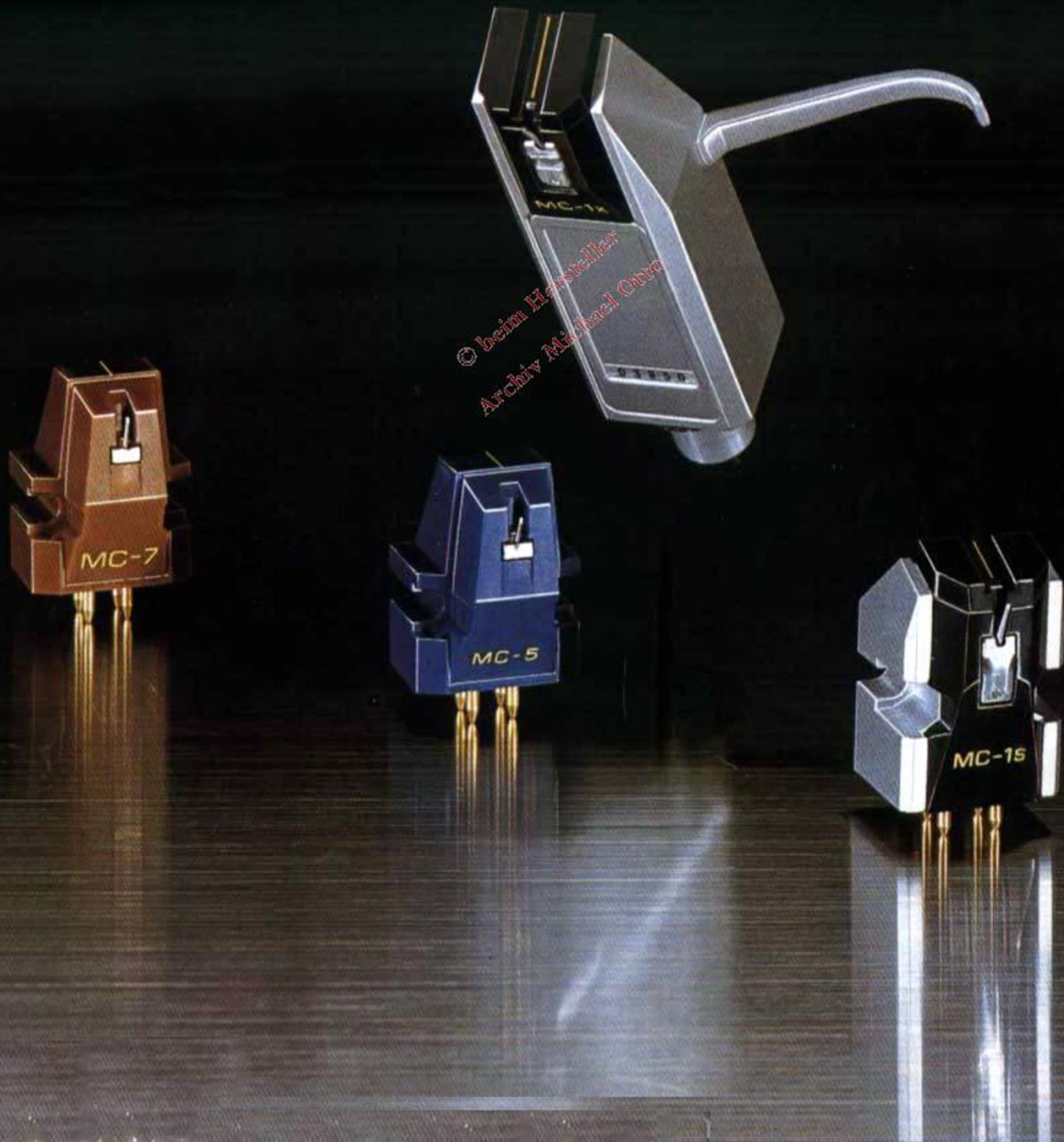


# MC-1X/1S / MC-5 / MC-7

Moving Coil Cartridges

 YAMAHA



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Archiv Michael Gysin

# MC-1X/1S THE SUPER REALIST

## Pure Beryllium Tapered Pipe Cantilever

The MC-1X moving coil cartridge with integral headshell and the MC-1S universal type moving coil cartridge are specifically designed to reproduce every detail of the original sound exactly as it was recorded. To aid in achieving this design goal Yamaha engineers chose to use a pure beryllium tapered pipe cantilever. This is not an easy cantilever to produce, but beryllium is ideal in terms of its sonic properties. It is extremely light, but extremely rigid so it responds precisely to each minute modulation cut into the record's groove. Other beryllium benefits are minimized sound coloration

