



## AEA R92 Ribbon Microphone User's Manual

The R92 LRG™ Series Ribbon Microphone is designed for close micing of amplifiers, instruments and vocals. The mic is optimized for micing distances of 6-12 inches, and has an extended high frequency response and reduced bass proximity effect compared to other AEA models.

Your R92 will sound great on guitar amps, acoustic guitar, as a room mic for drums, and in many creative mic-ing applications we haven't even thought of yet. We want you to make recordings with your R92 as quickly as possible, but please read through this manual carefully. Below you will find important information which could help you avoid damage to your new microphone, as well as help you quickly get great sounding recordings with the R92.

### A Few Things to Remember...

#### 1) Keep it covered when not in use.

Since the R92 contains powerful magnets, it is possible for tiny pieces of metal to be drawn into the ribbon gap. The microphone's protective cloth surround protects the transducer from this so-called "tramp iron", but it is wise to safeguard your investment by keeping the mic covered with its supplied bag when not in use. Avoid leaving the microphone sitting out on a table or workbench. In our experience this is a likely place where tramp iron may be attracted to the microphone.

#### 2) Store the mic upright.

Our ribbon transducers are tensioned very lightly for excellent transient response. To help ensure a long life and consistent sound, keep the microphone stored upright to prevent "sagging" in the ribbon that may occur during long term horizontal storage. Because AEA ribbon mics sound great on a variety of sources, many people like to leave their mics set up vertically on a stand in their studio with the protective bag on.

#### 3) Avoid phantom power.

Using a correctly wired cable and a properly working phantom power supply, there is little danger of damaging the microphone with phantom power. However since using phantom power with a faulty or miswired cable or a defective supply can cause severe damage to the transducer, we recommend avoiding the use of phantom power with your R92 as a general rule.

#### 4) Protect the microphone from wind blasts.

The ribbon element in your R92 is well-protected from the normal wind blasts that may occur when making amp, instrument and vocal recordings, but it is still possible to damage the ribbon by careless use and positioning. For example the R92 is NOT suitable for use inside a bass drum. A simple check is to place your hand where you would like to put the mic. Make sure that you can't feel any "wind" against your palm. An inexpensive pop filter can be very helpful to avoid damaging wind blasts and the associated noise that they will produce in the recording.

# Getting the Most Out of Your R92

## Preamplifiers

Here are a few specs to look for in a mic preamp which will match well with your R92:

- Abundant gain (at least 60dB clean gain)
- Low noise (EIN -127dB or better)
- High input impedance (we suggest at least 1.5 kOhm for good bass performance)

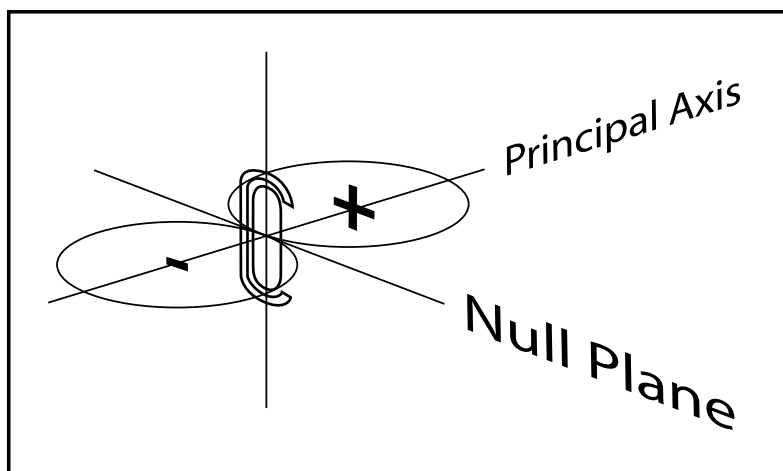
Active ribbon mic designs can help alleviate the gain demands on your preamp, but this approach results in increased cost, somewhat limited dynamic range and a slight degradation of sound caused by internal electronics. Active electronics also remove the variable interaction between the mic element and the preamplifier. Several excellent preamplifiers are built with variable input impedance, and when coupled with passive designs like the R92, a significant variety of sounds and colors are available to the sonic experimentalist.

**NOTE:** The fundamental design tradeoff of a dynamic microphone is bandwidth vs. output. With close micing applications in mind, the R92 was engineered with as much bandwidth as we could squeeze out of a large ribbon design. The tradeoff then is that a lot of gain may be required for recording low level sources. You will need a preamp with 60-65dB of clean gain to get a healthy level on quiet vocal recordings.

## Using the Figure-8 Pattern

The bidirectional (or “figure-8”) mic pattern of the R92 is a powerful recording tool. The front and rear lobes of the R92 have slightly different sounds. We call the front the “crisp” side and the back the “smooth” side. Try recording on the rear side to get a warmer sounding HF response (the phase of the recorded signal will be inverted as well). Like any bidirectional microphone, the bass response of the R92 is very sensitive to micing distance, but its excellent horizontal off-axis performance makes it easy to find a “sweet spot” when, for example, close micing an acoustic guitar.

