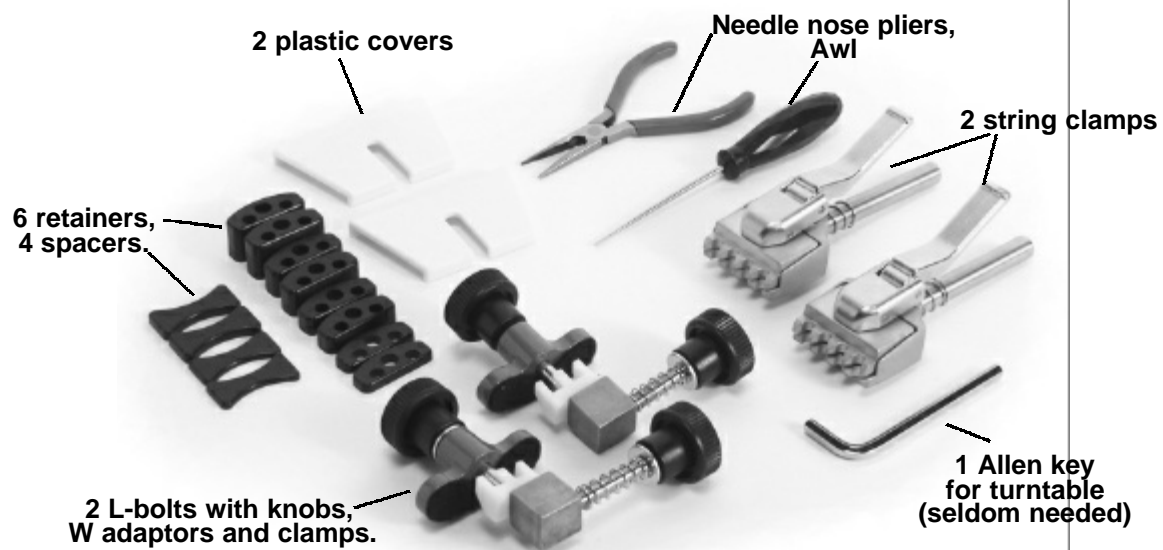


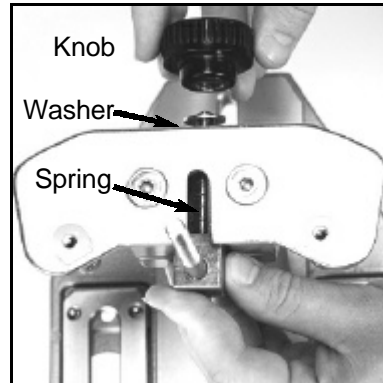
OWNER'S MANUAL AND STRINGING INSTRUCTIONS



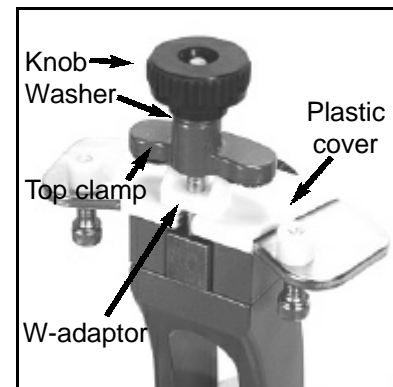
INSPECT YOUR PACKAGE UPON RECEIPT AND LOCATE ALL COMPONENTS.

ASSEMBLY

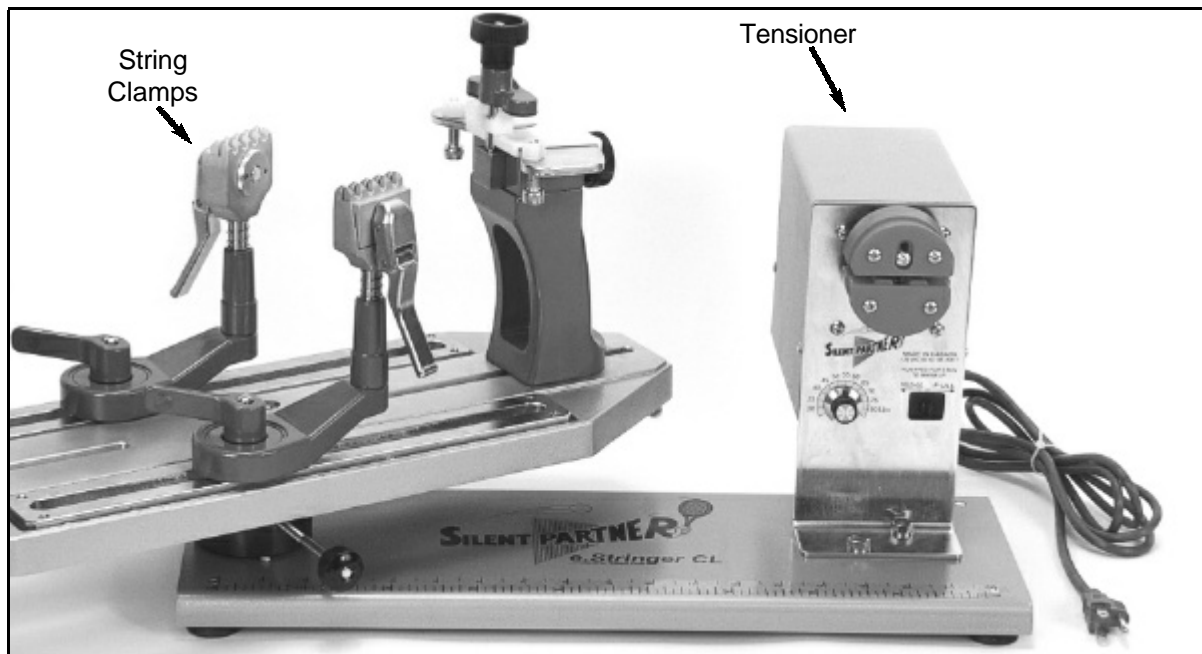
Assemble the L-bolt noting the location of the spring. Push against the spring so that the horizontal bolt protrudes on the other side of the mounting post. Place a washer over the horizontal bolt and thread the knob.



Top plate is held tightly for shipping. It must be loosened to allow plate to swivel slightly so that all supports can touch the racquet frame. Back each screw by half a turn. Now install plastic cover, W-adaptor, top clamp, washer, and knob.



Complete assembly by inserting the two string clamps into the swivel clamp bases and then bolt the tensioner on the base.



The turntable of new machines should be cleaned thoroughly to remove any oil residue left by the manufacturing process. In particular, clean the tracks of the mounting posts and of the swivel clamps from above and below.

