UTA

UnderToneAudio

UTEQ500 User Manual Version 1.0

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1. INTRODUCTION

Congratulations! You are the proud owner of the UTEQ500: one of the most powerful and musical equalizers ever stuffed into the 500 series format. The UTEQ500 packs a huge amount of power into a single 500 series module. Whether you are tracking or mixing, we are confident you will find the UTEQ500 to be an indispensable tool in the music making process.

To get up and running right away with your UTEQ500, skip to Chapters 2 (Racking), and 3 (Front Panel Controls). The rest of the manual contains more detailed information that is not essential for understanding the units basic functionality.

The story of the UTEQ500 goes all the way back to the building a custom console. The Equalizer was the single most important element of the design. I needed an EQ that would do everything all of my other EQs did. It needed to have the musicality of a classic Neve or EMI but the flexibility of a GML or Orban. Larry Jasper and I worked for years refining the design that ended up in the consoles and is now, in part, available in the UTEQ500. While we couldn't physically fit all of the bands and filters that were on the original console EQ into the 500 series package, we distilled it down to the most powerful and essential elements.

What's so special about the EQ? The EQ incorporates features that have never before been available in a hardware EQ unit. The ability to blend between peak and shelf shape EQs, as well as being able to reverse the phase of a portion of the frequency spectrum, are features that just simply have not been available before.

The features took years of experimentation to develop. The first version of the EQ became unstable with certain combinations of settings. It would literally turn into a synthesizer and blast +28 dB of a distorted square wave out the output. We thought we were sunk and that I would not be able to have the flexibility I wanted while keeping the circuit stable. Patience and persistence yielded the answer. It forced us to change to a totally different approach for tackling the subtractive EQ (when you turn down a frequency). This different approach had an unintended benefit. We realized this approach allowed us to add the "Notch" mode and the Phase manipulation mode.

The original design was simply going to have a peak mode and shelf mode. The challenge was to figure out what the character or slope of the shelf mode would be. We set up the original prototype with a trim pot to be able to adjust the slope of the shelf shape. As soon as I had a chance to play with this control, I decided it should exist on the front panel... And thus the "Shape" control was born! Each band can blend from a peak shape - to a modern shelf shape - to a vintage shelf shape - and everything in between. The UTA EQ can literally emulate the shape or slope of any shelf EQ ever created, and it can do an endless number moves that no other EQ has ever been able to do.

These significant discoveries and changes are only a few of the notable moments of endless hours experimenting, testing, and real world use that has helped refine what we feel is the best equalizer ever built.

2. INSTALLING THE MODULE IN YOUR RACK

1. Power down your 500 series rack
2. Install the module into an open space by aligning the edge connector with the corresponding connector in the back of the rack and gently pushing until it is fully seated
3. Install the top and bottom mounting screws to secure the module inplace
4. Power up the 500 series rack
5. Good to go!

AUDIO CONNECTIONS

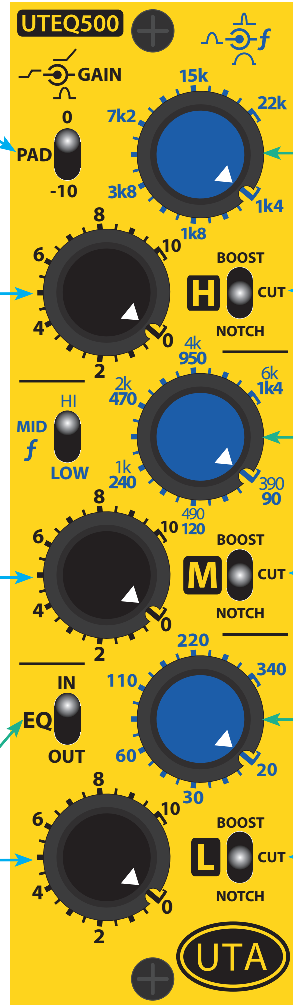
The EQ modules only have 1 input and 1 output. You will find these on the corresponding channel of the back of your 500 series rack.

3. FRONT PANEL CONTROLS

INPUT PAD- This toggle switch pads the input signal 10dB

SHAPE/GAIN - This dual concentric potentiometer controls both the amount of gain adjust and the shape of the adjustment.
UPPER KNOB controls the shape. In the fully counter-clockwise position, the EQ band will boost or cut a "peak" type shape. As the knob is turned clockwise, the shape progressively turns into a shelf.
LOWER KNOB controls the amount of gain adjust. When the B/C/N toggle switch is in the "B" or "C" modes you can boost or cut 15 dB of the selected frequency. When the B/C/N toggle switch is in the "N" position, the gain control will allow you to either notch the selected frequency or reverse the phase of the selected frequency. To notch the selected frequency, set the gain control to "5". To reverse phase of the selected frequency, set the gain control to "10".

EQ IN/OUT - This toggle switch turns on or off the entire EQ circuit. When the toggle switch is in the "Up" or "IN" position, The EQ circuit is added to the signal path. When the toggle switch is in the "Down" or " OUT" position the entire EQ circuit is bypassed.



FREQUENCY/Q CONTROL - This dual concentric potentiometer allows you to select the frequency being adjusted and the "Q" of the adjustment being made.
THE UPPER KNOB controls the "Q". In the fully counter-clockwise position, you get the widest "Q" of .3. As the knob is turned clockwise the "Q" will get more narrow. In the fully clockwise position you get the most narrow "Q" of 10.
THE LOWER KNOB controls the frequency selection. The frequency gets lower as the knob is turned counter-clockwise and conversely, will get higher as the knob is turned clockwise.

B/C/N - This three position toggle switch selects the mode for the gain adjust on an individual parametric band of the EQ.
B - In the "Up" or "B" position, the gain control for that band will boost whatever frequency/ shape is selected up to 15dB.
C - In the "Middle" or "C" position, the gain control for that band will cut whatever frequency/shape is selected as much as 15dB.
N - In the "Down" or "N" position, the gain control for that band will allow you to either notch out a frequency or reverse the phase of a particular frequency. *(For more information on the notch mode see pg. 22 in The Equalizer section)*

4. THE EQUALIZER

In this section we will take a very in depth look at the functions of the UTEQ500. If you want a quick over view of the EQ functions, see *Section 4 (Front Panel Controls)*.

