

# AEA R44

## OWNER'S MANUAL



THE CLASSIC RIBBON MICROPHONE

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# WELCOME

Congratulations on your purchase of the AEA R44 ribbon microphone and welcome to the AEA family!

Whether it be the smooth brass section of a Hollywood soundtrack, the velvety lushness of a jazz vocal, or the larger-than-life drum sound of a classic rock record - chances are that you will find a 44 ribbon mic was used on most of your favorite albums. It is one of the most iconic microphone designs in audio history. In studio use for 85 years, the 44 ribbon design by RCA is legendary.

"The RCA 44B was the first great music microphone," Les Paul once told AEA's Wes Dooley. "It sounds right on everything, every instrument and voice." RCA ceased production of the R44 in 1966. After their microphone division was closed in 1976, AEA began servicing ribbon microphones. By 1998, I decided to release our own version of this classic mic. The 44's recognizable sound produces thunderous lows due to the strong proximity effect, a full and rich mid-range, and a unique top-end taking the edge off of harsh instruments. This beautiful, natural-sounding microphone provides an unmatched authenticity of sonic reproduction, particularly when placed at a distance in a well-tuned room.

Your R44 microphone is 100 percent handcrafted in Pasadena, CA. AEA is a family-owned company with a small crew of skilled technicians - most of them also musicians. Proudly independent, we still manufacture all our ribbon microphones and preamps by hand from locally sourced parts.

We hope the R44 will help you capture many magical performances that touch the heart. Please read this manual thoroughly to make sure that you get the best sound and longevity from your new microphone. We invite you to become part of the AEA community by sharing your experiences with the R44 via e-mail, phone or our social media channels.

*Wes Dooley*  
*Founder of AEA*

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# INTRODUCTION

The R44 is a passive, side address ribbon microphone with a bidirectional (or figure-of-8) pickup pattern. It was designed to be a part-for-part replica of the RCA R44 series, with the exception of using neodymium rather than alnico magnets. Everything else, including the 1.8 micron thick ribbon tuned to 16.5 Hz and the 1:28 transformer honors the legacy of this microphone. The versatile R44 gives modern engineers access to the vintage ribbon sound that RCA pioneered. With its healthy low end, smooth and articulate midrange, detailed high end, and lack of uncomfortable resonances, the R44 is perfect for a variety of applications. Common applications are vocals, strings, woodwinds, brass, guitars, and even far-field drum recording, but the R44's smooth musicality is perfect for nearly any recording situation. The microphone's responsiveness to proximity effect allows the engineer to "fix it in the mic" by moving the microphone forward or backward to create the ideal low end response. Whether used on vocals or instruments, the R44's performance is warm, intimate, and accurate to the performance.

## WARRANTY

Your R44 comes with a one-year limited warranty on parts and labor, shipping not included. **Registering your product with AEA will extend the warranty to a full three years.**

Scan the QR code or visit our website to register.



## SUPPORT

If you encounter any problems with your R44 microphone or have additional questions regarding specific applications, please contact our customer support team at [orders@ribbonmics.com](mailto:orders@ribbonmics.com) for the quickest response.

To contact us by phone, please call +1-626-798-9128 from 9:00 a.m.- 5:00 p.m. PST Monday-Friday. AEA's repair center is located at 1029 N. Allen Ave, Pasadena, CA 91104, U.S.A.

# GENERAL GUIDELINES

Your microphone is a valuable and important investment. Like most recording equipment and musical instruments, it requires common sense and basic care to keep it functioning properly. Given care, your new microphone will perform dependably for decades.

## PHANTOM POWER

Phantom power is not required or recommended for the passive R44. With a correctly wired cable and a properly working phantom power supply, there is actually little danger of damaging the microphone with phantom power. However, passive ribbons such as the R44 can be damaged if ground (Pin 1) is accidentally shorted, miswired, or hot patched in a patch bay to (Pin 2) or (Pin 3). Using phantom power with a faulty or miswired cable or a defective supply can severely stretch or break a ribbon.

