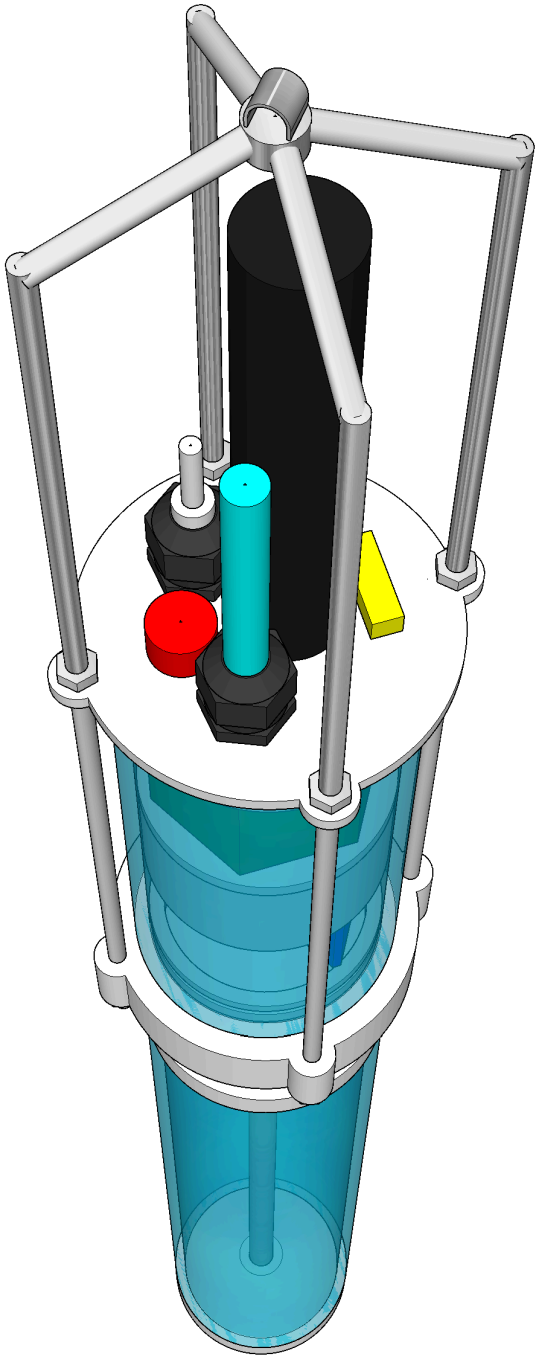
Climbox Team



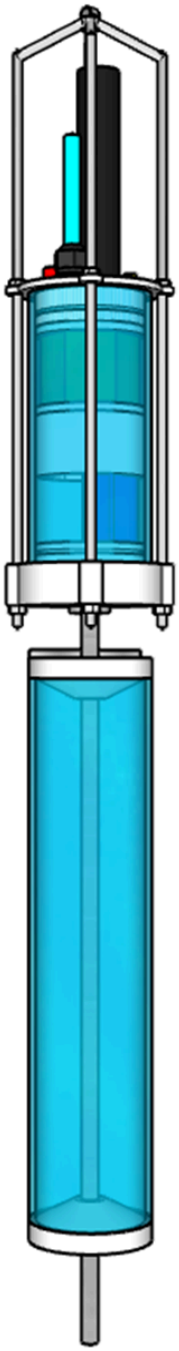
MANUAL BOOK

OCEASENSE

SMART DEVICE

ABOUT OCEASENSE

This Portable Oceanographic and Water Sample Essential Parameter Measuring Device is a portable seawater quality measurement instrument designed to provide an efficient and economical solution for measuring various water quality parameters at adjustable depths. The device is equipped with a depth sensor, pH sensor, salinity sensor, and dissolved oxygen (DO) sensor, all of which are connected to an ESP32 microcontroller. This microcontroller manages data from the sensors, which are configured using the user's smartphone via a Bluetooth connection. The instrument allows for the collection of up to 2 liters of seawater samples at the desired depth and can be installed on various types of vessels without requiring expensive additional equipment. The operation of this device can be easily performed through an application on the smartphone.



SPESIFICATION

APPLICATIONS

- Coastal and marine water quality monitoring
- Oceanographic data collection for research and education
- Environmental assessment and restoration projects
- Climate and carbon observation (temperature, salinity, DO, pH)
- Portable field measurements for ship-based or coastal surveys

PARAMETERS

- Depth (m)
- Temperature (°C)
- pH
- Salinity (ppt / PSU)
- Dissolved oxygen (DO, mg/L)
- Conductivity (mS/cm)

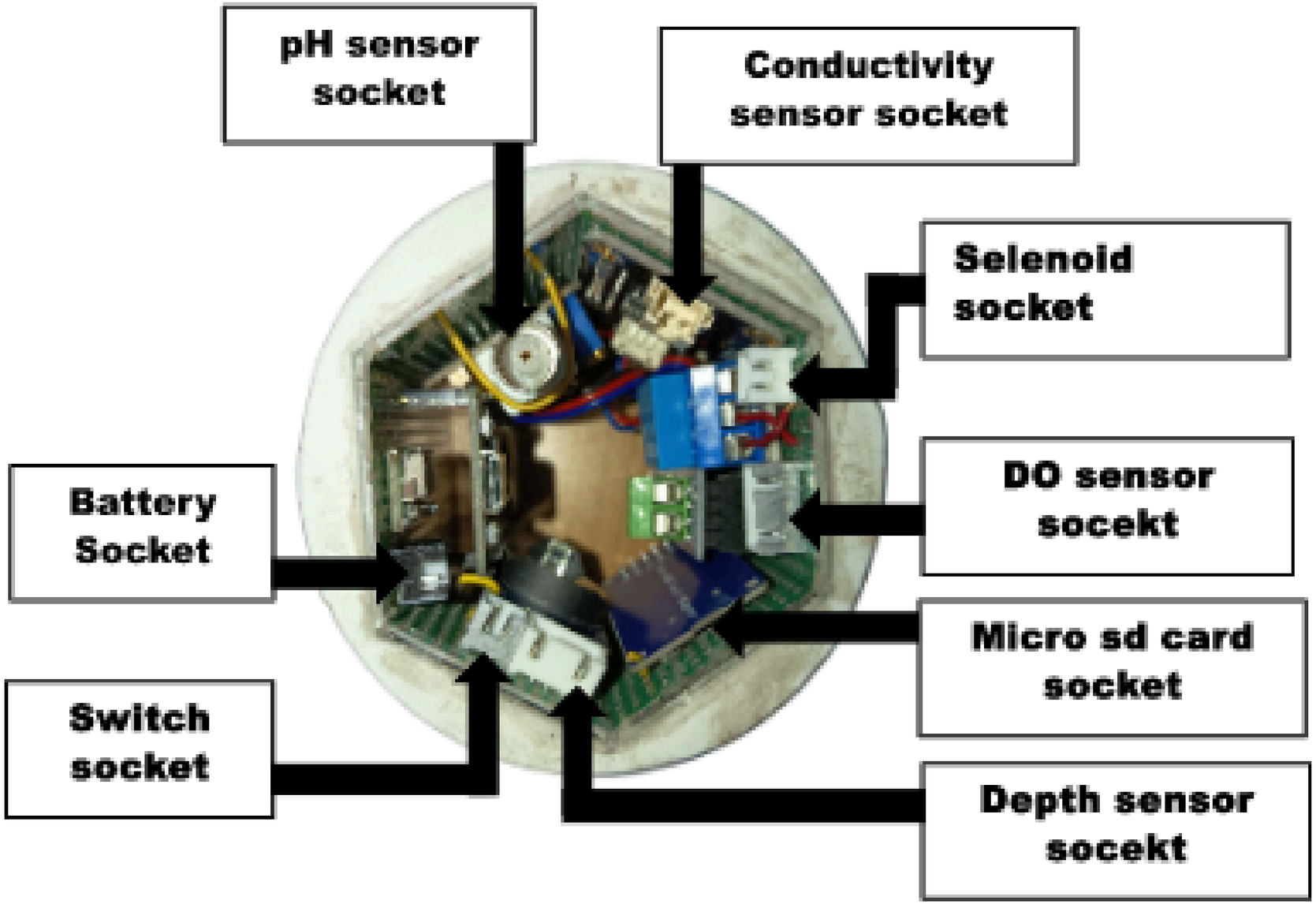
SYSTEM FEATURES

- Microcontroller: ESP32 (equipped with Bluetooth)
- Storage: MicroSD (2–32 GB)
- Sample Volume: 2 L of seawater
- Adjustable Depth: Up to 50 m
- Power Source: Rechargeable Li-ion battery (10–12 hours of operation)
- Structure: Stainless steel frame and sample collection tube

