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VIBRAPHONE AMPLIFICATION SYSTEM

Installing the Piezo-Ceramic Amplification System

Note: To make this manual easier to understand, the directions refer primarily to the vibraphone. Simply apply the same procedures to the marimba or xylophone if needed.

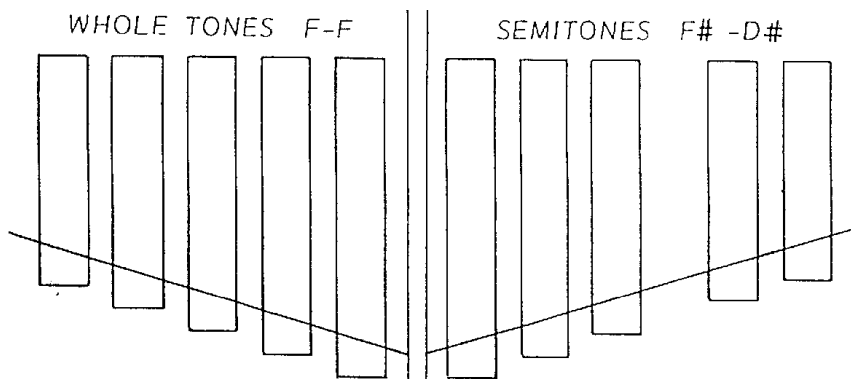
1: Place the bars upside-down on a table, as illustrated.

With the white tone bars (F-F), put the low bars to the right side.

With the black notes (F#-D#), position the low bars to the left side.

2: Mark a line on the bars corresponding to the way the string would be threaded. Make sure you mark the OPPOSITE side of the damper end! Follow the picture below.

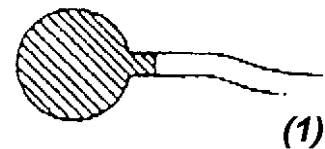
This line serves to display the nodal points, where the single transducers are supposed to be glued onto.



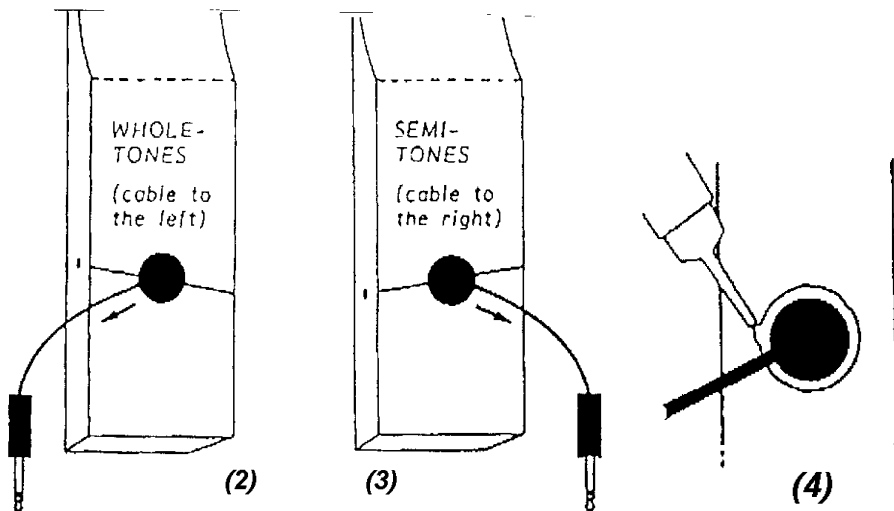
3: With golden or silver galvanized or lacquered bars you need to remove the galvanization layer or coating on the spots where the pickups are going to be glued on. Use the supplied sandpaper to sand down to the metal or wood. (This step is not necessary with "Musser Kelon" or fiberglass bars.) Sand a round area of about $\frac{3}{4}$ " (20mm) diameter on your line in the center of the bar at the spots where the pickups are going to be mounted (see fig. 2 and 3 next page).

4: After sanding, it is very important to clean all the sanded spots with rubbing alcohol or, even better, with acetone. Repeat this process several times until everything is absolutely clean.

5: Apply super glue to the metal side of the transducer. Spread the liquid over the entire surface with the tip of the tube. Note: Use a substantial amount of glue; the excess will ooze out on the edges, which is desired. Apply a small amount of superglue to the first $\frac{1}{8}$ " (3 mm) of cable near the transducer as well (as shown in illustration 1).



