470 Class

Sail Tuning / Mast Setting Guide

North Sails Japan, Inc.

Ver.0.010

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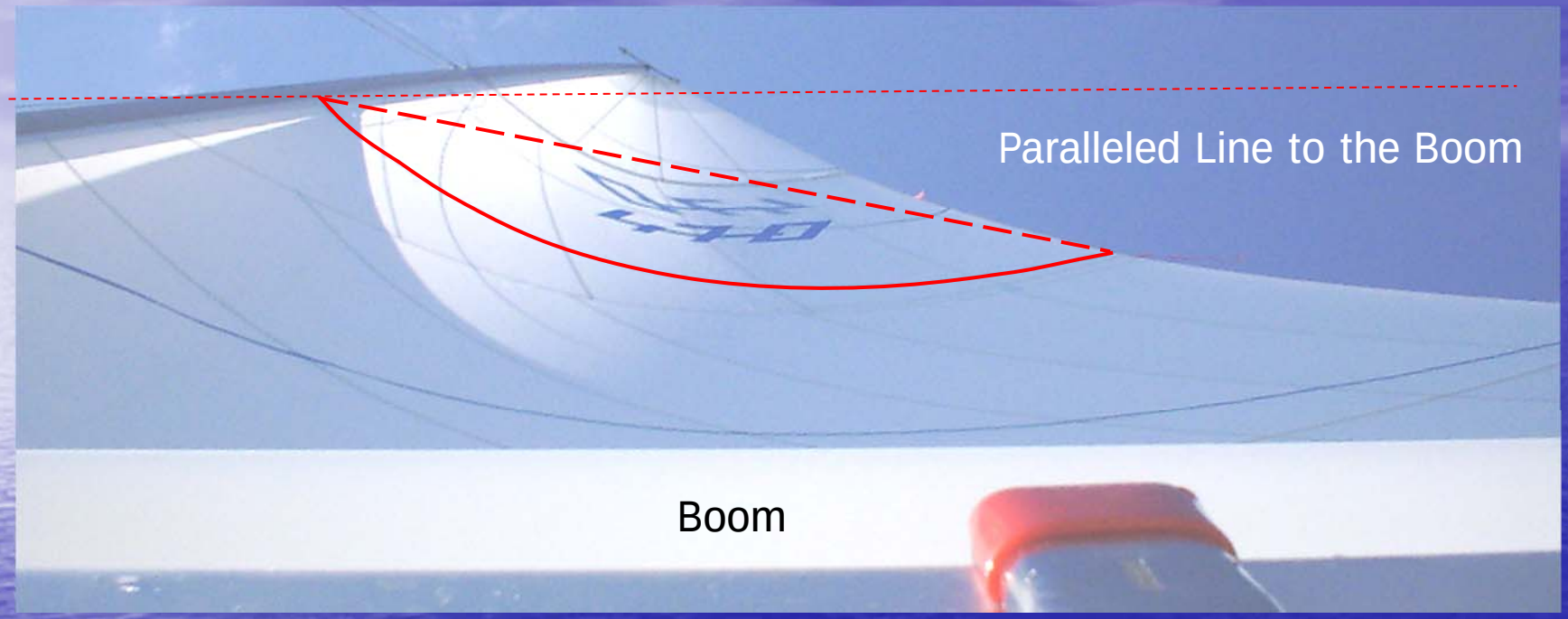
Numerical Analysis of Sail Shape



1. Camber : Parameter of sail depth in % of chord length
2. Draft : Parameter of maximum depth position in % of chord length
3. Twist : Parameter of chord angle to the boom
4. Entry : Parameter of the leading edge angle of sail to the chord
5. Exit : Parameter of the trailing edge angle of sail to the chord

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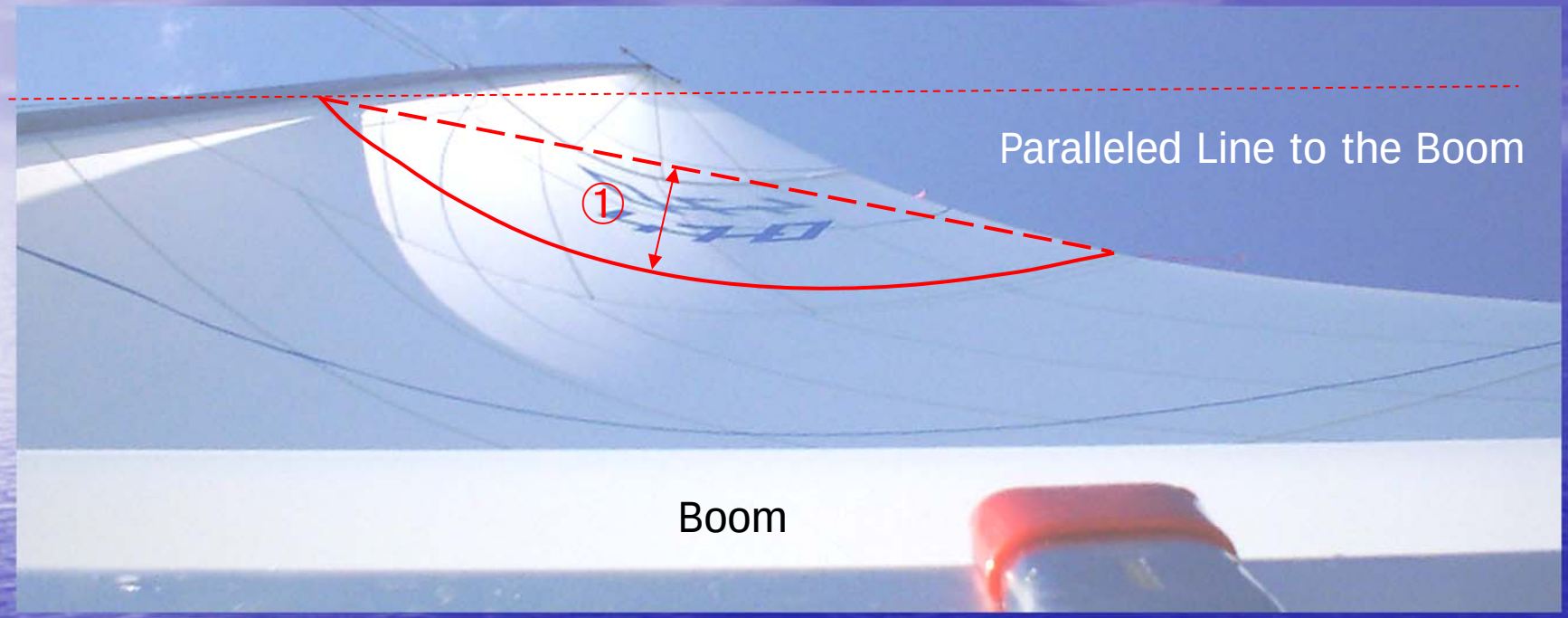
Numerical Analysis of Sail Shape



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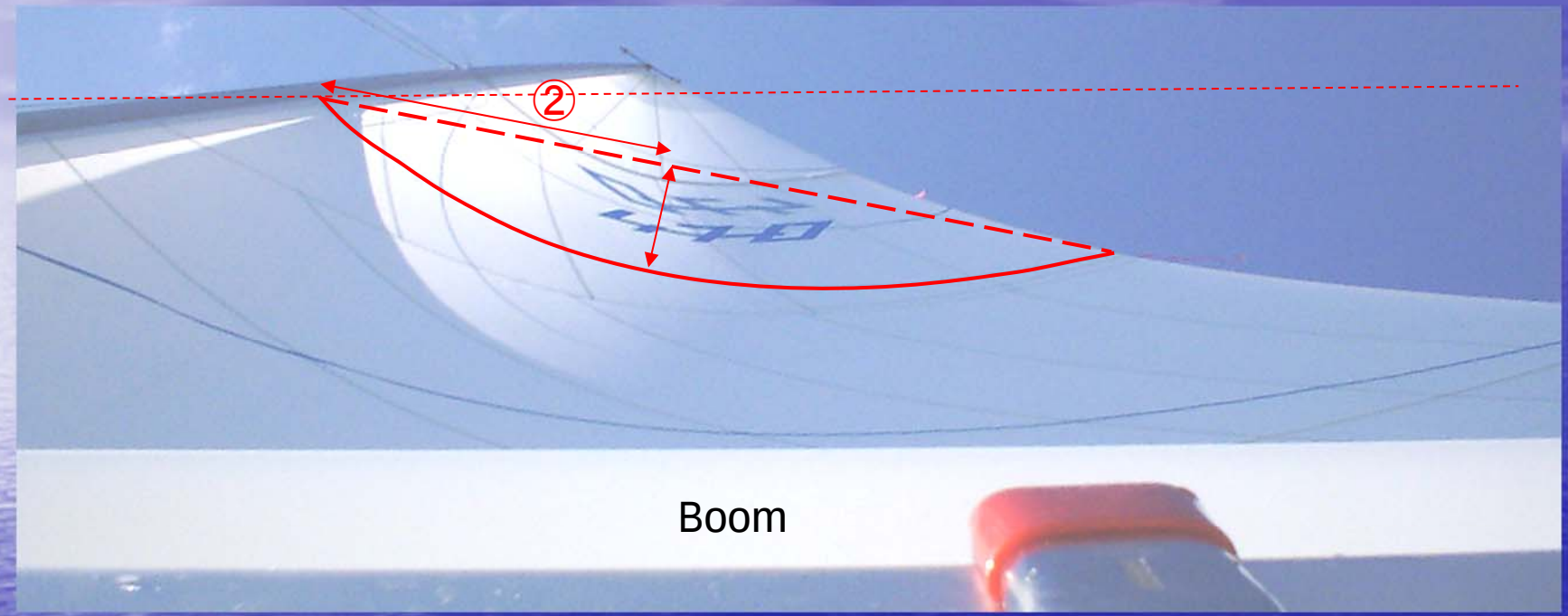

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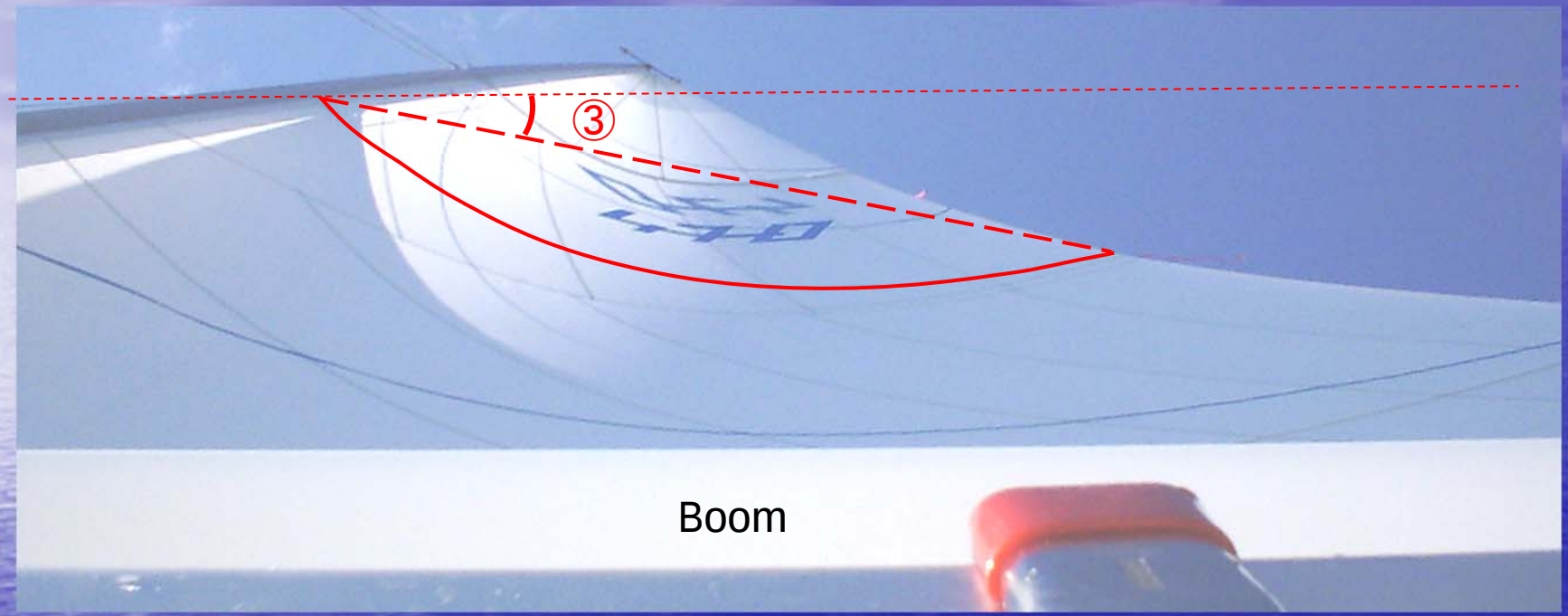
Numerical Analysis of Sail Shape



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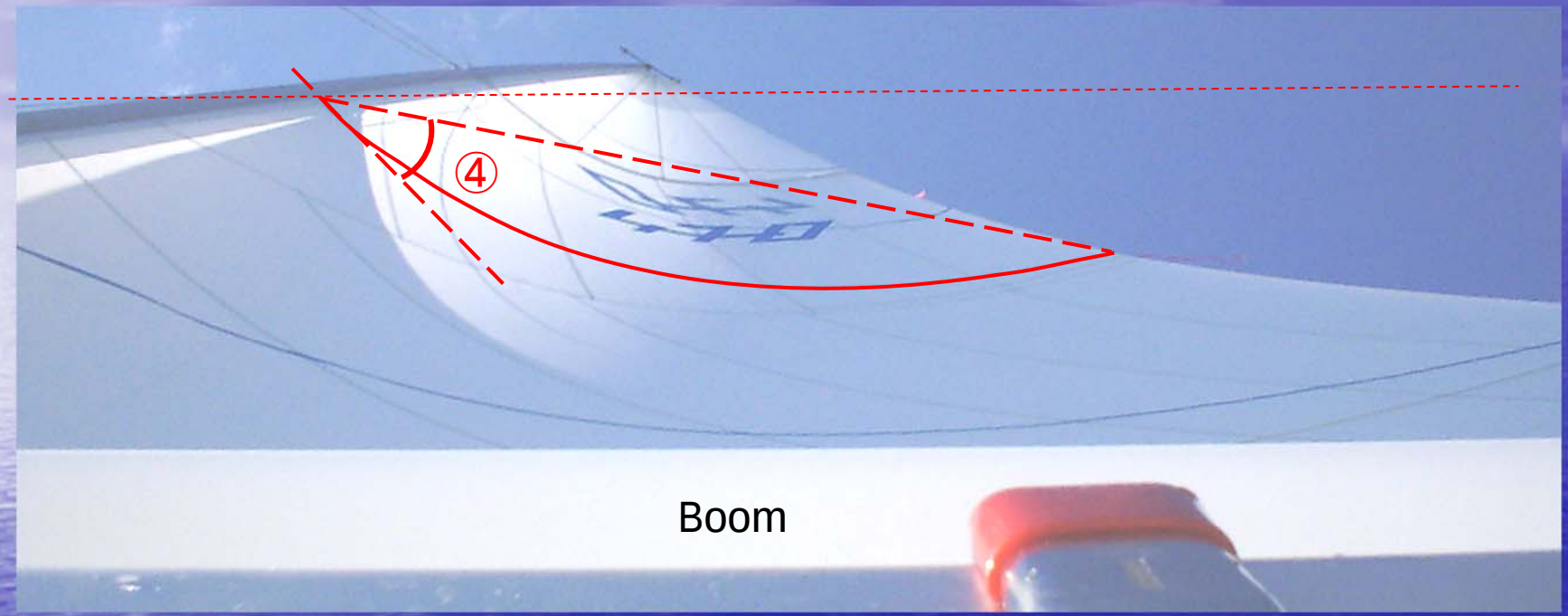
Numerical Analysis of Sail Shape



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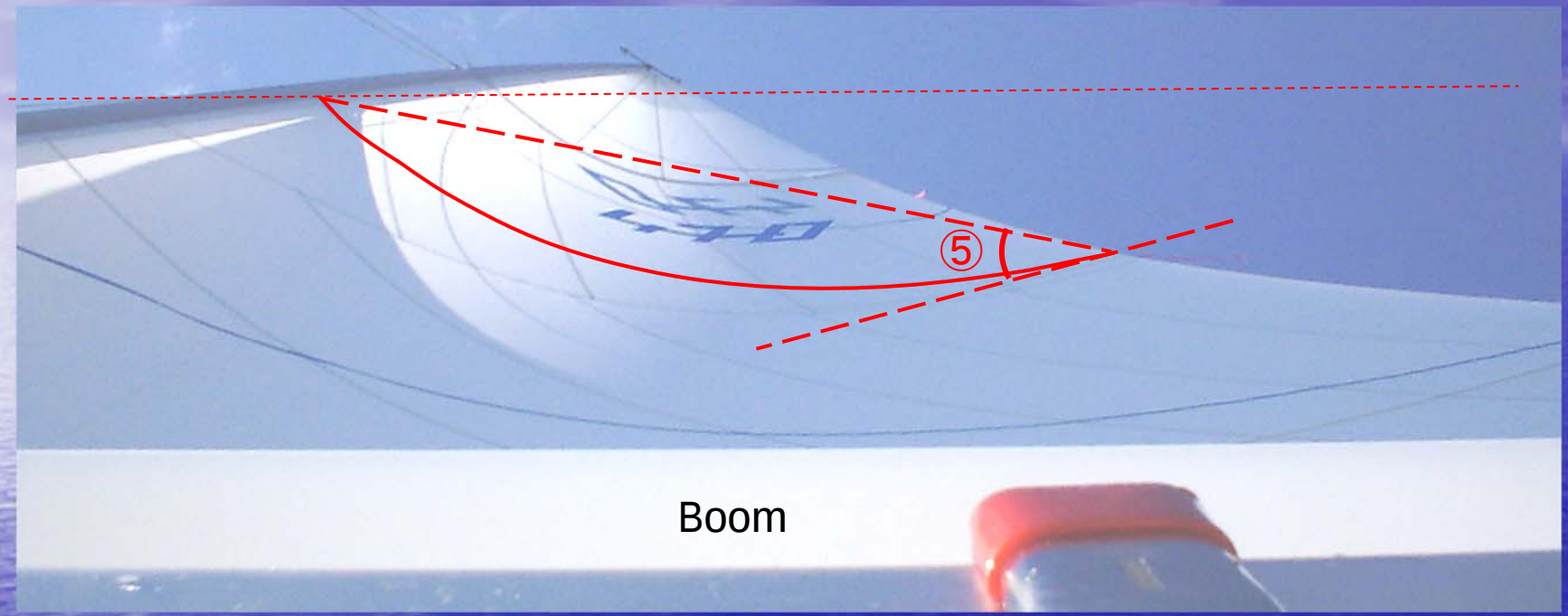

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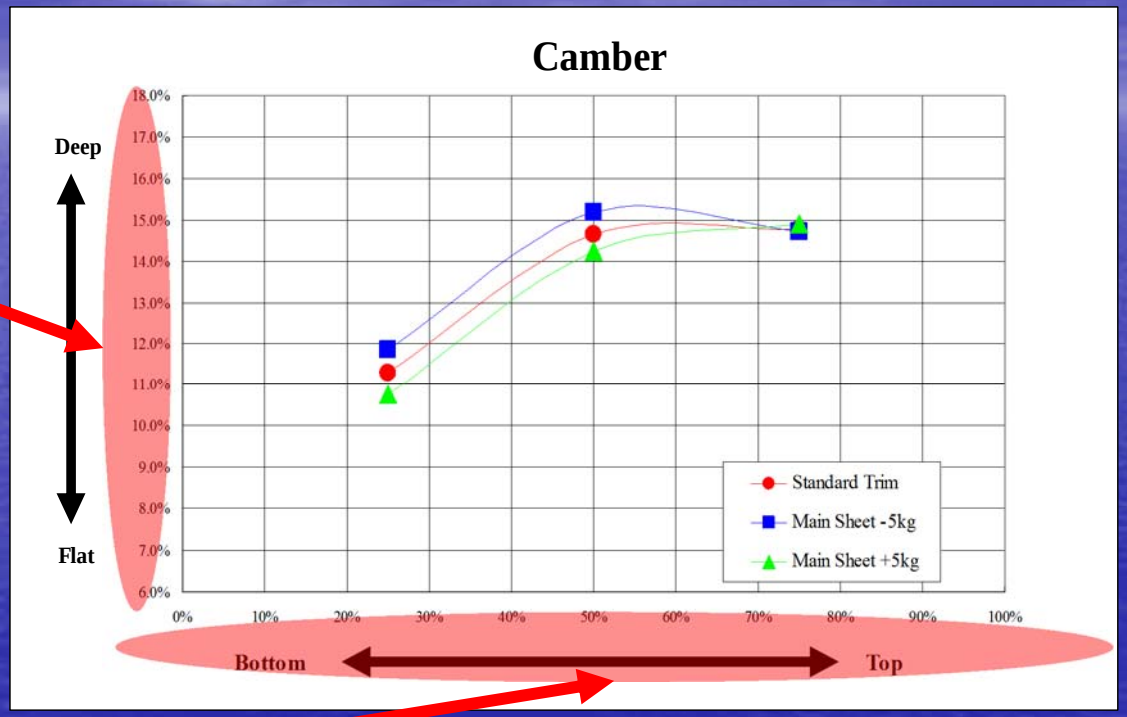
Numerical Analysis of Sail Shape

****** Shape Graphs ******

Vertical Axis

Item	Bigger	Smaller
Camber	*Deep*	*Flat*
Draft	*Aft*	*Fore*
Twist	*Open*	*Close*
Entry	*Wide*	*Narrow*
Exit	*Open*	*Close*



Horizontal Axis

0%	*… Bottom of Sail*
25%	*… Bottom Stripe*
50%	*… Middle Stripe*
75%	*… Top Stripe*
100%	*… Top of Sail*

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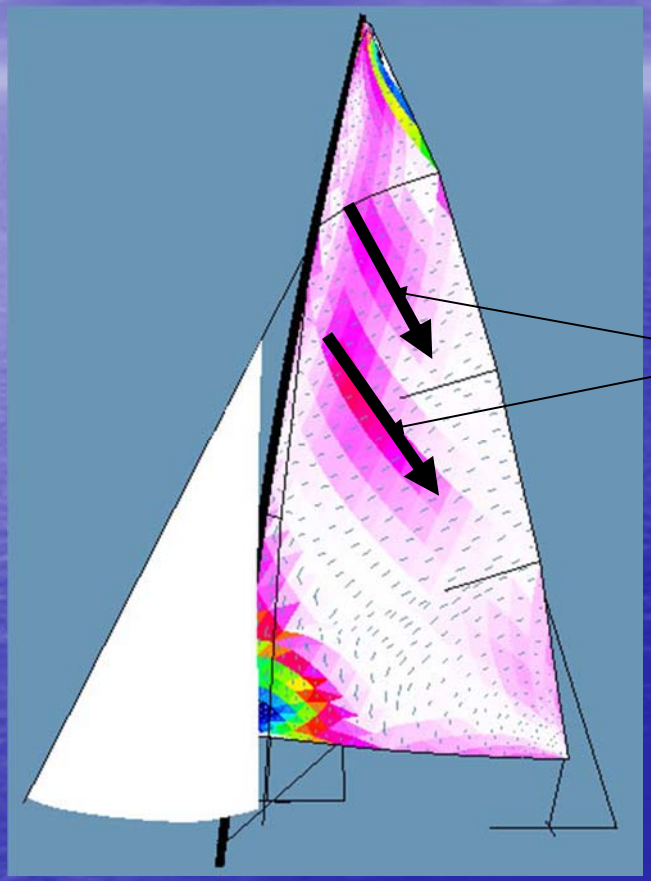
Numerical Analysis of Sail Shape

****** Minor Stress Map ******



Wrinkles

Wrinkles are observed in Minor Stress Map

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Mast Setting

(Pre-Bend Condition)

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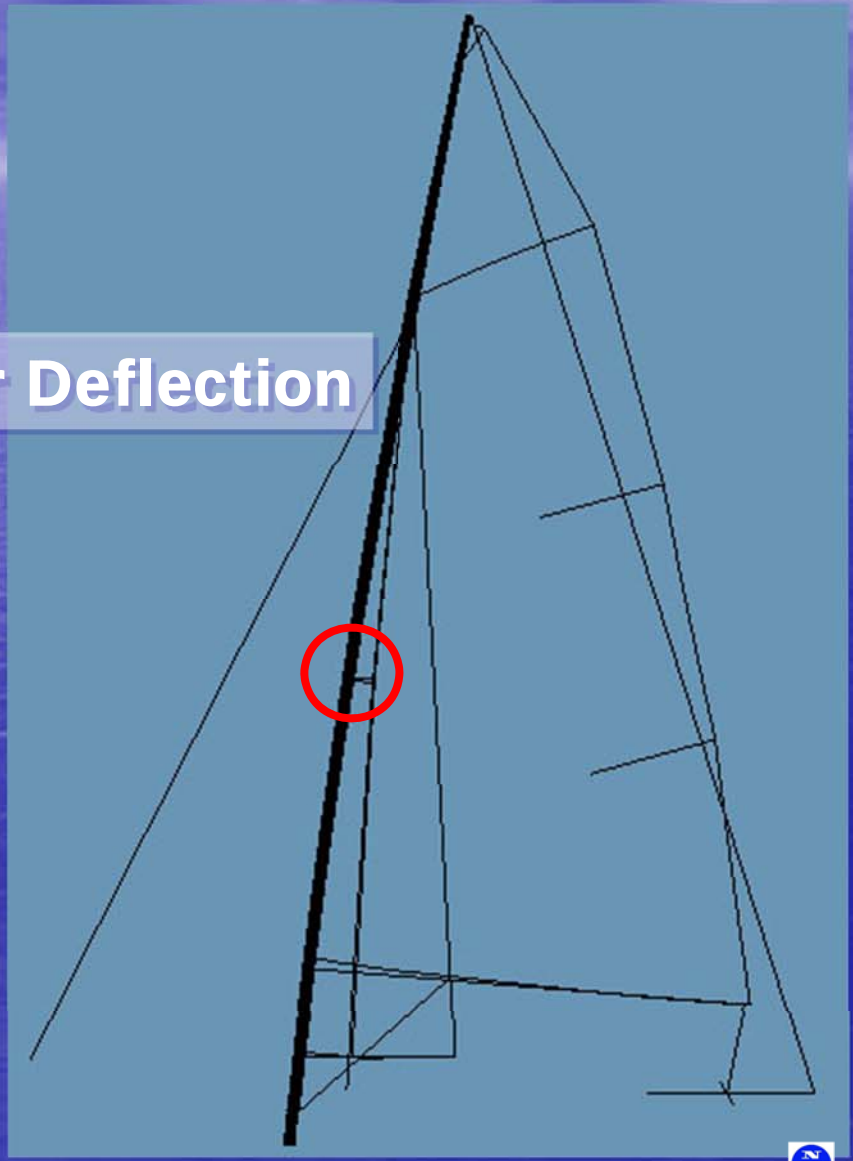
Mast Setting