There are far too many possible combinations of settings and curves that can be created by the UTEQ500 to be able to show graphs of all of them. We will only be showing graphs of settings with a frequency selection of 1.5 kHz in the High Shelf modes. The Low Shelf, or "Cut" counter parts will look like a mirror image version of what is shown in these graphs **(see pg. 7 for important new information about the mirroring of EQ shapes).**

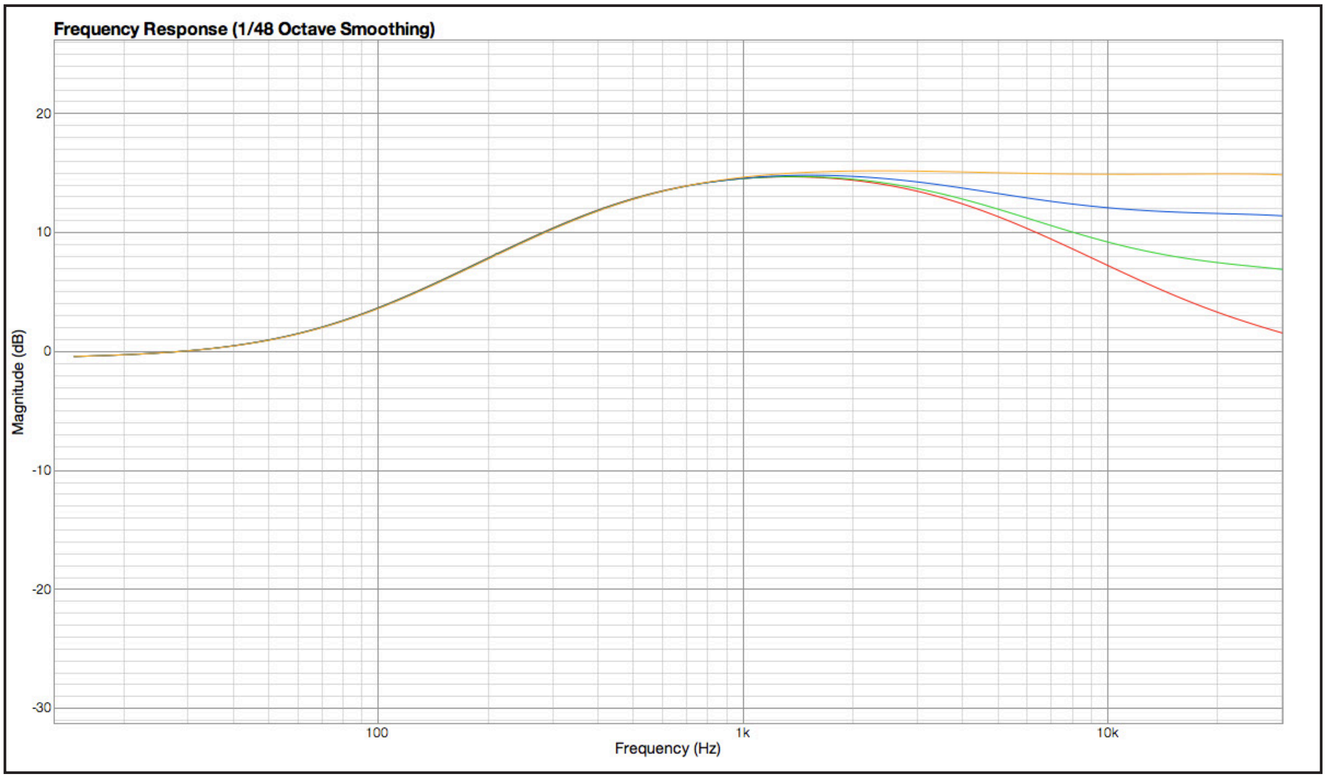
THE 3 PARAMETRIC BANDS

The 4 parametric bands have 2 configurations. The HF and HMF bands can blend between a peak shape and a "High Shelf". The LMF and LF bands can blend between a peak shape and a "Low Shelf". The bands are also broken into two parallel groups that are then in series. Each band can be set to boost, cut, notch or manipulate phase. All of these variables combined create a staggering amount of flexibility and control over the shapes and curves the equalizer is capable of generating. We will try to cover as many of these combinations as possible.

THE "SHAPE" CONTROL

The shape control is blending between a peak or bell type shape and a shelf shape. When the knob is all the way counter-clockwise, it is a peak or bell shape. As the knob is turned clockwise, it turns progressively more into a shelf shape. In Fig. 7, you see how the peak or bell shape gradually transforms into a conventional shelf shape as you turn the shape control from the fully counter-clockwise position to the 12 o'clock position. Notice the HF band graphics that will show the exact setting combinations used to create each curve.

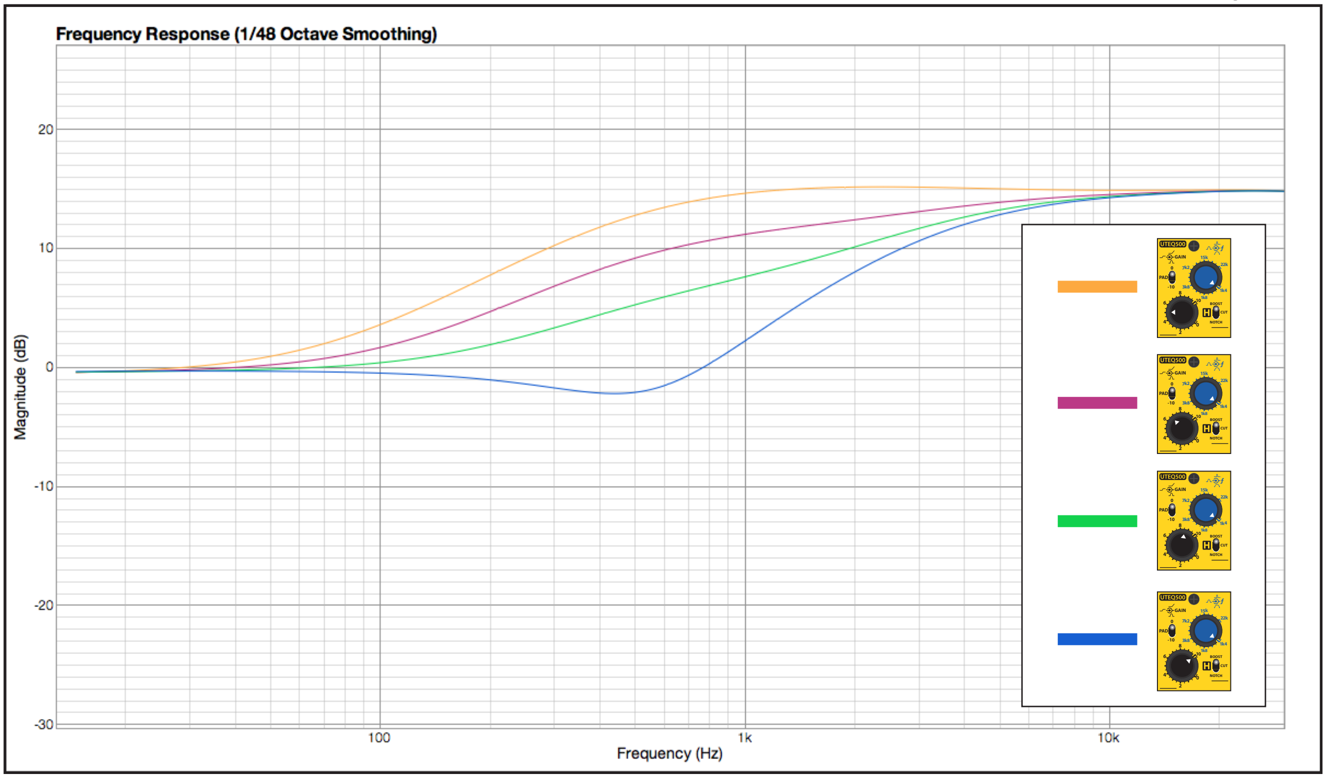
Fig. 7



The green curve is a good example of how you can open up the top end a little when you're doing a mid range boost. The yellow curve shows a conventional shelf shape where the boost starts to rise below the frequency selected, reaches its maximum amount of boost at the frequency selected and then stays up above the frequency selected.

