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WORKHORSE DYNAMIC MICROPHONES, PART II

FEATURING AKG, ELECTRO-VOICE, HEIL, SENNHEISER & SHURE

These winners handle big, dirty tracking jobs better than many costlier condenser and ribbon microphone options.

BY ROB TAVAGLIONE

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PHOTO: RHON PARKER

Continuing our *PAR* Session Trial series – comparative, detailed, application-based gear evaluations – we will address five intriguing dynamic microphone workhorses. Capable of handling tremendous SPL and reproducing the lowest of frequencies with minimal distortion, these are proven favorites in the field for capturing live effects and Foley: for example, the violent audio of explosions and gunshots. On a more musical (as well as more routine) basis, these mics are used daily for such diverse tasks such as drums/percussion, horns, any particularly loud or deep instruments, and announcing/voiceovers (VOs).

Selected Audio Clips: Workhorse Dynamic Microphones, Part II

Visit the link below for audio clips from this *PAR* Session Trial.

prosoundnetwork.com/workhorsedynamics2

For this *PAR* Session Trial, we aim five dynamic favorites at five traditional applications and attempt to sort the sure-fire hits from the near misses. The players are the AKG D 112 (\$279 list, \$199 street); Electro-Voice RE320 (\$499 list, \$299 street); Heil PR40 (\$375 list, \$325 street); Sennheiser MD 421 II (\$570 list, \$379 street); and Shure SM7B (\$436 list, \$349 street).

You can read *PAR*'s first Session Trial featuring Workhorse Dynamics (which included the AKG D 40, Audio-Technica AM650, Audix i5, Electro-Voice N/D478, Heil PR 20 and Shure SM57) by visiting this link: prosoundnetwork.com/workhorsedynamics.

The Contenders

Pardon my laziness, but the following quote from AKG's website sums it up better than I can: "The AKG D 112 has earned a well-deserved reputation worldwide as the best kick drum microphone ever made. Heavy-footed drummers won't faze it because the D 112 handles up to 160 dB SPL with no audible distortion. A specially engineered diaphragm with a very low resonance frequency maintains solid and powerful response below 100 Hz, while a narrow band presence rise at 4 kHz punches through dense mixes with little or no added EQ. The result is a kick drum sound that ideally balances precise definition and forceful impact."

The Electro-Voice RE320 is the newest mic included in this Session Trial, and it has already earned a fine reputation, not only in my previous review of the model (*PAR* March 2011), but also at countless radio stations, live stages and recording studios. The RE320 starts out with a timbre that is similar to its older sibling (the ubiquitous RE20) but adds a "dual personality" switch with an "insta-kick" curve that will be valued on not only kick drums, but also for DJs/VOs as well as guitar cabs of all types that crave some de rigueur mid-scooping.

The Heil PR40 utilizes a "large, low-mass diaphragm and a special mixture of neodymium, iron and boron" for "the strongest magnet structure available" for extremely wide frequency response and condenser-like high-frequency reproduction. The PR40 also incorporates features that reduce problems in troublesome environments with an "internal humbucking coil that removes any worry of using the PR 40 near monitor screens or noisy lighting fixtures and controls" and "a unique screen system using two different diameter mesh screens and an internal breath blast filter, allowing the user to talk closely to the microphone with little worry of pops or excessive sibilance."

Sennheiser's modern update of the classic MD 421U, the Sennheiser MD 421 II "continues the tradition of the MD 421, which has been one of Sennheiser's most popular dynamic mics for over 35 years. The MD 421's full-bodied cardioid pattern and five-position bass rolloff control make it an excellent choice for most instruments, as well as group vocals or radio broadcast announcers." That iconic "electric razor" shape and trademark sonic thickness is arguably the all-time favorite for capturing tom-toms.

The classic-looking and -sounding Shure SM7B is a popular choice when smoothness is called for, ideal for DJs, announcers, horns and many a modern acoustic music performer. “The SM7B has been updated from earlier models with an improved bracket design that offers greater stability” and employs two filter stages (a bass rolloff and a midrange emphasis) for dealing with proximity effect and tonal shaping.

