ATLAS
MONO

LYRA **ATLAS MONO**

MC PHONO CARTRIDGE

Introduction

The Atlas is Lyra's flagship model. It is also the first time that anyone has made an asymmetrically structured phono cartridge. Why asymmetric? Because, by literally misplacing the barriers to great sound that are present in every other cartridge today, it confers a number of important performance benefits.

Linear transducers such as loudspeakers and phono cartridges are inherently inefficient devices - somewhere between 5 and 10%. In other words, of the vibrational energy that enters a cartridge from the LP groove, only 5 to 10% will be converted into electrical signal. Some of the remaining 90 to 95% will be dissipated by the cartridge's internal damping system, but much of the excess vibrational energy will reflect inside the cartridge, creating internal echoes, smearing, and a general diminishing of fidelity. It is easy to demonstrate this with many cartridges - play a highly modulated LP with the power amp turned off, and bring your ear close to the cartridge. The "needle-talk" that you hear is excess vibrational energy which isn't being controlled properly.

To help conduct this excess vibrational energy into the headshell, where it can be safely dissipated within the greater mass of the tonearm and turntable plinth, Lyra has traditionally mounted the cantilever directly into the cartridge body, resulting in a rigid, seamless connection between the cantilever assembly and tonearm headshell (Lyra remain the only manufacturer to do so).

When Atlas was being designed, however, Lyra realized that it is not only important to link the cantilever to headshell with a rigid, unbroken path, but that further sonic gains could be obtained if all objects and voids were removed from the path. Atlas' asymmetric shape was conceived partly with this goal in mind, so that the screw and screwhole securing the front magnet carrier could be moved out of the way of the mechanical path connecting cantilever to headshell.

Freed of any obstructions or voids, the rigid, direct path established between cantilever and headshell is highly effective at draining away vibrations once they have been converted into electrical signals, suppressing induced resonances and internal reflections that would otherwise manifest as sonic colorations and overhang.

Also, Atlas' differently-shaped structures on the left and right sides suppress the formation of standing waves inside the cartridge body, thereby creating a less resonant, more neutral cartridge body than would be otherwise possible.

Atlas employs a yokeless dual magnet system, diamond-coated boron rod cantilever and Lyra designed variable-radius line-contact stylus (major radius 70 micrometers, minor radius 3 micrometers, block dimensions 0.08 x 0.12 x 0.5mm, mounted within a slot machined into the front of the cantilever), and builds the cantilever assembly directly into the titanium body structure.

Taking a more in-depth look

The cantilever and the insides of the body are both shaped so that joining the two components to each other creates a double-knife-edge mounting system, which focuses as much pressure as possible on the joint area and effectively cold-welds the parts together. More rigid than the cantilever mounting system employed in Titan, this design facilitates the transfer of mechanical energy away from the stylus and signal coil area, which minimizes reflected mechanical energy and thereby significantly reduces distortion and resonances.

Atlas' signal coil system is a completely new high-efficiency X-shaped design. Compared to traditional square coil formers the X-shape allows each channel to operate with greater autonomy from one another, giving better tracking, tighter channel matching, improved separation, and lower crosstalk-induced distortion.

Although there are and have been other X-coil cartridges, their performance benefits have been partly negated by poor efficiency in converting mechanical work into electrical output. This has either required high internal impedance (the larger coils add considerable moving mass and increase noise), and/or resulted in low output voltage (which stresses the phono stage).

To overcome this weakness, Lyra conducted a careful investigation of X-core coils, using a combination of mathematical analysis and hands-on experimentation. The outcome of the analysis program was a very specific X-core shape that not only had higher efficiency than any previous X-core cartridge, but also surpassed the efficiency of our earlier square-coil cartridge designs. Rather than using all of the extra efficiency to single-mindedly increase the output voltage, Lyra chose to distribute the benefits - allocating part of the extra efficiency to increase the output voltage (12% higher than Titan i), and using the remainder of the extra efficiency to reduce the amount of wire in the coils (22% less than Titan i). The lowered mass further improves tracking performance, while the higher output and lower internal impedance allow phono stages to perform better.

The Atlas uses Lyra's "New Angle" technology, which mechanically pre-biases the signal coils so that they are perfectly aligned to the front and rear magnets when LP playback takes place. This equalizes out discrepancies in vertical and horizontal compliances, and enables Atlas' coils to move with equal ease in all directions for wider dynamics, higher resolution, and improved tracking.

