

Storm Sails

Heavy Weather Technique

Offshore Safety at Sea Seminar

Ed Cesare

US Sailing / Storm Trysail

Sail inventory

- Set up intermediate forestay and runners
- Bend on sails which may be needed
 - Trysail, sheets and lead blocks
 - Heavy weather jib and storm jib with sheets
- Reeve deep reef lines
- Inspect running rigging for chafe
- Storm sail images courtesy of Carol Hasse, Port Townsend Sailmakers

Storm Sails

Cal 40 Illusion Sail Cross-over Chart															
TWS →	4	6	8	10	12	14	16	20	25	30	40	50	60	AWA	
28				G1	G1	G1	G1	J3	J3-1R						
32			G1	G1	G1	G1	G1	J3	J3-1R	J3-1R					
36 Dr		G1	G1	G1	G1	G1	G1	J3	J3-1R	J3-1R	SS-2R			36	
40 Dr		G1	G1	G1	G1	G1	G1	BR	J3-1R	J3-1R	SS-2R	SJ-Try		40	
45 JT		G1	G1	G1	G1	G1	G1	BR	BRR	BRR-1R	SS-2R	SJ-Try	Try	45	
50 JT		G1	G1	G1	G1	G1	G1	BR	BRR	BRR-1R	SS-2R	SJ-Try	Try	50	
55 JT	JT	JT	JT	JT	JT	JT	JT	BR-SS	BRR	BRR-1R	SS-2R	SJ-Try	Try	55	
60 JT	JT	JT	JT	JT	JT-SS	JT-SS	JT-SS	BR-SS	BRR	BRR-1R	SS-2R	SJ-Try	Try	60	
70 JT	JT	JT	JT	JT-SS	JT-SS	JT-SS	JT-SS	JT-SS	BR	BR-1R	BRR-2R	SJ-Try	Try	70	
80 JT	JT	JT	JT	JT-SS	JT-SS	JT-SS	JT-SS	JT-SS	JT-SS	BR-1R	BRR-2R	SJ-Try	Try	80	
90 0.5	0.5	0.5	0.5	0.75	0.75	1.5 AP	HA	HA	JT-SS	BR-1R	BRR-2R	SJ-Try	Try	90	
100 0.5	0.5	0.5	0.5	0.75	0.75	1.5 AP	1.5 AP	HA	JT-SS	BR-1R	BRR-2R	SJ-Try	Try	100	
110		0.5	0.5	0.75	1.5 AP	1.5 AP	HA	HA	BR-1R	BRR-1R	SJ-Try	Try	110		
120			0.5	0.75	1.5 AP	1.5 AP	HA	HA	BR	BRR-1R	SJ-Try	Try	120		
130				0.75	1.5 AP	1.5 AP	HA	HA	BR	BRR-1R	SJ-Try	SJ	130		
135				0.5	0.75	0.75	1.5 AP	HA	HA	BRR-1R	SJ-Try	SJ	135		
140				0.5	0.75	0.75	1.5 AP	1.5 AP	HA	BR-1R	SJ-Try	SJ	140		
145					0.75	0.75	1.5 AP	1.5 AP	HA	BR-1R	SJ	SJ	145		
150					0.75	0.75	1.5 AP	1.5 AP	HA	BR-1R	SJ	SJ	150		
160						0.75	1.5 AP	1.5 AP	HA	BR	SJ	SJ	160		
170							0.75	1.5 AP	HA	BR	SJ	SJ	170		

MAIN CODE	DESCRIPTION
	Full
1R	1st reef
2R	2nd reef
Try	Storm Trysail

JIBS CODE	DESCRIPTION
G1	155 3DL genoa
JT	Jib Top, 155%
J3	#3 115% Kevlar
BR	125% Blast Reacher
BRR	Blast Reacher, reefed clew & tack
SS	Upwind Staysail
SJ	Storm Jib

KITES CODE	DESCRIPTION
0.5	500 Airx
0.75	700 AIRX
0.8	.8/.75 bean bag
1.5 AP	1.5 oz. All-purpose
HA	1.5 oz 2-ply heavy air