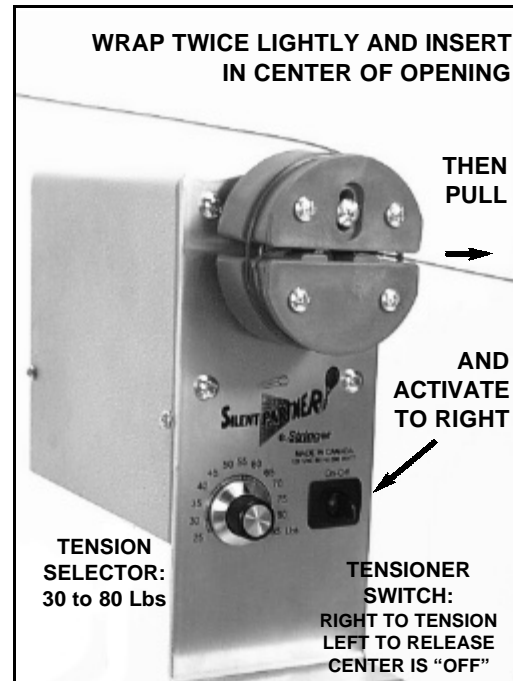
Always warm tensioner up before stringing. This is to allow the lubricant in the motor's gearbox to reach operating temperature. Warm up consists of turning the motor on by flipping the switch to the right, and allowing the motor to run for 5 minutes before starting to string.

TENSIONING THE STRING

Tension is selected by means of the knob shown in the lower left of the picture. To tension the string wrap it twice around the string gripper and then insert it in the center of the opening between the two sections of the gripper. Tensioning is activated by flipping the switch to the right. Pull on the loose end of the string until the gripper has shut and secured the string. Allow the gripper to come to a full stop.

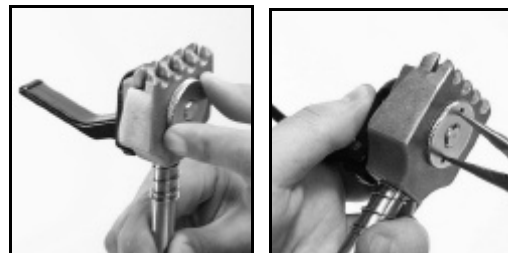
RELEASING THE STRING

After clamping the string, place the tensioner in reverse by flipping the switch to the left. When the string is free from the string gripper, turn the tensioner off by placing the switch in the center position.



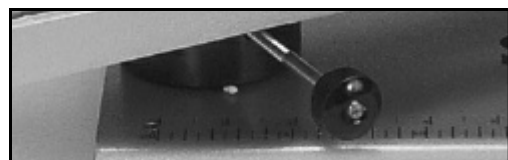
ADJUSTING THE STRING CLAMPS

The clamps should pinch the string tightly without damaging it. Different strings and different gauges require different adjustments. Adjustment can usually be done with finger tips. Needle nose pliers can be used if necessary. Clamp should be open when adjustment is made.



THE BRAKE

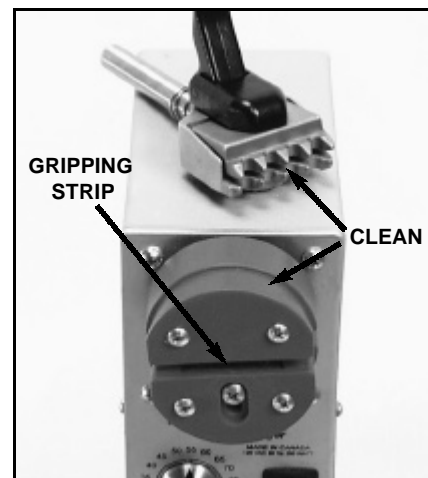
The brake is used primarily when tying knots and when calibrating. The turntable should turn freely during string tensioning to allow proper alignment of the racquet.



MAINTENANCE

The electronics and the motor of the e.Stringer FL do not require maintenance. Maintenance is limited to periodic cleaning with alcohol of the surfaces that come in contact with string (the rim of the string gripper and the jaws of the clamps). Cleaning the sliding surfaces of the turntable tracks (from above and below) is also important.

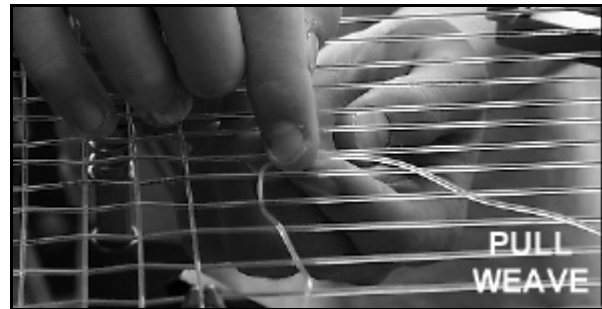
The string gripper contains a double sided gripping strip that must not be cleaned with alcohol. If, after long usage, it becomes necessary to tend to the gripping strip (noticeable because of slippage of the string), one should 'flip' the strip over to expose its unused surface. This is achieved by removing the two screws that secure the cover plate to gain access to the strip and withdrawing it delicately.



WEAVING TECHNIQUES

There are two common techniques for weaving the cross strings over and under the mains. Both techniques require that one hand be placed over the string bed and the other hand under it.

- 1) Secure the string between the index finger of each hand and push it away from you as you snake it over and under successive main strings.
- 2) Secure the string with two fingers placed about six inches from the end of the string and pull the resulting loop towards you as you snake it over and under successive main strings.



TYING KNOTS

Knots normally involve an anchor string (a string that is already installed and tensioned) and a tying string (a loose string end that is threaded through the same hole as the anchor string and wrapped around the anchor string in a self-locking pattern).

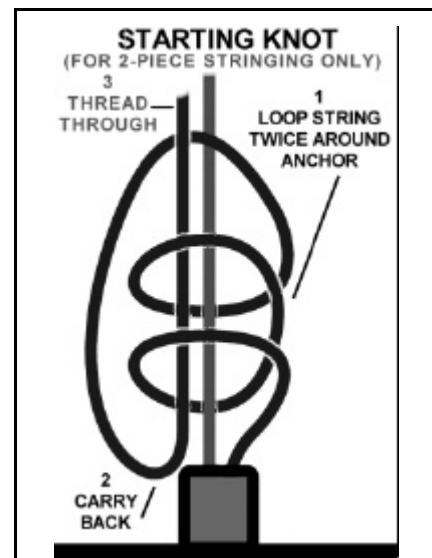
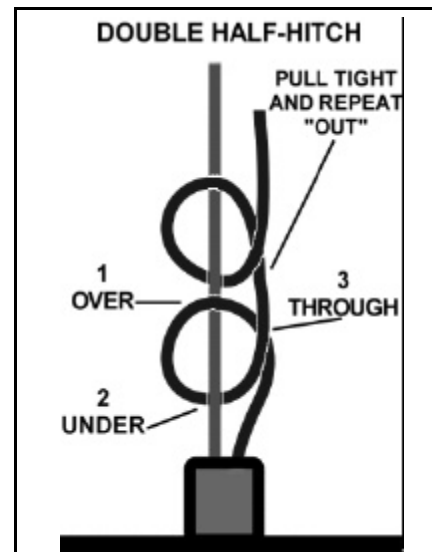
The most common knot in racquet stringing is known as the DOUBLE HALF-HITCH. To tie a half-hitch knot remember the "OUT" rule: take the tying string Over the anchor string, guide it Under and around the anchor string, and finally pull it Through the loop that the tying string has formed. To lock this knot in place you need only pull on the end of the tying string. A single half-hitch would normally be secure but it is standard practice to double up on the half-hitch for added security. The second half-hitch is tied exactly the same way using the OUT rule.

