



Royer R-121 Studio Ribbon Microphone

FIELD TEST

by [Barry Rudolph](#)

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Ribbon mics, by nature, exhibit a warm and friendly tone with a natural figure-8 pattern that's useful in a variety of studio applications. However, ribbon microphone fans--and many respected engineers swear by these mics for particular applications--have few choices. There are the vintage models, which include very old and fragile mics like the RCA 77, 44 and BK11 models, and Bang & Olufsen ribbons, none of which are manufactured anymore. And there are a few currently produced ribbons, including the Coles 4038 and 4104B models, the Beyer M500 handheld mic and AEA's R44c, a replica of the RCA 44.

It is therefore a cause for celebration that another manufacturer has stepped forward with a ribbon design--this one taking advantage of recent developments in magnet design, materials and mechanical construction. The new Royer R-121 Ribbon-Velocity studio microphone uses a pure aluminum ribbon measuring 3/16-inches wide by 1.75 inches long and just 2.5 microns thick. This ribbon element is suspended between two powerful neodymium magnets in a specially designed flux-frame assembly. The magnets protrude like a pair of "ears" through machined slots on either side of the mic's body. (Be careful about placing the microphone near ferrous metal particles and dust as they will stick to these magnet ears.)

The microphone body, a burnished nickel-finished steel tube (black matte chrome also available) measuring 6.13 inches long by 1 inch in diameter, is an integral design feature and is said to reduce the audible effect of cavity resonance. A built-in, two-stage, stainless steel screen arrangement provides acoustical damping for the ribbon as well as wind blast protection. The screen also prevents the internal magnet assembly from collecting metal particles.



I have found that older ribbon mics are sometimes big, heavy and obtrusive, which can make them difficult to position and work with in the studio. By contrast, the Royer's small size and weight (only 8.6 oz.) make it as easy to use as any dynamic or condenser mic. The Royer is a "side address" mic, with a fixed figure-8 polar pattern. I found that the mic sounded the same and was equally sensitive on either side. Maximum SPL is rated at 130 dB, and I tested this specification often. Frequency range is rated at 30 to 15k Hz with sensitivity at -53 dBv Ref. 1 volt +/-1dB--that's more output than a Shure SM57 dynamic or the old RCA 44 ribbon. Self-noise (not printed on the spec sheet) is very low, as expected; there are no internal preamp electronics, and phantom powering is not required. (In fact, phantom power should be turned off, as a faulty cable could damage the ribbon). Rated load impedance is 1,500 ohms.

I had the opportunity to use two Royers during tracking sessions for a rock album. I would classify the microphone as a musical instrument mic since it may not be the first choice as a general-purpose vocal mic. I used the mic on electric guitars with great success--it gave me a warmer and fatter sound than my favorite dynamic. I like to mix microphones when recording guitars, and the Royer's sound is unmistakable whether mixed with another microphone or on its own.

The mic's sound didn't seem to change during many hours of abuse from two Marshall cabinets. I used one of the R-121s close to the speaker and another placed farther away as an overall cabinet mic. Due to the proximity effect, a dynamic or condenser mic on the cabinet would sound thinner than the same mic up close, but this was not the case with the Royer. The figure-8 pattern is noticeable with either mic placement, and there is room for some interesting experimentation here. I try putting the "null" (the side of the mic) of the pattern toward the amp cabinet. If you "null out" the close mic, you'll get a close sound with extra room ambience...a little hard to describe. If you null out the farther-away cabinet mic, the effect is similar to an even farther-away room mic (or the illusion of a bigger recording space). I also put one Royer equidistant between two Marshall cabinets facing each other. I flipped the phase of one cabinet (speaker cable) so the two cabinets were "pushing and pulling." I got a very fat guitar sound that pumped a lot of air and I lived to tell about it!

Next, I tried both Royers on grand piano. Since I wanted a close, pop piano sound, I put the mics over the hammers, one at the low end and one at the high end. I didn't have any phase problems as I thought I might have with two figure-8 mics. Mono compatibility (does anyone care these days?) was about as good as any wide-spaced pair of cardioid mics. I did get extra ambience and a little bounce off the piano's fully opened lid. All of these features led to a good, full piano sound that was not too bright, the right size to fit within the track--all without any furious EQ twiddling.

Using two Royers as drum overheads provided a warmer sound than I am used to but worked fine for the softer ballad I was recording. However, for that popular overbright *sound du jour* drum overhead sound, I would probably go with my Milabs. (A condenser mic is probably an unfair comparison.)

Royer also makes the Royer/Speiden SF-12 stereo coincident ribbon microphone. The Speiden design consists of a dual capsule, stereo-crossed figure-8 with two ribbons, one on top of the other, positioned at 90 degrees to one another--the center axis is at the 45-degree point between the two ribbons' center axes. With a 2-micron ribbon weighing about 0.3 milligrams, this mic is said to exhibit excellent transient response. This is the only Blumlein pair of ribbon mics currently made and is designed for orchestral, choir recording or any other distance-miking application. The Royer R-121 sells for \$995 retail while the SF-12 Royer/Speiden microphone sells for \$1,995.

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