WELCOME

Greetings! Congratulations on the purchase of the latest version of the MI Audio Super Crunch Box. Version 2 has been a long time coming, and is the latest iteration of the original Crunch Box which was released in 2005. Since that time, the Crunch Box and Super Crunch Box have gone on to be some of the most recognised and popular of 'boutique'[1] pedals on the market, with well over 30,000 units in circulation. The latest iteration takes things up a notch, not only delivering the sought after tones of the original, but also adding a radically different 3rd lower gain mode, a fully active 3 band EQ for surgical tonal precision, higher headroom operation, and a more robust output section for more authentic tonal 'transfer' regardless of what comes after the pedal. These new features mean that all of the original goodness is still there, but now with the option of being a much more 'precise' shaper of tone, and with the ability to 'play well' with a wider range of guitars and amps.

FEATURES AND CONTROLS

GAIN

Adjusts the amount of overdrive. The actual amount of drive in your signal will also be dependant on the settings of the **CLIP** and **MODE** switches.

VOL.

Output volume control. The actual output volume is also dependant on the setting of the **CLIP** switch.

CLIP

This is the 3 position switch closest to the top of the pedal, and is used for choosing different clipping elements in the final gain stage in order to produce different tones. Going from left to right, the modes are:

1. (Left) Standard – This is the original Crunch Box. This is my go-to tone. It has a nice sizzle in the note detail, and produces a pleasing 'complexity' to the note decay, capturing a nice valve-amp like character.
2. (middle) Open – This is the least distorted setting, and produces a lot of punch. It's great for more classic rock tones, and also for producing a crazy amount of output volume is you want to push the front end of your amp really hard. In fact, with the newly redesigned power supply section, the new Super Crunch Box can produce signals with the same amplitude as my Boost 'n' Buff pedal, which is one of the 'loudest' boost pedals available today.
3. (right) Compressed – This is the most 'distorted' setting. However, it has a very different character to the Standard mode. It's smoother with a much more controlled decay and rounded tone, despite the increase in harmonic content. Also, due to the nature of the clipping devices, it is also reduces the output volume, so be sure to compensate for this with the **VOL.** control.

One of the great things about the Super Crunch Box is that you can produce the same levels of distortion and harmonic content in different ways. For example, you can run the **GAIN** in its midrange in the 1st **CLIP** mode (left), higher in the 2nd **CLIP** mode (middle) or lower in the 3rd **CLIP** mode (right) to produce roughly the same amount of distortion. However, the character and response of each of these will be different, opening up a wide tonal palette with which to create your art. There's no right or wrong answer here. Use your ear to unlock your musical voice.

MODE

This is the second switch, and is used to access three different levels of gain. The important things is that these three levels of gain aren't simply about reducing/increasing the gain, but most importantly about shaping the frequency of the response of the Super Crunch Box *before AND during* the distortion generation process in order to affect the feel and character of your guitar and the tone produced. I will now take some time to discuss the characteristics of each of these gain modes, from left to right:

1. (Left) Low Gain – This is a brand new mode. It has a radically different approach to the frequency shaping pre-distortion, namely emphasising the higher end of the spectrum all the way to end of the audio range.

[1] whatever that means!

This gives this mode incredible bite, and makes it a remarkable addition to the classic Crunch Box sounds, helping single-coils cut through without loosing their inherent character.

2. (Middle) High Gain – This is the original Crunch Box sound. It's very high gain, very saturated, with a noticeable mid-range focus, placing the 'power' of the signal right where it needs to be for an awesome rock sound.
3. (Right) Mid Gain– This is same as a 'low' gain mode on V1 of the Super Crunch Box. Compared to the High Gain (Middle position) mode, there is less top end roll off and less of a mid-range hump. There's still plenty of gain here, so this is the best mode if you want to retain a similar tone to the original Crunch Box, but with better performance when rolling back your guitar volume.

Low Gain Mode in Depth

I would like to explain my reason for including this new mode. Let me preface this by saying that there is a certain charm to the original Crunch Box, a particular single-mindedness to its approach, namely to take whatever input signal you put into it, and to turn it into pure rock. But this does have its draw-backs. The main one for me was that it made single-coils sound like 'weak humbuckers'. I realised that the reason for this was the way the frequency response was shaped. You see, one 'scientific' way of approaching the character of individual pickups is to look at the overtones produced for a given input signal. All things being equal, the higher overtones are where pickups 'signature' presence can be seen. Of course, humbuckers tend to have less going on at the top end compared to single-coils, so the original mid-focus of the Crunch Box was just fine for them. However, for lower output pickups, or single coils with more top end detail, the filtering out of their 'sweat frequencies' effectively neutralised their unique characteristics.

