

WINCH DIMENSIONING GUIDE





Using the Dimensioning Guides

The winch dimensioning guides are based on the relationship between the sheet load, the winch gearing, and the effort required at the winch handle. They indicate which winch size is appropriate for a given application based on how much effort is reasonable for a person to apply when trimming the line.

The dimensioning guides are therefore not based on the Safe Working Load (SWL) of the winch. SWL is a separate safety-related limitation and must be considered independently, particularly for static applications.

E-winches, when operated under electric power, can generate higher line loads than manually operated S-winches of the same size. Consequently, for the same boat and application, the E-winch dimensioning guide may recommend a smaller winch size than the corresponding S-winch dimensioning guide.

Dynamic applications

For sheets, where the sail must be trimmable throughout the full range of expected sheet loads, the selected winch should provide sufficient mechanical advantage to allow the sheet to be trimmed at the maximum calculated sheet load.

In other words, the dimensioning is based on the relationship between the maximum sheet load and the effort required at a 10" winch handle. A larger winch generally provides greater mechanical advantage, reducing the effort required at the handle, while a smaller winch may require greater effort but can provide faster line retrieval.

Static applications

For halyards, outhauls and spinnaker guys, where the line is normally not trimmed while subjected to the maximum calculated load, the winch is dimensioned differently.

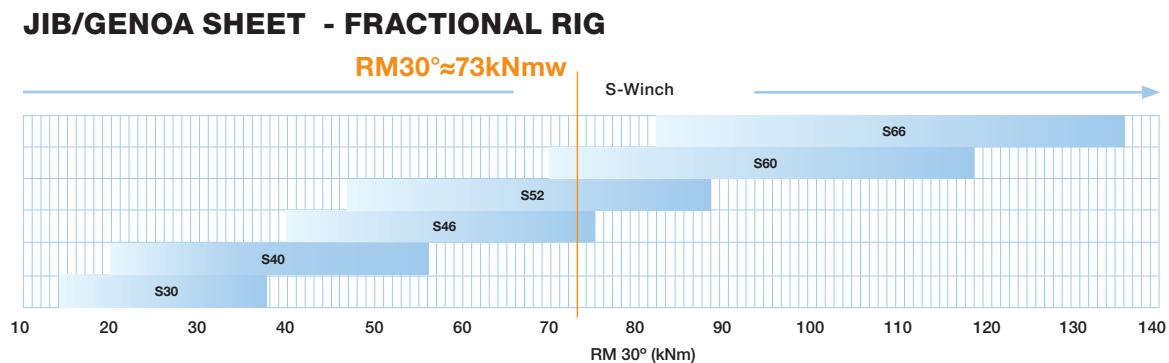
The winch should be capable of generating 75% of the calculated line load based on the available mechanical advantage and a reasonable effort at the winch handle.

In addition, the Safe Working Load (SWL) of the winch must be equal to or greater than 100% of the calculated line load.

Example

The following example shows how to use the dimensioning guide to select a manually operated S-winch for a jib/genoa sheet on a fractional-rigged boat with a righting moment at 30° heel angle (RM30°) of **73 kNm**.

Locate **RM30° = 73 kNm** on the X-axis and draw a vertical line upwards through the graph.



The vertical line intersects the applicable range for **S46, S52 and S60**, indicating that all three winch sizes are suitable for this boat and application. The final choice depends on the customer's requirements and the desired balance between trimming speed and the effort required at the winch handle.

Selecting an **S46**, with the boat's RM close to the upper limit of the winch's recommended range, means that more effort will be required at the winch handle when the sheet load is close to its maximum. However, the smaller winch provides faster line retrieval.

Selecting an **S60** provides greater mechanical advantage, meaning that less effort is required at the winch handle, even when the sheet load is close to its maximum. The **S52** provides a compromise between the two.

To calculate the righting moment of a specific boat, use the calculator available at www.seldenmast.com.

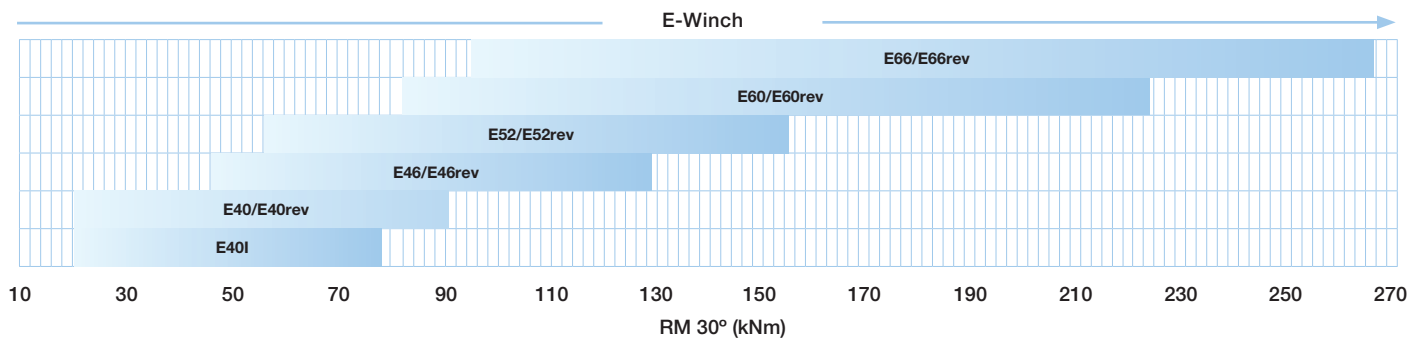
DIMENSIONING

E-SERIES

MAINSAIL

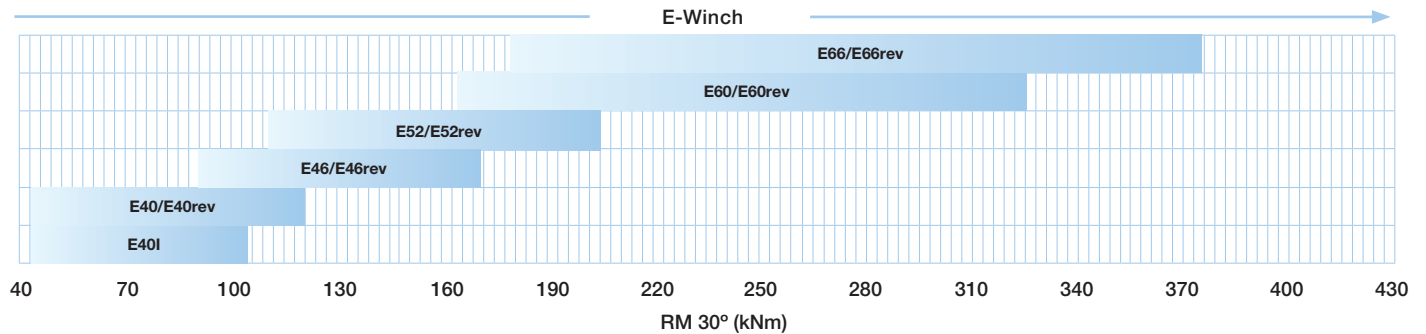


MAIN HALYARD - FRACTIONAL RIG



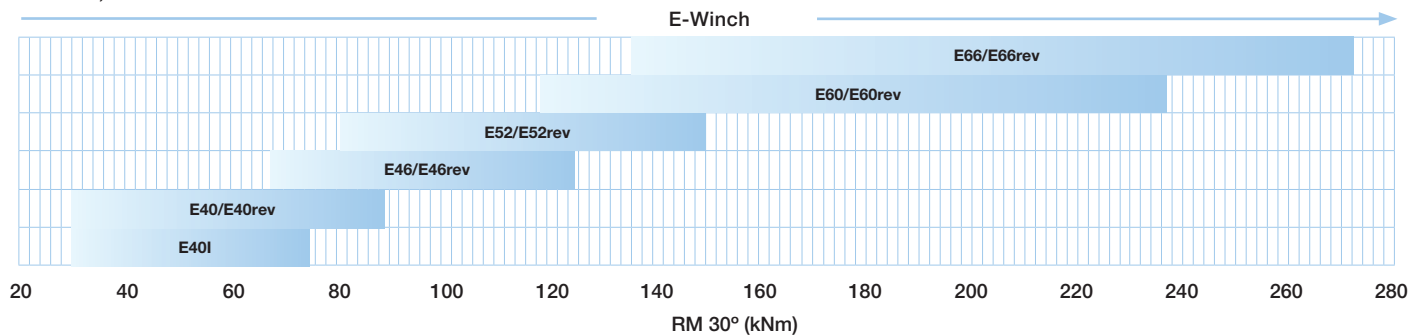
MAIN SHEET, END SHEETED BOOM - FRACTIONAL RIG

