# DIRECT- VS INDIRECT- RACQUET SUPPORT SYSTEMS.

***WHAT IS LEADING:  STRESS OR DEFORMATION?***

**** A RACQUET CRACKS OR BREAKS BECAUSE THE STRESS IN THE RACQUET MATERIAL IS TOO HIGH.***

**** NO DEFORMATION DOES NOT MEAN NO STRESS.***

## DIFFERENT SUPPORT SYSTEMS.

Racquet stringing machines are supplied with different support systems:

The available systems can be divided in 2 main systems:

**INDIRECT and DIRECT SYSTEMS :**

When all main strings are tensioned the load on the racquet is maximum.

The mainstrings pull the frame inwards.

A **DIRECT SYSTEM** protects the racquet against getting shorter, which is the primary direction of the deformation.

A  direct system has 2 or 3 inside supports between 11 and 1 o'clock which push the racquet outwards against the load of the main strings.

An **INDIRECT SYSTEM** prevents the racquet against getting wider, which ist he secondary direction of the deformation.

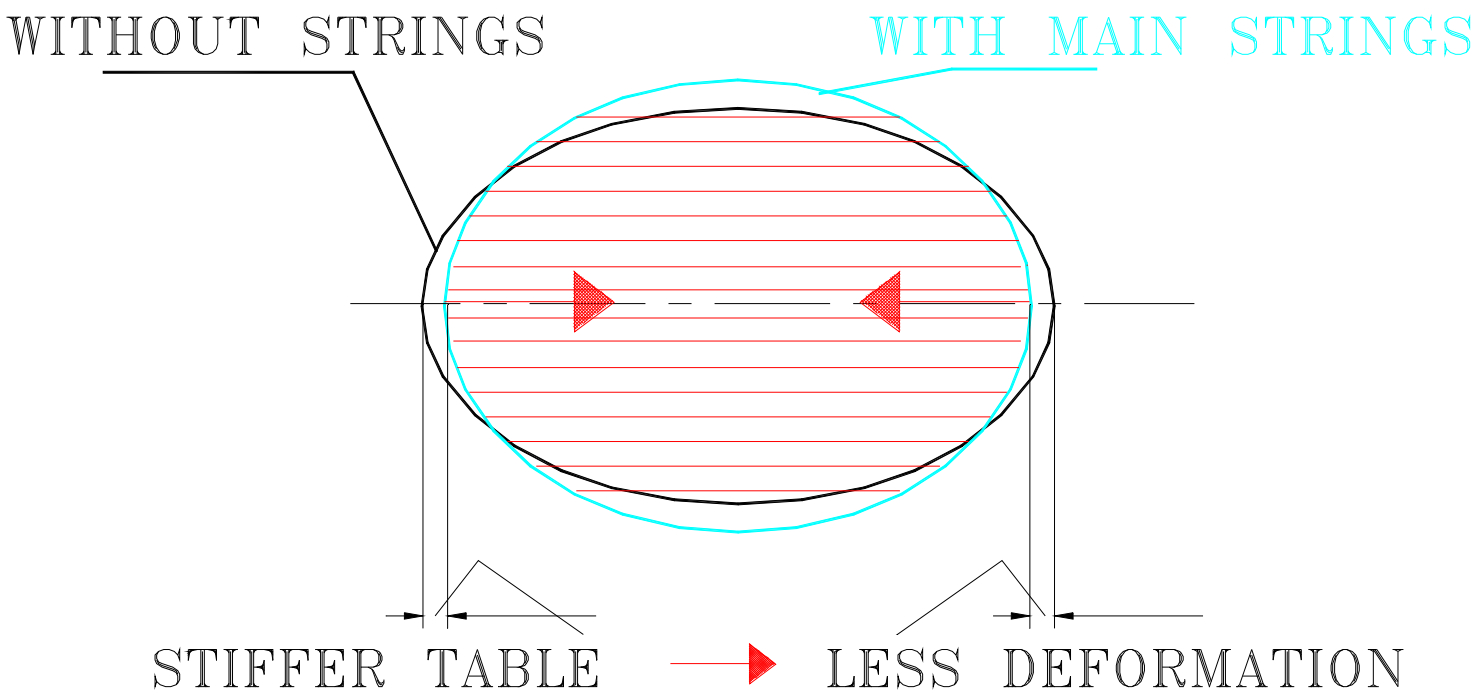
An indirect support system has inside supports at 12 and 6 o'clock and usually 4 outside supports at 10 and 2 and 8 and 4 o'clock.

