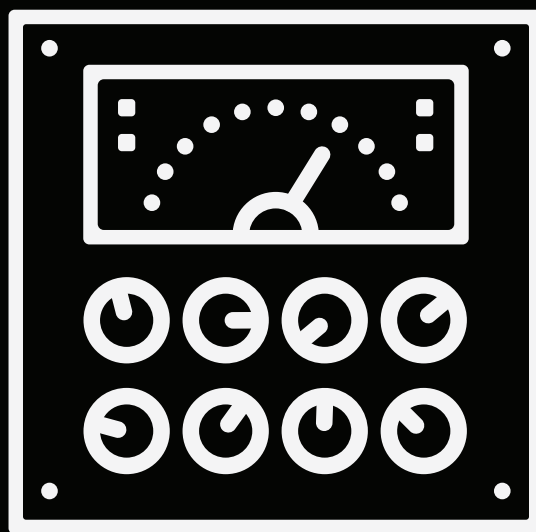


PREAMPS

EXPLAINED

A practical guide to understand preamp types, styles and technology and choose the right preamp for your studio



JZ MICROPHONES

Here at JZ Microphones , we take every opportunity to make sure we record the best sounds possible. And preamps, next to the mic choice, are in our eyes the most substantial element of a good source recording. In this short but detailed PDF, you'll have a complete guide to everything from interface preamps, to the plethora of types and styles or dedicated preamps.

Harri Lowe



VINTAGE PREAMPS

Solid State transformer

These are among the most widely cloned and made preamps available on the market today. An original will set you back a large amount of money, but competent clones vary in similar sonic characteristics. All aim for one particular sound; a warm, harmonically rich and weighted pairing with all JZ microphones, and mic's in general.

Low budget options are brands such as Warm Audio, or my favorite, Golden Age Audio which employ similar components at every stage, whereas other similar brands have not utilized this route.

Higher budget options include Heritage Audio, Stam Audio or Neve themselves. Unless using the original Neve units, it's impossible to recreate the exact same qualities of the original designs, however Stam have possibly come the closest and Heritage Audio have a growing reputation. If you can afford the AMS Neve brand, then of course they are an obvious option however, they are expensive and clones have become so close that for a slightly lower price you can achieve a very close quality in sound.



Tube preamps

Valves have a very particular sound. When run cold (low input, high output) they have a glisten and shimmer to the sound and add subtle harmonics that impart an expensive and polished sound. Depending on the tube, and on the point at which breakup and distortion starts, common ones are 12au7 (low distortion, higher noise) 12at7 (Mid-level distortion, common middle ground but less common), and 12ax7 (commonly used across the board for both preamps in pro audio equipment and even more commonly used in guitar amps and pedals).

Vintage tube equipment is where preamps first started, and were most common during the 50's, 60's, and 70's. They are a reliable source of quality preamp, versatile in their sound capabilities. The main problems with these –are that the tubes wear over time and need replacing, and depending on the manufacturer of the tube, they can be much less desirable than their counterparts. Cheap, easy to build Chinese models are mass produced and often come with a mediocre quality, much surpassed by their Russian comrades. However, British valves are of the highest quality I've found, in particular Mullard or Philips being the top of the game.

Vintage tube preamps are so highly sought after today, that there really aren't any lower budget options here, however some better budget ones are preamps such as the Ivory series from TLA Audio. I have a C1 dual tube preamp and stereo compressor, which I've loved over the years, British made, and faithful to old schematics used from the early preamp days.



Higher budget options go as extreme as you'd expect, but Universal Audio's 6176 Tube preamp comes in a stereo model, and a lower budget option of the Solo 610 - both of which are faithful to the early days of the company and encompass the sound of their heritage extremely well.



Transparent Preamps

Lastly in the main 3 types, are transparent linear preamps, most commonly found in the typical interfaces in today's market. We briefly touched on this subject in another blog post, **Preamps At A Glance**, but to cover it again there are 3 most commonly used chips found in nearly all preamps making them all similar to each other - some, however, have slightly more to them in the higher end of the spectrum and even mid-level have extras like the 3rd Gen Scarlett with added Air control to each preamp channel. The same rule applies to most 8 preamp expansion channel strips like the Ultragain from Behringer featuring Midas preamps, revered in the audio industry for their clean sound and precision. Others like the Audient line have built in JFet line-in's which are incredible line level options for DI recording instruments like guitars.

Other transparent, or at least lower THD preamps usually have a little more to them regarding circuitry than a simple chip. Take the Focusrite ISA range, utilizing an input transformer that imparts a special sonic characteristic through impedance and allowing harmonic content to be passed onto the signal. Unlike the Neve style preamps that also have an output transformer, these preamps run at a much lower distortion range and are far, far cleaner sounding. Another great example is the API range employing op-amp design. These are an extremely low-level distortion design using two stages, one of which is a closed feedback loop and another part for eliminating stray electrical noise. These are highly coveted across the industry as being some of the best sounding preamps, and sound incredible with our Vintage Mic series.



