

# LINN SELEKT DSM

## NETWORK MUSIC PLAYER

Reviewer Jez Ford

**G**enerational change occurs in technology, as it does in populations. Linn, once described as “Scotland’s only leading cool brand”, provides examples of both. The company’s founder, Ivor Tiefenbrun, leveraged his father’s precision engineering company to set Linn in motion with a precision-designed turntable notable for a new patented point bearing. And with it, he began the conversion of the hi-fi world to the crucial concept that the quality of the source in an audio system is critical to the system’s overall quality. This ‘source-first’ philosophy sounds smack-yourself-in-the-face obvious today, but was most definitely not the mode of thought back in 1973 (see *Linn, The Origin Story*, p30-31).

Thirty years later, another change in the generations saw Ivor’s son Gilad Tiefenbrun taking the reins as Linn’s Managing Director in 2009, having previously served on the board and as head of design and engineering. Turntables by then were a relatively niche product, though rallying — by 2011 he was telling us in Sydney that turntables and accessories were up over the last two years and now accounted for about 10% of Linn’s turnover.

But the future was clear, and it was file-based music, not physical discs. The lesson had been hard learned by much of the hi-fi industry, Linn along with the rest, as the rise of file sharing was accompanied by a decline in high fidelity as a priority in general. The company had been through a major restructuring in 2007, and it faced a key question. While the ‘source-first’ philosophy was by then accepted the world over, what exactly was the source of the future?

Linn was very early in deciding that the source of the future was definitely not the CD. It stopped making CD players in the same year that Gilad became MD. Linn was already on another path.

### A TRUE DIGITAL FORMAT

“We decided that we’d rather take the time to explain to existing and potential customers why we

believe the time is right to get into music streaming even if it means we risk losing a sale,” Gilad said at the time, also referring back to an earlier prediction by his father Ivor that “CD would be an interim format, before an eventual ‘true’ digital format would come along to rival vinyl.”

So the first Linn DS network music player appeared in 2007, the Klimax DS. Its input was a digital stream over a home network, not a physical disc. And it could play ‘Studio Master’ quality recordings up to 24-bit resolution and 192kHz sampling frequency — Linn Records was a pioneer at releasing such high-res recordings (DRM-free, too).

With Studio Master files to download, and format-independent Linn DS music streamers to play them with, Gilad said, “Linn believes Ivor’s digital prophecy has been fulfilled”.

And now, another decade on, comes Linn’s latest model, the Selekt DSM reviewed here. In some ways it’s a continuing development from previous DS and DSM releases. But in other notable ways, it’s a new generation of product from Linn, for a new generation of music lover. For one thing, the Selekt DSM is easy to use with products (especially speakers) from other brands; at the recent Australian Hi-Fi & AV Show, the Selekt DSM was demonstrated in one of Tivoli Hi-Fi’s rooms with a pair of B&W speakers. And Linn has measured dozens of speaker models, perhaps hundreds, for its Space Optimization software (see overleaf).

But the biggest change here is the extraordinary modularity of the new model. This goes beyond the usual ‘add a DAC’ option or ‘add different inputs’ that we’ve seen before. The Selekt DSM is listed as a network music player, although for Linn ‘DSM’ has always indicated preamplifier functionality (DS models being source only). So the Selekt DSM is a network music player/preamplifier. Except... it also has upgrade options, one of which is to add amplification — not so much an upgrade as a wholesale change from one type of product to another. The UK’s Alan Sircom has referred to this as “messing with the Platonic forms of hi-fi”, our ideas of how products are defined. The traditional



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definitions of hi-fi are unable to fully define the Selekt DSM. What is it, exactly?

Well, perhaps the answer is that you, the customer, get to decide what it is. And even better, you can always change your mind later.

### EQUIPMENT

If the Selekt DSM's counter-Platonic form doesn't convince you of generational change, the physical embodiment surely will. It is recognisably a Linn network player, but all grown up. The front display is monochrome: it's colour-capable, we gather, but holds its hues in reserve. It's all black — black and white — but not like a grey day under Glaswegian skies, more black and white like a trendy Etsy art collection. It has quite a big knob on the top, which marries to an identically sized central foot below; Linn was sensible to stop the knob fetish where it did, for fear of anyone shouting 'Naim' too loudly in their ear (Linn and Naim being the separated lovers of 1970s hi-fi — see also the Naim ND 555 in this issue, though disappointingly this has no knob at all). Besides, this Linn knob moves laterally to select things, it's a completely different kind of knob. OK?

