

49er class Measurement Audit - Vilamoura 2023

At recent regattas, there has been boat park talk about variations in boats.

The builders have always worked together to try and make the boats as consistent as possible; we take this very seriously and decided to measure as many boats as possible to check for any differences.

The 2023 Europeans was an ideal opportunity for a build audit which is done regularly by the copyright holder but has never been led by the Class & builders or been conducted before on this scale.

Over recent years, questions had been asked about possible variations in hull shape, maststep and forestay position, maststep height, chainplate height and wing width.

A set of jigs were developed to be able to measure these and other details in a detailed way such that any differences could be realigned if the results showed a need to do so.

On the first full day every measurement template was used to take every measurement possible with those templates.

Hull Shape

Upon analysing the first day's data, it became clear that the hulls were as close to identical as possible.

Hull measurement was from the centrecase aft as this was deemed the critical area on a boat that is always planning.

There was only a +/- .5mm difference in the average between the 2 builders, which is an outstanding result.

The 49er hulls are built from moulds that are all made from the same plugs and all built by the same mould maker to ensure consistency.

There had been rumors about some hulls having been altered. These boats were targeted and measured. They were found to be 100% as per design with no sign of any alteration.

After looking at the results from the first day, it was decided to concentrate on the deck measurements.

Deck details:

We found 3 boats where the wing width was outside tolerance.

These were older boats and were found to have wear in the wing bolt holes through the gunwales which was causing the wings to slide outwards on the wing underside mouldings.

These boats were altered in the evening such that they now comply.

There were variations in all other measurements, but all were within the tolerances that the builders must build to.

While there was a range of measurements for each item, there was no indication that either builder was using the building tolerances to generally optimize their boats.

Comparisons were done by averaging the measurements for each builder while also taking note of the range for each item.

Summary:

The results showed amazingly little difference between 2 builders who are building boats on different sides of the world.

As a result of the project, the builders have agreed to work to targets in future rather than be happy to be within the tolerances.

As outlined the above, the builders are using this data to improve processes further to ensure boats are even closer in future.

It is planned to undertake more regular builder audit measuring at regattas to give the builders more regular feedback and spot any emerging variations quickly.