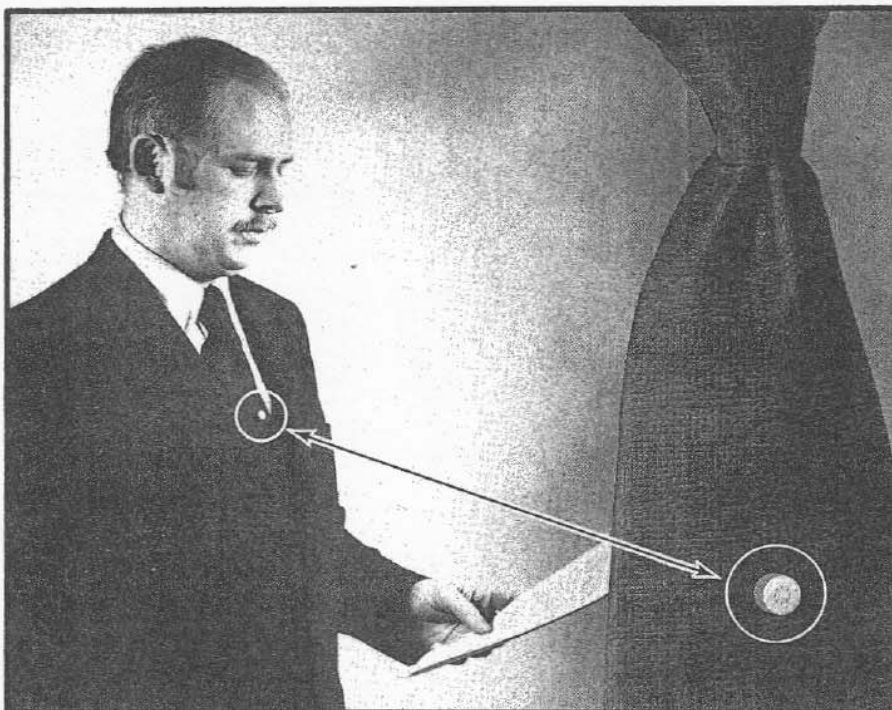




Electro-Voice®
a gulton company

Model C085A

Miniature Electret Condenser Omnidirectional Microphone

SPECIFICATIONS

Element:

Electret condenser

Frequency Response:

70 Hz — 16,000 Hz

Impedance:

150 ohm nominal (balanced)

Polar Pattern:

Omnidirectional

Output Level:

—56 dB

(0 dB = 1 mW/10 dynes/cm²)

EIA Sensitivity Rating:

—152 dB

Case Material:

Steel and high-impact plastic

Dimensions,

Microphone diameter:

10.3 mm (13/32")

Battery case diameter:

19 mm (3/4")

(See dimension drawing for all other dimensions)

Weight,

Tie tac:

2.8 g (.1 oz)

Electronics:

7.1 g (.25 oz)

Battery Housing:

94 g (3.3 oz)

Finish:

Fawn beige micomatte

Operating Voltage:

1.1 to 1.8 V

Battery Required:

See Figure 5

Battery Life:

Greater than 1000 hours

Current Required:

150 microamps

Accessories Furnished:

Windscreen

Belt clip

Tie clip adapter

DESCRIPTION AND APPLICATIONS

The C085A* is an omnidirectional electret condenser microphone.

Designed to be aesthetically pleasing, the C085A is ideal for on-camera use. The unique design of the C085A allows the microphone capsule to be attached to the performer's clothes in the manner of an ordinary tie tac. The backing or retention device for the microphone capsule is an electronics package that makes electrical as well as mechanical contact with the C085A. This approach allows the user to disguise the microphone as perhaps a tie tac, lapel pin, shirt button, broach, etc. Choice of placement and "disguise" is limited only by the user's imagination.

With the adaptation of an additional connector, the C085A is capable of being powered from certain wireless transmitters or tape recorders, thus eliminating the battery connector housing (see operating instructions).

TECHNICAL INFORMATION

The tie tac portion of the C085A contains the electret condenser generating element. The penetrating probe of the microphone is a coaxial stainless steel pin which is used to fasten the microphone to the electronics package. It also provides electrical contact in a manner very similar to that of a phone plug.