Meanwhile (and compounding our rudeness of making comparisons) there are six preset buttons in front of the knob, which can be user defined to link to any song, playlist, station or source available to the Selekt DSM. This reminds us of Bose SoundTouch products, which have six buttons which can be user defined to link to any song, playlist, or station... But where Bose's are plastic spongy things with numbers stamped upon them, these six preset buttons are stylishly silver with a two-level depth of movement. And since we have profusely praised the SoundTouch system since its appearance, we can only similarly praise Linn for independently adopting something similar.

▽ THIS IS THE BACK PANEL OF THE SELEKT DSM WITH AMPLIFICATION OPTION, SO SPEAKER OUTPUTS REPLACE THE BALANCED AND RCA LINE-LEVEL OUTPUTS FROM THE REVIEWED VERSION.



### INS AND OUTS

In terms of inputs (the preamplification part of the DSM notation), there are nine in total, plus Ethernet: two each of optical and coaxial digital, two phono turntable inputs (separate sockets for moving magnet and moving coil cartridges). There is, and we love this, an HDMI input configured as an ARC (Audio Return Channel) output, so it can suck the audio back from one of your TV's HDMI inputs (usually there is one particular TV input with ARC written next to it).

There is USB-B into which you can plug a computer, which would be less remarkable of further comment were this not the first time Linn has ever ever ever included such an input on one of its streaming players. We're not entirely sure why this was so eschewed in the past — some legacy of Beltian objection to a PC being used in the same suburb as an audio system, possibly. We note there's still no USB-A slot to allow direct connection of sticks or drives, but after all, Linn calls these 'network' players for a reason.

There is one single analogue line-level input on RCA sockets. This and the phono inputs are digitised on arrival, as is increasingly common on products which rely on digital processing and volume control; it could really be no other way. And in fact, if the RIAA equalisation and other filtering of the phono stages are done digitally, there might even be considerable advantages in avoiding the phase distortion inherent in an analogue interpretation. You might improve the sound of your turntable by treating it digitally. Hurts, doesn't it?

The outputs will vary according to the level of Selekt DSM you are using (see image below).

### PLAYING KAZOO

With the Ethernet connected, you're able to use the Kazoo app (although Linn users often integrate other and sometimes multiple apps

for control). Kazoo is Linn's latest control app, and can run not only on portable devices, both iOS and Android, but also as software for Windows and Mac computers, so that you can control your Linn device from pretty much anywhere.

Kazoo includes easy access to certain streaming services — seemingly hand-picked for quality since it includes Tidal and Qobuz (the latter still not yet officially available in Australia, though it will work if you've set up an account elsewhere). Both of these have subscription levels which can access high-res files, rather than the lower-than-CD streams of Spotify and its ilk. There's also internet radio built in, with its variable quality streams.

Kazoo provides an attractive interface with album artwork tiled on the screen, and can also be used for multiroom operation, grouping Linn zones for joint playback. Kazoo Server software forms a searchable database for Kazoo itself, bringing together all your music stored, for example, in iTunes or Windows Media Server, or in folders of high-res files on a computer or on NAS drive. Indeed QNAP NAS drives can have Kazoo Server installed on the NAS itself — this has the advantage that the server software is always on, whereas otherwise you'll need a computer permanently on to serve up the music (the Selekt's other streaming services will always remain available).

If you're a Roon user, you may be thinking that Kazoo Server sounds a similar concept, right down to the QNAP compatibility, and you'd be right — the good news is that you can carry on using Roon, since the Selekt DSM is compatible with Roon, if not officially 'Roon Ready'. Indeed here in Australia as we write, you get Roon included with purchase, though this offer won't last forever.