### Interior View



### Laminated, Air-Core IC Coils

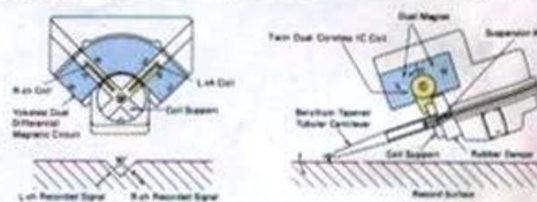
due to cantilever resonance and outstanding trackability for low-distortion reproduction. The coils used in these remarkable cartridges are unique, too. Taking advantage of in-house integrated circuit production facilities and technology, Yamaha engineers succeeded in producing extremely light, tiny dual laminated coreless coils by vapor deposition of micron-thin spiral coil traces (two layers) on a silicon wafer. The extremely low mass of these coils permits highly accurate response to mechanical signals transmitted by the cantilever, and the fact that they are circular means they are uniformly affected by the magnetic field, thereby minimizing distortion and maximizing efficiency.

### Yokeless Dual Differential Magnetic Circuit

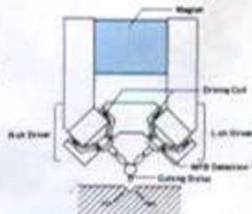
Conventional moving coil cartridges use two magnets of opposite polarity, one on each side of the moving coils. Only a portion of the coils is immersed in the magnetic field, resulting in reduced efficiency and distorted output. Yamaha's unique dual differential magnetic circuit uses two magnets on either side of each coil so the entire coil is immersed in the magnetic field at all times. The result is exceptionally high efficiency and linear, undistorted output for stunning music reproduction precision. Additionally, the magnets used are made of samarium cobalt—a lightweight magnetic material with a particularly high flux density—increasing efficiency without adding appreciably to the mass of the cartridge.

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### Diagram of MC-1X/MC-1S Generating System



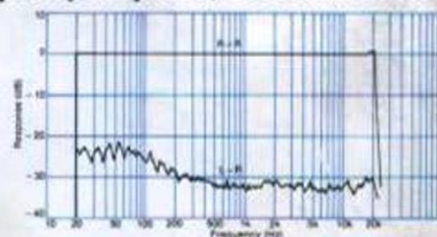
### Diagram of Record Cutting Head



### "Root Wing" Coil Suspension

Since the mass of a cartridge's moving system greatly affects reproduction quality, the point where the coil assembly is attached to the cantilever is a critical performance factor. To make the effective moving mass as small as possible, Yamaha engineers chose to mount the coils at the very root of the cantilever—as far as possible from the stylus. This guarantees that reproduction won't be affected by resonance in the cantilever/coil system, and the exceptionally low effective mass that results ensures the most accurate possible response to music signals for clean, uncolored music reproduction.

### Frequency Response / Crosstalk Characteristics



### Integrated and Universal Types

Two versions of this unparalleled performer are available: The MC-1X is solidly integrated with a resonance-free aluminum diecast headshell for use with virtually any tonearm of standard overhang, while the MC-1S is a universal type that you can use with your favorite headshell. The cartridge casings of both types are formed of solid diecast aluminum to prevent resonance, and the connector terminals are gold plated to eliminate the possibility of contact resistance causing a loss of reproduction quality. Whether you choose the MC-1X or the MC-1S, you'll hear the stunning sonic difference that state-of-the-art Yamaha sound reproduction technology makes.

