

tune-bot

Owner's Instruction Manual

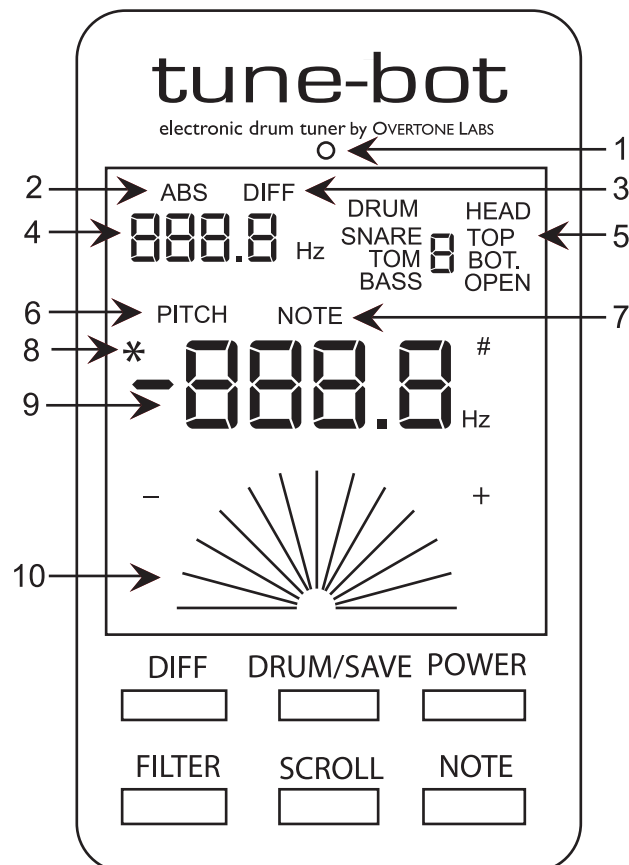
Congratulations! You've invested in the first and only practical electronic tuner designed specifically for drums and drumsets. The revolutionary Tune-bot brings drum tuning into the 21st century by letting you tune musically, not mechanically. The Tune-bot is able to accurately measure the true pitch at each lug as well as the overall pitch of the drum. You'll be able to tune faster, more easily, and more accurately—so your drums will sound better than ever before.

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PRODUCT INTERFACE

1. Trigger LED
2. Absolute Mode indicator
3. Difference Mode indicator
4. Reference Value
5. Drum Selection (for save/recall)
6. Pitch Mode indicator
7. Note Mode indicator
8. Filter Mode indicator
9. Measured Value
10. Dial



BUTTON

POWER: Turns the power on or off.

NOTE: Switches between Pitch (frequency) display and Note/Octave display.

DIFF: Switches between display of current pitch measurement and the difference between the current measurement and a reference value. The reference value will be the latest measurement if the Drum-Number is 0, otherwise the reference value will be the pitch saved to the selected memory Save slot.

FILTER: Records latest frequency measurement and limits future displayed readings to nearby frequencies. Also copies the latest frequency measurement to the Reference Value display and lights up the asterisk (*).

DRUM/SAVE: Cycles between the Drum, Drum-Number and Head selection options **or** saves the current measured pitch or note to the memory location of the selected Drum type, Drum number, and Head type if pressed and held. Saves are limited to Drum-Numbers 1-9; Drum-Number 0 is used for DIFF mode operation and is not available for saving.

SCROLL: Advances the selected Drum, Drum-Number or Head value.

GETTING STARTED

1. Install the battery. We have included two AAA batteries. Rotate the clip on the back of the Tune-bot until you see the battery cover. Open the battery cover by pushing down and sliding in the direction of the arrow on the cover. Install the batteries, being sure to match the positive and negative ends of the batteries to the correct contacts. Then replace the cover. (That's the most mechanical thing you'll ever do with the Tune-bot.)

2. Press the Power button on the Tune-bot to turn the unit on. You'll see a display that shows the default settings that are the basic starting point for working with the Tune-bot. They include "Pitch" for **Pitch** mode (frequency in Hz.), "ABS" for **Absolute** mode, a flashing setting of "DRUM," non-flashing settings of "Snare," "Head," and "Top," and two indicators of "Hz." There will also be lots of zeros. Not to worry...everything will soon be explained.

