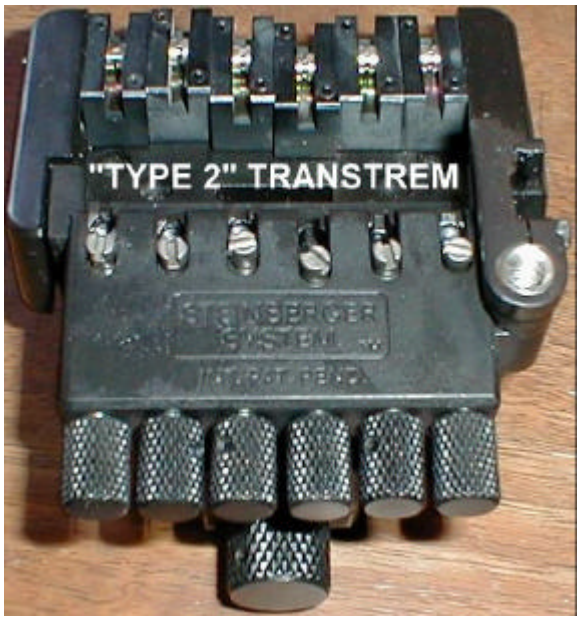
STEINBERGER TRANSTREM (TYPE 2) TECHNICAL DOCUMENT

These instructions apply to newer style TransTrems only (non-threaded ball type or modified threaded ball type). For purposes of discussion, these TransTrems are referred to as “Type 2” TransTrems.

THEORY OF OPERATION

All TransTrems operate the same principle that by slacking and tightening the strings at different distances during trem use, the strings will maintain relative tuning.

This is accomplished in two ways. First, the low string side of the TransTrem (starting at the first or high E string) moves farther during trem movement than does the bass side (low E string). This compensates for the different tensions required to keep the strings in relative tune. Of course, this is not enough to maintain absolutely relative tune, but it gets the system closer to the desired goal.

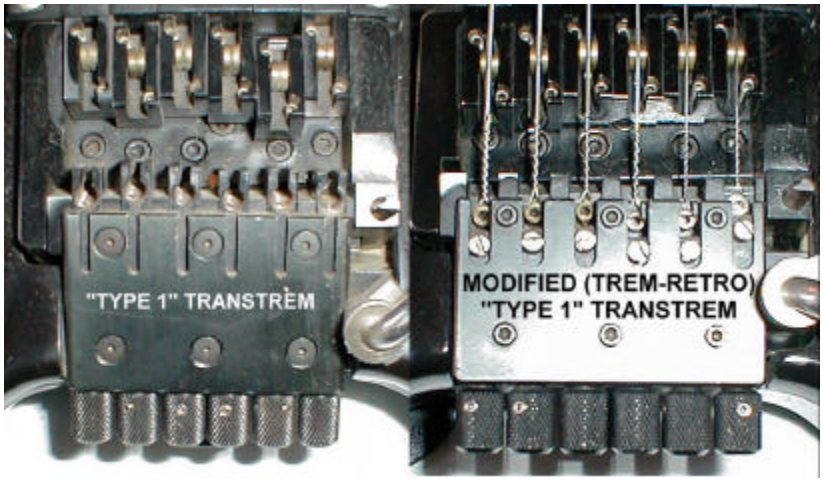


Secondly, the fine tuning of the relative pitch is accomplished by changing the depth of the string balls. For example, if you bend up two steps, and one of the strings is sharp, you raise the string ball (detuning it slightly) so that it is tune. Conversely, if the string is flat, you lower the ball to bring it to proper pitch.

This string ball height adjustment is the heart of the two different types of TransTrems.

Older (Type 1) units require a threaded ball string. The string claw is threaded to accept the threaded ball end of the string. This allows you to set the string ball height with an Allen wrench (inserted into the string ball).

Newer (Type 2) units feature an adjustable string claw for each string. This allows you to set the ball depth with a screwdriver (adjusting the captive string ball holder) rather than an allen wrench. It also simplifies string changes since you don't need to unscrew the string ball from the claw - you can just pop it out like on a normal S-Trem or R-Trem bridge.