De-power the sail plan

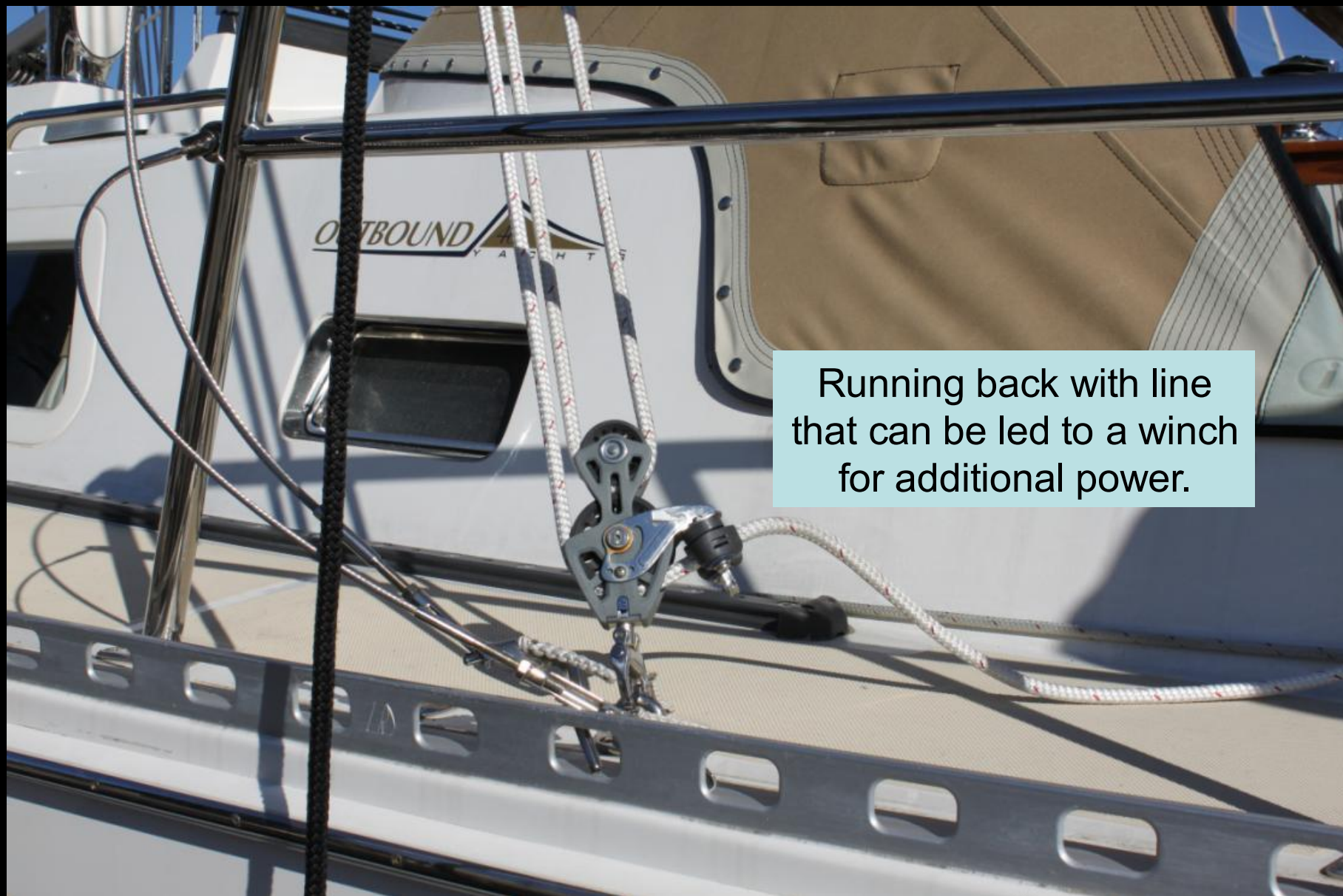
- Flatten sails
 - Backstay, halyard tension, foot tension
- Traveler down
- Sheet outboard
- Select flatter, newer sails
 - Don't try to use a blown out sail on the assumption that it might, in fact, blow out