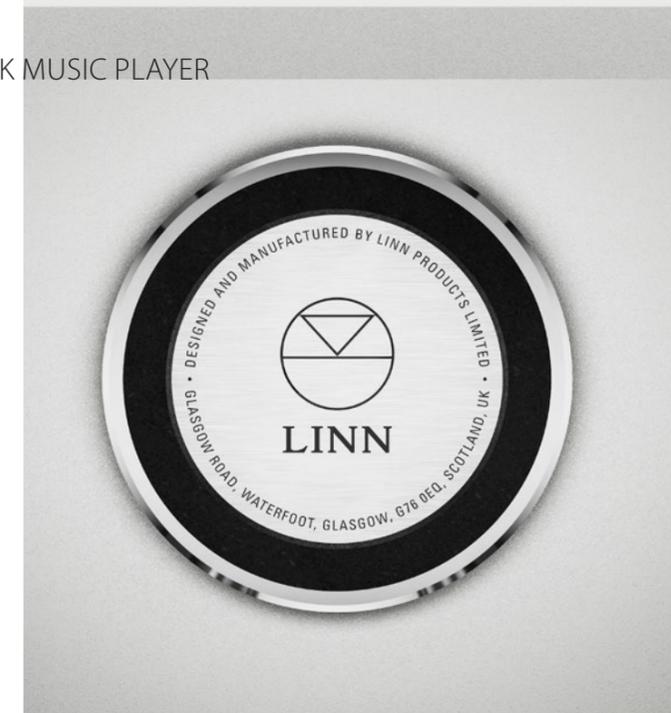


The soundstage was not merely wide but also deep and full of distance and air. The spread of harmonies across this was tinglingly delicious.

Similarly if you're already using Minimserver or Twonky, Linn's Kazoo app will be happy searching through those, rather than you needing to add Kazoo Server as a double-up or replacement.

### CHOOSE YOUR LEVEL

So as we've seen, you can choose various versions of the Selekt DSM, either going above the base level from the start, or choosing to upgrade it later. The upgrades come in the form of removable 'cartridges' so that any Linn dealer can install them easily in your home — you don't even have to take the Selekt to your dealer.



The big choice is whether to have amplifiers included, which as mentioned makes the Selekt rather more than the usual 'DSM' definition, thereby blurring the Platonic forms of hi-fi.

The second upgrade option of including Linn's Katalyst DAC architecture — as did the unit we reviewed — may also start to blur the established lines of Linn's product tiering. Linn's sources start with the Majik DSM, then this Selekt, then rising to the Akurate and finally the aptly-named range-topper the Klimax DSM. But with the Selekt being a significant rethink and redesign of the DSM concept, it has attractions that the Akurate in the tier above doesn't offer. And if you choose the Katalyst upgrade, we reckon there may not be much to choose between them in performance terms either, though Nigel Ng of distributor Advance Audio Australia tells us he has heard a direct comparison, and the Akurate still outperforms the new Selekt. But the Selekt is so much prettier! Of course there's every chance the Akurate will also soon enough be revised, restoring the balance more obviously.

What advantages does Katalyst bring? It represents Linn's fourth big revision in DAC architecture, and was introduced in 2016. It claims five key advances, critical among them the use of a high-stability Reference Level voltage used to minimise micro-variations in the output analogue signal, which is produced by a new ultra-low distortion analogue output driver. (Diagrams that accompany Linn's fairly brief explanation of Katalyst imply that this Reference Level voltage may also be used during the digital stage, but its merit seems less obvious there.)

Further, the Katalyst architecture uses separate, tailored and isolated power supplies for each part of the process, with no way for the current

draw on one supply to affect the others. One of these is dedicated to the Master Clock, which Linn claims to bring additional stability and accuracy, along with Linn-designed data optimisation at the input, said to “prepare the digital signal for conversion with greater accuracy, minimising errors right at the start of the process”, which sounds to us likely to include an apodising filter.

### KNOW YOUR SPACE

Room correction has become increasingly accepted in hi-fi circles in recent years; it has been common on consumer AV rather longer, where it was required to set delays that allow multiple speakers to synchronise. More traditionally audiophiles might work to perfect the room itself, so that correction would not be required.