Lower budget options of course are sticking with preamps within interfaces, however if you're looking for a budget dedicated outboard pre, the warm audio range has a great API 312 clone, as does Capi Audio, however it is only in a 500 series format. The Focusrite ISA ONE is a preamp I have myself that I adore and would implore anyone with a lower budget to invest in the ISA range - not only is the quality a perfect pairing with our Black Hole and Vintage Series, but it's faithful to the original design schematics. It's created by the founders of the design and is a steal for such quality at a fraction of the price.

Higher end models include Stam yet again, leading the market in high end recreations, for API 312 clones, and Neumann have entered the market recently with their new line of Ultra Linear preamp designs to impart no coloration to the signal and leave the sound of the microphone untouched, however preamps are usually chosen for their colour and characteristic of sound so it's a niche in the market some of you might want to explore; others may stick to the status quo, which is where I have landed for my almost 10 years in production.



MODERN PREAMPS

There are several styles, but unlike the previous post regarding vintage preamps, the modern world is so widely based off old technology with the addition of innovation, so we'll simply state our 3 choices in this post that come to mind when we talk about Modern Preamps.

Solid State

The name that pops to my head at the forefront of modern preamp design and innovation has always been SSL Technology. From their early vintage designs in the original 9000E and G consoles they have continued to persevere to revolutionize their sound and design.

SSL have a specific sound depending on the preamp or desk you use, the E being slightly more rounded to the bottom end and with more bite, the G with much more controlled low end and both having different shapes and bands to their respective EQ's when part of the desk variation.



Their Alpha series is the newest kid on the block featuring VHD Pre with 4 all solid state, all analogue circuit preamps that add a modern variation of warmth, colour and bite. It is its own style of sound, utilizing the innovative VHD circuit design, similar to THD as you'll remember from our recent posts, where the more you push the input, the more distortion you achieve; anything from the widely acclaimed SSL style tube warmth, all the way to serious levels of clipping.



Tube

As we previously wrote, tube designs are some of the first ever preamps utilized in the audio world. As such, they've always held a special place in engineers' hearts from new to old - and so the designs have been played with over and over to create new, wonderful styled colour options ranging in price to welcome any engineer into the world with open arms.

I'm going to pick two that have always been a recommendation for me regarding this style of preamp, with 2 very clear price points that should give flexibility - whether you're looking for a great preamp to get you into this never ending game, or you're looking for an upgrade to accentuate the pristine quality of our JZ Mics.

ART MPA-II



I started with the one channel, \$50 version of this preamp, with nothing more than the basic controls to reverse polarity, cut 80hz, and a -20db pad if I recall correctly. This version of the basic preamp I had features flexible tonal controls to tweak the level of warmth or distortion to the signal, along with higher value and better made valves, and lastly, has much lower noise especially at lower levels of recording (something usually overlooked when starting out!).

Not only can it afford dual mono recording, but Mid/Side recording as well - so as a beginner preamp, this would be a great no-brainer start off especially if you want to broaden your skills in drum or acoustic guitar recording. In terms of modern preamps, this Class A designed preamp isn't the best on the market, but at less than \$300 second-hand it will be a work horse for years - trust me, I still have that first preamp I bought all those years ago and by investing in a very desirable valve, it's still used in my recordings..



DBX 676



One of my most used preamps, perfectly paired with any microphone I've ever put it with; this preamp is a new take on what preamps can do. DBX have been in the game since the start, revered for their compressors, their preamps often go unnoticed.

But the 676 is an all tube channel strip, running at a super high voltage to allow for maximum headroom and full versatility when dialling in the right level of warmth. The quality of this preamp is much higher than the aforementioned option, and it shows in the sound. This preamp also includes their mastering compressor technology, and it's very easy to switch valves to achieve the right level of distortion on your tracks no matter when you're tracking. Modern tube preamp technology doesn't get much better than this in terms of sound for me.

Transformer

Lastly, as we have touched on transformer preamps, it seemed prudent to show where they can be utilized in some of the more linear and lower THD options on the market. The name Neve has always been associated with the more incredible sounding equipment on the planet, but their modern take on Rupert's much-loved design has allowed for one of the cleanest preamps they offer.

The Neve 511 preamp is based on the much loved, but much less known 5017 preamp that achieves a crystal clean timbre it was so well known for, but on the 511 they have included the addition of the Portico II Silk/Texture feature to allow more of a vintage Neve vibe - including clipping, turning this into both super clean and super “vibey” all in one very small 500 series package.





Lastly, a much less known company gets an honorable mention. Joe Meek is a company owned by the same people that bought you the Trident console (the 80B console was the same that tracked much loved records like *The Dark Side Of The Moon* by Pink Floyd) and their Twin Q2 has been a reliable and sturdy preamp for many years in my studio.

It features a completely analogue design, super transparent, and with the addition of an Iron Input transformer extending the low-end response of anything put in front of it. Not only does it have the typical controls of a preamp you'd expect, but it has the full parametric EQ and optical compressor Joe Meek was so well known for back in the day, and can operate in both dual mono and stereo. These preamps are similar to the above example in that, their classic, untouched design (no goodies engaged) achieve a pristine and crystal signal that is simply shaped to the manufacturers design specification to impart 'their' sound upon your recordings, but offer much more with when pushed, or have extra features (like the iron transformer in the Twin Q2), that can bring it into the realms of other styles of circuit we've discussed thus far.