Female Announcer

I enlisted the help of voiceover artist (and excellent singer) Kay Roebuck to run our dynamic mic collection through VO paces. I used a Stedman pop filter three inches off each mic, the solid-state mic amp from my Manley TNT pre (50 Hz HPF engaged to reduce rumble without affecting tone, at 60 dB of gain), no compression or EQ, gain compensated in my DAW to achieve similar average levels on each test track. Kay worked each mic’s placement, finding the sweet spot for ideal top end and proximity effect.

Kay’s main concerns with mic selection were “fullness, presence and reduction of mouth noise,” the latter of which is sometimes a problem with condensers, she asserts. With these qualities in mind, Kay reluctantly picked the EV RE 320 as her favorite (hear webclip #1), narrowly edging out the Sennheiser MD421-II (hear webclip #2), which she really liked as well. We tried the E-V’s kick filter setting and found it to be too carved out. The Heil PR40 also got positive feedback with its defined top end, but had a little mid-honk and thinness. Neither of us liked the SM7B for this test, much for its darkness on Kay’s voice, though we both preferred it with its midrange boost engaged. With enough gain employed, noise floor and ground buzz were also issues with the SM7B. And although we liked the chesty fullness and depth of the AKG D112, it seemed to be voiced oddly in its high-frequency response and accentuated mouth noise unflatteringly.

Personally, I slightly preferred the MD 421 II on Kay for its wonderful balance and gracefulness,

even over an older (and brighter) MD 421U that we also tried out. The RE 320 was kind and articulated, but almost a little nasal in the mids. The PR40 had a unique balance that was bold and intriguing with some bottom EQ boost; closer placement and more proximity effect might just do the trick.

Male Announcer

Local radio personality/actor Divakar Shukla visited Catalyst Recording and laid down test VO tracks in fast and fine form, through the same signal path used for the female VO test detailed previously. Divakar’s deep voice called for some HPF-ing, even though he carefully found the ideal placement for just the right amount of proximity effect with each mic and did his usual slightly off-axis positioning to reduce plosives.

We both liked the Shure SM7B as our favorite (hear webclip #3), especially with its midrange boost filter engaged. Even though the noise floor of the SM7B was comparably present, its articulated mids and smoothly sweet top end made up for it with undeniably classic “FM tone.”

We couldn’t reach agreement on our number two choice, as I gravitated towards the sexy sculpting of the RE 320 with the kick filter engaged; Divakar conversely preferred the smoothly sculpted Sennheiser MD 421 II (hear webclip #4), and I could easily be swayed to agree. I liked the crisp top of the RE 320 and found the MD 421 II a little “poofy,” though using its variable bass filter made the choice too close to pick.

I’m afraid we didn’t like the AKG D 112 or the Heil Sound PR40 on Divakar’s voice. The D 112 became too fat and boomy, while the PR40’s midrange character didn’t quite agree with Divakar’s particular timbre and enunciation. We did agree that both could be quite usable if we generously applied some EQ.

Trumpet

For the next session, Brandon Nater put together a nice 20-second arrangement of “When the Saints Come Marching In,” featuring exaggerated dynamics, pronounced peaks and



PHOTOS: RHON PARKER

Top to bottom: AKG D 112, Electro-Voice RE 320, Heil PR40, Sennheiser MD 421 II and Shure SM7B



PHOTO: ROB TMAJONE

Trumpeter Brandon Nater performed an arrangement of “When The Saints Come Marching In” before each of our five contenders.

wide frequency range in order to fully test each mic’s frequency response. I used my Earthworks 1024 preamplifier this time, with +40 dB of gain applied per mic, placing the trumpet bell exactly two feet away from each mic’s diaphragm. No compression or EQ was applied, and gain compensation/matching took place in my DAW.