The Mid gain mode went some way to counteracting this. However, I wanted to experiment by going even further, and having a frequency response which not just let the high frequencies through, but in fact emphasised them. The resultant tone is unlike anything else I've ever made, and I hope you find it as unique and useful as I do. The extra top end emphasis produces a wonderful bite, and a clarity which is quite addictive. With lower gain settings, the tone is effectively clean. As the gain goes up, the clean character remains, but when you dig in, overtones jump out. With the gain all the way up and the **CLIP** switch set to left or right, you get a great, dynamic overdrive sound, which is super sensitive to cleaning up with the guitar volume.

The magic of this mode could only be unlocked because of the inclusion of the new EQ section. If I want to create the same 'balance' in the lowest gain mode compared to the higher modes, I find that I need to turn up the **LOW** and **MID** controls up a touch, and turn down the **HI**. Just a little hint!

PRES.

This is a renamed version of the original **TONE** control on the Super Crunch Box and Crunch Box. Apologies for the naming confusion,… I just didn't know what to call it given the addition of the tone controls! However, its function remains the same, namely a rolling off of the top end of pedal. The reason I chose this *high cut* control wasn't so much about the tone of the Crunch Box, but rather because of the way that typical clean channels on guitar amplifiers work.

A typical clean channel on a guitar amplifier has a relatively flat frequency response over the 'useable' guitar range from about 80Hz to 20KHz. There are however two sections in the preamp which introduce a non-flat dimension to the sound, namely the pass EQ tone stack, and the 'bright capacitor' across the gain pot. The tone stack is self-explanatory, but it's interesting to note that the typical design actually has a mid frequency dip. (as an aside, to get closest to a flat frequency response, you need to turn the bass and treble all the way down, and the midrange all the way up,… but you need not worry about this).

The bright capacitor usually introduces a significant boost in the higher frequencies. Initially, engineers added these caps in order to counteract a drop in the high end due to the Miller capacitance at the input of a typical tube stage which comes after the gain/volume control. Eventually the values of these capacitors increased by design as guitarists gravitated towards tones with more sparkle. The problem for me as a pedal designer is that I have no idea if your amp has a bright capacitor, what value it is, and how much boost in the top end it introduces, since this

is dependent on your preferred setting of the volume/gain control. So by having a variable control to shave off top end, you can set the clean channel up any way you like, and then 'neutralise' effect of the bright capacitor. Without this control, depending on your amp and settings, any distorted signal going in may sound shrill and harsh. Note: If your amp doesn't have a bright cap (a naturally 'dark' clean channel), you can run the **PRES**. control all the way up.

To set this control to work with your preferred clean sound, I suggest setting up the Gain, Volume and switches to their desired setting. Set the EQ on the pedal flat, then adjust the **PRES.** control so that the top end detail is where you like it. If you're using a multichannel amp, and you're going to use the overdrive channel of the amp as a different type of drive, perhaps use the tone of the overdrive channel on the amp as a 'reference' for where you need to set the **PRES.** control.

EQ

The EQ section, comprising of **LOW, MID** and **HI** is a specially designed *active* EQ stage. I had a few reasons to add the EQ to the Super Crunch Box. Firstly, as I mentioned above, the new Low Gain mode needed a more flexible EQ to 'balance' the other modes. Secondly, whilst most people were happy with the natural response of the Super Crunch Box, some found that the simple presence and tone controls were too limiting. Besides, I received a few different requests for further EQ shaping, the most common being more low end, less mids, and in some cases, more mids! As you can see it wasn't possible to come up with a simple solution to please everyone.

Next was the choice of EQ. The simplest solution is a passive EQ network. This is both easy to implement, and has the advantage of being 'familiar' to most guitarists. The drawbacks though are a relatively limited range (typically ±5db at best), not to mention the natural mid-scoop mentioned above, which goes counter to the Super Crunch Box ethos. This made me turn my attention to active EQs. But Active EQs get such a bad rap! Looking at the standard implementation quickly reveals why. Most of the 'datasheet' active EQs are designed for Hi Fi applications. Many guitar pedals which implement these EQs simply lift the design and values direct from datasheets. This creates an EQ where the lows are voiced too low and add flub instead of bass, the mids are voiced too high (closer to a guitarist's idea of 'high mid'), and the treble's way too high, adding harshness and buzz.