* U.S. Patent No. 3,864,531

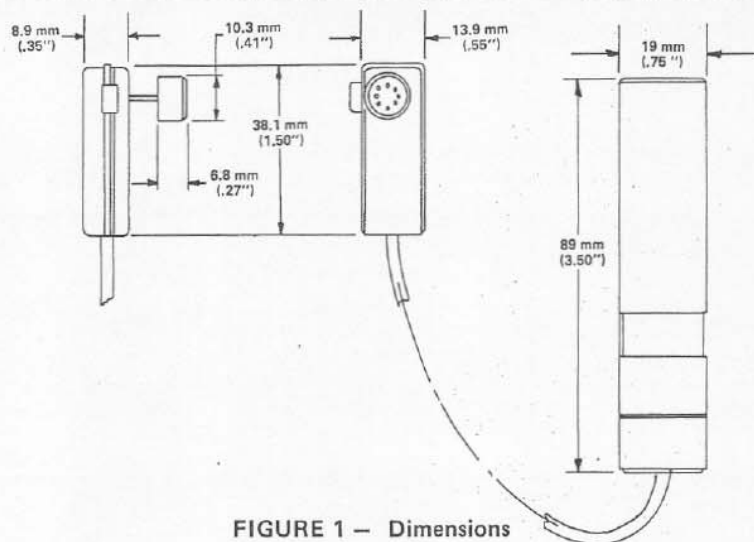


FIGURE 1 — Dimensions

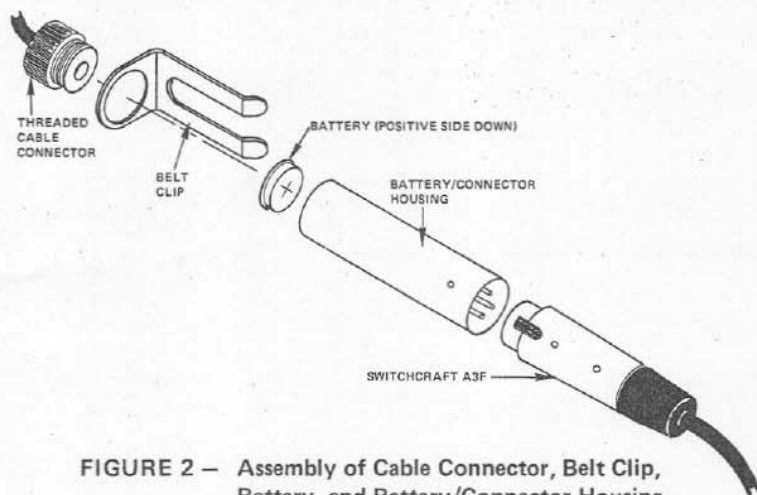


FIGURE 2 — Assembly of Cable Connector, Belt Clip, Battery, and Battery/Connector Housing

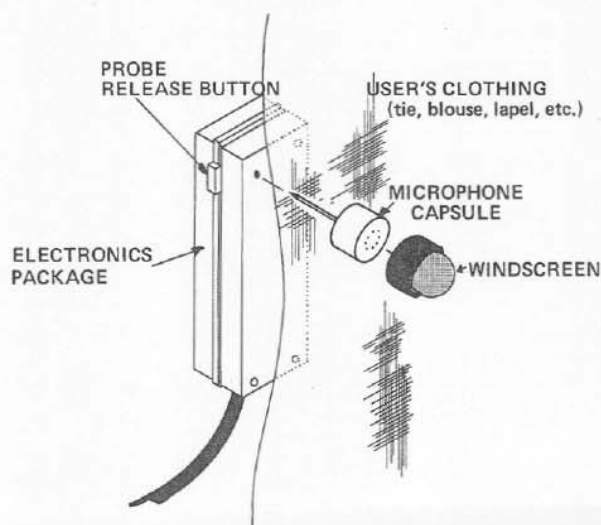


FIGURE 3 — Assembly of Microphone Capsule and Windscreen to Electronics Package

The electronics package can be broken down into three major sections. The top end contains the probe capturing device and maintains electrical contact. The middle section houses the impedance converter electronics, and the bottom section contains a special concave conical cable strain relief.

In order to prevent failure commonly associated with cables of small diameter, the need for a superior cable and strain relief design was recognized. Our experience has shown that a cable diameter of one-eighth of an inch is as small as prudence will permit. The cable employed on the CO85A is an adaptation from a military product which contains a nylon shock-cord for added strength. Typically, the weakest point of the cable is at its point of termination. The innovative use of a concave conical strain relief allows the mechanical integrity of the cable to be maintained.