6: Press the transducer on the corresponding point of the note bar. Use the supplied pencil (eraser end) and gently apply pressure for 20 – 30 seconds (exact positions shown in illustrations 2 and 3). Spread the oozing-out glue all around the edge of the transducer with the tip of the glue tube (illustration 4) while you hold the pickup down with the eraser.



After you finished the gluing of all pickups, allow the glue to set for at least 30 minutes before you move the bars.

Note: The superglue will take even longer to completely set because it was applied quite thickly. However, tests showed that 30 minutes of drying time are enough to allow for moving and testing of the bars. Just be careful and do not play them hard yet.

7: Screw the whole tone and half tone collecting rails to the outside of the corresponding front and back frame rail of the vibraphone with 2 screws each.

Tip: Use a vise to temporarily hold the collecting rail in place while you pre-drill the 2 mounting holes and fasten the screws.

The distance between the bottom side of the note bars and the top of the collecting rails should be 2" - 2.5" (5-6 cm). On a Musser vibraphone the low edge of the collecting rail ends up perfectly flush with the low edge of the frame rail.

You may have to remove the carrying handle or relocate the vibrato motor speed control panel in rare cases (not necessary on Musser or Yamaha).

If you install the system on a 4 1/3 octave or bigger marimba, the rails are usually divided (four pieces, two on each side) and equipped with hangers for a screw-less mount. The single rails are inter-connected with the supplied 4 pin connector cables.

8: Carefully place the note bars on your instrument and plug the transducer plugs into the corresponding sockets in the collecting rails.

Make sure that the cables of the transducers are not touching the frame or rubber boot of the posts. Carefully bend the cable away so that it runs freely without contact.

9: Connect the Mini Mixer to the collecting rails by using the special Y cable. Connect the DC adapter to the Mini Mixer and hook your system up to an amplifier.

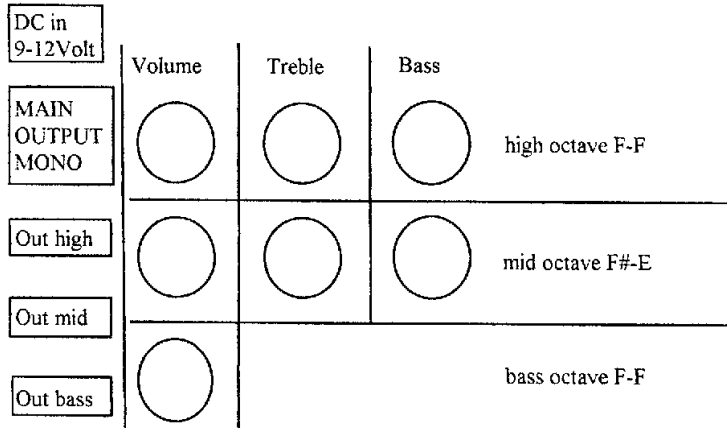
The Mini Mixer Functions

10: To finely adjust and perfectly balance the sound, remove the top of the Mini Mixer box by unscrewing the four **black** Philips-head screws. Adjust the three octave ranges according to illustration below.

You will find a diagram like the following on top of the Mini Mixer as well.

MINI MIXER FOR VIBRAPHONE

Open the 4 screws on the sides and lift up the top to uncover the trimpots.



Mini Mixer octave ranges for Vibe and Marimba

Vibraphone	Marimba
Bass octave: F - F	Bass octave: A(C) - H
Mid octave: F# - E	Mid octave: C - H
High Octave: F - F	High octave: C - C (2 oct.)

11: The Mini Mixer was factory preset on a Musser M55 vibe. Don't be afraid to change the settings. Before you start, you may make a note of the factory settings, just in case. The trimmers utilize little "indicator-arrows" to indicate the position. (12 o'clock center position on bass and treble controls is linear, no cut - no boost) Use the supplied small screwdriver attached with Velcro inside the Mini Mixer to turn the trimmers.

12: Any differences in volume of the individual notes can be adjusted on the trimmers in the collecting rails. **Note:** This adjustment only applies to the upper third (70% - 100%) of the volume range, in other words, fully counterclockwise does not cut down to zero, but just to about 70%. Use the supplied small screwdriver (attached with Velcro inside the Mini Mixer).

