

Bee



FIELD GUIDE TO THE
WORKER BEE

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Welcome to the wonderful and harmonious world of the Worker Bee.

The Worker Bee, *Apis myriadalis*, is a newly discovered microphone species that is striking in appearance, sonic quality, and unmatched audio reproduction. A proud member of the *Cardiodium* genus of Bee recording tools, its lineage traces back to the finest microphones ever created for studio, stage, film, and broadcast. Easily identified in the field by its leading-edge technology, innovative engineering, and unique looks, the King Bee imparts the clearest, most accurate sound found anywhere – no matter what type of recording hive you inhabit.

From vocals to guitars, Accordions to Zithers, and virtually any instrument in the musical kingdom, the Worker Bee collects and captures sound with amazing ease. Add exquisite craftsmanship, and engineering savvy from some of the most experienced minds in the recording industry, and the result is a microphone that is one of the most productive and versatile mics in its field – or any musically flowering landscape!

We know you're eager to let your Worker Bee out, but before you begin recording, please read through this guide and become familiar with your industrious mic's features and setup. You'll learn all about the Worker Bee's audio anatomy, as well as tips and tricks based on years of our research and study of sound in the wild, that will help you make even better recordings.

So, sit back, grab some tea (with honey!) and prepare for your ears to take flight.



SCIENTIFIC NOMENCLATURE

Species	<i>Apis myriadalis</i>
Native Range	Worldwide
Preferred Habitat	Professional and home recording studios, broadcast centers, houses of worship, clover
Description	The Worker Bee has a fixed-charge back plate, permanently polarized 24mm diameter condenser capsule.
Morphology	The Worker Bee's very low noise rating (>7.0 dB) and high output make it the perfect choice for ultra-high resolution digital recording. Instead of integrated circuits (chips), the Worker Bee's Class A discrete amplifier circuitry ensures the most accurate and noise-free signal possible, with minimal distortion and coloration. You can position the side-address capsule, enclosed within its unique grille, for very precise placement.
	 <i>Caution: Do not remove, rotate, swivel, or move the Worker Bee capsule in any direction – mortal injury may result from any attempt to position the capsule!</i>
Related Species	King Bee (<i>Apis melliflora</i>)
Additional Markings	The Beekeeper (shockmount), Honeycomb (pop filter), and Beeline (optional 22-AWG XLR mic cable)



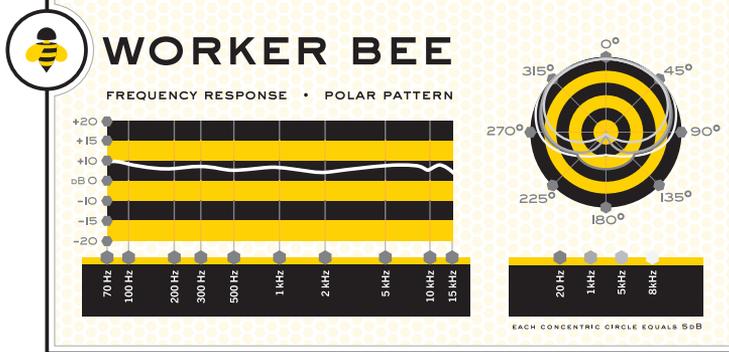
A: Capsule address side
B: Power indicator light
C: XLR input (underside)





TECHNICAL SPECIFICATIONS

Transducer Type: Fixed-charge back plate, permanently polarized 24 mm diameter condenser capsule	S/N Ratio: 79.0 dB-A (IEC 651)
Polar Pattern: Cardioid	Noise Level: 9.5 dB-A (IEC 651)
Frequency Response: 20 Hz – 20 kHz	Dynamic Range: 135.5 dB (@ 2.5k ohms)
Sensitivity: 19.0 mV/Pa at 1 kHz (1 Pa = 94 dB SPL)	Transformer Output Power Requirement: +48V DC Phantom Power (IEC 268-15)
Output Impedance: 50 ohms	Weight: 15.7 oz (446 g)
Rated Load Impedance: >1k ohms	Dimensions: 5.9" x 2.9" (152 mm x 76 mm)
Maximum SPL: 145 dB SPL (2.5k ohms, 0.5% THD)	



This Worker Bee Capsule Frequency Chart is an accurate representation of the mic's response, but how the microphone reacts in a particular application will vary greatly depending on various conditions – room acoustics, distance from the sound source (proximity), instrument tuning, microphone cabling, and more. For an artist or engineer, these internal and external variables create the basis of the final sound.





