

BIGSBY

Secrets

ICONS OF '50s HIP AND PURVEYORS OF THE ULTIMATE WOBBLE, Bigsby vibratos are one of the coolest accessories ever invented – but unless treated right, they can cause trouble galore. In this exclusive workshop guide, repair expert Dan Erlewine tells you how to win with your vintage whammy...

Paul A Bigsby is one of the great undersung names in the history of the electric guitar. A maverick inventor, craftsman and motorcycle racer, the Californian's big moment came in the mid-1940's when he built a prototype vibrato for an archtop Gibson L10 belonging to country singer/guitarist Merle Travis.

Next, Travis asked Bigsby to make an entire solid electric guitar. The groundbreaking result had a stunningly designed maple single-cutaway body with a neck-through-body design, a single 'blade' pickup, and a swoopy scrolled headstock with the tuners arrayed in a line along the top – spookily similar in design to the Strat headstock of 1954 (it's reported that Leo Fender saw Travis playing a club in Placentia, California, and borrowed the new guitar for a week. Not to say, of course, that Fender stole the whole concept – but the influence is undeniable). The original Bigsby/Travis guitar is now on display at the Country Music Hall Of Fame in Nashville.

But instead of challenging Fender's Teles and Strats with a production offshoot of the Bigsby/Travis guitar, or taking them on in the field of pedal steels (of which he is virtually the founding father, making instruments for big names like Speedy West and Bud Isaacs) Paul Bigsby instead chose to concentrate on his vibratos, selling thousands until he finally offered the company to ex-Gibson man Ted McCarty in 1965. Paul Bigsby died in 1968.

Why did the invention of Fender's wide-ranging vibrato not toll the death-knell for the Bigsby? Simply, you couldn't retro-fit a Strat trem on your own guitar. Bigsbys might only have had a semitone's worth of travel both up and down, but the cool looks, great feel and easy-fittability meant the units were virtually ever-present on Gretsch guitars right through the '50s and '60s, often popped up as factory-fitted equipment on Gibson solids and semis and even made an appearance on Fender Teles in the late '60s.

When vibrato technology went through the roof in the late '70s and early '80s, again, you'd think the archaic Bigsby would finally be dead and buried. Wrong: the retro revival has found Bigsbys fitted to current Gretsch reissues, Washburns, Epiphones, Gibsons and many more. In all likelihood, more new guitars now come fitted with the classic old spring-arm vibrato than ever did in the '50s and '60s. It's a remarkable story that means that the name of Bigsby will never be forgotten.

But now: some tips – both simple and just-for-pros – that'll keep your Bigsby in tip-top working order...

THE BIGSBY VIBRATO

According to the American Heritage Dictionary, no less, vibrato is 'a tremulous or pulsating effect produced in an instrumental or vocal tone by barely perceptible minute and rapid variations in

pitch' (most amp tremolos, for example, don't change pitch, but change volume very quickly).

Paul Bigsby named his invention the Bigsby Vibrato, a more apt description than 'tremolo' for the subtle change in pitch – or slightly more – it lets a guitarist produce.

DO YOU NEED THAT BAR?

On some Bigsbys, there's a roller bar in front of the retainer bar to which the strings fasten. The roller bar exerts downward pressure on the bridge to increase string angle to the top of the bridge saddles and to help keep the strings in place when plucked or picked. However, a Bigsby works its best with only the *necessary* downward pressure – and no more – to keep the strings in place. In my opinion, not every guitar equipped with the roller bar needs one: the downward pressure can be too great. It all depends on the angle of the neck to the body and the resulting height of the top of the bridge. Try stringing up without running the strings under the roller bar and see if you still have a decent string



Pre-curve your string-ends for hassle-free stringing

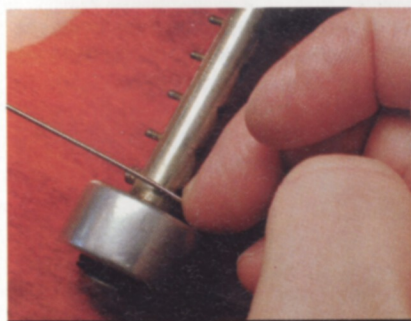
angle to the bridge and some downward pressure. If so, you may prefer the operation and sound of the vibrato without the bar.

Some guitars pick up overtones from the open string length between the bridge and the retainer bar. If that's the case with your guitar, you may choose not to string up this way, but it doesn't hurt to try – and you may like the sound of the overtones you'll hear.

