
graph
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Video Training Series
graphtech
GUITAR LABS
The Nut & Saddle Experts
Guitar Center

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Video Training Series

Knowing = Growing.

How To Maximize Sales With
Graph Tech's Videos Training Series

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Hello,

In order to help your sales teams have the most comprehensive understanding of all the innovative things that distinguish Graph Tech products, we're launching a video training series.

In them, we clarify things like:

• Which of the hundreds of TUSQ nuts available are best for your guitar? And how do you easily install them?

• How are ResoMax bridges simultaneously a throwback to classics made in the 1950s and loaded with ingenious design upgrades? Which is the right sized replacement for your guitar?

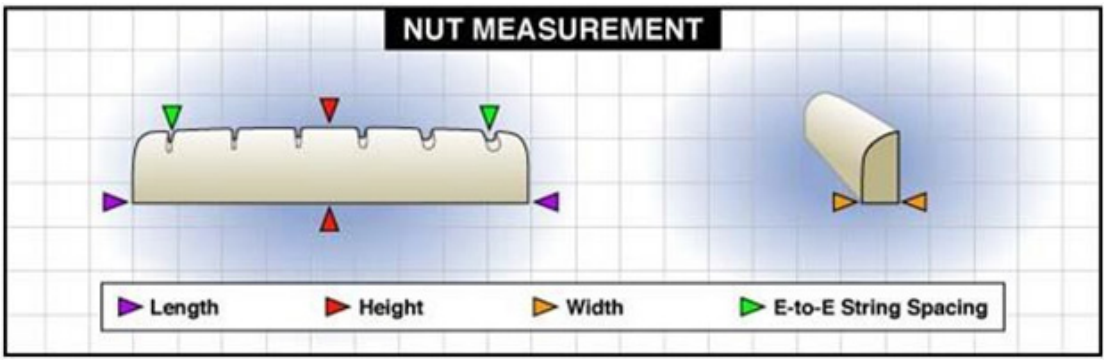
• How do Ratio machine heads balance the response of each tuner so that they react the same? How do you use the included InvisoMatch mounting plates to install them with no drilling or filling required?

These videos will give your sales team the tools they need to help educate their customers on what has made Graph Tech an industry leader in envelope-pushing enhancers of tone and performance for more than 30 years.

Things to Consider

When choosing a part, sort the offering in this order:

- **Length**
- **Thickness/Width**
- **Height**
- **E-to-E string spacing**



Use the catalog as a reference

1. Category: All products come in three forms: Pre-Slotted, Nut Blanks, and Nut Slabs. With the pre-slotted nut, most of the work is done for you. Simply fine-tune the fit as needed. A blank comes shaped, but without string slots. A slab is a rectangular chunk of material (offered in several thicknesses).

2. What model: what is your instrument's make and model? You can check our sizing guide to see if there is a recommend fit or OEM part option.

3. Instrument type: What type of instrument is the nut for? Acoustic, Electric, Bass, ukulele or mandolin

4. Material type: Which material type is required or preferred? TUSQ, TUSQXL, Black TUSQ XL, NuBone or NuBone XB:

Tusq is made for high-end acoustic guitars. TUSQ provides up to 200 per cent more harmonic content and richness over bone.

Prefix code: Example **PQ-1000-00**

PQ - 1 packaged part / **BQ -** 1 bulk part / **LQ -** Package of 10 parts

Tusq XL is generally used for electric instruments as it's impregnated with PTFE to reduce string binding and to improve tuning stability.

Prefix code: Example **PQL-5000-00**

PQL - 1 packaged part / **BQL -** 1 bulk part / **LQT -** Package of 10 parts

Black Tusq XL is generally used for electric instruments as it's impregnated with PTFE to reduce string binding and to improve tuning stability.

Prefix code: Example **PT-6000-00**

PT - 1 packaged part / **BT -** 1 bulk part / **LT -** Package of 10 parts

Nubone is a derivative of TUSQ for budget conscious repairs.

Prefix code: Example **LC-6010-10**

PC - 1 packaged part / **BC -** 1 bulk part / **LC -** Package of 10 parts

Nubone XB is our newest material, is for instruments that require more bass response and harmonics, such as ukuleles and small-bodied guitars.

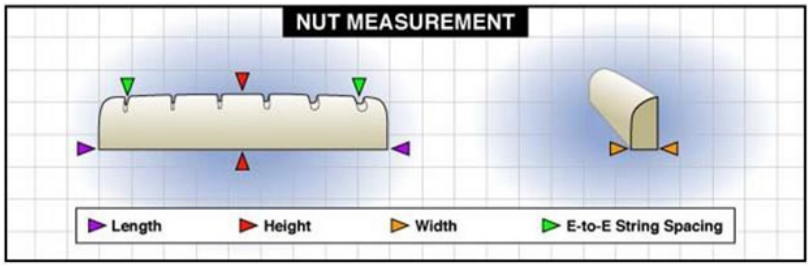
Prefix code: Example **BB-5000-00**

PB - 1 packaged part / **BB -** 1 bulk part / **LB -** Package of 10 parts

Finding the right Nut

Use the Graph Tech Catalog or website **- www.graphtech.com -** for reference.

