

Deck Sweeper report from the Australian F16 Association to the International F16 association, 8 Feb 2021

Following is a summary of deck sweeper sails on Viper F16s compiled by the Australian F16 Association in consultation with its members.

Overview

After trialing the deck sweeper on a Viper it was apparent early on that the characteristics of the deck sweeper type sail was beneficial to the Viper. The 16ft length with the 2.5m width creates a boat that is highly powered for its length. We don't believe the weight of the viper being 7-8 kgs heavier than the class minimum of 123 makes much difference. The key is the hull length and the propensity of the F16 to nosedive on bear-aways, reaching, offshore and even under kite in strong winds 16+ knots.

We requested that Australia move to deck sweepers to embrace the sail technology that was showing great results in the F18 and A class fleets. In March 2020 the members of the Australian Association at the AGM voted to omit the luff length rule in the F16 rules for Australian events.

The international association gave its blessing as a trial period for the Australians to sail with the deck sweeper sails and analyse the results.

After the approvals 8 Deck sweeper sails were built to augment the 2 that were already on boats for training and mixed fleet racing with F18s. Beau White had a Deck Sweeper built by Goodall Designs way back in 2018.

Technical and Sailing impressions

The first Deck sweeper had the same head size as the original F16 8.1m Luff length and the foot was shorter by about 15 cm. The sail provided excellent acceleration in gusts. The greatest difference with the deck sweeper was the ability to sail the boat in higher wind without the dreaded nosediving. Off the breeze the boat carried the bow noticeably higher and crews needed to stand further forward in the lulls to keep the boat trim. The immediate reaction as a skipper when sailing with this sail was the reduction in the mainsheet load. It dropped by 30% and we needed to be aware not to oversheet the main.

Crossing the boat

The caveat of the deck sweeper is crews crossing the boat in gybes. We expected this to be an issue and was always the cause not to commit to the deck sweeper. The smaller trampoline on the F16 provides little space for two bigger sailors. Gybing and crawling under the sail proved no issue for most crews, experienced and novice. The boom height remains the same and the bottom of the sail just bends as the crew pushes through the "dog flap"

Interesting enough the first bottom batten broken since Beau white started sailing with deck sweepers came on an F18 two weeks ago. Not on the F16.

Tacking, a good team will always have the crew cross in front of the mast to stop the boat stalling out in the tack. In a crash tack, the crew can go under the sail with only a little more difficulty than the standard sail.

Power

The other immediate item noticed and of concern was the lack of power for a double crew (140kg) in light breeze. F18s were trapezing and the F16 team were sitting on the hulls. All the owners of the deck sweepers that submitted reports make a note of this. Most of them are comfortable to run two main sails as most boats have a standard sail already. The consensus is to run the standard sail for light breeze and the deck sweeper for 12 knots and up. This is possibly the next item to consider for the class....would the class allow sail changes during a regatta. In the same way skiff sailors do with rigs.

Second Generation

The second generation of deck sweepers that came out of both the Goodall and Element sails lofts had smaller heads and the foot length the same as the original F16 sail. More power was shifted to the lower end of the sail and it appears the sails do generate more power in the light. It is still not as powerful though than the standard F16 sail.

The second generation sails the sheet loads have increased, I think its from the angle of the blocks being slanted backward further, it is still lower than the standard sail.

The smaller head improves the bow up attitude of the boat further and provides good power down low.

Upwind

Sailing upwind the F16 notches up another gear with the deck sweepers. The "groove" is much easier to maintain and seems to be 20% wider on both sides before you start stalling. The lighter F16 benefits greatly from this and the boat tends not to heel and drop as much in the gusts, so there is less sheeting going on, with lighter sheet loads. This makes the boats more competitive in mixed fleet against the F18s.

The Deck sweeper appears to point higher and in stronger breeze feels less "draggy". This draggy feel was confirmed for me recently when I put the gen 2 deck sweeper cat rigged on a foiling Viper. I was able to foil with relative ease upwind, whereas prior to this when sailing single handed I could only foil the boat upwind with a jib.

Less drag = faster with more height

Vision

Vision is worse with the Deck sweeper. It does not change from the classic sail for boats approaching on the course due to the angles. Downwind it makes it very difficult to see the bottom mark and judge the layline. There are strategies to get around this, but yes its is harder to find the bottom mark through the deck sweeper.