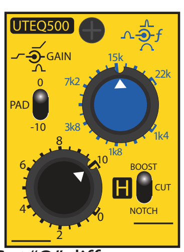
In *Fig. 8,* you can see what happens as you continue to turn the shape control past the 12 o'clock position. This is the range of the shape control where you can actually change the slope and the contour of the shelf, allowing you to emulate the curve of pretty much any analog shelf EQ ever made.

Fig. 8



The green curve is a really useful shape because of the very linear, gradual rise of the boost. This minimizes phase anomalies and sounds extraordinarily natural. Use this shape if you want a sound to be brighter without really sounding EQed. The blue curve is an example of a more "classic" type shelf shape with an under shoot and the beginning of the slope. This curve is reminiscent of those on old 80 series Neve EQs. It is also important to note that, as the shape control goes past the 12 o'clock position, the frequency range being boosted will seem to get higher. The frequency selection is not actually changing, it is just the slope of the boost emphasizing the higher frequencies.

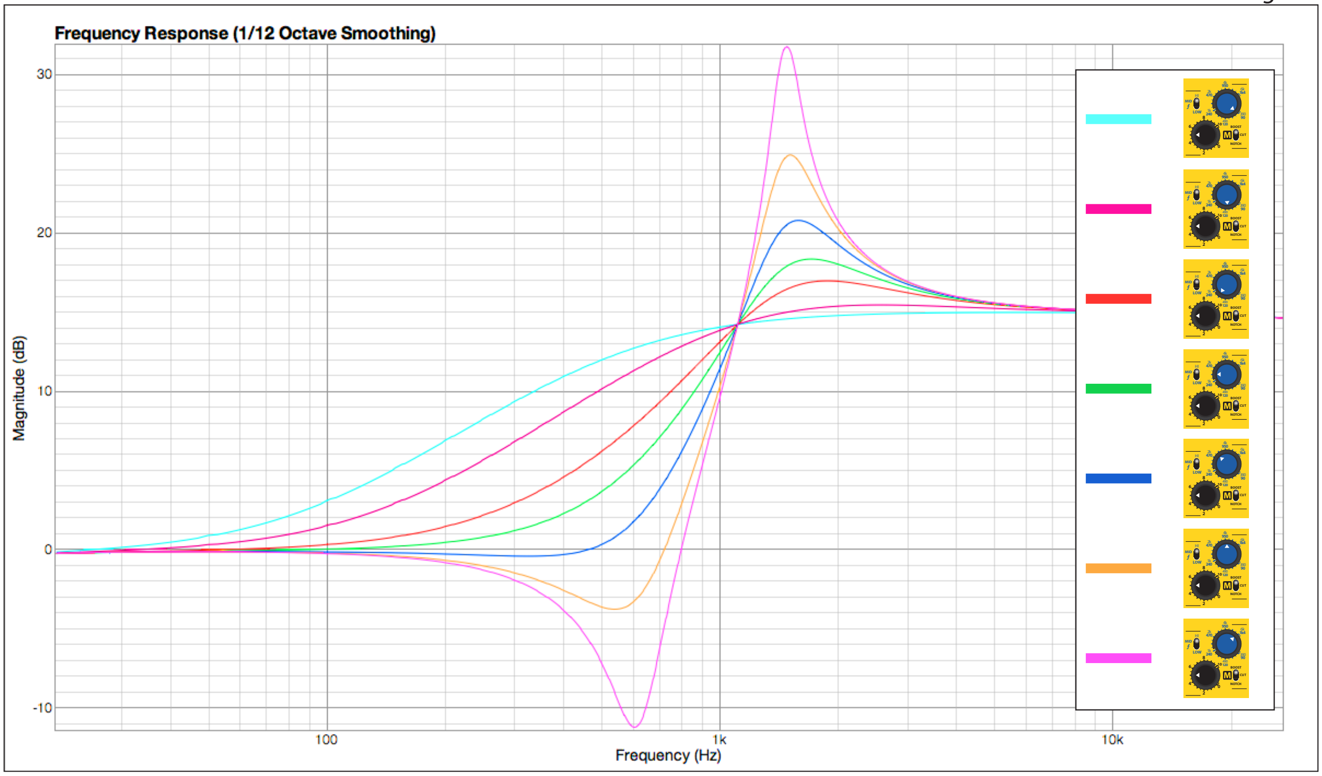
In the process of creating the presets for this manual, I discovered a behavior of the UTA EQ that I think is important for people to be aware of. Most of the shapes created with the EQ will mirror closely when switching from boost to cut, however there is an exception. When you move the shape control past the 12 o'clock position, a higher "Q" setting is needed to generate the same shape when cutting. The more the shape control is increased past the 12 o'clock position, the more you need to increase the "Q" to have the same shape when cutting. For example, to mirror the yellow plot shown above while cutting, you would leave the "Q" control fully counter clockwise. To have a mirror of the blue plot shown above, you have to increase the "Q" shown here:



Cut "Q" difference

In *Fig. 9* we will look at what happens when you start to combine the "Q" control with a shelf shape.

Fig. 9



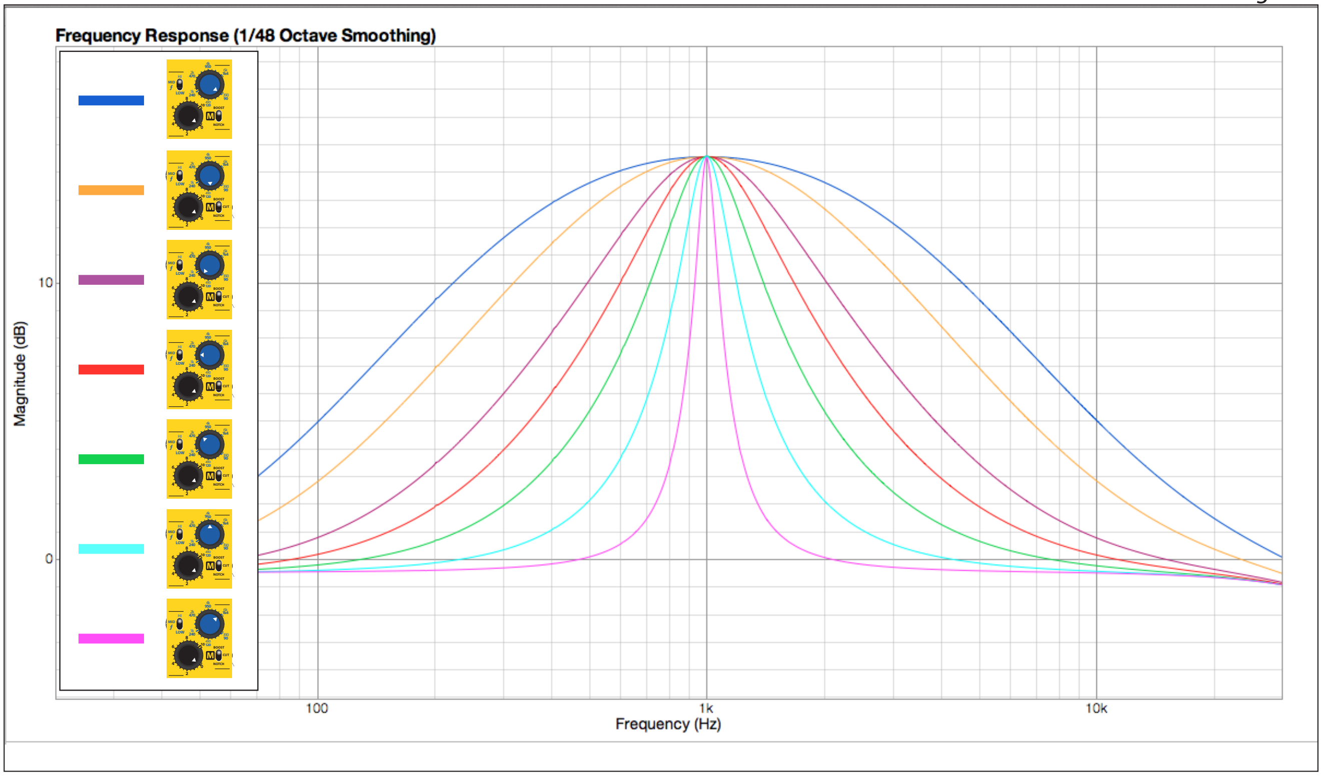
The curves in this graph show what happens when you progressively increase the Q (starting fully counter-clockwise and turning the knob clockwise) of a conventional shelf shape. You can see how a peak starts to develop on top of the initial shelf shape as the rise of the shelf gets steeper. Once you get past the 12 o'clock position, an undershoot starts to develop (an undershoot is the dip right before the rise in the curve). This combination of the shelf shape with the Q control can achieve a huge amount of boost. Notice that when the Q control is fully clockwise, there is more than 30 dB of boost happening at the selected frequency. **BE CAREFUL!!! BOOSTING 30 dB OF CERTAIN FREQUENCIES WHEN YOUR SPEAKERS ARE TURNED UP LOUD CAN RESULT IN SPEAKER AND/OR EAR DAMAGE.**