1. Start with the style of nut you are looking for. On the Graph Tech website you can select in the filter section options like Slotted Guitar, Bass Guitar, Blank, etc.



One you get the **Lenght**, find the right **Thickness**

2. On the Graph Tech website and in the Product Catalog nuts are sorted by length.

Lenght

Slotted Guitar Nuts: 7-String

PRODUCT CODE	STYLE	PRODUCT	LENGTH	THICKNESS	HEIGHT	E TO E
6748	Schecter® Style		48.00 mm	5.98 mm	8.09 mm	40.08 mm
			1.890 in	0.235 in	0.319 in	1.578 in
6700	Carvin® Style		48.72 mm	4.95 mm	8.66 mm	41.15 mm
			1.918 in	0.195 in	0.341 in	1.620 in
5700	Strat® Style		50.29 mm	3.23 mm	5.64 mm	41.58 mm
			1.980 in	0.127 in	0.222 in	1.637 in

Product measurement on the Graph Tech catalog.

Thickness

3. Scroll down until you find a length that is close. A little longer is ok, as it can be sanded down for a nice flush finish with the neck.

4. Once you have the length, find the correct thickness, again. A little thicker is ok as it can be sanded down.

5. Find the closest string spacing to want. For guitars the measurement is from the center of the low E string slot to the center of the high E string slot. Now you have the nut, for example - 6134-00 - you can choose the material and write down the part number you need.

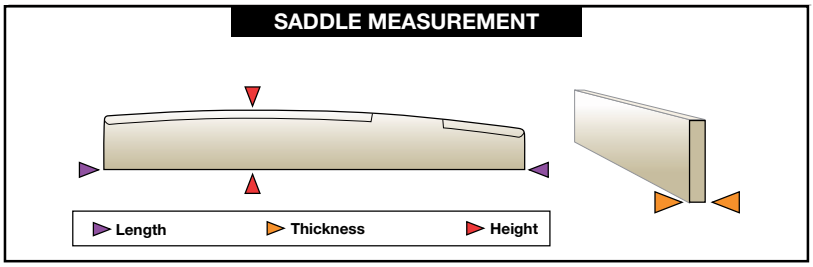
For example:

TUSQ Nut: 1 packaged nut **= PQ-6134-00**
TUSQ Nut: 1 bulk nut **= BQ-6134-00**
TUSQ Nut: 10 packaged nuts **= LQ-6143-00**

Finding the right Acoustic Saddle

Use the Graph Tech Catalog or website **- www.graphtech.com -** for reference.

1. Start with the style of Acoustic Saddle you are looking for. On the Graph Tech website you can select in the filter section options like Compemsated, Blanks or Slabs.



One you get the **Lenght**, find the right **Thickness**

2. On the Graph Tech website and in the Product Catalog saddles are sorted by length.

(Compensated) Acoustic Saddles

Lenght

left-handed option available

PRODUCT CODE	STYLE	PRODUCT	LENGTH	THICKNESS	HEIGHT	E TO E
9283	Gibson® Style		83.50 mm	3.20 mm	11.50 mm	0.00 mm
			3.287 in	0.126 in	0.453 in	0.000 in
9219	Guitabec® Style		83.79 mm	3.28 mm	11.29 mm	0.00 mm
			3.299 in	0.129 in	0.444 in	0.000 in

Product measurement on the Graph Tech catalog.

Thickness

3. Scroll down until you find a length that is close. A little longer is ok, as it can be sanded down for a nice flush finish with the neck.

4. Once you have the length, find the correct thickness, again. A little thicker is ok as it can be sanded down.

5. Now, find the height you need, taller than you need is ok, as the saddles are meant to be sanded down a little for final fitting. You will also notice some saddles are compensated. This helps the guitar play a little more in tune as you play higher up the neck.

For example:
TUSQ Saddle: 1 packaged saddle **= PQ-9200-C0**
TUSQ Saddle: 1 bulk saddle **= BQ-9200-C0**
TUSQ Saddle: 10 packaged saddles **= LQ-9200-10**

Finding the right String Saver

First you will need to determine what type of String Saver you need.

6 different categories:

- SS Originals for guitar
- SS Orignals for bass
- SS Originals for tune-o-matics
- SS Classic for guitar
- SS Classic for Floyd Rose
- SS complete bridge assemblies

Strat-style saddles

Determine the proper string spacing, design & intonation screw position

- The 8000-00 are the more common 2 1/16” spacing, and are usually a great fit for most modern Fender style Tremolos.