Since passive ribbon microphones and other transformer-coupled microphones can be particularly vulnerable to phantom-power, it is recommended to make disengaging phantom-power before plugging and unplugging (the microphone) a habit.

## MICROPHONE STORAGE

**Keep the microphone covered when it is not in use.** This will reduce the damage that may result from a gust of air. Place the supplied protective bag over the microphone when it is not in use. For long-term storage, keep the microphone in its protective case. An unprotected ribbon microphone can attract minute iron particles, sometimes known as "tramp iron". If allowed, tramp iron can penetrate the screen of a ribbon mic, sufficiently build up in the magnetic gap and rub against the ribbon, causing distortion, electrical shorts or tearing of the ribbon.

## AIR TURBULENCE

**Avoid exposing the microphone to strong air turbulence.** Ribbon microphones can withstand very high SPL (Sound Pressure Level), but can be damaged by a strong gust of air or high levels of very low frequency sound waves (from a kick drum or bass cabinet). This can stretch the ribbon, reducing overall output, especially at high frequencies.

Take precautions when recording any source that moves air. To avoid damage, use "The Hand Test": put the back of your hand where the mic will be positioned; if you can feel the moving air, place a pop-filter between the microphone and the source or simply pull the mic farther back. When recording kick drums or bass guitar cabinets, angle the microphone so that no air blasts the microphone directly on-axis from the front or back.

Never blow directly into any microphone to test it. Not only does this force moisture and dirt into the microphone, but strong air movement can stretch the ribbon. While the ribbon may not break, it nonetheless could significantly degrade the microphone's performance. The ribbon in your R44 is protected from plosive and direct wind blasts by both the diamond-shaped grille and its acoustical fabric, as well as perforated metal and fabric blast screens internally on each side of the ribbon. This design provides good wind and breath blast protection, plus good high-end response.

## STRAY MAGNETIC FIELDS

Ribbon microphones are fundamentally prone to picking up strong external magnetic fields generated by light dimmers or nearby power transformers. Though AEA designers paid much attention to suppressing such sensitivity, it is still possible that you might encounter this problem. If you should pick up a hum, try rotating or moving the microphone to find a spot where the hum disappears, and try eliminating potential sources of stray magnetic fields. Rotate or move the mic to find the point of peak interference.

The high-performance magnets used in AEA microphones are incredibly strong, and a significant amount of stray magnetic field lines surround the microphone. To prevent data loss caused by magnetic fields, avoid placing the microphone in close proximity to hard drives, credit cards, analog tape, or any other magnetically sensitive items.

## MICROPHONE POSITIONING

Always use a sturdy microphone stand with the R44. Weighing in at over 8 pounds and more than 13 inches long, the R44 requires mounting on a strong, robust microphone stand with a heavy base or tripod. Large studio-booms with an appropriate counter-weight are recommended to prevent your R44 from tipping-over and crashing, causing injury to itself, a musician, or a valuable musical instrument.

The integrated cushion mount was designed to keep structure-borne noise transmitted through the microphone stand and the cable away from the low-tuned ribbon transducer. For the shock mount to function as intended, it is important to vertically position the cushion mount off of the mic stand and to rotate the microphone within the yoke, as opposed to rotating the entire mic on the stand. This requires the use of a swivel mount or Posi-Lock when using a boom arm for positioning the microphone in a vertical configuration. Having the cushion mount reaching out horizontally on a boom will cause inferior vibration isolation and can also distort the cushion mount as time goes by.

# APPLICATIONS ADVICE

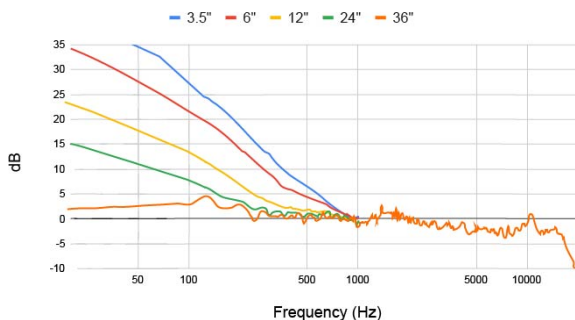
We actively encourage users to visit [AEAribbonmics.com](https://www.AEAribbonmics.com) to access our comprehensive collection of in-depth articles and tutorials featuring the R44, along with a library of audio and video demonstrations of the R44 in action.

