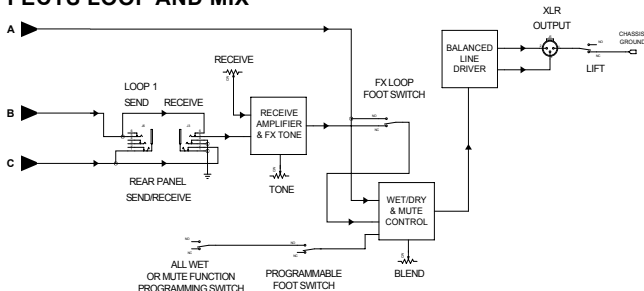
SPECIFICATIONS

Audio circuit type:	Microphone Pre-amplifier
Frequency response:	-3dB @ 5Hz & 90kHz, (0dBV Output, Bandwidth 5-96kHz)
Total harmonic distortion:	0.0038% @ +18dBu, 1kHz, 20-20kHz Bandwidth
Input impedance:	2kΩ
Maximum output:	+24dBu balanced, (@1kHz, THD=0.1%, Bandwidth 20-20kHz)
Maximum mic preamp gain:	61.5dB balanced
Maximum send gain:	+9dB unbalanced
Output impedance:	210Ω
Equivalent input noise:	-122.5dBu (@ +61.5dB Gain, Rs=150Ω, Bandwidth 20-20kHz)
Common mode rejection:	-63dBu @55Hz
FX loop output impedance:	2.5kΩ
XLR configuration:	Pin 1 ground, Pin 2 (+), Pin 3 (-)
Phantom Power +48V (IEC 61938):	+48V (Maximum Supply Current: 10mA), Source Impedance: 6.8kΩ +/-0.5%
Input power requirements:	+/-18V 4W
Supplied power supply:	15VDC / 400 mA
Minimum PSU ratings (3rd party supply):	9VDC / 500 mA 12VDC / 375mA 15VDC / 300mA 18VDC / 250mA
Warranty:	3 Years, transferable

BLOCK DIAGRAM - MIC INPUT STAGE



EFFECTS LOOP AND MIX



THREE YEAR TRANSFERABLE LIMITED WARRANTY

RADIAL ENGINEERING LTD. ("Radial") warrants this product to be free from defects in material and workmanship and will remedy any such defects free of charge according to the terms of this warranty. Radial will repair or replace (at its option) any defective component(s) of this product (excluding finish and wear and tear on components under normal use) for a period of three (3) years from the original date of purchase. In the event that a particular product is no longer available, Radial reserves the right to replace the product with a similar product of equal or greater value. In the unlikely event that a defect is uncovered, please call 604-942-1001 or email service@radialeng.com to obtain an RA number (Return Authorization number) before the 3 year warranty period expires. The product must be returned prepaid in the original shipping container (or equivalent) to Radial or to an authorized Radial repair center and you must assume the risk of loss or damage. A copy of the original invoice showing date of purchase and the dealer name must accompany any request for work to be performed under this limited and transferable warranty. This warranty shall not apply if the product has been damaged due to abuse, misuse, misapplication, accident or as a result of service or modification by any other than an authorized Radial repair center.

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