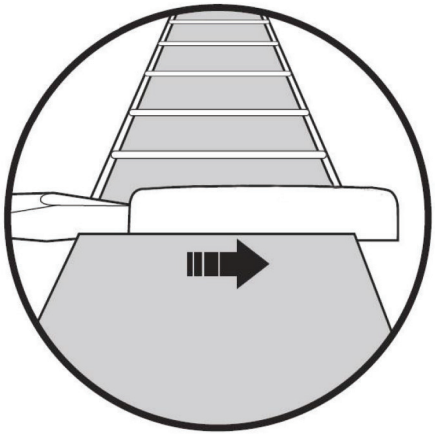
- The 8000-F0 (Just remember F for Fat) is what you’ll need for the wider, “vintage” 2 3/16” String spaced Fender style Tremolos.

Tune-o-matic bridges

Check the correlation chart to clarify what is right fit for the majority of TOM bridges on the market.

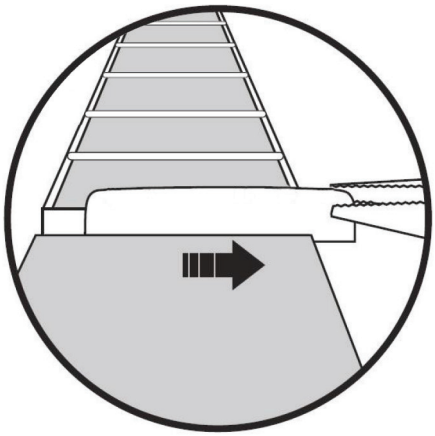
Tune-o-matic Sizing Chart

BRIDGE STAMP	STRING SAVER PART	BRIDGE STAMP	STRING SAVER PART
B-2 or B H	PS-8616-00	Jin Ah®	PS-8440-00
Gibson® ABR-01	PS-8400-00	Komax®	PS-8615-00
Gibson® Nashville TOM pre 2000	PS-8501-00	Pigtail® Wraparound	PS-8617-00
Gibson® Nashville TOM post 2000	PS-8500-00	PW	PS-8501-00
GOTOH® Japan	PS-8560-00	S.I.C.	PS-8615-00
Hipshot® Baby Grand	PS-8616-00	TonePros® AVR-II	PS-8615-00
Schaller® 455 / 456	PS-8500-00	TonePros® AVT-II	PS-8501-00
Schaller® made in Germany	PS-8500-00	TonePros® GOTOH	PS-8600-00
SUNG IL®	PS-8616-00	TonePros® TP6	PS-8501-00
SUNG IL® BM002	PS-8615-00	TonePros® TPFP	PS-8502-00
SUNG IL® BM003	PS-8618-00	TonePros® T3BT	PS-8560-00
BR-EG	PS-8633-00	TonePros®	PS-8560-00
Epiphone®	PS-8440-00	ResoMax Tune-o-matic	PS-8501-00



Installing a Blank Nut

If the nut is not sitting in a slot,and just butted up against the neck, usually a light tap with a small block will set it free. If it is sitting in a slot, gently tap it out sideways using a hammer and a screwdriver. If you pull it out upwards, you risk taking some of the wood with it.



1. Clean nut shelf

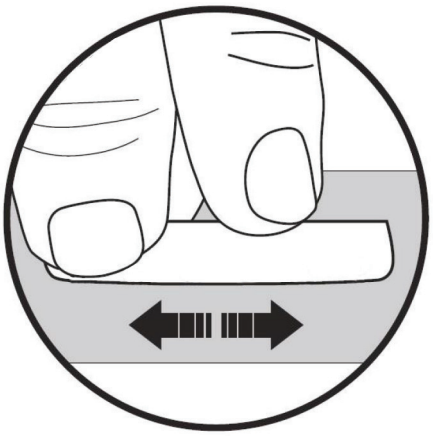
2. Surface the front face on a flat surface (up to 600 grit)

3. Surface the back face – sanding down the nut to the correct thickness

4. Surface the bottom edge 90 degrees to the front and back faces

5. Once you have a snug fit… Center the blank fingerboard

6. Rough cut and finish the ends flush with the fingerboard and shelf

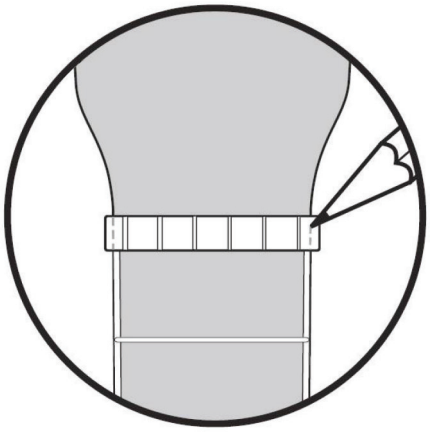


7. Mark the height of the frets on the nut using a flat pencil (sand a pencil in half so that it has a flat surface of around 3” on the sanded side)

