

Mobius Megatar Tapping Bass

# Owner's Guide



**Thank You! For purchasing the Mobius Megatar\*  
Specialty Tapping Bass — Here's to your  
journey in Opening the World of Music ...  
one song at a time!**

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**MOBIUS MEGATAR, LTD.**

\* megatar, *noun* An instrument designed for two-handed touch-style play with one group of strings for bass and another group of strings for melody.

**Mobius Megatar, Ltd.  
USA Contact: Mobius Megatar USA  
Post Office Box 969  
Fairfax, CA 94978  
(415) 435-8803  
[www.megatar.com](http://www.megatar.com)**

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**PUBLISHER'S NOTE:**

These documents are intended to accompany a new Mobius Megatar Specialty Tapping Bass, for the purpose of providing basic use and maintenance information for the new owner.

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## Thank You!

### **We Appreciate Your Investment in this Instrument!**

It's a significant investment, to purchase a professional musical performance instrument. It's a step into an unknown future. It's not always easy.

So we want you to know that we have built this instrument the best we know how, and have sincerely attempted to give you the best value, reliability, and good sound possible.

We hope you enjoy this instrument. It should serve you faithfully for many years, and bring pleasure to you and to your audience.

### **Taking Good Care of Your Instrument**

A guitar or a bass does not require a lot of coddling. It's not like a sports car or a sailing ship.

But basic knowledge of how to 'set up' your instrument to get the best playability and sound will serve you well.

And a few guidelines to care for and protect your instrument will preserve your investment.

### **The Mobius Megatar Website**

Over time, Mobius develops additional materials of interest to touch-style musicians. Please visit our website to gain access to these materials.

Visit us at <http://www.megatar.com>

### **Questions Not Covered in this documentation?**

Please call us or send us email. We will use your questions to create additional documentation, so the next guy finds things a little easier.

Write us at POB 969, Fairfax CA 94978 USA

Email us at [tappers@megatar.com](mailto:tappers@megatar.com)

### **Tapping Pro? New Guy?**

If you've been playing touch-style for many years, we hope you enjoy the enhancements we've made to basic touch-style design in this instrument.

And if you're just starting out to play this style of music, you're in for a treat!

## Table of Contents

---

**What's In The Box?**

---

---

**Introduction to the Tapping Bass**

---

**Man, you must be Putting Me On!**

---

---

**Basic 'Set-Up'**

---

**The Feiten Intonation System**

---

---

**Amplification and Sound**

---

**Pickup Array Facts**

---

**Care of Your Instrument**

---

---

**Accessories**

---

**Your Warranty**

---

---

**Contact Information**

---

## What's In the Box?

### 1. Your New Tapping Bass

The TrueTapper instrument comes with the TrueTalker dual pickup-array, with one 'dual-rail' type pickup for bass strings and one dual-rail pickup for harmony/melody strings.

The dual-rail pickup design produces a powerful signal and a clear sound. Because we designed the TrueTapper to be a versatile instrument, it made sense to provide pickups with plenty of full-frequency content and a clear tone. This way, in performances where you want to sound bright and clear you can play with tone controls wide open, and in a performance where you want a more mellow or muted tone, you can easily round off the highs with the tone controls.

The TrueTapper is normally delivered with 'bass-bottom megatar' tuning (unless you have specified differently). Standard bass-bottom tuning gives you a normal 6-string bass on the string set nearest you when instrument is in playing position, and a secondary set of 'harmony' strings located on the far side of the neck. These harmony strings are higher-pitched and also tuned in fourths and can be used for rhythmic chords over your basslines, or for playing melodies.

### 2. The MegStrap

Our unique new design of a 'guitar strap' will look familiar to anyone, but the new attachment between the shoulder-strap and the instrument's tuner head does three things —

1. The loop stays open and ready whenever the instrument is in its stand or case. So it's very quick to put on or take off.
2. The attachment self-positions the shoulder strap so that it stays on your shoulder. So it will never slide forward or backward off your shoulder, but instead stays where it should, doing its work of helping to distribute the weight of the instrument more comfortably on your shoulder.
3. The attachment at the same time positions the head of the instrument in space. The instrument's tuner head should be approximately above your left shoulder and 8"-12" in front of your shoulder. This will work out to be the correct playing position so that your hands can fall naturally and comfortably on the fretboard with minimal bending of the wrists.

### 3. Two Adjustment Tools

The small allen wrench is used to adjust the height of the string saddles. They are adjusted correctly when the instrument is shipped from the factory but, as we'll discuss later, there are occasions when you may need to readjust the saddles.

The small round bar is used to adjust the dual push-pull truss-rods in the neck of the instrument. These truss-rods feature a space-saving adjustment 'wheel' and the bar is inserted into a hole on the wheel's perimeter as if it were an extending spoke. In this way you can make fine truss-rod adjustments with good leverage and good control.

Your instrument's truss-rods are adjusted correctly when the instrument is shipped from the factory, but there are occasions when temperature or humidity or string changes or playing conditions make it necessary to adjust the truss-rods to maintain the neck's flatness.

*Keep these two small tools someplace safe!*

### 4. Stereo Output Cord

The stereo 1/4" jack goes into the instrument's stereo socket. At the cord's far end, the two monophonic 1/4" jacks normally are jacked into two different amplifiers — one for the bass strings and one for the harmony strings.

If jacking into a single monophonic amplifier is desired, this can be accomplished by (a) rewiring the pots in the pickup-array, (b) building a specially wired cord with a stereo jack wherein both signals are wired together, or (c) plugging both mono plugs into a 'Y-connector' which is then jacked into the amplifier.

### 5. Easy Touch-Style Basics

Teaches the rapid route to 'Rhythm Bass' and much more.

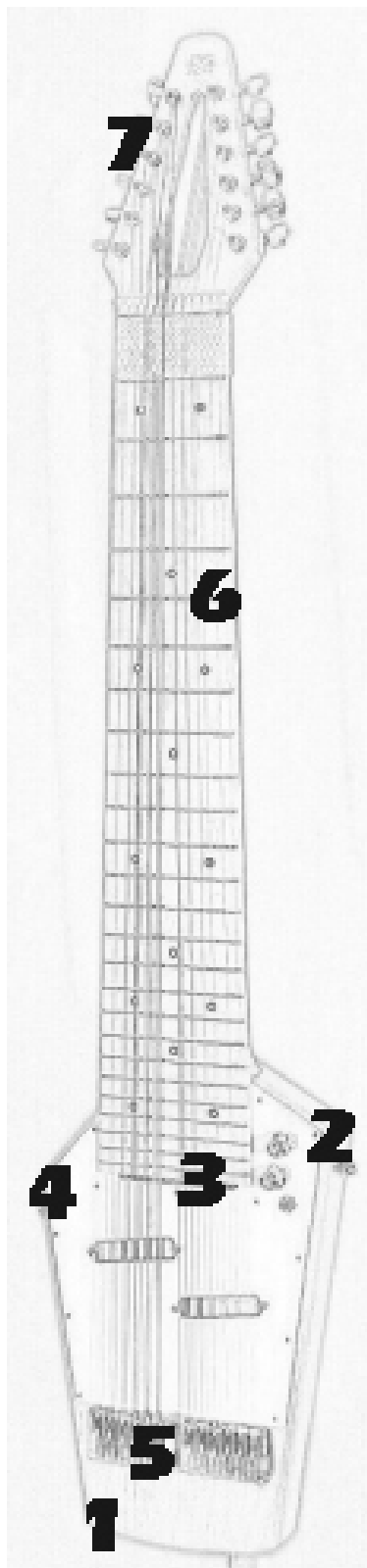
### 6. This Owner's Guide

Right now, we suggest that you write the instrument's serial number (see label on body's rear surface) into this book, and/or other safe place.

