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- Royer SF-2 Active Ribbon Microphone

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REVIEW

BY PAUL VNUK JR.

In a recording session when someone says, "I'm going to go put up a Royer" or "Let's use the Royer", they are typically referring to Royer's R-121 passive ribbon microphone... and with good reason, as it happens to be one of the few universally accepted modern classics!

While the R-121 (which we reviewed way back in July 1999!) does have the smooth rolled-off richness associated with a good ribbon mic, it also features a mid-forward modern push that has made it the guitar cabinet mic, second only to the ubiquitous Shure SM57 dynamic mic. The R-121 and its active-electronics descendant the R-122 (reviewed October 2002), and their various cousins, have also become a mainstay for drum overheads, percussion, horn sections, kick drum and more. (Speaking of innovations, Royer's phantom-powered active ribbons—which featured built-in head amplifiers for higher gain and built-in impedance matching so the mics could be used with any preamp suitable for a condenser mic—sparked a revolution of their own!)

design, the SF assembly is much smaller, using an ultra-thin 1.8-micron ribbon between two pole-pieces with four high-grade neodymium magnets, with internal stainless-steel damping screens on both sides of the ribbon. (For the curious, Figures 1 and 2 show the innards of an R Series mic vs. an SF Series mic, and were taken at a recent trade show at Royer's booth.)

The first mic of the SF Series was the SF-12 passive stereo mic (reviewed June 2000), followed by the passive mono SF-1 (reviewed March 2002) and the active stereo SF-24 (reviewed November 2004). Now we come full circle with the SF-2, an active mono ribbon based on the "Royer/Speiden" design.

Looks and build

The SF-2 measures 8" tall and is 1" in diameter at the top and 1 1/2" at its base. Stylistically it has the "active Royer SF" look with its signature built-in windscreen and the

large bulbous lower body which houses its active electronics.

It has a matte black finish adorned with the green enamel Royer badge, and ships with a felt-lined suspension mount, an aluminum flight case, and a velvet cloth bag for protecting the mic from dust and bursts of air when not in use. A Deluxe package adds a custom Padauk wood presentation case, Royer's RSM-24 shockmount, and a cable, in a large aluminum case.

Specs

The SF-2 features a 30 Hz to 15 kHz (± 2 dB) frequency response; it has a smooth frequency plot with no extreme spikes, rises, or cuts. (There will be small peaks due to body resonances and the like, but they'll be slightly different from mic to mic and you won't see them on a generalized frequency plot as issued by Royer... sorry, but I had to say that to avoid getting yelled at the next time I see Scott Dorsey at a trade show.)



Royer SF-2 Active Ribbon Microphone

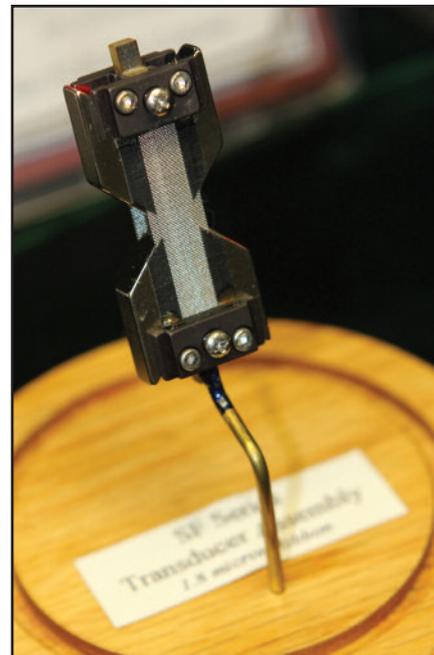
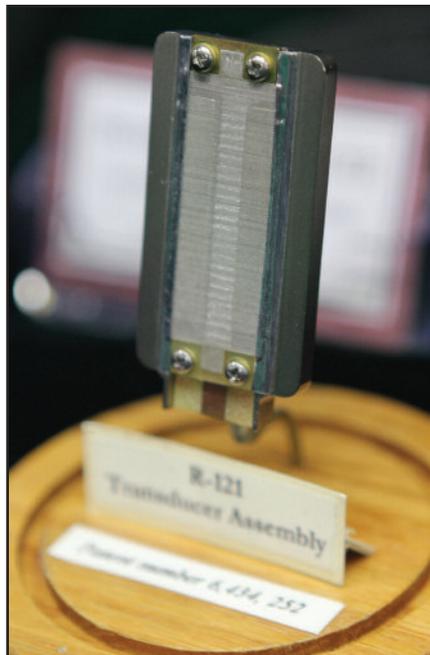
A lesser-known ribbon design with a sweet and clear sound

Almost 15 years ago it was with the R-121 that David Royer and company ignited the modern ribbon-mic revolution, and this past February Royer Labs received a technical Grammy® award for that accomplishment. Three cheers for the R-121 and to Royer on their award... but today we are going to look at another side of Royer, a slightly lesser known side, one that is sonically more neutral and 'hi-fi', as we review the new SF-2.