DATA ACCESSIBILITY

- Bluetooth App Control – Configuration and monitoring via smartphone
- Internal MicroSD – Local data logging
- Compatible with open data sharing platforms

WIRING INSTALATION



COMPONENTS

Depth and Temperature Sensor (MS5837-30BA):
Type: Digital absolute pressure and temperature sensor
Measurement range:

- Depth: 0–30 bar (0–300 meters water depth)
- Temperature: -20°C to +85°C

Depth accuracy: 2 mm

pH Sensor:
Type: Digital pH sensor
pH Range: 0–14
Accuracy: ±0.1 pH at 25°C

Conductivity Sensor
Type: Conductivity sensor
Range: 0 to 500 mS/cm
Accuracy: ±0.1 PSU

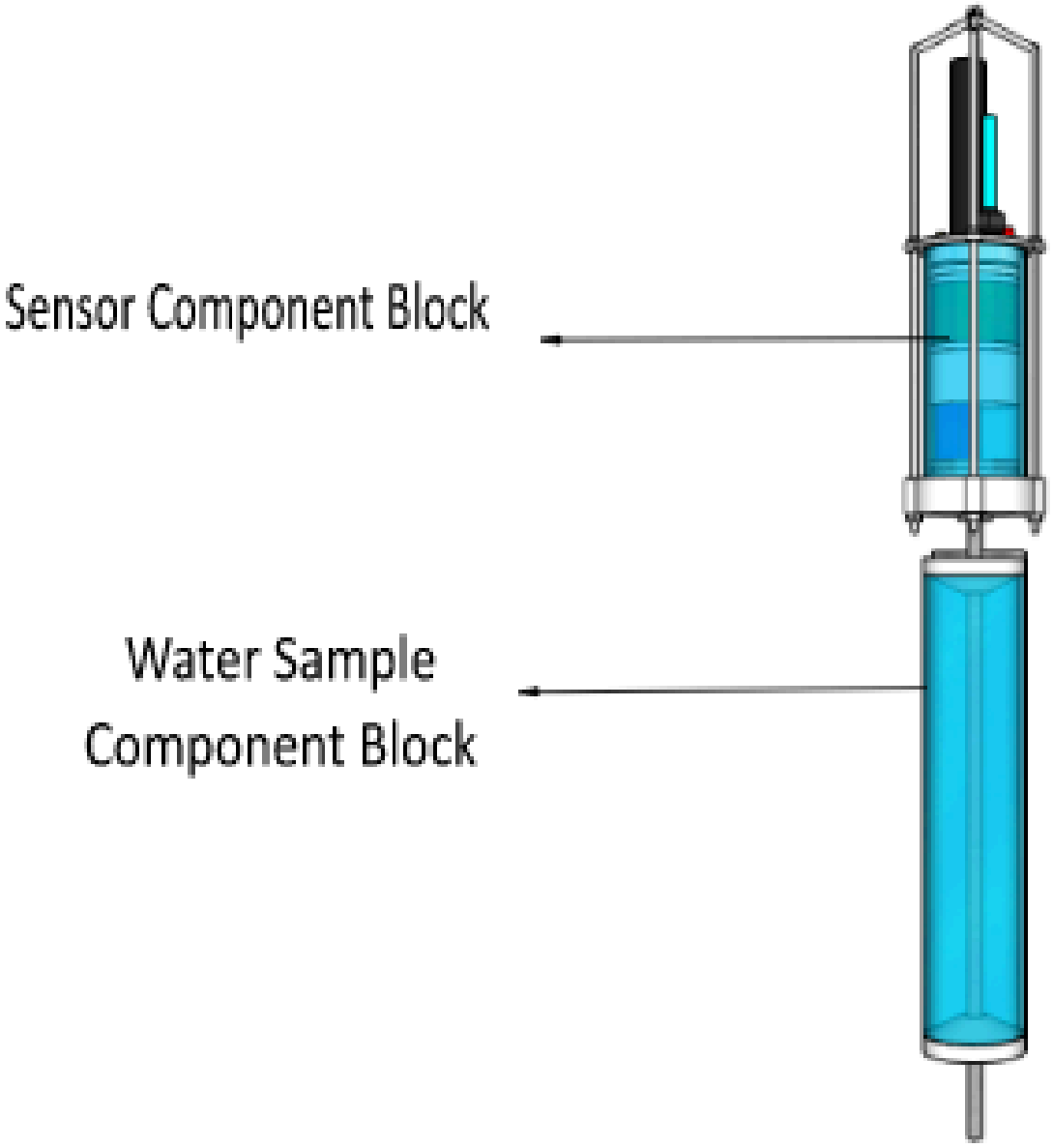
Dissolved Oxygen Sensor (DO)
Type: Electrochemical dissolved oxygen sensor
DO Range: 0–20 mg/L
Accuracy: ±0.01 mg/L (0~200% Saturation)

Storage Memory: MicroSD (2-32Gb)

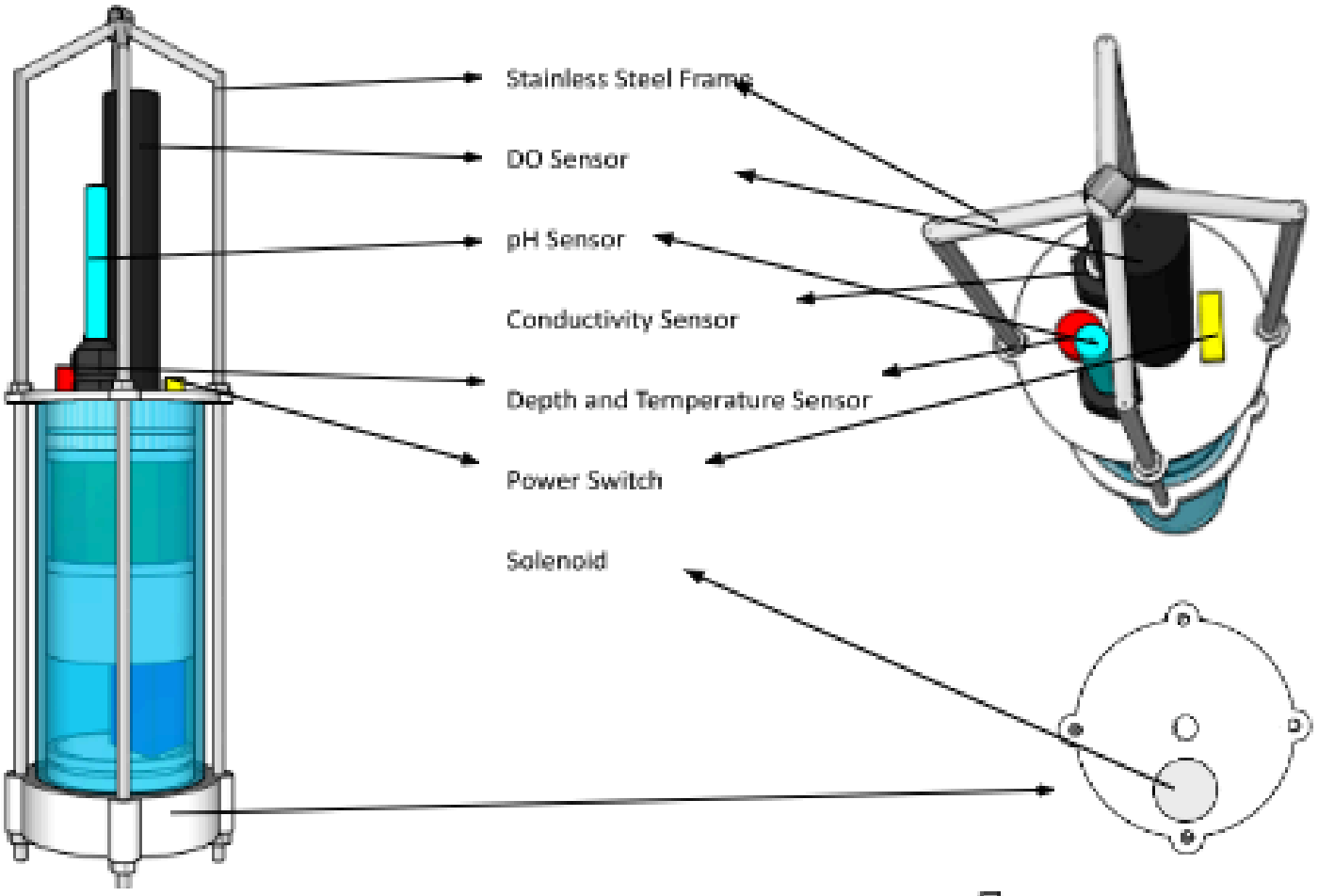
Water Sampling
Capacity: 2 liters
Sample Collection Depth: Adjustable up to 50 meters
Depth Settings: Set via mobile app, with solenoid control to open or close the valve

