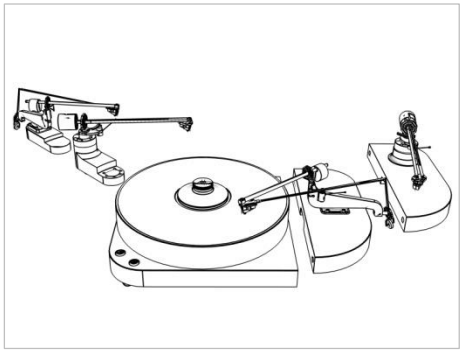
Thales Turntable

TTT – The Turntable for our tonearms

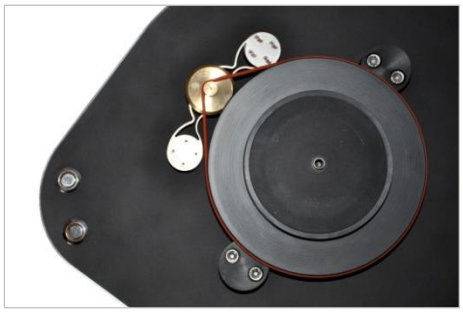
The extraordinary design and performance of our tangential pivoted tonearms (Thales & Simplicity) required a fitting turntable. The Thales Turntable (TTT) is made to match our tonearms perfectly in all aspects: technically, optically and tonally. It provides the most accurate and harmonic sound possible, in a compact and sublime design never seen before.

Concept



Aristotle brought the character of a turntable to the point in a single sentence: «The whole is more than the sum of its parts». Based on the experience that a turntable with its tonearm should be one single unit, we have created a modular system that is flexible but looks harmonic as well. The tonearm-base on the right hand side becomes a part of the turntable, to which it is connected by a massive ductile cast iron element. It is possible to add an additional tonearm to the left hand side. Each of the 125 parts has been carefully designed to perform its function in the overall concept perfectly. In this documentation we will show you some details of the technical design. But please remember the final result is not the outcome of sophisticated details only, but the performance of the whole unit as an ensemble.

Drive

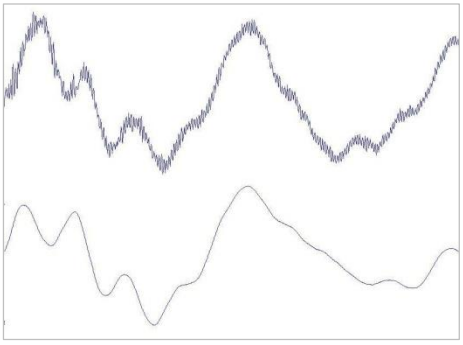


The drive of a turntable is basically very easy: it should make the record turning with a speed of 33 ⅓ resp. 45 rpm. The list of what it should not do is much longer: it should not sound or vibrate at all. It should not be influenced by the mechanical tracking, no matter in which frequency-range. It should not care about temperature, humidity or dust. And finally it should be incredible constant. The human hearing can discern 1Hz difference at its most sensitive frequency (1000 Hz). If we would have to define one hour that accurate, we should keep a pitch of less than four seconds! For the TTT, we have realized a drive system combining the advantages of the very traditional idle wheel drive (strength and constancy) with the benefit of the belt drive (silence and decoupling). The motor itself – a brushless DC motor with ironless winding – provides a maximum output of 20 Watts and is mounted on a carefully calculated decoupling element. This element keeps away all vibration from the chassis, but avoids any axial movement of the motor. The pulley – which acts as a flywheel to compensate the motor increments – drives the sub-platter via a precision-belt, originally made for medicine applications. The whole drive system is completely covered by the platter.

Bearing

The bearing of the TTT is our homage to traditional craftsmanship. The approved construction is known since more than 50 years in the industry, while we have brought the realization and finish to a new level by combining it with traditional knowledge of our watchmaker. The main shaft is made of hard chrome plated carbon tool steel. Its surface has been hand polished step by step with basswood and diamond-paste. The shaft runs in two sintered bronze bushings, which have been soaked and cooked with specifically made oil. This guaranties maintenance free running for many decades. Vertically, the shaft ends up in a spherical carbide metal piece, lying on a hardened steel ball. The whole bearing is put inside a body made of ductile cast iron. This material has extraordinary damping qualities and keeps away any noise from the main chassis.

Platter



The platter of the TTT has two important tasks: it enlarges the rotating inertial mass and provides the underlay for the record. The complete mass of the platter is 8.5 kg, but by concentrating the rotating mass at the outside diameter, the inertial properties are equal to a massive platter of 10 kg. The platter is tuned to one single resonance frequency and efficiently damped by a customized lead-vinyl inlay. This inlay is at the same time the mat the record is lying on. After choosing the material of the mat by listening tests, we have proved its function by measuring the vibration of the bare platter compared to the damped one. As you can see in the picture above, the – quite high – resonance frequency of the platter (upper curve) is completely damped away with the mat (lower curve). But in all this, the main signal is kept very precise; there is no flattening or blearing, usually known as «overdamping».

Clamp

Unlike most turntables, for the TTT is the clamp part of the main concept. It defines the contact between the record and the carefully designed mat and platter. The clamp attaches a (very little) deformation to the record-label to make sure the record touches the mat surface all over. This deformation is fully guided between shape and counter shape. Even the hold-down-force is defined by a spring-loaded mechanism and is independent of the torque you are tightening the clamp. All this process is quite critical, since only one of the parameters (shape, force, size) can bring the function to nothing or – even worse – damage the record.

Spikes

The spikes look quite common from outside, but the secret of the decoupling and leveling mechanism is inside. The spikes make the turntable standing on balls, keeping it in position by a small rubber element. This keeps horizontal vibration of the ground away efficiently. The leveling mechanism is a combination of a machined thread with a high precision sliding fit. This makes leveling of the unit easy, secure and precise, while preventing any play or unstable standing.

Electronics

The electronics has been developed especially for the TTT. It is a closed loop controller which keeps the speed of the motor constant. The feedback of the brushless DC-motor is compared with an extreme precise reference voltage, which makes the drive unit significant more accurate than a pll-system with quartz controlled oscillator. This preciseness can only be reached by using circuits with a perfect temperature compensation. The separate housing of massive aluminum – milled out of a block – is an integrated part of this compensation design.

Technical Specifications:

- Turntable speed: 33 ⅓ rpm, 45rpm
- Wow and flutter at 33 ⅓ rpm, DIN45 507: ±0,06%
- Rumble: -58dB (unweighted)
- Voltage: 240/120V, 50/60Hz
- Tonearm: maximum 2, customized bases
- Output-terminals: RCA / XLR / direct wiring
- Weight: 18.5kg
- Size: 432 x 312 x 105mm

Turntable Specifications:

- 3-phase motor underneath platter
- Short belt drive system with flywheel
- High-precision bearing, hard chrome-plated
- Clamp with spring loaded flattening-mechanism
- Lead-vinyl-mat between platter and record
- Decoupling ball element feet
- Separate power supply unit
- Black finish with silver edges

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