

Guitar Technical Services

PETER ALLEN

PHONE 01926-499012 www.guitartechnicalservices.co.uk mail:guitar_technical_services@msn.com

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Bigsby, Jazzmaster, Jaguar, Mustang Tremolo Staying in Tune!

The one thing all the above tremolos have in common is that they are blamed for not staying in tune. Often this is down to user error. The main reason for it going out of tune is people not understanding the tremolo and how it's supposed to operate. The Bigsby tremolo is one of the first commercial vibrato systems and has been used to good effect by Duane Eddie, PJ Harvey, Ripley Johnson, G. Love, Jeff Wootton, Keith Richards, Jimmy Page, Eric Clapton, Mick Taylor, George Harrison, Paul McCartney, Johnny Marr, Jimmy Page...etc.

To begin with, my enlightenment to tuning issues came from Kent Armstrong – the great pickup maker – who explained that the tremolo bridge is meant to 'move'. The problem people have with the tremolo is their perception of the strings needing to 'saw' backward and forwards on the top of the saddles. To this end people buy roller saddles. This is usually a retrograde step for 2 reasons. Firstly they think that this will solve the problem and secondly, often the radius of the roller saddle bridge is either too flat or too curved and doesn't mirror the fretboard.

One thing that has been noticeable on the recent Gretsch guitars fitted with the Bigsby is the inclusion of a couple of pins to locate the bridge. I have seen the base of the wooden bridge's glued down. According to Kent Armstrong the whole reason for the tremolo staying in tune is to allow the bridge to lean forward and backwards when the tremolo is in operation. This reduces the 'sawing effect' on the top of the saddles.

So the solution to a stable tremolo whether it is a Jazzmaster, Jaguar, Mustang or Bigsby equipped guitars, is to follow this procedure.

1. Firstly to fit the strings correctly to the machine head capstans. This can be done with a 'one-turn string lock method', locking tuners or 3 turns at least running down the post (no more than 5 turns).
2. Always tune up to the correct pitch from below the note, rather than downwards
3. Pre-tension the string by bending each string in normal playing fashion - i.e. about 2 string positions across the fretboard at the 12th fret (middle of the string). Let it return to its normal position and then check the tuning meter. You do not need to use one finger to bend the string as if you are playing it - style does not count when pre-stretching, you can use 3 or 4 fingers. Ensuring that new strings are pre-stretched is very important to maintain the set-up and stability.

4. When bending the strings note that the tremolo arm will dip as the string increases tension from the bend. So to combat this effect, hold the tremolo arm whilst bending the string.
5. Re-tune up to pitch and bend each string in normal playing fashion again! This procedure may have to be repeated up to 6 times or more to achieve stability.
6. When the strings have reached their optimum tension you will be able to bend and release the string and it will stay in tune. Even if you do not normally bend strings during playing, this method should be used to stabilise tuning and to make the truss rod work against the correct string tension.
7. Note - Over-stretching a string can sometimes result in damage to it or even breakage. If the intonation is correct and you suspect a faulty string, check the percentage error on the 5th fret. If you have pre-stretched the strings correctly, the 5th fret reading should ideally be Zero, but up to 10% sharp is normal and acceptable. If the note is above 15% sharp - and they can even go up to 30% - it is most likely that the string is defective or it wasn't properly pre-tensioned (see above). Please note that too much finger pressure will also give false readings.
8. Having pre-tensioned the strings, our attention can be focused on any other problems. Look for snagging in the nut slots. A simple trick once the guitar is tuned to pitch is to press down on the string behind the nut and release. If the note raises in pitch, it indicates that there is friction pinching the string (probably from a narrow slot). Thin wraps of fine Wet or Dry 3M paper should slightly widen the slot. Do the test again to see if the problem is resolved. The strings should move back and forth without being impeded.
9. Now to the bridge saddles. Sometime the saddles can have burrs on them and this can act like a ratchet, especially on the wound strings. These burrs can be removed with a 'needle file'.
10. Teflon oil/grease applied to the nut slots and saddle tops will reduce some friction.
11. After all these points have been checked, the tremolo should now be ready for setting. Looking at the bridge and its position on the guitar, **the bridge should be vertical**. All too often when restringing, the strings will pull bridge forwards. This slight lean forward may not be noticeable but it is important to correct it by a slightly pushing it towards the tremolo to straighten or make vertical.
12. Now tune the guitar and use the tremolo arm downwards and upwards and re-tune the guitar. According to Kent Armstrong you will see that the bridge topples forwards and backwards with the use of the tremolo arm. The looseness and swaying effect gives rise to the tremolo staying in tune! The process for settling the tremolo should be to tune the guitar and 'hand the tremolo' (up and down movement) several times before playing commences. The concept is - equilibrium between the bridge and the string.

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As you can see from the instruction above the stable use of the tremolo depends on no snagging and a freedom to have bridge sway when the tremolo arm is used. One point to mention is to only adjust the intonation when the tremolo is stable and the bridge upright – the string having found its equilibrium between the bridge and the string. Its also important to check the intonation again after 'handing the tremolo'. It you adjust the intonation, Lift the string and rest it on the saddle afterwards.

I can say that when the above method is used and applied to the vibrato, the Bigsby, Jazzmaster, Jaguar, Mustang Tremolo, it will stay in tune with very little error. Obviously if the vibrato is over-used then the percentage of error increases but these units were never intended for excessive use, only the gentle wavering of the note!

Tip: On restringing one string at a time - tune upwards and then lift the string off the saddle and place it back to reduce the forwards pull on the saddle.