2:1 Sheet, S > 90% of E

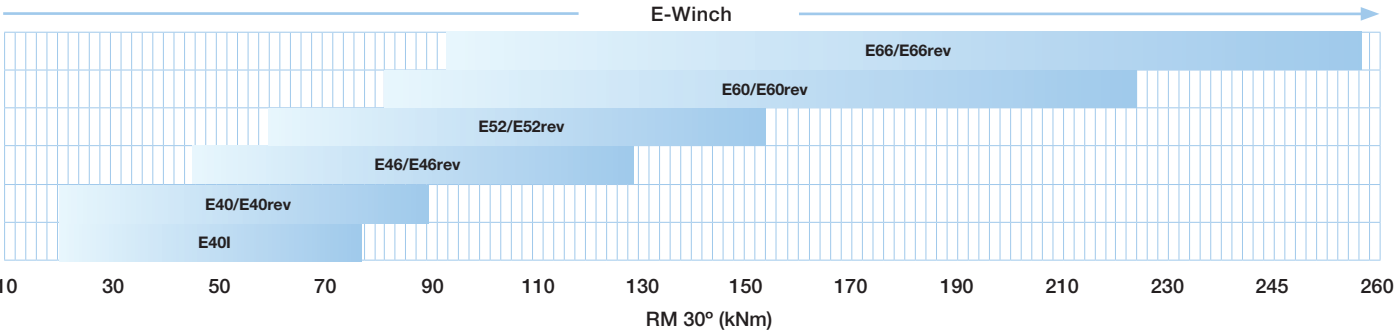


MAIN SHEET, MID SHEETED BOOM - FRACTIONAL RIG

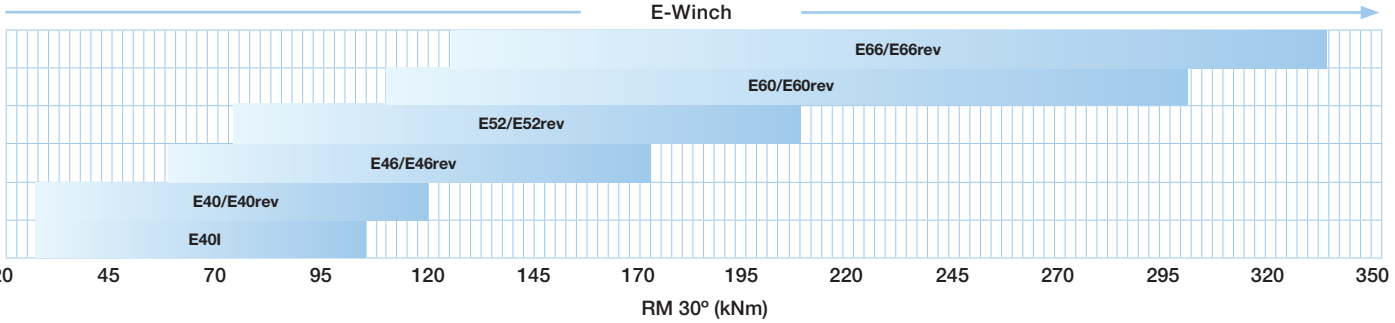
4:1 Sheet, S > 50% of E



MAIN OUTHAUL - FRACTIONAL RIG

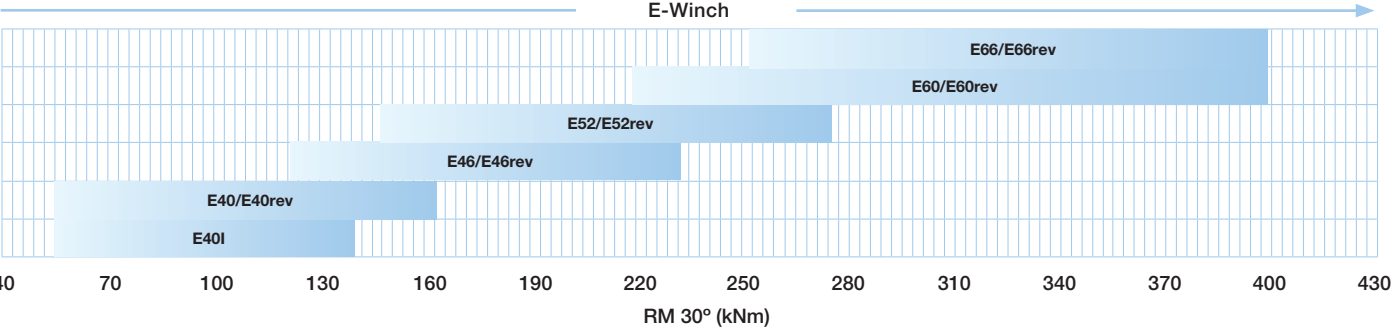


MAIN HALYARD - MAST HEAD RIG



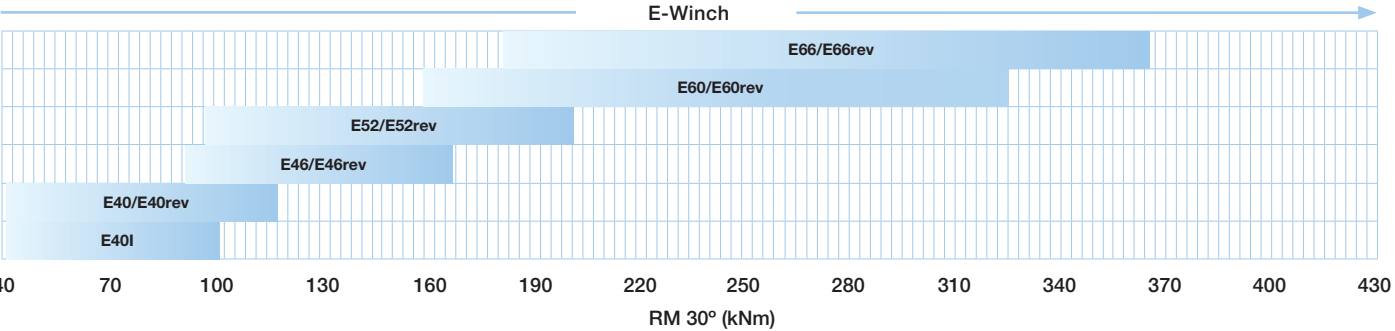
MAIN SHEET, END SHEETED BOOM - MAST HEAD RIG