If you are experiencing problems with your microphone, please visit the following troubleshooting section of our website:

[AEAribbonmics.com/support/troubleshooting-aea-products/](https://www.AEAribbonmics.com/support/troubleshooting-aea-products/)

## PROXIMITY EFFECT

Proximity Effect



(graph is a visualization, not a measurement)

Proximity effect, a characteristic of all directional microphones, is a rise in low-frequency response at closer working distances. This can be used to superb effect, particularly with deeper vocals to enhance richness and depth. A potential trade-off is reduced articulation resulting from the masking effect on the treble due to "excessive" bass boost.



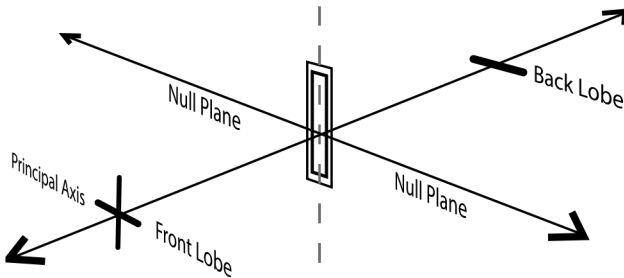
## HOW TO MINIMIZE BLEED

A significant and ever-present challenge in contemporary studio recording is minimizing leakage from nearby instruments into the various microphones. The deep nulls of ribbon microphones provide good rejection of unwanted sounds, which can be beneficial in sound reinforcement situations where feedback is always a threat.

While gobo isolation panels can be effective in isolating performers from each other, they introduce their own set of problems - including reflections close to the performers and/or microphones that result in comb-filter distortions. Because gobos usually are bulky and occupy valuable floor space, they also inhibit the ability of the musicians to hear and see each other easily. Such a setup requires complex and often cumbersome headphone monitor mixes for the musicians.

## A FIGURE-OF-8 MICROPHONE

Figure-of-8 microphones are constructed with positive polarity on the front and negative polarity on the back. Positive pressure on the front side of the ribbon produces a positive voltage on (Pin-2), with respect to (Pin-3) on the output connector.



# R44 SERIES VARIANTS

Our R44 Series microphones all share the authentic sound, feel and look of the original RCA 44. With careful technical modifications, we've created several variations to accommodate modern applications and budgets.

## R44C - THE ORIGINAL

The R44C is an exact replica of the RCA 44 born from years of experience with RCA repairs. All components are built to RCA specifications and the sonic quality is entirely true to the original. To record with an AEA R44C is to participate in the legacy of the most iconic ribbon mic in music history.



## R44CE - COST EFFECTIVE

To make the iconic sound of the R44C more affordable, AEA incorporated cost-effective exterior components that don't compromise build quality or durability. It delivers precisely the same sound as the R44C.



## R44CX - HIGH OUTPUT

AEA developed the X-motor as a means of increasing the output of the R44C without active electronics. It comes equipped with a modified R44 transducer that includes two additional magnets, providing an extra 6db of output. It is visually distinguished from the R44C by a red logo badge on the transformer case.

## R44CXE - COST EFFECTIVE

This variation of the R44 incorporates the cost-effective exterior components of the R44CE with the addition of the X-Motor for an additional 6dB of output. It is visually distinguished from the R44CE by a red logo badge on the transformer case.



