

How to Control Feedback

3 feedback prevention & suppression techniques

Where:

Feedback can occur anytime your audio system has an input device that can receive a signal from the system's output.

For example: a microphone receiving a delayed copy of its own signal back from a speaker.

How:

Wherever the sound system's output is added back in phase with its input, constructive interference (feedback) occurs.

When the output is added back to the input via the feedback loop, changes in tonality occur due to constructive and destructive interference.

Now What?

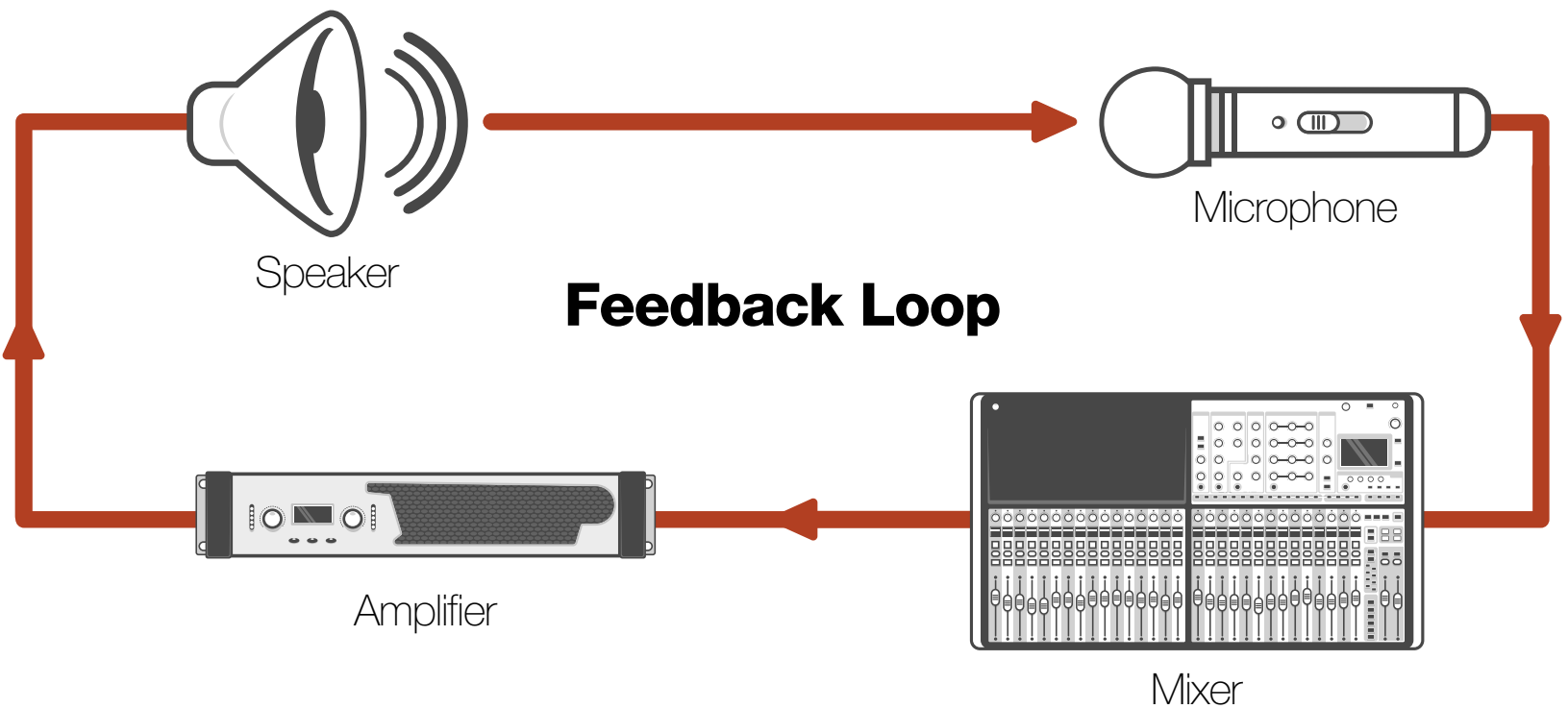
In the real world, you cannot completely eliminate the feedback gain, so you will never have an ideal response.

As such you have to choose between two conflicting objectives: achieve the maximum gain-before-feedback OR achieve the tone ideal for your performance.

Gain-before-feedback – push your system as loud as it can go before feeding back.

Tone – keep the sound quality as pure as possible.

It is important to strike a balance between the two. If you operate near maximum gain, you will get artificial “peaks,” ruining the tone.



Solutions

The first and most important step in preventing feedback is to properly set up your room using passive feedback reduction techniques. Then apply EQ, and finally set up an automatic feedback suppressor.