8. Measure up from the fret height mark 0.045” on bass side and 0.25” on treble side

9. Mark an arc matching the fingerboard radius between these two points

Installing a Blank Nut

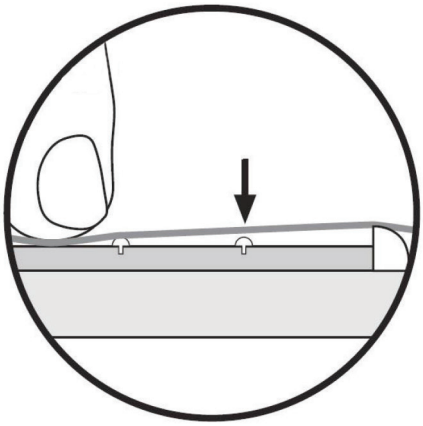


10. Surface the top edge of the nut down to the arc. The fop edge of the nut should slant down from front to back in a slight arch matching the angle of the headstock

11. Resurface the back face of the nut so that the nut is 0.020”-0.025” thinner front to back at the top than at the bottom

12. Locate the String Slots, measuring in 1/8” from either end of the fingerboard for each E string, then locating the remaining strings using the String Spacing Ruler

13. Notch the slots with a knife, thin file, or saw. Recheck the spacing before cutting deeper



14. Slightly round the top edge of the nut on the ends, from the outside of each E string slot to a little above the fingerboard, leaving a clear line between the top of the nut and the round over

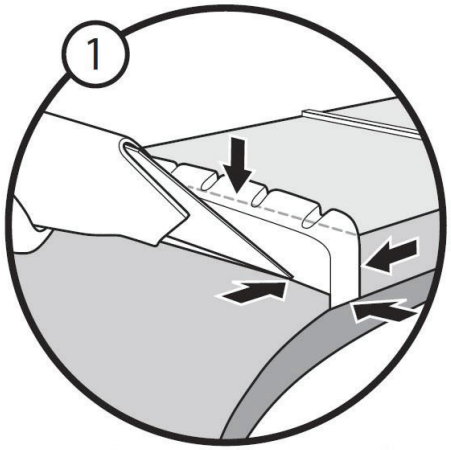
15. String the guitar up with the proper strings and adjust the neck bow

16. Adjust the depth of the nut slots using the gauged nut files so that you have between .002” and 0.005” of clearance above the 1st fret when holding down the string at the 3rd fret

17. Adjust the height of the nut so that ½ to ¾ of the E, A, and D strings are within the nut slots

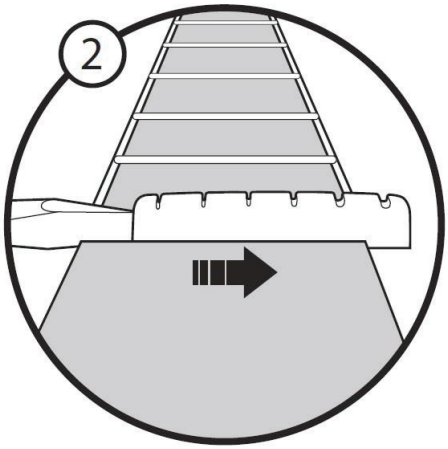
18. Polish out nut

19. Glue nut in place using a drop of wood glue.

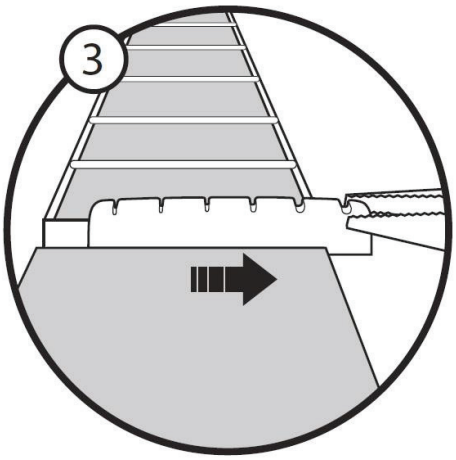


Installing a Slotted Nut

1. Remove the strings. Trace around (score) every edge of the nut with an exacto knife to prevent the lacquer from sticking to the nut before you remove it.

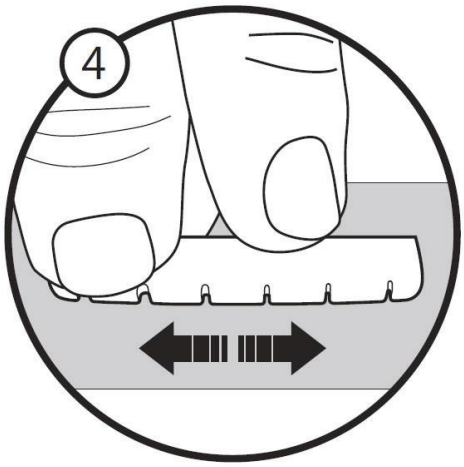


2. If the nut is not sitting in a slot, and just butted up against the neck, usually a light tap with a small block will set it free. If it is sitting in a slot, gently tap it out sideways using a hammer and a screwdriver. If you pull it out upwards, you risk taking some of the wood with it.