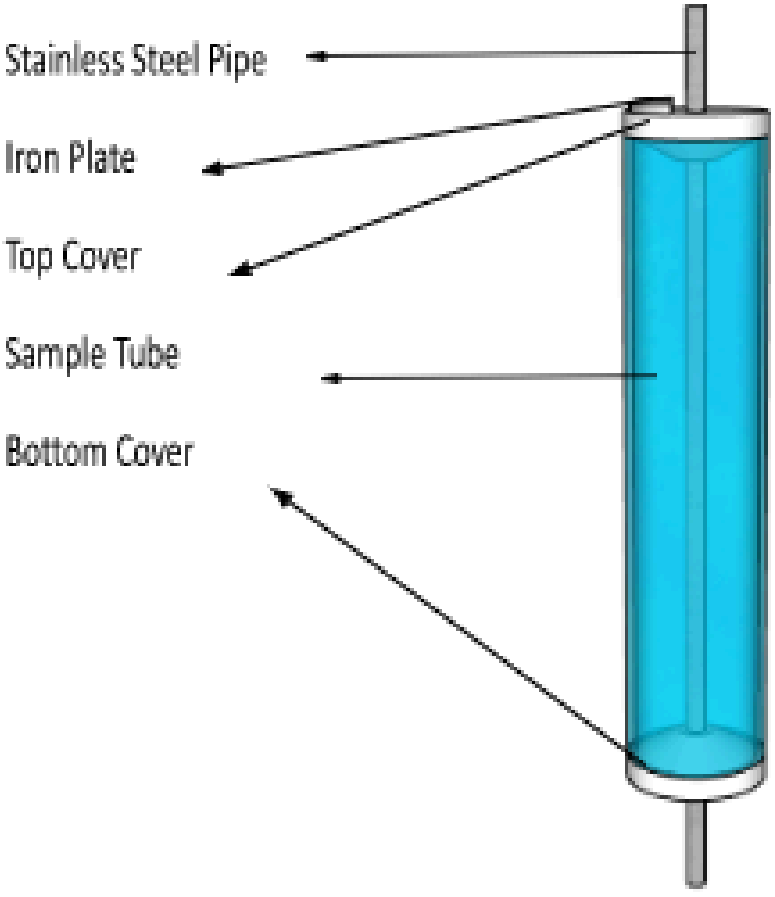
Battery
Type: Rechargeable Li-ion battery
Battery Life: 10–12 hours of continuous use (depending on depth and operating conditions)

COMPONENTS



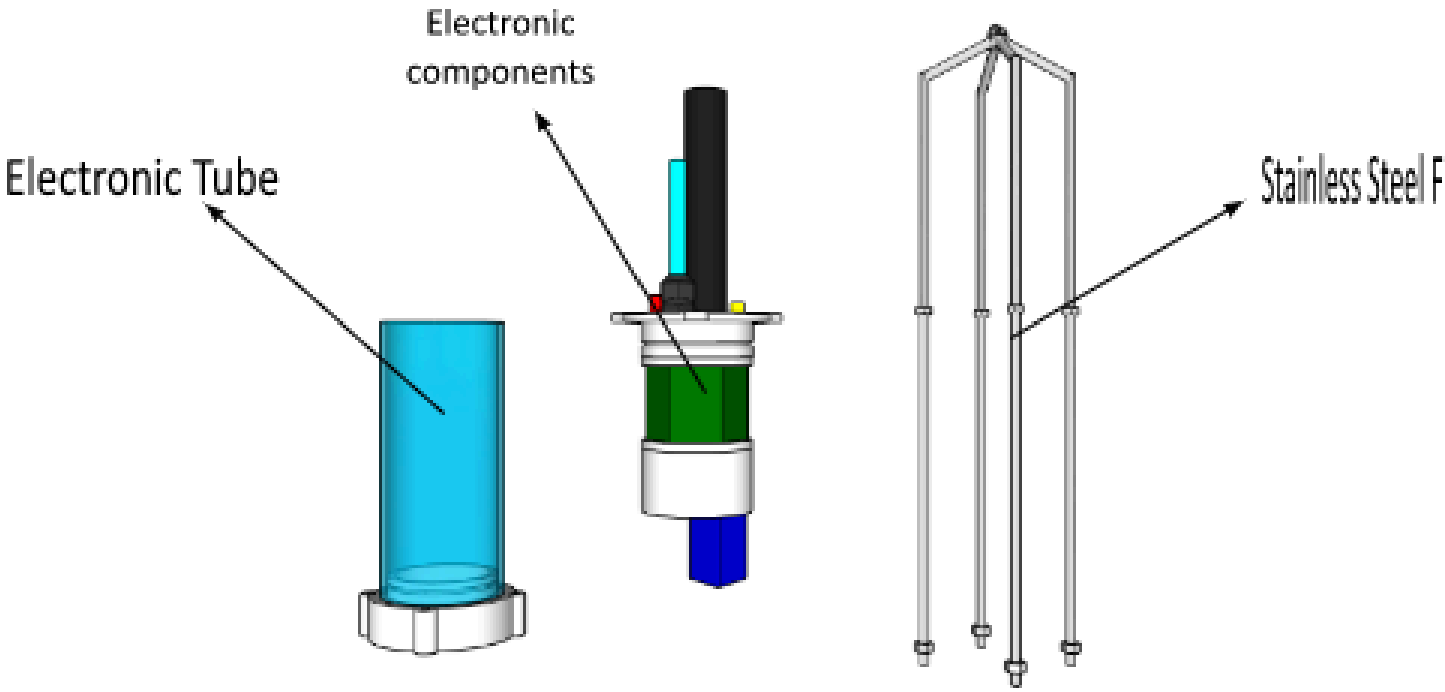
COMPONENTS


Stainless Steel Frame
DO Sensor
pH Sensor
Conductivity Sensor
Depth and Temperature Sensor
Power Switch
Solenoid

