



**SPECIALISED
EQUIPMENT
FOR YOUR YACHT**







BSI A/S

BSI A/S design and manufacture specialist high-quality marine equipment for cruising yachts, racing yachts, and superyachts. Our goal is to provide the best-in-class products to yachts so that they can handle the extreme conditions nature exposes us to with no compromise on control or speed.

At BSI A/S we continually explore ways to improve our range of products. We utilise the latest materials and invest in innovative technology, to enable our experienced team of sailors and dedicated craftsmen and women to manufacture the absolute finest solutions today and into tomorrow.

Our commitment is to our customers and to growth.

The BSI A/S Group established in 1958 today includes BSI Rigging, Easy, GORI Propeller, Hundested Propeller, Jefa Steering, Moonlight Hatches and Portlights, and OYS Rigging.





MADE BY SAILORS, FOR SAILORS

BSI RIGGING

BSI is a world leading manufacturer and supplier of rod, wire, fibre rigging and components to the marine markets. We currently supply 85% of the rod and wire rigging to OEMs around the world and offer customers an extensive service programme which is supported worldwide through a network of certified centres and technicians.

BSI breathes Danish design and quality to deliver innovative rigging solutions with the Scandinavian touch to its design. The whole process is managed in-house from design, to engineering and manufacture. Sailing yachts around the world have been fitted with the strongest and lightest solutions from BSI. Furthermore, from our factory in Denmark, we supply leading mast manufacturers worldwide.

BSI Rigging was established in 1958, and the range of rigging includes the following.

Rod Rigging

BSI Rod Rigging and hardware solutions are available for cruising, racing, and superyachts. Our goal is, and has always been, to manufacture the best-in-class products with the strength to handle anything a raging sea can throw at them, without compromising on control or speed.

We offer traceability of manufacturing and sourced base materials with AISI 316/EN 1.4401 being the lowest grade we use. As our products are designed, engineered, and manufactured in-house and with over 40 CNC machines, we offer a complete service including FEA and NDT analysis. Our rod rigging and hardware products are electropolished for removal of waste particles ensuring long life and minimum corrosion.

BSI is a chosen supplier of many yards and leading mast manufacturers and riggers. We are ISO 9001 certified and have strict quality control, supported by in house testing facilities and a worldwide service network.

Fibre Rigging

BSI Kevlar and alternative fibre rigging are designed and manufactured primarily for high performance racing yachts and superyachts. Within the range is our superior hardware solutions that are fabricated to enable all composite including, carbon fibre rigging, to seamlessly interface with the yachts styling. BSI works with the best in the industry when it comes to the mast manufacturers to provide a solution that provides the utmost reliability, from a broad range of materials of the highest grade that are most suitable for the application.

OS Wire Rigging

BSI produces high quality wire standing rigging and fittings with guaranteed value for money. The range of BSI products is based on a straightforward uncompromising attitude to designing,

engineering, manufacturing, and distributing a complete range of state-of-the-art rigging hardware. Our product development and design engineering are based on Finite-Element-Analysis, fatigue tests, careful choice of raw materials. There is full traceability, and strict quality control on all elements to ensure the standards that make OS Wire fittings the ultimate choice in wire fittings. The success of OS Wire fittings is maintained by a worldwide network – providing excellent aftersales service.

Service Programme

A number of factors will affect the life expectancy of your rigging; age of rigging, miles sailed, sailing conditions, designed safety factors, tuning, adherence to maintenance schedule, traumatic events such as groundings, knockdowns and crash jibes in addition to the environmental conditions and corrosion.

BSI has developed a Rigging Service Programme including stress preventive maintenance to protect the structural integrity of a yacht's rigging, enhance performance, longevity and safety of the yachts guests and crew while maximising the investment with limited service down-time. Yachts participating in the Rigging Service Programme will have their maintenance records continually updated with the assurance this information is safely secured at BSI Headquarters in Denmark on the BSI Service Log.

No yacht is alike, so BSI offers flexibility in the programme to coincide with the yachts scheduled refit plans. Pre-Service inspections are recommended as this allows both BSI and the yacht to plan and minimise down time.



