

## EasyRigging lightweight sailboat rigging

After six months of engineering and practical sailing tests, **SmartRigging** has succeeded in adapting America's Cup and Ocean racing rigging technology to PBO fibre stays for sailboats and dinghies ranging from 4 to 11 metres in length.

The new brand named **EasyRigging** is specifically designed for sailboat standing rigging, head stays and aft rigging such as, check stays, runners, e.g.

The more "engineered" diamond shrouds as used on catamarans as well as jumpers used on fractional rigs are also tested in practice and available .

### The PBO fibre

PBO stands for (polybenzoxazole). PBO is the next generation super fibre, offering the highest strength and modulus of any synthetic fibre on the market.

In fact PBO's strength and modulus are almost double that of Kevlar® (p-Aramid fibre).

PBO is well known for 8 years as a fibre rigging core material and has proven its longevity.



**SmartRigging**, the manufacture of **EasyRigging** cables is already 3 years the runner up in lightweight PBO yacht rigging.

With over 85 boats sailing all over the World, ranging from 6 until 52 meters and as the main supplier of the top teams in the America's cup and the Ocean racing.

**SmartRigging** has proven itself as the perfect partner in the yachting industry.



## EasyRigging proven experience

By using the **SmartRigging** expertise, production methods and innovative use of high-tech materials, **EasyRigging** has been kept extremely affordable despite its high degree of sophistication.

Now all sailboat and dinghy owners can benefit from this new lightweight rigging product which has already proven its quality and benefits in the Americas Cup and Ocean racing.



## EasyRigging endless winding technology

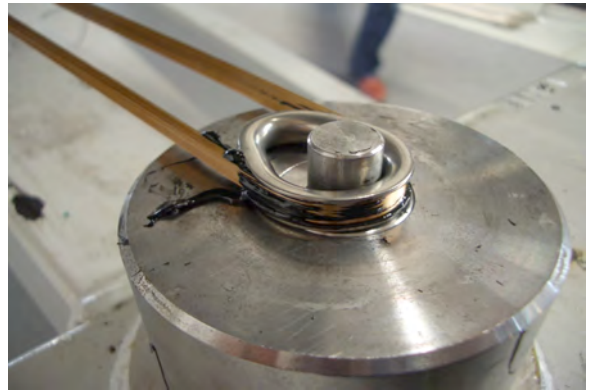
Endless winding is, totally automated process of continuous winding of fibres around two thimbles until the right cable strength or required cable stretch has been reached.

This advanced way of manufacturing is used by the leading fibre cable producers in the World.

**EasyRigging** can ensure that the lightweight end fittings of the cable are always inside the strongest fibres in the World.

With their fibre tension control system

**EasyRigging** can produce the lowest stretch, highest quality and highest break load rigging possible.



## EasyRigging four step production method

The four step way of production used by **EasyRigging** is the most efficient way to produce a cable. The 4 steps are the following.

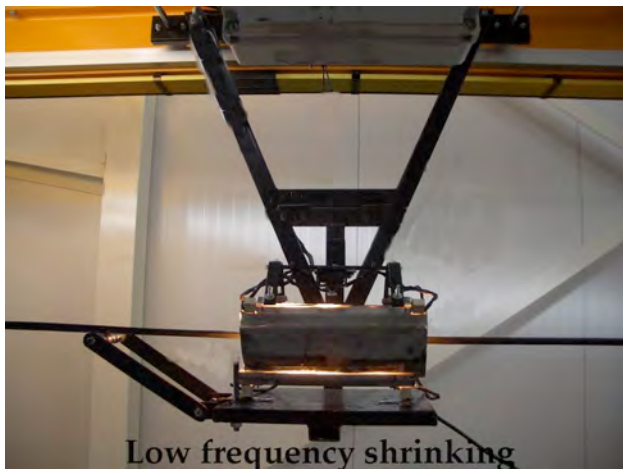
### 1. Endless winding of the stay



After the required length has been programmed, the rigging computer will calculate the amount of fibres and the number of loops required for the specified cable.

### 2. Sealing of the stay

**EasyRigging** uses a very high quality heat shrink to protect and seal the fibres inside the cable. With our specially engineered low frequency shrinking robot we seal the complete cable.



### 3. Testing the stays

All the produced **EasyRigging** stays are stretch tested for quality control with a length measurement accuracy of 0,1mm before shipping.

This way **EasyRigging** can check the cable properties.

In every shipment there is a stretch test, installation and maintenance certificate.