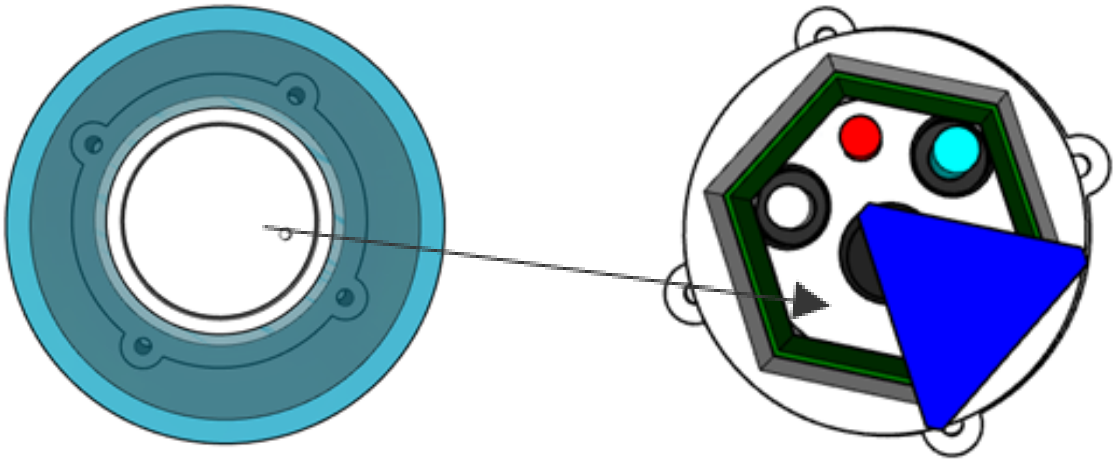

Stainless Steel Pipe
Iron Plate
Top Cover
Sample Tube
Bottom Cover

HOW TO ASSEMBLE SENSOR PARTS

1. Parts of the Tool

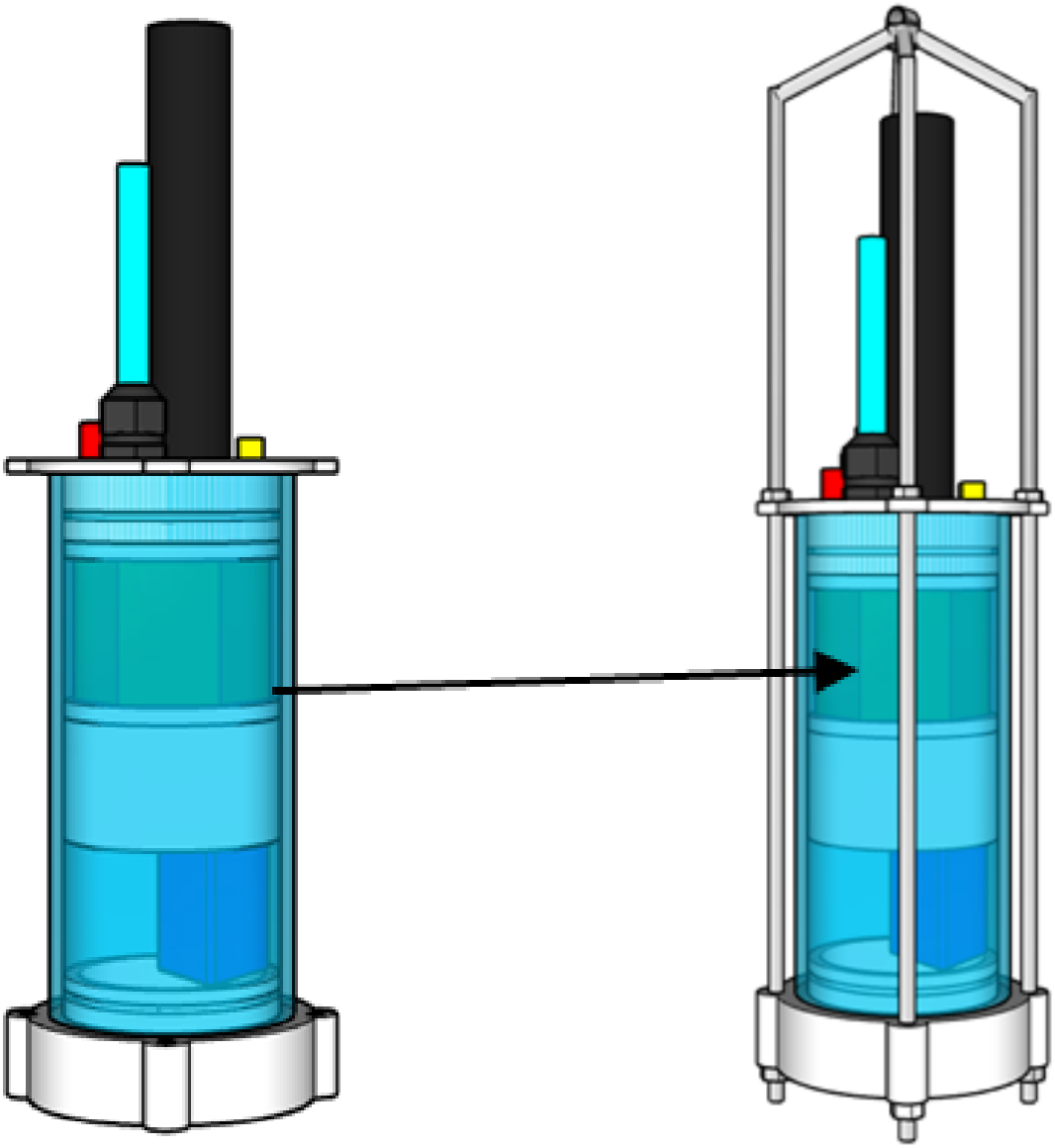


2. Connect the tube section to the electronic component section (connect the solenoid cable to the sensor section).



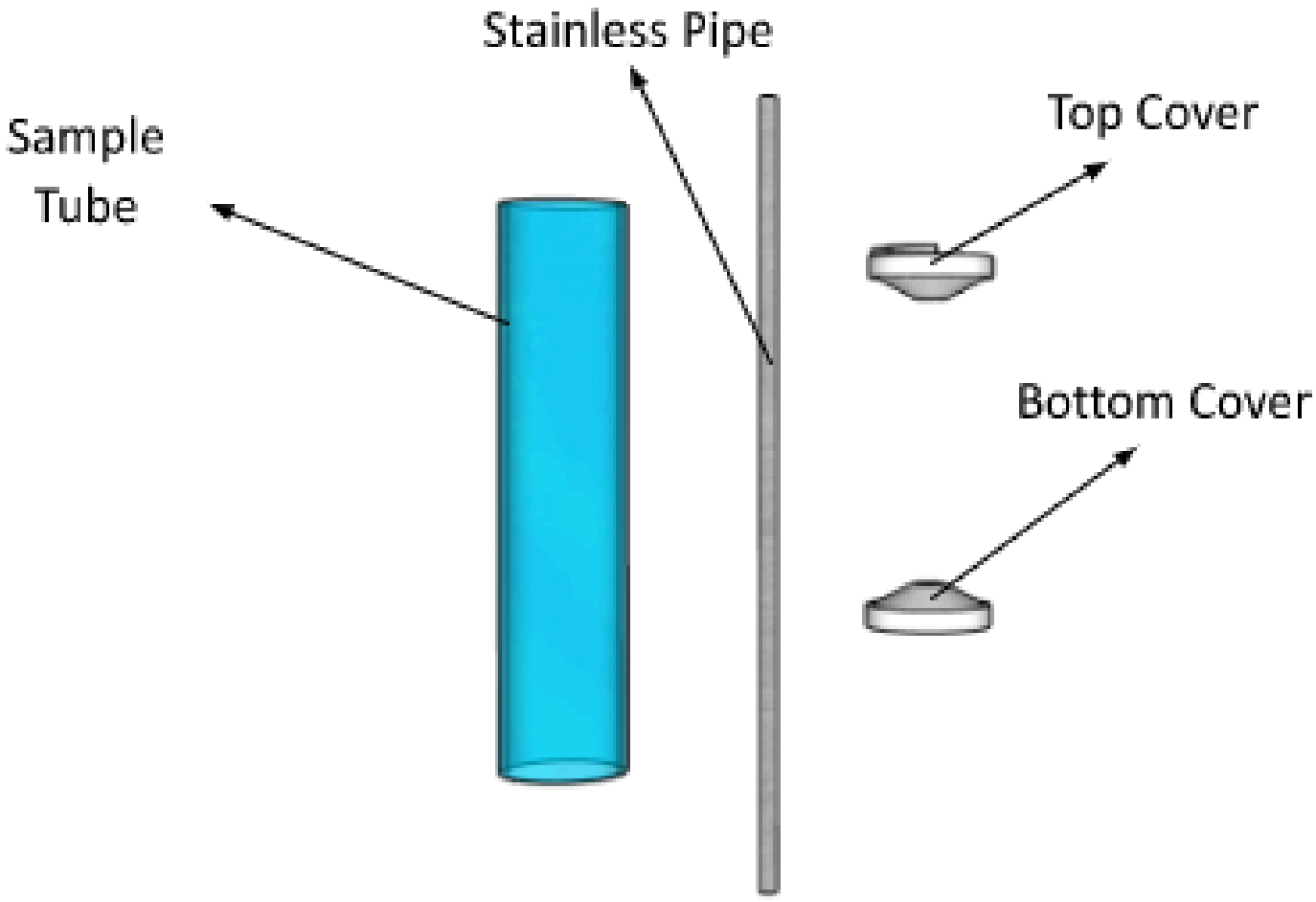
HOW TO ASSEMBLE A NANSEN BOTTLE KIT

3. Connect the battery connector to the electronic component
4. Combine the sensor component with the sensor cover, then lock it with stainless steel as protection and reinforcement