STRINGING TIPS

On a Bigsby, the strings attach to the six pins on the string retaining bar that connects to the spring-loaded hand lever. Bigsby suggests removing the tension spring under the arm so the arm falls down and the string pins are more accessible, but I don't bother doing that. Spring or no spring, pre-bend each string around any round object about the size of the retainer bar to produce a round hook shape – it will go on the pin much easier.

Slip each string under the roller bar (if there is one), over the top of the retaining bar, then wrap it down under and onto

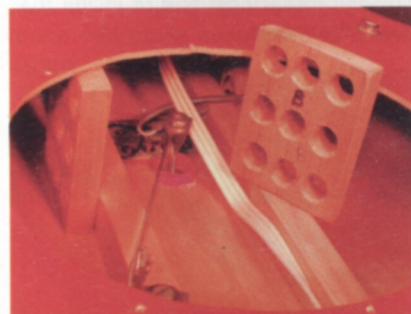


Use a fingernail to keep strings straight when tuning

the anchor pin. Hold the string onto the pin as you tune until the tension keeps it from popping off the pin. Then use your fingernail to keep the string aligned with the pin as you tune to pitch. If you have removed the spring, tune the strings taut, but not to pitch – and when all the strings are on, lift the tremolo arm and install the arm spring.

INSTALLING A BIGSBY

You can install a Bigsby only on a guitar with a top strong enough to support it, although they're often mounted on guitars that can't support them – such as the 1969 Gretsch Nashville 6120 described below. The earlier 6120s – like Brian Setzer's – have trestle-supported tops that connect, and strengthen, the top and back and provide support under



Some Gretsches need extra support under the bridge

the bridge area. After 1963, however, Gretsch removed this support, cut an access hole in the back and covered it with a Comfort Cushion. When you use the Bigsby on these models, the top flexes and the bridge base lifts free. If you own one of these otherwise cool Gretsch guitars (and there are many out there), consider taking it to a repair shop and having two wooden supports custom-fitted in the bridge area. These are mahogany and not even glued in (although they probably should be), with the grain running top to bottom, 1/2" thick x 2" wide x 2 3/4". I drill 'tone holes' to lighten them and keep the sound airy. Then, with a good bridge setup, the guitar will return to pitch much better. The tone will improve, too, because the top won't flex.

What about Les Pauls? Most Bigsby-equipped Les Pauls come with the B5 'horseshoe' model mounted quite close

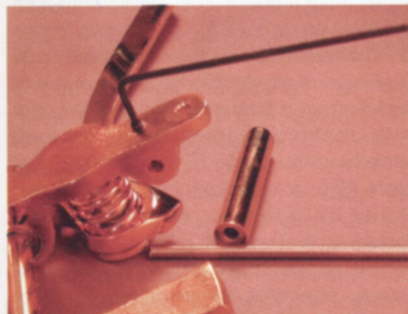
to the bridge, but in this position the roller bar can create too much angle for the Bigsby to work like it should... and the arm is often too far forward to use when picking in a normal position. It's better to fit a Bigsby further back where



Bigsby on an LP – moved back, with roller disabled

it rests closer to the top curve, where I could palm the arm with my pinkie and ring fingers, yet use my pick in a desirable playing area. I installed the strings over the roller bar, and they cleared it – but just barely on the bass side.

If you string a Bigsby over the roller bar and the strings touch, you can remove the roller from underneath – a single Allen screw holds the roller in place (see picture). Bigsbys can look a little strange with the roller removed so I didn't actually deliver it that way:



Removing the roller bar for better string clearance

however, missing out the roller bar, the vibrato now felt smooth and easy. If you mount a Bigsby on your guitar, give thought to its placement.

A DIFFERENT ARM PLACEMENT

How about this tremolo arm that retrofits the Bigsby and is adjustable in



New arm: not to everyone's taste but super-adjustable

length? At the time this book went to press, this replacement arm had just become available from guitar shop suppliers. I find it more comfortable and easier to use than the flat Bigsby arm. You also can position it where you like it: both the length and the tilt of the arm are adjustable.

NEVER FELT BETTER

The felt pads on the underside of this 1961 Gretsch 6120's Bigsby had compressed enough that, even under string pressure, the base of the vibrato barely touched the top on the treble side and there was actually a gap on the



Fresh felt...

bass side. I removed the old felts with a knife, then cut several circles of green pool table felt. Lacking thicker felt, I laminated several circles together with double-stick tape until I achieved the correct thickness. The treble side needed only one layer of new felt, the



...giving nice tight contact to the body

bass side needed three or four. Then the tailpiece touched the top – which is a must for the vibrato to work properly.