Two-piece stringing requires what is known as a STARTING KNOT to provide an initial anchor for the crosses. One important property of the starting knot is its bulk, which is useful when using thin strings. Note that while the starting knot is initially loose, the pull of the first cross as it is being tensioned tightens the knot very securely.

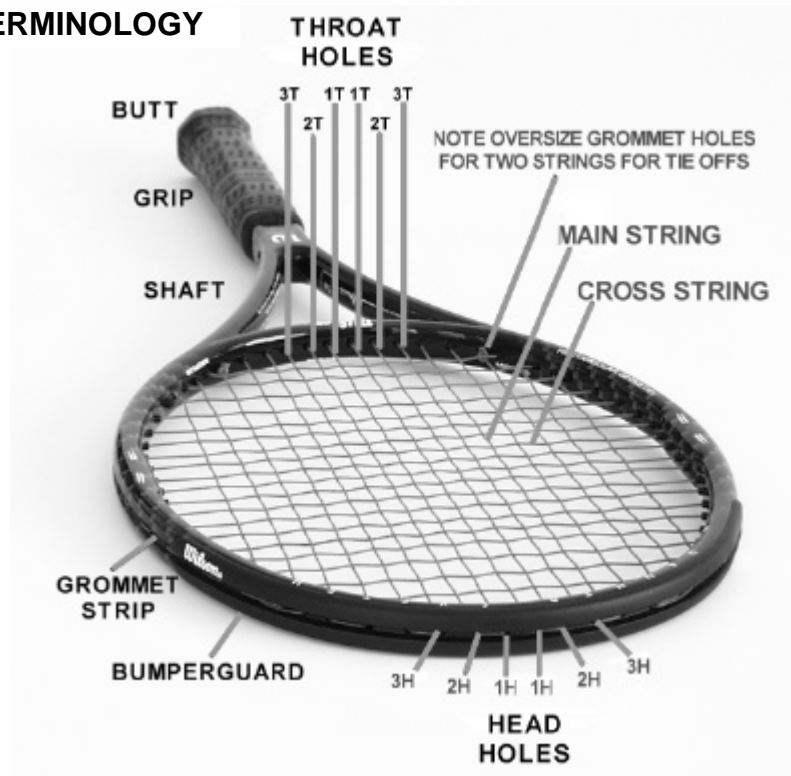
When tying knots it is helpful to lock the racquet in place using the screw-in brake on the cross bar. For tight knots, it is also desirable to use needle nose pliers to pull on the string. For safety, pull down (away from your face). Also for safety it is advisable to wear protective eye glasses while stringing.

WANT TO STRING FASTER?

1. Perfect your weaving and knot tying techniques! Advanced stringers often weave "one ahead" (see picture 5 on page 11). This technique exploits the "lifting" effect the tensioned "cross" has over the "mains" and helps reduce friction when crosses are pulled through mains.
2. Keep track of the string ends so that you don't have to keep searching for them. Keep them under a wrist band or in the next hole they will be threaded through (picture 5 on page 11).
3. Keep string ends cut at a sharp angle. This will allow them to act as awls when pushed through tight grommet holes.



RACQUET TERMINOLOGY

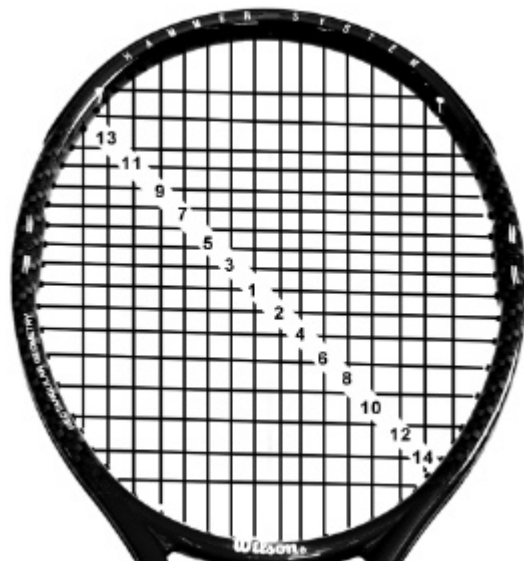


RACQUET INSPECTION

Examine the frame for hairline cracks and for warpage. A frame that suffers from structural weaknesses may not be worth stringing. Next look for repairable damage. A common wear point is at the head of the racquet where the protective bumperguard may be damaged from contact with the court. Grommets can also wear on the inside of the frame where strings are tied. Although it is normal for grommets to flare from the compression caused by knots at tie off points, grommets that allow the string to touch the racquet frame should be replaced. If replacement is indicated, you may want to consult with a professional for advice on how to proceed and for obtaining the exact replacement part for your racquet. If you obtain the replacement grommet and want to install it yourself, be mindful of the following points: (1) the replacement grommet strip must be made specifically for your racquet, (2) Start at one end by inserting the first grommet into the appropriate hole in the racquet and then proceed to adjacent grommets in succession. You will soon find it necessary to help each grommet pass through the inner hole in the racquet frame by guiding it with the point of an awl. (3) Used grommet strips cannot be reinstalled.

CUTTING OLD STRINGS

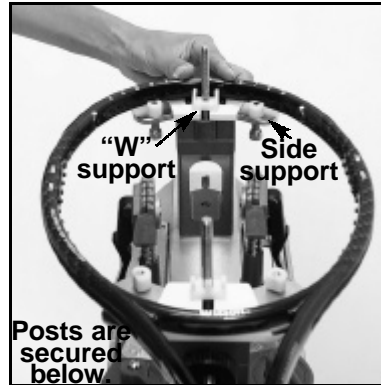
Because the breakage of a string causes substantial imbalance in the distribution of tension in the frame, it is advisable for the owner of the racquet to cut through the entire string bed as soon as possible after a string breaks. To avoid creating further stress as one cuts into the string bed, it is best to begin at the center of the racquet by snipping a main and a cross string together where they intersect. One should then proceed outward in a diagonal toward the rim by snipping intersecting strings above and below the center point in alternation. If, after reaching the rim, a few strings still hold tension, they can be cut singly. Remove the strings by pulling them out of the frame from the outside. Lay the pieces in a neat bundle to facilitate clean-up.



