

ERA IV
COMES TO A
COMPLETE NEW
SPECTRUM OF
PHONOGRAPH
CARTRIDGES



**New! M97 Series
Era IV Phono Cartridges**



New! M97 Series Era IV Phono Cartridges

the source of sound

Every component in your system depends on the electrical signal generated by the phono cartridge as it tracks the record groove. No matter how much you spend on a turntable, amplifier, or speakers, your system can't provide true high fidelity sound with an inferior cartridge. What's more, a cartridge that mistracks can ruin your records!

A Shure Stereo Dynetic® Cartridge provides a dependable, highly accurate source of sound from all your records. Moreover, it is a component that can "grow" with your sound system as you upgrade other components in the years ahead.

the M97 Series

The M97 Cartridge Series was developed by Shure in answer to the need for a broad spectrum of cartridges for the variety of audiophiles seeking a high-performance cartridge with top-of-the-line features at a moderate price. Every M97 is a genuine Shure Stereo Dynetic® Cartridge, and features the exclusive Shure Era IV Dynamic Stabilizer. In addition, each model incorporates the new telescoped stylus shank design which provides lower effective tip mass without sacrificing strength.

The M97 Series Cartridges are available with five different stylus assemblies in two different tracking force ranges to match the budget and turntable of the audiophile. As your system grows, you can upgrade your M97 cartridge by purchasing the replacement stylus assembly from a different model in the series. In addition, a stylus for playing 78's is available for any M97 Series Cartridge.

also available with adjustable integrated headshell

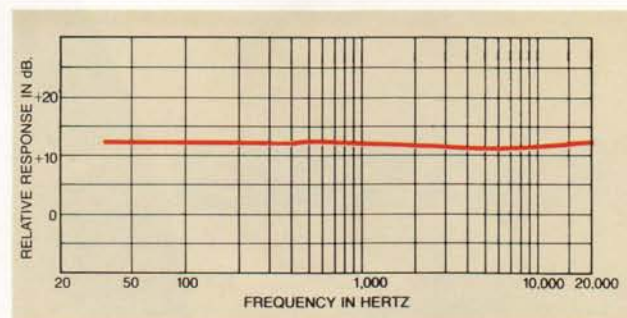
The M97HE cartridge with Hyperelliptical stylus is also available with an adjustable integrated headshell as Model M97HE-AH. This cartridge-headshell combination offers all the design and performance advantages of the M97HE plus the simplicity of plug-in connection. The universal four-pin bayonet mount allows for instant attachment into the tone arm of most major turntables. In addition, the M97HE-AH is factory-aligned, can be easily adjusted for cartridge overhang using the supplied template, and includes an alignment stylus so you will not damage your working stylus during setup. The M97HE-AH is the ideal choice for audiophiles who frequently interchange cartridges.

your kind of sound

The frequency response of the M97 Series of cartridges is extremely flat throughout most of the audible range. The response curve of the M97HE is indicated in the chart.



