

## Telecaster® -- Adjustment and Care

The following setup procedures and specifications for your Telecaster were derived using the strings, which come on the instruments as standard equipment from the factory. If you plan to change string gauges, you may need to adjust the specs somewhat to compensate for the changes in string sizes. Modifications of the specifications may also be made, (within limited parameters) to adjust for your individual playing style or application (i.e. how hard you pick, strum, or fret the guitar) Note: These are minimum specifications which are meant to guide you, and should not to be taken as hard and fast rules, as we realize that every player's subjective requirements may differ somewhat.

### Necessary Tools

- Set of automotive feeler gauges (.002 - .025) (0.05 – 1 mm)
- 6" (150 mm) ruler (with 1/32" and 1/64" increments) (0.5 mm increments)
- Light machine oil (3-in-1, toy locomotive, or gun oil)
- Phillips screwdriver
- Electronic tuner
- Wire cutters
- Peg winder
- Polish and cloth

#### Strings

Lets start with strings. First, in order for strings to stay in tune well, they should be changed on a regular basis. Strings that have lost their integrity (worn where the string is pressed against the fret) or have become oxidized, rusty, and dirty will not return to pitch properly. To check if your strings need changing, run a finger underneath the string and feel for dirt, rust or flat spots. If you find any of these, you should change your strings.

No matter what gauge of strings you use or whether they're pure nickel, nickel-plated steel, or stainless steel; for the best tuning stability we recommend you use Fender strings. Fender strings are designed to provide superior performance. Make sure to stretch your strings properly. After you have installed a new set and have them tuned to pitch, hold the strings at the first fret and hook your fingers under each string (one at a time) and tug lightly, moving your hand from the bridge to the neck. Re-tune and repeat several times.

### Tuning Keys

Whether you are using locking, standard, or vintage tuning keys; how you wind the strings onto the pegs is very important. First start by loading all the strings through the bridge and then loading them onto the keys as follows:

Locking tuning keys - Imagine the headcap of the neck is the face of a clock, with the top being at 12 o'clock and the nut at 6 o'clock. Line the six tuning machines so that the 1<sup>st</sup> string keyhole is set at 1 o'clock, the 2<sup>nd</sup> at 2 o'clock, the 3<sup>rd</sup> and 4<sup>th</sup> at 3 o'clock, the 5<sup>th</sup> at 4 o'clock, and the 6<sup>th</sup> at 5 o'clock. Pull the strings through taut, and tighten the thumb wheel locking the string in. Now tune to pitch.

Standard keys - In order to reduce string slippage at the tuning key, we recommend that you use a tie technique. This is accomplished by pulling the string through the keyhole, and pulling the string clockwise underneath itself and bringing it back over the top of itself; creating a knot. You will need to leave a bit of slack for the 1<sup>st</sup> string, so you have at least 2 to 3 winds around the post. As you progress down the line to the 6<sup>th</sup> string you will reduce the amount of slack and the amount of winds around the keys.

Vintage keys - For these keys you will want to pre-cut the strings to achieve the proper length and the desired amount of winds. Pull the 6<sup>th</sup> string to the 4<sup>th</sup> key and cut it (make sure when you are pulling the strings that you are pulling the string taut). Pull the 5<sup>th</sup> string to the 3<sup>rd</sup> key and cut it. Pull the 4<sup>th</sup> string between the 2<sup>nd</sup> and 1<sup>st</sup> keys and cut it. Pull the 3<sup>rd</sup> string just about to the top of the headcap and cut it. Pull the 2<sup>nd</sup> string about a 1/2"(13 mm) past the headcap and cut it. Finally

pull the 1<sup>st</sup> string 1 ½" (38 mm) past the top of the headcap and cut it. Insert into the center hole in the tuning key, bend and crimp to a 90° angle, and wind neatly in a downward pattern (carefully as to prevent overlapping of the strings).

If your tuning keys have a screw on the end of the button, check the tightness of the screw. This controls the tension of the gears inside the tuning keys. DO NOT over-tighten these screws. They should be tightened to "finger-tight." This is very important especially on locking tuners.

## Back to Top

## Bridge

Telecasters can be found with two distinctive types of bridges. The most well known bridge is the vintage style three-section bridge. The other is the modern-day six-section bridge like the American Standard Telecaster bridge. Check your tuning.