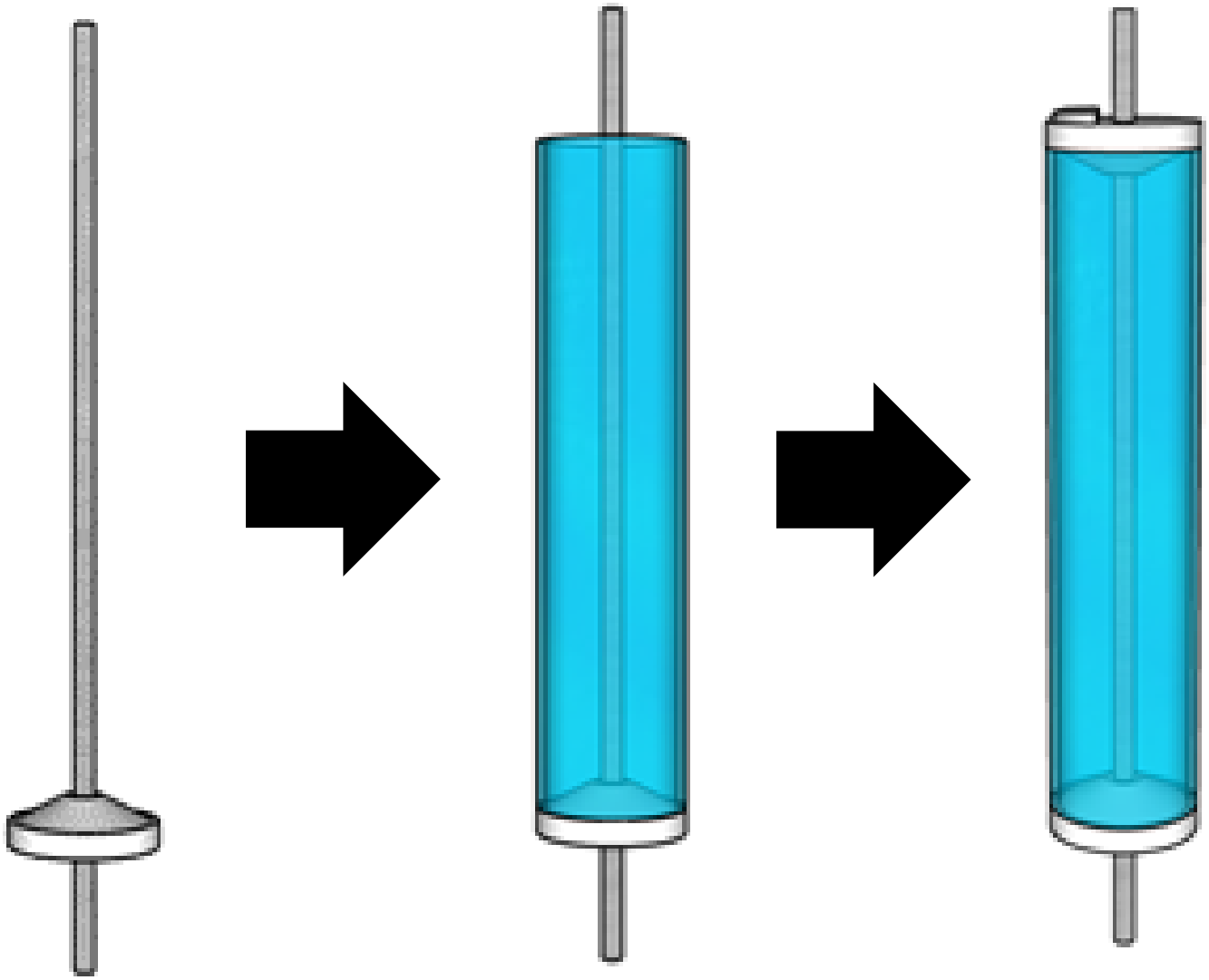
HOW TO ASSEMBLE A NANSEN BOTTLE KIT

5. Parts of a water sample container



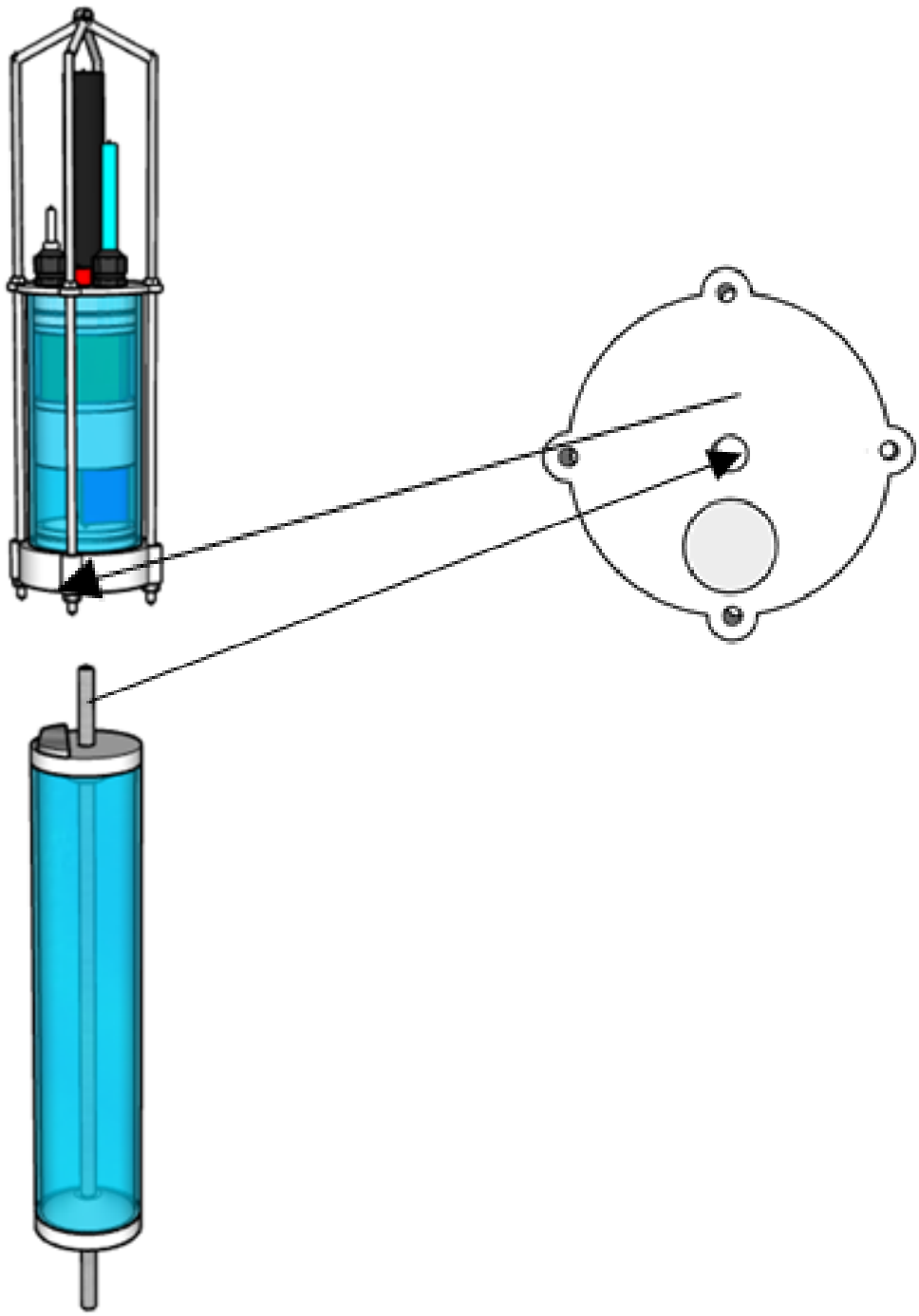
HOW TO ASSEMBLE A NANSEN BOTTLE KIT

6. Connect the bottom cover to the stainless steel pipe on the long threaded part at the bottom. Then connect it to the sample tube, making sure there is an O-ring on the connector in the sample tube. Finally, close it with the top cover.



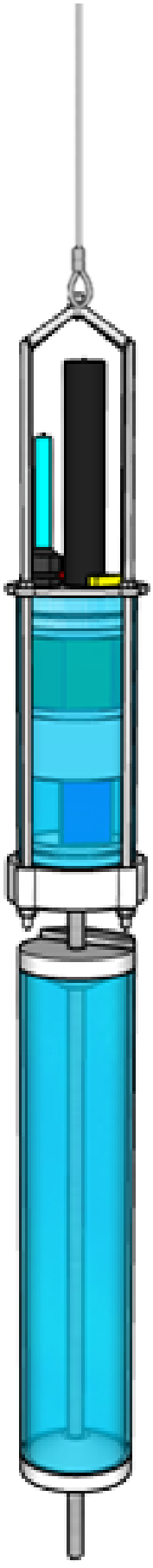
