SPECIFICATIONS

Element:
Electret condenser

Frequency Response:
80 to 15,000 Hz
(see Figure 2)

Impedance:
150 ohms nominal (balanced)

Polar Pattern:
Omnidirectional

Output Level:
-45 dB ref
(0 dB = 1 mW/10 dynes/cm²)

EIA Sensitivity Rating:
-136 dB

Self Noise:
2 µV A weighted

S/N Ratio:
72 dB A weighted

Dynamic Range:
117 dB
(141 dB Input-open circuit)

Equivalent Noise Level:
Less than 24 dB re
0.0002 dynes/cm²

Maximum SPL at 1% THD:
141 dB (SPL) at 1 kHz

Operating Voltage:
9 Vdc internal “transistor radio”
battery (not supplied. See
Replacement Guide.)

8 to 50 V dc external via battery termination

8 to 50 V dc phantom power

Current Required:
3.9 mA maximum

Output Cable:
4.6 m (15 feet), two-conductor,
shielded, brown, rubber-jacketed,
with TA3F and A3M connectors

Case Material,
Mike Capsule:
Brass

Electronic Housing:
Aluminum

Power-Supply/Buffer:
Steel with plastic cover

Connections:
See Figure 3

Dimensions:
See Figure 1

Finish,
Mike Capsule/Electronic Housing
Assembly:
Fawn beige micomatte

Power-Supply/Buffer Assembly:
Nickel plated with black plastic
cover

Weight,
Mike Capsule/Electronic Housing
Assembly:
19 grams (including tie clasp)

Power-Supply/Buffer Assembly:
120 grams (less battery)

Furnished Accessories:
385 windscreen
Belt clip
Storage pouch
Tie clasp (EV No. 70316)

Optional Accessories:
522 extension miniature
interconnect cable, 10 ft long
390 dual tie clasp
AC24M power supply
CO9R*

*The CO9R is a field replacement for
the microphone capsule electronics and
cable.
DESCRIPTION AND APPLICATIONS

The CO94 is a miniature lavalier electret microphone designed to attach to the user’s clothing with a tie clasp. The CO94 consists of two separate assemblies: the microphone element and the power-supply/buffer module. The microphone element and power-supply/buffer module are connected by a 1.83 meter (6 ft) length of durable miniature cable. This cable is connected to the power-supply/buffer module with a miniature connector, permitting the use of cable extensions. In normal operation, the microphone element is attached to the user with the supplied tie clasp or the optional 390 dual tie clasp. The power-supply/buffer module is normally clipped to the user’s belt using the supplied clip. The small physical size of the microphone element portion of the CO90 is ideal for on-camera use.

The CO94 can be powered in several ways, depending on the application. The CO94 can operate from a 9-volt battery located in the supply/buffer module. In this mode, the switch located on the power-supply/buffer module’s front surface functions as an “on-off” switch.

The CO94 can also operate as a phantom powered unit on any of the currently used phantom power systems employing voltages from 8 to 50 V dc. (The series resistances should maintain the required 3.9 mA.) When operating in the phantom powered mode, the switch located on the power-supply/buffer module’s front surface functions as a silent muting switch (see Figure 3).

If desired, the CO94 can be operated in a dual power mode employing both battery and phantom powering. The advantage of this configuration is insurance against loss of signal should the phantom power fail. When phantom voltage is present, the battery is automatically switched from the circuit. Should phantom power fail, the phantom supply is automatically removed from the circuit and the battery activated. A shorted battery or a shorted phantom power supply (assuming the short is to ground and not across the output leads) will not affect the operation of the CO94 on the remaining power source.

In applications using a large number of CO94 microphones such as in board room installations, the CO94 can be powered by a positive (with respect to ground) dc voltage of 8 to 50 volts.
The CO94 employs a series regulating device that automatically adjusts the current flow from any power supply to the required 3.9 mA. Refer to Figure 4 for power supply circuit diagrams.

