LIMITED WARRANTY

If your ST-1000 fails due to manufacturing defect within TWO YEARS from the date of original purchase, please return, postage prepaid, to SABINE for replacement with a new or reconditioned unit. You must include your full name, address, proof of purchase and a statement of the symptoms of the defect.

DAMAGES NOT COVERED UNDER WARRANTY:

- **Physical Abuse such as excessive bending of the Music Stand Clips.**
- **Damage from water or other liquids or a ruptured battery.**
- **Damage caused by reversal of the battery voltage, or excessive battery voltage, as from a poorly regulated AC adapter.**

This warranty is in lieu of all other warranties, expressed or implied. This warranty gives you specific legal rights which vary from state to state. Applicable in the USA only.

SABINE
MUSICAL MANUFACTURING CO., INC.
4637 N.W. 6th Street • Gainesville, FL 32609
Made in U.S.A.

ST-1000 Chromatic AutoTuner

Sabine
Musical Manufacturing Co., Inc.

ADVANTAGES OF THE SABINE TUNER

You have purchased the world's finest electronic tuner. Some of the features which make it even better than tuners costing twice as much are listed here. See the following pages for a complete discussion of these features and detailed instructions on using the tuner.

FULLY AUTOMATIC OPERATION
Automatic Note Selection, Automatic Mode Switching.

ONE-TOUCH RECALIBRATION SYSTEM
Automatically re-scale to any note from any instrument.

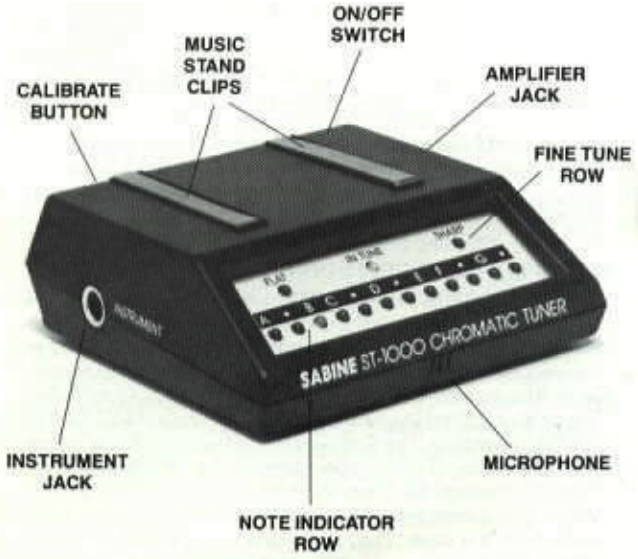
SUPERIOR NOISE REJECTION
Steady, accurate readings, even in a noisy room.

EXTENDED BATTERY LIFE
60 to 120 hours on a standard low-cost 9V battery.

INDICATORS FOR ALL ESSENTIAL FUNCTIONS
Power ON, Battery LOW, Non-Standard Pitch (A not 440).

DESIGN FOR EASE OF USE
Optimum Viewing Angle, Mounts for Music Stand or Amp.

ALL SOLID-STATE "LED" DISPLAY
No broken meters. Easy to see across a dark stage.



FEATURES

Separating musical tones from voices and extraneous noise is a complex task requiring a sophisticated combination of analog and digital circuits. The key to high performance and low cost is Sabine's custom-design "IC"* which combines all of these circuits onto a single silicon chip. The analog circuits provide the high-speed signal processing necessary for smooth response while tracking changes in pitch. Tuners which use only digital circuits often show the effects of computational delay—the display will hesitate, and jump from one reading to another.

*Patent Pending

FULLY AUTOMATIC OPERATION

One objective in designing this tuner was to make its use as simple as possible, without compromising features or performance. Many of the knobs and switches found on other tuners control functions which the ST-1000 does automatically. The musician should not have to worry about selecting the note or setting the internal operating mode (FAST/SLOW display response). The Sabine tuner will automatically sense and select any of the twelve notes in any of the seven octaves C1 through B8. Once the note is sensed, mode switching is fully automatic. The mode is FAST during the initial search for the note. Then it switches to a MEDIUM speed during the second or so while it is settling on a new tone. Finally, when the circuits decide the note is "locked in," the tuner switches to SLOW mode, which provides the greatest accuracy and minimum jitter from noise. All of this is done without the musician having to touch a single switch.

ONE-TOUCH RECALIBRATION SYSTEM

This is a feature we are especially proud of. We thought long and hard about what musicians really need when they set a tuner to some other pitch than the standard A440. Most don't really care what frequency it is, and they don't want to figure it out by trial-and-error with the switches. They just want to set the tuner so it's in tune with the group, or with a piano, or with a song on a record player. See the "Instructions" section for more detail.

SUPERIOR NOISE REJECTION

A Multistage Band-Pass Filter, built into the custom IC, gives outstanding separation of signal from noise, allowing the tuner to give a steady, accurate reading, even in a noisy room. The Sabine Tuner will track a signal 14 dB below the noise level, far superior to any other tuner.