THE ANTI-SQUEAK CLUB

On a 1969 Gretsch Nashville I managed to eliminate all the squeaking and spring groans that sometimes afflict a Bigsby by installing washers cut from several thicknesses of Teflon sheeting. First, I unbolted the arm from the vibrato base and replaced the coarse fibre washer between the arm and body with a .030" Teflon washer. Then I placed one .011" washer under the nut and small spring that fasten the arm onto the retainer bar, and another .011" washer in the spring well. After brushing the two springs



You can replace this washer with a .030" Teflon one

clean, I lightly oiled the smaller arm spring and its hex nut, then strung to pitch. All this gave a vibrato as quiet, cushy, and smoother as any I've played. You don't just find Teflon sheets at the corner store – I buy them in 6" x 12" square sheets from the McMaster Carr Company in Elmhurst, Illinois, USA ☎ (630) 833-0300; www.mcmaster.com.



An .011" Teflon washer here, another in the spring well

SHIFTING A TAILPIECE

It's common to find tailpieces mounted slightly off-centre or worn out at the hinge. Either affliction will pull the bridge to one side or the other – sometimes enough to cause the strings to miss the pickup polepieces and fall off the fingerboard. One 1969 Gretsch Nashville that recently came my way was a particularly bad example, with a bridge held in place with dabs of glue. To remedy matters without plugging and redrilling all the holes for the tailpiece hinge, I loosened the tailpiece screws enough to slide feeler gauges in to find



Askew tailpieces can be sorted by inserting feeler gauges and then gluing coloured wood veneers to the inside of the hinge

out the thickness I needed to 'shift' the tailpiece toward the bass side. I then superglued a strip of wood veneer close to that thickness (.028") to the bass edge of the tailpiece hinge, and coloured the edge of the wood with an orange marker (next time I'll use a silver marker – always learning). Reinstalled, the tailpiece lined up perfectly with the bridge, pickups, and fretboard.

PRO REPAIRS FOR GRETSCH'S SOLID-BAR TREMOLO BRIDGE

When Chet Atkins asked for more sustain in the late '50s, Gretsch introduced a solid-bar saddle on a wood base that was height-adjustable via thumbwheels on 8-32" threaded posts at each end of the bridge base. The earliest versions of these bridges (and there are many out there) were intended to be *rocking* bridges, since the posts have round bottoms that rest in round-bottomed holes in the wooden bridge base – yet these bridges don't work well, because the crudely shaped post bottom often catches on the hole when it rocks, sometimes tearing chunks of wood from the base.

A professional repair tech can fine-tune these bridge bases. First, it's possible to file off the sharp edges of the V-shaped part of the post bottoms and sand and polish them smooth. Then, after wrapping the post threads with a slit plastic straw for protection, the post can be fitted into the chuck of an electric hand drill and run backward and forward in the bridge base hole, rocking slightly as you go and burnishing the shape of the post into the base. Also, you can ask for a screwdriver slot to be in the end of the two post-screws so that you can keep the flat sides of the rocker post aligned with the strings – otherwise, the posts may want to turn sideways when you use the thumbwheels. Finally, put Vaseline in the hole, assemble and adjust the bridge and action, and the bridge will work the way it was intended to. Remember, this is not a task for kitchen-table first-timers, so seek knowledgeable help.

Many Gretsch guitars equipped with this bridge were built with improperly low neck angles that made the action impossibly high with the bridge at its lowest adjustment. The common fix for the bridge was to lower it by sanding the bottom of the wood base and filing some of the metal off the bottom of the metal bar saddle as well, both where the saddle contacts the thumbwheels and where it hits the bridge base. But often, a better solution for this problem is to have a pro reset the neck to the proper neck angle that will accommodate a taller bridge of normal height. Then, since replacement bridge bases are not available for this style, have a new, higher bridge base made to

accommodate either a new replacement bar saddle or the original, filed-down saddle.



Brass tubing can help sort a shaky Gretsch bar bridge

ANOTHER BAR SADDLE TIP

This repair is pretty simple. Often, bar saddles move on the rocker studs because the hole in the saddle is too big for the thread size of the rocker. The saddle cannot rock properly under string tension and tremolo use because the saddle slides on the thumbwheels rather than rocking. If you tighten up the sloppy holes, the bridge works better.

Your local hobby shop may well sell an assortment of miniature brass-tubing cut-offs. In this case a piece of tubing – cut with a hobbyist's razor saw – was the perfect size to slide over the threaded rocker post and fit inside the hole in the saddle.



