TRUE-TENSION STRINGING MACHINE MODEL 2020
Operations Manual

Appendix A: TENSION GUIDELINES

The design of the True-Tension stringing machine is the result of extensive, scientific, engineering research based on objective engineering tests and data. This produced a totally new stringing system that facilitates excellent control of tension uniformity from string to string and careful balance of tensions between the main and cross strings.

Please read the following information carefully. It will help you understand this new stringing system better.

The string tensions that are recommended by racquet frame manufacturers or asked for by most players are not the actual tensions that are left on the strings in a strung racquet. They are referred to as "reference tensions," and are the tension settings on other stringing machines. The big difference between reference tensions and actual tensions left in the racquet is due to the difference in stringing machine design. The engineered design of the True-Tension stringing machine has virtually eliminated the existing causes of string tension losses during the stringing process. These problems are addressed in the booklet, "Tension Control: The Key To Better Stringing. "

Use the Conversion Scales in Figure I and Figure 2 to determine the actual tension setting on the True-Tension Stringing Machine for the main string tension. Use the recommended or asked for tension as the reference tension. You must keep in mind that there is a large variation in tensions among stringers and stringing machines, so yours may be slightly different from our recommendations requiring you to make adjustments accordingly.

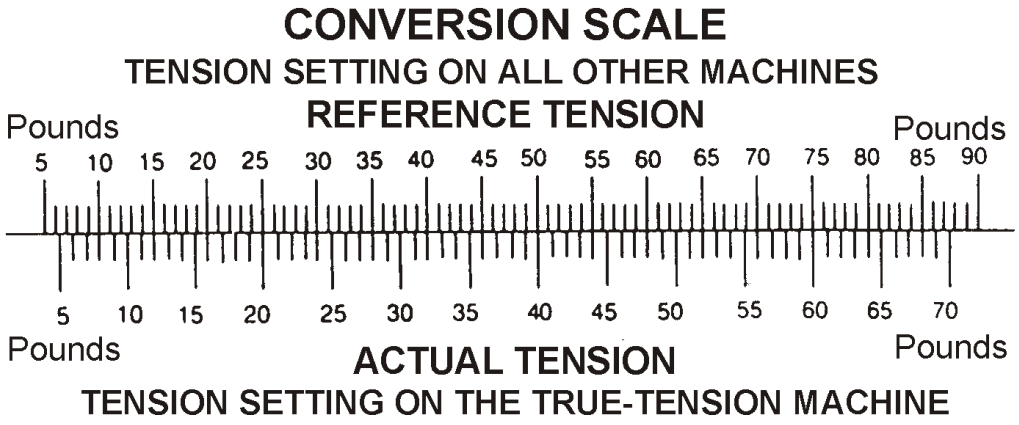

Figure 1
Tension in Pounds

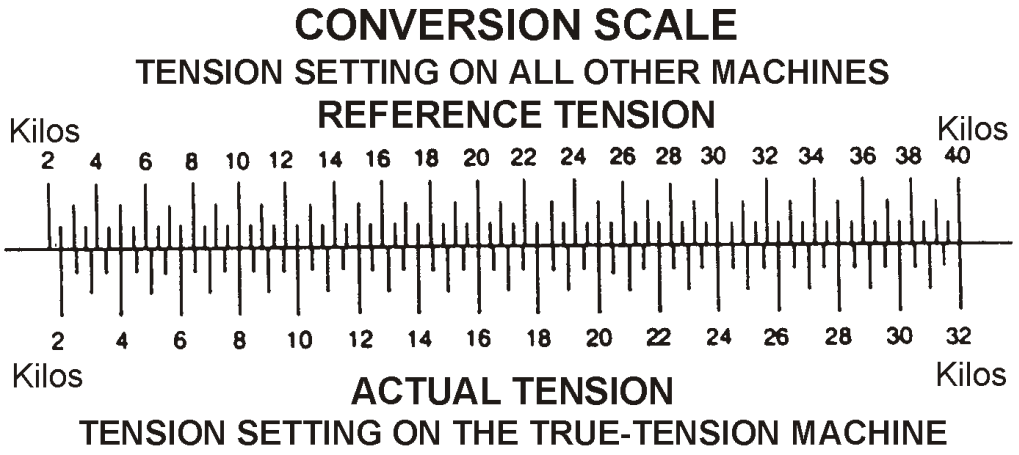

Figure 2
Tension in Kilograms

These Conversion Scales take 80% of the reference tensions for the actual tension. Because of the large variation in tensions between machines and stringers, yours may differ slightly so you may have to make adjustments accordingly.

