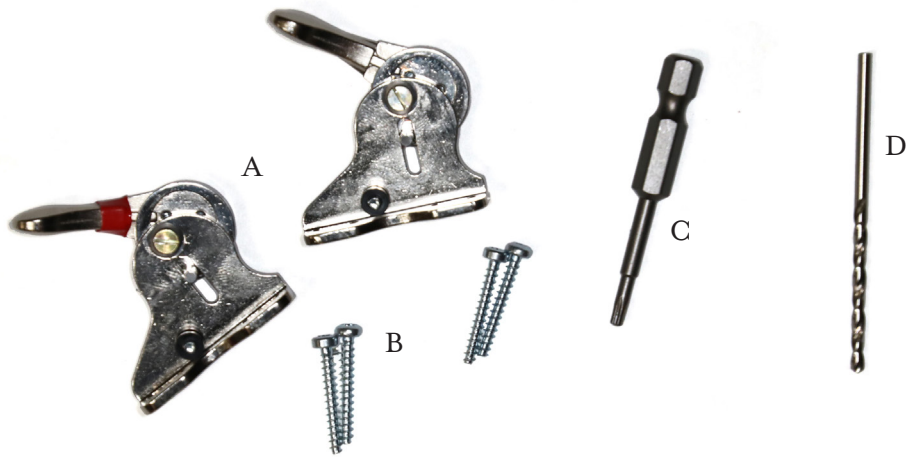
HOW TO INSTALL CAMAC LEVERS

OVERVIEW

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



YOUR INSTALLATION KIT INCLUDES:

- ☐ ☐ A. Sharping Levers
- ☐ ☐ B. 3/4" Torx Screws (2 per lever)
- ☐ ☐ C. Torx Driver Bit (size T-8)
- ☐ ☐ D. Drill Bit - 3/32"
- ☐ ☐ Installation Instructions
- ☐ ☐ Paper Template for lever placement (only available for Musicmakers Harps)

RECOMMENDED TOOLS

- ☐ ☐ Awl or Ice Pick
- ☐ ☐ Cordless Drill
- ☐ ☐ Electronic Tuner
- ☐ ☐ Tuning Wrench for Your Harp
- ☐ ☐ Allen Wrench for bridge pins

A FEW TIPS BEFORE YOU GET STARTED

1. Read through the entire directions first to get a feel for the project. Pay special attention to the highlighted boxes.

2. Check out our Camac Lever Installation video online -

harpkit.com/resources/camac-lever-installation

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Please note that Camac sharping levers are sorted by size to fit specific strings on your harp. YOU NEED TO KEEP THEM IN THE PROPER ORDER! There is NO identification number on the lever itself, so if you mix them up, it will be a challenge to sort them out again.

PREPARE YOUR HARP

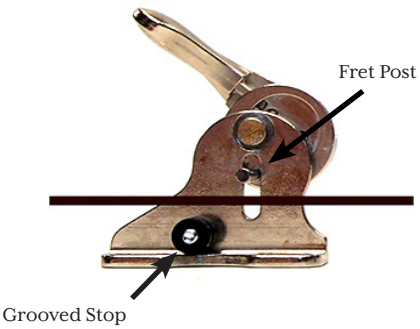
____ 1. Your harp must be strung and well tuned before you can mount the sharping levers on the neck.

Installing levers is easiest if you lay your harp on its side on a padded work table.

SET THE BRIDGE PIN HEIGHT

____ 2. The bridge pin must be set to the correct height so the string passes through the lever without touching the fret post or gooved stop. Aim to center the string between the fret post and grooved stop. (fig. 1) This allows the most flexibility for regulation (fine tuning).

FIG. 1



You can make adjustments for each string as you install the levers but you can get all of the bridge pins pretty close ahead of time by following the-guidelines below.

You'll find that there are three sizes of lever - small, medium, and large (fig. 2) - with the small levers being installed on the shortest strings and the large levers being installed on the longest strings.

You'll need an allen wrench to adjust the height of your bridge pins.

The standard bridge pins use a 5/64" allen wrench and the larger bridge pins use a 3/32" allen wrench.

FIG. 2

Adjust your bridge pins as follows:

Small Levers - 1/4" gap between the wood and the string
Medium Levers - 3/8" gap
Large Levers - 7/16" gap

PREPARE THE PAPER TEMPLATE

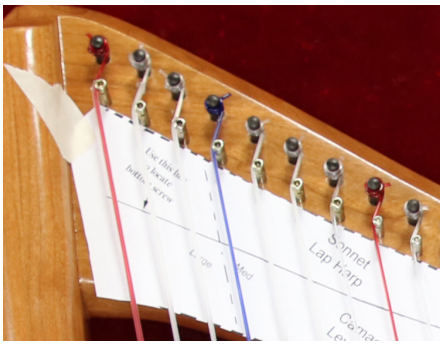


FIG. 3

FIG. 4

____ 3. We provide a paper template for Musicmakers Harps. Cut out the template and position it under the strings, hooking the ends around the tuning pins and guide pins.

