Condenser vs. Dynamic Microphones

Selecting The Right Mic

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When selecting microphones to use both live and in your home studio, you'll commonly come across two different types of microphones, **dynamic** and **condenser**. Let's look at both of these microphone types, and what their advantages and disadvantages are.

**Condenser Microphones**

Condenser microphones are the most common types of microphones you'll find in studios. They have a much greater frequency response and transient response - which is the ability to reproduce the "speed" of an instrument or voice. They also generally have a louder output, but are much more sensitive to loud sounds.

Condenser microphones are generally much more expensive than dynamic microphones, but keep in mind, many cheap condensers exist. The problem is that most of these mics are coming from a couple factories in China, and all sound the same -- very brittle and with little low end.

They require the use of a power supply, generally 48 volt "phantom power", and that's supplied very easily by most mixing boards or external power supplies (look for a switch that says "P 48" or "48V" on the channel strip or on the back of the mixer.)

Condenser microphones are generally used only in studios because of their sensitivity to loud sounds and the fact that they're quite a bit more fragile than their dynamic counterparts. That being said, you'll find them onstage at live music venues for use as drum overheads or for use in orchestral or choral sound reinforcement.

With condenser microphones, you'll find two different types: small diaphragm, and large diaphragm.

**Large Diaphragm Microphones** - Large diaphragm microphones (LDMs) are generally the choice for studio vocals, and any instrument recording where a more "deep" sound is desired. A large diaphragm microphone generally warms up the sound of what it's recording, which also leads to the myth that most LDMs reproduce low frequencies better than small diaphragm mics; this isn't true, in fact, small diaphragm mics are much better at reproducing everything evenly, including bass. You'll want a pop screen if using a condenser microphone for vocals; they're so sensitive to transient noises that the "P" and "SH" sounds you make will cause distortion.

**Small Diaphragm Microphones** - Small diaphragm microphones (SDMs) are generally the best choice where you want a solid, wide frequency response and the best transient response, which as we mentioned before, is the ability for your microphone to reproduce fast sounds, such as stringed instruments. SDMs are also the preferred choice for concert taping.
Dynamic Microphones

Compared to condenser microphones, dynamic microphones are much more rugged. They’re also especially resistant to moisture and other forms of abuse, which makes them the perfect choice onstage. Dynamic microphones like the Shure SM57 and Shure SM58 are legendary for not only their good sound quality, but the amount of abuse they can withstand. Any good rock club probably has at least 5 of each of these microphones in various states of aesthetic ruin; however, they still turn on and more than likely sound just as they did the day they came out of the package.

Dynamic microphones don’t require their own power supply like condenser microphones. Their sound quality is generally not as accurate, however. Most dynamic microphones have a limited frequency response, which makes them well-suited, along with their ability to withstand high sound pressure levels, for loud guitar amps, live vocals, and drums.

That being said, there’s a few companies right now producing "boutique" dynamic microphones -- some with characteristics similar to that of a condenser with the sustainability of a dynamic. Good dynamic microphones include the Shure SM57 ($99), Sennheiser E602 ($100), and the Shure SM58 ($109).

Selecting Between The Two

Let’s take a look at what you might be doing, and then we’ll suggest a microphone for your use.

Recording Vocals At Home - You’ll want a large-diaphragm condenser microphone if you have phantom power; if not, you might want to consider a large-diaphragm dynamic microphone like the Shure SM7B ($350). If you’re on a budget, you won’t get much better than a Shure SM58.

Recording Acoustic Guitar - You’ll want a good small-diaphragm condenser microphone. A good choice is the Oktava MC012 ($99), Marshall MXL 603S ($99), or, more expensively, the Neumann KM184 ($730).

Recording Cello/Upright Bass - You’ll want a large-diaphragm condenser microphone. This is because, while the strings resonate quickly, the slower transient response of the large-diaphragm microphone will lend to better low frequency reproduction on these instruments.

Concert Taping - You’ll want a pair of small-diaphragm condenser microphones for stereo recording. The small diaphragm allows for faster and more accurate transient replication, and better low end reproduction.

Drums - Here, you’ll want a combination of dynamic and condenser microphones. You need a dynamic mic on the drums themselves - Shure Beta 98 (condensers) are great on toms, and Shure Beta 57 or SM57, along with the Heil PR20, sound great on snare, Heil PR40 and Shure Beta 52 are great on kick. Then for overhead mics and cymbals, you’ll want small diaphragm condenser microphones, since they give you the best frequency and transient response. However, some dynamic microphones -- such as the Heil PR series and Shure SM57 -- can be interchanged for condensers with great results.