1. ***Measure FAC:***
   a. Set SAT to F5, play F3, stop LEDs with tuning hammer, [press **OCT** up],
      SAT now on F6, play F3, stop LEDs with [**CENTS**] button,
      [while holding down **SHIFT**]-[press **STO STRETCH**].
   b. Set SAT to A5, play A4, stop LEDs with tuning hammer, [press **OCT** up],
      SAT now on A6, play A4, stop LEDs with [**CENTS**] button,
      [while holding down **SHIFT**]-[press **STO STRETCH**].
   c. Set SAT to C6, play C6, stop LEDs with tuning hammer, [press **OCT** up],
      SAT now on C7, play C6, stop LEDs with [**CENTS**] button,
      [while holding down **SHIFT**]-[press **STO STRETCH**].
   d. [hold down **STRETCH**]-[release **STRETCH**] to review FAC numbers just created.

2. ***Storing a measured FAC:***
   Select a page [**PAGE** up or down] for storing FAC.
   [rollover from **STRETCH** to **STO MEM**].
   SAT displays "FAC" during rollover.
   SAT displays "BUSY" while FAC is calculated and stored on selected page.
   Press [**NOTE**] up and down to begin tuning.

3. ***Storing a predetermined FAC:***
   [press **TUNE**].
   [while holding down **STRETCH**], F3 or A4 or C6 will be displayed.
   [adjust stretch number with **CENTS**], [release **STRETCH**].
   Repeat until all stretch numbers are entered.
   Select a page [**PAGE** up or down] to store FAC.
   [rollover from **STRETCH** to **STO MEM**] to calculate and store the tuning.
   Press [**NOTE**] up and down to begin tuning.

4. ***View FAC from an existing page in memory:***
   [while holding down **SHIFT 2**]-[press and release **STRETCH** to view each stretch number].
   [Press **MEM**].
   Press [**NOTE**] up and down to begin tuning.

5. ***Measure an unknown pitch:***
   [Hold down **MSR**], play the note until LEDs stop.
   [release **MSR**], check the cents display.

6. ***Pitch raising 25% correction:***
   [while holding down **MSR**] play the note until LEDs stop and then
   [rollover from **MSR** to **SHIFT**].

7. ***Pitch raising 33% correction:***
   [while holding down **MSR**] play the note until LEDs stop and then [rollover from **MSR** to **SHIFT 2**].

8. ***Tune to exactly A440:***
   Measure and store an FAC tuning - go straight to A4 and tune all three strings.
   Press [**TUNE**], display jumps to A6.
   [press **OCT**] down twice to A4, and set the display to A4 0.0 with [**CENTS**] button.
   Play A4, use [**CENTS**] to stop the LEDs. Note the amount of error.
   Store an offset to counteract the error - enter an opposite offset.
   Store offset [rollover from **SHIFT** to **RST MSR**].
   Store the tuning again [rollover from **SHIFT** to **STO STRETCH**].
   (Tune the piano knowing A4 will be exactly on A440)

9. ***Creating an offset as part of an FAC tuning:***
   Set the cents window to zero by [holding down **SHIFT**]-[quickly tap **CAL TUNE**], display shows 0.0.
   Select an offset amount with the [**CENTS**] button.
   Store offset [rollover from **SHIFT** to **RST MSR**].
   Then [rollover from **STRETCH** to **STO MEM**]. The entire tuning will be offset by the chosen amount.
   No "+" or "-" in final display.
   Press [**NOTE**] up and down to continue tuning.

10. ***Creating or altering an offset of a current tuning:***
    Set the cents window to zero by [holding down **SHIFT**]-[quickly tap **CAL**], display shows 0.0.
    Select the amount of additional offset to add or subtract to the current offset.
    Store offset [rollover from **SHIFT** to **RST MSR**].
    "+" or "-" is displayed.
    Press [**NOTE**] up and down to continue tuning.

11. ***Displaying the current offset:***
    Set the cents window to zero by [holding down **SHIFT**]-[quickly tap **CAL TUNE**], display shows 0.0.
    [while holding down **SHIFT**]-[press **RST**].
    As long as [**SHIFT**] is depressed, the cents offset currently in use is displayed.
    Press [**NOTE**] up and down to continue tuning.

12. ***Quickly eliminate an offset:***
    "+" or "-" is displayed.
    [while holding down **SHIFT**]-[hold down **CAL**] until A4 0.0 appears.
    Press [**TUNE**].
    No "+" or "-" in final display.
    Press [**NOTE**] up and down to continue tuning.

13. ***Check battery charge:***
    [while holding down **SHIFT 2**]-[press **BAT**].
    Press [**NOTE**] up and down to continue tuning.

14. ***Check page being used***:
    [press **MEM**].
    Press [**NOTE**] up and down to continue tuning.

15. ***Auto note stepping on/off:***
    [hold down **SHIFT**]-[press **AUTO NOTE** up or down].
    The ladder display bars indicate direction.
    Play a note one octave higher if it's not stepping up crisply.

16. ***Force a Warm-Stop:***
    [while holding down **SHIFT 2**]-[press **MIDI IN**], SAT powers off.
    Power back on without losing any settings.

17. ***If you get lost at any time:*** [press **TUNE**].

Notes:

1. a. Stretch numbers are ***taken*** from the keyboard at F3, A4, C6.
   b. Stretch numbers are ***tuned*** with SAT set to F5, A5, C6.
   c. Stretch numbers are ***measured*** with SAT set to F6, A6, C7.
   d. Stretch numbers are ***stored*** into SAT set to F6, A6, C7.

2. Full battery charge lasts 60-80 hours.

3. LO-BAT display (25% charge) indicates 30 minutes left.

4. Use SAT connected to battery charger when batteries are dead.

5. Five minute charge provides 2 hours of use.

6. First 90 minutes at high-current rate provides 80% charge - red LED.

7. Overnight trickle rate provides 100% charge - green LED.

8. SAT will ***Warm-Stop*** after 30 minutes of no buttons pressed.

9. SAT powers up on page 0 in CAL mode.

10. Page 0 will not store a piano.