GLASS TIME – THE SUPERTUBECLOCK

Neville Roberts

Neville Roberts introduces a CD clock upgrade with a difference – this one is valve-based and you can fit up to three of them in a Njoe Tjoeb 4000!

The latest offering to emerge from the makers of the Njoe Tjoeb 4000 valve CD player (DÉ HIFIWINKEL, or AH!) is a drive clock upgrade that is truly unique and suitable for any CD player. To my knowledge, it is the only one that has a valve at its heart!

Furthermore, it is possible to fit two additional SuperTubeClocks to replace the DAC chip oscillator and the SampleRateConverter in a Njoe Tjoeb 4000 that has been fitted with a 24/192 DAC/upsampler unit (the TjoUpsampler).

Each clock costs 300 Euros (just over £200) and is available directly from http://www.hifi-planet.com/ah4a-enhp.htm.

The SuperTubeClock

Is this just another gimmick where valves seem to be popping up everywhere as the 'universal' upgrade? Not according to Herman van den Dungen and his technical genius, Marcel Croese, who created this device. It is claimed that the SuperTubeClock, as it is called, can transform the sound of any CD player by the replacement of the player's drive mechanism system clock oscillator. As with all 'after-market' clock upgrades, the SuperTubeClock generates a more stable clock for the drive mechanism than the built-in clock. But why a valve-based oscillator?

The Njoe Tjoeb 4000 before the upgrades

A Bit of Theory

As the old saying goes: the secret of good comedy is in the timing – and this is also true of good CD and DVD players!

The problem is that the undesirable switching transients, which are inherent in solid state clocks and particularly bad in CMOS materials, will inevitably cause jitter in the clock output. Unfortunately, a part of this jitter is located in audio frequencies thus hampering our efforts to get rid of jitter in the audio signal! The trick is to end up with a very fast square wave enabling the clock to provide extremely accurate timing, but without noise or jitter in the clock itself.

Removing the Drive Mechanism

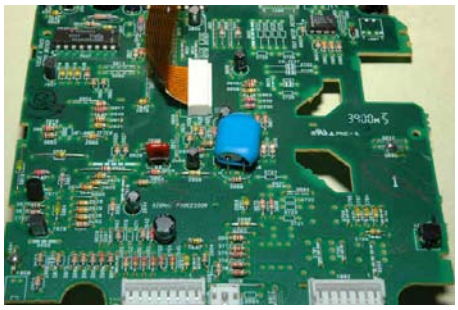
Valves are well-known for their very linear operation and their very low noise and distortion products. The SuperTubeClock incorporates a sturdy and stable long-life mini-triode which is used to produce an ultra-clean sine wave. This is then shaped into a square wave with excellent speed, accuracy and jitter properties. Specifically, the parasitic noise in the 10Hz to 100kHz region is claimed to be much lower than of any of the comparative designs and this noise is considered to be the determining factor for the audibility of jitter. The absence of this jitter should result in a reduced sense of the "digital" sound of a CD.

Removing the drive circuit board

This does make sense in theory, for the same reasons that valves sound so good when used in the audio chain of amplifiers. The question is – does it make a difference in practice?

Upgrading the Drive Clock

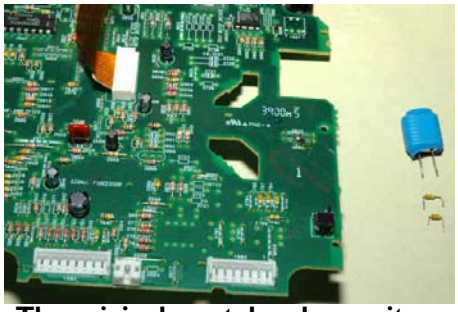
The first part of the upgrade can be carried out on any CD player. This involves replacing the 8.4672MHz clock on the drive mechanism. Comprehensive instructions are given on how to do this, although it is quite a fiddly process and I would only recommend this to be carried out by someone with the necessary experience. For the less experienced, Herman has written a manual with full instructions on what to do and how to send parts of their CD player safely to Holland to have the upgrade carried out professionally.



The original drive crystal

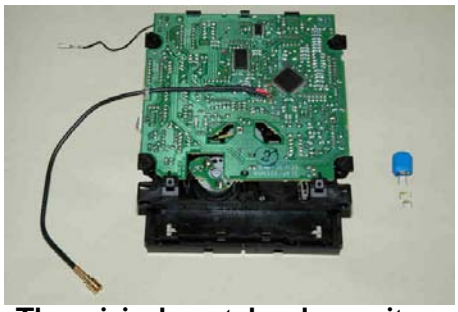
Using the Njoe Tjoeb 4000 as an example, the first task is to remove the drive mechanism from the player. This involves unclipping the front of the drive to free up the CD tray, unscrewing the mechanism from inside, unplugging the connections and withdrawing the unit.

Once the drive has been removed, the circuit board is unscrewed from the base of the mechanism and tilted downwards, taking care to avoid undue strain on the connections to the laser and motors. Next, the crystal and two capacitors are removed from the circuit board and a thin coaxial cable is soldered in place of the crystal. This is where the signal from the clock is injected into the existing circuitry. The copper of the printed circuit board is quite fragile and therefore some solder pins were fitted into the holes where the crystal was connected and the cable was soldered to these pins, rather than being directly wired to the copper printed circuit board. Also, a tie-wrap was used at the edge of the board to take the strain of any movement of the cable away from the circuit board connections.



