

THORENS

TD 124



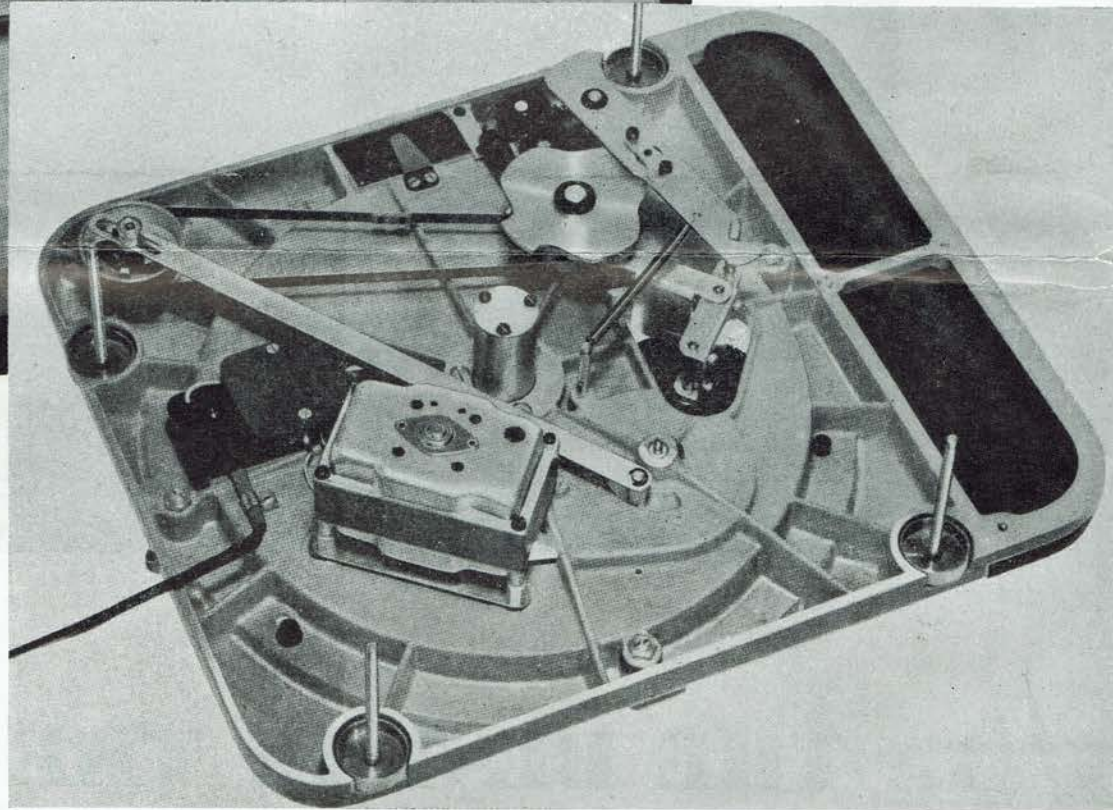
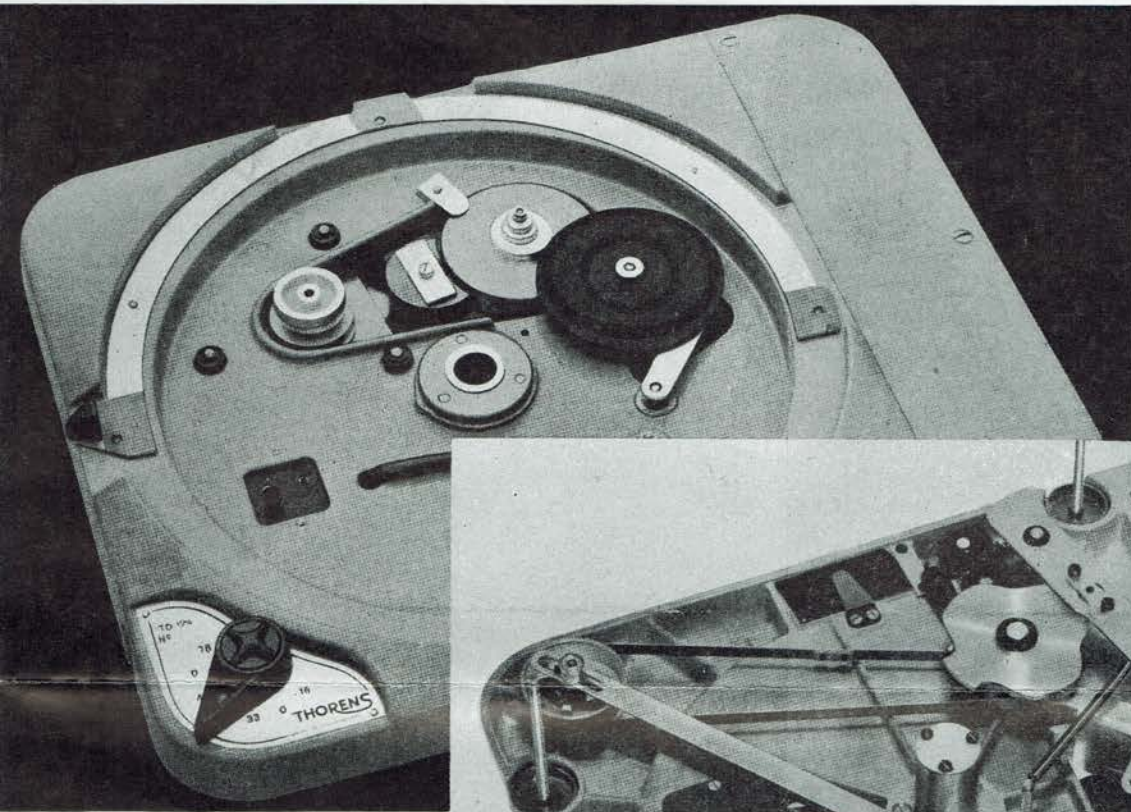
THE BEST IN THE WORLD

