Protune Corp.
P.O. Box 9485 Schenectady, NY 12309
(845) 462-6452 info@protune.com www.protune.com

INSTALLATION & USE
Single Drum Timp-Tuner, Model TT-1E

TIMP-TUNER™ with Magnetic Mount

TIMP-TUNER™ is easy to use. First, mount it on the drum opposite the normal striking point. **Strike the drum lightly with a repeating "tap-tap-tap...."** and the tuner's unique display shows the note sounded and intonation accuracy. **A light roll or repeated strikes on the drum provides a continuous readout of the note**, so the player can quickly bring the drum to the correct pitch.

Pitch changes can be done quickly and accurately. The tuner can also be used to set the proper playing range and to equalize the head tension.

INSTALL BATTERIES

1. Remove the four screws on the back of the unit and remove the back cover.
2. Install three size AA batteries of one of the following types only:
   Alkaline (non-rechargeable)
   Alkaline (rechargeable*)
   Nickel Cadmium ("NiCAD", rechargeable*)
   Nickel Metal Hydride ("NiMH", rechargeable*)

   * Note: Follow battery manufacturer's directions and warnings regarding charging and disposal. It is important for function and safety to use the proper charging equipment for the particular batteries being used. ***Do not use lithium batteries in this device.***

3. ***Important: Check That the Batteries are installed in the orientation shown on the battery holder base.***
4. Replace the back cover and screws.

INSTALL ON THE DRUM

Place the TIMP-TUNER™ on the counterhoop (outer tensioning ring) at a position approximately **opposite the normal striking area**, far enough away from the lugs so that there is no interference with the lug key.

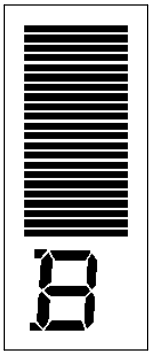
OPERATION

(Note: The Timp-tuner must be mounted to the drum to operate. It cannot be hand-held.)

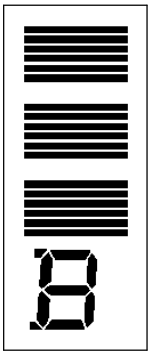
1. On/Off control is by the red pushbutton switch near the lower right corner of the display. Pressing it once turns the unit on. When you are finished using the TIMP-TUNER™, press the red pushbutton and it will go off.

The unit also has an "Automatic Off" feature, so that it turns itself off if it is idle (no note detected after about three minutes). It is recommended that you always turn off the unit (by pressing the red button) when you are finished using it. The "Automatic Off" function serves as a backup, to save battery life just in case you forget. You should not rely on it, however, since sympathetic vibrations of the drumhead or other sources of random signals may cause the unit to continue to operate.

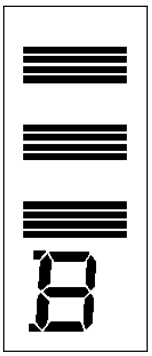
2. Battery Condition is displayed as soon as the unit is turned on, for about one second of operation. The display shows a "B" (for *Battery*) and also a number of bars indicating remaining battery life. The less bars showing, the less life remaining in the batteries. The diagrams below show the range of battery indications.



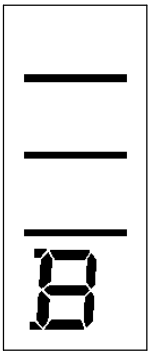
Battery New



Battery High



Battery Medium



Battery Almost Dead

When the indicator shows that the batteries are almost dead, they should be replaced. You may continue to use the TIMP-TUNER™ with the batteries almost dead, but it will stop operating after a relatively short time. When the batteries are getting too low to correctly operate the unit, it automatically turns itself off.

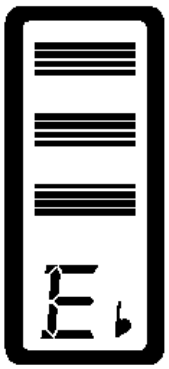
3. Striking the Drum ***For Best Results - use a relatively light repeating tap of the drum with a soft mallet.*** A single strike of the drum provides only a short-duration readout of the note and intonation, and may introduce overtones. A repeating striking of the drum (or a soft roll) is preferred, since it excites the fundamental and then provides a continuous readout.

Strike the drum with a soft mallet approximately opposite the pickup position as lightly as will cause the note to indicate. Striking the drum too hard increases the overtone content of the sound and may cause the tuner to indicate an overtone. Because the amplitude of the head vibrations decreases (for a given force of striking) as the head is tightened the drum must generally be struck harder to get an indication on the tuner display for the higher notes. *Also, the better the head is balanced ("in tune with itself" see page 6) the more sensitive the tuner will appear to be, since the fundamental is cleaner (less peculiar overtones) and stronger.*

Note: When you change the pedal position, the counterhoop moves up or down - and with it the tuner. From time to time the tuner pauses to reset its internal "yardstick" (calibration of distance to the head). If it fails to read on the first try after making a pedal position change, this may be due either to a peculiar ringing of the head or a tuner reset pause. If this happens, just stop the head vibrations with your hand for a moment, wait about a second, and try again.

