CBA ref 2024 - CLN01

chase bliss

A field guide to CLEAN

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Power req: 9V DC Center Negative ~300 mA

Overview

Clean started as a question:

Can clean be as fun as dirty?

Distortion circuits are always bursting with character and interesting details that react to the way you play. Is it possible to enjoy the touch sensitivity of an overdrive, or the unwieldy response of a fuzz, on a clean instrument?

We found that you can!

Clean is a "creative compressor" that brings the joyful and exploratory energy of distortion circuits to compression. Your playing dynamics are rewarded, creating a more interactive and lively version of your instrument that moves and shifts as you play.

From tube-like sag, to drifting equalization, to softening swells.

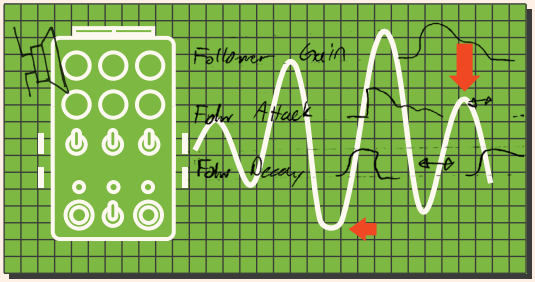
It also became a very sophisticated compressor along the way.

Clean is entirely analog, and built from scratch using studio-grade parts. It's true stereo, utilizes two stages of compression, and features some unique refinements like emphasis filters and a dynamic EQ.

Save an up-front enhancer to one preset for instrument work and an end-of-chain glue setting to another for mixes.

Clean has everything that you need to explore compression's wild side.

Let's get a look at what makes it so.



What's Inside

Clean is an original, VCA-based circuit. It is not based on any existing compressors, but is instead a brand new exploration of how far compression can go.

EMPHASIS FILTERING
cassette-style noise reduction

DYNAMIC EQ (see pg. 28)

Output Level (dB)

Fig. 2

ALL-ANALOG SIGNAL PATH

ADAPTIVE ENVELOPE FOLLOWER (see pg. 18)

TWO-STAGE COMPRESSION (see pg. 24)

EXTERNAL SIDECHAIN (see pg. 34)

1:1

PHYSICAL MODELING
(see pg. 13) organic fluctuations of a wobbling spring

TRUE STEREO (see pg. 34)

NOISE GATE (see pg. 35)

Fig. 4

Fig. 3

Input Level (dB)

4:1

FEEDFORWARD BLENDING (see pg. 26)

DRY BLEND (see pg. 11)

∞:1

Setup

Let's get Clean settled into its new home. If you're experienced with pedals you can probably ignore this bit and dive right in.

POWER
Clean requires a 9V DC, center negative power supply with at least 300 mA of current.

You'll see this symbol on your power supply:

I / O
Clean can be used in mono, stereo, or mono to stereo. The default setting will automatically work for either mono or stereo:

Mono in, mono out

TS CABLE

Stereo in, stereo out

TRS CABLE

Many stereo devices use dual mono jacks, so you may need a TRS to dual TS-style cable.

If you have a mono input but want to split it to stereo output: Turn on the **MISO** dip switch.

And if you want to create a unique stereo image: Turn on the **SPREAD** dip switch (pg. 32).

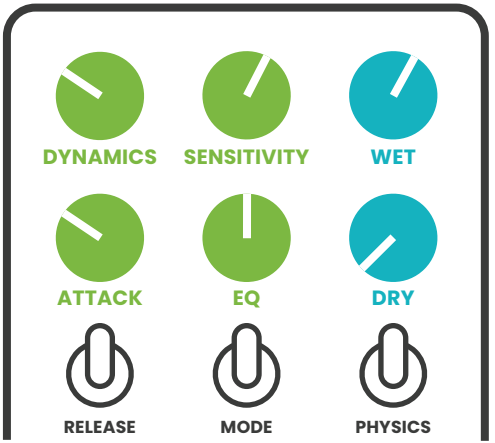
OPTIONS
Clean has lots of ways to customize and fine-tune your experience. If you'd like to get right into all that, check out:

- Hidden Options (pg. 16)
- Customize (pg. 34)
- Ramping (pg. 36)
- External Control (pg. 38)

Otherwise it's probably best to start with all dip switches off:

Okay, let's get started.

Getting Started



This is your safe space.

