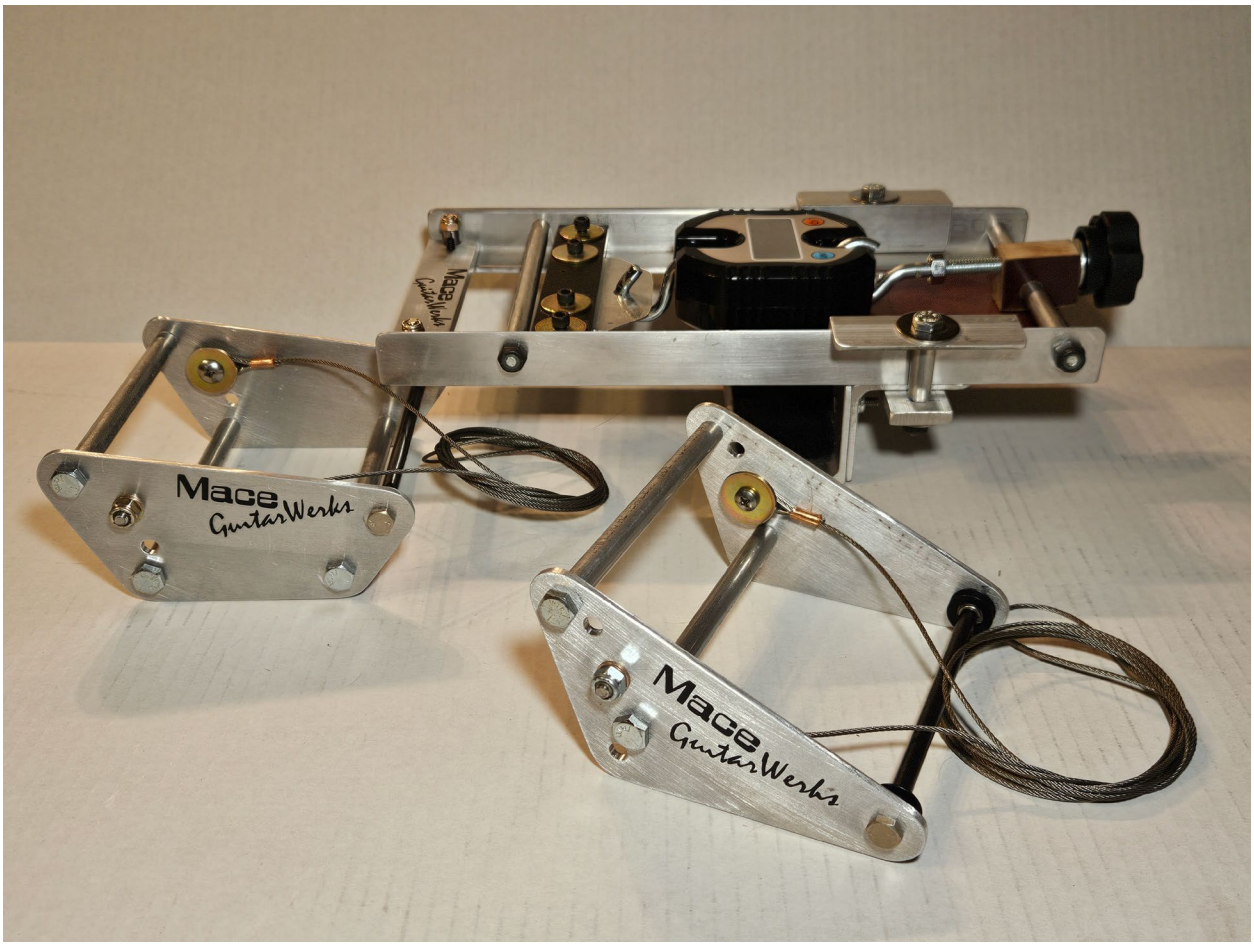
MACE GuitarWerks

Fret Wizard User Guide and Instructions:

READ EVERY WORD OF THIS FIRST!

