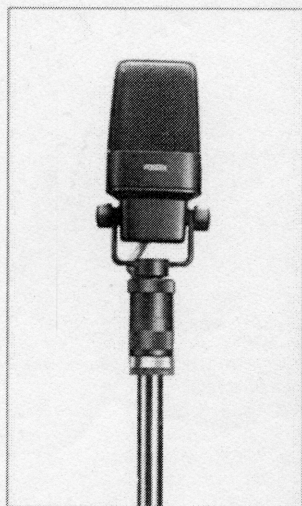
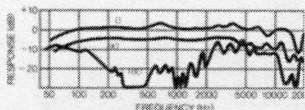


# RP Technology: Over 20 International Patents



## M11RP

- Professional unidirectional type designed for announcing and speech.
- Wide range of application in broadcasting, recording studios and auditoriums.
- The soft and delicate sound quality is a characteristic of the printed ribbon microphone.
- The double suspension method prevents pickup of mechanical noise.
- Sound quality switchable in 3 steps (0, 1, 2).
- Also suitable for percussions and oriental musical instruments.



### SPECIFICATIONS

- Impedance: 600 ohms
- Sensitivity: -51dB, 2.8mV/Pa (0dB = 1V/Pa)
- Frequency response: 40 ~ 18,000Hz
- Dimensions: 67 x 63 x 179mm (W, D, H)
- Weight: 580g

## PRINTED RIBBON MICROPHONES

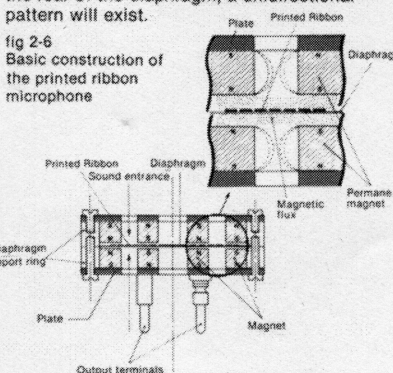
As shown in fig. 2-6, the basic construction of the printed-ribbon microphone consists of a diaphragm sandwiched between two set of concentric ring magnets. The magnetic flux from the two ring magnets, flows from N to S poles in the direction of the radial axis.

The diaphragm is constructed of a plastic film, 4-6  $\mu$ m in thickness. The aluminum spiral ribbon coil is deposited onto the surface of the diaphragm, producing a single piece diaphragm/coil assembly.

The sound waves arrive at the diaphragm through openings between the inner and outer ring magnets, as well as through the centre hole of the inner magnet. When excited by the sound waves, the diaphragm/coil assembly moves through the magnetic field, and a voltage is induced across the coil winding. The acoustic impedance of this type of transducer is almost identical to the traditional ribbon style, in that the front and rear geometry are symmetrical. Additionally, the diaphragm is symmetrical about the main axis therefore a figure-8 polar pattern may be obtained in all planes of the diaphragm axis.

The equivalent circuit is shown in fig. 2-7. As with the traditional ribbon design, if the rear portion of the diaphragm is contained by a sealed labyrinth, to prevent sound waves arriving from the back, an omnidirectional pattern is obtained. If a small opening is made in this labyrinth to introduce sound waves to the rear of the diaphragm, a unidirectional pattern will exist.

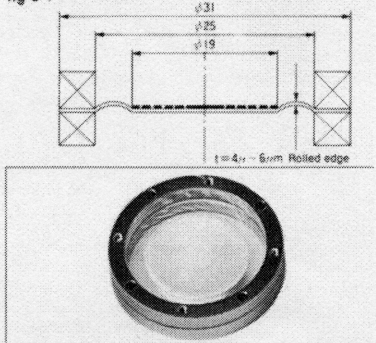
fig 2-6  
Basic construction of the printed ribbon microphone



## CONSTRUCTION OF PRINTED RIBBON MICROPHONES

### DIAPHRAGM

fig 3-1 Diaphragm and cross section of the Printed Ribbon microphone



As the bi-directional dynamic type employs inertia damping, a uniform response can be obtained above the resonance of the system. Therefore the low frequency limit is determined by the resonant frequency of the system. This resonant frequency, in turn, is determined by the diaphragm mass, the mass element applied to the front, the back, and through the edge stiffness. In professional usage, this resonant frequency is generally 50-100Hz. In order to obtain a low frequency resonance the edge must be very thin; a rolled edge, shown in fig. 3-1, is used to establish a resonance near 80Hz and also allows uniform movement of the centre of the printed coil. Although the mass of the diaphragm is greater than that of a traditional ribbon-type, it is far lighter than a moving-coil type, exhibiting superior sensitivity and excellent transient response. The precision etching of the printed coil also contributes to the flat frequency response and reliability of the system.