M97HE-AH
WITH ADJUSTABLE
INTEGRATED
HEADSHELL





THE SPECTRUM OF THE M97 SERIES

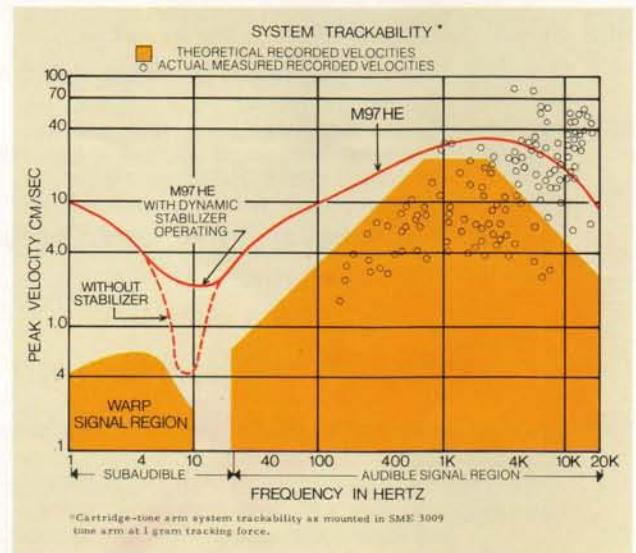
Model	Dynamic Stabilizer	Stylus Configuration	Tip Dimensions	Tip Tracking Force	Replacement Stylus
M97HE M97HE-AH	Yes	Nude Hyperelliptical		¾ to 1½ grams	N97HE
M97ED	Yes	Nude Biradial (Elliptical)	.0002 in. x .0007 in.	¾ to 1½ grams	N97ED
M97GD	Yes	Nude Spherical	.0006 in.	¾ to 1½ grams	N97GD
M97EJ	Yes	Biradial (Elliptical)	.0004 in. x .0007 in.	1½ to 3 grams	N97EJ
M97B	Yes	Spherical	.0006 in.	1½ to 3 grams	N97B
78 rpm Stylus for all M97's	Yes	Biradial (Elliptical)	.0005 in. x .0025 in.	1½ to 3 grams	N978E

trackability

Trackability is the most important characteristic of a cartridge. Simply put, trackability is the ability of a cartridge to maintain contact with the record groove at a given tracking force.

In the chart, the shaded area at bottom left represents the actual warp signals found on records; the shaded area at right represents the *theoretical* limits of record cutting velocities; the scattered points are the "hottest" recorded velocities actually measured on difficult-to-track records.

Because many of these measured points fall outside of the theoretical limits at high frequencies, the cartridge should have trackability higher than the theoretical limits. In addition, in order to achieve its full potential trackability at *all* frequencies, a cartridge's trackability in the subaudible range must be much higher than the warp signals.



CARTRIDGES

Applications	Trackability (cm/sec Peak Recorded Velocity)				Measured at a tracking force of:
	400 Hz	1000 Hz	5000 Hz	10,000 Hz	
Highest fidelity where light tracking forces are essential.	24	35	33	25	1.0 gram
Where slightly heavier tracking forces are required.	30	41	46	34	2.0 grams
For 78 rpm records.					

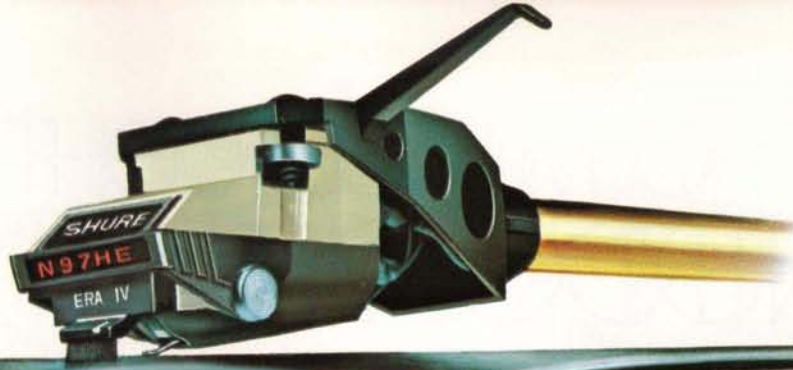
a note about tracking force

The trackability of an M97HE has been plotted on the chart across both the entire audio spectrum and in the subaudible (warp) spectrum in terms of peak velocity at the tip. Its trackability is shown at the ultra-light tip tracking force of *only one gram*; at slightly higher forces its trackability will encompass even more of the "hot" recorded velocities. (Trackability of the M97ED and M97GD is equal to the M97HE.) Trackability of the M97EJ and M97B is stated in the table above for the measured tracking force of 2 grams.

Select the cartridge suitable for your tone arm's recommended tracking force range.

