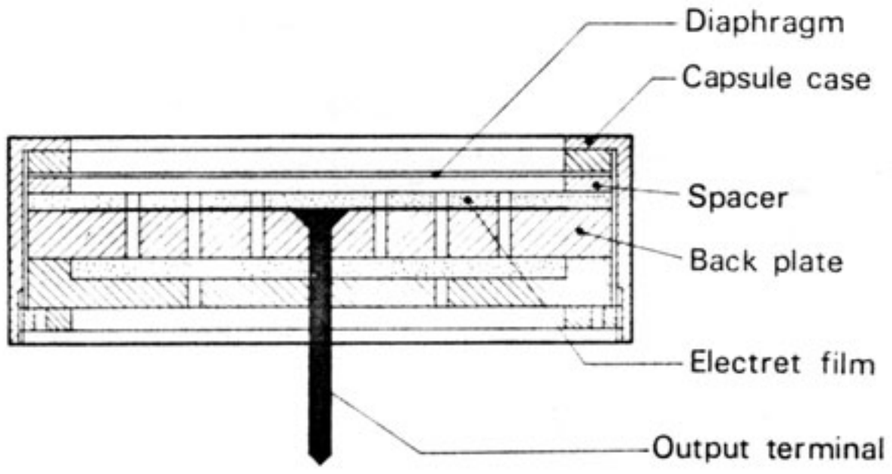
BACK-ELECTRET CONDENSER CAPSULE

After intensive research and critical listening tests it became apparent that the tone quality of the microphone is ultimately determined by the physical characteristics of the diaphragm material. The best material now available is a thin polyester film from 4 μm to 6 μm in thickness, used in conventional condenser microphones such as the Sony C-37P and C-47.

Sony engineers have developed a technique to adhere the electret material to the back plate, and have built a new electret capsule, called back-electret condenser capsule, which permits the use of a thin polyester film of a micronic order of thickness as the diaphragm instead of the thicker film used in the conventional electret condenser microphone. The construction is as shown below.

The thinner diaphragm assures high compliance because of the reduction of its mass, which results in a great improvement of the frequency response and directivity at low frequencies, and improves the transient characteristics over the entire frequency range. This makes possible electret condenser microphones having response characteristics equivalent to laboratory grade condenser microphones.

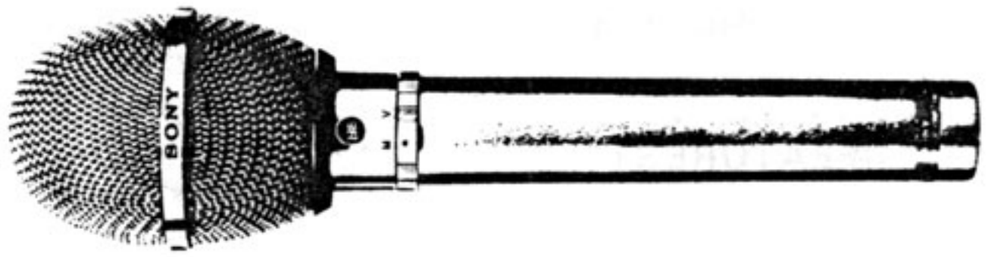


SONY®

BE

ELECTRET CONDENSER MICROPHONE

ECM-23F



Owner's instruction manual

Before operating your microphone, please read this manual completely to become familiar with all its features and capabilities.
Keep this manual handy for future reference.

Sony Corporation
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TABLE OF CONTENTS