Clean gives you many ways to smoosh, shift, and shape your sound, and like all Chase Bliss pedals we let you get pretty extreme about it. The above setting is a good place to return to if you're feeling lost.

Don't worry if things aren't feeling quite right here, each instrument will be a little different.

The most important step is to get your **SENSITIVITY** right. Clean is a dynamic effect that reacts to the loudness of your playing. If **SENSITIVITY** is too high you will be overwhelmed, too low and you won't get much at all. Keep your eye on the left LED and make some adjustments to the knob until you see it moving at a comfortable playing volume.

You should hear clear, balanced compression.

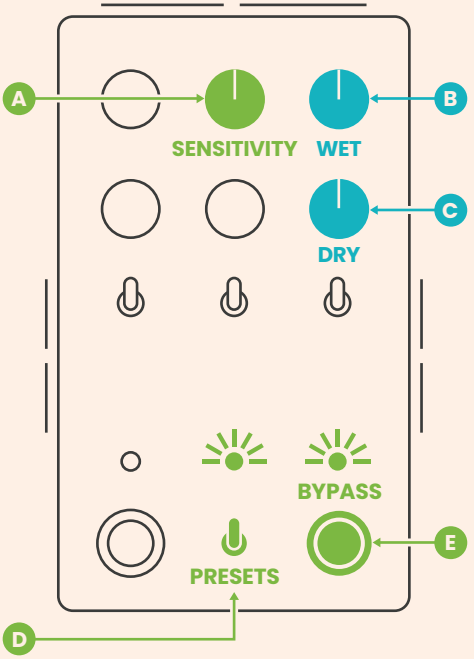
Turn up the **DYNAMICS** and mess with the **PHYSICS** to experience fluttering sag.

Get the **EQ** moving to introduce some vibe.

And hold down the **AUX** switch to turn it all into a swell.

You should be somewhere between refined and broken right now. Clean is real good at both, and it's probably time to learn why.

Controls



Adjust, boost, save.

A **SENSITIVITY (RAMP)**

Sets the dynamic threshold. The higher the knob is turned up, the more sensitive Clean becomes. Use lower settings for more subtle results that only affect louder playing, and higher settings for a more responsive spectrum. If ramping is engaged (pg. 36), this knob's function will change to control the ramping speed.

B **WET**

Controls the loudness of the processed signal. Able to apply a healthy boost.

C **DRY**

Controls the loudness of the unprocessed signal. Able to apply a healthy boost.

D **PRESETS**

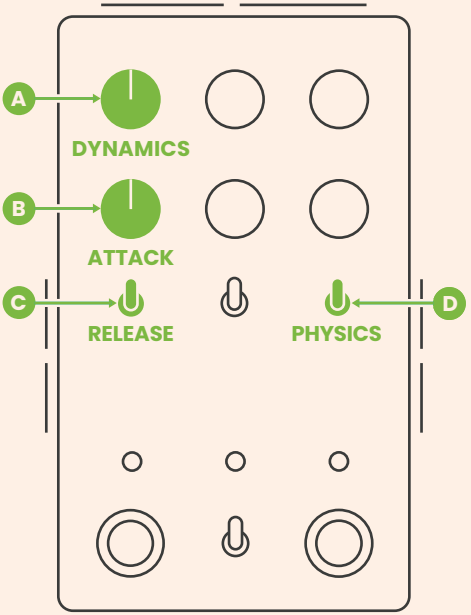
The left and right positions each store a preset, while the middle position is live (current settings). To save to the right slot, hold the right footswitch for 3 seconds, then add the left footswitch for another 3 seconds. Do the same for the left slot, but start by holding down the left footswitch. The middle LED will blink to indicate success.

E **BYPASS**

Tap to turn Clean on / off.

Hold to max out Clean's sag effect.

Controls



Squish, relax, wobble.

A **DYNAMICS**

Set the amount of compression. You will gradually transition through different zones as the knob is turned up, going from compression, to limiting, to sag (pg. 24).

B **ATTACK**

Controls how quickly the compression will set in. The minimum position is the fastest with an onset speed of 0.5ms, and at the maximum position the speed is 300ms. The **ATTACK** knob also controls the speed of the motion-related EQ modes (pg. 29), and **MOTION** mode (pg. 35).

C **RELEASE**

Controls how quickly the compression (and left EQ mode) will fade out.