High trackability provides the ability to track a wide dynamic range.





the latest innovations

Even if Shure's top-of-the-line cartridge is beyond your present budget, you can still enjoy many of Shure's latest product innovations. The space-age technological advances introduced with the incomparable V15 Type IV Phono Cartridge—the Dynamic Stabilizer, telescoped shank, and the Hyperelliptical stylus—can be yours on an M97 Series Cartridge for a price that fits into a moderate budget.

the Dynamic Stabilizer

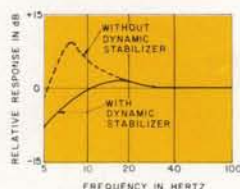
The revolutionary Shure-designed and -engineered Dynamic Stabilizer which vaulted the V15 Type IV to new industry-leading standards in high trackability, is featured on every cartridge in the M97 Series. The viscous-damped Dynamic Stabilizer minimizes or completely eliminates record warp-related problems such as fluctuating tracking force, groove skipping, cartridge bottoming, signal wow, and even amplifier and/or speaker overload.

The entire Stabilizer, suspended from two viscous bearings, acts like a shock absorber to maintain a constant cartridge-to-record distance and uniform tracking force, even on severely warped records.

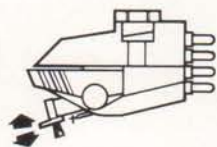
In addition, the viscous-damped Dynamic Stabilizer attenuates the arm/cartridge system resonance effect. Virtually all records produced today have numerous small warps, scarcely visible to the naked eye. As the record turns, these warps create an up-and-down motion of the cartridge and tone arm at between 2 and 12 Hz. If the warp frequency should coincide with the resonance frequency of the cartridge and tone arm, this up-and-down motion is greatly exaggerated and there is a very large increase in output. In extreme cases, mistracking will occur.

The effect of the Dynamic Stabilizer on system resonance is illustrated by the graph below. A test record was first played without the Dynamic Stabilizer, and then again when it was operating. The lowered output indicates that the Dynamic Stabilizer prevented excessive vertical oscillation, even at system resonance, insuring that the full tracking capability was realized at all times.

Over 10,000 tiny, electrically conductive carbon fibers in the Dynamic Stabilizer glide silently across the record surface and discharge the static electricity from the record surface while sweeping away minute dust particles. The Dynamic Stabilizer even protects the stylus and record from damage if the arm is accidentally dropped onto the record surface.



M97 Series Cartridges Mounted in SME 3009 Improved Tone Arm, STR 120 Test Record, Vertical Modulation, 16-2/3 RPM.



Dynamic Stabilizer

the telescoped stylus shank

Shure's unique telescoped stylus shank, originally designed for the V15 Type IV, is standard on every M97 cartridge. The telescoped stylus shank greatly improves trackability at the critical middle and high frequencies by combining significantly lower effective mass with the stiffness necessary for clear, undistorted reproduction.



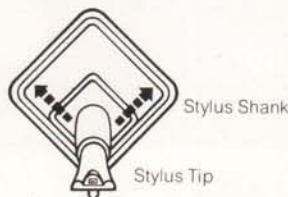
Telescoped Stylus Shank

the Hyperelliptical stylus

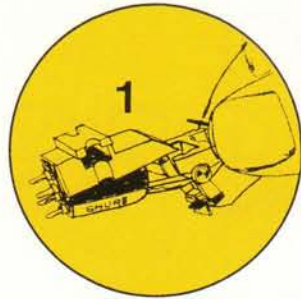
The remarkable sound of the V15 Type IV has been variously described by the most respected audio critics in the industry as "clean," "natural," and "easy to listen to." The reason is the incomparable low distortion afforded by the Hyperelliptical stylus, now available on the M97HE. The Hyperelliptical nude diamond tip configuration contacts the record groove in a significantly narrower "footprint" than the Biradial (Elliptical) tip, and is superior in low distortion performance to such long-contact shapes as the Hyperbolic. You can upgrade any M97 Series cartridge to the M97HE specifications by adding the replacement N97HE stylus assembly.

unique SIDE-GUARD stylus deflector

The most common cause of stylus damage occurs when the stylus is pushed sideways and bent, for example, when the cartridge is accidentally bumped against the edge of a record. The destruction is instantaneous and irreparable. To help prevent this, Shure's new M97 Series cartridges feature a unique lateral deflection assembly, called the SIDE-GUARD (illustrated below), which responds to side thrusts on the stylus by withdrawing the entire stylus shank and tip safely into the stylus housing before it can bend.



