ECC83/12AX7/7025 Guitar amp Test reports –Feb 2012

INTRODUCTION

Object of the test
To evaluate the sound quality and reliability of the new batch of ECC83/12AX7 types that have come available since our last test reports in 2002. To compare & evaluate the modern items against the best of the new old stock types for use in guitar applications.
All valves were selected with the same electrical characteristics and gain and the same levels of low micro phonics.

The equipment used for these tests were conducted with a variety of amplifiers the main ones listed below. We also used for the high gain tests a Mesa Boogie Dual Rectifier and a Peavey 5150 MK 1. The tests were done with one amplifier at a time with notes taken on each amplifier. The tests were then redone on each amplifier 5 times over a 4 year period and notes compared so consistency was achieved. The valves did perform differently in different amplifiers and with different speakers. So the test reports give an indication of what the valve produced consistently in the different amplifiers.

Equipment used

Amplifiers & combos

- Vox AC30 fitted with Celestion Blue Alnico Speakers,
- Fender Twin Reverb fitted with 2 Jensen C12N Speakers,
- Fender Princeton Reverb 2 fitted with Harma Bright Sapphire Speakers,
- Marshall 1977 50 watt Head,
- Marshall 1974 Super Bass Head,
- Mesa Boogie Dual Rectifier (High Gain Tests) Peavey 5150 MK 1(High Gain tests)

Cabinets

- Harma 1 x 12 cabinets fitted with a Weber Alnico A150 Lite Dope Speaker,
- Harma 2 x 12 fitted with Celestion 12 Gold Alnico Speakers
- Harma 2 x 12 fitted with Harma Clear Sapphire Speakers
- Marshall 4 x 12 fitted with Harma Vintage Ruby Speakers.
- T.A.D Silencer Power Attenuator & Weber Mass 100 Attenuator.

Pedals:

- Butler tube driver,
- Butler blues driver,
- Keeley TS808 tube screamer and Keeley SD-1 overdrive.

Guitars

- 1973 Fender Stratocaster,
- 1981 Yamaha SA 2000S,
- 1993 Gibson Les Paul Standard,
- 1978 Gibson Les Paul Custom fitted with Seymour Duncan 1959 PAF pickups,
- 983 Fender Telecaster Elite,
- 2006 USA vintage Fender 52 reissue Telecaster

Introduction
The Original American designed 12AX7 was introduced by RCA in 1948.
Seeing the huge potential of a small high MU double triode the giant Philips group via its Mullard brand introduced the ECC83 in the early 1950's. The ECC83/12AX7 is still to this day the most used signal valve in modern electronics.
The industry reference is generally considered to be the Mullard ECC83 with strong claim also made by the Telefunken ECC803S and the Tesla E83CC.

1-ECC83/MULLARD New old Stock 80's production

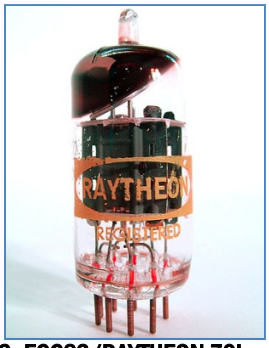
The claim that the Mullard ECC83 is the best sounding ECC83 ever made was fully justified in these new tests. In all amplifiers it provided a clear and musical sound that was a joy to play. The bass response was deep clear and rhythmical with a vice like grip on the sound. If pushed hard the Mullard did not lose any of its finesse nor did it ever sound hard or harsh.
In overdriven mode the valve has the smoothest and most detailed mid range of any valve and when distorted or run hard produced an almost 3D effect. The valve displayed the creamiest distortion out of any of the valves in the test. Treble was clear with a nice open ring this gave a nice weight and spacious feel to the sound. In high gain mode The Mullard ECC83 was also the best at taming the little inherent fizz that could be produced by the Peavey and the Mesa on high gain settings. Power chords crunched and the top end chime from the Vox AC30 could not be faulted. The Mullard displayed a detail and a crispness in the high gain settings that was not present in nearly all the other ECC83 types. The Mullard consistently provided exceptional performance in all the amplifiers.
This valve tone and dynamics makes this one of the best ECC83 ever made.

2-ECC83/M8137/CV4004 Box anode 1970s production

The Mullard CV4004 M8137 is the military ECC83 valve that is easily recognised by its thick box style anode plate construction. These are extremely rare now and very expensive and the box plate construction makes this valve very unique.
In audio circles this valve is considered as one of the best and given the number of calls I still receive for this

valve I thought we would include these in the tests. In clean mode the strengths of this valve are very obvious in that it has a very clear and dynamic top end response which is also very open and airy. The mid range has a really over emphasised and laid back feel and a larger than life presentation which fills the room. This was excellent with the Tele and Strat as it produced a depth that no other valve provided in these tests. The CV4004 box anode was really stunning in this department with the bass is very deep and musical. In overdriven and high gain the valve did have some short comings.