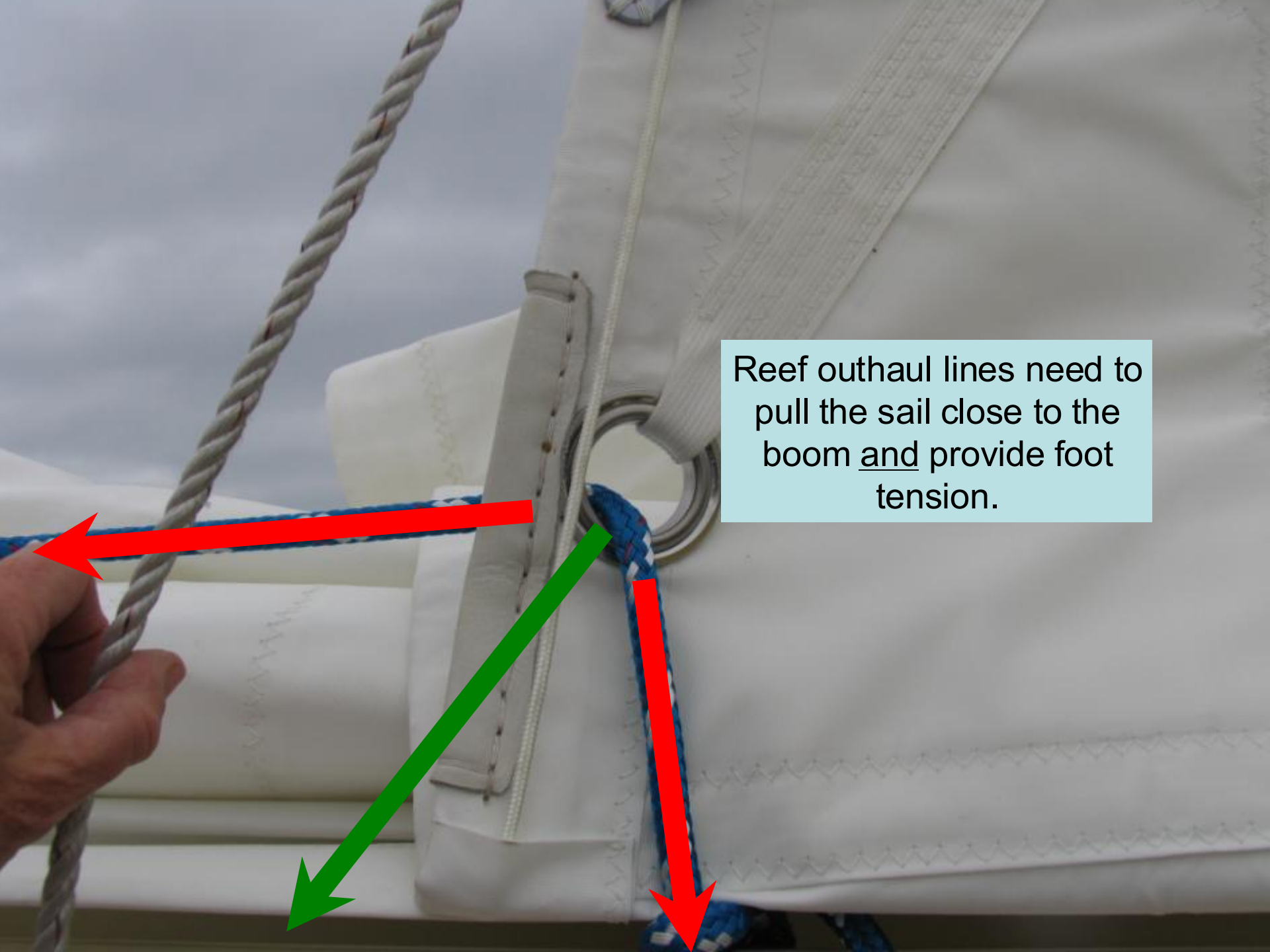
Shorten sail as the wind builds

- Experiment with sheet leads and hydraulic settings before you experience storm conditions
- Keep helm balanced
- Move CE towards center of boat
- Counteract stays'l tension with runners/checkstays





Running back with line
that can be led to a winch
for additional power.



