Product Review: J.B. Allred D-tubes

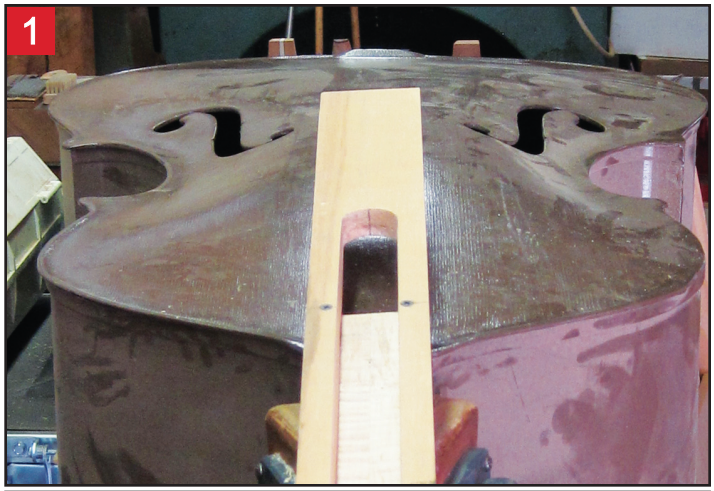
By A.B. Acker

This whole review started with a visit to J.B. Allred, Inc. in Scaneateles, NY in November of 2013. I'd wanted to see the operation of their plant since they were vendors at Symposium 2009. If you've been reading Guitarmaker long enough you probably saw the visitation article in #87 of spring Guitarmaker. It was a nice stretch of weather, with no snow in the forecast for several days, which if you know the Syracuse area, is better for visiting.

After a tour of the plant J.B. took me up on the offer to place his D-tubes in a couple of instruments I was working on. I'd heard of the strength and qualities of their products from other s using them in their projects. Carbon fiber is very stiff stuff, and Allred makes a variety of products from it. I took along two of the D-tubes to use for truss rods in a guitar I was building, and an upright bass I was repairing. The upright bass required "jigging-up" for a more difficult installation of the D-tube than it would be in new fabrication. The guitar neck was more straight forward, but still required some jigging also.

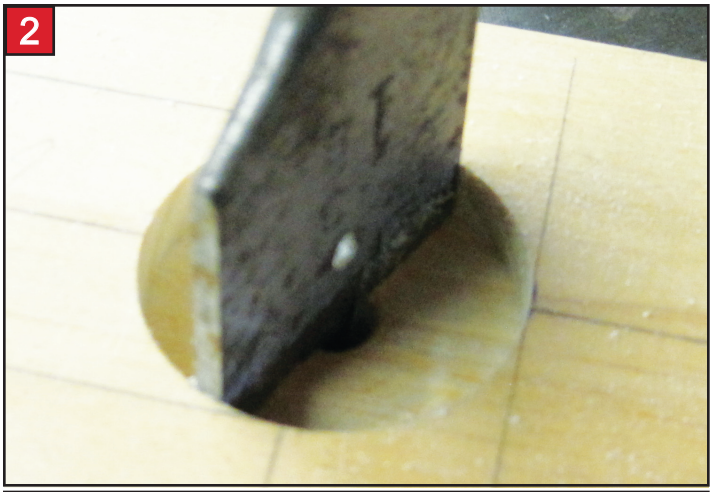
The Bass Repair

The upright bass is a King "Mortone" from the 60s, and was re-necked after the original one being broken in its travels. The new two-piece neck was fitted well, but was too flexible, and put too much "sweep" in the fingerboard. I'd read of others using the J.B. Allred D-tube in getting wayward bass necks back in shape. Some of the necks had been broken and others were just built too light to take the stress in stride. Since this neck was set well, in its new dovetailed position, I elected to do the repair with the neck on the bass. This, as you will notice, is with tuners in place and the bass sitting on a rug sample on my large tablesaw, the neck clamped in my swivel jawed vise of my workbench.



Upright bass with router jig applied, and setting on adjacent table saw, while the neck is clamped in the workbench swivel jaw vise.