The draw back is that this valve in terms of guitar amplifiers is not the most resilient in terms of micro phonics and this did not really suit the Mesa or Peavey as well as the regular Mullard. In overdriven mode the midrange is really beautifully overblown and gave a really nice rich timbre to the sound. The valve in the distortion sakes was really too refined and a little too laid back when compared to the standard ECC83 Mullard. This valve is a classic and better suited to audio than guitar applications as I feel many guitarists would be a little disappointed given the high cost. For me I would go with the regular Mullard ECC83 ladder plate every time.



3- ECC83/RAYTHEON 70's production

The Raytheon ECC83 construction is identical to the Mullard with its distinctive ladder plate. In all amplifiers it shared the Mullards deep bass and in this department there was really nothing to choose between the Mullard and the Raytheon.

In normal operation the treble was clean and clear with excellent dynamics and musicality.
The midband was not as punchy or as creamy as the Mullard but its performance was still excellent and again one of the best overall in the tests.
In the overdriven and high gain settings the Raytheon did show a rather over heavy midrange which seemed to merge into the bass unlike the Mullard ECC83.The treble response was less controlled and became a lot harder. The sound produced was very thick and coloured which sounded excellent in distorted mode. Overall one of the closest valves to the Mullard and sounded excellent in high gain settings.

4- ECC83/CV4004/BRIMAR 70's production

The Brimar is another really great British designed valve that is worth tone hounds worldwide hunting down. These have the distinctive grey half flange anode plate and a solid overall construction. In clean mode this valve is excellent as it produces every subtle variation of timbre in the guitars sound. It is really neutral sounding as it does not colour the tone thus providing a warm and responsive treble.
The bass response in clean mode was deep, clear and produced excellent clarity on single note runs and double stops. Slam these in the high gain mode and they provide a warm and punchy rock sound. The only slight down side is that they did seem to overemphasize the high frequency in these settings. The midrange also did not provide all the cream of the Mullard or the Raytheon but we are taking small differences. What the Brimar CV4004 has is near perfect note separation in all modes. The strong point of the Brimar is the clean sound as here it was better than nearly all valves under test.

5- ECC83/RFT 70's production

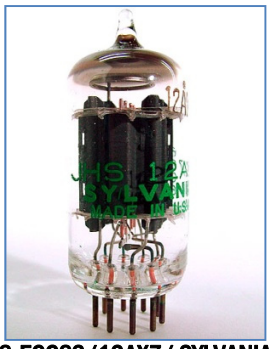
The RFT ECC83 was made in East Germany and was used by many manufactures as their own brand. It features a half flanged anode with three perforated hole in the facing plate of the anode. The RFT has a powerful if slightly less bottom end than the Mullards and produces a very tight and musical tone. The highs are not over extended and can be a little bit weak. The RFT has a very gutsy in your face dominant midrange flavour to the overall sound. The RFT adds plenty of spice to the clean sound.
If you push the valve slightly then it really has a nice solid punch and starts to distort quickly. This valve really does respond well to drive and was really at its best in the overdriven stakes. The Peavey and the Mesa really did benefit as saturation could be reached easily with less fizz than with was evident with most other valves. The midrange just cuts through the mix with a nice fat rounded tone
The RFT has a harmonic sustain on single notes lasted longer than most other ECC83 in this test. This is a great new old Stock valve that does lack some of the subtleness of the Mullards and the Brimars but In terms of a Rock valve this is amongst the best.

6-ECC83/Tungsram 80's production
The Tungsram ECC83 follows the Mullard ladder plate design and just like the Raytheon produces a sound

that is close to the original Mullard. In clean mode the bass is very tight and musical; chords produce plenty of slam with single note runs clear and high in the mix. The midrange is neutral and very transparent; this transparency remains under fully distorted conditions so it loses the edge of the Mullard in this respect and sounds a little lean. The treble is always clear and precise which sounded wonderful in the Vox as it had a really spacious quality.
In overdriven mode this valve has a super sweet top end that was big without any hardness. It really did remain tight in the bass and punchy in the midrange. In The high gain stakes it gave a full on Rock sound which was extremely punchy with a nice clarity. It lacked some of the Mullard character and could be described a little thin here.
This valve produced a very refined performance in all amplifiers and no wonder this valves was one of Aspen Pitman, the GT founder favorite ECC83's.