### 4. Shipping of the stays

**EasyRigging** ships over the whole World. A special heavy duty rigging box has been designed to protect the rigging during transport and storage.

All **EasyRigging** stays are labelled at the top for Easy installation.



## EasyRigging Repeatability



Every aspect of the automated endless winding process is tightly controlled in a UV light free environment, where humidity and temperature are measured and controlled.

Fibre tension controls are in place to provide a cable system that provides exceptionally consistent and repeatable performance.

**EasyRigging** cables are manufactured to marine industry leading

standards(Germanic Lloyds.)

The stays are tested during production and before shipping, to provide rigging systems of unsurpassed performance and repeatability.

## EasyRigging cable protection

All **EasyRigging** cables are protected by a black cover of a high-tech heat shrink material. This cover will protect the PBO fibres inside against UV , light, moisture and chafe.



The end fittings are sealed from the environment and protected during the production process. **EasyRigging** can assure water tightness and a long life span.

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## EasyRigging end fittings

A new range of (6 sizes) lightweight end fittings and hardware to match and attach has been designed for this new rigging system.

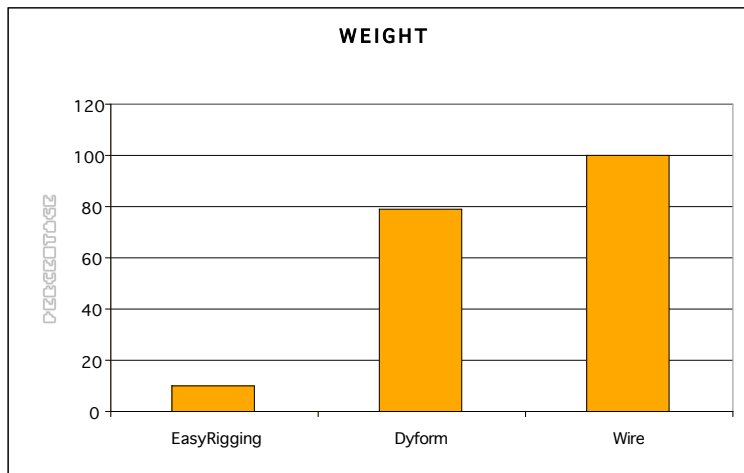


By using heavy duty thimbles, and the custom hardware the **EasyRigging** end fitting system is entirely compatible with all other existing Wire, Dyform and Rod rigging systems. This makes **EasyRigging** system ideal for new builds as well as refits.

## EasyRigging cable weight

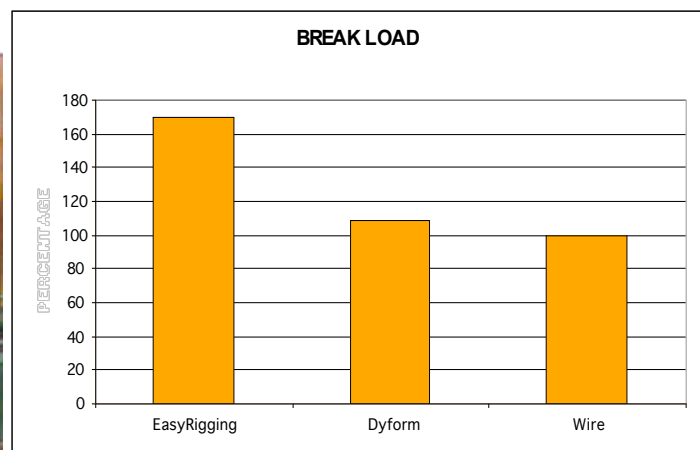
EasyRigging® cables are 85 to 90% lighter than existing Wire or Dyform stays. This guarantees increased stability onboard, which turns into **more speed, increased safety and more sailing comfort.**

EasyRigging will improve the power transfer, top speed, acceleration, better boat manoeuvrability, decreased transition time, reduce pitching and hobie horsing due to the big reduction of weight aloft.



## EasyRigging break load testing

EasyRigging has a 1,5 to 2 times higher breaking load than wire at similar diameters. This ensures improved safety onboard.



