

AEA R84 SERIES

OWNER'S MANUAL



CLASSIC RIBBON MIC INSPIRED BY THE R44

WELCOME

Congratulations on your purchase of an AEA R84 series microphone. R84 series mics are flexible and practical in a myriad of recording settings. Developed to have a classic sound from the same family as the R44, R84 series microphones deliver exceptional headroom while maintaining an intimate performance quality with smooth highs and extended lows. These aspects, combined with the milder proximity effect, make R84 series mics incredibly well suited for both close-up and ambient mic applications. It's just as versatile as an R44, flattering voice, strings, brass and drums alike. Protect it from puffs of air, phantom power, and tramp iron, and it is nearly invulnerable. Treat it well, and it will last decades.

Your R84 series microphone is 100% handcrafted in Pasadena, CA. AEA is a family owned company with a small crew of skilled technicians - most of them being musicians themselves. Proudly independent, we still manufacture all our ribbon microphones and preamps by hand from locally sourced parts.

We hope your microphone will capture many magical performances that touch the heart. This manual will help ensure that you get the best sound and longevity from your new microphone. Please become part of the AEA community by sharing your experiences via e-mail, phone or social media.

Wes Dooley
President of AEA

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INTRODUCTION

The R84 and the R84A are pill-shaped, side-address, ribbon microphones with a bidirectional pickup pattern. They are assembled with the same Big Ribbon™, tuning (16.5 Hz) as the AEA/RCA R44 and shares many of the unique sound characteristics with its historic predecessor. Designed to accommodate distant and medium miking duties, they exhibit a flat frequency response when placed 3 feet (1 meter) away from the source. As a result, the mic performs well on a variety of recording applications including vocals, brass, strings, woodwinds, guitars, and drums. R84 series microphones continue to gain followers with their natural sound, articulate midrange and forgiving nature. Whether used on vocals or instruments, their performance is intimate, warm and detailed, yet never harsh.

WARRANTY

Your R84 series mic 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.**

Register your microphone at [AEAribbonmics.com](https://www.aearibbonmics.com).

SUPPORT

If you should encounter any problems with your microphone or have questions regarding using your R84 series mic in specific application, please contact our customer support team at support@ribbonmics.com.

To talk to a live human being, call +1 (800) 798-9127, between 9:00 A.M.- 5:00 P.M. PT Monday through 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 any piece of recording equipment or musical instrument, it requires common sense and good basic care to keep it working properly. Given simple, basic care, your new microphone will perform admirably for decades.

PHANTOM POWER

R84 Passive Microphone

Phantom power is not required or recommended for the passive R84. We recommend avoiding the use of phantom power with your R84 as a general rule. With a correctly wired cable and a properly working phantom power supply, there is actually little danger of damaging an R84 microphone with phantom power. However, passive ribbons such as the R84 will get hurt if ground Pin 1 is accidentally shorted, miswired, or hot patched in a patch bay to Pin 2 or 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 or other transformer-coupled microphones are particularly sensitive to phantom-power, it is recommended to make disengaging phantom-power before plugging and unplugging a habit.

R84A Phantom-Powered Microphone

The phantom current draw for active AEA ribbon mics is 7 milliamps. IEC specifies P48 power which should be able to deliver 10 milliamps per input. Some USB and battery-powered audio interfaces will not deliver this. Please check the current values available on your unit to ensure the best performance.

Although the R84A needs a phantom power source to operate, you should still make sure that phantom power is turned off before plugging and unplugging the microphone. The loud pops that occur when the microphone is plugged in with phantom power engaged can damage speakers, headphones, and ears.

MICROPHONE STORAGE

Keep the microphone covered when it is not in use. Keeping the microphone covered when it is not in use will reduce the possibility of damage that might result from a sudden gust of air coming from air-conditioning or an open door or window. Place the supplied protective bag over the microphone when it is not in use. For long term storage, place the microphone in its protective case. Minute iron particles, sometimes known as “tramp iron,” are common within our environment. AEA ribbon microphones contain powerful magnets that produce strong magnetic fields. These fields can attract any ferric metal near the microphone that, if they are small enough, can penetrate the outer screening and work their way inside the microphone. Over time, this “tramp iron” can build up sufficiently in the magnetic gap to rub against the ribbon causing distortion, electrical shorts or tearing of the ribbon. The best prevention is to keep the microphone covered with the supplied plastic bag when it is not in use.

AIR TURBULENCE

Never expose the microphone to strong air turbulence. Ribbon microphones can withstand very high SPL (Sound Pressure Level) without difficulty, but can be damaged easily by a sudden, strong gust of air or high levels of very low frequency sound waves (like from a kick drum or bass cabinet). This can stretch the ribbon, causing the microphone to start sounding flabby.

Sources that may produce strong blast of air, such as the bass port on an electric guitar or bass amp, a guitar being plugged (or unplugged) while the amp level is turned fully up, an on-axis kick-drum hole (particularly with a port on the head), are potentially damaging.

