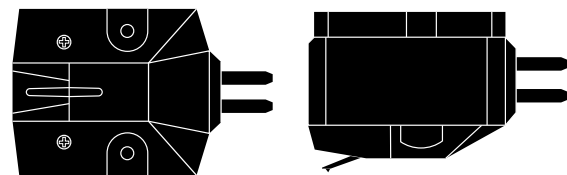


User's Manual

MC (Dual Moving Coil) Stereo Cartridge

AT33EV MC

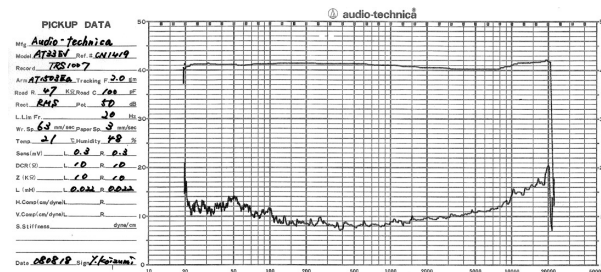


Caution

Following are cautions to ensure safe use of this product. Misuse of the product can result in accident or damage. Be sure to read these cautions before using product.

- Keep out of the reach of children.
This is to prevent accident and product failure.
- Keep plastic bags from box out of the reach of children and away from flame.
This is to prevent accident and fire.
- Keep out of direct sunlight, away from heating equipment and away from humid and dusty environments.
This is to prevent product failure and performance problems.
- Do not touch cantilever fulcrum.
This is to prevent product failure.
- Do not disassemble or modify the product.
This is to prevent product failure.
- Protect from strong impact.
This is to prevent product failure.

■ Frequency separation characteristics



Characteristics

● An evolved version of the AT33ANV model

The predecessor of this model is the AT33ANV, a limited edition model we launched in 2006 to mark our 45th anniversary. The AT33ANV was the first model in our AT33 series to use a duralumin cantilever, earning it a solid reputation for audio quality. The new AT33EV is an evolved model with the same basic specifications refined to a new level. The duralumin cantilever is now tapered to reduce the effective weight of the cantilever fulcrum and further harden the cantilever.

● Elliptical stylus chip and hard duralumin tapered pipe cantilever

The big advantage to the elliptical chip is its ability to richly reproduce sounds in the medium and low ranges. This elliptical chip is embedded into a hard duralumin tapered pipe cantilever. With its outstanding machine strength, the duralumin cantilever is tough enough for the job and produces natural sounds without distortion. The cantilever of this product, moreover, goes through a tapering process to harden it, making it faster to transmit sound than conventional duralumin cantilevers and producing unsurpassed response. Supporting this cantilever fulcrum with the traditional double damper disperses resonance, enables stable tracing and achieves linear frequency characteristics.

● 10 Ω middle impedance specifications

Loss that occurs as a result of electrical resistance components of a coil is referred to as copper loss. To minimize copper loss, this product has set impedance of 10 Ω. The output voltage of 0.3 mV is easy to use and allows for a pure sound.

● Neodymium magnet with dramatically enhanced magnetic energy and permendur yoke

The model uses a neodymium magnet with maximum energy product BHmax of 50 [kJ/m³] and a permendur yoke with high saturation flux density and outstanding magnetic properties, which further enhances the concentrated magnetic field of the coil gap.

● PCOCC coil

The PCOCC coil enables purer transmission because it is not subject to grain boundaries in the direction of transmission.

PCOCC

PCOCC = Pure Copper by Ohno Continuous Casting process
(Monocrystalline high-purity oxygen-free copper)

● High-separation, wide-response dual moving coil

The basic structure is an original MC type, with separate cylindrical coils to the left and right channels. Since power is generated independently in each of the left and right channels, this structure offers truly superior separation. If the signal from the opposite channel escapes, this can cause intermodulation distortion and have a decisive impact on audio quality and how the stereo sound spreads. The structure of this product ensures a clear and smooth sound. Additionally, the two coils have a reverse-V shape which reduces effective moving mass as seen from the stylus tip, limiting unnecessary movement of the coil and further eliminating distortion.

● VC mold limits unnecessary vibration

The VC mold that affixes the coil is made with hard synthetic resin containing potassium titanate to make it highly strong and rigid. This improvement results in a lighter product, which reduces unnecessary vibration.

● A tough body designed to be rigid

The product's housing is made of precision-cast hard aluminum alloy. Hard synthetic resin sandwiching in the structure on the top and bottom suppresses parasitic resonance. This minimizes unnecessary noise while enhancing rigidity and the SN ratio.

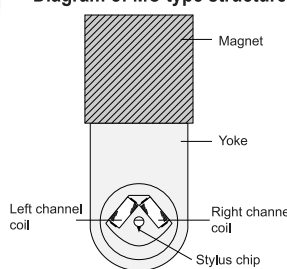
● "Hanenite" vibration-controlling rubber minimizes unnecessary vibration

The vibration-controlling rubber "hanenite" is used in the housing interior and the cantilever fulcrum support to minimize unnecessary vibration. The body structure, designed to be rigid and suppress vibration, allows the outstanding basic performance of the dual moving coil to fully express itself.

● Brass screws to go with high audio quality

The model uses brass screws to attach its shell. This is the ideal match for the high audio quality of the product.