The original crystal and capacitors removed and coax fitted

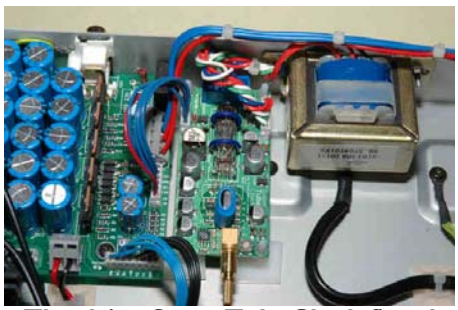
The drive mechanism is then reassembled and refitted back into the CD player. Fitting the clock is simply a case of pushing four plastic feet into the clock circuit board, removing the self-adhesive pads from their bases and pressing the feet firmly into place next to the mains transformer. The clock includes two power connectors to allow it to be inserted between the transformer and the valve output stage of the player using the supplied cable in a 'daisy chain' fashion. Finally, the coaxial cable from the drive mechanism is plugged into the clock and the unit is ready for testing.



The original crystal and capacitors removed and coax fitted

Listening Tests – Part 1

The clock is designed to be powered on all the time and takes about 15 seconds to warm up when the CD player is first plugged in. Until then, the unit will not respond to operation commands, either from the front panel or from the remote control. A slight "click" can be heard from within the player when the SuperTubeClock is ready, and the player is functional after this 15 second warm-up time. The player is in standby mode and the display will remain dark until either the power on/standby button, the open/close button or the play button is pressed.



The drive SuperTubeClock fitted

Of course, for the listening tests, I used some well-known CDs spanning a whole range of music. First to spin was an old favourite - Vivaldi Violin Concertos, Op.6, on Decca 455 653-2. It was obvious from the outset that there was a lot more going on than I had heard previously. The music was definitely clearer, but without being too bright. There are several adjectives that could be used at this point to describe the improvement in sound like 'transparent', 'detailed' and 'open', but the best way I can describe the effect is 'more vinyl-like'! The CD player had taken another step towards that sense of realism in music reproduction that few players can aspire to. Fantastic stuff!

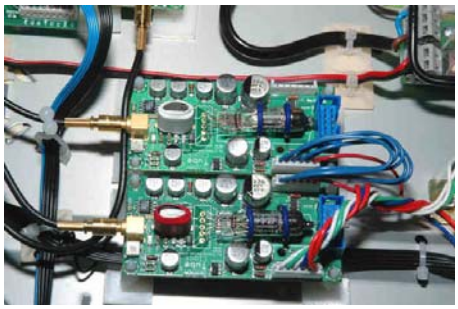
Fitting the Second and Third Clocks

Having been blown away by the improvement that a replacement drive clock could make, I wasted no time in turning my attention to the upsampler clocks. Two additional clocks are needed for this upgrade: a 24.576MHz to re-clock the DAC chip and a 30MHz clock for the sample rate converter.

It is a relatively easy task to remove the upsampler as it simply plugs into the main board. Again, this required the removal of the two crystals and associated capacitors and the fitting of two coaxial cables to inject the new signals into the circuit at the appropriate points.

The upsampler crystals removed and coax cables fitted

The upsampler is now re-installed. Plastic feet are fitted to the two clocks, which can then be fixed to the base of the player. To power these clocks, a separate mains transformer is provided. This requires drilling two small holes in the base to allow the transformer to be bolted securely in position. The two coaxial cables from the upsampler are connected to their respective clocks and, once again, the player is ready for testing.



The two upsampler clocks in place

Listening Tests – Part 2

Well, this is the upgrade for the image-conscious amongst us! Firing up the Vivaldi again demonstrated absolutely amazing positioning of the instruments of the orchestra within the sound stage. Solo instruments snapped into focus and the bowing of individual violins could be discerned within the string section.

For a complete change of mood, I turned to an absolutely superb recording entitled "The Day the TV Stood Still" (WHRCD701), which is a newly released recording from Winchester Hospital Radio and obtainable directly through their web site at http://www.whr.org.uk/tvstoodstill.html . This may seem a strange choice for a test CD, but it is one of the best examples of a superbly mastered recording taken from the original master analogue tapes you will find anywhere. The 2-CD set contains a vast range of light music that many will remember as interlude music from the '60s and '70s and provides enough variety to put any system through its paces.

The completed upgrade with three clocks

The strident brass on track 12 of CD1 "Brass Bugaloo" was sharp and crisp with fantastic attack. In contrast, the breathing of the flautist on track 8 "Flute Allegro" was clear, without being obtrusive, and the flute was in perfect balance to the harp and drums in the background (I did say that there was a wide range of musical styles on these CDs!). The familiar lilting sound of track 22 "Sun-Ride" (a one-minute long tune used between programmes in the 60s and 70s), now heard in stereo, was crystal-clear with the instruments of the ensemble located with pin-point accuracy. Turning to full orchestras, as exemplified by track 5 of CD2 "Children's Hour", the individual instruments were never swamped by the richness and grandeur of the crescendos in the piece.

Conclusions

There is no doubt that the first drive clock provides a fabulous improvement in clarity, transparency and detail. I am convinced that this would hold true for any CD player fitted with a SuperTubeClock. For those of us fortunate enough to have a Njoe Tjoeb 4000 fitted with a TjoUpsampler, the addition of two further valve clocks adds yet another dimension to the sound in terms of imaging and accuracy. Never before have my CDs sounded so analogue!

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