

TUBE

Tasting

A Players Guide: Pt1 Preamp Valves

JUST AS DIFFERENT STRINGS OR PICKUPS WILL DRASTICALLY alter the sound of your guitar, different makes of even the same type of valve can radically change your amp's tone and affect its reliability. British dealer and premier tube tester Derek Rocco of Watford Valves shares his taste tests with us...

Tubes are tubes, right? Sadly, no. Guitar amps may 'function' in the literal sense with an appropriate type from any manufacturer (though not for long in some cases), but because preamp and output valves really are at the centre of an amp's tone, the sound produced can alter beyond recognition from make to make.

In simple terms, valves available to buy today come from two distinct camps: current production examples, and 'New Old Stock' (NOS). The first are manufactured in factories that are still up and running, while the second batch consists of remaining stocks of valves which are still 'new' in the sense that they've never been used, but were manufactured long ago – sometimes as far back as the '50s.

Valve production in Western Europe and the USA ceased in the 1980s, by which time the technologies that primarily supported it – mainly military and communications uses – had changed over from vacuum tube to solid state circuitry. Although valves were and still are used in better instrument amplifiers and some high-end audio, these markets just weren't enough to keep the high-cost factories running. From that point onward,

new valves were only manufactured in Eastern Europe and China. With China recently having ceased production, current manufacture comes only from the Sovtek and Svetlana factories in Russia, JJ Tesla in the Slovak Republic, and EI in Yugoslavia (though availability and quality of EI are being hampered by wartime embargoes, so we won't consider them here).

Not a lot to choose from, you'll agree. Fortunately considerable – if ever-dwindling – supplies of generally superior NOS valves do remain, but if you've studied your economics you'll already have guessed that the laws of supply and demand dictate that these desirable Western European and US manufactured components will gradually command higher and higher prices as they sell out into extinction.

That's the reason you really need to know what you're paying for and why. In the tests below, we'll look at the most common and readily available current production preamp valves and a basket of still relatively easily found NOS examples, along with a couple fetching astronomical prices but worth considering as 'standards' of the type – the legendary Mullard, for example.

TESTING: 12AX7/ECC83

In order to test the full range of applications, the amplifiers used were a '70s Fender Twin Reverb fitted with JBLs, a '70s Fender Twin Reverb fitted with original Fender 'blue back' speakers, a Mesa/Boogie Mark IV combo, a Marshall 100 Super Lead into a 4x12" cab, an '80s Fender Princeton Reverb II and a vintage Vox AC10 with Elac speakers. Guitars used included a 1973 Fender Stratocaster, 1980 Yamaha SA 2000S semi-acoustic and a 1980 Gibson Les Paul Standard. Valves were selected for low microphony and low noise and rated for gain.

All of the valves below are of the 12AX7/ECC83 'double triode' type (12AX7 being the US designation, ECC83 the European). While you will find other valve types in some parts of guitar preamps, these are the most common 'first gain stage' choice and therefore have the most effect on your amp's drive and tone. Origin and Current or NOS manufacture are indicated; GP stands for Guide Price and gives an approximate range of prices commanded by each valve type on today's market. For specific prices and availability, check with retailers in our *Connections* sidebar. Any letters or numbers following the manufacturer name (such as 'WA' or 'LPS') indicate sub-codes in the valve type – ie '12AX7LPS'. Mullard ECC83, Mullard M8137 Box anode, RCA 7025 and Telefunken ECC83 were used as the reference.

SYLVANIA

(USA, NOS. GP: £9 – £16)

Classic American valve which was fitted by all the great '60s amplifier companies such as Ampeg, Fender & Gibson. This valve produces a rich, warm sound with excellent balance; when distorted it produces a fat sound with plenty of drive without loss in top end clarity. In the Fender amps the valve produces a clean, bright response which is great for fingerpicking. Single coils sound full with no harshness and plenty of detail.