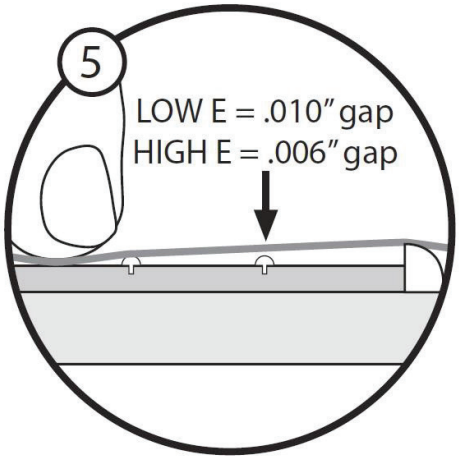


3. When it is sticking out the side, pull it out in the same direction with a pair of pliers, like you'd pull out a tooth. Scrape or file the nut slot free from old glue and finish residue while making sure that the slot remains square.

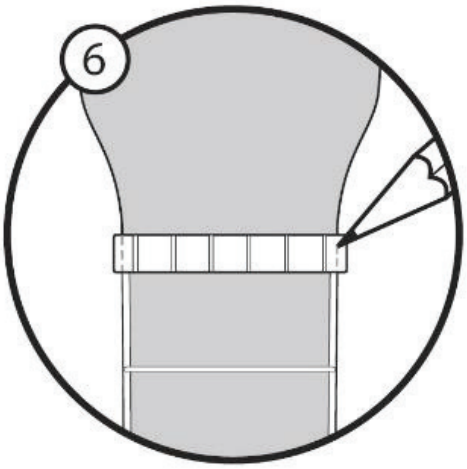
Installing a Slotted Nut



4. See if your new Graph Tech nut fits into the slot without force. If it's too thick, place a 400 to 600 grit sand paper face up on a -at surface and sand down the side of the nut until it fits in the slot snugly, but is easily removable.

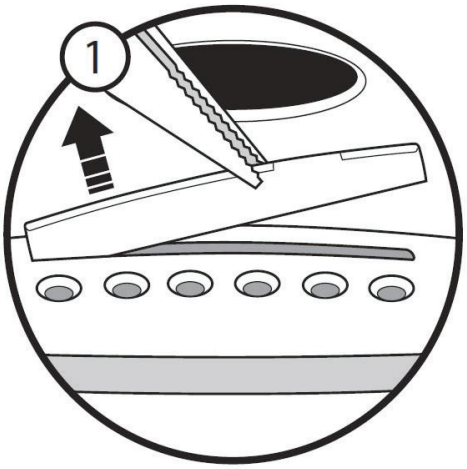


5. Restring the high and low E strings and tune to pitch to check for the correct height. For Electric Guitars, Push down on the third note of the low E string you are looking for a .010" gap between the low E string and the first fret and a gap of .006" on the high E string.



6. Once you've got the thickness and height correct, you just need to sand the ends of the nut so that they are flush with the neck. Graph Tech adds a little "meat" on the ends of their nuts, so you will always end up with a nice, flush finish. Just use a pencil and mark the ends of the nut that are sticking out, remove it from the neck and sand it to your marks.

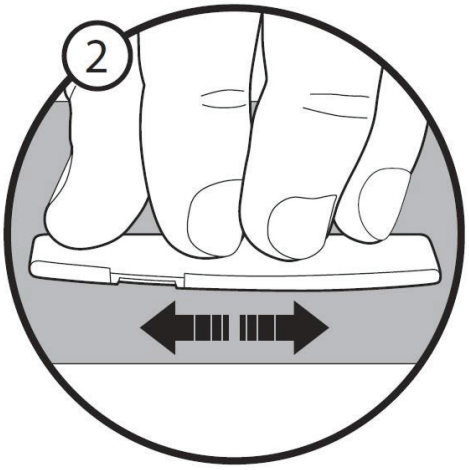
Ok, we are about ready to go, the nut is finished and ready for final installation. Just put a drop of white glue in the slot. You don't want to use a glue that is too strong, such as epoxy or cyanoacrylate (crazy glue)… if the nut ever has to be replaced again, it will be taking some of the neck with it.