## M88RP

- A professional bidirectional type for announcing and speech, designed for the first time in the world.
- A high degree of reliability proven through its widespread use in television and radio broadcasting.
- A superior directional pattern with almost identical sound quality between 0° and 180°, and very low pickup at 90°.
- The delicate and soft sound is most suitable for announcing.
- Sound can be selected by a 3 step switch to adjust for distance and voice quality of the announcer.
- Also high performance pickup of percussions and oriental music.



### SPECIFICATIONS

- Impedance: 600 ohms
- Sensitivity: -52dB, 2.5mV/Pa (0dB = 1V/Pa)
- Frequency response: 40 ~ 18,000Hz
- Switch: 3 step sound selecting
- Dimensions: 52 x 46 x 136mm (W, D, H)
- Weight: 330g

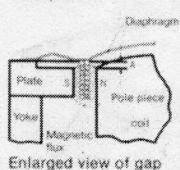
## OUTSTANDING FEATURES OF PRINTED RIBBON TRANSDUCER

1. Non-linear distortion during extremely high sound pressure levels where the diaphragm excursion is very large is kept at a minimum because the coil is in a uniform magnetic field.
2. Because very strong magnets are located on both sides of the diaphragm, the diaphragm is protected from minute iron particles floating in the air; this microphone is extremely suitable for outdoor use.
3. Reliability is high and maintenance is simple as the microphone requires neither batteries, nor an external power supply.
4. Due to the extremely small mass of the diaphragm, sensitivity and performance similar to traditional ribbon microphones is achieved while remaining durable.

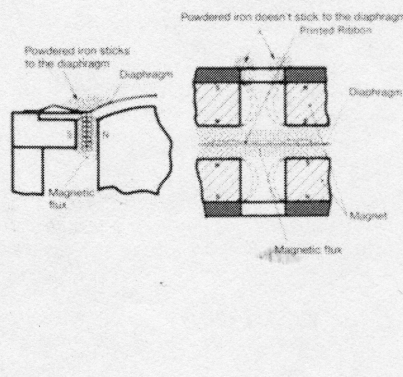
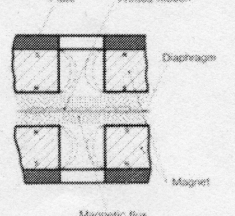
5. Extremely good bi-directional pickup pattern is possible due to the symmetrical physical construction of the microphone element.

fig 5-1

Enlarged view of gap in the moving coil type microphone



Enlarged view of gap in the printed ribbon type microphone





# A Careful Blending of Design Elements:

- The Warmth of a Ribbon
- The Clarity of a Condenser
- The Durability of a Dynamic

## RP Technology

Very simply, Fostex RP microphones are unlike any other microphones in the world. To date, more than twenty international patents have been awarded to this remarkable transducer technology. If you work in the world of audio recording/reproducing, you owe it to yourself and your clients to audition the Fostex RP microphones.

## The Best of All Worlds

Fostex RP Technology combines the attributes of ribbon, condenser and dynamic types, while avoiding all the limitations of traditional microphone design. Fostex engineers collaborated with NHK, Japan, one of the world's largest and most demanding broadcasting networks, to develop these world class transducers.

## Ribbon Microphones

In the early days of broadcasting, ribbon microphones were enormously popular because of their "natural" sound. Announcers and radio performers especially liked their conversational neutrality, because they could then use their own practised vocal skills to achieve desired effects. Ribbon mics "didn't get in the way." Unfortunately, the ribbon elements were just too delicate to hold up to constant use.

## Condenser Microphones

Condensers were among the first types of mics developed specifically for critical sound recording and broadcasting applications. There are some distinct advantages with this design.

- Low mass diaphragm. Faster response time than heavier dynamic elements. Better tracking of transient response and better definition of harmonics.
- Phantom powering. Permits the inclusion of a mic preamp inside the capsule, thereby avoiding an extra power supply. Higher output level, better signal-to-noise ratio.
- Pattern flexibility. When you start with a bi-directional pick-up pattern, all polar patterns are generated more effectively. Condenser mics offer tightly controlled response, both on and off axis.