Meet the new kid

The SF-2 is the latest in Royer's SF Series of mics, which are based upon a completely different ribbon assembly and design than the R-121. These mics originated as a variation of and improvement upon an original ribbon element designed by Robert Speiden in 1985.

Compared to the R-Series' medium sized 2.5-micron corrugated, offset aluminum ribbon





Royer SF-2 Active Ribbon Microphone

The SF-2 does have a slight low-end rise between 40 and 90 Hz, a mid rise from 1 to 6 kHz, and then a slight carving at 10 kHz that rises back up at 12 kHz before tapering off; each of these is never more than a dB or two at their most extreme. Further specs include a -38 dBV sensitivity, 200 Ohms @ 1 kHz output impedance, and 130 dB max SPL level.

As briefly mentioned above, the SF-2's internal amp uses phantom power to achieve a hotter signal level, 15 to 30 dB over that of a typical ribbon mic. The active circuit also distributes a reproducible load to the ribbon element, making it immune to the impedance variations between different microphone preamps that can alter the sonic consistency of passive designs. The output of the SF-2 features a custom wound toroidal transformer and an ultra-low-noise FET circuit.

The sound

Sonically the SF-2 has the telltale smoothness and gentle top end that ribbon mics are known for, but it's a very high-fidelity sound; unlike many ribbon models there is

because we assume 'bright and open' means 'clean and natural', when in fact most modern large-diaphragm condensers are actually more forward and detailed than they are neutral and natural. As a result, the SF-2 turns out to sound most similar to a good classic pencil condenser like an original Neumann KM 84, but smoother and larger in its sound. An unexpected result!

In use

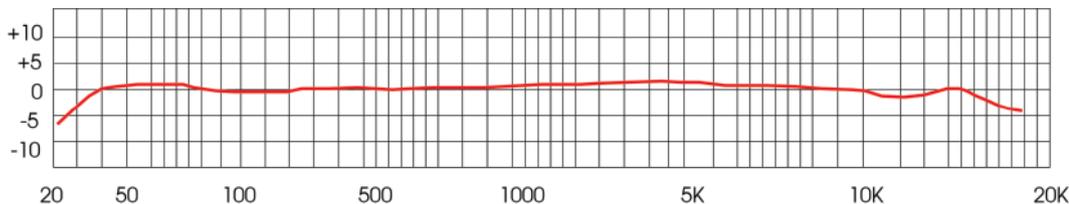
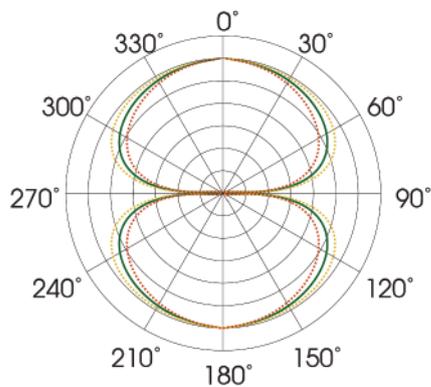
Prior to getting my hands on the SF-2, I had a few conversations about its design and history with John Jennings of Royer Labs, so I had an initial handle on this mic's expected likes and dislikes going in. This is a mic that loves acoustic instruments, especially those of a classical nature.

Most importantly, the SF-2's ribbon element wasn't designed for the high SPL the R-121 can handle, so for this review I avoided sticking it in the grille of a screaming guitar amp, placing it in the sound hole of a kick drum, placing it in front of a solo trumpet, or any other loud source that would generate forceful movements of air.

Piano: On a piano-and-cello duet (one SF-2 on each) in a live setting in a large church sanctuary, I appreciated that as I brought the faders up and down, the perceived sound of the instruments did not change so much as simply get louder or softer; this highlighted how true-to-life these mics are.

Later I placed both mics inside the piano as a slightly spaced pair (for a balance of low and high rather than left and right) and was again pleased with the results—full and smooth but never exaggerated, boomy, or excessively metallic.

Banjo: On a bluegrass-tinged pop session, I put up one of the SF-2s on banjo in place of the small-diaphragm condenser we had been using; it did a great job of cutting down on the bright, plastic twang that often takes copious amounts of eq to lessen, and placed the banjo comfortably in the mix.



nothing dark, pillowy, muffled, or cloudy about it.

When it comes to low end, a lot of ribbon mics tend toward extremes—either deep slopes from 80 Hz on down, or big booming low-end boosts. By contrast the SF-2 sits in the middle, with just enough low end to give it an even weight, but not enough to stand out.

