



humboldt preamp



user guide & instruction manual

description & features

Humboldt Preamp is an original circuit conceived, designed, prototyped and tested by Niche Devices over the course of two years. Each unit is hand soldered, crafted and assembled with pride in Western New York. We use high quality through-hole components including Alpha potentiometers, Sironex Photocouplers and many more.

Humboldt offers optical compression coupled with a high headroom pre-amplifier and features the unique usage of a vintage audio transformer. Humboldt's circuitry is very low noise and has ultra-transparent gain staging with practically no risk of op-amp clipping due to the power provided by the built-in charge pump circuit*.

The compressor side is a classic two knob style that is forgiving, natural and warm. The preamp section has a tasteful shelving equalizer to cut or boost high frequencies subtly without affecting tone in any other stage. Fully blend-able signal from 100% compression (wet) to 100% preamp (amplified dry) and everywhere in between. Providing unrivaled parallel compression, bringing the studio to your stage setup in an intuitive and user-friendly package.

Humboldt is an adept and capable tone shaper that can subtly and transparently sweeten tone in an "always on" configuration. It can also be pushed to extremes and used more as an effect. The headroom and volume capabilities of Humboldt can be utilized as a clean booster or even overdrive a low wattage tube amp.

True bypass switching in three different locations gives a range of options. Bypass the whole pedal at the footswitch. Bypass the transformer with the face mounted toggle. Bypass the high impedance input buffer with the top mounted toggle and experience the warm, vintage inspired 70k Ohm input impedance of yesteryear.

Our two-color indicator lamp is a subtle but useful feature. Red indicates the pedal is engaged with the transformer bypassed. Green indicates both the pedal, and the transformer are engaged. Both lamps feature high value resistors to tame the brightness of modern LEDs; so that you can focus more on playing and less on shielding your retinas from the twin-suns of Tatooine.

SE and DE models are both the same circuit, each with a slightly different selection of components and finishes. They are both hand-made with the same care and are equally high quality, professional musical instruments. SE features a shimmery grey/brown powder coated chassis, Boss style knobs and our base selection of high-quality components. DE features a gold sparkle powder coated chassis, MXR style knobs and our level one upgraded selection of components including, but not limited to:

- Burr Brown OPA2134 Audio Op-amps
- Wima, Nichicon Fine Gold and Silver Mica Capacitors
- NOS Allen-Bradley Carbon Composition Resistors

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quick start guide

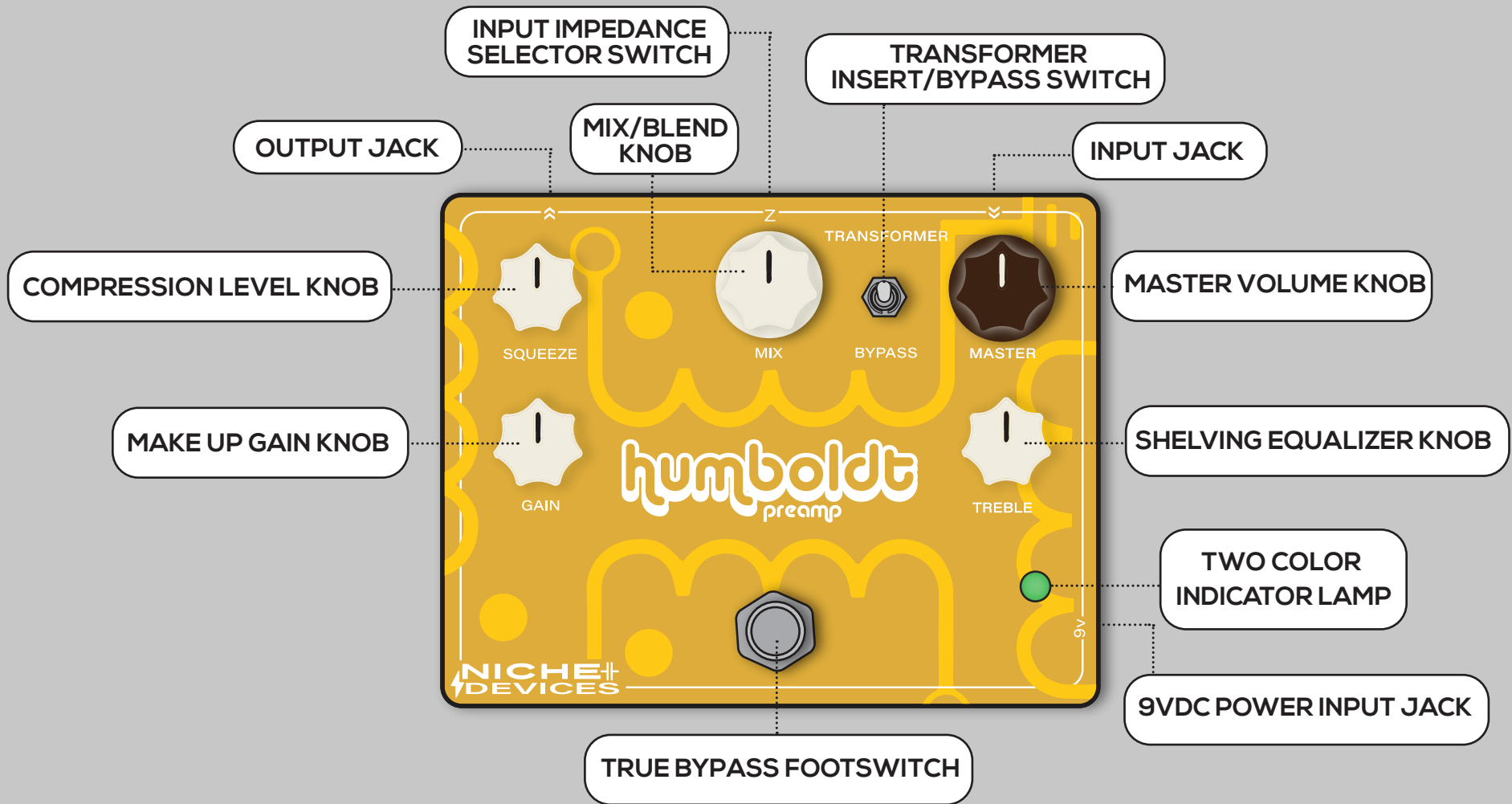
Use these settings to get a functional baseline sound. Be sure to read the entire manual to understand the full capabilities and limitations of this device.