### We Suggest — Keep the Shipping Box

If you ever need to ship your instrument, you'll be glad you kept the box!

## Introducing the Instrument



### The Mobius Megatar 'TrueTapper' Model

Instruments which are especially made for two-handed touch-style play are often called by different names. Sometimes they're called basses and sometimes they're called guitars.

There is no commonly-agreed-upon term for these instruments especially made for two-handed tapping play.

The word 'megatar' was coined by our company, Mobius Megatar, as a generic term for an instrument especially made for two-handed touch-style play, and which has a set of strings for bass and another set of strings for melody.

Although our name 'Mobius Megatar' is our trademark for the specialty tapping basses which we manufacture, we have no objection to people using the single lower-case word 'megatar' as a generic term to refer to such specialty instruments. It's a pretty good word to describe such an instrument, as it comes from 'mega' (meaning 'a lot') and the word 'guitar', and because clearly such an instrument is *more* than a guitar!

### What is a 'megatar'?

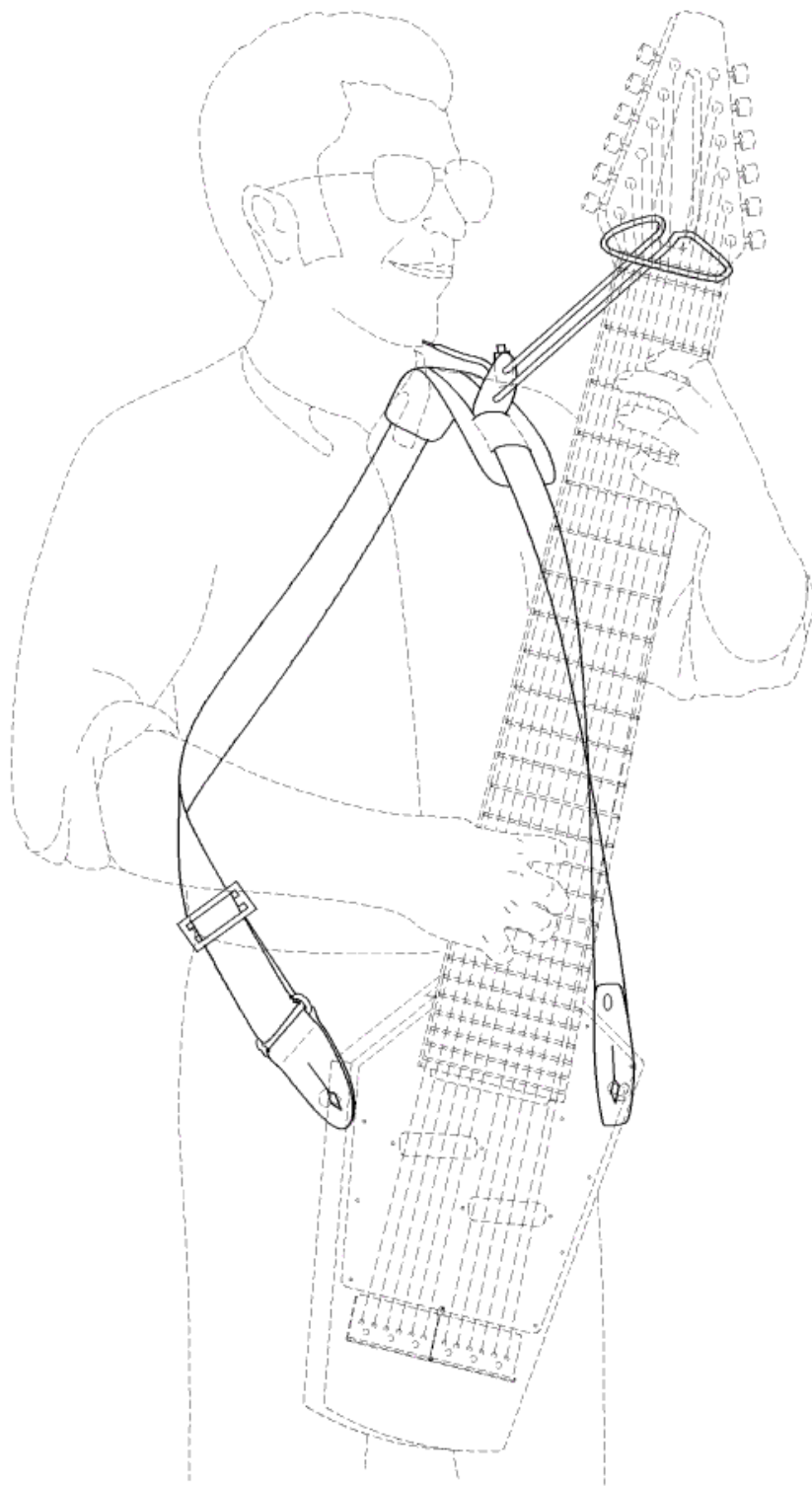
Megatar, *noun* An instrument especially made for two-handed touch-style technique, with one set of strings for bass and another set of strings for harmony or melody.

### Mobius TrueTapper Features

The TrueTapper has six bass strings and six melody strings.

1. Body — angular design provides rigidity which keeps tone and sustain strong, but small body size keeps weight down.
2. Volume and Tone Controls — permits you to separately adjust the loudness and tone of the bass and the melody strings.
3. Dual Truss-Rod Adjusters — allows you to fine-tune the fretboard to remain as flat as possible with the low action which produces the best sound and playability.
4. Pickup Assembly — as shown has one pickup for bass and one for melody, but this is a swappable option. Other pickup assemblies can have multiple pickups under the strings.
5. Fully-Adjustable Bridge — allows fine adjustment of string height, if needed. After the truss-rod adjustment to make neck as flat as possible, saddles are lowered to the lowest position which still avoids string buzz.
6. Special Fret-Markings — similar to standard guitar, but slightly different, helps you relate notes under both hands. This is explained in detail in your 'Easy Touch-Style Bassics' method book.
7. Tuners — high-ratio for easy-on-the-fingers precision tune-up.

## Man, you must be Putting Me On!



### How do you Put It On?

The illustration shows one happy tapper using the 'MegStrap' to support the TrueTapper in proper playing position.

Assuming that the strap's end-pieces are connected to the two buttons on each side of the instrument's body, you would put on the guitar strap as shown.

Next, use the strap's buckle to adjust the strap's length, to position the comfortable playing height of the instrument. The illustration shows positioning which most musicians find comfortable — the top of the instrument is about as high as the top of your head.

This should allow you to place your right hand, as shown approximately at the height of your belly-button or a little higher, for playing harmony and melody on the fret-board.

Once you have the instrument's height adjusted as desired, then use the cord lock and the cord and snug up the tuner head. As you shorten the cord from full slack, you will discover that as the tuner head moves toward you it becomes more stable. As soon as it feels relatively stable, that's close enough.

The important thing is that you manage to get the instrument supported so that it is comfortable on your body for the duration of the performance, and that the instrument is in a nearly-vertical position as shown.

This vertical position allows both of your hands to 'get at' the strings in an easy manner with minimal bending of the wrists. This keeps your hands in a good playing position, while minimizing fatigue during performance.

Your left hand will be positioned somewhat as shown more or less near the tuners, as you normally play the lower end of the bass strings with your left hand.

### Beware the Belt Buckle!

A belt-buckle can scratch the back of your instrument. You might want to move the buckle to the side.

## Basic 'Set-Up'

### DON'T MESS WITH THE BRIDGE!

Instruments manufactured by Mobius Megatar normally come with the '**Feiten Intonation System**' factory-installed.