Cool Bigsby bridge – but a tun-o-matic will work better

BIGSBY'S ALUMINIUM BRIDGE

The bridge that comes with a Bigsby vibrato has an aluminium base with threaded steel height posts, aluminium thumbwheels, and an aluminium top saddle with intonation points staggered along the saddle for the strings and styles of the 1950s. Aside from the fact that it doesn't intonate very well with light strings and an unwound G-string, the machine work on this bridge – at least today's version – is not very good. The saddle doesn't return the strings to pitch when you use the tremolo, even though the saddle bottom is slightly V-shaped so it will rock. There's also generally too much slop elsewhere. It looks nice, however, and with metal-working tools and experience, a pro can

make it work, but until Bigsby (now owned by Gretsch) redesigns this bridge, I don't recommend it. You are better off having a repair tech install a Gibson-style base with a Tune-O-Matic bridge – that's what Brian Setzer uses.

DELUXING A GRETSCHE BAR-SADDLE BRIDGE

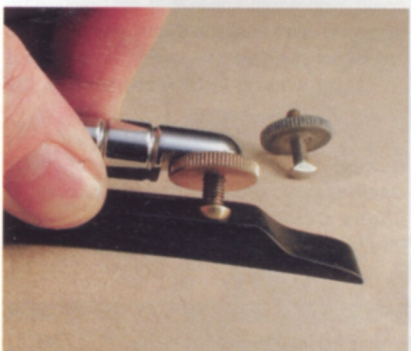
If you really want to sort your Gretsch rocker bar bridge, enlist your local friendly repairperson and ask them to



Nice new bridge base. But grotty old thumb-screws. Ugh

take the following steps – not easy, but the best fix there is. I recently undertook some work on a 1961 Gretsch 6120. I had already made a nice new ebony bridge base, but couldn't bring myself to use the old rocker posts in my nice new ebony base. So I stopped right there and made custom brass rocker posts.

First, take two 10-32 brass slotted round-head machine screws. These are just enough larger than the original 8-32 threaded posts that it fills the two holes in the bar saddle perfectly and



The finished item: new posts, matching holes in the base

eliminates the slop between the rocker posts and the holes. I made two new deluxe rocker posts with these 10-32 machine bolts.

Then, using a propane torch, heat the screw head and melt solder into the slot, filling it completely. Next, file and sand the excess solder from the brass until it's round and smooth, then pop it into the bridge base. The larger (10-32) brass machine screw fits the bar saddle quite snugly. I have no idea where I came up with the brass 10-32 thumbwheels... they were just lying in a

drawer of parts – I was lucky!

To mate the new brass round-bottom rocker screws to the non-matching holes in the bridge base, I used a steel 10-32 machine screw that matched the head size of the brass one exactly and ground it into a 'cutter' with two flat-sided sharpened cutting edges. The cutter matched the hole bottom in the bridge base perfectly with the brass rocker screw, creating a perfect 'ball and socket' joint. Finally I cut the excess brass screw to the proper length, added a little petroleum jelly and the bridge saddle returned to pitch perfectly.

ILL-FITTING BRIDGE BASES: ANOTHER LITTLE FIX

It's not uncommon to find a Gretsch with a bridge that fits the top very badly, perhaps after someone sanded the



Black superglue bridge fix – spooky stuff!

bottom to lower the action. There's a good way to fix this but, again, don't embark on this operation without professional help.

First, you can use a light to check for gaps between the base and the top. Next – be careful! – mix an amalgam of medium-viscosity black superglue with fine ebony sawdust, and slather it on the bottom of the bridge base. Place this mess quickly on an all-important and carefully laid-out protective bed, right where the bridge will rest, then string to pitch as fast as possible. The top is



...pressed into place over well-prepared protection

protected by: 1) thin self-stick signmaker's paper (layout marks on the masking tape at each end align the bridge); 2) wax paper covering the signmaker's paper and taped flat in



Finally, any high spots can be removed for a perfect fit

place (wax paper alone could melt through from the heat of the epoxy).

When the glue has set, cut away the excess before the epoxy dries too hard, then check with feeler gauges to find any remaining gaps. Finally, you need to hand-scrape any area of the bottom surface of the base which is still fractionally high and thus creating a gap, until the bridge fits tight. The finished guitar played great... and looked great, once the incorrect walnut brown re-staining had been stripped off and the whole guitar – the last of the great 6120's, in my opinion – refinished



Erlewine and restored Gretsch in perfect harmony. Aww.

to match the orange of later Gretsch Country Gentlemen models... the colour that it rightfully deserved to be, the colour of a Flagstaff Sunset.

Dan Erlewine works for Stewart MacDonald's Guitar Shop Supply, suppliers of, crikey, practically everything to the guitar building and repairing trade (see www.stewmac.com). Dan's new book *How To Make Your Electric Guitar Play Great* (Miller-Freeman publishing) is out soon, with plenty on Bigsby's, many other vibrato systems and much, much more besides. Watch for a full review in TGM soon.