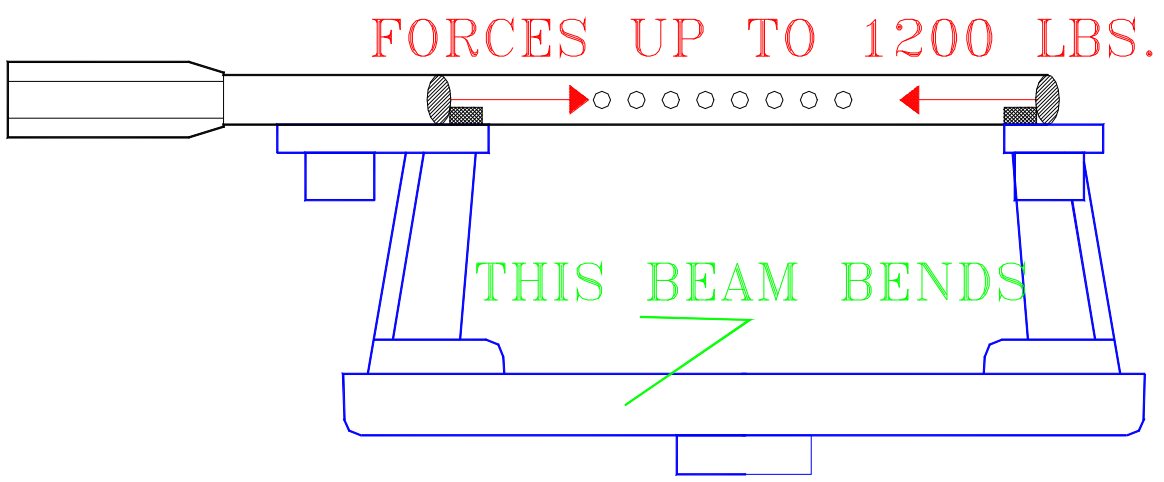
**THE PICTURES BELOW SHOW A TECHNICAL COMPARISON BETWEEN BOTH SYSTEMS:**

# THE RACKET-SUPPORT-SYSTEM

**MAIN TASK:** TO KEEP THE STRESS IN THE RACKET MATERIAL AS LOW AS POSSIBLE.

**MOST CRITICAL SITUATION:** WHEN ALL THE MAINSTRINGS HAVE BEEN TENSIONED




FOR THE BEST RACKET SUPPORT:

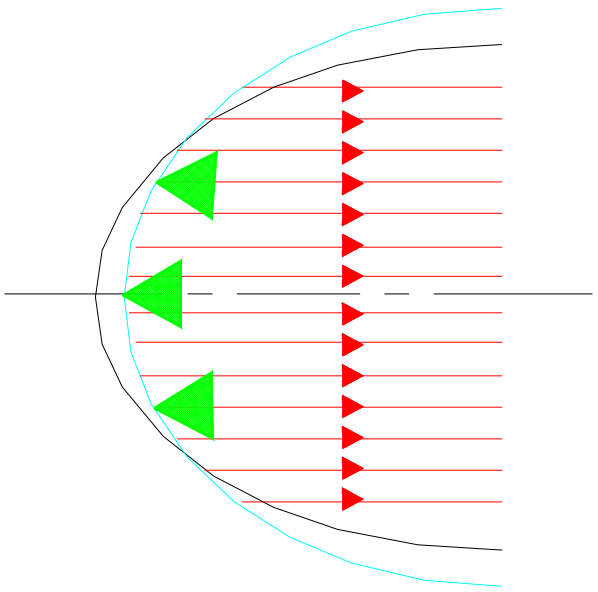
**MOST IMPORTANT:** VERY STIFF TABLE

**NEXT IMPORTANT:** THE POSITION OF THE SUPPORTS

**BIG QUESTION:** WHERE TO SUPPORT THE RACKET??

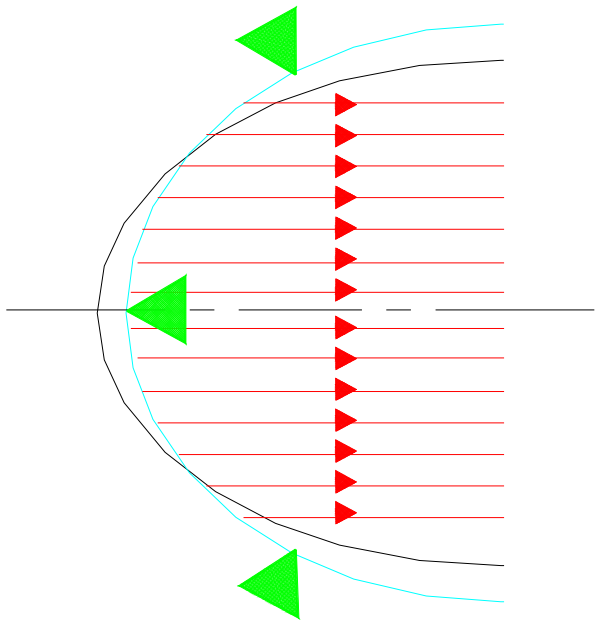
# WHERE TO SUPPORT THE FRAME????

## 2 SOLUTIONS:



AGAINST THE INSIDE

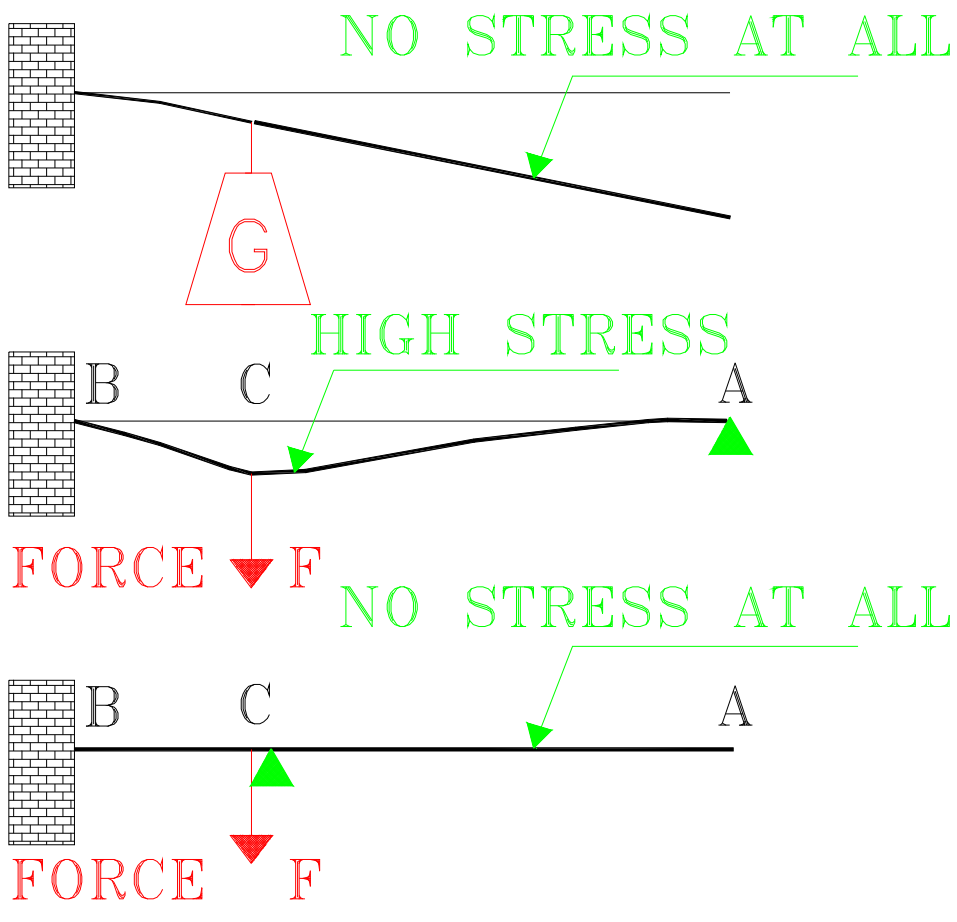
PUSHING OUTWARDS WHERE THE STRINGS PULL INWARDS