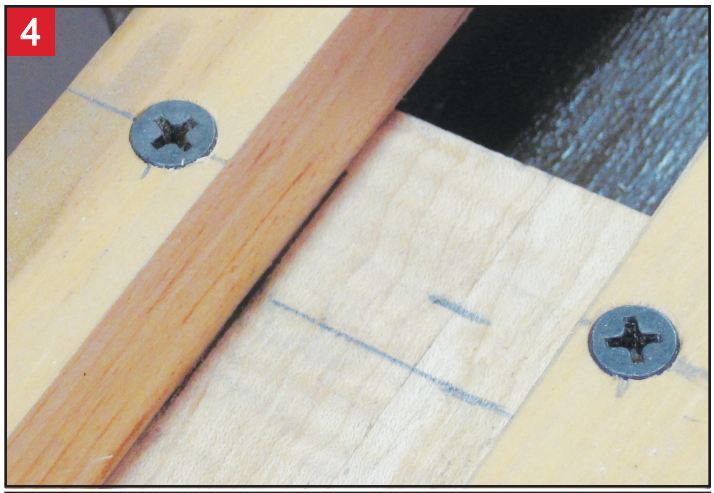
One of the problems in retrofitting the D-tube into an existing neck is not having a parallel straightedge to guide a router **(Photo 1)**. I decided to make a quick jig that would supply a parallel edge with the bass neck centerline. I poked around in the pieces of pine that seem to multiply with time, and after finding a suitable piece, proceeded to figure-out how it could be designed to work correctly. I went into my router bits and found an almost new core box cutter, which would cut a cove the size of the D-tube. OK, now how to fasten the jig to the neck, double faced tape? Since the neck is a little too small in area outside of where the groove was to be cut, I decided to try using drywall screws into what area was available, since this would be covered by the fingerboard afterward. This turned-out to be a good solution, and I drilled the end holes for the jig stops **(Photo 2)**. This was done with one of my large, and well-weathered spade bits. It still cuts well after all the years of service,



End of slot being drilled with one of my ancient spade bits. This is sized to accomodate the router guide diameter.

Drywall screws applying shop jig to maple bass neck, with no root-size relief holes drilled, but with no neck splitting!

something newer bits sometimes do not. The connecting sides of the jig, at zero and one-eighty degrees of the bored holes had to be done with my variable speed saber saw, and a fine toothed blade. The cuts had to be just inside the lines, so it would be possible to file just to the line, with a finish that was smooth enough for the router guide to follow without encountering bumps and dips. I used a hand-cut wood rasp with medium sized teeth for this, angled along the lines to help keep the rasped surface smooth and straight. The soft pine cut easily, but it was demanding work to make the jig usable. Over years of using this rasp I'd learned how good a result there could be, if I did my part, which was made more successful by angling the rasp along the cut line and filing to the marked line. The jig took a little time to make, but once having been made, was smoothed-out just exact enough with a block and 150 grit sandpaper to leave the sides straight, and smooth **(Photo 3)**.



Drywall screws applying shop jig to maple bass neck, with only root-size relief holes drilled, but with no neck splitting!

It's been a marvel to me in using drywall screws for woodwork, exactly how they do what they do, so well! In earlier years of cabinetry I'd been taught to drill-away the "root size" of the screws to prevent splitting of the wood. The "root" size being considered the same as a solid shaft of steel, or brass, that would make driving the screws difficult, perhaps breaking them in the driving, and most likely split the wood rather than compressing it. I still use this method when applying hardware to soft and hard woods, and usually using a drill that cuts slightly larger than the "root size." A little beeswax or paraffin further eases the job. But, upon encountering drywall screws, I found they were being used in the trade for more than drywall. I saw them being driven into not only softwood, but hardwood, and without drilling a pilot hole for the "root size" of the screw! How could this be, I still don't know, but surely it does. Drywall screws have a thinner "root size" but it's there, but not causing any trouble. So, I still don't know the technology behind this just that it works. I did drill a couple of small pilot holes for the drywall screws, given that there was not much width to the neck, it was maple, and a real mess if it got split. The drywall screws worked well, and I applied the jig to the neck. The jig got drilled for the "crest size" of the screws, and as you can figure, it is the size that just allows the screw to slide through without cutting into the jig. The jig was also countersunk for the screw heads to lie level, "or flush," to the jig surface. The jig was positioned on the neck, the screws pushed to make the points leave a place for the drill to make everything lined-up with the neck's centerline. It was a little difficult to discern the exact point where the bit should stop at the bottom of the neck so I clamped a stop block on the whole apparatus with toggle clamps. If you haven't discovered how useful they can be for a variety of situations, check them out. There's no going back after you try them once, they're just wonderful for the right situation **(Photo 4)**!