13: To securely transport your new system, please acquire two fitting pieces of thin foam (1/4", 6mm is fine). Place the bars pickup-side up on the foam and carefully roll them up.

14: For best protection of the system, we recommend leaving the bars on the instrument if possible. K & K offers a set of 40 Musser hook posts (like the ones on the damper side of Musser vibraphones). You can exchange the open post with these hook posts. They provide a secure attachment on both ends of the bars even if you turn the instrument upside down.

Power Supply

In order to get the best performance please use a 12-volt DC, 0.5 Ampere model. The DC plug should be the center plus.

Interesting Facts About Superglue vs. Epoxy

Problems might occur with super glue if you air travel frequently. We have not yet conducted sufficient testing on this matter, however, the low temperatures, varying air pressures and moisture that might condense as the bars return to normal temperatures might affect the superglue's bond.

However, you can give your pickups additional protection by carefully sealing the edges around the pickup disc as described in #6 (see fig. 4) plus by reinforcing them with silicone (next section), or by mounting them with a 2 component epoxy glue instead of superglue.

An epoxy glue is more stable but can be quite complicated to use and difficult to handle. However, if choosing to use epoxy over super glue please follow the mixing ratio, working time and dry time instructions of the specific epoxy carefully and keep these special concerns in mind:

You have to ensure that absolutely equal amounts of glue are applied to the metal side of each pickup in a thin layer. Try to apply the same pressure to each pickup when pressing them onto the bars.

Each pickup has to be secured by covering it with a piece of tape (we recommend duct tape), which is firmly pressed all around the pickup disk.

Mistakes can occur during each of these mounting steps and incorrect mounting will result in uneven loudness of the single tone-bars. After the epoxy has cured it is very hard to remove a pickup without damaging it.

In order to avoid these complications, we recommend using the included super glue, following the instructions above and reinforcing your transducers with silicone, as described below.

Protecting and Reinforcing Your Single Vibraphone Transducers with Silicone

Note: make sure that your system has been fine-tuned (all bars balanced in volume and sound) and that the superglue has dried for at least 24 hours before starting this procedure.

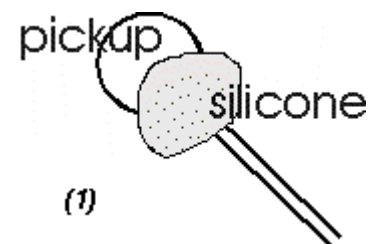
The single transducers of the K & K Vibraphone Amplification System are designed for maximum sound quality and best possible durability. However, the constant vibration of the note bar can cause some stress to the pickup cable's entry point. To avoid cable breakage, we have developed this protection method. It will also protect the superglue bonding.

If done right, this method will reinforce the pickup without jeopardizing any tonal characteristics. All you need is a tube of 100% caulking silicone (the type you use around your bathtub). Do not use marine silicone or car related products as they may contain metal-corrosive materials.

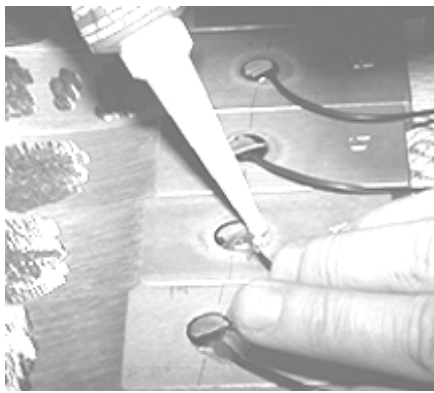
Important: Do not use anything but 100% caulking silicone. Other materials may harden over time, which will cause problems!

Color doesn't matter, however, we prefer clear. Silicone is widely available in most hardware stores in toothpaste-sized tubes.

- (1) Place the bars on a table with pickups facing up.
- (2) Clean the area around the pickup with rubbing alcohol and let dry.
- (3) Prepare you silicone tube and tip.
- (4) Apply silicone as shown in Figure 1.



- (5) Reinforce the cable entry point to the pickup disk. Make sure that you fully imbed at least 1/4" (6 mm) of the cable near the pickup disk. This flexible cable entry will absorb vibrations.