Spreader Deflection



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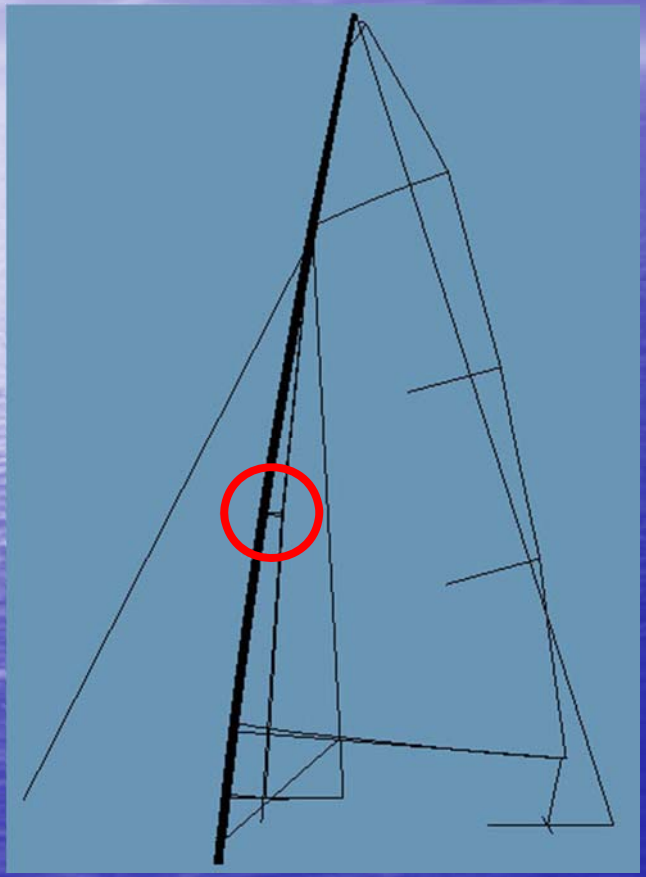
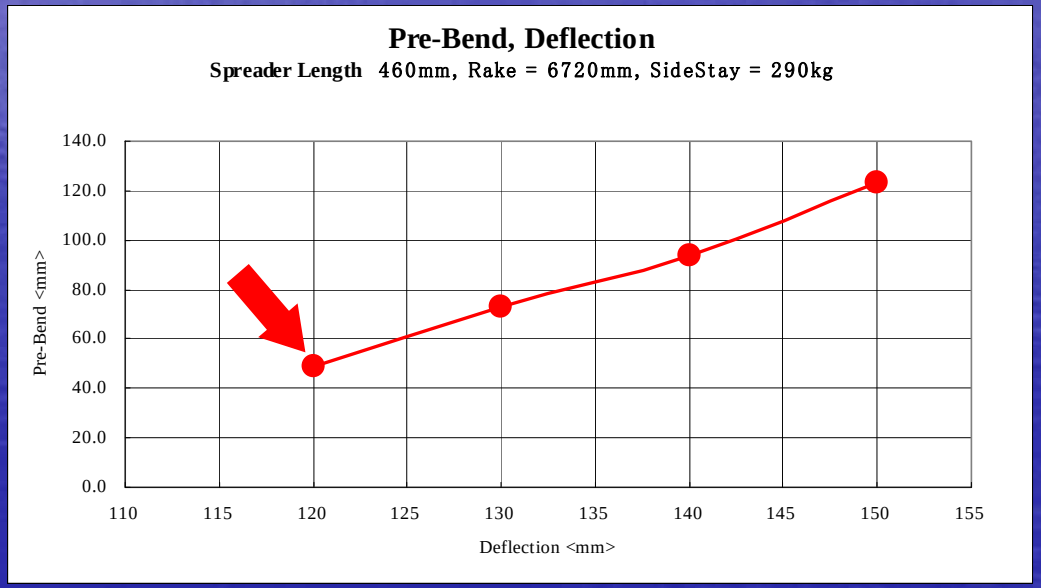
Mast Setting

Spreader Deflection





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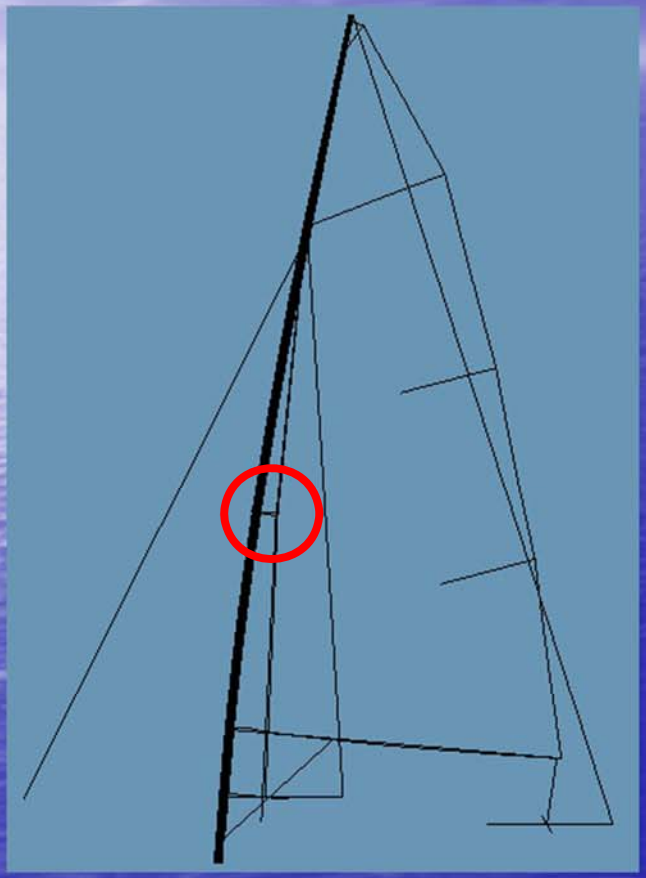
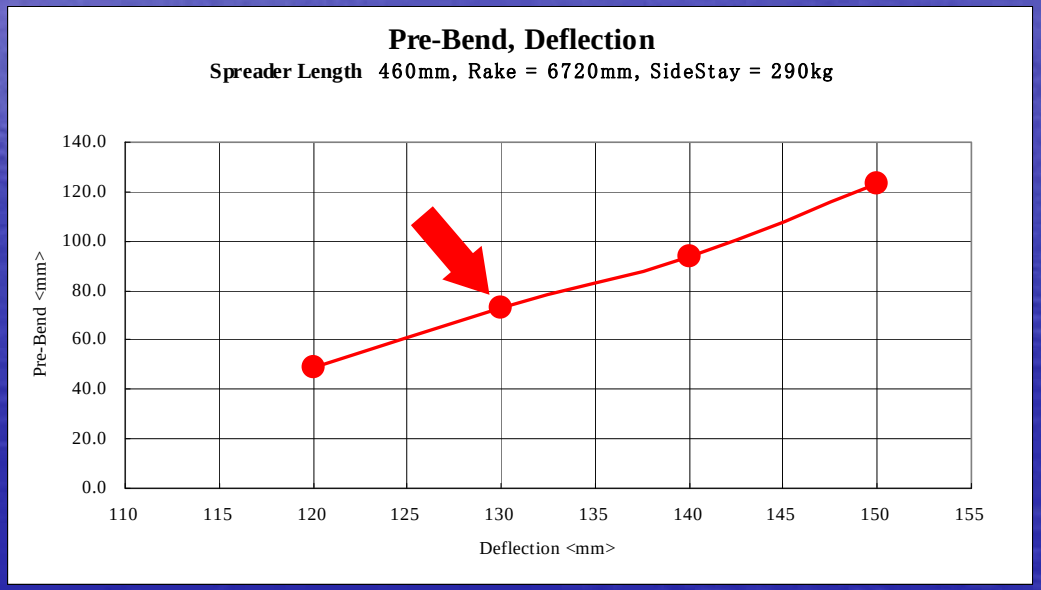
Mast Setting

Spreader Deflection





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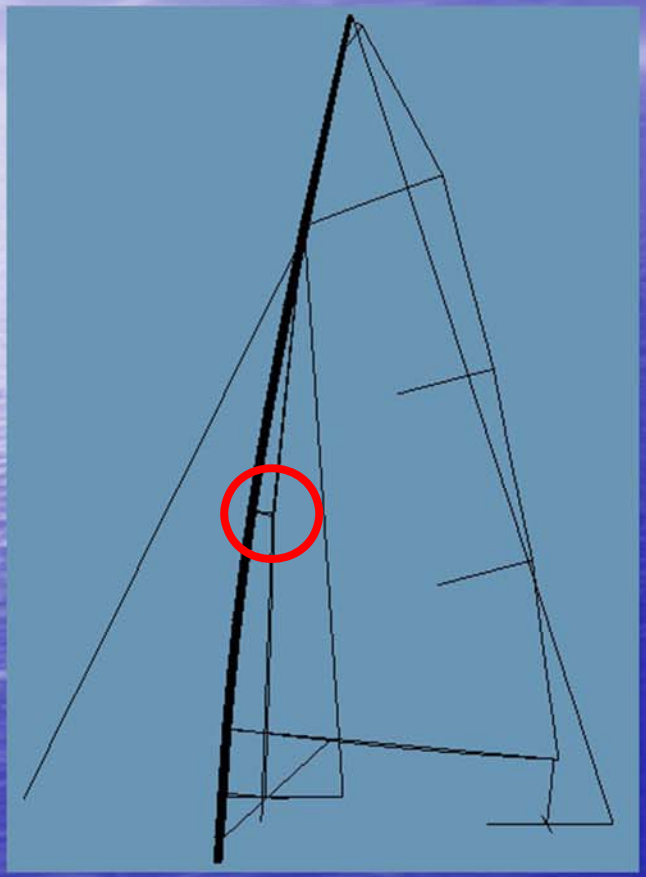
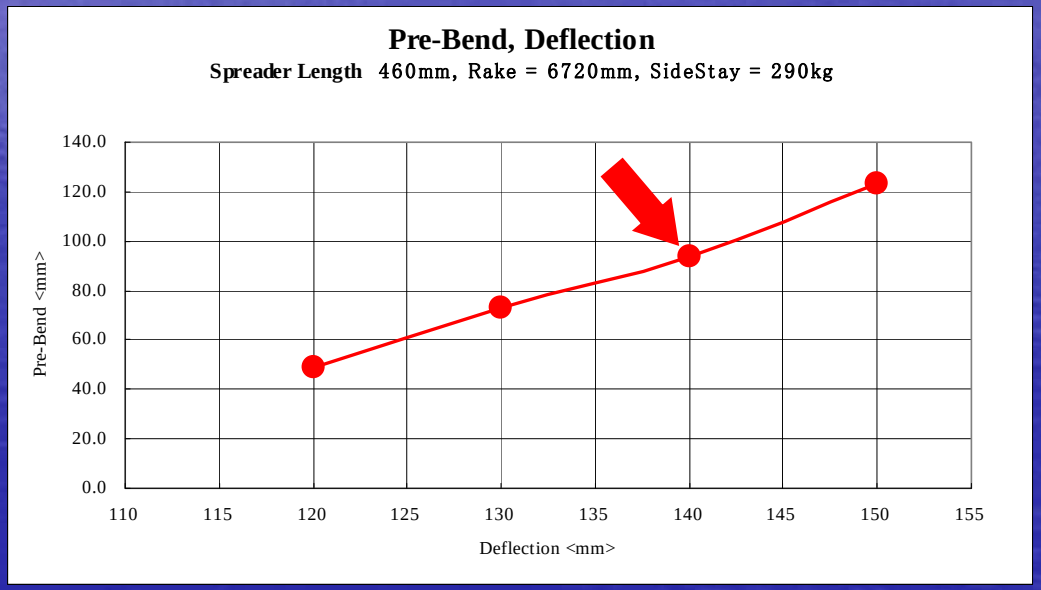
Mast Setting

Spreader Deflection





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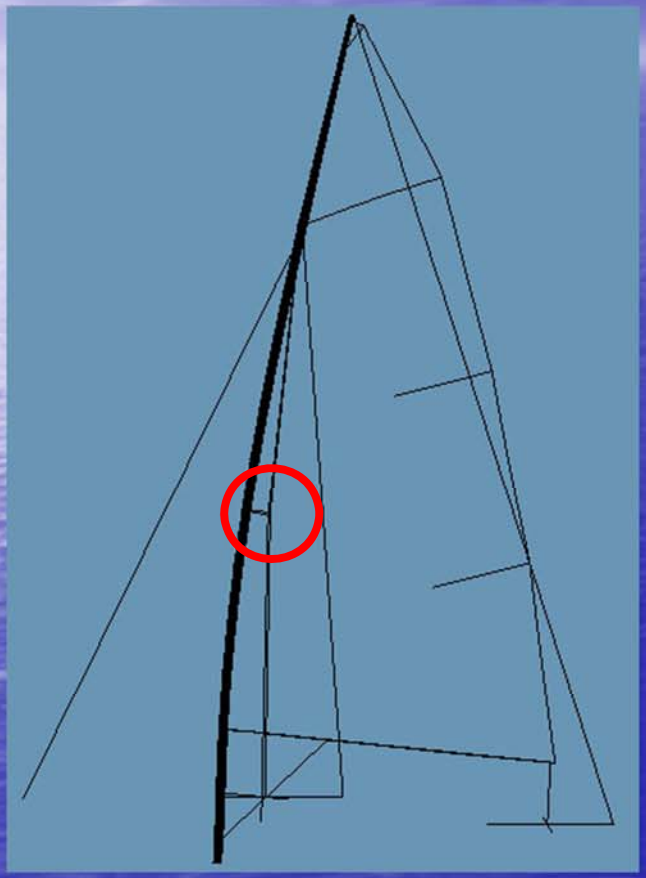
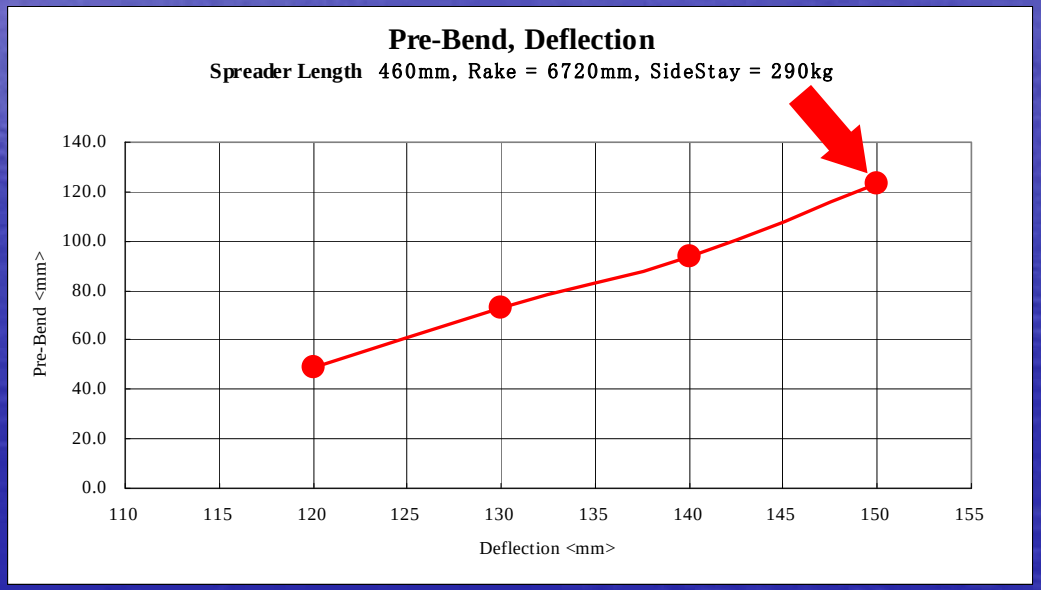
Mast Setting

Spreader Deflection





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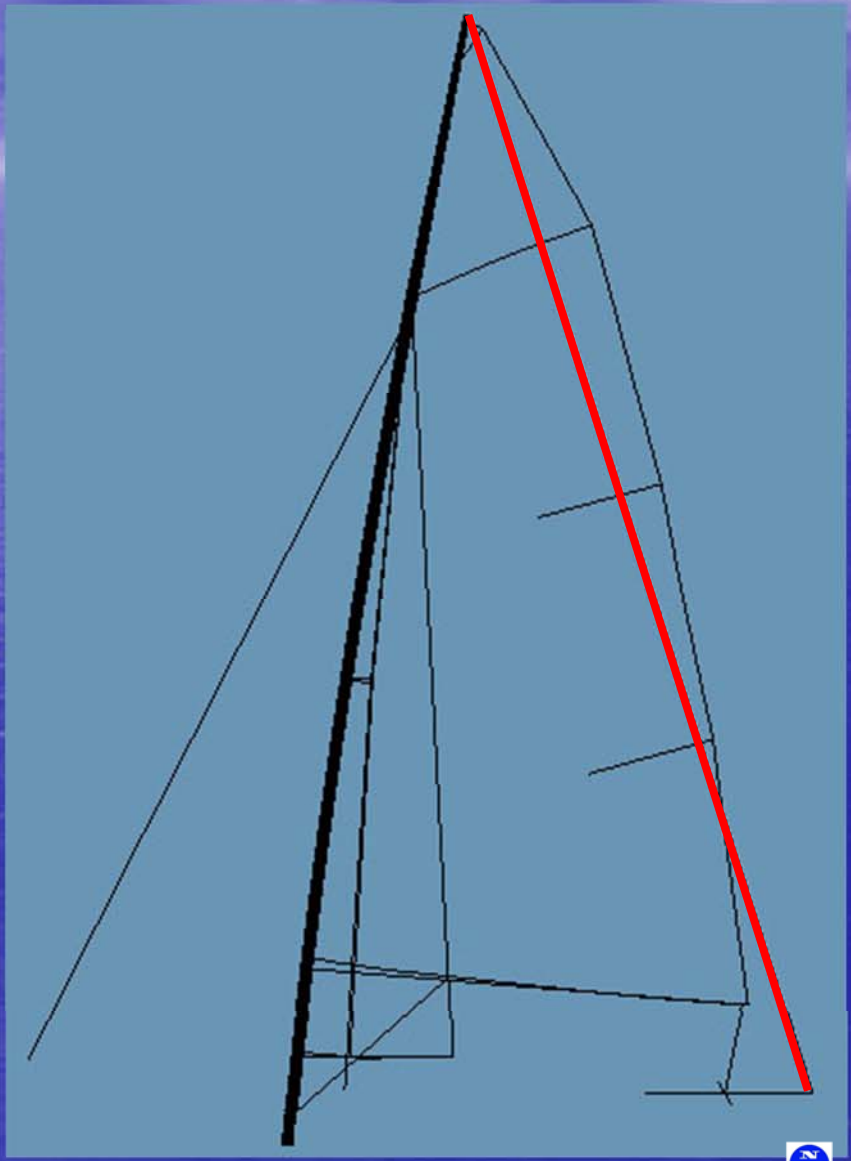
Mast Setting

Mast Rake



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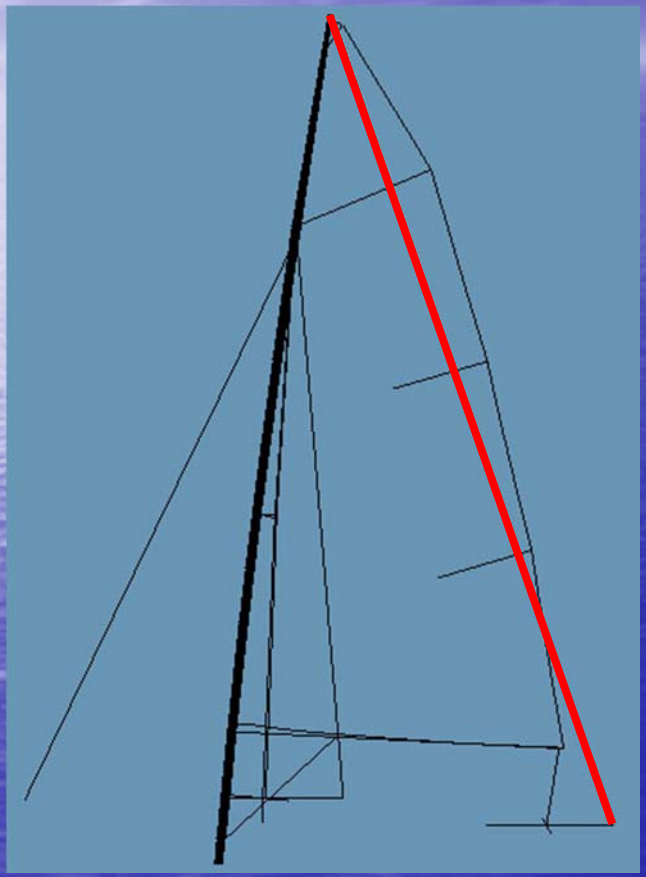
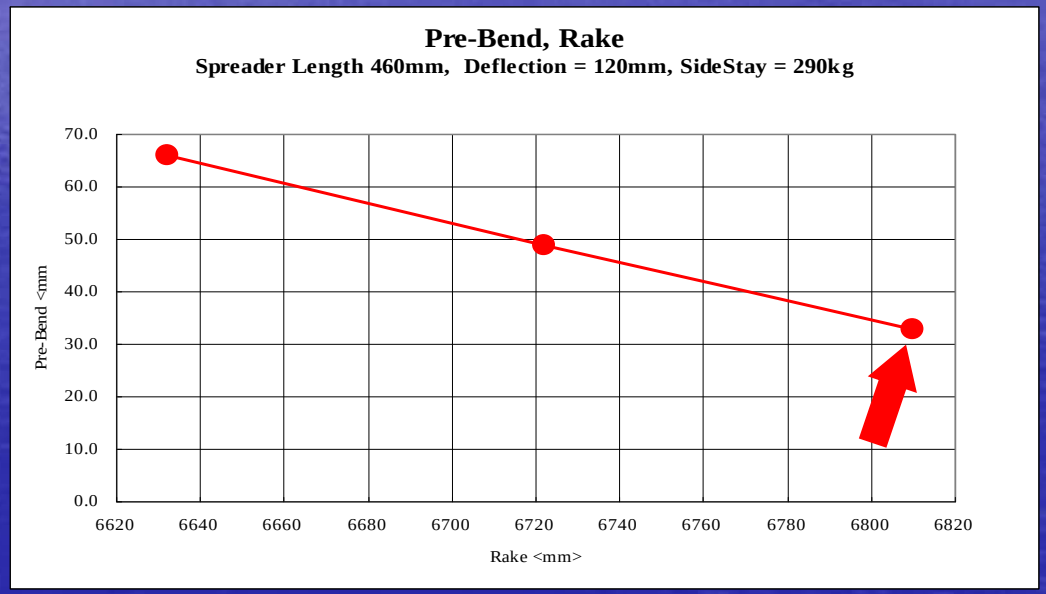
Mast Setting

Mast Rake





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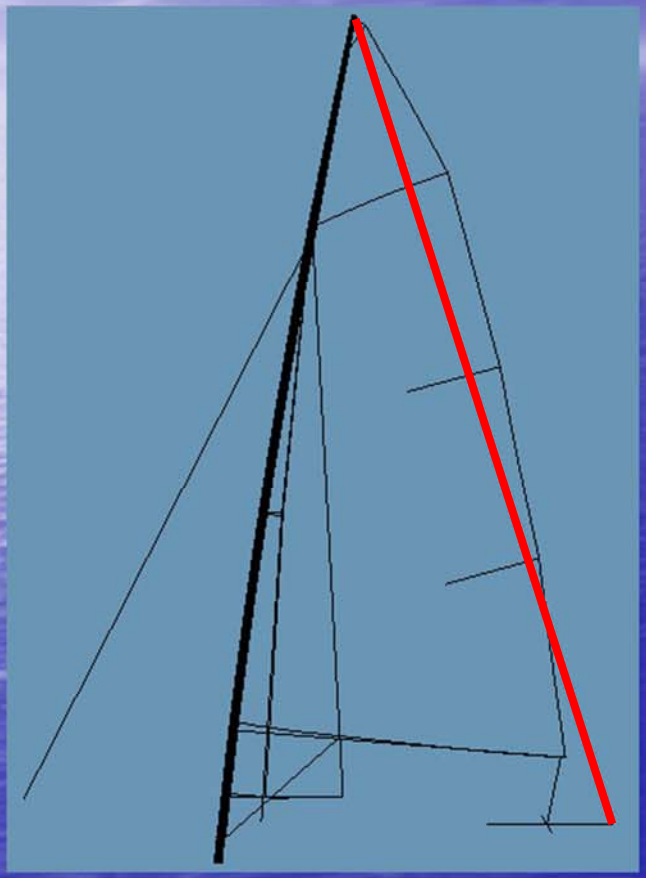
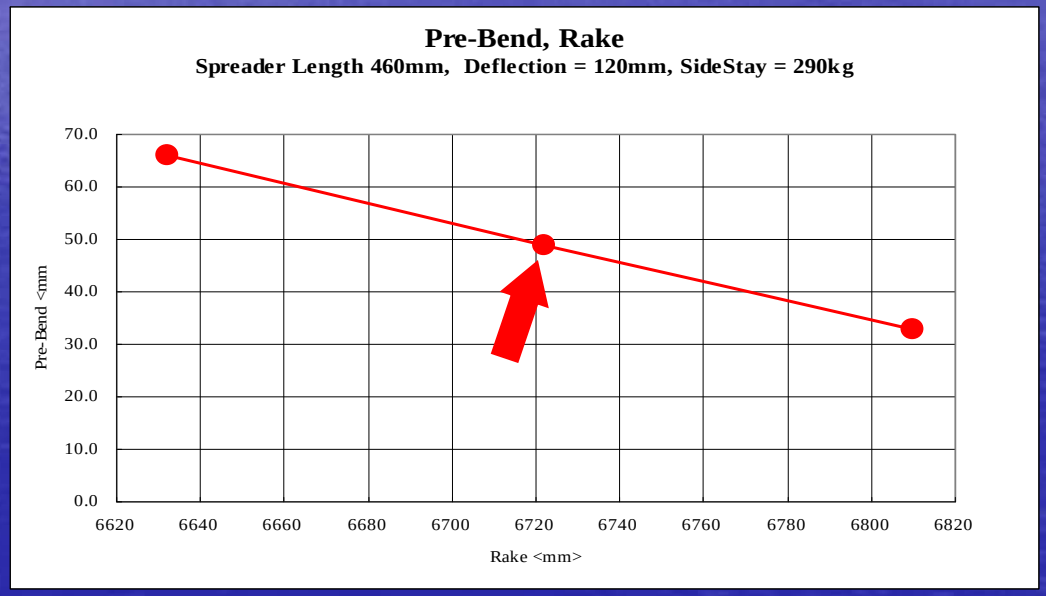
Mast Setting

Mast Rake





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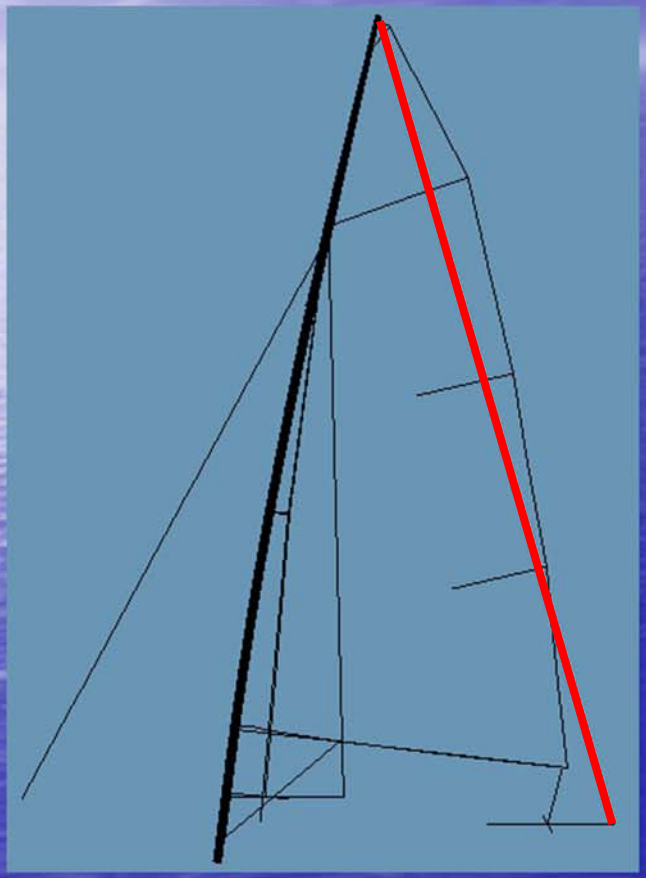

