N-Tune™
Turn on. Tune up.

Advanced Tuning Technology
Built into the guitar!

www n-tune.com

Designed by guitar-playing geeks in Seattle, WA, USA.

Contents

Quick start!

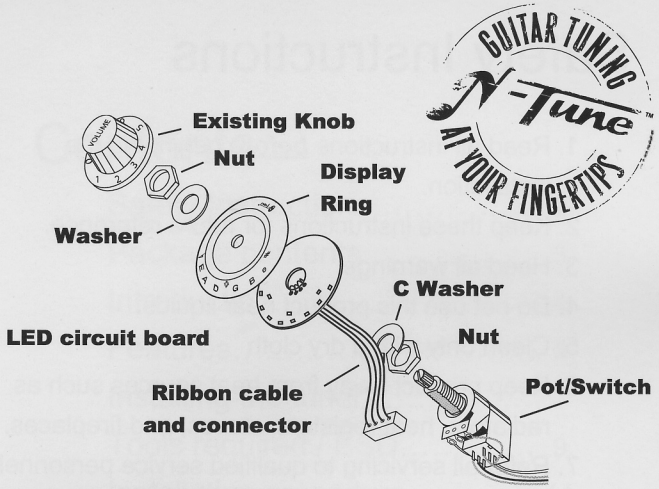
See page **19** if the tuner is already installed and you can't wait a second longer to tune your guitar!

Safety Instructions

1 Read all instructions ***before*** beginning the installation.
2. Keep these instructions for future reference.
3. Heed all warnings.
4. Do not use this product near liquids.
5. Clean only with a dry cloth
6. Keep product away from heat sources such as radiators, heat registers, stoves, and fireplaces.
7 Refer all servicing to qualified service personnel.
8. Dispose of used batteries in accordance with all applicable laws and procedures.

WARNING: Installation of the ***N-Tune***™ system may void the manufacturer's warranty on your guitar Check with your guitar's manufacturer or the dealer from where the guitar was purchased for details. It is highly recommended that only a qualified guitar technician install the ***N-Tune***.

*Zero Crossing, Inc. assumes no liability for any damage or injuries incurred in relation to the installation or modification of your guitar



PACKAGE CONTENTS

- 5 Colored display rings
- LED Circuit board with ribbon cable and connector
- 250kΩ or 500kΩ Volume pot/switch (with wiring harness/battery connector)
- 9V battery
- This manual

(*And, in a separate bag found underneath the plastic tray):*

- Battery holder and Velcro®
- Flathead replacement pickup screw (For use on guitars models that need it)
- 2 nuts
- 1 plain washer
- 1 'C' washer

Introduction

The ***N-Tune***™ chromatic tuner assembly replaces the volume control of your electric guitar It can be installed by experienced guitar technicians in most electric guitars or basses without the need for routing, woodworking or other modifications. (See our website for a current list of known guitars in which the ***N-Tune*** will work).

The tuner will take the place of a standard, passive, three-terminal guitar potentiometer (pot).

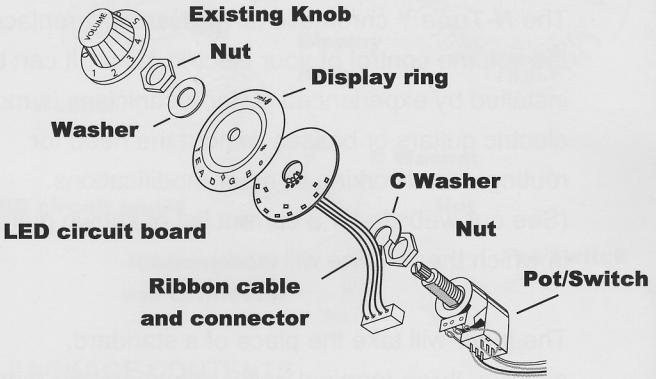
Two pot values of the ***N-Tune*** are available:

A 250kΩ pot

A 500kΩ pot

Note: If your existing volume pot has extra features that make it do more than just control the volume, then these extra features will no longer work with the ***N-Tune*** installed. Consult an experienced guitar technician for your available options for guitars with extra volume control features.

Features



1 Your original volume knob is reused.

2. The ***N-Tune*** display ring, mounted under the volume knob, shows the various notes and the tuning status symbols: flat, sharp and tuned.
3. As a string is plucked, the signals from the pickups are sampled and the note and tuning status are shown by the display's LED's.