The Fret Wizard (Pat Pending) is intended for professional use only by trained, experienced luthiers and qualified technicians on Solid-Body Electric Guitars and Simi-Hollow Body Electric Guitars which have a central solid wood core Only! It IS NOT approved for use on Acoustic Guitars or true Hollow-Body Electric Guitars. It is designed to duplicate the exact string tension and bending forces on the neck that cause distortion in the fretted area, while allowing unobstructed access to the surface of the fretboard and frets for the Level, Crown and Polish work to be performed. It is NOT designed or intended for any other use or purpose. It should NOT be used on any poor quality, inferior, warped or damaged necks, or any neck with a structural failure. Do NOT use it on a neck that has previously had a broken headstock no mater how good the repair is. You MUST inspect the truss rod system and ensure that it is functioning correctly. You MUST make the final determination as to the suitability of this tool for your purpose!

Your Kit contains a USB flash drive, on it is a collection of Instructional Fret Wizard Videos. Please take a few minutes and watch these, this is very important and will be crucial for understanding the proper use of the tool. You can also find them at https://maceguitarwerks.com/



Before you begin:

We recommend that you have the best quality tools available, do not cut corners here! Some of the tools that you will need and our recommendations are below:

1- Precision 18" straight edge (Stew Mac # 3850).
2- Precision notched straight edge (Stew Mac # 3814).
3- 16" fret leveler (Stew Mac # 4578).
4- Diamond fret leveler set (Stew Mac # 5259).
5- Diamond fret crowing files (Stew Mac # 5080).
6- Lighted magnifying head gear (Stew Mac Opti VISOR # 1687) YES YOU NEED IT!
7- Any other tools that you may be accustomed to using.

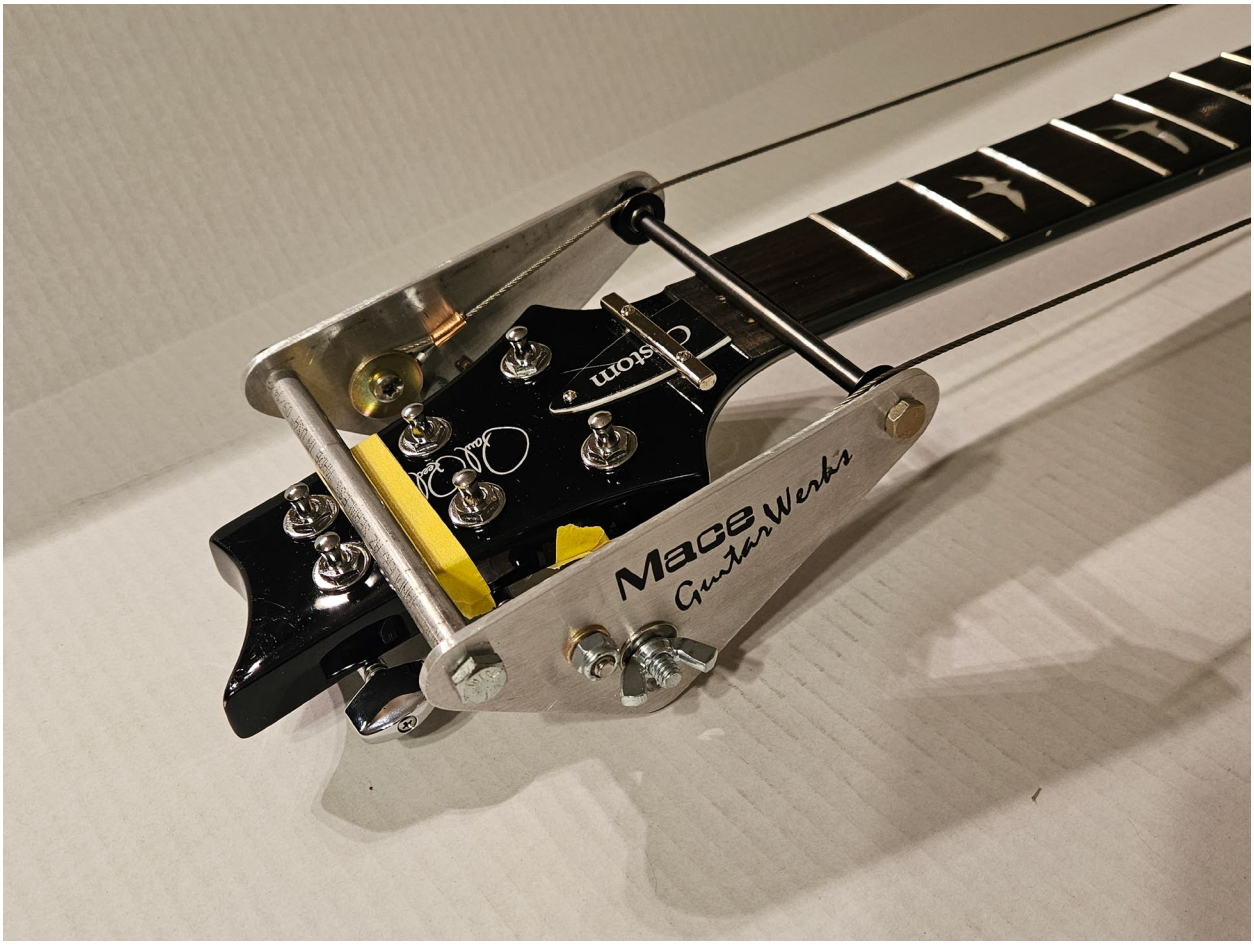
https://www.stewmac.com/luthier-tools-and-supplies/tools-by-job/tools-for-fretting/

