

HOW TO CONNECT A GRAPHIC EQUALIZER OR FEEDBACK SUPPRESSOR TO YOUR SOUND SYSTEM

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In theater stage productions, two of the most important tools for reducing feedback are the graphic equalizer and the feedback suppressor. Both devices work by turning down frequencies that tend to feed back. If you use either device, you can expect to hear the actors' voices more loudly without feedback in your P.A. system.

In this article, I'll call the device a "graphic EQ". How do you connect it to your sound system?

- If your mixer has groups or submixes, connect the graphic EQ to the insert jack in the floor-mic group bus. Or connect the graphic EQ to the send and return jacks in that bus.
- If you have a separate mixer and power amp, and your mixer lacks groups, connect the graphic EQ between the mixer and the power amp.
- If you have a powered mixer, connect the graphic EQ between the MIXER OUT jack and the POWER AMP IN jack.

I'll explain those terms and describe the connections.

Connecting to a group bus

Elaborate mixers or mixing consoles have a feature called "groups" or "group busses". A group bus is a channel in the mixer that combines the signals of several selected microphones. It's also called a "submix". Your mixer might have several group busses, called "Group 1", "Group 2", and so on.

Figure 1 below shows the signal flow from input to output (left to right) in a typical theater sound system. You can see where the group busses are in the signal path.

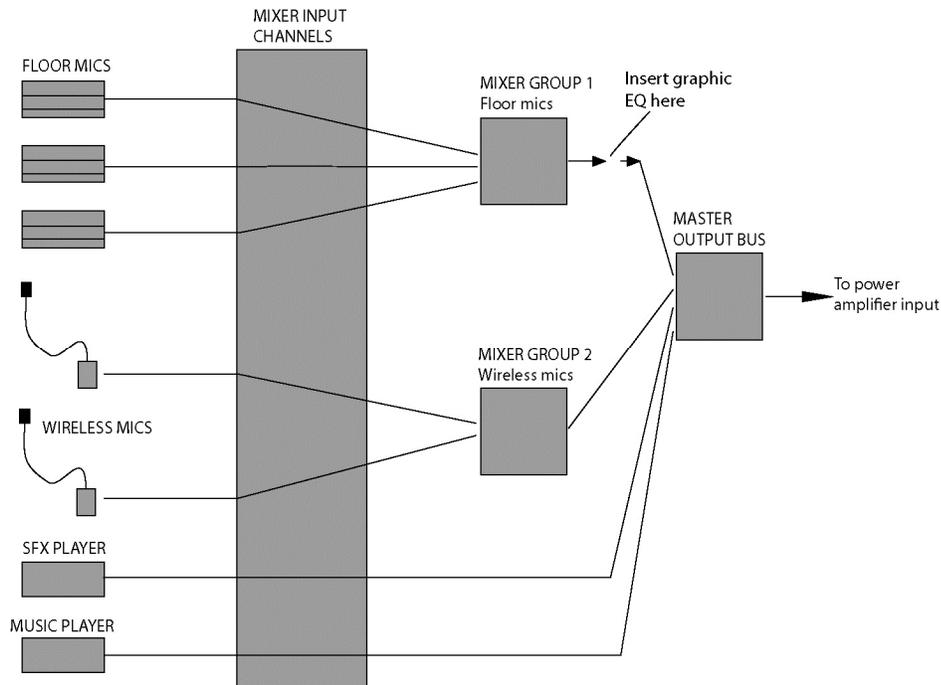


Figure 1.

In a mixer, each input module has some Assign buttons. You can assign or send the signal of each microphone to any group. That group will contain a mix of those mic signals. In Figure 1 above, all the floor mics are assigned to Group 1. So the Group 1 output is a mix of just the floor mics. The wireless mics are assigned to Group 2. The sound effects and music are assigned to the master output bus.

The submixes from Groups 1 and 2, and the SFX and music, combine in the master output bus to make a master mix of all the sound elements. That master mix goes to your power amp and loudspeakers, and that's what the audience hears.

Why would you assign the floor mics to their own group? That way, you can process that group independently from the other groups. You want to apply the graphic EQ only to the floor mics, not the headworn mics or music. Only the floor mics need that EQ to reduce feedback.

So we want to connect the graphic EQ between the Group 1 output and the master bus input as shown in Figure 1. Here's how:

On the back of a mixer, each group has a SEND jack and a RETURN jack. The SEND jack is the output of the group bus. The RETURN jack is the master bus input. As shown in Figure 2 below, connect the SEND jack to the input of the graphic EQ. Connect the RETURN jack to the output of the graphic EQ.