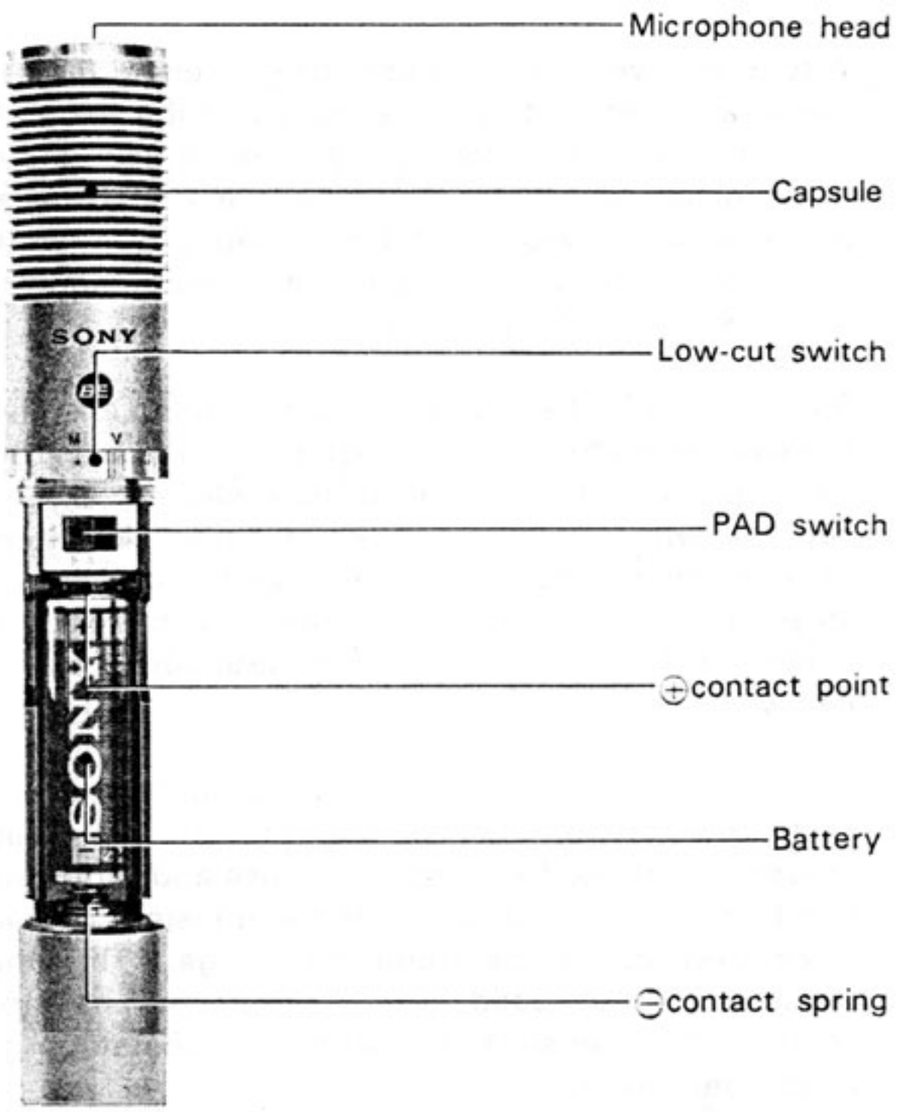
FEATURES

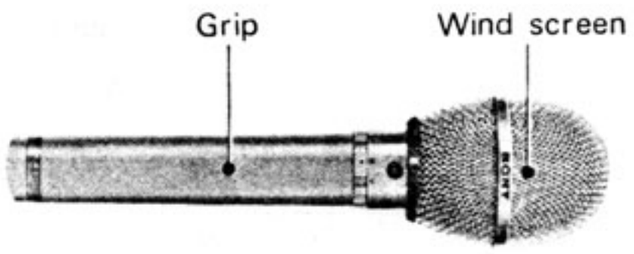
- The ECM-23F utilizes the newly developed back-electret condenser capsule, which results in a high quality sound pickup with the excellent transient characteristics over a wide frequency range.
- The Low-cut switch and Pad switch are incorporated to permit good sound pickup in almost any circumstances.
- Double wind screen effectively reduces both wind and pop noise.

PRECAUTIONS

- The microphone should never be dropped or subjected to an excessive shock.
- Keep the microphone away from extremely high temperature above 60°C (140°F).
- If the microphone is not to be used for a long time, remove the battery to avoid any possibility of corrosion. In case of battery leakage, wipe off any deposit left in the battery compartment.
- If the microphone head points toward a monitor speaker and the distance between them is too close, feedback (howling) may occur. In this event, move the microphone away from the speaker or reduce the speaker volume.
- Microphone and recording instruments should be turned on ten minutes before they are actually used. This assures stable performance of instruments.