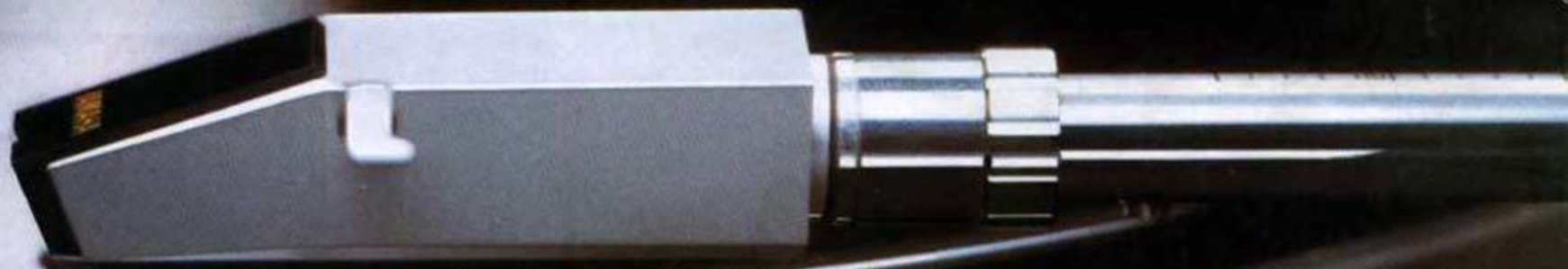


# Yamaha: Dedication to Musical Excellence

## New Phono Reproduction Precision

*One of these outstanding Yamaha moving coil cartridges is just what you need to add a touch of true performance perfection to your audio system. Each one of them utilizes all of Yamaha's extensive music experience and engineering technology to provide the very finest MC performance available. Unique Yamaha features like pure beryllium tapered pipe cantilevers, V/H matrix coil system design and original equalizing dampers are combined with uncompromising mechanical and electronic design, plus feedback from extensive listening tests by qualified music specialists, to provide you with music reproduction accuracy that unquestionably surpasses that of any other cartridge. With all the know-how and state-of-the-art technology incorporated into the MC-1X, MC-1S, MC-5 and MC-7, you're guaranteed to find a whole new world of detail, dynamic vitality and excitement in all your favorite records.*

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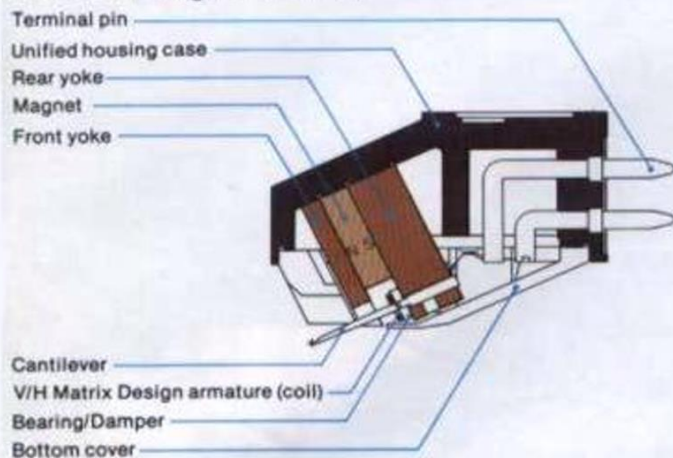


# MC-7 THE ENHANCER

## Sound Enhancement Design

The MC-7 is similar to the MC-5 in many ways. For example, it offers the same independent V/H matrix coil system ensuring superb, distortion-free stereo separation, and the same equalizing damper for effortless tracking even on irregular record surfaces. The basic objective of its design, however, is slightly different. The MC-7 is remarkable in that it actually *enhances* the sound quality of less-than-perfect program sources. Naturally, it also achieves excellent reproduction fidelity with high-quality recordings. Thus, the MC-7 is a

## Structural Diagram of MC-7



truly musical cartridge that can add greatly to your listening enjoyment.

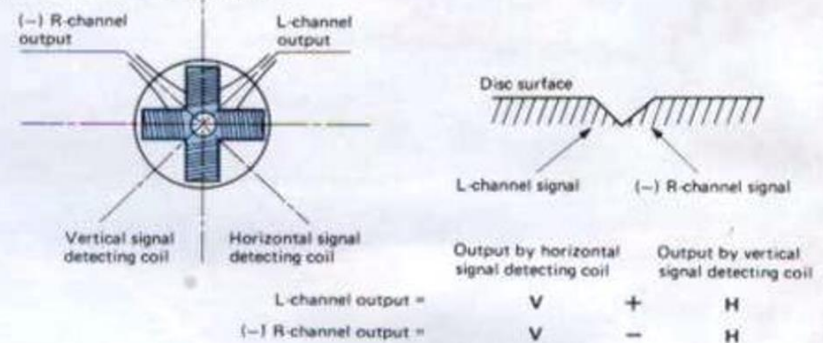
## Accurate One-Point Suspension

The MC-7 features a tapered pipe cantilever formed of specially selected aluminum with a precision solid-diamond stylus. The independent V/H matrix coil system is mounted at the root of the cantilever and the whole assembly is suspended at a single point with piano wire, while vertical and horizontal compliances are independently adjusted by the equalizing damper. The universal flexibility with no stress points afforded by this system means accurate response to record groove modulations with minimum distortion.