Intonation (Roughing it out)

You can pre-set the basic intonation of your guitar, by taking your tape measure and measuring from the inside of the nut to the center of the 12<sup>th</sup> fret (the wire, not the fingerboard). Double that measurement to find the scale length of your guitar. For a vintage three section bridge a series of compensations will need to be made to compensate for the lack of individual string intonation adjustment. Adjust the 1<sup>st</sup> bridge saddle to this scale length, measuring from the inside of the nut to the center of the bridge saddle. Now, adjust the distance of the 2<sup>nd</sup> saddle back from the 1<sup>st</sup> saddle, using the combination of the gauges of the 2<sup>nd</sup> and 3<sup>rd</sup> strings as a measurement (Example: If the 2<sup>nd</sup> string is .011" (0.3 mm) and the third is .013" (0.35 mm) you would move the 2<sup>nd</sup> saddle back .024" (0.65 mm) from the 1<sup>st</sup> saddle). Move the 3<sup>rd</sup> back from the 2<sup>nd</sup> saddle, using the gauge of the 5<sup>th</sup> and 6<sup>th</sup> strings as a measurement.

For the six-section bridge you will make adjustments for each individual string. Adjust the 1<sup>st</sup> string bridge saddle to the scale length, measuring from the inside of the nut to the center of the bridge saddle. Now, adjust the distance of the 2<sup>nd</sup> string saddle back from the 1<sup>st</sup> saddle, using the gauge of the 2<sup>nd</sup> string as a measurement (Example: If the 2<sup>nd</sup> string is .011" (0.3 mm) you would move the 2<sup>nd</sup> string back .011" (0.3 mm) from the 1<sup>st</sup> saddle). Move the 3<sup>rd</sup> back from the 2<sup>nd</sup> saddle, using the gauge of the 3<sup>rd</sup> string as a measurement. The 4<sup>th</sup> string saddle should be set parallel with the 2<sup>nd</sup> string saddle. Proceed with the 5<sup>th</sup> and 6<sup>th</sup> in the same method used for strings 2, and 3.

## Lubrication and String Breakage

Lubricating all of the contact points of a string's travel may be one of the most important elements in ensuring tuning stability, and in reducing string breakage. First, let us explain some of the most common causes for string breakage. The first and foremost contributor to this happening is moisture collection at the point of contact on the bridge saddle. This can be attributed to the moisture and acidity that transfers from your hands or can be a direct effect of humidity in the air. Another factor is metal-to-metal friction and fatigue. The differences in the metal components, over a period of time, react to each other and help breakdown the integrity of the strings. The stronger metal will always attack a softer metal (this is why a stainless-steel string will wear a groove or burr in a vintage-style saddle). Finally, you will also find that different string brands will break at different points of tension, due to the metal make-up and string manufacturing techniques. Since we manufacture our own strings, we are able to design and make our strings perform well for all playing techniques. Now, one of the best ways to reduce string breakage is to lubricate the string/saddle contact point with a light machine oil (we prefer 3-in-1 oil, because it contains anti-rust and anti-corrosive properties) every time you change your strings. The oil acts as an insulator against the moisture, and reduces the friction and metal fatigue.

Another point that should be lubricated is the string tree(s). For this point, a small amount of Chapstick®, applied with a toothpick, works wonders.

## Back to Top

### Truss Rod

There are two different styles of truss rods found on Fender guitars and basses; the “Standard” truss rod and the “Bi-flex” truss rod. Most Fender guitars and basses are equipped with a “Standard” truss rod (there are two types of “Standard” truss rod; one which adjusts at the heel of the neck and one which adjusts at the headstock, but both operate on the same principle). The “Standard” truss rod can counteract concave curvature, for example: in a neck that has too much relief, by generating a force in the neck opposite to that caused by excessive string tension. Fender also uses a unique “Bi-Flex” truss rod system on some instruments. Unlike the “Standard” truss rods, which can only correct a neck that is too concave (under-bowed), the “Bi-Flex” truss rod can compensate for either concave (under-bowed), or convex (over-bowed) curvature, by generating a force in either direction as needed for the correction.

Check your tuning. Install a capo at the 1<sup>st</sup> fret, depress the 6<sup>th</sup> string at the last fret.

With a feeler gauge, check the gap between the bottom of the string and the top of the 8<sup>th</sup> fret—see the specification chart below for the proper gap.

Adjustment at headstock (Allen wrench): Sight down the edge of the fingerboard from behind the headstock, looking toward the body of the instrument. If neck is too concave (action too high), turn the truss rod nut clock-wise to remove excess relief. If the neck is too convex (strings too close to the fingerboard), turn the truss rod nut counter-clockwise to allow the string tension to pull more relief into the neck. Check your tuning, then recheck the gap with the feeler gauge and re-adjust as needed.

Adjustment at neck joint (Phillips screwdriver): Sight down the edge of the fingerboard from behind the body, looking up toward the headstock of the instrument. If the neck is too concave (action too high), turn the truss rod nut clock-wise to remove excess relief. If the neck is too convex (strings too close to the fingerboard), turn the truss rod nut counter-clockwise to allow the string tension to pull more relief into the neck. Check your tuning, then recheck the gap with the feeler gauge and re-adjust as needed.