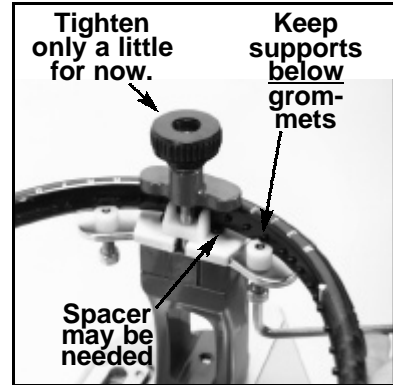
1. Top plate is held tightly for shipping. It must be loosened to allow all supports to touch the racquet. Before first use, back each screw by half a turn and then install plastic cover.



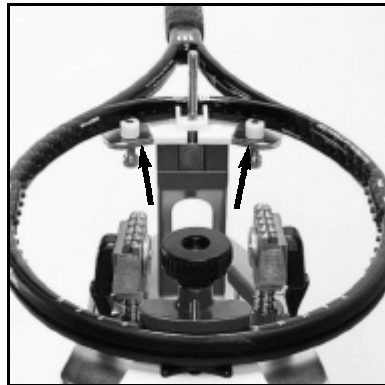
2. Secure one post tightly to the turntable and center the head of the racquet over it. Rim should touch the two side supports. W support should be close to the rim or touching it. Use black retainer if W support does not fit.



3. Install upper clamp making sure that the side supports are not touching the grommets. The height of the side supports can be adjusted, and a spacer can be placed below the tip of the racquet.



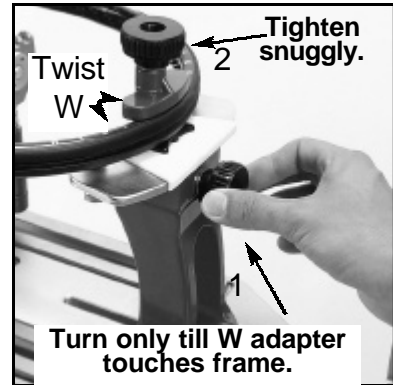
4. Loosen throat post and move it so that side supports touch the racquet. Now tighten the post from underneath the turntable (very tight). W support should be close to the rim or touching it.



5. Install upper clamp making sure that side supports are not touching the grommets. Tighten lightly. Racquet should be horizontal. Use spacers to level it if necessary.



6. Finish installation by turning micro adjusters at head and throat clockwise. Twist W support back and forth while tightening to determine when it has touched the rim then STOP. Now tighten top clamps.



Racquet is now mounted securely!



PATTERNS AND WHERE TO FIND THEM

Each racquet has a stringing pattern that is specified by the racquet manufacturer. The table below shows the pattern for a Wilson Hammer 5.8 95 (mid size), the racquet we will use in this stringing tutorial. Once you understand the basic steps involved in stringing this racquet, you will be able to interpret the pattern for any racquet. To assist you, we have posted the patterns for a large number of racquets on the internet. Here is where you will find them:

www.sptennis.com/patterns.html

RACQUET	TENSION	PATTERN	START LOOP	MAINS SKIP	TIE MAINS	ONE PIECE				
						LENGTH (TOTAL)	SHORT SIDE	START CROSS	LAST CROSS	TIE OFF
Wilson Hammer 5.8 95	LBS 50-60	M x X 16x19	T	7T,9T 7H,9H	6T	34'	8.5'	7T	7H	5H
						TWO PIECE				
						LENGTH M x X 18'x15'		START CROSS	LAST CROSS	TIE OFF
								7H	7T	5H,11T

To interpret stringing patterns correctly it is important to know what each part of the racquet is called.

- * The tip of the racquet is known as the HEAD and is referred to as "H" in stringing patterns.
- * The bottom of the racquet head is known as the THROAT and is referred to as "T" in patterns.
- * The strings that run from the throat to the head of the racquet are known as the MAINS and are referred to as "M" in stringing patterns.
- * The strings that run from side to side in the racquet head are known as the CROSSES and are referred to as "X" in stringing patterns..
- * The holes in the racquet head are referred to by number, counting in either direction from the center at the head (e.g. 7H) or at the throat (e.g. 7T).

Deciding whether to go with 1-piece or 2-piece stringing

Notice that the stringing pattern for the Hammer 5.8 contains information for one-piece stringing and two-piece stringing. One-piece stringing is the most common, but it is not always the best. A description of the two methods of stringing follow along with a few of their advantages and disadvantages. When all is said and done, both methods yield excellent results. To avoid unwanted stresses, some racquet manufacturers occasionally specify only one method for stringing some of their frames.

One piece stringing is done with a single piece of string that is tied in two places only. The string is divided into what is known as a "short side" and a "long side". The short side is used to string the mains on one side of the racquet head, ending in one tie off, while the long side is used to string the mains on the other side as well as all of the crosses ending with the other tie off.

- + Two knots take less time than four (but don't worry, tying knots is really easy).
- + String usually comes in one coil and can be used with less cutting this way.
- The same type of string needs to be used for the mains and the crosses.
- The long side of the string is a bit cumbersome when lacing the mains.

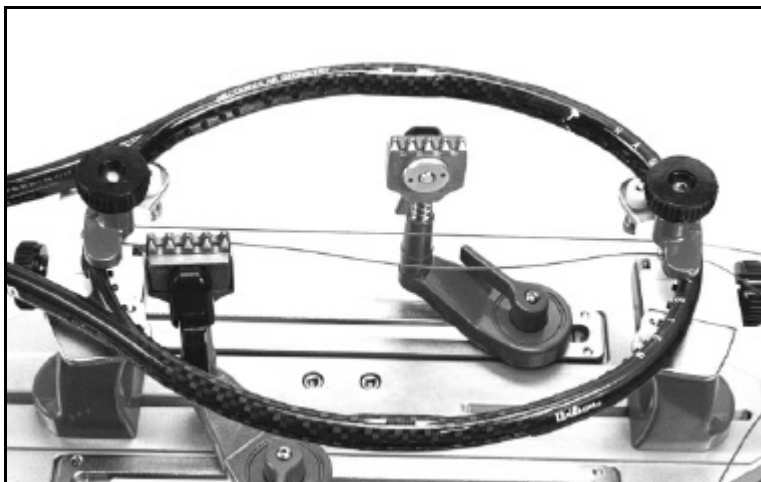
Two-piece stringing utilizes one piece of string for the mains and another for the crosses. The piece used for the mains is divided into two equal parts around the center point of the racquet and is laced symmetrically on both sides of the center point, ending in a tie off at each end. The crosses are started at one end with a "starting knot", and are weaved to the other end where they are tied off.