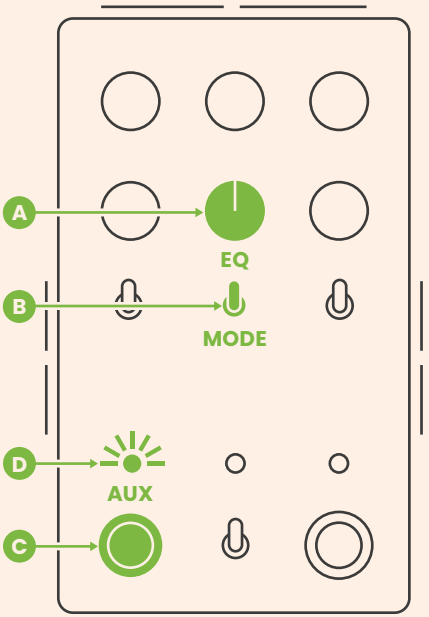
- **LEFT** - Fast (50ms)
- **MIDDLE** - User adjustable (see pg. 17)
- **RIGHT** - Slow (1.5s)

D **PHYSICS**

Manipulates the physical behavior of Clean's dynamic response, letting you sabotage it to produce instability and fluctuations.

- **LEFT** - Subtle, wobbly movement
- **MIDDLE** - Normal, stable movement
- **RIGHT**- Twitchy, unstable movement

Controls



Filter, select, swell.

A **EQ**

A one-knob EQ with three modes set by the toggle below. The counter-clockwise side of the sweep removes highs, while the clockwise side removes lows. Each mode is a variation on this idea. At noon the EQ will have no effect.

B **MODE**

Selects the EQ's mode.

- **LEFT (SHIFTY)** - Shifts when you play
- **MIDDLE (MANUAL)** - Classic, fixed EQ
- **RIGHT (MODULATED)** - Modulates when you play

C **AUX**

Engages a swell effect (pg. 30). There are two Swell Modes: Dynamic (default) and Manual. The swell effects are momentary by default, but this can be changed using the **LATCH** dip switch (pg. 34).

D **VISUAL ASSIST**

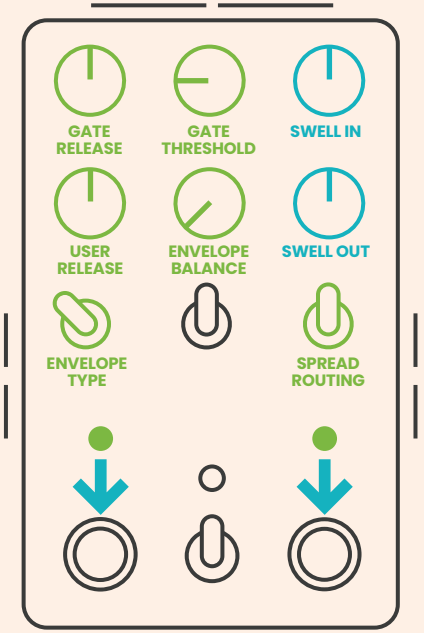
The left LED is a helpful guide for dialing in your settings and knowing what Clean is doing.

RED LED Shows you how much compression is being applied (the brighter the LED, the more compression).

GREEN LED Indicates you are in a Swell Mode and tracks the rising and falling of swells.

Hidden Options

Hold down both footswitches to access the Hidden Options. Both LEDs will light up green.



(Above settings are the default for all Hidden Options.)

SWELL IN
Sets how long it takes to reach full volume when Swell is engaged (pg. 30).

SWELL OUT
Sets how long it takes to return to silence when Swell is engaged (pg. 30).

GATE THRESHOLD
Sets the threshold for Clean's noise gate. Any input audio quieter than this threshold will be muted. The gate is activated by the **NOISE GATE** dip switch (pg. 35).

GATE RELEASE
Sets how quickly the Noise Gate will re-engage once you go below the threshold (pg. 35).

USER RELEASE
Allows you to set a custom value for the middle **RELEASE** position. The default setting is 650ms.

Hidden Options Continued

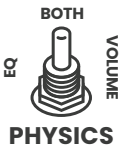
ENVELOPE TYPE

Selects which type of envelope follower Clean uses.

ANALOG A typical envelope follower that matches the exact settings of the **ATTACK** and **RELEASE** controls.

ADAPTIVE A reactive envelope follower that dynamically adjusts the attack and release settings depending on the loudness of your playing. The **ATTACK** and **RELEASE** controls select the slowest possible speed, and the Adaptive envelope will adjust within that range depending on how you play. Adaptive is good at staying out of the way and helps faster playing maintain its energy, but it's not quite as smooth and even as Analog.

