



**Electro-Voice®**  
a gulton company

## Model CO90/CO90E Miniature Electret Condenser Omnidirectional Microphone

### CO90 SPECIFICATIONS

**Element:**  
Electret condenser

**Frequency Response:**  
40 to 15,000 Hz

**Polar Pattern:**  
Omnidirectional

**Impedance:**  
150 ohms nominal (balanced)

**Output Level:**  
-57 dB  
(0 dB = 1 mW/10 dynes/cm<sup>2</sup>)

**EIA Sensitivity:**  
-148 dB

**Operating Voltage:**  
1.1 to 1.8 Vdc

**Current Required:**  
150 microamps

**Battery Required:**  
1.35 V battery (not included)  
(See Replacement Guide)

**Battery Life:**  
Greater than 1000 hours

**Case Material,**

- Mike capsule:  
Brass
- Electronic Housing  
Aluminum
- Battery Transformer Housing  
Steel

**Dimensions:**  
See Figure 1

**Cable Length:**  
(microphone to battery housing)  
1.83 m (6 feet)

**Finish:**  
Fawn beige micromatte

### Furnished Accessories:

- 385 windscreen
- Belt clip
- Storage pouch
- Tie clasp

### Optional Accessories:

- 512 connector adapter kit

### CO90E SPECIFICATIONS

**Element:**  
Electret condenser

**Frequency Response:**  
40 to 15,000 Hz

**Polar Pattern:**  
Omnidirectional

**Impedance:**  
Approximately 7,000 ohms

**Operating Voltage:**  
2 to 30 Volts

**Current Required:**  
150 microamps

**Cable Length:**  
1.83 meters (6 ft.)

**Dimensions:**  
See Figure 1

**Furnished Accessories:**  
385 windscreen  
Tie clasp

### DESCRIPTION & APPLICATIONS — CO90/CO90E

The CO90 is a miniature omnidirectional electret condenser microphone. Designed to be worn as a lavalier, the CO90 uses a tie clasp bar to attach the microphone to the talent's clothing. The CO90 is comprised of two separate assemblies, the microphone element and the battery/transformer

housing. The microphone element and battery/transformer housing are connected by a 1.83 meter (6 ft) length of a durable miniature cable. This cable contains two conductors and a shield and is designed to withstand normal abuse commonly encountered in professional use. In normal operation, the microphone element is attached to the talent utilizing the supplied tie clasp bar. The battery/transformer housing may be clipped to the talent's belt using the supplied belt clip. The small physical size of the CO90 is aesthetically pleasing for on-camera use.

The CO90 microphone requires one RM625 (or equivalent) battery for operation. The nominal output of the CO90 is equivalent to that of a standard low impedance dynamic microphone in both impedance and output level.

The CO90E is identical to the CO90 with the exception that it is not supplied with a battery/transformer housing or its related accessories. The CO90E is designed for adaptation to many special applications. One special application is the direct interface of the CO90E with a wireless transmitter. In this special adaptation, the CO90E derives its power required for the FET amplifier in the head element directly from the wireless transmitter. Another special application is the direct interface of the CO90E with a miniature Nagra SNN tape recorder. The special adaptations mentioned above eliminate

the need for the battery/transformer housing. The CO90E is for those customers who do not require the entire CO90 system. The CO90E is comprised of the microphone capsule or element with a 1.83 meter (6 ft) length of cable. A windscreen and tie clasp are also supplied.

#### OPERATING INSTRUCTIONS – CO90

To prepare the CO90 for use, install the 1.35 volt battery (positive "+" side down) in the battery/transformer housing (Figure 3). The threaded cable connector should be inserted through the hole in the belt clip bracket and threaded into the battery/transformer housing. The belt clip is supplied to provide a strain relief at the junction of the CO90 and the microphone cable. It is recommended that the belt clip be used unless concealment is a prime concern. The microphone itself should be inserted into its accessory tie clasp holder. It should be centered in the holder so that the spring-wire clamps the microphone at the junction of the

head capsule and its electronic package. The CO90 may be used with any balanced or unbalanced low impedance input.

#### IN CASE OF DIFFICULTY

If the microphone fails to function properly, check the battery voltage, and be sure battery is inserted properly into the battery/transformer housing. Also, be sure the microphone capsule is screwed down tight onto its electronics package.

#### TECHNICAL INFORMATION – CO90

The CO90 microphone can be broken down into three major subassemblies: the microphone capsule, the electronics/cable assembly, and the battery/transformer housing. 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 a recess in the back of the microphone capsule. The capsule is grounded to the electronics package by the threaded interface between the electronics and the microphone capsule. The electronics package houses an integrated circuit which is molded onto the miniature audio cable and its strain relief. This modular approach allows for ease of repair or replacement of damaged subassemblies and provides maximum reliability and durability. The integrated circuit contains a field effect transistor preamplifier.