(6) Cover the lower half of the pickup disk with silicone as well.

(7) The silicone should be applied about 1/8" (3-4 mm) high.

(8) Don't worry if the silicone surface is not smooth or if the coatings vary slightly in size or height. The silicone will generally not affect the sound quality or decay of your instrument because it stays soft and does not harden.

However, make sure that you do not use too much silicone on your high octave bars. They are smaller in size and thus the silicone spot appears "bigger" in relation to the bar size.

(9) Let dry for at least 12 hours.

Troubleshooting

If ONE tone does not work, replace the pickup:

Cut transducer disk off the note bar with a sharp, thin-bladed knife or with a razor blade. Remove glue residue from tone-bar with sandpaper and clean the area with rubbing alcohol. Let dry. Attach new pickup according to mounting instructions.

One octave does not work:

- Unplug all transducers within the corresponding octave range. (F - F, F# - E, F - F). Make sure to unplug **ALL whole notes – plus - ALL half notes** before starting the test.
- Plug each transducer in separately. Test each tone one by one. If it works, unplug the transducer and go on to the next one. Continue this procedure through all the unplugged pickups. Like this, you will be able to identify the bad transducer(s). One defective transducer can cause the entire octave to cut out. Exchange bad pickup(s). (See above)
- If the octave still does not respond, there might be a problem with the Mini Mixer or with the connection cable. In this case, please contact K & K for further assistance.

Uneven volume of single notes:

- Check the trim-pot setting at the individual trimmers in the collecting rails. Adjust to your liking. Note: The fully counterclockwise setting is not zero volume. It is a reduction of the signal by about 30%.
- If one tone changes it's volume after having worked fine before, it may be due to a weak gluing or a bad pickup. Try to carefully remove the transducer. If it isn't damaged, reattach it and test. If it is bent or otherwise blemished, replace it (see above).

Distorted audio sound:

- The vibraphone provides extremely high-level signal amplitudes. The initial attack loudness sustains for a long time without decreasing considerably. This is a unique phenomenon caused by the properties of the vibraphone bars. This occurrence might overload electronic components used in the amplification equipment. The problem usually occurs if the musician plays many notes at once (4 mallets) at high volumes or with heavy mallets.
- There are several remedies:

- Turn down the volume trimmers of each individual octave inside the Mini Mixer.
- Turn down the trim pots on the collecting rails.
- Use lighter mallets.
- Use a compressor limiter to limit the peak amplitude of the output signal. These units are available in your music store for \$100-200.
- Make sure not to peak amplification components, such as effect units, preamps and mixing consoles.
- Power amplifiers should have sufficient wattage to carry the immense workload.
- Speaker cabinets: Pay special attention to the horns and tweeters. In a speaker cabinet, the high tone systems tend to distort first. Make sure to use units of good quality, strong enough and capable of tolerating the extreme amplitudes of the vibraphone bar. If possible use speaker cabinets without tweeters.

How to locate the unit in your signal chain that is causing distortion:

- Record your vib audio directly out of the Mini Mixer into a high quality cassette deck, dat, etc.
- Adjust record level clearly below peak.
- Record a short test tune.
- Listen and check for distortion at normal volume level.
- Add your effect units or mixer devices one at a time.
- Identify the source of distortion from the recording.
- If none of the devices cause the distortion, try different power amp or speaker cabinets for identification.
- If the above steps do not render results, distortion might be caused by K & K equipment. Please contact us for further assistance.

Buzzing sound of single notes:

- The short transducer cable may be in contact with the bar, frame, rubber-ring of post or with the collecting rail. Make sure to bend the cable in a way so that it is not touching anything.
- If the problem persists, the pickup might have been attached incorrectly. Try to carefully remove the transducer. If it isn't damaged you may reinstall it and test it. If it is bent or otherwise blemished, replace it (see above).

If you are experiencing problems with significant drop in volume, excessive distortion, or if the system completely fails to work:

- Check the DC wall adapter power supply with a voltmeter to measure the output voltage. It should read 12 –15 volt. If you do not have a volt-meter try a different wall adapter with these specifications:
- Output voltage: 12-volt DC, 0.5 Ampere
- Polarity of the plug: Center plus
- If the above steps do not render results, other equipment might be causing distortion. Please contact us for further assistance.