

TUBE Tasting

A Players Guide: Pt2 Output Valves

WITHOUT FUNCTIONING, GOOD QUALITY OUTPUT VALVES your £5000 hand-built, point-to-point Scream-O-Tone combo is just so much crackling plywood. This issue, Derek Rocco of Watford Valves shares with us his taste tests of the larger variety EL34 and 6L6GC power tube varieties...

Having sorted you out for preamp valves last issue, this installment of *Tube Tasting* turns the microscope on the two major styles of large octal (that is, eight-pin) output valves.

Mainly an American valve in its original form – though examples were built elsewhere, and of course current production comes from Eastern Europe only – the 6L6GC and its relative the 5881 are most closely associated with the big Fender amps rated at 40W or more, though they also feature in newer designs from Mesa/Boogie, Soldano and others. Its British cousin the EL34A (a somewhat similar valve but with slightly different voltage requirements and tonal characteristics) is the longest-running valve of choice for Marshall, Hiwatt and others, and typifies the classic ‘British sound’. The two most popular smaller varieties of output valves – the EL84 and the 6V6GT – will be examined next time in the third and final part of this series.

As in our last issue, our tests will compare both current production and NOS (New Old Stock) samples (turn back to Part 1 for a fuller explanation of terminologies and the history of Western versus Eastern European and Chinese valve production). ‘GP’ stands for ‘guide price’ and indicates the approximate price range you can expect to pay for a single valve on the UK market (remember: most amps will require

either two or four output valves).

TESTING: EL34

By evaluating current production EL34 against NOS items, we hope you’ll be able to select the most suitable and reliable valve for your style of music. We’ve placed the emphasis on current production items which should be easy to get hold of – and the good news is the quality of current production EL34s has greatly improved since the start of the decade. We’ve picked valves with low microphony, low noise and similar gain characteristics, using the Mullard EL34 as a reference valve. The same applies now as did years ago: if you want the ultimate tone, simply buy the Mullard... if you can find (and afford) them.

The amplifier we used was a Marshall 100 Super Lead into a 4x12" cab loaded with Celestion Vintage 30s. The guitars were a ’73 Fender Strat, a 1980 Yamaha SA2000S semi-acoustic and a 1980 Les Paul Standard.

MULLARD ‘SINGLE GETTER’

(GB, NOS. Guide Price: £60 – £90) The Mullard provides crisp ringing sustain and huge, tight bottom end with clarity which was unrivalled in this test. The Mullard has it all: the valves sound huge with wide imaging and detail. When

the valve is pushed hard it sounds ferocious with cutting bite. Power chords rock the very foundations, and the valve never loses control when saturated. In history, not many valves can claim the mantle of best audio valve and best guitar valve: the Mullard still reigns supreme at both.

SOVTEK ‘WXT’

(RUSSIA, current. GP: £6 – £12)

The WXT is an upgraded Russian valve which replaces the EL34G & EL34G plus. The manufacturers claim a unique grid block design which improves electron flow and gives higher output – apparently 6 per cent higher than the competition.

With a rating of 25 watts plate dissipation, this valve is a vast improvement on its predecessors. It has a higher anode current draw and higher gain and is very stable. In reliability terms, the valve has stood the test on the road in countless Marshall amps – and in our high plate volt test, all 24 pieces come through with no problems.

The valve has good bottom end response which is nice and tight. It doesn’t have a big sound stage like the Mullard, instead offering a one-dimensional focus which is great for lead work as it pushes the sound right out. When saturated, the distortion has a fuzzy element... great for grunge. The top end response can go a little grainy and get hard on the ear but generally there’s a nice top end chime. We’d recommend this valve for use in all applications.

SVETLANA

(Russia, current. GP: £8 – £14)