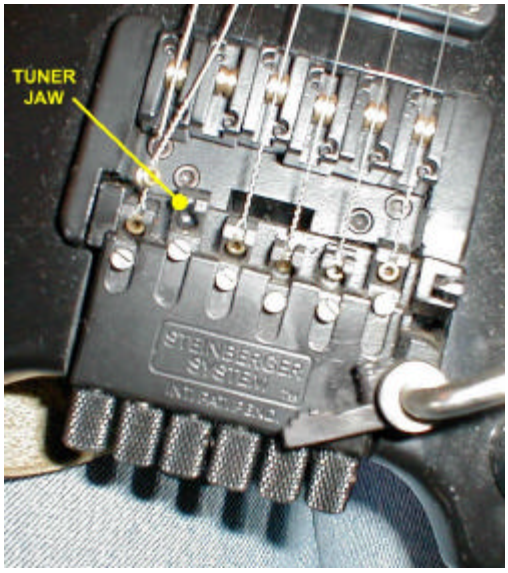
A modification was offered (referred to as the Trem-Retro modification) which allowed older trems to be modified to use the newer adjustable string claws. All that is actually required for this is a new trem face cap (the solid piece that sits over the string claws), new screws to mount the new cap, and the new type string claws. (It may be possible to perform this mod by simply replacing the entire center mechanism with one from a new TransTrem, but I have never tried this.)

NOTE

It is thought by some that the older TransTrems sound better than the newer ones because they are made from a forged (as opposed to a cast) material. I must admit that the more newer L series guitars I see, the more I am beginning to believe this.

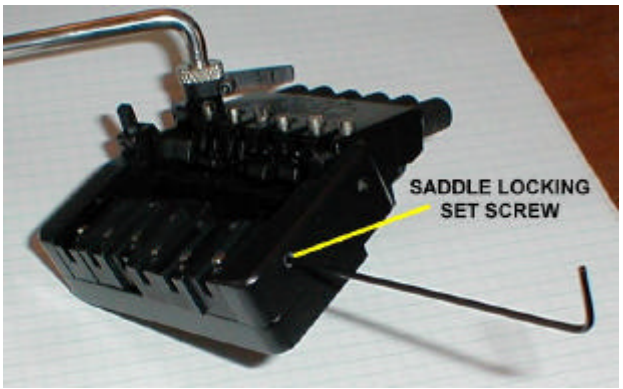
DISASSEMBLY INSTRUCTIONS

1. Remove strings from TransTrem by loosening tuning knob until strings are slacked enough to be removed from tuner jaws.



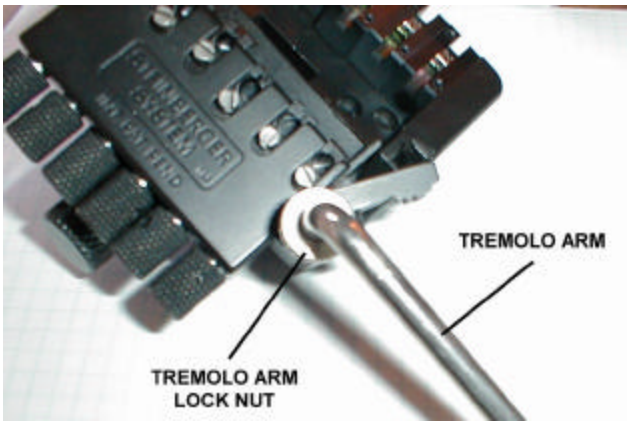
2. Loosen Spring Tension Knob completely by rotating it counterclockwise until it stops.

