

THE GUITAR OWNERS BIBLE

(The Truth About Guitars and Other Lies)

Matt Umanov

In this article, I will pass along some of the more significant things I have learned over the years about what to do and what not to do with, for, and about fretted instruments. Most of you are into guitars, so I will use guitars as examples throughout.

It is more important than most people think to be careful with a guitar. This doesn't mean babying your instrument and tucking it in every night, but there are a few sensible rules that should be religiously followed, viz:

1. Avoid extreme temperature changes

No one says that you can't take your guitar into bright sunlight or play it in the cellar, but don't try to rectify its condition by immediately exposing it to an extreme opposite. I once built a guitar for a friend who didn't think twice about leaning it against the airconditioner over night. This was right after it sat on the back seat of his car all

day, sans case, in mid-July. I couldn't begin to tell you about the tears that were shed the following day.

2. Get a hard-shell case

How expensive you say, and what a pain to lug it around. Annoyance though they may be, they're really worth it if you have any intentions of taking a good instrument out of the house. Good hard cases are usually made of pressed plywood and lined with some sort of soft material. There are also the newer jet-age fiber-glass cases which will take an incredible beating. The cardboard-type cases are O.K. for a short time, but water destroys them and the handles always fall off. Heavily padded soft cases are preferred by many for their portability, but I'm a bit leery of a flexible type of case.

Note A. The first thing to do after you've bought a new hard-shell case is to make sure that it's not locked. Then throw away the

key. I guarantee that the first time you lock the case you will immediately lose the key. Besides, it's just as easy for someone to steal a locked case with a guitar in it as it is to steal a guitar without a case.

Note B. It pays to be paranoid about flying in an airplane with an instrument. New F.A.A. regulation prohibit carrying instruments on board, and it all goes down the same hatch as baggage (HA!). Here hard cases are a must. And be sure to loosen the strings completely.

Note C. Although I personally have not found it necessary, some people like to keep de-humidifiers in their guitar cases. This keeps the air in the case at a fairly constant moisture level. A few guitar companies manufacture these but a small, damp sponge or a piece of apple will do just as well.

3. Home-Brew Repairs

Here is where the feathers really begin to fly. Many

self-taught musicians have a hazily-formed opinion that if they learn to play by themselves, they can also do simple but adequate minor repair work themselves. For the most part, this just ain't so. Guitars are a lot more delicate than you could ever imagine. Wood is composed of tubular fibers with pointed ends and these fibers range from 1/8"-1/2" in length for hardwoods (rosewood, mahogany) to 1"-3" in length in soft woods (spruce, the most common wood for guitar faces). When a break in the grain structure occurs for any reason, the wood must be perfectly lined up before it can be glued together. This requires more patience than most people have. In case of a sudden catastrophe loosen the strings completely and speak to a competent repair man. The worst thing you can do is to run out and buy lots of epoxy glue and/or Scotch cellophane tape and go to town on your guitar. Epoxy is pretty permanent stuff, the only known solvent being LSD, which will dissolve anything. If the wood isn't perfectly aligned when the glue dries, you're in trouble. Cellophane tape, another scourge of guitar repairmen everywhere, is al-

most as bad. The gum on it is detrimental to many finishes, and it leaves a sticky deposit which is difficult to remove after the tape has been peeled off. If tape is a must for a temporary repair, use masking tape (Scotch Brand is best). It is easily peeled off, although if left on for more than a few days it will also leave a sticky deposit. Also, watch out for those small slivers of wood that come loose from the instrument. Every last one is important.

There are some of you who will insist on doing your own repair work anyway. There is not room or reason here for me to give a lengthy dissertation on the various facets of fretted instrument repair. I can, however, make a few suggestions. Make repairs using a good quality *water-soluble* glue (Elmer's is too weak.) and don't clamp anything too tightly. Supplies are available from H.L. Wild, 510 East 11th Street, New York 10009.

Think out each step carefully, work slowly, and be prepared to re-do it when it doesn't come out quite right the first two or three times. Finishing (lacquer, etc.) information and supplies are available from Behlen Brothers, 10 Christopher Street, New York 10014.

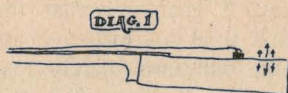
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String Action.

There is more controversy about string action amongst people who know nothing than there is about anything else. Here are some facts.