In a following section, we will explain the Feiten Intonation System in detail, but basically it is a set of precise positioning offsets in the bridge saddles. These offsets are done at the factory from a formula developed by and licensed by Mobius from the Buzz Feiten Design Company, LLC.

These precise factory-set offsets are done with the front-to-back adjuster screws which anchor into the rear surface of the bridge saddles. (The 'saddles' are the shaped rectangles over which the strings pass as they exit from the megatar's body and head on out toward the fretboard.)

What do these Feiten adjustments do?

They make the entire instrument sound more in tune with itself than does a normally adjusted instrument.

Does everybody agree that this is true?

No, in tests about 89% of the guitarists tested stated that the difference was obvious and clear to them and that it was good. The other 11% either could hear no difference or said it didn't matter.

But let's assume that you *like* the 'in-tuneness' of your Mobius instrument, and want to keep it.

In that case, then to preserve this wonderful 'in-tuneness' — *do not turn, adjust, or otherwise mess with the adjuster screws* that go into the bridge saddles. This also means don't remove the bridge saddles. This also means when replacing strings, tape those saddles down so they won't 'adjust themselves' while flopping around loose during string replacement!

What is the moral of this story?

1. Don't mess with the front-to-back adjustment of the bridge saddles.
2. Preserve the exact current setting of the bridge saddle adjustment by making sure you tape down the saddles during string replacement, or make sure they don't get accidentally 'adjusted' while flopping around during string change. This is easiest if the instrument is placed flat during string changes, and you change one string at a time.
3. Beware of guitar shops or luthiers who might not know about this. Because they will happily 'adjust' the saddles 'correctly' in the standard way, which means there will be no 'offsets' which produce the auditory magic.

A luthier may tell you, earnestly, that he can do just as good a job, or that he knows all about it. But unless he is licensed and trained by the Feiten organization, we don't see how that could be true. Even then, he does not have the formulas which apply to *this* instrument, and our contract with Feiten will not allow us to disseminate these formulas to the world.

If you *do* mess up the bridge adjustment, then what to do?

You've got two options —

You can return it to the factory for us to re-install the Feiten Intonation System. A shop fee will apply, and of course the cost of shipping.

Or, you could set the intonation in the normal way that luthiers do all over the world. This will produce an instrument which sounds as 'in-tune' as any normal guitar or bass. And for 11% of the musical population, why, that's good enough!

### Flatness and Low Action

To get the best sound and the easiest playability, you want the neck to be very flat, and the strings to be set very low.

As shipped, Mobius instruments are correctly set up for good sound and playability, but over time, things change. Changes in string weights, slight changes in wood over time, humidity changes or temperature changes — any of these can make a perfectly flat neck become less flat. So if you find that the strings seem to be 'too high' and harder to play, or if you find that strings have developed noticeable 'fret buzz', then maybe it's time to adjust.

(Note: the lowest-pitched two strings, the two biggest ones, can have fret buzz and probably will. Although you will hear this on your instrument, you will not hear it coming through the amplifier and it will not choke or stifle the sound coming from these two largest strings.)

Before you work on your instrument, the strings should be tuned approximately to pitch so that the string tension is set the way it's going to be. Because this is one of the forces that alters the shape of the fretboard, you should have that set correctly before you adjust the neck.

The easy way to work on your instrument is to place it on a flat table or desk, on two big thick books such as computer books. The one which is less thick can support the body, and the thicker

one can support the neck, being placed generally beneath the *middle* of the neck.

Generally, books about microsoft windows will work pretty well, but we have found that books about linux seem to be a bit more stable.

You will need the two small tools supplied with your Mobius instrument, a tiny allen wrench and a short round bar of metal.

First, place the butt of the fretboard on one of the books, and sight along the edge of the fretboard toward the body. All the edges of the frets line up and give you an instant picture of the general shape of the fretboard. That is, if it's set so as to be bowed down in the middle, you can see that. Or likewise, if it's set so that the middle of the fretboard protrudes upward, then you can see that as well.

Sight along the fretboard on the bass side, and sight along the fretboard on the harmony note side. They are not always the same.

This is not a perfect method, because of course the ends of the frets are not a perfect model of the tops of the frets where the strings are. But if you are a luthier and have the necessary straightedges and jigs to do it the better way, then you already know how. For the typical musician, this way works pretty well.

You would like both sides to be very straight. Some folks say you can allow a little bit of 'relief' on the bass side. 'Relief' means the middle sags down away from the strings a little bit. Because the big bass strings make a greater excursion, they can benefit from the greater clearance, and because you don't much play bass strings in the middle or high-pitched area of the fretboard your hand will not be inconvenienced by the greater string to fret distance.

If the fret edges show you a flat fretboard, then leave that part alone.

### Fretboard Middle is Sunken?

If you see that the fretboard middle is 'sunk down' then you are probably finding the strings to be too far from the frets, especially for your right hand playing harmony or melody. This means you will 'tighten' the truss-rod, and the instrument's tuner head will be pushed back toward the rear of the instrument. This then means that the middle will no longer be sunken.

Which direction 'tightens' the truss rod?

Let's assume that you have replaced your instrument upon the two supporting books on the table.

Let's say you are now looking from the instrument's butt up the fretboard toward the instrument's tuner head. Then as you view the adjuster wheels of the truss rods it's as if you are viewing the head of a screw. Turning that screw clockwise

from your viewpoint will turn the screw INTO the wood. And likewise turning that adjusting wheel clockwise from your viewpoint will TIGHTEN the truss rod.

So think of turning the adjuster wheel clockwise from your viewpoint as shoving the tuner head back toward the rear of the instrument. And this will mean that the middle is no longer sunken down away from the strings.

### Fretboard Middle is Bowed Upward?

If you see that the middle is 'bulged up,' then you are probably getting string buzz, and so you will want to 'back off' the truss-rod. This means you will 'unscrew' the truss-rod a tiny bit, and the instrument's tuner head will rise. If the tuner head rises, then the middle of the fretboard will not be bulged up.

Which direction 'unscrews' the truss rod?

Let's assume that you have replaced your instrument upon the two supporting books on the table.

Let's say you are now looking from the instrument's butt up the fretboard toward the instrument's tuner head. Then as you see the adjuster wheels of the truss rods it's as if you are viewing the head of a screw. Turning that screw counter-clockwise from your viewpoint will unscrew the screw OUT of the wood. And likewise turning that adjusting wheel counter-clockwise from your viewpoint will LOOSEN the truss rod.

So think of turning the adjuster wheel counter-clockwise from your viewpoint as permitting the tuner head to rise back toward the top face of the instrument. And this will mean that the middle is no longer bowed up toward the strings.

### How to Adjust the Truss-Rod

Easy does it.

If you about to tighten the truss rod, then to ease the work it must do, pre-stretch the wooden neck. You should now have the instrument resting solidly on the table. The instrument's body is resting on one book, and another slightly larger book is supporting the neck right in the middle.

Leaning over the instrument, place one hand on the instrument's body below the bridge, so as to hold the body down firmly upon its bookly support. Place your other hand on the instrument's neck near the nut, and lean your weight upon the body and nut, thus pressing downward to stretch the neck slightly downward. You will not hurt the instrument. This is the same pressure which the truss rod will apply, but pressing down now relieves some of the pressure on the truss rod which will make it easier to tighten it.

Use the little bar and insert into the most upright

of the holes along the adjuster wheel. Move the adjuster bar clockwise (viewed from instrument's butt) just far enough so that the following hole is now the 'most upright'. This is what we'll call 'one notch.'

Assuming that the neck was sunken equally on both the bass side and the melody side, then you would adjust one or two notches on one wheel then go to the other and do the same one or two notches of adjustment.

Then pick up the tuner head and sight toward the body along both edges as you did before.

Is it better? If you've tightened the wheels you should see a less-sunken middle.