Far greater than the sum of its parts

As with the Titan and Olympos, the Atlas uses a monolithic body that is meticulously carved from a solid billet of titanium, through a lengthy process that involves both contact (for the exterior) and non-contact machining (for the interior body structures). But by making most of the Atlas' body surfaces non-parallel, avoiding dimensions that are multiples of other dimensions, and adding a pre-stressed phase-interference resonance-controlling system, resonances have been inhibited further.

Special, built-to-order, version of Atlas

This is a special, built-to-order, mono version of Atlas for real mono playback of monaural/monophonic (mono) microgroove, vinyl records. It is recommended that the Atlas Mono is used with high-gain, low noise phono stages, or alternatively a step-up transformer designed for phono cartridges of 2 - 3 ohms or less.

On mono records, the vertical axis of the groove contains no musical information, but it will frequently have noise, in the form of groove damage and dirt. The Atlas Mono has therefore been designed to be completely insensitive to the vertical axis, which greatly improves the signal/noise ratio without any downside on monaural records.

The coil former is a square permeable plate oriented parallel to the record surface rather than the 45-degree angle used for most stereo cartridges, while the coils are wound so that they only generate a signal when there is horizontal movement of the stylus and cantilever when tracking a record.

Two totally separate monaural coils are used in the Atlas Mono, since most monaural cartridges are used with stereo amplifiers and stereo speakers. The separate coils also help avoid possible ground loops and hum problems that could otherwise be caused if a single coil is fed into a stereo two-channel amplification system, thereby tying the two channels together electrically.

In addition to parallel mono connection to a stereo system (two amplifiers and two speakers), it is also possible to leave one set of connections unattached for pure mono playback with a single amplifier and a single speaker. However, it is also possible to connect the two mono channels in series for additional output when used in a pure mono system. Use a short cartridge headshell lead wire with female pin-connectors to connect either the Atlas Mono's upper right pin with the lower left pin, or

alternatively the upper left pin with the lower right pin. Then use the two remaining unused pins for connection to your single amp RIAA input (alternatively a transformer input). The two internal channels are now "chained" in serial-connection for additional output and energy when you only use a single amplifier and a single speaker.