Plunge router at the end of jig with stop clamped onto the neck to limit the length of cut.

For this job I used my Bosch Pony router in a plunge base, which is just right for getting the router tube into the guide jig before the cutter reaches the neck wood. The jig is from ¾" pine, and although the bit is exposed enough to cut a groove deep enough to house the D-tube, but not cutting until well inside the jig slot. Did not figure on taking a full cut, just a slight one that would show if I'm on the money with my jig. You should also not have "slop" in the guide, just enough clearance not to bind as the tube progresses down the jig.

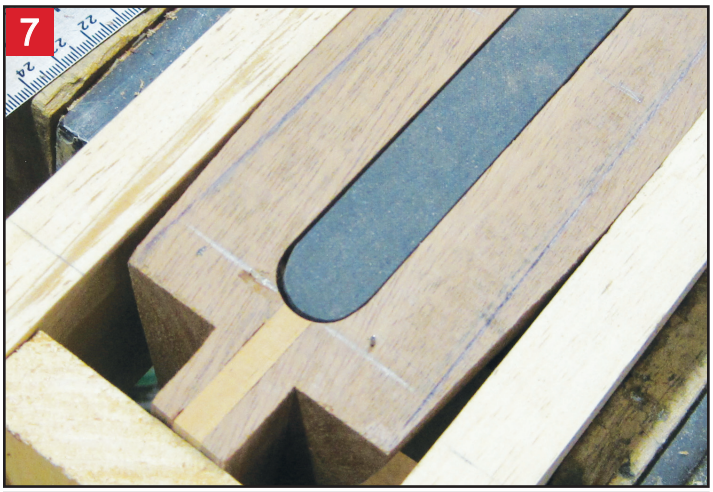
D-tube cut to length, profiled and lying in wait for epoxying. Slight overfitting is filled with epoxy and is negligible.

There are a variety of cutters and tube guides available for this router, and with a full set of guides, the quick receiver base will serve you well in a variety of uses. After the progressive cuts were taken it was obvious that the jig and tooling produced a straight, unburned groove for the D-tube. Only the cutting and fitting remained to be done **(Photo 5)**.

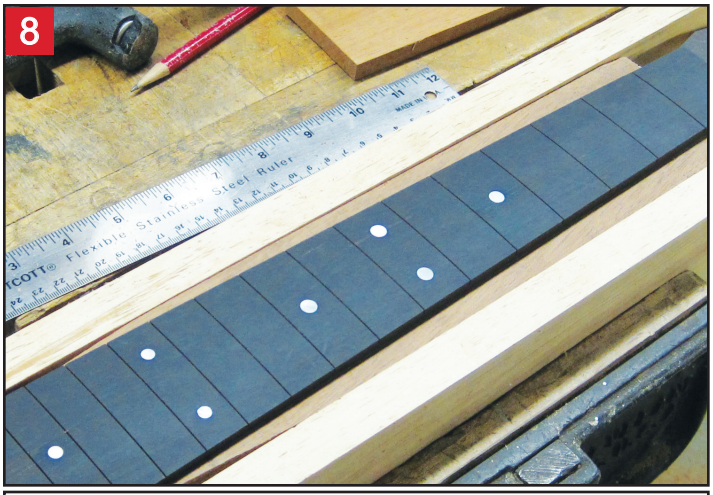
Reasoning that it would be quite a difficult process to try rounding the straight end of the D-tube to the radius of the cut groove ends, I decided to lay-out lines for the semicircle of the top profile, and then undercut the bottom part of the tube. After I cut to the line defining the thickness of the top surface of the tube, I cut straight down at the 0 and 180 points, leaving the side profile you can see in the photo. I then rounded that flat part into the circle that fits the circular ends of the groove. This worked fine to fill the surface and that area will have epoxy bonding the D-tube into the groove. At this point the jig was quickly removed, and the D-tube was sitting in place waiting to be glued-in. The tube was epoxied-in, and the fingerboard glued back on. The bass was set-up as before, but with a more rigid neck **(Photo 6)**.