CARE & FEEDING

The Worker Bee's minimal distortion and coloration are ideal for recording vocals, drums, electric guitar, piano, and most acoustic instruments, including complex sources like saxophones, flutes, and strings. What you hear at the input is what you get at the output, so the Worker Bee will quickly become one of the most useful – and busy – mics in your hive.

The Worker Bee requires +48V phantom power to operate, which most mic preamps, audio interfaces, and mixing consoles can provide (phantom power often needs to be switched on). If there is no phantom power source, you'll need to purchase a separate +48V power supply. Caution: Some supplies and audio interfaces, while rated at +48V, may actually produce less voltage. This affects typical condenser microphones negatively, but the Worker Bee is not just *any* microphone! The Worker Bee has evolved to adapt to varying environments, and delivers outstanding performance with a power source as low as +35V.

The Worker Bee includes a custom shockmount, the **Beekeeper**, and pop filter, the **Honeycomb**.

The Beekeeper isolates the microphone from vibrations (particularly low frequencies) that could wind up in the audio signal path.



To fasten the microphone to the Beekeeper, first place the microphone bottom into the recessed base of the Beekeeper. Make sure that the front (active) side of the mic with the Neat logo is facing out. Locate the two thumbscrews on the bottom of the Beekeeper and slowly turn one of the screws halfway in, then switch to the other screw and turn it halfway in. Finally, turn both fastening screws all the way in.

Please remember – be gentle when using the Beekeeper shockmount. Forced positioning without loosening the thumbscrews can result in damage (not covered by warranty) to your Worker Bee.

On vocals, the Honeycomb pop filter helps minimize sibilance as well as plosive (“p” and “b”) sounds. To fasten, locate the pop filter's half circle indentation, then align

Thumbscrews on Beekeeper base





Notch aligns with neck of mic

it with the microphone's stem/neck. Apply gentle pressure to snap the Honeycomb into place.

The **Beeline** microphone cable (sold separately) provides the best possible signal transfer from mic output to preamp input. The "quad" design uses four internal strands, configured as spiraled pairs to reduce common mode noise (e.g., hum and other interference). Each strand consists of 16 conductors with 36 AWG oxygen-free copper wire to provide extremely efficient signal transfer, audiophile sound quality, and maximum noise rejection.



Correct setup of your Worker Bee microphone is important to protect against damaging your audio components, not to mention your ears! To avoid getting stung accidentally, we recommend the following procedure:

1. Set your mic preamp gain to its nominal position ("0" or "off").
2. Mute your console master, stage monitor and mains feeds, headphones or foldback sends, as well as studio monitors.
3. Connect the female end of your XLR microphone cable to the Worker Bee's output jack. Connect the male end to your balanced console input, balanced mic preamp, or audio interface input.
4. Switch on phantom power.
5. Un-mute all previously muted signal paths and adjust the microphone preamp gain as necessary.

If you need to make changes in your setup, remember to mute your signal paths before disconnecting any cables!

The Neat logo that appears on one side of the Worker Bee indicates the mic's front (active) side. Align the microphone with the stand so the active side faces the sound source. The Worker Bee's cardioid pickup pattern suppresses sounds arriving from the back.





POLLINATION

So let's get started! Here's a swarm of Tricks & Tips to help you get the most out of your Worker Bee.

Part of the joy – and challenge – of recording instruments is that they each have unique personalities, so a placement strategy that works for one instrument may not work so well for another. Often, even a small adjustment to the mic's angle or distance from the source can make a world of difference in the results. We'll provide you with some starting points, but don't feel limited. Use your ears, and let your creativity soar!

Vocals

There's no better way to get your vocal session off to a great start than by putting your singer in front of a microphone that looks and sounds truly inspiring. Needless to say, the Worker Bee is the perfect creature.

