Thorens TD-125 Electronic Transcription Turntable

Shown with the Ortofon arm and cartridge, though any arm can be mounted.

MANUFACTURER'S SPECIFICATIONS'

Speeds: Three—45, 33⅓, and 16⅔. Motor Type: Synchronous. Motor Speed: 250 rpm at 33⅓. Interchangeable tonearm mounting board. Wow & Flutter: .08%. Rumble: —48 dB (unweighted); —68 dB (weighted). Drive System: belt. Power Requirements: 110-130 V a.c., or 200-240 V a.c., 50/60 Hz. Dimensions: 18" wide, 14" deep, 5" high. Weight: 32 lbs. Price: $185.00. Mounted on walnut base: $200.00. Dust cover optional.

The serious high fidelity enthusiast is continually looking for the best piece of equipment in every category—the best tuner, the best amplifier, the best tape recorder, the best cartridge, the best turntable, and a speaker system he likes. And aside from an ultra-expensive broadcast-type table, it appears that the features of the Thorens TD-125 place it as a favorite contender in the best turntable category. The performance features that the audio connoisseur wants are low rumble and low wow and flutter. The TD-125 excels in both. The construction is such that any user would be proud of the unit, and any mechanical engineer would be enthused by the obvious care that went into the design of this turntable.

The Thorens TD-125 uses a long sleeve bearing, with two highly polished contact surfaces, and with a single steel ball for a thrust bearing. (The highly polished sleeve bearing, two inches long, is more likely to continue to be rumble-free for a number of years than is a multiple-ball bearing, good as they have come to be.) Thus the drive to the platter cannot be transmitted through the shaft, as it was many years ago through various types of gearing. The drive to the rim is now almost universal, with most turntables being driven by an idler that contacts the motor pulley and the inside of the turntable rim at the same time. Thus, since the motor speed is much higher than that of the turntable, the motor rumble itself is transmitted directly to the platter. Some earlier Thorens models had the motor mounted on a separately isolated plate, and the motor drove the stepped pulley by a belt. This permitted mounting the stepped pulley on the framework on which the turntable bearing was mounted, with the idler still making the contact between the stepped pulley and the platter. This at least relieved the platter from direct contact with the motor, and was an improvement over previous models. The TD-125 uses a rubber-belt drive, isolating the motor from the platter.

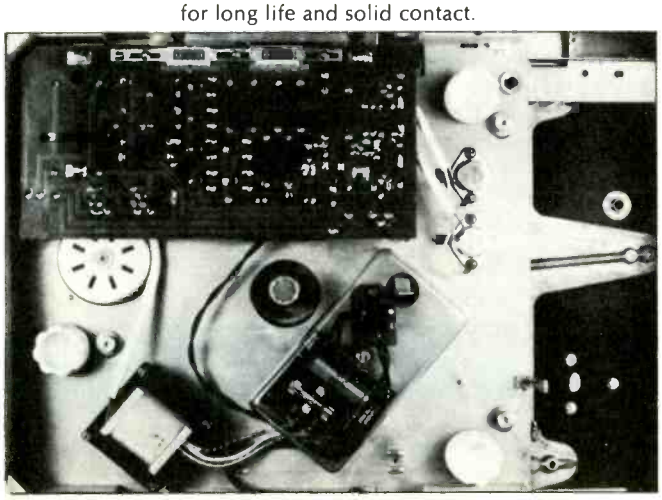
The step to the electronic turntable was an important one, since it permitted the use of a synchronous motor which could run at a much slower speed than is usual with the average induction motor (1725 rpm, approximately) or the 1800 of the hysteresis-synchronous motor. The reduction of the motor speed from the usual much-higher speed reduced the energy which causes rumble by the square of the speed ratio, and in addition, permitted the use of a larger motor pulley which provided a better drive ratio. For example, the motor pulley on the TD-125 measures 0.736 in., and the rim of the driven inner turntable is 6.28 in. This is a much better arrangement for the belt, since it does not have to wrap around a small-diameter motor pulley, which in the case of a 1725-rpm motor would have to be only 0.106 in. in diameter to drive the turntable at 33⅓ rpm.

Synchronous motors have their definite advantages as to consistent and accurate speeds, since their speed is directly dependent on the frequency of the a.c. line. But if one should want to vary the speed slightly, it becomes quite difficult with the line-operated synchronous motor, and if speed-changing elements are introduced between the motor and the platter, the advantages of the synchronous motor are lost.

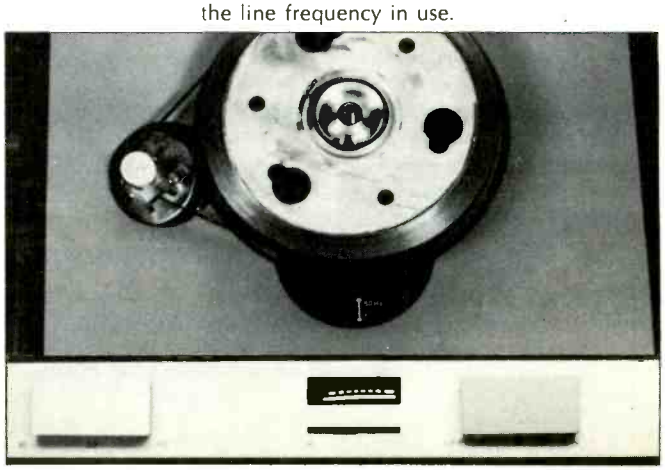
In the TD-125, Thorens does use a low-speed synchronous motor, but it is not driven in synchronism with the a.c. line.