3. Rotate the clip on the Tune-bot so that the finger grips are up (above the label) and the rim grips are down (in the direction of the Tune-bot's buttons).

4. Attach the clip to the hoop of the drum you want to tune, placing the Tune-bot between any two lugs. There's no need to move the Tune-bot around the drum from this point.

(Tip: Although this procedure can be done with the drum mounted on the kit, it's most effective with the drum off of the kit, with the opposite head muffled. Placing the drum atop a round drum stool is an excellent method.)

5. Strike the drum next to a lug, an inch or so in from the drum rim. While in **Pitch** mode (the default setting, remember?) the Tune-bot will read the pitch and display its frequency in Hertz. If you want to see the pitch as an actual musical note, press the **Note** button. Pressing the **Note** button a second time returns you to **Pitch** mode and Hertz.

6. Continue to strike the drum next to the remaining lugs, being sure to strike at the same distance away from each one.

7. Use the reading on the Tune-bot to get the pitches at the lugs fairly close to each other. Tightening a lug should raise the pitch and loosening should drop it. Ultimately you'll get the head "in tune with itself."

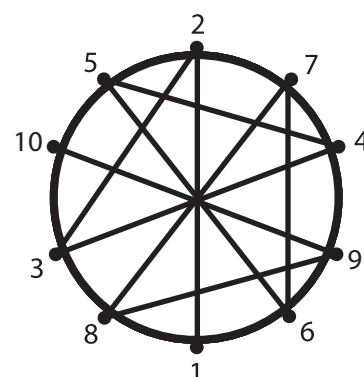
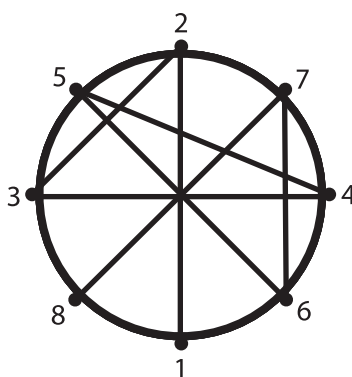
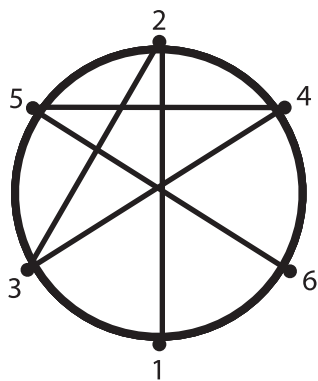
8. Repeat this procedure for the opposite head.

9. To measure the overall pitch of the drum, mount or hold the drum so both heads can resonate freely and just tap in the center of the drum. Sometimes it may be necessary to remove the Tune-bot from the drum rim and hold it over the center of the drum to pick up the overall pitch. Expect the lug pitch of the top and bottom heads to be higher than the overall drum pitch.

TUNING TIPS

1. While drum tuning can be performed on the kit, better results are usually obtained by removing the drum from the stand and muffling one of the heads so you only deal with the sound from one head at a time. We suggest that you place your drum on a carpet, sofa pillow, or round drum stool to conveniently support the drum while providing the necessary muffling.

2. If you're using new heads, you can expect them to loosen up after tuning. Because of this, it is important to "seat" the head. Before putting on the head make sure to remove any dirt or dust from the bearing edge. (The bearing edge is the part of the drum shell that contacts the drum head) After cleaning the bearing edge, place the head and the hoop on the drum. Finger-tighten the lugs as much as you can, always tightening opposite lugs. Next, switch to a tuning key and continue using the cross-lug pattern, tightening in small, even increments. (**refer to figures below**) Once you get rid of the wrinkles and can hear a tone, you're ready to use the Tune-bot. The new heads will need to be re-tuned often until the heads stretch out.



3. If you're using your existing heads, loosen the heads to lower than your desired pitch and then tune up to the sound you like. Try to tune the lugs with lowest readings up instead of lowering the ones with higher readings, as it's easier to tune up than down. And always tune in small increments, because tightening one lug will affect the pitch of the other lugs as well. The lug directly across from the tightened one will be the most affected of the remaining lugs.