COMBO Uses Analog **ATTACK** and Adaptive **RELEASE**. A best-of-both approach that gives you the responsiveness of Adaptive with the accuracy of Analog.



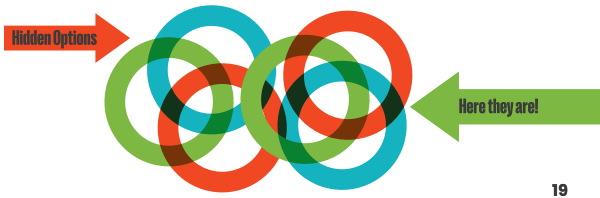
SPREAD ROUTING

Lets you independently assign **SPREAD** to the EQ or volume-based effects (compressor and swell). This might be helpful if you want identical compression on both channels, but stereo movement from the EQ (pg. 34).

ENVELOPE BALANCE

Lets you filter out low frequencies from the audio being used to control Clean's dynamic response. You can use this to make Clean more sensitive to the upper register of your instrument, or to go even further and ignore bass sounds (e.g. a kick drum) while still responding to higher frequency sounds (e.g. a snare drum). This affects both the internal envelope follower, as well as the sidechain input. (Note that this only filters control signals, you will not hear audible filtering.)

RESET - To reset all the Hidden Options to their default setting, flip the preset toggle to the left position and back to center three times. Once you see the blinking lights, press both footswitches to confirm.



Compression 101

Let's talk a bit about the essentials and how they work on Clean.

A compressor's job is simple:
If you make a sound that's "too loud" the compressor will turn itself on, catch that sound, and make it quieter before it escapes the pedal.

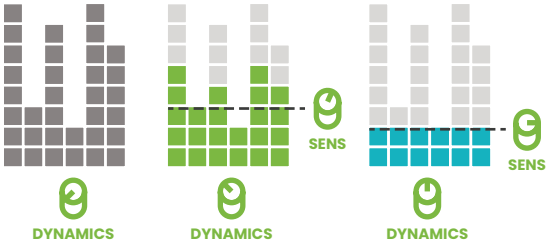
SENSITIVITY controls what "too loud" is.

DYNAMICS controls how much quieter to make it.

ATTACK controls how quickly the compressor turns on.

RELEASE controls how quickly it turns back off.

The result is an overall smoothing effect – instead of deep valleys and peaks you have rolling hills, or flat plains if you want to get really smooshed.



The **WET** level is important because the more compression you apply, the more you will need to boost to compensate.

Everything revolves around the interaction of these knobs. Is nothing happening? You probably need to turn up **SENSITIVITY**. Are things too smooshed? Turn down **DYNAMICS**.

You'll find a few classic compression settings on the following spread, then we'll dive into the more adventurous stuff.

Compression Ideas

TRANSPARENT ENHANCER

DYNAMICS ATTACK RELEASE

This setting will give you subtle compression (2:1) that thickens, focuses, and extends your sound. The slower **ATTACK** setting means your pick attack is uncompressed, preserving the energy of your instrument and preventing it from slipping into the background.

Suggested usage: Lead lines or a versatile all-around starter.

TIGHT & LIVELY

DYNAMICS ATTACK RELEASE

Here we're applying a medium amount of compression (4:1), with a swift attack and release. The result is responsive and balanced smoothing. It absorbs everything except the first bit of your pick attack, but releases quickly to avoid an overly squished and static feeling.

Suggested usage: Chords or fast and dense playing (e.g. funk)

PARALLEL POP

DRY WET SENSITIVITY

DYNAMICS ATTACK RELEASE

Using the **DRY** knob is a good way to have it all. It lets you create extreme settings that bring out the details and heap on the sustain, and then blend the uncompressed sound back in to restore its character and dynamics. The result is a big, punchy sound that allows for plenty of experimentation.

Suggested usage: Bass, drums, or thickening an instrument or mix.

The ideal **SENSITIVITY** setting will be different for every instrument and set of hands. Keep an eye on the left LED as you explore these settings and adjust **SENSITIVITY** if you're seeing too much or too little action.

