



Lyra Kleos SL Instructions, Edition 1

Thank you for purchasing the Kleos SL moving coil phono cartridge, made by Lyra Co., Ltd. Japan. Please follow these instructions carefully. Use separately available turntable and cartridge set-up tools like precision bubble level, alignment template (that allows direct visual alignment of cantilever and stylus), stylus force gauge, and follow the set-up instructions included with your tonearm.

Please notice that the Kleos SL does not have the letters SL printed on the cartridge, so it is necessary to look at the serial number located on the white output pin block for identification. A Kleos SL will have the lettering KSL followed by a 3 digit number. (A regular Kleos has KL plus 3 digit, and a Kleos Mono has KM plus 3 digits.)

Tonearm choice

Kleos SL is designed for use with high-quality tonearms that place the cartridge/toner low-frequency resonant point between 8~12Hz. Avoid tonearms with loose or overly tight bearings, also avoid those with undamped lift mechanisms, since these can "drop" Kleos SL onto the LP and shorten the suspension life span.

Phono stage and loading

Connect tonearm cables to RIAA-equalized phono input designed for direct use by low-output MC cartridges (0.25mV output voltage or less). If phono stage input impedance is adjustable, setting loading by ear should be sufficient, with 47kohm as highest and 86.6 ohms as lowest values.

For listeners interested in mathematically correct input loading, the value depends on the total capacitance between Kleos SL and phono stage (comprised mostly by the tonearm cable). Note that "input loading" of low-impedance cartridges has comparatively less to do with the cartridge and is more about taming RF energy which could otherwise trigger non-linearities in the phono stage and generate intermodulation distortion. Since different phono stages have different tolerances for RF energy, the best-sounding loading value will vary depending on tonearm cable and phono stage.

You may try setting your phono stage's loading according to the following number pairs. However, this data was calculated for the regular 0.5mV output, 5.4 ohms Kleos version, and at the time of creating this manual, no corresponding data had been generated for the Kleos SL, so please look at the data only as an indication for reference.

In each pair, the first number is the total capacitance between Kleos and phono stage (in picofarads), the second number is the corresponding optimal impedance range: 50pF-523~274ohm, 100pF-383~205ohm, 150pF-316~169ohm, 200pF-280~147ohm, 250pF-249~133ohm, 300pF-232~121ohm, 350pF-215~110ohm, 400pF-200~105ohm, 450pF-191~100ohm, 500pF-182~95.3ohm, 550pF-174~91ohm, 600pF-165~86.6ohm. In each pair the first number is selected to suppress any peaks at RF frequencies to about 3dB (which should be acceptable to nearly all phono stages), while the second number will give 0dB (at the cost of slightly poorer phase response and reduced dynamics).

If you do not know the precise capacitance of your tonearm cable, 100pF per meter is standard, while low-capacitance cable is likely to be around 50pF per meter (we do not recommend high-capacitance cable). As approximate loading figures we suggest 523ohms for 1m low-capacitance cable, 442ohms for 1.5m low-capacitance cable, 383ohms for 1m standard cable or 2m low-capacitance cable, 316ohms for 1.5m standard cable or 3m low-capacitance cable, 280ohms for 2m standard cable or 4m low-capacitance cable, 232ohms for 3m standard cable, and 200ohms for 4m standard cable.

If your phono stage is made for MM cartridges, use an additional head-amp or step-up transformer between Kleos SL and 47kohm MM phono input (if transformer, it must be of a type dedicated to cartridges of 10ohms or less, and should be connected to your phono stage with low-capacitance cable).

Turntable levelling

Confirm with a bubble level (a large machinist's level is best) that the turntable is absolutely horizontal.

