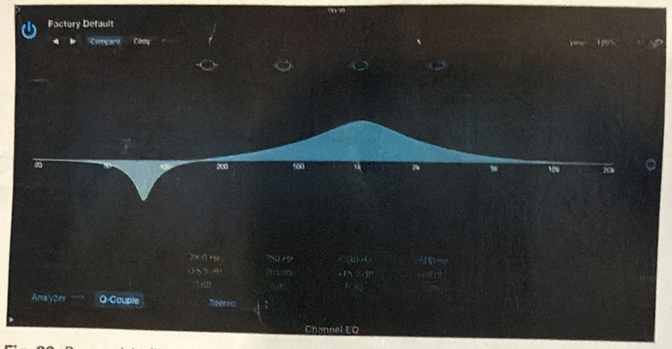

Fig. 22: Parametric filter response. A parametric filter can provide a peak or a notch in the frequency response.

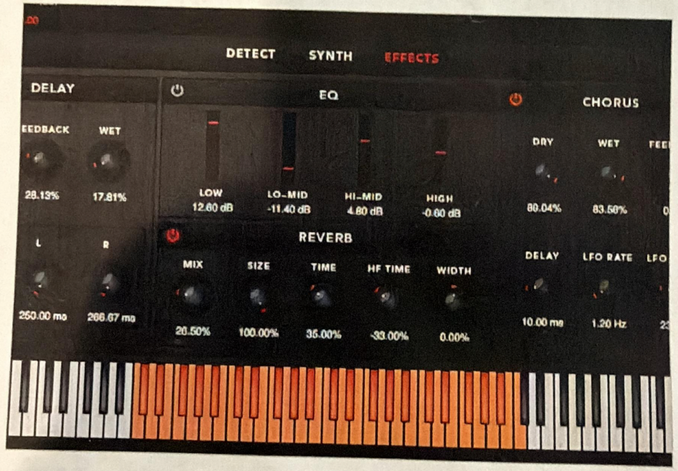

Fig. 23: A graphic EQ gets its name because the sliders draw a "graph" of the frequency response.

COMPRESSOR

A compressor also reduces dynamics but unlike a limiter, reduces peaks and amplifies lower-level signals to maintain a more constant level. The most important controls are threshold and ratio. Lower thresholds amplify low-level signals more, while higher ratios reduce high-level peaks more. While compressors can help with presenters at conferences where noise levels aren't too high, amplifying low-level signals with musical ensembles can encourage feedback. For most applications, leave compression off.

ders are very easy to adjust, particularly because you can move more than one at a time.

ES

e two output buses. More advanced models have several buses (called buses), and you can set up different mixes on these different buses k level controls. These "pick off" part of a channel strip's signal, and the same way a fader regulates the level going to the master stereo

for a mixed bus output is to set up a separate mix for singers. This is gers can hear themselves coming from the main speakers, then that getting into their mics, which encourages feedback. But setting up the peakers to minimize feedback makes it difficult for the singers to hear g it tough to stay on pitch. As mentioned previously, one solution is to s with reference earphones. A separate mix can be set up specifically g an auxiliary bus, perhaps with vocals and melodic instruments up urned down. This aux bus output feeds a separate headphone amp, eference earphones. Thus the singers can hear themselves without r signal get into their mics.

cation is to provide a master volume control for several individual mple, suppose you're mixing a church choir with multiple mics. You from each mic to a bus, turn down the mic channel faders, then return mixer input or send (aux) return input (Fig. 20) to blend it back in with se the send controls to balance each mic perfectly, then if you want to ntire choir, use the mixer input level or send return control rather than d control individually.

ly have a pre/post switch to pick up the pre-channel fader signal (so instant regardless of the fader setting) or post-channel fader, so that ler pulls down the send to the bus as well.

Each mixer has its own way of sending signals to buses. If space is tight and there are lots of buses, a channel might have a send control along with switches that route the send control to a particular bus (or buses).