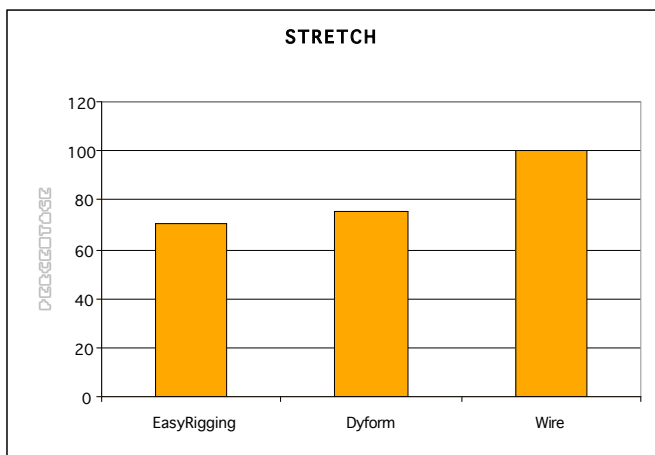
## EasyRigging stretch testing

**EasyRigging** cables have 20% to 30% less stretch than their wire equivalent at similar diameters.

High-tech super fibres as PBO and Carbon have a theoretical stretch at break of 2% or less. In practice a PBO cable will **break at approximately 1% stretch**.

At the SWL (35 to 40% of the break load of wire) the stretch is between 0,3 and 0,4%.

If fibre tension difference rises above 0,6 % means that those fibres will break already at SWL this will **reduce break load, lifespan** and will **decrease safety** on board.

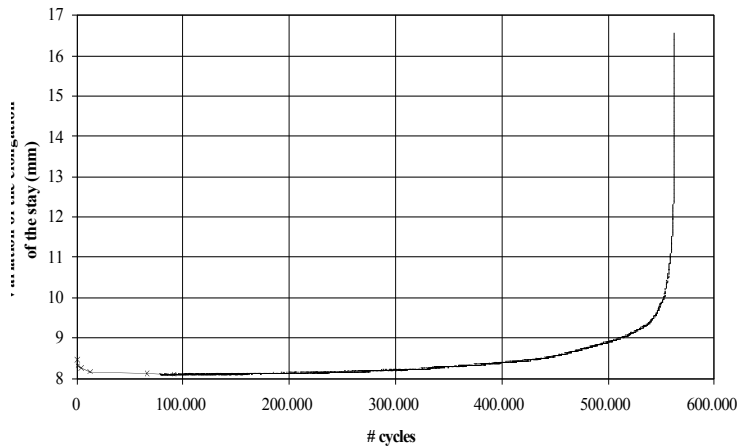


By using the **SmartRigging** endless winding production method **EasyRigging** can control the fibre tension during production within a 0,1% accuracy resulting in the highest break load, lowest stretch and lowest diameter possible.

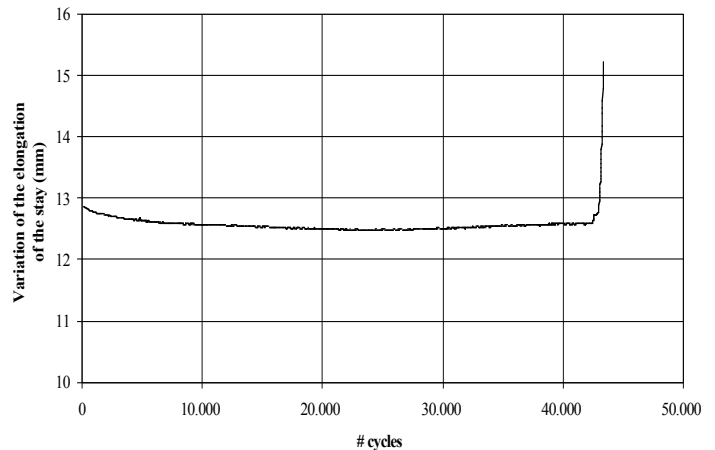
## EasyRigging fatigue testing

When designed on stretch equivalent and used properly, **EasyRigging** cables have a phenomenal **fatigue life**. When cycled between 5 and 35% of breaking strength of wire, **EasyRigging** has a fatigue life 8 times longer than rod rigging, 11 times longer than Dyform and 40 longer than wire rigging.

