My Carbon Graphite Banding Repair Method

Item #115001

At the Williamsburg NAPBIRT convention, my company introduced carbon graphite as a new product for use in wood instrument body repair. I promised a few attendees to give a detailed account of the applications and method of use.

Applications:

Banding with this material is a very effective way of reinforcing weak body tube areas, open cracks, and hairline cracks. We have sold this item to a few people who make clarinet barrels and want the strength of the band in the tin wall areas, yet do not want to constrict the wall with a metal ring. I first used this item in repairing a thin wall grenadilla flute head joint that had a troublesome crack. There had been other previous repair attempts, but this is the only one that held the crack closed.

In every day repair work, I use graphite banding where a crack that had been previously pinned, subsequently opens up. Also, I use it frequently to forestall having to do a socket replacement on an instrument that has a crack from ring to first tone hole on the lower joint (if this instrument comes in before the socket explodes).

Method:

The graphite is sold in ribbon form approximately three feet in length, about 1/4" wide. It appears very similar to a hank of violin bow hair and is black in color. The color

allows for a very good cosmetic appearance but will not be invisible.

Plan the placement of the band carefully. Mount the joint of the instrument securely in your lathe. Turning by hand, locate an area to be banded that is not interrupted by a tone hole, post etc. The structural integrity of the repair demands a constant ring around the circumference. This ring should not be interrupted by later drilling through for a post hole for instance.

Once the band location is set, wax the exterior of the instrument at least 1" North and South of the band area. I do this under power with some minwax paste wax on a Q-tip. (The wax will help keep the future epoxy clean-up work to a minimum).

We will use a cutoff/parting tool to cut the track that the graphite will rest in. On small instruments (oboe, clarinet, piccolo) I use a mini-thin blade (.072"), and cut in .030". On larger instruments (bass clarinet), I use a wider tool (1/8"), and cut in .050".

Once the track is cut in, continuing under power, use a sandtaper stick (or similar) to sand down the rough edge on each side of the track. The body now prepared, turn your attention to the graphite itself. To manage the graphite and keep your hands free and tangles to a minimum, hang the graphite ribbon from a nail or hook. I always use latex gloves when touching the stuff. It is very fibrous and can get into your pores. Pull a small amount from one side; a width equal to the width of the crack is ideal. Cut this amount off the ribbon and lay it someplace safe.

Mix up some 30-minute (2 ton) epoxy Item #105104 on an old glossy paper magazine. Wearing your latex gloves, pull the length of the graphite through the epoxy. Begin to wrap the epoxy into the track you cut by lathe. Wrap it clockwise so that when machining later on the lathe, you will not catch the end and pull it up, but rather push it into the crack. Wrap the material firmly, but not so tight as to squeeze all the epoxy out. You will get a feel for this after the first few jobs (junk horns you try). Try to end the wrap right at the surface level of the instrument. Cut off the excess length with a razor blade. (Alternatively, you may wish

to inlay the graphite below the surface, filling the remainder with grenadilla dust and thin super glue).

Clean up the excess epoxy on either side of the band by wiping with a paper towel. If you leave a little excess over the band area, this will shrink somewhat as it cures. Wait overnight for the epoxy to cure. Since you had previously waxed the body, any excess will not stick to the wood or get in the pores. This thin epoxy film can be lifted with a fingernail. Machine the band area down to the highest level of the wood. Note that rarely the exterior of the body will be concentric with the bore. Therefore, the band on most instruments will require some hand finishing.

Finish down high spots as you would a filled crack. I use a small 3-corner file then follow with 400 grit silicone carbide paper. This is followed with 1800 grit Micro-Mesh Item #127002. Finally, I restore the area with a little oil Item #119031-Wild Bore Oil. If you have exposed any lighter colored wood grain, you may wish to rag the area with a little black rouge buffing compound Item # 110034, or some shoe polish.

When properly executed, you will have a cosmetically pleasing, permanent repair that will be the most effective solution to the aforementioned situations.

Enjoy!

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