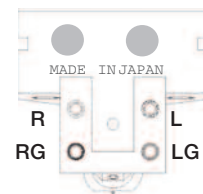
Mechanical installation

Kleos SL's threaded mounting screw holes are metric JIS-standard M2.6 pitch 0.45 and preferably should be used with one of the three different sizes of stainless steel screws (and matching hexagonal wrench) supplied. Don't use other screws unless they are confirmed suitable by Lyra or its distributor, as the wrong thread size may damage Kleos SL's body. If the thread size is correct, changing the screw headshape and material will affect the sound, and experimenting can be fun. Nonetheless, the supplied screws are made of a non-standard stainless-steel alloy which in our experience gives the best sonic results with Kleos SL. The tonearm headshell must have non-threaded holes or slots that are accessible from above.

Electrical connections

Connect the red (R+) and green (RG-) as well as white (L+) and blue (LG-) output pins at the rear of Kleos SL to tonearm (or headshell) lead-wires. Match each colored tonearm lead-wire clip to the correspondingly colored cartridge output pin. Kleos SL's red-green pins output the right channel signal, the white-blue pins output the left channel signal.

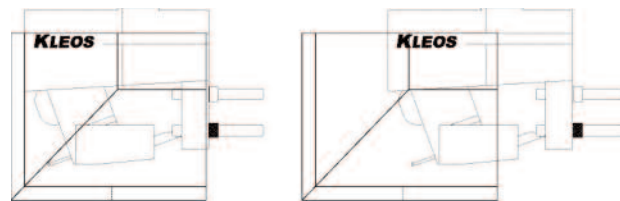
The output pins of the Kleos SL are platinum-plated for superior sound and essentially maintenance-free operation.



- RED: R +
- GREEN: RG -
- WHITE: L +
- BLUE: LG -

Stylus guard

Remove stylus cover only after provisionally installing Kleos SL in your tonearm (or headshell). Grasp both sides of stylus cover and gently pull it straight forward towards the front of the cartridge and then away, while watching the cantilever assembly closely to avoid any contact between cantilever and stylus cover, or between cantilever and your fingers.

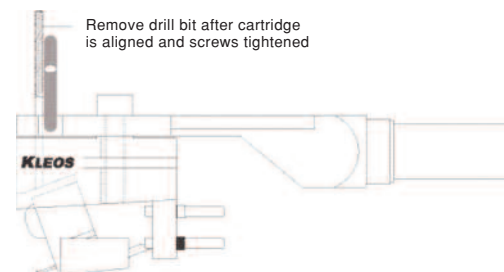
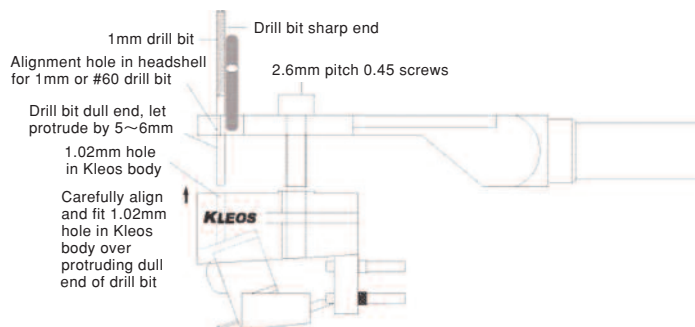


⇐ (Remove)

Stylus and cantilever alignment

Stylus and cantilever alignment adjustments in the headshell should be done with a separately available template (set-up tool) and a stylus force gauge. Kleos SL's long footprint line-contact stylus is very revealing, and careful setup (we recommend Baerwald or Lofgren A alignment) will be rewarded with better sound.

Kleos SL incorporates another, simpler stylus alignment method. The Kleos SL body has a 1.02mm hole drilled directly above the stylus, and this can be used with compatible tonearms, with a 1mm hole (US 60 gauge or 0.040 inch) drilled through the headshell at the position which gives optimal tracking of the stylus. Obtain a 1mm drill bit (or US 60 gauge or 0.040 inch), and push the dull end into the 1mm headshell hole so that it protrudes by 5~6mm from the headshell underside. Secure drill with clay or putty so that it doesn't slip (but can still move if pushed up vertically). Mount Kleos SL to headshell so that the protruding drill shaft fits into the 1.02mm hole in the Kleos SL body. Do this slowly and carefully, since you could scratch the Kleos SL body if you push or drag when it is not aligned with drill shaft. Once Kleos SL is flush with the headshell underside, install and tighten the two 2.6mm mounting screws. Feel free to also use a separate template to verify that cantilever is perpendicular to LP groove at null points (normally 66.0 and 120.9 mm from the LP center). Finally, remove drill shaft. This procedure should align stylus to +/-0.3mm accuracy.