3. Use a 1.5mm Allen wrench to loosen Saddle Locking Set Screw until Saddles can be moved.

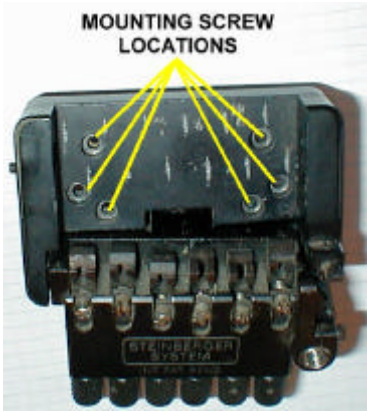


4. Lift Saddles out of TransTrem.

5. Remove Tremolo Arm and Tremolo Arm Lock Nut from TransTrem by rotating counterclockwise until completely unthreaded.



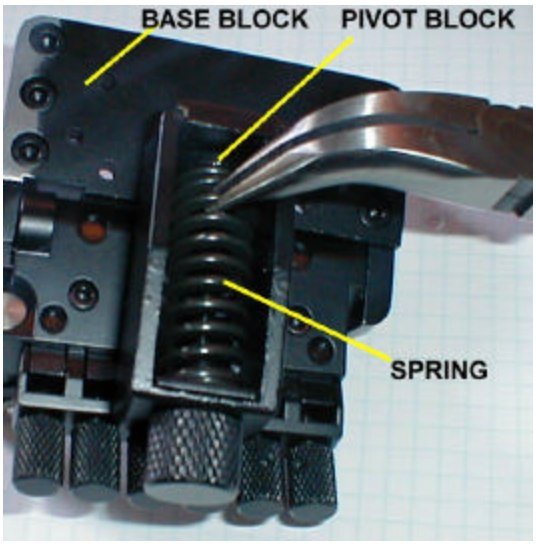
6. Depending on the type of instrument you have, the method used to attach the TransTrem to the body varies. Wood-bodied instruments used Fillister-Phillips head wood screws to attach the TransTrem to the body. Graphite instruments use Allen-head machine screws. Use a P2 Phillips screwdriver to remove the TransTrem mounting screws from wood-bodied instruments. Use a 7/64" Allen wrench to remove the TransTrem mounting screws from graphite-bodied instruments.



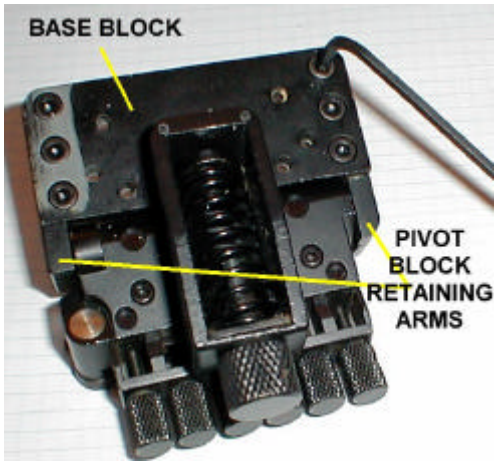
7. Lift the TransTrem out of the body cavity. (This may require some jiggling of the TransTrem.)

8. Turn the TransTrem over so that the TransTrem Spring is visible.

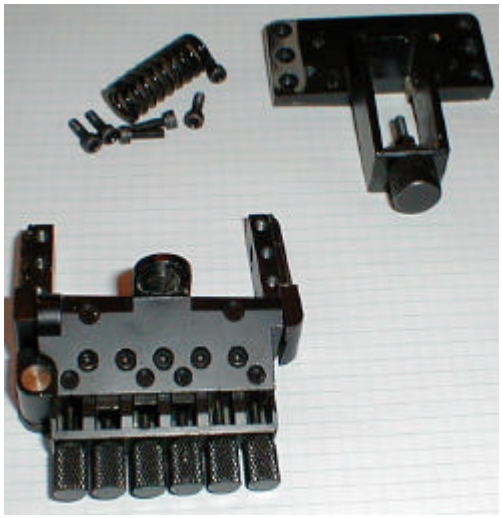
9. Using a screwdriver or needle-nose pliers, remove the TransTrem Spring from the Pivot Block (the side opposite the Spring Tension Knob) by forcing the spring toward the Spring Tension Knob and up out of the TransTrem Base Block.