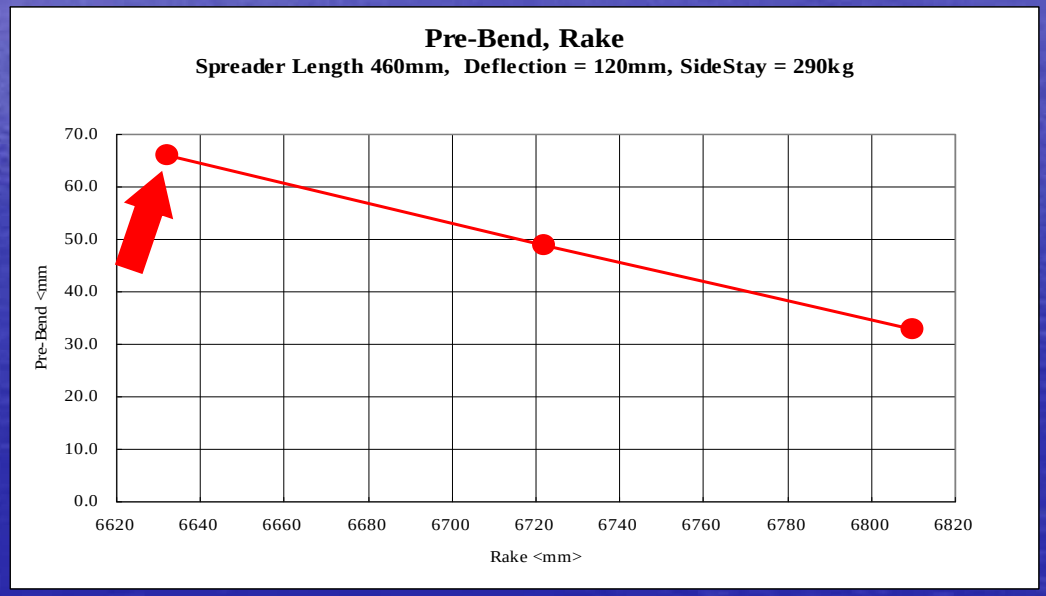

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Mast Setting

Mast Step

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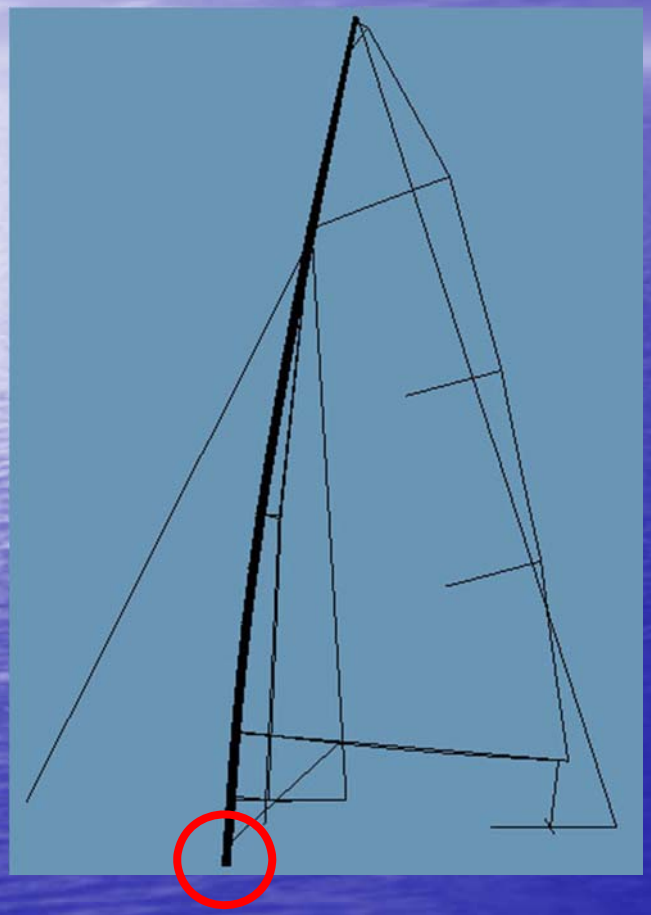

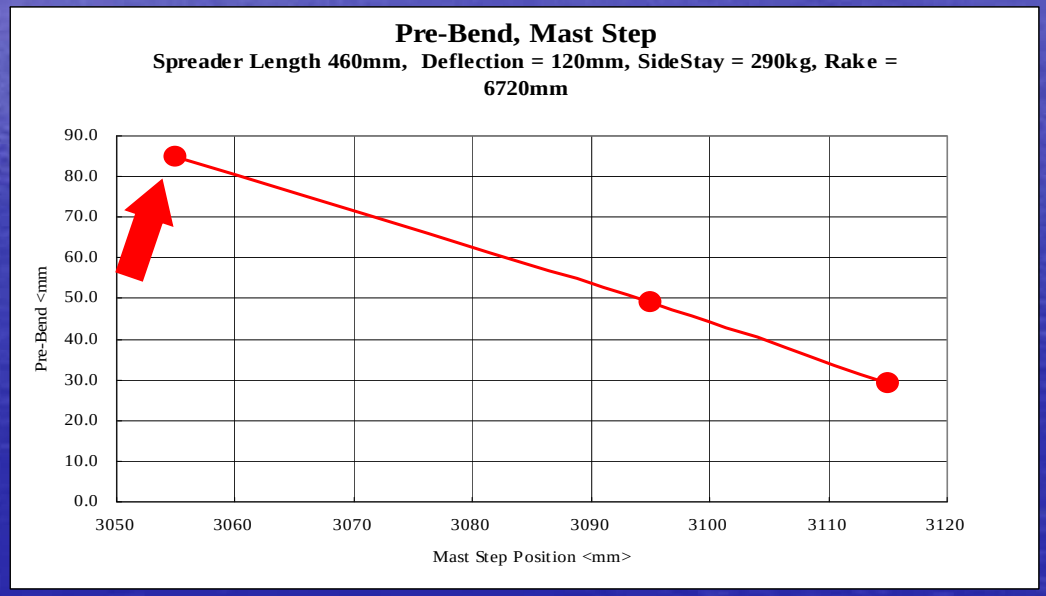

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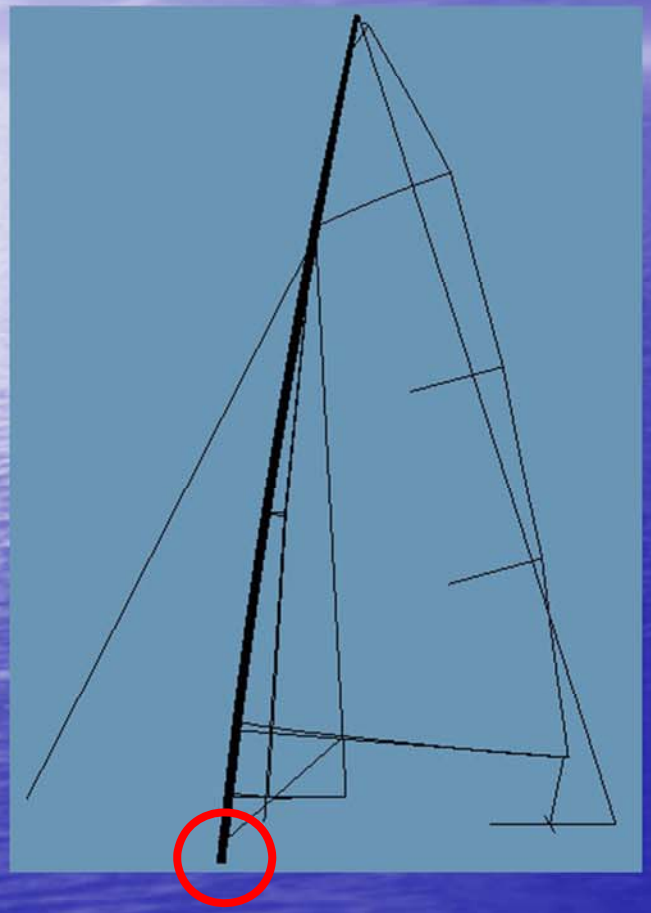

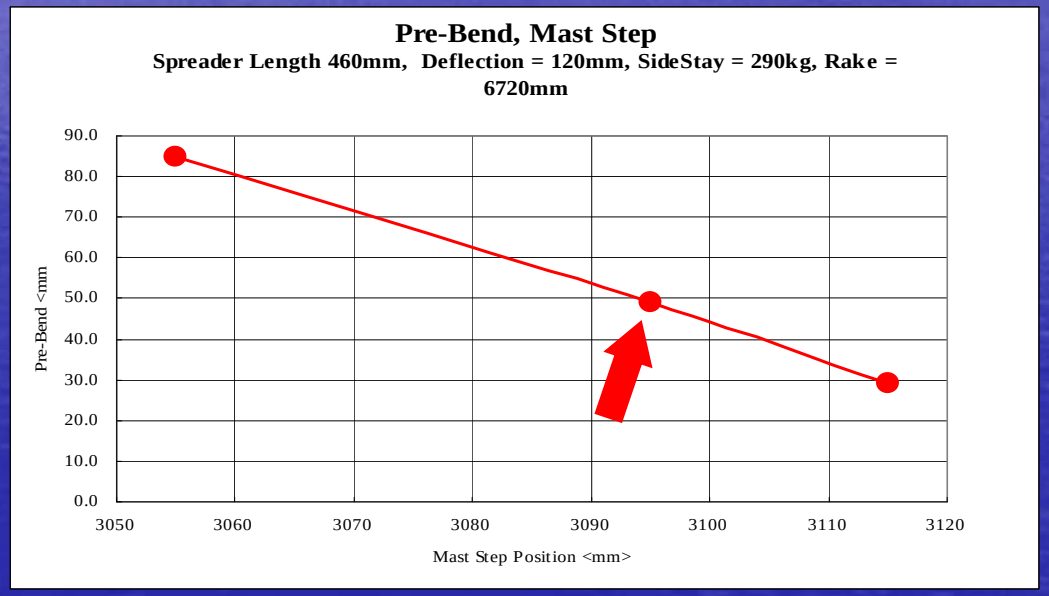

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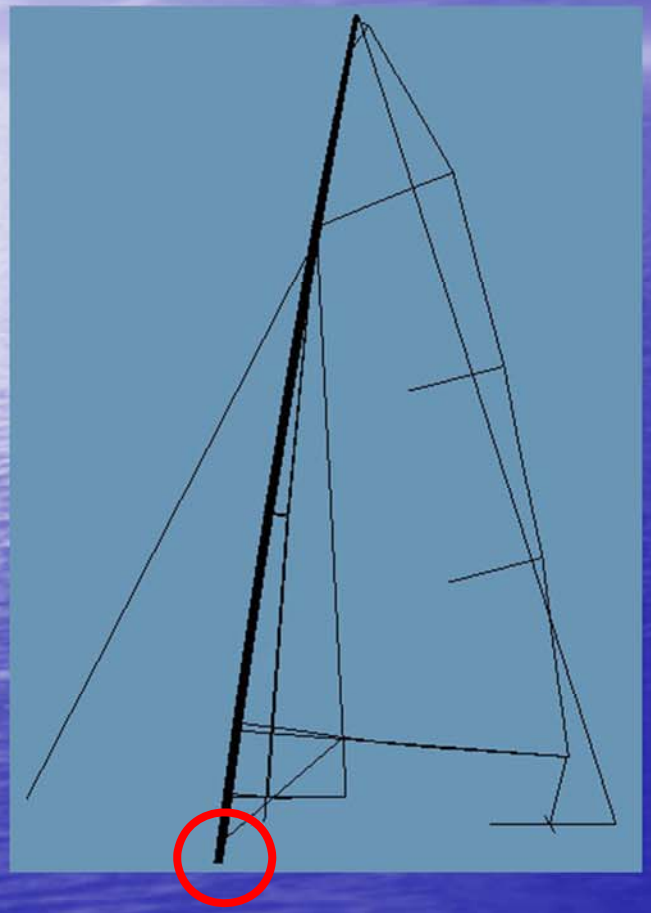

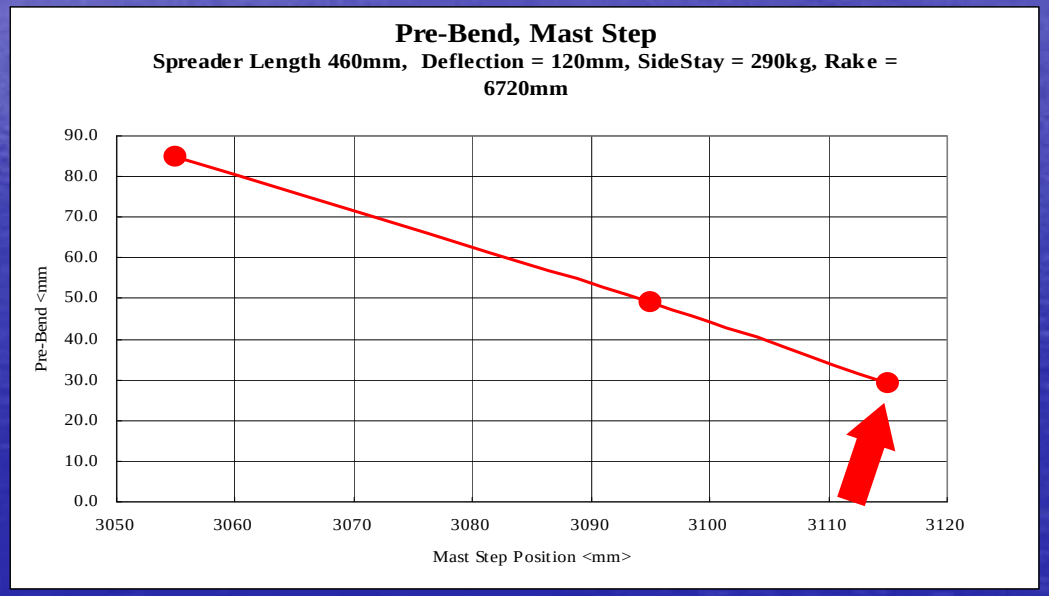

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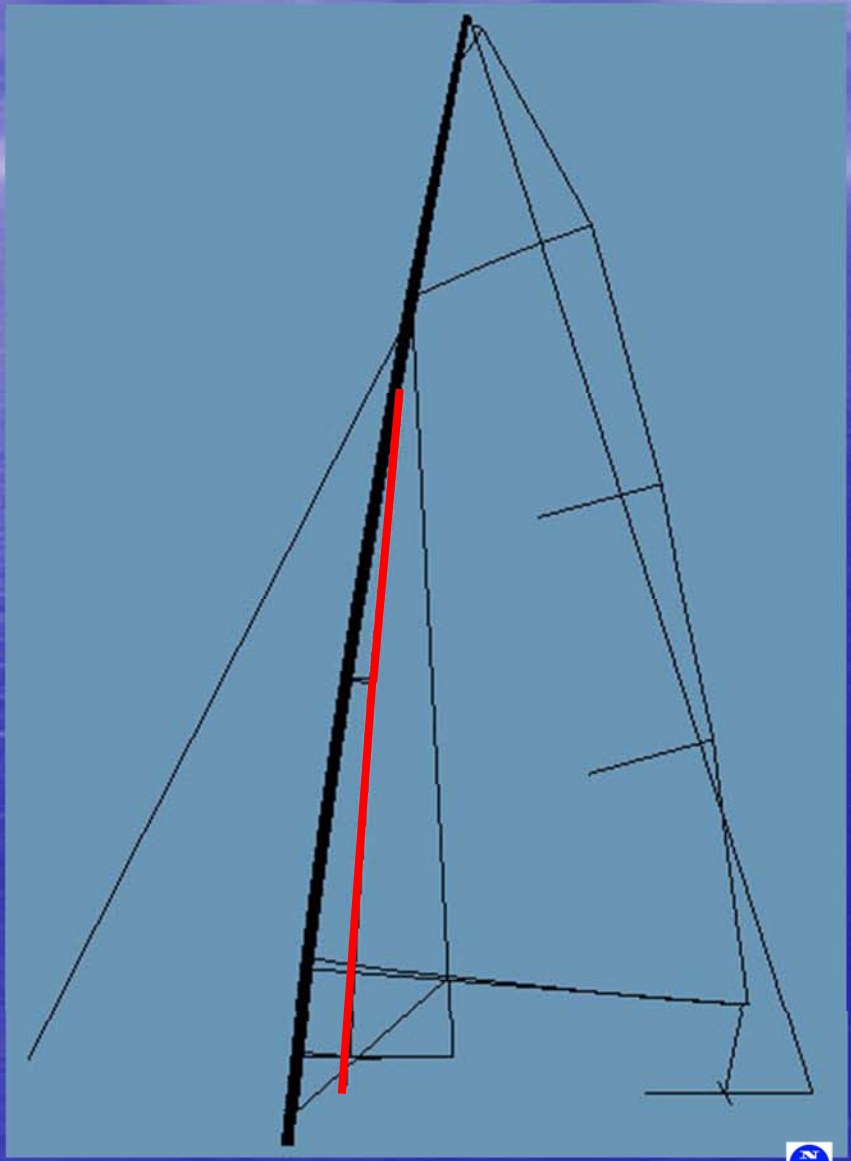
Mast Setting

Side Stay Tension



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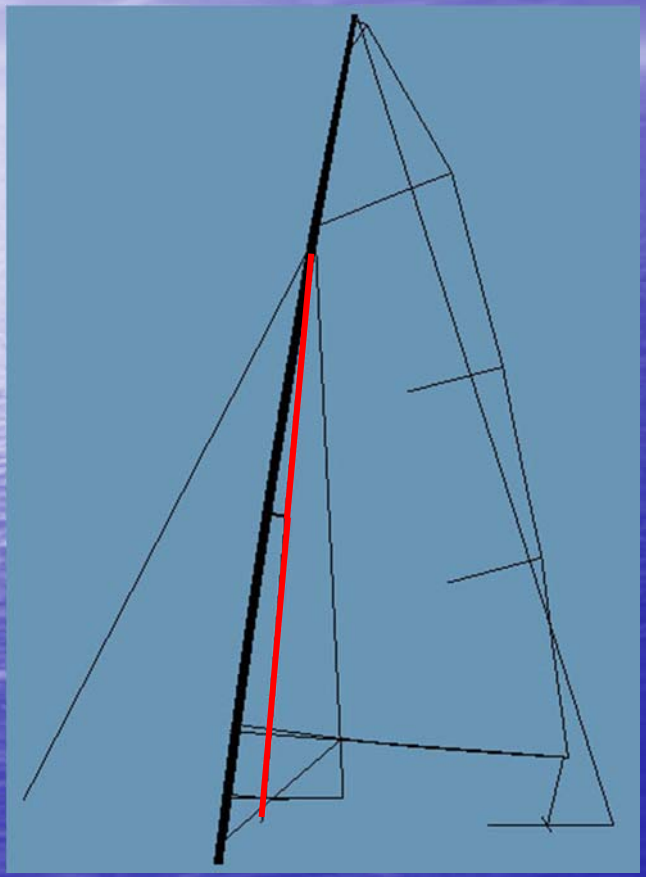

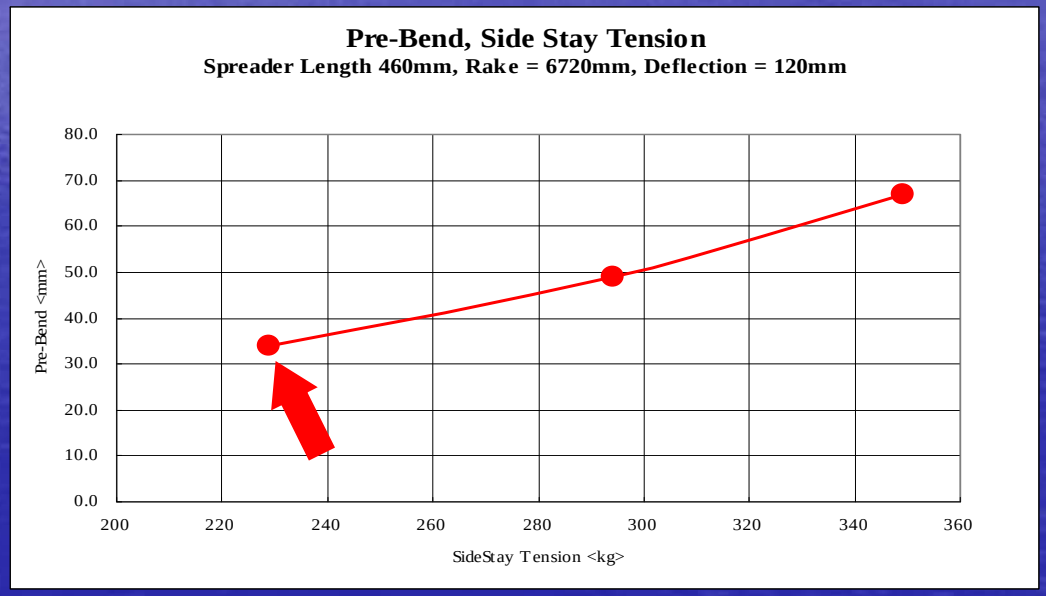

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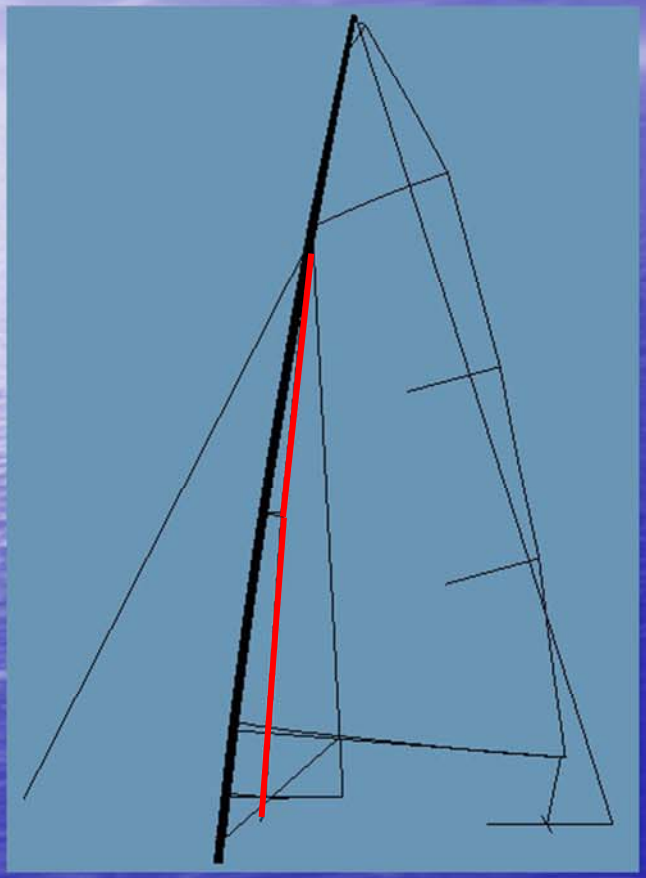

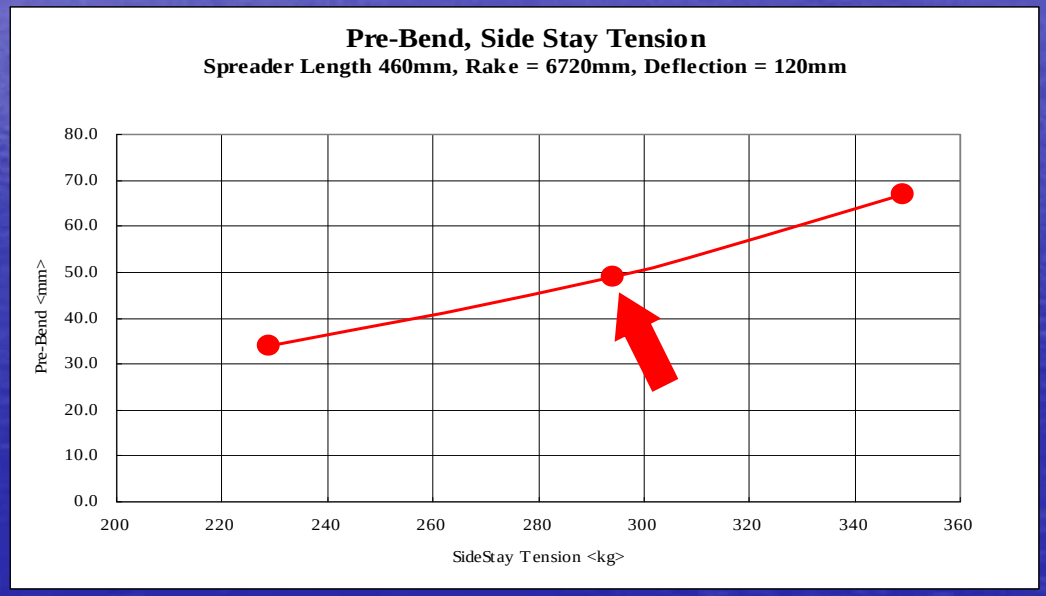

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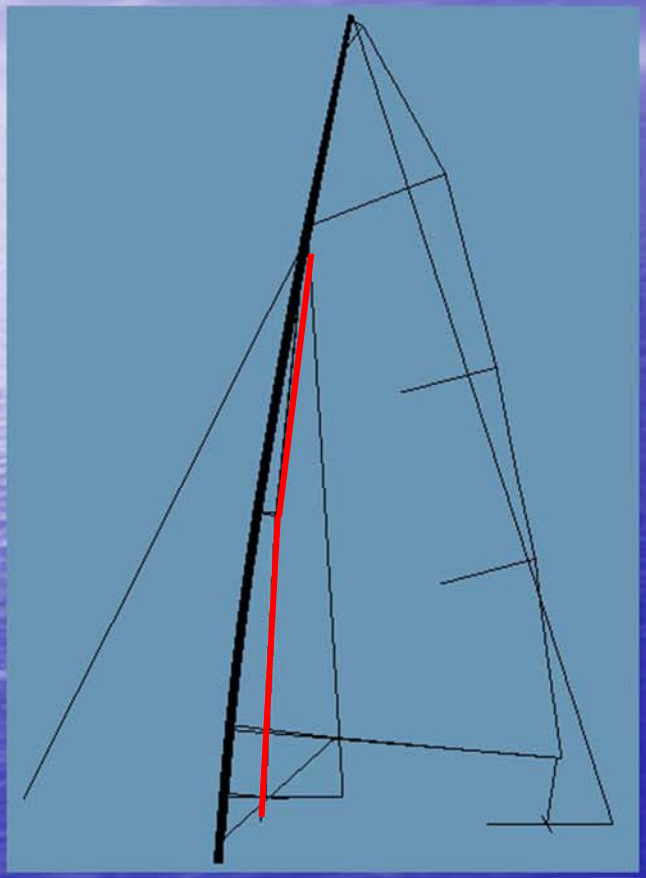

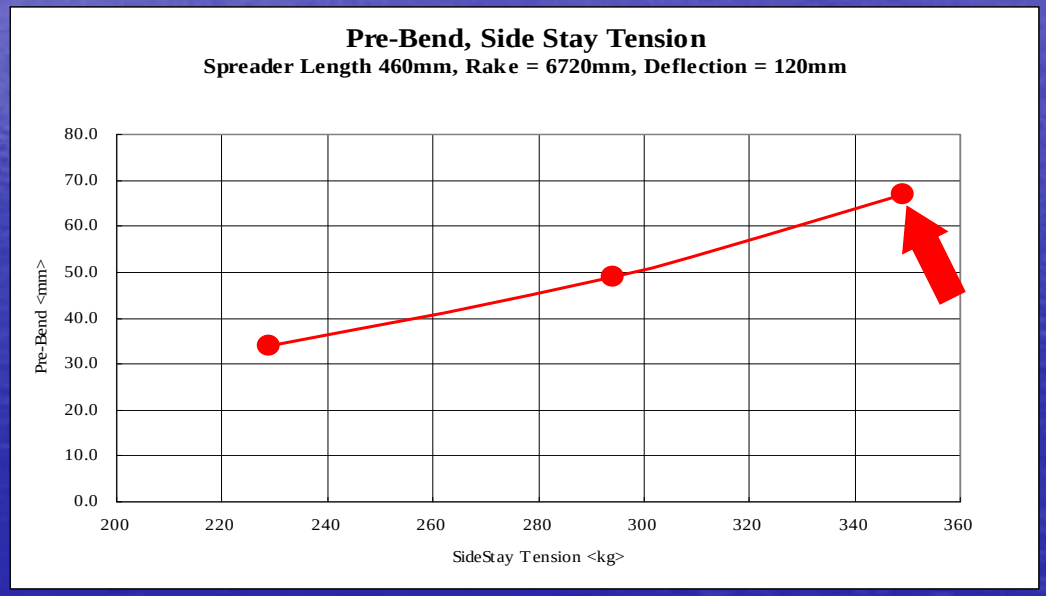

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Mast Setting

(Sailing Condition)