- + Allows the use of different strings for the mains and crosses.
- + Neither piece of string is very long, making it easier to lace the mains.
- Unless the string is packaged as a hybrid, a bit more measuring is necessary.
- Four knots are more intimidating for beginners than two (despite our reassurances).

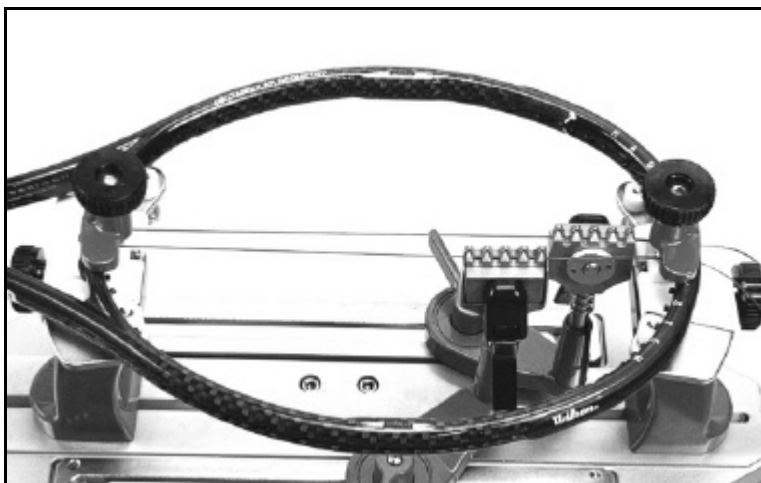
Stringing normally begins with the mains at the center of the racquet and proceeds outward to the sides of the frame. Measure enough string for the short side according to the racquet pattern and form a loop at the head or throat according to the pattern for the racquet you are stringing. For two-piece stringing, the string on each side of the loop is of equal length.



Place a clamp on the loose string on one side of the loop and tension the string on the other side. The friction on the string as it loops the grommet is necessary to avoid slippage at the clamp. This is a good time to check the adjustment of the clamps. They should pinch the string securely but not excessively. If you see clamp marks on the strings, reduce the tightness of the clamp by turning the adjusting screw counterclockwise (see middle picture on page 2).

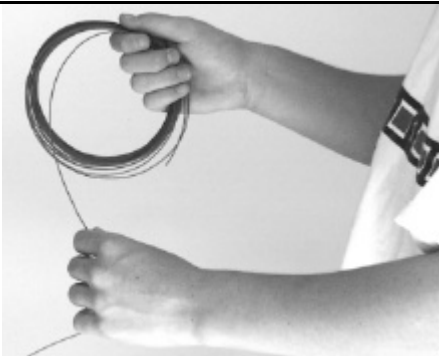


Allow the string gripper to come to rest then clamp the first string with the available clamp. Put the tensioner in reverse after clamping the string. Now tension the other string and move the clamp that was at the throat to the head. The thickness of the clamps necessitates staggered placement at the beginning. Otherwise clamps should be placed as close to the rim as possible, without touching it.



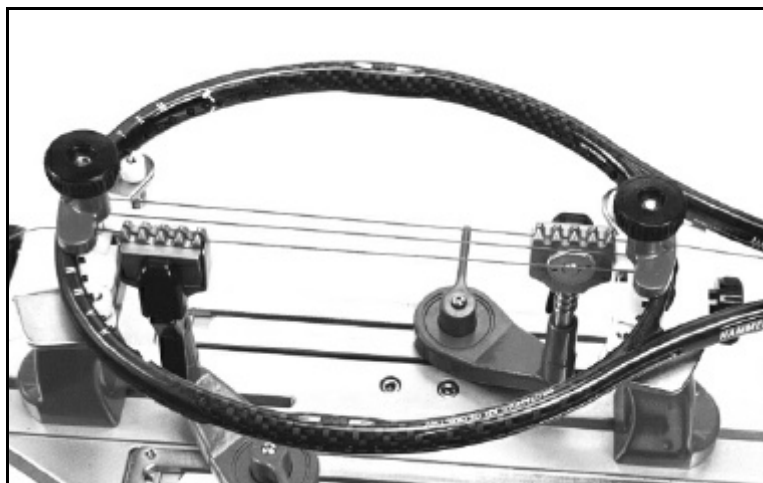
HELPFUL HINT FOR UNCOILING STRING

Stringing a racquet is a little like going fishing -- the hardest part is often dealing with tangles. To avoid spending a long and frustrating time untangling string (not uncommon with beginners) snip the plastic tie with diagonal cutters while holding the roll of string tightly with one hand (be careful not to snip a string in the process or you could cut your roll in half!). Continue to hold the roll with one hand and use the other hand to unwrap the string one coil at a time, allowing the loose end to gather on the floor. It will help you to know that a 40 foot roll contains about 32 coils. Under most circumstances, however, you will need to measure the string using the measuring rule on the e.Stringer. Note that some strings have strong "coil memory". In such cases it is advisable to prestretch the string "tug-of-war" style after tying one end to a secure anchor such as a door knob.

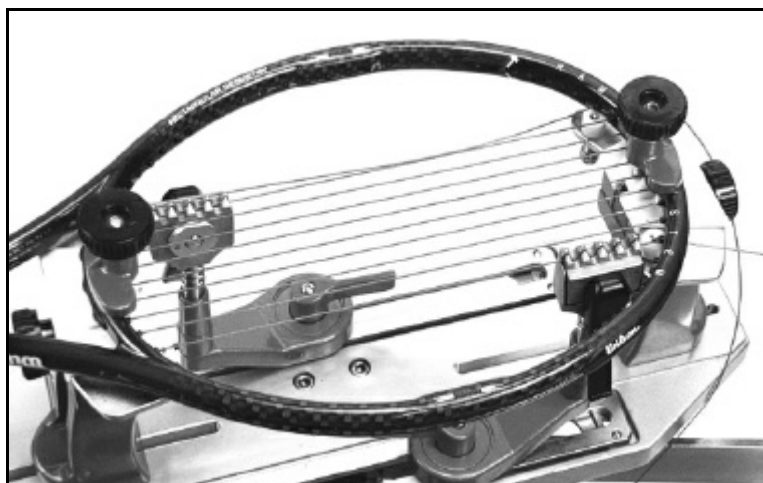


RACQUET	TENSION	PATTERN	START LOOP	MAINS SKIP	TIE MAINS	ONE PIECE				
						LENGTH (TOTAL)	SHORT SIDE	START CROSS	LAST CROSS	TIE OFF
Wilson Hammer 5.8 95	LBS 50-60	M x X 16x19	T	7T,9T 7H,9H	6T	34'	8.5'	7T	7H	5H
						TWO PIECE				
						LENGTH M x X 18'x15'		START CROSS 7H	LAST CROSS 7T	TIE OFF 5H,11T