The other end of the miniature audio cable is terminated in a threaded cable connector. This connector screws into the battery/transformer housing, retaining the battery and belt clip mechanically and electrically, and connecting the microphone electronics to the battery/transformer housing. The battery/transformer housing contains a

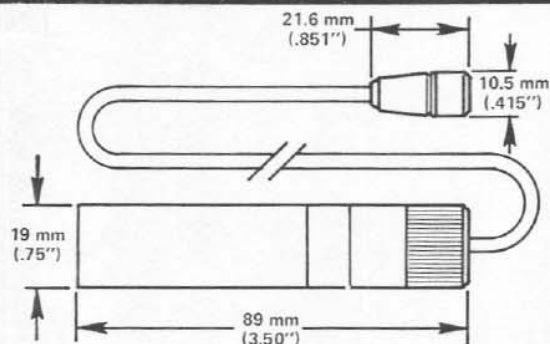


FIGURE 1 – Dimension

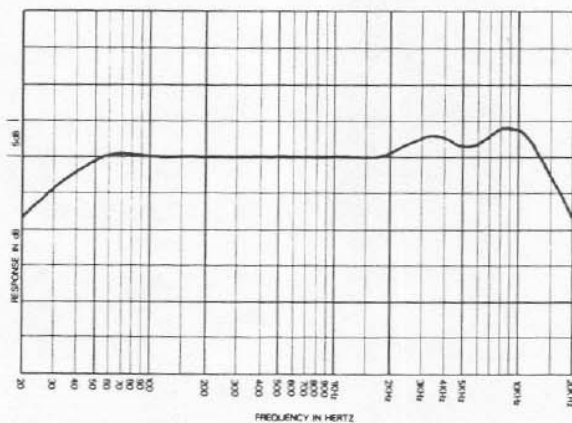


FIGURE 2 – Frequency Response

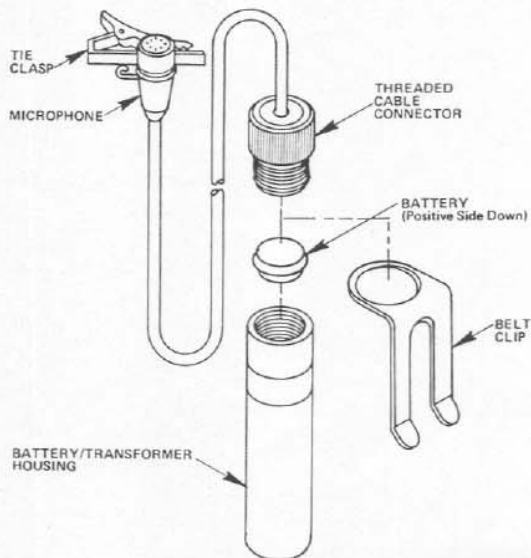


FIGURE 3 – Battery Transformer Housing/Head Assembly

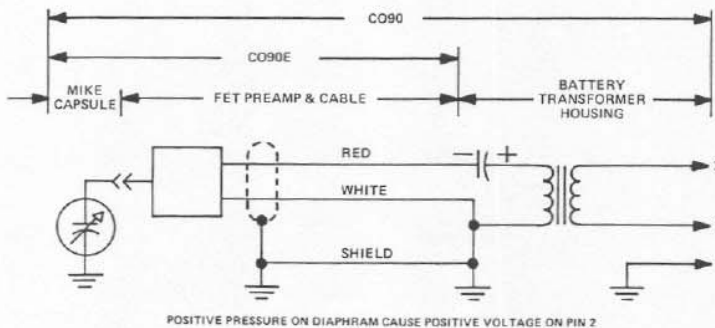
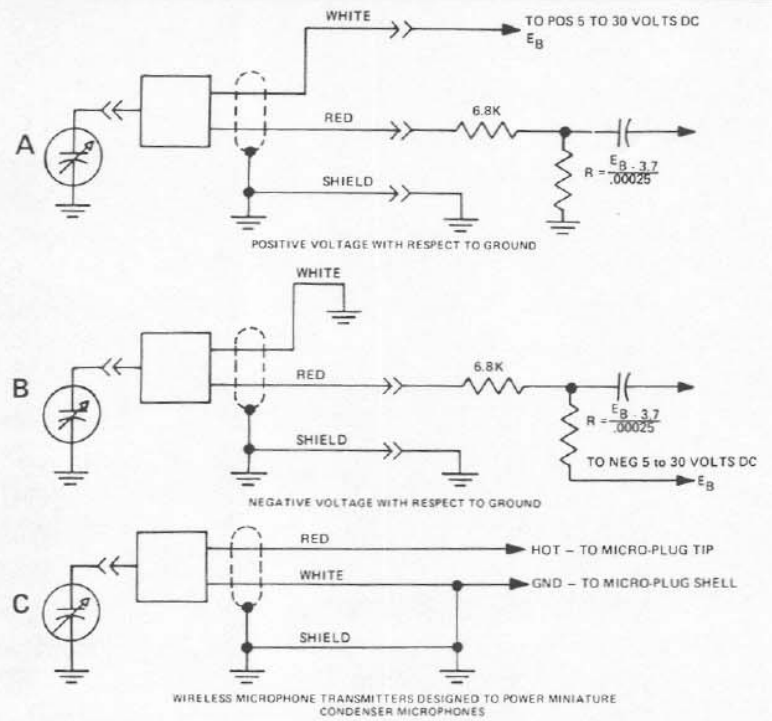