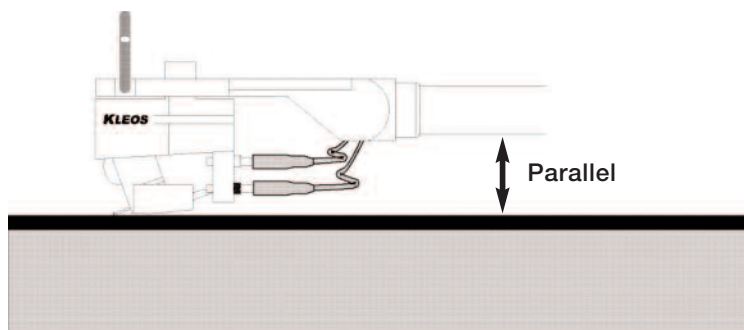
Tracking force

Note that Kleos SL features a new high-performance asymmetrical damping system, designed to make the signal coils precisely parallel to the front and rear magnets during play. This angle is affected by the tracking force, and we strongly advise not to deviate beyond our 1.7~1.8g guidelines. Setting the tracking force so that the cantilever is exactly perpendicular to the red front magnet carrier during play should result in largest dynamic range and best sound.

Higher tracking force may allow Kleos SL to better track audiophile test records or extreme "tracking obstacle" records, but this is no guarantee for best sound on normal music LPs. Also note that ambient temperatures may affect the optimal tracking force. If the temperature drops you may find that the tracking force should be raised a little, and if the temperature increases, slightly reducing the tracking force may give better sound.

VTA

Regarding VTA, your tonearm should have a VTA adjuster. If not, you will need to raise and lower the tonearm pivot by hand. Using a stack of playing cards will help you monitor the tonearm's height during VTA adjustments. With recommended tracking force applied (1.7~1.8g), set height of tonearm pivot so that armtube is parallel to LP surface. Note that LP thickness (or thinness) will affect VTA. Assuming that VTA remains the same, thicker LPs will require tonearm pivot to be raised, and thinner LPs will require pivot to be lowered. It is common for tonearm pivot height changes to affect tracking force, so do recheck the tracking force after making any VTA adjustments.



Anti-skating

Carefully adjust anti-skating force by observing the stylus and cantilever directly (as seen from the front of the cartridge) when the stylus is lowered into a record groove. Any pulling of the cantilever toward the left or right means the setting is wrong. Readjust repeatedly until the antiskating force leaves the cantilever centered. It is better to do this adjustment visually as described above, rather than relying on the number-scales built into your tonearm or blank-groove test records.

Use your ears

In all cases of adjustment, however, please use your ears. Ultimately your ears are the best judge of the set-up quality.

Stylus cleaning

Frequently clean the stylus using the short-bristled brush in the accessory kit. We also recommend that you use the included Lyra SPT (Stylus Performance Treatment), which is a water and soap based liquid stylus cleaner accompanied with a soft brush. Strong alcohol and chemical based stylus cleaners of other makes are not recommended for use with Lyra cartridges. Be sure that any liquid is not used on any other part of the cartridge than the diamond stylus. Use the liquid sparingly.

Fluxbusting

Periodic "fluxbusting" with a commercially available phono cartridge demagnetizer (not tape erasers!) will also yield sonic benefits. Carefully follow the demagnetizer instructions for safe, beneficial results.