GORI

GORI Propeller designs and manufactures an extensive range of folding and custom made propellers for sailing boats around the world. Our propellers offer low resistance with effective manoeuvrability along with patented single and overdrive technologies. GORI Propellers come in 2, 3 or 4 blades and meet the needs of leisure, commercial and racing yacht consumers, and are the preferred supplied to many OEM and custom yards.

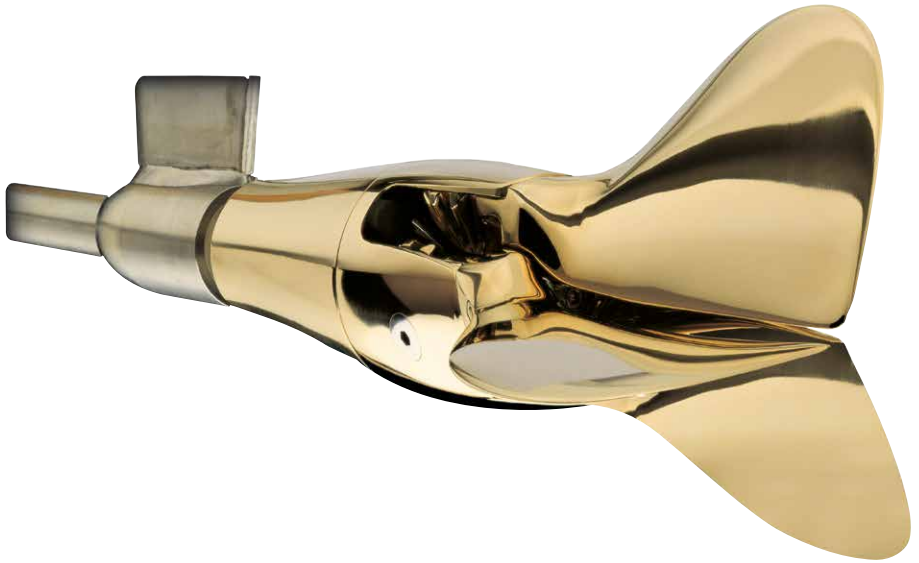
Our Propellers

2-Blade Folding Propellers

The 2-blade GORI Folding Propeller is designed for sailing yachts fitted with engines up to approximately 60 hp (44 KW). The geared blade design ensures the blades open and close together, giving less vibration ahead and astern. Under sail, the blades close simultaneously. The 2-blade is available in seven diameters from 11.5" to 18" for shaft and saildrive installation. Available in right-hand and left-hand rotation. Tests have shown that the efficiency of the 2-blade GORI Propeller in forward is comparably improved than most 2- and 3- blade feathering and folding propellers.

2-Blade Racing Propellers

With the GORI Racing Propeller everything is geared towards speed, from the intricately designed aquadynamic shape and the ingenious folding mechanism, to the precision engineering. These features reduce drag to an absolute minimum when folded while maintaining maximum effect under engine power, for this reason, the GORI Racing Propeller is the choice for many One Design racing yachts. The racing propeller is suitable for shaft and saildrive installation and can be found on yachts from 30 footers to Maxi's, IMOCA's and ULTIMs.



3-Blade Folding Propellers

The 3-blade GORI Folding Propeller marks a technological and functional leap forward in the development of propellers for sailboats. It is the only folding propeller operating the same pitch in forward and in reverse, as the blades pivot 180 degree. It is now possible for sailboats and motor-sailers to have folding propeller's speed advantages under sail, combined with the fixed propeller's thrust capability when motoring. The 3-blade GORI Propeller is offered in diameters from 15" and up to 30", for boats fitted with engines from approximately 10 hp (7 KW) and up to approximately 300 hp (221 KW). Tests by leading yachting magazines have shown that the 3-blade GORI Propeller has greater efficiency both forward (+11%) and reverse (+6,5%) than a feathering propeller.

3-Blade Overdrive Propellers

The 3-blade GORI Overdrive Folding Propeller function adds a new dimension to motor-sailing. The helm can select the propeller pitch and profile in the water while sailing forward by regulating the yacht's shift and throttle control without the need of vulnerable hydraulics or complicated mechanical devices.