7- ECC83/12AX7WA/PHILIPS 80'S Production

The Philips American 12AX7WA is identical to the Sylvania ladder plate design and has won many reviews as an excellent audio valve. In clean mode the bass is not as deep as the Mullards but is very clear with good note definition.
The valve has a very warm and dominant midband and this gives the impression of a lack of punch. The top end is also less bright and very smooth.
This was one of the first valves that it was clear than they liked more traditional circuits than the high gain circuits of the Mesa and the Peavey. In the Fenders and Marshall with a moderate amount of gain they provided a nice cutting solo sound with nice warmth. The overall sound was well controlled and detailed if a little out of balance. In the Peavey with the crunch setting in on the lead channel with only moderate settings and to a lesser extent with the Mesa it seems to add a little upper end rasp or attitude to the sound. Many valves would produce this sound with the Peavey and Mesa but the Philips seemed to handle and control belter with more punch in the midband. If you gave the valve too much gain then it could become a little aggressive.



8-ECC83/12AX7/ SYLVANIA 1960's Production

The 1960's Sylvania 12AX7 is identical with the short ladder plate design that they used for the latter Philips ECG valves.
The bass end was very similar to the Philips 12AX7 of the 80's and the valve did display many of the same traits of its younger brother.

This valve in clean mode defiantly had more bite and more attack than the latter Philips version. The treble was brighter and higher in the valves sound stage. This sounded excellent in the Fenders and the Vox AC30 which resulted in the treble providing a lovely top end chime. Enter the 5150 and the return of rasp in the upper end frequencies of the sound. I was a little disappointed with this as in the Marshall the valve sounded punchy and together. In deed in the Marshall the valve gave a great Rock sound with as nice blend of punch and warmth. In the Peavey and the Mesa they produced a rather thin sound when gain controls were set high. This is an excellent crunchy valve in the traditional style circuits but did not seem to cope that well in the high gain, high saturation situations.

9- ECC83/12AX7WA/G.E JAN 1980's Production

The General Electric Military Jan 12AX7WA follows their traditional ladder plate design and the G.E was used by many manufactures as original equipment in both audio and guitar applications. In Clean mode the valves bass response is not as deep as the new old stock British or European valves but it does sound really fat. The other noticeable sound character was that they had the best top end of any valve tested. The G.E provided excellent note separation which made both the Fender Twin and the Vox AC30 a joy to play with all guitars. In overdriven mode the valve performed well with pedals producing a fat clear distorted sound. In the high gain circuits they produce a slight bright presentation with a slight blurring in the treble. This clarity was welcomed when using a telecaster as it kept the sound without it descending into mush. On solo's notes rang out with plenty of weight and punch. This has more top end sparkle and was the best when it comes to clean sound in this test. No doubt that is why Fender used these until production stopped.
The G.E is the clean valve and will not disappoint in the overdrive stakes.

10- ECC83/7025-RCA 70's production

The RCA 7025 has the ladder plate ribbed design with solid internal supports and the O ring getter. In clean mode the bass and midrange are in perfect harmony as note separation and clarity are superb. The valve has lot of top end sparkle which made it excellent in the Fenders. In overdriven mode the RCA did possess a little midband honk but had the most wonderfully bright distorted tone.
In high gain modes this valve produced a really nice twang with a quite laid back feel.
A little top end fizz was also evident but the main strong point of the RCA was its really warm complex midrange. Single notes to power chords, double stops to broken chords the RCA had a really rich sound. Many of my customers over the years state that these are the best in Fenders, a little darker than the G.E but with more attitude. It is easy to see why they think this and why they sell so quickly, the ultimate Fender valve maybe?

11- ECC83/12AX7/G.E 80'S production non JAN

This is the non-military General Electric 12AX7A and whose plate structure was exactly the same as the Jan 12AX7WA. Indeed after trying to find a difference between the Jan and the Non Jan the only one I could find was the difference in the ink used to print the valves, green on the military white on these.
So to recap on the main points the G.E 12AX7 proved to have the best clean sound out of any valve tested. The midrange response sparkled in the Fender give that fantastic twang. In the Vox the G.E bell like top end chime was excellent. The valve produces a bright warm treble in clean mode with a musical harmonic midrange. In overdriven mode the valve produced a tight creamy focused sound. The G.E is my favourite clean valve in military or commercial specification.

12- ECC83/5751-PHILIPS 1980's production

The Philips 5751 has the ladder plate anode design the strong internal supports and looks identical to the 12AX7.
This valve is the warmest sounding 5751 I have tested and is very close if less detailed than my early original Tung-sol 5751 from the early 1960's. This valve has a firm tight bass response with precise note definition. The sound has excellent midrange transparency with a well-balanced top end.
In the overdrive stakes, given that this is a low gain 12AX7 it had much more clean headroom. It handles pedals with ease and this extra headroom gave plenty of clarity when pushed a little. In the high gain circuits particularly in the Peavey 5150 the sounded benefited with the extra clarity and this gave the whole amp a lot better focus.
The overall sound was well balanced and warm which gave a nice open distorted tone when pushed.