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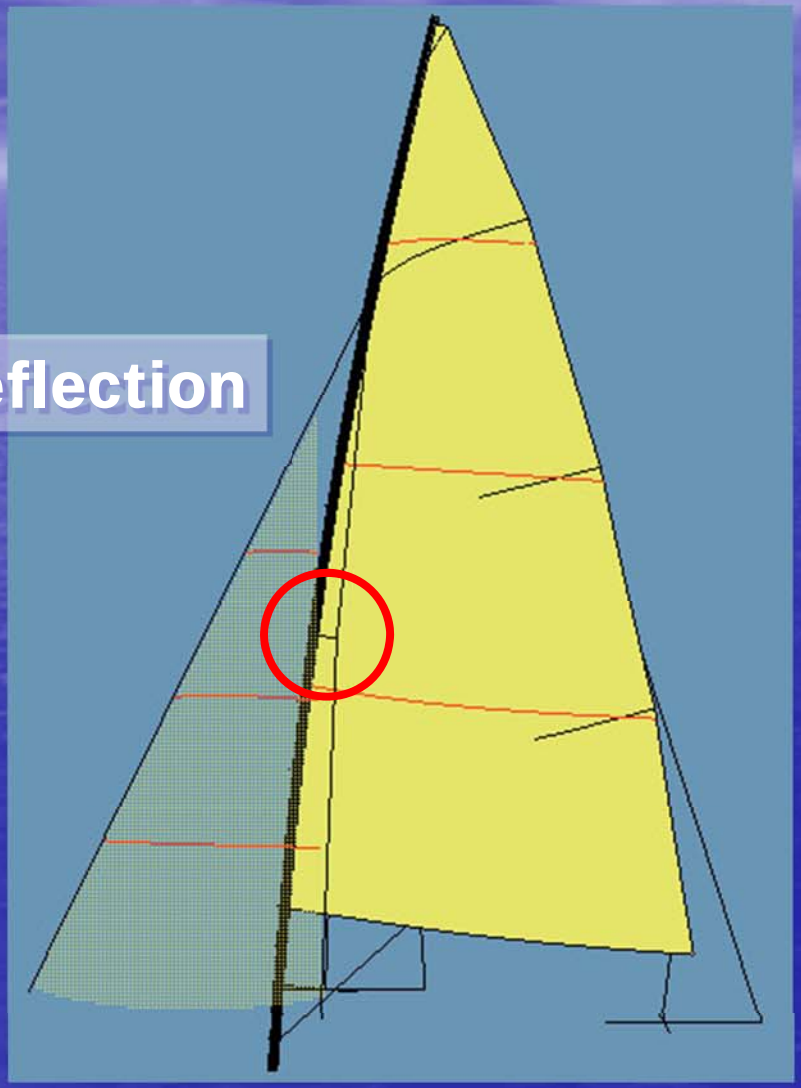
Mast Setting

Spreader Deflection



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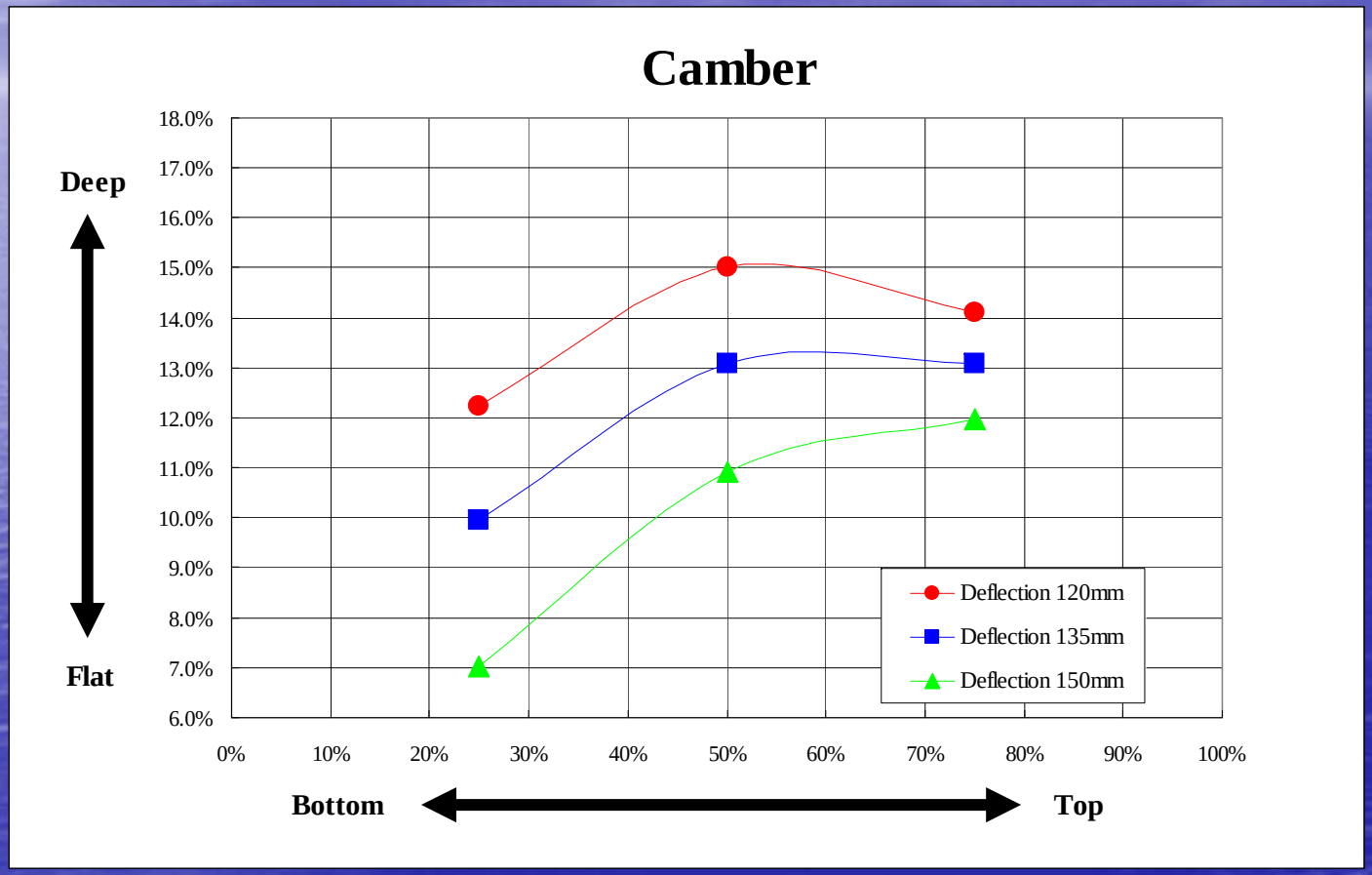

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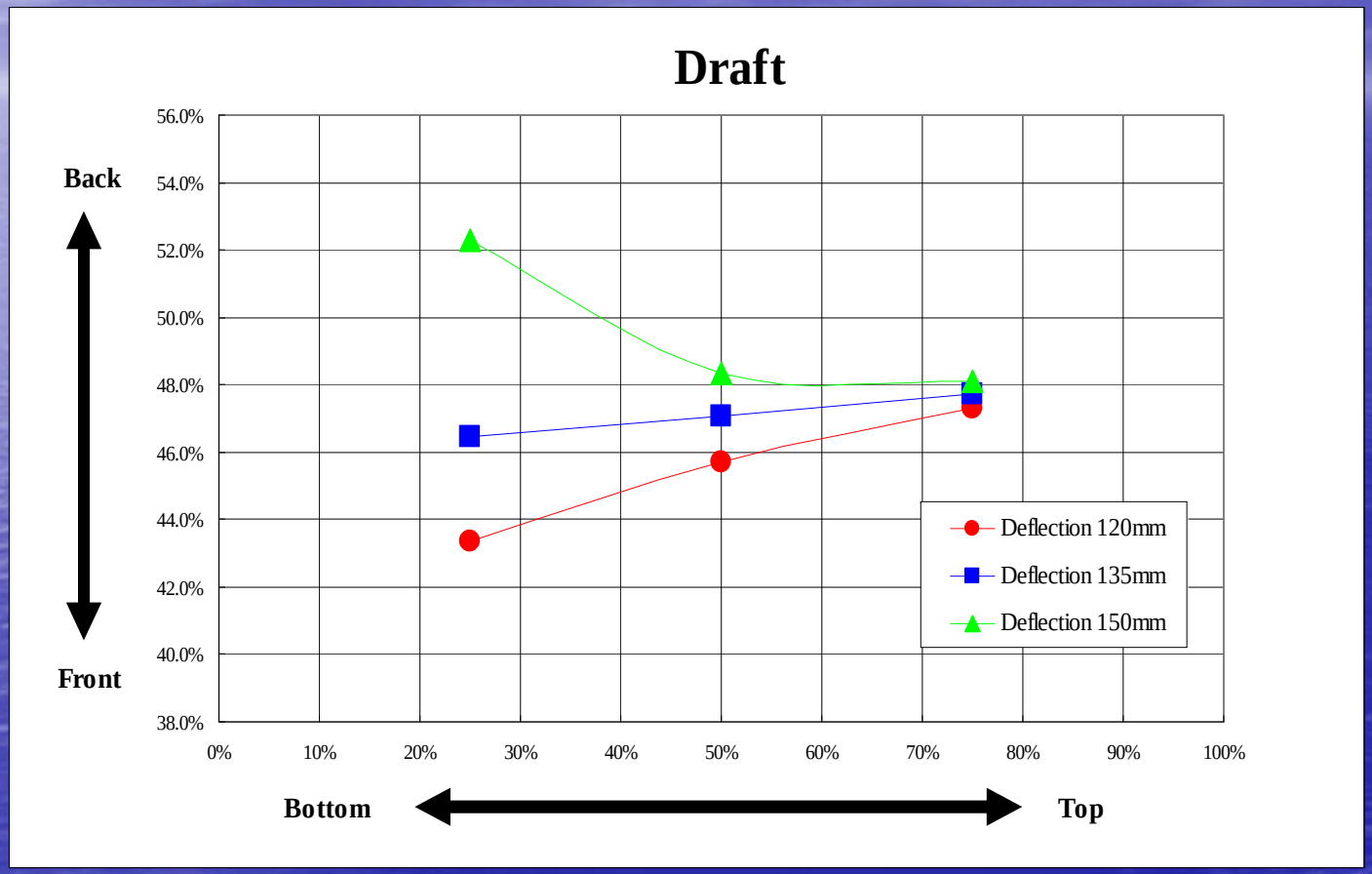

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Mast Setting

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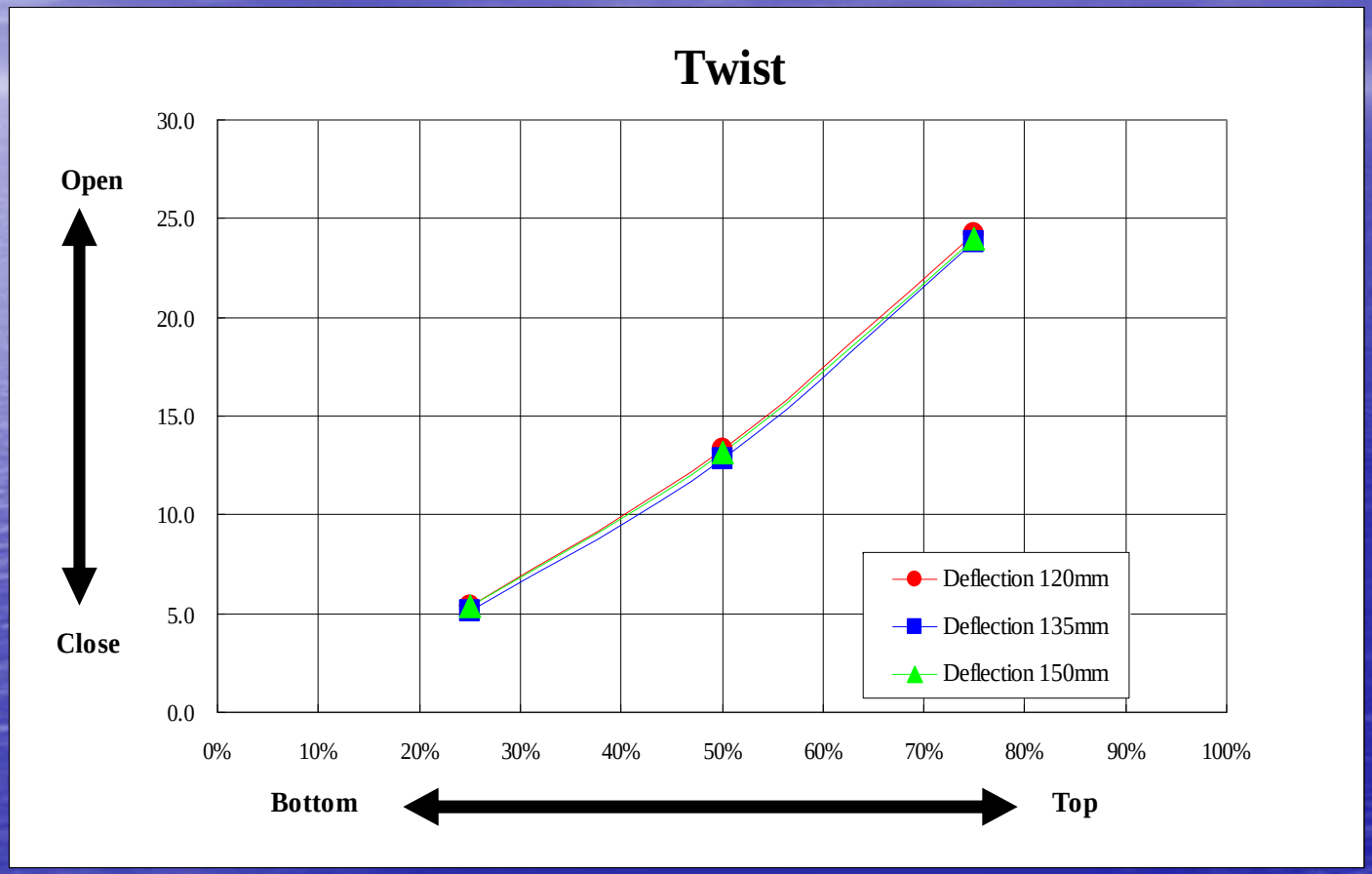

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Mast Setting

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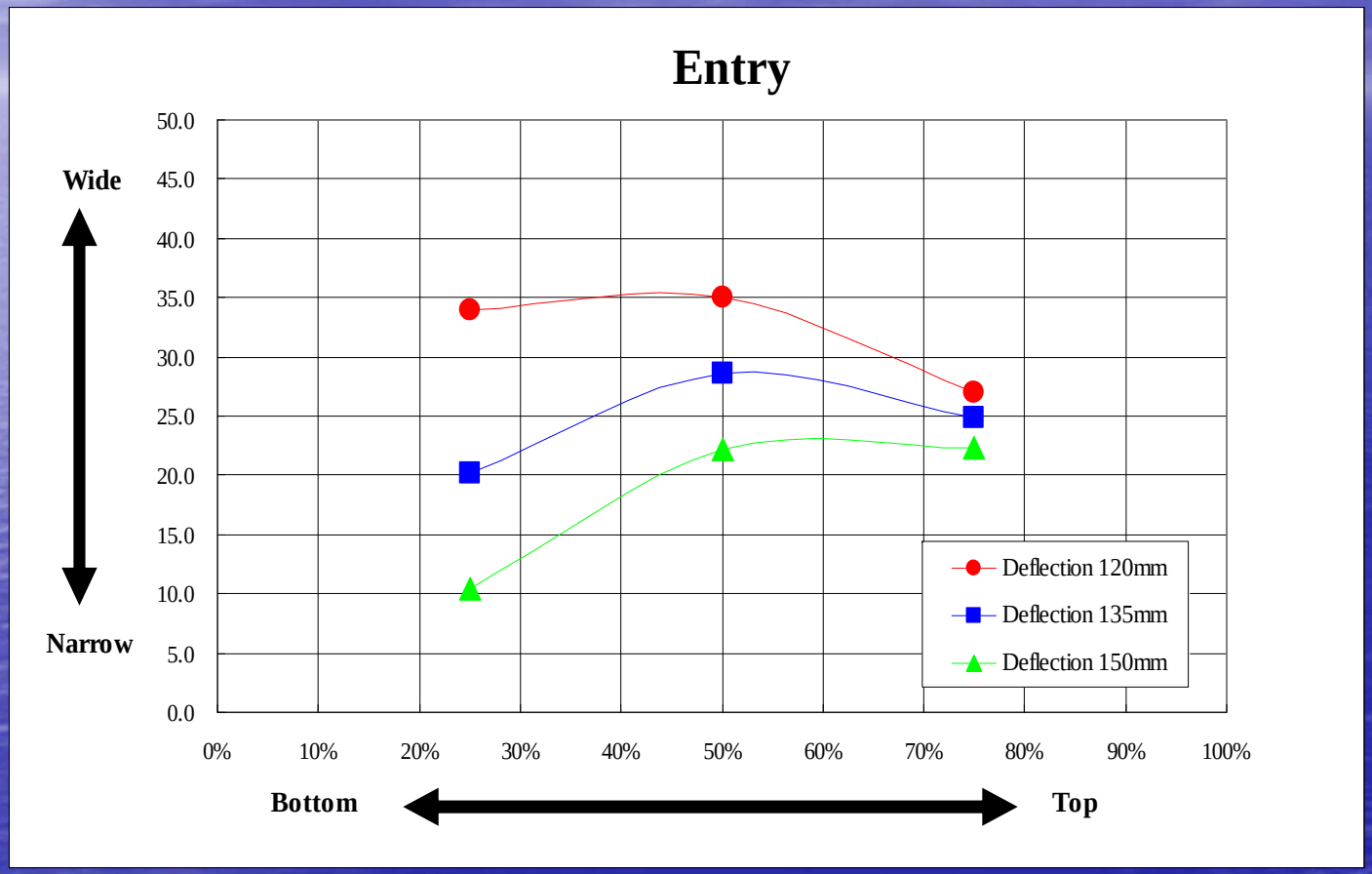

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Mast Setting

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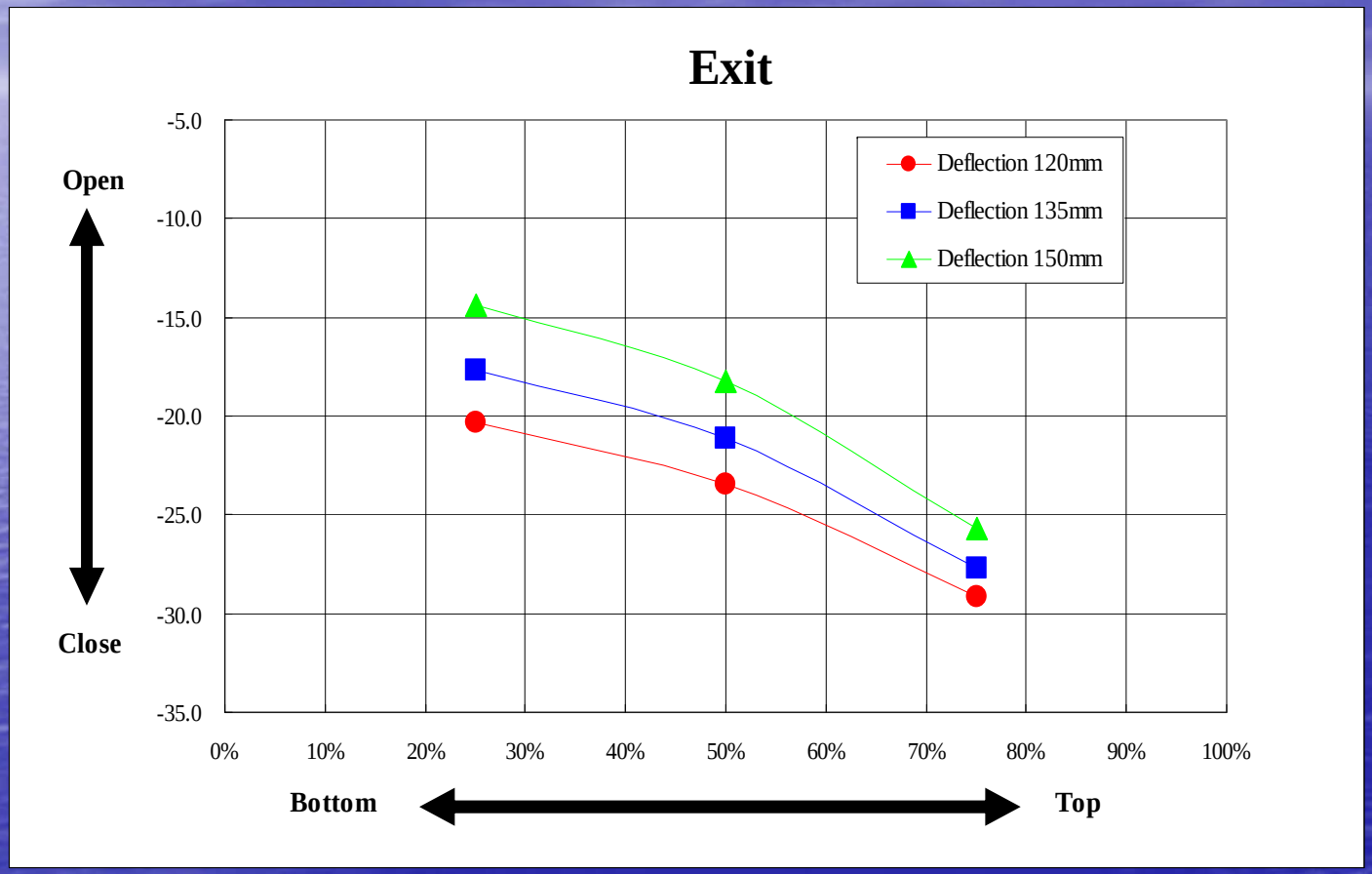

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Mast Setting

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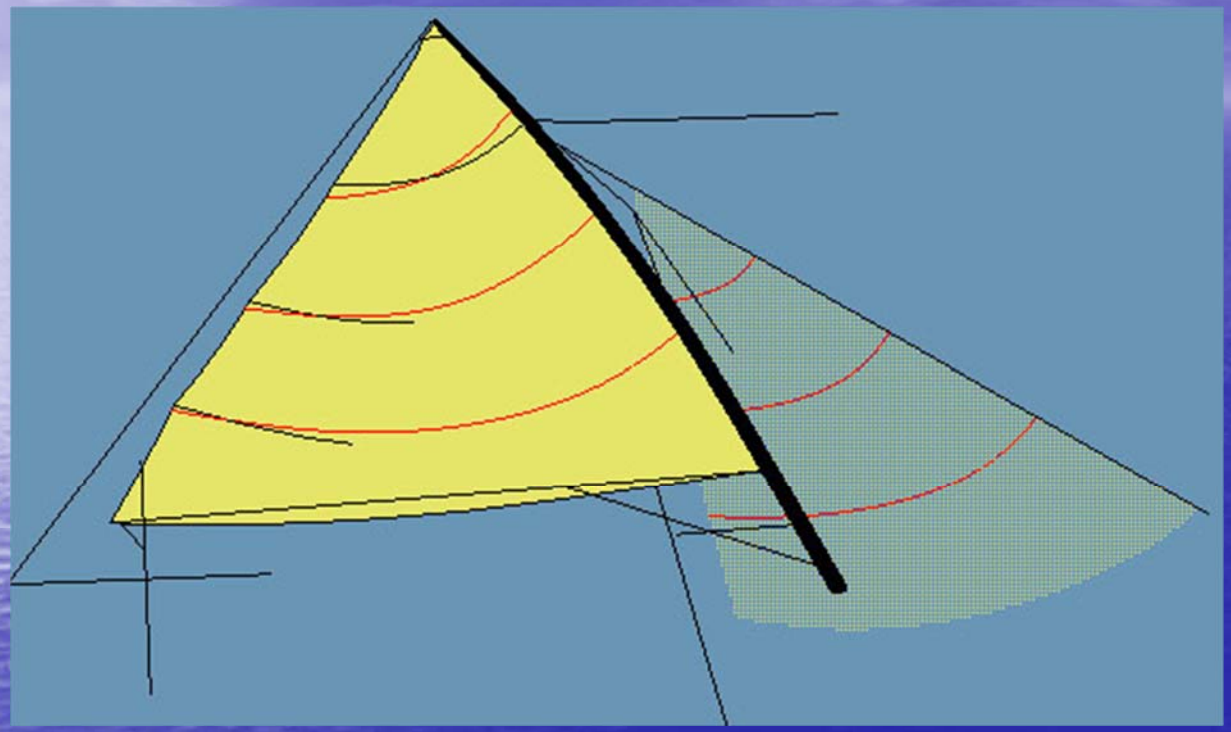

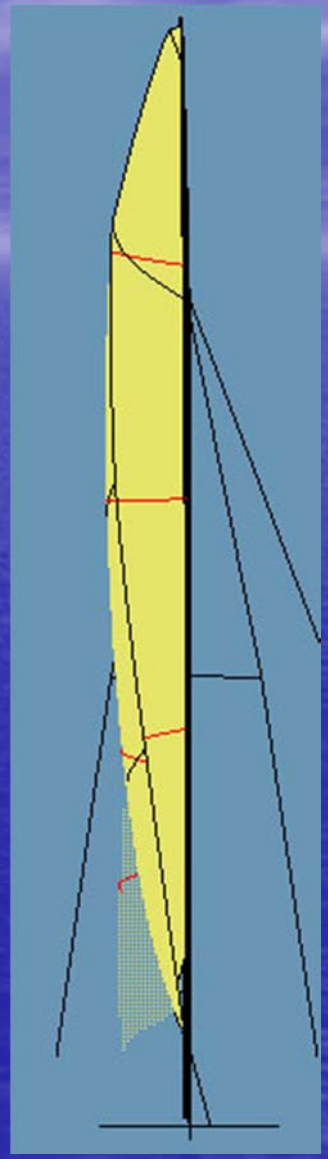

Spreader Deflection: 120mm

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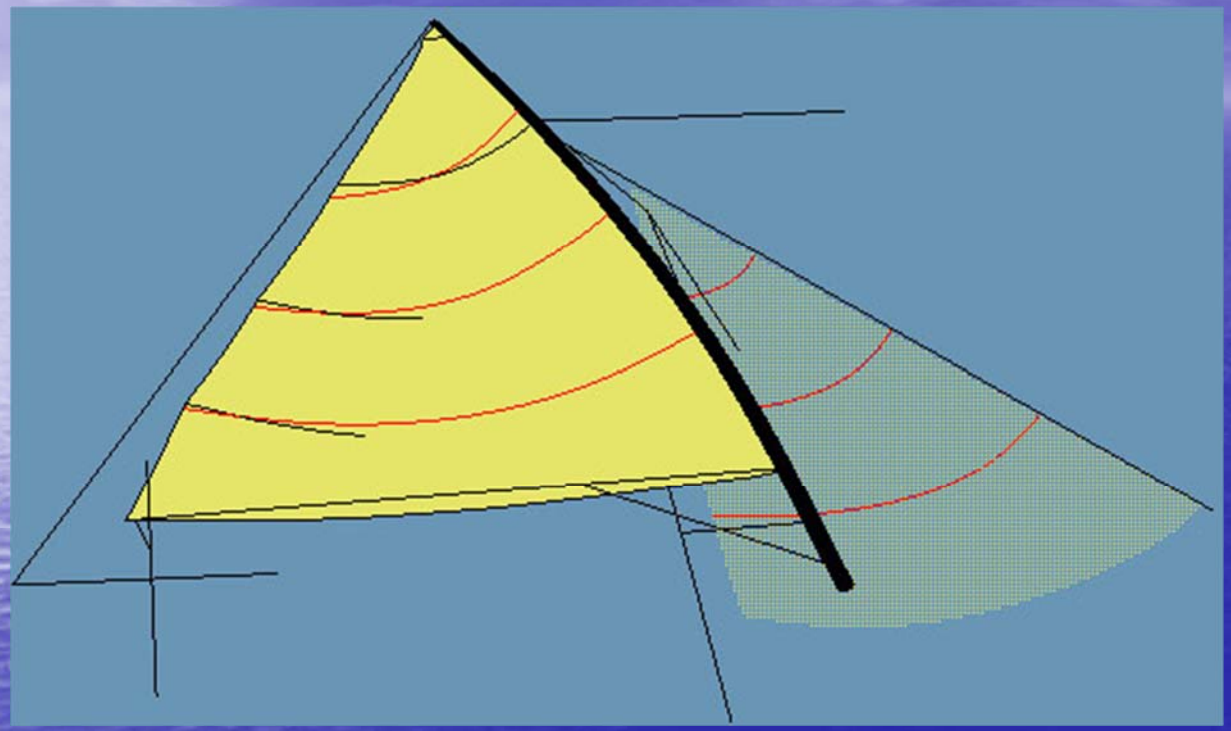
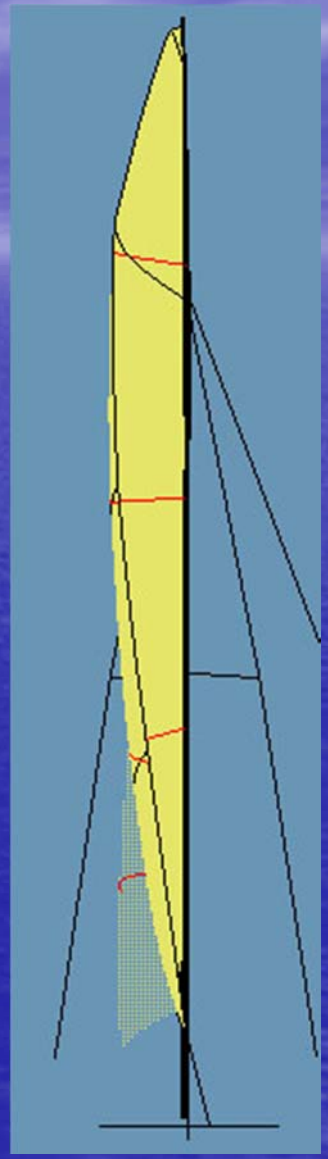
Mast Setting