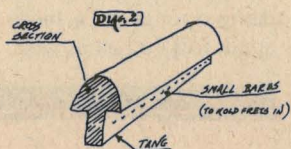
A. The lowest possible action on an acoustic instrument is *not* necessarily the

best one. Some people have the erroneous notion that if an electric guitar can have a near-zero action, so can an acoustic one. The difference lies in the nature of the bodies. On most electric guitars, vibration of the top is an insignificant, if not undesirable factor as the electronic circuitry does all of the work. An acoustic guitar, however, relies on the resonating power of the box for its sound. In general, the top will move up and down like so:

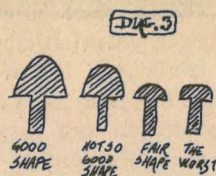


That means the strings will move up and down accordingly, and if the action is too low, the strings will hit successive frets as they vibrate. When a string is pressed down at any fret, it must be able to clear the top of the next fret, with added room for its own vibration. In order to get a good, clean sound at each fret, it is better to have the action a bit high rather than a bit low.

B. The second factor determining string height is the shape of the frets. Virtually all modern guitars use the "T" type of frets.



They are hammered into slots cut into the fingerboard and are held in place by small barbs on the tang of the fret. On good guitars each fret is shaped and filed by hand, preferably to a thin, high profile.



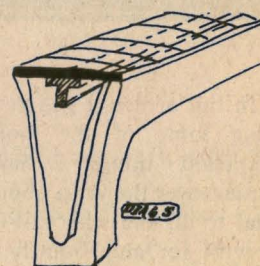
Low, flat frets generally produce a muddy sound. If the frets on your guitar are worn flat from use (or a kitchen-table fret job) it is advisable to have the whole neck re-fretted. Replacing just a few will not always suffice as the new ones will have to be filed down somewhat to meet the height of the remaining old ones.

C. All this brings us to the very debatable topic of neck straighteners, adjustable truss rods and the resetting of necks. There is the great fallacy that adjustable truss rods are groovy because all you have to do is crank down the rod and presto—down goes the action. What a laugh! Adjustable truss rods have only one function and that is to keep the neck straight from the nut to that point where the neck joins the body. It works by exerting longitudinal pressure along the length of the neck, and is placed in such a way that when the hex nut is tightened, the neck itself is bent back from the middle.

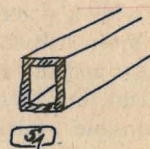


Tightening the truss rod past the point of straightness therefore, *can* lower the action, but only at the expense of having a warped neck, which will invariably result in horrendous buzzing around the 7th or 9th fret. In theory, the truss rod principle works well, but in practice, a neck will usually twist a little rather than

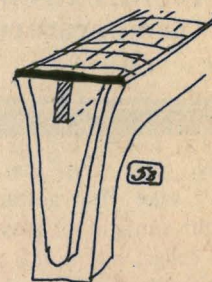
bend evenly, because no neck has exactly the same grain structure on both the bass and treble sides. The Martin Company avoids this problem by never using adjustable truss rods. They select their wood carefully so that an adjustable rod isn't necessary and supplement this with a non-adjustable T-bar embedded in the neck where you can't see it or fool with it (diagram #5).



In recent years, Martin has changed from a T-bar to a hollow square bar (diagram #5A). Martins with 12-fret



necks have a strip of ebony instead of steel, because the neck is shorter and needs less added support (diagram 5B).

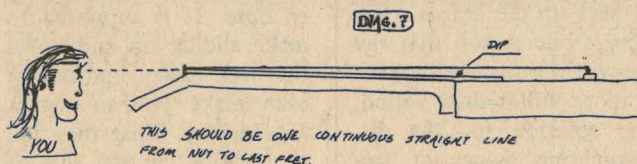


Out of all the Martin guitars I have played or worked on, only a very few had necks warped badly enough to warrant major surgery, and most of these were made during World War II, when steel was at a premium, and

guitar manufacturers had to do without. A precautionary word to those of you who own guitars with adjustable truss rods and want to fool with them—don't. They are by no means unbreakable, and it is better to let someone who knows what he's doing take care of the adjustments. A broken truss rod is a very involved (read: expensive) item to replace.