If you have a two piece tempate, position each end under the strings and the middle should overlap niceley. The top of the template should be touching the bottom of the guide pins. (figs. 3 &4).

Use a few pieces of tape to joing the two pieces and to prevent the paper from slipping out of position as you work.

PUNCH MARK THE LOCATION OF THE BOTTOM SCREW

You'll begin by punching marking the location of the bottom screw for each lever. You will drill and install this screw on all the levers before you install the top screw.

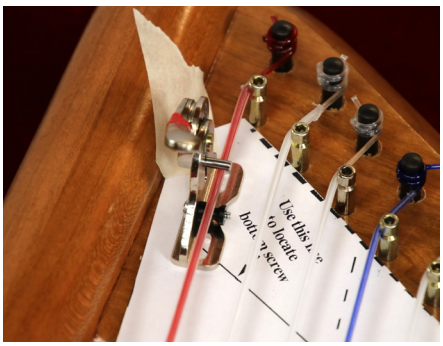


FIG. 5

____ 4. Begin with the largest lever for the lowest note on your harp (the longest string).

Position the lever under the string, below the brass bridge pin. Make sure the lever is oriented correctly so the handle engages the string when you lift it up toward the tuning pins. (fig. 5)

Hold the first sharping lever parallel to the first string so the string hovers directly above the groove in the grooved stop, and the line on your template appears in the bottom slot of the lever.

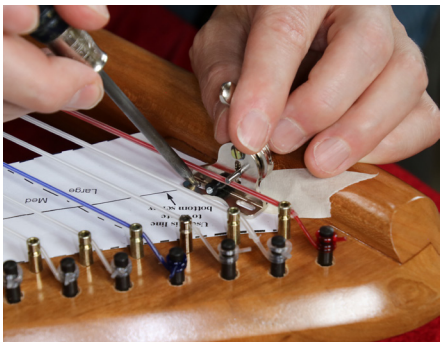


FIG. 6

____ 5. Use an awl or ice-pick to punch through the paper into the wood on the line of the slot, BEING CAREFUL NOT TO SLIDE THE PAPER AS YOU PUNCH. (fig. 6)

It is very important that the lever is aligned straight with the string and the string is centered over the groove in the Grooved Stop. Mounting the lever slightly off center (to the right or left of the string) will cause all kinds of problems later, such as buzzing string, clicking lever, or interfering with a neighboring lever.

____ 6. Repeat steps 4 and 5 for every individual lever, proceeding in order up the scale of the harp until all the lower mounting holes are punched.

This will mark the position of the bottom mounting screw hole. Yes, this can be difficult! You are holding the awl at an angle with one hand, so be careful to keep the point centered in the slot when you punch, and make sure you don't slide the lever out of place with your other hand!

DO NOT USE THE SAME LEVER TO MARK ALL POSITIONS! There are several different sizes of levers, so you must position each one individually, and keep them sorted as you set them aside, one at a time.

Once you have made all the lower punch marks, you can remove the paper template. You won't need it anymore.

INSTALL THE LOWER MOUNTING SCREW

____ 7. Use the provided 3/32" drill bit to drill all the punch marks to a depth of 7/8" (use a piece of tape on your drill bit to set the depth). (fig. 7)

Do your best to keep the drill perpendicular to the surface of the wood.

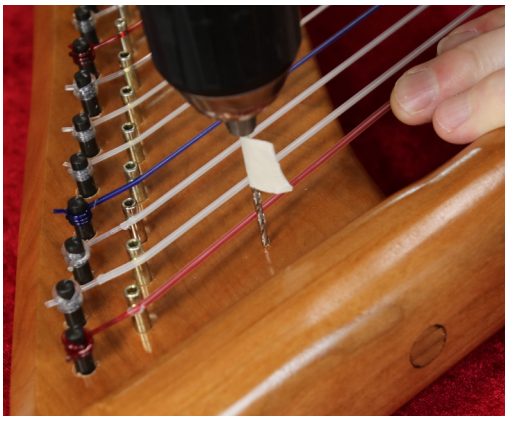


FIG. 7

When drilling holes for mounting screws - be careful to push the string out of the way of the drill bit. If you nick the string with the drill bit, it will be likely to break.

