

## .:: Mastering Tutorial ::.

Here we go - a little bit of advice concerning the royal discipline of music production... At first a track has to be well mixed before, just because mastering is expected to *refine* the track - it cannot improve a really bad mix! The better you mixed the track before, the less effort you'll have during the mastering process...

1. Export your final mixdown with about -3dB headroom left and at 24bit quality. Import the 24bit-wav-file with the mastering program you use – such as wavelab, soundforge, logic, audition, cubase...
2. At first you remove the DC-offset
3. Then you start at the master with a 2-band-EQ, which should also provide a high- and lowcut-possibility. Set the lowcut around 30-45hz, then do a highcut around 20khz. Applying a lowcut avoids that sounds lower than 30hz might destroy the sound of your track (besides, many monitors do not even reach the 30hz-threshold).

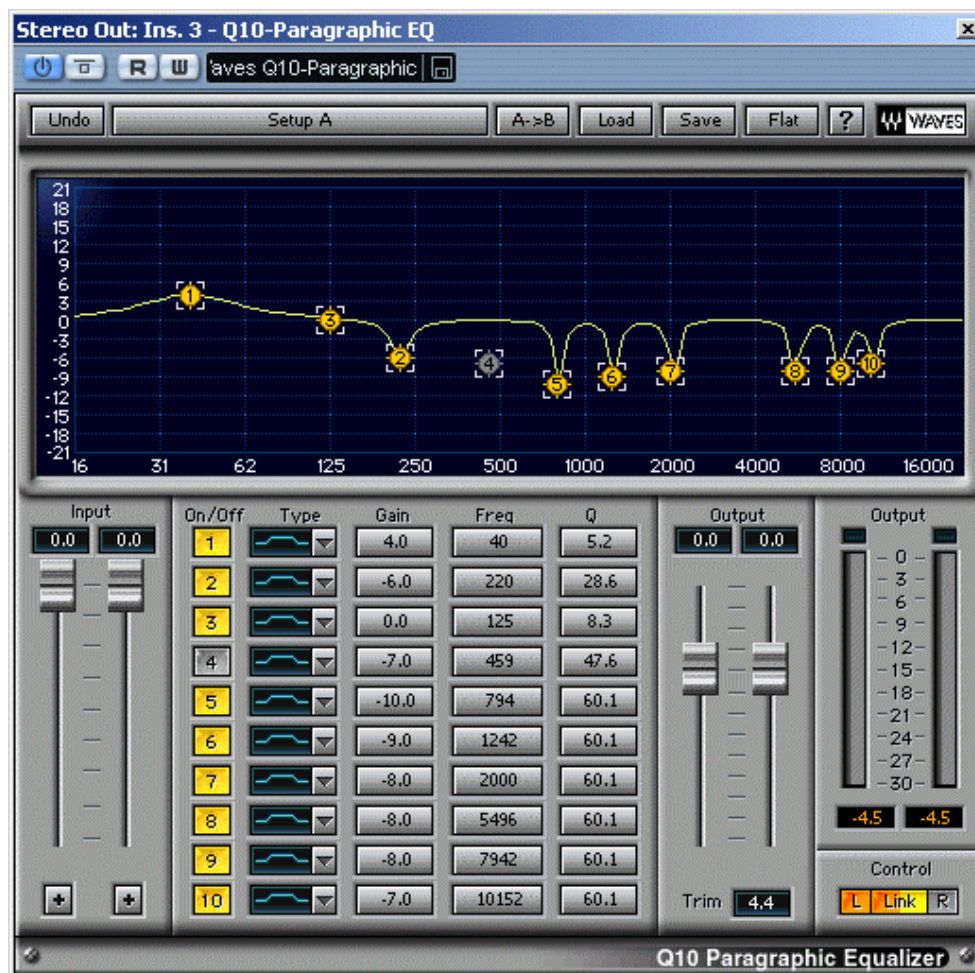


*Img.1: „Waves - Renaissance Equalizer REQ 2 band“  
With Lowcut at 30 Hz and Highcut at 20kHz*

4. We then continue with a multiband-compressor in order to get more headroom and to finally rise the track's loudness. I use „finalmaster“ from yamaha, which is well suited for electronic music...