AGAINST THE OUTSIDE

PUSHING INWARDS WHERE THE FRAME MOVES OUTWARDS

TO MAKE THE CHOICE EASIER WE COMPARE THE RACKET WITH A BEAM IN THE WALL:




2 WAYS TO SUPPORT THE BEAM:

1. IN POINT "A": WHERE THE MAXIMUM DISPLACEMENT OCCURS

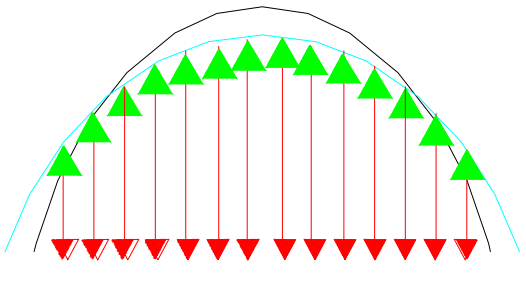
2. NEAR POINT "C": WHERE THE FORCE F WORKS UPON THE BEAM.

QUESTION: WHAT IS BEST FOR THE BEAM???

# CONCLUSIONS:

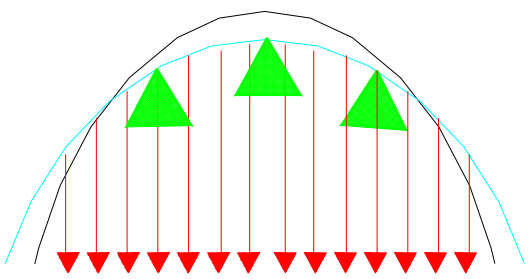
**BEAM:** TO SUPPORT AS CLOSE TO THE WORKING FORCE AS POSSIBLE.

**RACKET:** AN INSIDE SUPPORT AT EVERY POSITION OF A MAINSTRING WOULD BE THE BEST.

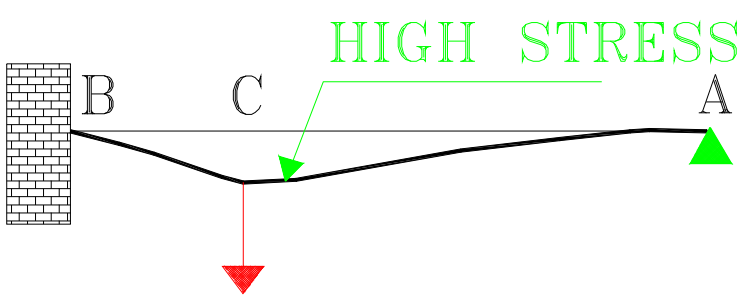


**THIS IS PRACTICALLY IMPOSSIBLE.**

**GOOD COMPROMIS:** 3 SUPPORTS EQUALLY DIVIDED "UNDER" THE MAIN STRINGS.



**BEAM:** THE SUPPORT IN "A" CUASES THE STRESS BETWEEN "A" AND "C".
NO SUPPORT, NO STRESS AT ALL!




RULER-DEMO

**RACKET:** OUTSIDE SUPPORT IN "A" CAUSES EXTRA STRESS BETWEEN "C" AND "A".