This setting gives a 50/50 blend of lightly compressed signal and amplified clean signal. With TREBLE set at 12 o'clock the frequency response of the preamp signal is close to flat. MASTER is a passive volume stage at the end of the circuit. Adjust this knob to find unity gain in comparison to the bypass signal. Begin with the transformer bypassed. You should now have a sound that is very similar to your bypass signal - this gives your ear a good reference point. From here you can experiment with the knobs, try inserting the transformer into the signal path and compare. We hope you enjoy it as much as we do!



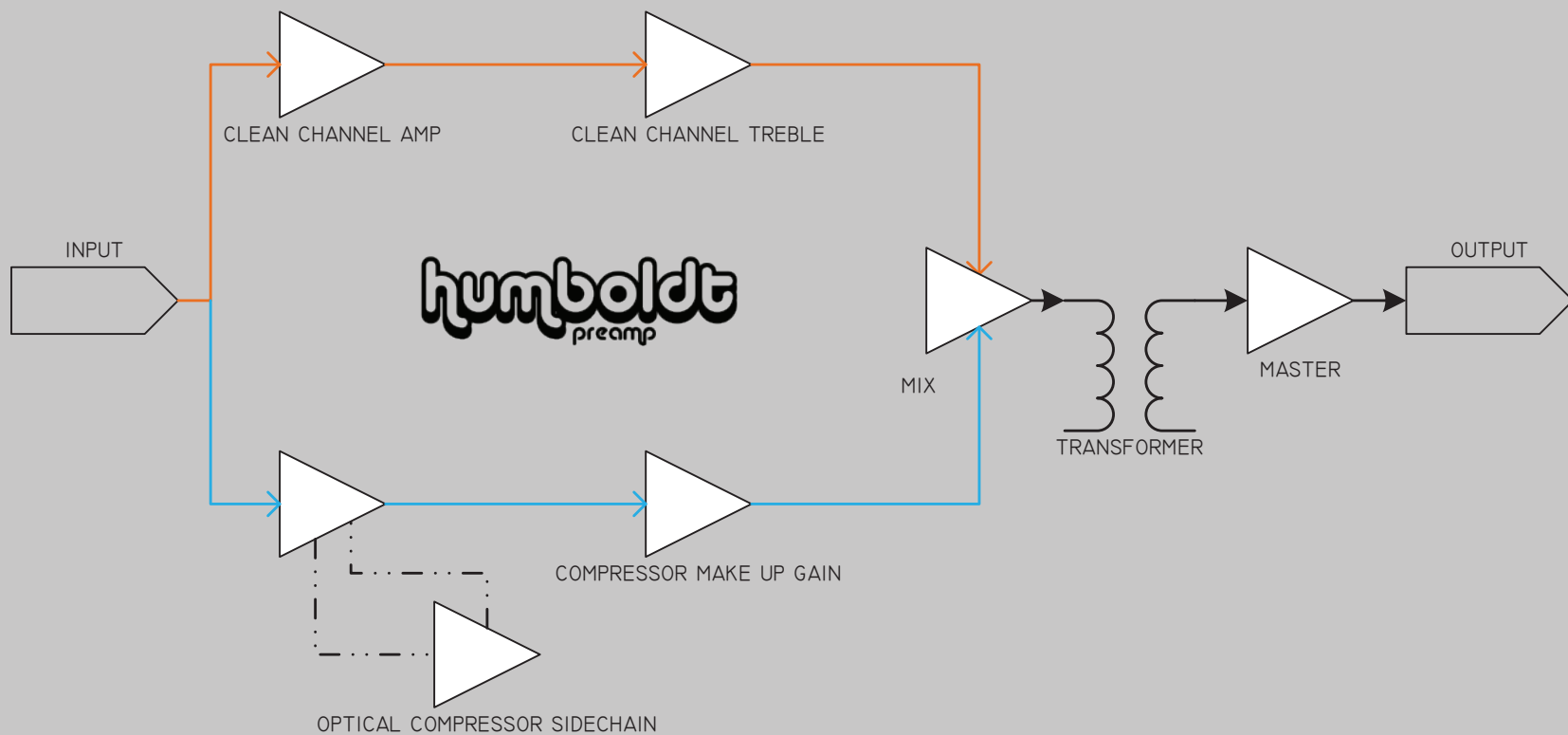
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panel layout