What is most useful about these combinations of shelf and Q is that you can achieve curves that would normally take 3 bands of an equalizer. Moreover, when these more complex curves are created with a single filter, there is an inherent musicality to it. It minimizes the compounding of phasing anomalies you get when creating a curve like this with multiple bands. The end result sounds more natural to the original sound.

I like using these combinations to move the energy in a sound from one area of the frequency spectrum to another in a more organic fashion. For example, if I have a bass guitar that needs to sound deeper, I can (with one band) boost frequencies below 100 Hz and simultaneously be reducing some of the frequencies just above 100 Hz. The bass just sounds deeper without really sounding EQed. In the high end frequencies, it is really great for adding a pointed ring to a shelf boost that will give the instrument a more identifiable character. This slight ringing can help it stand out from other elements in the mix.

In *Fig.10* We will look at the range of widths available by adjusting the Q control with the shape control in the peak or fully counter-clockwise position.

Fig. 10



The curves in this graph shows what happens when you have the shape control in the peak (fully counter clockwise position) while turning the Q control clockwise starting from the fully counter-clockwise position. The lowest setting achieves a very wide Q of about .3. The highest setting or fully clockwise position achieves a very narrow Q of about 10.

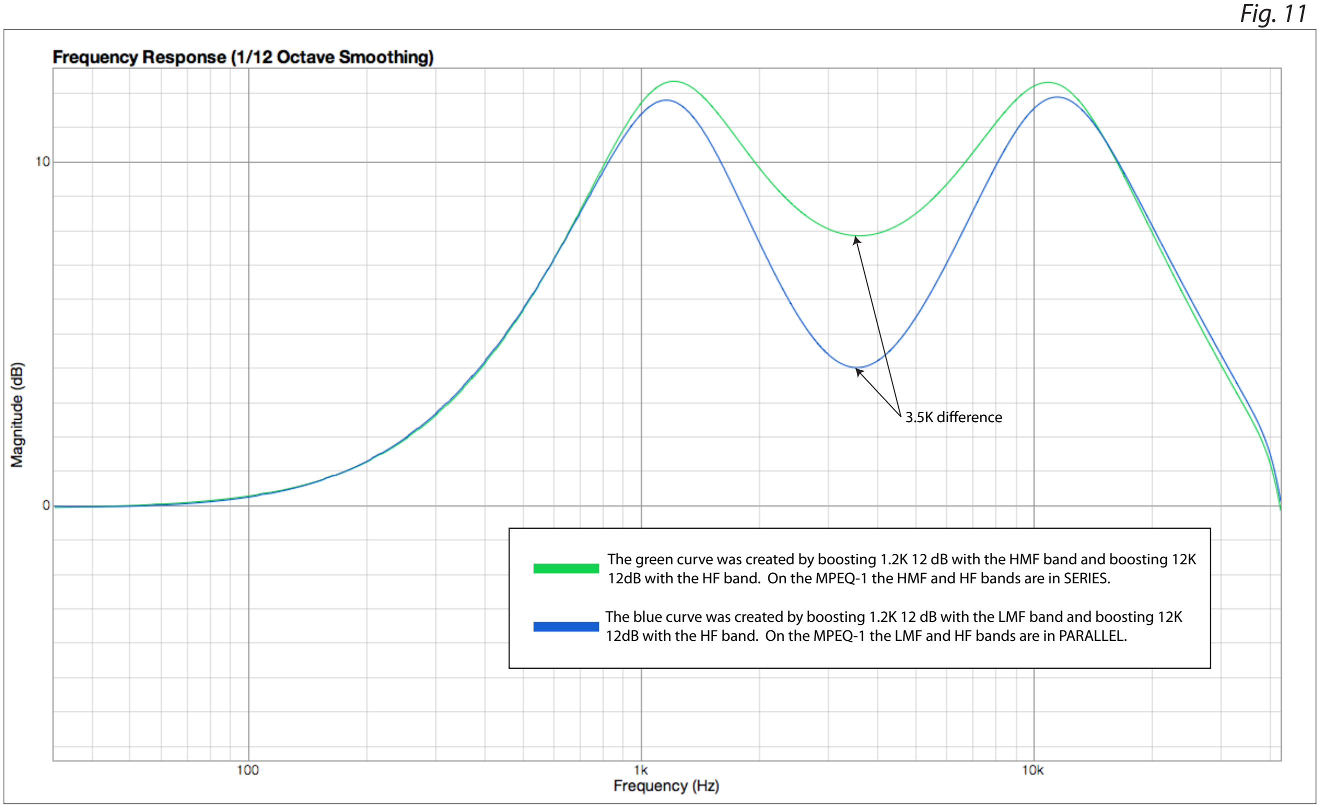
The wider settings are good for making overall tonal changes to a sound. You can boost or cut a broad section of frequencies to make a sound generally brighter or "bassier". The more narrow settings are excellent for addressing a specific frequency. If there is an offending overtone in a guitar track, you can surgically remove it without changing the overall tonal balance of the sound.

SERIES VS. PARALLEL

There are two main ways the filters in an equalizer circuit will interact - either a series type interaction or a parallel type interaction. When using multiple bands of an equalizer, the different interactions can be dramatic. Here is a list showing the interactive behavior of some familiar equalizers we measured.