Instead, it is driven by a locally generated a.c. voltage at a frequency which is determined by a Wien-bridge oscillator, which is an exceptionally stable device. The output of the oscillator is amplified by a 20-watt solid-state am-

Underside of the TD-125 turntable showing the synchronous motor at the left and the electronics assembly at the top. The speed-control switch is at the upper edge of the printed-circuit panel and is an integral part of it. The contacts and springs are gold plated for long life and solid contact.



The motor drives the inner turntable through a small belt which isolates motor vibration from the turntable assembly. Below: the stroboscope seen through the window at the front of the panel. The photo was taken at 33⅓ rpm, and the line of light below the dots is the position of the 45-rpm dots. A sliding window adjusts for the line frequency in use.



plifier and fed to the motor, which requires only about 5 watts to drive it, so there is always an abundance of available power. The frequency of the oscillator is 20 Hz for the 16⅔ speed, 40 Hz for 33⅓, and 55 Hz for 45 rpm. These frequencies are selected by a slide switch built into the printed circuit board and gold plated for permanence, as are the contacting springs. Slight variations can be made in the frequency by a vernier control. The a.c. line frequency is used only as a reference to illuminate the neon lamp which provides the stroboscopic action to tell you when you are exactly on speed. Thus if you want to play an instrument along with a record and need to change the pitch of the recorded music to match that of your instrument, you can do it easily, disregarding the stroboscope, by varying the oscillator frequency slightly by moving the plastic wheel which moves the arm of the control very gradually.

Since the oscillator and amplifier operate on d.c., they are not influenced by the a.c. line frequency, even though the d.c. does come from the a.c. line through rectifiers and filters.

The TD-125 has an inner turntable on which the platter itself sits, both being machined for a close fit, and both being dynamically balanced. The turntables and the chassis (or "motor board") are die cast from a non-ferrous metal, with the turntable weighing 8 lbs. The turntable bearing and the tonearm board are mounted on a separate framework which is shock mounted to the chassis. The motor, controls, amplifier, power transformer, fuses, terminal blocks and so on are also solidly mounted on the chassis, and handling the on-off switch or the speed control does not affect the flexibly mounted turntable and tonearm mounting board at all. The two controls, however, look like no controls ever seen before—instead they look like blocks of aluminum, but they are plastic, with an anodized aluminum plate bonded to the top surface. The stroboscope disc is viewed through a slot at the near side of the platter, and a sliding shield serves to cover the band for the unused frequency. Two bands are etched on a disc on the underside of the inner turntable—one for 50 Hz, and the other for the U. S. standard of 60 Hz. Most of the world is on 50 Hz (and also usually at 220 or 250 volts), while practically only the U. S. stays on 60 Hz and 117 volts. Hence the need for two supply frequencies and the adaptability for several voltages.

Performance

We tested the TD-125 with an Ortofon arm and the SL-15T cartridge. The tonearm mounting board was already drilled for the Ortofon, although the TD-125 is normally supplied with an undrilled board. Locating the center for mounting the Ortofon arm is simple because of a strip of metal with a hole in one end for the turntable spindle and one in the other end for a plastic gauge which is placed on the mounting board at the right position and the necessary centers marked through holes in the base of the gauge.

The TD-125 met all of its specifications that we could measure (we were stumped with the −68 dB weighted rumble). We were able to confirm the 48 dB unweighted rumble within 2 dB, but we were not too sure about the "silent" grooves on our test record. We did get down to −64 dB weighted (USASI "A" weighting). According to the NAB method, however, we measured the unweighted rumble at 46 dB below the 100-Hz reference of 1.4 cm/sec peak velocity (which corresponds to 7 cm/sec peak velocity at 1000 Hz). The NAB standard for an acceptable turntable is −35 dB, so the TD-125's measured 46 is 11 dB better than the NAB standard.

Wow and flutter measured .07 per cent, exceptionally good in a turntable, although not too uncommon in good tape recorders. But then, you can practically pound on a tape recorder while it's playing without affecting its wow and flutter figure.

Line-voltage variation between 95 and 130 volts produced absolutely no change in turntable speed. The vernier control provided a ±2½ per cent variation when needed to match the pitch of a record to your musical instrument if you want to "play along."

If you have room for its 18-in. width, you will most certainly find the TD-125 the answer to your continuing search for the ultimate in every department—beauty of functional design, virtual absence of rumble, low wow and flutter, a shock-mounted drive system independent of controls, and simple tonearm change facility. The turntable has a three-year warranty on parts *and labor,* but from its sturdy construction, which includes self-lubricating bearings, it would seem more likely that you could keep it in use for ten years without any performance or maintenance problems. If you do, its $185.00 price tag breaks down to $18.50 a year, which is a real bargain. (Base and tonearm are extra.)