MUSICMAKERS

REES SHARPING LEVERS

GENERAL INFORMATION

Sharping levers are used on folk harps to facilitate key changes. Installing a lever under a string allows you to raise the pitch of that string one-half step by lifting the handle under the string. Thus an F-string can be raised to F# by a simple flick of the lever. Similarly, a B-string may be tuned to Bb so that the lever will raise it to a B-natural and release it back to a B-flat, as needed.

You may install a lever under every string on the harp, but if you think you may never use all of them, it would be more cost-effective to select which keys you think you are most likely to use, and then install only the levers necessary for those keys.

Key of E:	requires F#, C#, G#
Key of A:	requires F#, C#, G#
Key of D:	requires F#, C#
Key of G:	requires F#
Key of C:	no sharps or flats
Key of F:	requires Bb
Key of Bb:	requires Bb, Eb
Key of Eb:	requires Bb, Eb, Ab

Many people ask us why we cannot pre-punch or even pre-drill the lever positions on the neck ahead of time for customers. The reason is that the levers must be aligned precisely to the strings, and the string positions may vary slightly from one harp to the next, depending on the fit of the soundboard and the back of the neck, so it is safer to fit levers to each harp individually.

Parts List:

Sharping Lever
2 Screws, #2 - 1/2" pan-head phillips
Retainer screws for thick strings

Recommended tools:

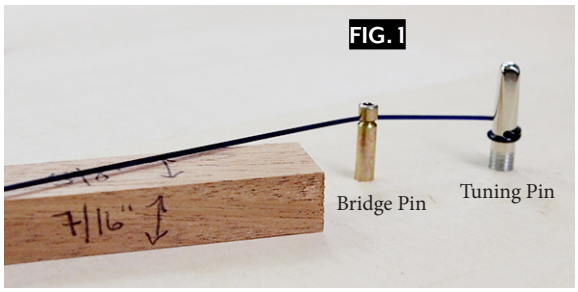
Phillips driver, size #1
Awl for punch-marking the wood
Drill bit, 5/64" for mounting scres
Drill bit, 7/64" for retainer screws
Power hand drill
Electronic tuner

INSTALLATION`INSTRUCTIONS

___1. Your harp must be strung and tuned before you can mount the sharping levers on the neck. You will rely on the pitch of the strings to determine the exact location of the levers.

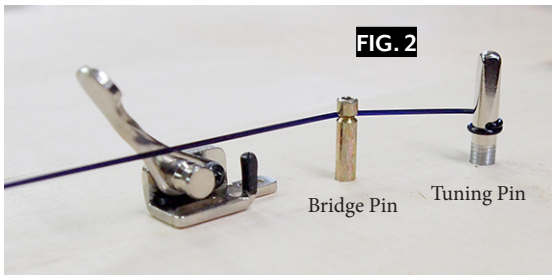
___2. Put some padding (blanket or towel) on your work table and lay the harp down on its side, the strings and guide pins are showing up.

___3. The strings should have about 7/16" clearance between the wood and the underside of the string (figure 1). You can adjust the string height by raising or lowering the threaded bridge pins using a 5/64" Allen wrench.



If you have plain (smooth-shaft) bridge pins, use a side cutter and a small scrap of wood as a fulcrum to pry them upwards out of the wood. To push them deeper into the wood, you may simply push them with a short dowel or tap them with a light hammer.

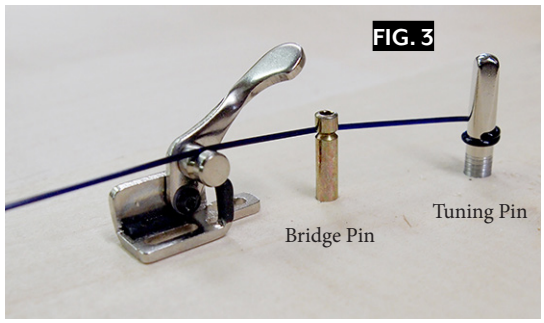
___4. Once the string heights are set, the sharping lever should look like figure 2 when you slide it under the string with the handle in the "down" position (disengaged). The string should hang above the lever with room to vibrate without buzzing against the lever.



___5. Start at the longest string (lowest note) and use an electronic tuner to double-check the accuracy of the tuning. Then raise the handle on the sharping lever under the string to the max, so it lifts the string and produces a higher pitched note when plucked. (fig 3.) Check the pitch of that "sharpened" note with your electronic tuner (try to hold the lever firmly against the wood so you get a clear tone).

If the pitch of the "sharped" note is not sharp enough, slide the lever further away from the Bridge Pin.

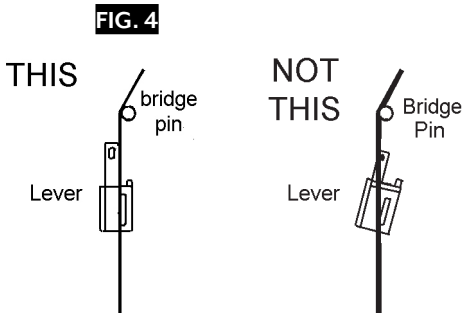
If the pitch of the "sharped" note is too sharp, slide the lever toward the Bridge Pin.



SPECIAL NOTE TO NON-MUSICIANS: There is no such note as E-sharp or B-sharp on your electronic tuner! When engaging the lever on an "E" string, the electronic tuner reading should jump from "E" to "F". Likewise, lifting the handle on a "B" string should make the tuner read "C". This is one of those quirks in music theory. What can we say...? The best use of levers on these strings is to tune the open E string to E-flat and the B string to B-flat. Then you will use the levers on those strings to raise the pitches to E-natural and B-natural, respectively.

