

# YAMAHA MOVING COIL CARTRIDGES

## MC-3/MC-9

Natural Sound Moving Coil Cartridges • Cross-Matrix Coil System  
• Equalizing Damper • Low-Mass Beryllium Tapered Tubular  
Cantilever (MC-3) • Rugged, Resonance-Free One-Piece Housing  
• Superior Mechanical and Electronic Design



**YAMAHA**



# Behind the Superior Yamaha Sound

Since Yamaha began as a producer of reed organs, it has expanded steadily for over a hundred years until today, Yamaha music instruments, sound reinforcement gear, music education and popularization programs,

sports equipment, and of course, audio products, are renowned worldwide for their highly refined performance. Naturally, the many years spent in intensive research in all these fields have resulted in a vast and varied store of technology, making it possible to achieve optimum performance and quality in every product. Yamaha audio know-how, however, does not stop at technology. Each new audio product must face the most demanding challenge imaginable: the critical ears of Yamaha music instrument designers. Unless the reproduced sound is exactly like the real thing, the product is not considered finished. Yamaha gives you vast technology tamed by musical sensitivity — a claim no other audio manufacturer can honestly make.

## MC-3/MC-9: Precision, Balance, and Outstanding Musical Imagery

These remarkable new cartridges are the realization of design ideals in tracking precision and music reproduction quality, built around exclusive Yamaha technology that's redefining the standards of moving coil cartridge performance. Unique features like the cross-matrix coil system, a special equalizing damper, pure beryllium tapered tubular cantilever and resonance-free one-piece housing, combined with uncompromising mechanical and electronic design, provide music reproduction accuracy that unquestionably surpasses that of any other cartridge.

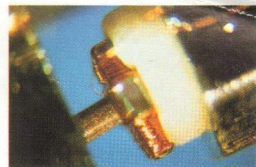
### Cross-Matrix Coil System

The Yamaha Cross-Matrix Coil System is a unique design achievement that provides exceptionally clear, accurate stereo imaging and precise reproduction of every

musical detail. Unlike conventional cartridges in which two or four coils are attached to the cantilever at a 45° angle on either side (corresponding to the left and right stereo channels cut into the left and right walls of a record's groove), the Yamaha cross-matrix coil system employs two coils aligned on the horizontal and vertical axes. The left channel signal is then derived by summing the outputs from the vertical and horizontal coils, and the right channel output is derived from the difference between the two outputs from the vertical and horizontal coils. Thus, an optimum channel "pickup output axis angle" can be set by adjusting the ratio between the number of turns in the vertical and horizontal coils. This permits independent adjustment of the cartridge's vertical and horizontal compliances, for outstanding trackability and reproduction quality.

### Equalizing Damper

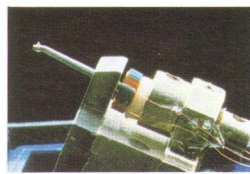
This independent compliance adjustment is achieved by a special damper designed specifically for this series of cartridges.



Located behind the cross-matrix coils, it has a small "step" on its upper surface that makes compliance in the vertical direction much stiffer than in the horizontal direction. This is because a stylus is normally subject to much greater vertical than horizontal excursion due to record surface height variation, and if compliance is set too high, the cantilever will "bottom out" when

faced with sufficiently large record surface height variation. But the Yamaha equalizing damper completely eliminates this problem, ensuring ideal trackability under conditions that would be too severe for conventional cartridges, and effectively improves response linearity throughout the audio spectrum.

### Pure Beryllium Tapered Cantilever (MC-3)



The pure beryllium tapered tubular cantilever incorporated on the MC-3 is ideal in terms of its sonic properties, and is lightweight yet extremely rigid



**MC-3**  
The Yamaha MC-3 cartridge features the unique Yamaha-engineered cross-matrix coil system, equalizing damper, and pure beryllium tapered pipe

cantilever, arranged in a resonance-free one-piece housing that combine to make this an exceptionally high-performance cartridge. The MC-3 ensures the most natural, perfectly balanced sound for genuine high fidelity reproduction.

for precise response to every modulation in a record's groove. Other beryllium benefits are minimized sound coloration due to cantilever resonance and outstanding trackability for low-distortion reproduction.

### Resonance-Free One-Piece Housing

The elegantly styled housings of these fine cartridges are rigid one-piece units formed of special high-impact plastic materials, so resonance is reduced to an absolute minimum. Additionally, connector terminals are solidly molded into these rugged housings, preventing vibration at the joints. Care and attention like this provide the very best phono reproduction available.



**MC-9**  
The new MC-9 is a high-performance moving coil cartridge incorporating Yamaha's sophisticated new technology for superior

overall balance and precision in reproduction performance. Like the MC-3, it's designed around the unique cross-matrix coil system and special equalizing damper, and constructed with careful attention to detail.

## MC-3/MC-9 SPECIFICATIONS

	MC-3	MC-9
Conversion Method	Cross-matrix air-core moving coil	Cross-matrix moving coil
Stylus	0.06 mm square solid diamond, 8 x 40 micron special elliptical	0.2 x 0.1 mm square solid diamond, 8 x 20 micron elliptical
Cantilever	Pure beryllium tube, tapered	Aluminum tube, tapered
Armature	V/H cross high-impact plastic core	V/H cross 78% Permalloy core
Coil	Independent V/H matrix	Independent V/H matrix
Suspension System	One-point suspension	One-point suspension
Cantilever Equalizer Mass	0.145 mg	—
Damper	Equalizing damper for V/H compliance control	Equalizing damper for V/H compliance control
Magnet	High energy samarium cobalt magnet	Rare earth cobalt magnet
Output Voltage	0.2 mV (1 kHz, 5 cm/sec. peak 45°)	0.3 mV (1 kHz, 5 cm/sec. peak 45°)
Channel Balance	Within 0.8 dB (1 kHz)	Within 1 dB (1 kHz)
Channel Separation	Greater than 28 dB (1 kHz)	Greater than 28 dB (1 kHz)
Electrical Impedance	30 ohms	30 ohms
Frequency Response	10—20,000 Hz (ability: 60 kHz)	10—20,000 Hz (ability: 60 kHz)
Recommended Tracking Force	1.2 g ± 0.2 g	1.5 g ± 0.3 g
Compliance (100 Hz)	H: 17 × 10 <sup>-6</sup> cm/dyne (dynamic) V: 16 × 10 <sup>-6</sup> cm/dyne (dynamic)	H: 11 × 10 <sup>-6</sup> cm/dyne (dynamic) V: 9 × 10 <sup>-6</sup> cm/dyne (dynamic)
Vertical Tracking Angle	22° ± 2°	20° ± 2°
Weight	5.9 g	5.3 g

Specifications subject to change without notice.

For details please contact:

SINCE 1887



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