OPERATING INSTRUCTIONS

To prepare the CO85A for use, install the 1.4 volt battery (positive—plus—side down) in the battery connector housing (Fig. 2). The threaded cable connector should be inserted through the hole in the belt clip bracket and threaded into the battery/connector housing. The belt clip is supplied to provide a strain relief at the junction of the CO85A and the microphone cable. It is recommended that the belt clip be used unless concealment is of prime concern.

The stainless steel probe of the microphone capsule should be inserted through the tie (lapel, blouse, etc.). This may require firm pressure, depending on the material, but don't worry about bending the probe. As with a normal tie tac, a twisting or rotary motion aids easy insertion. While pressing the probe release button (button on side of electronics package), insert the probe into the electronics package. Release the button and check that the probe has been properly retained by the electronics package. See Figure 3.

The battery/connector housing is designed to mate with a Switchcraft A3F (or equivalent) connector using two-conductor shielded cable for connection to the mixer input. The CO85A may be used with any balanced or unbalanced low-impedance input.

For those applications where the tie tac approach is not practical, an accessory clip adapter is supplied. Insert

the electronics package into the adapter clip as shown in Figure 4 and then connect the microphone capsule. For added convenience the cable for the electronics package can be routed between the electronics package and the clip as shown in Figure 4, thus allowing the unit to be clipped to a pocket or providing a more stable cable-dress when used on the tie.

When the CO85A is used outdoors, it is suggested that the supplemental wind-screen be used. Simply press the wind-screen over the microphone until it "snaps in" and is properly seated.

ELECTRET PRINCIPLE

The generating element of a condenser microphone is a capacitor, with one of its plates being the microphone's moving diaphragm; the other plate being the stationary backplate. When a charge is applied to the diaphragm, and changes in air pressure move the diaphragm, an output voltage is generated. All condenser microphones require a charge or difference of potential between diaphragm and backplate. The early condenser microphones achieve this by employing an external D.C. power source of approximately 200 volts. This system at best was awkward to use.

Today, condenser microphones operate from voltages of 48 volts and less. There are two methods of utilizing these lower voltages. One method increases the input voltage by employing some sophisticated electronic circuitry. Another method is to apply the 48 volts directly to the diaphragm, thus making the dynamic range and sensitivity of the microphones totally dependent upon the stability of the 48 volt supply. Still other methods have been devised.

In recent years, materials and techniques have been developed which allow placing a permanent charge on the condenser microphone capacitor element (diaphragm). This ability to permanently charge a material is known as the "electret phenomenon." With a permanent charge on the diaphragm, the only voltage now needed is to power the impedance converter. Because the output of any condenser microphone element is extremely high impedance, a means to convert the small fluctuations in capacitance into a usable output voltage is needed. The impedance converter provides this function and generally consists of a field effect transistor and its associated circuitry as shown in Figure 5.

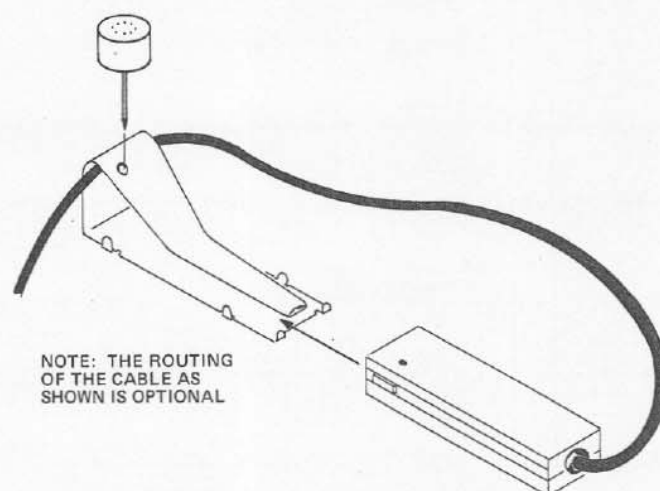
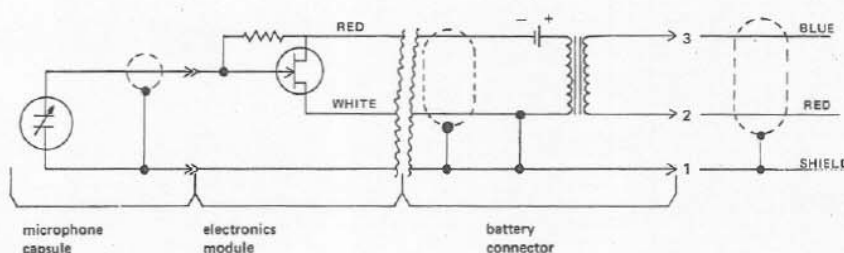