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block diagram



input impedance selector / transformer

INPUT IMPEDANCE SELECTOR

The switch on the top of the pedal (marked Z on the face) is the input impedance selector. Use this to engage or bypass the input buffer. This stage will only make an audible difference if the pedal is receiving signal directly from a guitar. If Humboldt is further into the signal chain or after a buffer of any kind, then the input signal won't be affected by the switch. In this instance, leave it bypassed. This feature is not meant to be adjusted frequently - find what works for your setup, then set it and forget it. There might be a slight audible pop when engaging this switch. This can be mitigated by turning down the MASTER volume first.

Down (toward floor) = Vintage / Bypassed / Off

Up (toward face) = Modern / Buffered / On

Vintage Z_{Ω} = 70k OHM

Modern Z_{Ω} = 1M OHM

TRANSFORMER

The transformer used in Humboldt Preamp was reclaimed from the line preamp card of a vintage mixing console.

It has a mu-metal core and a 1:4 step up ratio. Engaging the transformer acts as a passive volume boost - use the MASTER knob to control this boost. The transformer also changes the overall frequency response of the output signal and adds some other coloration.

The face mounted switch provides the ability to bypass the transformer if desired.

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shelving equalizer / master

SHELVING EQUALIZER

The TREBLE knob only affects the preamp side of the circuit. Frequencies at or above 650Hz will be affected by its use. All frequencies below that selected threshold pass through this stage unchanged. The knob works in a cut/boost configuration.

Noon = ∞ UNITY | Counterclockwise = CUT | Clockwise = BOOST

MASTER

The MASTER knob is a passive volume control. Setting this knob fully counterclockwise shuts output signal down to zero. Setting to full clockwise lets full signal through uninhibited. MASTER knob is conveniently placed next to the transformer bypass so volume can easily be corrected (if desired) after engaging or bypassing the transformer.

gain / squeeze

GAIN

The GAIN knob only affects the compressor side of the circuit. Use this knob to make up volume lost by the compressing action of this stage. Matching GAIN level to SQUEEZE level is a good policy at first. Experiment further and you will find a wide tonal variety within these two knobs.

SQUEEZE

The SQUEEZE knob only affects the compressor side of the circuit. The higher the knob setting (clockwise) the more the optical sidechain works to hold down signal peaks. This action is not instantaneous – which gives this stage its characteristic sound.

mix

The blend stage is where the clean and compressed signal paths rejoin each-other. The MIX knob controls this blend.

Full counterclockwise = Compressor Signal Only

Full clockwise = Preamp Signal Only

Please note previous details regarding TREBLE, SQUEEZE and GAIN; Setting MIX fully to either side will render one or more knobs inoperable.

The remainder of the MIX knob sweep is where you will find a vast array of parallel compression. Compress heavily with SQUEEZE and GAIN set at 2 o'clock or higher for example, and then blend your clean signal back in with the MIX knob. This provides the best of both worlds. Enjoy enhanced pick attack and sustain from the compressor side without the crushed and lifeless sound of an overly compressed signal.