2:1 Sheet, S> 90% of E

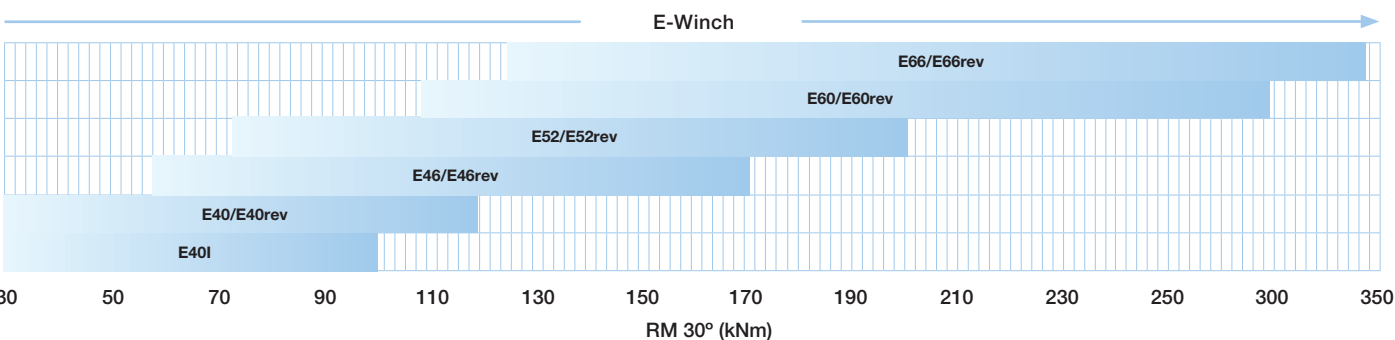


MAIN SHEET, MID SHEETED BOOM - MAST HEAD RIG

4:1 Sheet, S>50% of E



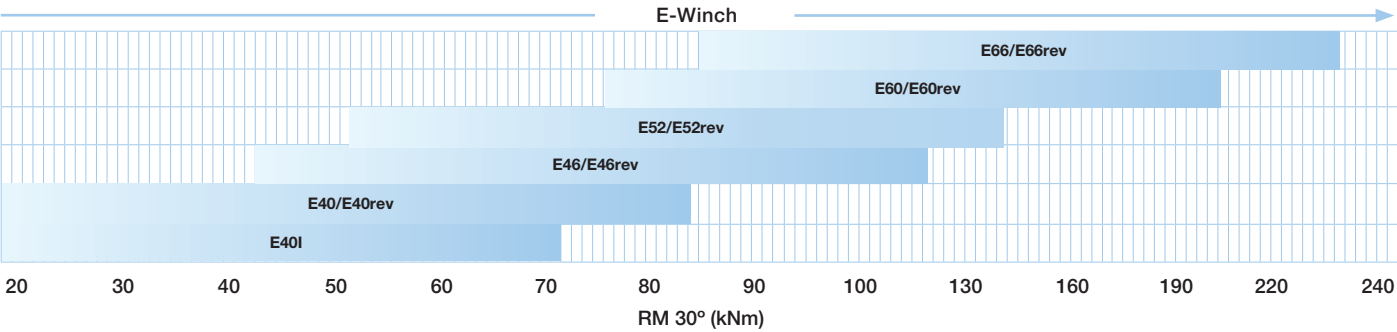
MAIN OUTHAUL - MAST HEAD RIG



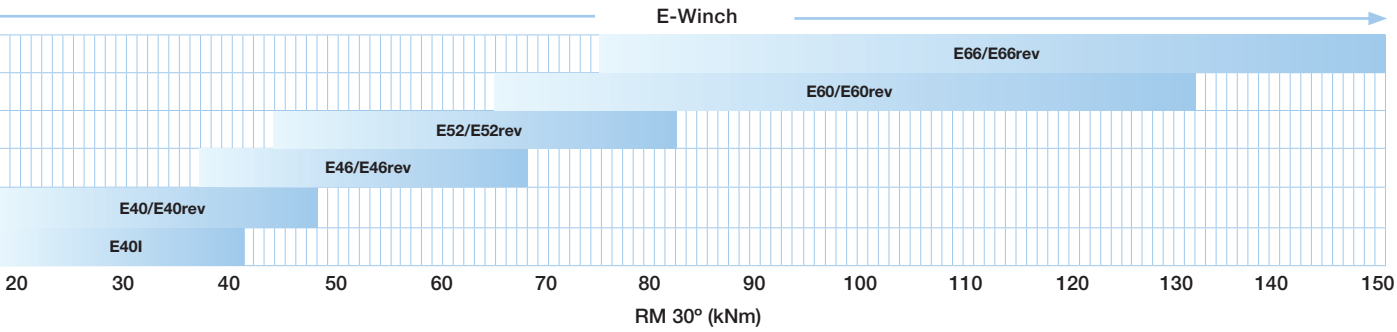
FLYING SAILS

CODE 0 HALYARD

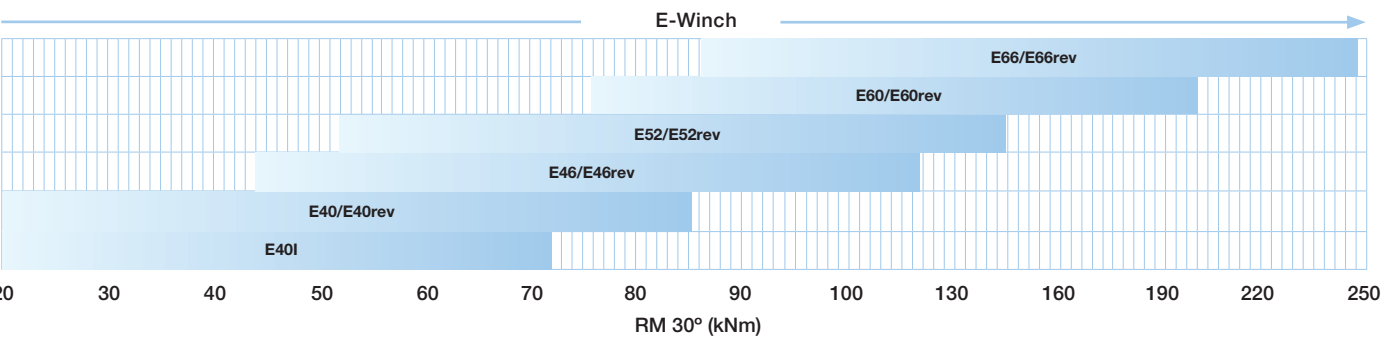
2:1 Halyard



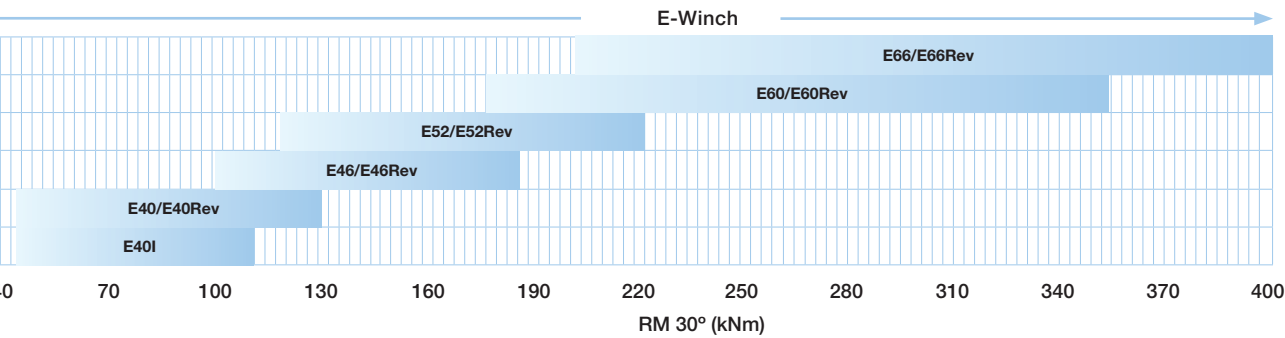
CODE 0 SHEET



SPINNAKER AND GENNAKER HALYARD

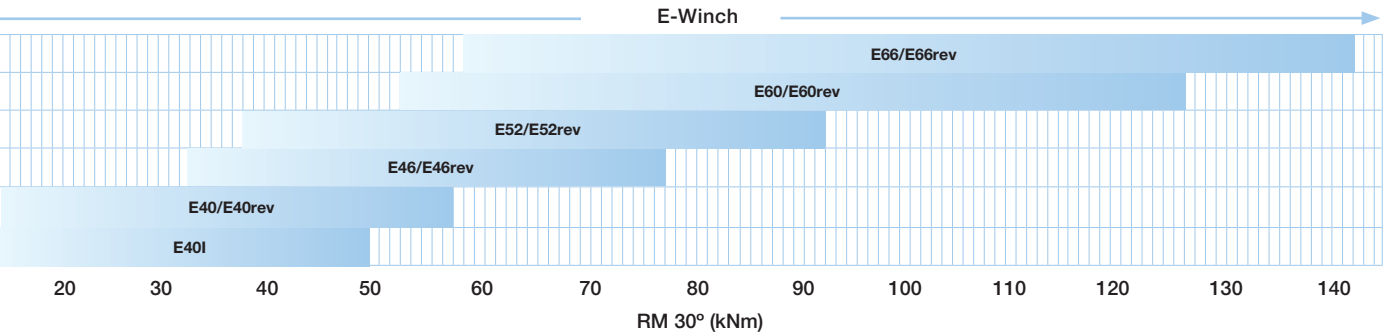


GENNAKER SHEET

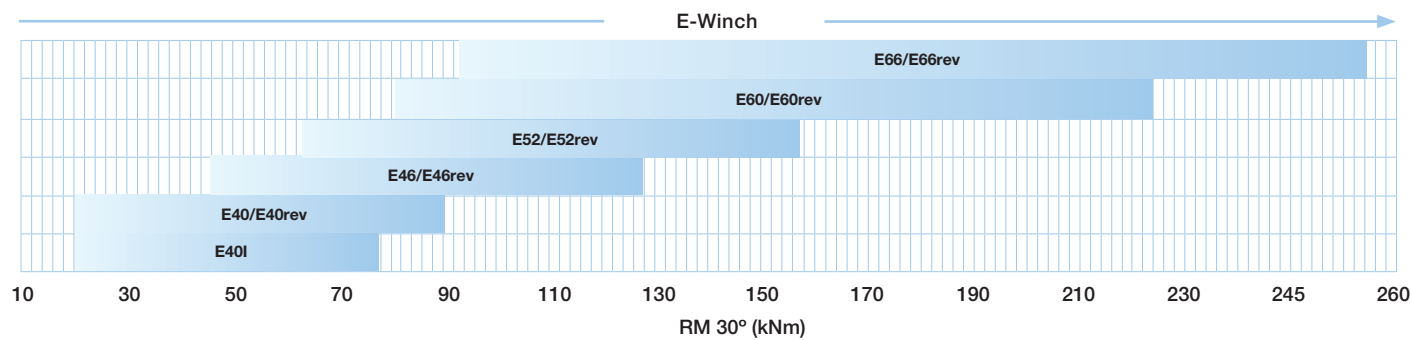


SPINNAKER SHEET AND GUY

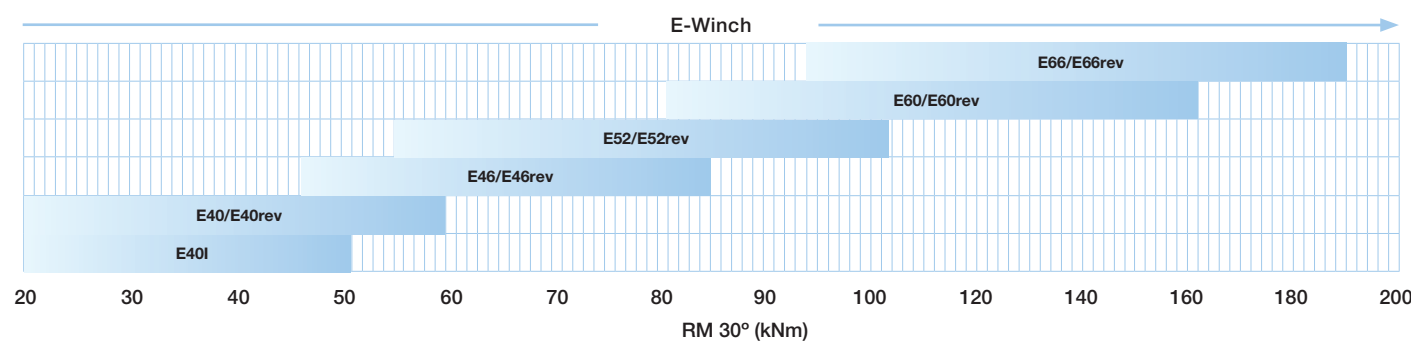
(Sheet load is approximately 50-35% of guy load)



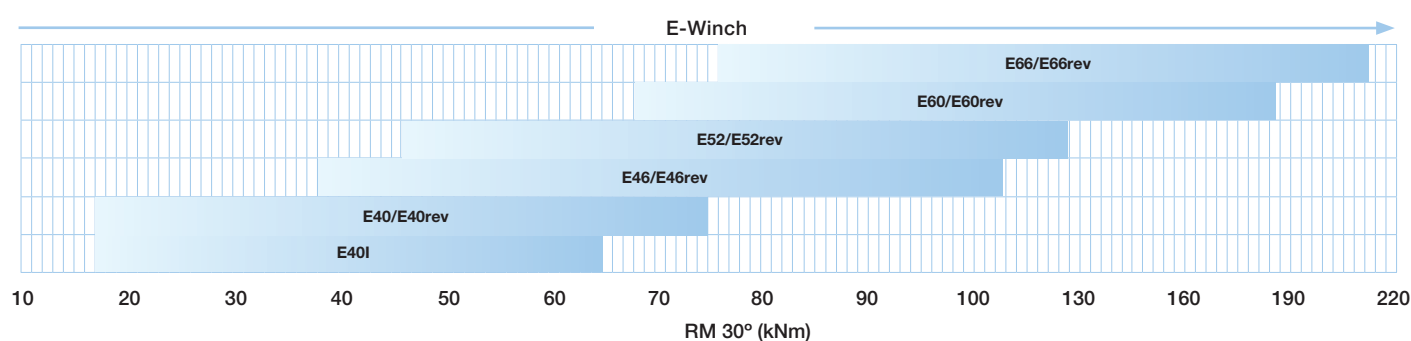
JIB/GENOA HALYARD - FRACTIONAL RIG



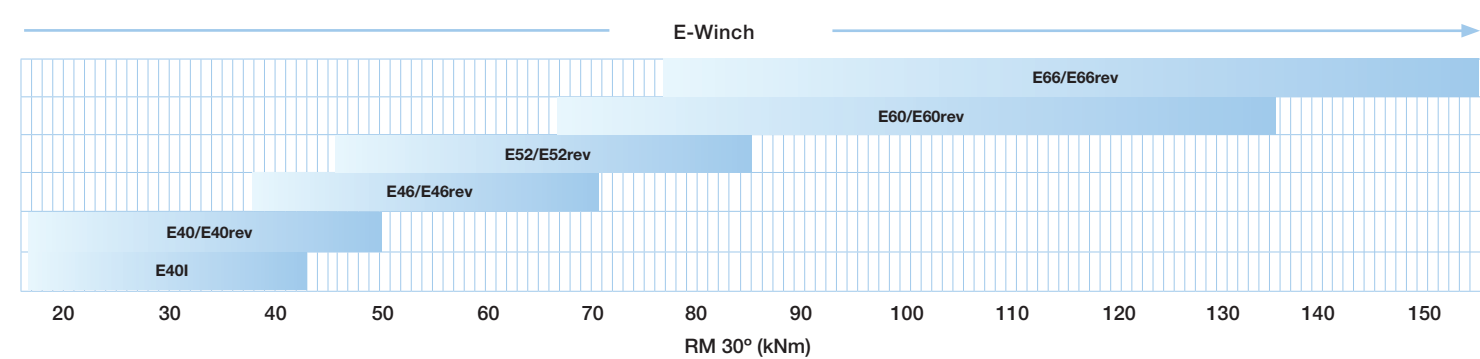
JIB/GENOA SHEET - FRACTIONAL RIG



JIB/GENOA HALYARD - MAST HEAD RIG



JIB/GENOA SHEET - MAST HEAD RIG

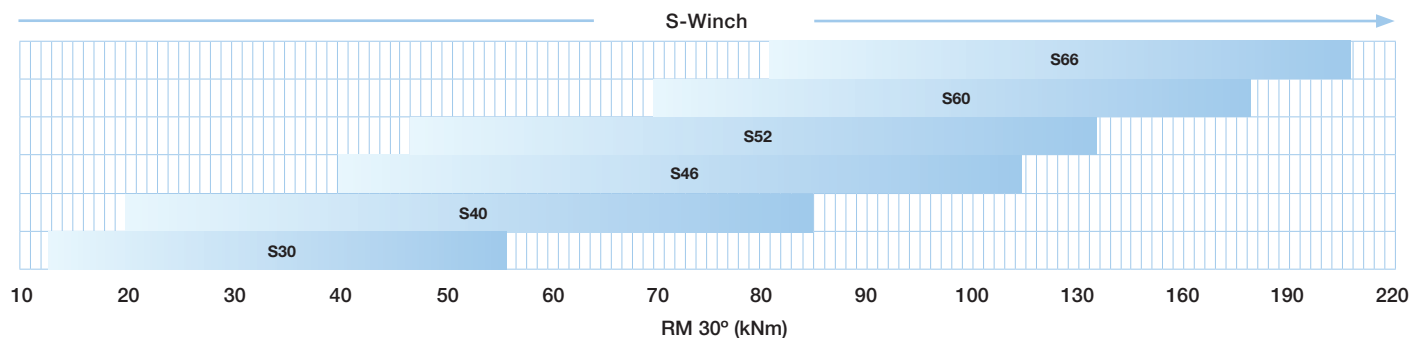


S-SERIES

MAINSAIL

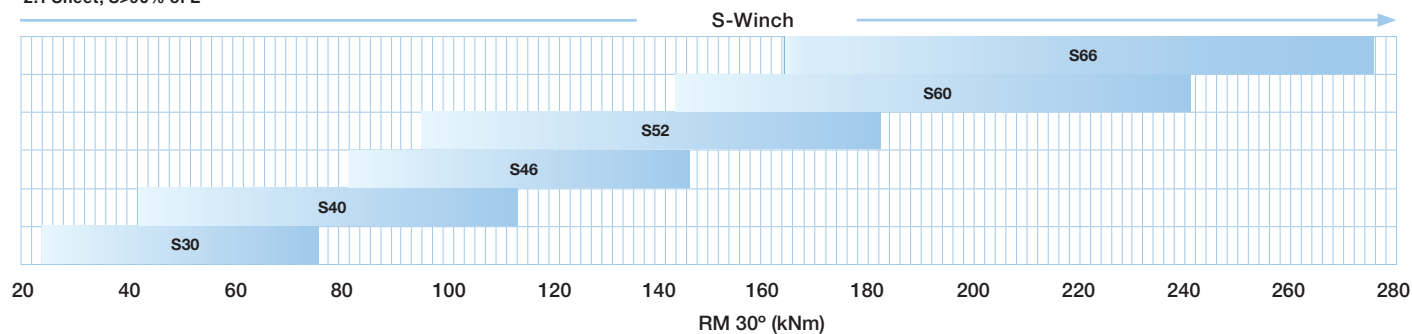


MAIN HALYARD - FRACTIONAL RIG



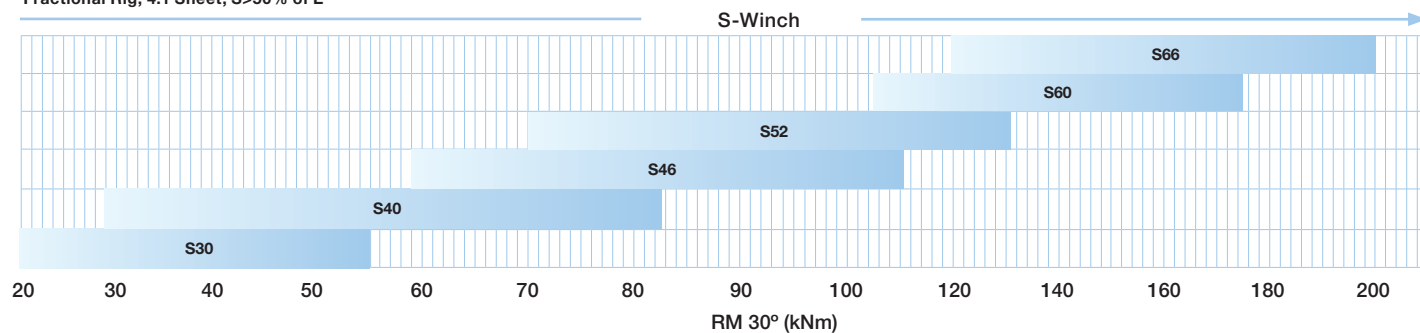
MAIN SHEET, END SHEETED BOOM - FRACTIONAL RIG

2:1 Sheet, S>90% of E

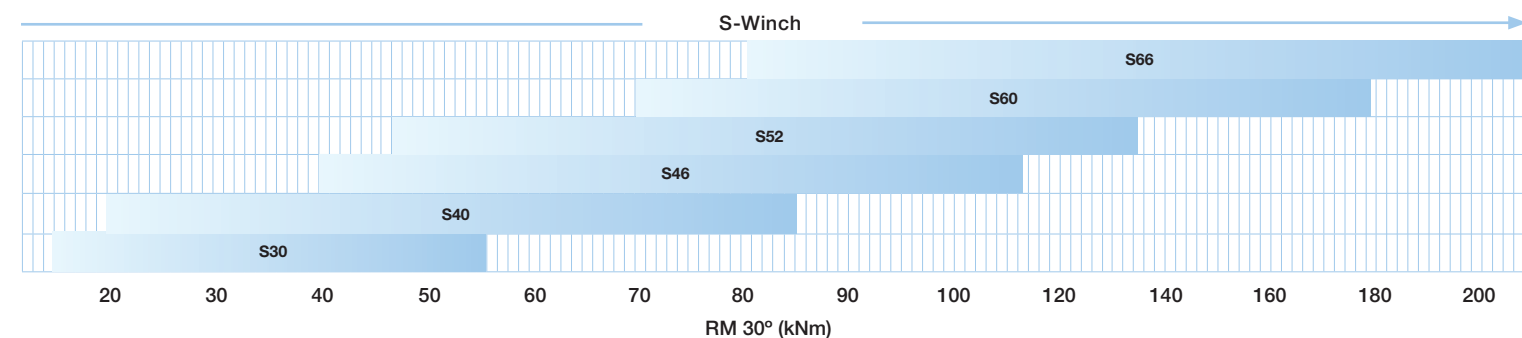


MAIN SHEET, MID SHEETED BOOM- FRACTIONAL RIG

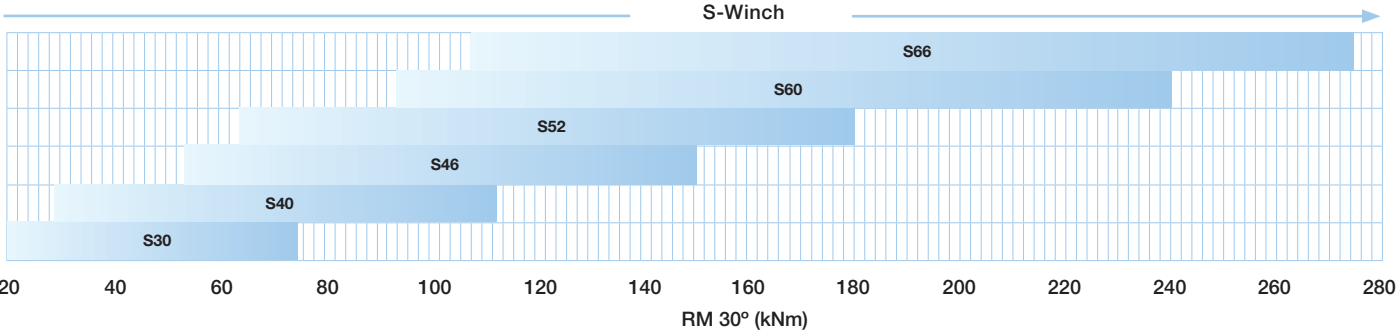
Fractional Rig, 4:1 Sheet, S>50% of E



MAIN OUTHAUL - FRACTIONAL RIG

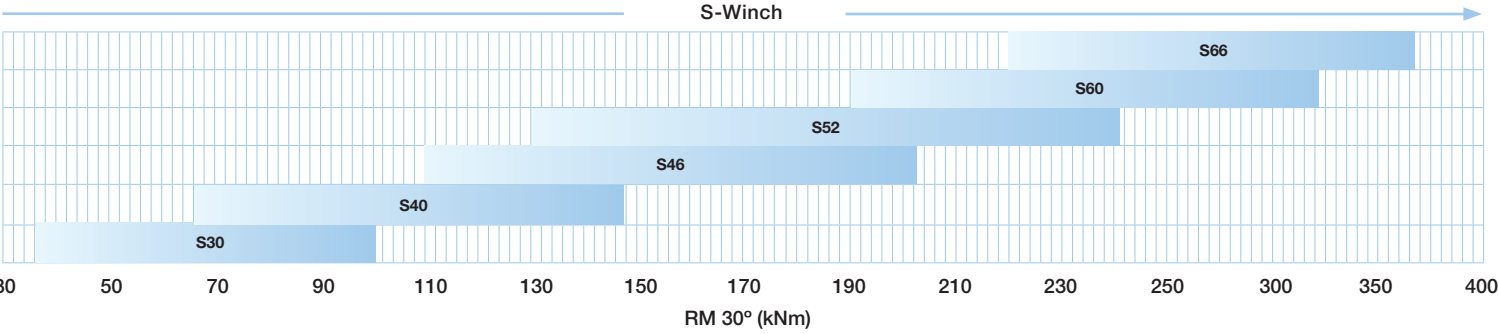


MAIN HALYARD - MAST HEAD RIG



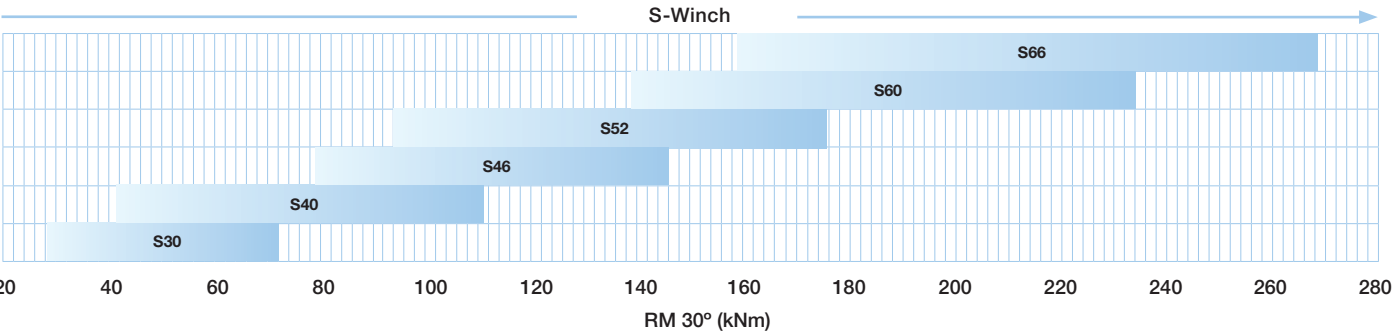
MAIN SHEET, END SHEETED BOOM - MAST HEAD RIG

2:1 Sheet, S>90% of E

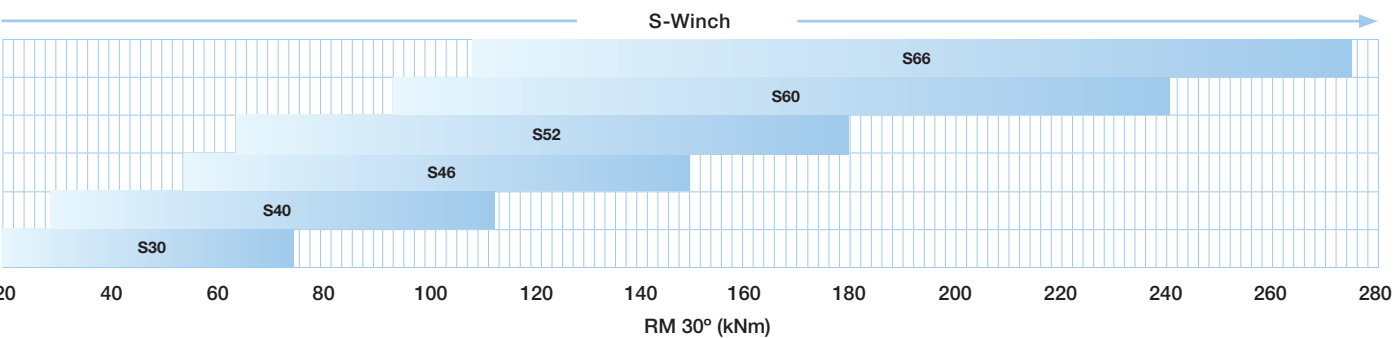


MAIN SHEET, MID SHEETED BOOM - MAST HEAD RIG

4:1 Sheet, S>50% of E



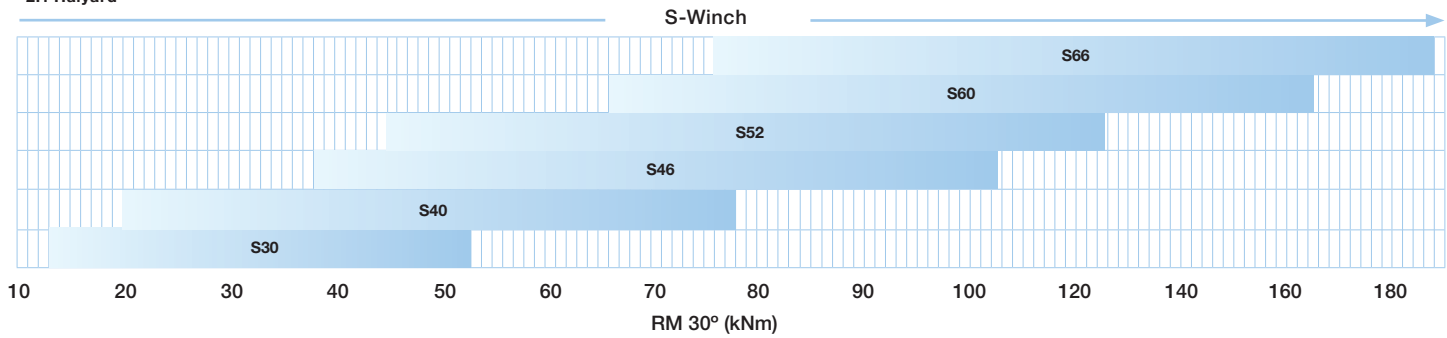
MAIN OUTHAUL - MAST HEAD RIG



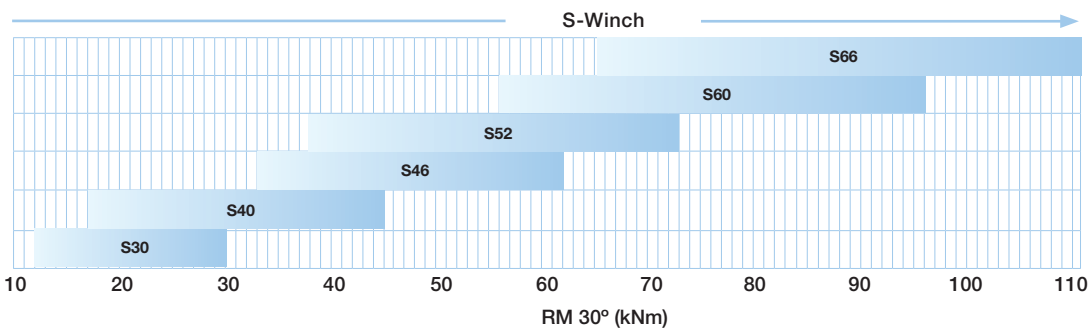
FLYING SAILS

CODE 0 HALYARD

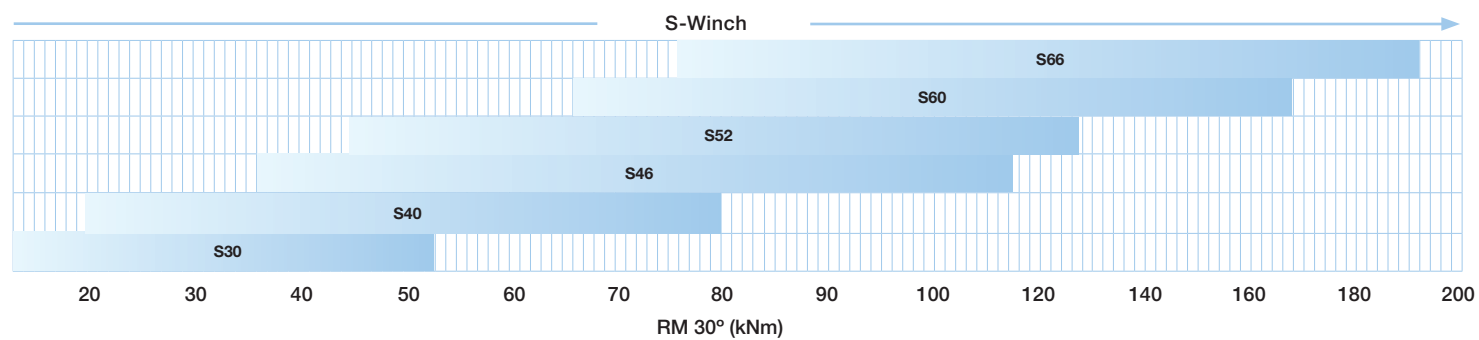
2:1 Halyard



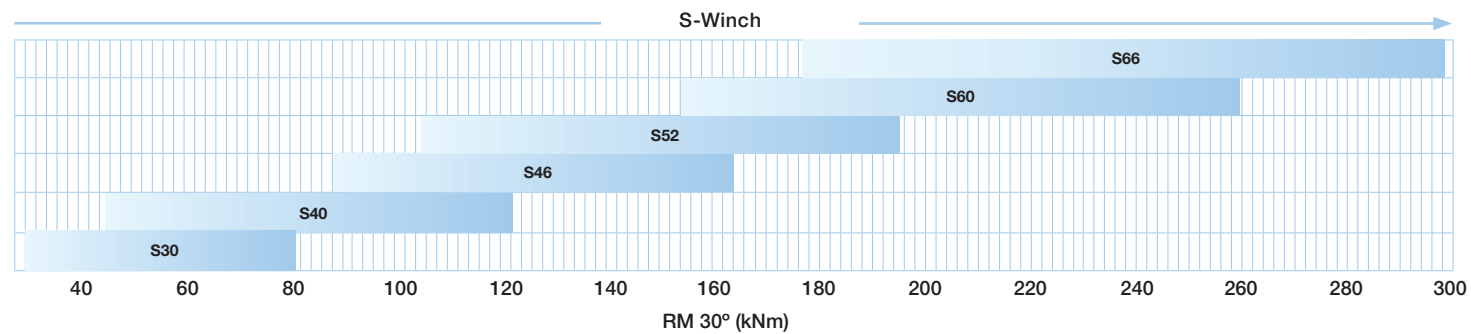
CODE 0 SHEET



SPINNAKER AND GENNAKER HALYARD

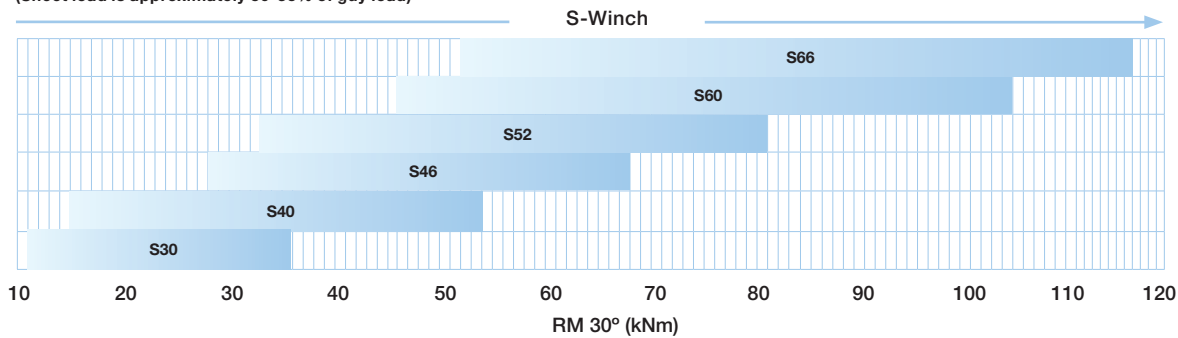


GENNAKER SHEET



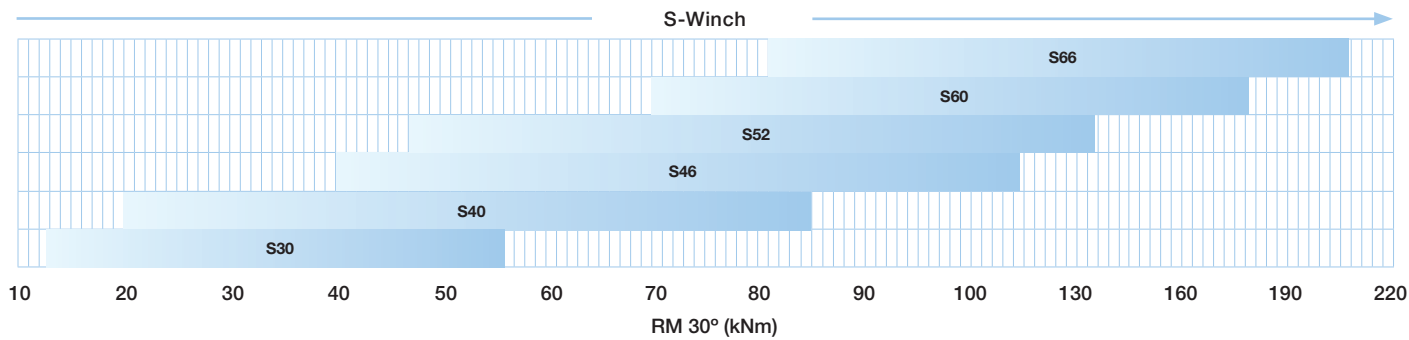
SPINNAKER SHEET AND GUY

(Sheet load is approximately 50-35% of guy load)

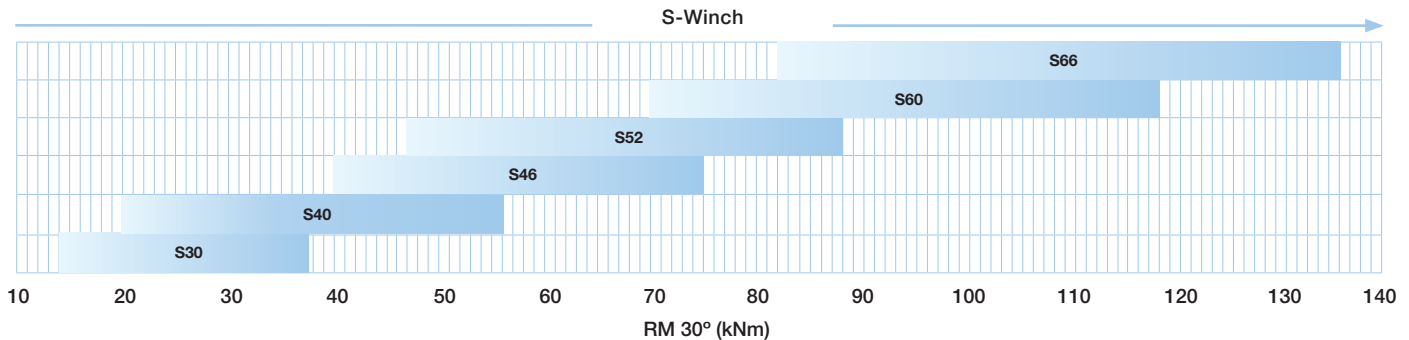


JIB & GENOA

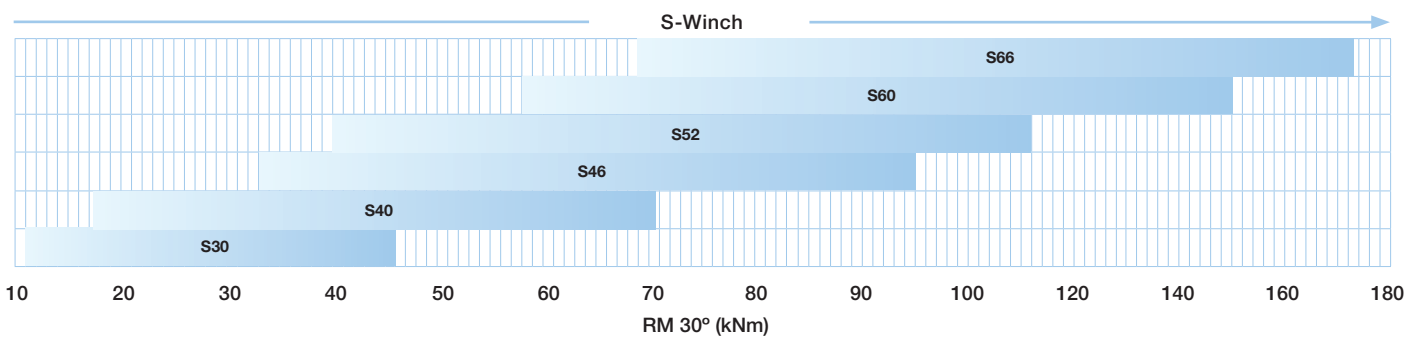
JIB/GENOA HALYARD - FRACTIONAL RIG



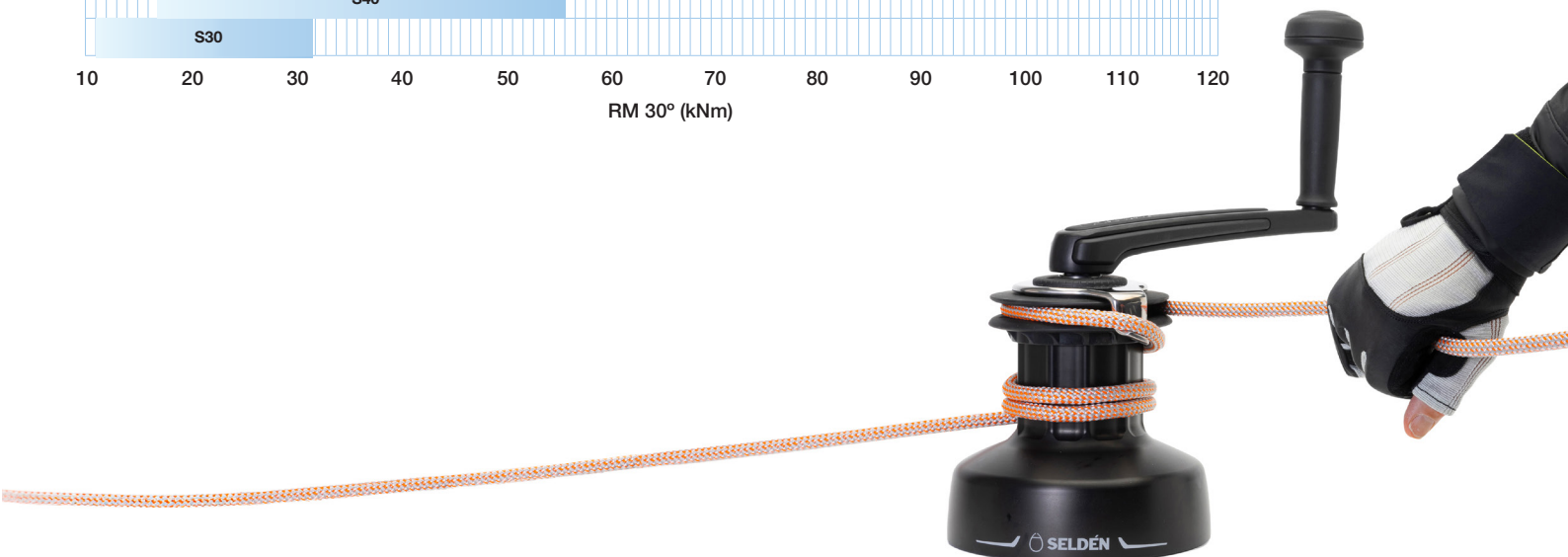
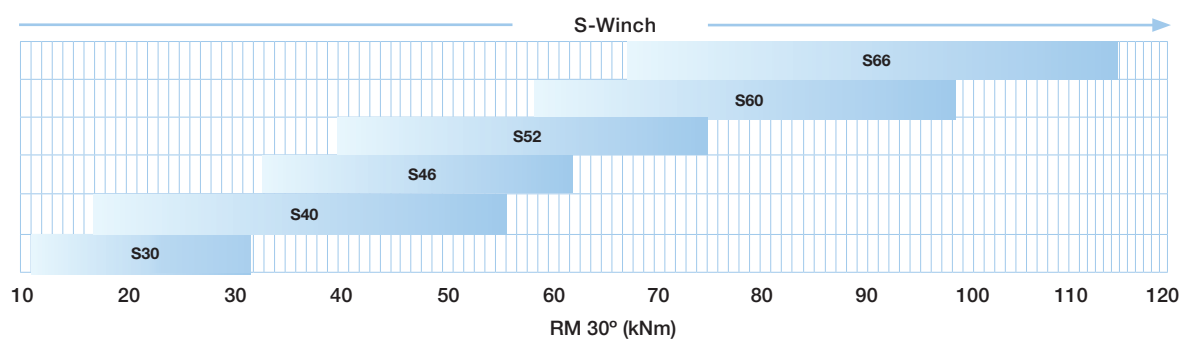
JIB/GENOA SHEET - FRACTIONAL RIG



JIB/GENOA HALYARD - MAST HEAD RIG



JIB/GENOA SHEET - MAST HEAD RIG



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