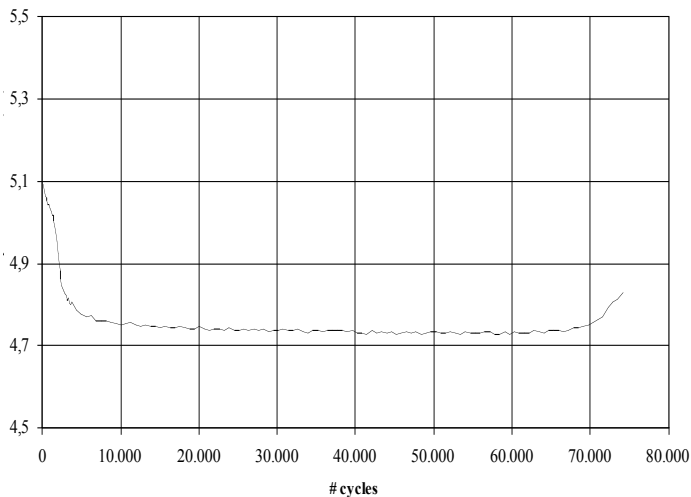
FATIGUE TEST : elongation of the EasyRigging stay (25847/1)  
 (variation between min (0,5 kN) and max (32 kN) loads)



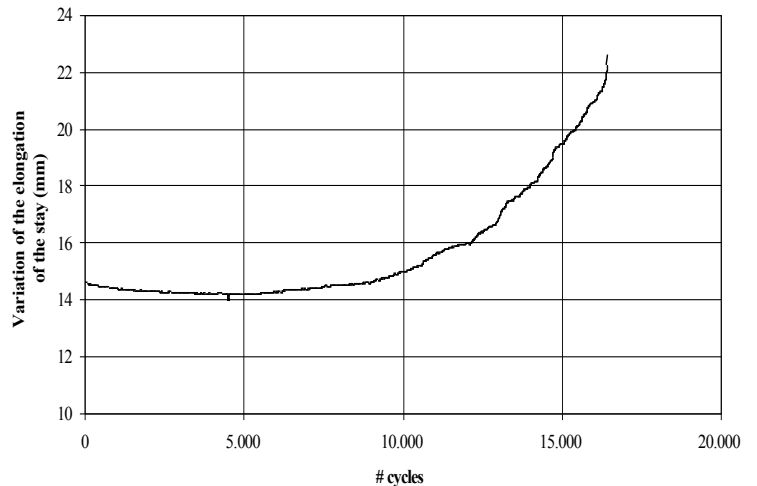
FATIGUE TEST : elongation of Dyform stay (26216/1)  
 (variation between min (0,5 kN) and max (32 kN) loads)



FATIGUE TEST : Rod Nitronic Ni 50 (25733/1)  
 (variation between min (0,5 kN) and max (32 kN) loads)



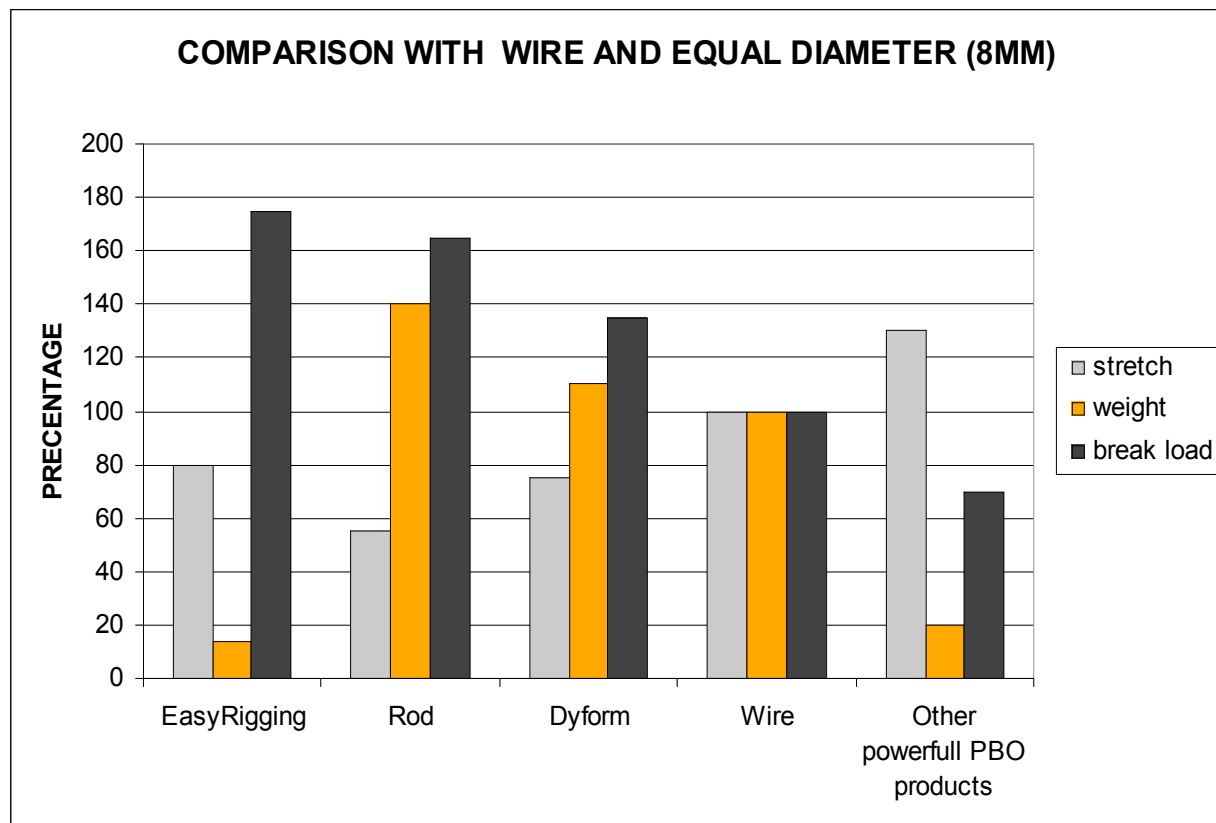
FATIGUE TEST : elongation of wire stay (PR05-030 - 26312/2)  
 (variation between min (0,5 kN) and max (32 kN) loads)



