

# HOW AMPS WORK



Essentially, an Amplifier (or Amp for short) takes the sound from an instrument (or microphone) and makes it audible (able to be heard). Electric Guitars and Bases make a little bit of sound on their own, but they need amps to be heard properly. Some Electric Keyboards make sound on their own as well, but others need an amp to be heard. There are different kinds of amps, and different ones can change sound in various ways (besides making it louder), but most of them share the same basic elements and functionality with some variation in style and appearance.

**Gain, Volume, and Master:** The main job of an amp is to amplify (or boost) the volume level of an instrument (or mic). On some amps, there is just one knob to control this, but many amps have two or three different knobs, all controlling how much the sound is amplified. These 3 knobs, Gain, Volume, and Master, all control different aspects of amplification.

In most amps, the sound is actually amplified twice, in two different sections of the amp. The first is called the **Preamp**. The **Gain** knob adjusts the sound level coming from the instrument into the Preamp, and the **Volume** knob adjusts the level coming out of the Preamp. The second section is called the **Power Amp**, where the sound is made loud enough to send to the Speaker. The **Master** knob controls the volume of the Power Amp. Sometimes these knobs are labeled differently, but generally, the far left knob controls the Preamp volume and the far left knob controls the Power Amp volume. **Gain** (sometimes labeled **Drive** or **Volume**) tends to produce distortion as it gets louder, while **Master** (or **Power Amp Volume**) tends to maintain a clean signal when it is turned up.

**Channel Select:** Some amps have the option to switch between two channels, each with a different sound. Usually, there is a **Clean** channel (for most rhythm and background playing), and an **Overdrive/Distortion** channel (for louder lead parts).

Some amps are actually two separate pieces: a **Head** and a **Cab** (short for Speaker Cabinet). In this type of amp, the Head is where all the actual amplification happens, while the Cab just contains the speaker that emits the sound.

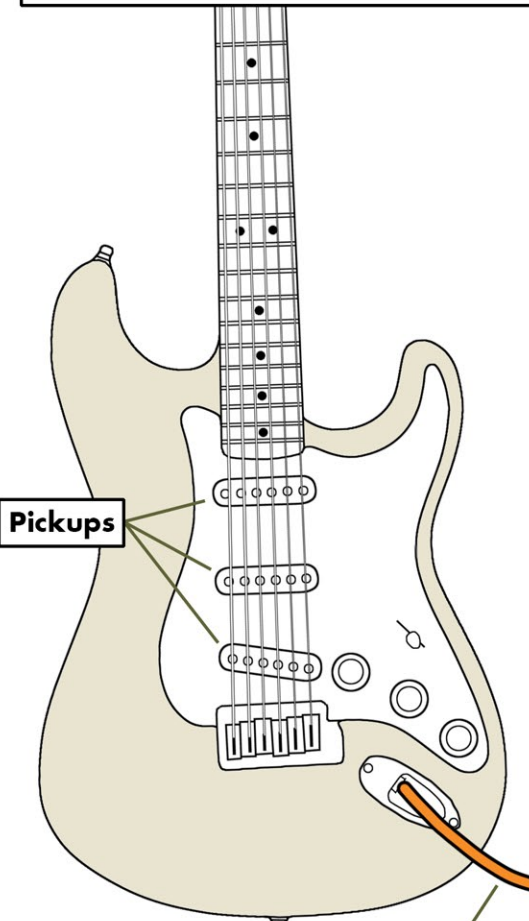
HEAD

CAB

Amps that are just one piece containing both amplifier and speaker are often called **Combination**, or **Combo Amps**.

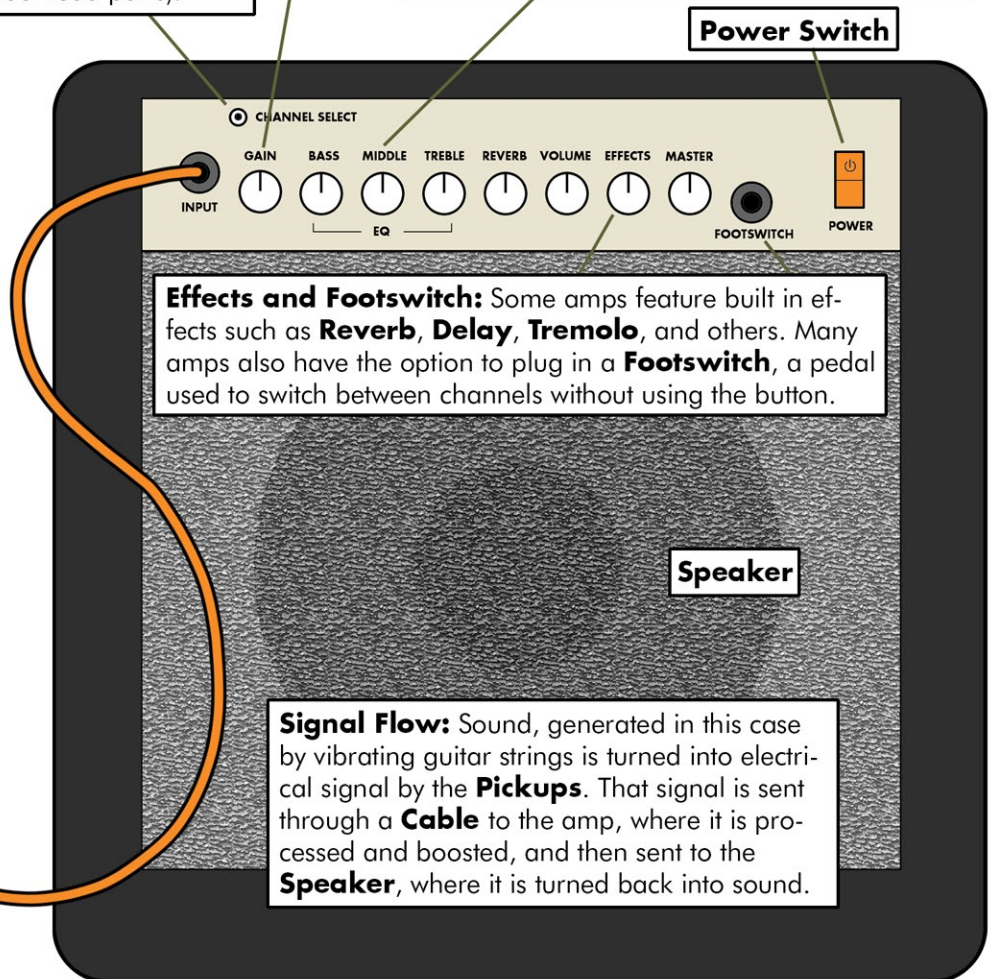
**EQ:** Most amps have an EQ (Equalizer) section, which controls how different kinds of sound are amplified. The EQ section typically consists of 2-3 knobs: **Treble**, **Bass**, and sometimes **Middle** (or **Mid**). The Bass knob boosts lower sounds (like bass guitar), the Treble knob boosts higher sounds (like the high strings on a guitar) and the Mid knob boosts mid-range sounds.

Power Switch



Pickups

Instrument (1/4") Cable



**Effects and Footswitch:** Some amps feature built in effects such as **Reverb**, **Delay**, **Tremolo**, and others. Many amps also have the option to plug in a **Footswitch**, a pedal used to switch between channels without using the button.

Speaker

**Signal Flow:** Sound, generated in this case by vibrating guitar strings is turned into electrical signal by the **Pickups**. That signal is sent through a **Cable** to the amp, where it is processed and boosted, and then sent to the **Speaker**, where it is turned back into sound.