This excels when motoring in fair weather or when using the engine under sail, Overdrive provides the same speed at lower rpms resulting in less engine noise, less vibration, and better fuel economy.

4-Blade Propellers

The 4-blade GORI Propeller has the same features and operates the same way as the 3-blade GORI Propeller, with the blades pivoting 180 degrees between forward and reverse, providing the same thrust in both directions. This is the lowest drag of all 4-blade propellers on the market. Sailors use a 4-blade propeller when there is not enough blade area on a 3-blade propeller or when there is not enough room for an optimised 3-blade propeller, and typically from 200 hp upwards. The 4-blade GORI Propeller is available in sizes from 21" through 32" diameter, in both left-hand and right-hand rotation.







HUNDESTED PROPELLER

Hundested Propeller manufactures controllable pitch propellers, controllable pitch gear boxes, regeneration solutions and thrusters, meeting the needs of the large yacht, superyacht and commercial fishing and workboat industry. Hundested manufacture CP Propellers from 150 hp to 4500 hp, CP Gear Boxes from 300 HO to 4500 hp and Thrusters as tunnel units from 25 HO to 2700 hp and retractable swing units in four models from 25 hp to 200 hp. Hundested is represented in US by Hundested Propeller US.

Hundested Propeller was established in 1921 and the range includes the following.

CP Propellers

Hundested Propeller design and manufacture two main categories in our propeller programme Variable Pitch and Multi Pitch. The propellers range in powers from approx. 150 hp up to 4500 hp depending on engine speed and reduction ratio of the gearbox. The diameter of the propellers ranges from approx. 750 mm up to 4000 mm. We manufacture propeller shafts in one piece in lengths up to 12m.

Hundested Propeller Marine Gear Boxes

Hundested Propeller has three main categories in our gear programme: Standard gears, Hybrid gears and Custom gears. The gears range in reduction ratio depending on single reduction or double reduction. Single reduction range is a ratio from 2,030 to 6,580. Double reduction range is a ratio from 6,050 to 12,600. All products are custom made to order. We manufacture propeller shafts in one piece in lengths up to 12m.



Hundested Propeller Pitch Control Units

Hundested Propeller pitch control units are shaft line units designed for installation after of a standard reduction gear box without built in pitch control. This system has many advantages including being used in combination with a conversion from fixed into a controllable propulsion system. They are effective if a noise and vibration free installation is required, and if a reverse function in combination with a CPP system is required.

Hundested Propeller Thrusters

Hundested Propeller has been making fixed tunnel thrusters since 1985 and retracting swing thrusters since 1989. We can supply four different tunnel models ranging from 20 hp and up to 2700 hp and four swing models ranging from 25 hp to 200 hp.

Hundested Low Resistance Propulsion Systems

The Hundested Propeller RPS (Retractable Propulsion System) and SPS (Saildrive Propulsion System) provide minimal resistance when under sail and during regattas. The systems are light weight, have CP Propellers, require minimum space inside the hull and engine room and can be positioned near the centre of the vessel, for optimum weight distribution. They are highly efficient when motoring and replace a normal stern propeller.



JEFA STEERING

Jefa Steering Systems design and manufacturer innovative steering solutions including autopilots and is the go-to brand for the largest production yacht builders around the world. The Jefa innovative steering solutions and twin rudder traveller system are compatible with all high-end brands of autopilot electronics and use less power compared to other brands. The systems offer customers superior quality products at optimal cost price, delivery, and installation time.

Jefa Steering was established in 2001 and includes the following.

Drive Units

Jefa Steering direct drives, compact autopilot drives, tiller levers, linear drive units, sprocket drives, and transmission drive units are some of the most efficient and strongest on the market.

Hydraulic Pedestal

The H200, H300 and H400 hydraulic pedestals from Jefa Steering. Jefa Steering introduces a new style integrated pedestal design. All major functions for the modern helmsman are integrated in one central steering and control centre. The integrated engine control offers easy installation and quick access. The integrated compass offers easy and clear readings without the need of a separate binnacle.

