Centrifugal Pump Design Manual:

This document is still being written! If you have any questions or suggestions, feel free to comment on the printables page/youtube channel.

Understanding Parameter Definitions:

<fill in details here>

Printing tips:

- The housing is the only complicated print of the three, the impeller and base have large flat faces and little to no overhangs, so they're pretty much no trouble at all.
- If you have problems with rubbing, adjust the "tolerance" parameter in the solidworks files to allow for more forgiving geometry. For reference, I have tolerance set to 0.5mm and print on a bambu-lab p1s and can run the design with little to no rubbing (after sanding some particularly rough support spots).
- The housing tends to print in better quality if printed vertically as shown below. Just ensure that no supports are placed inside the volute (interior tube area of the housing) as supports are very difficult to remove from there:



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Current Issues:

1. Impeller attachment to motor
    a. The impeller tends to loosen and move upwards on the motor shaft at higher rpm (past 11.1 volts on my current setup). This is because in the current design the impeller is friction fit, and is in general not held very well.
2. Seal around the base of the housing.
    a. Potentially one of the reasons why the impeller is lifting is due to air leaking in from the base and pushing up against the impeller. This could be fixed by using some kind of sealant.
3. There is a slight rub somewhere in the housing which I can't seem to get rid of, most likely this is from the funny overlapping geometry of the outlet. The current correction for this in solidworks is the only feature of the geometry that doesn't properly adjust to parameter changes, which needs to be fixed.