13- ECC83/5751/GE 1980's production

The G.E 5751 follows the same ladder plate structure as the G.E12AX7A.
In clean mode the valve produced a bright sound with treble forwardness with a clear transparent midrange. The bass was a little light but still very musical especially in the Vox and Marshall. In Fender amps with the Fender guitars the clean sound was by far the best of the test as the extra headroom seemed to suit the Vox as it was very open with plenty of chime. The In overdriven mode the G.E provided good crunchy performance with a forward and more pronounced treble. In the high gain circuits with the levels at more extreme settings the G.E did sound bright and shrill. In this case it was best to move the gain down a little. This is a great clean sounding valve and excellent at reducing the muddiness in your amplifier tonal sound.

14-ECC83/E83CC Original Tesla Czech 80's production

The Original Czech E83CC was originally made to rival the famous Telefunken ECC803S. This valve had the classic "A" frame double supported getter and industrial grade glass. The Tesla E83CC along with the Telefunken ECC803s was made with a unique Frame grid construction. The benefit of a frame grid valve is that it allows very thin and high quality grid wire to be used. The frame is made first and is a very solid structure the grid wire is then wrapped around the frame with the frame is rigid and set inside the mica. The grid's solid frame allows for perfect alignment of the grid windings.
This is a very expensive process and needs precise manufacture; hence no valves are currently made this way.

The benefit of such construction for guitar valves is immense and in terms of microphonics, these gave the lowest figures in this test, indeed nothing even came close. This is valve manufacture at is very finest and is true perfection.
This benefit was of major importance in the Mesa Boogie and 5150 as this valve displayed the lowest noise in this test. In clean mode in all the amps this valve provided one of the best clean sound by a mile. The Vox AC30 top end chime was dynamic and musical and chords sounded airy with a lovely rich harmonic overtone.
In overdriven mode and high gain crunch mode in the Mesa and the Peavey the valve had the most neural and transparent midrange. In terms of sound the Mullard ECC83 has that rich harmonic distortion that we all love.
The E83CC Tesla has neutrality that is superb and really did tame the buzz that is present in both the Mesa and Peavey. These in the V1 position of any amplifier really do give it a sonic purity that is unmatched, yes even by the Mullard. In the Marshall the amps seem to have the right balance of clarity and gain and in some areas I preferred these to the Mullards I defiantly preferred these in the higher gain circuits even though the distortion was not as creamy.
As with the Mullards these valves are often faked and it is quite hard to spot.
A couple of things to look for, firstly the JJ valve has a chrome support that runs from the bottom to the top of the valve mica the original item does not. The getter at the top of the valve (which is the round halo at the top of the valve) on the original E83CC Tesla has a double support, the JJ has a single support. The valves that we tested were from the Zavod Trintec factory with gold pins, 32 Vrchlabi factory code with nickel pins and later 37 Trintec factory code with steel pins all of which produced the same results with nothing to choose between them. This is one of the best of the ECC83/12AX7 ever made and if you can find them then the advice is buy them as this is the last great super valve.

15-ECC83/12AX7A-C T.A.D

The Tube Amp Doctor 12AX7A-C is the Chinese 12AX7B in selected format from TAD. The B designation means that it is factory selected for lower micro phonics. This is the same valve as the Ruby tubes, Groove tubes and Peavey rebrand.
This valve has a warmer and richer sound than the previous Shuguang factory items.
The bass and midrange response was less deep than many in the test. What it does posses is a warm biting midrange with a tendency to be easily overdriven. This does detract from the clean sound in the Fender amplifiers and therefore would not be my first choice in clean amplifiers as the treble response is also little muffled and non descript.
In the overdriven mode the ease of overdrive was welcomed this brought a nice throaty distorted guitar sound. The valve had reasonable resistance to micro phonics but in higher gain setting can produce some rattling. In the Marshall amplifier the TAD 12AX7A-C produced a nice mix of creamy overdrive with the loss of some top end clarity with a tendency to sound a little brittle and hard.
In the high gain circuit the valve did not really fare that well. Firstly the high levels of hiss were prevalent and the treble become to shrill and fuzzy. The midrange and bass seem to merge lacking the detail of many of the more modern 12AX7 types. This is a characteristic of all the Chinese made valves with this construction.
What this valve does well is provide a nice warm crunchy sound in traditional circuits such as the Marshall and the Vox. In the high gain circuits the valve sounds Sharpe, harsh and brittle.

