

Bass drums are part of the backbone of most any track out there in any genre. And there's a variety of ways to create interesting Bass drums with the Reason stock synths. This tutorial will walk through a few different methods for creating a Bass drum with the SubTractor, Malstrom, and Thor. These techniques won't use samples. Instead, we will create the drum sound from the ground up using synth oscillators. For this reason, the Redrum and Kong won't be used. However, don't discount using samples to create your Bass drum, or even layering multiple samples or Oscillators to get the exact sound you want out of the devices.

At a Glance:

- Tutorial Type: Audio
- Sub-Type: Sound Design, Thor Programming
- Difficulty Level: Intermediate

Devices Used:

- SubTractor Synthesizer (1)
- Malstrom Synthesizer (1)
- Thor Polysonic Synthesizer (1)

Practical Applications:

- When you want to create a synth-based Kick drum (using Oscillators instead of samples)
- To learn the ins and outs of creating Bass drum sounds.

Pitfalls:

- No pitfalls. Just be careful to follow the routings and how the sound is created. Also note how the modulations work in the Thor Modulation Bus Routing Section (MBRS).

Simple SubTractor Kick Drum

This first example is a very basic Kick Drum using the SubTractor. It shows most of the basics for how a Kick drum is created using any synth. It's based on a Sine wave oscillator, which is great for low booming sounds at lower registers. Indeed, Sine waves are even useful to create a Sub Bass layer to be played along with a synth line as well. Here's how you can create it:

1. Start by creating a SubTractor device, and set the Polyphony to 1. This means that only one key will trigger the drum at a given time. You don't need more than that for any drum sound.
2. In the Oscillator 1 section, Set the Phase to 127, the mode to Subtractive (-), and set the Waveform to Sine (Wave 3). Turn off Keyboard Tracking, and set the Octave to 1. This allows the pitch to remain the same, no matter where on the keyboard you play. If you need your Drum to have pitch capability, you can instead keep the key tracking on. But for now, keep it off.
3. Set the Noise Oscillator Decay rotary to 50, Color rotary to 9, and Level rotary to 100. This Mixes the Sine Oscillator with the Noise Oscillator to give the drum a little grit.
4. Since the Key Tracking is turned off, the Pitch Bend wheel has no effect, so you can set the Pitch Bend range to 0 (zero). Moving to the Modulation Wheel destination settings, set the Filter Frequency rotary to 0 (centered), LFO 1 rotary to +20, and FM rotary to +10. This way, when you raise the Mod Wheel, the Drum will have some variation, so that it doesn't sound so static.
5. Now on to the Envelopes. First, set the Mod Envelope as follows: Attack = 0; Decay = 34; Sustain = 0; Release = 28. Then set the Amount rotary to 77. In the Filter Envelope, set the Amount rotary to 68. Finally, set the Amp Envelope as follows: Attack = 0; Decay = 33; Sustain = 0; Release = 40. Keeping the Amp Envelope settings short is the most important part of this step. This creates a quick sound that starts and ends quickly (creating an abrupt transient). This is the key to any good Kick Drum design in my opinion, and is a general rule of thumb.
6. Turn the Volume slider up to 110, and in the Velocity section, set the Amp rotary to +40. This means that when you play the key controller softly the drum is softer, and when you play the keys harder, the drum sounds louder.



SubTractor Kick Drum front panel settings.

Now play the SubTractor device to hear your kick Drum.

Creating a Kick drum with the Malstrom

1. Start by creating a Malstrom device, and set the Polyphony to 1.
2. We'll start with the Performance wheels. Set the Pitch Bend range to 12. This means that you can pitch the drum sound a full octave in either direction. In the Mod Wheel settings, set the Shift rotary to +10, and Filter rotary to -6. Once we're finished with the other Malstrom settings, the Mod Wheel will shift the kick drum to a deeper, more "synthetic" or "crisper" sound when raised.
3. Moving on to the Modulator sections, turn off Mod A. We won't need it. In Mod B, set the Modulator to a Square wave (Curve 3). Then set the Filter rotary to -24.
4. In Oscillator A, change the Wavetable to "Wave: Square*4." Set the Motion rotary to +63, the Shift rotary to -40, and Octave rotary to 3. Set the Oscillator 1 Amp Envelope as follows: Attack = 4; Decay = 27; Sustain = 0; Release = 20. Then set the Volume slider to 70
5. Enable the routing button from Oscillator 1 to the Shaper, and turn on the Shaper. Set the Shaper mode to Clip, and the Amount rotary to 100.
6. In Filter A, set the Filter Frequency rotary to 36, and the Resonance rotary to 34. Turn off Filter B. Finally, set the Malstrom's master Volume rotary to 105.
7. In the Filter Envelope section, set the following: Attack = 0; Decay = 33; Sustain = 0; Release = 0. Then set the Filter Envelope Amount rotary to 24



Malstrom Kick Drum front panel settings.

Now play the Malstrom device between C2 - C3, to hear the kick drum.