SERIES	BOTH	PARALLEL
SSL (all versions) Neve 88R Orban 672 API 550A API 560	UTA NTI EQ3	GML Quad 8 Helios-ish

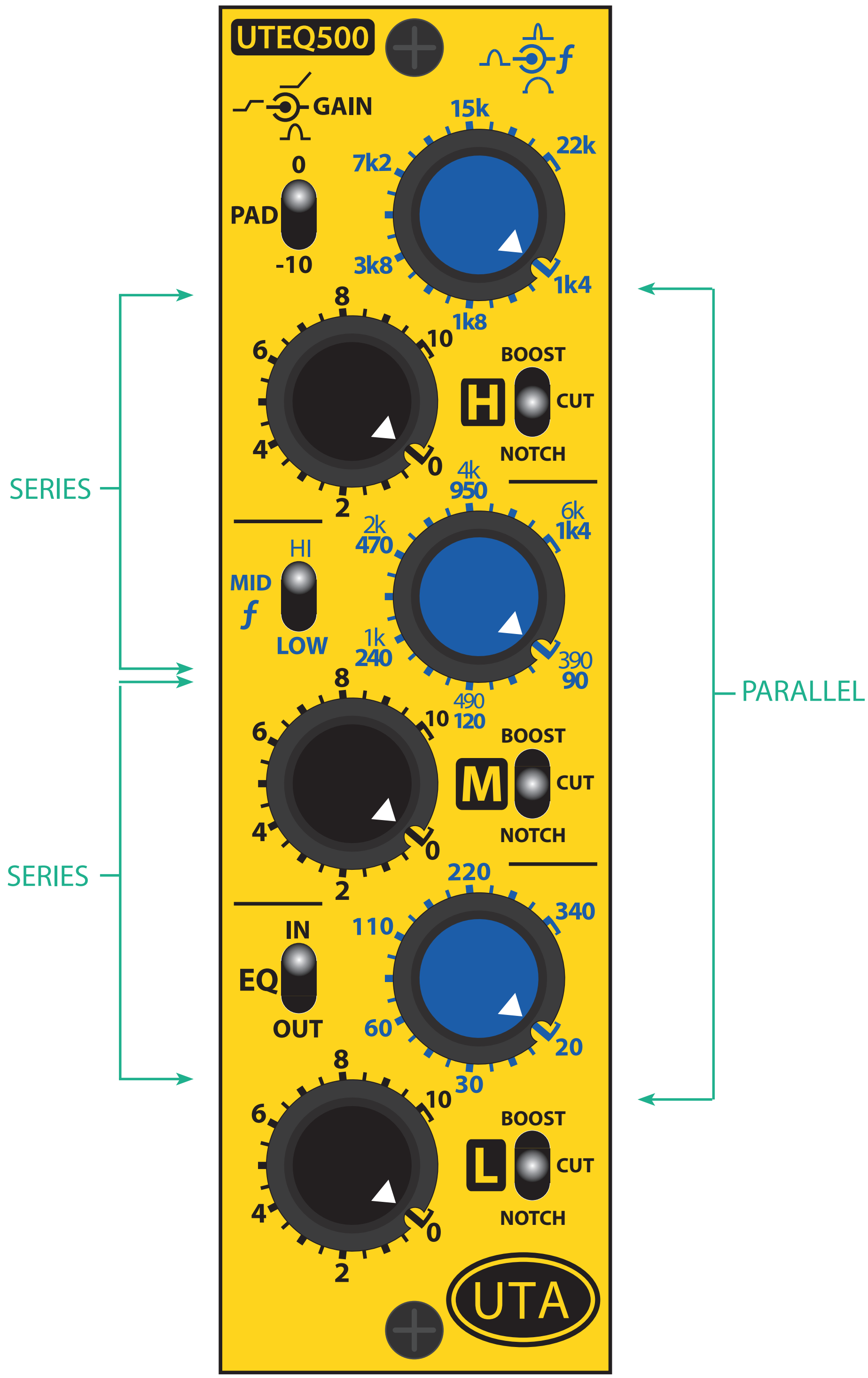
Fig. 11



You can see the dramatic difference in how the two separate boosts add up in the area where they overlap. At 3.5 kHz, there is a 4 dB difference in the resulting curves and, as you could imagine, they sound very different. The difference is caused by a difference in the phasing at the intersecting points in the curves. The series interaction can be described as being more "literal" because the two individual boosts will add to each other where they overlap. The parallel interaction can be described as being more "natural" because if you had a room that was acoustically causing these exact two individual boosts (12 dB at 1.2 kHz + 12 dB at 12kHz), the resulting curve would look like the parallel version.

The illustrations in *Fig. 12* show which bands of the equalizer interact in parallel and which ones interact in series. You can choose to have a parallel or series interaction based on which pair of bands you choose to use. For example, let's say you want to boost 200 Hz with the LMF and you also want to boost 6K as well. If you boost 6K with the HMF band, it will be a series interaction. If you boost 6K with the HF band, it will be a Parallel interaction.

Fig. 12



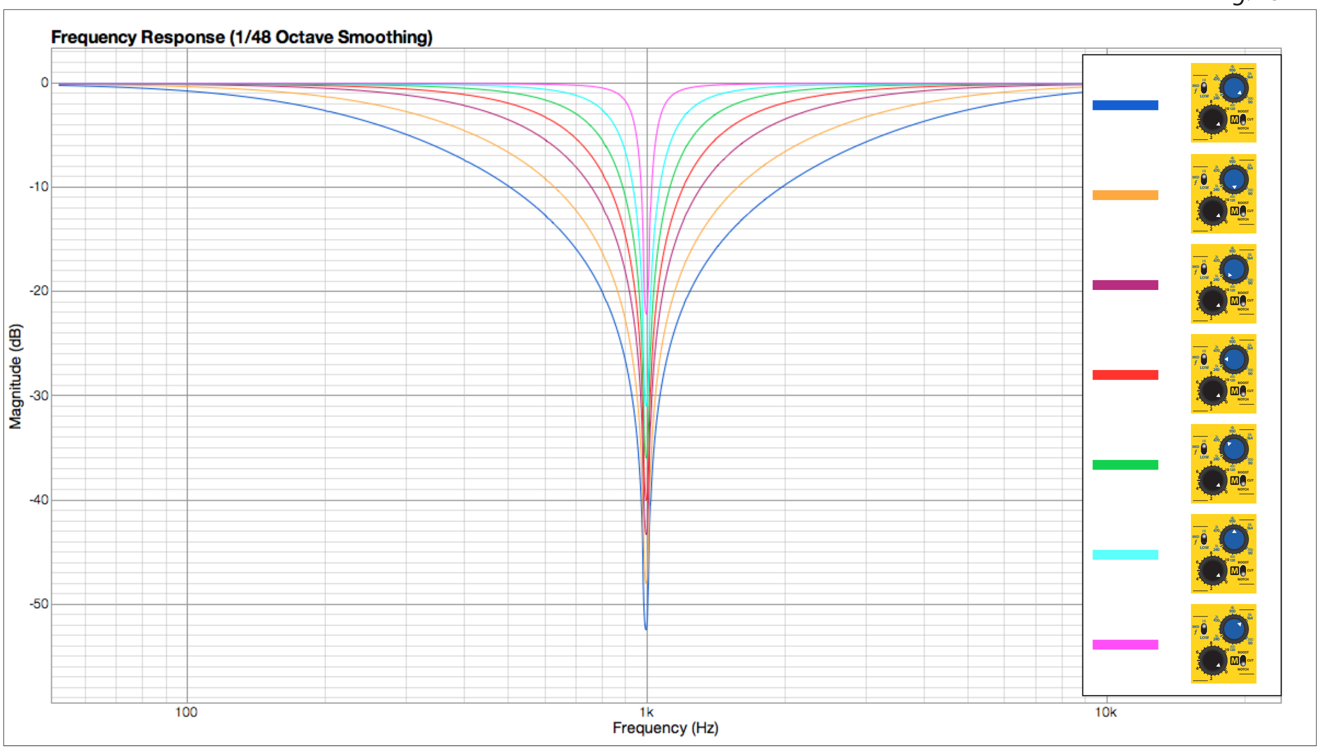
NOTCH MODE

There are 2 functions made available by the Notch Mode: Notch Filtering and Phase Adjust.