**EasyRigging** and **SmartRigging** fatigue test have been performed at the technical University of Leuven Belgium and are based on real live sailing data.

## EasyRigging Cable comparison tests

SmartRiggings R&D department has preformed the following tests. Stretch test, Break load test and Weight comparison tests between the EasyRigging ER-W8 cable, a 8 mm Dyform, Dash 17 Rod rigging, a 8 mm other PBO Product and a 8 mm wire (as the 100% test standard)



The results shows that **EasyRigging** has the **highest break load, lowest stretch and lowest weight** possible at equal cable diameters of wire, dyform and rod.

This proves that the **SmartRigging** endless winding method with fibre tension control is the best way to guarantee the highest cable quality possible

**EasyRigging** is available in 15 sizes to replace, wire from 2mm to 9mm, dyform from 2,5mm to 8mm and Rod from dash 4 to dash 10 .

**EasyRigging** can provide every yachtsman with the most economical rigging system with the smallest diameter and lowest weight possible.

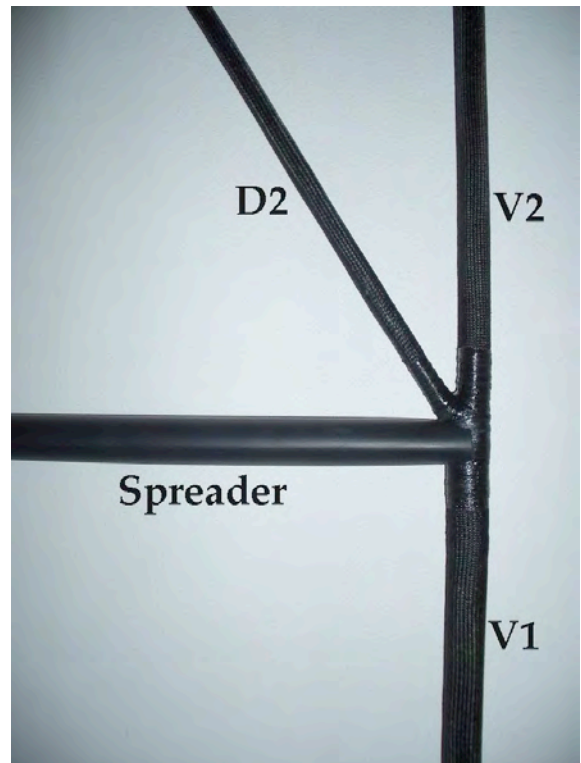
## Continuous **EasyRigging**

**SmartRigging** has developed the continuous rigging system in cooperation with a number of ocean racing teams.

This new system eliminates interruptions in the stays at the level of the spreaders and the different D and V cables are fully integrated into a **single cable** that runs from the V1 turnbuckle upwards via the spreader to the mast (for the D cable) or the top of the mast.

This eliminates the need for pins, strips or tip cups at the extremities of the spreader end, while retaining extremely strong links.

In addition to improving the appearance of the spreader ends, is the **EasyRigging** continuous rigging system also 15% lighter than the traditional pin system.