Now that the neck of your guitar is reasonably straight and the frets are cool, you may still have a problem with a too-high action. You can follow one of two plans of attack. If the saddle rises more than $3/32$ " above the top of the bridge, it can be filed down. It must be filed *evenly* and polished, as opposed to digging six notches into it. A notched saddle will dampen string vibrations. The height of the saddle, however, will affect the volume and the stiffness of the strings. By stiffness, I mean the amount of "give" a string has when it is played with a pick or your fingers. High saddles produce a loud sound and a stiff action. If you use a flat pick and/or play heavily high saddles are for you. And, conversely, low saddles for a looser string action. Bear this in mind when having your guitar worked on. Plan #2 is to have the neck reset. This involves changing the angle that the neck makes with the body

their necks reset after a number of years (although I have a theory). It's just a fact of life that has to be accepted, but rest assured that once it's done it will probably never need it again. If the action is high, you can tell if the neck needs re-setting by looking along one edge of the fingerboard. A noticeable dip where the neck joins the body will indicate that a reset is in order.



P.S. Don't even think of attempting to fix this one yourself, unless you are prepared for almost certain disaster. It's more than tricky.

5. Strings

A. Steel strings

The three types of steel strings are as follows:

1. **BRONZE WOUND ON STEEL CORE.** These have the warmest sound, and are the most widely used. The 1st & 2nd

strings is the Folklore Center-Fretted Instruments brand or Darco Black Label. They are identical to and made by the same manufacturer as many of the higher-priced brands. The only difference is in the package and the price. (An unsolicited plug: Folklore Center, 321 Sixth Ave., N.Y., N.Y. 10014.

2. **MONEL-STEEL STRINGS.** These have a sharper sound and tend to go dead rather quickly, but sound really nice once they're dead. And they last a long time. Excellent on Gibson guitars. Some good brands: Folklore Center Fretted Instruments, Gibson, Black Diamond.

3. **FLAT-WOUND STRINGS.** These were designed for electric guitars, where smooth, silent, and fancy sliding is a must. They produce a rather dampened sound on acoustic guitar and are recommended only as a last resort.

All three types of steel strings, except one, come in four gauges—extra light, light, medium and heavy. (The exception is monel which I haven't yet seen in extra-light.) A good rule to follow is that the lighter the gauge the more tone and less volume. Light gauge bronze strings have been found to be more than adequate for all large guitars, but mediums are O.K.,

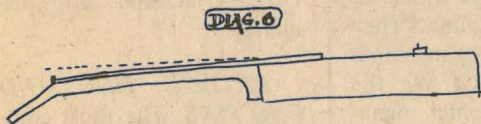
if you really like to pound away. Heavies are reserved for arch-top guitars and those few idiots who insist on being the loudest guitar player on the block. They often get their just desserts though, when their instruments begin to buckle and warp.

B. Compound Strings

Compound strings, sometimes referred to as silk and steel, have the four lowest strings made of a fibrous synthetic core wound with some sort of metal alloy. They are almost always of extra-light gauge, and sound wonderful on small guitars intended for use with regular steel or bronze strings. Sometimes, they can be put on guitars intended for use with nylon strings only, but it is not generally recommended, as the extra tension might neatly (or not so neatly) remove the bridge from the face of the guitar. There may also be a tendency for the face to buckle upwards behind the bridge. There is a variant on silk and steel strings, that bring silk and bronze, which, as the name implies, is wrapped with bronze instead of steel. They have a warmer sound than silk and steel, and I like them very much. Brands:—Folklore Center-Fretted Instruments; Goya.

C. Nylon Strings

There are a few purists,



THIS NECK HAS BEEN SET BACK A FEW DEGREES. DOTTED LINE SHOWS ORIGINAL POSITION.

No one has yet been able to figure out why some steel-string guitars need to have

strings are plain steel and unwound. The best bargain in bronze-wound

I'm sure, who insist that the original gut strings are still the best, but since the ready supply of cat and sheep gut seems to have run out, we will concern ourselves with the more recently developed nylon strings only. Even here the subject is open to much conjecture. The most common brands have the three bass strings wound (metal on nylon) and the three treble strings unwound (plain nylon). More recently they are available in a violent array of psychedelic colors, but there doesn't seem to be much difference between brands as far as quality goes. For the average guitar player they are all O.K. There are, however, a few brands which are definitely a few notches above the rest, notably *Concertiste*, *Savarez*, and *Augustine*. Savarez strings have the advantage of being available in regular tension (red package) and high tension (yellow package). You can also get wound first, second and third strings in this brand.