1) NOTCH FILTERING

First we will look at the Notch filtering. The Notch filtering works similarly to the Cut mode. The EQ circuit is simply filtering the signal, reversing its phase, then blending it back in with the original signal. When the phase reversed filtered signal is blended back in with the original, it will start to cancel those frequencies isolated by the filter. The "cut" mode is set up such that it will only cancel the selected frequency by a maximum of 15 dB. In Notch mode, the gain structure is adjusted to allow you to completely cancel out the selected frequency. This cancelling out of the selected frequency occurs when the gain control is set to "5".

Fig. 13



As you can see in *fig. 13,* the Notch Mode allows you to achieve an enormous amount of cut. Our test equipment is measuring over 50 dB of reduction at the selected frequency. With the Q control you can adjust how wide the notch is. In theory, the amount of cut stays the same as the Q gets narrower, but the graphs do not have the resolution to show this. Notch filtering is very useful for eliminating an offending frequency. You can use it to remove a 60 Hz hum or the hi whining sound of a computer fan or disk drive.

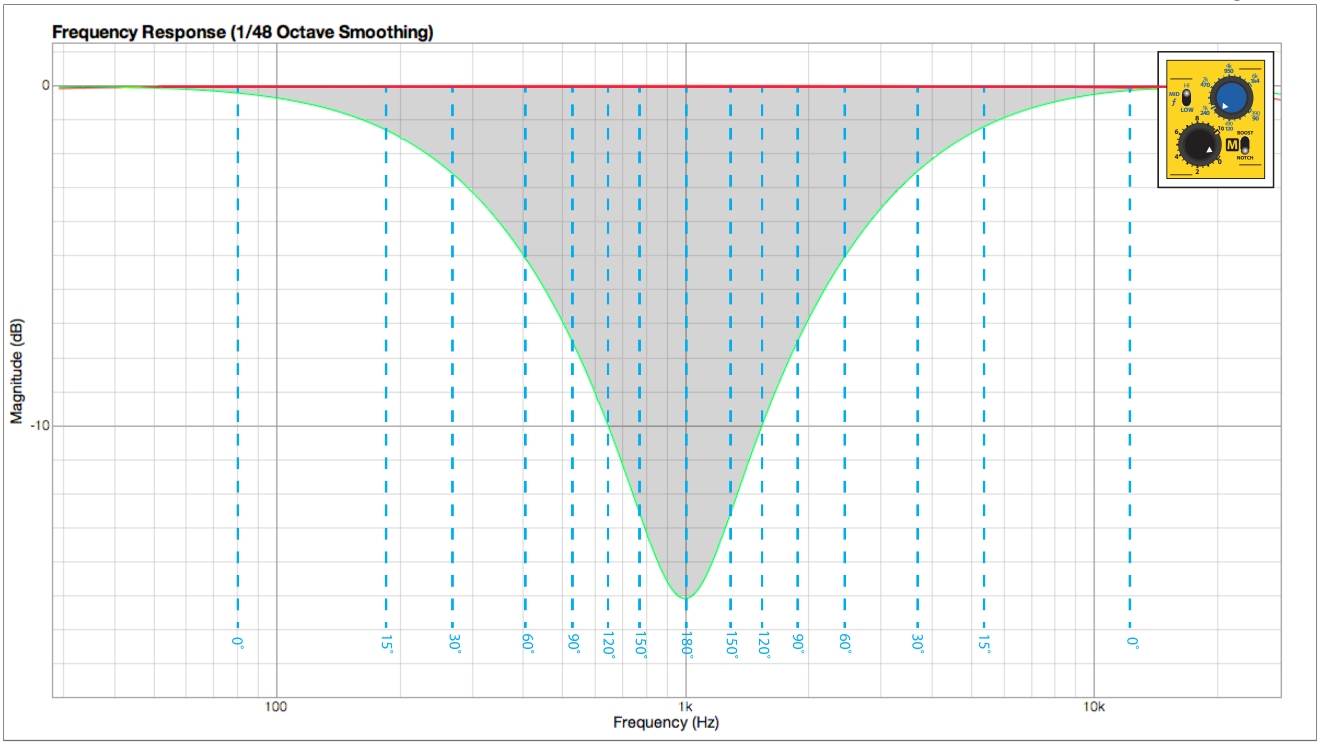
The shape control also stays active while in Notch Mode. With the shape control in the 12 o'clock position, the Notch Mode will make parametric bands function like HP/LP filters. The LF and LMF bands will turn into HP (High Pass) filters. The HMF and HF bands will turn into LP (Low Pass) filters. This can allow you to do some more extreme filter effects.

2) PHASE ADJUST

The Phase Adjust function is achieved by turning the gain control to "10" (fully clockwise) while the EQ band mode switch is in the "N" or "Notch" position. Both the "Shape" and "Q" controls stay active and hugely influence the how the Phase Adjust will perform.

The Phase Adjust mode is an extension of the Notch Filter mode. The same filtered, phase reversed signal is being turned up past the null point so it will start to blend back in with the original signal. When the gain control is at the "10" or fully clockwise position the filtered, phase reversed signal is then at unity gain with the original signal. What you have done at that point, is reversed the phase of a portion of the frequency spectrum. With the right shape/Q settings, it can be done without changing the frequency response of the original sound at all.

Fig. 14



The graph in *fig. 14* is optimized to illustrate what is happening and is not intended to be a technical representation of the function. The red line across the top is showing the actual frequency response of the processed signal. You can see that it is pretty flat across meaning that when soloed, it does not sound any different. The green line is showing the width of the phase adjustment being made. The greyed area is showing the portion of frequencies that are being affected by the phase adjustment. The dashed light blue lines are showing the degree of phase shift as you travel away from the selected frequency in both directions.

With this example, all of the information in the original sound at the 1 kHz frequency has been phase reversed 180˚. The degree of phase shift then starts to travel back to 0˚ as you move away from the 1 kHz frequency range. For example, above you can see that there is a 90˚ phase shift both below the 1 kHz selected frequency (at about 530 Hz) and above (at about 1.9 kHz). This is how you can achieve varying degrees of phase shift in a specific frequency range.