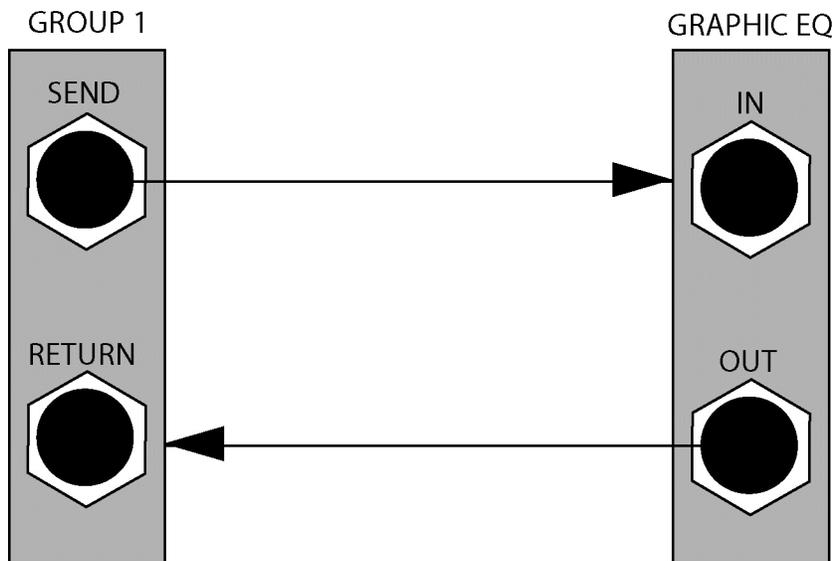


Figure 2.

You SEND the Group 1 mix to the graphic EQ, and the equalized signal RETURNS to the master bus.

In some mixers the send and return are combined into a single INSERT jack. It's a TRS (tip-ring-sleeve) type. Usually the tip of the jack is the Send signal, and the ring is the Return signal. The Sleeve is the common ground for send and return. So you need an adapter cable with a TRS phone plug (stereo phone plug) on one end, and two phone plugs on the other end.

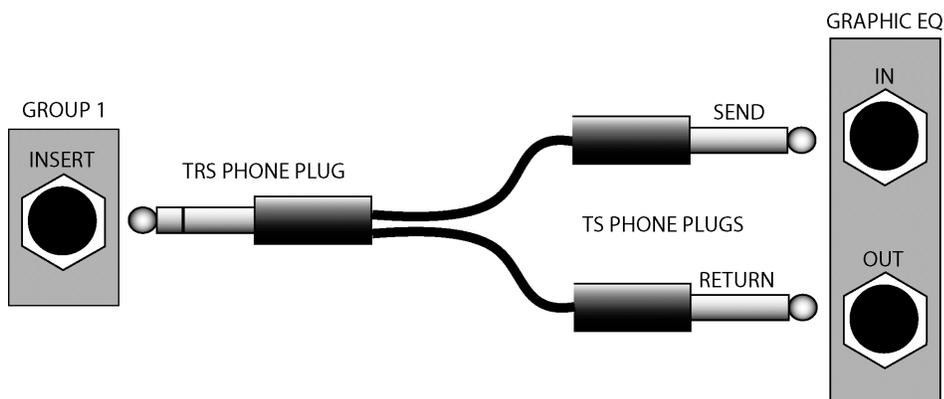


Figure 3.

Connect the TRS plug to the Group 1 INSERT jack (Figure 3). Connect the two phone plugs to the graphic EQ input and output. Be sure to connect the SEND plug to the graphic EQ input, and connect the RETURN plug to the graphic EQ output.

Now, when you adjust the controls on the graphic EQ or feedback suppressor, it will affect only the Group 1 (floor mic) signals.

Connecting between the mixer and power amplifier

So far we looked at the connections to a mixer with group busses. If your mixer lacks groups, you'll need to use a different method described below.

As Figure 4 shows, connect the mixer's master output to the graphic EQ input. Connect the graphic EQ output to the power-amp input. That way, any adjustments you make to the graphic EQ will affect the feedback of all the mics in the production. It will also slightly affect the tone of the music and sound effects.

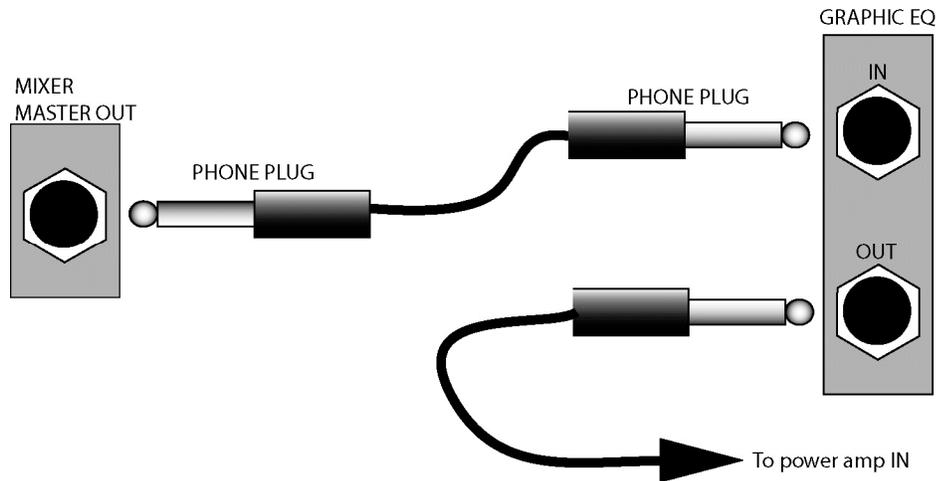


Figure 4.

Connecting to a powered mixer

You might have a powered mixer which combines a mixer and power amp in the same chassis. On the back of some powered mixers are jacks labeled MIXER OUT and POWER AMP IN or something similar. Connect the MIXER OUT jack to the graphic EQ input. Connect the Graphic EQ output to the POWER AMP IN jack (Figure 4).