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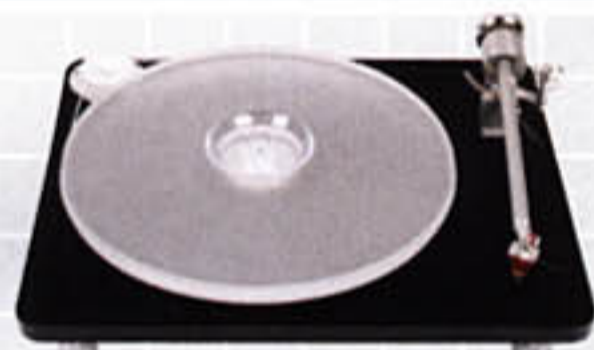
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GROUP TEST: JASON KENNEDY & LAB REPORTS: RICHARD BLACK

# TURNTABLES

Six sensibly priced turntables are put to the ultimate test

## ON TEST



Clearaudio Emotion  
£915



Funk V  
£1,065



Michell TecnoDec  
£886



Pro-Ject X-Pack  
£800



Rega P3-24  
£646



Roksan Radius 5  
£1,245

Vinyl has been enjoying a renaissance over the past five years and this has encouraged new music lovers to dabble in the only analogue format still supported. In turn, manufacturers who had otherwise avoided the format have been inspired to dip a toe in the water.

It's not difficult to see why vinyl refuses to go away. Even if you discount sound quality (which we certainly don't), the scale and quality of album sleeve artwork, the ritual of playing an LP and the sheer aesthetic appeal of a nice turntable are all-important factors in its long-term survival.

As this group of mid-priced turntables quite clearly shows, build and finish quality has never been higher – manufacturers can no longer cut it if their product doesn't have enough aesthetic appeal. The extensive use of acrylic is something that used to be the preserve of the high end, but it's now making affordable turntables look great too, and of these six decks on test, only two eschew the material. One of these, the aptly named Funk V, is so shiny it might as well be acrylic and the other, Rega P3-24, sticks to the traditional styling guns that the brand has become known and admired for.

One thing that the Rega benefits from has that most of the others do not, is a dust cover – all of the rest, except the Pro-Ject, remain open to the elements. Aftermarket dust covers are available, though, and the neatest universal option we've seen is the reasonably priced sheet of bent acrylic made by Michell, that covers platter and tonearm.

All of the assembled turntables were supplied with an arm and cartridge with the exception of the Michell, for which a

Dynavector DV10X5 was borrowed from Pear Audio. The prices reflect the full package and, in most cases, a less expensive cartridge could be used. However, as this is a fundamental part of the system any change will be obvious.

All six are belt-drive designs offering 33.3 and 45rpm operation. Those that allow you to change speed with a switch gained a 'Features' point, as did the models which offer a dust cover, arm cable and VTA adjustment. Rega does not believe that VTA is important, however, but it is the only manufacturer to publicise this opinion. **HFC**

### EQUIPMENT USED

- ⊕ Trichord Dino+ phono stage
- ⊕ Classé CP-700/CA-2200 pre/power amplifiers
- ⊕ B&W 802D loudspeakers
- ⊕ Townshend DCT interconnect and speaker cables
- ⊕ Custom Design Icon equipment support
- ⊕ Townshend VSSS equipment support
- ⊕ Van den Hul Spindle Oil
- ⊕ Dynavector DV 10X5 MC cartridge

### MUSIC USED

- ⊕ Keith Jarrett *Standards, Vol.1*
- ⊕ Lou Reed *Transformer*
- ⊕ Taj Mahal *Recycling The Blues And Other Stuff*
- ⊕ Joni Mitchell *The Hissing Of Summer Lawns*
- ⊕ Felix Laband *Dark Days Exit*

### EARS USED

This sort of in depth review would not be possible without the generous assistance of those who give up their time to take part in the blind listening. Our thanks are due to:

Andy Craig (dps)  
Reuben Klein (ECS/Wireworld)  
Keith Tonge (PMC)

## LISTENING TESTS

As a point of reference, we played one track from CD prior to each turntable in an attempt to avoid merely comparing each deck with the one that came before. As turntables are highly sensitive to support, each turntable was auditioned on both the spring-suspended Townshend VSSS and the more conventional Custom Design Icon rack. As well as the blind tests, each turntable was assessed individually with a wide variety of material, to fully assess its potential.

