

# SYMPTOMS OF A DRY GUITAR

## OR SOLVING THE MYSTERY OF THE SUNKEN

No environmental condition can do more damage to your instrument than **low relative humidity (RH)**. Many areas of the US experience naturally low humidity all year long. The entire Rocky Mountain region, for example, has notoriously low RH levels, as do Phoenix, Reno, Las Vegas, Tucson, and a number of other cities. In most regions of the country, however, low RH levels accompany the onslaught of winter, mostly due to the effects of artificially heating our homes and buildings.

If you've read the various references to humidity-related problems published in our quarterly newsletter, *Wood&Steel*, you know that the colder months wreak havoc on acoustic guitars made of solid wood. As the weather turns wet and temperatures free fall, there is a natural tendency to crank up indoor heating units. Unfortunately, what many don't realize is that **heating a room forces the relative humidity down to a level that poses a real threat to quality acoustic guitars by literally drying them out**. The following information deals with the adverse effects that "drying" has on guitars, the characteristic indicators of severe drying, and the steps one can take to counteract those effects.

Occasionally, we get a call from a customer who is convinced that his guitar has a bad neck. He will cite specific problems, which frequently include a huge **hump at the 14th fret** and strings that are extremely close to the frets. The strings "**buzz**" when played in the high registers, but it would seem that raising the saddle enough to rectify the problem would result in an uncommonly high saddle.

In such cases, we immediately rec-

ognize that the guitar has "dried out," thus causing a number of related problems: **The arch in the top sinks, taking the bridge with it; the neck bows forward, necessitating a truss rod adjustment; and the fingerboard shrinks in width, causing the sharp ends of the frets to extend beyond the edge of the neck.**

Combined, these events can make a guitar look as though it has a badly made neck. Actually, the neck is fine — the problem is with the *body*, and that can be restored to good condition with a truss rod adjustment and the use of a soundhole humidifier (e.g. a "Dampit"). However, many customers still find it hard to believe that so simple a solution as **humidifying the body will fix what appears to be a grave problem with the neck**. Let us convince you.

When we make a guitar, the wood first is dried, "seasoned," and acclimated to a certain moisture content. We follow the same, painstaking procedure on all of our guitars. As a result, all guitars leave the factory in the same condition, and all will react more or less the same when exposed to changes in humidity.

Our factory is climate-controlled to maintain a temperature of 75 degrees and a relative humidity of 47 percent. This consistency causes the wood to

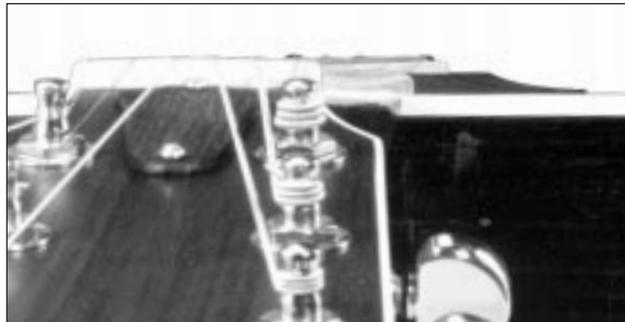


Photo 1. Dry guitar with an unadjusted neck.

*This photo shows a guitar that became "dry" due to exposure to low humidity. After weighing it on a gram scale, we found its total "dry" weight to be 2,162 grams. It appears to have a defective neck.*

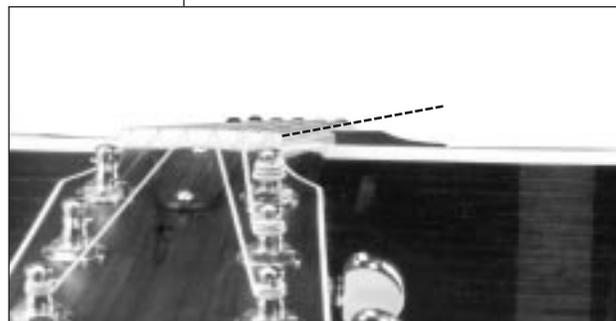


Photo 2. Dry guitar with the neck adjusted straight.

*However, because the guitar body has not been humidified yet, the bridge still sits below the correct plane of the neck angle. Notice how close the strings are to the fretboard. Re-humidifying the body will cause the top of the guitar body to swell, the bridge to rise, and ideally the string action will be back to factory specs.*



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equalize at a specified moisture content. As the wood's moisture content changes, so does the size of the wood. Spruce, in particular, shrinks and expands a tremendous amount as it gains and loses moisture. For example, let's say we condition a spruce top in a room that is 47 percent RH (relative humidity), and then cut that spruce to a width of 16 inches. If we then were to lower the room's RH to 30 percent, that same piece of spruce would shrink to 15.9 inches in width — shrinkage of almost 1/8 of an inch! If, instead, we were to raise the room's RH to 60 percent, the spruce would swell to 16.06 inches, an expansion of almost 1/16 of an inch.