**EasyRigging** can supply the only fully integrated continuous rigging solution.

This turnkey system has unique technologies incorporated to provide the yachtsman with the maximum weight savings and performance.

Small boats can now take advantage of the powerful benefits of continuous **EasyRigging**. The total weight saving in comparison with a rod system is between 80 and

90%.

Race fans will be happy to learn that the system also reduce windage. A comprehensive new range of hardware (turnbuckles, hangers, e.g.) is designed specially for these new rigging system.

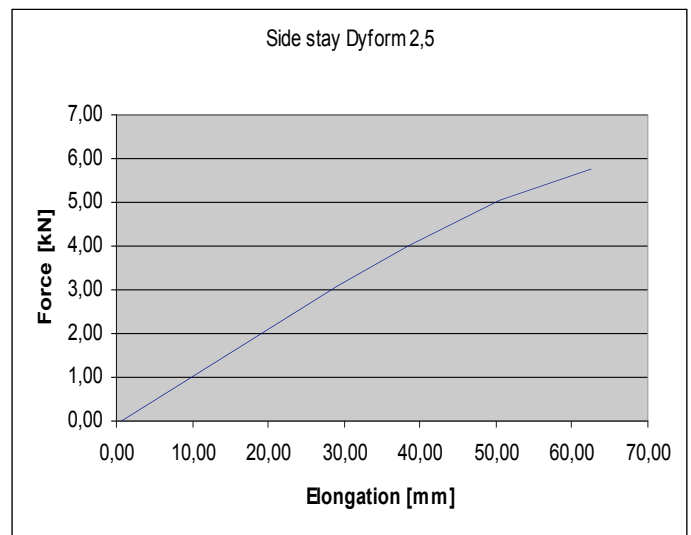
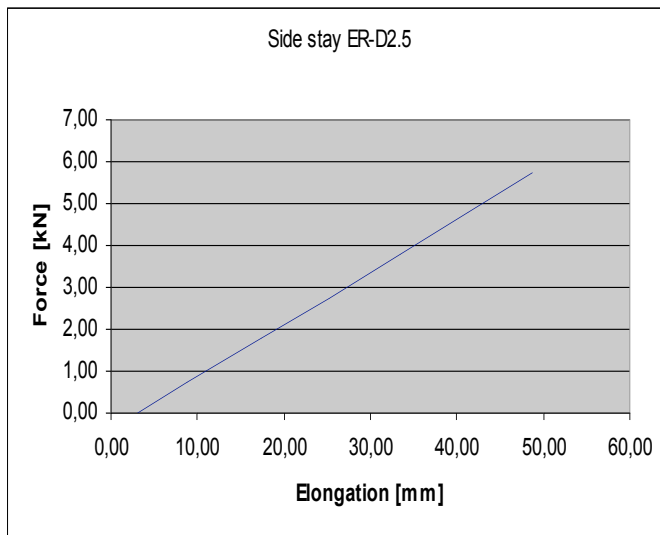
This **EasyRigging** system is entirely compatible with all other existing PBO ,Carbon, Wire, Dyform and Rod systems.

There is no limit in sizes to witch this continuous rigging system can be build.

## Pretensioning the EasyRigging stays

The EasyRigging stays can be tensioned on the same way as Wire, Dyform or Rod. There is no damage done on the stays when overloaded because the breaking load is 1,5 till 2 times higher then wire.

Using the Endless Winding production method the EasyRigging stays consist of unidirectional fibres, the stays have no construction stretch as Wire and Dyform.



In the graphs above you can see when Wire or Dyform is overloaded the stretch will be more and more until the wire breaks. EasyRigging stays have no overload limit.

## EasyRigging Maintenance

While rigging your boat, take care there are no turns, kinks or sharp bends in your rigging, this will reduce the live span and safety of your rigging.

Check your rigging every month on chafe in the places were lines are running.

EasyRigging will advice the customers to ad extra layers of chafe protection on the most vulnerable places.

## EasyRigging Quality control

All EasyRigging cables are tested at the SmartRigging state-of-the-art stretch testing bed prior to shipping.

The cable is stretch tested and pulled from 250 kg till 2 times the Save Working Load.

EasyRigging can assure that the quality is guaranteed and a long live span will be achieved.

Al the EasyRigging cables comes with a stretch test, warranty and a user certificate.

EasyRigging comes with a 1 year limited warranty on material and production faults.

**This makes the EasyRigging the lightweight choice for new builds and refits.**