The CO94 does not have the limited dynamic range typical of electret lavaliers powered by low voltage batteries. A CO94 is typically 10 dB greater in sensitivity than conventional electret lavaliers and will accept 20 dB greater input SPL before overload. Due to its superior signal-to-noise ratio and headroom, the CO94 can be used in recording and sound reinforcement applications where other miniature tie-clamp electrets would fail. These would include, for example, stereo spaced omni recording, binaural recording, and close miking of instruments. The CO94 may also be employed in wall or floor-mounted recording, where it receives the advantages resulting from barrier reinforcement.

The CO94 is an excellent microphone for barrier recording. A fundamental requirement for a microphone, if it is to be used for barrier recording, is small size with respect to the wavelength of the highest frequency of interest. Another critical factor is sensitivity. In typical barrier recording situations the source-to-microphone distance is much greater than is typical of more conventional microphone techniques. The CO94, by virtue of its extremely high sensitivity, small size and uniform response, is ideally suited for use in barrier recording situations. See Figure 5.

An important feature of the CO94 is a buffered second-order bass cut-off filter. This filter cuts off energy below 80 Hz such as machinery rumble, wind noise, etc.

OPERATING INSTRUCTIONS

To prepare the CO94 for operation in the battery mode, slide the black cover forward and install a 9-volt battery in the exposed compartment. Slide the cover rearward until a slight click is felt. Plug the microphone element assembly into the power-supply/buffer assembly.

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1 Barrier recording refers to the technique of mounting a microphone close to a large barrier such as the floor, wall or ceiling so that the direct sound is reinforced by an in-phase reflected sound from the barrier.
Phantom Powered Operation
To prepare the C094 for phantom powered operation, plug the microphone element and output cables into the power-supply/buffer assembly. Slide the front panel switch of the power-supply/buffer assembly to the "ON" position. If the output cable is connected to equipment providing phantom power, the unit should operate properly. If proper operation does not occur, check the phantom power supply back to its source. Refer to Figure 4 for power supply circuit diagrams.

TECHNICAL INFORMATION
The C094 can be separated into two major assemblies: the microphone element assembly and the power-supply/buffer assembly. In a similar fashion the microphone element assembly can be divided into two subassemblies: the microphone capsule subassembly and the electronics and cable subassembly. The microphone capsule houses the omnidirectional electret condenser element. The capacitance of this element changes in response to sound pressure variations occurring at the diaphragm. These changes in capacitance are converted to a usable output voltage by the electronics subassembly. Electrical connection to the electronics subassembly is accomplished through a probe which extends from the electronics assembly into a recess in the back of the microphone capsule.

The microphone/electronics assembly is connected to the power-supply/buffer assembly via a TA-3M connector. As its name implies, the power-supply/buffer provides the electronics in the microphone unit with power and buffers the approximately 7,000-ohm microphone signal down to the 150-ohm impedance typical of a high-quality low-impedance microphone. There is a 12-dB-per-octave active filter in the buffer that provides a bass roll-off starting at 80 Hz. The C094 can be powered from virtually any source ranging from 8 V dc to 50 V dc through the use of a constant-current regulator that is part of the power supply circuitry (see Figure 3).

BATTERY REPLACEMENT GUIDE
Alkaline Mercury Carbon-Zinc

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WARRANTY (Limited)
Electro-Voice Professional Broadcast, Recording, and Sound Reinforcement Microphones are guaranteed unconditionally against malfunction from any cause for a period of two years from date of original purchase. Also, these microphones are guaranteed without time limit against malfunction in the acoustic system due to defects in workmanship and materials. (Any active electronics incorporated in a microphone is guaranteed for three years from date of original purchase against such malfunction.) If such malfunction occurs, microphone will be repaired or replaced (at our option) without charge for materials or labor if delivered prepaid to the proper Electro-Voice service facility. Unit will be returned prepaid. Warranty does not cover finish, appearance items, cables, cable connectors, or switches. Defect guarantee does not cover malfunction due to abuse or operation at other than specified conditions. Repair by other than Electro-Voice or its authorized service agencies will void this guarantee.

For repair information and service locations, please write: Service Department, Electro-Voice, Inc., 600 Cecil Street, Buchanan, Michigan 49107 (Phone 616/695-6831) or Electro-Voice West, 8234 Doe Ave., Visalia, CA 93277 (209/825-1330,-1).

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Specifications subject to change without notice.