EXTENDED BATTERY LIFE

The Sabine Tuner uses "CMOS" circuitry, which draws almost no current from the battery. Only the LEDs draw a significant current, which means that when the tuner is not responding to a note, the battery will last for hundreds of hours. When the battery drops to 6 volts, the tuner switches automatically to "half-bright" mode. The tuner will work for many more hours in this mode, with no loss of accuracy. So you need not worry about changing batteries in the middle of a performance. Under typical conditions, a low-cost battery will last several weeks. Alkaline batteries are not necessary (see the "Specifications" section for ratings of different batteries).

INDICATORS FOR ALL ESSENTIAL FUNCTIONS

Providing indicators for all essential functions, without detracting from the essential simplicity of the design was a real challenge. Power ON is shown by a brief flash, once a second, on the green LED. Battery LOW is shown by the lights switching abruptly to a "half-bright" mode. "A not 440" is shown by a double flash (instead of the single flash each second) on the green LED.

INSTRUCTIONS FOR TUNING

1. Slide the ON/OFF Switch to ON.

The green "IN TUNE" light will flash once per second to show that the tuner is ON and ready.

2. Play or sing a single tone, and adjust that tone until the desired Note Indicator light is ON.

For example, if you wish to tune a "D" string on a guitar, pluck that string, and turn its tuning peg until the "D" Note Indicator if ON. This should occur within a half second after the string is plucked. If not, try a different technique. Generally, a bare thumb a few inches from the bridge, with moderate loudness is better than a hard pick close to the bridge.

ACOUSTIC INSTRUMENTS are detected by a very sensitive internal microphone. It is generally not necessary to play loudly, except in a noisy room.

ELECTRONIC INSTRUMENTS should be connected to the input labeled "INSTRUMENT." This will disconnect the internal mike and eliminate any room noise. The output labeled "AMPLIFIER" may be connected to your amplifier or PA. Leaving the tuner "in-line" while playing will not "load" or distort the signal in any way.

3. Slowly make the final adjustment until the green "IN TUNE" light is ON.

The SHARP and FLAT lights blink rapidly when you are far out of tune, and more slowly as you approach "IN TUNE." Observe this blink rate as you are tuning, and you will be able to hit "IN TUNE" every time without over-shoot. Re-pluck the string if it fades out too rapidly to get a reading, but don't pluck so often that the tuner never stabilizes on one note. Generally, a second or two from one pluck to the next is about right.

4. Mute all strings before tuning the next note.

5. Repeat steps 2 through 4 until the entire instrument is tuned.

ONE-TOUCH RECALIBRATION

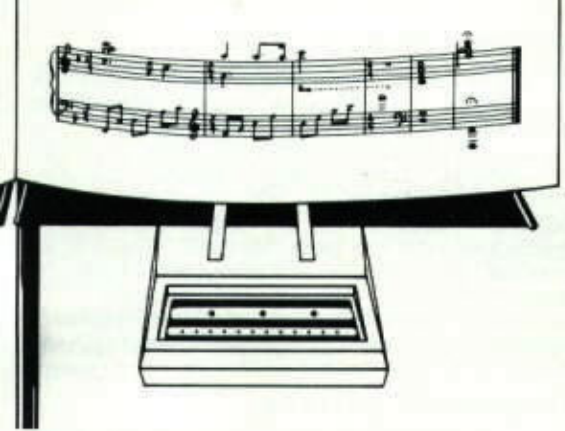
The Sabine Tuner is initially calibrated to the international standard pitch A = 440Hz. However, it is easily recalibrated to match an instrument (the "reference" instrument) that is not tuned to A = 440. Play any note on the reference instrument. Wait until you get a steady reading on the tuner. Then press the "CALIBRATE" button. This will cause the tuner to re-adjust its entire scale (not just the sample note) so that the reference instrument now reads "IN TUNE." The tuner will "remember" this new scale until you recalibrate again, or until you return it to A = 440 by turning OFF the power.

You can tell if your tuner has been recalibrated by watching the green light. If it flashes twice (instead of once) each second, then it is not calibrated to A = 440.

CHANGING THE BATTERY

When it is time to change the battery, the lights switch abruptly to a "half-bright" mode.

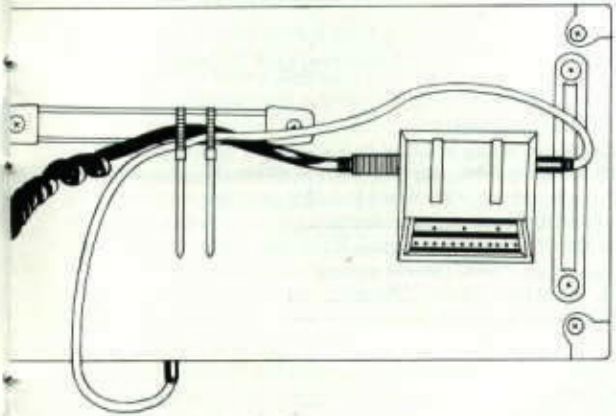
BE SURE TO TURN THE POWER SWITCH OFF BEFORE CHANGING THE BATTERY. If the switch is ON, a momentary reversal of the battery could destroy your tuner.



