# BerkleeShares.com

## FREE music lessons from Berklee College of Music

**Mixing and Mastering with Pro Tools**

Lesson 3:

Pro Tools Mixing: Dynamics Overview

This lesson is excerpted from an online course. While the navigation links on each page are not active, all of the multimedia interactions are. Have fun!

Check out Berkleeshares.com for more lessons just like this one.

## Intro to Dynamics: Gates and Expanders

⬅ ➡

Dynamics processors are essential in mixing. In a typical pop music production, most of the tracks have some kind of dynamic processing going on. Dynamics processors include:

- gates
- expanders (downward and upward)
- compressors
- limiters
- duckers
- de-essers

The DigiRack plug-ins include all of these except an upward expander and a ducker.

**Dynamics Processor basics**
All dynamics processors operate on the same basic principle. In a dynamics processor, you set an amplitude threshold, and the dynamics processor responds to the signal based on the signal's relationship to the threshold. Compressors, limiters, de-essers, and duckers act upon the signal when it exceeds the threshold, while gates and downward expanders act upon signals below the threshold.

This simple block diagram is a good generalized illustration of the basic components and signal paths in dynamics processing. Keep this diagram in mind when we look at all of these dynamics plug-ins.

.

.

The incoming signal is split into two separate signal paths: an audio path and a control path. The audio path signal goes through an amplifier stage, and is sent to the output of the dynamics processor. The control signal feeds a detector circuit, which compares the signal to a threshold value. Based on the signal's relationship to the threshold, the detector circuit will send control signals to the amplifier, changing the amplification, and therefore the dynamics, of the audio signal.

The control signal path is also called the sidechain, and the signal on the sidechain is also know as the *key signal*.

⬅ **Previous Activity Page**                    **Next Page** ➡

## Intro to Dynamics: Gates and Expanders

### Gates

Let's start by thinking about gates. In a gate, audio signals with amplitudes above the threshold are passed though the gate unchanged, that is, at **unity gain**. When the signal drops below the threshold, the gate reduces the signal by a fixed amount of dB, based on the setting of the **range** parameter.

In the DigiRack Gate, the parameters are

**Fig 3.11. the Gate Plug-in**

### Intro to Dynamics: Gates and Expanders

**Using Gates in Mixing**

Let's think about using gates in our mix of **Be There**, and start by applying a gate to the kick track. We'll use this track to experiment, and get a feel for how gates work.

Solo the kick track, keeping your EQ plug-in (from the previous topic) in the first slot. Insert a gate in the second Insert slot, and try the settings in the screenshot of the Gate plug-in below:
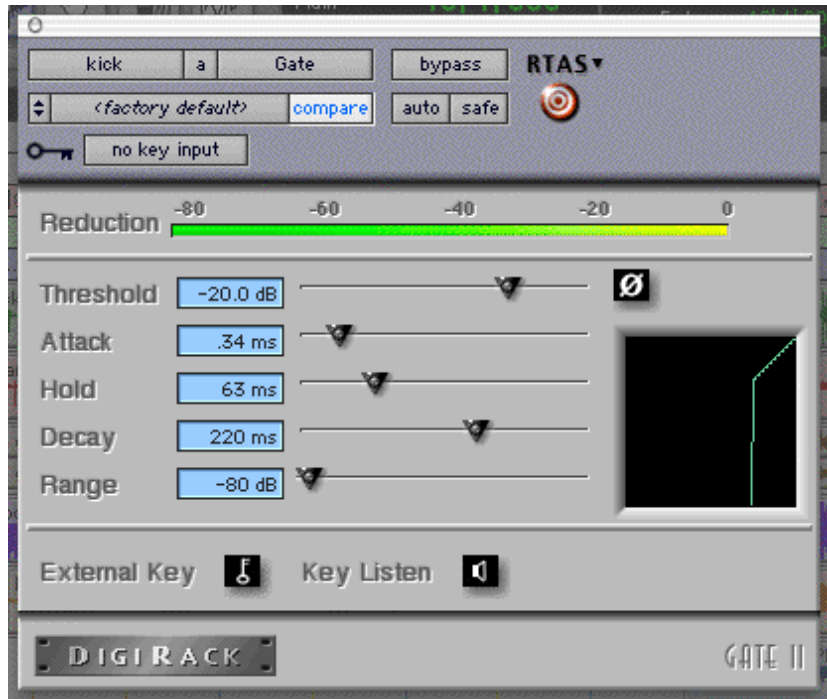


Fig 3.15. the Gate plug-in on the kick

You may have to "finesse" these settings a bit, but this should generally give you a cleaned up kick. Compare this to the BYPASSED audio, and you'll see how the Gate isolates the kick from the leakage on the track.

