



# REVIEW

BY PAUL VNUK JR.

## Mesanovic Model 2 Ribbon Microphone

This beautiful new ribbon mic has  
a beautiful new (ribbon?) sound

The Model 2 is a brand new ribbon design from Mesanovic Microphones, based in Detroit, MI and named for its founder Denial "Deni" Mesanovic.

Ribbon microphones have a reputation for a smoothness and a neutral sound that (compared to many modern condenser mics) can come across as dark to our ears. For this reason, ribbon mics often get the stereotypical label of "vintage sounding". Then again, ribbon technology has been in use since the late 1920s and the overall mechanical design has not changed much since then. Most ribbon mics are still based around a motor assembly with a small, thin corrugated metal ribbon, tensioned and suspended between two magnets, along with a transformer.

A few manufacturers have worked to shed  
the ribbon's dark reputation, crafting mics  
with extended high end response.

The Mesanovic Model 2 is one such mic.

This is not to say there have not been improvements along the way. The lion's share of ribbon mic innovation has been in the previous two decades, since the 1990s' ribbon renaissance. Passive designs have given way to active circuitry (Royer Labs was first), the advent of strong neodymium magnets has allowed for shorter motor assemblies with smaller, faster-transient ribbon elements (Royer, Cascade, and many others), better screening and blast protection has opened up new uses for traditionally fragile ribbons (AEA's Nuvo mics), and there have been companies experimenting with more durable composite ribbons, including the use of polymers (Shure) and ceramic materials (Sandhill Audio).

Additionally a few manufacturers have worked to shed the ribbon's dark reputation and craft models with extended high end response. The Mesanovic Model 2 is one such mic.

Right after this review, we have an in-depth interview with Deni, but the nutshell history of the Model 2 (and the preceding Model 1) is that they are literally the culmination of a college design project! It's a fascinating story... but first, let's meet the Model 2.

### The Model 2 and the Mesanovic motor

The Model 2 measures 7.4" tall with a 1.25" diameter. Holding it in my hand, one of the first things I noticed about it was its extreme light weight at a mere 215 grams (7.5 ounces).

The body is made of black anodized and sandblasted aluminum. It's a two-piece body, with each piece machined on a lathe from a single solid piece of aluminum. Covering the ribbon is a stainless steel mesh screening.

Lookwise, the mic is rounded out by modern industrial stainless steel screws and the MM logo laser-engraved in white. It looks and feels classy, simple, and modern.

The motor assembly starts with a pure aluminum ribbon element measuring 2" x 0.23" and 1.8 microns thick. The motor makes use of a compact front-to-back path; its "special sauce" comes from a pair of internal resonator plates—literally small perforated metal plates that resonate at specific frequencies to aid in the top end of the mic's sound. This idea has existed since the early days of ribbon technology. We saw it in my May 2011 review of the sE VR-1 ribbon mic, which made the corrugated plates part of the outer microphone body, as well as the Audio-Technica AT4081 reviewed by Scott Dorsey that same year. The Model 2 is rounded out by a custom wound toroidal transformer.



### Specs and sound

The Model 2 is a bidirectional (figure-8) mic. It has a frequency range of 20 Hz to 20 kHz and beyond, a sensitivity of  $-53.2$  dB ( $2.2$  mV/Pa), a noise floor under  $17$  dBA, and  $140$  dB max SPL.

Looking at its frequency plot, it definitely looks much more like a classic condenser microphone than a classic ribbon; those usually roll off anywhere from  $10$  kHz on down. The Model 2 has a solid, meaty low end from  $20$  to  $300$  Hz. It's only boosted by a dB or two, but

application, coupled at different times with a Fender '65 Princeton, a Peavey Classic 30, and an Egnater Tweaker-40 amp head. I also tried it on the Peavey and Fender without the iso cab as well.

Once I put the Model 2 mic in the iso box, I had zero reason to remove it for almost six weeks! The upper end response helped keep the sound from being boxy and closed in, as is common with iso cabs, and yet unlike a condenser mic in the same scenario, it had a nice gentle rounding that was never harsh or peaky.



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it adds a balanced sonic weight to the Model 2. There is a tiny half-dB dip from  $600$  Hz to  $1$  kHz, followed by a gentle  $1$  dB rise from  $2$  kHz to  $7$  kHz, a quick  $8$  to  $10$  kHz dip, by a  $4$  dB rise at  $12$  kHz, and an extended even slope down a few dB at  $20$  kHz.