16- ECC83/7025 TAD RT010

The TAD 7025 is exactly the same as the 12AX7-C. It is simply the top 5% of the batch in terms of micro phonics so can be used in the first position of high gain amps.
The valve performed identically in our tests to the standard 12AX7-C as you would expect. The ECC83/7025 TAD still had the same levels of hiss in the V1 positions in the Peavey and Mesa, With the same harsh and brittle sound when overdriven as the 12AX7-C.

17- ECC83/12AX7WC/SOVTEK

The Sovtek 12AX7WC is the factory selected version of the WA and WB and is the valve used by Fender and Groove tubes in the 12AX7-R
In all the amplifiers this valve was clearly not the best sounding. The bass is not particularly deep and tends to merge with into the midrange. The treble is also a little splashy and unrefined. The Fender and Vox amplifiers lacked the clarity and chime that you would want from these amplifiers.
The real strong point was the WC seems to have very low levels of micro phonics and a low noise floor. In the over driven tests the valve really gave a rather lightweight performance. In the Mesa and the Peavey they did reduce the breakup at lower volume levels and did provide a rather harsh brittle top end. Extreme settings led to a very mushy confused soundstage. The Sovtek WC was out performed by most of the valves in this test but it offers low levels of noise and may be useful in less critical positions.

18- ECC83/12AX7LPS/SOVTEK

The Sovtek 12AX7LPS construction is a long plate ladder plate design that was popular in the early 1960's.The S stands for spiral filament which reduces hum when operated in amplifiers which use AC heaters. In clean mode the LPs gave it's best result, the bass is deeper and rounder with a clean detailed midrange and more refined than other Sovtek items. The LPS in clean mode was very smooth and balanced and these valves worked well in the Fenders and the Vox.
Introduce moderate gain levels it was noticed that the LPS suffers from a higher than average level of micro phonics. This seems a common feature of long plate valves in general. In this mode the LPS continued to be well balance and distort fairly evenly the only downside was a little blurring in the treble department.
In high gain circuits the valve displayed a rather full fat distortion that was a little bass heavy. This did seem to get worse with more extreme settings with a metallic rattling element introduced into the sound. This valve has a nice warm presentation with good overall sound. In is prone to microphones and there I would not recommend these for high gain or combo amplifiers.

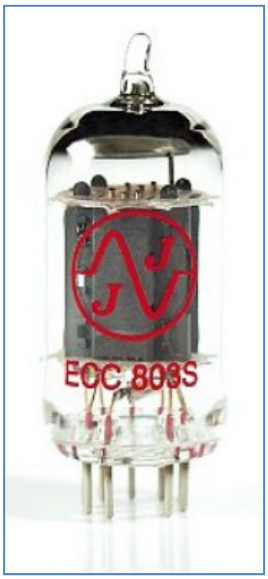
19- ECC83/7025-S-MUL/TAD

The TAD 7025-S is a Chinese produced reproduction original Mullard ECC83. This appears to be from the same factory as Groove Tubes 12AX7-M but is not the same valve.
I have seen examples of this valve also labeled preferred series 7025, ProComm ECC83 and PM ECC83. The TAD item has smaller plates than the GT re issue. The plate is spot welded and follows the same structure as the Mullard. It has thick mica spacers and rugged mechanical construction.
The bass and midrange are clean and clear with a nice top end. The valve has lot of punchy top end which made it excellent in the Fender and Vox amplifiers.
In terms of noise and hiss this item does have lower mechanical noise than the regular Chinese 12AX7-C.
In both overdriven and high gain modes this valve produces a nice sonic midrange that broke up very evenly indeed. Solo's had a rounded edge without losing its aggressive edge. The TAD 7025-S produces a bright top with punchy mids just like a Fender tweed amp. This valve performed really well in the high gain circuits giving a cutting aggression to chords even if a little fizzy. The 7025-S shares more of its sound character with the American R.C.A and G.E of the past than the Mullards. This is a great replica in sound of the old bright vibrant USA sound that is excellent in Fenders.
I would not tend to use this item in High gain circuit because of the fizz.

20-12AX7 Electro Harmonix

The 12AX7-Elrctro Harmonix is one of the most consistent and best sounding current production 12AX7/ECC83 types made today. The Electro

Harmonix follows the short ladder plate design and has very rigid internal construction. In clean mode bass is clear with excellent depth and the sound is well balanced with good clarity. In overdriven mode the valve breaks up easily and Sovtek, who own the brand name EH have designed in very nice overdrive characteristic to the Electro Harmonix 12AX7 valve.
In Overdrive mode the valve has a hard cutting sound with plenty of punch. Midrange response has slight muddiness with a nice rounded tone in the upper frequencies. The bass response in all modes was very tight. The12AX7-EH proved to be very low in the microphonics department.
The valves performance in clean mode was also very good. In the Vox and Fender nice clarity and top end detail was easily attained. The only fault that I can level at the 12ax7-EH is that it can have a slight thinness and treble hardness in the Fenders. The 12AX7 EH is one of the best modern made 12AX7 types that provided excellent sound quality at a low cost.