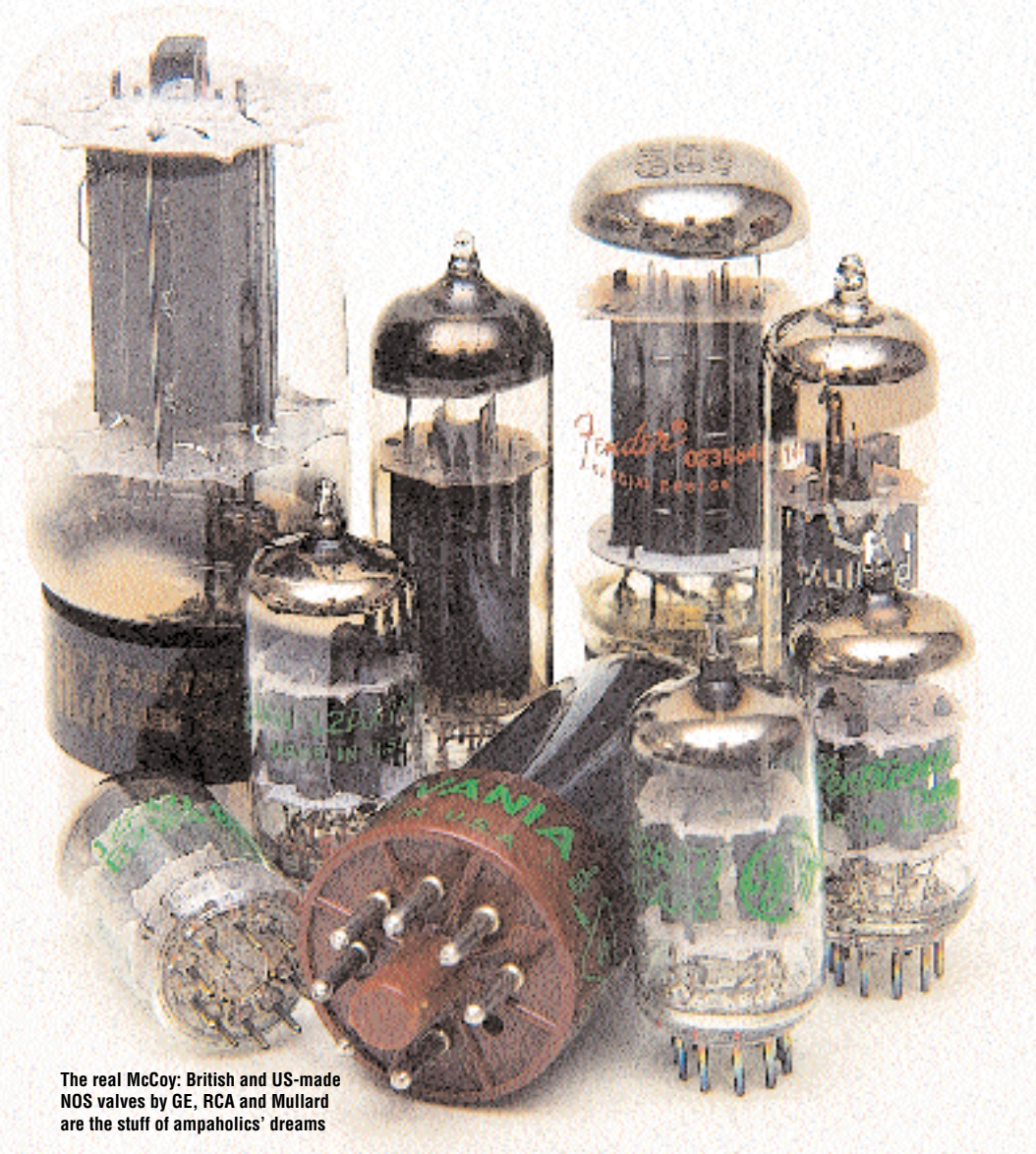
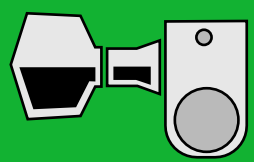
In the Boogie a sweet, crisp clean sound is easily attained, plus a classic rock sound with a little mid-forwardness (which we like). Because of the high-gain nature of the Boogie, however, it's important to select valves for low microphony. Early 1960s production; an ideal choice for all vintage Fenders.

