



Brinkmann

September 2009 / BARDO Turntable



After long years of interest, research and development, Helmut Brinkmann constructed the magnetic direct drive turntable Oasis. Since this project was well received by music lovers all over the world, Brinkmann decided to release a second model that features the magnetic direct drive motor and is inspired by the design of their top-of-the-line models Balance and LaGrange.

Introduction

The picture above shows the standard model **BARDO** with the **magnetic motor drive** and **platter of the Oasis turntable**, with **acrylic platter top** and **standard small plastic housed power supply**. It can also be **purchased in 3 possible upgrade stages**.

Three upgrade stages are possible

Upgrade stage 1

Features the **metal cased power supply** that is used for the **Balance** and **LaGrange turntables** instead of the standard power supply. The result is a **more defined bass response and a wider room imaging**.

Upgrade stage 2

Features a **glass platter mat** and a **record clamp** instead of the black acrylic platter mat that is shown in the picture. This results in a **finely extended dynamic resolution**.



Upgrade stage 3

The **combination of upgrade stages 1 and 2**, giving the **BARDO** nearly the **bandwidth and dynamic resolution of Brinkmann's bigger turntables**.

The **tonearm base** of the **BARDO** can be **rotated** and fixed without play to allow a **simple and precise tonearm adjustment for all tonearms between 9" and 10.5"**. **Brinkmann** drill the base according to the tonearm that the customer chooses.

The output sockets can be found on the back of the turntable, they can be equipped with **RCA** or **XLR sockets**, and it is also possible to install tonearms with **DIN connectors** or **fixed cables**.

The **two possible speeds, 33 1/3 and 45 rpm**, are selectable by a switch at the front of the turntable and can be **fine adjusted** via two screwdriver holes that are located next to the switch.

Magnetic drive

The **BARDO** has a **special magnetic direct drive motor** that was **developed by Helmut Brinkmann** and is **produced in the Brinkmann factory**. There is only **one bearing for the motor and the platter**, a **circular magnet** is mounted into the bearing of the platter and is concentrically **driven into rotation via coils** on the circuit board under the magnet. An **electronic circuit drives the coils via two magnetic sensitive resistors** that **react to the magnetic fields** into a **highly constant and slow circular movement**.

Cancelling cogging effects

Many of the known direct drive turntables were constructed for studios and radio stations where it was

necessary to have very quick start-up times of less than a second, which was achieved with high torque motors that speed up and stop the motor very rapidly. This caused **heavy cogging effects** accompanied by **high wow & flutter numbers**. To avoid this, **Brinkmann** worked long and hard on a **proprietary motor control that transfers just enough energy to the motor for it to remain at constant speed**. The **motor's stator consists of four specially designed field coils**, which are **mounted concentrically with high precision around the platter bearing**.

Based on listening sessions **Brinkmann** decided to forgo the typical 90-degree mounting angle in favour of a **non-standard 22.5-degree roster**, which, due to the magnetic fields overlapping, further reduced cogging.

Speedometer disc

The **motor's rotor also acts as the sub-platter** and carries a **magnetic ring with eight poles** on its underside. Inside the motor, the rpm of a speedometer disc is measured and turned into variable voltage that is fed into a control circuit where the rpm is compared to the reference voltage that is adjustable via the trim pots.

A **separate heater for the bearing**, as included with the **LaGrange and Balance bearings**, is not necessary. The **motor circuit** is kept under current all the time, just the speed is **switched to zero or 33 resp. 45**. In this way, the **bearing is kept warm** by the **quiescent current of the motor drive**.

Trickle down technology

The fact that **Brinkmann** have managed to trickle down technology from its bigger turntables ensures that the more affordable **BARDO** delivers an exceptionally strong performance.

With a **diverse range of upgrades**, the **BARDO** can be setup in a number of different configurations, offering exceptional value for money and a performance to match.

Attributes and technical specifications

Drive: Platter driven directly by magnetic field; soft proportional control

Power supply: External power supply in solid state technology

Bearing: Lubricated precision (hydrodynamic) journal bearing, quiet and maintenance-free

Platter: Resonance-optimized special aluminium alloy; surface-black acrylic platter mat

Chassis: 15 mm Duralumin with resonance-optimized geometry

Arm board: Movable (rotating) without play for simple and precise tonearm adjustment, with quick release. Accepts all tonearms between 9 and 10.5" as well as several linear tracking tonearms

Connectors: RCA, XLR or feed-through for tonearms with 5-pin DIN connectors; DIN connector (3 pin) for umbilical cord of external power supply; 2 mm connector for ground wire

RPM: 33 1/3 and 45, selectable by a switch; LED indicator for speed (33 1/3 = green, 45 = red), Deviation from nominal speed: 0.0% (adjustable), Fine adjustment of speed: $\pm 10\%$ with trim pot

Wow & Flutter: 0.07% linear, 0.035% weighted DIN 45507

Speed-up time: 12 / 16 seconds (33 1/3 / 45 rpm)

Wow & Flutter: 0.07% linear, 0.035% weighted DIN 45507

Speed-up time: 12 / 16 seconds (33 1/3 / 45 rpm)

Rumble (noise): -64 dB (test record DIN 45544); -68 dB (measuring adapter)

Dimensions: 420 x 320 x 100 mm (w x d x h)

Weight: Total 14.8 kg (Chassis 5 kg, Platter 9.8 kg);

Power Supply 0.5 kg

Accessories: Granite platform 440 x 310 x 30 mm, HRS platform.