Is it enough? Fretboard is approximately flat? If so, then you're done with this step.

Does it need more? Then you'll give it more.

Has the middle started bowing UP instead? Then you'll need to back off the wheels a little.

Is it perfect on one side and still too-sunken on the other side. Then you'll need to adjust the wheel on the side that needs it.

It would be very rare for a truss rod adjustment to require as much as a whole rotation. One or two notches or maybe three or four is about the max you'll see for an instrument that's wandered a little due to climate or string-pressure change.

### Neck Flat? Next — Lower Saddles

Before you start, go up and down the strings tapping notes. You're interested in two things. One is whether you're getting any repeating fret buzz. (Remember to tap right on the fret.) The other thing you're interested in is whether the strings are 'low enough.'

How low is low enough?

How long is a piece of string?

The perfect action would have the strings riding about 1/16" above the frets all along the fretboard, and never a one would buzz. However, due to the imperfect nature of wood, weather, and humans, we rarely achieve perfection.

Before you start this, tune to pitch so that the strings are at the correct tension.

As you use the tiny allen wrench to lower the saddles, try to keep the saddle level, and lower it the amount you think it should be. Then before you adjust all the other saddles, re-tap the string all up and down to see how it sounds and feels.

Once you've got that string as low as you can without making buzzes, go to the next.

Remember, the larger strings will be set a little higher than other smaller strings, because they need more room to move. The two largest strings should be set to rattle a little. This will sound correct through the amp, and will still feel ok to your fingers.

If you have never done tapping before, but have used a pick on guitar, this low action will seem excessive to you. But remember, when you pick the string it needs a lot of room to move back and forth. But when you tap, you create a smaller wave that runs up and down the string longitudinally and there is much less excursion.

You will discover that when the action is set low, you can play with a lighter touch with your amp turned a bit higher and in this way you will have much more control over dynamics with your finger-touch. Is this more difficult? No, most musicians say it seems easier.

Also, if strings were set high, you'd often get a lesser tone. It's as if the sound has become more choked. We think it is because your finger deadens the string more during the longer travel up and down but that's just a guess.

But your ears will tell you that the tone is better when the action is lower. And your fingers will thank you by the end of the gig.

### The String Deadener

Many musicians have tried different materials for the 'string mute'. Dave Bunker is the first known person to use a physical string mute. You can see it described in his patents. Other musicians have tried felt, fuzzy-dice material, leather, and velcro.

The best material we've found is a tacky rubberish substance sold in hardware stores as shelf-liner material.

If you ever need to replace the string deadener, or you'd like a different color, then head down to the biggest hardware store in town and ask for the shelf-liner department.

We've been told that this same material is used in Southern California as part of building foundations, because of the wonderful way it can absorb vibration.

For best results, cut a long strip about 1 1/5" or 1 5/8" wide. That's about 1/4" less wide than the space between fret zero and fret one. Then slacken all the strings and slide the rubbery strip beneath the strings. Move the strip so it's touching fret zero, but there's some fretboard visible beside fret one. (It's hard to fret notes on fret one when the material is touching fret one.)

On the side of the fretboard which is away from you during performance, fold the strip back over that last string and then weave it back toward you. Meaning go over that last string, then under the next string back toward you, then over the next, then under the next, and so on until it goes under the string which is closest to you during performance. The two ends are now hanging off the fretboard on the side nearest you. Chop the ends off,

leaving about 1" hanging out.

The reason for putting the fold on the side away from you is that your left hand is going to travel around in that area. So if you had the left-over flap sticking out in that location it would annoy your left hand.

### Tuning Up

Because you have the Feiten Intonation System installed on the instrument, you will get the best results if you tune up in one particular way.

Remember, the Feiten system uses precise offsets from theoretical in order to produce strings that sound more 'in-tune' to your ear when played.

Now what that means is that as you play notes up the fretboard ('up' meaning higher-pitched notes closer to the body), you are playing in the area where the offsets are. That is, they should NOT be tuned to the theoretical notes.

So if you try tuning all over the fretboard, matching up fifths and octaves here and there, you will probably have a headache and it may sound funny when played.

On non-Feiten instruments with *standard* intonation, the best advice is to tune up the strings where you are going to play. For example, if your right hand will mostly play between frets twelve and fifteen, it would be good to tune across the melody strings around fret thirteen. That way, the intonation error which is inherent in all fretted instruments will be minimal where you're actually playing.

However, the *Feiten-adjusted* instrument should be tuned in another way. Here it is —

- **Tune your Mobius Megatar instrument straight across all twelve strings at the second fret.**
- **If you have a highly accurate tuner or a most marvelous ear, then tune strings number five and six to be two cents flat. All the other strings go dead on the money at the second fret.**
- **If you must choose, then tune to the attack, because this is what people hear most as 'the pitch'. (On megatar instruments there is usually little difference between the attack pitch and the later pitch.)**

Below are tables that show our standard tunings. If you are playing an 'Uncrossed Hands' instrument, then the string numbers will be different, and likewise if your instrument is tuned in Mirror Fourths, the string numbers will be different, but you can work out the difference.

Here is the table for our standard Bass-Bottom tuned instrument. The string gauges show you which is the lowest note in each group, as the largest string gauge produces the lowest note.

String Group	String Number	String Gauge	Offset at Fret 2	Fret 2 Note
Harmony	1	.009	0	E
	2	.011	0	B
	3	.012	0	F#
	4	.016	0	C#
	5	.029W	-2 cents	G#
	(lowest note)	6	.040W	-2 cents
—————				
Bass	7	.025W	0	D
	8	.035W	0	A
	9	.050W	0	E
	10	.065W	0	B
	11	.085W	0	F#
	(lowest note)	12	.100W	0

If you have a Fifths-Bottom tuned instrument, the table for that tuning follows. Do not be thrown off by the fact that the note names on the bass side are identical. The last line in both charts, for example, is the note C#. But on standard Bass-Bottom tuning that's the *lowest* note, whereas on the Fifths-Bottom tuning that's the *highest* note!

When we install the Feiten Intonation at the factory, we set the note at the second fret exactly as shown on these charts, and then we have a formula for setting the notes at higher frets. A few of those notes at higher frets are set dead on the money, but the majority are set either a few cents sharp or flat. In other words, when the fret two is on the money, we adjust the bridge saddle so that the note at fret so-and-so is, for example, four cents sharp (or flat).

This process is tedious, repetitive, and time-consuming. It requires a piece of scientific equipment called a strobe tuner, which enables the technician to see variations of tuning as low as one tenth of one cent!

The good news is that, once done, you don't have to do this tedious thing at all. You just tune up at the second fret, and everything else is right.

How right?

Well, just as right as you have accurately tuned at the second fret. As always, you should be as accurate as you can be. However, an additional benefit of playing an instrument with Feiten intonation is that tuning can be done more quickly than using a system of checking fifths and octaves

all over the fretboard.

### Changing Strings

Although Mobius sells string sets, you can use most good-quality strings, as long as they are the correct length and gauge. If you try different gauges, then the Feiten offsets locked into your saddles will most likely no longer be exactly correct, so sticking with these gauges as given will ensure you a better sounding instrument.

If you've just \*got\* to try strings which are larger or smaller, and if you have suitable length strings, you can if you choose send the instrument back to the factory to have the Feiten adjustment re-set into the saddles after your preferred strings have been installed. (Shop rate & shipping apply.)

If you have some strings which are \*about\* the right gauge but not exactly, they will probably sound fine. Your ears should tell you if not.

You can probably find replacement strings easily for the bass strings, although the wound .025s are not common. The harmony strings are more troublesome, as most guitar strings come in the right gauges but they aren't long enough. In some cases you can snip a piece off the old string and tie it to the new one to make it long enough to reach the tuner peg.