To avoid possible damage, follow this simple procedure when positioning the microphone called “The Hand Test”: put the back of your hand where the mic will be; if you can feel the motion of air on your hand, place a pop-filter between the microphone and the source of the wind gusts or simply pull the mic further back. When recording kick drums or bass guitar cabinets, angle the microphone to make sure that no wind blasts hit 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, strong air movement also can stretch the ribbon and while it may not break, it nonetheless could significantly degrade the microphone's performance. The ribbon in the R84 is protected by multi-layered screens and grille cloths to provide superior wind protection. Nonetheless, using it outdoors requires special care to avoid wind which can damage the ribbon. Indoors, however, it is also important to avoid serious air movement from stage curtains, open windows, doors, or air-conditioning systems.

MAGNETIC STRAY FIELDS

Ribbon microphones are fundamentally prone to picking up strong external magnetic fields caused by light dimmers or nearby power transformers. Guitar players will know this phenomenon from single-coil pickups. Even though much attention was paid to suppressing such sensitivity to external magnetic fields in the design of your microphone, 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. You can use the microphone to find where hum is originating. Rotate the mic for maximum interference and move it back and forth to sense its direction.

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

MICROPHONE POSITIONING

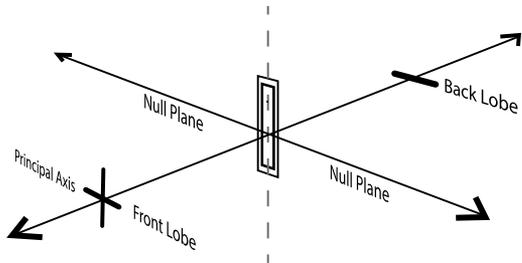
Always use a sturdy microphone stand. While the R84 was designed to work well with all standard microphone stands, a high-quality boom stand will make your life a little bit easier. Mounting the microphone on a strong, sturdy microphone stand with a heavy base (or tripod) is essential. If you are using a boom, make sure that it is properly balanced and that the tripod legs are positioned appropriately to prevent tipping.

APPLICATIONS ADVICE

We actively encourage users to visit AEAribbonmics.com to access our comprehensive collection of in-depth articles and tutorials featuring the R84 series microphone, along with a library of audio and video demonstrations of the R84 series in action.

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.



The sound of your R84 series microphone is slightly different between the front and the back – subtle, but sufficient to offer two “flavors.” In addition to polarity, this is the result of using two wraps of grille cloth on the back and only one on the front. When using the rear lobe, remember to invert the polarity on your preamp or DAW. This ensures your recordings with the back lobe will be in-phase with other microphones.

HOW TO MINIMIZE BLEED

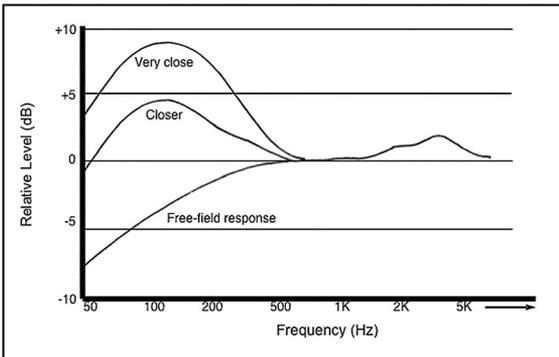
A significant and ever-present challenge in contemporary studio recording is minimizing “bleed” (also called “leakage” or “crosstalk”) from nearby instruments into the various microphones. The deep nulls of bidirectional ribbon microphones provide good rejection of unwanted sounds, which also can be beneficial in sound reinforcement situations where feedback is always a threat. While gobos can be effective in isolating performers from each

other, they introduce their own set of problems - not the least of which are reflections in close proximity to the performers and/or microphones that result in comb-filter distortions. Since gobos usually are bulky, 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.

Since the R84 is bidirectional, it exhibits nulls at right angles to the principal axis. These nulls produce a "plane of rejection" around the sides, top and bottom of the mic that can be used effectively to reduce leakage. Simply arrange the musicians so that nearby instruments are placed in the "null" of their neighbor's microphone, and vice versa. Although this does not entirely eliminate the need for gobos, it can significantly reduce their number.

Keep in mind that a certain degree of bleed is not necessarily bad. For some styles and genres, it can, in fact, be beneficial to embrace a little bit of bleed in order to create cohesive and natural sounding recordings. The important thing to listen for is whether or not other instruments that bleed into a specific instrument microphone still sound natural. You will generally find that well-designed ribbon microphones like the R84 capture a natural off-axis sound, which means that bleed from other instruments can contribute to the overall sound in a pleasing way.