But certain fundamentals such as room shape can never be fully ameliorated, and it is more these interactions which Linn has long been addressing with its Space Optimization acoustic modelling. Hence this is not a system which uses a microphone to listen and then correct. Instead you (or your Linn dealer) create a virtual room plan with the speaker positions and listening position/s marked within it. The software then predicts which frequencies will be affected by your environment and adjusts their energy accordingly; the effect should be to remove acoustic confusion and thereby deliver cleaner sound.

We wondered why Linn eschews the microphone measurement used by so many other companies. This is their explanation:

*“An acoustic measurement of the interactions between your speakers and room can have many sources of error which may affect the accuracy and repeatability of the measurement, including the choice of measurement stimulus, such as MLS or a log chirp; external noise, such as traffic noise and vibration; quality and calibration of the microphone, which can introduce distortion; and the microphone location, which can be sensitive to within a few centimetres. The use of acoustic modelling removes these sources of error: the model can apply an ideal impulse as stimulus; the modelling domain is free from noise; the model can use an ideal microphone; and the listening location is well-defined. It can thus be seen that acoustic modelling has a clear advantage over acoustic measurement in understanding the interactions between your speaker and room.”*

Given we’ve always had some of these concerns ourselves, particularly as regards microphone quality, we salute Linn’s solution. And while the original version of Space Optimization was relatively basic in its implementation of room shapes, the release of the Selekt DSM coincides with a much upgraded version which now allows more complicated room shapes, including ones with recesses and nooks and crannies, plus you can tell it where all the windows and doors are, their size, what the wall surfaces are made of — and more, including room height, even compensating for room temperature and humidity.

If possible, Linn’s software will also take into account the speakers you are using; Linn has modelled quite the list (available on its website), and encourages users to request modelling for any which it has yet to include. (With Linn’s own Exact speakers, an extended ‘Space Optimization+’ uses the actual measured response of every individual drive unit in the speaker!)

A final exceedingly handy upgrade is that the new version of the software can run on phones and tablets, as well as on computer. During the recent Australian Hi-Fi & AV Show in Melbourne we had a walkthrough of the new software from Nigel Ng, and its user simplicity was evident, as was the clarifying effect (on bass quality in particular) of switching the Space Optimization in and out for the demonstration room at the show.

### SET-UP & LISTENING

We thought the design of the Selekt DSM to be more dramatic in the flesh than the pictures here manage to capture. The granite-like speckling to the aluminium finish, the angled ventilation cuts through the precision aluminium casework, the way the cut-glass knob straddles the join between aluminium and front display section, the rippling of the 100 LEDs within that top dial and the way it tilts to select — it’s all beautifully executed and a delight to the eye.

We were up and running mighty quickly thanks to the Linn popping up in Roon (twice, since it shows up separately as an AirPlay device). We immediately tried DSD files, as we had thought these were not yet supported, but through they flowed, including our DSD128 files.

While enjoying them, we logged onto Linn’s website via a browser (you create an account) and set up our room for Space Optimization. As promised, this was simple enough to do. We were impressed that we were able to specify both the sets of speakers we wanted to use — one of them a German brand which is relatively obscure (except in Germany). We mapped our usefully rectangular listening room, though there was no way to account for its twin sloping ceilings except to average for height. Nor could we add the rising stairwell at rear right, since the only ‘door’ options were for solid doors. Skylights in the sloping roofs also had no suitable entry. We positioned the speakers and our listening position, adjusted for temperature and humidity (!), and the Linn program did its calculations, uploading them over the network to the Selekt DSM. It’s impressively user-friendly.

Did it work? We had heard the difference it could make at the hi-fi show, where enabling the Space Optimization had seemed to notably even out the bass response and also lift the right channel; that was an odd-shaped room, so there was work to be done.

Comparison is not immediate, however, since turning the Optimization on or off requires reupdating the player over the network; at home this delivered a second or so pause (and a slight sonic boom) with either Roon or USB playback. In our music room with high



quality recordings we thought the optimisation to add a little artifice, flattening the spaces within Beethoven’s *Piano Concerto No. 3* on Linn Records’ own release of Artur Pizarro with the Scottish Chamber Orchestra, curbing the Selekt’s excellent unoptimised sense of realism as the brash sweeps of the intro were delivered wide open and dynamic, Pizarro’s piano playing percussive and strong.