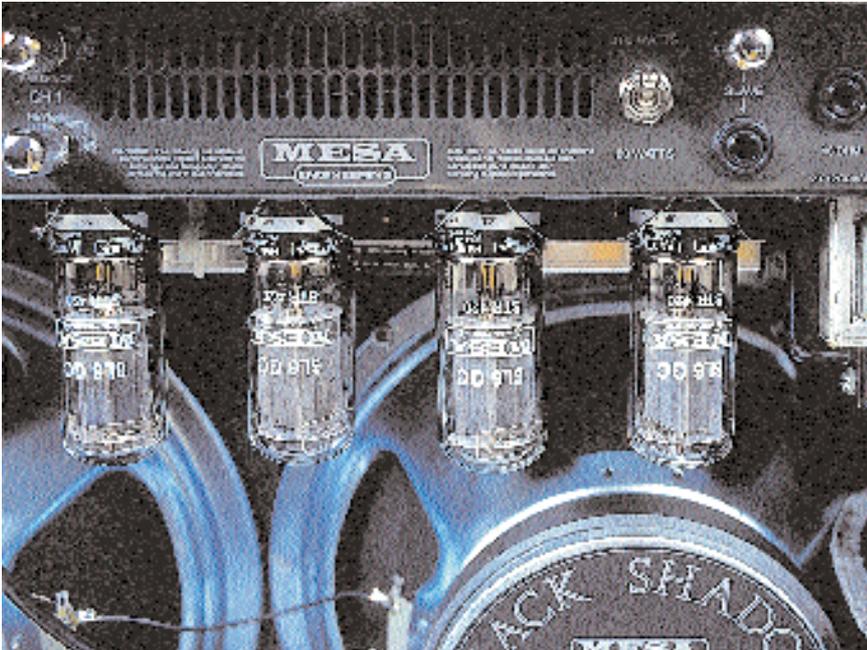
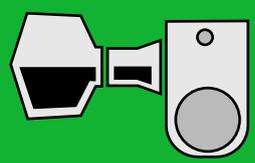
The Svetlana – claimed by its makers to give the best performance under overload conditions thanks to a special plate material – is used by many OEM manufacturers including Marshall. Reliability is not a problem: this valve has stood the test of time. In our endurance test all the Svetlanas came through with flying colours. The thing that really impressed us was that the readings didn’t change. Svetlana definitely have the ageing process sorted out.

The valve has a more linear performance than cheaper options like the Sovtek, and the bass response is better defined. The sound stage is also bigger than the Sovtek, and gives the Marshall more of the trad British rock sound. This unit is very well balanced with the midrange in correct focus, the top end smooth and crisp. A great valve and, again, thoroughly recommended.

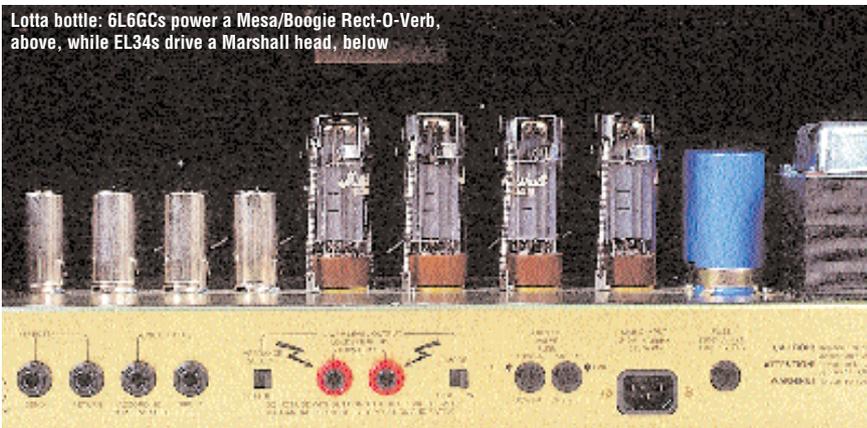
EI & EI ‘6CA7’

(Yugoslavia, current. GP: £8 – £14)

Both of these Yugo valves failed the endurance test at an alarming rate – even the 6CA7 versions which are supposed to be ‘specially tested’ by the



Lotta bottle: 6L6GCs power a Mesa/Boogie Rect-O-Verb, above, while EL34s drive a Marshall head, below



manufacturer. The valves that did come through (about 7 out of 12) were drawing up to 10ma less current than when we started the tests. These would need a serious burn-in process before matching.

Those which survived burn-in lacked the bottom-end response of the Mullard, Sovtek, Svetlana and Harma and sounded lighter and woollier. There's a nice top end response which is not harsh and easy on the ear, but the midrange response is recessed and very fuzzy when pushed.

Overall, these are not as good as the Sovtek or Svetlana if you want the classic rock sound and, basically, this valve just isn't in the same league as the others, with poor reliability and electrical construction. Best avoided.