IMPORTANT: BE CERTAIN THE SHARPING LEVER IS ORIENTED CORRECTLY! It is possible, on these long strings, to successfully install the sharping levers backwards. When you get to the middle and upper strings, however, you'll not have enough room to orient them this way. The proper orientation is for the handle to point down toward the body of the harp (away from the Guide Pin) when the lever is disengaged (see fig 2).

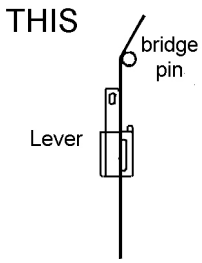
Also make sure the lever is parallel to the string (fig 4).



___6. When the engaged lever gives the proper half-step increase in pitch, you have it in the correct position for mounting. Double-check that the base of the lever is squared up with the string, as shown. (fig. 4)

When the lever is placed correctly, use an awl to punch-mark the wood for the lower mounting screw in the center of the slot, being careful to keep the lever in proper alignment with the string. Once the mark is made, you can set the lever aside for drilling the pilot hole with the 5/64" (smaller) drill bit supplied. Drill about 1/2" deep for the screw.

FIG. 4



___7. Go ahead and insert the mounting screw (#2 – 1/2" size) to hold the lever to the wood, using a #1 size Phillips driver. Be careful not to over-tighten the screw -- too much torque can strip the threads in the wood. Use slow speed on your drill to just snug it down against the base of the lever.

___8. Use an electronic tuner to double-check the tuning accuracy of the string with the lever engaged and disengaged. It should be a perfect half-step difference. If not, you may loosen the mounting screw and slide the lever up or down a little to achieve the correct pitch. Raising and lowering the string height with the bridge pin will also affect the pitch, because this changes the amount that the string is stretched as it is lifted by the lever.

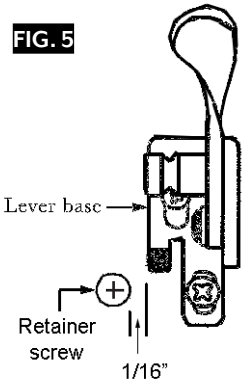
___9. When you have tested the pitch of the string with the lever engaged and disengaged, and you are fully satisfied with the accuracy of the half-step pitch of the engaged lever, you may drill a pilot hole (5/64" bit) for the second screw at the top of the lever. Installing that smaller screw holds the base of the sharping lever more fully against the wood to give you the best quality sound.

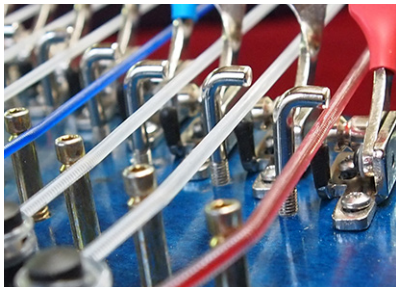
___10. Work your way up the scale installing levers in this way. You should notice that the levers will follow a smooth arc. This makes it quite easy to predict the proper placement of each successive lever. When you come to the shorter strings near the top of the scale, you will find that the string height plays a bigger role in achieving accurate pitch than does the lever placement. If you find that crowding the lever right up against the bridge pin still gives you a pitch that is too sharp when the lever is engaged, you will have to raise the string height by lifting the bridge pin. This is easiest if you have threaded bridge pins, allowing you to screw the pins in or out until you achieve the correct pitch. If your bridge pins have smooth shafts, then you'll need to use a side cutter and block of wood as a fulcrum to pry them up a little bit.

___11. The retainer screws are usually needed just for the lowest and thickest strings that might jump out of the groove in the lever when plucked aggressively. Drill the pilot hole 1/16" to the side of the lever bracket, just above the rubber-coated stop, as shown in fig 5, using the 7/64" drill bit provided. Drill at least 1/2" deep, just to be safe.

Then screw the retainer into the hole until it just touches the string when the lever is engaged. This will prevent buzzing when you pluck hard.
HINT: start the retainer by hand and use a pliers when turning is difficult.

FIG. 5





TROUBLESHOOTING

A) If you end up with a lever that is not aligned straight with the string after being mounted, this may result in a little "click" sound when you engage the handle to lift the string. In this case, you may loosen the mounting screw and try to slide the lever back into proper alignment. If necessary, you can remove the lever and file the slot in the base of the lever a little wider so you can position the lever a little more to the right or left, as necessary.

B) If your top-most strings go too sharp with the lever engaged, and you cannot crowd the lever any closer to the bridge pin, you may raise the height of the string by prying up the bridge pin (or turning it counter-clockwise if it is a threaded pin) until you get an accurate pitch.

C) To color the ends of the lever handles to match your C and F strings, you may use any of the following methods:

- Paint the tips of the handles with acrylic artist paint (red or blue)
- Paint the tips of the handles with red or blue fingernail polish
- Dip the ends of the handles in red or blue "Plasti-Dip (by Performix) or "Grip & Guard" (by Rustoleum)

D) As your harp ages, the soundboard may crown further, and the neck may deflect slightly, causing the string angles and lengths to change slightly, thus affecting the accuracy of the sharping levers. If you need to refine the placement of your levers at some future time, the easiest way to do this is by raising or lowering the string heights instead of moving the levers.

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