SOME MORE THINGS TO KNOW ABOUT YOUR GUITAR

BRACES. A lot has been said about the bracing pattern of Martin guitars, and all of it is true. Here is the basic story. Martin guitars have always been noted for their fullness of tone and durability, both due in no small part, to the way in which the braces under the top are laid out. At the

close of World War II, the Martin people found it no longer feasible to make the top braces quite as thin and light as they had been doing for over a hundred years. This was due to the fact that the Martin instruments were becoming increasingly popular, being taken overseas, and in general being mishandled by the newly-blossomed, mostly uninformed guitar-buying public. The lifetime guarantee being at stake they decided to beef up the braces a bit. This is one reason that the pre-war Martins usually have a more full-bodied sound. The solution for the discriminating owner of any post-war Martin is to have the top braces shaved down to pre-war specifications. This can be done by any guitar repairman who is well-versed in the discipline of Martin guitar construction. Cutting down the braces can make an amazing difference in the openness and richness of the sound. It must be noted however, that if you are the original owner of the instrument and the braces are cut, Martin will void the guarantee as to defective materials.

INSURANCE. The best advice here is to get lots of it, especially if you live in New York City and/or do much travelling by air. You can usually get a separate "floater policy" for your instrument, which covers it for loss due to fire or theft wherever you take it.

CLEANING YOUR GUITAR. Although it's not necessary to keep your guitar spotless, a good cleaning once in a while will keep the finish in good condition, and the guitar well protected. The best cleaners and polishes I have found are:

1. Michael Gurian's guitar polish and cleaner. Available in fine guitar shops.

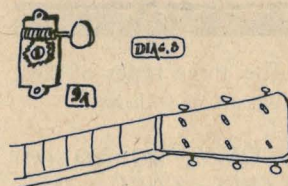
2. Meguiars Mirror Glaze, #MGH 10. This is available in better guitar and motorcycle shops and is sold as a polish for plastics.

Avoid those small bottles of Goya and Gibson polishes. They are a rip-off. Also don't use heavy waxes, oils and furniture polishes.

One last thing to avoid like the plague is a "fingerboard lubricant" called *Tone Finger Ease*. It is supposed to make sliding up and down the neck easier, and maybe even make you an instant Joe Maphis. What they fail to mention on the side of the spray can is that this stuff, if accidentally sprayed on the back of the neck, will cause *some* finishes to peel, crack, bubble, and split. This could be the burn of the decade. Don't chance it.

TUNING MACHINES.

Most steel-string guitars, being of the 14-fret neck variety, have individual tuning machines coming straight up through the peg-head (diags. 8 & 9A).



There has recently been produced by Schaller of Germany, a set of super G, sealed, single unit machine. They are the best tuning machines I have seen. Of all the American companies manufacturing this type of machine today, the best by far is Grover. They make four straight-through types, starting with *Sta-tite*, their cheapest. These are surprisingly good for exposed

gear machines, and cost about \$9.00 a set. The next is *Slimline*, similar to *Sta-tite*, but with covered gears. The best are *Rotomatics*, though they are both heavy and expensive (\$27.50 a set). The gears are sealed and packed in grease, and the 12-1 gear ratio is accurate for fine tuning. The most expensive Grover machines, the name of which I forget, are awful. They are big, ugly, heavy, expensive, and don't work very well, due to excessive play in the gears.

The selection of machines for slotted-head steel-string guitars is a bit limited. Grover *Slimlines* come in this side-mounting variety, and that's about it for quality individual machines. Waverly and Kluson make sets of 2 strips with 3 machines on each (diag. 9).

DIAG. 9



Some people have altered *Rotomatics* for use on slotted-head instruments, but the machining process is tedious at best. Sometimes an old set of individual side-mounting machines can be found, usually Grover, and they are almost always good. Also O.K. are some pre-war Waverly and 19th Century Jerome strip machines.

BRIDGE PINS AND END PINS. The most common problem with bridge pins is trying to get out those pesky ones that insist on sticking in the bridge. Before resorting to pipe wrenches, pickaxes, and hydraulic bridge-pin pullers,

try these methods:—

1. Loosen all the strings and try pushing the pins out from underneath by reaching through the sound hole. If the pin is starting to make a sizable puncture in the end of your finger, use a coin or some other hard, flat object as a go-between.

2. Pliers are OK when carefully used. They may leave some marks on the pin, though. Pull straight up

without twisting, as the groove on most pins will catch on the string and the pin may break off in the bridge. End pins are a must if you are going to use a strap. If your guitar has none, the easiest kind to put in is the screw type.