Compared to some of the other well-known high-end ribbon mics, it lacks the low-mid bump of the AEA R84, with which we reacquainted our readers in our August 2012 issue. It is not as overtly 'luscious' or 'vibey' as an RCA 44-style mic, and as mentioned earlier it isn't modern and upper-mid-forward like Royer's own R-121. Interestingly, I hear its tonality as closest to a well-maintained Coles 4038, only slightly more even. Overall this is a mic that is true to the source, honest and again gentle in the top end.

As such it may seem a tad dull when compared to high-end modern large-diaphragm condensers by Brauner, Blue, Neumann, and the like. But that is at least partly

I was even all set to avoid vocal work, as vocals can be fraught with plosives, spits and breath blasts, when John informed me it was not *that* fragile (far tougher than a Coles 4038 or any RCA); it would be fine for vocal work as long as a good pop filter was in place and a touch of distance was part of its placement. All in all, that makes the SF-2 similar to most classic and fragile ribbon designs in placement, use and handling... and points out that many engineers have now been spoiled by the R-121's ruggedness!

Strings: I received a pair of SF-2s at the start of the holiday season; I tend to do a lot of string recording at this time of year, and the SF-2 excels at that. On cello the sound was full and even and avoided the low nasal "squonk" I often have to eq out. Violins sounded smooth and controlled without the screechy string brightness that many modern condensers love to accentuate. Aside from close-miking solo instruments, a pair of SF-2s in a Blumlein stereo configuration is a beautiful thing when placed in the center of a string trio or quartet. Think full, natural and un-hyped!



Drum Overheads: In a more rock/pop setting, my favorite use of the SF-2 was on drum overheads. In live use, my results were similar to the piano-cello duet described above. Pulling the faders up and down while listening to the kit in the room revealed a sound that simply got louder and fuller without a drastic change in tone.

In the studio I again liked how real and natural the kit sounded. This is the only time I would tend toward calling the SF-2's sound a 'vintage' or 'classic' sound—not because they are vibey, dark, or imposing mics, but because they do not deliver a crisp, bright and modern tone.

For this reason I loved them in an Andy Johns-style setup (one SF-2 overhead and the other just off the side of the floor tom and ride cymbal, both equidistant from the snare). Again, 'classic' describes it well, especially since the figure-8 pattern adds in a nice helping of room sound and secondary reflections.

Acoustic Guitar: The SF-2 is one of the most evenly weighted and un-hyped acoustic guitar mics I have ever used. This of course can be good or bad, depending on whether or not you want the guitar being recorded to have extra jangle or low-end weight. It is easy to add low end with a bit of eq, but if you are after jangle, crispness and sparkle, this mic is just a tad too smooth for that.

Vocals: Just as with a string ensemble, the SF-2 works well for choirs and group backing vocals to keep them controlled and naturally placed in a mix. On solo vocals this mic is best suited for loud operatic-style vocalists at a healthy distance vs. an up-close, "on the mic" setting for traditional rock, pop or R&B... and not just for avoiding plosives.

Overall I missed the forward punch and openness of a modern condenser on solo voice, and I also found the SF-2 lacks the bold proximity effect and smooth goeey warmth of the vintage-type ribbons suited to crooning-style vocals. In simple terms, if you want natural unimposing vocals the SF-2 is great, but if you want imposing forward vocals that cut through a mix, look elsewhere.

I also tried the SF-2 for a voiceover spot, and while I loved the smooth top end control and found I could eq in a touch of low-end chest resonance, it probably would not be my first choice for such a use.

Conclusion

Bottom line, the SF-2 is a mic with a pristine smoothness that is sublime; it's honest and natural but never clinical or boring. I don't consider it a ribbon mic for the vibe seeker, which is fine because the market is overflowing with mics like that. Normally I don't like to classify mics by genre, but all in all the SF-2 is better suited to classical, jazz and folk styles and not so much for rock'n'roll. But, hey... we already have the R-121 for that, right?

The sobering part is the SF-2's retail price of \$2495. That makes a pair of them (which is really what you'll want) a substantial investment. But it is an investment that will pay huge dividends over the years of your recording career, and one that may be essential if you want to bring your recordings of classical stringed instruments, pianos, and the like to a whole new level. ➡

Price: \$2495; Deluxe package as described above, \$3295

More from: Royer Labs, www.royerlabs.com

Paul Vnuk Jr. (vnuk@recordingmag.com) is a recording engineer, sound designer, and recording musician in Milwaukee. Paul would like to thank John Jennings of Royer Labs for technical and historical discussions, and to apologize for his joke at the NAMM Show, when he told John he'd been having trouble with the SF-2 ever since he used it to record an air horn.