

RECOMMENDED

# Linn Sondek LP12

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With a decade or so of production behind the *Sondek*, the 'Nirvana' modification covered by the review in the last *HFC* 'Turntables' edition has now been augmented by a further development called 'Valhalla' (as with the 'Nirvana', this is an easy retrofit). For years now, the popular slow-speed synchronous motors generally fitted to the sub-chassis belt drive turntables have been at the mercy of the mains supply. The latter's frequency, distortion, noise level, transient fluctuations and voltage all affect the motor's output and also the level of vibration emitted from the motor frame.

Ideally such motors should be run from a two phase supply, but the second phase-shifted line has generally been optimised in a less-than-ideal fashion by using a phase shifting capacitor. When a turntable is intended for UK and for US markets, a pulley change is also required to account for the 20% mains frequency difference, in addition to the 2:1 change in voltage.

'Valhalla' solves these problems by effectively isolating the motor electronically from the mains supply. Mains power is rectified and smoothed to feed a bi-phase 100V low distortion power amplifier acting as the motor

source. The exact 50Hz frequency is synthesised from a quartz oscillator. When fed clear, stable 50Hz, the motor generates less vibration and mains harmonic components, attaining a near perfect pulley speed stability over both the long and the short term. Power into the belt is more stable, with (in theory at least) a lower rumble and reduced subchassis vibration resulting from the power feed. For simplicity's sake the single 33 rpm speed has been retained.

General alignment has also been improved with the recent introduction of larger and more accurate suspension springs and deckplate bolts. However the deck is still at present subject to suspension settling with use, and thus requires occasional realignment though new low-fatigue springs are promised to solve this problem in the near future.

To return to basic features, the *LP12* comprises a straightforward full sub-chassis belt driven turntable unit capable of accepting a variety of high quality tonearms. Deceptively simple in design, long experience with the product has shown that it has been subjected to such a high level of detailed development and refinement that almost every component down to the humblest screw fixings can be

shown to have a significant effect on the performance of the whole.

A substantial main bearing is used, with a hardened spindle ground to a slightly radiused point bearing on a thrust plate. High density PTFE sleeves in the bearing provide sufficient rigidity and very low rotational noise levels. The two piece platter is of considerable mass, cast in Mazak and turned to close tolerances, with a special grade of black felt used for the platter mat. Even now, considerable care is needed in setting up an *LP12* in a final installation, and the help of an experienced dealer is virtually mandatory.

Other minor improvements concern the light touch on-off switch with LED indicator, as well as extra screws front and back to help keep the baseboard in position.

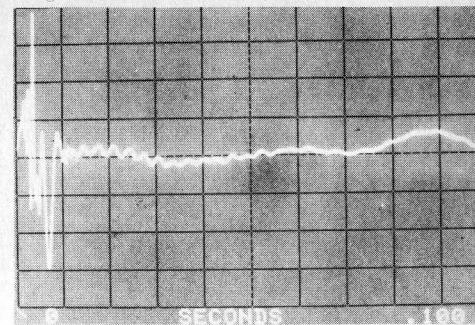
The well damped platter weighs some 4.1kg. Our assessment of disc damping was revised for this issue, and while the initial transient was certainly poorly damped by the felt mat, the impulse died away quickly thereafter, this a good result. A measurement taken last year showing the frequency transform of the felt mat versus an absorbent one has assumed greater significance this time round, inasmuch as it can be seen that while the 'composition' mat produced greater attenuation, its frequency response was uneven, while that of the felt was more uniform, suggesting lower overall coloration.

'Valhalla' made its mark on the motor results with excellent wow and flutter, plus significantly lower linear wow. Absolute speed and accuracy was satisfactory, while loss under load was very good at 0.13%, another important result. DIN weighted rumble improved to a superb -80dB. In fact the spectrograms for residual measuring system noise and for the *Sondek* were very similar and to check this result the two were submitted to subtraction providing the second rumble photo - no mains related rumble components remain!

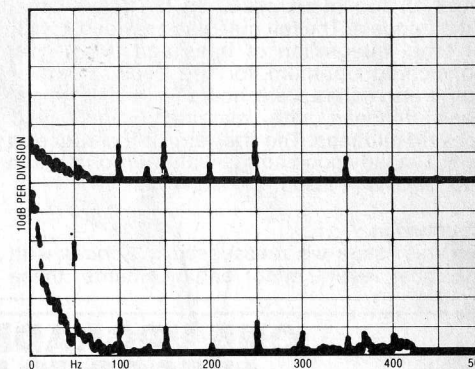
The *LP12* was not the very best in the issue as regards vibration isolation or acoustic breakthrough but the curves did confirm a high standard for these parameters nonetheless. Shock resistance was also quite good, with both acoustic feedback and hum very good.

### Sound quality

A few years ago it was considered heresy to suggest that turntables could make a 'sound' at all, but meanwhile the *Sondek* has been a leading exponent in demonstrating just how different the subjective performances can actually be. It scored an excellent rating on audition, notwithstanding some mild spectral



Disc impulse transmission showing damping



Rumble, electrical (above) and total (below)



Breakthrough, acoustic (above) and vibration (below)

Charts above characterise general turntable behaviour. See text for commentary on these results, see *Technical Introduction* for explanation of test techniques

**LINN SONDEK** *continued*

imbalance and coloration; a consumer who feels that absolute tonal neutrality is paramount is entitled to reject the LP12 but should be made aware of the importance of certain other factors. For example the LP12 has long generated a feeling of 'involvement' with the music for reasons that are only partly becoming understood.