PARTS IDENTIFICATION



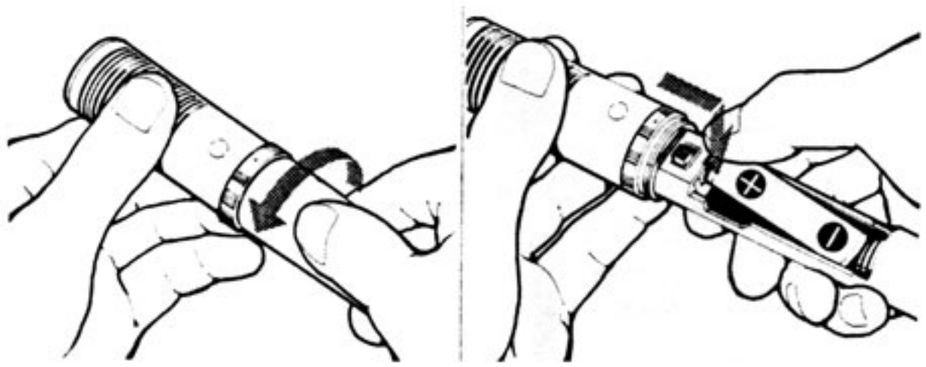


BATTERY INSTALLATION

❶ Open the battery compartment by turning the grip counterclockwise.
❷ Insert a battery into the battery compartment. Check for correct polarity.
❸ Close the compartment by turning the grip clockwise.

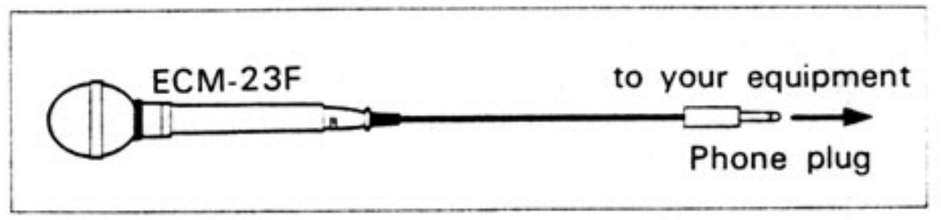
Notes

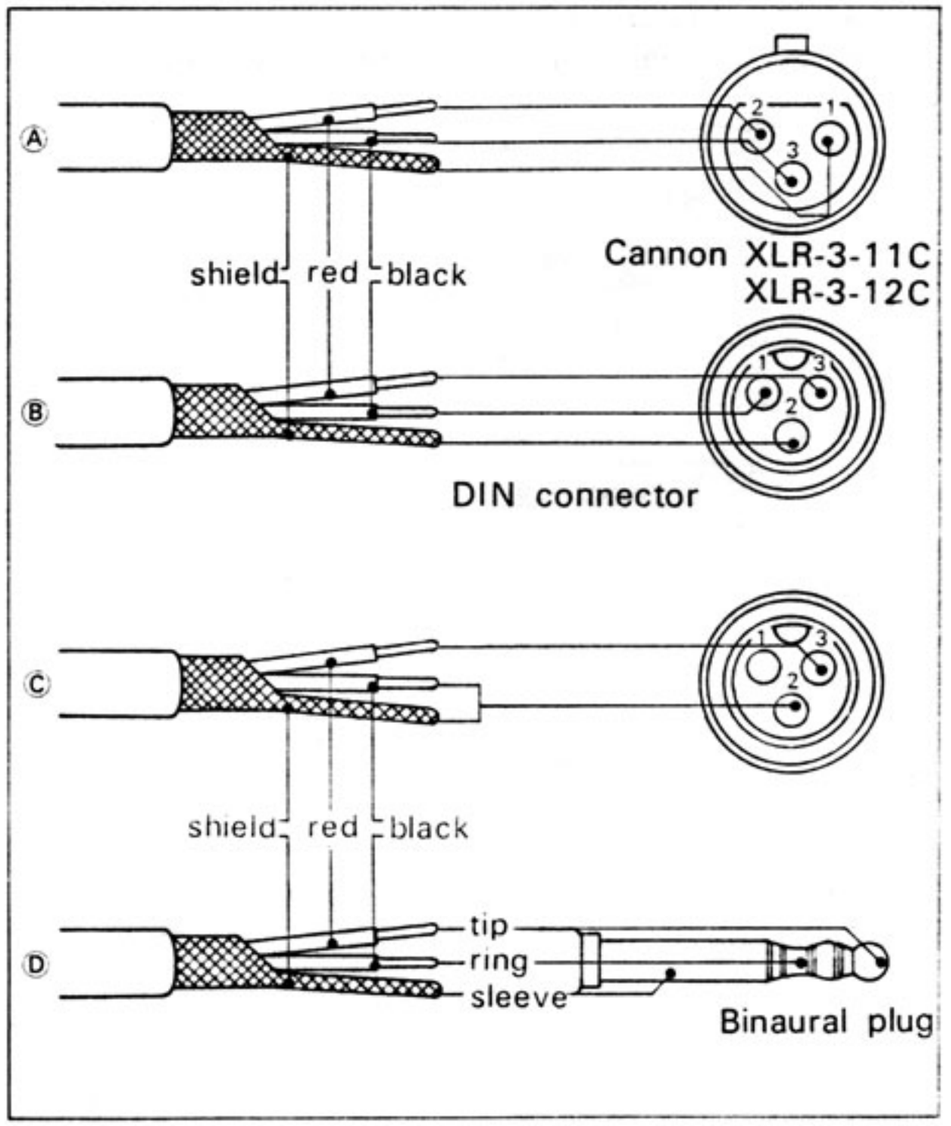
- If the microphone is not to be used for a long time, remove the battery.
- An EVEREADY manganese battery 1015 will operate continuously for about 6,000 hours. When the battery is exhausted, sensitivity will be decreased and distortion will be heard. When this occurs, replace with a new battery.