It is possible to use the bidirectional pattern to provide excellent isolation between musicians playing in the same room. The bidirectional pattern features a ‘null plane’ which provides more sound rejection than any other microphone pattern! Also the excellent off-axis response of the R92 means that whatever bleed is left over from nearby instruments will be reproduced with accurate phase information, so it won’t muddy or distort your mix.



Here’s an illustration of the pickup pattern of your R92. The AEA logo on the front of your R92 points directly towards the ‘principal axis’ indicated in the diagram. The “+” and “-“ in this diagram refer to the electrical polarity of sounds arriving at the front and back sides of the microphone respectively.

# Mic Positioning Suggestions

Here are a few ideas to get you started learning how best to use your R92 Ribbon Microphone. They are just suggestions, your creativity and ears will guide you to many uses we haven't listed here.

## Guitars

The R92 has a very sweet, warm tone when used to record guitar amplifiers. Using the R92 makes it possible to get very solid low end with present, yet transparent highs using one easy to position microphone.

Try starting with the mic at about 6" on axis from your speaker. When using the R92 to record small, low powered amplifiers try moving in to 4" or closer to get a fuller, warmer tone. For high powered amps coupled with closed back cabinets and hefty bass output you may need to pull the mic back as far as 8" or more from the speaker grille to get the right balance of treble and bass frequencies.

**Don't place the mic directly on the speaker grille.** The R92 was not designed to be used that way, and it could potentially damage the ribbon in front of a sufficiently powerful amplifier.

The R92 also sounds very cool on acoustic guitar. Place the mic 4-8 inches over the lower bout pointed towards the bridge for a sound with good low end, clear midrange and excellent pick articulation.

## Vocals

Use the R92 for a warm, clear vocal sound. The smoothness of the R92's treble response means that creative vocal EQ is easy on the ears, and the vocal sound may be extensively shaped and processed without risk of nasty resonance artifacts. As mentioned above, you will need a relatively quiet and high gain preamp to make vocal recordings with the R92. See the section above labeled "Getting the Most Out of Your R92" for details.

Start with the singer 4 to 6 inches directly on axis from the microphone. The ribbon is well protected from potentially damaging plosive blasts, but to avoid the mechanical noise caused in the mic cavity by a wind blast, you will probably want to use an inexpensive pop filter.

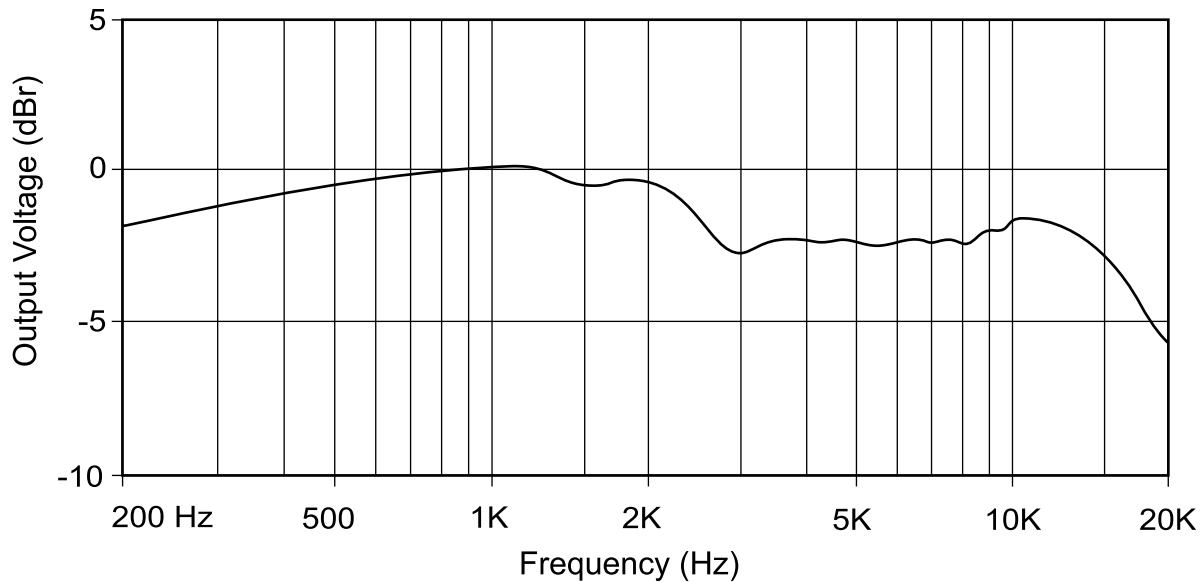
## Percussion

The R92 also sounds cool micing a conga or hand drum. Start with the mic about 6 inches from the head, and adjust distance for the bass content desired. You should be able to get a good mix of hand "slap" and a natural reproduction of the tone of the drum as well.