Spreader Deflection





Spreader Deflection: 135mm

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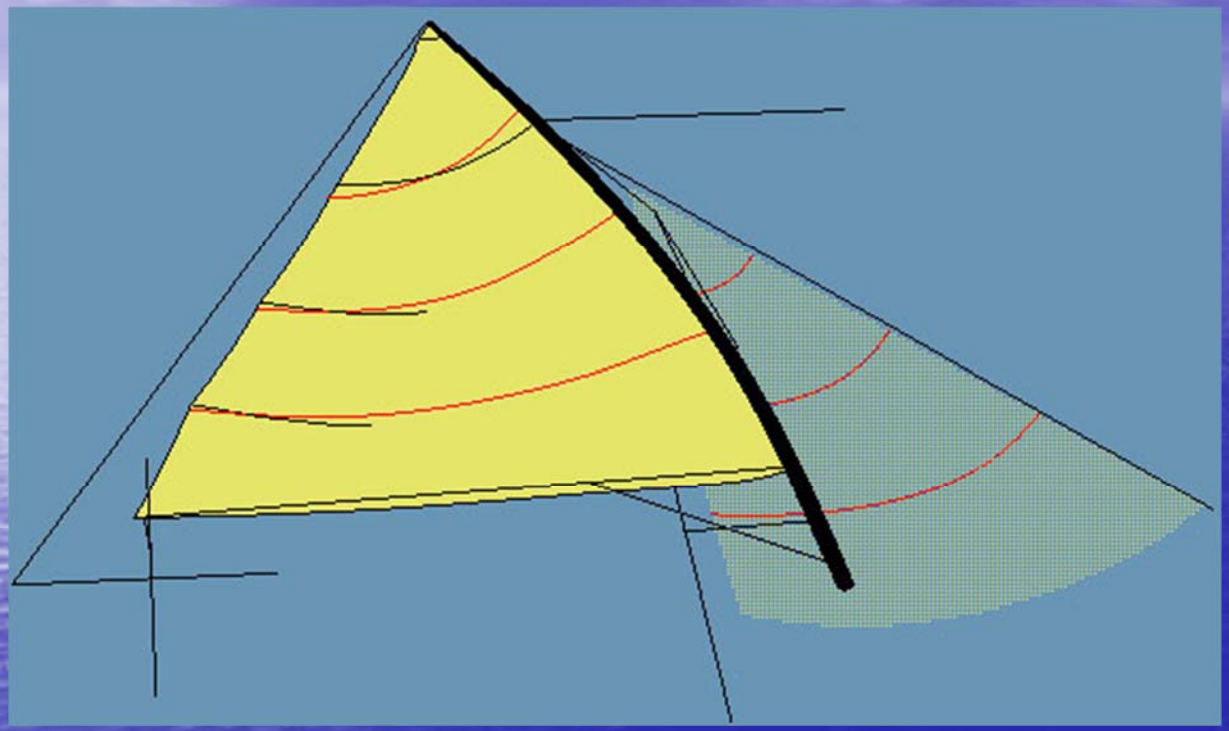
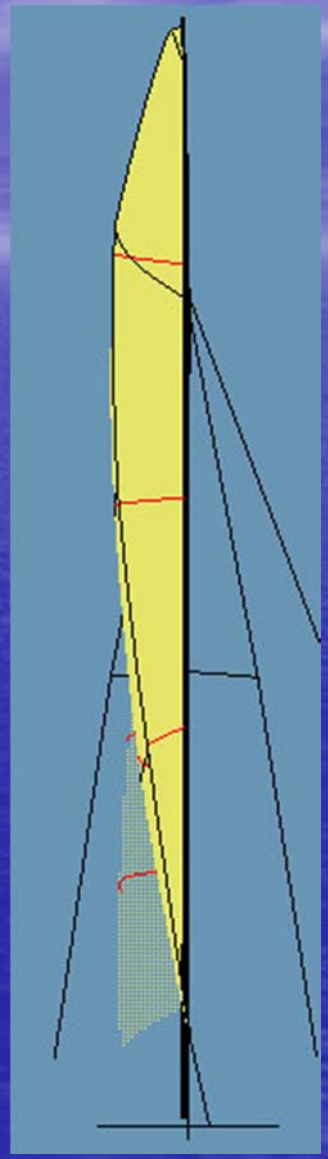
Mast Setting

Spreader Deflection





Spreader Deflection: 150mm

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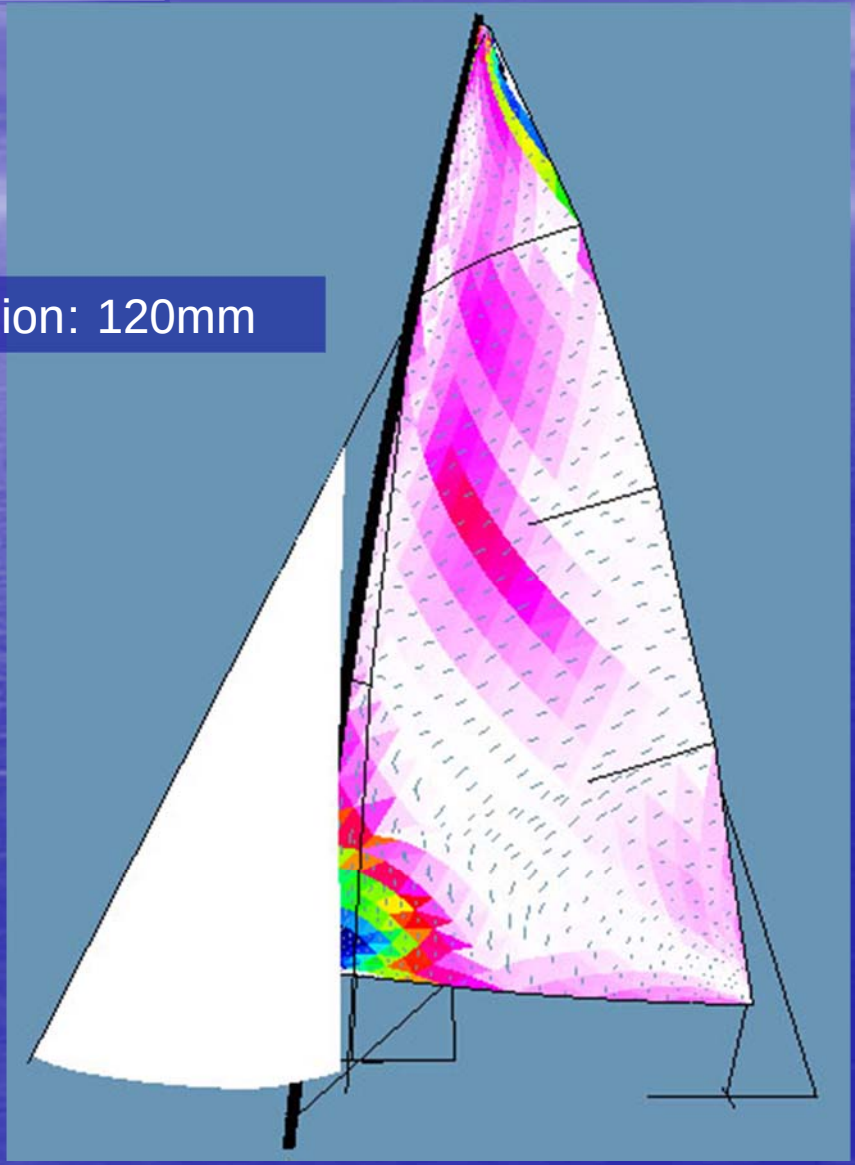
Mast Setting

Spreader Deflection

Spreader Deflection: 120mm



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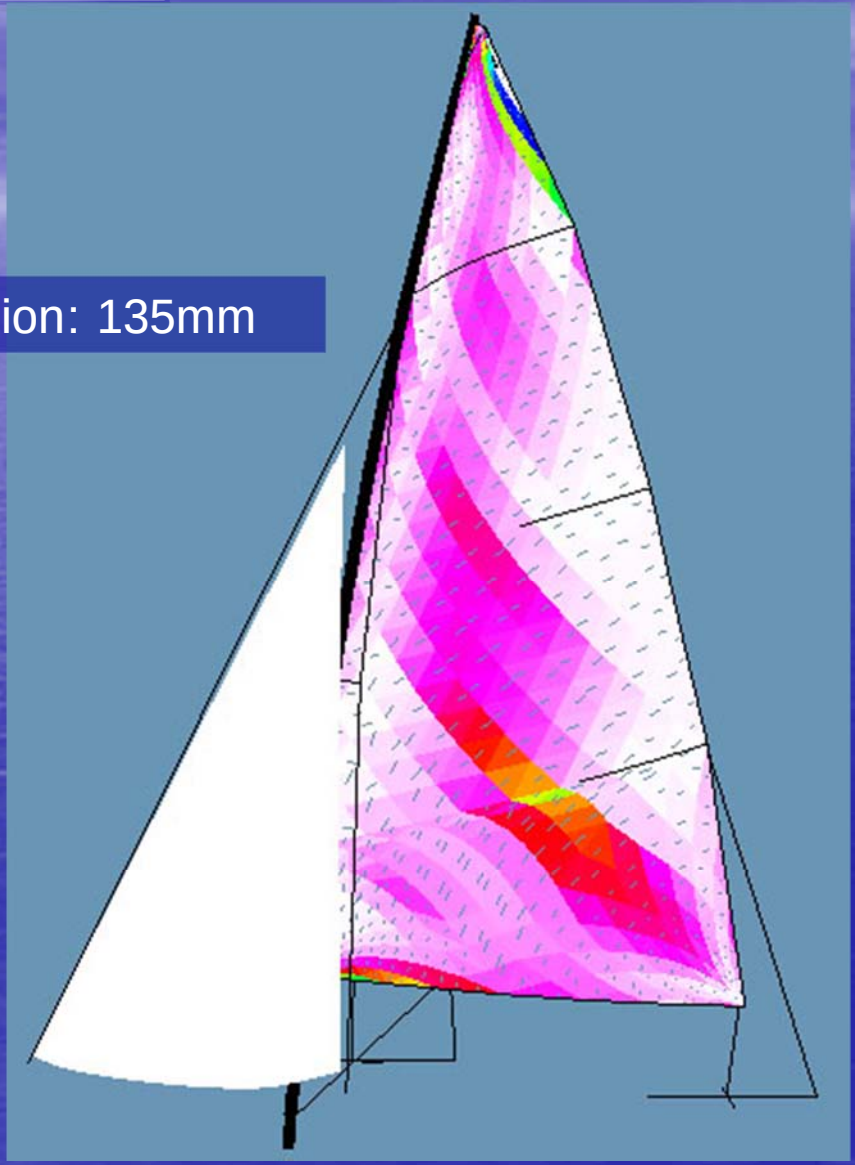
Mast Setting

Spreader Deflection

Spreader Deflection: 135mm



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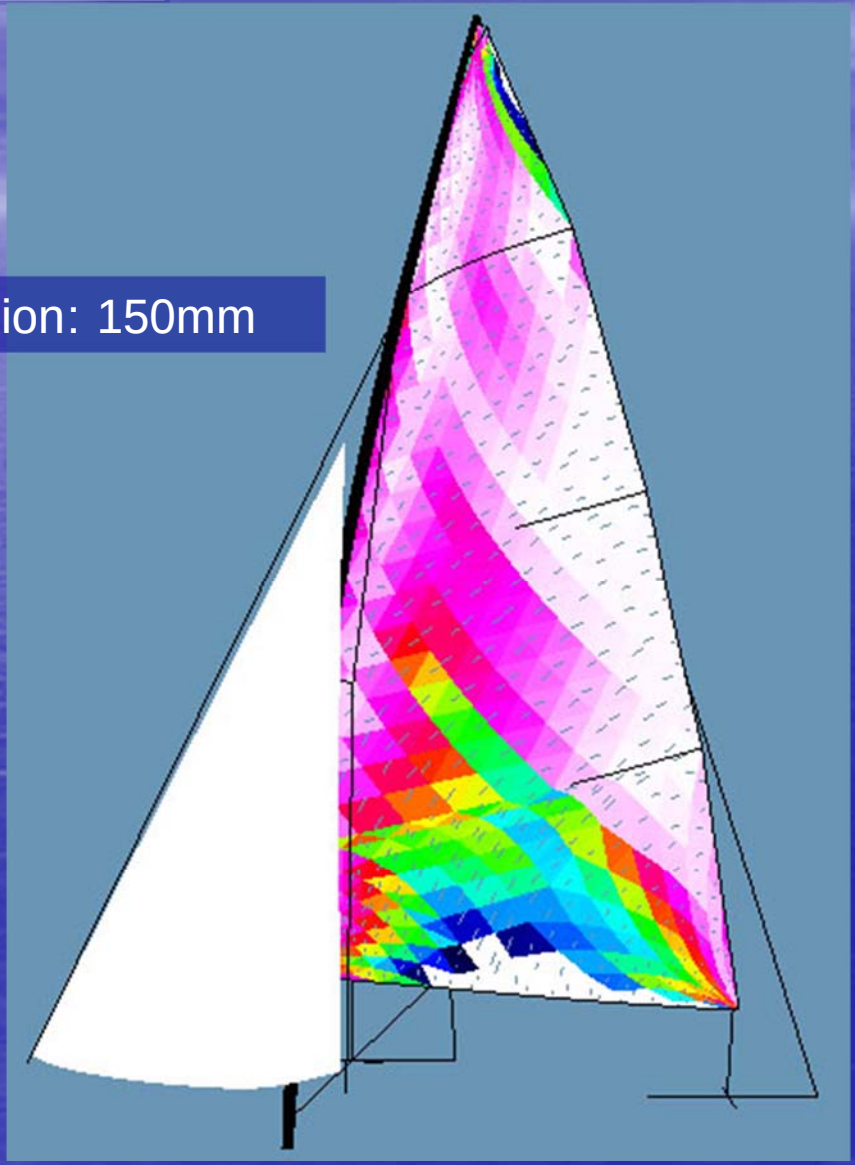
Mast Setting

Spreader Deflection

Spreader Deflection: 150mm



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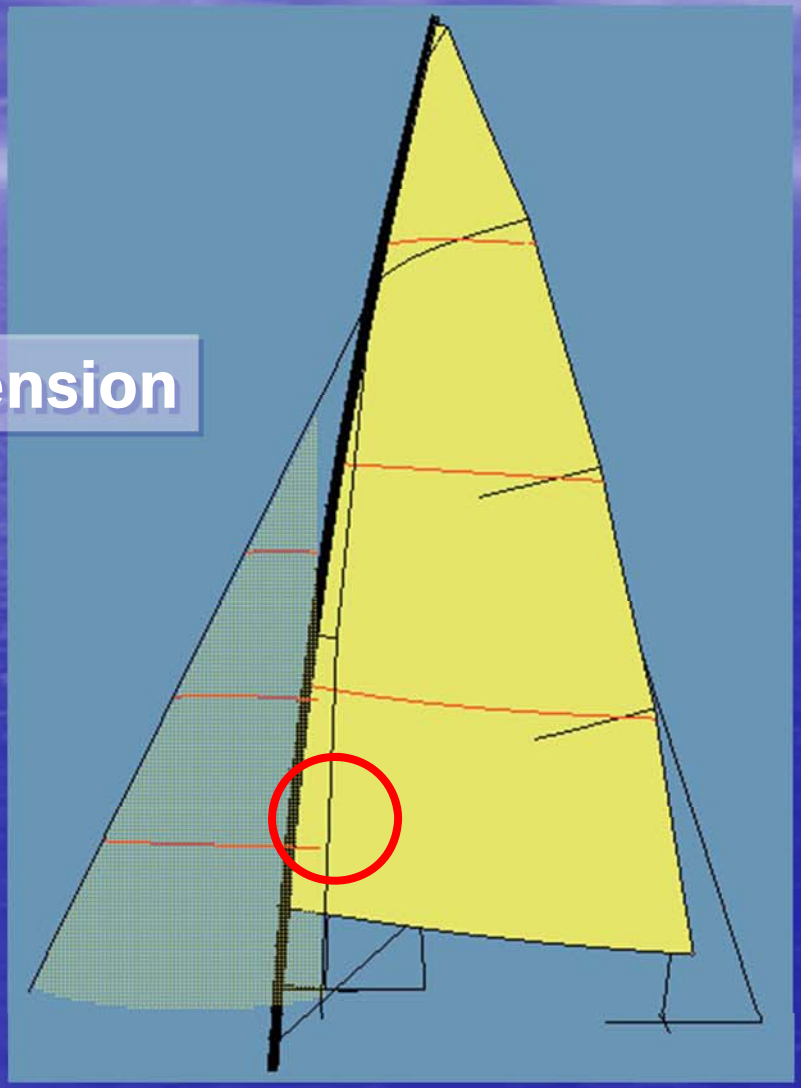
Mast Setting

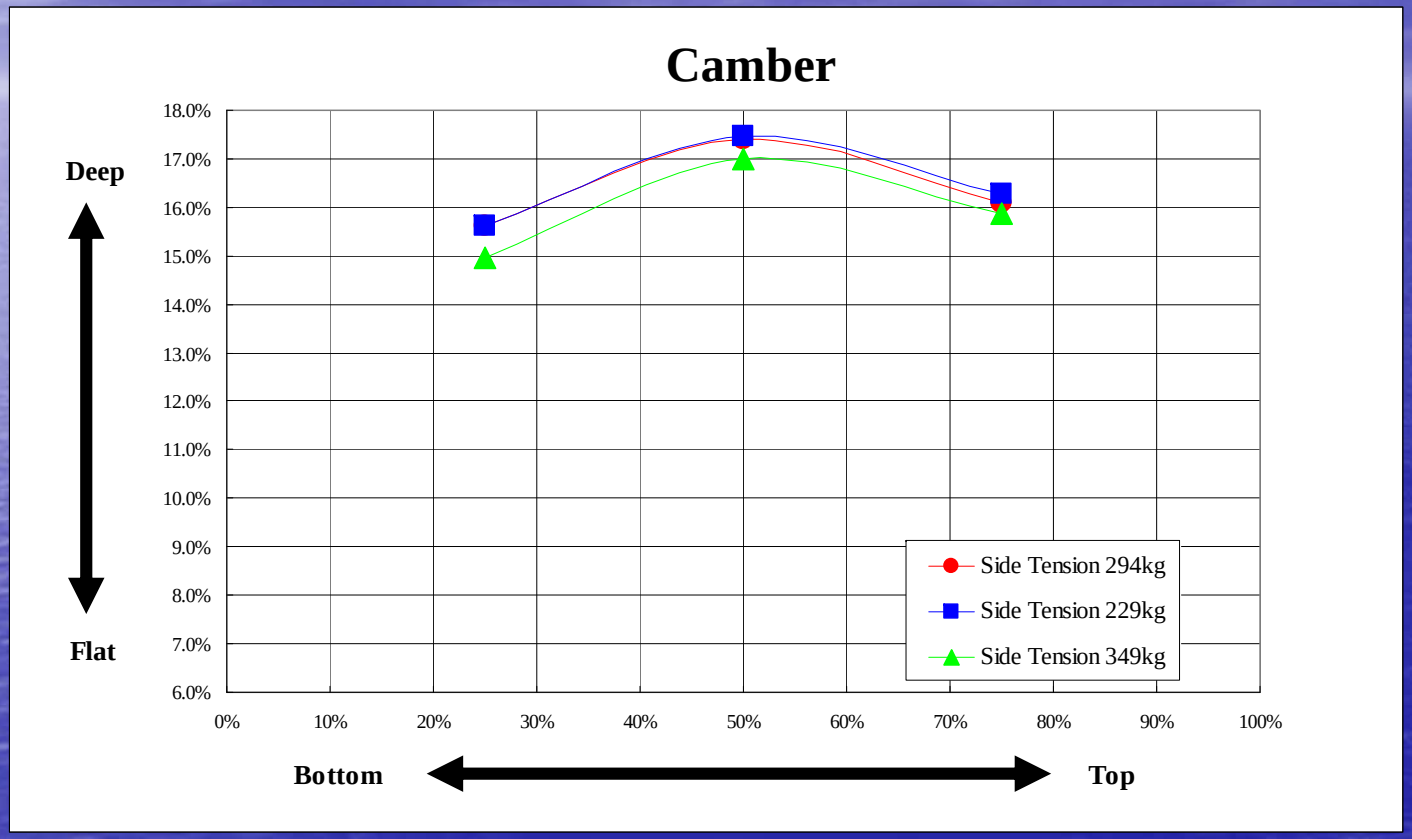
Side Stay Tension



2004 Copyright, North Sails Japan Inc.

Mast Setting

Side Stay Tension



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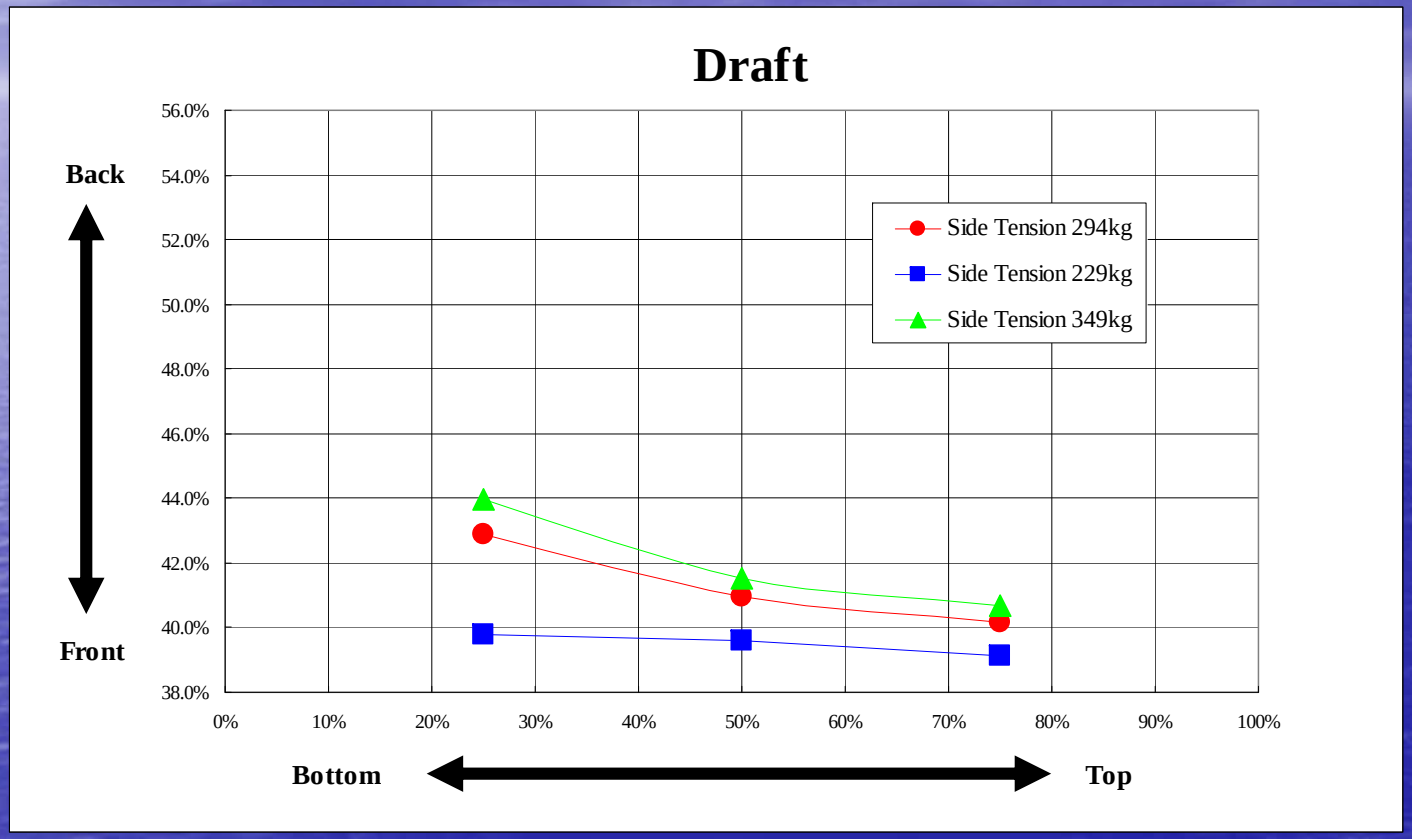
Mast Setting