■ Diagram of MC type structure



Using the Product

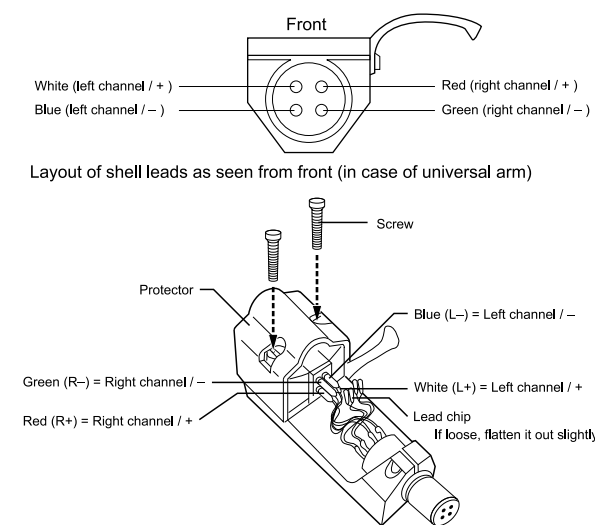
* The cantilever fulcrum is very delicate.
Handle with care.

(1) Attach product to head shell.

Attach the product with the transparent cover on, as shown below, to avoid damaging the cantilever fulcrum.

(2) Insert the lead chip, noting output polarity.

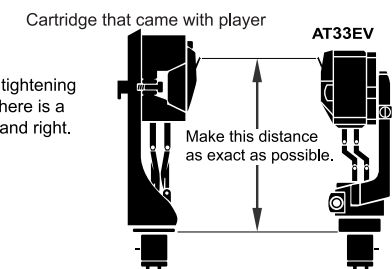
The layout of the universal arm's shell leads is as shown below. Connect leads to cartridge output terminals of the matching color. If the lead chip is loose, flatten it out slightly to insert it. Never apply heat (from solder, etc.) to the output terminal. The supplied PCOCC line is the best choice for use as lead. After you have finished making connections, remove the protector.



(3) Determine the correct position for installing the cartridge (adjust overhang).

Adjust overhang, following the instructions in the player system's user's manual. If you are unsure, align stylus tip to cartridge that originally came with the player (see illustration below). An overly large gap will impair audio quality, so align within 1 mm if possible.

* After adjusting, finish tightening screws making sure there is a balance between left and right.



(4) Adjust tracking force.

The standard for tracking force is 2.0 g. Suitable tracking force for this product is 1.8 - 2.2 g. During cooler temperatures, or when record or usage conditions (such as a high level of vibration) make it necessary, adjust tracking force within the range of suitable values.

(5) Adjust arm height.

Adjust the height so that the bottom face of the head shell and the record surface are parallel, as seen from the side. An improper arm height may cause the body of the cartridge to make contact with the record and could impair audio quality.

* Depending on equipment being connected, you may not be able to adjust arm height.

(6) You will need a transformer or head amplifier or stand-alone phono equalizer to connect to an amplifier.

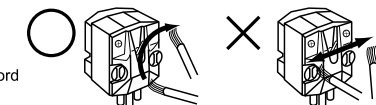
If the amplifier has a phono input (MC position), it may be used as is, but to fully take advantage of this product's audio quality, we recommend using a step up transformer (sold separately) or head amp or phono equalizer (sold separately). For connection instructions, check the user's manual of the equipment you are connecting.

(7) Always keep the stylus tip clean.

Use the supplied brush to clean dust and dirt from the stylus tip. Ideally, you should use a stylus cleaner (sold separately). To clean, move the brush from base to tip. If the cartridge has been removed from the arm, always remember to put on the protector and keep well away from heat sources, such as amplifiers.

Cleaning the stylus tip

Always brush the stylus tip in the same direction that a record moves.



(8) To change the stylus, we will exchange the entire cartridge.

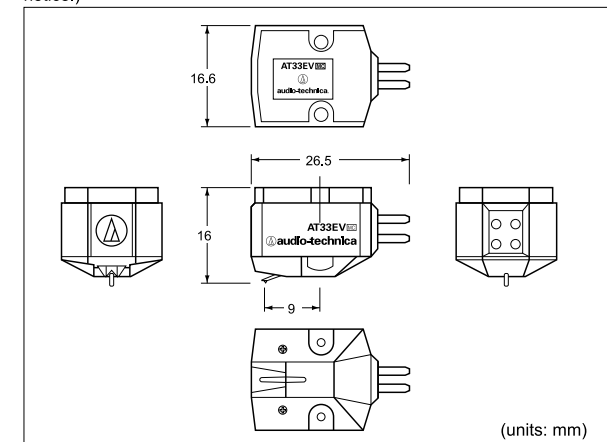
Return used cartridges to a dealer. You will receive a new cartridge for the price of changing the stylus. If the cartridge is no longer being produced, we will switch it for an equivalent item that we produce (for the price of changing the stylus). Thank you for your understanding.

Technical Data

Type	: MC
Frequency response	: 15 - 50,000 Hz
Output voltage	: 0.3 mV (1 kHz, 3.54 cm/sec.)
Channel separation	: 30 dB (1 kHz)
Output balance	: 0.5 dB (1 kHz)
Tracking force	: 1.8 - 2.2 g (2.0 g standard)
Coil impedance	: 10 Ω (1 kHz)
DC resistance	: 10 Ω
Recommended load impedance	: 100 Ω+ (with head amplifier connected)
Coil inductance	: 22 μH (1 kHz)
Static compliance	: 40 × 10 ⁻⁶ cm/dyne
Dynamic compliance	: 10 × 10 ⁻⁶ cm/dyne (100 Hz)
Stylus	: Nude elliptical 0.3 × 0.7 mil
Cantilever	: Duralumin tapered pipe
Vertical tracking angle	: 23°
Dimensions	: H16 × W16.6 × L26.5 mm
Weight	: 6.9 g

* Accessories: Non-magnetic driver × 1; washer × 2; protector × 1; cartridge installation screws 13 mm × 2 and 19 mm × 2; nut × 2; brush × 1; PCOCC lead set × 1.

(Because of improvements, technical data is subject to change without notice.)



(units: mm)