How to convert your boat

The "conversion" from a standard F16 sail to deck sweeper is not worthy of the word conversion. You swop out the gooseneck fitting on the mast....that's it. It can be done in 15 minutes with the use of a drill, hacksaw and riveter. 4 rivets and a 35mm cut to remove some sail track at the gooseneck. The new goosenecks are compatible with the old boom, fit in exactly the same place and a new curved boom is sold with the first sail.

We switch between sails all the time with no issues in the boat park.

General Sailing

On a reach when rigged with the powerful standard sail the Viper is more terrifying than fun. When we put the deck sweepers on we were able to blast across the wind and the boat feels more like a windsurfer than a nose heavy windward leeward race machine. The transformation is astonishing.

People get injured in pitchpoles and from a safety perspective the F16 is much improved with the deck sweeper sail. When taking an inexperienced crew out the deck sweeper is preferred if there is wind over 12 knots as the boat is more manageable.

The improvement of this pitchpole reduction can be attributed to a less powerful main sail or the transfer of the power lower down by 200-400mm.

It would appear it is a combination of the two, power reduction and center of effort lowering. There has been much speak of building recreational sails from the old standard sails with deck sweeper bases added on, thus increasing sail area on the F16.

Maintaining the 8100mm on Deck Sweepers

As for the of the shorter mast and deck sweeper, the fleet in NSW, ACT and VIC are unanimous that this is no good. Shorter masts require additional investment and limit the F16 versatility for quick switches to standard rigs and double handed/single handed sailing.

Already the shorter F16 rig against the F18 is an issue with covering during racing. F18s can sail out from under the F16. F18 wind shadows over the F16 are enormous. The shorter mast exacerbates the issue. It's a complex solution to a problem that should not exist. We will always use the standard 8500mm mast

Technical Conclusion

There is no doubt from a technical perspective the deck sweeper improves the boat performance, sailing experience, safety, versality and ease of use.

Perception and class impact

The class however must consider the impact of such a radical change to its rules and what the perception and impact this will have on the active racing sailors, prospective buyers and sailing community.

The F16 and F18 classes have been very stable in the rules. The F16 rules are extremely well written and thought out which is why they have not been able to be circumvented to allow deck sweepers to sneak in as they did in F18. Thus a managed approach to the technology can and has been implemented.

The greatest issue with the change is money.

The two arguments identified are:

1. Some people may have just invested in their boats and this change causes a loss in that investment, disillusionment with the class and general bad impression of the class that changes the rules.
2. Others may not wish to be forced into buying a new sail in order to be competitive in F16.

Both of these arguments to prevent the implementation of removing the luff length rule the Australian Association believe are flawed. The logic is as follows:

1. Current owners of F16s are seeing the demand for the boats increase. Competitive well maintained boats are selling quickly and for good prices(three years ago you could not give a Viper away). The prospect of sailors from classes such as Taipan, Moth, Wazp, A class, Nacra 15 and skiffs now entering the F16 class that keeps up with major shifts in technical design is very appealing. "Tinkerers" who enjoy optimizing systems and their boats have embraced this shift and the involvement and participation in the class has increased.

Folks getting into the class are able to buy older boats at lower cost because they don't have the new tech and thus have a negotiating point. It's a tough call on the sellers of older boats but it is vital that the second hand F16 market is rationalized to the value that buyers can pay. This has driven the price of second hand Vipers in Australia down.

2. The purchase of a new mainsail to remain competitive is part of being a competitive sailor. A set of regatta sails does not last more than two seasons and a Jib and Spinnaker no more than 1. All the current F16 standard sails bar 1 are well used (contrary to what sellers may say)

Australian F16 Association with the support of Goodall design offered a special on the deck sweepers. The cost of the deck sweeper sail, battens, boom and gooseneck were lower than a just a standard sail. With this initiative the sail maker could produce in bulk and the sailors received great pricing that did not exceed normal sail replacement costs. It worked and 7 sails were sold.

Class impression

Everything about this initiative has been positive. Youth sailors love the look of the boat. People see F16 as high performance, with flexibility but not arms race expensive A class level.

The changes have brought F16 to the front of the catamaran classes in terms of exposure and they have, and continue to become highly desirable boats with agile and responsive class governance.

Its all good! Personally I was apprehensive when the vote was taken that this may only be adopted by 3-4 boats and then the class would splinter. I was incorrect, if anything this has solidified and energized the class.

Conclusion

Below are the reports from a few of the sailors that made the effort to write things down. Much of the content of this report is also based on conversations with sailors at events, by phone and online.