21- ECC83/ECC803S/JJ-TESLA

The JJ-Tesla ECC803S is a recent valve to come on the market which has a long anode plate (13mm) with a longer fin that improves heat dissipation. I have no idea why they called it ECC803S as it really should be called ECC83 LP. These are identical in construction to the Czech Tesla ECC802S with a gain of an ECC83.
This design is not the same as the old frame grid ECC803S Telefunken so do not be confused with its markings.
The valve features gold plated grid wire, top getter and a spiral filament to reduce hum and noise.
In use in the clean mode the ECC803s produces a rich warm sound which was quite thick in the midband. The low end response is fast and rhythmical. The upper mids have nice detail with a smooth treble. Increase the gain and the problems of using a long plate valve becomes apparent. In the Vox the valve scored below par because it was very susceptible to vibration and micro phonics. This also was worse in the high gain applications as this could be heard through the speaker. The distorted tone had a metallic element to the sound that left it sounding a little hard. This valve does have a nice pleasing sound for audio and in clean applications if not really pushed. It is, however out performed by its older brother the ECC83S in guitar amps. Considering the competition it cannot be really recommended for these applications which are a shame.

22- ECC83/ECC83-WA TAD RT008

The TAD ECC83 WA is a new valve from TAD which features a triple mica construction and looks like a Chinese clone of the 12AX7WC Sovtek as the internal construction is identical. TAD appears to have replicated the Sovtek design with a few changes thrown in for good measure. In clean mode the valve has less clean headroom and has less top end response than the Sovtek 12AX7WC. It does however have more gain and more attack on single notes and double stops. The have also made the midrange response slightly fatter and warmer.
In the overdriven mode the top end has a nice crunchy ring with a slightly harder feel and sadly more fizz. In the high gain Mesa and the Peavey they did perform a little better than the Sovtek 12AX7WC as the top did go brittle but the mids were slightly fuller. The valves point of clipping/ distortion was slightly earlier which I really liked. On extreme settings the valve did lose control and supplied a rather mid biased wall of brittle sound which lacked any detail.
TAD has clearly aimed this valve at all the manufactures that fit the Sovtek12AX7WC in their amplifiers as standard.
It has a little more gain and a little less hardness at the top end and is a valve that will work well in Fenders and traditional circuits without sacrificing the gain. In High gain amps it still has the harshness that is a trait of Chinese valves which is a shame.

23 ECC83/7025-WA TAD RT080

The TAD 7025 WA is a selected low micro phony version of the TAD ECC83 WA.TAD recommends this for use in

demanding V1 position of high gain amplifiers as they have selected the lowest noise items from the batch and labeled them the 7025WA. Sound wise the same as the ECC83WA.

24-ECC83-RETRO/HARMA

The Harma ECC83 Retro follows the ladder plate design with a double supported getter and is a selected Russian made recreation of the famous Mullard ECC83.
The valve has a very warm detailed and harmonically rich midrange that does provide close to that Mullard sound.
The valve has been designed to give a smooth harmonic slope which gives a warm crunch in guitar amplifiers but breaks up a little later than many of the modern ECC83/12AX7. In clean mode it has a nice warm chime that was excellent in the both the Fender and the Vox AC30. The valve also has a really clear bass response which is very clear and precise.
In the overdriven stakes this valve has a full sweet distortion and gives a really warm crunch and reduced the upper end fizz and hardness that occurred in the Peavey and the Mesa. The valve is very punchy and has a tight focused sound with a nice rounded bass.
The valve is also very low in micro phonics as the Harma ECC83-Retro has extra thick mica spacers with a rigid anode construction. To further reduce micro phonics the valve is made from extra thick glass with a 22mm diameter. This again does the job in the high gain circuit and the Peavey and Mesa really did benefit from the valves extra warmth.

In terms of the 3D midrange then no the Harma Retro is not in the same league as the original Mullard, but then nothing is. The valve does provides classic warm crunch harmonically rich midrange response that is close as one can get and will bring the best out of any amplifier.