5. Now an EQ providing 6-10 bands (e.g. Waves' Q10) is applied to eliminate interfering frequencies. To do so, you choose a high Q-value (50-60), raise gain to ~14dB and then scan the frequencies for interferences („whistling“ or „beeping“ sounds). At such a frequency you lower the gain (down to -10dB). Repeat this procedure until you get (almost) no more interfering frequencies.

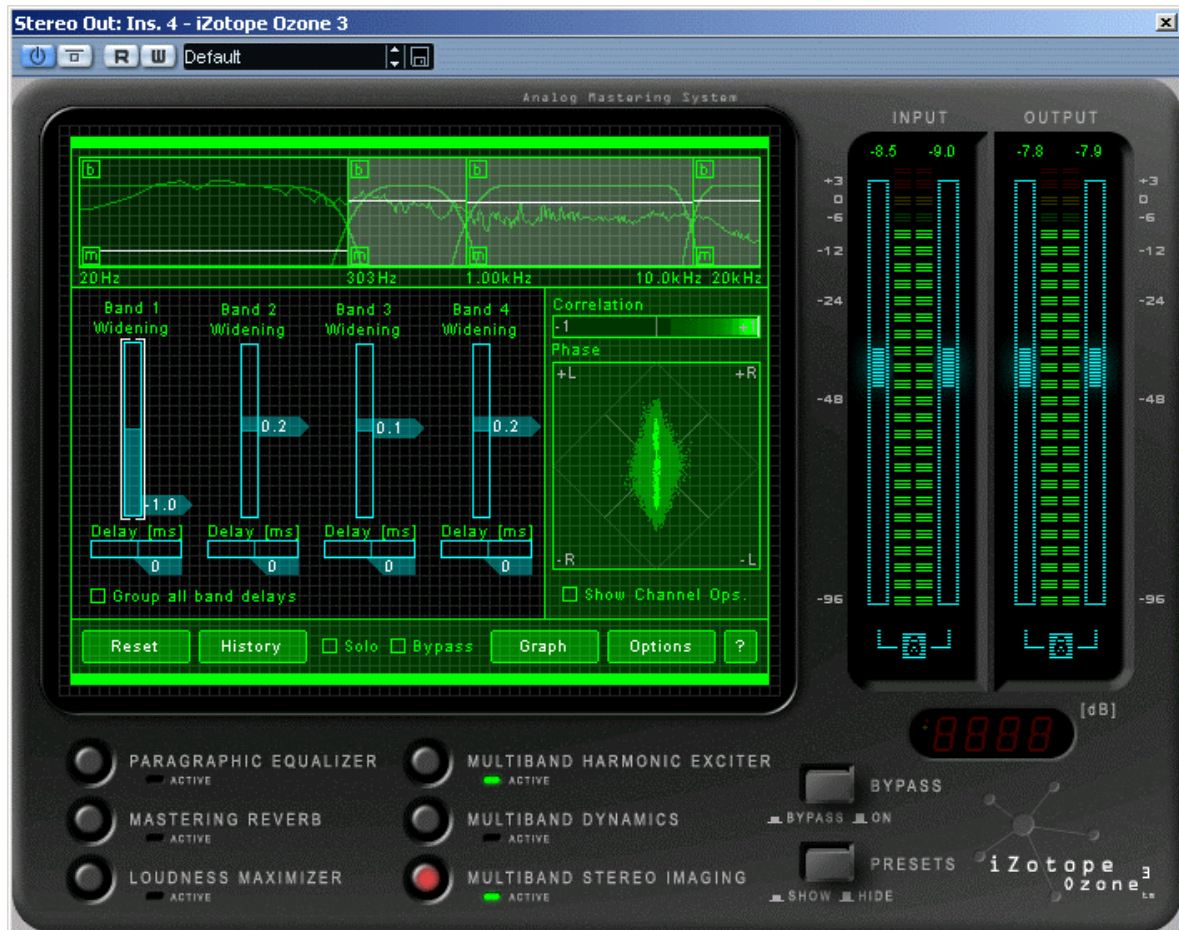
Around 800hz you can mostly apply a lower gain, because there nearly every track has its interferences. Furthermore, irritations often appear at „round frequencies“ like 2khz, 4khz, 8khz... – but that's something differing from track to track, you should check that with good headphones. Finally, step 5 is quite important because it „softens“ a tracks sound so there are no irritations when turning up the volume ;)