Parallel compression

From Wikipedia, the free encyclopedia

Parallel compression, also known as New York compression, is a dynamic range compression technique used in sound recording and mixing. Parallel compression, a form of upward compression, is achieved by mixing an unprocessed 'dry', or lightly compressed signal with a heavily compressed version of the same signal.

example settings



Niche Devices Standard

Our favorite setting wakes up sleepy single coil pickups and adds liveliness, sustain and body. This setting will also add sustain, sparkle and detail to humbucking pickups and help them cut through a mix where they may have been muddy before. We believe Humboldt thrives as an "always on" pedal and this setting reflects that.



The Clean Booster

Use Humboldt as a boost pedal with the added benefit of parallel compression to add pick attack and sustain to your solos. If you really crank the MASTER knob and/or the GAIN knob, then this could potentially send a low wattage tube preamp into delightful breakup. So, try it as an overdrive too!

example settings



1980s Studio

Squash it down and get heavy handed with that strumming and picking. The compressor will even out all those peaks to a steady level that your mix engineer will love. Try some Billie Jean or maybe a Toto song.



Trevor Pistachio

Good? Now play Divided Sky

specifications

Bypass Switching: True Bypass

Input Voltage: 9VDC Center Pin Negative

Required Current: at least 50mA

Input Impedance: Vintage $70k\Omega$ | Modern $850k\Omega$ (measured with 1VACpp @ 1kHz)

Output Impedance: $1k\Omega$

Frequency Response: 20Hz to 20kHz

Chassis Dimensions: 120mm x 94mm x 38mm

power



Required but not included:
9VDC pedal power supply with negative center pin
50mA or greater

This device has a charge pump* circuit on-board that uses 9 volts of input to provide up to 27 volts of overhead in some amplification stages. Do not use power in excess of 9V!

Please use a regulated power supply for steady, clean 9V power (check with voltmeter, up to 9.75V is acceptable.)
Some low-quality supplies indicate they are 9v but really put out 11-16V (!)

Voltage over 10VDC destroys Humboldt power components and voids warranty.
We can fix it, but we do not cover this under normal warranty repair.

Humboldt works with many standard pedal power supplies such as Boss, Strymon Zuma/Ojai, Voodoo Labs, One Spot and many more. The power required is considered industry standard and is sometimes referred to as Boss Style.

** Do not leave pedal plugged into power when not in use. Charge pumps have a tendency to become unstable when left powered but unused for long periods of time. If Humboldt sounds distorted in any way, remove DC power for 30 seconds. This "reboot" should clear the distortion.*

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warranty

Niche Devices warrants this Humboldt Preamp Pedal to be free from defects in material and workmanship for a period of one (1) year from the original date of purchase. If the product fails within the warranty period, Niche Devices will repair or, at our discretion, replace the product at no cost to the original purchaser. We reserve the right to defer shipping costs (one way) to the user. Please be prepared with proof of purchase at time of warranty if requested.

WARRANTY EXCLUSIONS

This warranty covers defects in materials and/or manufacturing that may arise while using this product as intended and described in this user manual. This warranty does not cover loss, theft, damage from misuse, abuse, modification, improper storage or natural disasters.

Natural disasters include your cousin Phil who comes to all your shows and stands in the front row where he proceeds to spill Lite Beer® all over your pedal board and monitor wedge despite your desperate pleas for him to finally get his shit together. Be better Phil, be better.

As indicated in the POWER section of this manual. We DO NOT cover damage to the charge pump circuit caused by overvoltage. Applying DC voltage over 10V to the power jack of this pedal will destroy the charge pump circuit. This damage is repairable, do not despair, we just cannot do the repairs for free. Thank you for understanding. Be sure to tell Phil.

LIABILITY LIMITS

If this pedal does malfunction, we will not be held liable to any party for any collateral damage that may result from said failure. Excluded damages include but are not limited to: Damage to other equipment, and incidental or consequential damages arising from the use, or inability to use this product, lost profits and lost savings. In no event will Niche Devices be liable for more than the amount of the purchase price, not to exceed the current retail price of the product. By using the product, the user accepts all terms herein. Niche Devices will not be held liable to any butt-hurt party in the instance that we copy/pasted a portion of this warranty text from another pedal manufacturer who is bigger than us, and thusly has a better grasp on legalese shenanigans – IF that's even what happened, which its not.

This product contains lead solder within the chassis and on the printed circuit board. Do not open the chassis and lick the PCB no matter how sexy it looks. Wash your hands thoroughly with soap and water after touching the inside of this device.