The difference in the tension between the main and cross strings is controlled by the shape of the bow of the racquet and is dictated by the laws of mathematics and physics. The longer and narrower the bow is the lower the cross string tension will be in reference to the main string tension. Here is an example: When you string an oversized racquet that calls for a 60% tension ratio of main strings to cross string at a reference tension setting of 675 pounds, for the main and cross string, on other machines you will leave about 60 pounds tension on the main strings and about 36 pounds tension on the cross strings. This will vary somewhat depending on the machine used and the stringer.

In order to cope with the proliferation of so many racquets of various sizes and shapes, we are using six different elliptical shapes, Figure 3 through Figure 8, to guide you in determining the cross string tension ratio. The reason the percentages overlap from one ellipse to the next is because of the variation in racquet bow shapes and string pattersn. Compare the shape of the bow of the racquet to the ellipses and pick the ellipse that matches the shape of the bow or the racquet. Use one of the percent ratios of the actual main string tension for the cross string tension. For your convenience a "Cross String Tension Ratio Chart" is included as Page 25. Use it to find the correct cross string tension for a given percent ratio. When you have finished stringing a racquet and removed the racquet holding clamps, check how the racquet fits in the supports. If the racquet is loose and can move sideways and up and down, it means that the cross string tension is too high. This forces the sides to pull in and make the bow narrower and longer which results in a tighter racquet. If the racquet is tight in the supports and gets wider and shorter when you remove it, the cross string tension is too low. This results in a looser racquet. The four point racquet supporting system of the True-Tension stringing machine will show you if the cross string tenxion on any racquet. On many over-size racquets and different shapes and designs the sides will pull in without making the bow longer. This is a design characteristic and no amount of care in stringing will prevent this type of distortion.