Why would you want to do this? Well, we initially weren't really sure. Larry had realized that this was possible with the unique approach to subtractive EQ we were using. Because this feature had never really existed before, neither of us really had any idea how useful it might actually be. As it turns out, not only can it be useful, it can actually be a lifesaver!

I have mostly been using the feature on drums, bass, and guitars. These are instruments that will frequently have multiple signals capturing a single sound source. With drums, whenever you use more than one microphone on the kit, there is a phase interaction that can dramatically affect the overall sound. If you are blending multiple amps or microphones for a guitar sound, the phase interactions hugely influence the blended sound. It is common to use both an amp and DI signal for electric bass and again, the phase interactions become very important.

With drums, I have been able to correct phasing problems that resulted from poor mic placement. Sometimes a mic will be placed such that it is 90˚ out of phase with other mics it is blending with. A traditional 180˚ phase switch can not correct this problem and it will usually require excessive EQ'ing to make up for the loss of body when the signals are blended. With the Phase Adjust feature you can incur a 90˚ phase shift within the necessary frequency range to correct the problem and preserve a more natural sounding blend of the microphones. There is a more detailed example of this here http://undertoneaudio.com/eq.html.

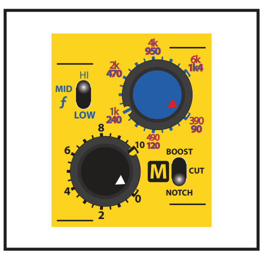
On bass, I have had situations where the amp and DI signals don't quite blend together in an optimum way. The 2 sources will either sound punchy but too nasally or deep but not punchy enough. With the deeper version, I can phase reverse a portion of a slightly higher frequency range (around 150 Hz) to get some more punch while having enough control to make sure it doesn't get nasally sounding. This fix can happen without either of the signals being EQed or sounding any different than they originally did. I am only changing how the signals are blended together to achieve the results I want.

On guitars it can be really cool. I like to use multiple amps and will sometimes use the variable phase feature to fix a problem. Other times, I will use it to intentionally cause the different amps to blend in weird ways to get a unique tonality that will really stand out in a mix or from other guitars. When these tonal changes are done by manipulating the phase, the results always seem to be more natural sounding. They don't sound like I forced them there with EQ.

IMPORTANT INFORMATION ABOUT THE SETTINGS!!!

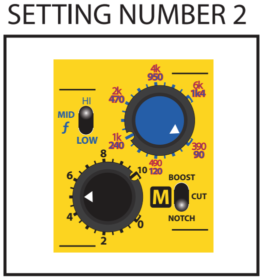
There are 3 settings that will give the best results for adjusting phase. When I use the phase adjust feature, I want it to only affect the phase and not change the frequencies or sound EQed at all. There do exist settings that will sound EQed, so read up!

SETTING NUMBER 1



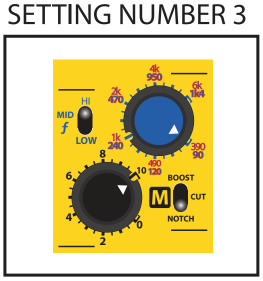
Setting 1 will give you a bell shaped phase reversal (see *fig. 13*) where the selected frequency is reversed 180˚ and then the degree of phase shift will travel back to 0˚ in both directions. You can change both the frequency and the Q (highlighted in red) as much as you want without changing the frequency response. The shape control must stay in the fully counterclockwise position and the gain control must stay in the fully clockwise (and a gain setting of "10") position or the frequency response will not remain flat.

SETTING NUMBER 2



Setting 2 will give you a shelf shaped phase reversal. If you are using either the LF or LMF bands, the 180˚ phase shift at the selected frequency will extend through the frequency range below that point. If you are using either the HF or HMF bands, the 180˚ phase shift at the selected frequency will extend through the frequency range above that point. To maintain a flat frequency response in this setting, the gain control must stay at 10 , the Shape control must stay at 12 o'clock, and the Q control must stay in the fully counter-clockwise position. You can freely change the selected frequency (highlighted in red) without affecting the frequency response.

SETTING NUMBER 3



Setting 3 will also give you a shelf shaped phase reversal except it will be a 0˚ phase shift at the frequency selected and will travel towards 180˚ beyond that point. This setting is good for causing a phase shift at the extreme ends of the frequency spectrum. To maintain a flat frequency response in this setting, the gain control must stay at 10, the Shape control must stay fully clockwise, and the Q control must stay in the fully counter-clockwise position. You can freely change the selected frequency (highlighted in red) without affecting the frequency response.

5. PRESETS

In this section, we will give you examples of settings that will emulate the curves and shapes that are created by some of the popular classic analog equalizers. Hopefully, this guide will allow you to quickly get to some familiar results.

First, I would like to talk a little bit about how I derived the settings and what you can expect from the presets. The information on the rest of this page is not really essential. Feel free to skip it and go directly to the presets if you like.

I used software called Fuzz Measure to graph the frequency response of all the various equalizers I tested. To replicate a particular curve, I would make sure the levels were matched when no EQing was being done and then match up a particular setting. It would take about 10-15 rounds of refining the settings to get the frequency response of the UTEQ500 to exactly match the curve of the device being copied. I would then photograph the UTEQ500 setting and replicate it graphically for this manual.

On devices that are somewhat similar technology (solid state discrete), the results really sound pretty amazingly similar when you get the curves to match exactly. There are however some remaining differences inherent in the different circuits. Things like harmonic coloration and phase shift at the extreme ends of the frequency spectrum are unavoidably going to be different, but they end up being quite subtle. This is because our ears are tuned to be very sensitive to frequency response and volume. Those 2 characteristics will far outweigh the others when trying to replicate the sound of an equalizer.

I ran into some challenges when creating these presets. One was the lack of consistency with much of the vintage gear. For instance, I own four Neve 1064 modules. It turned out that the UTEQ500 was better able to replicate the high frequency shelf EQ on each of those devices than they were at replicating each other! I was shocked to find out how different they all were. I have used and maintained these Neve 1064s for over two decades and felt like they pretty much sounded the same. But when you are trying to replicate an EQ frequency response curve with a tolerance of .1 dB or better from 20 Hz to 20 kHz, they were certainly not consistent. The Neve 1064/1073 hi EQ shelf preset for the UTEQ500 replicates an average of the dominant characteristic which is the slope of the hi shelf.

The other challenging issue is the Q or bandwidth behavior of different equalizers. The UTEQ500 circuit is what many call a “constant Q” type equalizer. Meaning the Q or bandwidth does NOT change when increasing or decreasing the amount of gain. Many vintage equalizers are what people refer to as a “proportional Q” type equalizer. In these circuits, the Q or bandwidth will get narrower as you increase the gain. The presets for these types of equalizers will show a range of adjustment for the Q control on the UTEQ500. You will have to manually increase the Q as you increase the gain to try and accurately replicate the behavior of the original device.

Finally, there are some devices that are derived from such vastly different technology that the underlying characteristics inherent in their design become more noticable. For instance, I can exactly replicate the curves of my Pultec EQP1A with the UTEQ500 but the Pultec – with all of its tubes, transformers, and inductors – will have a different personality. Despite this, I still feel it can be useful to know how to recreate these classic frequency response curves.