GE-JAN

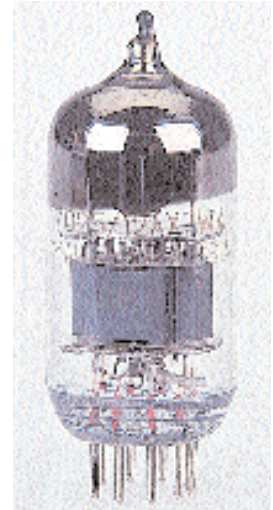
('Joint Army Navy') 'WA'

(USA, NOS. GP: £8 – £25)

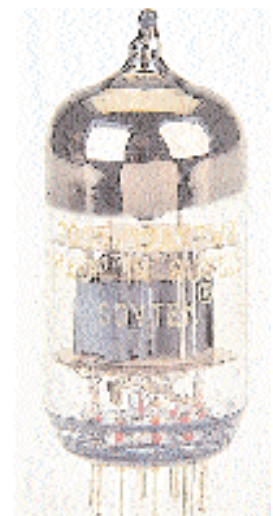
This rugged American military spec valve is of immense quality – it's the same valve fitted as standard in '70s Fenders. The GE valve is famous for its big, crisp



The real McCoy: British and US-made NOS valves by GE, RCA and Mullard are the stuff of ampaholics' dreams



Sovtek's lower-gain 'WA'



A more desirable Sovtek 'WB'

sound stage and bright top end response, something which really breathes life into Fenders. This valve supplies that authentic Fender twang; it's brighter than the other American valves and also works really well in the Vox by giving it a clearer top end response. When the valve distorts it has a rich harmonic feel and chime. Even under heavy Boogie distortion the bass and midrange detail are superb. Thoroughly recommended.

SOVTEK 'WA'

(Russia, current. GP: £3.50 – £6)

Low to medium gain with the same sound quality and less gain than the WB. When distorted, the WA doesn't have the detail or balance of NOS stuff – this valve seems to be pushing everything through the mid band. When pushed hard the sound compresses very early, too. But it's good for general repairs.

SOVTEK 'WB'

(Russia, current. GP: £5 – £8)

Low to medium gain with low microphonics. Clear, bright sound,

although it lacks the clarity and definition of NOS valves, and it distorts earlier than the WA. The sound is the same as the WA, but far better than the Chinese 12AX7 – no 'snap, crackle and pop'.

SOVTEK 'LPS'

(Russia, current. GP: £8 – £10)

The new Sovtek 12AX7LPS is now in production in Russia. This valve is of medium to high gain and has a special spiral filament which greatly reduces hum when operating in amplifiers with AC heaters. This is certainly the best 12AX7 that Sovtek have come up with.

In guitar amps we noticed that the level of microphonics are higher than the WB, but this would also be consistent with the higher gain of the tube. It gives a bright and clean sound, but not as sharp as the GE (below). When distorted, it retains its control and sounds sweet. Overall this is a very good sounding valve – a decent choice for audio or guitar.

PHILIPS-JAN 'WA'

(USA, NOS. GP: £7 – £14)

Low-noise American military valve made

in the famous Sylvania plant in Emporium, Pennsylvania. It retains the classic warm, solid sound of the early Sylvania but has less drive. This proves useful in the Boogie as the lower gain of the valve gives less microphonics. Midrange is very musical with all the clarity of the Sylvania.

The bottom end is superb: in comparison to the Sylvania it sounds a little tighter and better defined, which is welcomed in the Marshall amps. The bass is not as deep as the Mullard but the Philips does have that instant British-style tone. In the Fender amps all the tone that you would expect is there. This is a superb valve and an instant upgrade for all modern amps.