Try using the R92 as a room mic to 3 to 6 feet in front of a drum kit. You can get an ambient drum track by pointing the null plane of the R92 at the kit, so virtually all of the sound captured by the mic is indirectly reflected from the walls of the recording room.

The figure-8 polar pattern of the R92 is an extremely powerful tool for isolating the best aspects of your recording room from those which are less flattering. For example if your room has a nasty slap between two parallel walls, you can orient your drums and micing setup so that the null plane of the microphone is pointed directly between these two walls, thereby "nulling" the less desirable reflections out of your recording.

## On-Axis Frequency Response (1 meter)



## Specifications

Operating Principle:	Pressure Gradient
Polar Pattern:	Native Bidirectional (figure-8)
Transducer:	2" Aluminum Ribbon (1.8 micron)
Sensitivity:	>-55dBV/Pa
SPL Handling:	>135dB SPL peak
Frequency Response:	20 Hz - 18 kHz (+/-3dB)
Output Impedance:	270 ohms nominal

## Recommended Reading

BASIC STEREO MICROPHONE PERSPECTIVES - A REVIEW, first published in the *AES Journal*, vol. 33, no. 7/8, pp. 548-586, 1985 July/August; republished in the *STEREOPHONIC TECHNIQUES ANTHOLOGY*, pp. 297-305

THE BIDIRECTIONAL MICROPHONE: A FORGOTTEN PATRIARCH, was first presented at the 113th AES Convention in Los Angeles, 2002 October, Preprint no. 5646; it is scheduled for publication in the *AES Journal* in the 2003 April issue (vol. 51, no. 4)

THE NEW STEREO SOUNDBOOK, second edition, by Ron Streicher and F. Alton Everest, published by Audio Engineering Associates, 1998; [www.stereosoundbook.com](http://www.stereosoundbook.com).

RIBBON MICROPHONE ESSAYS by Wes Dooley, Ron Streicher and Philip Merrill published by Audio Engineering Associates, June 2003; [www.wesdooley.com](http://www.wesdooley.com).

NOTE: This is a working document. For the latest revision of the R92 Users Manual visit <http://www.ribbonmics.com>  
Copyright © 2005, Audio Engineering Associates.

## **Other Products by Audio Engineering Associates:**

### **TRP - The Ribbon Pre**

AEA/Fred Forsell collaboration preamp with no phantom power and 83dB of clean gain

RCA Working Reproduction Microphones and replacement parts

**AEA R44C and CNE Microphone** - Tribute to the classic RCA 44B using NOS ribbons

**AEA R44CX Microphone** - 6db more output for critical digital recordings

**RCA44 and RCA77 microphones** - Spare parts and prop shells

AEA Ribbon Microphones

**AEA R92 Microphone** - Large-ribbon optimized for guitar and other close-micing situations

**AEA R88 Microphone** - Large-ribbon coincident pair in a sleek black "stealth" package

**AEA R84 Microphone** - That big ribbon sound in a smaller more affordable package

Modular Microphone Positioners

**SMT** - Stereo Microphone Template for Blumlein and ORTF spacing

**SMP-17, 1M and 1.25M** - Stereo bars in three lengths for the ultimate in positioning flexibility

**Decca and Mini-Decca Trees** - For microphone arrays including recording for multichannel

Modular Studio Microphone Stands and Booms

**Flightweight Stands**

**Medium-Duty Vertical Stands and Booms**

**Heavy-Duty Stands and Booms**

**Crank-up Stands**

Since 1983 we've been the US agent for Coles Electroacoustics, manufacturers of the 4038 studio ribbon microphone and the 4104B, "lip" mic for voice-over work in high noise environments. We sell and service Coles microphones and genuine Coles parts.

In North America we represent CB Electronics, a leading worldwide supplier of machine control equipment to the sound-for-picture industry. Their products specialize in professional control of and translation between bi-phase, 9-pin serial and time code machines. Their SR line provides low cost multiple machine remote controls for RS-422, Sony, and Tascam DA88 protocol machines. The new P2DVD Interface may be a RS422 controlled Master with most RS422 synchronisers and Console automation systems.

Our Audio Test Department buys, sells, trades, and rents new and used audio test gear. Audio Precision, B&K, Hewlett Packard, Galaxy, Goldline, Neutrik, and Amber are among the lines we maintain in stock for audio measurements of Level, Polarity, Phase, THD and IMD, W&F, SPL, and Real-Time Analyzers.

## **Audio Engineering Associates**

1029 N. Allen Ave., Pasadena, CA 91104, USA

Phone: (626) 798-9128 Fax: (626) 798-2378

Visit us on the web at [www.ribbonmics.com](http://www.ribbonmics.com)