JJ/TESLA ('HARMA Version)

(Slovak Rep, current. GP: £8 - £15)

The Harma is a specially tested/selected valve of European manufacture. It has the widest frequency response and the highest plate dissipation (30 watts) of the

valves tested. It has a number of features such as gold wound grids and heavy grade glass – all making this a rugged valve for road use.

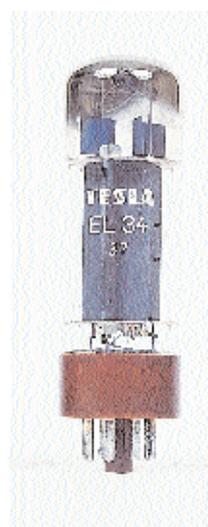
The bass response is big and bold and very well balanced. The tone is bright and slightly forward-sounding, with a sound stage that's big and quite Mullard-sounding and a mid response that's clear and sweet. When driven hard the valve never loses control, with rich distortion blasting through. We really love the top end response – it makes a Marshall really sing, and it's easy on the ear. Reliability-wise, these are rock-solid: the best current production EL34, bar none.

CHINESE

(Sold under various brand names, current. GP: £5 - £10)

Chinese valves have a bad name for reliability, being electrically inconsistent and of poor build quality. Some dealers are saying that they've improved, so we thought we'd try them again.

The results: as bad as ever. These are the only valves to have ever blown more than



Old-version Tesla EL34

one fuse on our test rig. Even when you find some that actually work they have absolutely no top end, sounding dull and unrefined. Frankly, the box and the printing is worth more than the valve itself. Our advice? Don't bother.

EL34s: CONCLUSION

The general standard of EL34s has certainly increased since the start of the decade. The battle ground comes down to three valves, all of which have their own virtues: the Sovtek, Svetlana and the JJ/Tesla. The other valve manufacturers can't currently compete.

The best-sounding current production valve is the JJ/Tesla (sold by Watford Valves as the Harma STR version). This we found the closest to the Mullard in sound quality and overall 'size'. The Svetlana also has a great Mullard-style bottom end but is not as involving or as forceful as the Tesla. The Sovtek is a great blues valve which overdrives nicely and pushes out fierce, hot solos. They can sound grainy at the top end, but I don't mind that: after all, it's rock'n'roll.

The Mullard is still king of the pile, followed by the Siemens. The gap is definitely getting closer, but it's doubtful that the Mullard will ever be bettered. Mullard prices continue to rise, so if you require the ultimate then it would genuinely pay to buy now. If financially challenged then then the JJ Tesla/Harma, Sovteks and Svetlana are all good choices which you can try until you find your favourite.

TESTING: 6L6GC

6L6 types are one of the biggest-selling valves in American history, and are still the favoured choice of many manufacturers. We wanted to see if the current production types could compete with some of the finest valves ever made.

The amplifiers used were a '70s Fender Twin Reverb fitted with JBL speakers, a '70s Twin Reverb fitted with original Fender blue back speakers, and a Mesa/Boogie Mark IV combo. Guitars used were the same as for the EL34 tests.

We chose the famed RCA 6L6GC was used as a reference. The JBL-fitted Twin – with its piercing high end and overall volume – was used to establish if the valves were microphonic.

RCA 'BLACK PLATE'

(USA, NOS. GP: £50 - £80)

The RCAs handle every situation with great authority. From hard rock in the Boogie to steely Fender twang, these justify their legendary reputation and provided an accurate reference standard. The bass is big with perfect balance and definition between top, middle and bottom. Sonic presentation is full and when the valve goes into distortion it

remains sweet and musical. All the amps sound huge with RCAs and displayed not a hint of harshness, even when saturated. These valves simply make you want to play.

CHINESE

(Sold under various brands, current. GP: £5 – £10)

This valve is offered by many amplifier manufacturers and many designer valve companies. All we can say is: why? After finding a choice foursome to fit the Twin (after 10 valves failed a simple burn-in test) the sound quality was still abysmal: harsh and brittle, with compression way too early. The bass is loose and fizzy and in the Fender with JBLs I found myself thinking that a transistor amp would sound better... then the amp went down. On examination we found the cathode/heater insulation was poor and the valves were gassy, whichever brand name was placed on them. They also were pretty microphonic. It makes no commercial sense for any dealer to stock this valve as they simply cannot operate at normal guitar amp plate voltages. If your amp has these valves installed, discard them at the earliest opportunity.