Dynamics

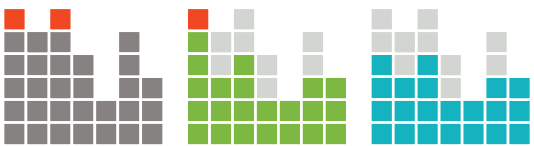
Now let's get into what makes Clean's compression unique, and the power of the **DYNAMICS** knob.

Each of Clean's stereo channels is actually two compressors run in series.

Stage One is a shape-shifting compressor.

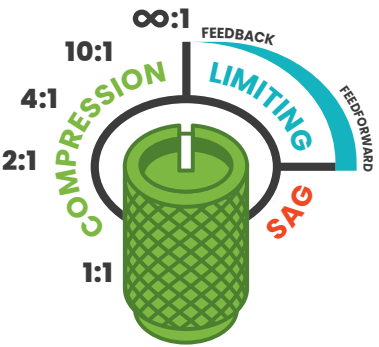
Stage Two is a variable limiter.

Two-stage compression is a popular studio trick for creating the most musical compression possible. The first stage can be more flexible and relaxed because the second stage will catch anything that slips through.



Stage One

This is Clean's primary compressor and it can do a lot. As you move through the sweep it evolves in a variety of ways to give you versatile but intuitive compression.



COMPRESSION

Throughout the first half of the knob's sweep you will find classic compression that gradually increases in strength. The lower parts of this range will net you subtle and transparent compression, while things will start to clamp down as you get closer to noon.

Dynamics Continued

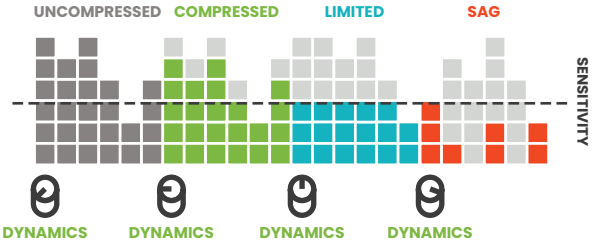
LIMITING
At noon you enter into hard limiting. This means that the **SENSITIVITY** knob sets the maximum possible loudness – anything louder will be completely squished.

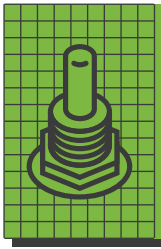
What's unique about this portion of the sweep is that you gradually begin to blend in feedforward limiting as you push further. Feedback is the more common and transparent style of compression, which is why it's used for the first half of the **DYNAMICS** knob. But feedforward has benefits when it comes to limiting.

Feedback - Natural, smooth, relaxed
Feedforward - Precise, snappy, aggressive

The limiting gets progressively tighter and faster until feedforward eventually takes over completely.

SAG
As you push into the last bit of the **DYNAMICS** knob's range you go beyond compression into a state that simulates an overloaded tube. Your signal falls out, falters, and sputters as you play harder.





PHYSICAL EDUCATION
To go further into disrepair, you can experiment with Clean's **PHYSICS** toggle. It models the physical response of a spring to interfere with the envelope's ability to follow you accurately, creating organic wobbles and bursts of motion.

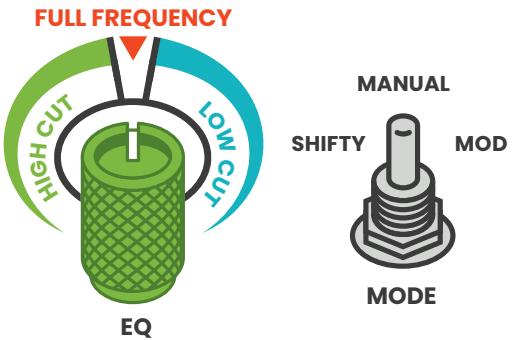
Stage Two

Clean's second stage is a more straightforward hard limiter. You can think of it as an "automatic limiter" in the sense that you never have to worry about controlling it directly. It simply reads the settings of the primary compressor and follows behind, catching any transients or peaks that get by the first stage.

EQ

Clean includes a dynamic EQ that reacts to your playing. It has three modes that each offer their own way of sculpting sound, introducing motion, and generating stereo nuance.

The EQ knob is a two-way control that adjusts either lows or highs. Each mode explores this in its own way.



In all modes, setting the knob to noon will deactivate the EQ.

MANUAL

A classic, fixed EQ. Rotating clockwise removes lows, rotating counter-clockwise removes highs.

MODULATED

An EQ that modulates when you play. The **EQ** knob selects the center point that will be modulated around, and the **ATTACK** knob sets the speed. The motion will smoothly fade away when you stop playing.