The Guitar Neck Installation

The installation of a D-tube in a parallel neck blank was easier than dealing with the retro fit in the tapered bass neck. If you're using the straight D-tube, and by this I mean that it's the same depth from its flat side all the way along, then you can use a fence to guide your cut all the way, staying aligned with the center line of the blank. But this guitar was using the other D-tube, the tapered one with a changing distance from its flat side, and tapered for applications such as a guitar neck which has a thinner profile at its wrist area. For this I made a box that could be clamped around the neck blank, and slipped-up as it got closer to the nut area. So it starts-out being flush with the top of the blank, and is aligned so that the depth of cut decreases as you progress up the jig. Usually a couple of passes after adjusting the jig for slightly less cut yields the tapered D-tube lying flush to the gluing surface. At that point the tube



Guitar neck blank sitting in shop made router guide, dry fitted and profiled. Neck was slotted for truss rod but was filled and fitted instead with an Allred D-tube for the review.



Fingerboard sitting in place on the machined guitar neck. The D-tube is in place and ready for epoxy. The D-tube is tapered and fitted by sliding the jig up towards the front end.

ends have been profiled, as they were in the bass installation, and fitted into the neck. The jig will need a stop block at the beginning and end points where the router base needs to start and stop. With the plunge base on the Bosch Pony router this is easily established before the plunge cut is started. It's worth the few minutes it takes to make the jig, and figure the cuts. The two types of D-tubes were a thoughtful development by Allred, to prevent wrist area thinning that would prove difficult to deal with otherwise. Good engineering folks! At this point in the installation it's easy to epoxy the D-tube in, and then prepare the blank's surface for gluing the fingerboard in place **(Photos 7 & 8)**.

Results:

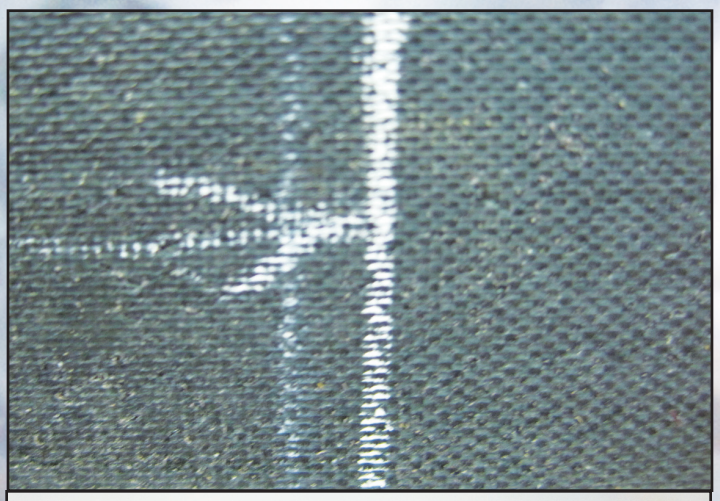
In both cases, the bass repair and new guitar neck reinforcement, the D-tubes went in easily. The fit needed to be close, but any slight discrepancy was filled with epoxy anyway. With the D-tubes in, and flush to the neck surfaces, the fingerboard and fretboard were aligned and glued to them.