# SPECIFICATIONS

## R44 Series

Operating Principle:	Pressure gradient transducer
Directional Pattern:	Bidirectional
Frequency Range:	<20 Hz to >20 kHz
Maximum SPL:	165+ dB SPL (1% third harmonic > 1 kHz)
Sensitivity R44C/CE:	2.25 mV/Pa (-53 dBV) into loaded circuit
Sensitivity R44CX/CXE:	4.47 mV/Pa (-47 dBV) into loaded circuit
Output Impedance:	270 Ohms Broadband
Rec Load Impedance:	1.2 Ohms or greater
Phantom Power:	Not required or recommended
Polarity:	Pin 2 high for positive pressure on front of mic

## Off-Axis Response

Horizontal:	Up to 90 dB rejection at right angles to the front and back axis
Vertical:	Level changes with angle of incidence, but frequency response is consistent

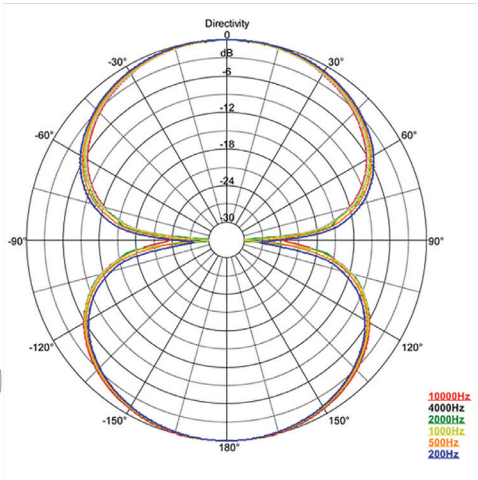
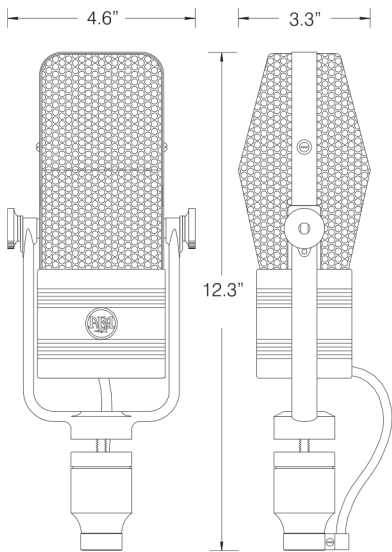
## Transducer Element

Material:	Pure aluminum corrugated ribbon
Thickness:	1.8 $\mu$ m
Width:	0.185 in (4.7 mm)
Length:	2.35 in (59.7 mm)

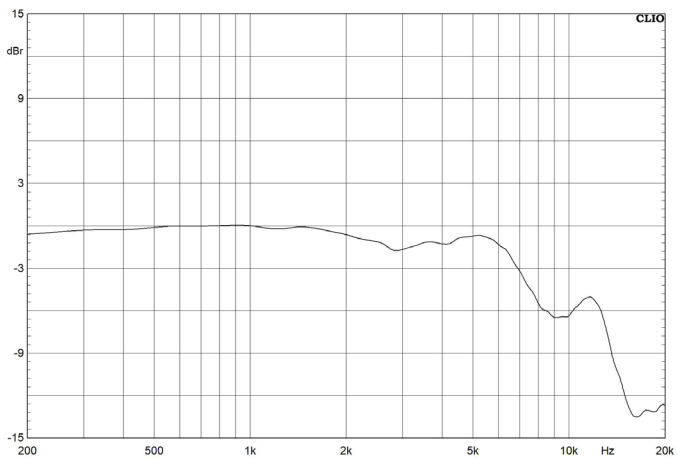
## Microphone Dimensions

Height:	12.25 in (31.1 cm)
Width:	4.62 in (11.7 cm)
Depth:	3.25 in (8.3 cm)
Weight with cable:	7.9 lb (3.43 kg)
Connector:	XLR-3M wired to a 10' (3 m) captive cable

# DIMENSIONS & POLAR PATTERN



# FREQUENCY RESPONSE



- Data below 200 Hz omitted due to measuring room restrictions
- 0 dBr is equivalent to 2.5 mV/Pa (-52 dBr) for R44C/CE
- 0 dBr is equivalent to 4.47 mV/Pa (-47 dBr) for R44CX/CXE
- Normalized to 0 dB at 1kHz. 1/3 octave smoothing



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