

## RE90H RE90WH Condenser Cardioid Hanging Microphone

- **Non-reflecting black (RE90H) or low-gloss white (RE90WH) with matching cable.**
- **Shielded pre-amp is highly-resistant to electrical noise and radio frequency interference.**
- **25-ft. braided, shielded cable maintains microphone's position (not rotation)**
- **Cardioid polar pattern**
- **Three-pin male XLR-type output connector fits with female bulkhead XLR-type connector**

---

### Description and Application

---

The RE90H and RE90WH of the Architectural Microphone Series are back-electret condenser hanging microphones providing an extended, flat frequency response with a controlled cardioid polar pattern for high-quality sound reinforcement. The RE90H is specifically designed for live pickup of choirs, instrumental and vocal groups, and theater. The size and color of the transducer and cable allow the microphone to blend in with its surroundings.

The RE90H's low self-noise and high-output signal level combine to produce low-noise, sound-reinforcement and recording. Exceptionally high sensitivity, a uniform cardioid polar response, and smooth frequency response make the RE90H ideally suited for distant sound pick-up. The cardioid polar pattern is precisely controlled and is highly effective in suppressing feedback without coloration of sound. Power for the RE90H is obtained from any phantom source supplying 9 to 52 volts.

The RE90H is furnished with 25 feet of black (RE90H) or white (RE90WH) miniature braided shielded cable. The design of the cable ensures the microphone's horizontal

position will be held stable without the need for fish-line tethering.

The RE90H is easily aimed at the performance with the supplied steel wire hanger and holding nut. The wire hanger attached to the microphone element and cable can be bent to aim the microphone in the vertical plane. To position the microphone on the horizontal plane, loosen the holding nut on the back of the microphone and slightly twist the microphone on the wire holder (clockwise rotation rotates the RE90H to the left; counterclockwise rotation rotates the RE90H to the right). Secure this position by tightening the holding nut.

**Note:** For fixed installations, allow the microphone cable to hang for at least 24 hours so the cable can completely relax and establish a set. This allows the microphone to be accurately positioned over a choir, stage or orchestra.

---

### Application Notes

---

When hanging one or more microphones to provide coverage for a choir, instrumental or theater group, the best microphone position for optimum sound quality and feedback control depends on many factors—sound system characteristics, construction of the au-

ditorium or theater, and the size and nature of the performing group. Two general rules to observe for the best sound coverage are (1) microphone position and (2) the “3-to-1 rule.”

The first rule is to suspend the microphone approximately two to three feet in front of the first row of performers and two to three feet higher than the heads of the last row of performers. The microphones are usually aimed to point at the last row of performers (see Figure 3).

The second rule, the “3-to-1 rule,” should be applied when more than one microphone is required, and their outputs are combined (as with a mixer). Following the 3-to-1 rule avoids the deep voids and dips in frequency response that occur when two or more microphones “see” the same signal from slightly different distances. The 3-to-1 rule is as follows: when multiple microphones are used, place them at least three times as far apart as any one of them is from the nearest sound source. Figure 4 shows a proper application of the 3-to-1 rule.

The RE90H may also be used to provide coverage for live theater applications (Figure 5). Most of the action occurs at center stage, so the microphone should be positioned above

# RE90H/RE90WH Condenser Cardioid Hanging Microphone

and pointed to the center of the stage.

## Architectural & Engineering Specifications

The microphone shall be a back-electret condenser type with a frequency response of 75 Hz to 15 kHz. The microphone shall have a cardioid polar pattern with a rear response which is typically 15 dB below the front response at 1.0 kHz. The microphone shall have an output power level of -30.4 dB, where 0 dB = 1 milliwatt per pascal, and output shall not be appreciably affected by the following temperature and humidity extremes: -29° to 74°C (-20° to 165°F) when the relative humidity is 0-50%; -29° to 57°C (-20° to 135°F) when relative humidity is 0-95%. The microphone shall have a nominal, balanced output impedance of 200 ohms when connected to its electronics module. The microphone shall have a low-gloss black finish (RE90H) or a low-gloss white finish (RE90WH). The cable color shall match the transducer. The transducer shall have a wire hanger for directing the microphone. Dimensions: the transducer shall be 12.7 mm (0.4 in.) wide and 36.8 mm (1.4 in.) long; the cable shall be 7.6 m (25 ft) long and 2.6 mm (0.1 in.) in diameter. The electronics module shall be a metal cylinder 94 mm (3.7 in.) long and 19 mm (0.75 in.) in diameter. Termination to the electronics module shall be a 3-pin male XLR type connector. The Electro-Voice RE90H and RE90WH are specified.

## Warranty (Limited)

Electro-Voice products are guaranteed against malfunction due to defects in materials or workmanship for a specified period, as noted in the individual product-line statement(s) below, or in the individual prod-

uct data sheet or owner's manual, beginning with the date of original purchase. If such malfunction occurs during the specified period, the product will be repaired or replaced (at our option) without charge. The product will be returned to the customer prepaid.