CONNECTIONS

The microphone cable has a Cannon connector XLR-3-11C at one end and a phone plug at the other end. Insert the Cannon connector into the microphone, and the phone plug into the microphone input of your equipment such as a tape recorder, an amplifier, a mixer, etc.
If your equipment has some other type of jack or connector, remove the phone plug and attach a new plug which matches the input connector as shown below.





LOW-CUT SWITCH

The low-cut switch adjusts the low frequency response as shown in the figure of frequency response on page 11.

"M" (Music)

This position provides a flat response over a wide frequency range. Normally use this position, especially for music programs. However, if room some acoustics happen to emphasize low frequencies, resulting in "boomy" sound pickup, set the switch to [V], even with the music source.

"V" (Voice)

This position reduces the response in the low frequency range. When a microphone is placed in close proximity (one inch or less) to the sound source, there may be a boosting of the bass response (this is "proximity effect"). The [V] position is preferable for close-miking of voice, and in situations where air conditioners or other sources of low-frequency ambients are encountered.

PAD SWITCH

This switch is used for preventing overload of the microphone impedance translator, resulting from the pickup of an excessively high level sound source. To change the setting, remove the grip.

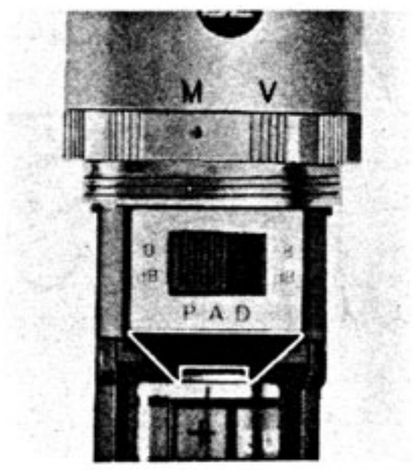
"0 dB"

Usually set the switch at this position. The microphone provides normal performance.

"−8 dB"

This position reduces the microphone output level by 8 dB. This allows higher sound levels to be reproduced without distortion.

The microphone attenuator of the tape recorder can also reduce the overall level. However the use of the PAD switch is recommended since it prevents overload distortion of the impedance translator, and the overall quality will be improved.



WIND SCREEN

To eliminate the effect of wind noise or breathing, cover the microphone with the supplied wind screen.
The wind screen also protects the capsule from shock, moisture and dust.

MORE ABOUT MICROPHONE USE

WHAT IS A CARDIOID MICROPHONE?

This type of microphone is more sensitive to sound originating on-axis—that is, directly in front of it—than to side or back sound, and shows a heart-shaped output level response when the source of sound moves off-axis. This type of response is ideal for picking up a desired sound source with less background noise. Always point the top of the microphone head at the sound source for best pickup.

● When using a cardioid microphone, large objects such as walls or furniture should be as far as possible from the microphone to prevent undesired reflections, which would result in a poor recording.

MICROPHONE PLACEMENT

Vocal pickup

Vocal pickup is probably the easiest source to begin with. Usually place the microphone approx. 10 cm (one third of a foot) from the mouth. If close placement causes proximity effect (an increase in bass response), or pop noise, move the microphone back a bit, or set the Low-cut switch at [V] position.