## LAB TESTS

Various tests were carried out to check for accurate and constant speed, extraneous vibration from the motor, bearing and surroundings, damping of resonances within the disc and in the arm and other parameters such as arm friction. Test equipment used for this included a specially cut test lacquer and a separate custom-made test disc, commercial test discs, a rumble coupler and a high-resolution digital recorder, the A/D converter of which (linked to a PC running various bits of analysis software) made interpreting measurements a vastly simpler and quicker process than it used to be!

**No other magazine offers an equivalent test and listening programme for comparative tests.**

## LAB REPORTS: THE BAR GRAPH

Our 3D bargraphs are a simple way of showing how the products compare across five technical parameters. In each case, a percentage is given that falls above or below the group average. In this case, the parameters are:

**1) Speed accuracy:** Simply a question of how close to the nominal 33.33RPM the platter goes round (for turntables with synchronous motors which follow mains frequency, itself subject to variations of up to 0.25 per cent, this is corrected to mains at exactly 50Hz).

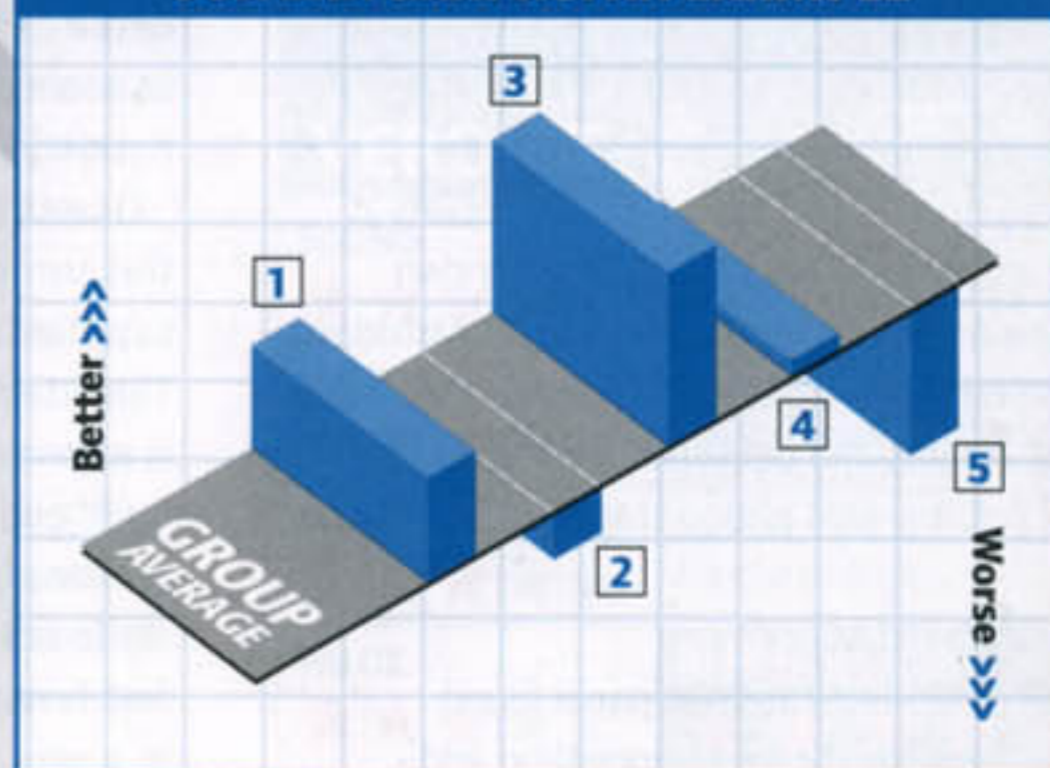
**2) Wow and flutter:** A measure of how much the platter speed 'wobbles' about the nominal 33.33RPM. Wow is low-rate variations and flutter high-rate. This causes pitch instability, so good measurements are important.