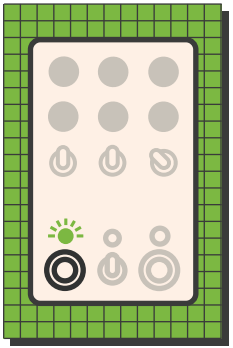
SHIFTY

An EQ that shifts when you play. Whenever your input signal passes the **SENSITIVITY** threshold the EQ will move away from the setting of the EQ knob and towards full frequency. When you stop playing it will shift back to the knob setting. The speed of the sweep is set by the **ATTACK** and **RELEASE** controls.

Each EQ mode has its own unique way of creating stereo movement when the **SPREAD** dip switch is turned on. Manual mode creates bursts of flickering panning, Modulated mode auto-pans from side to side, and Shifty introduces smooth, dynamic panning.

Swell

Clean gives you a couple different ways to access a softer world.

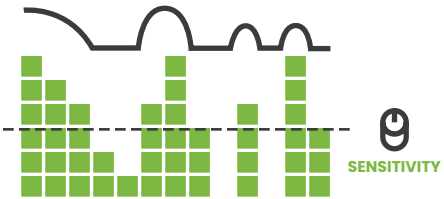


Swells are engaged by the AUX footswitch.

The footswitch is momentary by default, but that can be changed with the **LATCH** dip switch. You will know Swell is engaged when the left LED is green.

The default mode is Dynamic Swell.

In this state your signal will swell in whenever you play something louder than the **SENSITIVITY** threshold and swell back out once your playing goes under the threshold again.



There is also a second kind of swell that can be activated by the **SWELL AUX** dip switch.

The alternate mode is Manual Swell.

In this state you will only experience a swell when you press the **AUX** footswitch. Holding the footswitch down mutes your signal, releasing it swells back to full volume. You can also simply tap once to trigger an instant swell.

In both modes the speed of the swells are set by hidden options. Hold both footswitches down and use **WET** to adjust the swell in speed, and **DRY** for the swell out speed (specifics on pg. 17).

Tinker with different SENSITIVITY settings and speeds to uncover a variety of smooth and synthy textures.

BLIPS

SWELL IN **SWELL OUT** **AUX**

Slow swells are nice and all, but faster swells have a distinct and equally useful character. Set both **SWELL IN** and **SWELL OUT** to their fastest speed to turn your playing into short muted blips with a soft but percussive character.

Dusty

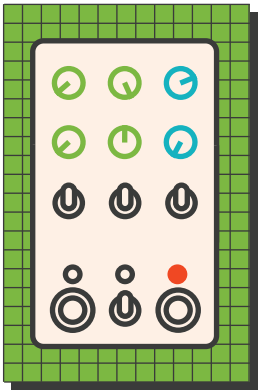
Dusty mode is a hidden bonus that lets you enjoy Clean's not-so-clean side. Flick the **DUSTY** dip switch to turn it on.

Clean's limiter typically hangs in the background, working as a final stage to smooth everything out. Dusty mode instead sets the limiter loose, turning it into a tactile overdrive with soft edges and a crumbly decay.

It's a unique and quirky state, so let's get comfortable with it.

Start here to just give it a nice listen.

This should give you a good sense for how dusty things can get.



Clean's limiter is actually a clipping circuit with a wide range, variable threshold. This means you can set the threshold so low that it starts to rip into your sound and distort it, and that's what Dusty mode lets you do. **SENSITIVITY** sets that threshold and works loosely as an "amount" control.

It's helpful to see how the circuit flows.

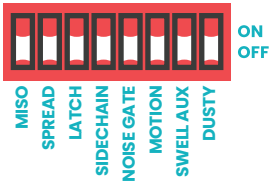
Notice how everything is before the limiter. Anything you change on the pedal will influence the distortion in some way.

Turning up **DYNAMICS**, for example, will reduce the distortion because it compresses your audio. But this can be interesting: Crank **DYNAMICS**, boost **WET** to compensate, and then roll back **SENSITIVITY**. You will be greeted by blooming overdrive that sputters and breaks when you dig in.

Your dry signal will be dusty as well; just turn up the **DRY** knob and the dust will begin to emerge.

It's a strange, *powerful*, and unclean mode. Poke around and see what you find.

Customize



The blue-labeled dip switches on top of Clean allow you to engage alternate behaviors and set things to your liking.