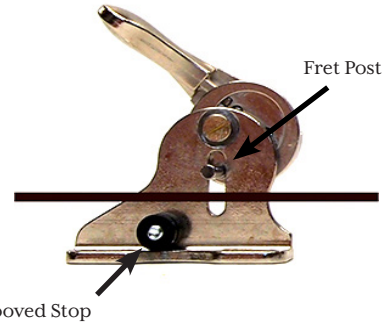
____ 8. Use the provided T-8 Torx driver bit to install the lower mounting screw in each lever. (fig. 8)

FIG. 8

Be careful not to over-tighten. If you use a power screwdriver, keep the speed and clutch setting very low lest you break the head off the screw.

INSTALL THE UPPER MOUNTING SCREW

FIG. 9

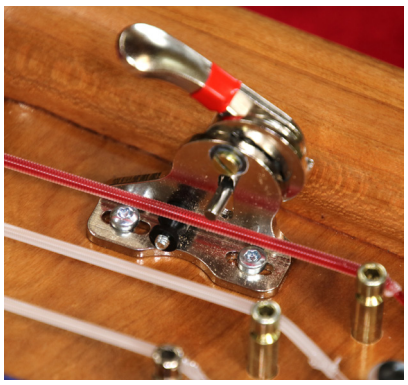


____ 9. Before you install the upper mounting screw, double check the height of the string as it passes through the lever. Make adjustments so the string sits midway between the fret post and the grooved stop. (fig. 9)

The very highest levers don't have a grooved stop but you can look at the other levers to see about how far they should be from the fret post.

____10. Test the first lever by lifting the handle to engage the string. Don't be concerned about proper pitch yet, but look to see if the string shifts sideways when it is pressed down to the grooved stop. If so, you can push the upper part of the lever sideways slightly to achieve better alignment. The mounting slot is also a hair wider than the shaft of the screw, so loosening the first screw can allow for sliding the base of the lever a little one way or the other.

FIG. 10



Install screws in same relative position in slots.

____ 11. When satisfied with the alignment, you can drill for the upper mounting screw, in the same relative position in its slot as the first screw in the lower slot. (fig. 10) This will allow the lever to slide up or down for fine tuning.

____12. Install the top mounting screw and repeat this process for the rest of the levers.

REGULATE THE LEVERS

FIG. 11

Fine tuning the position of the lever and the bridge pin to achieve a perfect half step is called regulating the lever. You'll now go through and regulate each lever.

For this process you will need:

An electronic tuner
The T-8 Torx driver
Allen wrenches to adjust your bridge pins

Korg CA-2 electronic tuner

NOTE: Your strings need to be stable and holding pitch before you attempt regulation. If your strings are still stretching too quickly, tune the harp several times over the next few days before proceeding with this final stage of fine-tuning (regulating).

____13. Tune the string to its correct open pitch (e.g., C-natural). Engage the lever by lifting the handle fully, and test that pitch (C-sharp) by plucking the string. You can release the lever and make sure the pitch of the open string has not changed.

IF THE ENGAGED PITCH IS NOT SHARP ENOUGH:

Loosen the mounting screws slightly and ***slide the lever down*** toward the soundboard. Tighten the screws and test the pitch (of both the open string and the engaged string) again.

If the engaged pitch is still not sharp enough you can ***raise the height of the bridge pin***. (This changes how much stretch it puts on the string and is especially useful in the higher registers. Make small adjustments and test the string with the lever disengaged to make sure you haven't created a buzz)

IF THE ENGAGED PITCH IS TOO SHARP:

Loosen the screws and ***slide the lever further up toward the bridge pin***. Tighten the screws and test the pitches (open and engaged) again.

If the engaged pitch is still too sharp, you can ***lower the height of the bridge pin.*** This reduces the amount of stretch when the lever is engaged.

If the above strategies don't solve the problem, you may need to drill new mounting holes for the lever or file the slots a little to enable more movement.

OTHER TROUBLESHOOTING TIPS

Buzzing or rattling can occur when the sharping lever is NOT engaged if the string is too close to the fret post or the bottom stop. Adjust the height of the bridge pin to correct this problem.

If a string sounds funny (buzzy or weak) when the lever is engaged, then the mounting screws are not tight. Use your Torx driver to tighten them up.

If you end up with a clicking sound as the lever engages, your lever is not quite centered under the string. This causes the string to click sideways into the groove. Try loosening the mounting screws and sliding the lever sideways.

Sometimes we have to remove the lever and use a needle file to open the slot a little wider in the desired direction so we can adjust it further.

That's all, folks. Congratulations. Installing and regulating levers on a harp is a delicate and detailed job! By doing the task yourself, you can now regulate your levers in the future as needed.