THE MASTER SECTION

A mixer's master section includes "global" controls, such as:

Master output control. This varies the mixer's overall output level.

Send bus master output controls. While not present on all mixers, these affect the overall level of the bus they control. In the example of the singer listening through reference earphones, the bus master control would adjust the level going to the reference earphones.

Bus return controls. In the choir application mentioned above, you may not need to use up a mixer input for the bus return, as there may be some "return" inputs specifically for this purpose. These will be line level and generally not offer all the options of a typical channel strip, but usually include a level control. They can also be used as extra inputs in a pinch.

Output meters. Most mixers have at least an output meter, and high-end mixers might include meters for individual channels. A typical meter will consist of 10 or more LEDs, and use different colors to differentiate among ranges of levels (green for normal, yellow for close to overload, and red for overload). Avoid letting the signal go into the red zone, as this can lead to distortion.

Headphone output. Most mixers have a headphone jack with an associated level control that's independent of the main output. This means you can turn down the output so the audience doesn't hear anything, yet listen to the various channels on headphones to make sure everything is working properly.

com

lines with XLR jacks. The line ins usu- 1/4" jacks, but some higher-end gear

line-level signals coming from today's e with whatever connector your mixer

lify greatly, represents the "friction" measured in ohms) isn't something sic guidelines.

w-impedance output and generate tputs to low-impedance mixer mic fically to accept low-level, low-im-

layers, etc. These invariably have evel") signals. Impedance matching er inputs that handle line levels.

cause the output impedances are high for mic inputs but too low for ts; otherwise, if you plan to plug a se a preamp to match impedance arious effects, a multi-effects pro- ate enough level to feed line-level

to the speaker's input will do the ng impedance are pretty simple edance output on your powered 8-ohm outputs, and the speaker

ious pieces of gear. Don't buy —have a selection of short and

ally reliable, but can fail (and

nbalanced lines are fine for tputs from guitar and bass balanced lines if the gear

n the wire.

cts over them, and running

r with non-residue gaffer's

bles together for a neater like speaker connections) e crosstalk.

connection. Squirt some

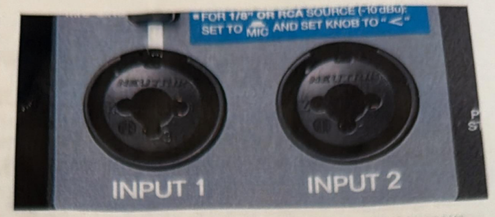

Fig. 10: The combination XLR jack is toward the left, and accepts both XLR and 1/4" phone plugs.

Fig. 11

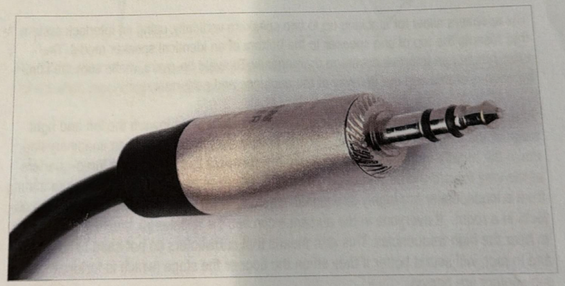

Fig. 12: This stereo mini-plug looks like a smaller version of a 1/4" stereo or balanced plug—and that's exactly what it is.

contact cleaner (available at stores like Radio Shack, or a more pro product like Caig's DeoxIT) on the plug, then plug and unplug a couple dozen times. This will remove the oxidation and improve the contact.

Connect all your cables before turning on power to your PA system. If you must connect or disconnect a cable while power is on, turn off the amplifier or powered speakers, then turn them back on again when all connections are made.

Always have some adapters on hand, like XLR to 1/4". You never know when to expect the unexpected.

audio source. For example, if a lecturer's voice has a thin quality, signal processors can make the voice sound fuller and deeper.

THE ROOM AND AUDIENCE.

