The Abell-Tretick Padding Method

The objective of this system is to achieve a firm, flat bed for the pad that is indicated directly from the tone hole seat. When executed properly, the method will reduce shimming, resulting in greater stability and longer pad life.

For purposes of this discussion, it is assumed that the person performing this operation is experienced with servicing flutes. It is also assumed that little explanation of terminology used is required. I will not spend time describing other necessary preparations, but it is important to note that the success of this and any other technique depends significantly on preparations such as key fitting, grommet fitting, spud height, pad selection, and tone hole facing.

Also use the bedding disks for applying the perfect amount of adhesive for trill and c pads, piccolo pads, clarinet, oboe, etc.

To perform this operation, the technician will need:

1. Bedding adhesive washers” (BAW)
2. Paper shims (a.k.a. washers)
3. Plastics. You will need a plug for each diameter pad you are using. Ideally, the plug should fit the pad cup I.D. (inner diameter), less .005”. We want the plug loose enough to float, but large enough to form a firm bed under the corner of the pad. The plug should be the thickness of your pad plus .003”. Further, the plug should have a radius, on the edge, which will be placed into the cup. This should keep the cup curvature from interfering with setting the plug wherever it needs to be.


The end result of our process will leave a paper shim glued into the pad cup. This shim will serve as the bedding for any subsequent full or partial shims required to set the pad. It is desirable to limit the stacking of full shims to only the level required to compensate for variances in pad thickness and also to allow for partial shims to compensate for tone hole and pad “dips”. The author allows .003” for this purpose (the same .003” I added to the plastic dimension), and I would recommend this as a great starting point. The shim glued in place will “mirror” the tone hole onto the cup.

Note: Though a “flat” tone hole will result in the best job requiring little or no partial shimming, this system will get you to a better starting point even on flutes without ideally faced tone holes. This system is equally suited for the finest handmade flutes as well as production mid grade and student level instruments.

1. Technician will remove all materials from the pad cup. Place a BAW in the cup. Set a .004” paper shim, into the cup next.
2. Mount the key onto the body.
3. Apply a light film of Pledge (or similar) to the plug. This will keep the plug from sticking (most often) to the adhesive and will facilitate its removal. Place the plastic plug into the cup. Note the exposure (the amount protruding from the cup). At this point, it is necessary to have a little more exposure than the end result. Each technician should shoot for an exposure suitable for the pad type, the instrument model, and personal style. In general, .015” to .020” is a good range. I scribe the circumference of my plugs to .020” to give me a reference when “floating-in”. Should you have too little initial exposure, add either another BAW or use a thicker paper shim. If you have way too much exposure, use a thinner paper shim. Deeper cups, and dramatically sculpted cups may require 2 BAWs. Judgment will be gained from experience.
4. Slowly, heat the pad cup over an alcohol or other gentle flame, centering on the back towards the arm.

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5. With the adhesive in a flexible state, nudge the plug around until it is parked in a position that gives the desired exposure, as well as a mate to the tone hole on all points around. Very much like floating a glued in pad. I personally use a combination of plastic feelers .001” thick, and a fluorescent tube leak light during this process. Any leak shows so prominently with the light. Feelers will help with blind spots and help to verify my work with the light.
6. Dismount the key. Remove the plug. It may have been glued in with a little of the squeeze out that is inevitable (and desired). The squeeze out is your evidence that the BAW completely supported the plug when in its “home” position. The plug will have two threaded holes to facilitate removing with a threaded puller. If needed, screw in the puller on either side, and give a gentle tug. Repeat on the other side as needed. On stubborn plugs you may need to heat the assembly gently when pulling.
7. Clean up any squeeze out with a small pointed burnisher. Be sure to clean up both the cup walls, and the grommet chimney.
8. If you are not happy with your work to this point, the material can be removed with heat and cotton swabs. Final clean up should be done with n-butyl acetate-mineral spirits (sold as contact cement thinner).
9. Place a .003” shim into the cup. Remember that the plug was .003” thicker than the pad you are installing. This is intended to allow for pads that measure a little thicker. Therefore, you have an allowance for the pad thickness of + or - .003”. If you require a greater tolerance, you will need taller plugs.
10. Install the pad in your usual fashion. As always, work with whole shims first, then partials.

For a discussion of the merits of this method, see Chris Abell’s article. Please call 704-521-1088 or email us at sales@jlsmithco.com with any questions or concerns.