FIGURE 4 – Schematic

FIGURE 5 –  
CO90E Typical Wiring Diagrams



REPLACEMENT PARTS LIST

Item	Description	Part No.	Req'd
1	Windscreen	Model 385	1
2	Head Capsule	88803	1
3	Electronics & cable assembly	88802	1
4	Tie clasp	70316	1
5	Rear case	70304	1
6	Banding clamp	79916	1
7	Plastic insert	79604	2
8	Washer	38576	1
9	Steel Washer	38649	1
10	Rivet	20077	1
11	Set screw #2-56	62965	1
12	Steel shell	70307	1
13	Set screw #4-40	62929	1
14	Belt clip	70281	1
15	Battery/Transformer housing	88801	1

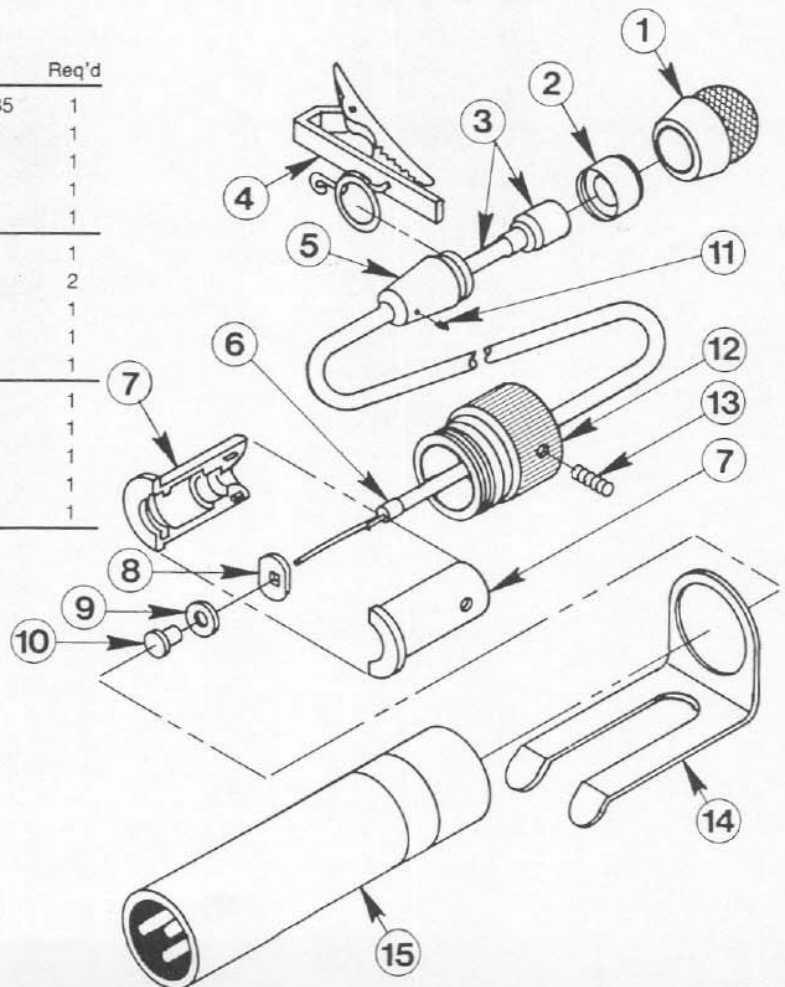


FIGURE 6 – Assembly Exploded View