Other times we could detect no notable difference at all, which was perfectly fine, since the Linn was on song without optimisation. Its dynamic abilities impressed even during warm-up, when it scored a slam-dunk presentation of Germlin doing *Helter Skelter*, played from a 2005 radio recording of BBC Radio 1’s ‘One World’ show... so entertaining, this, that all activity ceased as we turned things up and howled at the manic German indie noise. Hi-fi that can make you laugh must be doing something right on the emotion-passing side.



Its modularity using upgrade ‘cartridges’ means that it is not only customisable to your initial needs, it is potentially future-proofed against changing needs, and tech too.

Detail is another definite strength — lifting the level on Brian Wilson’s lush *S’Wonderful* opened up a soundstage that was not merely wide but also deep and full of distance and air. The spread of harmonies across this was spine-tinglingly delicious.

Turning up the 1981 Berlin Phil/von Karajan Holst’s *Venus*, what a world was created — every pluck of the fingers on the strings of the harp, a window opened to the right-channel horns (which can be a touch low on this recording), and the strings rising to illuminate the details of the hall acoustic; again the combined sound conveyed surging emotion along with the music.

We also enjoyed a long vinyl session through the moving magnet input (not, sad to say, with an LP12, but our midrange-reference Thorens turntable). Initially the phono input was markedly quieter than other sources, so that we had to open our Linn account and apply both a new maximum volume for the system and 6dB of volume offset to the moving-magnet input source (this useful volume levelling is available for all inputs).

From the exceptionally clear delivery of the Selekt DSM we’d never have guessed that the Selekt DSM digitally samples to implement the RIAA curve in the digital domain (which Linn credits with “lower distortion, lower noise and more music”) and to allow implementation of Space Optimization and other DSP actions. We’ve not heard Genesis’ *Firth of Fifth* delivered from our ‘Selling England...’ vinyl as freshly and firmly as here, Gabriel forward over the climax with Collin’s hollow-thwacked snare tone cracking through as guitars and synths filled the wide channels. The Linn thrillingly rendered the café atmosphere of Jeff Buckley’s 1993 ‘Live at the Sin-E’ set, the laughter then the rapture as he embarked on a Nusrat Fateh Ali Khan cover (which entirely explains his subsequent style of soaring vocal). Vinyl fans need not fear Linn has left the format behind in its embrace of ‘true digital’.

**CONCLUSION**

The Selekt DSM is an undoubted high water mark in the development of Linn's streaming products. It makes Linn's front-end far easier to use with non-Linn speakers (and amps, if not adding them to the Selekt). The external design and that top knob make its appearance more friendly to a wider base of customers too — less technical-industrial than previous designs. Meanwhile its modularity using upgrade 'cartridges' means that it is not only customisable to your initial needs, it is potentially future-proofed against changing needs and tech too; already trailed for 2019 is an HDMI module with more HDMI inputs, possibly also extra channels of amplification, and Dolby Digital Plus and DTS support. The omissions of a headphone output, Bluetooth and Wi-Fi may also come as options. In particular it is the ability to add amplifiers to the base-level streaming pre-amp which is entirely new and makes this a product that can transcend categories, as well as offering a compact and powerful single-unit solution.

Some day, and soon, we reckon, all Linn's network players will be made this way...



**SPECIFICATIONS**

**LINN SELEKT DSM**

**Inputs:** 1 × line level RCA, 1 × RCA phono moving magnet, 1 × RCA phono moving coil, 1 × HDMI with ARC, 2 × optical digital, 2 × coaxial digital, 1 × USB-B, Exakt Link, Ethernet