Both Brandon and I chose the Sennheiser MD 421 II as our easy favorite (hear webclip #5). He preferred it for “the most natural sound, the closest to what I hear when I play,” while I like it for its musical mids and the sweetest top end response of the bunch at the peaks. Yet from there, oddly enough, we couldn’t seem to agree on a thing.

Brandon really liked the AKG D 112 (hear webclip #6), mentioning its full bottom end and sweet top (which was too peaky at 4 kHz for me). I gravitated to the E-V RE 320

for a smooth top, a touch of favorable mid-flavor and a leanness down low I knew I could easily work with.

I liked the Shure SM7B for its classic, dark reproduction. Not unlike dark chocolate or smooth velvet, the SM7B provides a romantic yesteryear vibe, handling the extreme peaks of solo trumpet most gracefully. Brandon did not concur. Instead, he preferred the Heil PR40 with its defined top and thinned bottom; he explained that he’d like to use it on ragtime-type material.

Unlike most of our other applications here, I could easily use any of these five mics on trumpet as long as the song and style matched, and I had a nice, flexible EQ available.

Kick Drum

PAR editor and drummer Strother Bullins brought his 22-inch Birch bass drum, a

snare drum and hi-hat to Catalyst for some thorough kick tests. We used a Primacoustic KickStand (which reduces resonance through the stand and minimizes muddiness) to hold the mics, each amplified via my Manley TNT solid-state preamp set at +20 dB gain and 600 ohms impedance. (I tried different impedance settings on each mic, but 600 ohms always had the most punch, fullness and clarity, if only by a very slight edge.) Strother played a simple 2-and-4 pattern to a click at 120 BPM for consistency with each take; no compression or EQ was utilized during tracking.

After some initial listens with no EQ, we realized that a touch of subtractive EQ was needed to overcome a little midrange nasality in the drum/room at about 345 Hz; we applied that to each mic’s track. At this point, we had determined our favorite mics, but the results weren’t honest enough without further EQ-ing each mic’s output to get our ideal kick tone, just like we would in a real session, because seriously, who doesn’t EQ kick? We considered some dynamic range reduction as well, but thought the ensuing coloration might confuse matters, rather than clarify them.

Strother narrowly picked the Heil PR40 as his favorite sound (hear webclip #7), even though its tone was the leanest and brightest of our group. “The more you EQ it, the more I like it,” was Strother’s response, citing a big soundstage and mids that he really liked. He almost picked the E-V RE320 (with kick filter engaged because the tone was far too “midrangy” without it), which he called “controlled” and “punchy,” but not as “wide as the PR40.” The Sennheiser MD 421 II got his third pick for its flexibility with EQ, tasty low mids, though it is “not the most natural sound for kick.” The heavy lows and sculpted mids of the D 112 didn’t get Strother’s approval, due to too much slug-

gishness and boom. The Shure SM7B got Strother's fifth pick, for a sound he found more classic/vintage and overall too limited in scope for kick drum.

I agreed with all the qualities he heard, but reached some different conclusions about them. I picked the EV RE 320 as my number one for that malleable bottom end that can be all tight and punchy (the punchiest of the lot for sure), but can be EQ'ed into lumbering hugeness if needed. I love the RE 320's top-end snap and definition for rock tracks, too. Surprisingly to me, I chose the Shure SM7B for my second pick for a super solid-sounding fundamental and midrange response that picked up the beater very musically.

Even though I've been relying on the D 112 in kick applications for years, I only gave it my third pick (hear webclip #8) for some wobbliness way down low and an EQ curve better suited for ballads than 120 BPM. I really liked the way the MD 421 II responded to EQ when boosting the lows and highs, with solid "ripple-free" bass reproduction, but I didn't find its midrange to my taste. Strother's favorite PR40 got my fifth place;



PHOTO: ROB TAVAGNONE

PAR Editor Strother Bullins provides kick drum tracks for the ST evaluations. Inset: Each mic was positioned as near-to-identical to each other as possible and outside of the kick's acoustically transparent Evans Retro Screen resonant front head.

even though its impressive response to low EQ boost really opened my ears, I didn't like its midrange response to this particular beater's attack (a hard, synthetic beater rather than a softer felt beater).