MISO
Mono In, Stereo Out. Splits a mono input signal into a stereo output signal.

SPREAD
Engages stereo processing. The EQ, compressor, and swells each have their own distinct type of stereo motion. **SPREAD** also makes the dynamic response of the left and right channels independent, so that each side experiences its own unique compression and envelope response.

LATCH
Changes the hold function for each footswitch from momentary to latching, so that it will remain engaged until the footswitch is held again.

SIDECHAIN
Allows you to use an external audio signal to trigger the compression, useful for syncing to drums and other instruments. When engaged, the compressor will follow the signal plugged into the 1/8" **SIDECHAIN** input on the side of the pedal instead of the input audio.

NOISE GATE
Activates a noise gate that will mute the input when you're not playing. This allows you to filter out hum and other noise that gets amplified through the compression process. A hidden option under the **SENSITIVITY** knob sets the gate's threshold, and another under the **DYNAMICS** knob sets its release time (pg. 17)

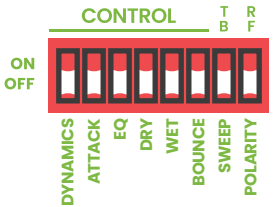
MOTION
Engages a special "motion mode" that modulates the amount of compression being applied. The **DYNAMICS** knob will set the depth of the modulation, and the **ATTACK** knob will set the rate. The motion will only occur while you are playing and gently fade out when your input signal goes below the sensitivity threshold.

SWELL AUX
Changes the function of the **AUX** footswitch to allow for manual swells. In this state, Clean will trigger a single swell whenever the **AUX** footswitch is pressed. This makes it possible to create precise, tempo-synced swells. Holding the AUX footswitch in this state will mute your signal, swelling back in upon release. More on pg. 31.

DUSTY
Transforms the limiter inside of Clean into a distinct form of crumbly overdrive. The limiter is at the very end of Clean's signal chain and affects both the wet and dry signals. More on pg. 32.

The dip switch settings are saved with your presets.

Ramping



Ramping gives you the ability to automate Clean's knobs, either as a one-time movement (ramp) or continuous motion (bounce).

It's easier to get started with Bounce, so let's do that. We're essentially going to modulate a knob.

1. Engage Bounce.

2. Choose which knob(s) you wish to control.

3. Choose the sweep.

4. Set the speed.

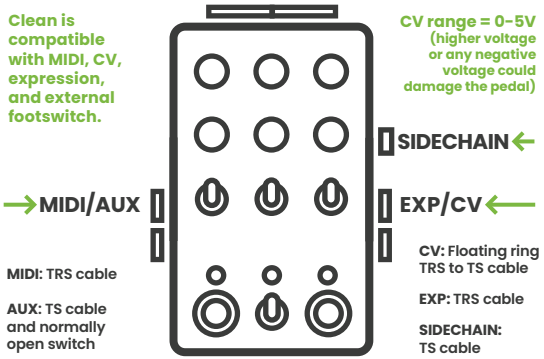
Now your dry signal will modulate in volume like a tremolo. The position of the knob you're controlling is important, because it either sets the maximum or minimum point of the range (depending on the **SWEEP** setting).

Ramp is the same idea, but the movement only happens once when you turn the pedal on. Your chosen knob(s) either rise or fall to the position set by the knob, then stay there. Useful for creating a wave of motion and activity when you first turn Clean on.

Check out the Dip Switches 101 document on our website for a step-by-step on ramping.

Ramping is engaged as soon as the dip switch for a corresponding knob is set to **ON**. At this point, the **SENSITIVITY** knob automatically changes to control the ramp speed. You can still adjust **SENSITIVITY** while ramping by holding down the left footswitch as you move the knob.

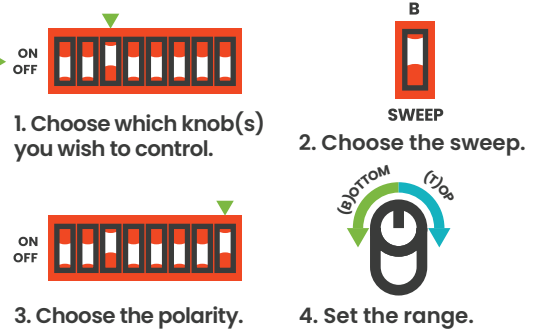
External Control



CV and expression can be used to control Clean's knobs.