25-Gold Lion ECC83/B759

The Sovtek factory have selected their LPS valve and labelled it up as a recreation of M.O Vs original Genalex Gold Lion ECC83/B759. This is a ladder plate design with gold pins and is a really nice looking addition to the market. The valve is factory balanced which means it is selected to have equal output on each of the triodes
The factory selection of this valve was excellent .The valve did show low levels of microphonics when testes. In clean mode, just like the Harma Retro ECC83 and the Tung-Sol 12AX7A the valve has a wonderfully warm midrange. The valves sound is very rhythmical and dynamic especially in the bass. In over driven mode the valve shows the same issues as the 12AX7LPS. In the Peavey and the Mesa when gain is added the B759 displayed the same levels of Microphonics and the same sound as the LPS tone when gain was added. When extreme overdrive was added with the gain is cranked up. The valve did smooth out that spiky hard high end that you can get out of the Mesa and Peavey on the plus side. The downside is that this is expensive with the price of this valve is now in the new old stock league. In the new old stock league there are far better valves at the same price. The other issue is the Microphonics and like the LPS is not something that you could recommend for the high gain circuits.

26-ECC83-STR/HARMA

The Harma ECC83 –STR construction is firmly based on the anode structure on the Telefunken ECC803S and Tesla E83CC.This structure has a number of advantages such as reduced micro phonics and better isolation from vibration. The valve has good gain with a later break up when compared to the Electro Harmonix and Chinese 12AX7
In Clean mode the Harma ECC83 STR is very well balanced with even tone. Bass has plenty of depth but it is not as deep as some of the others in the test. The mid-range is very transparent if a little lean and with less warmth.
In the Fender amplifiers the valve has a really nice to end sparkle to the sound. This gave a nice detailed ring to the treble that was one of the best out of the modern valves.
In the Peavey and Mesa the Harma ECC83-STR showed very low noise levels which reduced this hiss that is prominent with these circuits. It did not go fizzy and grainy when the gain was increased to sensible levels. This resulted in a crisp even distortion that never sounded hard or harsh and retained its overall balance.
What the Harma ECC83 STR does is provide a warm vintage tone with sparkling highs that is a good choice in all applications especially clean.

27-ECC83/12AX7WA TUNG-SOL

The Tung-sol 12AX7WA is a Russian produced from the reflector factory and the name Tung-sol is now owned by the Sovtek Company. In clean mode the valve has a very warm detailed and harmonically rich midrange that does provide that Mullard sound. The valve also has a very linear and smooth harmonic slope which gives the valve a warm crunch in guitar amplifiers.
In clean mode excellent chime and top end clarity in both the Fender and the Vox AC30.The bass is also excellent and it is very musical and dynamic.
Kick in the overdrive and the Tung-sol has a smooth warm distortion. In higher gain modes it displayed no muddiness and also had very low micro phonics. The valve performance under saturated conditions was warm and dynamic. This is an excellent valve that is one of the best modern 12AX7 types on the market today.

28-ECC83/7025 DR 250 HARMA

The Harma 7025-STR construction is based on the short ladder plate design that was made by Philips and Mullard.
The Harma is a selected valve for high gain applications and as it is tested for low noise.
In clean mode, like its factory stable mate the EH 12AX7 and the Chinese item the valve has plenty of gain. If you like your Fender amps with a little bit of crunch then this will fit the bill. The top end response is harder and is not as warm as some others in the test.
The bass response in this mode is very tight and clear with low levels of micro phonics.
In overdriven mode the valve has an aggressive of punch with a slight muddiness in the upper midrange frequencies. Top end could be made to sound bright and care would be needed over pre amp gain settings.
The 7025 did perform well in the Mesa and the Peavey circuits and will provide high amounts of gain if that is what you need.

29- ECC83/ECC83S/JJ-TESLA

The JJ/TESLA ECC83S was an improved version of the ECC83 that the factory introduced back in 2002.JJ introduced a more rigid construction with improved frequency response and this valve has now been with us for quite some time.
In Selected format this valve is available as Groove tubes ECC83S, Mesa ECC83 and Harma ECC83-STR
So in terms of sound quality and performance then the JJ is the same as the Harma and Groove tube items.
To recap, in clean mode the valve is very well balanced with nice even bass which is a little on the light side. The mid-range has plenty of detail and does not get muddy when overdriven but it is thinner in this department than some of the others in the test.
In Fender amplifiers the JJ valve produces excellent clean sounds, in overdriven mode and high gain circuits the valves has a warmth and clarity to smooth out the spikes and has an excellent distorted tone. This is a great valve that will suit a large range of amplifiers.

CONCLUSION- ECC83/12AX7/7025 TESTS RESULTS DEC 2011

This was our most exhaustive and longest run test which took the best part of 4 years to complete. In our first test reports way back in 1998 I pointed out that valves do have different characteristics depending on the circuit used. So the only real way to provide any constructive view of a valves performance was to try all the items in as many different amps possible. So the review is based on the valves consistent performance over the period in a number of different amplifiers, hence the long time frames. For example, The G.E 12AX7 valve continually provided the best clean sound regardless of amplifier and circuit. The reviews therefore are to help you choose what the best items are for you own application considering your preferences.