This is a case where having some spare strings around could save a bit of trouble.

String Group	String Number	String Gauge	Offset at Fret 2	Fret 2 Note
Harmony	1	.009	0	E
	2	.011	0	B
	3	.012	0	F#
	4	.016	0	C#
	5	.029W	-2 cents	G#
	(lowest note)	6	.040W	-2 cents
—————				
Bass	7	.095W	0	D
	8	.080W	0	A
	9	.060W	0	E
	10	.030W	0	B
	11	.016	0	F#
	(highest note)	12	.010	0

## The Feiten Intonation System

### Who is Buzz Feiten?

Buzz Feiten is a well-known studio guitarist. He's played with Stevie Wonder, gigged at Woodstock with the Paul Butterfield Blues Band, and jammed with Jimmy Hendrix.

Feiten (pronounced *feet-en*) was not happy with intonation on his guitars. It always sounded *wrong* to him. And especially he thought that the open strings sounded flat when played with fretted notes.

So one day he took a hack-saw to his fretboard and chopped a little wood away so he could move the nut a tiny bit closer to the bridge. This makes the open string a little shorter, and thus less flat.

This seemed to improve matters, and in fact, he and Southern California super-tech Greg Back filed patents upon this process.

However, there were still notes up and down the neck that sounded *wrong*, no matter how carefully he tuned.

In an article appearing in the June 1998 issue of *Electronic Musician* magazine, Feiten is quoted as saying, "I was on the road with Bette Midler, and there was a piano tech named Will Jennings who tuned the piano every night by ear. His intonation by ear was better than my intonation using a strobe tuner." So Feiten sat down at the bench and began "taking a microscopic look at what I do when I tune by ear."

### What is 'Just Intonation'?

Tuning instruments such as lute, guitar, and piano has a long history. When two singers sing harmony, they adjust the pitch so that it sounds sweetest. It sounds sweetest when the fundamental pitch of each note causes the harmonics in each tone to line up with the frequencies of the harmonics in the other's tone.

You can tune a piano to play perfectly in tune, with all harmonics lined up — if you will just choose one key, and then forever only play in that key. However, you will get very tired of playing 'Michael Row the Boat Ashore' in the key of G, and you will want to play Satie, Stravinsky, and Louie Louie pretty quick, and they're in different keys. Playing them on that 'G-tuned' piano will sound awful.

To really play all keys with dead-on notes in tune, you'd need a different piano for every key. And it would be really a bummer to leap to a dif-

ferent piano if the bridge section modulates to a different key!

On a lute or harp with one string per note, the situation would be the same, requiring a harp tuned to every different key to sound exactly correct. But on a guitar where frets are generally one bar of metal going across the six strings, the situation would be worse, because for example the fourth fret might have to be placed a little differently for the A-string as for the D-string to sound exactly right, and wouldn't that be a mess?

Many attempts have been made to tweak the tuning for best results. The 'Just Intonation' method means tuning octaves and fourths and fifths of keys related to the main key very well, and pretty much allowing the thirds and sevenths to sound fairly lousy.

The word 'intonation' originally meant 'intoning' or 'chanting,' and the word 'just' derives from the Latin word 'iustus' which you'll probably recognize as the root of 'justice' meaning honest or correct. So it will be no surprise that 'honest chanting' was the system used for Gregorian Chants, and that was great up until about 1600. These early types of music do not modulate into other keys and are done on variable pitch instruments such as voice.

Fixed-pitch instruments don't fare so well, so as music developed, the guys began detuning some of the pitches so they could change keys, and this process of messing with the tuning was called 'tempering' the notes, and from this we get the term 'temperament' which means a method or formula which is chosen to, hopefully, give better sound as you play in different keys.

Just like in the world of guitar or the world of touch-style, the guys then argued for hundreds of years about which 'temperament' was best. Even Bach took sides, writing keyboard pieces to demonstrate that *his* favorite method was the best.

In the end, the 'equal temperament' won out. This is a system where the twelve notes in the chromatic scale are equally spaced. This invention allows you to play in any key with every single note other than the root slightly out of tune. This is the system we use today. Isn't that great?

About the only thing you can do with a fixed-pitch instrument such as guitar is to play vibrato on everything, or add chorus effect, to disguise the fact that the notes other than the root are *not* really in tune.

## Guitars have Other Problems, too!

When you think *very carefully* about a guitar string, there are two other factors which can slightly alter the pitch of the played note —

- When the string is full open, think of it as the long side of a triangle. When the string is depressed to the fret, think of it as now comprising the two shorter legs of a triangle. True, it is a rather flat triangle, but it's a triangle, and geometry tells us that the length of the two sides are in this case slightly greater than the length of the one side. And this means that the string has been very slightly 'stretched' when you press it out of the straight line in order to fret it. When you stretch a string it becomes more sharp, so right here you can see one reason that a low action is better as the string is stretched less. Although we tappers do not normally play open strings, it still works out that low action gives less variability to pitch as we tap and fret the notes.
- The formulas originally designed for the layout of frets were specified by Pythagoras. It was a long time ago. These formulas are correct theoretically for theoretical strings, but we have to use actual strings which act slightly differently than theory predicts. For one thing, the string is slightly stiffer where it's attached to the bridge saddle, and this means its rate of vibration or frequency is not perfect. This stiffness difference is not the same on all strings because big thick wound strings act differently right at the bridge saddle than do thin unwound strings.

All these factors conspire to make a fixed fret guitar sound out of tune — because it is!

Out of tuneness, or poor intonation to our ear, is inherent in fretted instruments.

What can be done about it?

### Re-Enter Buzz Feiten

Along with his partner Greg Back, Feiten began six years of experiments in which he tried different offsets to the pitch up and down the fretboard.

Most guitarists and luthiers set their intonation in this way —

- Since the note at the twelfth fret should be one octave higher than the open string, then you tune the open string to pitch, and then play the note at the twelfth fret. If it's sharp, that means that the string length from twelfth fret to bridge must be made longer to lower that note.

- So you adjust the bridge saddle by moving it further back toward the butt of the instrument.
- The string now being longer, you repeat the experiment: Tune the open string to pitch, then try the note at twelfth fret. If it's still too sharp, then move the bridge saddle further back and repeat the experiment, etc.
- (For tappers, if you ever wish to discard the Buzz Feiten offsets set into your bridge saddles and go to 'standard intonation', you would do the process just this way, except that you'll get better results by tuning the note at the second fret, and then testing the note at the fourteenth fret.)

But, returning to Feiten and Back's experiments, they discovered that the best sound was achieved when the notes at the twelfth fret and open string were *not the same*.

Piano tuners have long since discovered that if they tune a piano right on, it doesn't sound as good as if they use what's called 'stretch tuning'. In stretch tuning, all the lowest notes are tuned slightly flat, and all the highest notes are tuned slightly sharp, so that the 88-note scale is considered to be 'stretched.' To our ear this sounds better than tuning precisely on pitch.

After six years of modeling some piano stretching formulas and other ideas, Feiten and Back came up with a 'best fit' set of offsets which produce good sound all up and down the fretboard.

Feiten is quote in the EM article as saying, "We've borrowed the philosophy of piano tuning. We make our guitars deliberately out of tune by a very small amount so they sound good regardless of chord shape, regardless of where you put the third of the chord, regardless of hand position, and against any open string."

"If you're not in tune," he says, "[even the best guitar won't help, because] you're going to sound bad. And conversely, your inexpensive strat copy is going to sound fabulous with this tuning system."

(If you own a guitar, then to hear an example, tune it up in the usual way, and then play ninth fret on G-string along with 12th fret on B-string., and it will sound in tune. That was a root (E) and its fifth (B). Now play on those same strings the root (E) and its major third (G#) by playing both strings at ninth fret. The G# will sound *very sharp* to the E. Not so great.)