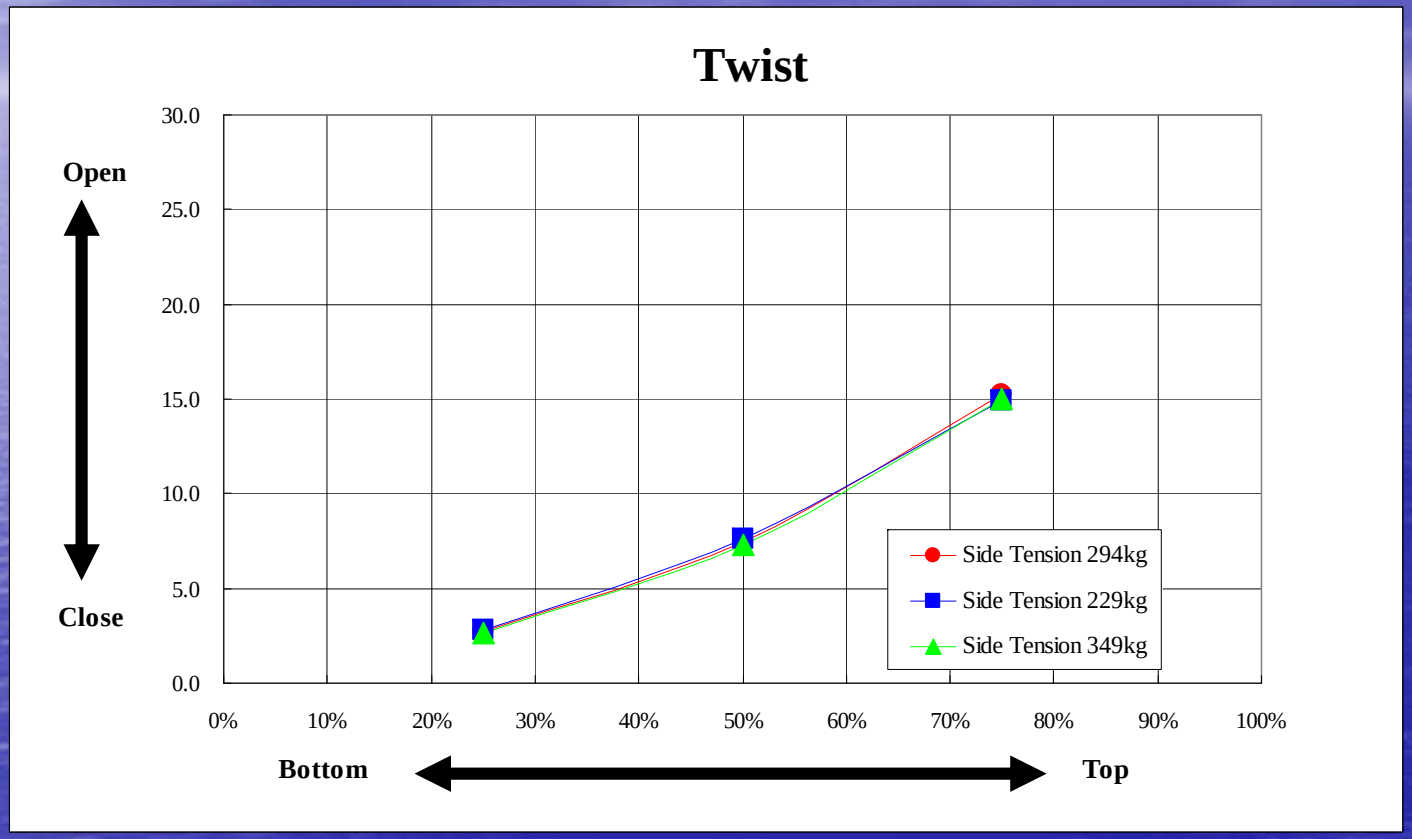
Side Stay Tension



2004 Copyright, North Sails Japan Inc.

Mast Setting

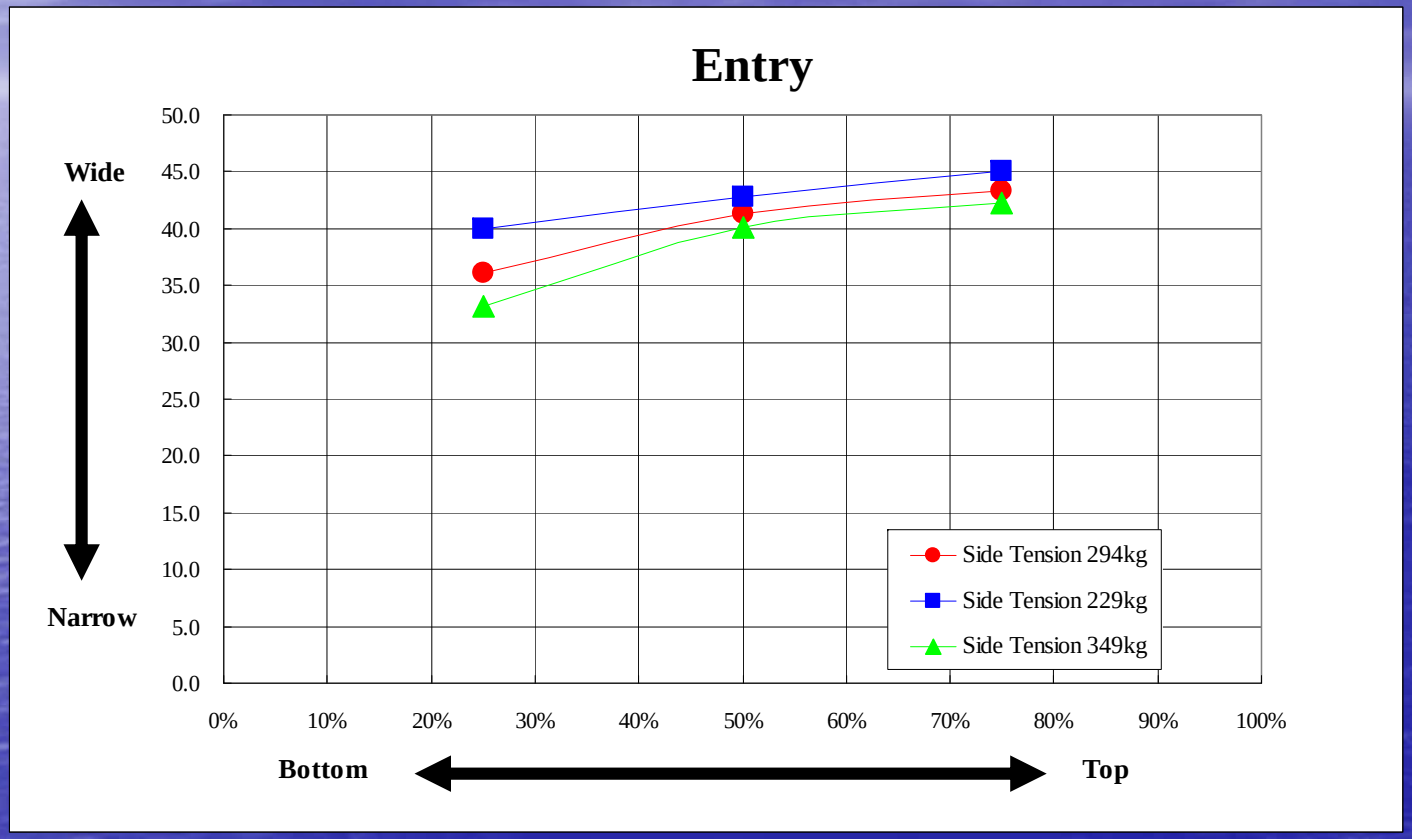
Side Stay Tension



2004 Copyright, North Sails Japan Inc.

Mast Setting

Side Stay Tension



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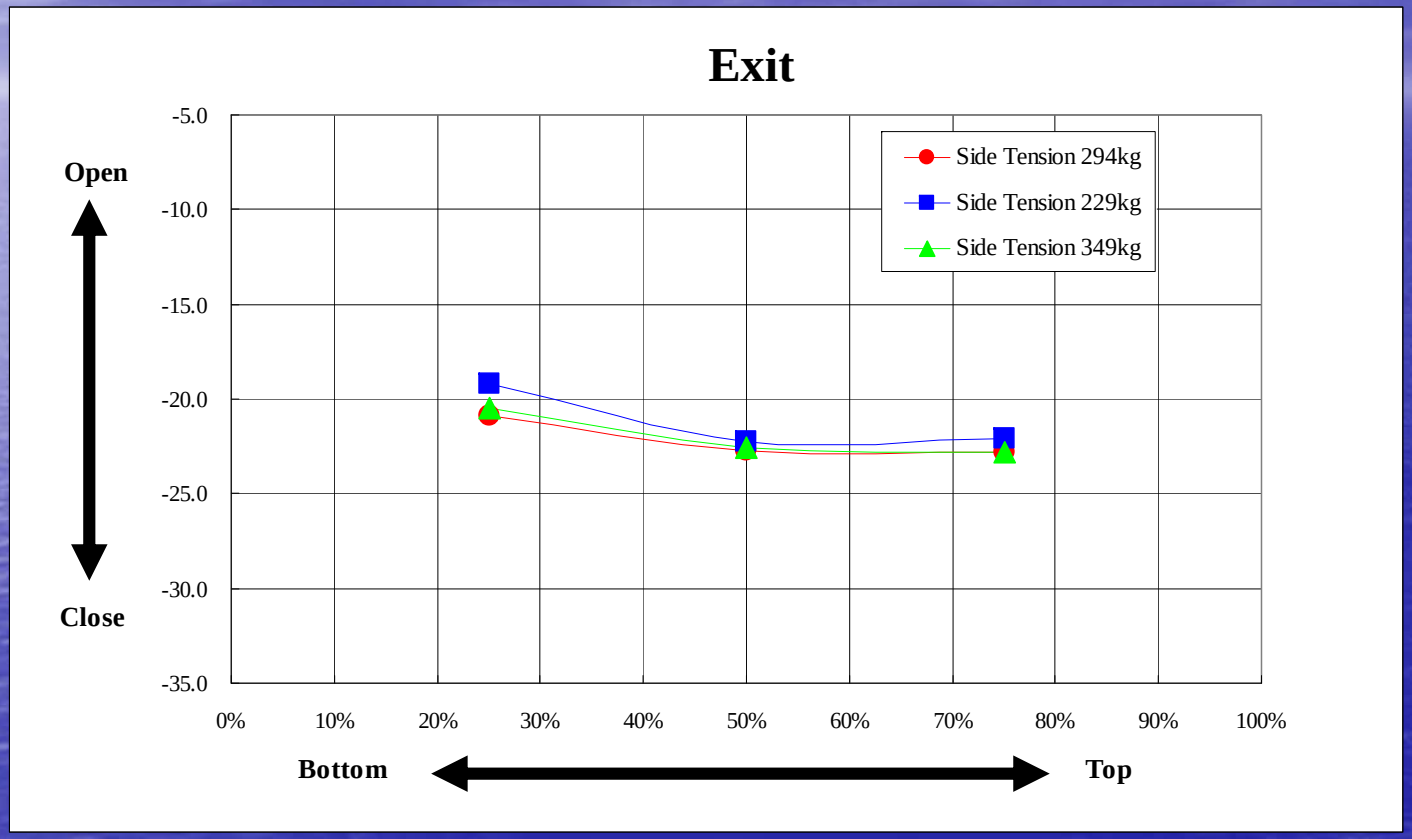
Mast Setting

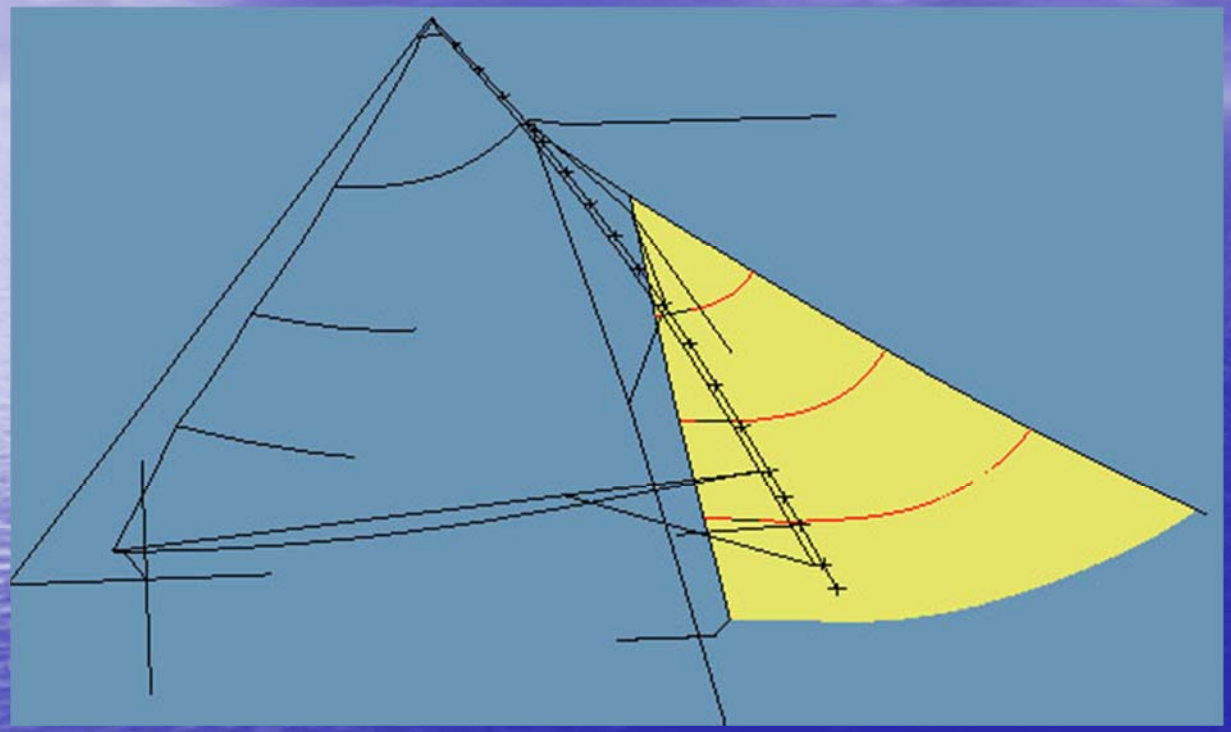
Side Stay Tension

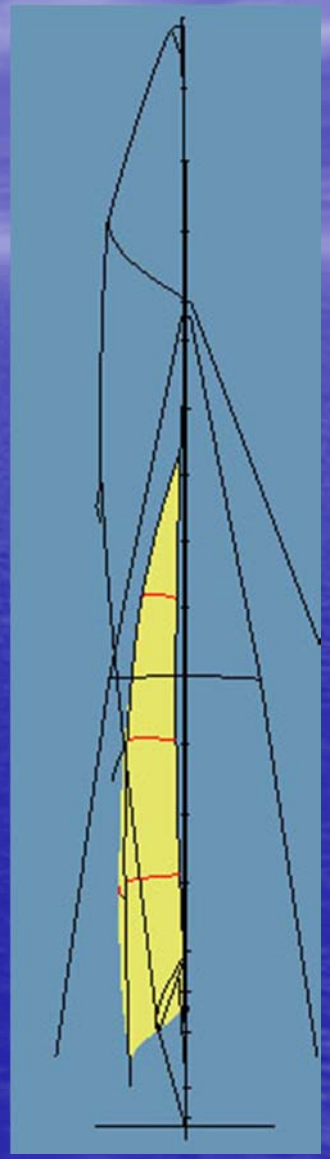


2004 Copyright, North Sails Japan Inc.

Mast Setting

Side Stay Tension





Side Stay Tension : 229kg

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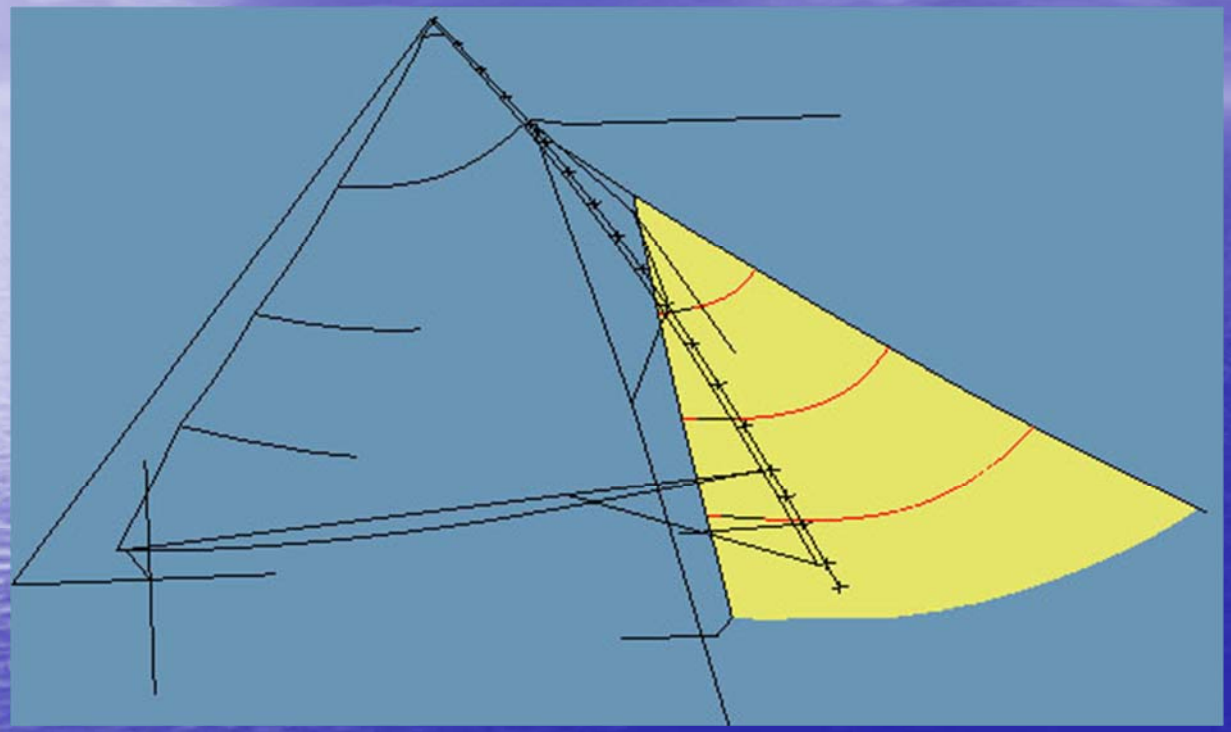
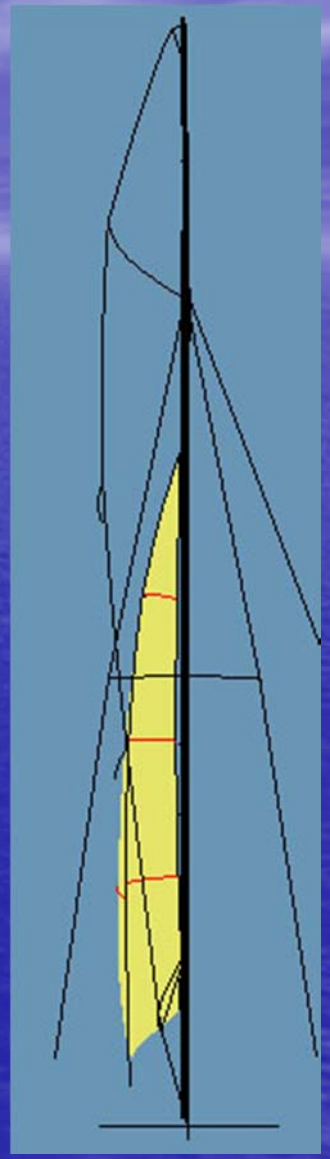
Mast Setting

Side Stay Tension





Side Stay Tension : 294kg

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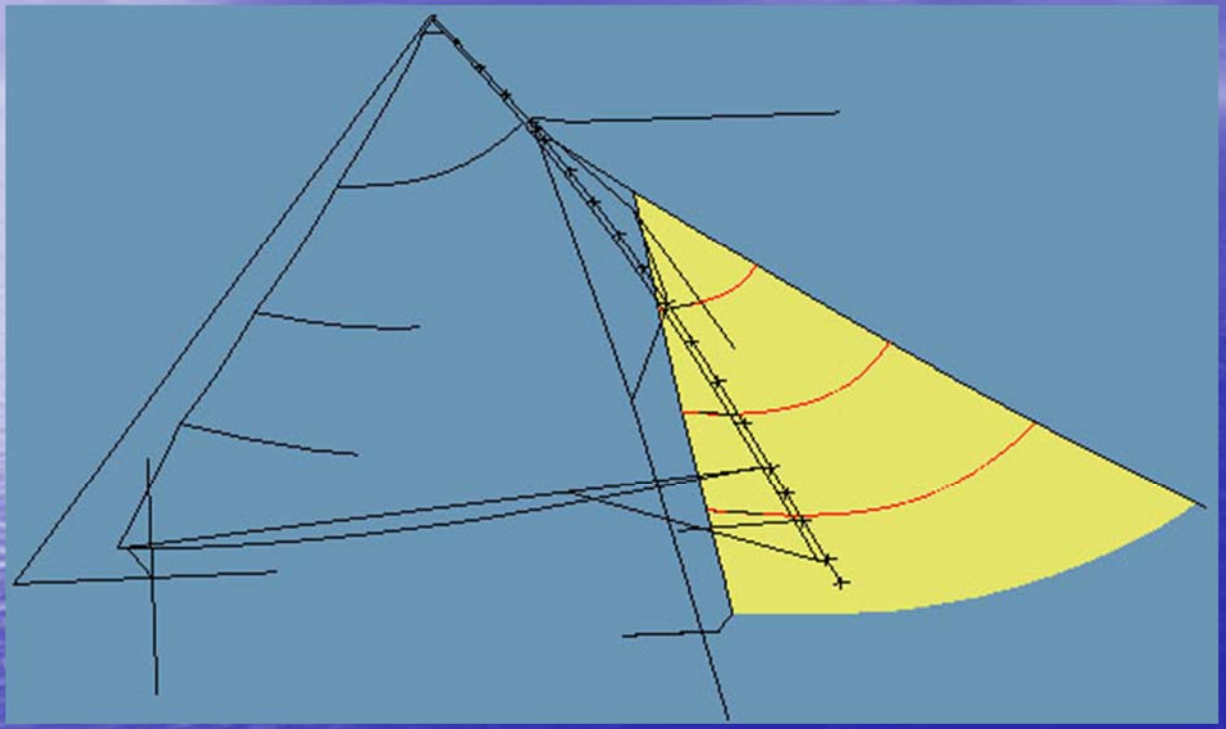
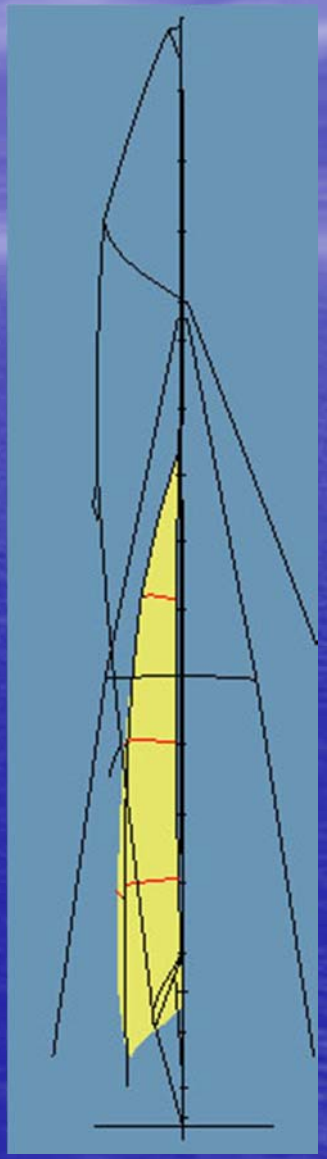
Mast Setting

Side Stay Tension





Side Stay Tension : 349kg

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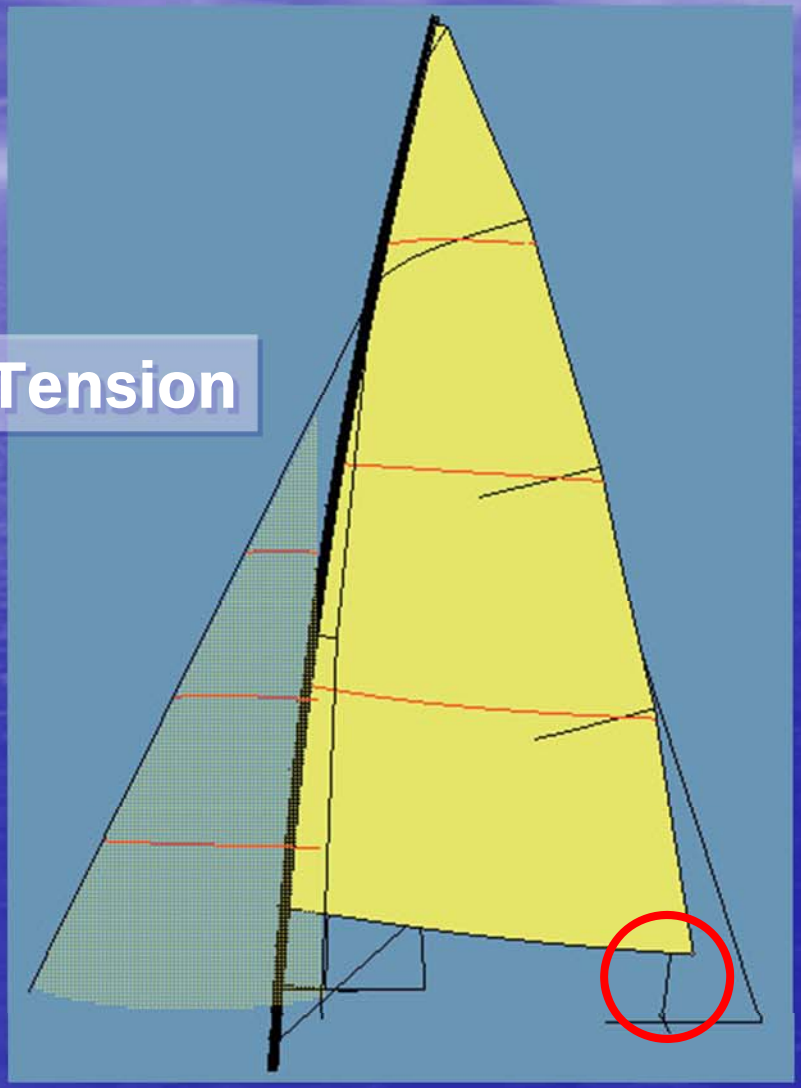
470 Class

Main Sail Trim

North Sails Japan, Inc.

Main Sail Trim

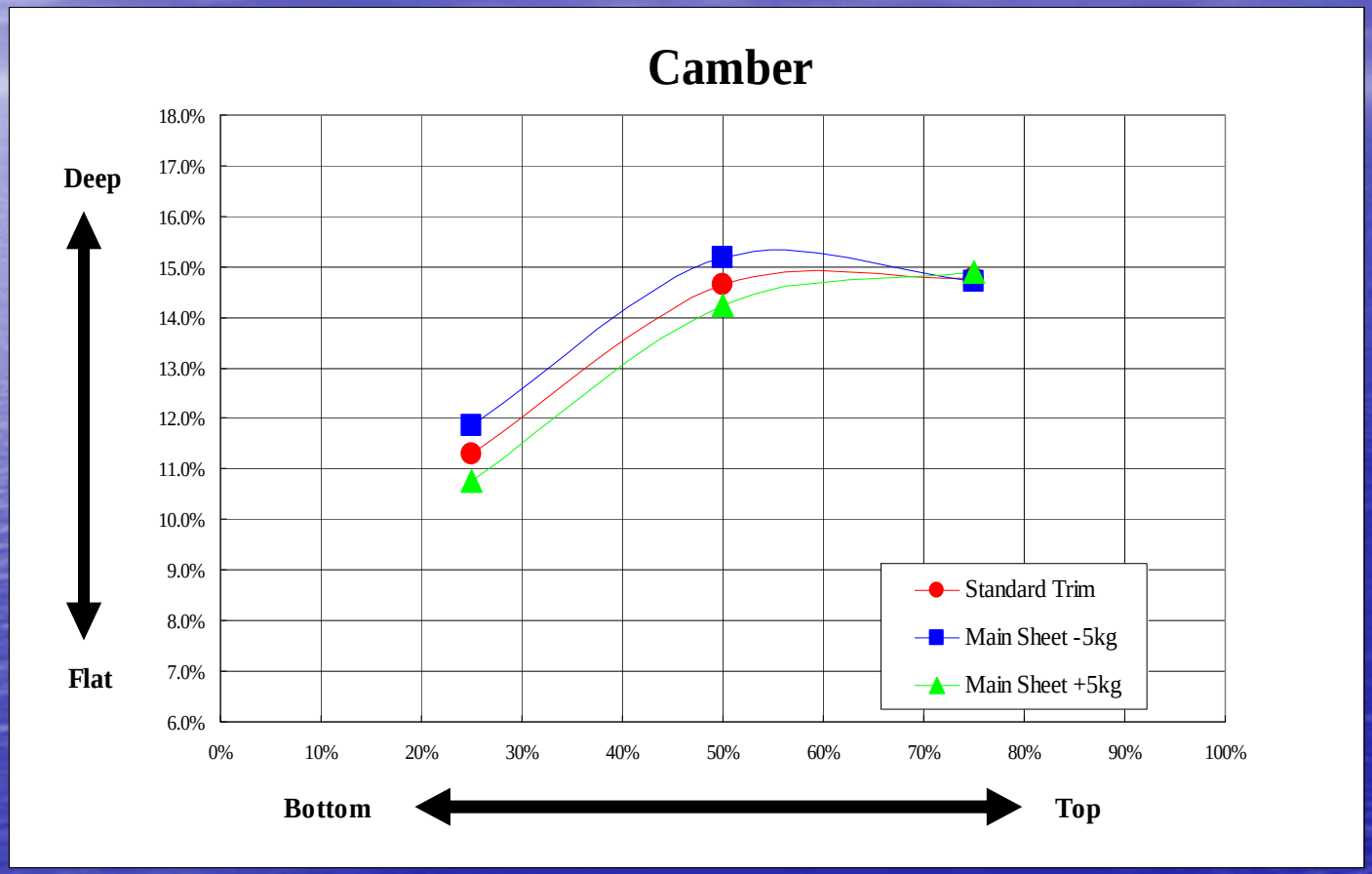
Main Sheet Tension



2004 Copyright, North Sails Japan Inc.

Main Sail Trim

Main Sheet Tension



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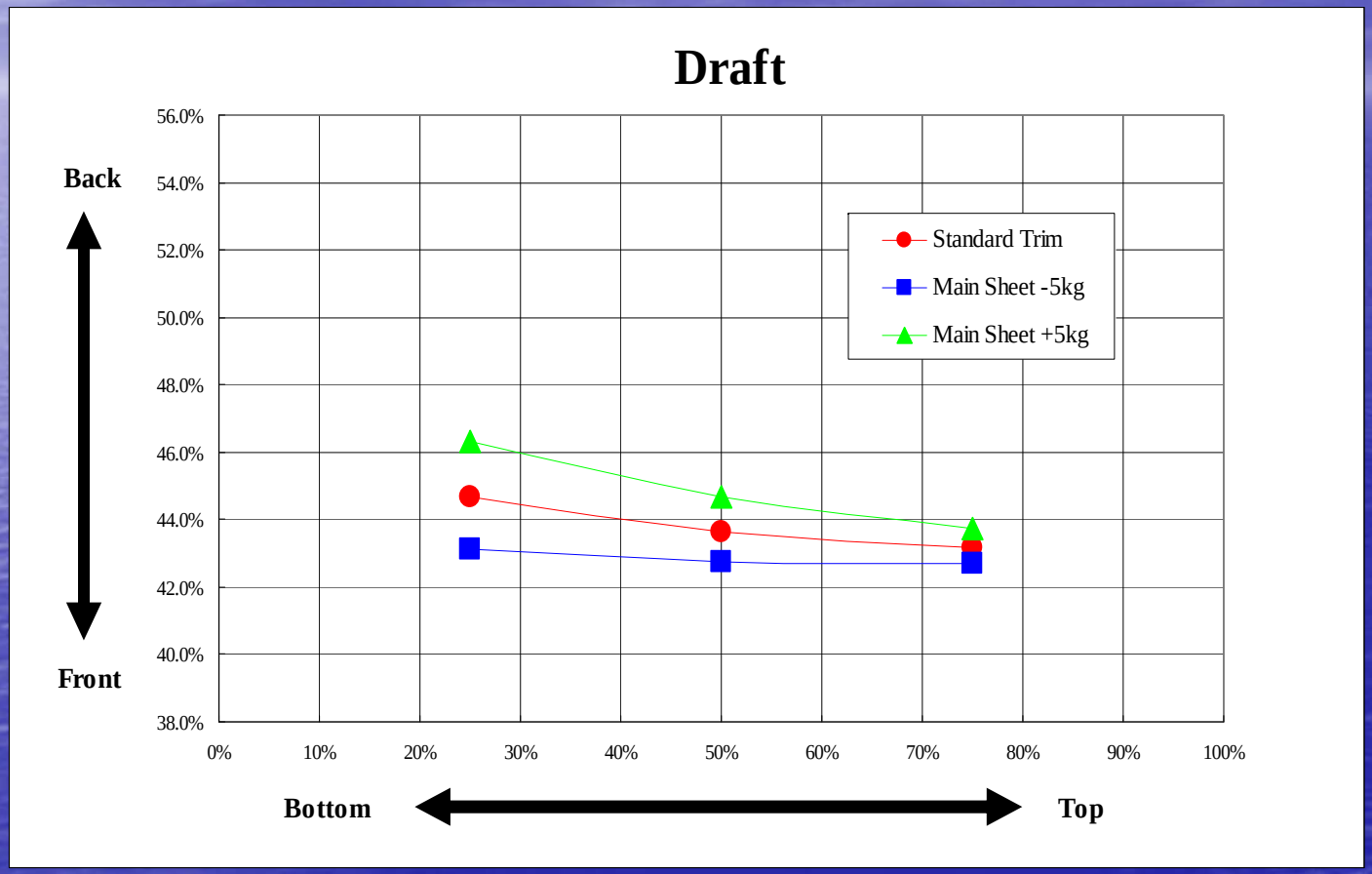
Main Sail Trim

