

Part 1 (2)

## **DESCRIPTION OF A SHOCK-ABSORBING KEEL-PROTECTION FOR SAILING-BOATS.**

Background: Svenska Koster is a boat-company operating from Uppsala in Sweden. We started up 16 years ago. We are mainly working with repairs and inspections of sailing-boats, often in connection with groundings. Our employers are all of the insurance companies in Sweden. During these years, our work of repairing has given us an insight into how the damages caused by groundings effect various boats. Svenska Koster has so far carried out repairs on approx. 110 boats. It is obvious that you could minimize the damages by a protection of some kind.

This work has resulted in a keel-protection/collision-protection.

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 sailing-boat of about 40 feet. The length of the protection should be between 20-25 cm. The thickness is corresponding to the breadth of the keel, 20-30 cm.

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 sides with additional openings.

In connection with a grounding, the rubber will compress. The inside hole will shrink up and allows the water to splash out through the openings and the boat will be 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 between 30-40 %.

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

This keel-protection will be glued with a special glue, that also can be used as a putty for smoothening the joints.

The insurance-companies are supporting our idea. Patent for this invention has been granted at the "Patent and registreringsverket."

Sailingboats can be in great demand here in Sweden and in Scandinavia.

There are many ways of profiling a product. Nowadays many car-companies are focusing on security. There should be the same thinking concerning boats. Up to now, there are no factory-made boats, supplied with a keel-protection minimizing groundings. All insurance companies are agreed on that the damages from groundings and the costs have increased and there are discussions about varying premiums for different brands depending on costs of damage in conformity with what is customary for cars.

Svenska Koster has today developed a keel-protection for sailing-boats mounted for an outside position. This arrangement is supported by the insurance companies by a reduction. If the keel-protection can be proved useful, it could give a permanent reduction of the premium at the time that you take out an insurance.

This could be a strong sales-argument for sailingboats and could further profile you as an innovative company.

Svenska Koster is willing to discuss a very favourable alternative for all of your boat-types, and is looking forward to have a discussion with you about what exactly our keel-protection would mean for your boats specifically.

If you wish, I am willing to pay a visit to your shipyard.

Sincerely,

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Part 2 (2)

The result of sailing with the keel-protection, the Keel-Pro in 2006.

Two groundings.

I have been talking to the two boat owners who mounted the keel-protection before the sailing season 2006. The following questions

were asked:

1. Have you noticed any negative difference concerning sailing capacity?
2. Have you run aground?
3. If yes, at what speed?
4. Was it a hard hit?
5. Did you get any damages on your boat?
6. Did your keel-protection get damaged?

There are two boat owners who ran aground. One had a Maxi 108 and kept the speed of 4 knots. The owner did not observe any damages on his boat or on his keel-protection. The puttying came loose a bit, which must be taken care of. Although it was a direct hit, it was experienced as a smooth touch. The boat owner can not notice any difference when it comes to sailing capacity. He feels more secure now, when he has got the keel- protection.

The other boat was an Omega 36, that ran aground with a big bounce. In spite of the hard collision, the boat bounced off the ground and stood still. The boat was towed away astern. This rough treatment gave no damages to the keel-protection. The boat has been examined and there are no damages after this grounding. The speed was estimated to 4-5 knots. The owner is more pleased with the performance of his boat this year, presumably because he has got a new rig. Accordingly no impairment of the sailing qualities concerning the Keel-Pro. He considers the investment of the keel-protection was worth while.

There are actually three boats that have run aground with the keel-protection. The first grounding took place in 2005 with an Albin Stratos in about 5 knots. The owner has talked about that incidence himself, under the heading; "Resultat av krocktest 2005", on [www.svenskakoster.se](http://www.svenskakoster.se) . The selection is small but distinct. Three groundings and no damages on the boats, but a smaller damage of the keel-protection in the first example, 2005. This damage was easy to repair. The glue I used was of the same kind as the glue I used for attaching the rubber to the keel.

All other boat owners who have got their boats equipped with the Keel-Pro, and did not run aground, have not noticed any impairments of the sailing performance.