

## DAMPER BAR *INSTALLATION*

(\*Please read these instructions all the way through before you begin.)

- Note – This is all going to seem a little confusing at first ... but, honestly, once you've gone through the entire procedure a few times ... it will be easy!

Be sure to read the “Adjusting” section at the end of these instructions so you will have a clear understanding of how the system works. Please ... please ... call me if you have any confusion at any point. It's important for you to fully understand all of these instructions to get the full use and enjoyment out of your Damper System. My cell is: 828-301-1622.

Notice how the damper bars are “stored” in foam pipe insulation with plastic balls over the bar rods ... in the case on top of the tuning pins. The left bar on top of the left tuning pins and the right bar on top of the right tuning pins. Take the left damper bar out of the foam insulation, remove the plastic balls and with the *adjustment screws* on each end of the damper bar facing away from instrument, lower the *bar rods* into the upper and lower *linear bearings* on the left side of the dulcimer. Repeat this procedure with the longer damper bar, on the right side, remember - screws facing out, away from instrument. You can store the insulation and plastic balls in the case until you repack the dulcimer.

The damper pedal is stored in it's own separate carrying case. Lift *pedal* with attached cables, out of case and place under the instrument with the “heel” closest to you. Working with one *cable* at a time, begin by taking the left cable and sliding the *cable housing* all the way down into the *barrel adjuster* located on the left side of the pedal. At the opposite end of the housing, pull the *ball end* of the cable out of the housing as far as possible. Grasp the exposed ball end of the cable and thread the ball end through the hole in the back of the dulcimer on the left side. As soon as the ball comes through the soundboard on the top, use the hooked end of the hooking tool to grab the ball end of the cable pulling it away from the felt and lift the ball up to the opening on the damper bar. I find it easier to gently lift the damper bar “up” at first ... as I'm hooking the cable *Hint*: Pressing the damper bar down with the opposite hand will make inserting the ball on the damper bar easier. *Note*: To double check that the cable is installed correctly, make sure that the *ferrule* at the upper end(metal end of the housing) is inserted as far as it can go into the back of the dulcimer and the *ferrule* on the lower end is inserted as far as it can go into the barrel on foot pedal. Use the flat wood end of the hooking tool to press the ball end all the way into the access hole on the side of the Damper Bar.

Do the same procedure with the right cable on the right side of the instrument. Your Damper system should now be ready to use. Everything was pre-adjusted and checked before shipping or pick up. Place the pedal wherever it seems most comfortable for the foot you intend to use. Your heel should be on the floor as you “damp” the strings with the toes or pad of your foot. The felt on the underside of the Damper bar should be just slightly above the strings until you begin to depress the pedal. You can vary the amount of damping by varying the amount of pressure applied to the Damper pedal.

## DAMPER BAR *REMOVAL and STORAGE*

Working with one side at a time, use the hooked end of the hooking tool to grab the ball end of the cable and slide it out of the damper bar access hole by pulling it toward you. (HINT: Press down on the damper bar with your free hand to relieve tension on the cable.) Once the cable is free, remove the damper bar by placing one hand on each end of the bar and lifting carefully, evenly and straight up, until the *rods* are clear of the linear bearings. Retrieve the foam insulation and plastic balls from the case. Starting at one end slip the bar down through the slit

in foam until the full length is enclosing the bar. The felt side should be “up.” Place each ball over each bar rod. You can thread the rod through any small hole in the ball ... then slide the ball down tight against the foam sleeve protecting the Damper Bar. Do the same procedure with the other side. Now, pull the cables down through the instrument, one at a time. With the cables still attached to the foot pedal, lay the pedal in the case. Slide the cable housing up out of the barrel adjusters in the foot pedal. This will allow you to lay the cables over without “kinking” and carefully coil the cables around the inside of the pedal box in the widest loops possible. You can store the allen wrenches and hooking tool in the pedal box as well.

### *ADJUSTING the action of* THE DAMPER BARS

There are 3 ways to raise or lower the damper bars for optimum clearance and performance.

- 1)       **BARREL ADJUSTERS ON THE FOOT PEDAL:** Loosen (counterclockwise) the lower (black) lock nut. This allows the upper (silver) knob to turn freely. Rotate silver knob clockwise to *raise* the respective damper bar. Rotate counterclockwise to *lower* it. When desired clearance from the strings has been attained, re-tighten the black lock nut to hold the silver knob in chosen position.
  
- 2)       **UPPER AND LOWER ALLEN ADJUSTMENT SCREWS ON THE DAMPER BAR, Micro-adjustment:** With the larger *allen wrench*, loosen the *adjustment screw*. (NOTE: the allen wrench fits on the head or end of the *adjustment screw*). Adjust the *bar rod* up or down to “micro-adjust” the distance between the felt and the strings. (HINT: with the bar removed, use the starting length of 1&5/8 inches for the exposed rod) Once the adjustment has been made, retighten the *adjustment screw*, finger tight. Then, snug it up, maybe 1/16<sup>th</sup> to 1/8<sup>th</sup> turn with the allen wrench. CAUTION: DO NOT overtighten!!!
  
- 3)       **KNARP CABLE STOPS LOCATED BELOW BARREL ADJUSTERS UNDERNEATH THE TONGUE OF FOOT PEDAL, for cable stretch:** After some use, the cables may “stretch”. Adjustment of the stops becomes necessary. With the pedal and damper bars installed properly, pick up the pedal and hold it at eye level. Look under the tongue at the cable stops. Depress the tongue with your hands. Notice if there is any unusual slack when the tongue returns to its “up” position. To adjust, use the smaller allen wrench to loosen the set screw that is located in one end of the *Knarp*. Slide the Knarp up snug under the tongue and retighten. This can definitely be a little tricky ... you might feel like you're “all thumbs!” What might be easier is to actually remove the cable entirely from the barrel adjuster and foot pedal. You will have to unhook it from the damper bar to allow you to do this. If you noted, let's say, 3/8” of slack ... then loosen the cable stop ... slide it 1/4” to 3/8” up the cable and re-tighten. Now re-install in the foot pedal, hook up the damper bar and see if you've “taken up the slack.” \*Please remember – you can always call me (828-301-1622) for any help you might need in accomplishing these tasks.
  
- 4)       **FINAL TEST:** To make sure your damper system is adjusted correctly, use a hammer to tap on all the strings to make sure that the notes ring clearly and are not being partially dampened by the felt. THEN, depress the damper pedal and tap on all the strings to make sure the felt is contacting the strings evenly, and therefore dampening all the strings simultaneously.