FIGURE 4 — Inserting Electronics Package into Adapter Clip



NOTE: Positive Voltage on pin 2 with positive pressure on diaphragm

FIGURE 5 — Schematic

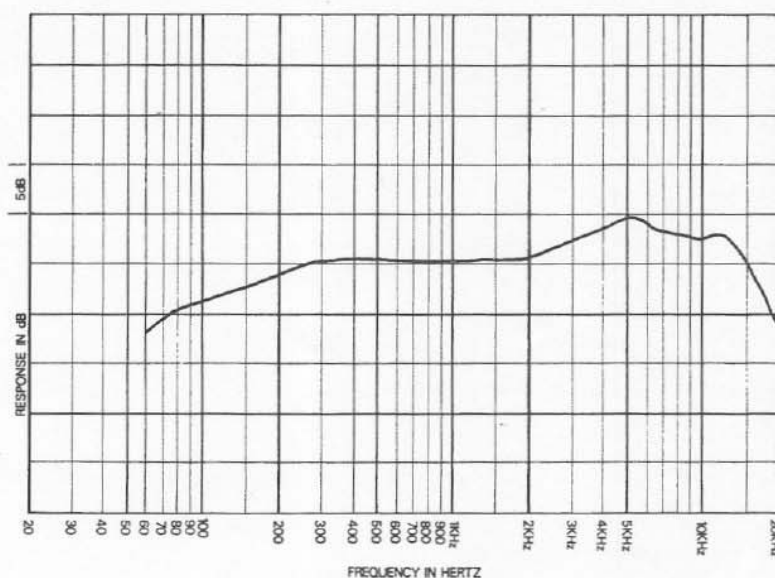


FIGURE 6 — Frequency Response

POWERING THE CO85A FROM A TAPE RECORDER OR WIRELESS TRANSMITTER

With specific modifications the CO85A can be powered from certain tape recorders and wireless transmitters, thereby reducing the overall bulk of the microphone package. Information concerning these modifications, specifically for Vega and Swintek wireless microphones and Nagra SN recorders, is available on request. For the Vega and Swintek wireless microphones request Technical Bulletin No. 17. For the Nagra SN recorder request Technical Bulletin No. 18. Write to: Electro-Voice, Inc., Department MR85, 600 Cecil St., Buchanan, Michigan, 49107.

BATTERY

Because the current drain on the battery is so small (approximately 150 micro-amps), the battery may be left on continuously with a useful life expectancy of over one thousand hours.

BATTERY REPLACEMENT GUIDE	
RAY-O-VAC	T625
MALLORY	RM-625
BURGESS	Hg-625
EVEREADY	E625
BRIGHT STAR	BPX-625

NOTE: A microphone with extremely low output level indicates that the battery needs replacing.

ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

The microphone shall be the Electro-Voice Model CO85A. The microphone shall be an omnidirectional electret condenser. The microphone shall be used in the manner of an ordinary tie-tac.

The microphone shall have a frequency response from 70 Hz to 16,000 Hz. The unit shall have a 150 ohm nominal impedance balanced output, with an output level of -56 dB (0 dB = 1 mW/10 dynes/cm²). The microphone capsule and battery/connector housing shall be made of steel and the electronics package shall be made of high impact plastic. The CO85A will be supplied with a belt clip, windscreen, and clip adapter.

The battery/connector housing shall contain a Switchcraft A3M connector. A 4.6 m (15 foot) 2-conductor shielded, brown, rubber-jacketed broadcast-type cable shall be provided.

WARRANTY (Limited) —

Electro-Voice Professional Electret Condenser Microphones are guaranteed unconditionally against malfunction from any cause for a period of two years from date of original purchase. Also, Electro-Voice Professional Electret Condenser Microphones are guaranteed for the life of the microphone against malfunction due to defects in the acoustic system, and for three years against defects in the active electronics. 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 and lifetime warranty 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 correct shipping address, instructions on return of Electro-Voice products for repair, and locations of authorized service agencies, please write: Service Department, Electro-Voice, Inc., 600 Cecil Street, Buchanan, Michigan 49107 (Phone 616/695-6831) or 8234 Doe Avenue, Visalia, California, 93277. (Phone: 209/625-1330-1).

Electro-Voice also maintains complete facilities for non-warranty service of E-V products.

Specifications subject to change without notice.