THORENS TD 124 TRANSCRIPTION TURNTABLE

DISTRIBUTED BY TECHNICAL SUPPLIERS LIMITED, LONDON, W.12

Highest achievement in turntable design does not mainly result from spectacular new mechanical or electrical elements, but much more from an integration of known, ordinarily conflicting elements, into a new design where their best features are magnified and their individual weaknesses eliminated.

As many as **11 important features found on Model TD 124 Turntable**, including Inertia Controlled Drive and Two Part Turntable with Clutch Action, are listed on pages 3 and 4 of the present leaflet with **41 resulting advantages**.



Professional users and discriminating music lovers will find for the first time so many desirable features harmoniously blended into a new turntable whose basic performance is better than NARTB specifications for broadcasting studio equipment.

● **Wooden board for tone arm mounting made integral with the cast aluminium frame.**

1. No relative vibrations between base plate and tone arm mounting board; the rumble level is independent of the type of installation.
2. Easy installation of any type of tone arm; the two dimensions of tone arm mounting board available allow the use of tone arms for 12" or 16" records.
3. Easy replacement of tone arm mounting board on installed unit when changing the tone arm.

● **Spring suspension of the whole unit on the mounting board.**

4. Easy installation without the need for additional parts on any base or cabinet. the mounting board does not need to be spring mounted.

● **Special inbuilt levelling device.**

5. The mounting board or cabinet do not need to be levelled.
6. The precision inbuilt bubble-level allows a permanent control of the levelling.

● **Inertia-controlled drive system; relatively light, precision built 4 pole motor, associated to a very heavy turntable (11 ½ lbs)**

7. Minimizes the influence of instantaneous voltage fluctuations on the turntable speed; the flywheel, not the motor, is controlling the speed.
8. Keeps motor vibrations very low.
9. Allows a most compliant suspension of the motor on the base plate for maximum damping of any vibration.
10. Keeps the stray flux very low.

● **Two steps speed reduction**

between motor and turntable, associating the best features of the belt-driven flywheel and of the stepped pulley-idler wheel speed shift, and eliminating the drawbacks of these two systems taken alone.