There are some trade-offs, however, and they include cost (usually expensive), size (usually large, bulky), and the need for external or phantom powering.

## Dynamic Microphones

Dynamic microphones were designed to offer

a reliable alternative to the condenser designs, and they have their own advantages:

- Rugged. Great for use on the road.
- Inexpensive. A low-cost alternative to condensers.
- No need for an extra power supply or source. But then, along come the trade-offs:
- Higher distortion and a lower overload point.
- Best pattern design is the omni. Other patterns have poor control.
- Higher diaphragm mass results in poorer high frequency response.

## Fostex RP Microphones

A careful blending of all the classic microphone design benefits, without the corresponding trade-offs. That's what Fostex RP Technology delivers. In the studio, on the air, or on stage.

Soon after their introduction, the Fostex mics were being called "Printed Ribbon" Microphones, so fondly did their warmth resemble the beautiful but frail ribbon mics of yesteryear. (The reference to 'printed' is to one patented aspect of Fostex RP Technology, wherein the voice coil is etched directly onto the diaphragm.)

But the reference to 'ribbon' carried a negative connotation regarding durability. However Fostex RP Mics have a history which verifies a ruggedness quotient equal to, or better than, the very best dynamics.

In the RP system, a flat, thin diaphragm is driven with absolute phase uniformity, in true piston motion. 80% lighter than the typical dynamic element, the RP element has the fast transient response of a condenser.

Fostex RP Microphones use a magnetic design in place of the polarizing voltage design of a condenser. The advantage of this fact can be seen in the ability of the RP design to be applied to any polar pattern, with full integrity.

The basic RP pattern is bi-directional, or 'Figure-8'. The acoustic air mass load is the same, in fact, on both sides of the diaphragm. (A little horn-blowing is in order here — even the very best condensers do not have this true front-to-back symmetry.)

Given this reciprocal pick-up pattern as a basic building block, the RP design can be predictably controlled all the way from a stereo mic to a super cardioid.

The very high magnet flux on the surface of the RP diaphragm produces outstanding control, reduces diaphragm break-up and results in lower distortion overall. Fostex RP mics have less than 0.2% THD at 130 dB SPL — a figure unmatched by some of the finest condensers.

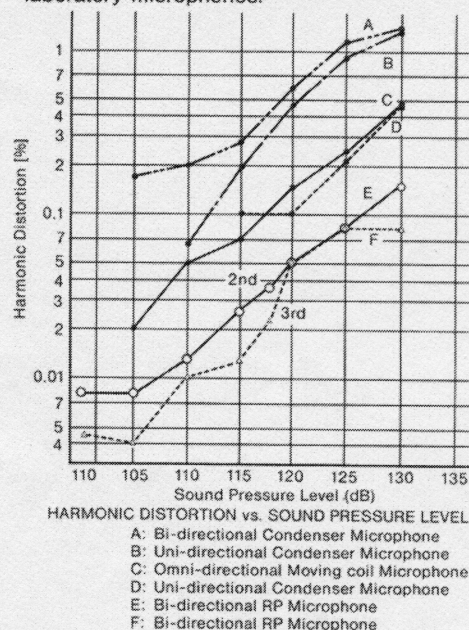
Surprisingly, this kind of performance and reliability is readily affordable. Fostex RP mics are about half or less the cost of world class condensers, and about the same as the best dynamics available.

Finally, of course, there is the sound. Something you really must audition first-hand, because all else is secondary. The rest of this brochure contains specific information on the various models of Fostex RP Microphones, and the applications for which they were designed.

We hope you will find it useful. We also hope you'll take the time to listen to these remarkable microphones. Because we trust you'll know the truth when you hear it.

## LOWER DISTORTION

The patented Fostex RP design permits capsule construction which has identical front/back response. This design reduces second harmonic distortion to almost unmeasurable levels, lower than some of the best condenser microphones. At 100 dB, RP microphones have less than 0.01% distortion, equal to many high quality electronics. At 130 dB SPL, RP mics have less than 0.2% distortion. The high magnetic flux, the flat diaphragm and the spiral voice coil all contribute to complete diaphragm control at all SPL levels. This patented design results in operating levels so high, they are normally associated only with laboratory microphones.