4. To read the overall pitch of the drum, strike the drum in the center. It doesn't matter whether you hit the batter (top) or resonant (bottom) head, they should produce the same reading on the Tune-bot.

5. Different people favor different drum sounds. For the most resonant sound, tune the top and bottom heads to the same pitch. Tuning the batter and resonant heads to different pitches causes a pitch bend, produces less sustain (how long the drum resonates), and more attack (the articulation of sound when the stick hits the head). The bigger the difference in pitches between the heads, the greater the pitch bend and attack. Experiment to find the sound you like best.

6. After you find the sound you covet, you can save that pitch measurement on the Tune-bot. (See *Saving a measured pitch or note.*) You can save different values for the batter head, the resonant head, and the overall pitch of the

drum. There are numerous **Save** slots for toms, snares, and bass drums, so that you can save and recall the optimum tunings for several different drumkits.

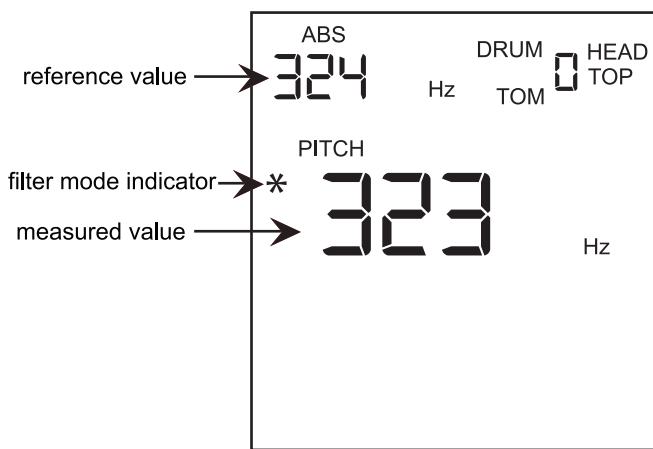
TUNE-BOT FEATURES

FILTER MODE

(Press the **Filter** button to activate; press it again to deactivate.)

Sometimes when you're tuning a drum lug-by-lug you'll notice readings that seem out of place. This happens most often when the drum is being tuned on the kit. If a much higher frequency is displayed, it's likely that a higher overtone from the tap has been measured. Alternatively, if a lower frequency is displayed, it's likely that the fundamental (overall) frequency of the drum has been measured. In either case, an undesired tone has been detected instead of the lowest frequency overtone that's needed for tuning the lugs. The Tune-bot's **Filter** mode provides a simple option to reject higher overtones or the fundamental tone in such situations.

To eliminate the problem, hit the **Filter** button after you've tapped around the drum and obtained a correct reading. The **Filter** mode only displays readings from subsequent taps that are in a similar range to the saved reading, which will be displayed in the top left corner of the screen. (**refer to figure below**) When the **Filter** mode is on, there will be an asterisk (*) displayed on the screen. To turn the **Filter** mode off, hit the button again.

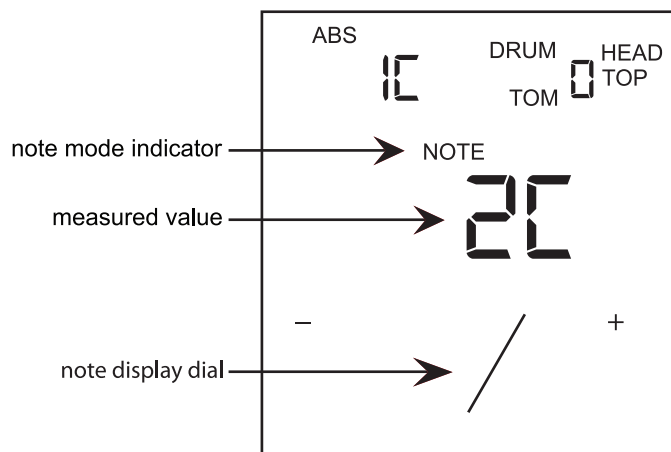


If it's not obvious which measured frequency is the lowest overtone frequency (the one you want to match the others to), a couple of simple tests involving touching the drumhead with one finger while tapping the drum near a lug will clarify the situation. If an unusually low frequency (likely the overall frequency of the drum) is detected near some lugs, touching the center of the head while tapping at the lugs will eliminate it. Higher-frequency overtones can be suppressed by touching the head about two inches in from the edge at a position roughly 90 degrees from where the drum is tapped.