4. Reading the Tuner Display

When a note is sounded on the drum the display shows the note and the strobe-like bar pattern indicates tuning accuracy. If the bar pattern appears to be moving upward the note is sharp, while downward motion indicates that the note is flat. The rate of motion of the bar pattern is proportional to the tuning error. The slower the bar pattern motion appears to be, the closer the note is to proper pitch. The bar pattern is motionless when the note is exactly on pitch.



AUTOMATICALLY SHOWS NOTE SOUNDED.
Motion of the strobe-like bar pattern indicates tuning error, moving up (sharp) or down (flat) at a speed proportional to tuning error. When the note sounded is exactly in tune, the bar pattern is motionless.

The sensitivity of the tuner to error (flat or sharp) is often greater than the resolution of the tuning mechanism of a drum. Strive for approximately correct tuning by trying to minimize the bar pattern motion up or down. With practice one can learn to get closer to precise tuning and tune quickly and accurately to a new note.

When in-between adjacent notes the display may flip from one to another (for instance, from showing a very flat C to showing a very sharp B. With no note being played the display normally will show the complete set of bars and the note indicator will be blank. When not displaying a note the display will periodically show a number indicating the calibration setting as discussed in Section 5 below. Random pickup of drumhead vibrations or other interference may cause a note to indicate from time to time.

Note that the display backlight goes on automatically whenever a note is displayed, and it turns off if no note is displayed.

If the display is completely blank it generally indicates that power is off. (Auto Off, batteries dead or not installed, or the power switched was not pressed). If all characters of the display are showing (possibly with some flickering) the internal computer chip must be reset. This is done by turning the switch off for a few seconds and then on again.

5. Calibration Setting Indication Whenever the tuner is turned on it automatically starts at the previously set calibration. The calibration is indicated by a number that shows on the display from time to time (when not registering a note being played). The number "0" indicates A-440 calibration, and that is the calibration that is preset at the factory. It may be changed by the user, and the new calibration setting will be retained and indicated by the appropriate number as discussed in the next section.

6. Changing the Calibration is done using the black pushbutton switch near the bottom left of the display. Presets are provided up to A-445 and down to A-436. To set to a different calibration, wait for a moment when there is no note or calibration display registering and then press and hold the black pushbutton. You will see the numbers "1" "2" "3" ..etc. being displayed sequence, meaning:

"1" = A-441
"2" = A-442
"3" = A-443
"4" = A-444
"5" = A-445

Still holding the button down the numbers will then sequence down ("4" "3" "2"....) through "0" (meaning A-440) and then indicate:

"9" = A-439
"8" = A-438
"7" = A-437
"6" = A-436

Continuing to hold the button down the numbers then increase again ("7" "8" "9" "0" "1" ....etc).

Taking your finger off the set button stops the sequence and the tuner is calibrated to the last indicated preset. That number will then show on the display from time to time (when not registering a note being played) to remind you of the calibration setting.

USING THE TIMP-TUNER™ TO SET THE HEAD TENSION

To set head tension for the proper playing range for each size drum (for instance when installing a new head or after installing a pickup) first set the pedal to the lowest tension lowest note) position and relax the tension at the adjusting screws. Then tighten the adjusting screws as uniformly as possible (a little bit at a time on each screw) until the lowest note in the playing range indicates on the tuner when the drum is struck. The approximate playing range for the various sizes of timpani are tabulated below.

Size	Range	Frequency
32"	C2 to A2	65.406 - 110.00 Hz (Cycles per second)
30"	D2 to A2	73.416 - 110.00
29/28"	E2 to C#3	82.407 - 138.59
26/25"	Bb2 to A3	116.54 - 220.00
23"	D3 to C#4	146.83 - 277.18
20"	E3 to D4	164.81 - 293.66

Since the tuner generally will not indicate a note with the head tension too low the proper octave will usually be set by this method. (In other words starting with slack head tension on a 28" drum and gradually increasing the first E that will register on the tuner will be the E2.)

USING THE TIMP-TUNER™ TO EQUALIZE HEAD TENSION (GETTING THE HEAD "IN TUNE WITH ITSELF")

Adjust the drum to a note in the middle of its range and get that note in tune when striking (light repeated taps with a soft mallet) near one lug position. Then go around the drum, striking it at each tensioning screw position in turn and noting the intonation reading. Then, at lug positions that indicate sharp relative to the others, slacken the tension slightly. At positions that are flat relative to the others, tighten the tensioning screws slightly. Then set the pedal for the lowest note, come up to a note in the middle of the range, and repeat the procedure, as many times as required, until the bar pattern motion is approximately the same no matter where around the drum the head is struck.

QUESTIONS OR PROBLEMS?

Please contact us (see top of page 1) or visit our website ***www.protune.com*** and see the topics under ***support***.

ONE YEAR LIMITED WARRANTY

This product is warranted for one year from the date of original purchase to be free of mechanical and electrical defects in material and workmanship. Protune Corp. will repair any such defects occurring during the warranty period provided the product is returned (shipping prepaid) with proof of purchase (copy of receipt, invoice, or packing slip). We will pay for return shipping.

The warranty does not cover damage resulting from any of the following: abuse of the product; improper battery insertion, tampering; disassembly, or attempted repair or alteration by any person other than the manufacturer.

For Service outside of warranty, return the unit to manufacturer, shipping costs prepaid, together with check or money order for $35.00 to cover cost of inspection, minor repair, and return shipping. Factory will advise you if additional repair charges will be incurred.