4. Pull the volume knob up to turn the tuner on and mute the output of the guitar Press it down to turn the tuner off and restore audio signal to the output jack.
5. The tuner is powered by a user-replacable 9 volt battery
6. The ***N-Tune*** features an Auto Power OFF feature that prevents draining the battery by automatically turning the tuner off if it is left on for 3 minutes.

Installing the tuner

It is recommended that the following installation procedure should only be undertaken by experienced guitar technicians. If you are not well experienced in working with guitar electronics, you should not attempt this install yourself

IMPORTANT NOTE FOR FENDER® and FENDER-TYPE GUITARS: There are many different styles of electric guitars and installing the ***N-Tune*** may require some compromises to consider For instance, on some Fender Stratocaster® (Strat®) models, you may notice that the ***N-Tune*** display ring can interfere with access to a portion of the pickup adjustment screw that is adjacent to the volume control. Depending on the particular guitar accessing this screw for pickup height adjustment may require temporary removal of the ***N-Tune*** display ring and circuit board. Also be aware that there are different types of screws for this function.

A flat head, counter-sunk pickup adjustment screw has been provided that will work for some models. This provided screw requires a counter-sunk hole in the pick guard in order to allow for a flat surface under the edge of the ***N-Tune*** circuit board and display ring. Some Strat models do not have counter-sunk holes for the pick guard mounting screw.

It may be necessary to countersink this hole and use the provided screw to get your ***N-Tune*** circuit board and display disc to install flush to the pick guard.

WARNING:

BE AWARE THAT INSTALLING THE COUNTER-SUNK SCREW INTO A PICK GUARD THAT DOES NOT HAVE COUNTER-SUNK HOLES CAN CAUSE DAMAGE TO THE PICK GUARD. FOR BEST RESULTS, REFER ALL INSTALLATIONS TO A QUALIFIED GUITAR TECHNICIAN WHO CAN PROVIDE YOU WITH THE BEST OPTIONS FOR INSTALLATION OF THE ***N-TUNE*** IN YOUR GUITAR.

Tools required

Soldering iron, solder solder sucker or solder wick, pliers, a screwdriver selection and nut drivers.

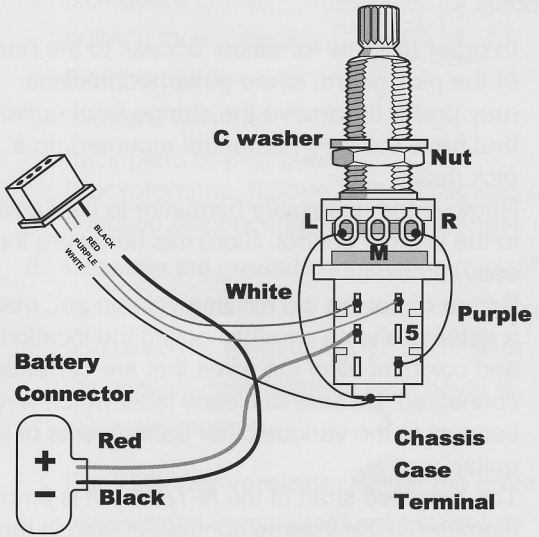
Electro Static Discharge (ESD) precautions

In order to prevent possible damage to static sensitive circuit components on the LED circuit board, it is generally recommended to observe standard ESD precautions when handling the printed circuit board (PCB) by using a properly grounded ESD wrist strap to reduce the chance of static charge build up from your body

Do not remove the LED circuit board from the anti-static plastic sleeve until the moment that you are ready to use it. Once removed, do not touch the PCB components or conductors.

The Potentiometer (pot) assembly

The potentiometer assembly consists of a push-pull pot/switch assembly that is pre-wired to a 9 volt battery connector and a four pin connector for the LED circuit board connection.



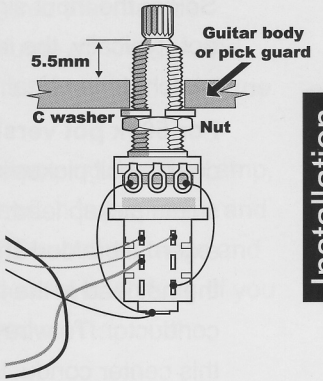
nstallation Procedure

The following procedure assumes your guitar has a standard 3-terminal potentiometer

Use these instructions as a guide and also refer to our website www.n-tune.com for more details, updates and information about particular guitar models.