**Exclusions and Limitations:** The Limited Warranty does not apply to: (a) exterior finish or appearance; (b) certain specific items described in the individual product-line statement(s) below, or in the individual product data sheet or owner's manual; (c) malfunction resulting from use or operation of the product other than as specified in the product data sheet or owner's manual; (d) malfunction resulting from misuse or abuse of the product; or (e) malfunction occurring at any time after repairs have been made to the product by anyone other than Electro-Voice Service or any of its authorized service representatives. **Obtaining Warranty**

**Service:** To obtain warranty service, a customer must deliver the product, prepaid, to Electro-Voice Service or any of its authorized service representatives together with proof of purchase of the product in the form of a bill of sale or receipted invoice. A list of authorized service representatives is available from Electro-Voice Service at 600 Cecil Street, Buchanan, MI 49107 (800/234/6831 or FAX 616/695/4743). **Incidental and Consequential Damages Excluded:** Product repair or replacement and return to the customer are the only remedies provided to the customer. Electro-Voice shall not be liable for any incidental or consequential damages including, without limitation, injury to persons or property or loss of use. Some states do not allow the exclusion or limitation of incidental or consequential damages so the above limitation or exclusion may not apply to you. **Other Rights:** This warranty

gives you specific legal rights, and you may also have other rights which vary from state to state.

**Electro-Voice Wired Microphones** are guaranteed against malfunction from any cause for two (2) years from the date of original purchase. In addition, the Limited Warranty for the acoustic system contained in these microphones shall apply for the life of the product, defined as a period of ten (10) years from the date that the manufacture of the specific microphone has been discontinued. Any and all active electronics incorporated in these microphones are guaranteed against malfunction due to defects in materials or workmanship for a period of three (3) years from the date of original purchase. The Limited Warranty does not extend to cables, cable connectors, or switches. Additional details are included in the Uniform Limited Warranty statement.

For warranty repair, service information, or a listing of the repair facilities nearest you, contact the service repair department at: 616/695-6831 or 800/685-2606.

**For technical assistance,** contact Technical Support at 800/234-6831 or 616/695-6831, M-F, 8:00 a.m. to 5:00 p.m. eastern standard time.

Specifications subject to change without notice.

# RE90H/RE90WH Condenser Cardioid Hanging Microphone

RE90H/RE90WH Condenser Cardioid Hanging Microphone

Figure 1—Frequency Response

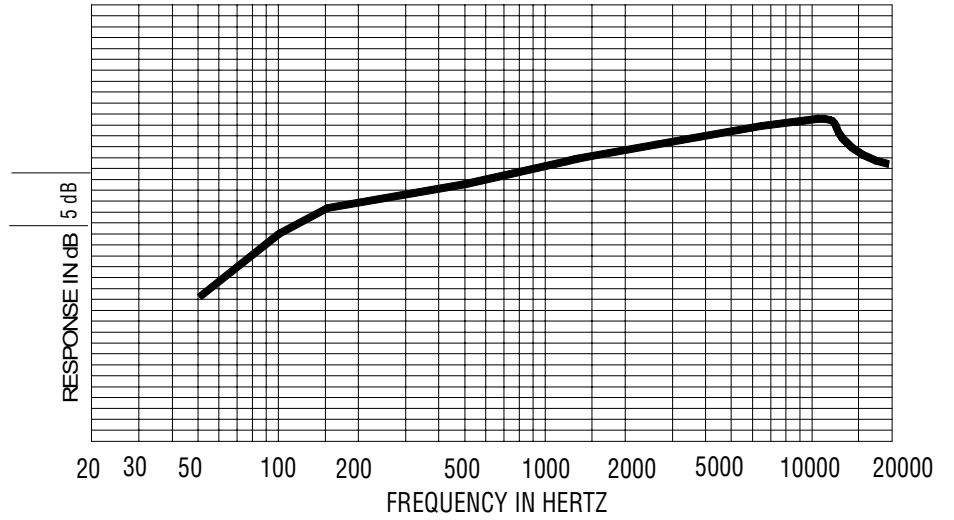
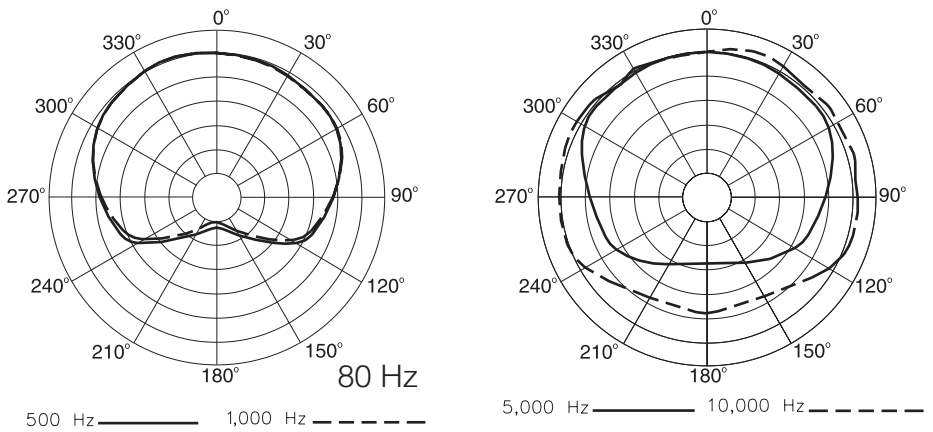
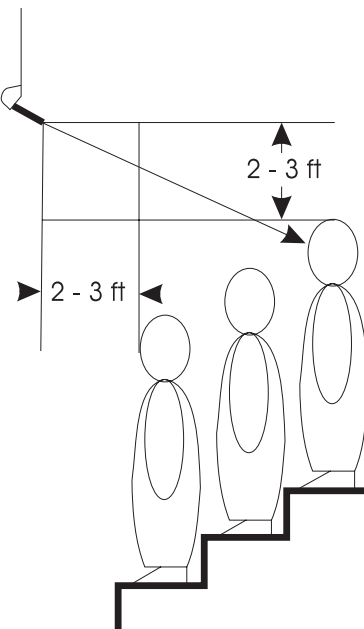