You may not think of them as part of a PA system, but as we'll see later, they can have a major effect on the overall sound.

Fig. 1: The keyboardist is using a boom mic stand to go over the keyboard, while the singer behind him is using a straight, vertical mic stand.

PA SYSTEM COMPONENTS

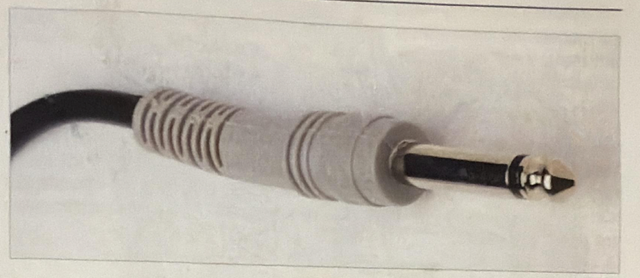

Fig. 5: An unbalanced 1/4" phone plug. Note the tip, the black insulating band, and ground. The flare toward the base of the jack provides a stronger grip when inserted into a jack.

Fig. 6: A balanced (TRS) 1/4" phone plug. Note there are three sections, separated by black insulating bands—the tip, the ring, and the ground. These are also called stereo plugs when used to carry two independent left and right channel signals.

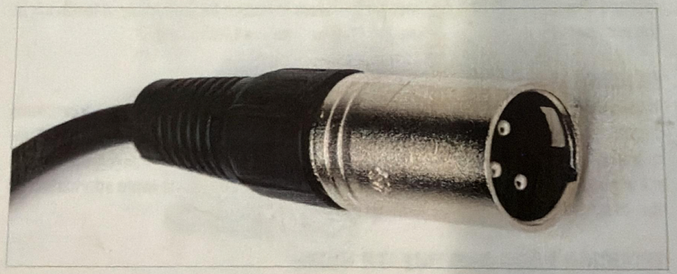

Fig. 7: An XLR plug, as used for balanced line connections.

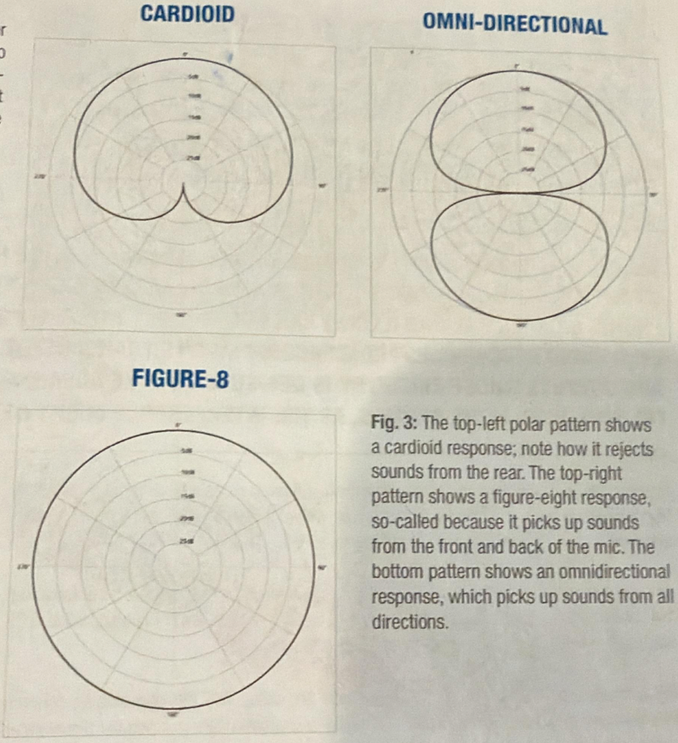

Fig. 3: The top-left polar pattern shows a cardioid response; note how it rejects sounds from the rear. The top-right pattern shows a figure-eight response, so-called because it picks up sounds from the front and back of the mic. The bottom pattern shows an omnidirectional response, which picks up sounds from all directions.