

**Circuit Bent
Speak & Math**

**By
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Owner's Manual 1.3

<http://www.fastmatt.com>



Quick Reference:

- A. 1/4" Output Jack (for Amplifier)**
- B. Pitch Bend Body Contacts**
 - BB. Base Contact**
 - BL. Lower Pitch Contact**
 - BH. Higher Pitch Contact**
- C. Pitch Bend Knob**
- D. Glitch Switch**
- E. Distortion Button**
- F. Tone Buttons**
 - FS. Screech Tone**
 - FL. Low Tone**
 - FH. High Tone**
- G. RELEASE Button for RHYTHM Loop**
- H. Two-Way Loop Switch**
- I. RELEASE Button for FREEZE Loop**
- J. Main Power Switch**
- K. Temporary Mute Button**

Congratulations on your purchase of my circuit-bent Speak & Math. Carrying on the tradition of the circuit bending community, I've taken what was once a delightful children's toy and turned it into a freakish machine that generates random alien musical sounds in response to your control inputs.

As with any circuit-bent instrument, you will not be covered under the original manufacturer's warranty. ☺

However, Please do not hesitate to contact me if you have any trouble or questions about it. If something goes wrong with it, I will provide free repair service for at least one year, if you cover shipping. If I determine a defect to be the result of my workmanship, I'll cover the shipping also.

I can be reached by emailing fastmatt@fastmatt.com.

The following pages will give you a tour of your new instrument and will offer tips on getting the freaky sounds out of it. Please be sure to have 4 fresh C batteries installed in the direction pictured inside the battery compartment. **I DO NOT ADVISE THE USE OF A WALL POWER ADAPTOR**, following the general advise of the circuit bending community.

Let's get started...

1. Power on the unit
The Main Power Switch (J) directly breaks the battery power circuit. I advise this be turned off when not in use (even after pressing the original OFF button) to avoid battery drain, or worse, having it wake you up in the middle of the night. Yes, it has been known to happen!
Start by turning the switch ON (upwards). Note that this alone will not make it do anything, it just connects the batteries to the circuitry.
2. Set the Glitch Switch (D) to down (off) position and Loop Switch (H) to the center (OFF) position.
3. Move the Pitch Bend Knob (C) to its center position away from the stop points in either direction – to get you a normal pitch to start with.
4. Hit the original ON keypad button at the top right of the keypad. You should hear the familiar sounder and see the game symbol and difficulty level on the screen. YOUR SPEAK WILL BEHAVE NORMALLY AT THIS POINT. Feel free to take a moment to relive your childhood and play all the math games. You will be surprised how hard Level 3 gets!! ☺ Where's my calculator??
5. Now let's have some fun. Get it talking, either using the number keys (1,2,3 only) or by starting up a game such as 'WORD PROBLEMS followed by 'GO' button. Now press the Distortion Button (E) to turn the voice into a demonic distorted menace. This effect can be used at any time, with all other effects. This button is momentary so as soon as you release it, the effect is off.
6. Release the distortion button. Get it talking again, and flip the Glitch Switch (D) into the UP (on) position. The speech should begin to glitch out and become a random stream of alien phonemes and words. (Remember E.T.?) Note that the glitch is not continuous. It will stop after a few seconds, but just keep it going by hitting the number buttons, the game buttons, etc. You will find that different buttons will create new variations of glitch. You will surely also find that sometimes you'll push this thing a little too far and it will turn off, or lock up with no sound. This is normal – you're making it do things it was never designed to do – but it won't hurt anything. Simply try hitting the ON keypad button to get back into the game. Or you might have to cycle the power by flipping the Main Power Switch (J) off and back on, then hit the ON keypad button. Turn the Glitch Switch off for the next experiment
7. Get it back to a normal state by hitting the ON key or power-cycling. Now flip the LOOP Switch (H) into its LOWER position. This activates the RHYTHMIC LOOP bend, and is in my opinion the coolest modification. You must get the device to make noise in order for the loops to start. Do this by hitting the ON keypad button, the number keys, game keys, etc – anything to make it do something. You should begin to hear a random rhythmic sound. The frequencies and variations of this sound effect are simply amazing, and should be a great source for your sampling or live performance. Now that you have a freaky loop running, you can alter it with other controls – more on this later. If the machine suddenly powers completely off, simply turn it back on or cycle the power.
8. You've still got that cool rhythm loop going. Now find the Momentary Release Button for the RHYTHMIC loop. This button is labeled (G) in the diagram, and is directly above the switch. Remember that the release button for the loop you are doing is the one OPPOSITE the direction of the loop switch. Very gently and quickly, tap this button. This releases the current loop and will usually drop you into another random loop sound. After a few of these advances, you'll stop hearing sound. Just get it talking again with

the keys to get the loop started again. The advance button gives you fast access to the next loop sound without having to turn off and on the main loop switch.