MOUNTING ON A MUSIC STAND

Use the metal clips on top of the tuner. If your music stand has a sharp or ragged edge, a strip of tape along the edge will prevent scratching the top of your tuner.

The clips will easily accommodate a thin piece of metal like a music stand, but they will be permanently bent if you try to jam them over something thicker, like the handle of a guitar amp.



MOUNTING ON AN AMPLIFIER

Two cable ties are provided for attachment to an amplifier.

TUNING TIPS FOR STRING INSTRUMENTS

1. Tune string instruments from a pitch that is flat up to the pitch that you desire. This minimizes the effects of friction in the tuning mechanism. If you tune down from the sharp side, there is a greater tendency for the mechanism to slip after the tuning is complete.

There are many sources of friction in a typical guitar. The slots in the nut may be tight on the string. Windings on the lower strings may not slide smoothly over the nut. Pressure from a capo may prevent the strings from sliding smoothly when the tuning peg is turned. Note: The Sabine Capo (available at most music stores) eliminates friction problems common with other capos. The other sources of friction will remain, however, so tuning up from flat is recommended in any case.

2. Don't expect the string to remain "IN TUNE" for the entire duration of the tone. A typical acoustic guitar will drift by 4 or 5 cents from start to end of the tone. There is nothing wrong with the guitar or the tuner. This drift is part of the natural sound of acoustic instruments. Generally, you should adjust the note so that it is "IN TUNE" for the first second or two after plucking.

3. "Sympathetic Vibrations" between two strings when they are near perfect tune will confuse the tuner. On a guitar these occur most frequently between the first (E) and the fifth (A) string, and between the second (B) and the sixth (E) string. It is good practice to mute the strings that are not being tuned.

4. Avoid pressure on the instrument while tuning. Moderate pressure on the neck of a guitar will cause a noticeable change in pitch.

5. A Note for Advanced Fretted Instrumentalists

All fretted instruments, and most other instruments that have a fixed tuning, are built to play an "even-tempered" scale (equal tonal spacing between all notes). The Sabine tuner is also calibrated on this scale. The even-tempered scale is used because it allows the musician to play in any key without retuning. The problem with even-tempered tuning is that some notes are quite far out of perfect harmony. In a D chord, for example, the F♯ is 14 cents sharp of perfect harmony with the D. This is noticeable to some musicians. When tuning by ear, these musicians may prefer a slightly different tuning, depending on what chords they play most often. For these musicians we recommend the following procedure: Start with even-tempered tuning, then watch the blink rate as you change a note to the tuning you like. Remember that blink rate, and you will be able to repeat that tuning every time.

ACCESSORIES

AC ADAPTERS

An AC adapter is not recommended for most users. The long battery life and extended grace period make an occasional battery change far less trouble than carrying an adapter. However, for those situations when an adapter must be used, we recommend a good quality, well-regulated unit with a battery snap end.

Use of a poorly regulated AC adapter can degrade the performance or burn out the circuit. AC hum can cause poor tracking of low-level signals, or self-locking on the AC frequency (B flat). **Voltages over 10 volts (even a brief surge when the adapter is first switched ON) can destroy the circuit.** Some AC adapters have a switch to reverse the normal polarity. **Reverse polarity can destroy the circuit. Damage due to overvoltage or reversed polarity is not covered under warranty.**

CONTACT MICROPHONES

Tuning using the internal microphone may be impossible in situations where there are other instruments playing—for example, when several students are all playing horns in a crowded practice room. We recommend our model CM-1, which plugs into the "instrument" jack, and turns the internal mike OFF. A suction cup holds the contact mike to the instrument.

SPECIFICATIONS

Scale: Even Tempered, 12 notes per octave
Range: Seven Octaves (C1 through B8)
Accuracy: + or – One Cent (uses quartz crystal)
Noise Rejection: 14 dB
Maximum noise level (white noise relative to sinusoidal signal) at which tuner will still read accurately
Battery Life: In hours, measured using a standard test cycle: 2 seconds tuning, 14 seconds idle

	Standard	Heavy Duty	Alkaline
Bright Mode	60	95	125
Dim Mode	60	95	100
TOTAL	120	190	225

Tuning Error Indication:
Sharp & Flat LEDs: 4 blinks/sec for every 10 cents error
In Tune LED: ON at 1.5 cents error, OFF at 4.0 cents error
Mode Switching (FAST...SLOW): Automatic, 3 levels
Viewing Angle: 0 to 90° (on the floor or on top of an amp stack)
Accessories Provided:
9V Standard Battery
Two Cable Ties
Size: 3-3/4 by 3-3/4 by 1-3/8 inches
Weight: Five ounces