11. The long rubber belt prevents any vibration to be transmitted from the motor to the idler wheel and to the turntable.
12. Extra large diameter aluminium pulley for the belt (1 ¼" and 2 ¾") preventing slipping and deformation of the belt.
13. The rubber belt is easily interchanged from the top of the unit.
14. The stepped pulley for four speeds revolves at half the speed of that of conventional systems, thus the steps are of a much larger diameter. Better contact with idler wheel, no slipping and no local deformation of the soft tread of the idler wheel.
15. The stepped pulley is not on the rotor shaft, but has extra long, precision bearing rigidly fixed to the base plate. The vibrations and possible misalignment of the rotor shaft of a spring mounted motor has no effect on the stepped pulley and idler wheel. This latter cannot work as "wow multiplier".
16. Large idler wheel (3 ¾") with permanently bond special tread; no rumble filter action required.
17. Precision control system of the idler wheel for true parallel action with the steady spindles of stepped pulley and turntable.

THORENS TD 124

Single control knob for the " On-Off " switch and for the 78, 45, 33 1/3, 16 2/3 rpm speed shift. " Off " positions between each two speeds.

- 18. Automatic disengagement of the idler wheel in each " Off " position.
- 19. Large condenser on " On-Off " switch for silent operation.

Variable speed control ($\pm 3\%$) acting on the four speeds.

- 20. Control knob coaxial to the speed change knob.
- 21. Eddy current brake of new design (patent applied for). Exclusive aluminium brake drum with fixed permanent magnet and coaxially rotating vane for varying the braking action. The brake is not on the motor shaft but runs in an independent bearing fixed to the base plate. Precision control system without spring links. This system allows a more effective, precise and stable speed adjustment without influencing the rumble level and the flutter content.
- 22. Extended mean speed adjustment through magnet displacement.

Precision inbuilt stroboscope for four speeds, 60 and 50 cycles.

- 23. Printed on an extra large diameter underside of the turntable.
- 24. Illuminated by a neon bulb acting as pilot light.
- 25. Visible through a lucite covered aperture on front of unit.

Easy conversion from 50 to 60 cycles operation.

Voltage commutator for 100-120, 125-150 and 200-250 volts.

Two parts turntable with clutch action (Patent applied for).

- 26. Cast iron flywheel and aluminium turntable may be instantly coupled or decoupled for fast starting and stopping.
- 27. Motor and flywheel may be permanently maintained in operation for the whole time of use of the unit, the aluminium turntable alone being stopped for the change of records. Thus the temperature and lubrication conditions may be maintained stable for maximum speed stability.
- 28. Clutch operation for starting the turntable eliminates the possibility of starting in a wrong speed by mistake.
- 29. The clutch operated " Start & Stop " of the turntable eliminates the major cause of wear and deterioration of the drive system of conventional turntables.

The precision machined cast iron flywheel has :

- 30. Increased mass for the same volume, as compared to aluminium.
- 31. Greater mechanical stability and strength.
- 32. Excellent shielding properties against stray flux.
- 33. Strictly homogeneous design without ribs, holes or bolts on the pickup playing surface.
- 34. Heavy main spindle of hardened steel ground and polished to mirror finish running in deep cast iron well with nylon bearing surfaces. Thrust ball revolving with main spindle on nylon seat.
- 35. Precision machined aluminium turntable with heavy rubber mat and inbuilt retractable hub for 45 rpm. records.
- 36. The record spindle is part of main spindle and not of aluminium turntable for perfect record centering.
- 37. Distance between top surface of the aluminium turntable and the castiron flywheel great enough for the practical elimination of interaction on any pickup cartridge.
- 38. Clutch control knob on left side of unit.

Cast aluminium base plate strongly ribbed.

- 39. New styling corresponding to the present day trend in precision mechanical and electronic equipment.
- 40. Extremely reduced depth of the mechanism underside the base plate opening new installation possibilities.
- 41. Logical layout of the complete foolproof mechanism for easy access to every part.