It should be noted we agreed that all five mics were quite usable, requiring different stylistic applications and EQ-ing, and all are superior to small-diaphragm mics or most condensers for getting a "standard" rock/pop kick drum sound.

Heavily Distorted Guitar

No test of workhorse dynamics would be complete without some extreme metal testing — Dude! — so I used my custom "Frankenstein" guitar (modified for low tuning to drop C); a Mesa Boogie Dual Rectifier (a metalhead's fave amp with EL34s and the silicon diodes, not the tube rectifiers, for extra snarly power); a Marshall 4x12 cabinet with Celestion speakers; the aforementioned Primacoustic KickStand holding the mics, each near the speaker (two inches off center and just off the

grille cloth); the mics boosted via my AMS-Neve 4081 solid-state preamp (for 20 dB of amplification that is slightly "forward") and, just before my DAW, an Apogee Rosetta converter. No dynamics, EQ or filtering was used in tracking, but I applied a 70 Hz HPF on playback, like many dutiful metal engineers would.

Much to my surprise, I didn't really like the translation of the Sennheiser MD 421 II; it was too "woofy" and laden with "cellulite" through its low-mids (evidenced by sluggish palm-muting response). I could've used more top-end bite and attitude as well.

The D 112 almost captured usable results, but I found its bottom a little lumbering and its mids slightly too carved out, although the D 112's 4 kHz boost was working pretty well in this app.

Finally, the Shure SM7B got something I could work with: The bottom end was full and thorough without expressiveness, and the mids had character, if possibly a little bit papery. With a little top-end EQ boosted, the

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Workhorse Dynamics II

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SM7B could build a mighty powerful heavy guitar sound.

From here on out, all the sounds I achieved were useful and desirable, picking favorites would almost have to be song-dependent. Forced to choose, it's a tie for first place between the Heil PR40 (hear webclip #9) and the E-V RE 320 without its kick filter engaged. Both had a lean and flab-free bottom end, responsive mids and plenty of high-end bite. The Heil is heavenly with just a touch of bottom EQ added and its colorful mids accentuated some nice, aggressive rasp. The RE320 had a lower frequency to its own mid-emphasis, which was clearly different from the PR40, but equally desirable.

Nonetheless, the RE320 with the kick filter was my top pick (hear webclip #10) with

its dialed-in bottom end, perfectly tuned mid-scoop and snarly bite up top. With it, there's no extra fat, no cheap sizzle, just the guitar of the metal gods with a little extra bite and attitude to cut through dense mixes.

Summary

Considering the competitively low prices of these microphones, their rugged and durable diaphragms and their simple designs/electronics, any respectable mic closet needs at least a few of these winners to handle "the dirty jobs" of audio engineering.

Considering my choices as well as those of our performers, I have to give the number one pick to the eminently flexible E-V RE320. In addition to it being voiced well, the addition of that "insta-kick" filter added more utility than a simple bass rolloff.

I'll give the number two pick to the Sennheiser MD-421 II for its musicality, warmth and gracefulness. I'd be reticent if I didn't mention how universally loathed the

mic clips are on these otherwise stellar and respected mics.

The Heil PR40 and Shure SM7B are virtually tied for third place with nearly opposite generalizations about them. The PR40 brings uncharacteristic (for dynamic mics) brightness and definition to the table, whereas the SM7B brings the opposite: softness and depth. Both color mids in their own unique ways to make them either ideal choices or inappropriate, based on the specifics of the application.

Somehow the AKG D 112 gets the number five pick here, a seemingly harsh ranking that may be misleading. The hefty, low-end response and kick drum specialization of this transducer finds it voiced mostly for fundamental-heavy kick drum sounds; that fact didn't help these rankings. However, I can't imagine not owning or using a D 112, as their quality and stylized response is often the perfect fit for extreme SPL challenges and applications requiring maximum bass response.