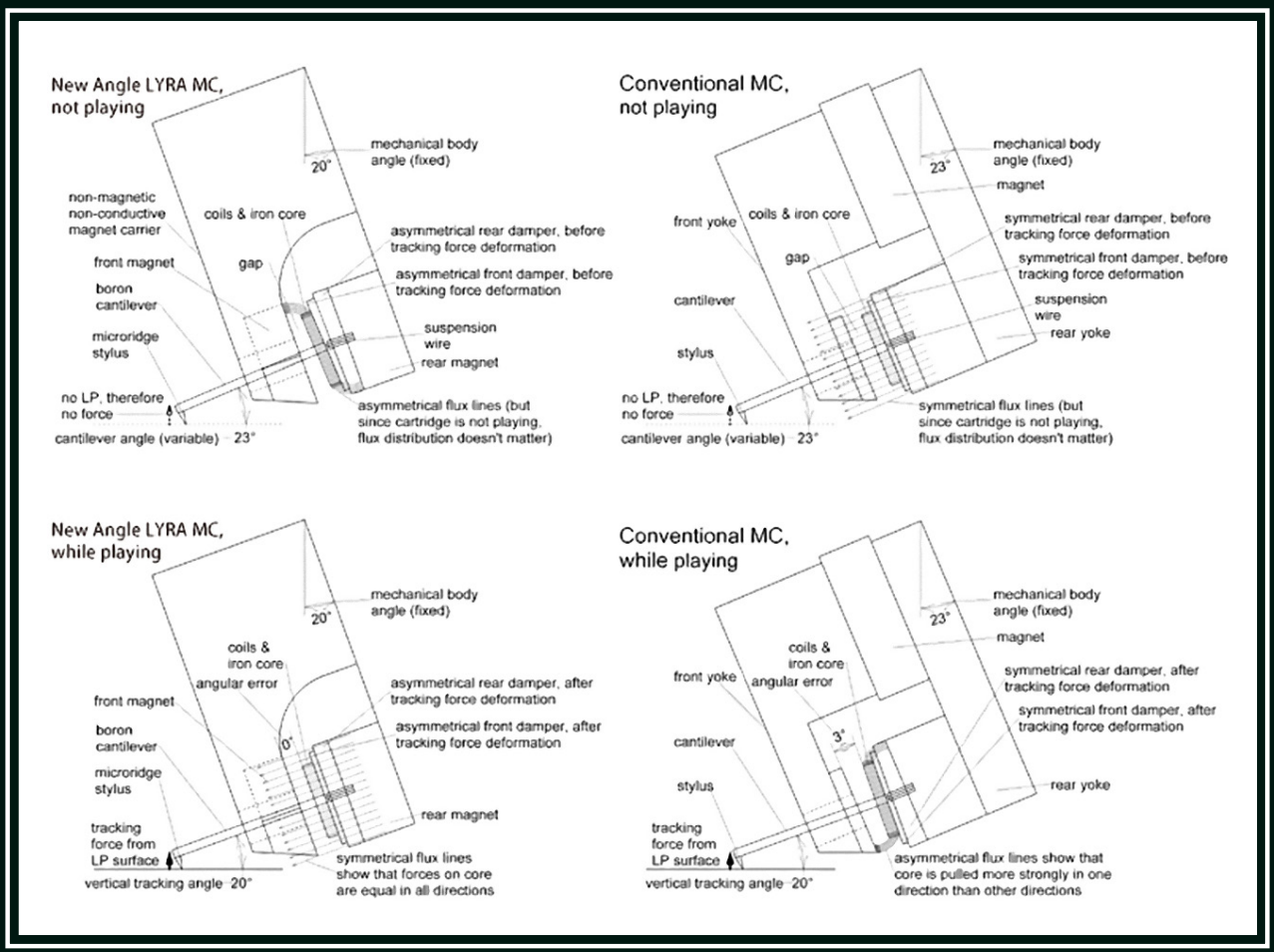
Setting a new benchmark in performance

Lyra offers a truly unique combination of advanced cartridge design by Jonathan Carr and expert construction by master cartridge builders Lyra's Yoshinori Mishima and his assistant Akiko Ishiyama*. This is an elite group of individuals that are capable of crafting the highest level MC transducers on the planet.

*only involved in the preliminary build of each Delos & Kleos cartridge

Lyra firmly believe that the Atlas represents an important step forward in LP playback.

When you experience Atlas - you will too.



MODEL
Lyra Atlas Mono

DESIGNER
Jonathan Carr

BUILDER
Yoshinori Mishima (final build, testing)

TYPE
Medium weight, medium compliance, low-impedance, low-output moving coil cartridge

STYLUS
Lyra-designed long-footprint variable-radius line-contact nude diamond (3um x 70um profile, block dimensions 0.08 x 0.12 x 0.5mm), slot-mounted

CANTILEVER SYSTEM
Diamond-coated solid boron rod with short one-point wire suspension, directly mounted into cartridge body via high-pressure knife-edge system

COILS
Two individually isolated monophonic/monaural 6N high-purity copper coils wound in parallel (on top of each other) on a square-shaped chemically-purified high-purity iron former with 3.0 ohms self-impedance

OUTPUT VOLTAGE
0.25mV@5cm/sec., 2.4μH inductance degrees (CBS test record, other test records may alter results)

FREQUENCY RANGE
10Hz ~ 50kHz

COMPLIANCE
Approx. 12 x 10-6cm/dyne at 100Hz

VERTICAL TRACKING ANGLE
20 degrees

CARTRIDGE BODY
One-piece machining from solid titanium billet, with reduced-surface higher-pressure headshell contact area, predominately non-parallel and asymmetrical shaping, phase-interference resonance-controlling mechanism, and body threaded directly for mounting screws

CARTRIDGE MOUNTING SCREWS
2.6 mm 0.45 pitch JIS standard

DISTANCE FROM MOUNTING HOLES TO STYLUS TIP
9.5mm

CARTRIDGE WEIGHT (WITHOUT STYLUS COVER)
11.6g

RECOMMENDED TRACKING FORCE
1.65 ~ 1.75g (1.72g recommended)

RECOMMENDED LOAD DIRECTLY INTO MC PHONO INPUT
Determine by listening

RECOMMENDED LOAD VIA STEP-UP TRANSFORMER
Use a step-up transformer designed for 2 - 3 ohms cartridge impedance. The transformer output must be connected to standard 47kohm MM-level RIAA input, preferably via short, low-capacitance cable

RECOMMENDED TONEARMS
High-quality pivoted or linear tangential tonearms with rigid bearing(s), adjustable anti-skating force, preferably VTA

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