SOVTEK 5881/5881 'WXT'

(Russia, current. GP: £5 – £10)

This is the industry standard, fitted by Fender, Marshall and Boogie. They have a warm tone but lacks the scale and harmonic detail of the RCA. When pushed hard the Sovteks tend to lose control and can sound muddy. The fine detail is blurrier than the other valves, especially with the JBL-loaded Twin. The Sovteks performed very well on the microphony test, and only a few units failed the burn-in test.

SOVTEK 'WXT Plus'

(Russia, current. GP: £7 – £12)

This valve differs from the 5881 by having larger plate dimensions and improved

A Russian-made 5AR4 rectifier and EL84 (left & centre) flank an NOS small-bottle USA-made GE 6L6GC (right), one of the clear favourites of the tone tests



grids to allow higher power handling, and it performed very well in the microphonic tests. The WXT Plus has more top end clarity than the 5881: the midrange is still muffled when pushed, while the bass response is much the same as the 5881, being soft and sweet. In all three amps we noticed a little more detail and clarity than with the 5881, yet the WXT Plus valves were not as good as the majority of others in this test in the clarity department.

SYLVANIA

(USA, NOS. GP: £20 – £30)

These Sylvania valves – late-'60s and early-'70s production – sound full and rich, and they're solid as a rock: no problems on the high plate volt tests and no problems with microphony. The bass is nice and tight with that classic warm sound associated with Sylvania. In the Fender amps they sound a lot brighter than in the Boogie but in no way are they harsh. The midrange is not as detailed as the RCA, but the valves are very punchy and forward sounding.

Imaging and presentation are far better than the Sovteks, too. These are a great choice for all applications if you want that real Fender twang.

GE (Early Type)

(USA, NOS. GP: £22 – £32)

The 'early type' GE 6L6 has a more rounded appearance and is slightly

smaller than later production items. The sound stage and imaging are huge, making the notes fly out of the amp. Bass is deep, rich and plentiful and equally as extended as the RCA; the famous Strat voice is not lost even under driven conditions. The top end has a rich, bell-like clarity which begs you to sustain a note. In the Boogie – which came with poor-quality Chinese 6L6 valves – fitting the GE gave an instantly richer, fatter, almost stack-like tone which I thought sounded better even than with the RCAs, while the JBL-fitted Twin shone with clarity and midrange sparkle. These GEs are one of the greatest 6L6s of all time and come with our strongest recommendation.

TUNG-SOL 5881

(USA, NOS. GP: £35 – £45)

This is the valve that gave the tweed Fender Bassman its true voice. The bass is very tight, well defined and in your face: the valve is well balanced and has the classic midrange twang. They give less power than the Sylvania, GE or RCA but have superb drive and great early distortion and actually make the amp sound bigger than it really is. A great-sounding valve that deserves its classic status.

PHILIPS 'WGB' (& HARMA SB)

(USA, NOS. GP: £10 – £20)

This American-made military



Valve heaven: an original RCA 'black plate' 6L6GC

specification valve has all the tight bass and midrange clarity and twang of the Tung-Sol – and it's something of a bargain. The break up is very musical and the dominant midrange response is uniquely 'classic Fender' with no harshness. True, it's a little less defined and aggressive than the Tung-Sol, but it's warmer with a touch less bass.

This valve is superb in Fenders if you fancy midrange honk and early distortion at club volume levels. These valves are an ideal choice in reissue Bassmans, Boogies and Soldanos. The Harma SB-6L6 is a specially selected version of the Philips.

HARMA 'STR'

(E. Europe, current. GP: £14 – £17)

This is the best current production 6L6. The glass envelope is made from high quality heavy grade glass, making the valve the most unmicrophonic of any we tested. The gold-plated grids and special plate alloy give it improved plate dissipation and greater stability at high voltages.

When it comes to scale of sound, the Harma STR is second only to the GE. The treble response is full, smooth and creamy, the sustain long and pleasing with punch and definition. This valve is a real goodie: highly recommended.

SVETLANA

(Russia, current. GP: £10 – £16)

The Svetlana has a growing list of professional users. The specs claim a design based on the famous Philips/Sylvania STR 387, and sure enough the extra thick mica spacer does make this valve less prone to microphony.

