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Tron Nucleus

Tron 300B

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Okay, okay: you read the price and shook your head. Admittedly, these tube amps are not exactly a special offer. Nevertheless they are more than worth a review in Image Hi-Fi. At least, that's the opinion of the author of this article. And nobody can accuse him of only reviewing super-expensive High End gear...

Let's quickly go back to Frankfurt, to the High End Show '99. I'm devoting my time to my special hobby. That is, I'm searching for tube electronics. The common day-to-day amps – EL34 or 6550 push-pull stuff – do not interest me on that particular day. The same happens with hybrid amps – tube freaks are just fascinated by tubes. And I mean only tubes! Hybrids are neither fish nor fowl. And the mixture tastes like pork with fish sauce.

But unfortunately the result of my search during the show is very poor. Besides the big, old S-class amps – 100,000 DM, 1-square meter of chassis, chrome – a lot of beginners are riding the tube-wave as always. “Me too” is written in invisible letters onto their front-plates. And inside you find conventional circuits and conventional components. Sounds good, sure. Uh, if I would maybe like to review this component...? Yes, of course I would. And the delivery date will be April 1, 2010, assuming there is still a quarter of a page empty in our magazine.

Where are the purists, the real freaks? These guys, who have their “Radiotron Designers' Handbook” below their pillow. These guys, who still have a feeling for correlations of different components. These guys, who for example would never ever even consider using circuit boards, Okay, I confess. This works great. And the requirements of the standard target group are met. But I am looking for something different, for something very special: I am looking for the tube-underground. The absolute insider who – 15 years earlier – read the publications of crazy Japanese tube freaks. And at that time, only very few people in England and USA even knew what a 300B was! Freaks, who had stored tons of “bottles” in their basement, when we still simply threw

loads of them away. By the way: if somebody knows a place with “tube trash” I'll come and help with the digging!

On Saturday evening I meet a special guest of Avantgarde Acoustic: Graham Tricker. He is from the UK: calm, educated, understated. And apparently he knows an incredible amount about tubes. No, not in a conventional way: he is not talking about the “best sound in the world” and also not about turnover. Very pleasant indeed. And it gets even better the next day as I visit him at the Avantgarde Acoustics show room. There is a Platine Verdier with a SME 3012 and Ortofon SPU. That fits precisely! Graham Tricker has brought this combination from the UK – and this man has automatically scored at least 100 bonus points with me.

His amps are called TRON: 300B monoblocks in a traditional “steam locomotive” design. His matching dual-housing preamps are named NUCLEUS. And – because seeing is better than talking – we simply start by unscrewing the chassis of the existing stereo 300B amp. A quick glimpse below the base plate – or rather, the solid 4 mm plate – immediately shows: this gentle expert knows all the “tube” tricks. A work of art, which has its price.

Handmade in the UK? Yes Sir! Precisely wired over the soldering points. Piece by piece soldered and assembled. Yes, this is expensive – and would normally give any production manager grey hair and make his mobile phone display blur. My colleague Egger would simply say: this is HOT!

Through a small opening in the chassis I can detect the nameplate of a Partridge transformer. Nice: the Partridge was always *the* transformer, blessed by the true Japanese ultra freaks. And this at times, when Single Ended was sold only in dark backyards. And these “dealers” are the true founders of the rebirth of the 300B. Because, if one reads the American tube magazines, one gets the impression these US-guys have invented 300B-Hifi and the matching high efficient speakers. Sorry boys: you were the last to discover what your old cinema valves are good for.

Let's go back to the Partridge transformer: besides the frequency- and “Heaven knows what-” optimised 300B transformers of these

modern days, the old Partridge is still a “real” statement in the world of 300B transformers.

Precisely wound by old men during their tea break. A few critics are of the opinion that the Partridge sounds too dark, too soft or simply too “friendly”. But these criticisms come from exactly those “High- End guys” who still believe that a polypropylene cone is a good idea! By the way: polypropylene is poison for the 300B – she simply suffocates with this sluggish and dull plastic.