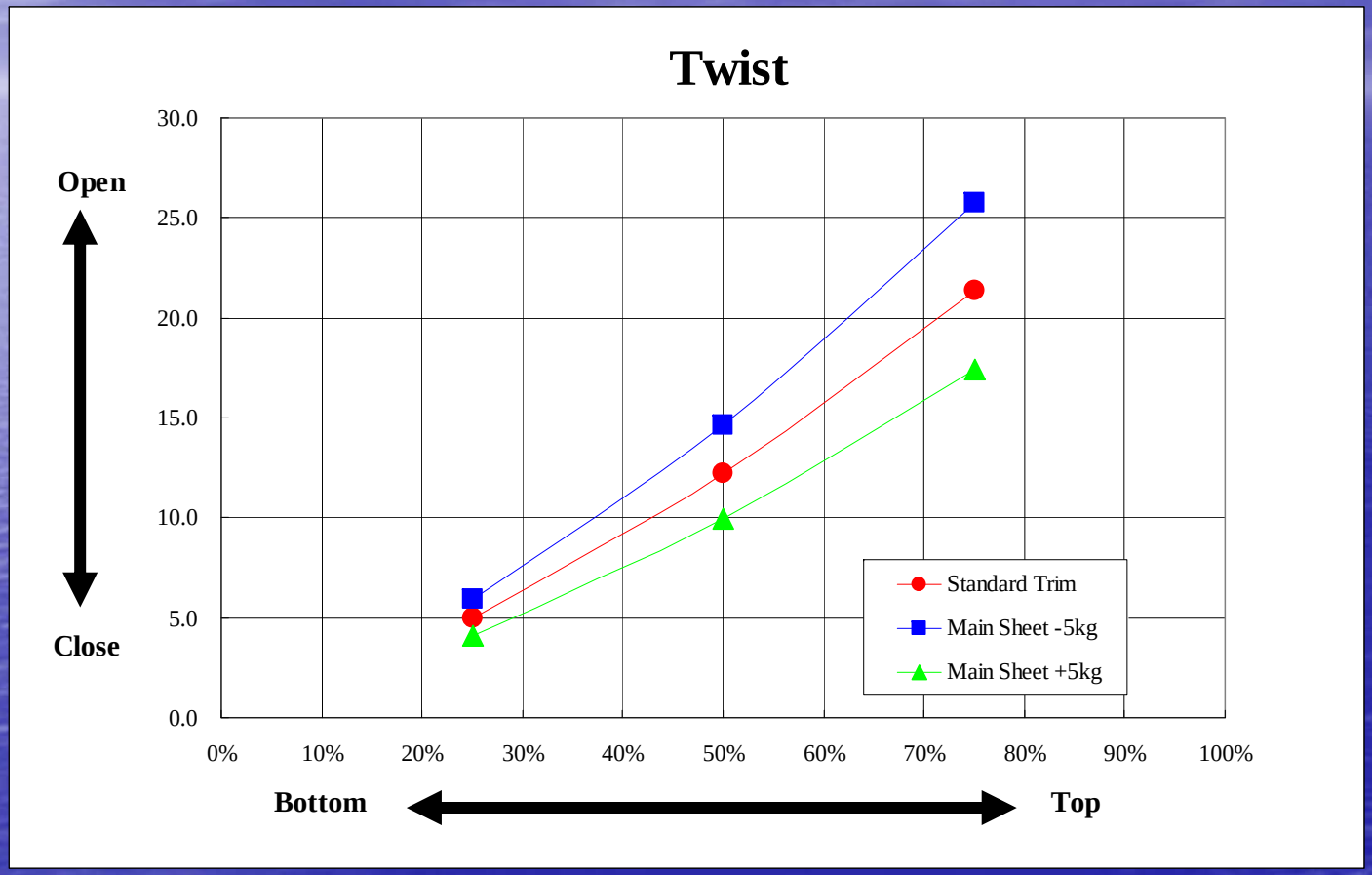
Main Sheet Tension



2004 Copyright, North Sails Japan Inc.

Main Sail Trim

Main Sheet Tension



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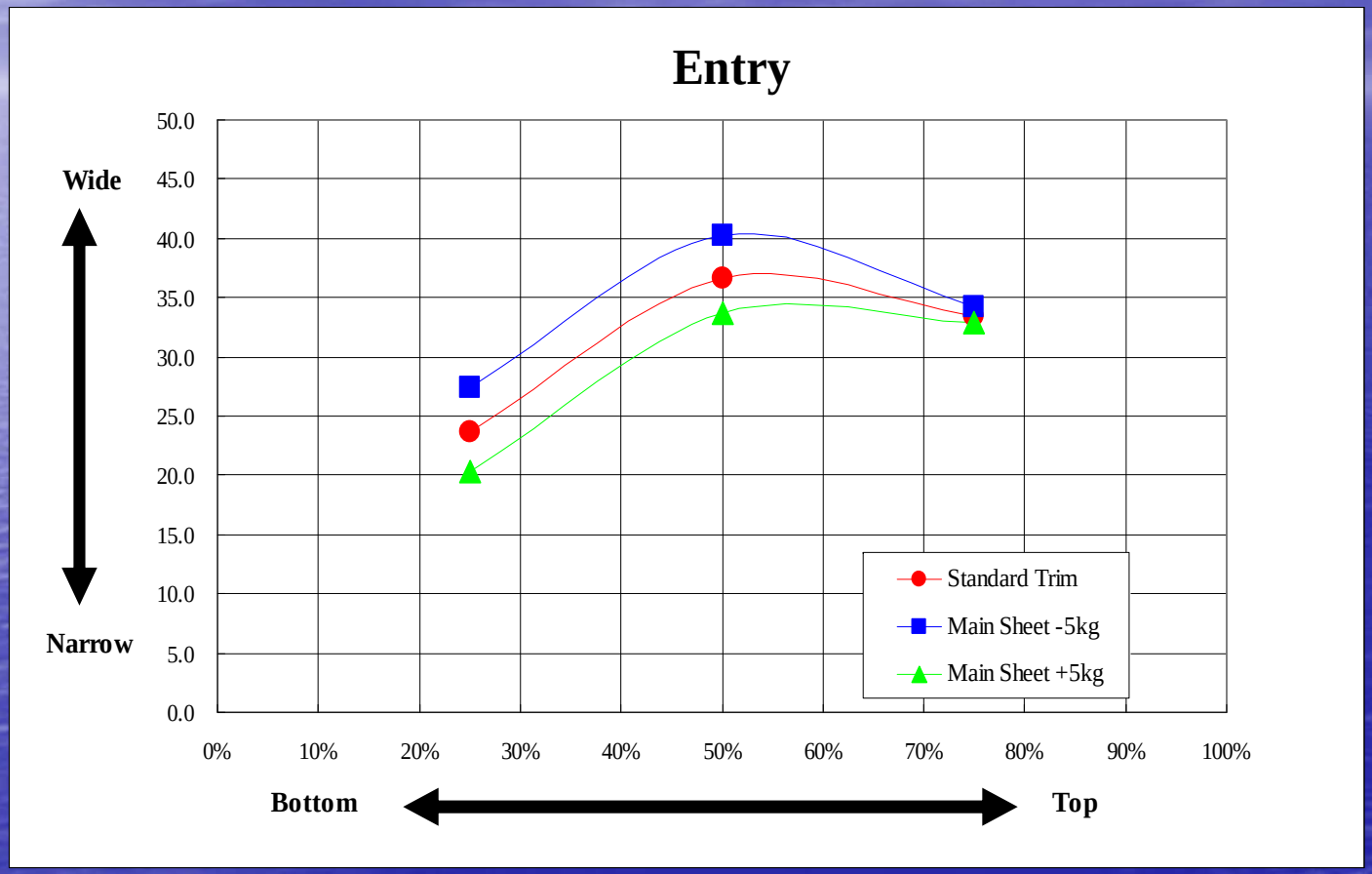
Main Sail Trim

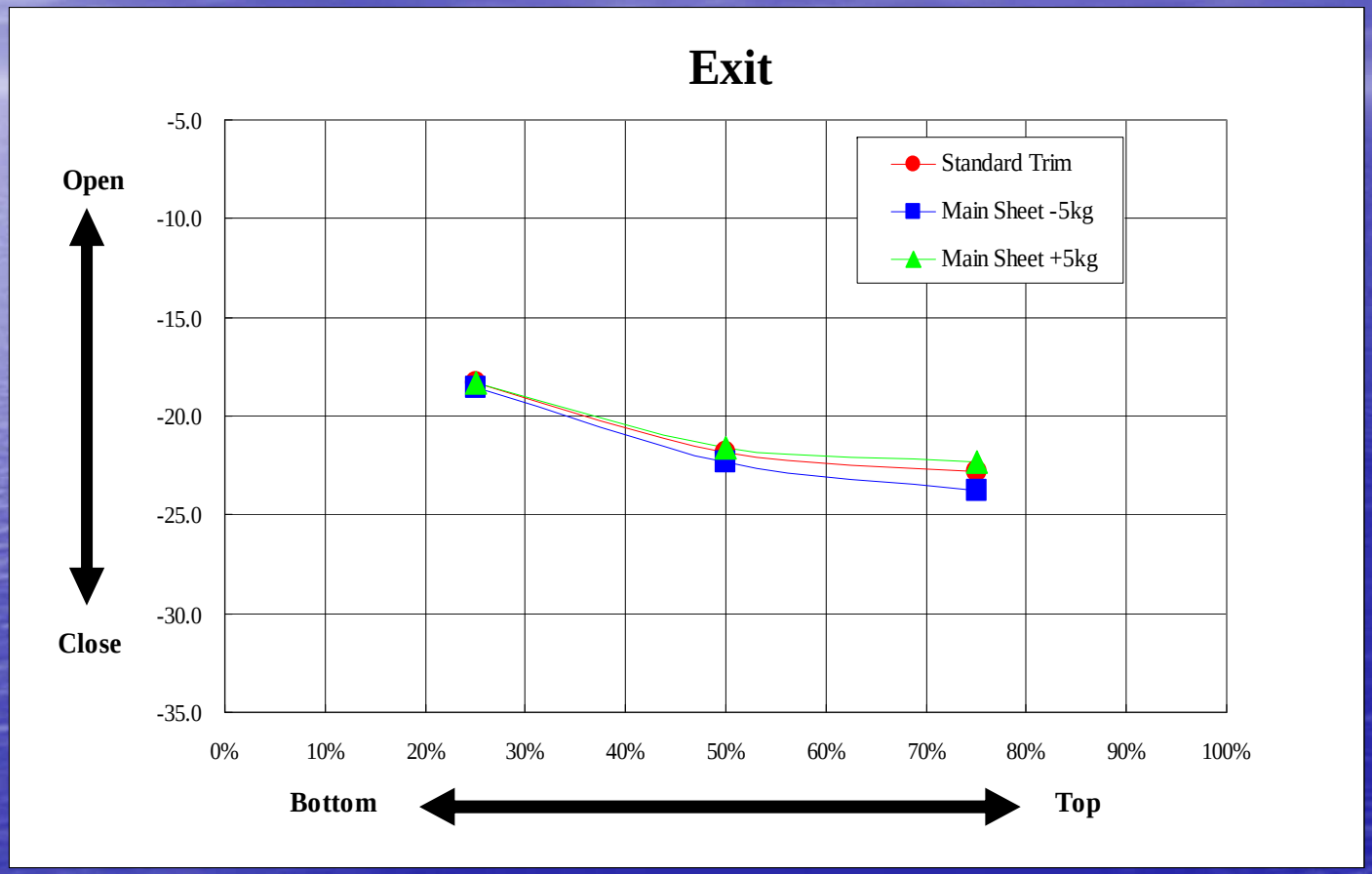
Main Sheet Tension



2004 Copyright, North Sails Japan Inc.

Main Sail Trim

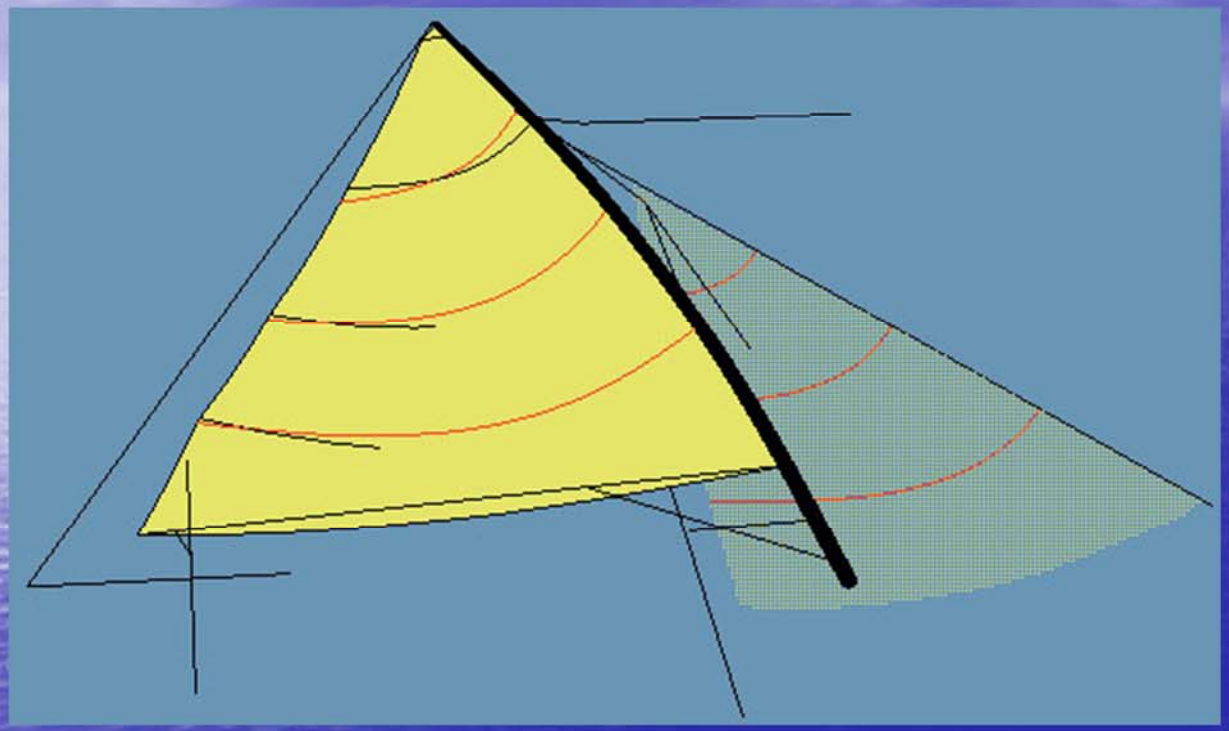
Main Sheet Tension

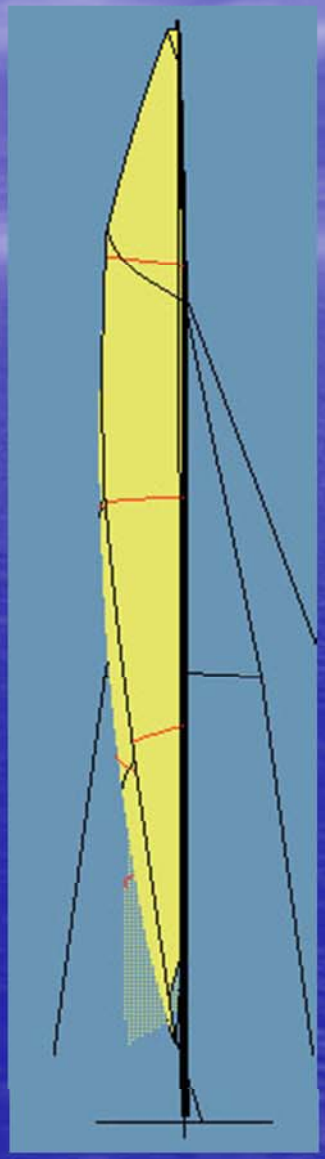


2004 Copyright, North Sails Japan Inc.

Main Sail Trim

Main Sheet Tension





Main Sheet: Normal Trim –5kg

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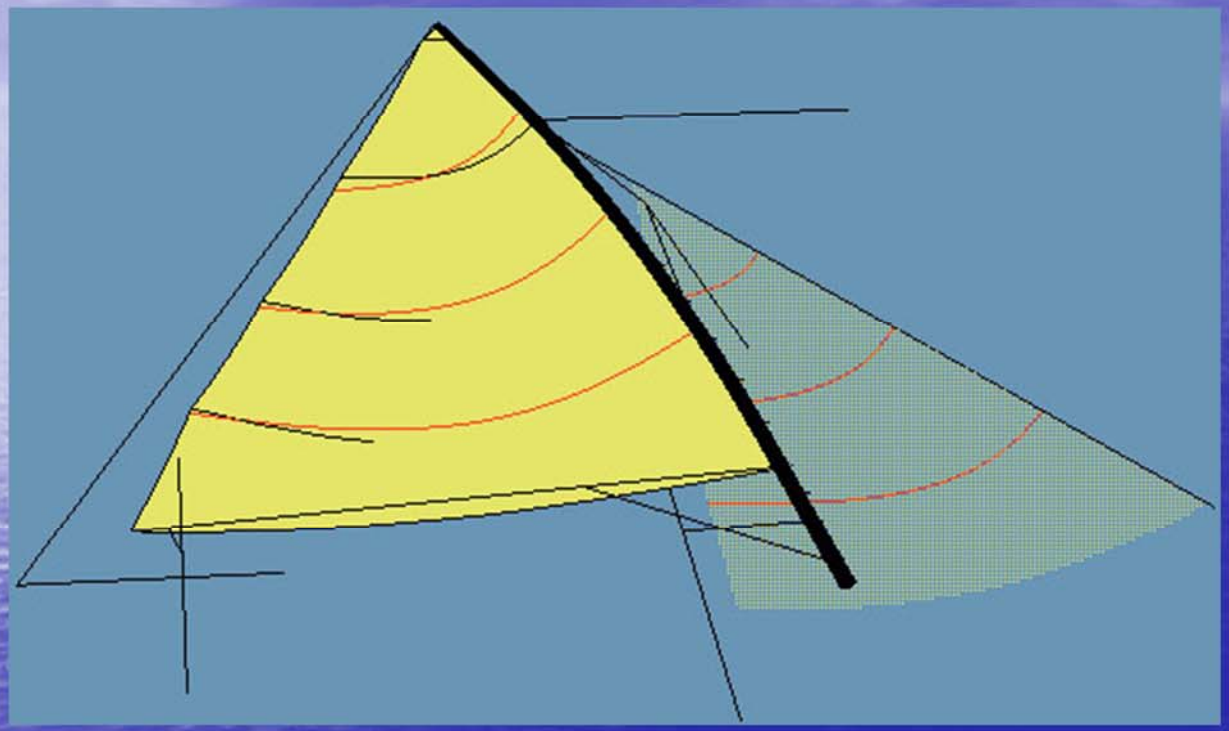
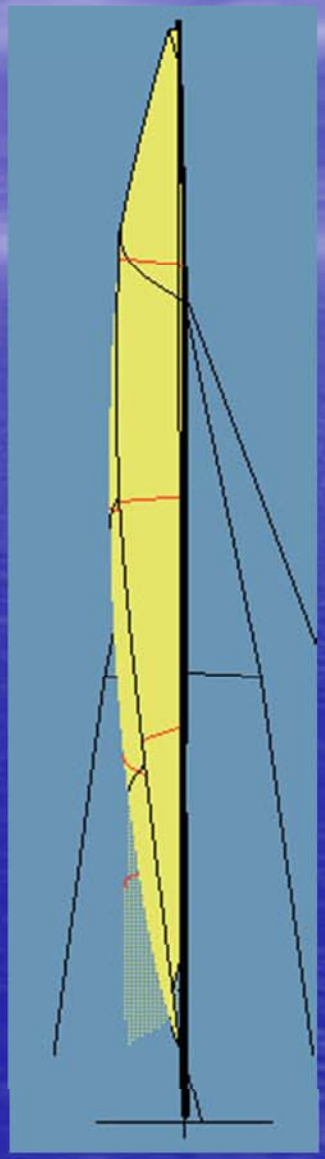
Main Sail Trim

Main Sheet Tension





Main Sheet: Normal Trim

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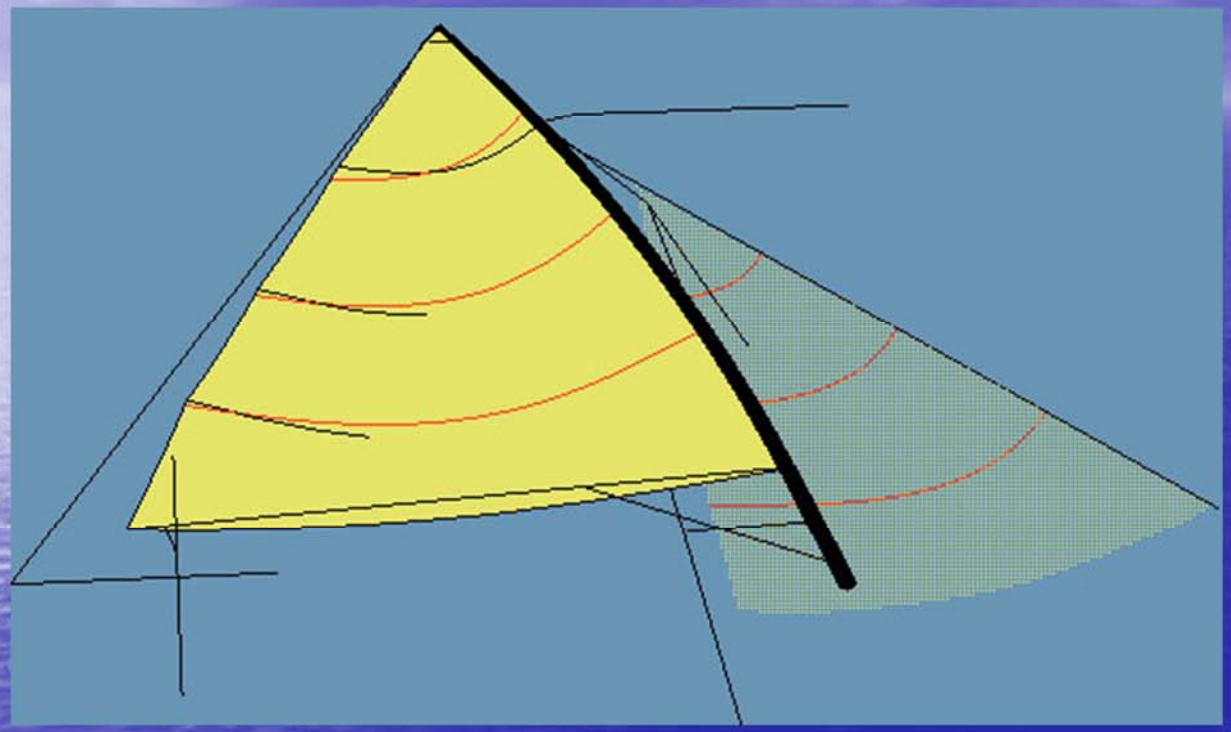
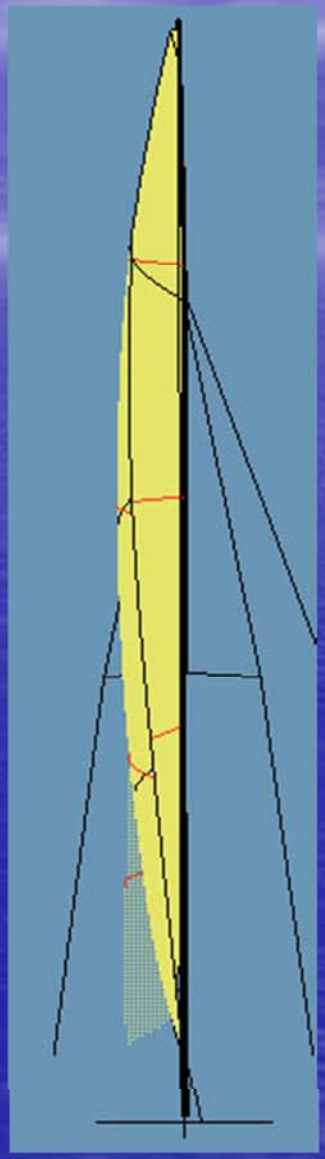
Main Sail Trim