The Model 2 sits comfortably in the newly growing class of extended top-end ribbons. The solid low-end weight coupled with the extended upper range of the Model 2 gives it a sound that is breathy, open and very dimensional, coupled with the smooth transient response that ribbons are known for.

### In use

My first use of the Model 2 was on a guitar cabinet. I placed it on a Celestion Vintage 30 in an iso box in a live sound

Next I put up a pair of Model 2s as drum overheads. This is where the 3D sound of the Model 2 was most apparent. Here the Model 2 almost stays out of the way of the kit in a very breathy transparent way; you are not aware of the overhead mics until you take them out of the mix. When the drums need to fall back into and be part of a mix, these are a great choice.

On stringed sources such as acoustic guitar, cello, and mandolin, the word that comes to mind is dimensionality. It's a very smooth hi-fi sound.

Voice was perhaps the one area where the Model 2 did not offer enough push for my taste. It was nice on backing vocals, but lead vocal work needed a touch more eq and compression to pop. Also on voice, I noticed that despite its



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low end boost, it does not have quite as much of a proximity effect as an AEA/RCA large ribbon style mic.

The Model 2 is designed to be symmetrical to within 0.5 dB at all frequencies, meaning the front and rear lobes of the figure-8 pattern are identical in sound. That's why Mesanovic can offer a stereo model, the Model 2S, in a Blumlein configuration.

In my collection, the microphone it compares to the most is the aforementioned sE VR-1. That mic reaches for a similar high end, but in comparison it is a touch more blunt and forward vs. the Model 2's gentle dimensionality.

### Conclusion

Bottom line, Mesanovic has come right out of the gate with a uniquely voiced ribbon mic that stands on its own, with its own lovely sound and boutique American-built quality that's just fantastic. Talk about Detroit Muscle!

**Price:** \$999 • **More from:** Mesanovic Microphones, [www.mesanovicmicrophones.com](http://www.mesanovicmicrophones.com)

## Getting To Know Deni Mesanovic

### Deni, give me a little bit of background on you and your company. How'd you get started?

*Deni Mesanovic:* I went to the University of Michigan for sound engineering and [that program] incorporates recording classes, a little bit of electrical engineering, acoustics—the whole spectrum. We had a pair of ribbon mics in the studio and I really loved how they sounded so I began researching them. I've always been a tinker with electronics, so for my senior thesis, I decided I wanted to build a pair of ribbon mics! [laughs].

I spent about two years researching that, had a local shop here in Detroit machine all the components for me, sourced some transformers, and I assembled it. I realized how much I really enjoyed doing that... so when I got out of school I thought, "Let's start a ribbon mic company!"

### Awesome! So how many years have you been in business?

We've been in business about three years, and I've been playing around with ribbon mics for five or six years.

### In addition to the Model 2, is the Model 1 still available?

The Model 1 was our first product, but it was before we had any dealers or anything. I kept tweaking the mic and eventually came up with a whole new mic, so I decided to discontinue the Model 1 and make the Model 2 the main priority. A year after that, we released a stereo version, the Model 2S, and now we're getting ready to release the Active version. So I guess you could say that the Model 2 is the sound of Mesanovic.

### Did you set out to make a more open, brighter ribbon mic?

Yeah, I really wanted to make a mic that kind of solved, I guess... I wouldn't call them *problems*, but issues that ribbon mics have: the lack of top end, they're a little boxy, a little muddy in the lower mids, and the bottom can get a little boomy. I wanted to fix all those things and get a mic, when you put it up on anything, it really needed no EQ whatsoever, it just worked.

### I'm assuming a lot of our readers are not familiar with the resonator plate concept, can you explain that?

Yeah, the resonator plate idea has been around for quite a while. They are just plates with a bunch of holes in them that create a resonance at a certain frequency. The amount of resonance is controlled by the design of the plates, the number of

holes, the size of the holes, and how far away the plate is from the ribbon itself. All those things are optimally tuned to perform with the dimensions of the ribbon motor to give you a certain sound.

I won't get into the math and details of that, but we designed these plates so they would lift the high end back up where the ribbon motor rolls off, which with our motor is around 12 kHz.

### What are the plates made from?

The plates and the ribbon motor are all milled steel.