On the surface it may look like we all have more choice but it reality the number of factories that are producing valve has diminished. Since our last reports we have seen the E.I factory close its doors and sadly the fall of Blackburn micro tech solutions in Sept of 2009 which I had high hopes for. What we do have is a few more brand names that are products from the existing factories. The positive outcome of all this is that over the recent years we have seen some new designs from Sovtek, JJ and the Chinese factories which is excellent news.

In terms of quality and sound reproduction for guitar amplifiers as in all our previous tests the new old stock

items have come out the best and I will deal with these first.
Three valves have been dropped from this test for the simple reason as there does not seem to be anyone selling these that have any quantity to offer. These are the E83CC Siemens which was our runner up, French Mazda silver and grey plate.
I have included items that even though we have no more retail stock left these items are available from other resellers so I feel it is important to include these.

In the clean stakes the generally brighter and toppier sounding valves came from the great American manufactures such as R.C.A, General Electric, and Sylvania.
The RCA grey plate 7025 and the British Brimar CV4004 all made their claim for top position given excellent all round performance. In some circuits the 5751 from Philips and G.E gave excellent results. If I had to pick one in the clean stakes then the General Electric 12AX7 would be the one as this valve consistently delivered the clean sound in military grade JAN 12AX7WA or commercial grade 12AX7A.

We use valves amps as we like the way that they distort and the ones that give a rich musical distortion are generally considered the best.

This section was dominated by the European valves generally due to the warmer sounding nature of the valves. This is a tough call as all these items are expensive and some of the differences very close but then these will normally be fitted into high end amplifiers.

In terms of distortion then the Brimar CV4004 and RFT ECC83 challenge for high end but both have a number of short comings. The Hungarian Tungsram ECC83 was again knocking on the door and it is easy to see why this valve has a religious following. The RCA and G.E also put in strong performances with only a few minus marks. If you select any of these valves for your personal application based on the reviews you would not be disappointed. Three valves really did shine above the pack and do it consistently.

In First place The Mullard ECC83 as in all amplifiers this valve was Impossible to beat.

In Second place The Original Tesla E83CC as its exceptional performance in all circuits was only beaten by the Mullard.

In Third Place was the Raytheon 12AX7A which only missed out on second place due to the Tesla E83CC strong overall performance.

Of the current production ECC83 the results were easy as three valves stand out

In First place due to its sound across all musical styles from Rock, Blues through to Metal. From clean to crunch and the musical way it distorted in the high gain stakes makes the clear winner was the Harma ECC83 –Retro aka Tung-sol 12AX7A.

In Second Place the 12AX7-Electro Harmonix as this valve was placed consistently high in all our tests and again because of it exceptional across the board performance.

In Third Place goes to the ECC83S JJ aka Harma ECC83-STR aka Groove tube ECC83S as this valve was placed consistently high in all our tests.

In closing I am sad that one valve company did not make it through and I hope something will come out of all the effort put in the staff of Blackburn's micro tech solutions that closed in September of 2009.
The samples that I forwarded on, in both standard and cryo treated format to Neville Roberts of the Tech Tube E813CC in 2009 for his HI-Fi world review are looking up at me. I can't help feeling that these were the ones that got away and things in 2012 could have been so much different.

E813CC Tech Tube
The Blackburn micro tech solutions E81CC design was the first to use a cathode based on a low power arrangement as used in CRT. This is something that Mullard had worked on in the past but was not brought to commercial life. This could have been quite something as Neville Roberts really rated this valve and he is someone that after reading many of his articles over the years I have the utmost respect for. If he says it is good then it is good as he has very good analytical ears.

The valves that were sent to me as samples from tube tech were a month or so before they went into administration. So maybe they were the last knockings who knows but they were really unusable in most of the amplifiers. They were horrendous and the only way I could evaluate then was by using a vintage Marshall super bass head located in a different room to the cabinets.
The valve did poses fantastic detail and clarity and clean sounds were easily up with the best. In Overdriven mode the valve had a clarity and smoothness that was really clear with no fuzz. This design had potential was again this was easily amongst the best. Electrically from a test point of view the valves were first rate.
So this item could have been on course to really revolutionize the valve market Tube tech stated "The TechTube™ valve has minimal structural restraint. The design allows for tiny amounts of movement in the various components which at times allows a small amount of micro phony when driven hard at high frequencies." Small was not the case in my findings and in short the effort was worth it as it was clear that although this concept was in its infancy. The E813CC s would bear fruit if the micro phonics could be solved.