**Outputs:** 1 × RCA unbalanced, 1 × balanced XLR, 1 × coaxial digital, Exakt Link

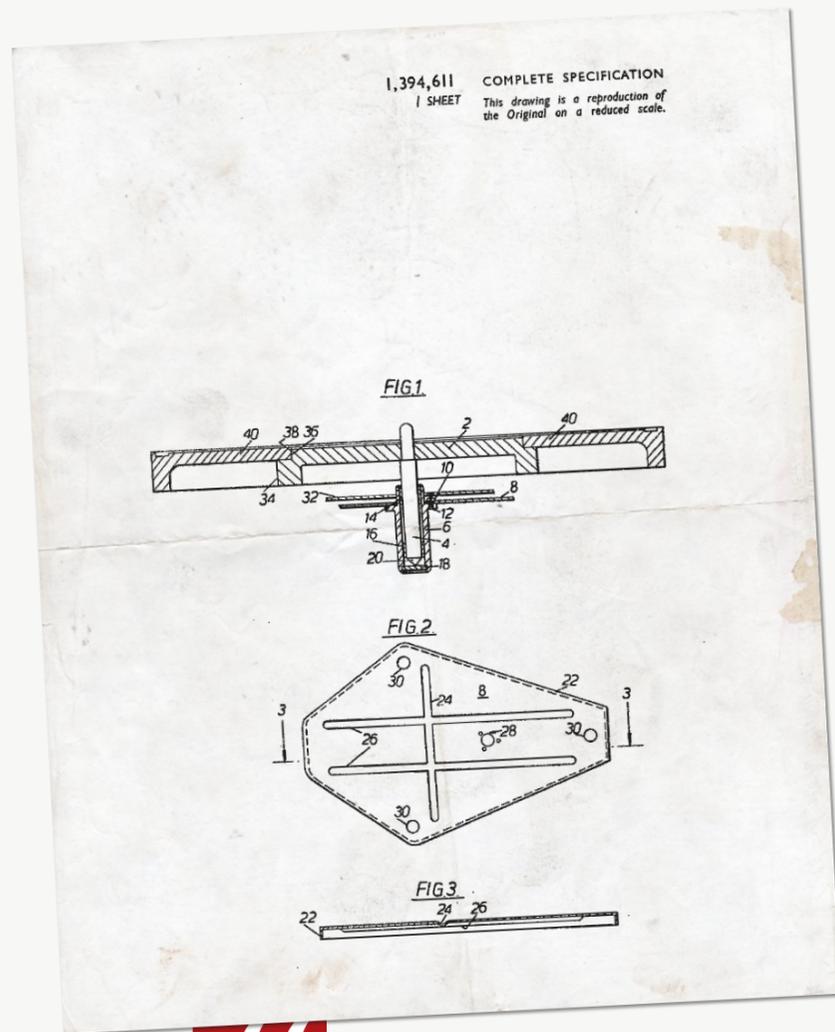
**Dimensions (WHD):**  
350 × 113 × 350mm

**Weight:** 7.2kg

(Specifications are for the Selekt DSM options without amplification.)

**Price:** \$7995; \$9995 with integrated power amp; \$11,995 with Katalyst (as reviewed); \$13,995 with integrated power amp & Katalyst

**Contact:** Advance Audio Australia on 02 9561 0799 or visit [www.advanceaudio.com.au](http://www.advanceaudio.com.au)



“the spindle is rotatably mounted in the sleeve, and a plate in said sleeve, the spindle being formed with a bearing portion which has point contact with said plate to support said spindle...”

**LINN THE ORIGIN STORY**

It's hard to believe today, but in the early days of hi-fi, there was little recognition of the 'garbage in, garbage out' philosophy. The signal was the signal, amplifiers just made it bigger, and it was your loudspeakers that made all the difference between good sound and bad sound. No matter that the art of LP reproduction had remained substantially unchanged since 1948 when Peter Goldmark, head of research at CBS-Columbia in the US, had delivered a lightweight tone-arm and sapphire needle to play his new 12-inch 33 $\frac{1}{3}$ rpm vinylite LP with microgrooves (the 45rpm 7-incher arrived the following year from RCA Victor). No

matter that the record player was clearly a far more complicated piece of technology than a big box of wood with some cones in it. No, the loudspeakers remained the unchallenged kings of high fidelity.

Turntables certainly evolved, if gradually. The 1950s saw belt drives arriving alongside the old rubber-wheel idler drives, though it took 20 years for idlers to fully fall out of favour. The 1960s saw Technics introducing direct drive. And of course there were turntables which were considered good, and others not-so-good. But still, when you were putting together an audio system, you weighted your expenditure towards the loudspeakers, often getting the best possible value by building your own cabinets from a kit, especially in Australia where finished goods faced high import tariffs.

