

## Description of a shock-absorbing Keel-Protection, Keel-Pro, for sailingboats

Background: Svenska Koster is a boat-company operating from Uppsala in Sweden. We started up 1988 and are mainly working with repairs and inspection of sailing-boats, often in connection with groundings. Our customers are in Sweden, Finland and Norway and also, of course the insurance-companies in Sweden. During many years, our work of repairing has given us an insight into how the damage caused by grounding effect various boats. Svenska Koster has also carried out repairs approx. 120 boats. It is obvious that you could minimize the damage by protection of some kind. This work has resulted in a keel-protection, named Keel-Pro. For boats under construction a recess will be made at the bottom of the keel, allowing the thickness of the keel-protection to be 16-18 cm for a sailingboat of about 40 feet. The length of the keel-protection is around 17 cm. The thickness is corresponding to the breadth of the keel which depends on the model.

This keel-protection consists of a special rubber-compound, resistant of time. Inside the rubber-shield there is a hole connected to the outside, downwards through openings, as well as upwards and to the side with additional openings. In connection with groundings, the rubber will compress. The inside hole will shrink up and allows the water to splash out through the openings and the boat will slowed down.

The power this takes stays under water, but the remaining power is transmitted to the hull, the rigging etc. The total power reduction will be up to 68 % in 5 knots with a boat of 5 tons.

This construction will also result in less or none repairing of the keel-blade or the hull.

This keel-protection will be glued with a special glue, that also can be used as a putty for smoothening the joints. But you can also use NM epoxy 705 Elastic from Nils Malmgren in Sweden. We can sell this together with the Keel-Pro

The insurance companies are supporting our idea. Patent for this invention has been granted.

Sailingboats can be in great demand in Sweden and Finland but also, of course, in some other countries where you have coralreeves and groundings.

All insurance companies have agreed on that damages from groundings and the

costs have increased and there are some discussions about varying premiums for different brands depending on costs of damages.

Svenska Koster has today developed a keel-protection for sailingboats mounted for an outside position. Arcona Yachts has a recess for the Keel-Pro. But the protection is the same if the mounting is outside the keel or recess.

The total numbers of Keel-Pro until 2013 are about 220 pcs