NOTE MODE

(Press the **Note** button to activate; press it again to return to **Pitch** mode (Hz).)

Although kit drums are not specific-pitch instruments, there may still be times when you'd prefer the Tune-bot to display its readings as musical notes instead of frequencies. For example, some drummers like to tune their various toms to specific musical intervals. If you'd like to see the readings in notes, press the **Note** button. Now, your display will show you the nearest note, and show you if it is sharp (+) or flat (-). (**refer to figure below**) The number before the letter that names the note refers to the octave, with 1 being the lowest. **Note** mode is most useful when you're measuring the overall tone of the drum rather than lug measurements. First, tune your lugs evenly as described earlier using the standard Frequency readings in Hz, then switch to **Note** mode and tune in small increments to reach the desired note for the drum's overall tuning.



SAVING A MEASURED PITCH OR NOTE

To save a pitch or note, you must first pick a **Save** slot. Press the **Scroll** button to switch between snare, tom, and bass. Once you have the correct drum type, press the **Drum/Save** button, highlighting the number (0-9) next to the drum type. Pressing the **Scroll** button allows you to scroll through the numbers; each number **other than zero** can hold a different saved value.

When you press the **Drum/Save** button again, the **Head** selection option becomes highlighted. Now pressing the **Scroll** button cycles between Top, Bottom, and Open, allowing you to save a value for the top head, the bottom head, or the overall “open” pitch of the drum. To save a particular reading, hit the drum, wait for a reading, and then **hold** the **Drum/Save** button until the LED flashes twice and the value appears in the upper left corner of the display. A saved entry will be stored both as pitch and a note. To switch back and forth between the two, press the **Note** button.

RECALLING A SAVED PITCH OR NOTE

To recall a saved pitch or note, use the **Drum/Save** and **Scroll** buttons to reach the desired save slot as explained in the *Saving a measured pitch or note* section. The saved entry will appear in the top left corner of the screen. You can now compare your drum’s current readings to the saved pitch.

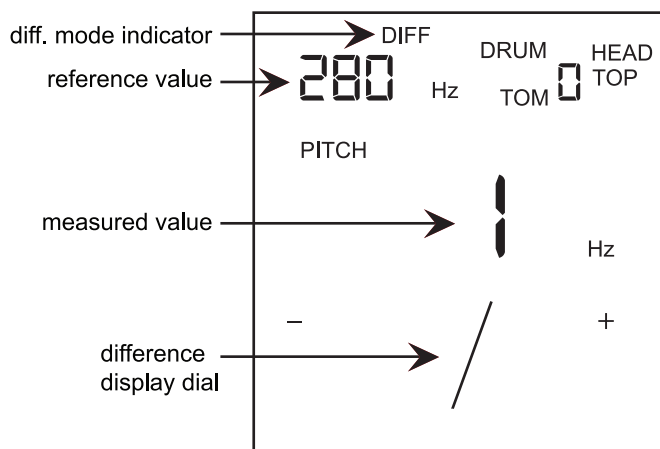
DIFFERENCE MODE

(Press the **Diffe** button to activate; press it again to return to **Absolute** mode.)

Another way to get your lugs tuned evenly (and thus your drum in tune with itself) is by the use of the **Difference** mode. This feature is the selectable alternative to the default **Absolute** mode. Instead of displaying a specific pitch value, it displays the difference in pitch between the lug hit and a target value; an analog dial showing the relative difference is also displayed.

