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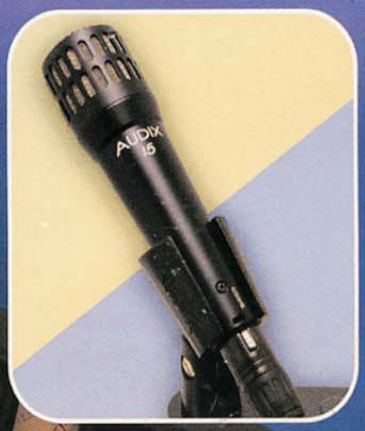

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Microtech Gefell Nickel Diaphragm Mics

BY TY FORD

Nickel, as defined by Webster's Dictionary is, "A hard, silvery white ductile and malleable metallic element, not readily oxidized: used in alloys and electroplating." Although I had heard of condenser mics with nickel diaphragms, I did not know whether they sounded any different than PVC and Mylar diaphragms sprayed with gold. After some research, I found three Gefell mics with nickel diaphragms: the M 294 cardioid ($1,450), M 295 cardioid ($1,450) and M 296 omni ($1,550).

Features

The grille of the M 296 unscrews to reveal a shiny, pure nickel .8-micron diaphragm with about a 3/4-inch diameter.The M 296 S ($1,750) has a .3-micron nickel diaphragm. All four mics have 10 dB pad and LF rolloff micro switches embedded in their shafts.

These mics are neither small (1/2 inch) nor large (1 inch) in diameter. One implication of the size might be that the three Gefells are more sensitive than small-diameter mics. Another might be that they result in less off-axis phase anomalies than larger diaphragm mics.

The M 294 and M 295 cardioid specs are very similar. Each lists a 40 Hz to 18 kHz frequency response and an impedance of 150 ohms. Sensitivity is 17 mV/Pa at 1 kHz. They share IEC self-noise (13 dBA), S/N (81 dBA), a 143 dB maximum SPL (with 10 dB pad engaged), a dynamic range of 120 dB and a phantom power consumption of 3mA. The switchable 15 dB bass rolloff is set at 60 Hz.

The main difference between the two cardioids is their frequency response. The M 294 has a shelf that starts with a slow 1 dB rise between 4 kHz and 5 kHz. At 6 kHz it begins a steeper ramp to a +5 dB peak at 8.5 kHz. It is back down to 0 dB by 12.5 kHz and down 6 dB by 20 kHz.

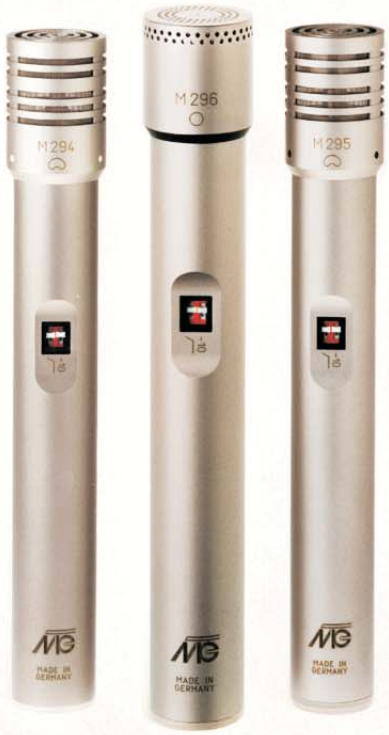
The M 295 is not as peaked, with a gentle rise starting at 2 kHz. At 10 kHz it reaches a +2 dB peak and is down 4 dB by 15 kHz. Both mics have a gently tapered low end that begins a roll off at 700 Hz. The M 296 omni has a gentle +2 dB rise beginning at 2 kHz that begins to fall at 10 kHz and crosses 0 dB at 20 kHz. At 15 mV/Pa, the M 296 is slightly less sensitive than the cardioids and has 14 dBA self-noise. Maximum SPL is 134 dB. S/N is 80 dBA. The switchable -10 dB bass rolloff is set at 90 Hz.

In Use

Hal Laurent, recordist and member of the internationally famous Baltimore Mandolin Orchestra, joined me to compare the Gefell mics with Schoeps CMC64, CMC641, Neumann KM 84, Shure KSM141 and Oktava MC 012 from the Sound Room.