HOW TO USE

1. Connect the Air Sample Component to the bottom of the electronic component that has a screw.



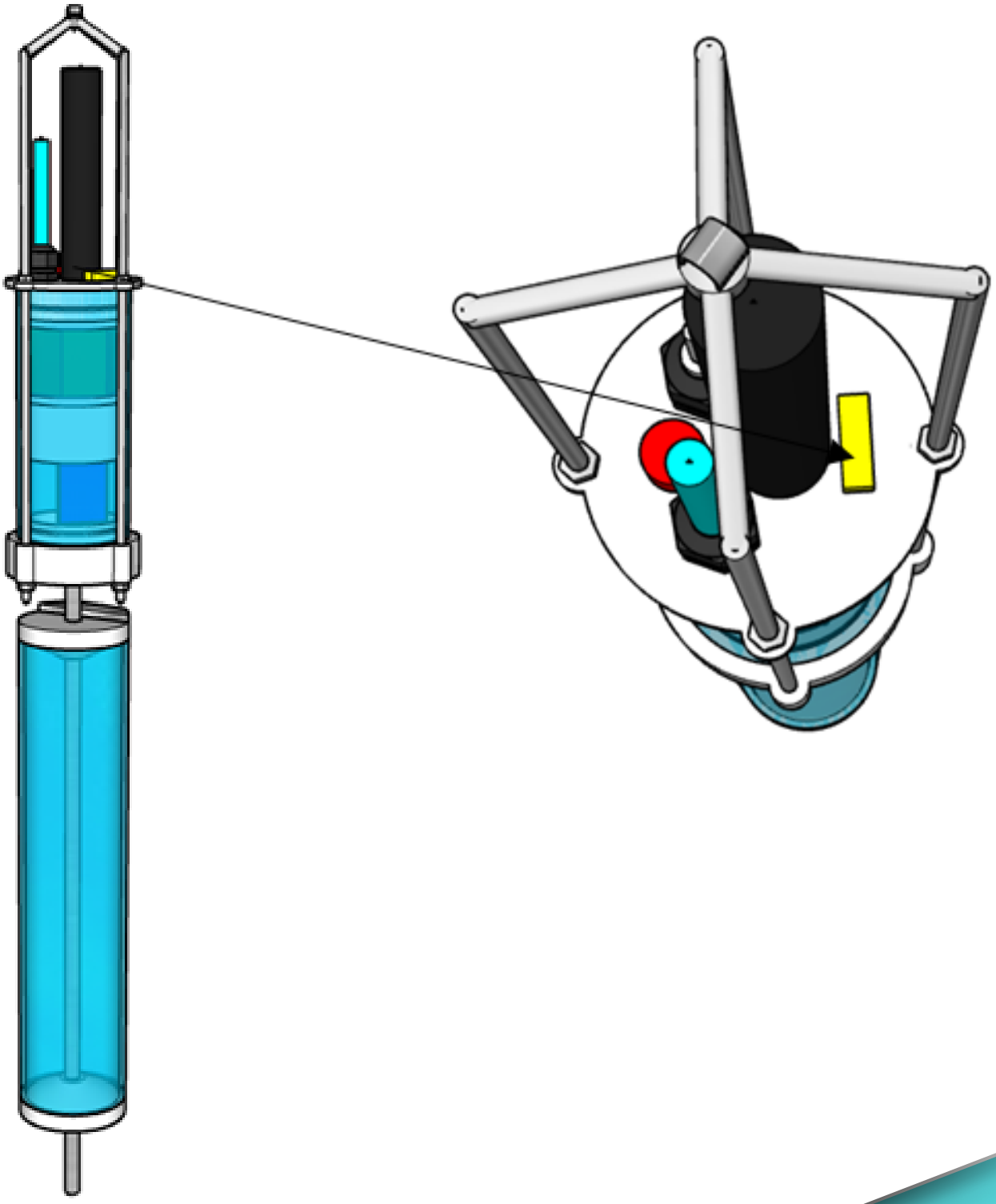
HOW TO USE

2. Tie the top part with a rope to secure the tool when lowering it into the water.



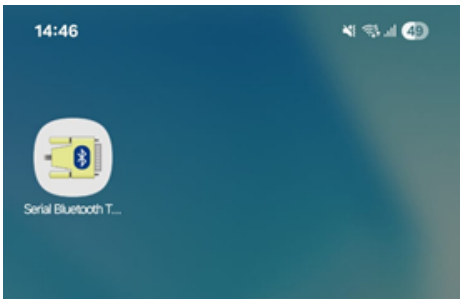
HOW TO USE

3. After that, turn on the device by inserting the magnetic key into the magnetic switch (the yellow part of the electronic component).