After careful and prolonged listening the LP12 was found to excel in its ability to retain the timing, tempo, rhythm and pitch of complex percussive sections, failure here producing some loss of interest on the part of the listener. Additional qualities included rapid post-transient decay producing 'transparent silences' between successive notes and these were all too often obscured by hangover in other models. The felt mat also provided a level of tonal integration of bass and treble now considered optimum for the deck. However some anomalies were heard - a mild upper bass richness with marginally 'loud' and forward midband. The *Ittok* arm still produces a spectacularly good sound with the *Sondek*; the Alphason arm also matched it well.

**Conclusion**

For this issue we reassessed a *Sondek* with the most recent minor enhancements, these

including the viscous main bearing oil and new suspension lock nuts. No change in performance was measured but some improvement in sound quality was observed. The musical attack and detail in the midrange shows a small improvement, this tending to strengthen the subjective stereo focus, while the bass was more forceful, possibly excessively reinforcing the upper-bass forwardness that we have previously noted. This seemed rather obvious with the Rega *RB300* arm. However, the *Sondek's* position is little altered and it continues to carry our strong recommendation.

**GENERAL DATA**

Motor unit

**Motor Section**

Type . . . manual, belt-drive, synchronous motor, sub-chassis  
 Platter mass/damping . . . . . 4.1kg/good  
 Finish and engineering . . . . . excellent/excellent  
 Type of mains/connecting leads . . . . . 2-core  
 Speed options . . . . . 33rpm  
 Wow and flutter (DIN peak wtd, sigma 2) . . . . . 0.06%  
 Wow and flutter (LIN peak wtd 0.2-6Hz/6-300Hz) . . . . . 0.09%/0.05%  
 Absolute speed error . . . . . -0.2%  
 Speed drift, 1 hour/load variation . . . . . quartz-locked/ -0.13%  
 Start-up time to audible stabilisation . . . . . 6 secs  
 Rumble, DIN B wtd L/R average (see spectrum) . . . . . -80 dB  
 Size/clearance for lid rear . . . . . 44.5(w) x 36(d) x 15(h)/5.5cm  
 Ease of use . . . . . good  
 Typical acoustic breakthrough and resonances . . . . . very good  
 Subjective sound quality of complete system . . . . . excellent  
 Hum level/acoustic feedback . . . . . very good/very good  
 Vibration sensitivity/shock resistance . . . . . very good/good  
 Estimated typical purchase price . . . . . £408

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**CUSTOMERS' COMMENTS**

*S.B. Blackpool:* 'A definite and real improvement to my AR'. *J.H. Cleveleys:* 'Fabulous, simply fabulous'. *C.P. Bamber Bridge:* 'Great', owns *Sondek*. *K.R. Manchester:* 'Well worth the money'. *M.J. Bolton:* 'Very good on my Ariston'. *B.M. Preston:* 'Sondek improved dramatically'. *M.S. Blackpool:* 'It is surprisingly a real improvement'. *D.B. Lichfield:* 'Hard to believe before I heard it'. *A.M. Wimbledon:* 'Every hi-fi buff should have one'. *L.M. London:* 'Cheap considering the improvements'.

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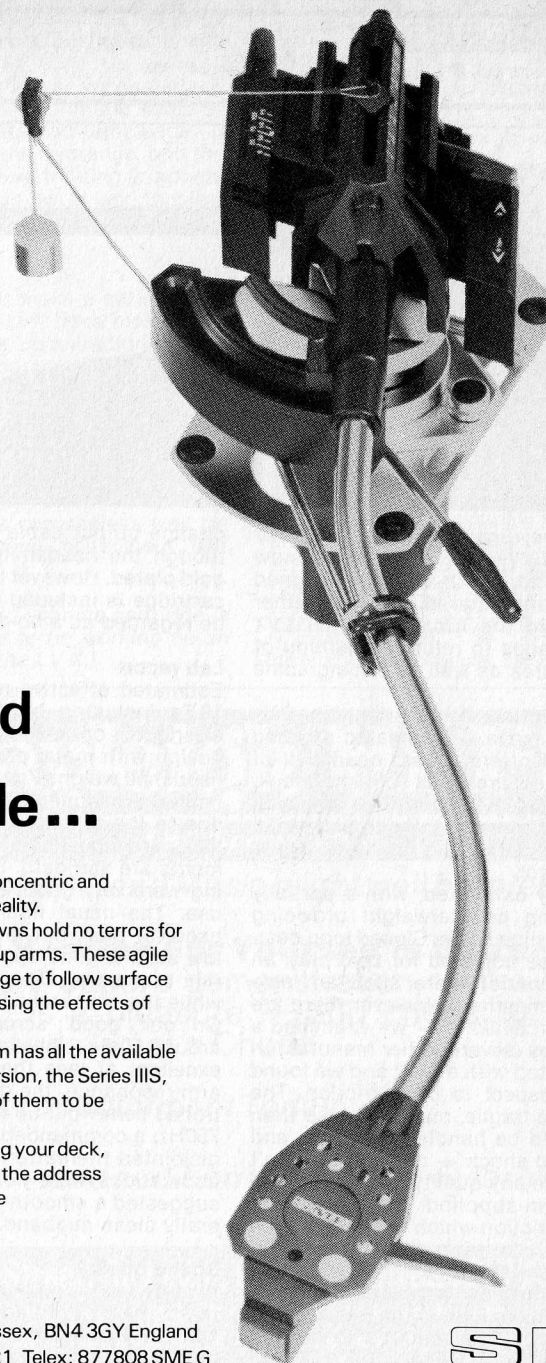
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