INSPECT YOUR PACKAGE UPON RECEIPT AND LOCATE THE FOLLOWING COMPONENTS.
ASSEMBLE STRINGER AS SHOWN ABOVE USING PLIERS TO BOLT THE TENSIONER IN PLACE.
GRIPPING THE STRING
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 with the switch shown in the lower right. Pull on the loose end of the string until the gripper has shut and secured the string.

Note: Wrap string near the back of the channel to prevent it from pushing on face covers of the drum.

TENSIONING THE STRING
Tension is selected by means of the knob shown in the lower left in the picture. Tension should be within the range specified by the manufacturer. Lower tensions yield more power, higher tensions more control.

To tension string, flip power switch to the right. To release string, flip switch to the left. The middle position is “OFF”

Allow the gripper to come to a stop and clamp the string before releasing tension (detailed instructions on stringing and clamping are provided later).

MAINTENANCE
The electronics and the motor of the e.Stringer 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).

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 stingers often weave “one ahead” (two strings are weaved before the trailing string is tensioned). This technique exploits the “lifting” effect the tensioned “cross” has over the “mains”.

2. Keep track of the string ends so that you don’t have to keep searching for them. You can keep them under your belt or wrist band or in the next hole they will be threaded through.

3. Keep string ends cut at a sharp angle. This will allow them to act as awls when pushed through tight grommet holes.
GETTING READY TO STRING

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. Turn the micro-adjustment knobs on the mounting posts so that the square fitting is flush with the edge of the red frame.

2. Locate the center of the racquet at head and throat.

3. Place the center of the head against the "W-adaptor". The mounting post at the head must be secured tightly on the square bar using the large knob under the post. Note that the throat rests loosely on the other mounting post.

4. Apply the "hold-down clamp" over the head and tighten it down loosely to hold the head in place. It will be tightened snugly when the racquet is fully mounted.

5. Move the mounting post at the throat so that the W-adaptor is snug against the center of the frame. Now secure the mounting post tightly on the square bar.

6. Install the hold-down clamp loosely at the throat. Now turn the microadjustors at the head and throat to bring the W-adaptor snugly against the frame. Use no more than the force of your thumb and forefinger for this adjustment.

7. Tighten the hold-down clamps with no more than the force of your thumb and forefinger. The racquet is now mounted securely.

Note: If the W-adaptor does not fit between the grommets of the racquet, use a "D" retainer instead (see front page). If the frame is tapered, you can place "bow-tie" spacers under the frame at the head or throat to level it.
Mounting on the Inside 6-point System

1. Place the racquet head on the post marked for the head. The mounting posts should allow the racquet to fit comfortably. Secure the mounting post at the head with the large knob. Make sure that the “W” support at the head is clear of the frame. If mounting an oversize frame, the “D” supports at the head can be placed in the outer holes. For midsize frames they should be in the inner holes.

2. Push the head against the two “D” supports. The center finger of the “W” adapter must line up with the center of the frame. Make sure that grommets do not interfere with the “D” and “W” supports. The height of the “D” supports is adjustable. For convenience adjust them now by backing off the frame and turning the Allen head below by hand. The flat part of the “D” must face the frame.

3. While continuing to push the frame against the “D” supports (not shown here) turn the microadjuster clockwise to bring the “W” adapter in contact with the frame. Stop at contact or you will pull the frame away from the “D” supports. The “W” adapter may not fit some grommet patterns. If so, use a black flat retainer that fits just below the grommets.

4. While continuing to push the frame against the “D” supports and “W” support, install the hold-down clamp, washer and knob. Tighten the knob snugly. The “D” supports should fit below the grommets without interfering with them.

5. Tighten the large knob that secures the mounting post to the square bar. You should tighten this knob securely because the mounting posts must resist substantial inward pull during stringing. Note that this is the only knob that should be tightened very hard.

6. Now switch to mounting the throat. Slide the mounting post to bring the “D” supports in contact with the frame. The “W” support should be backed-off at this point. This is a good time to adjust the height of the “D” supports. Also make sure that the frame is horizontal. Use a spacer if necessary (see front page).

7. While pressing the “D” supports snugly against the frame (not shown here), secure the mounting post by tightening the large knob. The large knob should be tightened hard.

8. While holding the frame down against the mounting post and the “D” supports (not shown here) turn the microadjuster clockwise to bring the “W” adapter in contact with the frame. Stop at contact or you will stretch the frame.

