



## extended manual

This manual provides general information on drum tuning and a step by step guide to improving your drum tuning using the Drum-Tuner app.

Start by removing all the tension rods and subsequently remove the hoop and head. When you use the same head, clean both the head and the bearing edge. You only have to clean the bearing edge when using a new head. The next steps are all based on tuning a new drum head. You can skip 'seating your head' when using your existing head, although there is never any harm in doing this again.

Place the head on the drum. The head should move or spin freely on the shell. Turn the head logo to where you want it to be. Place the rim on the head and make sure the tension rod holes are in line with the lugs.

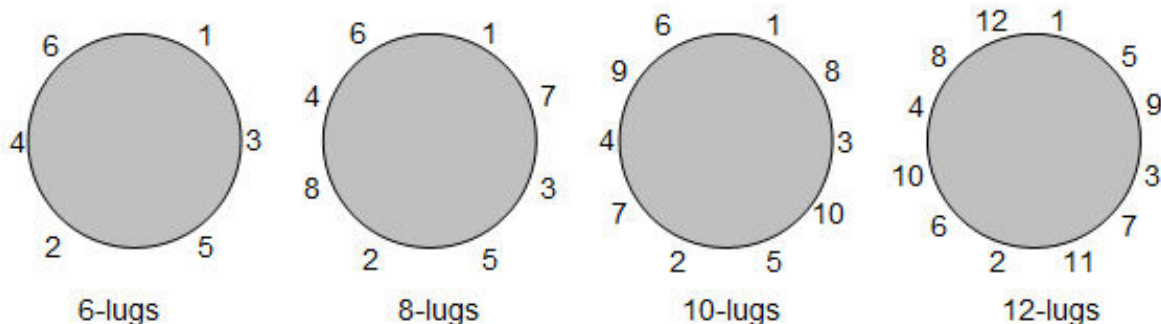
Place the rods in the holes and finger tighten the tension rods in the tensioning cross pattern, until they touch the rim.

Start turning each rod 1/4 turn, using a cross pattern.

Continue to make the turns in small increments in this same pattern until you hear a resonant tone and all wrinkles have disappeared. This will take several cycles of the pattern.

Now you're ready to seat the head.

### *Tensioning cross patterns*



## Seating the Head

You will need to seat the head before you can start the tuning process.

Pre-stretch the head by pressing the centre of the head with the palm of your hand. Seating the head means you won't need to re-tune quite so often. Don't worry about the cracking and popping you will hear. Repeat this a couple of times. Sometimes some wrinkles may appear. In that case you will need to retighten the head in the cross pattern until the wrinkles disappear.

Now loosen all tension rods a little in the cross pattern.  
Now you can start tuning your drum.

## Tuning the drum

You can start the tuning process once the head is seated. Tuning the drum means getting the same pitch all around the drum head – in the frequency you want – and to achieve a clean tone with as few annoying overtones as possible.

*A drum produces several frequencies. The two most important ones are the lug frequency and the overall or fundamental pitch. The lug pitch is used for tuning your drums when you are comparing the head tone near each lug.*

*The fundamental frequency is lower and roughly 0.55x the lug pitch, depending on the tom depth and the heads you are using. A lower or higher tuned bottom head will increase or decrease this factor.*

Start with the smallest tom if you have two or three toms. If you have a lot of toms, it's best to start in the middle and work from there. This will avoid ending too high or low.

This is where the most difficult part of tuning a drum starts and where the Drum-Tuner app comes in to help you.

The Drum-Tuner gives you the **Measured Frequency** when you tap the drums, the loudest frequency at any given moment. You can also read a **Filtered Frequency**. The unique Filtered Frequency function gives you the frequency (pitch) that's near the Tune Frequency you have entered (lug frequency). So the Filtered Frequencies near all lugs need to be the same as the Tune Frequency – then you have a perfectly tuned drum.

So first you have to decide in which pitch/frequency you want to tune your drum. If you know the frequency you want, tap on the display and key it in or use the dial. If you don't know the frequency you want, use the overview at the bottom of this manual and start from there. From this starting point you can decide to keep it like this, or tune the drum higher or lower and develop your own personal drum sound. It takes time to develop your own sound, but you can store the frequencies for each head, so it will be easier next time.

If you like the pitch of your drum as it is, push the green button to set the Filtered Frequency to become the "Tune Frequency" (when you see the Filtered Frequency in the display).

Place your tom on a carpet, blanket or drum stool and place your device near the drum, a little bit higher than the drum head surface, with the mic pointing at the drum. Make sure the correct lug frequency is entered as Tune Frequency.

1. Now measure the frequency near all lugs. Tap the head one inch from the lug and first correct the lugs with the biggest differences.
2. Then tap (not too loudly) and tune the head lug-by-lug in a cross pattern. Repeat this until each step gives you a result of less than 2.0Hz from the desired Tune Frequency.
3. Fine tuning: tune the drum lug by lug by turning the drum, so each lug is next to the mic of your device when you measure it. Tuning one tension rod can influence the frequency of other lugs, so you may have to go around several times. You don't have to use the cross pattern in this case. Tune until the Tune Frequency and the Filtered Frequency near all lugs are (almost) the same.

If you're having problems with reading the frequency; put your fingertip on the middle of the head to reduce overtones (sometimes some moongel in the centre of the head will do fine too).