1 In order to allow for easier access to the back of the pick guard, some guitar technicians may prefer to remove the strings from guitars that have the volume control mounted on a pick guard
2. Remove the necessary hardware to gain access to the volume control. Store this hardware for easy retrieval.
3. Before removing the existing volume pot, make a detailed sketch carefully noting the location and colors of all of the wires that are currently connected. Be sure to clearly label which wires connect to the various other components of the guitar
4. The threaded shaft of the ***N-Tune*** pot is 8mm in diameter If the volume control pot hole in the guitar is too small, you may have to enlarge the hole to 11/32" (8.73mm) AT YOUR OWN RISK*

5. With the special "C" washer in place, adjust the nut until there is at least 5.5mm of thread showing above the pick guard or the guitar's face. Check that the pot does not interfere with the back plate or pick guard.
(For reference, 5.5mm is the thickness of the supplied display ring plus the thickness of a nut)



6. Desolder the ground connections (typically the black wires of the existing volume pot and re-solder them to the "L" terminal or the chassis case terminal (whichever is more convenient).

For 250k pot versions: Solder the ground connections from the old pot to terminal "L" (or the chassis case terminal) on the new pot.

Solder the input signal wire from the existing pot (typically the lead from the pickup selector switch) to terminal "**5**" on the ***N-Tune*** pot.

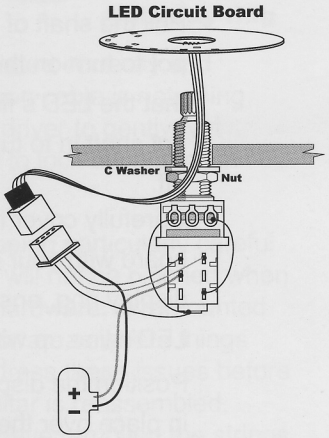
For 500k pot versions: Traditional "Humbucker" double coil pickups have a dual conductor braided shield pickup lead. For this type of pickup lead, the external braided shield is the ground conductor and the hot lead is the insulated (coaxial) center conductor To wire this type of pickup to the ***N-Tune***, this center conductor (which is probably on the "R" terminal on the existing pot) needs to be soldered to terminal "**5**" on the ***N-Tune*** pot assembly Also, wire a jumper from terminal "L" to connect to the braided shield/ground. It may be a good idea to insulate the end of the braided shield with a portion of electrical tape so that it cannot touch against any of the other terminals on the ***N-Tune*** pot assembly inadvertently grounding them out

7 Solder the output jack "hot" (or positive) wire of the existing pot (typically terminal "M") to the "M" terminal on the ***N-Tune*** pot assembly. (See the figure on page 10.

De-solder any tone control wires that may be connected to the existing volume control pot and re-solder them to the same terminal on the ***N-Tune*** pot assembly

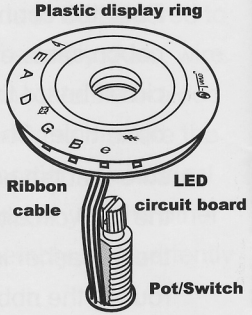
Before reassembling the guitar plug it into an amp, make sure the ***N-Tune*** pot/switch is pushed in and the volume pot is turned up. Strum the strings and and check that the volume control is working. If you have removed the strings, you can tap on the pickup

Pass the connector and ribbon cable of the LED circuit board through the open hole. Check to make sure that the orientation of the LED circuit board and the C washer is correct for routing the ribbon cable so that the LEDs will be facing you when you play the guitar



11 Push the ***N-Tune*** pot through the hole and make sure the ribbon cable of the LED circuit board fits into the open slot in the C-washer
Join together the white connectors from the LED circuit board and the ***N-Tune*** pot assembly
Securely attach the battery holder clip to the inside cavity of the guitar with the provided
Find a place for the battery that will not be in the way of any pots, wires or other controls.

Pull the shaft of the ***N-Tune*** pot to turn on the tuner Verify that the LED's flash. Push the pot shaft in to turn the tuner off.

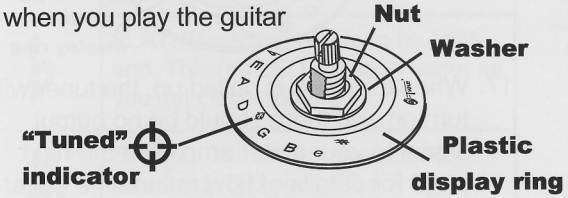


Carefully cover the LED circuit board with your chosen plastic display ring, ensuring that the LED's line up with the pockets in the ring.

Position the display ring/LED circuit board assembly in place over the threaded shaft of the pot being careful of the routing of the ribbon cable through the opening in the C washer

12. Place the supplied washer on the top of the display ring and the supplied nut on the threaded shaft of the ***N-Tune*** pot assembly and hand tighten the nut so everything is loosely held in place.