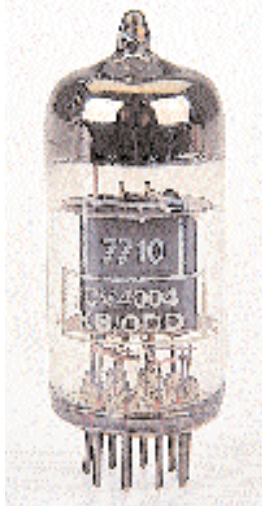
MULLARD

(GB, NOS. GP: £35 – £60)

This legendary British valve is the most sought-after ECC83/12AX7 type of all time. The key is the way the valve distorts. The Mullard reproduces exactly what is driven into it with great musicality, combining smooth drive with balanced low microphonics and reproduces every subtle detail with a rich



Mullard: king of preamp tubes



A military grade Brimar CV4004

sound stage. When overdriven the valve has a 3-D effect which makes it really sing – and it sounds amazing in a Boogie. The noise level even at full saturation is very low, while the bass response has great kick without loss of definition. We came to the conclusion that this was going to be a hard act to follow.

BRIMAR CV4004

(GB, NOS. GP: £11 – £24)

British military spec valve with half-flange anode giving instant British rock. Exceptional balance and sound staging with great drive. It hasn't got the rich harmonic distortion or the unique 3D effect of the Mullard and under full distortion doesn't have the same bite, but the presentation is relaxed and musical, which none of the new ECC83 types can match. This valve does every-

thing it should do excellently.

CHINESE

(Sold under various brands, recently discontinued. GP: £4 – £7)

Chinese 12AX7s tended to be fitted by all the major amp manufacturers while they were in production. On the plus side they have good gain and low microphonics, which suits the Boogie and the Marshall amps. The drawback? A complete lack of tone, giving the trademark 'wasp in a jam jar' cheap overdrive sound. The treble is fizzy and the bass response gives a hazy distortion. Also, after only

short periods of gigging these valves tend to sound harsh and brittle. Sadly, we can't recommend these valves.

JJ TESLA

(Slovak Rep, current. GP: £5 – £8)

Watford Valves have recently re-evaluated this valve (some early production items produced excessive hum which rendered them useless). The valve's gain characteristics place it in the medium to high gain range. The bottom end response is clean and clear; it has a solid structure which makes it free from adverse microphonics. Tonally, they're great. The midrange has a slight blurring which seems to increase the harder you push it, while the top end is sweet and clear and has nice sustain. Great for rock sounds, but not ideal for clean.

GE 5751

(USA, NOS. GP: £6 – £12)

This is a low-gain valve which produces all the classic GE sound stage and performance as described with the 12AX7WA version. The valve is very low in distortion and very difficult to clip. This is an excellent valve for use in Fenders or any clean stage application, sounding bright and vibrant with plenty of detail. It's very well balanced – indeed it's very easy to get identically matched examples (where each of the twin triodes have identical characteristics). This valve is far better than any currently produced valve for clean, pure Fender style twang.

RFT

(former East Germany, NOS.

GP: £8 – £14)

This German valve – used for a long period by Marshall – is sometimes branded Brimar, Siemens or Telefunken. It has a rich bass response, great drive, a clear and detailed midrange and is very low in microphonics due to a thick glass envelope. This valve distorts earlier than the USA types, but it shows less treble response – a characteristic which lends it to rock-style set ups. The rich harmonic distortion, full of rich sustain with plenty of bass crunch, makes this a great valve in Marshall, Boogie and Vox amps. Definitely one for rockers and blues players.

TESLA E83CC/ECC803S

(former Czechoslovakia, NOS.

GP: £18 – £24)

The Czech replica of the famous

Telefunken ECC803S, this valve has the large 'A' frame getter and thick grade glass which eliminate microphony. It also retains the gold pins and plate structure of the Telefunken (and is *not* the same as the new JJ Tesla E83CC).

The first thing that strikes you is that it is very quiet and displays no microphonics whatsoever. It's beautiful on female vocals in pro-audio applications as it has a super midband, very fast and dynamic. We checked these against a private stash of real Telefunken ECC803S and now reckon that these are identical in every way, including the sound (all it really lacks is the diamond mark). It has a rich bottom end, silky smooth treble and nice balance.

In guitar amps the sound stage is big, with no rings and no pops – just your guitar. This valve seems very neutral, not colouring the sound in any way, and when pushed into distortion it sounds really rich with super-late compression. This is fabulous – it just does what it is supposed to do: nothing more, nothing less.