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Weight : unpacked 22 lbs (10 kg.)
 Shipping 33 lbs (15 kg.)

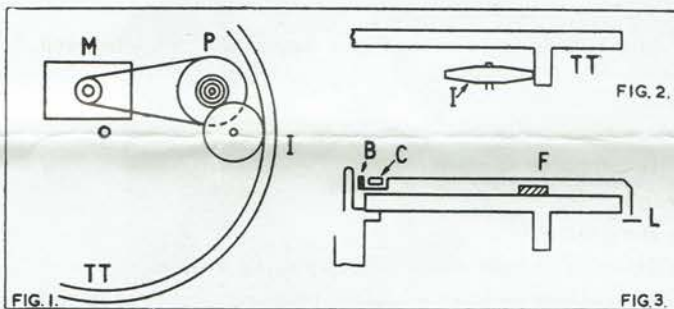
Dimensions : length 15 1/2" (394 mm.) depth 3" (74 mm.) below mounting board
 width 12 3/4" (324 mm.) height 2 1/2" (60 mm.) above mounting board

THIS is indeed a **Rolls-Royce** amongst transcription turn-tables. To do it justice one would run out of superlatives long before the report were finished. It is Swiss made, and the manufacturer's underlying policy was to produce the finest turntable their skill would permit. That is, of course, a good start!

The design is quite different from any previous turntable reviewed in these pages. **Fig. 1** shows the main layout, **M** is the motor, a 4-pole induction type running at just under 1,500 r.p.m., and is supported by 3 rubber mountings. A stepped pulley **P** is driven by an endless synthetic rubber belt. This pulley is mounted rigidly on to the main frame, and is thus always perfectly aligned with the rubber-tyred idler **I**. This in turn drives via the inner surface of a flange on the main cast iron turntable.

The idler is connected to its control knob by a flat spring-steel belt (or tape). The control knob has 7 positions—78-off-45-off-33½-off-16½, and the idler is of course lifted well clear of step pulley and turntable in the *off* positions. This control also operates a micro-switch to switch the motor on and off. It is suppressed.

Concentric with the control knob is the fine speed control. This uses eddy-current braking. The magnet is fixed and very close to the face of the step pulley. Inside this pulley is a movable piece of iron giving a variable reluctance effect.

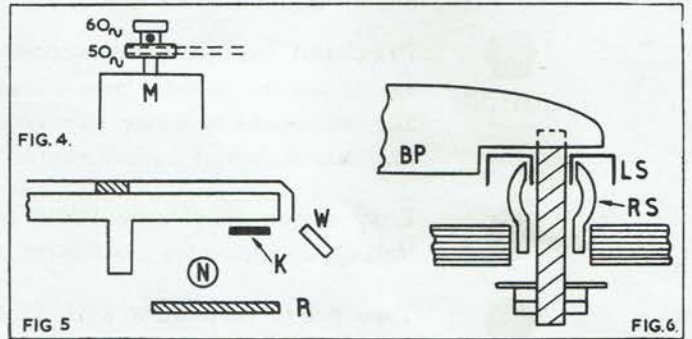


The record does not sit on the cast iron turntable, but has its own "turntable" which is clutch controlled. This is a very light aluminium shell which fits over the main one. Though quite thin and light, it is precision finished and runs absolutely true. This is driven by 6 ground plastic friction pads affixed to the main turntable—**F** in **fig. 3**. This, together with the rubber mat and disc gives adequate spacing between magnetic pickup and cast iron turntable.

Three lifting fingers—**L** in **fig. 3**—operated by a second control knob, lift the shell clear of the main turntable and brake it to a standstill while the rest continues to rotate. This makes possible practically instantaneous starts and stops since the shell inertia is very low. It also ensures that the machine, by running continuously, maintains a more steady speed and is not affected by intermittent starting and stopping.