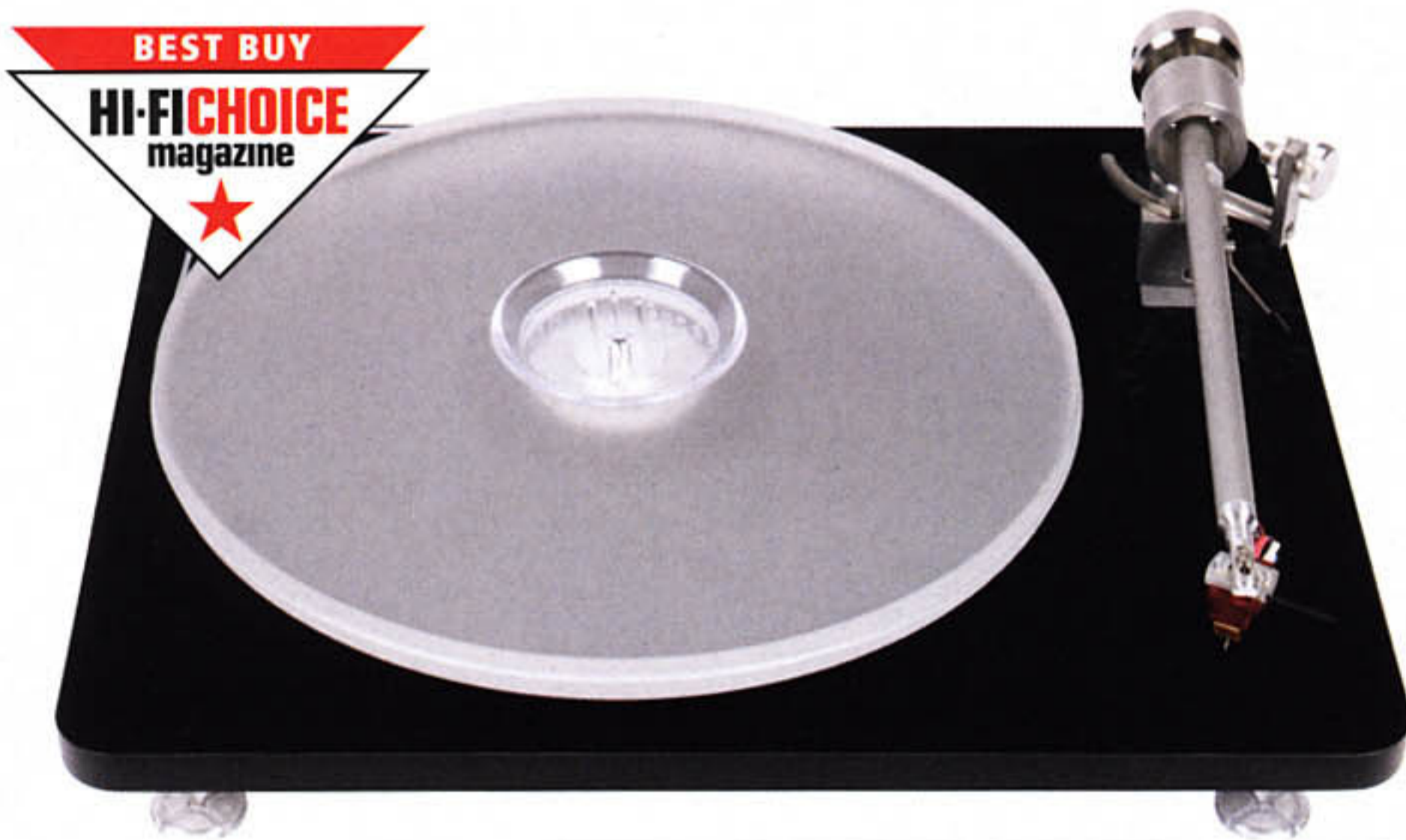
**3) Rumble:** The background low frequency noise the deck itself produces due to bearing friction and motor noise.