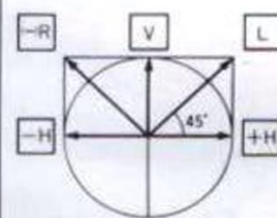
## Low-Distortion Sendust Core

Compared to other magnetic core materials, Sendust offers distinctly superior characteristics in terms of sound reproduction. Its exceptionally large magnetic flux density makes it possible to design a highly efficient magnetic circuit, and its stubborn resistance to Barkhausen noise—noise generated when the structure in a magnetic material changes with sudden variations in an applied magnetic field—ensures exceptional reproduction clarity. The difference made by these minute design details may not be particularly apparent from the

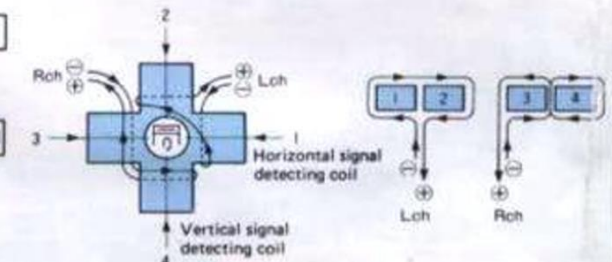
## V/H Matrix Design (1)



## V/H Matrix Design (2)



## V/H Matrix Design (3) Wiring Diagram

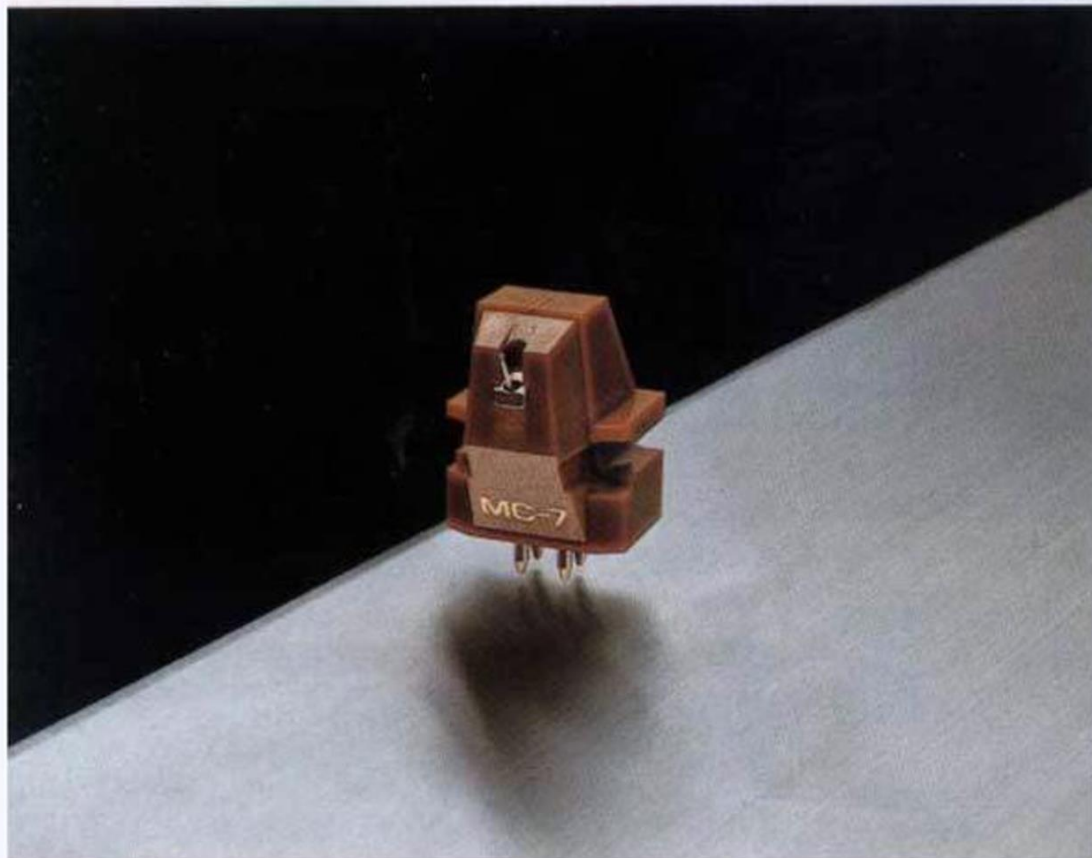
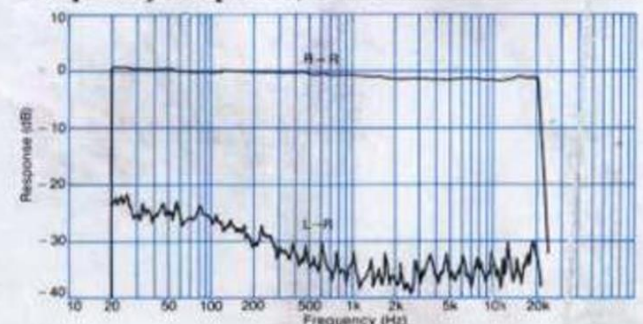