The motor pulley is a double one and can be used for 50 c/s or 60 c/s mains by reversing it—**fig. 4**. The motor is tapped for all voltages from 100-250. **Fig. 5** shows the arrangement of the built-in stroboscope. Six stroboscopic patterns are printed on the underside of the cast iron turntable—for the 4 speeds at both mains frequencies. (The 33½ pattern also works for 16½ r.p.m.). A reversible mask **K** covers the unwanted set. A neon, **N**, illuminates this pattern, and gives a much clearer picture than ordinary (mains) lighting would do. It is viewed through a perspex window **W** via a mirror **R**. Not only can the speed be seen all the time it is playing, but it can be pre-set before operating the clutch.

All bearings are very well designed and beautifully finished. The motor bearings have a large oil reserve in felt pads—as is common for that type of work. The stepped pulley is properly bushed and is fitted with a steel thrust ball to reduce friction, and a tiny plastic cap excludes dust. The idler wheel's vertical thrust is taken on a nylon washer, and the most precise details of its adjustment are given in the instruction booklet. The main turntable spindle is over ½ in. diameter, mirror finished, and runs in a cast iron bearing bushed with nylon. Thrust is taken on a steel ball sitting on a nylon pad. This design needs practically no lubrication—only its original smear of silicone oil. In this case, too, the booklet gives implicit instructions for cleaning and re-lubricating in the event of dirt or lint accidentally getting in the bearing. This type of bearing



also minimises rumble. The correct lubricants are stated in the manual, together with their U.S. equivalents.

The whole machine is built on to a complicated die-cast aluminium baseplate. It is very rigid by virtue of its depth, general complication and generous ribbing. It is extended to embrace the pickup mounting, and this extension carries a removable wooden panel about 12 in. × 3 in., secured by 3 plated screws. A very ingenious and comprehensive template is provided, which gives the correct mounting position for all pickup requirements. The template also covers an outside panel—which extends beyond the casting—to take 16-in. arms. With this scheme, changing the pickup merely means changing the panel, a matter of 3 screws and a lead. The whole apparatus can thus remain permanently tidy, however often a change is made. (The writer has already been forced to do this with his own equipment!)

The baseplate is fitted with a very neat bubble level. It is so sensitive at and near the level position, that it is easy to detect a tilt of 10 minutes of arc (¼ degree).

The four fixing bolts are permanently fitted to the baseplate, and are long enough to allow it to stand with its entrails clear of the bench—a very thoughtful provision. These carry 4 hollow milled and plated screw caps which are intended to sit on the resilient mountings provided. **Fig. 6** shows the general idea. **BP** is the diecast baseplate. **LS** is the milled levelling screw, readily accessible at the edge of the baseplate. **RS** is the self-damping rubber suspension. Note that the rubber moulding is shaped to permit lateral as well as vertical motion. Again, the instructions are quite particular. When adjusting these screws, the user is advised to try and make sure the load is fairly evenly distributed, and not mainly carried on three of the points. A small point, but one of the many things that go towards making the difference between good and excellent. In fact, this shows up all through the manual.

The first page of instructions deals with unpacking and, more important, repacking the machine. This is a piece of real engineering, but nothing less would do. Farther on in the manual the speed changes expected between the inside and outside of a 12 in. **lp** disc played with a modern pickup, are given. These are detectable on the very large diameter stroboscope and should be about 24 dots per minute—a mere 1/19 of a semitone! For maximum accuracy the speed should of course, be adjusted whilst actually playing a disc. The whole finish is of course, in keeping with the excellent design and withall lovely to contemplate.

The makers are **Thorens S.A., Sainte-Croix, Switzerland.**

Performance. This was as expected. Everything worked perfectly without any attention whatsoever. This is the first time the writer has seen a turntable that can be set accurately on one of its speeds and is then exactly right in all the others and *still* right after trying them all several times. Not absolutely essential, of course, but it does give one confidence! The machine tested was not absolutely silent, the driving motor itself could just be heard, but no rumble or hum could be detected from it.