With the Feiten system, it works out so that a small amount is 'borrowed' from the fifth to sweeten the third. To the ear, the fifth doesn't

seem to be hurt, but the third sounds sweeter.

"The revolutionary aspect of what we've done," says Feiten, "is that we've identified the precise amount of tempering you can get away with. No less and no more. That's what took six years to figure out."

Feiten's enthusiasm has come to be shared by many high-level guitarists, including Eddy Van Halen, Liona Boyd, Joe Satriani, David Crosby, and Steve Vai. Scott Henderson endorses Feiten's system by saying, "It's in tune all over the neck now." Feiten licensee and high-end luthier Gary Brawer in San Francisco, whose clients include Satriani, Metallica, and Counting Crows, says that he's never seen a guitar which would not benefit from use of the system.

### **Do you need a special tuner? Can you play with other people?**

No, you do not need a special tuner to tune up. Just tune up by ear or any tuner, and it will sound better than a normal instrument.

And for playing with another player, it will cause no problem. According to Feiten, "You'll just sound more 'focused' than the other guitar. You'll sound tighter with the keyboard."

Although you do not have to be fussy with tuning, if you do take the time to tune very carefully,

the results are the most outstanding. In performance, the system gives you a little more leeway between retunings, in that the strings can slip a bit further before sounding creepy.

### **Basic Developments**

Feiten and Back have developed formulas for acoustic guitars, for electric guitars, and for basses, all in different scale lengths. For reasons of physics and human hearing, basses are not usually as out-of-tune a higher-pitched instruments, or perhaps we just don't hear it as much, but basses improve with this system as well.

Of course, on a specialty instrument such as those made by Mobius, where the instrument has strings spanning the low note range of bass through the high note-range of guitar, the problem of getting in tune is even greater, and the solution afforded by the Feiten system is even more important to sounding 'in-tune'.

It's quite amazing to see the face of a player who for the first time, 'gets it' that for the first time in his performing life, he is suddenly playing and everything sounds in tune!

You can find out more about the Buzz Feiten Intonation System at his website located at:

<http://www.buzzfeiten.com>

## Amplification and Sound

### What's the Best Way to Amplify?

This is another issue of religion, so we can't specify what's 'best.' But we can pass along some common views about amplifying a two-handed tapping instrument to get a good sound.

### One Amp or Two?

Some musicians feel that, since it's *one* instrument, they want to play it so it has *one* sound. This is the way you play a piano, so the idea has a certain logic.

Other musicians prefer to make the instrument sound like a bass and a guitar, and usually this means they use two amps. In this case, they can shape the sound differently for the two 'instruments'.

### Effects

Generally, basses usually benefit from some sort of compression. It eases the pop of the attack and gives a longer audible sustain as the volume of the held note slowly dies off.

Basses generally don't want to be given much reverb or chorus as it can make the sound muddy or vague.

Guitars in general often like some overdrive or distortion. Small amounts make the sound rounder and smoother. Guitars, with their high notes, can usually tolerate reverb fairly well.

### Guitar Amp versus Keyboard Amp

Amps made for keyboards are made to transmit a wide frequency range. Think of a piano with very low notes and very high notes. For that reason, a 'good' keyboard amp is generally considered to be one that gives a 'flat' or accurate response. While this is great for keyboards, most guitars or basses played through a keyboard amp with no other processing will sound somewhat thin or flat compared to the usual way you hear guitars and basses played.

So while a keyboard amp will accurately handle the wide frequency range of your megatar instrument, in many mixes you will want to beef up the sound somewhat. Common effects can do this easily.

One other downside to keyboard amps is that

they do not usually tolerate being overdriven. That is, if you drive it very hard in an attempt to get it to distort, it is just as likely to work like hell playing accurately until you have blown it up.

Moral: Do not overdrive keyboard amps in an effort to produce distortion. Use a stomp box.

Guitar amps, by comparison, will not handle the low bass frequencies particularly well because the guitar amp is made to work well in the frequency range of guitar. This type of amp does not really reproduce sound particularly 'accurately', but it does reproduce guitar sounds in a 'kindly' fashion. That is, guitars sound very good when played through a guitar amp. Not accurate, but good.

So if you use a guitar amp, you probably would not actually require the use of any outside effects.

Likewise, a bass amp is made like a guitar amp and is not accurate but is very kind to bass sounds. It won't handle the high guitar tones as well, because the high tones will be less clear. But again, the bass amp will probably not require you to use any sound-shaping effects at all.

Of course, if you like the guitar and bass amps, you can use one of each.

There are musicians who feel that one amp does pretty good. Maybe you will like the sound of both bass and guitar through a Fender Twin.

Your ears will tell you.

Alternately, you could use a keyboard amp, and use sound shaping effects to add the warmth and roundness normally contributed by the bass amp and the guitar amp.

For example, you could drive the bass signal through some EQ to round off the top, and some compression to smooth the signal. Then your guitar signal might receive some overdrive, some distortion, some chorus, and some reverb.

If you don't already have firm opinions about how you want your sound to be, you will have them soon. But before you settle in, if possible, listen to the rigs of some other touch-style players. There is a huge variety of sounds from which to choose.

## Pickup Array Facts

### The Removable Pickup Array

Your Mobius Megatar instrument is easy to customize. Bass-players and guitarists often want to tweak their sound, and the thing they most often want to change are pickups. This is just a fact of life: Birds fly south for the winter, and guitarists change their pickups. So we've made it easy.

The space below the pickguard (the 'cavity') has been made very large, and it is completely 'shielded.' This means it's been painted with a special black conductive paint.

Further, the underside of the pickguard is covered with metallic foil. When the pickguard is in place, the entire space beneath the pickguard is shielded from electrical signals.

For example, a refrigerator or vacuum cleaner creates radio waves, as does fluorescent lighting. These radio waves zoom right through a guitar's wooden body, and because pickups contain coils of wire, these act like a radio receiver, and suddenly your guitar is making humming sounds.

But by completely surrounding the pickups and volume pots and wiring with a metallic box, most radio waves are blocked. Result? A much quieter instrument

Therefore, your Mobius instrument has its electronics cavity completely shielded.

### 'Humbucking' Pickups

Early pickups consisted of a single coil of wire, and 'single coil' pickups are still around today. They are popular because they produce certain tones. They are also noisy, being eager to act like a radio. Even shielding often fails to completely kill their hum and hiss.

A later development, the 'humbucking' pickup, has two coils wound in reverse directions, so that any radio waves picked up by one coil is also picked up by the other coil, but 180 degrees out of phase, which effectively creates a simple 'noise cancellation' circuit. Humbuckers are therefore considerably quieter, and humbuckers also have a variety of desirable tones.

In a touch-style instrument, the gain is set higher than on a normal bass, and so questions of noise affect us more than usual.

For this reason, Mobius instruments are generally delivered with humbucking pickups.

### How the Pickup Array is Built

Traditional bass construction consists of hollowing out small cavities in the body. For example, the builder hollows out a cavity for each pickup, and another set of cavities for the volume pots and for the output jack. Then holes are drilled between these cavities to run the wiring.

If you wanted to change the pickups, it's easiest if you choose new pickups which are exactly the same size as the old ones, but you still have to unsolder the old ones and solder in the new ones.

If you wanted differently-shaped pickups, you'd also cut out new holes, maybe fill in some of the old holes, rewire everything, and in some cases, re-finish the instrument.

This job typically requires a skilled guitar-builder (called a 'luthier') and costs several hundreds of dollars in addition to the cost of the new pickups and parts.