Instrument Preparation:

1- Remove the strings,
2- Removal of the tuners is not normally required, if desired they may be removed. For some designs a single tuner or pair may need to be removed to allow for the crossmember clearance. New build necks without tuners will use the Headstock Frame Tension Bar Bolt holes closest to the headstock.
3- If equipped with a locking nut remove it also. (Floyd Rose, etc.)
4- If the neck has an angled headstock, it is recommended that you also remove the nut and clean the shelf.
5- Tape up the headstock on both sides where the Fret Wizard cross bars will contact the finish.
6- Remove the bridge, tail stop and the rear strap button.
7- Tape up the body where the frame rails and rear stop will make contact, cover a large enough area to adequately protect the finish.
8- Tape the back of the body where the End Stop clamp foot will make contact.

Installing the MACE GuitarWerks Fret Wizard:

1- **Angled Headstock:** Place the headstock frame on the headstock, align the center line with the center of the fretboard, seat the compression bar on the nut shelf, the stabilizer bar on the headstock face and the tension bar bushing to the back of the headstock (if required use the provided ½" spacer with the tuners installed). Install the tension bar bolt, washer and Wingnut.



2- **Straight Headstock:** Place the headstock frame on the headstock, align the center line with the center of the fretboard, seat the compression bar at the tangent point near the nut and the stabilizer bar on the headstock face between the 4th and 5th tuner keys. Install the tension bar and bolt at the back of the headstock (if required use the provided ½" spacer with the tuners installed). Install the stabilizer bar and bolt at the back of the headstock. Install washers and wingnuts.

3- Slide the body frame onto the back of the body, adjust the rear stop so that the rails are just behind the front of the bridge location (the rear stop is adjustable for body thickness, SEE NOTES 3 and 4).
4- Adjust the rear stop against the body end, tighten the 2 Adjustment Bolts.