GETTING THE BEST OUT OF YOUR PREAMP

Impedance and pushing the Preamp

Just like bass amps of new and old, where they had 2 separate inputs for active or passive pickups, preamps have long had the option to change in the impedance of the input but mainly for DI recording. With more modern circuits coming into play, this has been brought over to microphones more and more often, with 2 examples in our recent posts - the Golden Age Premiere 73 and the Focusrite ISA One - both transformer preamps, but many tube and solid state options also include this option. Because microphones draw a low current with their output, we recommend a high impedance at all times. Low impedances can affect the high-end clarity and overall sound of the microphone, and simply put, won't allow it to operate to the best of its abilities.

A better option to get the colour you want is to push the preamp. As we've discussed in the last two posts, THD is important in deciding the harmonic distortion on your tracks, and pushing the preamp input/output stages depending on the make-up gain can add some beautiful colour to your microphone and help it pair perfectly. **Just be sure not to confuse THD with clipping - if the lights go red, turn down instead!**

Gain Staging, Inserts and Pads

To this end, a lot of the sources we record can make the preamps clip furiously - if that's what you're after, cool - but I have always been a fan of clean recording, subtle harmonics, and most importantly, control. Pads can be a god-send here. Using an input pad can save you in most instances, especially when the microphone doesn't have one built in and you're left wondering how to record a drum kit, where each hit sounds like a small atom bomb dropping. Sometimes, output pads are integrated into the design of transformer based preamps like 1073 clones for example, as the input transformer can make the signal rather hot.



This can also be super helpful when adding inserts into the preamp signal. The output of most units has a small switch on the back of the outboard that allows -4db or +10db to normalize the signal on the output, but let me describe my current vocal chain and how I avoid too much complication and climbing under my desk:

JZ Black Hole BH2 → Golden Age Premiere 73 input between 20-50% → 1176 FET Compressor inserted and set how hard I'd like to smash the signal, make-up adjusted for any level loss during compression → Back into the Premiere 73 with the output pad engaged and output dialled out near to full.

The output pad saves me here as I can cool the signal with compression and control it. And instead of adding large levels of noise and having the sound of the output transformer running cold, not adding the life we all know and love from 1073 preamps, I've run the transformer at max - but because the signal has been lowered prior to the transformer doing anything, the level is much more controlled, and I can record with very low noise and no clipping. Gain staging is so incredibly important and will not only help you now, if you move to a desk where the workflow is infinitely more complicated, but also if you focus on mixing where gain staging will affect every single decision you make in order to not fall into the 'loud is better' trap.

Filters

Lastly, filters are far too absent from so many recordings I'm sent each year, and it seems an intervention is needed. A lot of microphones have filters built into them, but more often than not, like out BH2 and Vintage series mics, the design doesn't always allow for switches added into the design.

Preamps have these switches instead and it's imperative you utilize them, just like the input and output pads just discussed. More often than not, the Cut 80hz filter is one of the first on the front of the design of many preamps and engaging this for your Guitar DI recording, Vocal recording, Mid-range Brass, Violins, Snare, Overheads, you get the picture - anything that's not bass heavy and doesn't need that nasty rumble, cut it. It can stop you clipping the signal, which is a good enough reason as any to engage this little button, but it can speed your workflow at the



mixing stage, it controls the low end information straight into the box, and knowing you've done this allows you to make more precise movements regarding the low-end, rather than mixing in autopilot making moves because you do it on every mix' or because a video said always cut x frequency' make these moves for yourself in the good knowledge that while recording you made that call for a reason.



SO.. HOW DO YOU CHOOSE?

Well, as there's a lot of choice it can be overwhelming to say the least on what preamp to go for - a lot of us are drawn to the mojo of vintage units because of their rich history, but the modern recreations and originals have their own flavours that can't be ignored either.

When starting off, it can be hard to discern what is the best choice but luckily we live in the technological age where you can try before you buy... somewhat. See, you can find many faithful recreations in software which, although they aren't quite the same as the real thing, they're close enough for you to decide what will be the best choice for you. When switching between different versions to test the hypothetical waters with, I've found Slate Digital's Virtual Mix Rack has the best A/B comparison tool to switch between the various console and preamp emulations. The consoles will give you a feel of the real thing in terms of desk, whereas the 1073 Neve, and Telefunken preamp strips are pretty faithful in terms of distortion and tonality.

If you have the funds, however, the Arturia and Acustica preamp emulations offer a much better sound quality and dynamic range which can't be overstated compared to other variants out there. I'll usually reach for one of these brands depending on the flavour or colour I'm looking for, for that specific track.

Once you've decided on the type of sound you think works best for your tracks - then make the move and purchase the real thing in time. I remember when I got my first dedicated preamp - it was a "night and day" difference for me. I'm sure you'll agree once your time comes!