9. Now that you're getting the hang of the rhythmic loop, return the Loop Switch to center, and stabilize the machine with the ON key or a power cycle. Get it talking by hitting a game button. Right when it is in the middle of saying something, flip that Loop Switch UP. You'll freeze it right in the middle of the sound it was making. Gently tap the release button (I) to increment the freeze to the next piece of sound, or hold it down to let the speaking continue, then release when you want to freeze it again.
10. Now leave the switch up, and hold down its Momentary Release button – the LOWER one (I). As long as you're holding this down, the loop is not active, so it will talk normally. Get the sounds going again, and now you can catch the sounds by releasing the button right where you want it, and pressing it back in to let go of the sound. Sometimes you'll find this freeze loop has its own subtle rhythmic qualities as well, and it also responds well to the pitch bend controls.
11. Return the loop switch to center off, and stabilize the machine. Get it talking by hitting letters or starting the 'SAY IT' game. Reach for the Pitch Bend Knob (C) and turn it in either direction. This will raise or lower the pitch. The pitch knob works by altering its clock frequency, causing the whole thing to run faster or slower than it was designed for! The far upper and lower ranges are a bit touchy. I have tuned it for maximum lowness without crashing, but you will find the machine gets a bit unstable in its lowest range, so just be ready to power-cycle. You can use this bend with any other effect. This will be especially fun in a few minutes...read on.
12. Return the knob to somewhere in the middle, so it sounds normal again. Now get it talking and gently touch the LEFT body contact (BL) and the CENTER (base) body contact (BB). You will find that the firmer your pressure on the contacts, the lower the pitch, to an extent. Now try touching Base (BB) and High Pitch (BH) contacts. This will cause the pitch to rise. You may crash the device with the right amount of firm contact. Your fingers are providing a low current pathway – you are literally carrying electricity, merging your circuitry with its circuitry. The resistance of your fingertips is altering the CPU frequency just like that pitch knob does.
13. Now try out the Tone Buttons (F). The tone labeled FS is what I call the 'Screech'. It will produce a very loud tone, and may cause little red lines to form on the display. (I REALLY don't think the Texas Instruments engineers would approve! So far I haven't fried one though.) The FH button is the 'high' pitch – really more of a mid range, smooth sound. The FL button is the 'low' pitch. All three can be played during any other bend. Now you can play a little tune by pressing the buttons as you adjust the pitch with the knob or the body contacts! Practice with this – you might surprise your friends with a familiar melody.
14. Now you are ready to start making your own musical madness. Use all the bends described, in different combinations, and see what you can come up with. Once you have some practice, you might want to take it on stage if you are a musical performer. If you are, then I'm sure by now you've discovered the 1/4" Amplifier Output (A). And you've probably plugged it into a monster amplifier and tried out all your effects pedals. If you want to capture some of this sound to your PC, you have two options. The easiest way is to NOT use the 1/4" output – instead, plug a cable with 1/8" mono jacks on each end, into the original headphone jack located on the right side, and the other end into your PC sound card's 'Line In' jack. This is a Line Level output, which means it has a voltage strong enough to power a headphone. Your PC Sound Card Line In is designed to handle this voltage – your AMPLIFIER is not. Similarly, the amplifier output isn't designed for your PC input. If you were to plug your 1/4" amp output jack into the

PC, you probably won't hear anything at all, because the 1/4" output is attenuated with resistors to properly feed an amplifier. If you have a 'direct box' such as the 'Tube Pre' made by Presonus, you can use the 1/4" jack to plug into that box, then from the direct box into your PC, and that works great as well.

15. Recording on PC – you probably know what you're doing here, probably more so than I do. If not, I recommend a shareware program called Goldwave (Windows only). It can record large sound files and save as .wav or .mp3, and also gives you lots of editing and effects capabilities. Search for it on Google. Just start up a sound recording session and jam out. Once you're done, you should have lots of raw material to take apart and use in your samplers, or directly into your music. I wish I had the time and energy to do this kind of stuff, but I'm too busy making these bent Speaks for YOU!! ☺
16. You've surely noticed the blue LEDs on the sides. These are just for show. They are positioned to light up your hands as you perform. They are ultra-brite, so try not to stare directly into them, lest you burn blue spots onto your retinas. These should give you a little 'wow' factor on stage. Don't press too hard on them or you'll knock them into the case, out of their holders.
17. The Temporary Mute Button (K) simply mutes the sound (both speaker and amp output) momentarily. You can press and release it rhythmically to cause 'DJ Cuts'. Works really well with the rhythm or freeze loops.

I hope you have enjoyed this step-by-step tour. Again, if you have any questions at all, or suggestions on how to make the device or this manual better for yourself or others, please let me know.

Also, if you or someone you know wants another one and don't see any on eBay, let me know. I've got a whole stack piled up on my workbench, awaiting their date with destiny.

Thanks again for your purchase, and please keep me posted on what you're up to. I'd love to hear stories about how you're using it, or pictures of you using it on stage, or be credited in your hit albums, etc. etc.

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