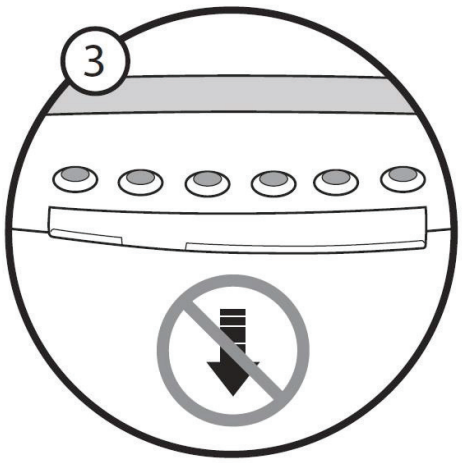
Installing an Acoustic Saddle

1. Remove the strings and bridge pins. The saddle should lift out easily. If you find it is glued in, get a competent guitar tech to complete the replacement.

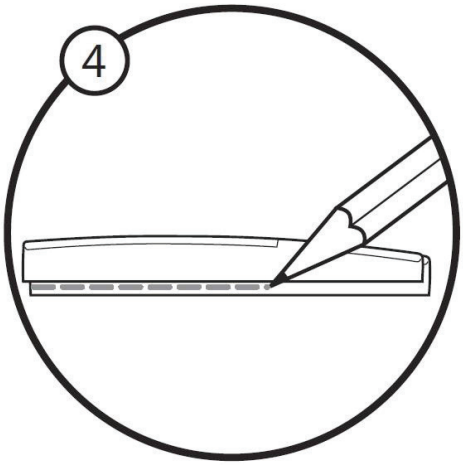
Do NOT pry it out as you may take some wood from your bridge with it. Once removed, clean the slot of any debris.



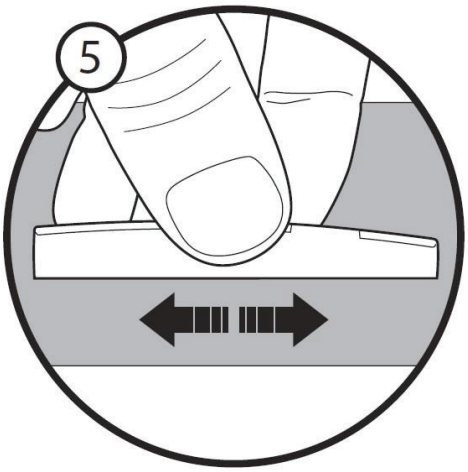
2. Check if the Graph Tech saddle fits into the slot, without forcing it. If it's too thick, place a 240 to 400 grit sand paper on a flat surface and sand the sides of the saddle until it fits in the slot snugly but is easily removable. You may have to reduce the length also.



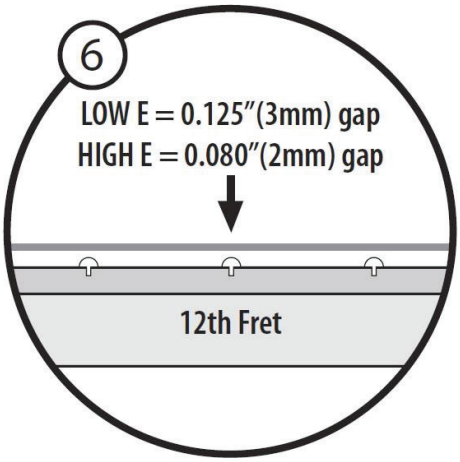
3. The saddle should slip in easily, but still be snug enough that you can turn the guitar upside down without the saddle falling out.



4. Adjust the string height. Put your old saddle against the Graph Tech saddle and align the tops. Using a pencil, mark a line along the bottom of your new saddle.



5. Sand the bottom of the saddle up to the line, keeping the bottom flat and square to the sides. Work in small increments and check your work frequently so you don't remove too much material.