Front view of SIDE-GUARD Deflection Assembly and stylus. Arrows show direction stylus takes when subjected to lateral movement.



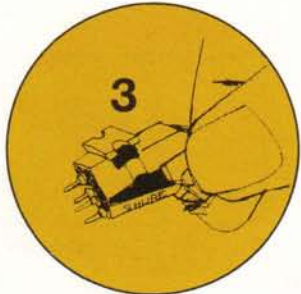
the M97 cartridge grows with your sound system

You can upgrade your M97 Series cartridge by replacing the stylus assembly with a different stylus model in the series. That means you can obtain the high trackability and low distortion found on the M97HE by adding the N97HE replacement stylus to any member of the M97 Series. Or, you can reduce the tracking force of the M97EJ or M97B by substituting an N97HE, ED, or GD stylus. It takes only seconds and requires no tools.



1) Withdraw the old stylus assembly by grasping the stylus grip and pulling it forward out of the cartridge body.

2) Grasp the stylus grip of the new stylus assembly between the thumb and forefinger and carefully insert the brass-colored stylus carrier into the stylus socket in the cartridge.



3) Push the stylus assembly into the cartridge until the stylus grip touches the cartridge body.

Warning: check your stylus at least once a year

It is absolutely imperative that you check your diamond stylus (needle) at least once a year. Diamonds are *not* forever. Repeated use will inevitably cause wear to the stylus tip. A badly worn stylus can ruin a recording in one playing! Many Shure dealers have the equipment necessary to check the wear of your present stylus. Remove it from the cartridge and take it for examination. Considering the value of your record collection and the cost of records, it is the worst kind of economy to run the risk of damaging them with an extremely worn stylus!

beware:

Don't jeopardize your valuable record collection by using an imitation of a Shure stylus. An inferior replacement stylus will audibly detract from and significantly reduce your cartridge's performance and increase record wear.

Accept no substitute. By insisting on a Genuine Shure stylus your cartridge will retain its original performance capability—and at the same time protect your records.

Look for the name Shure on the stylus grip and the statement "This Stereo Dynetic® Stylus is precision manufactured by Shure Brothers Inc." on the box—and be assured of quality.

M97 specifications

Note: See chart on inside spread for trackability and replacement stylus information.

Frequency Response: 20 to 20,000 Hz

Channel Separation (minimum): M97HE-AH, M97HE, M97ED, M97GD: 25 dB at 1kHz, M97EJ, M97B; 20 dB at 1kHz

Channel Balance: Within 2 dB

Tracking Force: M97HE-AH, M97HE, M97ED, M97GD, Ultra-light tracking force:

	Force at the stylus tip	Total tone arm setting with Dynamic Stabilizer operating
Minimum	0.75 grams	1.25 grams
	1.0 gram	1.5 grams
Maximum	1.5 grams	2.0 grams

Tracking Force: M97EJ, M97B, Light tracking force:

	Force at the stylus tip	Total tone arm setting with Dynamic Stabilizer operating
Minimum	1.5 grams	2.0 grams
	2.0 grams	2.5 grams
Maximum	3.0 grams	3.5 grams

Force Exerted by Dynamic Stabilizer: 0.5 grams

Output (at 1,000 Hz): 4.0 mV at 5 cm/sec peak recorded velocity (Output voltage given for stereo cut record. For MONO cut record, output voltage at both left channel and right channel cartridge terminals will be 71% of above figure.)

Inductance: 700 millihenries

DC Resistance: 1,550 ohms

Optimum Load: 47,000 ohms resistance in parallel with 200 to 300 picofarads capacitance per channel. Load resistance can be up to 70,000 ohms with almost no audible change in frequency response. Total capacitance includes both tone arm wiring and amplifier input circuit.

Mounting: M97HE-AH: Universal four-pin bayonet

All other models: 12.7 mm (standard 1/2 in.) mounting centers

Net Weight: M97HE-AH: 12.6 grams All other models: 6.4 grams



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