5- Use a straight edge along the fret surface to determine the proper cable bridge height to use. Measure and add 1/16” for the correct cable bridge height, adjust this with the adjustment setscrews (see FIG. 3).
6- Feed the tension cables across the Headstock Frame Pulleys and to the Body Frame, across the cable bridge, under the Crossmember and into the Cable Bridle (See Installation Video).
7- Take the slack out of the tension cables and tighten the bridle lock screws.
8- Turn on the digital tensiometer scale. Adjust to 20 pounds, reinspect the complete installation for security and alignment.
9- Using a precision straight edge and a truss rod wrench adjust the neck completely straight.
10- Repeat step 9 at 50 pounds and again at 75 pounds of tension.
11- Inspect the tension cables for proper height using a straight edge across the cables at the last fret.
12- Refer to the string tension chart for the final tension value and adjust to the value for the strings that you will be installing. *For Unconventional gages and tunings see Notes-1and 2.*
13- Be sure that the neck is straight with no back-bow or relief.

14- We recommend letting the neck “set” one hour before proceeding, longer if it is practical.

Leveling the frets:

First things first. (NEW FRETS) A properly surfaced fretboard that is absolutely straight and true is where it ALL begins. Frets that are pressed in evenly and seated properly into a straight and true fretboard will require very minimal material removal to achieve a perfect fret playing surface.

STOP HERE and watch the video “Fret LCP”. I assure you that the vast majority of the YouTube warriors that are racing to the top of Mount Clickmore ARE DOING IT WRONG! The video explains the commonly used wrong technique and details the **proper technique** to get a silky smooth “broke-in” feeling fret job that is completely flat and true, making low action easy.

Surrogate Body special instructions supplement:

You may need a surrogate body for “off the instrument necks” we recommend that you make it from hard maple, 1-3/4” thick, 8” wide and 16” long with the appropriate neck pocket machined into it at one end in the center of the body. If you are using the Fret Wizard on a neck that is not installed on an instrument install the neck in the surrogate body and proceed using the standard instructions.

FIG. 1- Body frame and components:

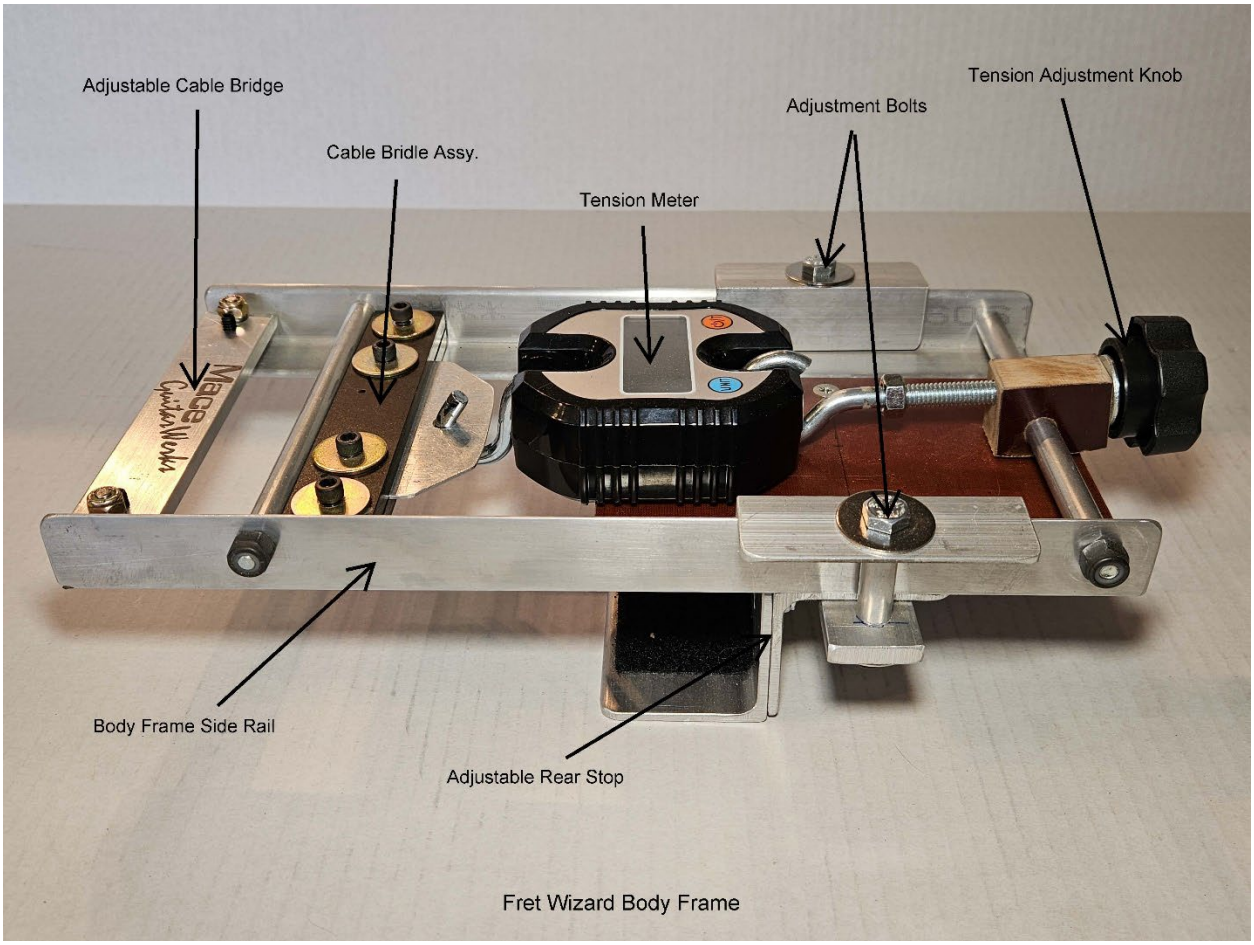


FIG. 2- Headstock Frame and Components:

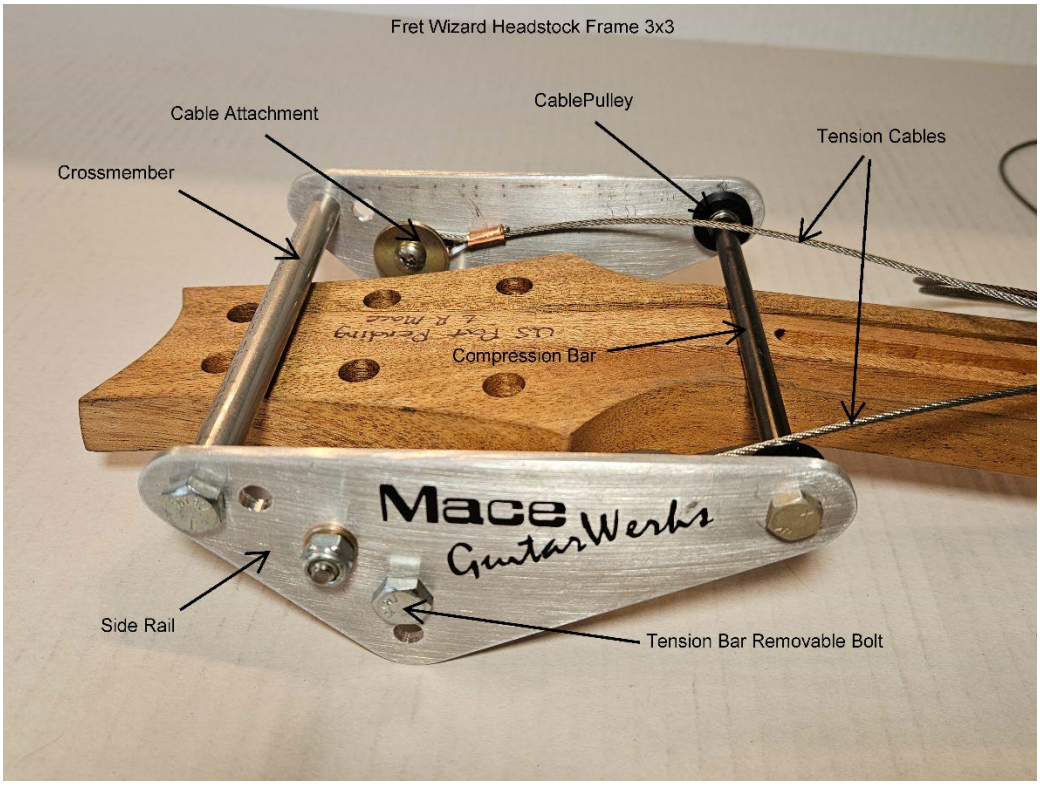
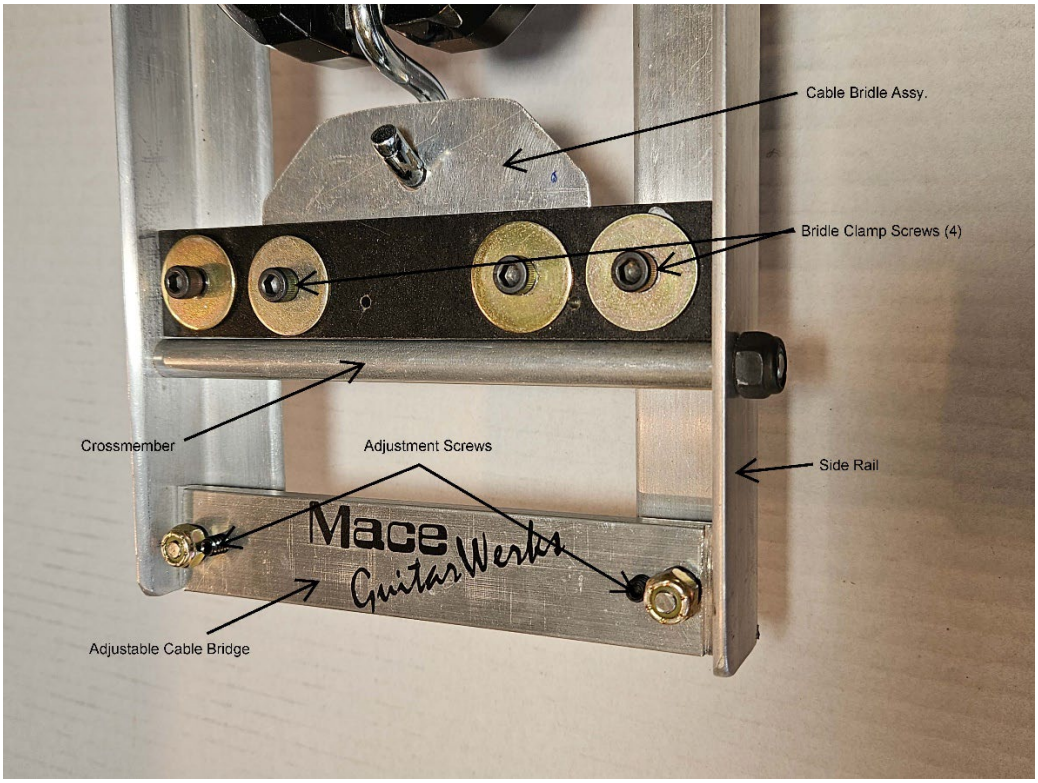


FIG. 3- Body Frame Bridge and Bridle Assy. Detail:



Electric Guitar Nickel-Plated Steel String Tension Values

Guitar string tension is based upon a 25.5" guitar scale length and standard tuning.