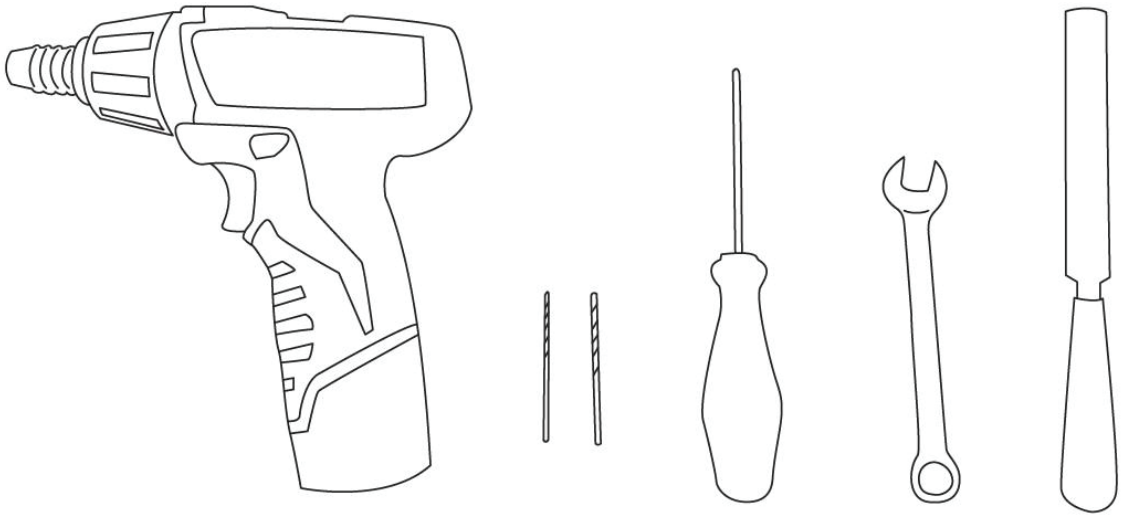


6. Determine correct string height, by measuring the gap between the top of the twelfth fret and the bottom of the low E string. It should be around 0.125" (3mm), or about a stack of 12 business cards if you don't have a ruler. For the high E string, the gap should be around 0.080"(2mm), or about a stack of 8 business cards.

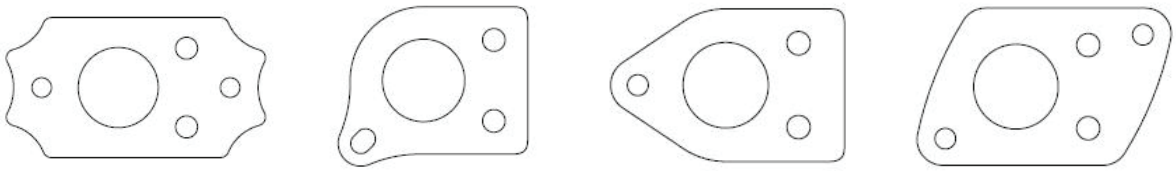
Installing Ratio Tuners

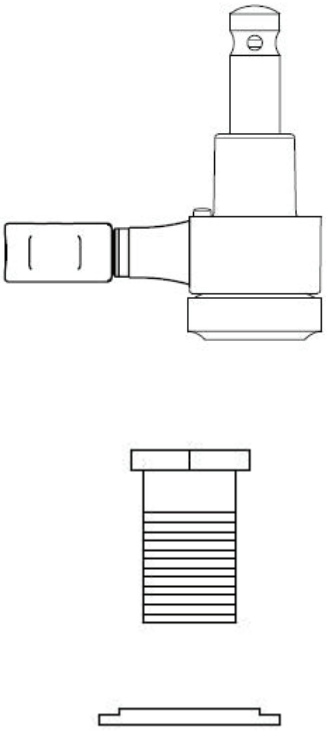
If you are not going to use the InvisoMatch mounting plates… you'll need the standard tools you would use to install any other machine heads…such as

- A Drill
- Drill bits: 1/16" (1.6mm I #52) and 7/64" (2.5mm / #40)
- A Phillips Screwdriver - required only for screw mount machine heads)
- A 10mm Wrench
- Straight edge



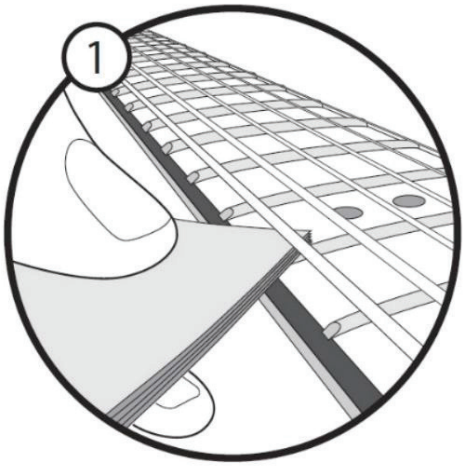
But we are going to show how quick and accurate it is, using the InvisoMatch mounting system. Here are examples of the different plates we offer.





Installation

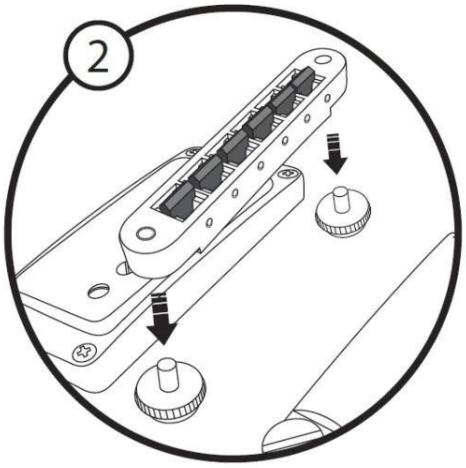
1. Mount plates
2. Fit tuners
3. Re-install washers & threaded nut bolts
4. Re-string
5. tune



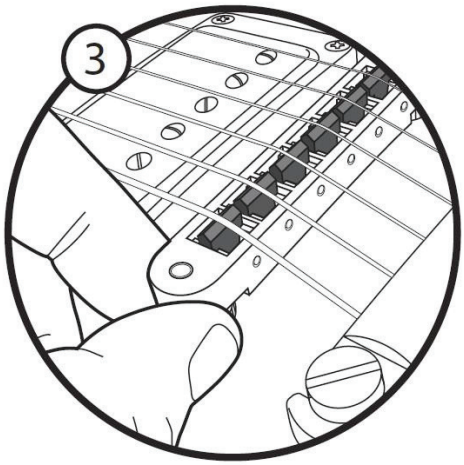
Installing a Resomax Bridge

1. First; before you remove the existing bridge, determine the correct string height, by measuring the gap between the top of the 12th fret and the bottom of the low E string.