However, on standard Mobius Megatar instruments, all of the pickups and electronics are surface-mounted to the pickguard, and this assembly of pickups, pickguard, and electronics we call a 'Pickup Array' because it's an array of pickups all lined up and ready to go.

To change a Mobius Pickup Array can be done very rapidly by anyone. You just unscrew the old Pickup Array and remove it. Place the new Pickup Array into the same spot and screw it in.

Bingo! It's ready to play.

This allows anybody to customize the instrument merely for the cost of the new Pickup Array.

If you are playing 'mission critical' gigs, you can keep a spare array on hand. If you ever managed to actually damage the array on your instrument, the new one can be installed in about three minutes. You tune up, and you're ready to go.

Further, if you want some wild new pickup, any luthier will find it an easy job to install your new pickups into a blank pickguard. This means that anybody who wishes to make replacement Pickup Arrays for Mobius instruments can do so easily. Over time, this means more choices for touch-style players.

Mobius sells alternative Pickup Arrays, and also blank pickguards with all electronics and shielding installed, for folks that would like to 'roll their own.'

## Grounding the Bridge

To 'ground the bridge' means to connect a wire from a guitar's bridge (and thus the metal strings) to the 'signal ground' of the electronics.

This further reduces noise.

Any reason not to do it?

Yes. In the case where other equipment on the stage is improperly wired, the grounded bridge makes electric shock more possible.

Even experienced musicians sometimes argue about how this works, but here are the facts:

1. If all equipment is correctly wired, you'll never get a shock. And this is usually the case. But what if something's broken?
2. If you are not touching any 'ground' and you grab some voltage in a piece of broken equipment, probably nothing much will happen to you. Because your body is not particularly where voltage wants to go.
3. Any electrical voltage wants to go to a ground. That is its nature.
4. What's a 'ground'? This is a conductive pathway to the actual earth. For example, a water pipe is a good ground because it goes around the house but winds up in the actual ground.
5. For reasons of safety, most house electricity has a ground nearby, and since you plug amps into electrical sockets, the amps therefore contain a ground somewhere, and since you jack your instrument into the amp, your instrument's electronics have a ground in there, too.
6. What would happen if you were touching the 'ground' inside your instrument, which is connected to the amp's ground, which is connected to the electrical power's ground ... and at the same time you grabbed some voltage? Well, in that case, your body would look like a workable path to get to the ground, and the voltage would take the path through your body.
7. If you touched a voltage with one hand while touching a ground with the same hand, the electricity would go through your hand. It probably wouldn't kill you.
8. But if you touched a voltage with one hand while touching a ground with your other hand, the electricity might go through your heart. This is bad.

To avoid shocks, always make sure that *\*all\** equipment is correctly wired. If you have to touch the equipment of other folks, and you're suspicious, touch it first with the *\*back\** of your hand.

To avoid touching a ground inside any guitar, including Mobius instruments, disconnect the

'bridge ground', which we'll describe next.

Further, if your volume control knobs are metal, do not adjust volume while handling any other equipment.

## Disconnecting the Ground

It is standard practice to ground the bridge on guitars, because on most gigs, it will make your instrument *\*much\** quieter. And if all equipment is correctly wired, there is no danger.

So that musicians have the option of playing with grounded bridge or without, the Mobius Pickup Array has a 'clip-on' ground wire, .

Mobius instruments normally ship with the bridge grounded, as is industry practice, and as most musicians prefer.

To disconnect the bridge ground, however, is very easy. If you will be playing in situations where you cannot ascertain the safety of the other equipment, disconnect it!

To disconnect the bridge ground, remove the Pickup Array as described below. You will see a single wire which goes from the pickguard toward the bridge. In the middle of this single wire is a two-part red clip. Grab each end of the red clip and pull it apart. (It can be clipped back later if desired.)

## To Remove and Replace Pickup Array

Place instrument on a stable surface like a table, perhaps elevated on two books as discussed earlier. Loosen the strings very very loose.

Using a very small phillips screwdriver, unscrew all the tiny screws around the perimeter of the Pickguard Array, and set them carefully aside.

Place a thin magazine or something similar over the *\*top\** of the array (so strings won't catch on the protruding switches and pickups), and then raise the Pickup Array straight up until it's clear of the fretboard — it's often snug — and then slide it out to either side, though the side with volume pots is usually easier.

If necessary, unclip the red bullet connector which grounds the bridge to the pickguard.

To replace, place the magazine over the top of the Pickup Array and slide it in from the side. Carefully position, making sure that wires to volume pots and switches fall into the wooden 'slot' beside volume pot and switch cavities.

Once correctly positioned, re-install the mounting screws snug but not super tight.

You may need to adjust pickup height for best sound. Raise till sound turns dirty — that's too close. Now back off slightly. Ready to go!

## Care of Your Instrument

### Instrument Finish

Your instrument's finish should require very little maintenance. The instrument is generally finished with a polyurethane finish, which seals the wood, provides good tone qualities, and protects the wood for many years.

Naturally, dents and bangs can puncture holes through the tough finish, so you'll want to handle your instrument carefully.

The pickguard material is a plastic, often a polycarbonate though occasionally an acrylic, and it is a fact of life that all plastics and all pickguards can be scratched. Just a fact of life.

The pickguard can be wiped with a *soft* cloth, as can the body and neck finish. Polishing with a soft cloth will make the chrome parts shiny as well.

### Preserve Us from Harm!

Like a pet or your girlfriend or family members, you've sort of got to look out for your instrument, to keep it from harm.

The commonest damage is leaving it leaning against a wall, from which it will of course fall, and in doing so it will strike something, and of course then you get a nice nick on the neck or the edge of the fretboard which will annoy you.

So consider using a stand, or placing it flat on a table, or keeping it in the case.

### Theft, Airlines, and other Menaces

It's not uncommon for thieves to believe that musical instruments are good things to steal. The megatar label showing your serial number is secured to the instrument in such a way as to be highly difficult to remove or modify without completely destroying the label, and we maintain a database of all serial numbers.

But of course you'd prefer never to lose the instrument in the first place. So here are a few suggestions ...

If travelling with your instrument in a softcase, keep it with you. The softcase has backpack straps, so put it on and you won't have to leave it lying around.

If travelling with your instrument in a hardcase, then use the case lock, and carry a flexible bicycle

lock-cord thing. In fact, if you want to secure the instrument itself, you can use a flexible bicycle lock run through the tuner head of the instrument and attached to something big like the hotel bed-frame!

Baggage gorillas at your favorite airline are another danger. Some airlines will permit you to carry on an instrument in a softcase if it looks small, and that's one reason our softcase is compact. But call ahead. Some airlines won't permit it, and some begin to balk on filled-up flights. If possible, avoid checking the softcase. The baggage guys *will* throw it on or off the truck. Fact.

Checking the instrument? That's what the FliteLite hardcase is for. If you've got one, please use it. Sticking 'fragile' or 'scientific instrument' stickers on is not such a bad idea, either.

Shipping an instrument? *Keep the box in which your instrument arrived!* It is especially designed to protect the instrument.

### Heat and Damp

Wood does not like great heat or great cold. Wood does not like a lot of moisture, and it doesn't like going from moist to dry to moist to dry.

Wood likes to stay at one reasonable temperature without great changes in humidity.

So your megatar will appreciate it if you don't leave it in the unheated trunk of your car during the seasonal blizzard. And he'd like it if you could avoid leaving him in the noonday sun at siesta time. Even less would he enjoy being out in the rain, or even outside where the morning dew gives him aches and pins.

If he has to change temperature, please help him to change slowly.

### Belt Buckle and Rear Connector

If you can turn your belt buckle to the side, you can reduce the scratching on the rear of the body. Also on the rear surface in the middle of the body is the connector to which you attach a MegHook or MegBar. You'll notice that around this connector is just finished wood. So poking that wood with the screw of the MegHook or MegBar is not a great idea.