The usual measurements were taken. Turntable mass 11½ lbs. (5.1 Kgm). Turntable inertia 630 Kgm-cm². Centre spindle 0.2819 in. diameter. Speed change for 125 gm-cm torque—2.5%. Speed change for voltage change 240-220—1.28%. Speed control range (240V and no load) + 3.13% to -0.4%. Time to stop from 33½ r.p.m. (53°F) (a) Turntables only, level, 62 secs., (b) ditto 2° tilt, 30 secs., (c) Whole unit by switching off mains, 8.3 secs.

We are thus pleased to recommend this machine to our readers and doubt very strongly whether there is a better one to be had.
R.L.W.

AUDIOLAB TEST REPORT

Prepared by Hirsch-Houck Laboratories and published in June, 1958 issue of *AUDIOCRAFT MAGAZINE, U.S.A.*

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SPECIAL NOTE—In reproducing this report, TSL wish to point out that whilst they approve entirely of such policy, description of the motor in detail has been condensed because it already appears in full in this brochure. No opinion or comment has been omitted or modified.

THORENS TD-124 TURNTABLE

It appears that the Swiss designers of this turntable decided to develop a unit that would do just about anything that any user could ever demand of a turntable, and do it well, at a reasonable cost. Although it offers no startling basic design improvements over other turntables, the TD-124 gives evidence of extreme ingenuity and fine craftsmanship in its design and construction . . . (The rubber belt and pulley) makes a better contact with the rubber idler wheel and minimizes slippage and local deformation of the idler. The pulley incidentally, is mounted on a precision bearing and represents a miniature turntable in itself.

A unique feature of the TD-124 is the clutch system for operating the upper aluminium turntable. This revolves with the heavy turntable (and rests) on six $\frac{1}{2}$ " diameter rubber discs fastened to the cast-iron turntable and turns with it. When a clutch knob on the left side of the base plate is moved, the aluminium turntable is lifted clear and stops instantly while the main turntable continues its rotation.

This system has obvious advantages in cueing the pickup to a particular portion of the record or in stopping the playing and returning to the exact point where it was stopped. Another advantage is that the motor may be operated continuously during a playing session and so become stabilised in temperature and thus in speed. The change in speed when the upper turntable is engaged is momentary, and the average value remains constant.

The double turntable allows the designers to take advantage of the greater mass of an iron turntable, while the aluminium turntable keeps the cartridge far enough (away) so that no appreciable magnetic attraction can take place even with older cartridges which were subject to this difficulty.

(Further technical description follows as already given in this brochure.)

TEST RESULTS

Rumble was measured with the silent grooves of the Popular

Science and Components 1108 records. A Fairchild 225A cartridge mounted in a Fairchild 281 arm was used. Equalisation was by a Marantz preamplifier set for the RIAA characteristic.

The rumble measured -43db relative to a velocity of 7cm/sec at 1,000 cps. The same value was measured with the clutch disengaged so that the upper turntable was not revolving. It was predominantly 30 cps with some 60 cps as well. It was quite inaudible in our listening tests.

Wow and flutter were measured with the Components 1106 record. The wow was 0.05% (including components from 0.5 to 10 cps) and the flutter (10 to 300 cps) was 0.1%.

The TD-124 turntable is unusually silent in operation. Not only can no sound be heard from the motor or idler, but absolutely no vibration can be felt by hand on any part of the unit. With the upper turntable stationary, we found it quite impossible to tell if the unit was turned on without looking at the illuminated stroboscope markings.

SUMMARY

The Thorens TD-124 seems to have incorporated with great success practically every desirable operating feature one could desire. It is the equal of the finest turntables we know of in respect to wow and flutter. Its rumble level, while possibly not so low as some others, meets professional standards and is certainly negligible in practical use. It offers four-speed operation, with adjustable speeds and unusual ease of measuring speed. It is universal in its operating voltages and frequencies. It is in all respects a pleasure to use. We think it is as clean and functional as anything we have ever seen. The only (point of criticism) we came up with was the fact that the centre spindle revolved with the lower turntable. If the record had a slightly undersize centre hole as some do, it might continue to revolve when the upper turntable was stopped. There is also a small possibility of wear on the centre hole if a record were left on the stationary upper turntable for some time.

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