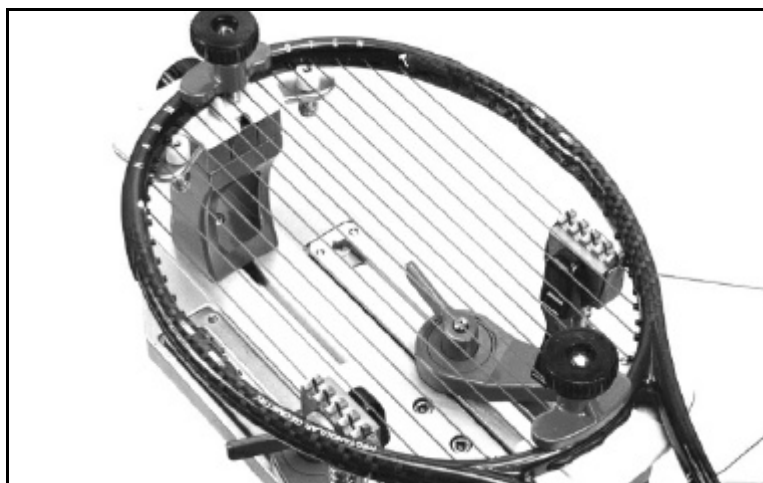
To minimize stress on the racquet head, it is desirable to work outward from the center symmetrically. Rotate the racquet and lace one string on each side of the center line then tension and clamp them one after the other. Take care never to release tension in the tensioned string bed. You'll have to start from scratch!



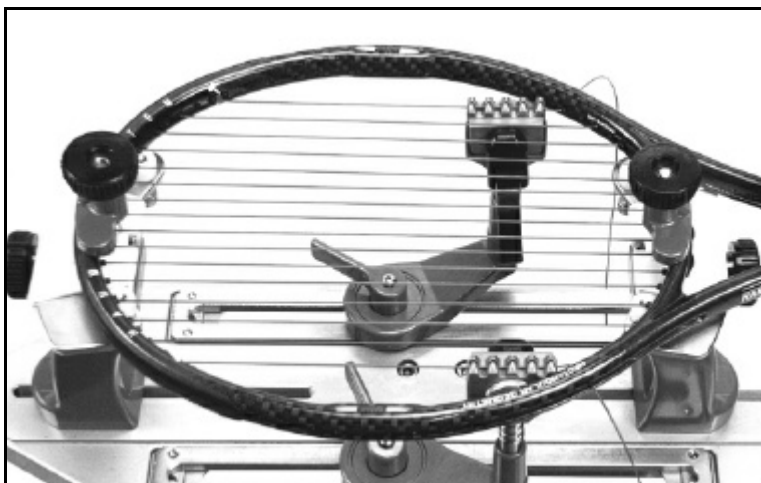
From this point on things get repetitive for a while. What is important is to lace and tension one string at a time in alternation on each side of the center line.



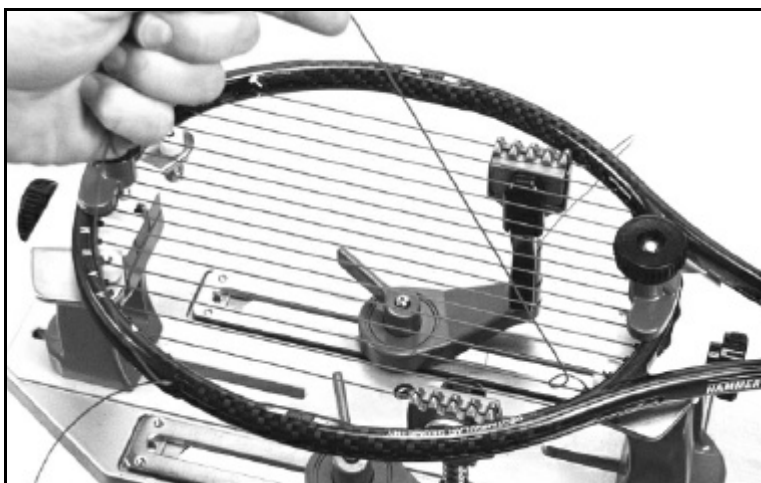
You don't want to miss skipping holes that will be used for crosses (holes 7 and 9 at the head and throat in this frame). Just between you and us, a dead give away of inexperienced stringers is that they count their strings at practically every tensioning operation, so if you have to do it, do it discretely.



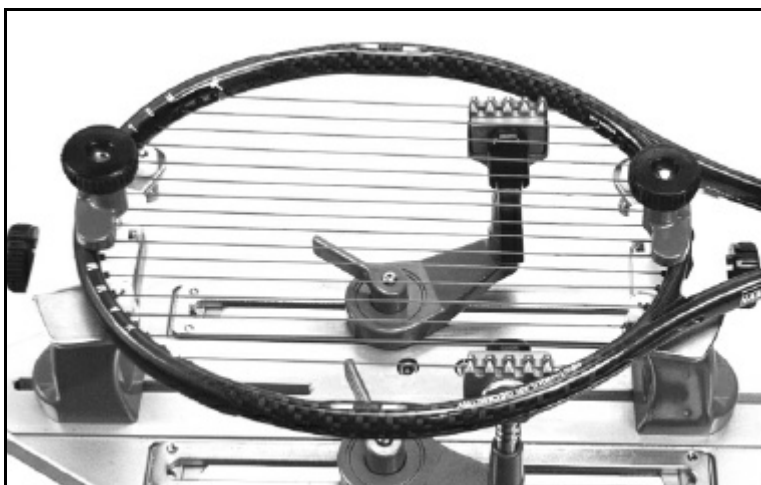
This pattern comprises 16 main strings which are shown fully tensioned in this picture. You don't want to lose tension at this point!



The pattern tells you where to tie off the short side. Note that there is already a tensioned string in this hole (known as the anchor) and that the hole is larger than most other holes to accommodate two strings.