For a quick and interesting variation, do the following:

- Change the Oscillator A Shift rotary to -22. Change the Oscillator A Amp Envelope Decay setting to 38. Change the Shaper Mode to Saturate. Change the Filter A Mode to BP 12, and Filter Frequency to 26.
- Now play the Malsstrom patch. You'll hear how the Kick drum produced is much more hollow and gritty sounding. This also shows how with just a few small modifications, you can come up with a completely different sound.

Creating a Kick drum with Thor

- Start by creating a Thor device, and on the Global Control panel, set the Pitch Bend Range to 12. This allows the Pitch wheel to travel up or down one octave. In the Keyboard Modes section, set the Polyphony and Release Polyphony to 0 (zero). Set the mode to Mono Retrigger. This allows you to play single beats with your key controller when you press a single key. But if you hold down 1 key, you'll be able to play faster by pressing another key simultaneously, since a drum beat will sound both when you press down and when you release the second key.



Thor Kick Drum front panel settings.

- Click the **Show Programmer** button to expand Thor. In the Oscillator Slot 1 (the Analog Oscillator), set the KBD rotary to zero (fully left), and Octave to 2. Then change the Wave to Sine. The KBD rotary ensures that the pitch of the drum will remain the same no matter where you play it on your key controller. The Sine wave creates a nice beefy bass drum sound.
- In the Oscillator 2 slot, add a Noise Oscillator. Set the Noise Mode to Color, and the Color rotary to 10. This will add a little grit to the Bass drum sound.
- In the Mixer section, set the Balance 1-2 rotary to 22. This means that the Oscillator 1 slot is more pronounced than the Noise Oscillator. You only need a little Noise Oscillator to add into the Mix. Otherwise, the Kick drum gets too fuzzy and diluted.
- Route both Oscillators into Filter 1 by pressing the small red "1" and "2" square routing buttons. Also route Oscillator 2 into Filter 2 by pressing the small red "2" square routing button. Also enable the routing from Filter 2 into the Amp section by pressing the red ">" square button. This allows Oscillator 1 to go through Filter 1, and the Oscillator 2 to be "doubled-up" and sent both through Filter 1 and Filter 2.
- In the Filter 1 slot (Low Pass Filter), Set the Drive slider to 80, and the Filter Frequency rotary to 175 Hz. Then set the Envelope rotary to 57, and set the mode to an 18 dB slope.
- Moving to the Amp section, set the Velocity rotary to 84.
- Set the Three Envelopes as follows: Mod Envelope: Delay = 0.0 ms; Attack = 0.4 ms; Decay = 3.2 ms; Release = 3.2 ms. Filter Envelope: Attack = 0.0 ms; Decay = 105 ms; Sustain = -63.7 dB; Release = 3.2 ms. Amp Envelope: Attack = 1.2 ms; Decay = 349 ms; Sustain = -44.5 dB; Release = 256 ms.
- In the Global Envelope section, you can turn off this envelope (deselect the Gate Trig button), and reduce the sliders to zero. We won't be using it.
- In the FX section, turn on the Delay, and enable the Tempo Sync function to sync the delay to the song Tempo. We're going to add a delay to the Kick drum that will be accessible from one of Thor's buttons on the Global panel. Set the Delay Time to 1/16 and the Dry / Wet rotary to 0 (zero).
- Next, in the Modulation Bus Routing Section (MBRS), enter the following lines starting at the top left line:

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Mod Env : 65 > Osc1 Pitch [Gives a slight shape to the pitch of Osc1 so it jumps up in pitch a bit; an upward bounce]
Mod Wheel : -34 > Osc1+2 Lev [Makes the drum sound a little more wooden when the Mod Wheel is raised by altering the Mix between Oscillators]
Button2 : 70 > Del DryWet [Ties the Delay to Button 2 on Thor - pressing Button 1 will create something between a flam and drum roll and is a nice effect. Have a play with the delay settings if you want to create a different kind of drum roll or drum delay]
Rotary2 : 80 > Filt1 Freq [Sets the Filter to Rotary 2. When increasing Rotary 2, the filter is opened for a sharper sound.]
Button1 : 100 > O2->O1 AM [Adds an AM tone to the drum sound to provide yet another type of sharp drum sound alternative.]
Then enter the following two lines at the top left MBRS section:
Rotary1 : 54 > M.Env Dec : -50 > Amp Gain [This changes the shape of the drum pitch that is created by the Mod Envelope by changing its decay parameter (increasing the time in which the pitch is altered upward - as noted in the first MBRS line above).]
Mod Wheel : 66 > Osc1:2 Bal : -65 Filt2 Drive [This, along with the Mod Wheel line above, contributes to the wooden drum sound.]
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- Enter the following labels for the Rotaries and Buttons (notations in Brackets denote my default settings as shown in the Thor image here): Rotary 1: "Pitch Envelope" or "Pitch Shape" (76) Rotary 2: Filter or "Filter Freq" (38) Button 1: "AM Tone" or "Alt Tone" (Off) Button 2: "Delay" or "Drum Roll" (Off).

Now play the Thor device to hear the Kick drum. As you play the drum, use the Pitch Bend & Mod Wheels, the Rotaries and Buttons, until you find the sound you like. Try altering settings to create your own kick drum based on this patch. Many possibilities can be found by using this as a springboard for your designs.