



## 3D printed annular weed fin that works



Flex

[VIEW IN BROWSER](#)

updated 7. 4. 2023 | published 7. 4. 2023

### Summary

Annular fins generate high lift at low speeds. This one for weed and shallow water...Works too!

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1st test of annular weed fin. Other annular fins tested work well but collect weed like crazy. This one is 14cm diameter with an increasing airfoil chord over the radius. (Next fin is decreasing chord over radius) The theory for annular fins is they generate much more lift for equivalent fin area and thus can run smaller fin for shallower water, less weed drag or lighter winds. Theory also shows that can eliminate approximately one radius from the circumference but still maintain the annular properties..

Whilst not meant as new revolutionary fin, the build technique I think is new and allows cheap rapid prototyping of whatever crazy ideas one may come up with. The whole concept is all the load sections are held under compression. The tuttle bolts to the board and the bolts from the annular section to the transfer plate keep the whole print mashed together making it nearly indestructible.

I rolled 1.5mm stainless sheet to around 140mm dia, then measured and printed the fin accordingly as as too hard to roll steel accurately (for me at least). For a weed fin the rake is 55deg+ so is just a very simple 55deg triangle pasted on the steel (I only had orange and red paper big enough

on hand as per the photos). Soaking the print in epoxy (before glassing it) adds a lot of strength as it soaks into the print pore space and works sort of like fibreglass. Note I put one layer of glass over the print as otherwise the trailing edge being so thin always seems to break off.

If you going to build this yourself, it's better you get your steel, then measure the diameter accurately, and use some dummy test print jigs to check...then design the fin around that. Trying to print this design then matching it to steel will probably end in tears.

Video of first run here.

## Model files



**spacer.stl**



**rear-wing-main.stl**



**strut-1.stl**



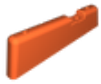
**front-wing-left.stl**



**rear-wing-2.stl**



**front-wing.stl**



**tuttle.stl**

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**front-wing-right.stl**

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**rear-wing-right.stl**

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**rear-wing-left.stl**

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**front-wing-main.stl**

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