10. Use a 3mm Allen wrench to remove the six screws securing the TransTrem Base Block to the Pivot Block Retaining Arms.

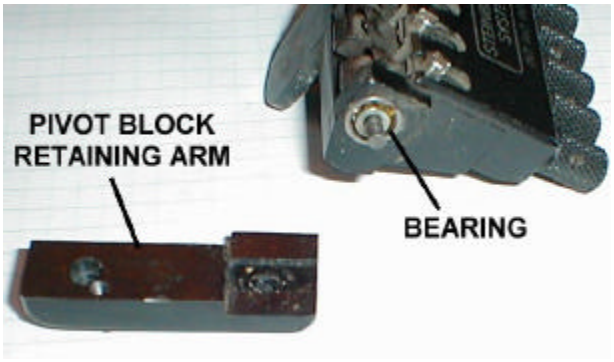


11. Lift the TransTrem Base Block off of the Pivot Block and Pivot Block Retaining Arms.



12. While holding both Pivot Block Retaining Arms to the TransTrem Pivot Block, carefully turn the TransTrem over.

13. Carefully remove one of the Pivot Block Retaining Arms from the TransTrem Base Block and Pivot Block.



14. Each Pivot Block Retaining Arm acts as the outer race for a TransTrem Bearing and one washer (referred to as the Outer Washer). Make note of the location of this washer for use during re-assembly.

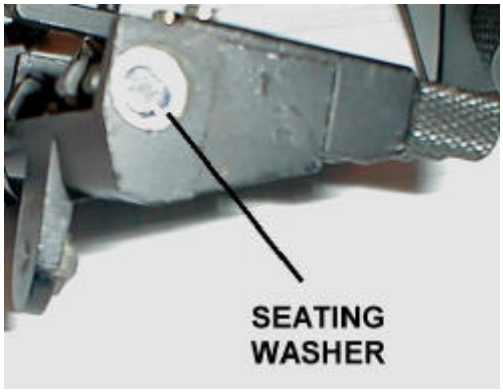
NOTE

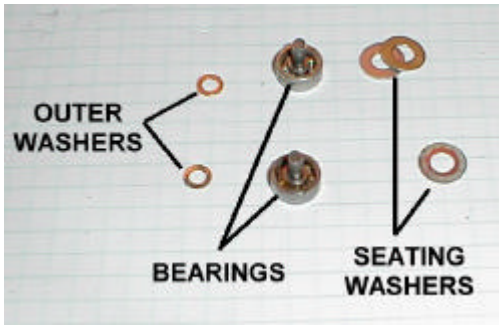
When a TransTrem is in good condition (clean and well lubricated), the bearings may actually come off with the Pivot Block Retaining Arms. In other cases, force may be required to remove the TransTrem Bearing from the Pivot Block. Use caution when removing the bearings so as not to damage the Pivot Block.

15. Repeat steps 13 and 14 for the other Pivot Block Retaining Arm.

16. Carefully remove the TransTrem Bearing from the Pivot Block. (When a TransTrem is in good condition (clean and well lubricated), the bearings may actually come off with the Pivot Block Retaining Arms. In other cases, force may be required to remove the TransTrem Bearing from the Pivot Block. Use caution when removing the bearings so as not to damage the Pivot Block.

17. Make note of the number and position of, and remove, the large seating washer(s) that sits beneath the TransTrem Bearing in each side of the Pivot Block. One or more seating washer may reside beneath each TransTrem bearing. These seating washers are used to "build up" the placement of the TransTrem bearing so that the bearing will be relatively flush with the outer surface of the Pivot Block when installed.

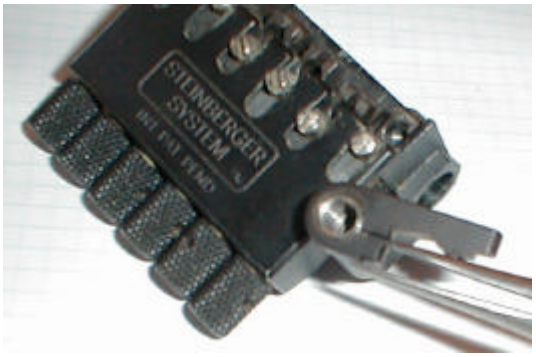




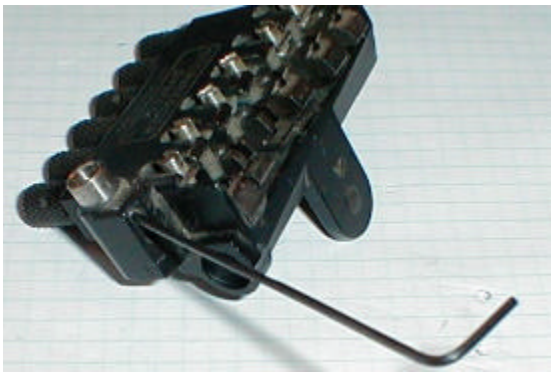
18. Use a punch to remove the Bearing Roller Pin from the bearing.