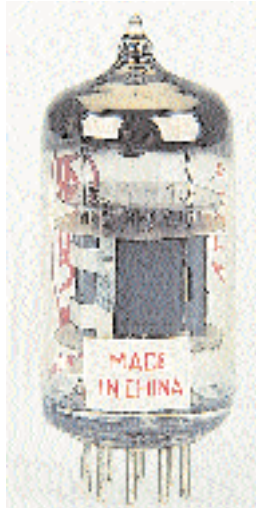
SUPER TUBES: RESULTS

The first thing is that under these tests the unanimous conclusion is that the NOS valves offer better sound quality than the current production types, but this has to be balanced against cost and what your own budget will allow. Tonality is in the ears of the listener and you might find that a current production item has exactly what you are looking for. So try as many valves as you can until you find the sound that suits you.

The **Mullard** ECC83 is the clear winner, as its own superb character shines through. Detail, sustain and perfect balance are second to none, but



GE's robust, low-gain 5751



Chinese 12AX7: not a favourite

what really wins the day is its superb three-dimensional distortion character and bass bite.

Otherwise, it's a very close race for runner-up. The **RFT** has a great rock tone and Mullard-style gain: it can be made to distort very easily and is most at home in Marshall and Boogie amps. With bass crunch in abundance, this is an ideal valve for rock players. The **GE** is the most 'American' sounding due to its bright nature. We love the sound stage and crisp distortion of this valve, and it's certainly a great all-rounder with low microphony.

The **Sylvania** and **Philips** valves all show a similar sound quality. The Sylvania have higher gain and higher drive: this could lead to feedback in critical early gain stages if the valves are unselected for microphony. The Philips seems to be tighter in the bass area but retains the classic mid-band warmth – and it sounds really good in Fender amps.

The **Brimar** CV4004 is a classic British-sounding valve. Refined and balanced, it does everything it should,

and very well. Mind, it's not as aggressive as the Mullard, the GE or the RFT.

Of the current production items, in terms of pure sound quality the **JJ Tesla** is the best. The current JJ Tesla valves (used heavily by Groove Tubes) are higher gain than ones from the early production years. They generally have a good sound with a forward presentation, though when pushed really hard they can sound a little rough around the edges. The audio boys may not like this but it does sound good in guitar amps.

The **Sovtek** valves are certainly low on microphonics – and that's why they're used by more amp manufacturers than any other valve. The WB and LPS are the best for

guitar. The LPS seems to be cleaner and sharper than the other Sovteks, and what you lose in microphonics you get back double in terms of gain. This provides more crunch, more drive and more musical tone than any Sovteks before. Basically, the Sovteks do tend to suffer from a little midrange fuzz when pushed and lack the midrange detail of NOS valves, but they offer top value for money and are available in quantity.

The simple rule to remember is that all the valves do sound different and it may be the least expensive valve that meets your needs. Once you have found your preference always get some spares because in life these three things are certain: death, taxes – and the fact that stocks of original vintage valves will dry up!

Next issue: current production and NOS output valves go under the tone microscope.

Further results and other tube types can be seen on the [Watford Valves web site: www.watfordvalves.com](http://www.watfordvalves.com)

CONNECTIONS

Valves are available from a number of established UK dealers, although prices vary according to supply, degree of testing and matching provided, and so forth. You can generally expect to pay a quid or two more for guaranteed tested preamp valves than from job-lot wholesale style sellers; you'll have to decide for yourself what the savings vs the risk is worth to you. As these tests indicate, many current Eastern European valves in particular have occasionally high failure rates, and even US and UK-built valves of near-mythical status can sometimes fail right out of the box.

Although many big valve dealers will re-brand units with their own logos (as

done by Groove Tubes, Ruby Tubes, and Watford Valves' own Harma label) you should always have access to accurate information on the original model number and country of origin. As discussed in our feature, all current production valves will come from well-known lines built in a few established factories, while remaining supplies of NOS valves are also generally only from familiar and traceable production runs of years past – whatever new branding is given them. Many good guitar shops carry stocks of valves, but for specialist UK suppliers try:

Watford Valves ☎ 01923-893270 or www.watfordvalves.com