GAUGE	E-1	B-2	G-3	D-4	A-5	E-6	TOTAL TENSION (LBS)
Super Light Strings Diameter (in) / Tension (lbs)	.009 / 13	.011 / 11	.016 / 15	.024 / 16	.032 / 16	.042 / 15	85
Custom Light Strings Diameter (in) / Tension (lbs)	.009 / 13.	.011 / 11	.016 / 15	.026 / 18.5	.036 / 19.5	.046 / 17.5	94.5
Light Strings Diameter (in) / Tension (lbs)	.010 / 16	.013 / 15	.017 / 17	.026 / 18	.036 / 20	.046 / 17	103
Light-Heavy Strings Diameter (in) / Tension (lbs)	.010 / 16	.013 / 15	.017 / 17	.032 / 28	.042 / 26	.052 / 22	124
Medium Strings Diameter (in) / Tension (lbs)	.011 / 20	.014 / 18	.018 / 19	.028 / 21	.038 / 22	.049 / 20	118
Heavy Strings Diameter (in) / Tension (lbs)	.012 / 23	.016 / 23	.024 / 28	.032 / 28	.042 / 26	.052 / 22	151

For 25” Scale use factor of .963 for the tension value.

For 24-3/4” Scale use factor of .94 for the tension value.

(See Note 2)

Notes*

1- **The Formula for calculating the string tension value (unconventional string gages and/or tunings) is: $(2xLxF)_2$ xUW/386.4 you must know the "UW" or Unit Weight per linear inch in pounds from the manufacturer, L= Length in inches, F= Frequency of the open string.**
2- **String tension values and the proper tension setting of The Fret Wizard for unconventional scale length, string gages and tunings will have to be calculated individually. It is not simply a relative factor of the scale length. We have a 14-page technical publication available for download on our website under " Technical Reference Manual for String Tensions"**
3- **The Industry Standard body thickness is 1-3/4" the Fret Wizard rear stop is factory set for this thickness. To adjust the rear stop for 2", 2-1/4" or 2-1/2" body thickness (Les Paul for example): remove the two "Z-Bar" screws and install them in the holes that correspond to the body thickness required. Add a shim block between the body frame and the front of the body at the rear stop. (SEE FIG. 1)**
4- **Special Instructions for "V", "Star", "Z" and "Explorer" etc. style bodies: Remove the Adjustable Rear Stop from the Body Frame side rails (2ea. ¼"x2" Adjustment bolts, [FIG. 1]), apply sufficient protective masking tape to the guitar, place the body frame on the guitar body with the cable bridge against the Floyd Rose studs if equipped (alternatively the front crossmember [FIG. 3] may rest against the tailpiece studs), using shop "C-Clamps" and a padded clamp block (1/4x2x8" is recommended) securely clamp the Fret Wizard Body Frame side rails to the guitar body. Be extremely careful with this method because it be easy to damage the instrument's finish.**
5- **As stated in the opening paragraph: The Mace GuitarWerks Fret Wizard is designed and approved for "**Solid-Body Electric Guitars and Simi-Hollow Body Electric Guitars which have a central solid wood core Only! It IS NOT approved for use on Acoustic Guitars or true Hollow-Body Electric Guitars." **The "shell" type construction of Hollow-Body Guitars and Acoustic Guitars IS NOT Strong enough to carry the load imposed on the distal end of the body. Use of this tool on those types of guitars may result in the catastrophic crushing of the guitar body and personal injury.**

APPENDIX A.

Principals of Operation:

The Fret Wizard is a revolutionary new concept in Lutherie tools. It provides the ultimate in fret leveling accuracy. The headstock frame geometry duplicates the force moments of the strings on the headstock and the neck, the body frame produces the same tension as the instrument's strings using two 1/16" stainless steel aircraft cables. Allowing the fretboard to be unobstructed for easy access to complete the fret leveling operation. The most precise Fret-Job would be done WHILE the neck is under string load and that is exactly what the Fret Wizard does.

Rev. C 03/06/2025