**4) Arm resonance:** The arm must hold the cartridge still against the reaction of the stylus in the groove. Mechanical resonances in the arm degrade this and are measured by applying a known impulse to the arm and measuring cartridge output.

**5) Vibration breakthrough:** The degree to which vibration from the floor gets through to the disc and stylus, via the turntables feet and suspension.

### OUR BAR GRAPHS: AN EXAMPLE





**Price: £915 (inc. arm and cartridge)** ☎ 01252 702705 🌐 www.clearaudio.de

## CLEARAUDIO EMOTION

*The clean lines of German craftsmanship*

**C**learaudio is a company that just loves acrylic and makes some pretty outrageous designs using stacks of the stuff. It also makes some rather tasteful-looking turntables that are, considering the value of the Euro these days, very competitively priced.

Emotion is a simple solid plinth design with minimal apparent means of keeping out vibration. Its three legs are turned acrylic cones that look great and have a rubber O-ring underneath to keep unwanted vibes at bay. It would be wise to site it well away from loudspeakers and decouple it from suspended floors.

It has a freestanding AC synchronous motor (with an on/off switch at its side) that drives the 18mm-thick acrylic platter via a round section belt. The bearing is described as being 'maintenance free' and consists of a hardened steel pin in a sintered bronze housing.

The Satisfy tonearm is unusual in having Clearaudio's distinctive headshell, whereby a top plate bolts to the cartridge and both elements are aligned with one bolt. It has gimbal bearings and a clever, if bulky magnetic anti-skate system. It doesn't come with interconnect cable, but has phono sockets at the arm base so you can choose your own.

The Aurum Classics wood-bodied cartridge is an moving magnet (MM) design that tracks at 2.2grams and delivers 3.3mV output, which will suit any MM phono stage.

