THE REEL THING – THE SONY TC-377 OPEN REEL RECORDER

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Neville Roberts looks back to the heyday of open reel recorders and, in particular, the Sony TC-377.

Back in the mid '70s, an open reel recorder was an essential component of any Hi-Fi system, but alas, the dizzy heights of a Revox B77 and the like were way out of the price range of a young Hi-Fi enthusiast! We had to be content with a machine that could only accommodate 7" spools, instead of the 10" reels with NAB centres. Fortunately, there were many machines on the market to choose from.

The Akai 4000DS

For many of us starting out on the unattainable journey to reach the ultimate system, the first step along the road was the famous Akai 4000DS Mk.II, which was in production between 1976 and 1978. This machine made a virtue of money-saving simplicity by using a brass sleeve fitted over the capstan to change the tape speed. A separate switch changed the equalization settings to suit the 3¾ IPS and 7½ IPS speeds. This particular model was the successor to the 4000DS (circa 1972-1976) which in its turn was a successor to the 4000D (circa 1970-1972) with several improvements. Its success was due to a simple but rugged construction that resulted in a build quality beyond its competitors in the same price range, together with good recording and playback quality due to the separate record and playback 1 micron gap heads.

The Sony TC-377

The Akai was not without its quirks! When playing in the upright position, one was forced to use the push-on rubber reel retainers to prevent the spools from falling off. After a while, the rubber retainers had a habit of popping off the spindle of their own accord, which was rather disconcerting when one was relaxing while listening to a piece of music!

More serious was the fact that there was a noticeable reduction in the quality of music recorded on the Akai, even when using low-noise tape recorded at 7½ IPS. Of course, there was no Dolby noise reduction, so a little tape hiss was always evident, but the Akai was also a little bass light and 'thin-sounding'. It was time to move on and the Akai was sold to make way for a Sony TC-377.

History

Open reel (or "reel-to-reel) tape recorders were widely used for voice recording in the home and for office dictation until the Philips "compact cassette", which was introduced in 1963, gained in popularity. Although cassettes quickly replaced open reel recorders because of their convenience, the narrow tape width and slow speed of the cassette (? " and 1? IPS respectively) meant that they were unable to compete with the open reel machines that used ¼" tape and faster speeds for Hi-Fi applications. In the 1970s, Sony sold more open reel decks than any other manufacturer.

The Sony TC-399

The Sony TC-377 "Three Head Stereo Tapecorder" was fitted with Sony's Ferrite & Ferrite heads and was produced between 1972 and 1977. It had a pretty good specification for the price, considering that it was one of the Sony 'entry level' Hi-Fi separates. It was justifiably a

very successful domestic machine and Sony followed it with the TC-378 in 1977 and the TC-399, which was in production from 1978 to 1983.

For the more affluent enthusiast, there were plenty of models to choose from. For example, the TC-558, which was produced from 1973 to 1976, featured solenoid controls (instead of mechanical levers) and six heads to enable full auto-reverse operation. However, to allow for the larger 10" reels, you had to upgrade to the TC-755, TC-756 or TC-758 machines. These also had solenoid controls, but featured dual capstan drive to keep the tape tension constant across the heads. Additionally, the TC-756 supported speeds up to 15 IPS.

At the top end of the spectrum was Sony's TC-765 that was introduced in 1976 and manufactured until 1982. This machine offered superb sound quality for a quarter-track, 7½ IPS machine – with a price tag to match! Moving to the TC-766 offered the audiophile 30 IPS and half-track stereo (unidirectional operation) for the ultimate in sound quality.

Sony seemed to have it made, until a little-known rival company called Nakamichi, also from Tokyo, started to challenge Sony's supremacy. Nakamichi was founded in 1948 and by the 1950s, it had developed one of the first open reel tape recorders in Japan under the Magic Tone label. It went on to develop and market its own tape recorder in 1957 called the Fidela 3-head Open Reel Stereo Tape Deck. When Philips introduced the world to the cassette, Nakamichi applied its experience to this new medium and by 1973 it was producing stereo cassette decks with such high quality reproduction that they provided a serious challenge to the open reel machine – if you could afford them! The Nakamichi 700 and 1000 machines with their three heads and dual capstan drive were regarded as two of the finest cassette recorders made in the mid-1970s, but few audiophiles could own them as the model numbers were derived from the price tag! Nakamichi responded to the potential demand by releasing more economical two-head models such as the Nakamichi 500 and 600. By the early 80s, the open reel recorder was truly a 'legacy format'.