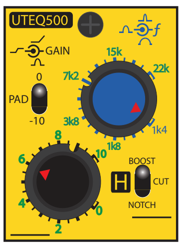
Controls that are highlighted in RED (typically the "SHAPE" and "Q") must stay in the shown position to maintain the character or slope of the device being replicated. Controls highlighted in GREEN (typically the "GAIN" and "FREQUENCY") can be changed freely as they would be on the device being replicated.

API 550A

SHELF

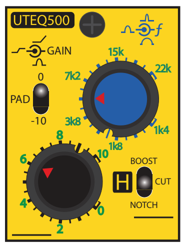
The 550A Shelf setting was derived by replicating the curve of the 550A when it was set for a 12dB boost at 5 kHz. You can freely change the GAIN and FREQUENCY while maintaining the 550A shelf character. You can see the necessary increase in the "Q" control to maintain the same shape when cutting

BOOSTING



550A 5 kHz shelf +12dB

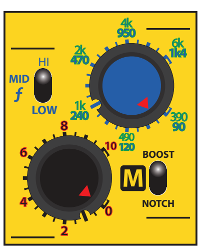
CUTTING



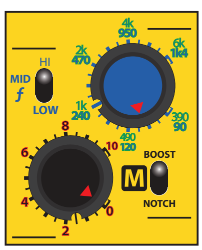
550A 5kHz shelf -12dB

PEAK

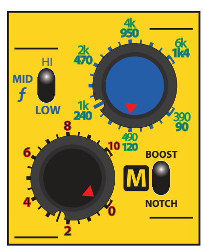
The 550A peak or bell curve EQ is a bit trickier because it is a "proportional Q" type. Since the 550A has detented controls, I felt it would be best to show each gain setting. You will see how the "Q" setting on the UTEQ500 increases (gets narrower) as the gain gets higher. All of the settings were done with the frequency on the 550A set to 800 Hz but these settings will work with any selected frequency on the UTEQ500.



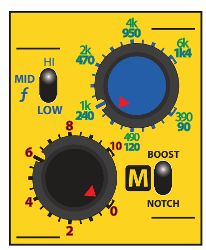
550A 800Hz peak +2dB



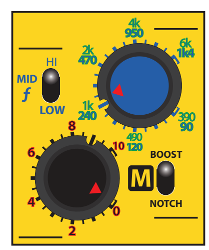
550A 800Hz peak +4dB



550A 800Hz peak +6dB



550A 800Hz peak +9dB



550A 800Hz peak +12dB

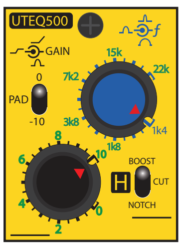
NEVE 1073/1064

The Neve 1073 is probably the most well known and coveted of the 80 series Neve modules. I tested both an original 1073 and an original 1064. The 1064 is essentially the same circuit as the 1073 but in a larger chassis. They both showed characteristics of having a hi shelf band set to 12 kHz. Both the 1073 and 1064 I tested had the "proportional" type Q behavior for the mid band, meaning the "Q" gets narrower as the gain is increased. Every 80 series module I have ever used has the same peculiar High Frequency roll off when the EQ is engaged. 20 kHz drops 2 dB when the EQ is engaged. I was not able to replicate the HP filter settings because it is an 18 dB/octave filter. The UTA HP is 12 dB/octave with active Q. I just didn't feel I could get it close enough to include as a preset.

SHELF

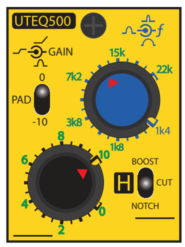
The 1073 Shelf settings are pretty straight forward. Simply set the shape control fully clockwise, the "Q" control fully counter clockwise and the frequency about 1/10th of the frequency you want to boost.

BOOSTING



1073 12kHz shelf +15dB

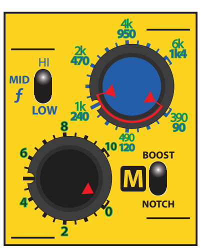
CUTTING



1073 12kHz shelf -15dB

PEAK

The 1073 has a "proportional" type "Q" behavior, meaning the "Q" gets narrower as the gain (boosting or cutting) is increased. Since the 1073 has a constantly variable gain control, I felt it would be best to show a range for the Q setting. I measured the "Q" with 15 dB of boost and with only 2 dB of boost to get an idea of what the highest and lowest "Q" settings would be. You can simply estimate the "Q" setting on the UTEQ500 based on the amount of boost/cut you are using. For example, if you set the gain control on the UTEQ500 around 5, then you would set the "Q" control near the middle of the range shown in the graphic below.

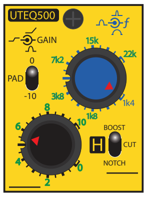


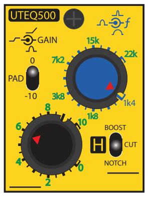
1073 1.2kHz Mid Band

SSL EQUALIZERS

This is the point where you will start to see some repetition in the settings. You'll notice that the SSL "E" settings are very similar to the API 550A shelf setting. In this case the shape of the "CUT" mode on the UTEQ500 mirrored the "BOOST" mode very closely so you can leave the shape and "Q" settings the same for both.

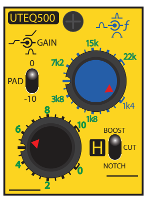
SSL "E" Shelf

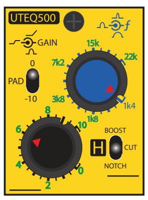

SSL "E" SHELF BOOST


SSL "E" SHELF CUT

The "G" style shelf settings are very similar to the Neve 1073 shelf settings. You'll notice that you will have to increase the "Q" when cutting to achieve an accurate mirror image of the boost curve.

SSL "G" Shelf


SSL "E" SHELF BOOST


SSL "E" SHELF CUT

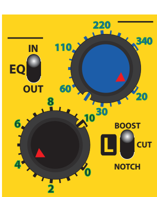
SSL Peak Shape

Because the SSL EQ has the same type of controls for the two mid band "peak" EQs, I didn't feel it was necessary to show presets. As you would on an SSL Equalizer, simply listen and set the width of the "Q" for the result you want on the UTEQ500.

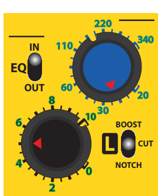
PULTEC EQP1A

The Low Frequency Band is pretty straight forward. I was able to find Shape/Q settings that exactly matched the initial rise or fall when boosting or cutting. The overall bandwidth of the EQP1A is slightly less then the UTEQ500 so the curves start diverge a little at the very extreme low end. There is about a 1 dB difference at 10 Hz.

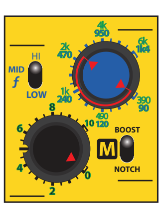
BOOSTING


EQP1A 100Hz +15dB

CUTTING


EQP1A 100Hz -15dB

The High Frequency band is a simple peak or bell shape but it is a "proportional Q" type circuit. Both the "Bandwidth" control and the "Gain" interact to determine the actual width of the boost or cut. I measured the EQP1A at both extremes to figure out what the range of "Q" settings would be on UTEQ500. One measurement was taken at full gain with the Bandwidth at the "0" or sharpest setting. The other measurement was taken at a very low gain setting with the Bandwidth at the "10" or "broadest" setting.


EQP1A 3kHz High Band