**To make "fine" adjustments to a plug-in value, hold down CMD while click-dragging with the mouse. This works on other parameters in ProTools, not just the plug-ins.**

Now have a look at this movie, which shows you how these parameters can affect the response of the gate.

**SHOW ME!**

So you can see that a gate, in addition to isolating the kick from the leakage, gives you tremendous power to reshape the kick, especially the attack characteristics. This is generally true when using gates on any sound, especially percussive sounds such as pianos, basses, guitars, and more.

Try putting a gate on the snare track as well, and find settings that isolate it from the track leakage. Here's an audio example of the "raw" snare track, and a gated version as well. Try and find settings that achieve the gate effect you hear in this example.
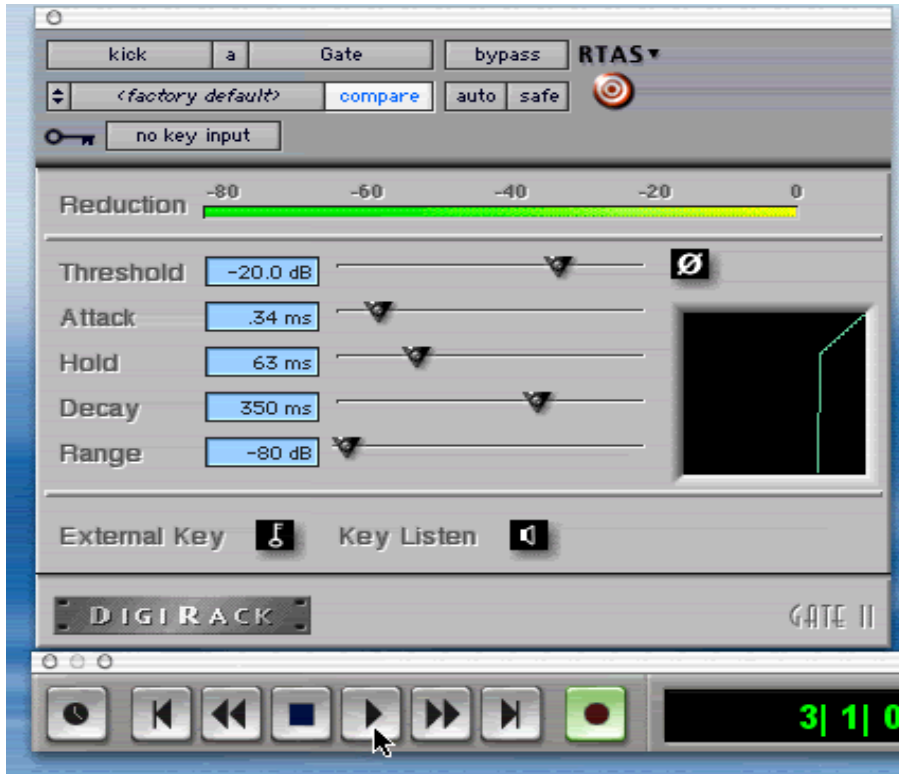
Previous Page                                    Next Page

**Click the image to start the video.**

## Intro to Dynamics: Gates and Expanders

**Don't overdo it!**

In mixing, it's very common to use gates to clean up and isolate the various drum tracks. However, you should be careful with this. Too much isolation of your individual drum tracks creates a mix where every sound seems to have a variable ambience around it, and the result is unnatural. Remember, a kit is a combination of percussion instruments all being used together: kick, snare, toms, and cymbals. If it's a good drum recording made in a good-sounding room, too much gating can ruin it.

This is where the range control can help. Have a look at this movie to see what the range control can do in a gate.

**SHOW ME!**

When mixing this tune, the best settings for gating the kick and snare depend on everything else going on. As a starting point, I'd probably start with the settings we used first, and bring the range up between —40 and —30. A little bit of the leakage is a good thing here.

Now return to the snare track, and bring up its range control to around —35 dB. Again, this gives the track a little bit of natural sound while still maintaining the isolation of the snare. Listen to the kick and snare track in context with the Kit Stereo and Tambourine track, and adjust the settings until you feel they are "just right." Here's an audio example of all of the kit tracks EQ'd without gating, and then with gating.

Click the image to start the video.