Reef outhaul lines need to pull the sail close to the boom and provide foot tension.

Reefing tacks need to approximate the location of the tack when the sail is unreefed.



VALIANT 42

OFFSHORE SOIL INVENTORY:

- * 105% ROLLER FURLING GENOA: 540f
- PARTIALLY FURLED: 300f

- * WORKING STAYSIL: 210f
- * STORM STAYSIL: 115f
- * CRUISING SPINNAKER: 1400f

- * MAINSAIL 320f
- 1st REEF: 240f
- 2nd REEF: 160f

- * STORM TRYSIL: 105f

+ - WIND RANGE

5-15/18 KNOTS

15/18-25/30 KNOTS

30-45 KNOTS

45+ KNOTS

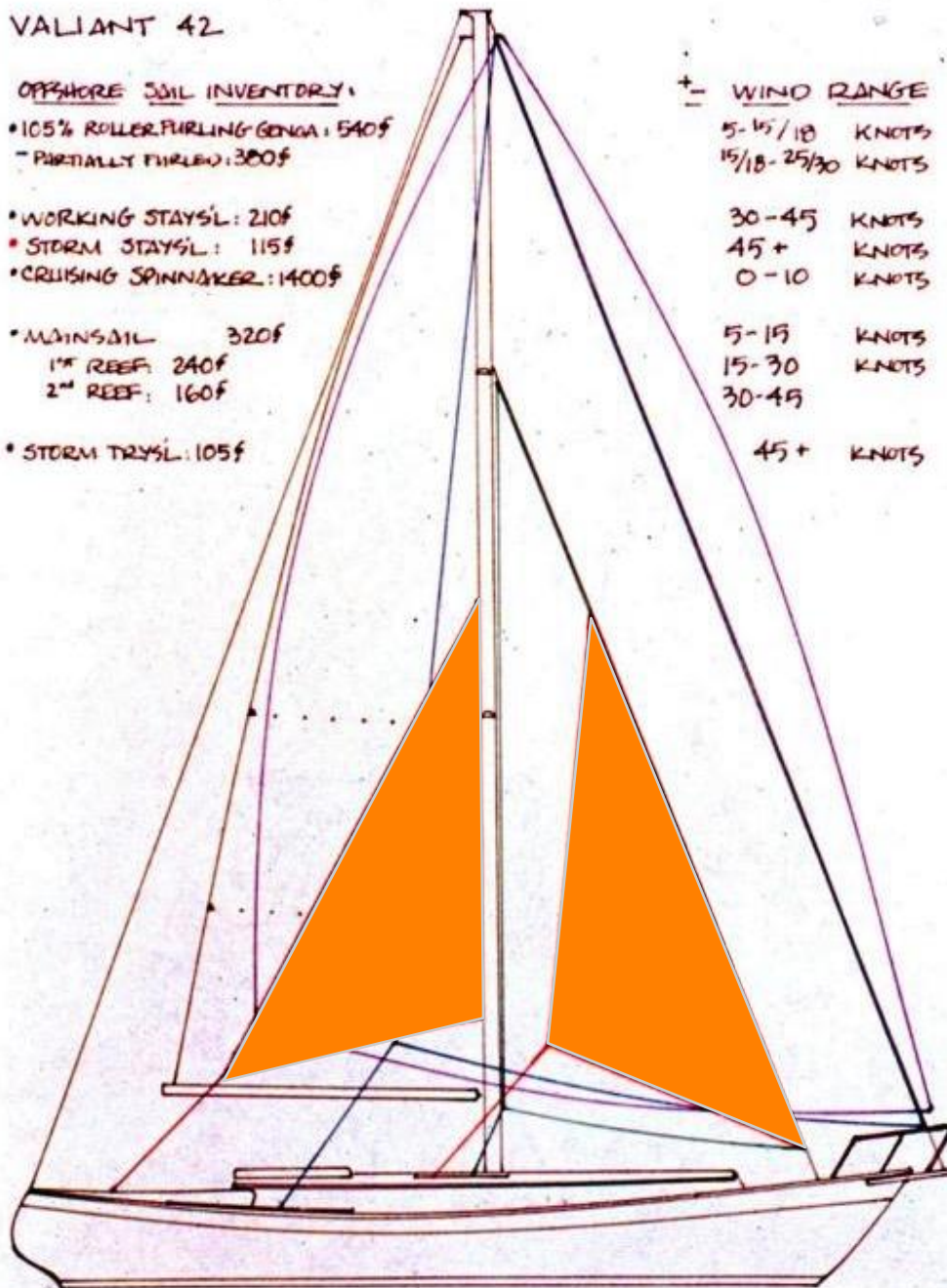
0-10 KNOTS

5-15 KNOTS

15-30 KNOTS

30-45

45+ KNOTS





This is what happens if you try to use your furling genoa as a storm jib.




Storm Sails: Storm Jib

- Offshore Special Regulations require that it be no larger than 5% of luff squared
Luff = 50', SA < 125 ft²
- Cannot rely on headfoil or other slotted headstay
- High clew to allow waves to pass underneath
- Move inboard to stays'l stay to keep CE inboard





A close-up view of a sailboat's deck. A white storm jib sail is partially visible, with its hanks (metal rings) attached to a blue and white rope. A bright yellow safety cover is draped over the sail. The background shows the blue water of the sea. A text box is overlaid on the right side of the image.

Put storm jib hanks on a length of line to keep the sail from being lost over the side.

Transfer one hank at a time from the length of line to the stay.



The storm jib is bent on
with the bright head panel.