DIAG. 10



The tapered ones require a tapered hole. When putting in an extra pin where the neck joins the body, be sure not to screw it into the heel of the neck itself, as it might split the heel. The neck is mounted in a large block of wood (inside the body), and so it is best to put the pin next to the heel, about 1/2" away.



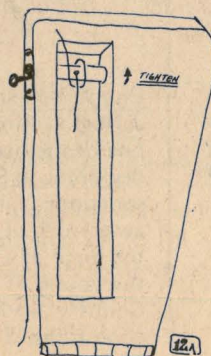
DIAG. 11

There really is a Best Way to attach strings to the tuning machines. Here it is.

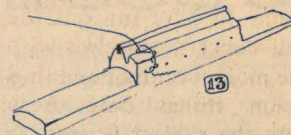
DIAG. 12



Having the string go around the post only once or twice is very good. Having the string go around the post forty six times is very bad, mostly because it's messy and hard to remove comes the time to change strings.



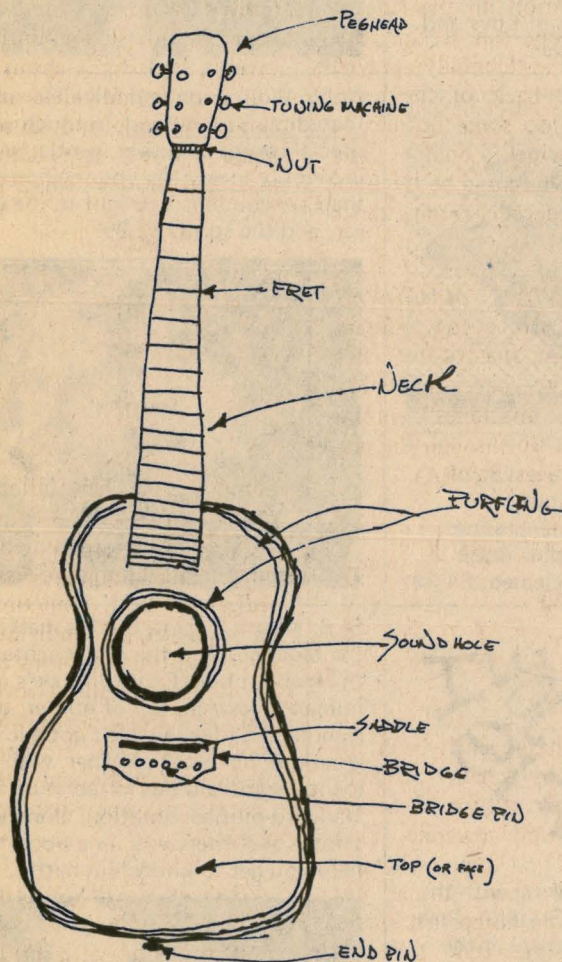
And here is how to attach nylon strings at the bridge:—



I will gladly answer any sensible questions at my shop at 35 Bedford St., N.Y., N.Y. 10014, (212) 675-2157 Noon-7 P.M., Tues.-Sat. Stamped self-addressed envelopes are nice.



The walls of Matt Umanov's Guitar Shop are bedecked with the handsomest 5 and 6 stringed jewels you'll ever want to see. Guitars, banjos and mandolins of rare vintage and brand spankin' new. But nestled amongst these treasures is a warning to one and all; "Will all those who want their action as low as possible without buzzing please leave immediately". You'd have to know Matt to appreciate how much that sign expresses his hard-headed approach to the tricky business of guitar repairing. But fear naught. When you place your ailing love into Matt's hands you can be sure he'll deliver a diagnosis with all the assurance of the Surgeon-General. And once your heavy heart has been lightened, you can turn your attention to the aforementioned treasures or just sit down and dig the fine pickin' and strummin' that's usually goin' on at Matt's place. And if that doesn't cheer you then Susie Umanov will tell you about a worse case than yours. And if that doesn't work you can always pet Ivan the cat. He understands.



VARIOUS PARTS OF SORT OF A STEEL STRING GUITAR.

*CLASSIC GUITAR IS SIMILAR EXCEPT FOR SLOTTED PEGHEAD (DIAG. 12A), AND BRIDGE (DIAG. 13). THERE ARE MANY OTHER VERY BASIC DIFFERENCES, BUT THESE ARE THE MOST APPARENT EXTERNALLY.