Start with the microphone at lip level and position the vocalist 4 to 5 inches (10 - 13 cm) away. For more intimacy and presence, move in – as close as 1 inch (2.5 cm), if needed. This won't overpower the mic, but always use the supplied Honeycomb pop filter. The filter helps control breath pops and also protects the diaphragm.

Experiment with different angles. Aiming directly at the mouth provides the most clarity and articulation. A slight upward tilt adds head tone and projection. A downward tilt adds warmth and softens the top end.

For group vocals, position the singers as close in as possible. Be sure to have some honey-sweetened breath mints close at hand . . .

Electric Guitar

Because of its robust characteristics, the Worker Bee is an excellent choice for any amplified guitar sound, clean or dirty. The speaker cone provides a broad palette of tones and as the artist, you supply the color. Brightness is strongest in the cone's center, and decreases gradually as you move to the outer edges. Clean sounds often benefit from the top boost near the center, while overdriven sounds enjoy the warmth and "beef" at the outside. Keep the mic close for a "direct" sound, or move it back a foot (30 cm) or more for some room ambience. With distorted guitars, a little distance adds depth and helps round out the rough edges.

Here's a nifty trick: the next time you record a "Jazz Box" guitar through a direct (D.I.) setup, place your Worker Bee in front of the guitar, toward the fingerboard. Now mix in a small amount of that "finger" sound with the direct signal to add personality. A little bit can make a big, big difference.





Acoustic Guitar

Acoustic guitars can be tricky, but here the Worker Bee reigns supreme. Its shimmering high end adds life and air to bring out the guitar's "sparkle." Each guitar is different, but the "sweet spot" is usually near where the neck and body join (around the 12th – 14th frets). For maximum presence, start with the mic close to the guitar – about 3 or 4 inches (7 - 10 cm). Moving the mic closer to the sound hole increases the warmth and fullness, but beware the dreaded "sound hole boom" that can give acoustic guitars a "muddy" quality. Now try moving the mic farther from the guitar. This may help even the sound and create a better image, with the trade-off of a little less presence. Find the right balance, and your guitar will sing.

Adventurous types can try adding a second Worker Bee below and behind the bridge. Adjust the tilt toward the bridge to add brightness and reduce lows. Pan the two mics left and right for a spectacular stereo image. The balance is correct when the sound is wide, but centered. Sweet!

Strings

Because of the Worker Bee's natural highs and soft midrange characteristics, it's an excellent choice for recording all members of the orchestral string family. Violins and violas sound best with the mic placed above the body at a distance of 2 to 3 feet (0.6 - 1 m). Angling the capsule toward the bridge produces a warmer sound, while favoring the tuning pegs produces a lighter tone. Raise the mic for a more classical ambient sound, or lower the mic for a more detailed, contemporary sound. For a cello or bowed bass, start with your Worker Bee closer – 1 to 2 feet (30 - 60 cm) away and aimed toward the bridge. Tilt closer to the f-hole for a warmer sound. But if you need thunder from your basses, move the mics back and let the room roar!

When recording a full section, a pair of Worker Bees placed wide in front, at a distance of 10 feet (3 m) or more can greatly enhance your ensemble's image and depth. Mix the room sound in with the close mics for a rich, spacious blend.

Upright basses in a contemporary setting, which are often fingered, need a different approach. Start with your Worker Bee in tight – 3 to 4 inches (7 - 10 cm) above the f-hole but angled towards the bridge. This should produce a clear, present timbre with rich bass and a clean percussive finger attack. Move away from the f-hole if the sound becomes "muddy." Or, for a darker, more traditional tone, try placing the mic directly in front of the bass between the bridge and fingerboard at a distance of 6 to





12 inches (15 - 30 cm). Upright basses vary a great deal in personality, so finding the “sweet spot” on your instrument may take some exploration – but your Worker Bee will get you there.

Drums & Percussion

The Worker Bee’s slim profile and fast transient response make it a perfect choice for drums and percussion. For drum kits, congas, djembes, or other hand drums, begin by placing the microphone just inside the rim 2 to 4 inches (5 to 10 cm) above the head. Directing the capsule toward the point of impact (stick or hand) will emphasize attack and definition. Angling the capsule back towards the rim produces a rounder tone. To maximize separation and boost the fundamentals, keep the mics close. Or raise the mics for a natural, ambient interplay between drums and their surroundings.