In order to get around these issues, I designed a 3 stage active EQ where the EQ frequencies are based on Plexi/JCM800 frequencies. This give you the best of both world, namely the power of an active EQ with the familiar frequency ranges of the most beloved British amps' tone-stack. The range for each control, by the way, is ±12db. I found this powerful enough for virtually any application, but not so wide that the slightest touch of any of the controls throws your tonal balance off. FYI, my original design was ±20db. It was pretty nuts,… and very difficult to use! Finally, note that the independent EQ stages mean that the EQ bands are very isolated. So, for example, you can adjust the mids without worrying about the lows and highs being affected. This give you 'surgical precision' over your tone.

One of the great advantages of having such a powerful EQ is it allows you to use the Super Crunch Box as a very powerful booster into the front of an overdriven amplifier. By running the Super Crunch Box relatively clean with the **CLIP** switch in the middle, you can then push different frequencies by using the EQ. For example, you can fuzz up an overdriven amp by running the **LOW** all the way up, with the **MID** turned down. Alternatively, you can use the pedal like a mid-boost by doing the opposite. The options are endless!

Finally a note about headroom. The incredibly high headroom power supply built into the Super Crunch Box, coupled with a careful topology means that you never get unwanted distortion or compression as a result of EQ settings. If you do experience this, chances are that this is in fact your amplifier's front end which is being pushed too hard. If you experience this, try reducing the volume of the Super Crunch Box, or adjusting the EQ for a less 'radical' EQ setting. This is particularly the case for the lower frequencies.

HOW TO SET UP THE SUPER CRUNCH BOX

1. Set presence and all EQ to 12 O'clock.
2. Set the gain, mode, clip and volume to the desired settings.
3. Adjust the presence control to get the right amount of top end 'sizzle' in your sound.
4. Adjust the EQ for the desired tone.

Just remember: You can get the same 'amount' of distortion using different settings. Experiment with all the possibilities to find what works best for you, based on your tonal preference, how you like the pedal to respond to changes in guitar volume etc.

POWERING THE PEDAL
PLEASE READ CAREFULLY!!!

THE SUPER CRUNCH BOX PEDAL RUNS OFF 9V ONLY. REPEAT. ONLY USE A 9V BATTERY OR 9V DC POWER ADAPTOR.

The Super Crunch Box is designed for 9v, and will not run better at higher voltages (for technical reasons). In fact you can cause damage to the circuit if a higher voltage is applied.

The 9 volt DC port (which accepts a standard barrel jack with a Negative centre pin.) or 9V battery may be used. If using battery to power the Super Crunch Box, and the pedal begins to sound different, please monitor the voltage of the battery with a multimeter and/or replace the battery with a new one. The current draw of the Super Crunch Box is about 20mA.

If using a battery, the pedal is powered when a plug is inserted into the input jack. So when not in use, disconnect the input plug to maximise battery life.

To access the battery, unscrew the 4 screws at the bottom of the pedal and remove the bottom plate.

REGISTRATION AND WARRANTY

To register your pedal, you can email your name, contact details, purchase date, and retailer details to: register@miaudio.com

Alternatively, you can send the above information to the postal address on the front of this manual. PLEASE REGISTER YOUR PEDAL. In the long run, it will be difficult to have your pedal serviced if you need to if the pedal is not registered.

This pedal carries a 5 year warranty that covers all repairs due to manufacturer error. It does not cover any damage due to user mishandling, shipping, acts of God, and abuse. The owner should contact MI Audio directly for all repairs, and any work done by anyone other than MI Audio voids the warranty. All shipping costs are the responsibility of the owner, and are to be paid in advance of any work performed on the pedal. The owner may be asked to provide a copy of the sales receipt for verification.

DISCLAIMER

The owner or user assumes responsibility for death, injury and/or damages relating to the operation of this device. MI Audio assumes no responsibility for death, injury or damages relating from the operation of this device. I am always thinking of ways to improve things, so all specifications are subject to change without notice.

THANK YOU!

Thanks for your patience with this manual, which has turned into a small thesis. You did it! Pat yourself on the back! But on a more serious note, I hope that you can see how much effort I put into my craft. I wanted to make sure that I communicated to you as accurately as possible the intricacies of my design, and the rationale behind it, so that you could get the most out of Super Crunch Box.