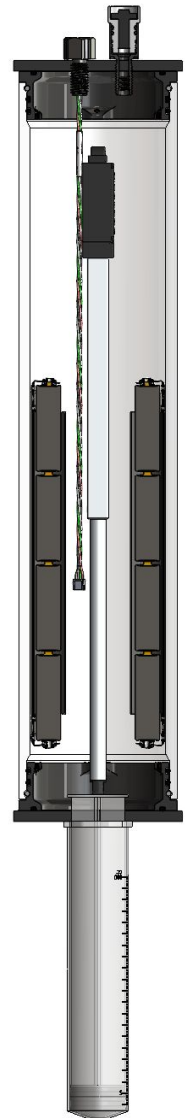## Profile:

The body of the float is a BlueRobotics 3in. enclosure tube. The tube's two flange caps provide both a watertight seal and pressure relief should the internal pressure exceed the external pressure. The bottom end cap has been machined to allow the syringe to extend outside the float. The syringe pass-through is sealed with epoxy and silicone to keep the float watertight.

Buoyancy Engine:

A linear-actuated 100ml syringe acts as the float's buoyancy engine. When the actuator is retracted, water is pulled into the syringe and the float begins to sink. Once at the bottom of the pool—indicated by pressure sensor readings—the actuator extends, expels the water from the syringe, and the float begins to float back to the surface.

Electronics:

The float is powered by eight AA alkaline batteries supplying a total voltage of 12V. Two battery packs each holding four batteries are installed in series with a single 7.5A Littlefuse ATO blade fuse. The system consists of an Arduino Nano, a linear actuator, BlueRobotics Bar02 Depth Sensor, RF transmitter, RTC module, and tilt switch. The 12V powers the linear actuator and Arduino Nano. The Arduino's 5V supply powers the remaining devices.

SID: