

# Line Selection Guide

## Racing or cruising, Samson makes a line for every application

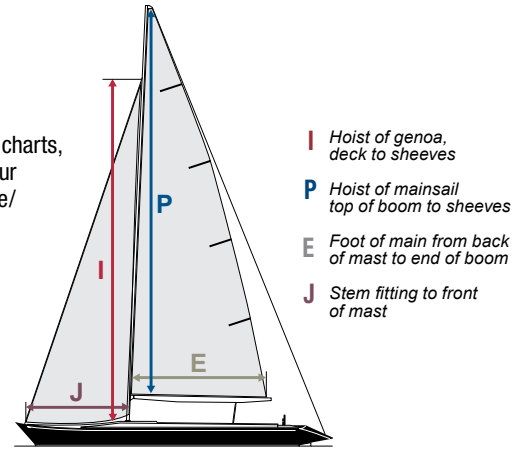
Sheets, halyards, and control lines all require different characteristics in strength and stretch. In these charts, you'll find a Samson line engineered for your size boat, the type of sailing you do, and its function in your rig. For sheets, use your sail plan and the sheet load formula provided to determine the appropriate size/strength for your boat and the wind conditions you expect to encounter.

To calculate typical loads on sheets for genoas, jibs, end of boom mainsheets, spinnaker guys and sheets, the following formula can be used (not applicable to multi-hull vessels):

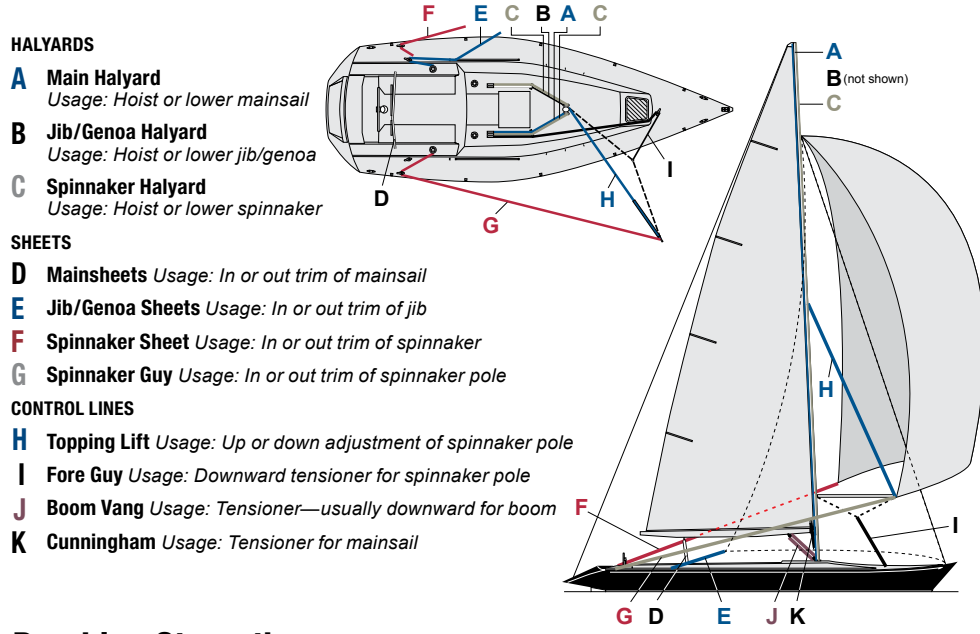
$$(\text{windspeed})^2 \times .004 \times (\text{sail area in square feet}) = \text{sheet load at clew in pounds}$$

To calculate sail area based on your sail plan, use the following formulas:

$$100\% \text{ fore triangle} = 1/2J \times I \quad \text{mainsail} = 1/2E \times P$$



- I** Hoist of genoa, deck to sheaves
- P** Hoist of mainsail top of boom to sheaves
- E** Foot of main from back of mast to end of boom
- J** Stem fitting to front of mast



### HALYARDS

- A Main Halyard**  
Usage: Hoist or lower mainsail
- B Jib/Genoa Halyard**  
Usage: Hoist or lower jib/genoa
- C Spinnaker Halyard**  
Usage: Hoist or lower spinnaker

### SHEETS

- D Mainsheets** Usage: In or out trim of mainsail
- E Jib/Genoa Sheets** Usage: In or out trim of jib
- F Spinnaker Sheet** Usage: In or out trim of spinnaker
- G Spinnaker Guy** Usage: In or out trim of spinnaker pole

### CONTROL LINES

- H Topping Lift** Usage: Up or down adjustment of spinnaker pole
- I Fore Guy** Usage: Downward tensioner for spinnaker pole
- J Boom Vang** Usage: Tensioner—usually downward for boom
- K Cunningham** Usage: Tensioner for mainsail

## Elastic Elongation

### Using Elastic Elongation Data

For some applications, the amount of stretch of a line under a known load can be critical. Elastic elongation is expressed as a percentage of the line's length under a given load. To use the chart, calculate or approximate the anticipated load and determine what percentage (10%, 20%, or 30%) of the rope breaking strength is closest to your load. Use the percentage listed in the chart to calculate the elongation: multiply the length of the line by the percentage of elongation in the chart. If the percentage of elongation from the chart is 0.44%, multiply the length of the line by .0044.

### Elastic Elongation after 50 cycles

% of Breaking Strength	10%	20%	30%
AmSteel®	0.46%	0.70%	0.96%
AmSteel®-Blue	0.46%	0.70%	0.96%
AS-78	0.46%	0.70%	0.96%
Control-DPX™	0.80%	1.06%	1.32%
Lightning Rope	0.59%	0.68%	0.77%
LS	1.80%	2.60%	3.30%
MLX	0.70%	0.90%	1.10%
Tech-12	0.63%	0.96%	1.20%
Trophy	2.20%	3.10%	3.80%
Validator-12	0.49%	0.78%	0.98%
Validator II	0.59%	0.78%	0.98%
Ultra-Lite	0.50%	0.80%	1.00%
Ultra-Tech	0.63%	0.97%	1.24%
WarpSpeed®II / White	0.44%	0.62%	0.79%
XLS	1.50%	2.20%	2.90%
XLS Extra / Extra T	0.50%	0.80%	1.00%

## Breaking Strengths (Approximate average in pounds)

Diameter	7/64"	1/8"	3/16"	1/4"	5/16"	3/8"	7/16"	1/2"	9/16"	5/8"	3/4"
AmSteel®				7,400	10,500	15,500	18,000	27,500	34,000	40,700	52,000
AmSteel®-Blue	1,600	2,500	5,400	8,600	13,700	19,600	23,900	34,000	40,500	52,800	64,400
AS-78		2,500	5,400	8,600	13,700	19,600	23,900	34,000	40,500	52,800	64,000
Control-DPX™				3,700	5,600	9,300	11,000	14,000			
Lightning Rope	1,400	2,100	5,400	7,900	13,500	18,500	20,600	32,000	41,600	50,600	
LS Yacht Braid			1,200	1,900	2,300	3,700	4,900	7,000		11,000	
MLX				3,800	4,500	7,200	9,500	15,000			
Tech-12		2,800	5,600	8,200	13,000	18,000					
Trophy Braid			800	1,400	2,000	3,000	4,000	6,000			
Ultra-Tech			2,300	4,800	7,800	10,000	14,800	20,000			
Ultra-Lite			1,200	2,200	2,900	4,400					
Validator-12	2,000	2,700	5,500	9,400	14,000	19,500	23,500	35,000	43,000	55,000	
Validator II			3,300	5,000	7,000	11,000	15,200	20,000	26,000	30,000	45,000
WarpSpeed®II / White				5,100	6,200	9,800	14,000	21,000	26,500		
XLS			1,200	2,200	3,300	4,400	5,800	8,300	11,000	13,600	19,000
XLS Extra / Extra T				2,400	3,800	5,100	7,000	9,400			

\*Larger sizes available. See SamsonRope.com for specs.

## Metric Conversion Chart for Line Diameter and Circumference

Diameter		Circumference		Diameter		Circumference	
7/64"	2.5 mm	5/16"	7.5 mm	1/2"	12.0 mm	1-1/2"	36.0 mm
1/8"	3.0 mm	3/8"	9.0 mm	9/16"	14.0 mm	1-3/4"	42.0 mm
3/16"	5.0 mm	9/16"	15.0 mm	5/8"	16.0 mm	2"	48.0 mm
1/4"	6.0 mm	3/4"	18.0 mm	3/4"	18.0 mm	2-1/4"	54.0 mm
5/16"	8.0 mm	1"	24.0 mm	7/8"	22.0 mm	2-3/4"	66.0 mm
3/8"	9.0 mm	1-1/8"	27.0 mm	1"	24.0 mm	3"	72.0 mm
7/16"	11.0 mm	1-1/4"	33.0 mm				



**SAMSON**  
THE STRONGEST NAME IN ROPE

## HALYARD SELECTION *(For Main, Jib/Genoa, & Spinnaker Halyards)*

Size	Cruiser	Cruiser/Racer	High Tech Racer
15'	1/4" XLS	1/4" XLS	1/8" Tech-12, 1/4" MLX, XLS Extra, WarpSpeed®II
20'	1/4" XLS	1/4" MLX, XLS, XLS Extra, WarpSpeed®II	3/16" AmSteel®Blue, Tech-12, Lightning Rope, Validator-12, AS-78 1/4" WarpSpeed®II, Validator II, Ultra-Tech, AmSteel®
25'	5/16" XLS	5/16" MLX, XLS, XLS Extra, 1/4" WarpSpeed®II	3/16" AmSteel®Blue, Tech-12, Lightning Rope, Validator-12, AS-78 1/4" WarpSpeed®II, Validator II, Ultra-Tech, AmSteel®
30'	3/8" XLS	3/8" MLX, XLS, XLS Extra, 5/16" WarpSpeed®II	1/4" AmSteel®Blue, Tech-12, Lightning Rope, Validator-12, AS-78 5/16" WarpSpeed®II, Validator II, Ultra-Tech, AmSteel®
35'	7/16" XLS	7/16" MLX, XLS, XLS Extra, 3/8" WarpSpeed®II	1/4" AmSteel®Blue, Tech-12, Lightning Rope, Validator-12, AS-78 5/16" Ultra-Tech, 5/16" WarpSpeed®II, Validator II
40'	1/2" XLS	1/2" MLX, XLS, XLS Extra, 3/8" WarpSpeed®II	1/4" AmSteel®Blue, Tech-12, Lightning Rope, Validator-12, AS-78, AmSteel®, 5/16" WarpSpeed®II, Validator II, Ultra-Tech
45'	1/2" XLS	5/8" XLS, 7/16" WarpSpeed®II, 1/2" MLX, XLS Extra	1/4" AmSteel®Blue, Tech-12, Lightning Rope, Validator-12, AS-78 5/16" Ultra-Tech, AmSteel®, 3/8" WarpSpeed®II, Validator II
50'	5/8" XLS	5/8" XLS, 7/16" WarpSpeed®II, 1/2" MLX, XLS Extra	5/16" AmSteel®Blue, Tech-12, Lightning Rope, Validator-12, AS-78, 3/8" AmSteel®, 7/16" WarpSpeed®II, Validator II, Ultra-Tech

NOTE: The high tech racer may wish to break down the halyards more specifically and in the same diameters as follows: Main: Validator-12; Ultra-Tech Spinnaker: WarpSpeed®II; XLS Extra Jib: WarpSpeed®II; Validator-12

## MAINSHEETS SELECTION *(End of Boom Sheeting)*

Size	Cruiser	Cruiser/Racer	High Tech Racer
15'	1/4" Control-DPX, LS, Trophy, XLS	1/4" Control-DPX, MLX, XLS, XLS Extra, Ultra-Lite	3/16" Ultra-Tech, Validator II, 1/4" Control-DPX, WarpSpeed®II
20'	5/16" Control-DPX, LS, Trophy, XLS	5/16" Control-DPX, MLX, XLS, XLS Extra, Ultra-Lite	5/16" Control-DPX, 1/4" Ultra-Tech, Validator II, WarpSpeed®II
25'	5/16" Control-DPX, LS, Trophy, XLS	5/16" Control-DPX, MLX, XLS, XLS Extra, Ultra-Lite	5/16" Control-DPX, 1/4" Ultra-Tech, Validator II, WarpSpeed®II
30'	5/16" Control-DPX, 3/8" LS, Trophy, XLS	5/16" Control-DPX, 3/8" MLX, XLS, XLS Extra	5/16" Control-DPX, Ultra-Tech, Validator II, WarpSpeed®II
35'	5/16" Control-DPX, 7/16" LS, Trophy, XLS	5/16" Control-DPX, 7/16" MLX, XLS, XLS Extra	5/16" Control-DPX, 3/8" Ultra-Tech, Validator II, WarpSpeed®II
40'	7/16" Control-DPX, 1/2" LS, Trophy, XLS	7/16" Control-DPX, 1/2" MLX, XLS, XLS Extra	5/16" Control-DPX, 3/8" Ultra-Tech, Validator II, WarpSpeed®II
45'	7/16" Control-DPX, 1/2" LS, Trophy, XLS	7/16" Control-DPX, 5/8" XLS, 1/2" MLX, XLS Extra	7/16" Control-DPX, Ultra-Tech, Validator II, WarpSpeed®II
50'	1/2" Control-DPX, 5/8" LS, Trophy, XLS	1/2" Control-DPX, 5/8" XLS, 1/2" MLX, XLS Extra	1/2" Control-DPX, 7/16" Ultra-Tech, Validator II, WarpSpeed®II

## SPINNAKER SHEETS

Size	Cruiser	Cruiser/Racer	High Tech Racer
15'	1/4" Control-DPX, LS, Trophy, XLS	1/4" Control-DPX, MLX, Ultra-Lite, XLS Extra	1/4" Control-DPX, Ultra-Lite, Ultra-Tech, WarpSpeed®II
20'	1/4" Control-DPX, LS, Trophy, XLS	1/4" Control-DPX, MLX, Ultra-Lite, XLS Extra	1/4" Control-DPX, Ultra-Lite, Ultra-Tech, WarpSpeed®II
25'	5/16" Control-DPX, LS, Trophy, XLS	5/16" Control-DPX, MLX, Ultra-Lite, XLS Extra	5/16" Control-DPX, Ultra-Lite, 1/4" Ultra-Tech, WarpSpeed®II
30'	3/8" Control-DPX, LS, Trophy, XLS	3/8" Control-DPX, MLX, Ultra-Lite, XLS Extra	3/8" Control-DPX, Ultra-Lite, 5/16" Ultra-Tech, WarpSpeed®II
35'	7/16" Control-DPX, LS, Trophy, XLS	7/16" Control-DPX, 3/8" MLX, Ultra-Lite, XLS Extra	3/8" Ultra-Lite, 5/16" Ultra-Tech, WarpSpeed®II, 7/16" Control-DPX
40'	7/16" Control-DPX, 1/2" LS, Trophy, XLS	7/16" Control-DPX, XLS Extra, 1/2" MLX, XLS	7/16" Control-DPX, MLX, XLS Extra, 3/8" Ultra-Tech, WarpSpeed®II
45'	1/2" Control-DPX, LS, XLS	7/16" XLS Extra, 1/2" Control-DPX, MLX, XLS	3/8" Ultra-Tech, WarpSpeed®II, 1/2" Control-DPX, MLX, XLS Extra
50'	1/2" Control-DPX, 5/8" LS, XLS	1/2" Control-DPX, MLX, XLS, XLS Extra	7/16" Ultra-Tech, WarpSpeed®II, 1/2" Control-DPX, MLX, XLS Extra

## JIB/GENOA SHEET SELECTION

Size	Cruiser	Cruiser/Racer	High Tech Racer
15'	1/4" Control-DPX, LS, Trophy	1/4" Control-DPX, XLS	1/4" Control-DPX, Ultra-Tech, Validator II, WarpSpeed®II
20'	1/4" Control-DPX, LS, Trophy	1/4" Control-DPX, XLS	1/4" Control-DPX, Ultra-Tech, Validator II, WarpSpeed®II
25'	5/16" Control-DPX, LS, Trophy, XLS	5/16" Control-DPX, MLX, XLS, XLS Extra	5/16" Control-DPX, 1/4" Ultra-Tech, Validator II, WarpSpeed®II
30'	3/8" Control-DPX, LS, Trophy, XLS	3/8" Control-DPX, MLX, XLS, XLS Extra	1/4" Ultra-Tech, Validator II, WarpSpeed®II, 3/8" Control-DPX
35'	7/16" Control-DPX, LS, Trophy, XLS	7/16" Control-DPX, MLX, XLS, XLS Extra	5/16" Ultra-Tech, Validator II, WarpSpeed®II, 7/16" Control-DPX
40'	1/2" Control-DPX, LS, Trophy, XLS	1/2" Control-DPX, MLX, XLS, XLS Extra	3/8" Ultra-Tech, Validator II, WarpSpeed®II, 1/2" Control-DPX
45'	1/2" Control-DPX, LS, XLS	1/2" Control-DPX, MLX, XLS Extra, 5/8" XLS	3/8" Ultra-Tech, Validator II, WarpSpeed®II, 1/2" Control-DPX
50'	1/2" Control-DPX, LS, XLS	1/2" Control-DPX, MLX, XLS Extra, 5/8" XLS	7/16" Ultra-Tech, Validator II, WarpSpeed®II, 1/2" Control-DPX

## SPINNAKER GUY SELECTION

Size	Cruiser	Cruiser/Racer	High Tech Racer
15'	N/A	1/4" Control-DPX, XLS	1/4" Control-DPX, Ultra-Tech, Validator II, WarpSpeed®II
20'	N/A	1/4" Control-DPX, XLS	1/4" Control-DPX, Ultra-Tech, Validator II, WarpSpeed®II
25'	N/A	5/16" Control-DPX, MLX, XLS, XLS Extra	5/16" Control-DPX, 1/4" Ultra-Tech, Validator II, WarpSpeed®II
30'	5/16" Control-DPX, 3/8" XLS	3/8" Control-DPX, MLX, XLS Extra	5/16" Ultra-Tech, Validator II, WarpSpeed®II, 3/8" Control-DPX
35'	7/16" Control-DPX, XLS	7/16" Control-DPX, MLX, XLS Extra	5/16" Ultra-Tech, Validator II, WarpSpeed®II, 7/16" Control-DPX
40'	7/16" Control-DPX, 1/2" XLS	7/16" Control-DPX, 1/2" MLX, XLS Extra	3/8" Ultra-Tech, Validator II, WarpSpeed®II, 7/16" Control-DPX
45'	1/2" Control-DPX, 5/8" XLS	7/16" WarpSpeed®II, 1/2" Control-DPX	7/16" Ultra-Tech, Validator II, WarpSpeed®II, 1/2" Control-DPX
50'	1/2" Control-DPX, 3/4" XLS	7/16" WarpSpeed®II, 1/2" Control-DPX	7/16" Ultra-Tech, Validator II, WarpSpeed®II, 1/2" Control-DPX

## CONTROL LINE SELECTION *(For Topping Lifts, Fore Guys, Boom Vangs & Cunninghams)*

Size	Cruiser	Cruiser/Racer	High Tech Racer
15'	3/16" LS, XLS	3/16" AmSteel® XLS, XLS Extra	3/16" AmSteel®-Blue, Lightning Rope, Tech-12 1/4" AS-78, Ultra-Tech, Validator II, WarpSpeed®II
20'	1/4" Control-DPX, LS, Trophy, XLS	1/4" AmSteel® Control-DPX, MLX, XLS, XLS Extra	3/16" AmSteel®-Blue, Lightning Rope, Tech-12 1/4" AS-78, Control-DPX, Ultra-Tech, Validator II, WarpSpeed®II
25'	1/4" Control-DPX, LS, Trophy, XLS	1/4" AmSteel® Control-DPX, MLX, XLS, XLS Extra	3/16" AmSteel®-Blue, Lightning Rope, Tech-12, Ultra-Tech, Validator II 1/4" AS-78, Control-DPX, WarpSpeed®II
30'	5/16" Control-DPX, LS, Trophy, XLS	5/16" AmSteel® Control-DPX, MLX, XLS, XLS Extra	1/4" AmSteel®-Blue, AS-78, Ultra-Tech, Validator II, WarpSpeed®II, 5/16" Control-DPX
35'	5/16" Control-DPX, LS, Trophy, XLS	5/16" AmSteel® Control-DPX, MLX, XLS, XLS Extra	3/16" AmSteel®-Blue, Lightning Rope, Tech-12, 5/16" Control-DPX 1/4" AS-78, Ultra-Tech, Validator II, WarpSpeed®II
40'	3/8" Control-DPX, LS Trophy, XLS	3/8" AmSteel® Control-DPX, MLX, XLS, XLS Extra	1/4" AmSteel®-Blue, Lightning Rope, Tech-12, 3/8" Control-DPX 5/16" AS-78, Ultra-Tech, Validator II, WarpSpeed®II
45'	7/16" Control-DPX, LS Trophy, XLS	7/16" Control-DPX, 3/8" AmSteel®, MLX, XLS, XLS Extra	1/4" AmSteel®-Blue, Lightning Rope, Tech-12, 7/16" Control-DPX 5/16" AS-78, Ultra-Tech, Validator II, WarpSpeed®II
50'	1/2" Control-DPX, LS Trophy, XLS	7/16" AmSteel®, MLX, XLS, XLS Extra, 1/2" Control-DPX	3/8" AS-78, Ultra-Tech, Validator II, WarpSpeed®II, 1/2" Control-DPX 5/16" AmSteel®-Blue, Lightning Rope, Tech-12

Note: For any multiple purchase control lines, i.e. travellers, jib car leads etc. Apex would be the choice. For lazy jacks use LS Yacht Braid.