### SOUND QUALITY

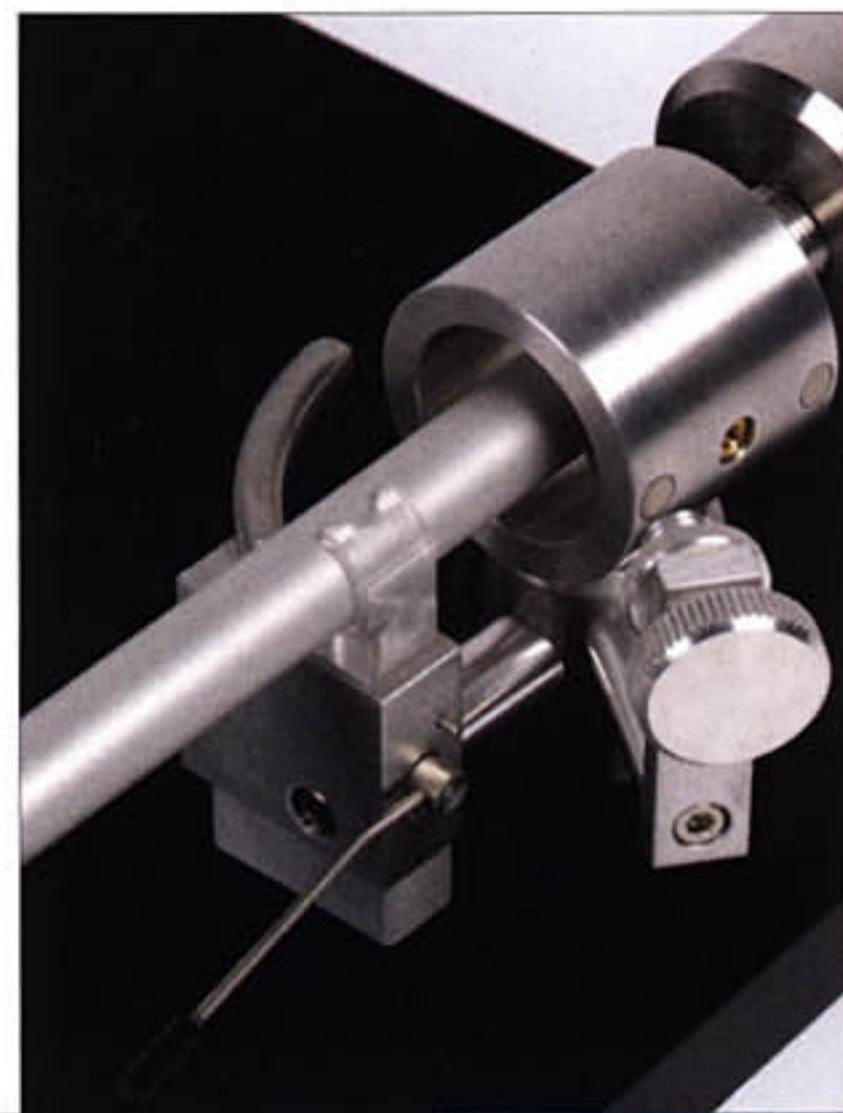
In the listening room the panel found the Clearaudio to be an appealing and

enjoyable record player. They liked its ability to keep the bass in proportion and in time, commenting on the good overall integration of the sound. One listener suggested that there was, "a touch of velvet to every frequency", however, which he meant as a complement, but is also an indication of the 'halo effect' that acrylic platters tend to bring to the party. They can produce a subtle glow to the mid and top that adds extra scale and openness to the sound that's is not entirely accurate.

Another listener suspected that the turntable had more energy storage than its predecessor on the day (Rega P3/24), which probably indicates the same observation in a different way. If anything, the Clearaudio has less potential in this respect than the Rega as it's a little bit lighter in terms of platter mass.

The Emotion had the advantage of a better interconnect than the competition (because we had to supply it), which will have helped its undoubtedly good treble extension and tight bottom end. The midrange is very good at projecting detail as well and, while it's not as rich as some, it remains in control despite nothing serious in the way of isolation.

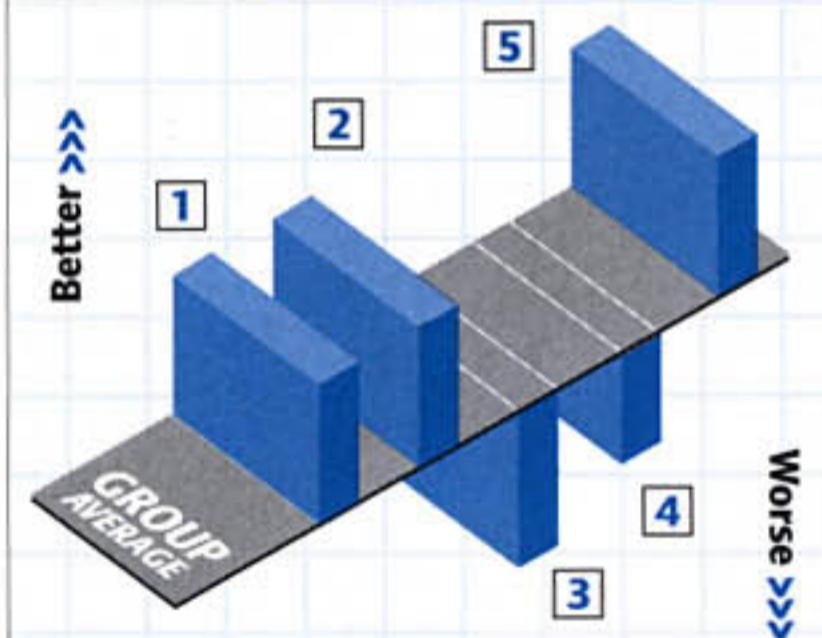
One thing we noticed when re-packing this turntable was the selection of tools supplied and the quality of packaging. The attention to detail Clearaudio brings is extremely high, resulting in impressive build quality. This welcome standard of manufacture, allied with sound that, while not entirely neutral, is engaging and revealing in equal measure, results in a very classy package for the money. **HFC**