*Img.2: „Waves – Q10 Paraphic Equalizer“  
With subsidence of interfering frequencies (formants).*

6. You may then use an exciter (ozone izotope...) to artificially add the higher frequencies (you cut the original ones before because they were interfering).

With the same plugin you may scan the stereo field – there should be a quite homogeneous stereo field with no *antiphase* (=loss of power in the track): around 100-300hz I set the track to „mono“ to avoid such an effect on bass frequencies – but that’s again something you should try & hear on your own...



**Img.3:** „iZotope Ozone 3“

*Until 300hz switched to mono, above more stereo width and overtones added.*

7. Maybe you now need to add some warmth to your track (PSP Vintagewarmer...)

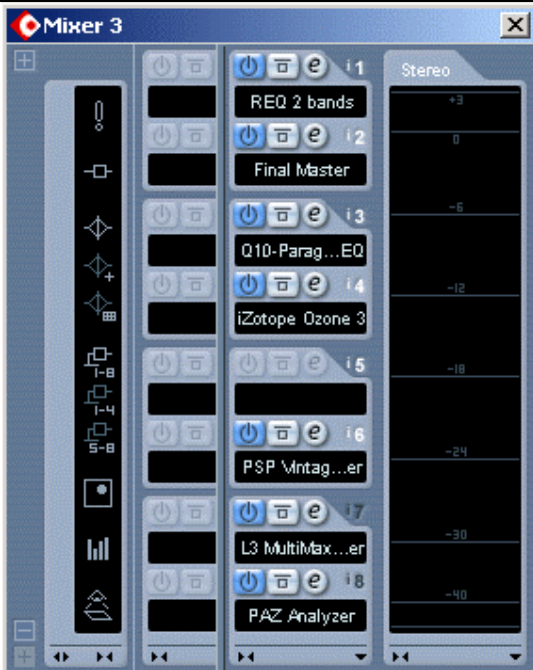
8. Applying a limiter leads to increased loudness. Set the limiter to „0“ and check how many headroom (db?) you have left. Set the limiter’s output to -0,2db to avoid clipping.

Choose the „threshold“ controller and set it to the value of your headroom before.

Using Waves' L2 you turn „shaping“ to > „ultra“.

9. Finally you may use an analyzer to optically see your mastered track. There you see that it was necessary to set the limiter's output to  $-0,2\text{db}$ , otherwise your track would clip now - and e.g. cubase would not even show that. Besides, nearly every limiter has this „ $-0,2\text{db}$ -setting“ as a preset.

You should also check that your track's frequency response is as linear as possible.

<p><b>Summary / workflow:</b></p> <ol style="list-style-type: none"><li>1. EQ (high-/ lowcut)</li><li>2. Multicomp</li><li>3. EQ</li><li>4. Exciter</li><li>5. Stereoimager</li><li>6. Adding warmth</li><li>7. MultibandLimiter</li><li>8. Analyzer</li></ol>	 <p><i>Img.4: „Cubase SX 3 Mixer“ Example for a mastering chain .</i></p>
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Of course, there are many other ways to master a track – this is only expected to be a guideline. I made best experiences doing it the way I described - and many „pros“ do it like this, too. Finally, I advise you not to master with reason...

Just a short information for you:  
out now: :: [HHD010] Kunststoff - Mudflap EP ::



Available at:

<http://www.itunes.com/>  
<http://www.beatport.com/>  
<http://www.tracktracker.com/>  
<http://www.napster.de/>  
<http://www.humpty.de/>

And many many more!

The music needs you!!!

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