## Accessories

### ReUnion Blues 'SofCase'

Their reputation as the best gigbags in the world is warranted. The custom 'SofCase' is specifically designed for your instrument, of heavy-duty cordura nylon and quality leather, with a long zipper that goes all the way around. On the face, a large pocket to hold method book or accessories. Carry it three ways: Like a briefcase, like a backpack, or in upright 'safety position' with the built-in safety handle at the neck.

### TKL 'FliteLite' Hardcase

Using patented processes, this molded instrument case is the result of extensive research into new materials and manufacturing technologies. The shell is precision molded from custom extruded resin compounds, with aluminum edging and steel locks. Tough, high-tech protection. It's light and it's strong. That's what you want.

### The MegHook

The convenience of a *removable* belt-hook! Just attach the belthook to the rear of your megatar instrument, and then slip the wide hook portion over your belt to support your instrument from the belt. You can use the belthook by itself if you keep your hands on the neck of the instrument, or use it in combination with your MegStrap, to eliminate any lateral (side to side) motion if you get to dancing around. And then, if you wish to play seated, and the belthook is in the way? That's where you'll appreciate it being removable!

### The MegBar

Like to play seated? The MegBar attaches to the rear of your megatar, and provides a 'cross-bar' to either side of the instrument's body. This form-fitting cross-bar can rest comfortably on your thighs while playing seated. It can be used by itself, or in combination with your MegStrap.

### The MegSlider

The Mobius Megatar instrument is not particularly heavy for a bass, and our standard MegStrap does a good job of distributing the weight upon your shoulder. But if you find that weight less

than comfortable by the end of the gig, we've obtained a supply of the patented 'Slider' straps, which are shaped like a figure eight, with one strap going over each shoulder to distribute the weight more evenly than one strap can. To the Slider we've added the special Mobius Shoulder Pad with Attachment, so that the Slider Strap works like the MegStrap to hold the instrument in correct upright playing position. Max comfort.

### MelloTone LongStringers

Custom string sets are available direct from Mobius for both Bass-Bottom and Fifths-Bottom megatar tunings. These strings are extra long, in correct gauges for easy play and great sound.

### Alternate Pickup-Arrays

A number of power-upgrade possibilities are available to personalize your instrument to your taste and to the music you play. This upgrade is easiest done when instrument is purchased, either direct from factory or ordered through your local music store. See our website for current selection.

### Graph Tech custom nut/saddles

This is a factory upgrade, easiest done when instrument is purchased, either direct from factory or ordered through your local music store. Graph Tech 'Tusq' (blonde) and 'String-Saver' material (charcoal-colored) adds brilliance to the tone, and slightly increased sustain, as well as good looks!

### Easy Touch-Style Bassics

A copy is included with every new instrument, but extra copies are available. They make great gifts. Special discounts available for teachers.

### The JazzMaster Workout

By theory guru Jim Grantham. San Francisco Bay Area saxophonist and music educator has written a thorough but clear method book for learning music, progressions, ear-training, and more. As Grantham says, 'Learn to Burn!'

## Your Warranty

Mobius Megatar Warrants to the Original Purchaser of this Musical Instrument all Materials and Workmanship for a period of One Year from Date of Purchase, damage due to neglect, misuse, or normal wear and tear excepted. To activate Warranty, Warranty Card must be completed and mailed to Mobius Megatar within Ten Days of purchase. Proof of Purchase is the burden of Purchaser. Should the Instrument require service, Purchaser should contact Mobius Megatar to obtain an 'RMA' (Returned Merchandise Authorization) and then ship Proof of Purchase (clearly showing Date of Purchase to establish Warranty Period) along with Instrument prepaid in original shipping carton to Factory. Assuming that Materials or Workmanship are found to be faulty and within Warranty Period, Factory will repair or replace at our discretion, and will ship Instrument to Purchaser (at Purchaser's expense if outside continental United States). Mobius Megatar does not warrant fitness of Instrument for any particular purpose, nor will Mobius Megatar be held responsible for any loss of income or consequential damages due to product failure. No other warranties are expressed or implied.

**To Preserve Your Warranty Rights, please record the following information —**

Instrument Model \_\_\_\_\_

Serial Number \_\_\_\_\_

Purchased from \_\_\_\_\_

Purchase Date \_\_\_\_\_

In the event that you require any Warranty Repair, you will need Proof of Purchase showing the Date of Purchase (which establishes the time period that instrument is covered by Warranty), so we suggest you attach your receipt or other paperwork, just in case.

## Contact Information

### About Mobius Megatar

Mobius Megatar is an instrument manufacturer. Our company was created for the purpose of bringing more music and more 'tappistry' into the world.

'Tappistry', *noun*, the artistry of tapping on strings in order to make music, thus making simultaneous two-handed play possible on guitar-like instruments.

Who are we? We're engineers and we're musicians. We like music, and we like the two-handed touch-style method. And we think that lots of other musicians would like two-handed tapping, if only it were a little easier to play, a little more affordable, and a little better known.

So that's given us our mission: Make a great tapping instrument, designed to be easy to play, designed to be affordable, and place it in musicians' hands all around the world.

### Mobius Products

Mobius Megatar manufactures a line of specialty tapping basses, along with special pickup arrays to customize the sound, and requisite accessories such as strings and cases and instructional material, of which this is the first book of a series.

You can find detailed information about our products on the web at <http://www.megatar.com>

### How to Contact Mobius Megatar

US Mailing Address —  
Mobius Megatar USA  
Post Office Box 969  
Fairfax, CA 94978

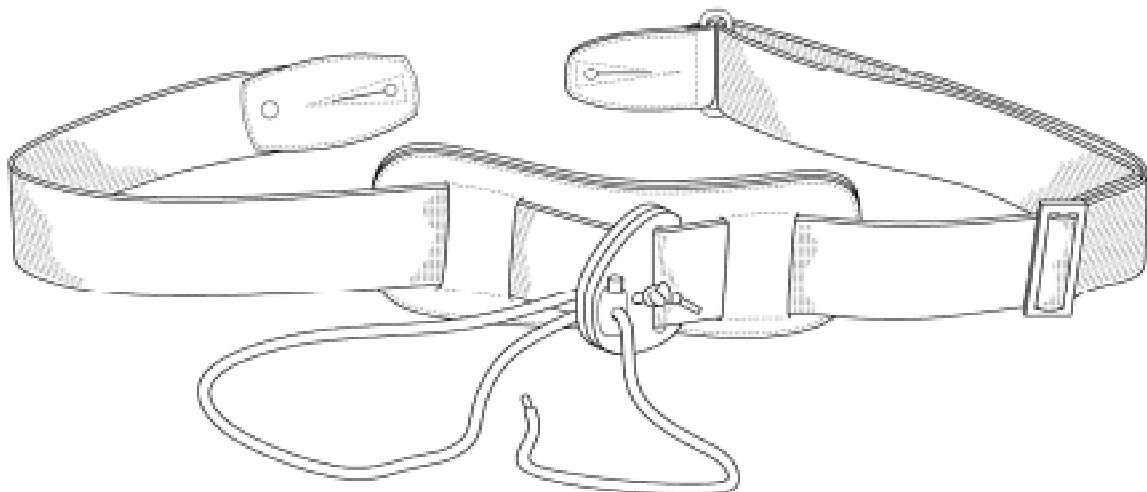
Website —  
<http://www.megatar.com>

Email —  
[tappers@megatar.com](mailto:tappers@megatar.com)

US Office Telephone —  
(415) 435-8803

US Fax Number —  
(415) 453-1485

US Office Hours —  
9am—5pm Monday-Friday,  
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