Four months later, the TRON/NUCLEUS combination finally arrives in our Munich office. The heavy and solidly screwed wooden boxes are adequate packing. The TRON power amp comes with two Western Electric 300Bs. Graham Tricker simply certifies this new Western production as “original specs”. The concept of the TRON-300B is of the utmost consistency: super-simple circuitry, “hard-wiring” and valve rectification. Plus a speciality normally abandoned for its cost: in-between the voltage transformer and the power tubes there is not a simple capacitor, but a so-called “step-up transformer”. Graham Tricker apparently does not like capacitors in the signal path. Throughout all stages of the amplification – from the MC-input of the phono stage, the line preamp stage to the speaker terminals – you will find only two capacitors; this is in the phono stage. Capacitors – according to Graham – would have more influence on the sound of an amp than any other component. For this reason he is using instead of “foil” or even “paper-in-oil” capacitors, exclusively only step-up transformers. The same applies as well to the 600 ohm line-output of the NUCLEUS preamp.

But let’s just count the active amplification stages between the phono MC jacks and the speaker terminals: two triode systems in the phono stage, one triode system in the line stage, two triode systems in the power amp. In total a mere five active elements between cartridge and speaker. In CD-mode only three! More or better? It’s practically impossible to imagine less!

Graham Tricker – like me, in my function as a hobby designer of tube amps – is following an extremely consistent design philosophy: as few amplification stages as possible, only the best components and – worthy as a subject in a discussion forum – step-up transformers instead of capacitors. Good transformers in the signal path – that’s based on my (tube)-listening experience – represent the better solution. Unfortunately also the more expensive: Whilst even the best “state-of-the-art” capacitors are reasonably affordable, any “useable” step-up transformer will cost at least a couple of hundred Marks. On the subject of transformers: the extremely low signal voltage from an MC cartridge is simply

not the domain of a tube. Only with incredible effort can you succeed in this. And even then the result in respect to its signal-to-noise ratio will not match a very good transistor amp. An MC step-up transformer on the phono inputs with MM-sensitivity is the one-and-only choice for the real tube freak. Likewise in the TRON/NUCLEUS phono preamp we find an MC-transformer. Depending on the cartridge to be used, GT Audio utilises 6:1, 10:1 or 20:1 step-up ratios. Naturally the transformers are shielded with Mu-metal. This is followed by an ECC83-double triode per channel with an RIAA rectification in-between the systems. Passive, because – as in all components in this chain – Graham eliminates any negative feedback. Even the cathode resistors of the amplification tubes are bridged with capacitors. This even prevents local negative feedback. As an option one can use the 6072 instead of the ECC83. This will reduce the gain significantly. The idea is to match the input sensitivity with the line stage and to run the systems operation in the optimal 12 o’clock position of the level control.

“The power supply is the most important” says Graham Tricker. The man is right! And thus a lot of care and attention is given to the power supply section: both the phono and the line amps have their own separate power supplies with an external transformer for each. And how could it be different? The anode voltage of the amplifier tubes is electronically stabilized with tubes. An ECL85 is used as a regulator. The reference voltage is provided by an 85A2 stabilizing tube. DC heating finally ensures that no unwanted interfering voltages occur.

From a circuit-layout point of view, the line amp is structured even simpler than this: Behind the input selector switch and the volume control you will only find one 5687WA tube. This double triode is more or less like an E182CC. That is, it’s not fully pin- and data-compatible. The two systems of the 5687WA are each utilized for one stereo channel and switched as an anode follower. Instead of a commonly used anode resistor, an enormous transformer sets the output resistance of the preamp down to 600 ohm. To ensure an optimal matching to the power amp impedance, this unit is also available with two different gain settings. The deeper sense in this precise alignment of the amplification components immediately becomes clear when hooking the system up to a speaker with high sensitivity: deathly silence – in CD-mode even when the volume control is in max position. Never ever – I swear by my best 300B heating wire! – was

there a tube amp on our table with such an incredibly low noise floor! Mainly the power amp is responsible for this hardly audible remaining noise, only detectable when you put your ears very close to the drivers. No difference between zero- and max-position of the volume control!

Similarly good are the results with the phono preamp: with regard to the signal-to-noise ratio this is the best noise-free phono preamp we have ever heard!

Part of the TRON-concept is the use of special tubes – each worthy of being a collector's item. Only originals! No Chinese “fire-crackers”, or Russian “roulette”. A person who is a collector and restorer of old vintage equipment like Graham Tricker probably has enough “bottles” in his “wine cellar” to even produce bigger quantities and exclusively only use N.O.S.-tubes (New Old Stock). That's why the input of the 300B is fitted with a fine example of 5842 with a golden ceramic socket. Freaks immediately now know that this must be an equivalent to the famous 417A from Western Electric. A top-rated ultra-short-wave triode, which is even worth a try for phono stages. Immediately thereafter Graham uses a step-up transformer to feed the grid of the WE300B. Contrary to this very puristic circuit layout, the power supply follows the simple “cost-no-object” rule: 5Z3 rectifier tube followed by a battery of filter components, consisting of over-dimensional capacitors plus two 10-Hy-coils. Notably, the input tubes are heated with AC-voltage. Contrary to this: both of the 300Bs have separate DC-heat circuits. Here Graham doesn't use an integrated voltage rectifier, but passive R-C filters. Because of the exact heating DC-voltage of the 300Bs, this costly solution requires a very precisely adjusted output transformer. But experience tells that the audible result is by far superior to normal amps with five-volt rectifier ICs.