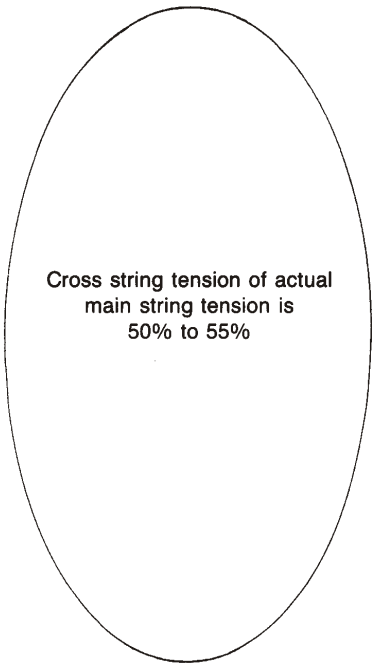

Figure 3

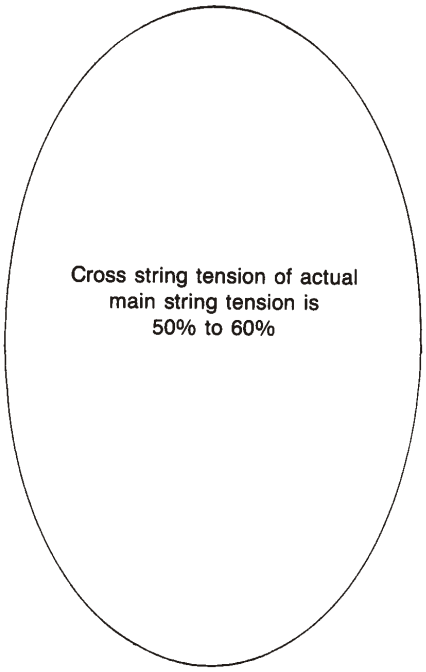

Figure 4

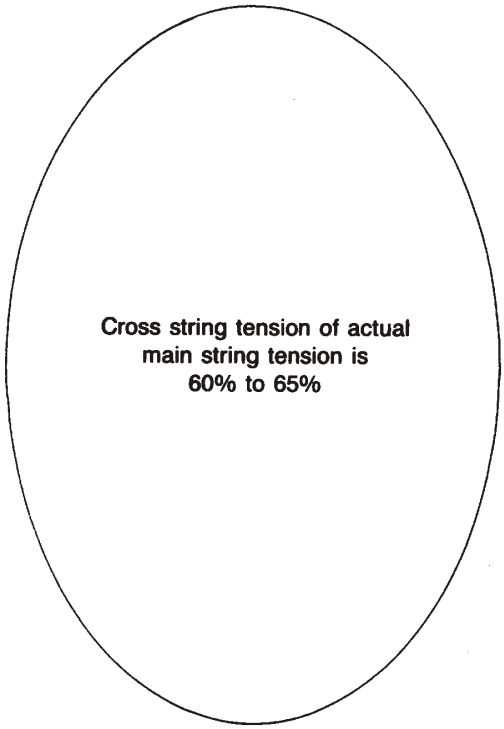

Figure 5

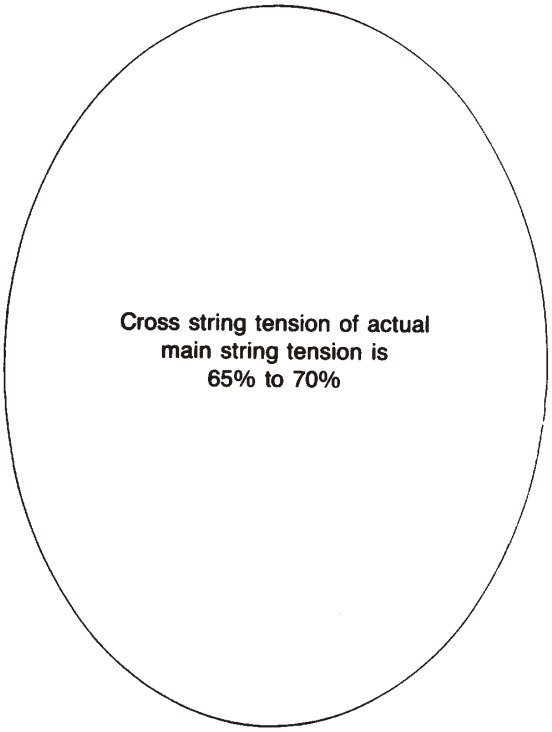

Figure 6

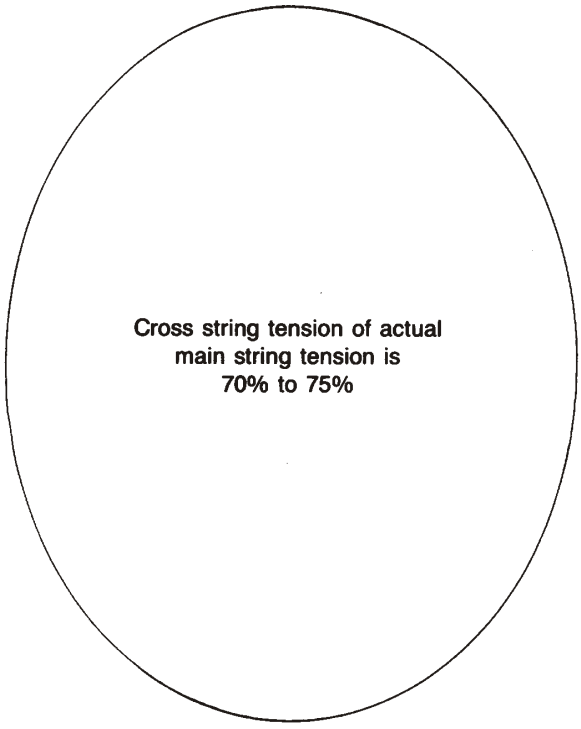

Figure 7

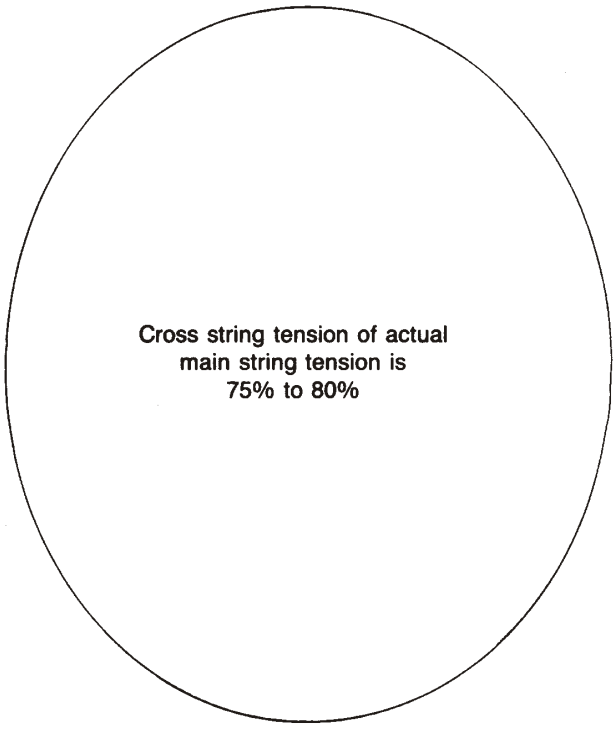

Figure 8