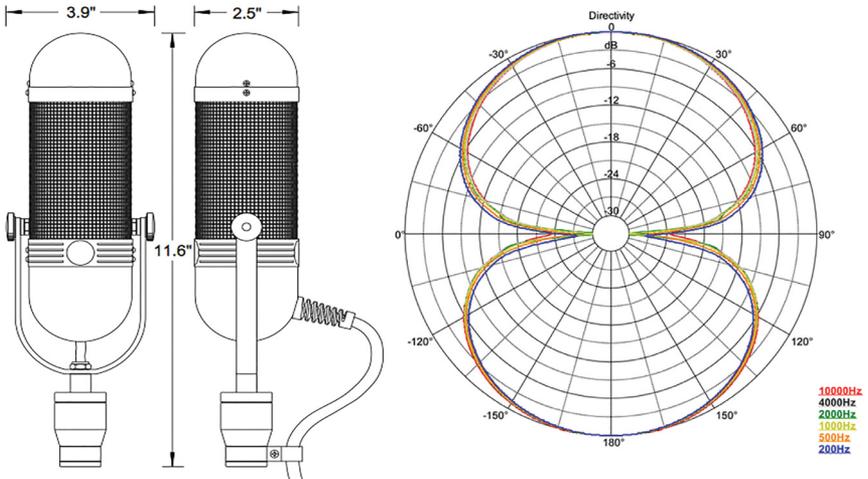
PROXIMITY EFFECT



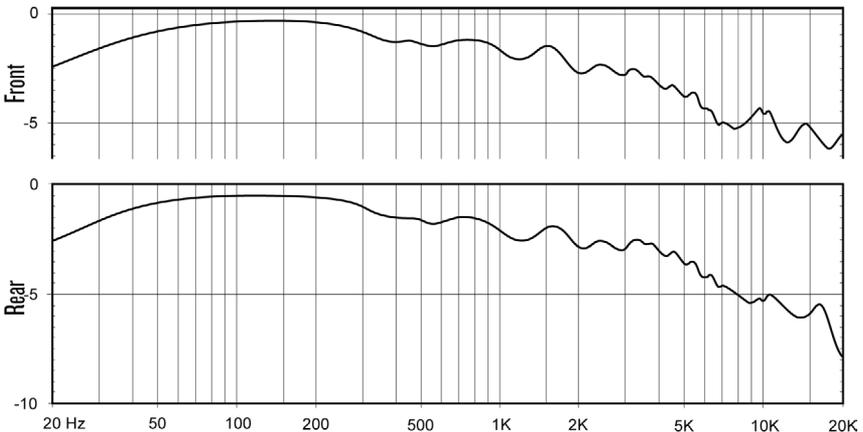
Proximity effect is a characteristic of all directional microphones; it is a rise in low-frequency response that increases at closer working distances. While this can be used to good effect, particularly with male voices to give them

an enhanced richness and depth, the potential trade-off is reduced articulation or clarity that can result from the masking effect on the treble due to "excessive" bass boost.

The R44's proximity effect begins at six feet (1.8 M) and can become huge. The RCA 44 was developed when studios were larger and mics were rarely used close up. Compared to the R44, the R84 has a more moderate proximity effect. Designed to accommodate both distant and medium miking duties, it exhibits a flat frequency response when placed 3 feet (1 meter) away from the source.



FREQUENCY RESPONSE



R84 frequency response curves: Upper curve is front, Lower curve is rear.
 0 dB = -55dBV referenced to one Pascal (94 dV SPL.)

SPECIFICATIONS

Operating Principle:	Pressure gradient transducer
Directional Pattern:	Bidirectional
Frequency Range:	<20 Hz to >20 kHz
Polarity:	Pin 2 high for positive pressure on front of microphone
Polar Response:	Native bidirectional, figure-of-8 pattern
Horizontal:	Up to 90 dB rejection at right angles to the front/back axis.
Vertical:	Level changes with angle of incidence, but frequency response is consistent.
Transducer Element Material:	Pure aluminum corrugated ribbon
Thickness:	1.8 μm
Width:	0.185 in (4.7 mm)
Length:	2.35 in (59.7 mm)
Microphone Dimensions:	
Height:	11.6 in (29.5 cm)
Width:	3.9 in (9.9 cm)
Depth:	2.5 in (6.4 cm)
Weight with cable:	3 lb (1.36 kg)
Shipping Weight:	4 lb (1.8 kg)
Connector:	XLR-3M

R84 Passive Microphone

Maximum SPL:	165 + dB SPL (1% third harmonic > 1 kHz)
Sensitivity:	2.5 mV/Pa (-52 dBv/Pa) into unloaded circuit
Output Impedance:	
Recommended Load Impedance:	270 Ω nominal 1.2K Ω or greater
Phantom Power:	Not required or recommended

R84A Phantom-Powered Microphone

Maximum SPL:	141 + dB SPL (1% third harmonic > 1 kHz)
Sensitivity:	6.3 mV/Pa (-44 dBv/Pa) into unloaded circuit
Output Impedance:	92 Ω broadband
Recommended Load Impedance:	1.0K Ω or greater
Phantom Power:	P48 phantom power, 7 mA

Accessories Included

Softcase, user manual, captive 10" (3 meter) output cable with XLR-3M connector.

Note: The phantom-powered R84A was previously known as the A840.



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