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# AZDEN



# PHONO CARTRIDGES

**A Combination of Experience and Advanced Technology  
Combined to Create a New Standard of Original Sound Reproduction**

Incorporating these advanced designs, the GM-P5L can precisely reproduce even super-high range signals. body, the GM-P5L is the highest grade P-mount type MC cartridge.

■ Cantilevers using boron, an ideal material.

Cantilevers are an important component because they influence tone color and determine frequency response. This is especially important when accurately reproducing high frequencies. Cantilevers must be able to precisely trace minute tracks on records, and they must also be light and tough.

The cantilevers of the GM-P5L use boron, an ideal material that is extremely hard, and yet has extremely low density.

In addition, the tubular shape of the structure makes the cantilevers lighter and gives them precise tracking performance.

■ A one-point suspension method prevents distortion in high ranges and provides good frequency separation.

The one-point suspension method of GM-P5L makes it possible to fix the center of vibration at one point. The suspension wire is woven from seven strands of very thin stainless steel wire to improve hardness. As a result, the GM-P5L provides superb compliance and offers an excellent and steady sound image.

■ Stylus tips using line contact nude diamonds.

Stylii can be classified into three types according to the shape of their tips: Round, Elliptical and Line Contact. The shape of the stylus makes a great difference on tracks of com-

plex high range signals.

The stylus tip of the GM-P5L is a Line Contact type which has almost the same shape as the cutter heads. Compared to the Round or Elliptical type, the Line Contact type increases the contact area with the groove wall allowing for more precise tracking. In addition, the stylii are made of nude diamonds to reduce the mass. The GM-P5L can precisely reproduce even the most minute signals in a high range.

■ The housing completely stops unwanted vibration.

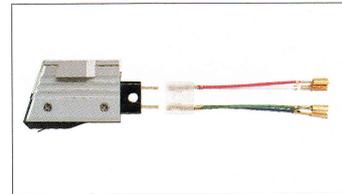
Sympathetic vibrations often interfere with delicate vibrating parts, and influence sound quality.

The housing of the GM-P5L is made

of light, but strong aluminum to prevent unwanted vibrations.

■ P-mount type is easy to handle.

The GM-P5L is a P-mount type, which is now a standard. It is easy to install. All you have to do to enjoy high quality sound is just to insert it into a tone arm. And, another feature of this type is its compatibility with older tone-arms. An ADAPTER is provided as an accessory to install it in shell type



## Precise Tracking Ability Allows Accurate Reproduction of

*A good cartridge picks up sound signals accurately without damaging the delicate and precise recordgrooves. These tiny mechanisms have a critical job to perform, so precision is required in every component.*

*AZDEN conducted exhaustive research into materials and techniques that can be put to*

A unique armature "Tri-pole moving coil" structure makes possible one of the world's lightest cartridges, weighing only 2.7 grams. The GM-1E is an extremely light, super-low mass MC cartridge.

■ A unique idea, the "tri-pole moving coil" structure, introduces a new approach to cartridges.

MC cartridges are ideal in form because their vibrating parts don't use magnets which often cause problems in the design of cartridges. AZDEN's original idea, the "tri-pole moving coil" device, has established a new era of innovation in MC cartridges.

The "tri-pole moving coil" device uses three armatures. One pole is shaped like a shaft and goes in the direction of the cantilever, and the other two are shaped like disks and provide separate left and right generators. Each of these armatures generates electric power, which is then combined. As a result, electromechanical efficiency is remarkably improved.

The GM-1E contains a feature of MC cartridges that vibrations are precisely transmitted to the armatures. Therefore, both high linearity and high output, which are often impossible to achieve with ordinary methods, are simultaneously realized. In addition, the signal to noise ratio is remarkably improved.

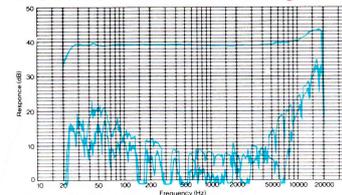
The left and right disk shaped armatures are completely separate and cross at right angles to each other. Their stereophonic and ideal generation completely eliminate crosstalk and distortion in all ranges, retaining only perfect sound.