It should be around 0.125”(3mm), or about a stack of 12 business cards if you don’t have a ruler. For the high E string, the gap should be around 0.080”(2mm), or about a stack of 8 business cards.

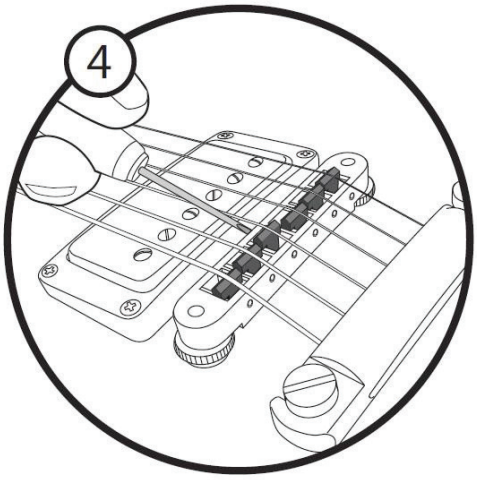


2. Now remove the strings and remove the old bridge by lifting it off the posts. The ResoMax™ comes with posts, but in some instances you can keep using your old posts. Lower your new ResoMax™ bridge onto the posts.



3. Now install strings and tune your guitar to concert pitch. Adjust the string height by turning the thumb wheels on the bridge posts. Raise or lower the treble and bass sides of the bridge until correct string height (measured in Step 1) is achieved.

Tune the guitar to concert pitch after the adjustment and check the string height at the 12th fret. If the strings touch the bridge body behind the saddles, raise the tail piece until the strings have clearance, by turning the screws on the tail piece mounting posts.



4. Set the intonation. In order for chords to play in tune all over the fretboard, each string must be correctly intonated. The note fretted at the 12th fret should match the 12th-fret harmonic. Compare the pitch of the fretted note and the harmonic (lightly touch the string right above the 12th fret and pluck).

Adjust each saddle by turning its intonation screw with a screwdriver. Shortening the string will increase the pitch of the harmonic relative to the fretted note; making the string longer will decrease the pitch. Each time you make a saddle adjustment, retune the string before comparing pitches again.

Installing a 12 String Guitar Nut

String Spacing

1. From each end, measure in 3 mm to mark the outside strings.

2. Add the space inside the courses together, center to center of each string, allowing:

   a. 3 mm between strings in courses with 2 wound strings

   b. 2 ½ mm between strings in courses with 1 wound and 1 plain string

   c. 2 mm between strings in courses with 2 plain strings

3. Subtract the total spaces in the courses from the distance between the 2 outside strings, and divide the remaining distance by 5 for the gap between courses.

4. Measure each of the string locations from one end and add the space in between strings as you go. So, starting with and measuring from the octave of Low E to each string, the distance to:

   a. Low E is 3mm

   b. Octave A is 3mm + the distance you figured for the gaps (X)

   c. Regular A is 3mm + X + 2.5mm,

   d. Octave D is 3mm + X + 2.5mm + X, and so forth

5. Measure twice before cutting the slots.

String Sizes - Common string gauges for 12 string guitars are as follows:

STRING	LIGHT GAUGE	MEDIUM GAUGE
E	.010 plain	.010 plain
B	.014 plain	.016 plain
G	.023 wound	.025 wound
	.008 plain	.010 plain
D	.030 wound	.032 wound
	.012 plain	.014 plain
A	.039 wound	.042 wound
	.018 plain	.020 plain
E	.047 wound	.052 wound
	.027 plain	.030 plain

Overall nut height is checked based on the regularly tuned strings.

RECOMMENDED WORKSHOP TOOLS

- Nut Slotting File Set
- Radius Gauge
- Lubrication
- String Winder
- String Cutter
- String Action Gauge
- Tuner
- Pencil
- Bridge Pin Puller
- Nut Saw
- Needle Files
- Flat plate
- Sand Paper
- Belt Sander Combo
- Eye Safety
- Mask
- Nut shaping Files Set
- Nut Vise
- Nut slot ruler
- Wood glue
- Super glue
- Exacto Knife
- Digital Caliper
- Pliers
- Shop Ruler
- Feeler Gauges
- Fretting Hammer

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