## **New Product Announcement**

The Fostex **M11** and **M88RP** microphones are truly a different breed than any other microphones currently available. Fostex was awarded 20 international patents on this unique transducer technology. These special edition microphones are hand built and available in limited quantities.

The M11 and M88 utilize a patented Printed Ribbon Element that combines the best sound and features of dynamic, condenser and ribbon microphones.

Immediate advantages over normal ribbon technology are strength and durability. Ribbon microphones are noted for the fragility of their elements, thereby negating their use for outside applications or high sound pressure level microphone placements. The M11 and M88 microphones can endure close percussion or loud amplifier microphone placements without danger to the capsule.

An additional benefit of the Fostex Printed Ribbon technology is the clarity and sheen of a high quality condenser microphone, without the need for phantom power! This fact results in an extremely low noise floor due to the elimination of the condenser's electronic circuitry, which would normally be required.

In the Fostex design, the M11 and M88 microphones have a large, low mass printed ribbon diaphragm which offers very fast response time compared with typical heavy dynamic mic capsules. The resulting smooth upper high end attributed to this ribbon technology can warm up any digital production while maintaining pristine clarity and presence.

The M11 and M88RP are delivered in their own hard leatherette cases. Each microphone has a built in swivel microphone stand holder with adapters and high quality low noise cable.

### ***To Sum Up the Main Benefits.***

- No phantom power required.
- No on board circuitry to create noise.
- The durability of a dynamic element
- The clarity of a condenser capsule
- The warmth of a ribbon element
- Extremely low distortion @130db less than .2%!

#### **The M11RP**

- A Unidirectional element.
- 3 position filter
- A double suspended capsule
- 40-18,000k Frequency Response
- -51db, 2.8mV/Pa Sensitivity
- 600 ohms Impedance

#### **The M88RP**

Bi Directional element  
Superior Front/ Back Identical Sound Quality  
Three position filter  
40-18,000k Frequency Response  
-52db, 2.5mV/Pa Sensitivity  
600 ohms Impedance



## Fostex Revives Models M11RP and M88RP Large Diameter Printed Ribbon Microphones.

*Proprietary RP Technology Has Earned Fostex Over 20 International Patents*

The Fostex M11RP and M88RP microphones are truly a different breed than any other microphones currently available. Fostex was awarded 20 international patents on this unique transducer technology. These special edition microphones are hand built and available in limited quantities, according to Professional Products Manager Rick Cannata.

"No phantom power is required and there is no on board circuitry to create noise," Cannata said, "These microphones have the durability of a dynamic element, the clarity of a condenser capsule and the warmth of a ribbon design." Extremely low distortion is rated at less than .2% at 130dB.

Immediate advantages over normal ribbon technology are strength and durability. Ribbon microphones are noted for the fragility of their elements, thereby negating their use for outside applications or high sound pressure level microphone placements. The M11 and M88 microphones can endure close percussion or loud amplifier microphone placements without danger to the capsule.

An additional benefit of the Fostex Printed Ribbon technology is the clarity and sheen of a

--more--

Fostex RP Mics, Page 2

high quality condenser microphone, without the need for phantom power! This fact results in an extremely low noise floor due to the elimination of the condenser's electronic circuitry, which would normally be required.



In the Fostex design, the M11 and M88 microphones have a large, low mass printed ribbon diaphragm, which offers very fast response time, compared with typical heavy dynamic mic capsules. "The resulting smooth upper high end attributed to this ribbon technology can warm up any digital production while maintaining pristine clarity and presence," Cannata said.

The M11 and M88RP are delivered in their own hard leatherette cases. Each microphone has a built in swivel microphone stand holder with adapters and high quality low noise cable.

**The M11RP**

- A Unidirectional element.
- 3 position filter
- A double suspended capsule
- 40-18,000k Frequency Response
- -51db, 2.8mV/Pa Sensitivity
- 600 ohms Impedance
- MSRP: \$1,199.00

**The M88RP**

Bi Directional element  
Superior Front/ Back Identical Sound Quality  
Three position filter  
40-18,000k Frequency Response  
-52db, 2.5mV/Pa Sensitivity  
600 ohms Impedance  
MSRP: \$1,399.00

Headquartered in Norwalk, California, Fostex America is a leading manufacturer and marketer of innovative digital recorders/editors /mixers and performance products for creative musicians and producers, as well as for personal and professional studios. Founded in 1981, the company is a Division of Foster Electric U.S.A., Inc.

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