### Your website states 100% handcrafted in Detroit, MI. Is everything made in house? Is anything sourced from outside?

Every part of the microphone is made in-house. We've got a CNC lathe and a CNC mill; every single piece of metal in the microphone is made in our shop. The motor is 100% designed by myself and is manufactured in-house. The only things we source are the case that the mic comes in and the microphone clip.

When we first started, we were using a Samar transformer, and then we just decided, "Hey, let's do it ourselves." So we got a toroidal winding machine, we got the amorphous tape-wound cores, and started doing the transformers ourselves. We're not depending on any suppliers for anything.

### So you have a 100% Detroit made microphone. That's actually really cool!

And that actually helps in the sound. A ribbon microphone is really just a bunch of metal components—it all comes down to the metalwork, how precise is it, how tight the tolerances are. By doing it in-house we have full control over that. So we know Serial Number 1000 is going to sound the same as Serial Number 1.

### On average, how long does it take to make a Model 2?

Before I had the CNC machinery, it was all done on manual machinery. I had a manual lathe and I had a manual mill. The first fifty are like that, and maybe the first twelve Stereos.

### You're serious! [laughs]

Yeah, it was hours of work. As soon as I got those out the door and got things rolling, I thought, "OK, now I can get these two CNC machines and that will speed things up a bit." Now I do them in batches. Between machining time, assembly time, testing time, the ribboning and all that stuff, I'd say you're looking at probably eight to twelve hours per mic.

### Wow!

The machining can be quick, but the prep work for the anodizer takes some time. You have to de-burr all those edges around the



window, then you have to take really fine sandpaper and get that all smooth, and then it's ready to be sandblasted...

On the inside, you've got to glue the magnets, you've got to let the magnets dry, then you've got to glue the little clamps that the ribbon clamps onto, you've got to let that dry, you've got to corrugate the ribbon, you've got to tension it, you've got to let that sit for a few days, test it again, see if the tension is still correct. You've got to assemble the mic, you've got to run tests on it. So it does take quite a bit of time for a mic to go from stage one to being shipped.

#### And you taught yourself to do all that?

I learn something new every single day, yeah.

#### When you were designing the mic, what was your biggest "aha!" moment?

Haha! Let's see. When I was designing the Model 2, I would say like the biggest "aha moment" would be when I got the resonator plate design correct. When I got those plates to work correctly, I was like, "Yes, this is it, I've got the mic I've been waiting for!"

#### How many ribbons did you go through before you got the whole ribboning down?

A lot of ribbons, and a whole lot of money from the foil that went into them! [laughs]

It's funny that you mention it. You know, to build a proper corrugation machine, it's really a piece of art. I've gone through almost ten different corrugators until I finally designed it well enough that I knew every ribbon would be consistent.

#### What was the biggest challenge in designing the mic?

I'd say the biggest challenge was the actual machining of the mic. The microphone is divided into two halves, the upper grille half and the bottom grille half. That's all machined. Are you familiar with lathe work and stuff like that?

#### Yes and no. I've done lathe work with wood, not metal.

That entire piece is machined in one operation, so the metal tube goes into the lathe, it's turned on the outside diameter, it's turned on the inside diameter. The holes are drilled and then the windows are cut out, all in the same operation. It's a 4-axis CNC machine that does that, and aluminum is a very soft and gummy metal. So getting the machine to cut that properly without deforming the metal, without bending it, without breaking tools, it took a lot of hours to dial that machine

in. But once it got dialed in, now it runs beautifully and it cuts those windows perfectly. That was the biggest challenge.

#### Very cool. So you mentioned next up you're going to be working on an Active version?

Yes. I'm actually machining that now as we speak. It's going to be released probably at the end of May, right before the Summer NAMM show.

#### Did you design your own circuit for the active electronics?

Yeah, the active part is just an impedance buffer. All the gain comes from a really high-ratio step-up transformer that feeds into the impedance buffer and that's it. It sounds identical to the Model 2. It just has around 12-13 dB more gain.

#### Deni, thanks so much for the inside look at ribbon building, is there anything else you'd like people to know about the company?

Well, It's a different-sounding ribbon mic and I just hope they will try it out and experience it. I think ribbon microphones are fantastic. We should really push the technology forward, just like people are doing on everything else. Get your hands on them, and try them on everything! ➔



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