Figure 2—Polar Response



Scale: 5 dB per Division

Figure 3—Hanging Microphone Placement



# RE90H/RE90WH Condenser Cardioid Hanging Microphone

Figure 4—3-to-1 Rule

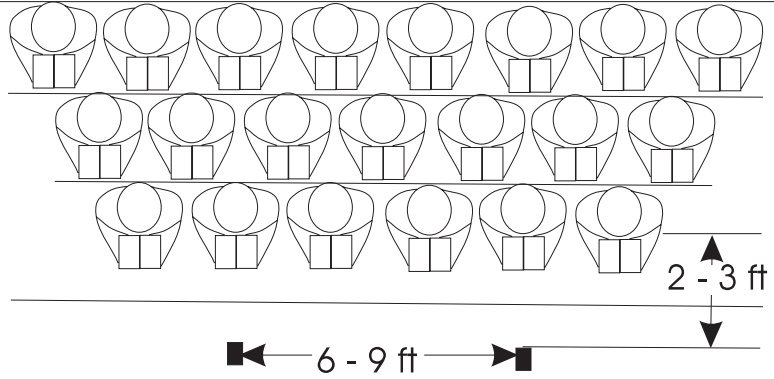
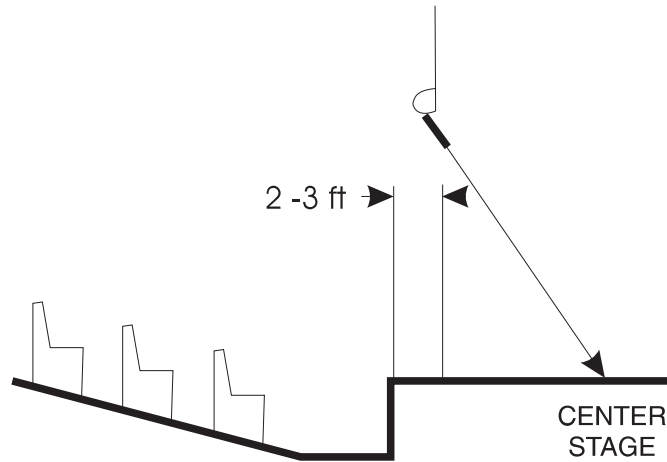


Figure 5—Live Theater Placement



RE90H/RE90WH Condenser Cardioid Hanging Microphone

## Specifications

### Generation Element:

Condenser, back electret

### Frequency Response (see Figure 1):

75 Hz to 15,000 Hz

### Polar Pattern:

Cardioid

### Sensitivity,

#### Open Circuit Voltage, 1 kHz:

27 mV/pascal

#### Power Level, 1 kHz (0 dB =

1 mW/pascal):

-30.4 dB

### Clipping Level (1% THD):

120 dB SPL

### Equivalent Noise:

25 dB SPL A weighted

### Dynamic Range:

95 dB

### Output Impedance, 1 kHz:

200 ohms

### Power Requirements:

9 to 52 V dc phantom supply

### Current Consumption:

2.0 mA

### Polarity:

Pin 2 positive, referenced to pin 3, with positive pressure on the diaphragm

### Color,

#### RE90H:

Low-gloss black

#### RE90WH:

Low-gloss white

### Environmental Conditions,

#### Relative Humidity 0-50%:

-29° to 74°C (-20° to 165°F)

#### Relative Humidity 0 to 95%:

-29° to 57°C (-20° to 135°F)

### Dimensions,

#### Transducer:

12.7 mm (0.4 in.) diameter

36.8 mm (1.45 in.) long

#### Microphone Cable:

7.6 m (25 ft) long

#### Electronics Module:

94 mm (3.7 in.) long

19 mm (0.75 in.) diameter

#### Net Weight:

157 grams (5.5 oz)

#### Shipping Weight:

324 grams (11.4 oz)

# Electro-Voice®

600 Cecil Street, Buchanan, MI 49107

800/234-6831, 616/695-6831, 616/695-1304 Fax