Main Sheet Tension





Main Sheet: Normal Trim +5kg

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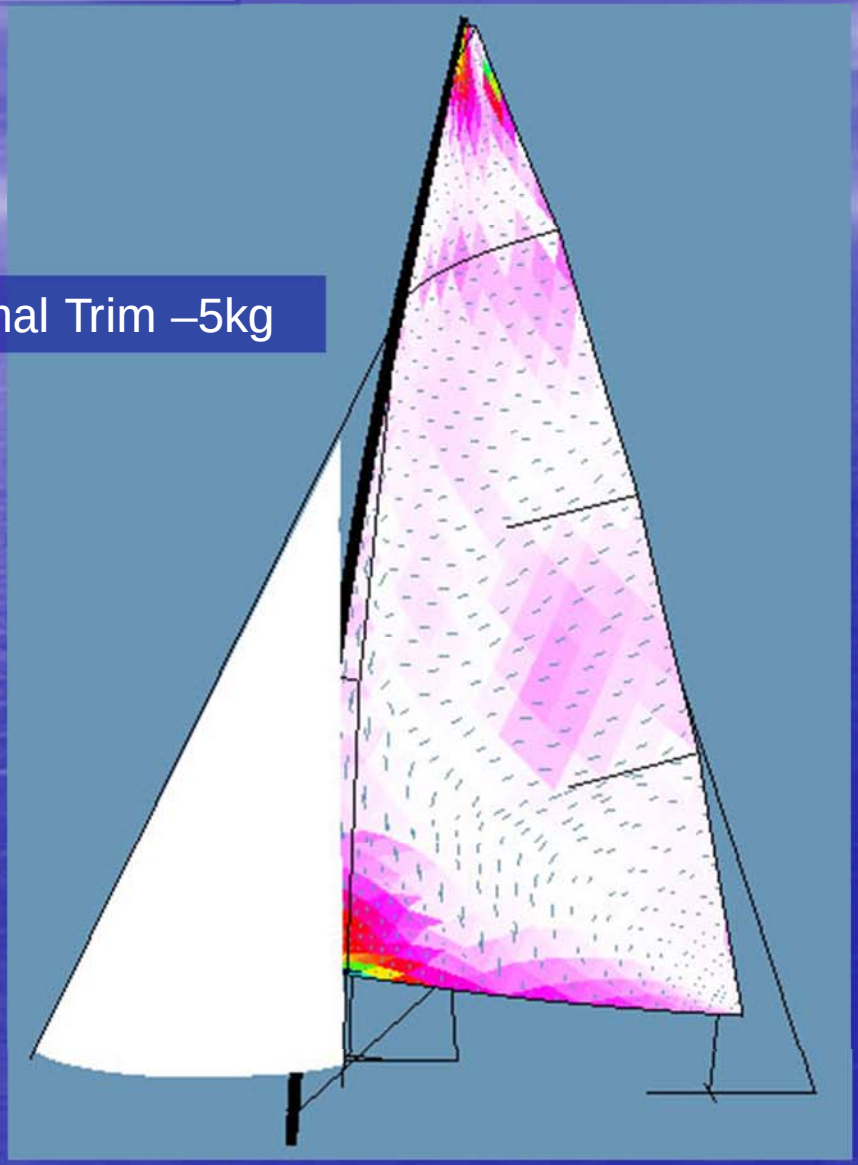
Main Sail Trim

Main Sheet Tension

Main Sheet: Normal Trim –5kg



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Main Sail Trim

Main Sheet Tension

Main Sheet: Normal Trim

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Main Sail Trim

Main Sheet Tension

Main Sheet: Normal Trim +5kg

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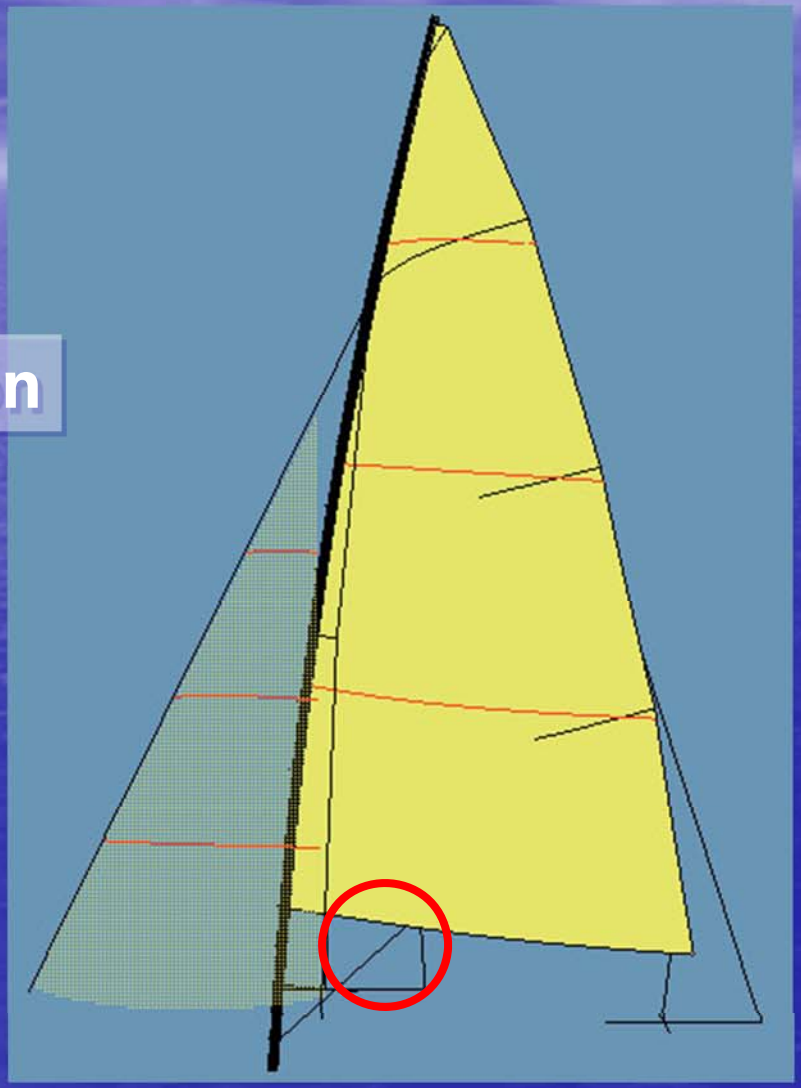
Main Sail Trim

Vang Tension



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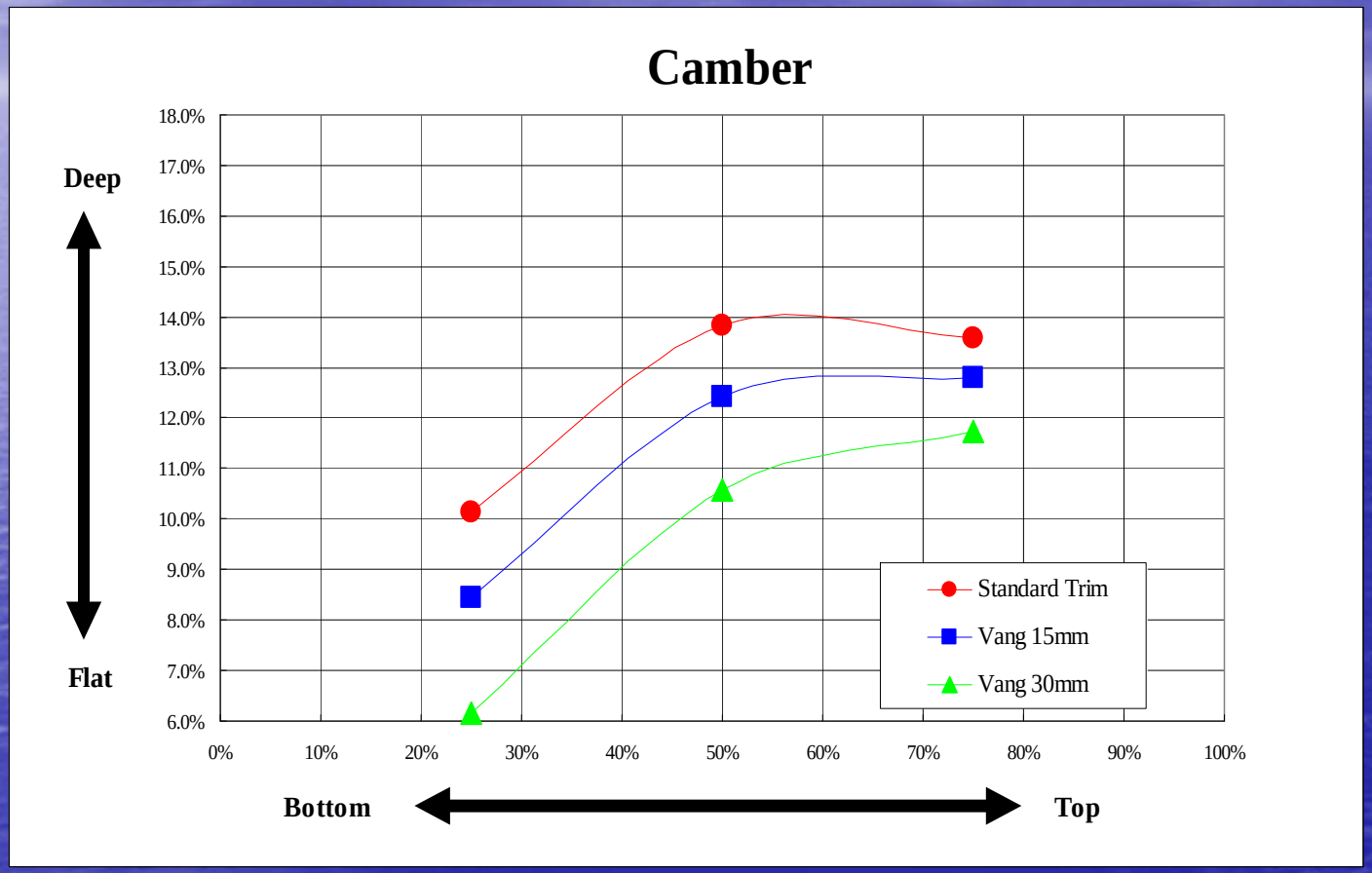
Main Sail Trim

Vang Tension



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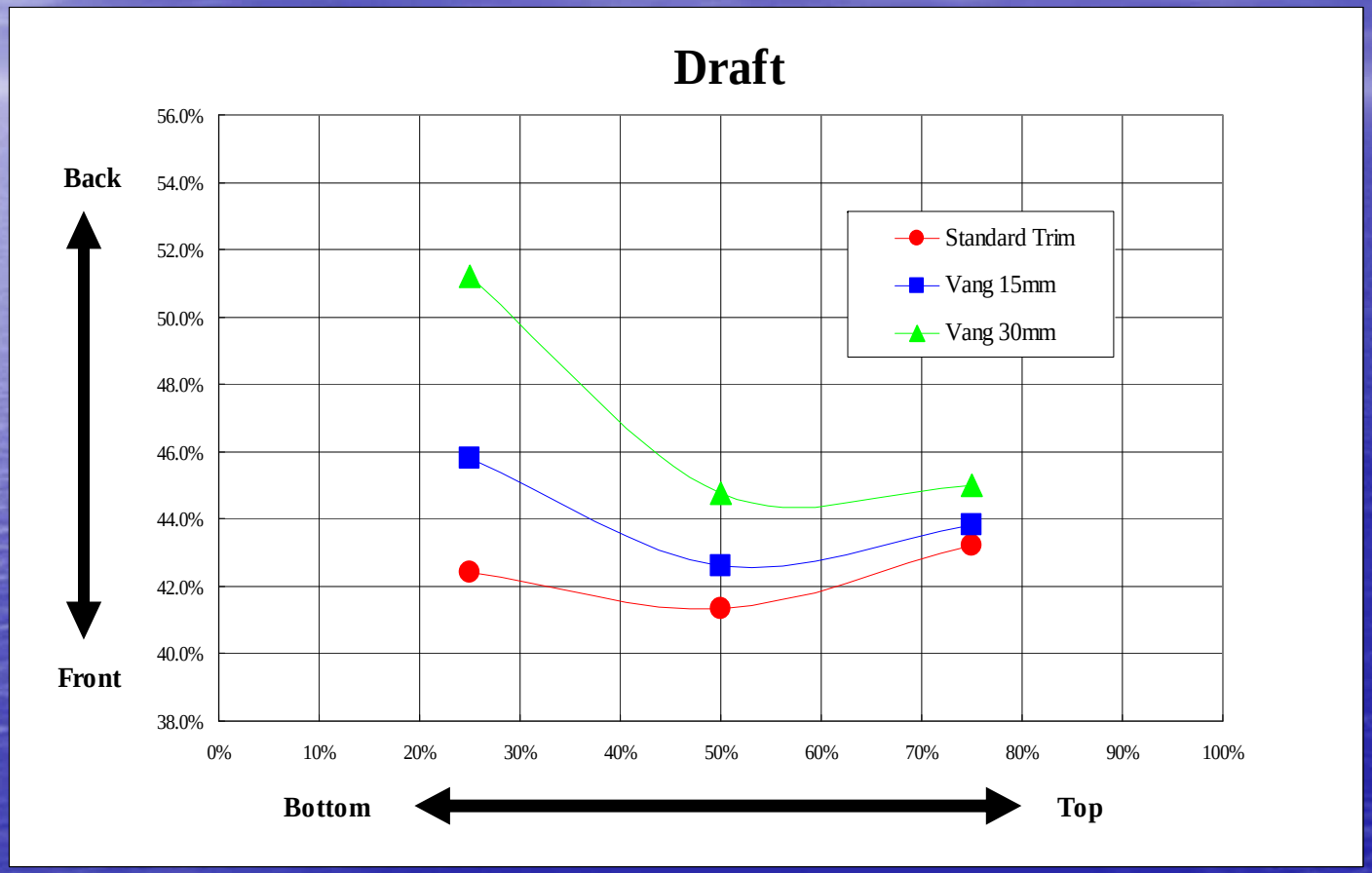
Main Sail Trim

Vang Tension



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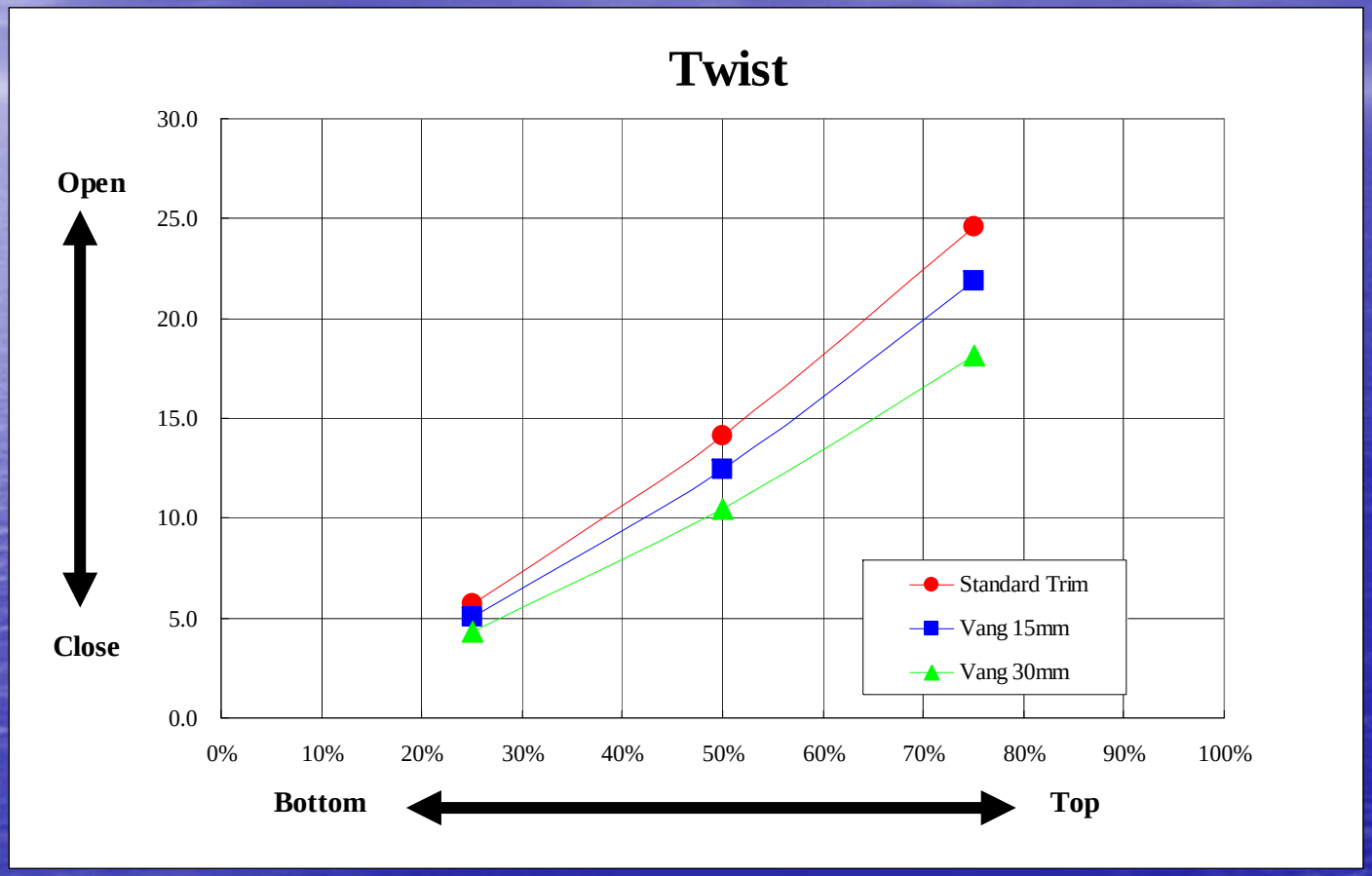
Main Sail Trim

Vang Tension



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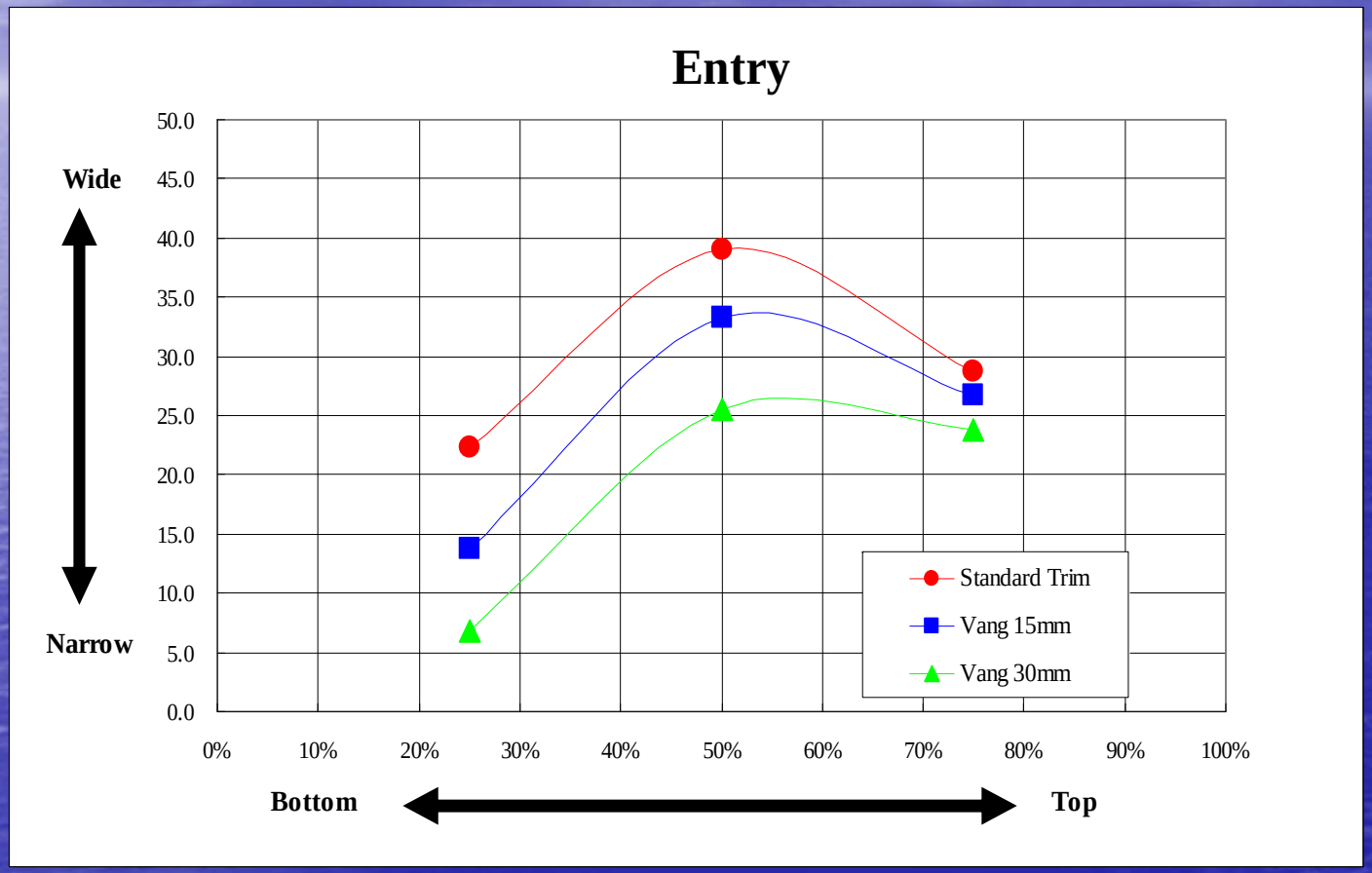
Main Sail Trim

Vang Tension



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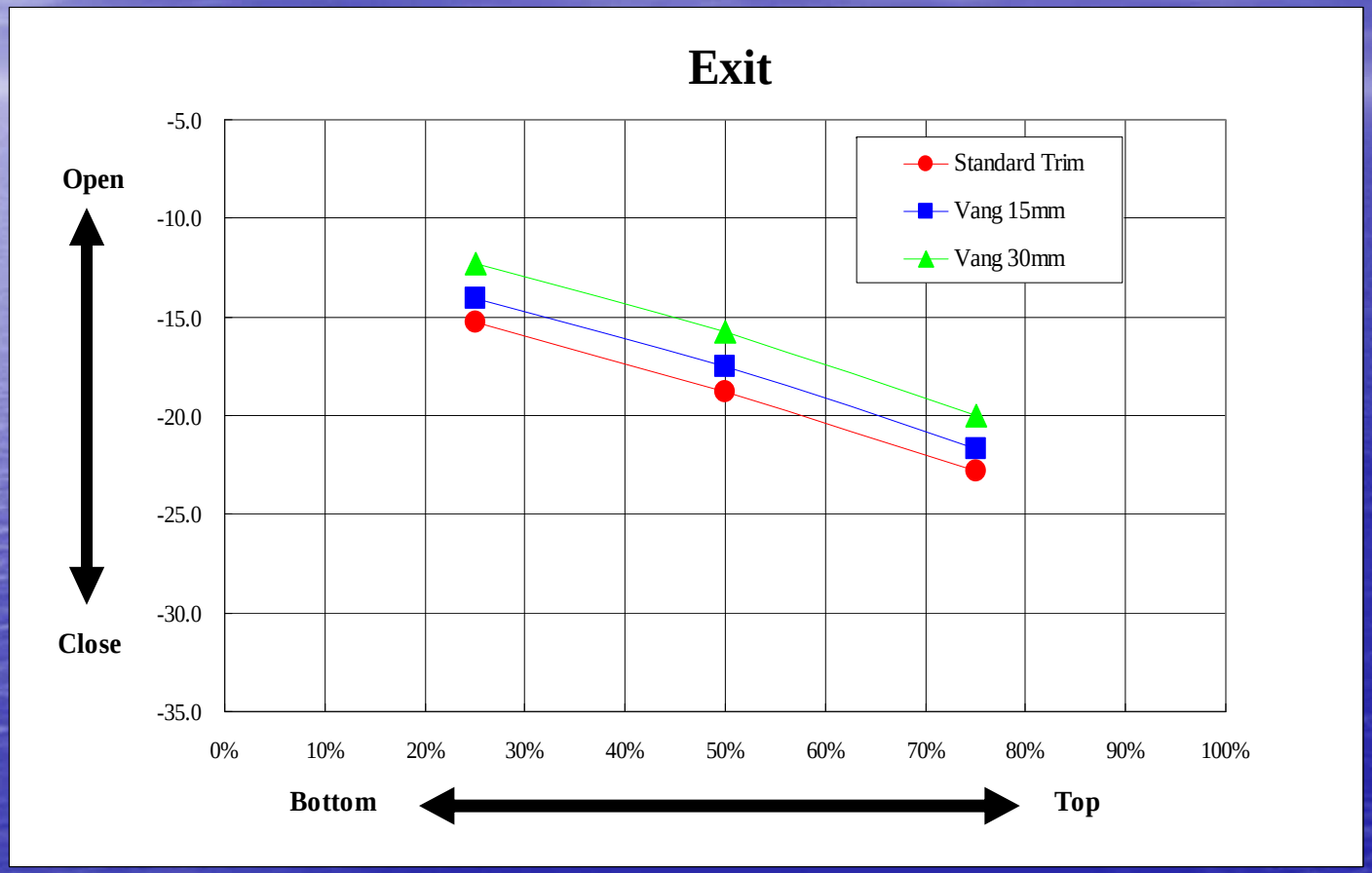
Main Sail Trim

Vang Tension



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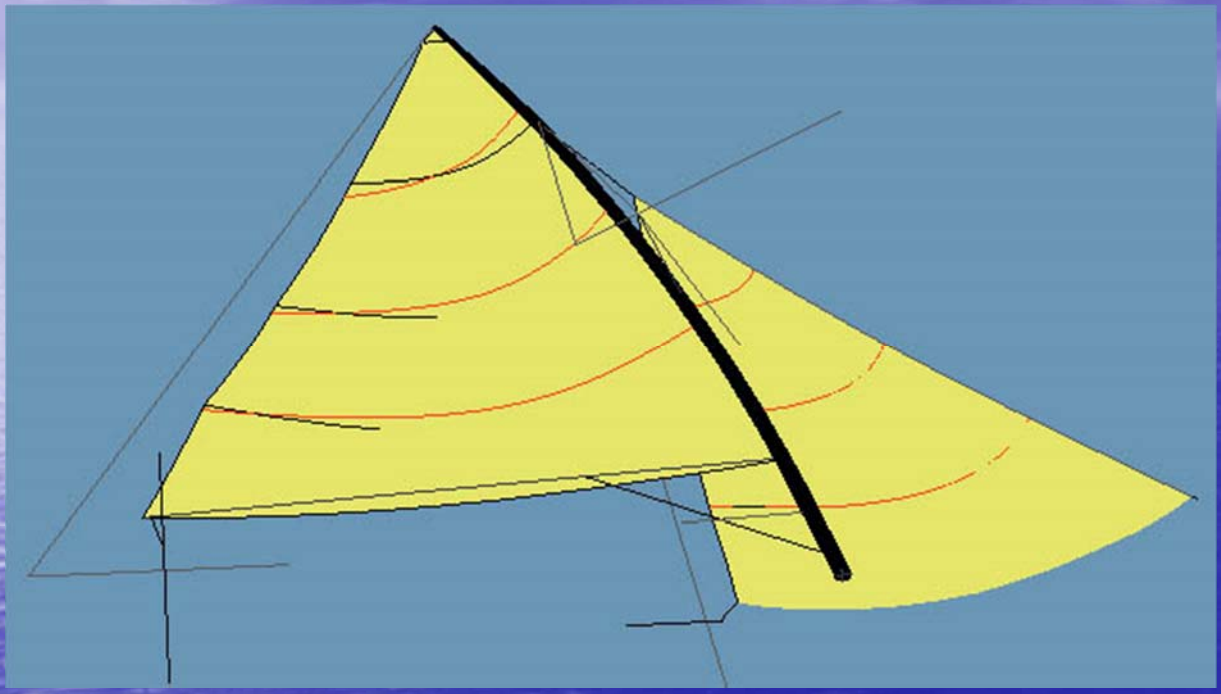
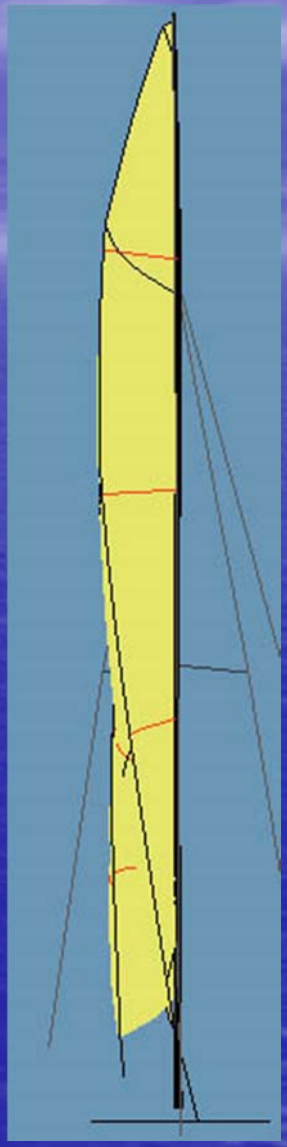
Main Sail Trim

Vang Tension





Vang: Normal Trim

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