The comparison was made using two channels of a GML 2020 preamp through an RME ADI-8 DS A/D converter and optically into a Pro Tools Digi 001. I used male voice and a D28S Martin. We recorded each mic at exactly the same position (two inches off the fret board of the Martin at the 12th fret) and a subjectively chosen better position for each mic. We also recorded spoken word. In comparing the M 294 and M 295, we found that on male voice, the difference of the two presence peaks was not very noticeable.

On acoustic guitar, however, the peak on the M 294 was obvious. This was not the sort of



scritchy top, scooped mid I heard with the Oktava MC 012, but a very full sound. The MC 012 was a bit thicker, or less clear, in the mids and also less sensitive. The Oktava MC 012 with hypercardioid capsule was very close in level, but most of that was due to its rather boomy low end.

The Shure KMS141 in cardioid was slightly darker and several dB less sensitive than the Gefells. The Neumann KM 84 was closest in sound to the M 295. Although it was slightly less sensitive, we could have intercut tracks. At two inches off the 12th fret on acoustic guitar, the M 295 was also similar to the Schoeps CMC641, although they had different top ends.

Both M 294 and M 295 capsules are designed with a slightly reduced low end that allows them to be worked as closely at one to two inches as vocal mics; and that's without engaging the LF rolloff. The peakier M 294 can be used on softer, darker voices, while the flatter M 295 can be used on a wider range of voices.

I know a lot of people cannot wrap their minds around the idea of using anything but a large diaphragm condenser on voice. Get over it. If small diaphragm mics are good enough for the Three Tenors and almost every interior dialog movie scene you have ever seen, size alone just does not matter.

It is easy to write off the M 296 as a nice mic, but, hey, it is an omni!

This mic made me reassess my thoughts about omnis. The +2 dB between 3 kHz and 10 kHz gives enough presence to keep the mic from sounding dull. In fact, on axis, that extra top end is enough to sound nicely bright. Not the edgy bright so often heard on lesser quality mics, but a clear and transparent top end that (probably because of the .8 micron diaphragm) offers an almost startling amount of detail.

I set up to record both voice and acoustic guitar with one M 296. I found that placing the mic below nose level and pointing it slightly below the mouth and toward the face of the guitar worked best. That left me singing somewhat off axis into the M 296 at a distance of four to six inches. My voice would have been too bright on axis.

The mic was about eight inches from the D28S sound hole and about six inches out. I moved the guitar a bit to get the right sound. Recording this way means you have to sing and play at the right volumes using headphones, but the benefits are that you have no phase interaction, self-noise or mic pre noise build-ups from multiple mics. The pure honesty of the recording was arresting. I found myself listening to the track repeatedly because it just sounded so natural. I MP3ed a short section of the take and put it up on my website if you want to hear it.

Fast Facts

- ***Applications:***
  Studio, broadcast
- ***Key Features:***
  8-micron nickel diaphragms, low-frequency EQ taper; omni, cardioid, hypercardioid patterns
- ***Price:***
  M 294 - $1,450, M 295 - $1,450, M 296 - $1,550, M 296 S - $1,750
- ***Contact:***
  Microtech Gefell/C-Tec at 604-942-1001, www.microtechgefell.com.

Many omnis are not very susceptible to proximity, but I found that getting the M 296 closer than a foot to the Martin meant I had to engage the mic's LF rolloff to keep the fifth and sixth strings in balance.

This experience led me back to the two cardioids. They exhibited a similar clarity. Their tapered LF response allows you to get them closer to the sound source without having to deal so much with proximity effect.

Getting the mics closer to their sources meant less leakage and slightly brighter, more direct sound. Close-miking also means more sustain from each instrument. On my vocal track, the guitar was 18 dB to 23 dB below peak. The vocals themselves peaked at -2 dB. That was enough separation so that when I muted the vocal track during instrumental passages, I heard only the slightest change in sound: a larger, less direct space.

Summary

What we have here are three mics that cross conventional lines. Their diaphragms are nickel and, at .8 microns, are extremely thin. Even though they are only 3/4 of an inch in diameter, they work quite nicely on voice or instruments. They have an unusual approach to phantom powering. Based on this experience, I would venture to guess that these three mics will be at home on the same shelf as Neumann or Schoeps. If you are looking for thick, ultra-warm, non-real results, you will probably be disappointed. If you want the unvarnished truth with a pinch of presence, proceed.

Ty Ford can be reached via his website - http://home.comcast.net/~tyreeford.