Caution

Never remove the white dust-cover that covers and protects the moving coil and magnet area!!! This is a protective, permanently attached dust cover which is made of sonically transparent Japanese "Washi" paper, and removing it may break the coil leads. Do not worry if this dust cover gets dirty during normal use, it is not a problem. You may brush it extremely carefully to remove dust, but never use liquid.

Limited warranty:

Lyra Co., Ltd. offers a limited one year warranty for Lyra phono car-

tridges for the original purchaser only. Warranty is always executed through the original route of purchase; i.e. through the retailer where the cartridge was purchased and the country distributor that imported the cartridge. Distributors are prohibited from accepting warranty or any other service repair for cartridges that have been purchased from another country and/or sales area. Lyra Co., Ltd. also reserve the right to refuse any warranty or service repair for cartridges purchased from a source outside the sales area of residence. If a Lyra owner moves from one sales area to another, he/she should register the move with the importer in the country of purchase and/or directly with Lyra. All Lyra importers and retailers are prohibited from transshipping cartridges into other sales areas. Any Lyra cartridge with altered and tampered with serial number, shall no longer be considered to be a Lyra. If you suspect your cartridge's serial number has been tampered with or altered, please contact Lyra Co., Ltd. to register and discuss the matter. If Lyra Co., Ltd. can establish the identity of the cartridge and that what has happened was without any fault of the customer's actions, Lyra Co., Ltd. may reinstate warranty and service privileges. Any Lyra cartridge that has been repaired or retipped by a non-Lyra business so it contains non-Lyra parts and workmanship shall also no longer be considered to be a Lyra. If you suspect your Lyra cartridge contains non-original parts and has been worked on by non-authorized personnel, please contact Lyra Co., Ltd. If what has happened can be established to be without any fault of the customer's actions, Lyra Co., Ltd. may reinstate warranty and service privileges, and in some cases offer to rebuild the cartridge to genuine Lyra spec at a nominal charge.

In the case of faulty parts and workmanship, Lyra Co., Ltd. may repair or replace the faulty cartridge at its own discretion. However, if a problem clearly can be traced to an impact between the cartridge's cantilever and/or stylus and a foreign object (like a phonograph record or a part of the turntable), the repair and/or rebuild of the cartridge will not be accepted as a warranty case, but will be charged according to the work involved. The cause is almost always apparent after studying the cantilever/stylus with a microscope.

Specifications for Lyra Kleos SL:

Designer: Jonathan Carr

Builder: Yoshinori Mishima (final build, testing),
Akiko Ishiyama (preliminary build)

Type: Medium weight, medium compliance, low-impedance moving coil cartridge

Frequency range: 10Hz~50kHz

Channel separation: 35dB or better at 1kHz

Cantilever system: Solid boron rod with Lyra-designed long-footprint line-contact stylus (3 μ m \times 70 μ m, slot-mounted) and one-point suspension, directly mounted to cartridge body

Coil: 6-N high-purity copper, 2.7ohms internal impedance

Output voltage: 0.25mV@5cm/sec. (CBS test record, other test records may alter results)

Compliance: Approx. 12 \times 10 cm/dyne at 100Hz

Vertical tracking angle: 20 degrees

Cartridge body: One-piece machining from solid 7075 alloy billet, with focussed-pressure headshell contact area, and resonance-controlling mechanism

Cartridge weight (without stylus cover): 8.8g

Recommended tracking force: 1.7~1.8g (1.75g preferred)

Recommended load directly into MC phono input:

86.6ohms~47kohm (determine by listening, or follow detailed guidelines above)

Recommended load via step-up transformer: 5~15ohm (step-up transformer's output must be connected to 47kohm MM-level RIAA input)

Recommended tonearm: High-quality pivoted or linear (tangential) tone arm with precision bearing(s), adjustable anti-skating force, preferably VTA adjustment

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All service of Lyra phono cartridges is to go through the distributor of the country where the cartridge was purchased. Never send your cartridge directly to Lyra for service & repair unless you have obtained prior authorization.

