

The exact distances that each of the individual bridge saddles need to be shifted back relative to the bridge saddle for the high-E string depends on the gauge of the string, the physical nature of the string itself - the string material, how the string was physically made (the wire-drawing process, and winding the outer string, if this is a wound string), and also the action of the guitar (height of strings from the frets on the fretboard). For a given set of strings, with a specific gauge of string diameter for each of the six strings the locations of each of the individual bridge saddles need to be adjusted for proper intonation of fretted notes over the full scale of the fretboard. If the bridge saddles are then properly adjusted, but then the guitar player decides to use a different gauge set of strings, or even a different brand of the *same* gauge strings, likely the bridge saddles will require further adjustment!

The procedure for saddle adjustment, for proper intonation of an electric guitar is as follows. First, *never* attempt to adjust the bridge saddle locations on a guitar with old, or “dead” strings on the guitar - do this *only* after you have put on a new set of strings *and* have played them just long enough (with clean hands!) so that they have “settled down” and are stable, tuning-wise. Dead strings, which are dirty from the build-up/accumulation of skin cells, sweat, finger grease, dirt, etc. do *not* intonate properly - the mass per unit length, μ of the string is no longer constant along its length (!), and the accumulation of “grunge” on the strings also has a direct impact on the effective rigidity of the strings - especially the wound strings. Do *not* attempt to adjust the bridge saddle string compensation immediately after re-stringing your guitar - the strings need some time to settle down - break them in by playing a bit, allow the strings to stabilize, e.g. overnight.

Since the high-E string is closest to an “ideal”, perfectly linear guitar string, start with this string. Holding the guitar as you would normally play, tune up all of the strings to their correct pitch using an electronic guitar/bass tuner, or some other kind of electronic tuner – e.g. a chromatic tuner. Use a good-quality tuner, one which the tuner also displays how far away from the desired note’s frequency you are, in cents. Having done this, then fret & pick the twelfth fret, of the high-E string, one octave above the open high-E string, playing the guitar exactly as you would normally do. Using the cents reading from the electronic tuner, if the bridge saddle for the high-E string is adjusted correctly, the pitch (i.e. frequency) should be identical to that of the pitch associated with the open high-E string.

If the pitch of the fretted note on the 12th fret of your guitar is *low* relative to the pitch of the open-E, this means that the bridge saddle for the high-E string is *too far back*, and needs to be moved *forward* (i.e. closer towards the neck). If the pitch of the fretted note on the 12th fret of your guitar is *high* relative to the pitch of the open-E, this means that the bridge saddle for the high-E string is *too far forward*, and needs to be moved *back* (i.e. farther away from the neck). Make the adjustments to the position of the high-E string bridge saddle, using a good-quality, suitably-sized screwdriver. If the bridge saddle adjustment screws are at all stiff or sticky, when you *next* re-string your guitar, it is a good time to clean the bridge saddles, and e.g. lubricate them (very sparingly!) with a good-quality lubricant, such as medium-grade key oil, used for lubricating the keys & valves of brass & wind instruments.