19. Use a 2mm Allen wrench to loosen the Transposing Arm Retainer Screw.

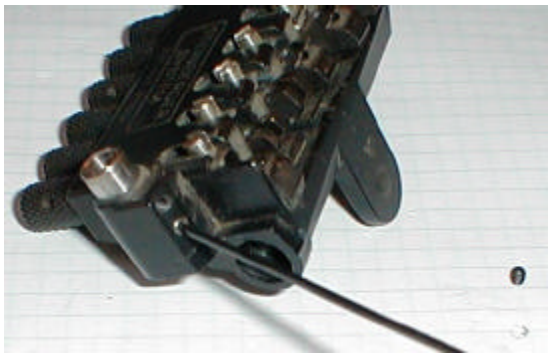
20. Remove the Transposing Arm from the Tremolo Arm Retainer. It may be necessary to insert a wedge between the gap in the loop of the Transposing Arm in order to loosen it enough to be easily removed. A pair of fine tipped needle-nose pliers or a small flat blade screwdriver will do fine.



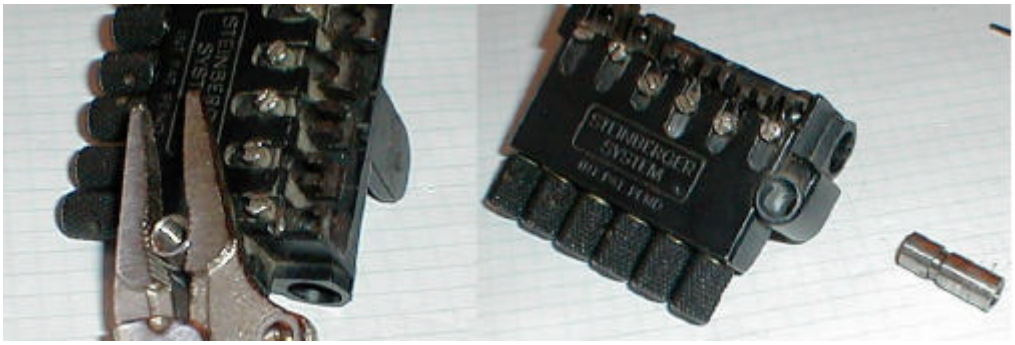
21. Use a 1.5mm Allen wrench to remove the Tremolo Arm Friction Adjustment Screw.



22. Use a 1.5mm Allen wrench to remove the Tremolo Arm Retainer Screw.



23. Pull the Tremolo Arm Retainer and Transposing Arm from the Pivot Block as an assembly. It may be necessary to use more force than fingers can provide. If so, it is recommended that you use a pair of vice-grips, set loosely. Close the vice-grips loosely then tighten onto the Tremolo Arm Retainer with just enough pressure to remove.

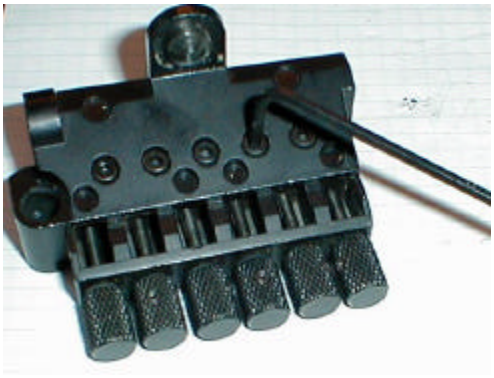


NOTE

Do not remove Tuner Jaws (String Claws) unless necessary to perform additional repair or lubrication. If it is necessary to remove all Tuner Jaws at the same time, make note of location of each since there are four different types. (One type each for high E, B, G, and one type for Low E, A and D.)