The TC-377 in Operation

Back to the TC-377... This machine has a cleverly designed walnut-veneered cabinet that enables the deck to be operated in either a sloping horizontal position or a reclined vertical position. By removing four screws, the machine can be withdrawn from the cabinet, rotated through 180 degrees and re-fitted. Incidentally, the reel spindles are fitted with a twist-locking device to hold the reels in place when the unit is used vertically – no rubber retainers to fly around the room!

Another delight for me was that, in common with other Japanese equipment of the period, the instruction manual supplied with the unit included a circuit diagram!

The Sony was fitted, like the Akai, with separate record and playback heads and circuitry, which allowed for nearly simultaneous playback and recording. I use the term 'nearly' as there is a slight delay determined by the tape speed and the physical separation of the heads. At 7½ IPS and the 1¼" separation between the heads (yes, I did measure it!), you get a delay of 167mS when switching between tape and source input for A/B tests – certainly close enough to monitor what is coming off the tape and take any necessary action while recording.

For a relatively modest increase in cost in comparison to the Akai, there was a huge step-change in performance with the Sony. On

The Sony TC-558

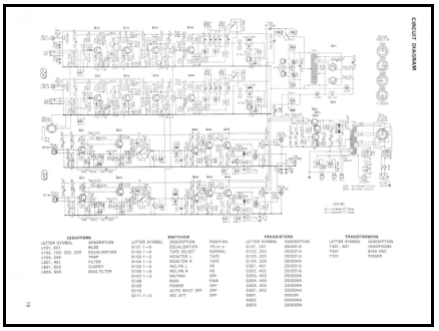
The Sony TC-765

The Sony TC-377 horizontal

Instruction manual

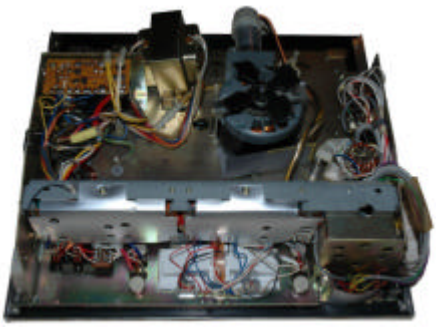
paper, the Sony claimed a 20Hz to 25KHz ±3dB frequency response using low noise tape, which is similar to that quoted for the Akai. However, the Sony claimed better than 55dB signal-to-noise ratio; an improvement of 5dB on the Akai.

The Sony is clearly superior to the Akai in terms of sound quality, having a fuller range with no tendency to bass lightness. On A/B testing when using top quality low noise tape at 7½ IPS with a vinyl source, it was difficult to tell which was source and which was tape. The only clue was the slight increase in background hiss on the tape. This is a small price to pay (after all, we do put up with the odd click on a record don't we?) and could be reduced by using a Dolby noise reduction system. Although the Sony doesn't have Dolby (which is essential for cassette systems), many purists would argue that the reduction in hiss comes at a cost of increased distortion. The dynamic variable high frequency boost used in Dolby-B during recording and the corresponding cut during playback inevitably adds distortion and, therefore, many would say it should be avoided if at all possible.



The circuit diagram

The tape head block



Inside the TC-377

Signal and power connectors

Buying Today

Due to the popularity of the TC-377, there are still many to be found and they can often be seen on web-based auction sites as well as in shops that specialise in vintage Hi-Fi. They seem to exchange hands at between £100 and £150, depending on condition. Spare drive belts are readily available too and cost around £20 for a set.

Any prospective buyer should check the state of the tape heads as these could be very expensive to replace if worn. Visually, there should be no grooves on the heads along the tape path. A noticeable lack of treble could be caused by poor head alignment. This is easily corrected by using an alignment tape to first set the playback head and then a blank tape to calibrate the recording head against the playback head.

Conclusions

Against all the odds, my TC-377 still occupies a space in my Hi-Fi cabinet. It is mainly used for playing back my 'legacy format' tapes as I tend to make recordings on CD nowadays. However, in the same way that placing a record on the turntable and lowering the stylus into the groove somehow adds to the pleasure of playing a record, threading a tape into the Sony mechanism and turning the knob to the 'play' position contributes to the overall experience of playing music on the Hi-Fi system. I would argue that analogue recording, free from the harsh realities of digital and with a minimum of tampering of the sound signal, yields an effortless smoothness, depth and open character to the sound.

Totally analogue reproduction still has its place in an audiophile system and the Sony TC-377, although an entry level machine, can still delight audiences without any serious damage to the wallet!

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