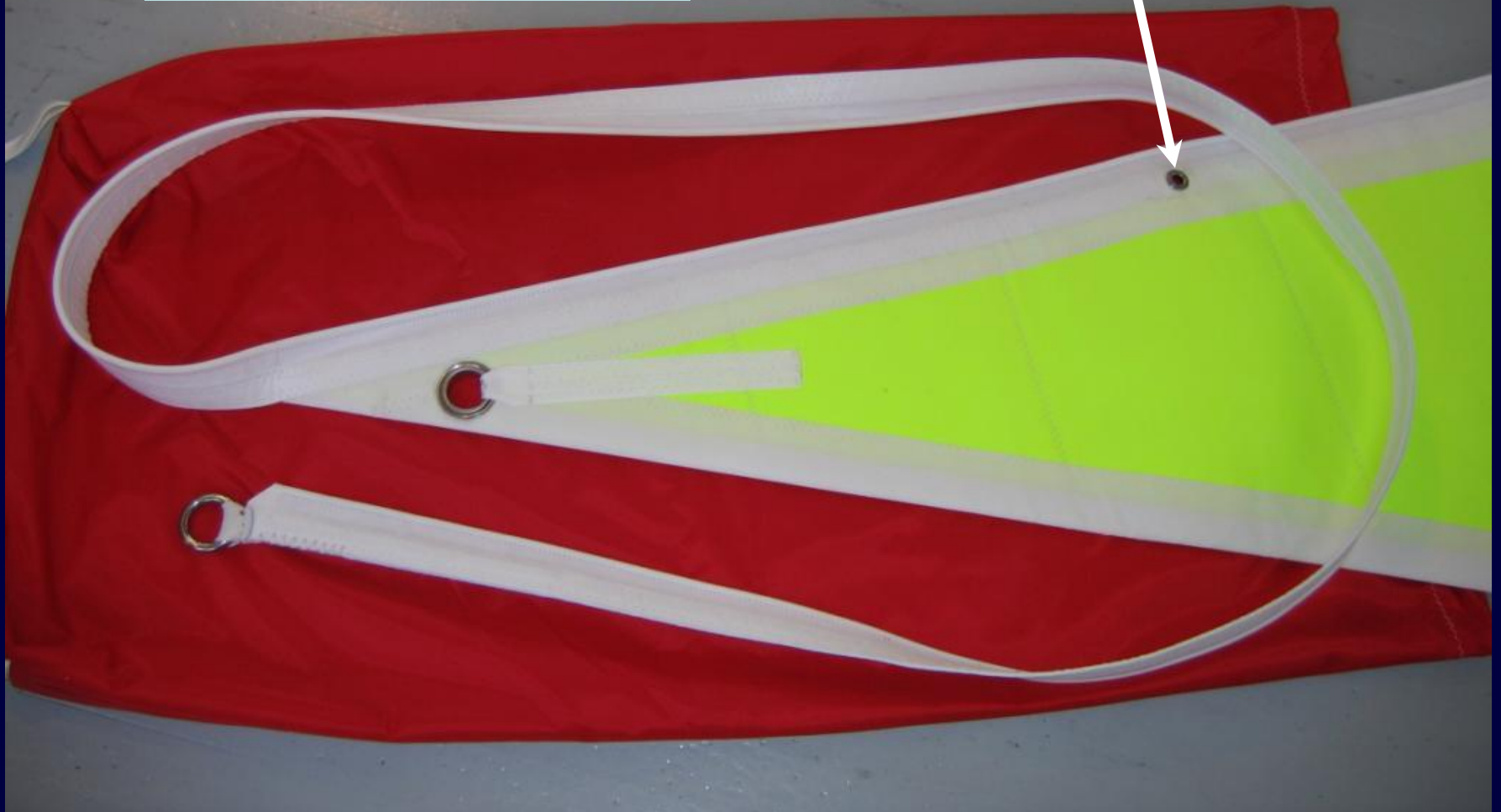




Completed sail showing
chafe protection, pennant,
turnbuckle, etc.

Extra long luff tape
spreads the load so the
sail doesn't pull out of the
headfoil.

Extra grommets for
attaching the sail if the
headfoil is broken.



Storm Sails: Storm Trysail

- Does not rely on boom (which may have been broken already)
- Generally sheets to gunwale aft
- Uses two sheets, like a genoa
- May require second track on many masts