■ The GM-1E weighs only 2.7 grams, and is the lightest of all cartridges. Its super-low mass improves tracking. The GM-1E employs a "tri-pole moving coil" structure, but without using yokes in the magnetic circuits which increase the weight of the cartridge. Therefore, while high output is achieved without using transformers or MC amplifiers, super-low mass is also

achieved. The cartridge weighs a mere 2.7 grams, and is the lightest of all cartridges. This lightness remarkably improves tracking ability to a point where the GM-1E can accurately trace even minute signals in high ranges and reproduce original sound at its best.

■ Stylus tips are elliptical with high tracking ability.

■ Needles are interchangeable, unlike those of other MC cartridges.



Moving Coil Pickup Cartridge

# GM-1E

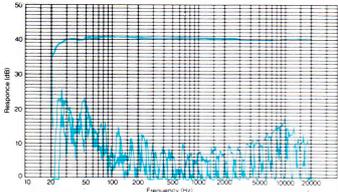
0.3 x 0.7 mil Elliptical Stylus.  
UT-58 Tube Cantilever



**Packaged in a light, tough**

arms. (Please remove the ADAPTER if you use it as a P-mount type cartridge.)

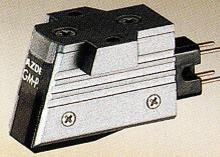
■ We use a high energy samarium magnet in the magnetic circuit.



Moving Coil Pickup Cartridge

# GM-P5L

Nude Line Contact Stylus.  
Boron Tube Cantilever.



# Original Sound. AZDEN High Performance Cartridges.

*practical use to produce ideal cartridges. This resulted in creative ideas, such as cantilevers made of boron and tri-pole moving coil units.*

*AZDEN cartridges are the latest in state of the art design. No effort has been spared to apply our advanced technology to the development and production of these cartridges.*

YM-P50VL

YM-P50E

YM-P50C

YM-10VE

YM-10E

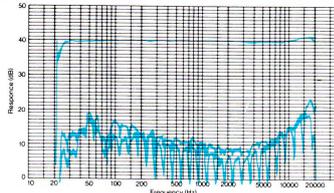
YM-10C

Almost all of today's turntables use P-mount cartridges. Our YM-P50 series cartridges are all P-mounts. However, we have also included an "easy to remove" adapter if you wish to use these "state of the art" cartridge in a turntable with standard type headshell.



This series of MM cartridges has the same suspension system as the YM-10 series. The YM-P50VL uses tapered cantilever featuring hardness, light weight, and Vital Line Contact nude diamond tip. This allows excellent frequency response.

Moving Magnet Pickup Cartridge  
**YM-P50VL**  
Vital Nude Line Contact Stylus.  
UT-58 Tapered Tube Cantilever.

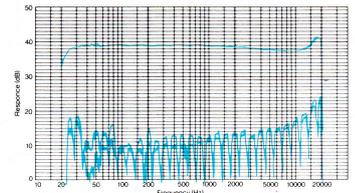


Moving Magnet Pickup Cartridge  
**YM-P50E**  
0.3 x 0.7 mil Elliptical Stylus.  
Aluminum Tube Cantilever.

Moving Magnet Pickup Cartridge  
**YM-P50C**  
0.65 mil Conical Stylus.  
Aluminum Tube Cantilever.

The unique suspension system allows for short cantilevers. This allows a fixed point of support, steady movement, and also high compliance. These cartridges offer excellent performance at low cost.

Moving Magnet Pickup Cartridge  
**YM-10VE**  
0.3 x 0.7 mil Vital Elliptical Stylus.  
Aluminum Tube Cantilever.



Moving Magnet Pickup Cartridge  
**YM-10E**  
0.3 x 0.7 mil Elliptical Stylus.  
Aluminum Tube Cantilever.

Moving Magnet Pickup Cartridge  
**YM-10C**  
0.65 mil Conical Stylus.  
Aluminum Tube Cantilever.

