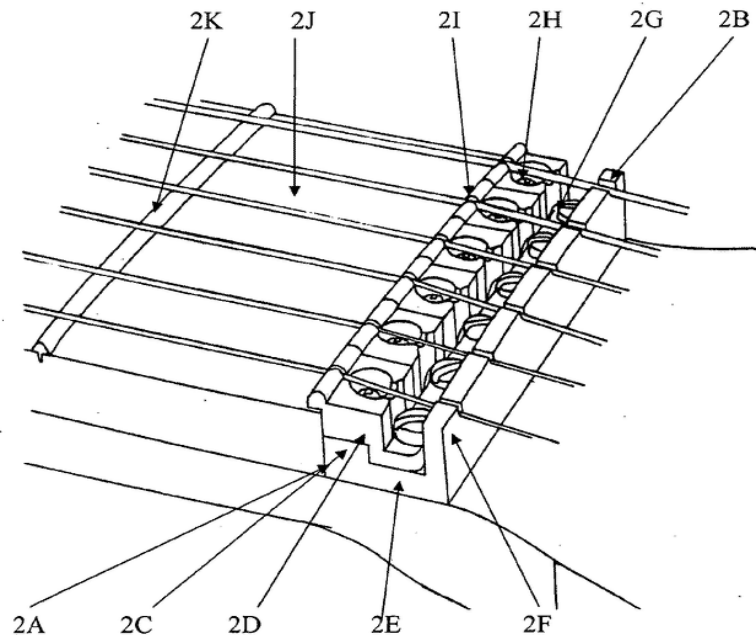


ELIASSON ADJUSTABLE GUITAR NUT SPECIFICATIONS page 1

Best results are obtained using a precision tuner. We use a Peterson strobe tuner.

The figure shows an enlarged perspective view of the adjustable compensated nut. This invention replaces the usual nut previously used on guitars. The adjustable compensated nut has an L-shaped bracket (2A) with grooves (2B) of various widths on top of the bracket to accept strings of various gauges. The number of grooves will correspond to the number of strings on the instrument. The bottom of the bracket is secured to the guitar neck with screws. The bottom of the bracket has ridges (2C) on both sides of the saddle (2D) to stabilize the saddle and specifically to prevent any lateral or rotational movement.

The saddles (2D) rest on the horizontal portion (2E) of the bracket, facing its vertical wall (2F). The saddles are attached to the bracket with horizontal adjustment screws (2G). The mid section of the saddle comprises a vertical adjustment screw (2H). The anterior section of the saddle, facing the bridge and the first fret has an overhang (2I) that rests on top of the surface of the fingerboard (2J). This overhang has a groove that corresponds to the gauge of the string for each individual saddle. By loosening the horizontal adjustment screw, the saddle can move horizontally backward or forward (forward toward the bridge and the first fret (2K) or backward away from the bridge and the first fret towards the tuning machines). Once the horizontal adjustment screw has been loosened, vertical adjustment is also possible by turning the vertical adjustment screw. Vertical adjustment can also be accomplished by using a thin metallic shim under the saddle.



ELIASSON ADJUSTABLE GUITAR NUT SPECIFICATIONS page 2

Width of base: 43.00 mm (width of guitar neck) = 1692 thousandths of an inch = 1.692 inch

Length of base: 12.00 mm (in the longitudinal axis of the guitar neck) = 472 thousandths of an inch
= 0.472 inch

E to E string spacing (middle of string to middle of string): 36.11 mm = 1421 thousandths of an inch
= 1.421 inch

Six individual saddles comprising horizontal and vertical adjustment screw

Height of saddles in middle of the nut:

7.31 mm from base to top of saddle = 287 thousandths of an inch = 0.287 inch

5.31 mm from base to under overhang = 209 thousandths of an inch = 0.209 inch which would correspond to thickness of the fingerboard along the midline (a common fingerboard thickness). If the fingerboard is thicker, shims need to be added under the nut. Brass shims that fit under each individual saddle are also available.

Radius of nut (saddles): 12 inches. Note that by raising the saddles individually with the vertical adjustment screw other fingerboard radiuses can be accommodated.

RETROFITTING VERSUS NEW INSTALLATION

The nut is best installed by an experienced luthier. For retrofitting, it installs very nicely on both Fender type necks and Gibson type necks. Be aware that the width of the nut corresponds to the width of the neck before proceeding. Some woodworking is necessary. For details about how to remove the existing nut, see numerous tutorials on the internet. Mask of both the neck and the headstock to avoid chipping the finish. If the finish covers the old nut it may have to be scored with an Exacto knife at the base of the old nut to minimize chipping. On a Fender type neck, the neck wood behind the nut (headstock side) needs to be removed, we use a small Dremel type router (very carefully) and micro chisels available from Stewart McDonalds. Be careful and patient. Clean old glue from the nut slot. We advise against using files unless you are really adept at using them. If this is an installation on a neck in construction, allow for 12 mm = 0.472 inch ledge at the end of the fingerboard.

HOW TO ADJUST INTONATION

There are many reasons why a guitar is not in tune. The spacing of the frets on a guitar is equal-tempered and the distance between the frets is based on a formula dividing a 12-tone octave into 12 logarithmically equal parts. Most guitars fail to achieve equal temperament due to incorrect bridge and nut placement. Adjusting the string length at the bridge to improve tuning is called compensating the bridge. In this context, compensation consists of shortening or lengthening individual strings by moving saddles upon which the strings rest. The goal of this movement is to improve intonation.

1. The bracket is placed at the end of the fingerboard; the front end of the bracket has to be flush with the end of the fingerboard.
2. The adjustable saddles are placed on the bracket. The side of the saddle that faces the bridge (and the fingerboard) has an overhang. This overhang rests above the fingerboard if needed. The vertical adjustment screws allow for variation of the height of the individual strings over the fingerboard and the frets (once the strings have been loosened).
3. DO NOT ATTEMPT TO ADJUST THE VERTICAL ADJUSTMENT SCREWS WITHOUT LOOSENING THE HORIZONTAL ADJUSTMENT SCREW FIRST OR YOU WILL STRIP THE VERTICAL ADJUSTMENT SCREW. Furthermore, the configuration of the saddles can be arranged with the vertical screw in a manner to accommodate various finger board radiuses. Additional vertical adjustment can be done by placing thin metal shims under the saddles, or the bracket can be shimmed up. We usually, if needed, use thin wood veneer in colors matching the neck.
4. The guitar can be tuned, once proper action has been established (proper height of the strings of the fingerboard at the nut).
5. It is recommended to first adjust the bridge saddles in a standard manner so the twelfth fret harmonic is equal to the twelfth fret fretted note. This is done with the nut saddle front end (overhang) in a position corresponding exactly to the end of the fingerboard. This position may mean sliding the saddles backwards towards the headstock after loosening the horizontal adjustment screws. **This is a crucial first step** and without it, proper intonation will not be achieved. Once this has been accomplished, the individual nut saddles can be adjusted.
6. Using a strobe tuner, the open string is tuned first. **Each string is then fretted at the first fret.** The nut saddle is moved horizontally, either towards or away from the bridge, until the string intonates properly at the first fret. Use 'average finger pressure'. Very often the G string requires the most compensation (movement of the saddle in the direction of the bridge). This is repeated for each string of the instrument, resulting in striking improvement of intonation all over the fingerboard. You are done. Enjoy!