Musical instrument pickup

Unlike voice, musical instrument such as brass, woodwinds, percussion, etc. can produce very intense sound peaks and transients. The microphone may distort or overload if placed too close. Therefore, it is desirable to experiment during a rehearsal with placement of the microphone to achieve best pickup with minimum background noise.

SPECIFICATIONS

General

Type	Electret condenser microphone (with back-electret condenser capsule)
FET	Sony junction FET
Battery	Penlight battery size AA EVEREADY 1015 (manganese) E-91 (alkaline) E-9 (mercury)
Microphone cable	5 mm (approx. 0.2 inch) dia., 6 m (19 ft. 8 in.) long, double conductor shielded cable with Cannon XLR-3-11C connector and phone plug
Dimensions	27 mm dia. ×190 mm (approx. 1.06 in. dia. ×7.48 in.)
Weight	190 g (approx. 6.7 oz) without cable
Finish	Satin nickel finish

Supplied accessories

Wind screen	1
Microphone holder	1
Microphone cable	1
Carrying case	1
Stand adaptor	1

Performance

Frequency response	20 – 20,000 Hz (See the figure on page 11)
Directivity	Cardioid pattern (See the figure on page 11.)
Output impedance	250 ohms ±20% balanced

Output level (deviation ±3 dB)

Position of the PAD switch	Effective output level *1	Open circuit voltage *2
0 dB	−56.0 dBm	−75.0 dB (0.16 mV)
−8 dB	−64.0 dBm	−83.0 dB (0.07 mV)

*1 0 dBm=1 mV/10 μbar at 1,000 Hz

*2 0 dB=1 V/μbar at 1,000 Hz

Recommended load impedance is more than 3 k ohms.

Power requirement	Normal operating voltage: 1.5 V DC
	Minimum operating voltage: 1.1 V DC
	Current drain: Less than 200 μA

Battery life	About 6,000 hours with EVEREADY 1015 About 7,000 hours with EVEREADY E-91 About 9,700 hours with EVEREADY E-9
Noise level	Signal-to-noise ratio More than 46 dB (1,000 Hz, 1 μbar) Inherent noise Less than 28 dB SPL (0 dB = 2×10^{-4} μbar) Wind noise*1 (with wind screen) Less than 45 dB SPL Induction noise from external magnetic field*2 Less than 5 dB SPL

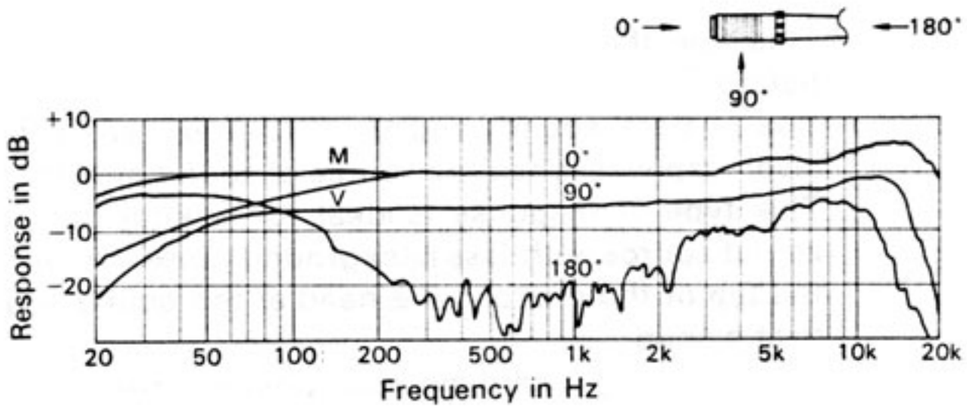
*1 Wind noise is the value measured by applying a wind velocity of 2 m/sec (6.6 ft/sec) from all directions to the microphone. The mean value is taken and converted to the equivalent input sound level.
0 dB = 2×10^{-4} μbar

*2 The external magnetic field induction noise is measured with the microphone placed in the alternating magnetic field of 50 Hz, 1 milligauss. The maximum noise value is taken and then converted to the equivalent input sound level.
0 dB = 2×10^{-4} μbar

Maximum sound pressure input level (at 1,000 Hz, 1% distortion)	Approx. 130 dB SPL (PAD switch 0 dB)
Dynamic range	Approx. 102 dB
Temperature	−20°C to 60°C (−4°F to 140°F) for storage 0°C to 60°C (32°F to 140°F) for operation

Design and specifications subject to change without notice.

Frequency responce



Directivity