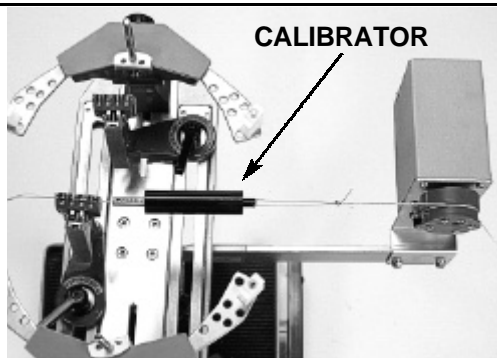
Recognizing tie off holes is a valuable skill when a racquet pattern is not available. Detailed instructions on this type of tie off (using a double half-hitch knot) are provided in this manual on page 3.



This tutorial illustrates one-piece and two-piece stringing. The last step in installing the mains in two-piece stringing is to tie off the second main. For one-piece stringing this main is not tied off since the long string is also used to weave the crosses.

HELPFUL HINT FOR CALIBRATION

Calibrators (about \$25) are useful in insuring correct tension under all conditions. Secure a piece of string at one end of the calibrator and clamp it. Secure another piece of string to the other end of the calibrator and place it in the string gripper. Apply the brake and set the reference tension to 55 lb. Tension and check that the tension indicated on the calibrator matches the reference tension. If it does not, use a small screw driver to loosen the knob on the tension selector and reposition the knob to point to the correct tension. The e.Stringer FL controls tension in a number of ways that are described under the "Sweet Sweetspot" heading on page 12. Calibration should be done prior to stringing and the reading should be taken 3 seconds after the tensioner stops.

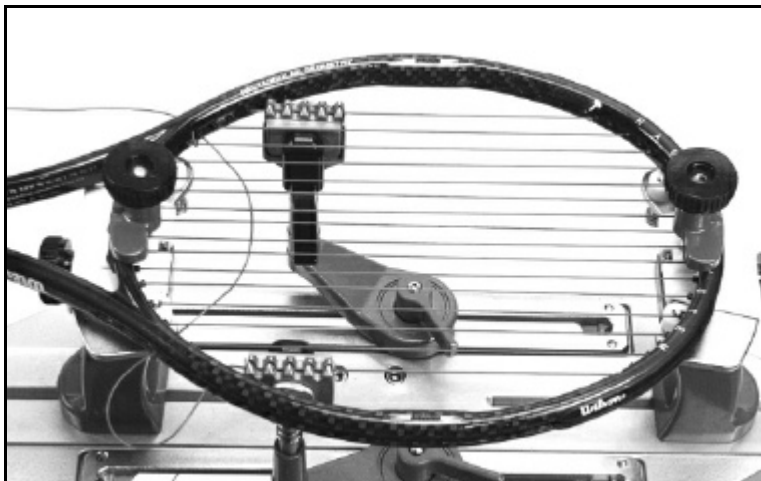


WEAVING THE CROSSES

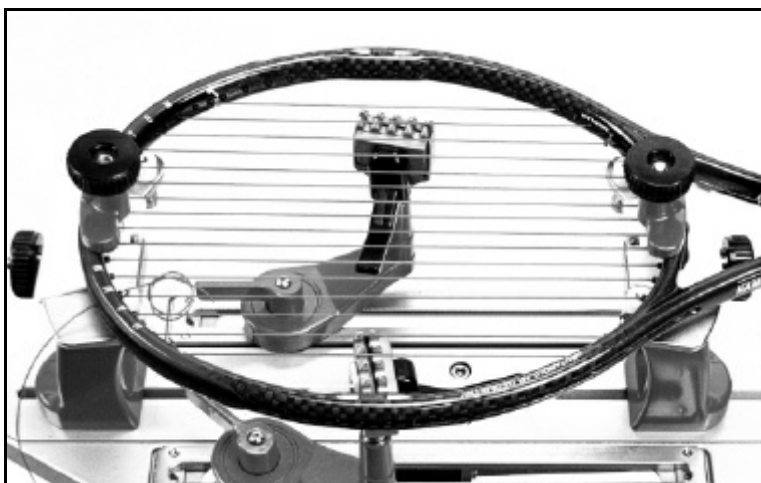
11

RACQUET	TENSION	PATTERN	START LOOP	MAINS SKIP	TIE MAINS	ONE PIECE				
						LENGTH (TOTAL)	SHORT SIDE	START CROSS	LAST CROSS	TIE OFF
Wilson Hammer 5.8 95	LBS 50-60	M x X 16x19	T	7T,9T 7H,9H	6T	34'	8.5'	7T	7H	5H
						TWO PIECE				
						LENGTH M x X 18'x15'		START CROSS 7H	LAST CROSS 7T	TIE OFF 5H,11T

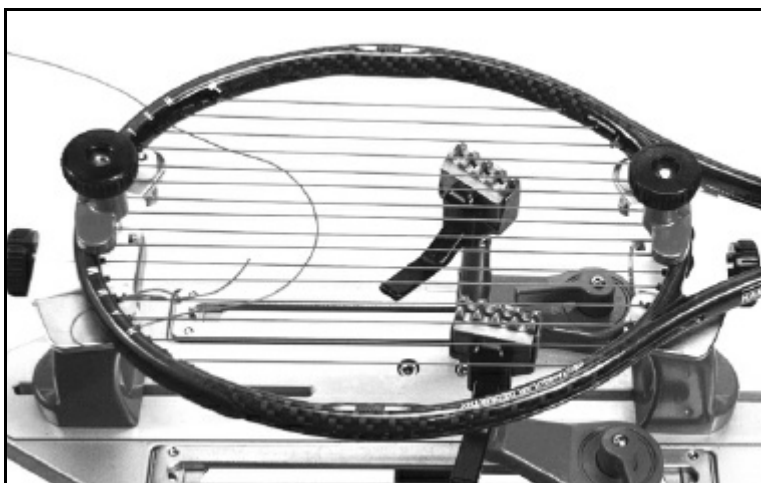
In one-piece stringing the long side of the string is threaded through the hole designated by the pattern for starting the crosses (remember hole 7T that was skipped while lacing the mains?). The string is weaved over and under the mains (see instructions on weaving on page 3) and threaded through the same-number hole at the other end. Stringing proceeds in successive open holes until tie off (at 5H here). To avoid friction burns during this pulling operation it is important to push the string up along the mains with your fingers repeatedly while pulling.



Our example will continue with two-piece stringing, which uses many of the same operations as one-piece stringing. The pattern specifies that the crosses start at the head (note that the starting knot is at 5H; see page 3 for instructions on tying a starting knot). Because two piece stringing often involves 'hybrids' (different strings) of different gauges, it is important to check and adjust the pinch of the clamps at this time.