It is an enormously positive move for the class here in Australia. The class retains its versatility with the standard and DS sails. At the same time F16 moves its performance, image and community forward.

We overwhelmingly would encourage the international class to make the relevant rule changes to adopt deck sweepers.

Media and Testimonials.

Viper with Deck Sweeper sailing here is an onboard video that tends to show how well the Viper works with a deck sweeper in gusty strong winds.

<https://www.youtube.com/watch?v=ZEs IXSA wk&t=204s>

Male, Age 25-35, Preferred position: Crew

Pro

- boat feels more stable
- less crew fatigue
- easy to de power
- More FUN!

Con

- kite sheets through gybes are more difficult — restricts access round mast rotation — not enough power in light air

I don't think I would have gotten into the class if my first sail back on the viper wasn't with a DS, it helps keep a calm attitude on the boat even in 20+ knots.

In my opinion The DS reduces crew fatigue resulting in a higher quality of competitive racing.

Male, Age 45-55, Solo Sailor

Testimonial on the Decksweepers for F16 (Viper)

I am super happy to write a short testimonial for the DeckSweeper (DS) sail for the viper. To put my comments in context, I am a brand new Viper owner. I bought the boat last year and apart from a couple of beginner sails – I have only sailed this season (September-April in Australia). Total sails about 15 or so.

The first thing to say is that the DS sail was a major motivator in me buying the boat. It speaks to the future of the class. When I was looking at buying into the class last year, the community felt a bit jaded. With the move towards the DS the community has re-energised. In Australia, we have seen many new boats bought and sailed in the last 6 months – Beau will know better than I but at least 4 that I know of. Many sailors are committing to travelling to regattas. People are on the forums. It is exciting. In Australia, it feels energetic and active. In Canberra we have 3 boats that sail regularly and several sailors looking at the Viper with interest.

Secondly, I sail mostly single handed and the DS was important for me to make the boat safer and more enjoyable across a wider range of winds (more on that below). The heavy wind performance of the decksweeper is superb. It points high and goes fast upwind. It is stable and helps lift the bows downwind. The bear-away and (beam reaches in general) is more controlled and more fun. In heavy weather I wouldn't sail with the standard sail again.

My final comment is that the sail is challenging to tune in light winds. I am still really a beginner in F16 sailing but it is definitely a bit of a challenge to get the boat going in 5-10kn for me. Given the heavy wind benefits I am happy to take this without question – although I do sometimes dig out the old classical sail if it looks like drifter.

Cheers,

Male, Age 25-35 , Preferred Position: Skipper

Here are my thoughts about the F16 deck sweeper after using it for 1 year;

Pro

- + The boat is much safer!
- + The boat can handle stronger wind!
- + The tendency for nose dive is reduced a lot!
- + The boat is much faster and can compete with F18s (because they also use DS).
- + Bearing away at the top mark usually results in a capsize with a regular main in hard wind, with DS it's not even close!
- + It's and exiting upgrade for the boat and people are joining the F16 class in Aus because the F16 is cool again.
- + Walking in front of the mast is easier than what anyone thinks and getting into the habit of doing it makes the boat faster because of the weight.

Cons

- It makes old sails in hard wind less competitive.
- In light wind the regular main might be slightly faster.

Summary; Introducing DS has been a huge success for the F16 class in Aus, it's made the boat cool, attractive, faster and safer.

If DS is not allowed on the next F16 worlds, that would be a massive disappointment and I would consider to not do it.

Age 45-55 , Preferred Position: Skipper and Solo

hi I cannot comment on what is happening on the viper front. on my Nacra I had performance sails make a deck sweeper for a shorter mast (8.17m) to comply with luff length requirement. Sail is slightly smaller than F16 . I have been sailing one up. Boat is much faster upwind as less heel. Downwind the noses are popping with the flat bottoms and it is fairly easy to get the boat planing. Two up the deck sweeper is a pain the ass for the crew. Going around the mast is easy for slow tacks and gibs in flat water. In chop and high winds it is not good. I plan to stay with standard configuration for two up

I will say if I ever get to europe I plan to sail one up with the shorter mast and decksweeper (hence why I bought it)

Element Sails, <https://www.facebook.com/elementsails>

F16 Deck-sweeper main in 20+ knots of wind is proving to make a huge difference to the boat, making for a much more controllable sail and therefore boat.

It's got a big 👍 from us.