24. Unscrew Tuning Knob for each tuner until the String Claw can be removed from the Pivot Block.

25. Use a 3 mm Allen wrench to remove the five screws securing the Pivot Block to the Tuner Assembly.



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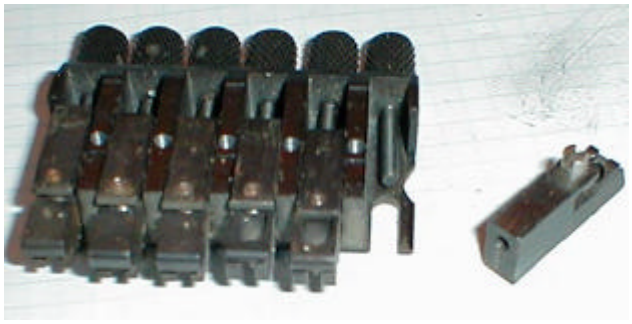
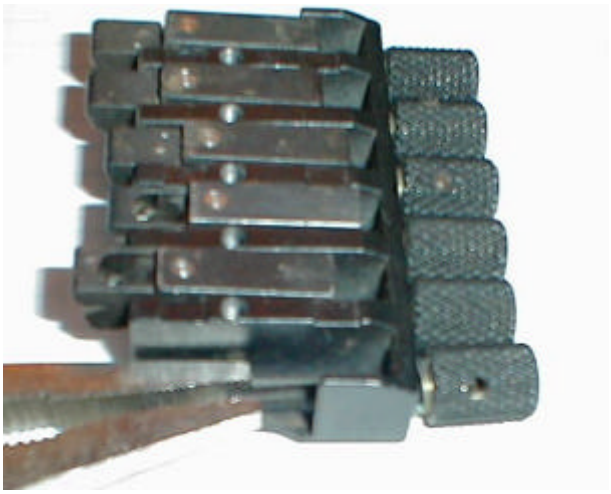
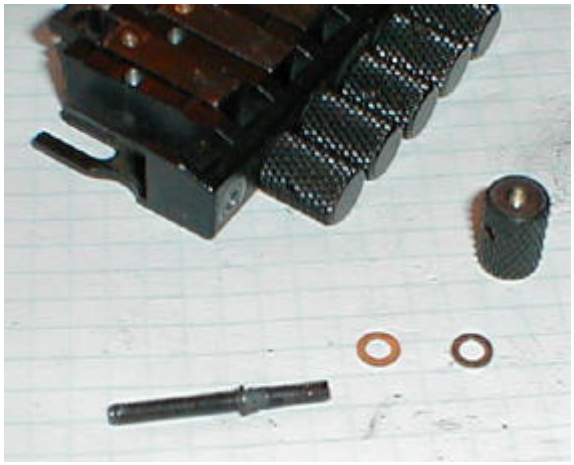


27. Use a 1.5mm Allen wrench to remove the Tuning Knob Retaining Screw for one of the Tuning Knobs.

28. Carefully grip the Tuning Screw from inside the Tuner Assembly. It is recommended that you use a pair of vice-grips, set loosely, along with a piece of cloth to protect the threads of the Tuning Screw. Close the vice-grips loosely then tighten onto the Tuning Screw with just enough pressure to hold.



29. Unscrew the Tuning Knob from the Tuning Screw and remove, along with two flat washers (located between the Tuning Knob and the Tuner Assembly).



30. Repeat steps 26 through 29 for each Tuning Knob as required.

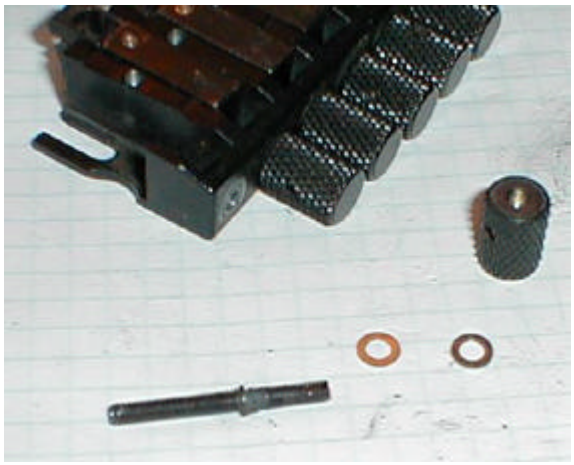
ASSEMBLY INSTRUCTIONS

Assembly is generally the reverse of disassembly. Instructions are given for instances where specific instructions are required.