## SPECIFICATIONS

	Moving Coil Pickup Cartridge <b>GM-P5L</b>	Moving Coil Pickup Cartridge <b>GM-1E</b>	Moving Magnet Pickup Cartridge <b>YM-P50VL</b>	Moving Magnet Pickup Cartridge <b>YM-P50E</b>	Moving Magnet Pickup Cartridge <b>YM-P50C</b>	Moving Magnet Pickup Cartridge <b>YM-10VE</b>	Moving Magnet Pickup Cartridge <b>YM-10E</b>	Moving Magnet Pickup Cartridge <b>YM-10C</b>
Stylus Shape & Size	Nude Line Contact	0.3 × 0.7 mil Elliptical	Vital Nude Line Contact	0.3 × 0.7 mil Elliptical	0.65 mil Conical	0.3 × 0.7 mil Vital Elliptical	0.3 × 0.7 mil Elliptical	0.65 mil Conical
Cantilever	Boron Tube	UT-58 Tube	UT-58 Taperd Tube	Aluminum Tube	Aluminum Tube	Aluminum Tube	Aluminum Tube	Aluminum Tube
Output Voltage	0.2mV 5cm/sec at 1kHz	2mV 5cm/sec at 1kHz	4mV 5cm/sec at 1kHz	4mV 5cm/sec at 1kHz	4mV 5cm/sec at 1kHz	4.5mV 5cm/sec at 1kHz	4.5mV 5cm/sec at 1kHz	4.5mV 5cm/sec at 1kHz
Channel Balance	0.5dB at 1kHz	1.5dB at 1kHz	1dB at 1kHz	1.5dB at 1kHz	1.5dB at 1kHz	1.5dB at 1kHz	1.5dB at 1kHz	1.5dB at 1kHz
Channel Separation	30dB at 1kHz	28dB at 1kHz	30dB at 1kHz	28dB at 1kHz	24dB at 1kHz	26dB at 1kHz	24dB at 1kHz	22dB at 1kHz
Frequency Responce Bandwise	10 ~ 60,000Hz	10 ~ 22,000Hz	10 ~ 24,000Hz	10 ~ 22,000Hz	10 ~ 22,000Hz	10 ~ 24,000Hz	10 ~ 22,000Hz	10 ~ 22,000Hz
Dynamic Compliance	17 × 10 <sup>-6</sup> cm/dyn	10 × 10 <sup>-6</sup> cm/dyn	17 × 10 <sup>-6</sup> cm/dyn	17 × 10 <sup>-6</sup> cm/dyn	17 × 10 <sup>-6</sup> cm/dyn	10 × 10 <sup>-6</sup> cm/dyn	10 × 10 <sup>-6</sup> cm/dyn	10 × 10 <sup>-6</sup> cm/dyn
Vertical Tracking Angle	20°	20°	20°	20°	20°	20°	20°	20°
Impedance	10Ω at 1kHz	130Ω at 1kHz	3.2kΩ at 1kHz	3.2kΩ at 1kHz	3.2kΩ at 1kHz	3.2kΩ at 1kHz	3.2kΩ at 1kHz	3.2kΩ at 1kHz
DC Resistance	10Ω	130Ω	610Ω	610Ω	610Ω	690Ω	690Ω	690Ω
Load Resistance Capacitance	40Ω 100 ~ 300pF	47kΩ 100 ~ 300pF	47kΩ 100 ~ 300pF	47kΩ 100 ~ 300pF	47kΩ 100 ~ 300pF	47kΩ 100 ~ 300pF	47kΩ 100 ~ 300pF	47kΩ 100 ~ 300pF
Tracking Force	1.25 ± 0.25gr	2 ± 0.5gr	1.25 ± 0.25gr	1.25 ± 0.25gr	1.25 ± 0.25gr	2 ± 0.5gr	2 ± 0.5gr	2 ± 0.5gr
Weight	8.8gr (With Base) 5.9gr (P-mount)	2.7gr	5.9gr	5.9gr	5.9gr	4.5gr	4.5gr	4.5gr
	P-mount 		P-mount 	P-mount 	P-mount 			