Save the Tune Frequency by entering the name (e.g. tom 1 - top) and go to the second tune screen for tuning the next head.

Keep the Tune Frequency by entering the name (e.g. tom 1 batter) and go to the second tune screen.

### Two-headed drums

1	<b>Bottom heads same frequency</b> Tuning the top and bottom heads to the same pitch gives more tone and longer sustain or resonance.
2	<b>Bottom head higher frequency</b> Tuning the bottom head tighter than the batter head produces a pitch bend and a shorter sustain and resonance.
3	<b>Bottom head lower frequency</b> Tuning the bottom head lower also gives you a pitch bend (more noticeable than with a higher tuned resonant head) and less sustain.

Of course you can also play without a bottom head or use a 682Drums XBM-bottom head (air-permeable bottom head). We suggest always using a single ply head when using a resonant head.

*The overall frequency of the tom will change when the bottom pitch is lower or higher than the top head. So if you want to tune your bottom head higher, you need to tune your top head lower to get the same overall tom frequency and vice versa. The top and bottom head will always give the same fundamental tone, even when they are tuned differently.*

## **Snare drum**

Tuning the batter head of a snare drum is identical to any other drum. However, the batter head is normally always tuned higher than a tom and so is the resonant head.

The resonant head of a snare drum is much thinner than a batter head which is the key to a good snare sound. Always tune the snare resonant head without the snares on it.

We suggest trying a top head Tune Frequency between 220Hz and 340Hz for a snare drum. Try tuning the bottom head 1,33 to 1,5 times higher (but not higher than 400Hz).

## **Bass Drum**

Tuning the bass drum is basically the same as tuning toms, with the same top/bottom tuning relationships. However, most drummers use some sort of muffling (pillow, blanket), but you can also use self-muffled drum heads like Remo's Powerstrokes (and still use additional muffling if so required). Muffling and holes in the resonant head naturally have a major impact on the final sound.

## **General**

The wood that's used, the depth and the bearing edge will all influence how your drums will sound. In general a cheap drum kit will never sound great. However, if it's well tuned you can still be left surprised. And a great quality drum kit that's not properly tuned will never sound great either.

There are drummers who want to tune to an exact note. Please note that all drum shells have their own unique tonal quality. Make sure you don't tune outside of the tom's tuning range. Try to find out the tuning range of each tom and your drums will always sound better if you stay within this range.

If you start with your highest tom and tune it too low, then the pitch may be too low when you get to your largest tom. It may be helpful to start in the middle if you have a lot of toms.

Your drums will sound different when you move away from them. Ask someone else to play it (or at least hit it) and listen from a distance. This is how your audience will hear your drum sound in an un-mic'd situation.

If you want to eliminate overtones you can muffle them with 682Drums muffling rings, moongel or use drum heads like Evans EC2 or Remo pinstripes or Powerstrokes. If you love overtones, keep it as it is.

The most important rule for tuning a drum is: there are no rules! Be creative and create your own sound.

## Frequencies

In the table below you will find sample Tune Frequencies (lug frequencies) for Drum-Tuner you can use for tuning your drums. This can be a good starting point:

	maximum*	minimum*
Tom size	lug frequency	lug frequency
8	450	250
10	350	220
12	300	170
13	260	140
14	200	120
16	200	110
18	150	80

kit 1	kit 2	kit 3	kit 3	kit 4	kit 5
			350	320	280
	260		300	280	220
210	220	200	240	220	190
	180		190	180	160
			160	150	140
130	130	130	135	130	120
		105	115	110	100

*\* indication for highest and lowest frequency depending on drum heads, wood, shell dept etc.*

The fundamental frequency of the tom will change when the bottom pitch is lower or higher than the top head. The bigger the difference between bottom and top frequency, the less resonance you'll get.

All "Tune Frequencies" above are a good starting point, from where you can work on creating your own sound. The first time this takes time. A lot of time.

Plan a day or so to work on it and you will be surprised how your kit will sound.

You can store the Tune Frequencies of your choice in Drum-Tuner. Enter the name and go to the next Tune page.

### Snare Drum

For a snare drum we suggest trying a top head Tune Frequency between 220Hz and 340Hz. Try tuning the bottom head 1,33 to 1,5 times higher (but not higher than 400Hz).

### Bass Drum

Try the Tune Frequency range between 75 and 140 for a bass drum. Try to set the Tune Frequency for the resonant head 1,33 or 1,5 times higher.

## Explanation Tune Screen

The image shows a screenshot of the 'DRUM TUNER' app interface. The app title is 'DRUM TUNER by 6820beats'. The current drum part is 'Tom 1 batter'. The interface includes a 'Tune Frequency' dial set to 195.0, a 'Measured Frequency' of 244.4, a 'Filtered Frequency' of 189.3, a 'Nearest Note' of G3, and an 'Exact Note Frequency' of 196.0. A 'Difference indicator' bar at the bottom shows the deviation from the target frequency. A 'Home' button is visible on the left side of the screen.

**Tune Frequency**  
Lug frequency you want to tune your drum to

Tap to enter description

Dialer for setting the Tune Frequency (you can also tap the display)

**Measured Frequency**  
Last loudest measured frequency

**Tune Frequency**  
Frequency near the Tune Frequency

Home

**Nearest Note**  
Note nearest to the Tune Frequency

**Exact Note Frequency**  
Exact frequency of the nearest note

Difference indicator