### LAB REPORT

Speed is spot-on (given it runs off direct mains it will be subject to the variations in that, typically a few tenths of a per cent) and wow and flutter are the lowest in the group. The weakness is rumble, specifically mechanical hum breakthrough from the motor, which entirely accounts for the relatively poor figure on that account. However, because the motor is freestanding this will, in practice, vary considerably depending on the surface supporting the motor and deck – on our super-heavy isolation platform the measurement looks better, while very lightweight supports may measure slightly worse. Vibration breakthrough is a little higher than most, while arm resonance is good thanks to Clearaudio's lightweight, well-damped arm tube design.

### HOW IT COMPARES



- 1] Speed accuracy >> +40%
- 2] Wow and flutter >> +40%
- 3] Rumble >> -50%
- 4] Vibration breakthrough >> -30%
- 5] Arm resonance >> +40%

### SPECIFICATIONS

Measurement	Actual
Speed accuracy	0%
Wow and flutter	0.03%
Rumble	-67dB

### VERDICT

<b>SOUND</b> ★★★★★	Beautifully built and designed this entry point into the Clearaudio range gives a good idea of company standards. Its sound is open emphasising mid and top, but delivering nice timely bass.
<b>FEATURES</b> ★★★☆☆	
<b>BUILD</b> ★★★★★	
<b>VALUE</b> ★★★★★	
<b>HI-FI CHOICE OVERALL SCORE</b> ★★★★★☆☆	

# CONCLUSIONS

Six decks and three clear winners in this revealing test

**W**e have reviewed most of these turntables in solo or *Ultimate Group Tests* in previous issues of *HFC* and it's a relief to see that the results are reasonably consistent. It's always more difficult to assess a component's relative quality in isolation, however, and this is probably why the Rega did rather better in its first solo test than within this competitive group.

Out of interest, we pulled out an old Pro-Ject Expression II to see how compared and at less than half the price of the Rega set-up it was not surprising

to hear a far cruder and weaker result. Then again, the Michell combo put at least the same gap between itself and the Rega, hence the lack of a flag for this old favourite.

In past reviews, we have been so swept up by the Funk V's finesse through the midband, that we've been more than happy to recommend it for that impressive strength alone.

If you are after a full-bandwidth experience, however, you will need a better cartridge than the Denon we tried; the deck is still a charmer though.

Likewise, the Roksan is capable of fine results with the right cartridge and although we were surprised that these were not forthcoming with the Chorus Black cartridge, that's how it fared with our 'blind' panel. It is an extremely well put together turntable and arm, though, and one that is capable of delivering the goods in the right company.

The Clearaudio is the best looking example of the art on offer and has a clear and open sound that, while not entirely neutral, is very

pleasant indeed. It also has a first-class cartridge, which always aids performance.

Michell continues to make remarkably well-engineered decks for a very reasonable cost, an approach that results in precise and clean sound, so long as you avoid interference from resonant supports.