The pattern specifies that the crosses start at 7H. Weave the string over and under the mains and thread it through the corresponding hole at the other end (see instructions on weaving on page 3). Again, take note of the importance of spreading the cross as you pull it through the mains (see instructions for picture 1 on this page).

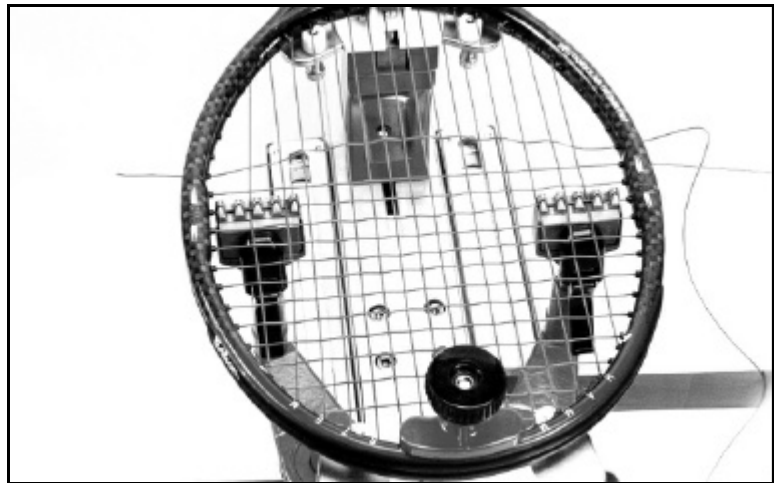


Tension and clamp the first cross. If you use a different gauge of string for the crosses than the mains you may need to re-adjust the tightness of the string clamps for the crosses.

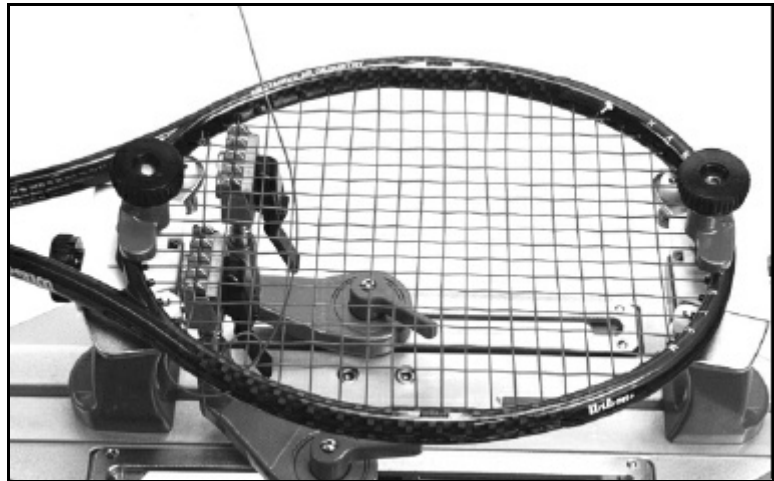
In general it is better to start under the first main because the last weave will be over the last main, making it easier to insert the string in the grommet hole. Be mindful of the fact that the first and last few crosses do not start in the same orientation (over or under) the first main they encounter. Note this as you weave the second cross.



Stringers love repetition, so here we go again: weaving, tensioning and clamping in successive open holes. This is where good stringing technique is important. Note the two good practices illustrated in this picture.



On occasion you will encounter heavy string traffic around holes you need to put a cross through. Use the tip of an awl to open a passage. Also, when traffic gets heavy do not allow strings to cross over each other on the outside of the frame (lay them parallel).



Just when this was getting to be fun, we are done! The pattern tells us that the last cross is at 7T and the tie off at 11T. The crosses are often crooked at the end of a string job. Straighten them and then look carefully at the string bed (placing an eye near the racquet shaft at the level of the string plane helps). This is not the time to discover a missed weave!!!

HELPFUL HINT FOR TYING KNOTS

Because tension is invariably lost when a knot is tied, some operators like to pull the last string 3 lbs to 5 lbs higher than the reference tension. To hold tension while tying the knot, some operators push an awl in the grommet hole where the string is to be tied off. While this procedure is effective in preventing movement of the string when tying the knot, it should be used with care because it can result in an enlarged grommet hole or cause damage to the grommet and the string, damage that can cause premature string failure. You should always inspect grommets to insure that they provide a smooth bed for the string.



Sweet Sweetspot

When a freshly strung racquet gives a player the impression that the string tension is very even it is because the sweetspot is large and because all sections of the sweetspot impart about the same amount of power to the ball. Silent Partner e.Stringers use some familiar and some less familiar design features to achieve this result.

Slow and Steady Tensioning: Each pull with the e.Stringer takes about four seconds. This relatively slow pull speed adds negligibly to the time required to string a racquet but it adds significantly to tension stability in the string bed. Slow pulls are also more controlled and thus minimize variability from one pull to the next.

String Prestretching: Each pull of the e.Stringer exceeds the reference tension by a few pounds and then backs off to it. This further contributes to tension stability.

IN A NUTSHELL

When used properly, the e.Stringer provides a sweeter sweetspot with less effort than just about any other personal or professional stringing machine.

WARRANTY

Deuce Industries warrants the base, racquet holder and clamps of the Silent Partner e.Stringer for a period of five years, and the electric tensioning unit for a period of one year. The terms of sale of the e.Stringer may also include a 1-week satisfaction warranty as well as an extended warranty for customers who purchase Silent Partner strings. Deuce Industries' obligation under this warranty is limited to the original purchaser and applies to the cost of labor and materials to repair a warrantable defect.

To obtain warranty service call or write Deuce Industries Ltd to obtain instructions on how to proceed. No returns will be accepted without prior authorization. Shipping to Deuce Industries must be prepaid. After completing warranted repairs, Deuce Industries will pay for return shipment to you. Under no circumstance is shipping reimbursed under the terms of the satisfaction warranty.

This warranty does not cover the following:

- Units damaged by neglect, accident, abuse, or unauthorized repair or modification.
- Units subjected to damage by failure to follow instructions contained in the owner's manual.
- Units that fail following repair by anyone not authorized by Deuce Industries.
- Units damaged during shipment (present claims to shipper).

All implied warranties are limited in duration to the length of this warranty. Deuce Industries neither assumes nor authorizes any representative or other person to assume for it any other liability in connection with the sale or shipment of its products. This warranty shall not be extended beyond its original term with respect to any part(s) repaired or replaced by Deuce Industries. Under no circumstance shall Deuce Industries be liable for any consequential damages for breach of this warranty or of any implied warranty. Deuce Industries is not responsible for incidental or consequential damages of any kind. Its liability is limited to the repair or replacement, at its option, of a defective product.

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