## Intro to Dynamics: Gates and Expanders
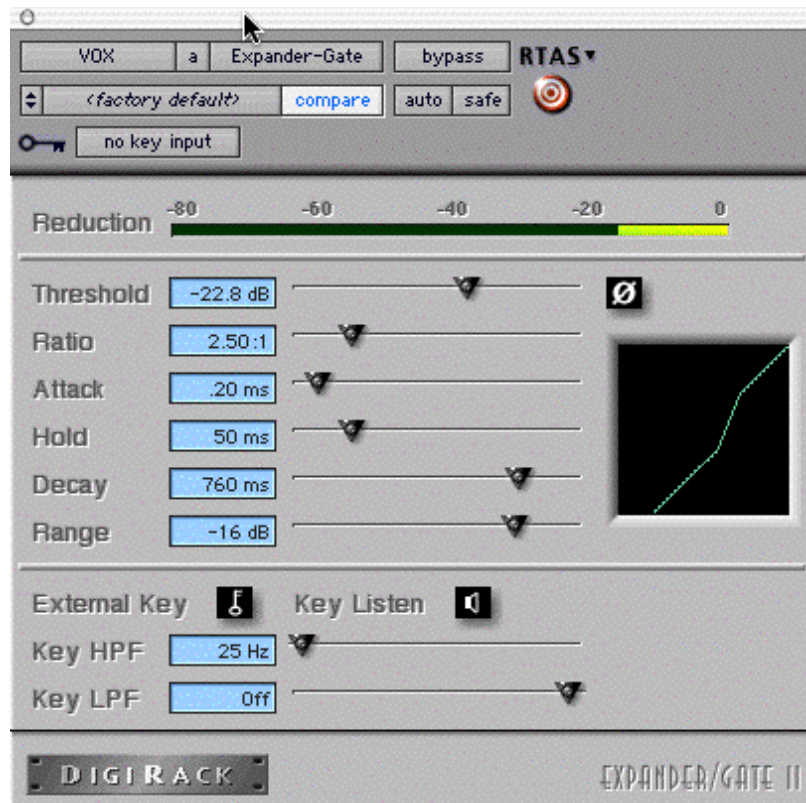
**Expander-Gate**



Fig 3.13. The Expander/Gate

Now let's look at the Expander/Gate. We already know how it works; it's basically the same as the gate! There's a new parameter, however: the Ratio. The following movie will illustrate this new parameter. These two diagrams illustrate the difference between a gate and a downward expander. The main difference is how signals below the threshold are reduced. On a gate, there is uniform reduction of everything below the gate, while in the downward expander, the gain reduction is exponential.

One of the common uses for expanders is on vocals. The downward expander lets us have a gradual reduction in the quiet parts of the track, such as breaths and lip-smacks. Let's put a downward expander on the lead vocal. Set the Expander to the settings as they are in the screenshot above (figure 3.13). If you look at the graphic in the plug-ins window, it shows you the gain reduction that will occur when the signal falls below the threshold. In this case, it gently pushes down all of the extraneous sounds the vocalist makes, but does not cut them out completely. (This would sound unnatural.)

Previous Page                                    Next Activity: Practice Exercise

# Want more?

## Study with the world-renowned professors of Berklee College of Music, on your own time, from anywhere in the world.

### Online Courses and Certificates from Berkleemusic

**Producing with Pro Tools**
Learn Pro Tools using Digi Design's approved curriculum—only enhanced with greater depth and hands-on activities for Berkleemusic's online environment. Learn to record, editing, and mix, and get on the road to becoming a Pro Tools operator from home.

**Desktop Music Production for Mac or PC**
Master the tools and techniques for producing great-sounding music at home … and create high quality recordings ready for CD or MP3!
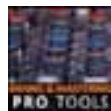
**Mixing and Mastering with Pro Tools**
Gain a greater understanding of two key elements of music production by learning the Berklee approach to mixing and mastering using the Pro Tools software.

**Master Certificate in Producing**
Gain a complete understanding of the concepts and production techniques, from fundamental-to-advanced, that you'll need to create, produce, and record professional-sounding arrangements in this 8-course certificate program.

Learn **More** ⊙

### Books and DVDs from Berklee Press

**Producing in the Home Studio with Pro Tools**
This best-selling book will show you how easy it is to produce music in your home or project studio using Digidesign's Pro Tools software.

**Producing Music with Digital Performer**
No matter what your skill level, this complete guide is all you will need to produce music using MOTU's Digital Performer software.

**Recording and Producing in the Home Studio**
No matter what software you use, this is the only guide you will need to set up your studio and record great music.

**Understanding Audio**
Whether you are a musician setting up your first Pro Tools project studio, or you are a seasoned recording engineer or producer eager to find a reference that fills in the gaps in your understanding of audio, this book is for you.

Learn **More** ⊙