VERTUE CLASS SLOOP

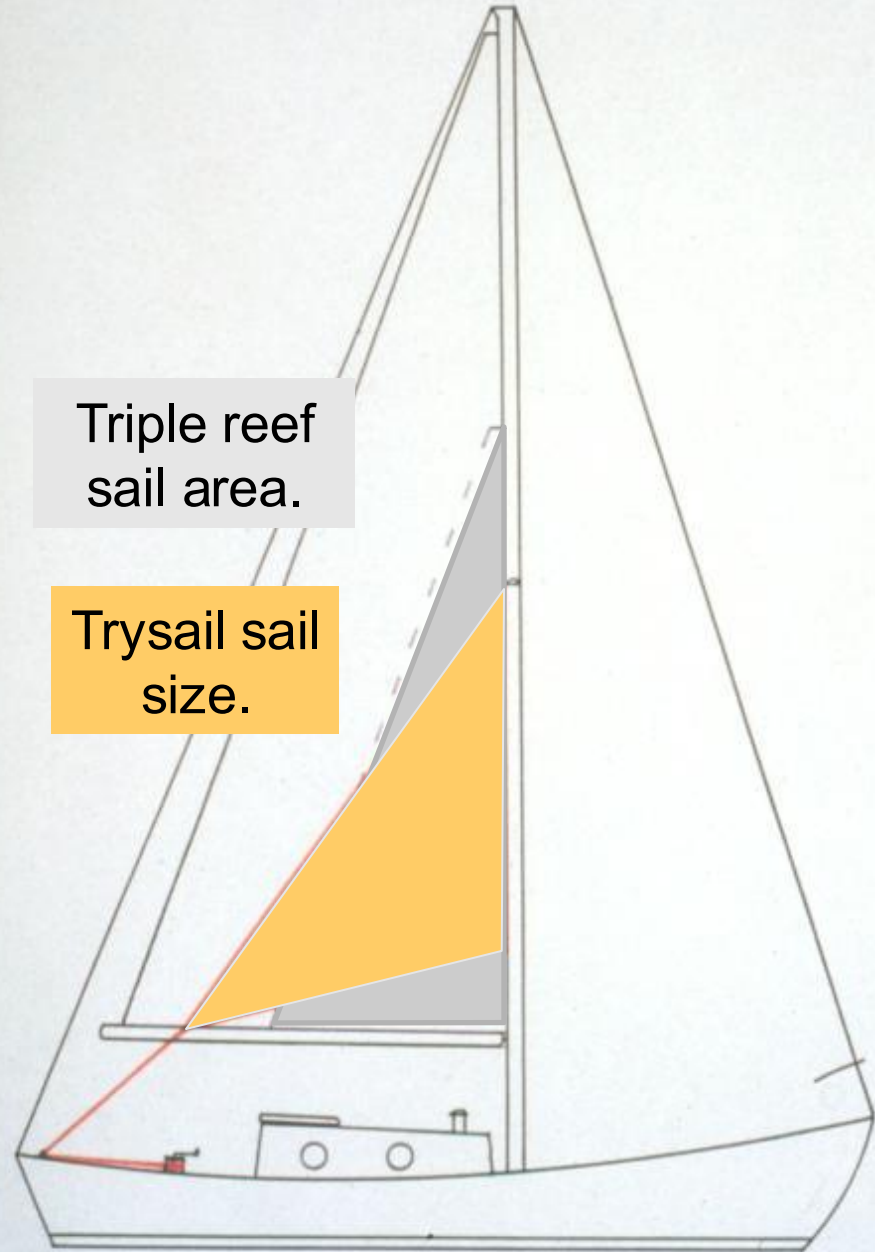
TRYSAIL

SQUARE FOOTAGE = $\frac{1}{3}$ MAINSAIL

The size of the storm
trysail should be
about $\frac{1}{3}$ of the area
of the main.


Triple reef
sail area.

Trysail sail
size.