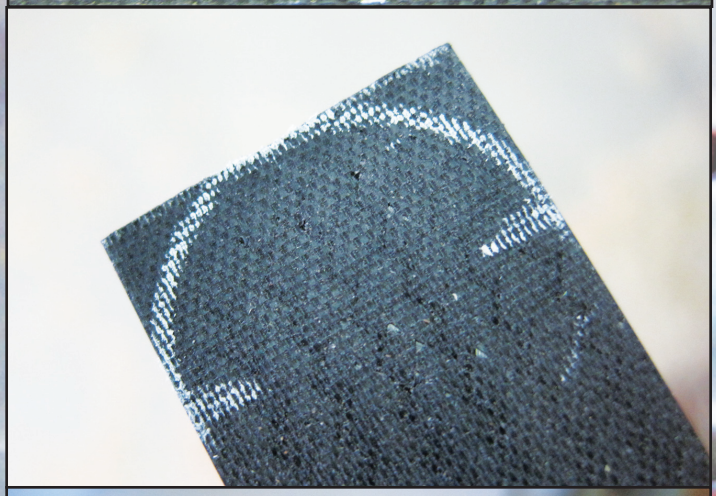
The finished instruments were notable in two respects:

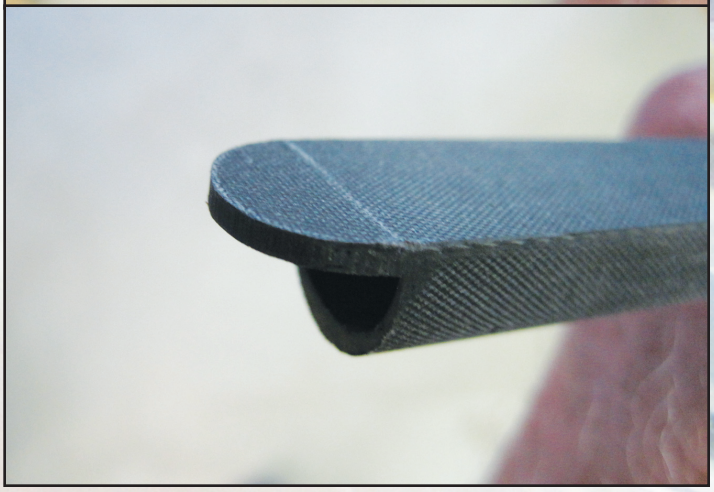
- The necks were straight under load
- There was noticibly more sustain in the guitar

This was not readily detectable in the upright bass, but the guitar sustain seemed notable. This was only slightly apparent, and in no way detrimental to playability. There was a slight difference in the neck weight, comparable to using a metal truss rod, but negligible to an epoxy graphite bar.

Overall, the Allred D-tubes were a good alternative to have available. They worked very well, and proved to be everything that Allred advertised. Although priced a bit higher than most neck reinforcements on the market, the D-tubes are just the product to use in most cases. They are best used in new construction, but are ideal in retrofitting, and are the only option available, in some cases. □







My Way of Fitting the J.B. Allred D-tube

Start by profiling one end of the D-tube to the width of the tube, in this case, five eighths of an inch. If the cavity is slightly wider than the D-tube it will be filled with epoxy. Just get the routed D-tube centered on the centerline of the neck blank.

Lay out the squared and cut off end with a circle template that fits the width of the tube, and draw the semicircle with an artist's colored pencil, making it flush to zero, ninety and one-eighty. These come in many colors, and are greaseless, to allow artists painting over them.

Mark around the tube from the zero and one-eighty points, and then mark down the side, measuring from the top the thickness of the tube surface, just to the underline. There will be a cavity here that will be filled with epoxy.

You could elect to leave the tube cut like this, and install it flat ended. In this case you would need to cut the router groove to a flat ended mortise on both ends. Either option is a bit of a job, so, you can decide your way.

Cut the D-tube to length and then profile that end the same way. It's not necessary, or desirable, to fill the D-tube entirely, only the profiled ends. Spread epoxy on the routed length of the truss rod groove, and then squeeze everything into place. Clamp the tube level with the fingerboard surface, using wax paper and a caul, filling the cavity with enough epoxy to take-up any extra space if it's slightly too deep. After everything's set, remove your caul and scrape to bare wood. From here it's straight-forward to gluing your fingerboard or fretboard down.