Which leaves us with Pro-Ject's keenly priced X-pack. While the Euro has pushed the price up a little in the last month, it's still got the best cartridge of the group, which makes it hard to beat. **HFC**

## TRY THEM WITH THESE

### AMPLIFIERS

**LEEMA PULSE £1,195**

A highly capable amplifier with surprising power reserves and a decent phono stage.

**SUGDEN A21AL SERIES 2 £1,299**

Find out why vinyl will never die with the optional phono and sensitive speakers.

### LOUDSPEAKERS

**ATC SCM11 £799**

Use with the Leema amp to hear the detail and power of vinyl in all its glory.

**PMC FB11 £1,850**

Combine this speaker with the Sugden amp and bathe in the sonic space.

## HINTS AND TIPS

>> Place turntables as far away from loudspeakers as is practical, there's nothing that undermines their sound more than vibrations.

>> It makes sense to use a wall shelf or a sprung suspension system. Also make sure the support is perfectly level.

>> If replacing or providing cables from the arm ensure they are shielded to minimise hum and don't forget the earth connection.

>> With hard-topped platters keep them clean so that dust isn't forced into the grooves by a clamp, for instance.

## TURNTABLES AT A GLANCE



MAKE MODEL	Clearaudio Emotion	Funk V	Michell TecnoDec	Pro-Ject X-Pack	Rega P3-24	Roksan Radius 5
PRICE	£915	£1,065	£886	£800	£646	£1,245
SOUND	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
FEATURES	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
BUILD	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
VALUE	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
OVERALL	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
CONCLUSION	Beautifully designed, this entry point in the Clearaudio range gives a good idea of the company's achievements. Its sound is open and clean, emphasising mid and top, but delivering nice timely bass.	This decidedly odd slab of a turntable produces some extremely beguiling music in the context of an inexpensive arm and cartridge. It can do even better with dearer ancillaries and can be forgiven its foibles.	This nicely engineered baby in the Michell range needs careful partnering, but can deliver a very sophisticated result for the money. Just keep it away from any resonating surfaces.	The X-Pack combines some very strong elements into a killer package that takes top honours for sound and value. Build and finish isn't super-slick, but is easily good enough for the money.	The latest incarnation of this classic deck builds on its strengths in the timing department and produces an engaging, if less than precise sound, that will continue to win listeners over to the vinyl path.	Very decent build quality combined with a good intrinsic design, the Radius 5 is capable of sophisticated and revealing results, but not with the Chorus Black magnet cartridge we used.
<b>KEY FEATURES</b>						
SIZE	40x15x33cm	43x11.5x33.5cm	46x10x32cm	46x13.3x36cm	46x14x35cm	40x15x35cm
WEIGHT	6.9kg	4kg	5kg	7.5kg	6.8kg	7kg
SPEEDS	33/45	33/45	33/45	33/45	33/45	33/45
REPLACEABLE LEADS	Yes	No	No	Yes	No	No
MOTOR TYPE	Synchronous	DC	DC	AC	Synchronous	Synchronous
SWITCHABLE SPEED	no	Yes	No	Yes	Yes	No
<b>LAB CONCLUSIONS</b> E = EXCELLENT • G = GOOD • A = AVERAGE • P = POOR						
SPEED ACCURACY	0% <b>E</b>	see Lab Report <b>P</b>	+0.05% <b>E</b>	+0.1% <b>E</b>	+0.3% <b>G</b>	+0.15% <b>E</b>
WOW AND FLUTTER	0.03% <b>E</b>	0.04% <b>E</b>	0.06% <b>G</b>	0.04% <b>E</b>	0.04% <b>E</b>	0.07% <b>G</b>
RUMBLE	-67dB <b>A</b>	-76dB <b>G</b>	-80dB <b>E</b>	-73dB <b>G</b>	-72dB <b>G</b>	-74dB <b>G</b>
VIBRATION BREAK	-30%	-40%	+10%	+10%	+30%	+40%
ARM RESONANCE	+40%	+20%	-40%	+50%	-30%	-10%