1. Passive Reduction Techniques

- a. Treat your venue with some “Natural EQ” when possible by adding bass traps, diffusers, etc.
- b. Less is more. Fewer speakers and mics result in fewer feedback paths.
- c. Consider microphone and speaker directionality while arranging the space.
- d. Keep your mics and speakers as far away from one another as possible. You'll get the highest gain directly in front of the speaker, so avoid putting the microphone there if possible.
- e. Watch out for strong reflections that may also cause feedback

2. Apply EQ

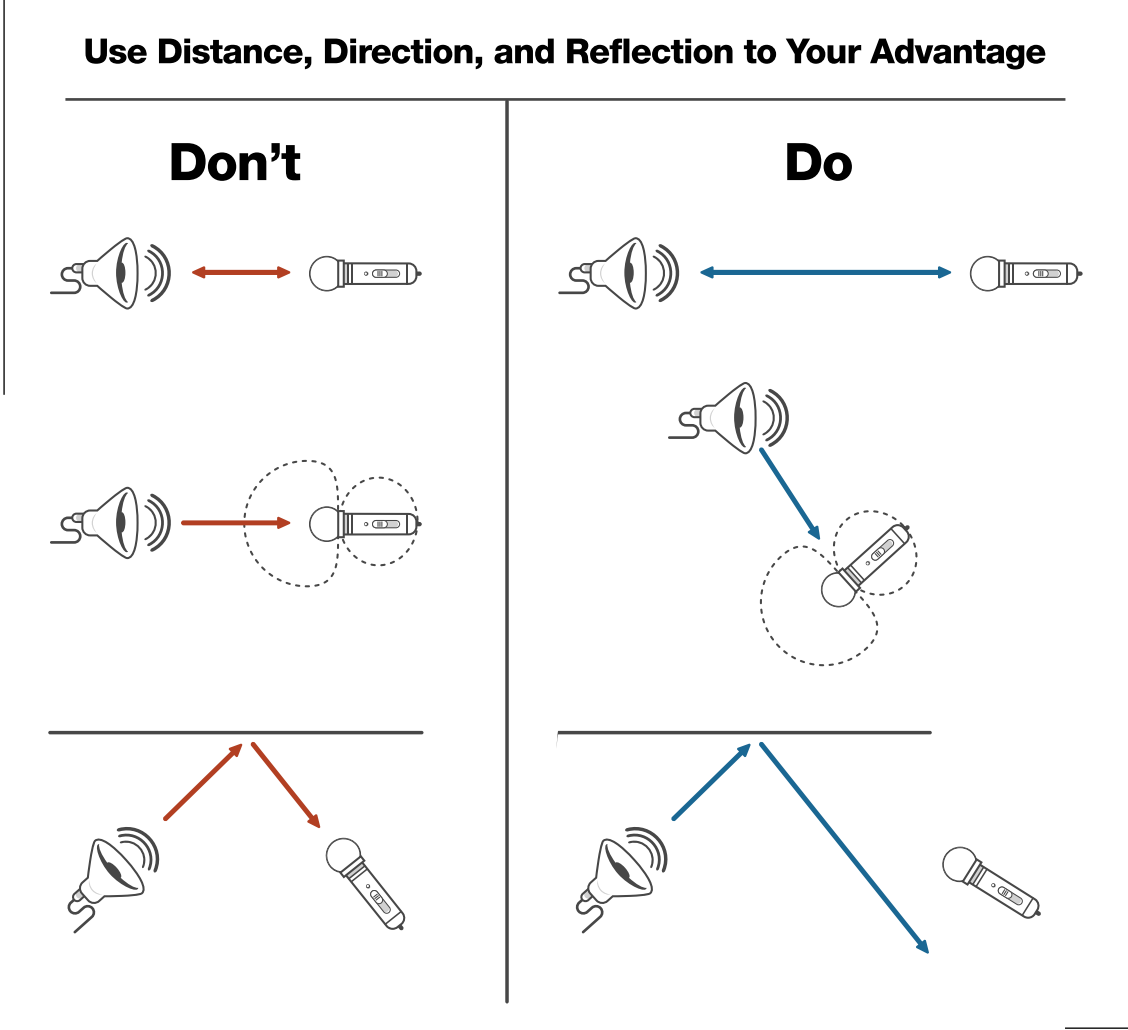
- a. Check the tonality of the room in all points of interest.
- b. EQ the area around the mics for maximum gain before feedback.
- c. EQ the area around the audience to ensure a certain tonal response.
- d. Be careful of speaker delay misalignment and polarity issues. They can have a big effect on your tone.
- e. A room full of people has a different response than an empty room. Use an Auto-EQ system like dbx's DriveRack PA2 which is not too invasive to test even as the crowd arrives.

3. Set up an Automatic Feedback Suppressor

- a. An Advanced Feedback Suppression unit like the dbx AFS2 standalone feedback suppressor can catch any problematic feedback that may still occur.
- b. Increase your output and test how high you can go before experiencing feedback problems.
- c. Often times the act of approaching the mic will reveal a problematic feedback region. When ringing out your system, have the performers stand in their positions (with their ears covered). This helps to catch most of the problem tones before the performance starts.
- d. Once you've reached a level where you can't increase the gain before running into a lot of new feedback, you've reached your max. Your actual performance level should be a few dB below max.



—AFS2 Feedback Suppressor



For more information on feedback suppression, read [A Detailed Look at Feedback Prevention & Suppression](#).