9. Install the hold-down clamp with washer and knob. Tighten snugly. The height of the “D” supports can be given a final adjustment with an Allen key at this time. The flat part of the “D” should stay snug against the frame as you turn the screw.
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

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 (a measuring tape is provided on the e.Stringer) and form a loop at the head or throat according to the pattern for the racquet you are stringing. For 2-piece stringing, the string on each side of the loop is of equal length.

Pull the two strings snuggly by hand to close the loop and apply a clamp over both. The clamp should be placed about three inches from the loop to provide sufficient space for the placement of another clamp. Note that flying clamps should always ride over two strings and that they should be adjusted to pinch the two strings securely but not excessively. If you see clamp marks on the strings, reduce the tightness of the clamp by turning the adjusting screw counterclockwise with the allen key supplied with the clamp.

Lace the short side of the string through the next open grommet hole at the head and throat and secure it to the string gripper on the tensioning unit. Set the reference tension according to your needs (between 50 and 60 lbs for this frame) and activate the tensioner with the black toggle switch (see page 3). Allow the string gripper to come to rest then install the second flying clamp as shown in the picture. Put the tensioner in reverse after clamping the string. Stop the tensioner after releasing the string. Brake is not used during tensioning.

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.
LACING THE MAINS (con’t)

<table>
<thead>
<tr>
<th>RACQUET</th>
<th>TENSION</th>
<th>PATTERN</th>
<th>START</th>
<th>MAINS</th>
<th>TIE</th>
<th>LENGTH (TOTAL)</th>
<th>SHORT SIDE</th>
<th>START CROSS</th>
<th>LAST CROSS</th>
<th>TIE OFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wilson</td>
<td>5.8</td>
<td>95</td>
<td>16x19</td>
<td>T</td>
<td>7T</td>
<td>34’</td>
<td>8.5’</td>
<td>7T</td>
<td>7H</td>
<td>5H</td>
</tr>
<tr>
<td>Hammer</td>
<td>50-60</td>
<td>16x19</td>
<td>T</td>
<td>7T,9T</td>
<td>6T</td>
<td>34’</td>
<td>8.5’</td>
<td>7T</td>
<td>7H</td>
<td>5H</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7H,9H</td>
<td></td>
<td>6T</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The frame has been rotated 180 degrees to tension the string on the head side. Note that the flying clamp that is not necessary to hold tension on the strings (given that the tensioner is temporarily lending a hand) is moved to the new position to clamp the strings close to the string gripper. 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 point. This is to maintain even tension in the frame.

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 try to 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 1-piece and 2-piece stringing. The last step in installing the mains in 2-piece stringing is to tie off the second main. For 1-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 to the far vertical post. 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 black knob on the tension selector and reposition the knob to point to the correct tension (press the knob against the rubber bushing as you tighten the set screw). The eStringer 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

<table>
<thead>
<tr>
<th>RACQUET</th>
<th>TENSION</th>
<th>PATTERN</th>
<th>START LOOP</th>
<th>MAINS</th>
<th>TIE MAINS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wilson</td>
<td>50-60</td>
<td>M x X</td>
<td>T</td>
<td>7T,9T</td>
<td>6T</td>
</tr>
<tr>
<td>Hammer</td>
<td>16x19</td>
<td></td>
<td></td>
<td>7H,9H</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ONE PIECE</th>
</tr>
</thead>
<tbody>
<tr>
<td>LENGTH</td>
</tr>
<tr>
<td>(TOTAL)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TWO PIECE</th>
</tr>
</thead>
<tbody>
<tr>
<td>LENGTH</td>
</tr>
<tr>
<td>M x X</td>
</tr>
</tbody>
</table>

In 1-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 “fan” (push the string up along the mains with your fingers) repeatedly while pulling.

Our example will continue with 2-piece stringing, which uses many of the same operations as 1-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 flying 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 “fanning” (see instructions for picture 1 on this page).
Activate the tensioner. Crosses are usually tensioned to the same tension as mains. Take a good look at this picture and ask what keeps the flying clamp from pulling back with the first cross. The answer, of course, is “the mains”. Note also that because you are only clamping one cross we recommend that you maintain proper pinching by placing a dummy piece of string on the free side of the clamp. If you use a different gauge of string for the crosses than the mains you may need to re-adjust the tightness of the clamp.

Stringers love repetition, so here we go again: weaving, tensioning and clamping in successive open holes. If spacing makes it difficult to clamp two crosses at a time, use a dummy string. 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. 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 plane (placing an eye near the racquet shaft at the level of the plane helps). This is not the time to discover a missed weave!!!

# 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. To obtain warranty service call or e-mail Silent Partner to obtain instructions on how to proceed. No returns will be accepted without prior authorization. Shipping 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.

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