MIDI lets you go deeper and control everything, including the Hidden Options and the dip switches.

CV and expression are set up the same way as ramping using the dip switches on the top of the pedal. The pedal will simply detect a CV or expression signal when you plug it in and hand over control.

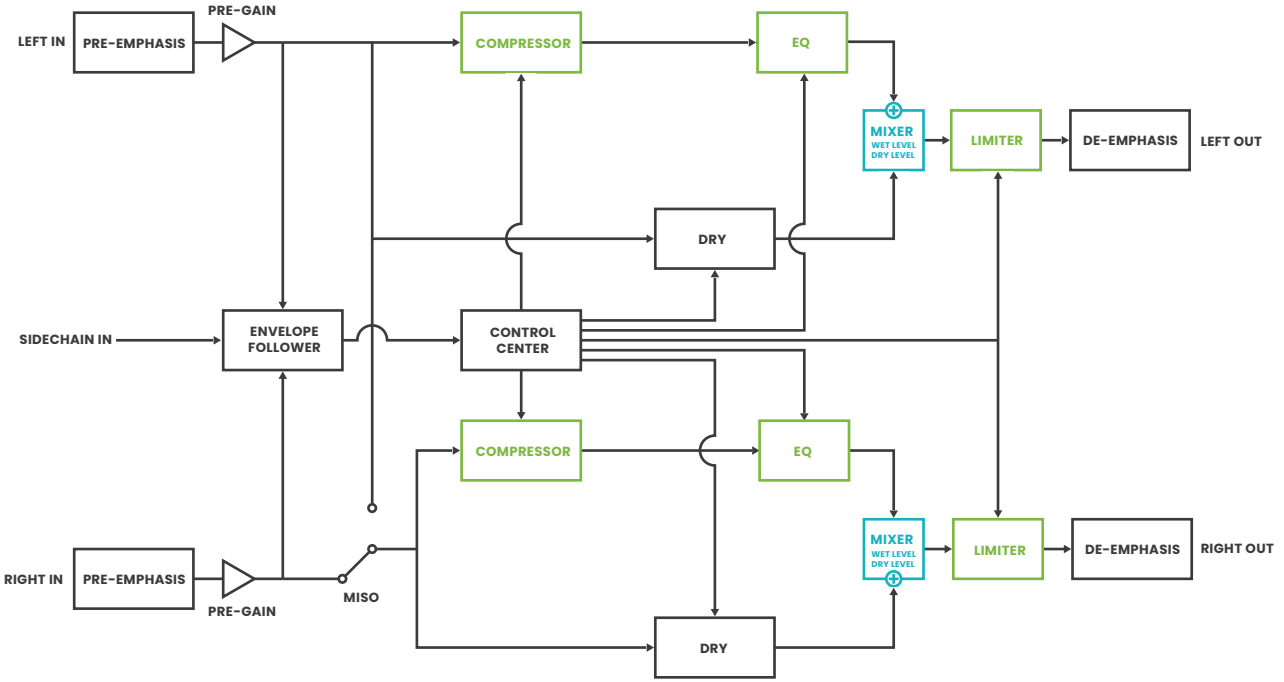


If you plug in a CV or expression signal but engage none of the knobs, you will have control over **SENSITIVITY.**

MIDI requires a Chase Bliss MIDIbox to convert the signal to a ¼" TRS jack. For details on getting MIDI going with Clean, check out the MIDI manual.

The MIDI jack can also be used to control the **AUX** footswitch with an external pedal. Plug in any normally-open momentary footswitch using a TS cable and you're all set, it takes control automatically.

Signal Flow


LEFT IN
PRE-EMPHASIS
PRE-GAIN
COMPRESSOR
EQ
MIXER
WET LEVEL
DRY LEVEL
LIMITER
DE-EMPHASIS
LEFT OUT
DRY
SIDECHAIN IN
ENVELOPE FOLLOWER
CONTROL CENTER
COMPRESSOR
EQ
MIXER
WET LEVEL
DRY LEVEL
LIMITER
DE-EMPHASIS
RIGHT OUT
RIGHT IN
PRE-EMPHASIS
PRE-GAIN
MISO
DRY


Output Level (dB)
Fig.2
Fig.1
1:1
2:1
4:1
∞:1
Input Level (dB)
Fig.3
SO LONG!
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and you are
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Write us here any time
if you have any questions:
help@chasebliss.com
We're happy to help.
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