Note: In either case, if you meet excessive resistance when adjusting the truss rod, your instrument needs constant adjustment, adjusting the truss rod has no effect on the neck, or you're simply not comfortable making this type of adjustment yourself, take your instrument to your local Authorized Fender Service Center.

Neck Radius

7.25"

9.5" to 12"

15" to 17" Relief

.012" (0.3 mm)

.010" (0.25 mm)

.008" (0.2 mm)

## Back to Top

### Action

Players with a light touch can get away with lower action, others need higher action to avoid rattles. Check tuning. Using 6" (150 mm) ruler, measure distance between bottom of strings and top of the 17<sup>th</sup> fret. Adjust bridge saddles to the height according to the chart, then re-tune.

Experiment with the height until the desired sound and feel is achieved.

Neck Radius String Height

Bass Side Treble Side

7.25"

9.5" to 12"  
15" to 17" 5/64" (2 mm)  
4/64" (1.6 mm)  
4/64" (1.6 mm) 4/64" (1.6 mm)  
4/64" (1.6 mm)  
3/64" (1.2 mm)

## Shimming/Micro-Tilt™ Adjustment

Shimming is a procedure used to adjust the pitch of the neck in relation to the body. A shim is placed in the neck pocket, underneath the butt-end of the neck. On many of the American series guitars, a Micro-Tilt adjustment is offered. It replaces the need for a shim by using a hex screw against a plate installed in the butt-end of the neck. The need to adjust the pitch (raising the butt-end of the neck in the pocket, thereby pitching the neck back) of the neck occurs in situations where the string height is high and the action adjustment is as low as the adjustment will allow. To properly shim a neck the neck needs to be removed from the neck pocket of the body. A shim approximately 1/4" (6.4 mm) wide x 1 3/4" (44.5 mm) long x .010" (0.25 mm) thick will allow you to raise the action approximately 1/32". For those guitars with the Micro-Tilt adjustment, loosen the two neck screws on both sides of the adjustment access hole on the neckplate by at least 4 full turns. Tightening the hex adjustment screw with an 1/8" hex wrench approximately 1/4 turn will allow you to raise the action approximately 1/32" (0.8 mm). Retighten the neck screws when the adjustment is complete. The pitch of the neck on your guitar has been preset at the factory and in most cases will not need to be adjusted. Note: If you feel you need this adjustment to be made and you're not comfortable with the procedure, take your guitar to your authorized Fender Service Center.

## Pickups

Set too high, pickups can cause a myriad of inexplicable phenomena. Depress all of the strings at the last fret. Using 6" (150 mm) ruler, measure the distance from the bottom of the 1<sup>st</sup> and 6<sup>th</sup> strings to top of the pole piece. Rule of thumb-the distance should be greatest at the 6<sup>th</sup> string - neck pickup position, and closest at the 1<sup>st</sup> string - bridge pickup position. Follow the measurement guidelines from the chart as starting points. The distance will vary according to the amount of magnetic pull of the pickup.

Bass Side Treble Side

Texas Specials 8/64" (3.6 mm) 6/64" (2.4 mm)

Vintage style 6/64" (2.4 mm) 5/64" (2 mm)

Noiseless™ Series 8/64" (3.6 mm) 6/64" (2.4 mm)

Standard Single-Coil 5/64" (2 mm) 4/64" (1.6 mm)

Humbuckers 4/64" (1.6 mm) 4/64" (1.6 mm)

Lace Sensors As close as desired (allowing for string vibration)

## Back to Top

Intonation (Fine Tuning)

Adjustments should be made after all of the above have been accomplished. Set the pickup selector in the middle, volume and tone controls to the max. Check tuning. Check each string at the 12<sup>th</sup> fret harmonic to fretted note (make sure you are depressing the string evenly to the fret). If sharp, lengthen string by adjusting the saddle back. If flat, shorten string by moving the saddle forward. Remember guitars are tempered instruments, retune, play and make further adjustments as needed. (Note: In the event you have a three section style bridge, compensate between the

strings to minimize the percentage any one string that may be sharp or flat. Listen for an aurally pleasing intonation).

## **Additional Hints**

There are a couple of additional things that you can do to optimize your tuning stability that have more to do with playing and tuning habits. Each time that you go to play your guitar, before you do your final tuning, play for a few minutes to allow the strings to warm-up. Metal expands when warm and contracts when cool. After you have played a few riffs, bent a few notes, you can then do your final tuning. Remember that with most tuning keys it's desirable to tune up to pitch. However, with locking tuners go past the note, and tune down to pitch. Finally, wipe strings, neck, and bridge with a lint free clothe after playing. When transporting or storing your guitar, even for short periods, avoid leaving it anyplace you wouldn't feel comfortable yourself.