Jefa Steering Wire System

Pedestals, guides, chain and wire conduit, sheaves, quadrants and travellers for installing a Jefa Steering wire system.

Jefa Steering Wheels

Steering wheels from Jefa Steering, in stainless steel, wood rimmed, teak and Carbon rimmed, carbon, aluminium and GRP.

Jefa Steering Transmission System

When a direct link from the rudder to the pedestal via a rack and pinion system isn't possible, the best, most direct and strong mechanical steering system to go for is the Jefa Transmission Steering System. The result is a steering system which can be far away from the rudder, but with the same precision and feel as a tiller steered boat.

Rack & Pinion System

Pedestals, draglinks, stopring, rack & pinion geometry and extension tube. All the parts needed to complete the Jefa Steering Rack & Pinion System are available in one place.

Accessories

To complement the Jefa Steering Systems, our products are available with cockpit tables, compasses, engine control mechanisms and instrument pods for seamless integration onboard.





OYS

OYS is one of the world's leading suppliers to the superyacht and high-performance yachting market. We have an established reputation for delivering high-quality rigging to high profile superyachts. We are designers, engineers and project managers who specialise in customised solutions using the very latest materials and manufacturing techniques to provide standing rigging solutions.

We are proud to be the chosen supplier of bespoke standing rigging solutions to award-winning superyachts. Our reputation has been built through a proven record of working on distinguished projects and with well-known yards around the world.

We use a network of service agents who work with a dedicated in-house project manager to deliver projects on time, within budget and to the highest possible standard customers have come to expect.

OYS was established in 1998 and includes the following.

Rod Rigging

OYS manufactures Nitronic 50 Rod standing rigging solutions and associated hardware that enables the rigging to interface seamlessly through the yacht's deck.

Nitronic 50 is an austenitic, nitrogen strengthened steel providing a combination of high corrosion resistance. It has structural properties approximately twice the yield strength of comparable commercial metals such as 316 and 316L stainless steel. In addition, Nitronic 50, offers very good mechanical properties at both elevated and sub-zero temperatures and, unlike many





austenitic stainless steels, Nitronic 50 does not become magnetic when cold worked.

Manufactured in cold drawn form, Nitronic 50 is available in coiled form (straightened and unstraightened) from -0004 to -0060, and in rod form from -0076 to -1000, in standard lengths from seven metres to 16 metres. Nitronic 50 bar is delivered in a highly polished centreless ground finish as standard, whilst coil is available in a variety of finishes.

OYS owns the largest rod rigging head press in the world. The press is over 35 tonnes, stands 4m tall and runs on hydraulic pressure up to 600 bar. The press can head standing rigging up to an impressive breakload (BL) of 1,600,000 lb.

Kevlar Rigging

OYS manufactures Kevlar® standing rigging solutions and associated hardware that enables composite rigging to interface effortlessly with the yacht it is being installed on.

Why Kevlar® as an alternative to rod rigging?

Kevlar® is one of the most frequently used material for composite rigging due to its known and reliable performance characteristics and its acceptable cost trade off against traditional materials, in the same applications. At one fifth the weight of steel, its low weight is a major attraction in rigging applications.

The densely packed core and construction, ensures that cables have high strength, high modulus, and low creep. Our special high density polyethylene cover provides excellent resistance to both abrasion and UV.

Service Programme

OYS Rigging is supported by a network of Service Rigging Agents who look after our rigs in the market and who carry out any work on our behalf.

It is as important to maintain and service a yachts rigging as it is the engine, especially rod rigging, as it consists of many critical highly tensioned moving parts, some of which are often never inspected due to their position on the rig. Failure to regularly inspect or service such hidden parts could result in you sailing with a potential problem.

Therefore, it is essential that all rigging components, subjected to loading and movement are correctly lubricated and maintained, hence the requirement for servicing.

Areas of rod rigging susceptible to fatigue include the cold heads on the ends of the rods, which often exhibit increased localised stress within the end fittings, a location which is hard to assess without professional service work being performed. We recommend the OYS Service Programme for all yachts, including those rigged without OYS equipment, to help prolong the life of your yacht's rigging.



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