



ZU/DL-103 SPECIFICATIONS

ZU AUDIO DL-103 Mk.I [REV-A] PHONO PICKUP CARTRIDGE SPECIFICATIONS + INFORMATION

Design Based on the legendary Denon DL-103

We take Denon's DL-103 motor and pickup assembly, remove the plastic, machine the body, place it in our 6061 machined shell for increased weight and control—which also features machined directly into body EIA standard two hole mounting so no fumbling around with mounting nuts—and the whole thing gets locked-up in dual compound epoxy.

Tolerance Explained Denon's factory tolerance between L & R output voltage and internal coil impedance on the DL-103 is $\leq 6.0\%$ as tested by Zu. Cartridges that do not measure 2% or better are either reworked or resold as stock Denon products. This ensures that the Zu branded DL-103 pickups are the cream of the crop. Those that are after the tightest of tolerances will be happy to know that in remanufacturing Zu performs tests and measure it at various stages; and in final testing Zu measures and grades all units. Tolerance is measured between L & R internal resistance and output voltage. Tolerance spec is not an average of measures but accounts for the lowest of any measurement, thus giving a true tolerance perspective. All tolerance measures are referenced to the serial numbers and are graded and indicated on the label.

Launched Summer 2007

Design: rigid body, naked, moving coil stereo phonograph pickup
Bandwidth: 15Hz—45kHz
Output: 0.3 mV
Impedance: 45 Ω ($\pm 5 \Omega$)
Compliance: 5 x 10⁻⁶ cm/dyne

Stylus: 0.2mm square base diamond, crystal aligned, conical cut

Tolerance Between Channels: Standard $\leq 4.0\%$ | Grade 1 $\leq 1.0\%$ | Grade 2 $\leq 0.5\%$ | Grade 2 Prime $\leq 0.1\%$

Weight: 14 grams

Included Screws: 2.5mm x 8mm stainless with 4.5mm slotted cheese heads

Mount: standard EIA universal tonearm, with 2.5mm x 11mm deep taps in body

Mount to stylus vertical height: 0.60" [15mm]

Stylus Underhang: 0.06" [1.6mm]

Stylus Pressure: 2.5 grams @ 70°F for wide dynamic range media

Recommended Resistive Load: 80—200 Ω , or as needed to get the phono pre to mate well

Country Of Origin: armature, Japan; body and remanufacture, USA

Satisfaction Guarantee: 60-day unless the cantilever is damaged

Warranty: 2-year limited, does not cover damaged cantilevers



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The Zu/DL-103 is a high performance two-channel stereo moving-coil phonograph pickup cartridge. The motor and its design were developed by Denon in collaboration with the Broadcasting Corporation Technical Research Laboratories back in the early 1960s. Design objectives for the original Denon assembly called for the creation of a new broadcast standard, for high-performance, high-consistency, high-reliability. The Zu/DL-103 consists of that original motor, still manufactured by Denon in Japan, then modified and placed in a machined from Alcoa alloy 6061. This assembly is then bound as a voidless unit with a clear phenols and ethers based composite. The Zu/DL-103 was a two year researched and developed project that began November 2005. Zu would like to acknowledge Phil Ressler for his significant contribution to this project.

WARNING: the Zu/DL-103 has an exposed stylus and cantilever, extra care must be taken in the mounting and operation to avoid breaking. Broken cantilevers are not covered under warranty.

WARNING: do not solder to the pickup's lead pins. Do not expose the pickup to temperatures greater than 200°F [93°C]. Doing so voids the warranty.

NOTE: if you are using a vintage table that has a lot of ferrous parts, or have a platter that has been filled with iron or other ferrous material, the magnetic attraction of the motor to table may increase stylus pressure.

The Zu/DL-103 is built to fall within EIA dimensions and can be mounted on any commercially available universal tonearm built to EIA standards. The Zu/DL-103 weighs 14 grams, please consult with the tonearm manufacturer if there is a question of weight compatibility. In some cases such as Rega tonearms, a 'heavy weight' counterweight may need to be fitted to the tonearm.

ALIGNMENT

For those that want the absolute in alignment we recommend evaluating angles and dimensions from the stylus.

Vertically level your Zu/DL-103. And being that the Zu/DL-103 is naked, we recommend you set your VTA (vertical tracking height) of your arm, or at least get it in the ballpark, prior to installation of the pickup. This pickup should sound best on a level tonearm, or rather the pickup should be orthogonally positioned to the record—parallel if you are looking at the horizontal planes. You can get close by adjusting the distance between the top surface of the type of vinyl played most, to the bottom side of the EIA tonearm mount, roughly 0.60" of an inch [15mm], and then adjusting the VTA of the arm to be level with this point. You can easily verify that you are running a level pickup when the reflection in the record of the Zu/DL-103 is orthogonally mirrored; so there is no perspective difference or angle shift between the reflection and the actual pickup. The Zu/DL-103 features true right angles so this should be pretty easy work.



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PICKUP / TONEARM ALIGNMENT

To ensure the lowest tracking error, please follow the alignment method outlined by the tonearm manufacturer. The body of the Zu/DL-103 is completely straight and right-angled to aid in the alignment of the stylus and arm. The stylus of the Zu/DL-103 sits roughly 0.06" behind the pickup face edge [-1.6mm].

STYLUS PRESSURE (DOWN FORCE) ADJUSTMENT

Please follow your tonearm manufacturers recommended procedure for setting stylus pressure. We recommend 2.5 grams of stylus force for normal conditions. Reduce stylus pressure to roughly 2.2 grams when the ambient in-room temperature is above 85°F [30°C]. Increase stylus pressure to 2.7 grams when the ambient in-room temperature is lower than 60 °F [16°C].

ZU / DL-103 PHONO PREAMP MATCHING

The nominal output voltage of the Zu/DL-103 is 0.3mV and the nominal internal impedance per channel is about 45 ohms. We recommend running a step-up transformer for moving magnet phono preamps. A step-up transformer is not required for phono preamps that have a moving coil (MC) setting, which should be a loading of between 80 and 200 ohms.