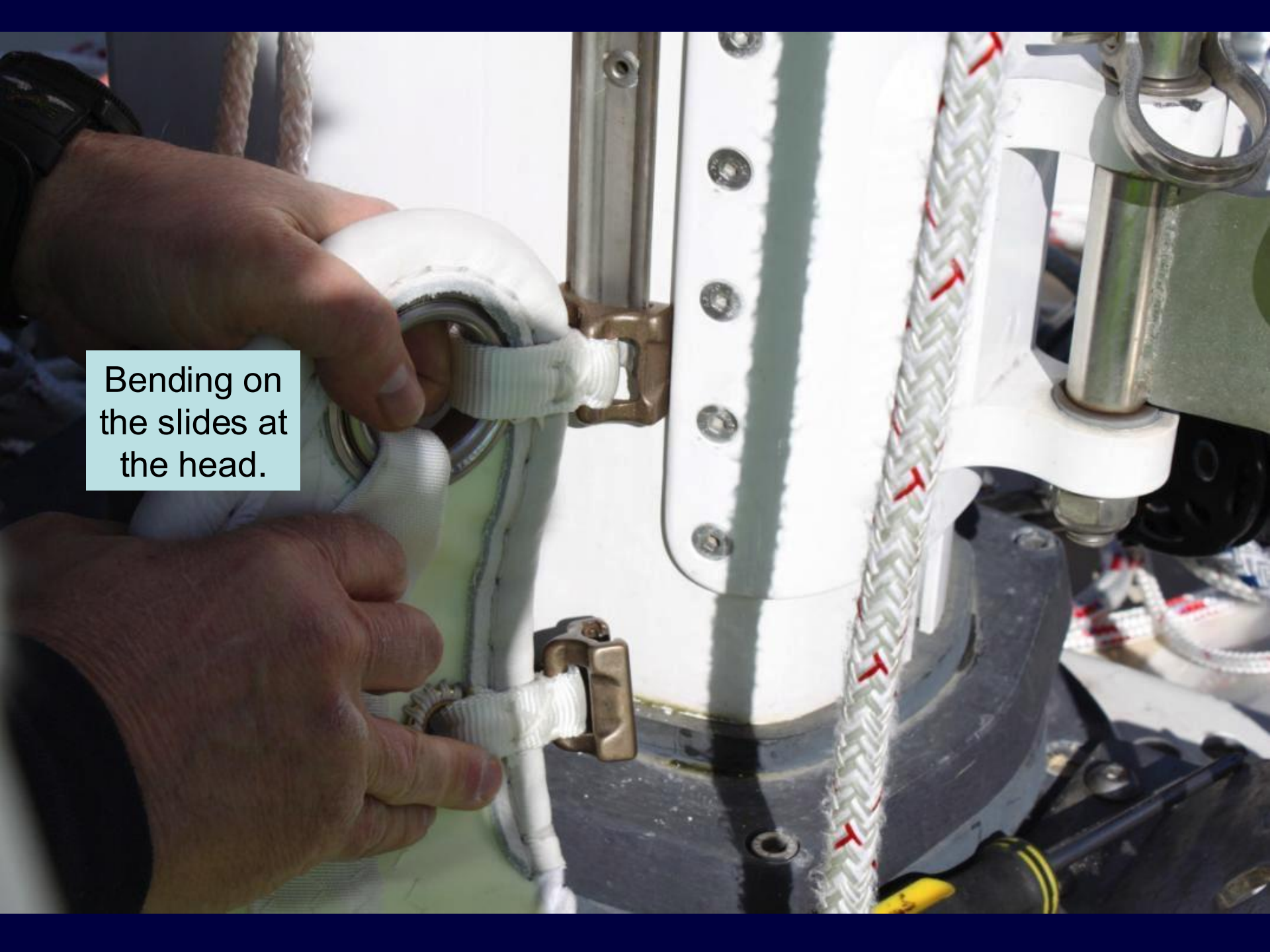




Track for
storm
trysail.

A close-up photograph showing a person's hand, wearing a dark blue long-sleeved shirt, using a screwdriver with a black and yellow handle to adjust a metal track stop. The track stop is a small metal bracket with a screw, mounted on a white plastic track. The track is part of a larger assembly, likely for a sailboat's trysail. In the background, there are various mechanical components, including a metal pulley and a white rope with red stitching. The scene is brightly lit, suggesting it's outdoors.

Track stop
at the
bottom of
the trysail
track.




Bending on
the slides at
the head.

Storm trysail bent on
and ready for hoisting.
Sail can be bagged
and left in place.



Storm
trysails
require two
sheets, like
a jib.





Example of trysail
sheets interfering
with Stack Pack
mainsail cover.

Trysails will require
a pennant so they
can fly clear of the
main.





Boats in in-mast
furling can also
use trysails if
they have a mast
track for that
purpose



Crew Maintenance

Maintain yourself

Eat

before you're hungry

Dress

before you get wet

Add Layers

before you get cold

Rest

before you're exhausted

Drink

before you're thirsty

Storm Technique

- C Choices are Condition/Boat Dependent!
- Evaluate the Characteristics of your boat
- Evaluate the Characteristics of your crew
- Evaluate the duration of the Wx Event
- Choices are Condition/Boat Dependent!

Storm Technique

How To Heave-To

1. Tacking without releasing the headsail sheet. The sail will backwind.
2. Adjust the main or trysail for a slight amount of drive (forward and to leeward).
3. Tie off the helm so the boat will head up if it picks up too much speed.

TIP: To avoid taking breaking waves on the beam, balance the boat with the bow about 40–60° off the wave angle.

Storm Technique

- Close Reaching – TWA 60 – Shortened Sail
- Motor sailing to slowly to windward
- Lying Ahull
- Running Off – Drogues, Warps, Sea Anchors

Final Thoughts

“Weather the storm you cannot avoid,
and avoid the storm you cannot weather.”

- Understand what techniques work with your boat.
- Prepare your vessel in advance.
- Have small, strong sails and reliable means of setting them.
- Bring lots of drivers!

Final thoughts

- Avoid heavy weather if possible
- Prepare in advance
 - Keep crew rested, hydrated and fed
- Have good weather information
- Have the proper tools
 - Storm sails
 - Drag devices
 - Lots of drivers