HOW TO USE

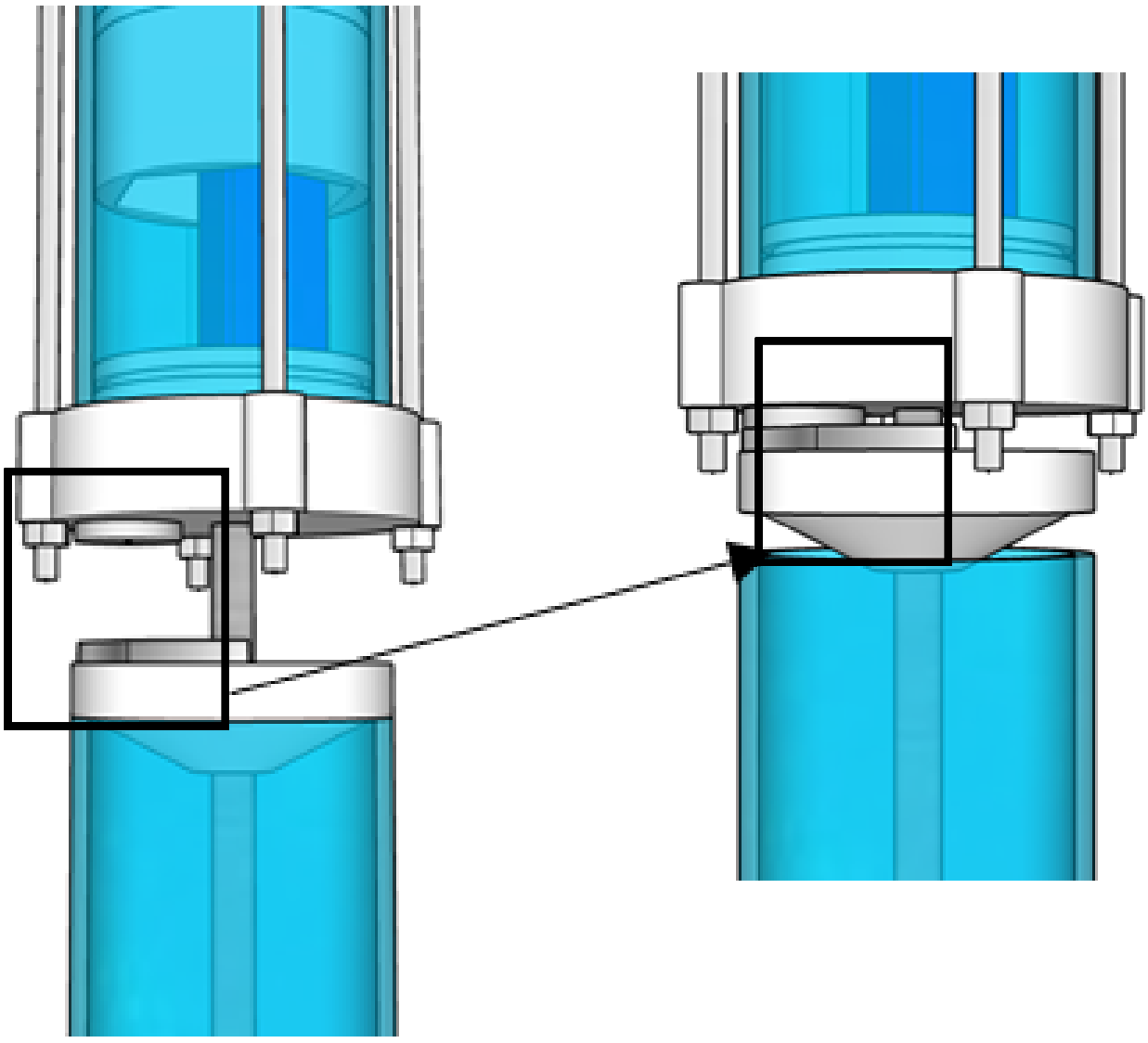
4. After turning it on, connect the Bluetooth device to your Bluetooth cell phone. Once connected, open the Serial Bluetooth Terminal application.



5. The terminal serial application is used to set the depth and sampling time for data collection (start; depth: 10 cm; time: 10 s), then send (depth can be in meters or centimeters and time can be in seconds or minutes).