1. Carefully grip the long threaded portion of the Tuning Screw. It is recommended that you use a pair of vice-grips, set loosely, along with a piece of cloth to protect the threads of the Tuning Screw. Close the vice-grips loosely then tighten onto the Tuning Screw with just enough pressure to hold.

2. Install the Tuning Screw into the Tuner Assembly and insert the shorter threaded end through the corresponding opening.

3. Install two flat washers on the protruding end of the Tuning Screw.



4. Make a mental note of the location of the “flat” on the Tuner Screw.

5. Install the Tuning Knob onto the Tuning Screw and tighten (clockwise) until the Tuning Knob no longer will turn.

6.

Steinberger TransTrem Operating Instructions

Installing Tremolo Arm

To install, spin arm clockwise into threaded hole a minimum of four full turns. When arm is screwed in almost to the desired position, tighten knurled locking nut firmly down. Tighten both arm and nut together for about 1/8th turn more to lock into position.

To remove or re-adjust arm, spin arm counter-clockwise until small transposing arm contacts back of pin. Continue turning until arm is free. To adjust rotational friction of transposing arm, turn set-screw located diagonally under arm on tuner housing.

To Use Tremolo

Rotate arm into playing position and use normally.

To Transpose

Drop arm down, then turn clockwise to engage D, C, and B tunings. Pull arm up and turn clockwise to engage F# and G tunings. To disengage, rotate arm counter-clockwise.

To Tune

Lock tremolo in center E position by rotating arm clockwise then tune each individual string with small tuning knobs as you would normally. **ALWAYS LOCK TO TUNE!**

To Replace Strings

To remove, loosen tuning knob until string is slack and the ball end can slide up and out of the jaw. The "B" and "G" string balls are deep in the jaw and restricted from upward movement by a small lip. Simply move the ball back in the jaw and lift to remove.

To install strings, align string ball with hole in jaw and push the ball down as far as it will go. The "B" and "G" string balls must be pushed below the small internal lip. Pull up to lip for stable operation.

After rough tuning, push the tremolo arm up and down several times to set the strings. Fine tune and adjust transposing features, if necessary.

To Adjust Tremolo Return

After unit is tuned, rotate arm counter-clockwise to disengage center lock. If tremolo moves and does not remain in tune, turn the Spring Tension Knob at the bottom of the guitar to adjust it to pitch.

Tremolo should not move or change pitch when going in and out of locked position. Additional tremolo positions of Eb and F are possible by further adjustment of the spring tension knob.

Action and Intonation

Unlock the saddles with side set screw (1.5 mm allen wrench required). Adjust action (vertical movement) with individual saddle set screws.

For bridge intonation (horizontal movement), push saddles manually. If intonation is sharp at the 24th fret, push saddle back (toward tuning knobs). If intonation is flat at the 24th fret, push saddle forward (toward headpiece).

ALWAYS LOCK side set screws when bridge adjustment is completed.

To Adjust Transposing Feature

The TransTrem™ should transpose all strings in tune. Starting from standard tuning, the pattern should be as follows.

Down 3	**Down 2**	**Down 1**	**Center**	**Up 1**	**Up 2**
String	**Steps**	**Steps**	**Step Notch**	**Step**	**Steps**

1 st E B C D E F# G
2 nd B F# G A B C# D
3 rd G D Eb F G A Bb
4 th D A Bb C D E F
5 th A E F G A B C
6 th E B C D E F# G

Adjust Trans Trem™ at the Down 2 Steps and Up 1 Step intervals.

If a string does not maintain tune according to this chart, the tuner jaw must be adjusted up or down. Use a small screwdriver, or a coin to adjust the screw located just behind each jaw. Turn clockwise to move jaw down, counter-clockwise to move jaw up as follows:

1. Set transposing arm Down 2 Steps and tune according to chart. (Example: "E" string should be "C")
2. Transpose to Up 1 Step and check new pitch to chart. (Example: "E" string should be "F#")
3. Adjust jaw height. If pitch is sharp, lower jaw height by turning screw clockwise. If pitch is flat, raise jaw by turning screw counter-clockwise.
4. Repeat steps 1 thru 3 until pitch is correct in both positions. All other transposing positions should now be automatically in tune.