Besides the first-class components – ceramic sockets, Rifa-capacitors, ultra-low induction resistors – one immediately notices the very well executed earthing-loops of the amplifier. This is the overriding principle of any noise free amp design. As with all components of the TRON series, the customer has the choice of copper, silver or gold wiring. But for the signal path, Graham uses exclusively special cloth-isolated wires. Like in the very early days! Anti-magnetic aluminium covers and a CNC-milled aluminium chassis are matter-of-course. Same applies to the correct separation of circuitry earth and mains ground with the help of an R-C combination. And this important

feature is normally forgotten by most tube designers. Normally a double pair of speaker terminals are used for the different impedances of the output transformer. With Graham's electronics this is different: the speaker terminals are connected in parallel and simply allow an easy bi-wiring solution. But with some simple internal soldering the Partridge transformer can easily be reconfigured down to 1 ohm.

After warming-up – this takes approx. 20 minutes – the teamwork with the 92dB speaker Triangle Zays reveal a big surprise: Graham's amps are subjectively the most powerful 300Bs I've ever encountered! But it gets even better: in respect to its bass contour and control, the TRON-300B opens new single-ended dimensions! Not normally exactly the strength of an eight-watt tube. OK – and this becomes clear by simply looking at the physical facts – the TRON-300B will still not outperform opponents from the transistor-faction. But this is not necessary, because the expert will not connect tubes to any old slow “wishy-washy” speakers anyway, which can only be controlled by ultra-low output impedances. And gigantic passive crossovers, read heavy complex loads are also not exactly the favourite playground for a triode. Graham Tricker has an even more puristic point-of-view in this matter: he knows exactly under which circumstances the 300Bs perform in top shape. And he recommends his electronics for people who anyway are running the horn-track and who at best are laughing about 92 dB sensitivity.

And this is exactly the deeper reason for his hard fight for every tiny little bit of signal-to-noise ratio: if you hook up more than 105 dB/Wm of efficiency, then most tube amplifiers would force their owners under a “waterfall” of noise. And this before the music even has started! Graham connects us here with a combination which – although crystal clear and logical – has still not been internalised by a lot of manufacturers of single ended amps: the amps are exclusively made for high sensitivity speakers and thus should work logically absolutely hum- and noise-free; a condition which is unfortunately met only by very few triode concepts.

But let's not be as uncompromising as Graham Tricker: even with the Zays or with my Roiene – which are both efficient speakers, but for sure no efficiency miracles – the TRON-chain cuts an incredibly fine figure. Dynamics or power problems never occurred, although the volume control sometimes got close to the four-o'clock position. By the way:

I mention the Zays because this at first “underestimated” speaker has established itself in the meantime. The only (perfectly tolerable) weakness is the slightly enhanced treble. Besides this, the fast French paper cones apparently had a lot of fun with these freaky English tubes. To limit their operational arena just to horns would be foolish and extravagant. Without exaggeration: the TRONs add a three-dimensional soundstaging which really is ‘world-class’, based more than ever on the energy-loaded plasticity of the 300B.

In this special case quite without latently “forced” or even distorted sound; on the contrary: the power amp has comparatively huge reserves of energy and vehemently accelerates if required. It’s as if the bass systems of the Zays are pushed effortlessly forward without inertia. The TRON has an important difference to many – not to all! – representatives of the single ended community: bite and attack! Much faster and more agile, but also with much more detailed polychromatic fine-resolution as usual! This amp produces a clinker-

free and very transparent sound, which still has this dearly catching and emotional factor.

Summary:

It’s high time – in my opinion – for the biggest compliment ever: for the fact that one simply gets glued to the chair. That even the most critical listener gets the key to a crucial holistic experience within minutes. Only very, very few amplifiers take their users beyond this threshold. This is at least my very personal and thus subjective opinion. And to the people who want even further clarification: including the TRONs, I know of only three or (four) brand names which will take you beyond this point.

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