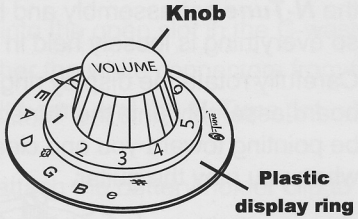
Carefully rotate the display ring/LED circuit board assembly until the "tuned" indicator will be pointing toward you and clearly visible when you play the guitar



13. Once everything is orientated correctly and you are sure that the ribbon cable is not going to be pinched, use a nut driver to gently yet firmly tighten the top nut to lock everything in place.

14. Reassemble the guitar being particularly careful to route all wires so they will not be pinched when the pick guard, or other hardware, is remounted. Be aware of any bulges or areas where things don't fit correctly and address these issues before proceeding. Once the guitar is reassembled, restring the guitar if you have removed the strings.

16. Push your volume knob onto the knurl of the ***N-Tune*** pot.



17 When the knob is pulled up, the tuner will turn on and there should be no output signal to your guitar amp. See the next page for details of how to tune the guitar

When the knob is down, the tuner and its LEDs will be off, and the guitar's output signal will be restored.

You are now ready to tune up your guitar with ***N-Tune***!

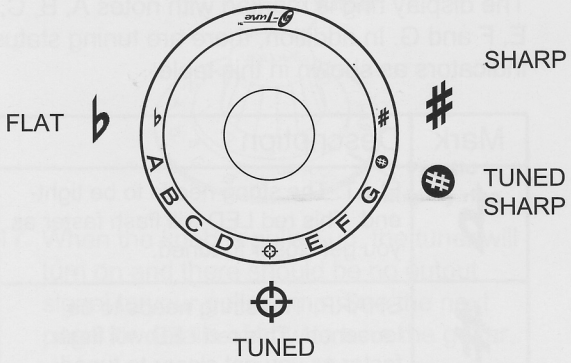
Tuner details

The display ring is marked with notes A, B, C, D, E, F and G. In addition, there are tuning status indicators as shown in this table:

Mark	Description
♭	FLAT The string needs to be tight-end. This red LED will flash faster as you get closer to tuned.
♯	SHARP The string needs to be loosened. This red LED will flash faster as you get closer to tuned.
⊕	TUNED. The string is in tune when loosened. this green LED comes on.
♯	TUNED SHARP This LED lights when the string is in tuned to a sharp, such as F#.

The tuner allows you to easily tune any string to any note and set up special tunings.

Tuning procedure



1 Pull on the volume knob to turn on the tuner (When the tuner is on, the output is muted.)

2. Pluck a string and its closest note will be displayed by the A, B, C, D, E, F or G LEDs.

3. Tune the string until the desired note is displayed.

4. If the flat symbol is flashing red, then tighten the string. It will flash faster as you get closer to being in tune.

5. If the sharp symbol is flashing, then loosen the string. It will flash faster as you get closer to being in tune. Try tuning down until the flat symbol is flashing, then tune up.

6. The green tuned symbol will light with happiness when you are in tune!

7 Repeat this procedure with the other strings.

8. If you are trying to tune to a sharp, such as F#, then tune up until both the green tuned light and the yellow tuned sharp light come on.

9. Push the volume knob back in to turn the tuner off and restore normal output.

Changing the battery

The tuner has minimal battery power draw and should provide many months of use. If you need to replace the battery, use the following steps:

- Depending on how it is installed, the battery can be accessed from the rear panel of your guitar or from under the pick guard.
- Velcro strips hold the battery mounting clip in place inside the guitar
- Remove the battery and carefully install a new one, making sure that the polarity is correct.
- Remove the battery if your guitar is not going to be used for long periods of time.

Specifications

Note Range
27Hz to 3520 Hz (notes A0-A7)
Accuracy
+/-2 cents
Input Source
Instrument pickups
Battery Life
Estimated at one year's worth of tuning (approximately 600+ tunings
The tuner automatically powers down when not in use to conserve battery life
Power Requirements
One 9V battery
Physical Dimensions
Tuner Disc with LED circuit board

Height:	1.35"
Width:	1.35"
Depth:	0.12"

Potentiometer Body

Height:	0.98"
Width:	0.72"
Depth:	0.94"

Warranty and repair

- If you suspect that there is something wrong with your tuner please contact us at:

  techsupport@n-tune.com

- The patent pending ***N-Tune*** guitar tuning system carries a one year limited warranty Contact our tech support via email or our website for any warranty related issues. Proof of purchase may be required.

Please visit www.n-tune.com for:

- Warranty Details
- Technical Support
- Alternative language instructions

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