With its sparkling high-end qualities, the Worker Bee is an excellent pick for cymbals, shakers, and small hand percussion. For stereo drum overhead use, place two Worker Bees about 2 feet (60 cm) above the kit, one over each cymbal cluster. If possible, position them equidistant from the snare’s center for the best phase alignment. A mic cable can be a useful measuring tool.

A similar arrangement works well for a small percussion table. For balance, arrange the instruments on the tables and stands so that the loudest ones are farthest from the mics and the softer ones are closer.

Saxes, Flutes and Reeds

The Worker Bee’s exceptionally smooth response delivers a modern tonality when recording saxophones and other wind instruments. One characteristic of woodwinds is that the sound from different registers emanates from a different point on the instrument, so the goal is to achieve an even balance throughout the horn’s range. For soprano sax, clarinet, and other straight instruments, position the capsule about 8 to 12 inches (20 - 30 cm) directly above and in front of the keys, between the middle of the horn and the lowest pads. To adjust the balance of airy highs (toward the mouthpiece) and cutting midrange (toward the bell), try moving the microphone up or down along the body’s length. For a more biting tone, move the mic to include some bell sound. For a darker and smoother sound, move the microphone farther away from the instrument.

For curved horns – alto, tenor, and baritone saxes, bass clarinets, and similar – place your Worker Bee 8 to 12 inches (20 - 30 cm) in front of, and to the side of the bell. Angle the capsule up toward the mouthpiece to capture more air, brightness, and

THE BEE FAMILY



KING BEE



WORKER BEE



BUMBLEBEE



BEECASTER



BEEHIVE



BEESTRO

high notes. For a mellower sound, orient the capsule toward the floor to emphasize the sax's low range and tame the biting upper mids that project straight out of the bell. With all woodwinds, avoid aiming directly down the bell – this makes the lowest notes “honk.”

For flute, start by placing the Worker Bee 2 feet (60 cm) in front and above the middle of the instrument. Remember that the flautist is moving a *lot* of air, so avoid the jet stream! If you want more highs and breath sound, move the capsule closer to the mouthpiece.

For a pristine, warmer classical tone with less brittle air and reduced key noise, place the microphone directly above and behind the mouthpiece. Make sure the mic is far enough away from headphones to avoid leakage and possible feedback.

We hope you enjoy your Worker Bee, and find it to be an ideal species for a wide spectrum of instrumentation and recording needs. With proper care and usage, the Worker Bee will provide a lifetime of creative cross-pollination no matter what – or where – you record!



BEEFRIEND THE BEES!

Honeybee populations are in decline worldwide due to various factors ranging from pesticide use and parasites to climate change. In the United States and Europe alone, honeybees have seen a 25% - 45% decline over the last twenty years.

Honeybees play an important role in ecosystems and are essential pollinators of many of the foods we eat everyday – apples, peaches, almonds, zucchini, and hundreds more – literally a third of all the food we eat depends on bees and other pollinators to make sure it makes it to your table.

To learn the latest buzz on the many challenges facing bees today, visit sos-bees.org for information and background on the problems and solutions in creating a stable and healthy worldwide bee population. Get involved and help save the bees!

BEE ACCESSORIES



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WARRANTY

This Microphone or related part is warranted under the conditions outlined below to its original, registered owner, provided the purchase was made from an authorized (NEAT) dealer. This Microphone or related part is guaranteed to remain free from operating defects for three (3) years from the date of purchase. In the event that service is required, all necessary parts and labor will be furnished free of charge. This warranty is void if the serial number has been altered, removed or defaced. The warranty is void if, in NEAT's sole opinion, the equipment is altered, misused, mishandled, maladjusted, suffers excessive wear, or is serviced by any parties not authorized by NEAT. The warranty does not include transportation costs incurred because of the need for service unless arranged for in advance. NEAT reserves the right to make changes in design and improve upon its products without obligation to install these improvements in any of its products previously manufactured. This warranty is in lieu of any or all expressed or implied. In keeping with our policy of continued product improvement, NEAT reserves the right to alter specifications without prior notice.

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