In all test amps the balance was perfect – just like the RCA bass is crisp and clear but not as deep as the Harma. Distortion is sweet with good punch, and when pushed this valve avoids the muddiness of the Sovteks. We reckon it's the best current production item available... behind the excellent Harma STR reviewed above.

PHILIPS/SYLVANIA 'STR 387'

(USA, NOS. GP: £22 – £32)

These 387 valves are famed for their rugged construction and high voltage tolerances. In sound terms we could detect no difference between the 387 and the Sylvania 6L6GC: indeed, this tube actually sounded brighter than its earlier brother, which I felt was over-bright in the Twin fitted with JBLs. Overall, it has the same characteristics as the Sylvania and would be a very decent choice.

EAST EUROPEAN/HARMA STR KT66

(Russia, current. GP: £28 – £35)

This is a completely different valve from those built by Sovtek and Chinese

factories in recent years and (somewhat misguidedly) labelled 'KT66'. This new run – commissioned from Russia's Reflector factory by 'a leading US tube retailer' but now also available under the Harma brand – is accurately based on the specs of the legendary British GEC KT66, that essential ingredient in so many early Marshall amps, including a rugged structure and gold-wound grids.

Tested somewhat separately from the other 6L6s in a vintage '59 Fender Bassman, a reissue Marshall

Bluesbreaker and a reissue Fender Vibrolux, this valve proves stunning in all applications. Bass response is big, and the sound is warm and very responsive throughout the range. In the reissue Bluesbreaker it was actually hard to hear any difference between these and an NOS pair of GEC KT66s (costing from £65 – £95 each on today's market, when you can find 'em). Highly recommended.

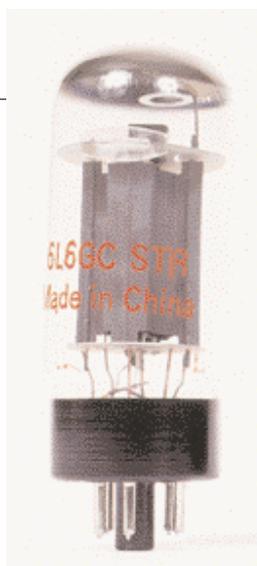
6L6GC: CONCLUSION

With 6L6 valves the first step is to decide how you want the amp to sound in relation to your style of music. Some types distort sooner, others stay tight and crisp – and both can be considered excellent tubes in their own right. It all depends on what you're looking for.

The **Russian 6P3S** and the **Chinese 6L6s** are not worth fitting in guitar amps. Most of them don't work: the ones that do sound poor.

The Russian-built **Sovtek** valves are more reliable and make good economic choices for general repairs or replacements, but they don't have character or tonal definition to compare with NOS units.

The top two current production 6L6GCs are the **Harma STR** and the **Svetlana**. The Harma have a bigger GE-style presentation and are more vibrant,



Chinese 6L6GC: 'discard them'

easily ranking alongside many USA valves.

Of a slightly different breed but an electronic virtual equivalent of the 6L6 types, the new-model **Russian KT66** is a welcome addition to the current-production market, and puts to shame many valves marketed as KT66s in recent years. If you want the sound of an original GEC KT66 but can't pay that kind of money, this is the only real alternative.

The real stars of the NOS examples are the early production **GE** and, not surprisingly, the **RCA black plate**. The GE's bass is not as deep as the RCAs, but would you really notice this with your Boogie or Fender cranked up to eight your favourite club? I think not. The great thing about the GE is that the more you turn it up, the bigger it gets. The RCA is better balanced, but I would gladly trade that for the more forward, slightly brighter sound of the GE. This tube is pure rock'n'roll.

The **Sylvania 6L6GC** proved itself another great valve: warm, rich, full-bodied and an excellent choice for a Fender Twin. With a Strat in the 'out of phase' position, this was just heaven.

But the real revelation was the US-made military spec **Philips WGB/Harma SB-6L6**. It has less power than the other USA items, but an excellently detailed midrange presentation and the advantage of early break-up, giving big, fat distortion in a Twin Reverb without taking your head off and, in the Boogie, a nice crunch with any amount of pre-amp distortion. This valve is just the job for a club player.

Next issue: small bottle EL84 and 6V6 output valves. Further results and other tube types on the Watford Valves web site: www.watfordvalves.com