To begin tuning using **Difference** mode, set the Tune-bot to Save slot 0. Using any other Save slot will cause the **Difference** mode to compare the new lug hit to a previously saved value. (If you want to use **Difference** mode with a saved reading, simply select that reading first. [See *Recalling a saved pitch or note*.] Now press the **Difference** button, and all readings will be compared to the saved value.)

Assuming that you’re starting fresh (on Save slot 0: not using a previously saved value), strike near each lug of your drum and determine which one you’d like to match the others to. Strike that desired lug again and press the **Difference** button: the measured value will be copied to the reference value display and the difference between the pitch of any other lug and the pitch of the reference lug will appear in the main display. Your reading will show you + or – the amount of Hz separating the two pitches. (**refer to figure below**) Press the **Difference** button again to exit **Difference** mode and return to **Absolute** mode.



ENERGY SAVING FEATURES

- 1.If there is no signal input after 30 seconds, Tune-bot switches to an energy-saving mode and dims the LCD without shutting off. After a signal is detected or a button is pushed, the display returns to normal brightness.
- 2.If there is no signal input after 3 minutes, Tune-bot will shut-off automatically

SPECIFICATIONS

Tuning Range:	30 - 400 Hz, 1C - 4G#
Sine-Wave Accuracy:	+/- 0.25 Hz.
Response Time:	750 mSec.
Tuning Modes:	Pitch (Hz), Note/Octave Absolute, Difference
Save Slots:	9 x Snares, Toms and Bass Drums Heads: Top, Bottom and Open
Power:	2 AAA Batteries
Weight:	60 g. (without batteries)

PRECAUTIONS

1. Avoid the following situations to prevent a potential malfunction of the tuner:
 - Exposure to liquids
 - Direct sunlight
 - Extreme temperature or humidity
 - Excessive dust or dirt
2. Remove the batteries to prevent leakage when the unit is not in use for long periods.
3. To avoid breakage, do not apply excessive force to the push-buttons, battery cover, clamp or display. Do not take apart the tuner, it is not user serviceable. Dismantling the tuner voids the manufacturer's warranty.
4. Do not use liquid cleaners on the product.
5. Keep this manual future reference.

REGULATIONS

FCC (USA)

This Class B digital device has been tested and found to comply with Part 15 of the FCC Rules. These FCC limits

provide reasonable protection against radiated interference in a residential installation.

CE Mark (European Harmonized Standards)

This battery operated apparatus has been tested and found to comply with EMC Directive (89/336/EEC) and CE mark Directive (93/68/EEC).

A LITTLE MUSICAL INFORMATION

Just in case you're curious as to how musical notes and frequency measurements relate, here's a chart that graphs it all out for you.

Frequencies of Musical Notes and Octaves

Oct.	C	C #	D	D #	E	F	F #	G	G #	A	A #	B
1	32.7	34.6	36.7	38.9	41.2	43.7	46.2	49	51.9	55	58.3	61.7
2	65.4	69.3	73.4	77.8	82.4	87.3	92.5	98	103.8	110	116.5	123.5
3	130.8	138.6	146.8	155.6	164.8	174.6	185	196	207.7	220	233.1	246.9
4	261.6	277.2	293.7	311.1	329.6	349.2	370	392	415.3	440	466.1	493.9
5	523.3	554.4	587.3	622.3	659.3	698.5	740.0	784.0	830.6	880.0	932.2	987.8

Many drummers like to tune the drums on their kits to musical intervals—most commonly thirds (every other note on a major scale). Here's a chart that shows how those intervals are pitched in each major scale.

Third Intervals

C	E	G#	C
C#	F	A	C#
D	F#	A#	D
D#	G	B	D#
E	G#	C	E
F	A	C#	F
F#	A#	D	F#
G	B	D#	G
G#	C	E	G#
A	C#	F	A
A#	D	F#	A#
B	D#	G	B

Suggested Tuning frequencies

WE know, we know... no two drummers ever tune alike. But just in case you'd like a starting point to experiment from, try this:

Drum Type	Diameter (inches)	Depth (inches)	Top Pitch	Bottom Pitch
Tom	10	9	225	284
Tom	12	10	188	237
Tom	14	11	150	189
Tom	16	13	113	142
Bass	20	15.5	67.5	101