



The Genesis of a Class

by Peter Norlin

In August 1979, I was sitting on the deck. We were sailing Admirals Cup in Cowes, when a very small boat came sailing around the moorings of the Cowes Week racing yachts. This was the first time anyone had seen such a little boat. The helmsman, a young German guy, was sitting inside the boat, and only the head was seen in the cockpit. He was the founder of this type of boat. The boat was narrow and looked like a scaled down 12 meter yacht, in terms of both the sailplane and the shape of the hull where the approximate dimensions were LOA = 3.5m and the beam was 0.8m. This boat had a lot of followers like the Illusion, the Shadow, the Millimeter, and the Defender, etc. All of them went under the name "Bath tub twelve's". They were good as long there was little wind and flat sea.



At the same time I was working in the towing tank with Admiral Cup 12 meters. The trial horse, which is a boat that I designed as close in shape to the existing twelve's as possible, to be compared with my experimental design. This experimental boat was a smaller lighter 12 meter to suite the light winds in Newport, Rhode Island. The trial horse (scale 1:10) was built in series, to be sailed with a radio control. We were 5-10 sailors who had great fun sailing these boats in regattas. One of them was Odd Lindquist who sailed his own design. Odd got an inquiry, from one of the participants, to design a 1/5 scale of a 12 meter (or twice the size of the 1/10 scale radio control boat). Odd designed the "Odd 1/5" that sailed for the first time in 1982. Very soon after that, Jan Törmfeldt asked me if he could build a 1/5 scale mini twelve of my design. While working with the tank testing and sailing with the radio-controlled model 12 meter, I became familiar with the scale effects. I decided to scale down a 6 meter hull, which is proportionally heavier and bigger than a scaled down 12 meter, and use the scaled down 12meter rig and sails, which is a little lower than the scaled down 6 meter rig. I chose the depth to be 1 meter, compared to a 1/5 scale down 12 meter that gives a depth of 56cm and a scaled down 6 meter that gives a depth of 66cm.

All these choices were due to the scale effect from the wind, which is the square root of the inverted scale. This means that the same wind for a big boat is much stronger for a small (or model boat). The square root of 10/1 is 3.16, so wind strength of 3 m/s corresponds to 9.5 m/s for the model twelve compared to the full size twelve. (The square root of 2.5/1 is 1.58. Thus the wind is 1.58 times stronger for a scaled down 6 meter, and the square root of 5/1 is 2.24 so the wind is 2.24 times stronger for a scaled down 12 meter, compared to a mini 12). I designed the boat to float as deep in the water as a 6 meter in racing trim with all sails and crew onboard. To achieve this, I had to take out approximately 35kg from the ballast.

Jan Törmfeldt started to build the Norlin Mk I. He made extraordinary work regarding the anatomy for the helmsman. With a lot of work and carefulness, he had 2 boats ready for the spring 1983. This new "mini twelve" proved to be a very good sailing boat that could coop with most conditions. The first two boats had a fin keel with a bulb. The third and boats built after that had internal ballast of eight to nine retractable lead pieces. This made the boat easy to move, so the hull could be placed upside down on the car roof with the lead stored in the rear of the car. We sailed in different places around Stockholm and on the waters inside Stockholm. The fleets were situated in Saltsjöbaden and in Waxholm where Håkan Södergren built up a fleet. The boats participating were the Odd 1/5, the Södergren Mark I and II as well as the Norlin Mk I. The Södergren boats were "scaled down 6 meters."

After some time, the class started to grow, and as the Norlin Mk I was designed to the following thoughts and items, I proposed the following MINI 12 RULE to the Swedish Sailing Association:



The rule is based on the existing International 12 meter rule in scale 1/5 with the following changes.

Mini 12ia regler.

Baserade på 12ia reglerna 1:5 skala
med följande ändringar

- ① Depl. regel. $(0.2 \text{ LVL} + 0.06)^3$.
- ② Min Frihöjd - max avdrag .292 m.
- ③ Med 35kg extra balt skall
våren följa på KVL.
- ④ Max djup. 1.0 m.
- ⑤ Segelplan o segel mått.
 1. Mätdeck 36 mm över skandäck
 2. Höjd segelplan över mätdeck 5,0 m.
 3. " För Δ " " 3,75 m.
 4. Stodda 72 mm
Latta 104 270 mm
" 203 360 mm
 $\frac{3}{4}$ höjd bredd storsegel 41% B
 $\frac{1}{2}$ " " " " 68% B

Displacement Formula: $(0.2 \cdot |w| + 0.06)^2$ (scaled down from the 6 meter rule)

Freeboard, when calculating the rating max deduction: F = 292mm (from the 6 meter rule)

The boat shall float at her dwl with an extra ballast of 35kg.

Max Depth = 1m.

Sailplane and Sail Measurements: (from the 12 meter rule)

Measurement deck 36mm above covering board

Mast Height: 5m (above measurement deck)

Fore Triangle Height: 3.75m (above measurement deck)

Upper and Lower Battens: 270mm

Intermediate Battens: 360mm

Top Width Main: 72mm

$\frac{3}{4}$ Width Main: 41%

$\frac{1}{2}$ Width Main: 68%



Scantling Rule:

- Regarding material: Like the 12 meter rule
- Sandwich material only in the deck
- Deductible internal ballasts at least 8 parts.
- Unsinkable
- Min glass weight $900 \frac{\text{kg}}{\text{m}^2}$. Kevlar and carbon fiber not allowed

The reason for the 35kg extra measurement ballast is as follows:

- My wish was to have a boat floating at the same racing trim as a 6 meter.
- As the crew weight plus sails etc. of a 6meter is approximately 500 kg.
- This weight scaled down $500 \div 15.625 = 32\text{kg}$.
- $32\text{kg} + 35\text{kg}$ taken out from the ballast gives a crew weight of 67kg, so the boat will float when racing at about the same trim as a 6-meter.

This rule was the unofficial rule until 1986, when Odd Lindquist, Håkan Södergren, the Swedish Chief Measurer Lennart Olsson and me, wrote (after a lot of meetings and work) the first official Swedish Mini 12 Rule that came in force around 1988, in the Scandinavian Sailing Association. Claes Hultling, a strong character of the class brought the Class to ISAF who accepted the rule 1993. In 1986, Imma Björndahl started to build the Södergren Mk III, and the exchange of sailing started between Sweden and Finland. The Norlin Mk I was changed to Mk II in 1986, and the Norlin Mk III was designed 1987.

Before the unofficial 1988 World Championships, in Helsinki, the mini 12 sailed with an overlapping Genoa. From a suggestion from Claes Hultling, the jib was shortened to 100%. The reason was that it was very hard for all sailors including the disabled sailors to tack. The foot of the jib was then changed to 110% after an investigation among the sailors. The shorter jib is good because it opens the racecourse and may be more important as it avoids a lot of accidents due to bad sight behind the Genoa.

The fact that the boat is very insensible to weight of the crew is due to the longer waterline with a heavy crew, without increasing the wetted surface too much. Many times you can see very different persons on the podium after a long regatta, from light to heavy, from disabled to able bodied, and from man to woman. This little racing boat is a thrill to sail. The sailing feeling is obvious as the boat doesn't lose much when tacking. It is your tactics and wind seeking ability that becomes very important.