MC-7 specifications, but they most certainly result in an audible improvement in sound quality.

## Resonance-Free One-Piece Housing

As unimportant as it may seem, resonance or structural imperfections in the cartridge housing can have audible impact on reproduction quality. The MC-7 and MC-5 housings are rigid one-piece units—a concept derived from our MC-1X and MC-1S cartridges—formed of a special high-impact plastic material, so resonance is reduced to an absolute minimum. Additionally, the connector terminals are solidly molded into this rugged housing, preventing vibration at the joints. More than anything about the MC-7, however, its beautiful sound reproduction quality reflects the Yamaha dedication to musical excellence it embodies.

## Frequency Response / Crosstalk Characteristics



# Yamaha Moving Coil Cartridges

MC-1X/1S, MC-5, MC-7

## SPECIFICATIONS

	MC-1X/MC-1S	MC-5	MC-7
Type	Moving coil	Moving coil	Moving coil
Armature	Pure silicon base plate/air core, laminated	V/H cross Sendust core	V/H cross Sendust core
Coil	IC aluminum film coil	Independent V/H matrix	Independent V/H matrix
Magnetic Circuitry	Yokeless, dual differential	—	—
Magnet	High energy capacity samarium cobalt magnet	—	—
Moving System	—	One-point suspension	One-point suspension
Stylus	0.1 mm square pure diamond, special contour 8 x 40 micron ellipse	Square solid diamond tip 0.14 x 0.07 mm	—
Cantilever	Pure beryllium tube, tapered	—	Aluminum tube, tapered
Cantilever Equivalent Mass	0.25 mg	—	—
Housing	Aluminum diecast	High-impact plastic	—
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 1 dB (1 kHz)	—	—
Channel Separation	Greater than 28 dB (1 kHz)	—	—
Electrical Impedance	30 ohms $\pm$ 20% (R/L balance within 20%)	30 ohms (purely resistive)	30 ohms (purely resistive)
Frequency Response	10—20,000 Hz (capability ~ 60 kHz)	—	—
Recommended Tracking Force	1.8 g $\pm$ 0.2 g	1.2 g $\pm$ 0.2 g	1.5 g $\pm$ 0.3 g
Compliance (100 Hz)	11 x 10 <sup>-6</sup> cm/dyne (dynamic)	H: 14 x 10 <sup>-6</sup> cm/dyne (dynamic) V: 13 x 10 <sup>-6</sup> cm/dyne (dynamic)	15 x 10 <sup>-6</sup> cm/dyne (dynamic) 35 x 10 <sup>-6</sup> cm/dyne (static)
Vertical Tracking Angle	20° $\pm$ 2°	22° $\pm$ 2°	20° $\pm$ 2°
Weight	MC-1X: 18.5 g $\pm$ 0.1 g (integrated type) MC-1S: 7.8 g $\pm$ 0.1 g (universal type)	5.7 g	5.7 g

Specifications subject to change without notice.

For details please contact:

SINCE 1887



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