As with many things about the 1970s, it's hard to put your head back into that space. But in April 1972, Mr Jack Tiefenbrun of Newton Mearns in Renfrewshire, Scotland, applied for a patent through the Fitzpatrick Chartered Patent Agents in Glasgow. It was subsequently granted in May 1975.

*"This invention is concerned with improvements in or relating to gramophone record playing apparatus,"* the application began. *"According to the present invention there is provided a gramophone record playing apparatus including a turntable platter, a spindle assembly comprising a spindle, on which the turntable platter is mounted, a sleeve provided with bearing whereby the spindle is rotatably mounted in the sleeve, and a plate in said sleeve, the spindle being formed with a bearing portion which has point contact with said plate to support said spindle, and the point contact being capable of being substantially maintained during operation of the apparatus by virtue of the material and finishes employed with respect to the spindle and said plate."*

From this application, two things are clear. Firstly, the success of such a point-contact bearing rested crucially on access to a high level of engineering. The material and finishes of the bearing were crucial to the contact being maintained, and thereby to the useful long-term operation of such a design. In this, Jack Tiefenbrun was uniquely placed. He had come from a background in textiles into machine tool design, founding his company Textiles Engineering in 1951, and gaining as a key early client the successful Glasgow-based Singer Sewing Machine company. Expanding to new premises in a snooker hall in Glasgow's famous Gorbals



district, he engineered jigs, tools, fixtures and press tools, expanding his customer base and in the 1960s moving into purpose-built premises in Castlemilk, from which the company took its new name, Castle Precision Engineering. By 1970 Castle was investing in some of the very first high-precision CNC machinery, and was gaining clients in aerospace industries, including Rolls-Royce. And it was through that high level of engineering prowess that the ideas behind the new turntable were being realised.

The patent application also makes clear that the goal was for higher fidelity.

*"The advantage of the above described turntable spindle assembly,"* says the application, eventually, *"is that it reduces the level of noise and vibration encountered in conventional turntable assemblies and this reduction is highly advantageous in high fidelity apparatus."*

The patent may have been in Jack Tiefenbrun's name, but the legend belongs to his son, Ivor. Linn's official company history tells that it was Ivor, unsatisfied with the performance of an audio system he had purchased shortly after getting married, who started to experiment with his turntable. He moved it out of the room, and ran cables under the door, and became convinced that by removing the effect of sound pressure from the speakers, it sounded much better. Could a turntable be designed that would operate in the room yet be relatively immune to the effect of the acoustic feedback from the loudspeakers?

The answer, clearly, was yes. With the assistance of Castle Precision Engineering and his father's quiet-running central bearing design (and a group of skilled colleagues),

a precision-engineered record player was launched in 1973 as the Sondek LP12, under a new company name — Linn. Castle Precision Engineering ground the drive belts, produced the soon-to-be-patented bearings, stamped and pressed the top plates and completed final assembly of the first LP12. (And the Linn company logo, largely unchanged over the following 44 years, represents that point bearing defined in Ivor's father's patent.)

There is a side history, which says that Ariston, another turntable manufacturer, was also using Castle for precision elements of its turntables prior to the LP12. Whether or how much this fed into the LP12 is now impossible to ascertain; Ariston is, in any case, long gone, while Linn's legacy speaks for itself.

As for the change in hi-fi sensibilities on the importance of the source in delivering higher fidelity, it did not occur overnight in a massed awakening alongside the 1973 release of the Sondek LP12. The thought-shifting was more a triumph of Ivor Tiefenbrun's tireless demonstrations of the difference between good sources and bad, with his proselytisation of the 'source first' concept, eventually persuading dealers and hi-fi users and, yes, even hi-fi journalists that speakers were not the dominant arbiter of hi-fi performance. In this Linn was assisted in the early years by Naim Audio, which had a similar interest in promoting the role of amplification, and a similarly tireless promoter in Julian Vereker.

It seems so clear today that 'garbage in equals garbage out' that it's hard to imagine a time when this wasn't common knowledge. For our enlightenment, more than anyone else or any other company, we can thank Ivor Tiefenbrun, and Linn. £