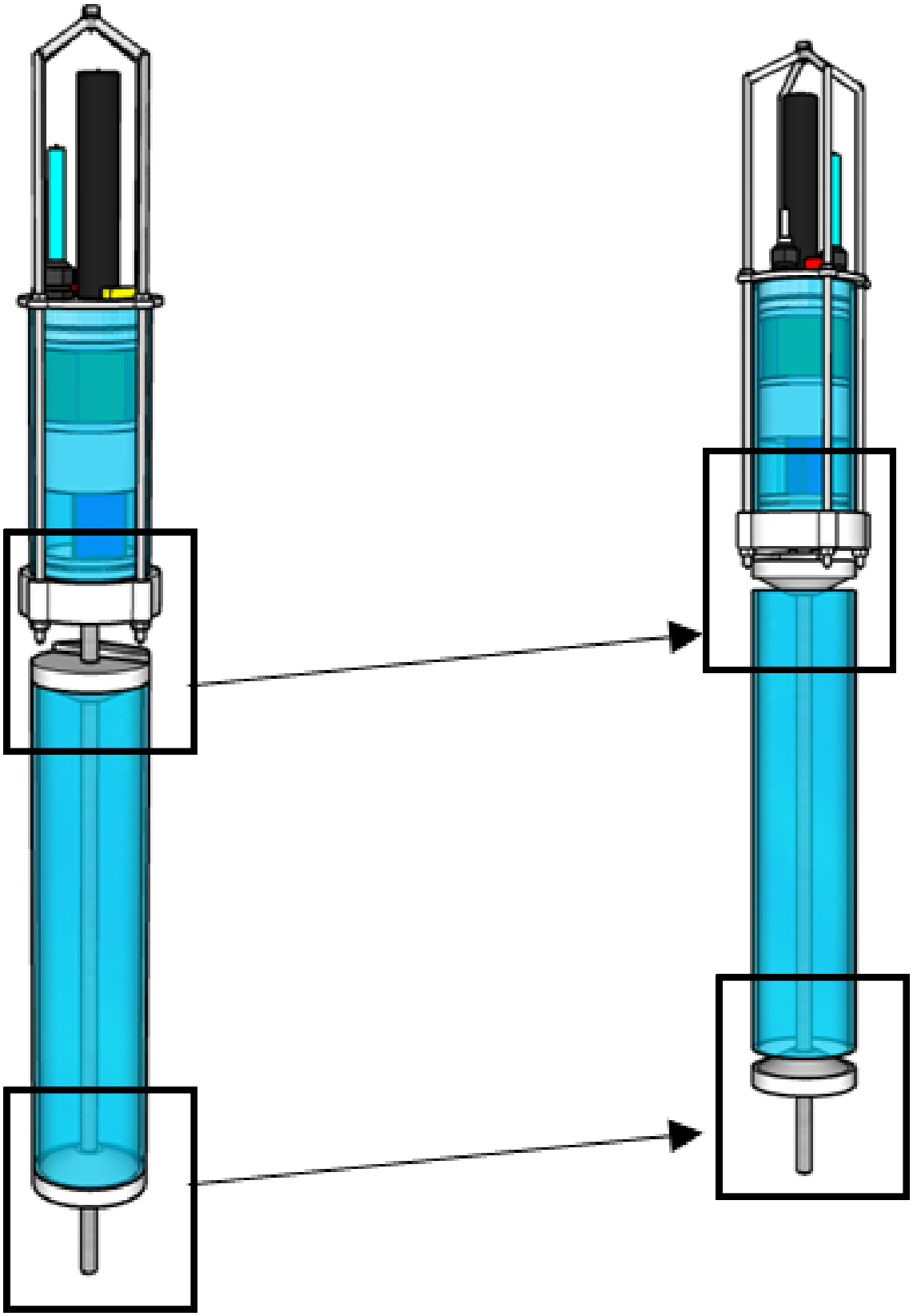
HOW TO USE

6. Attach the metal part to the water sample with the solenoid part on the sensor component.



HOW TO USE

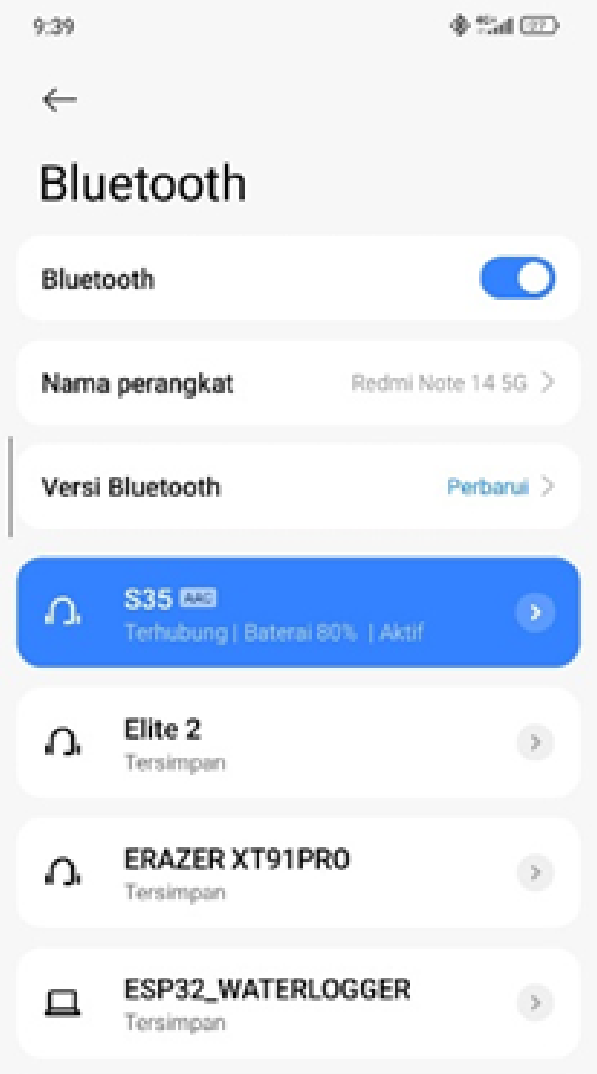
7. Ensure that the top cap of the sample tube is attached to the bottom of the electronic component and that the bottom cap of the sample tube is open so that water can enter and exit.



MAINTENANCE AND CARE

A. Bluetooth is not connected

- Ensure the device is turned on
- Ensure Bluetooth on your phone is active
- Ensure the detected Bluetooth device is ESP32_WATERLOGGER



B. Solenoid Not Working

- Ensure the battery power is 12v.
- When replacing the battery, ensure the output current is 20A.

SAFETY INSTRUCTIONS & WARNINGS

1. Use in Marine Environments:

- Ensure that the device is securely attached to the vessel and will not become detached during use at sea.
- Avoid using the device in locations subject to waves or extreme sea conditions, which could damage the device or interfere with its functioning.

2. Sensor Installation:

- Ensure that all sensors are properly installed and undamaged before use. Damage to sensors, especially pH and dissolved oxygen (DO) sensors, can result in inaccurate measurements.
- Do not touch the sensor tip directly with your hands to avoid contamination that could affect the measurement results.

3. Batteries and Power Source:

- Check the battery condition before use. Using a battery that is not fully charged can reduce the operating time of the device.
- Avoid using the device when the battery is low to prevent measurement interference and damage to the device.

4. Mobile App Usage:

- Ensure that the mobile device used has stable Bluetooth connectivity to maintain communication between the device and the mobile app.
- Always update the application on your mobile device to ensure compatibility with the device and the latest features.

5. Cable and Connector Safety:

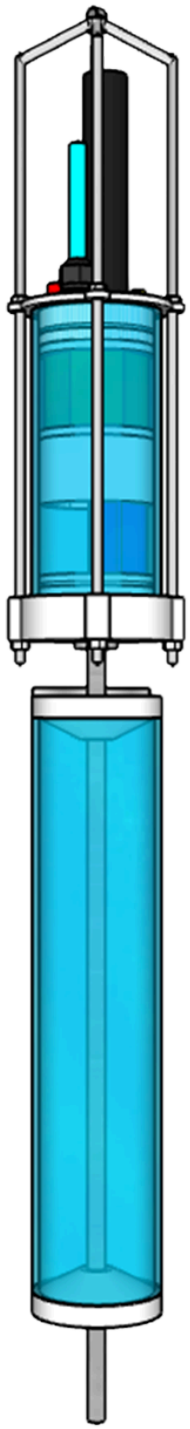
- Avoid loose or pinched cables that can damage the connection between the sensor and the microcontroller.
- Prevent direct contact between cables or connectors and seawater to avoid corrosion and damage to the device.
    -

SAFETY INSTRUCTIONS & WARNINGS

5. **Storage:**
   - After use, store the device in a dry and safe place. Do not store the device in places with high temperatures or humidity that can damage electronic components.
   - Make sure the device is dry before storing it, especially after use in wet or marine environments.
7. **Prevention of Physical Damage:**
   - Avoid dropping the device from heights or subjecting it to hard impacts that could damage the sensor or microcontroller components.
   - Always check the physical integrity of the device before and after use to ensure there is no damage that could affect measurements.
8. **Contamination Prevention:**
   - Do not use the device in environments containing chemicals or other substances that can damage sensors, especially pH and dissolved oxygen sensors.
   - Ensure the device is properly cleaned after use to prevent contamination that could affect measurement results in subsequent uses.
9. **Regular Maintenance:**
   - Perform regular inspections and calibrations of the device to ensure measurement accuracy.
   - Replace worn or damaged components or sensors with original components to maintain device performance.

Improper or careless use can cause damage to the device or inaccurate measurement results, which can impact safety and the reliability of the data collected. Always follow the instructions for use and ensure the device is functioning properly before using it in the field.

CONTACT US



More Information:

Visit Website
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https://climbox-db.web.app

Instagram
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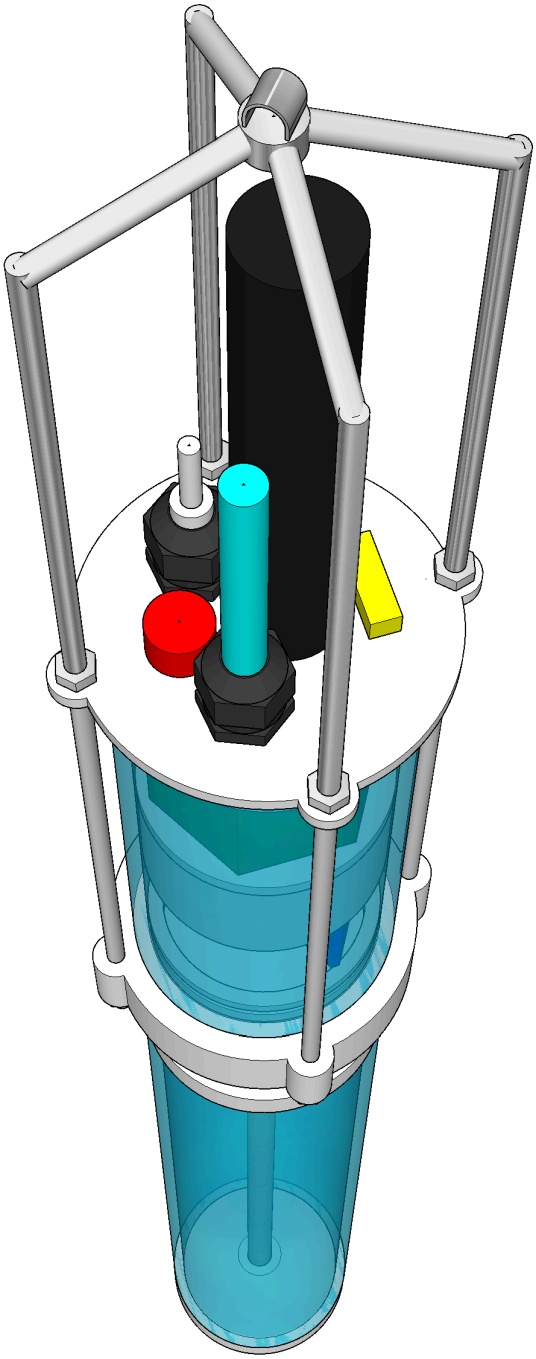

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