Relative humidity is not an arbitrary matter. We prefer 47 percent RH because it is a very "normal" or "median" humidity. When built at that RH level, a guitar can be exposed to more or less humidity and still perform well. The more extreme the temperature and/or humidity fluctuations, the sooner the guitar will be adversely affected.

**The good news is, your guitar can be protected from many changes simply by storing it in its case.** If it does become too dry, both its moisture content and its shape can be restored by exposing it to humidity. A soundhole humidifier accomplishes this very well.

Now, study the accompanying photos of a guitar that was sent to us by a customer. A soundhole humidifier and a truss rod adjustment were all that was required to reverse this disastrous situation.

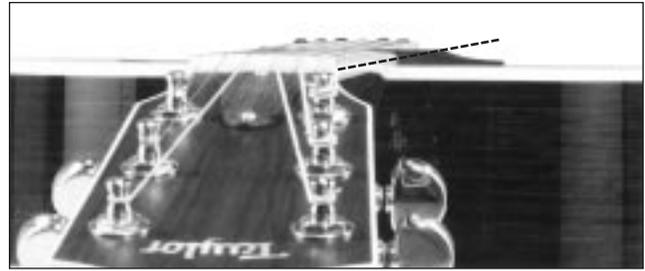
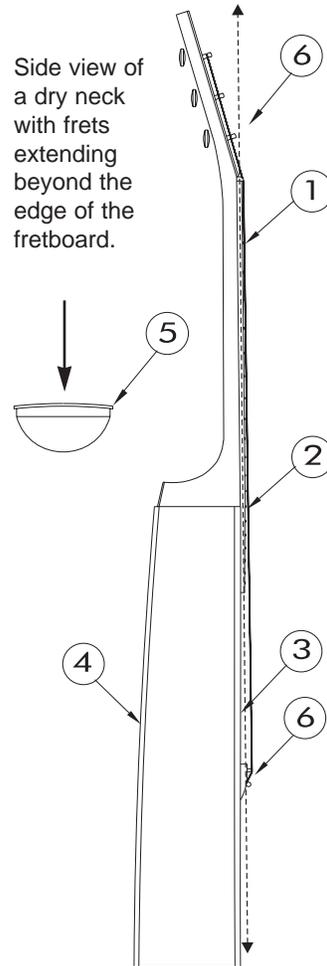


Photo 3. Properly humidified guitar with an adjusted neck.

*This photo shows the same guitar properly humidified and with the truss rod correctly adjusted. A "Dampit" was installed inside the guitar, which was placed in its case for four days. The case was opened only to re-wet the "Dampit." The guitar again was weighed on a gram scale. Its total weight now was 2,187 grams, indicating a weight increase of 25 grams (.90 ounces of water). Note: two Dampits often are used simultaneously for very dry guitars.*



Side view of a dry neck with frets extending beyond the edge of the fretboard.

Figure 3. Illustration of a **NORMAL** guitar. **Look for symptoms of drying in areas indicated by the numbers.**

1. Low action. Strings are very close to the fretboard.
2. Hump on fretboard where neck joins body.
3. Sunken top across the soundboard between bridge and fingerboard.
4. Back of guitar looks very flat.
5. Sharp fret ends extend beyond the edge of fretboard.
6. The plane of the neck angle on a dry guitar hits above the top of the bridge.



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## ADDITIONAL INFORMATION

We recommend using two Dampits to revive a dry guitar.

**BE SURE TO SQUEEZE EXCESS WATER FROM THE DAMPITS. THEY SHOULD NOT DRIP WHEN HELD VERTICALLY. IF DRIPS OCCUR, SQUEEZE MORE WATER OUT UNTIL THEY STOP DRIPPING.**

Insert two Dampits in the body of the guitar, put it back in the case and close the lid. It usually takes three days to see results, but you can check the guitar daily for improvement.

The guitar described in this

article was very dry and required three applications over a period of nine days to restore it to the correct humidification.

It is possible to *over*-humidify a guitar. As the arches in the top begin to be restored, proceed with caution. (Check daily).

A soundhole humidifier will restore the body. It will also affect the neck, but to a lesser degree. The frets may remain sharp, and may need to be filed.

### STORE OWNERS AND MANAGERS

If a proper humidity level is maintained in the store, the guitar will not become dry in the first place, thus precluding any need for repair work. The humidity level should be kept at about 50 percent RH. It is easy and affordable to humidify a store, and there are professional people who can help

you accomplish the task. We'd be happy to assist in putting you in touch with the right people.

The relative humidity within your store will vary from area to area, according to changes in temperature. If you have high ceilings, *do not* display your solid-wood acoustic guitars up there, where heat accumulates. Instead, put them lower, where the temperature is more normal. Keeping them away from outside doors will help protect them from the drying effects of weather. There are inexpensive ways to de-stratify the temperature layers in your building. Feel free to call us for advice on this matter.

One final note: Please instruct your customers to store their guitars in their cases. The case will protect the guitar from most of the ravages of low humidity.

