ApisQueen U2

ApisQueen U2 Underwater Thruster Instruction Manual

Model: U2 (UT001)

1. Introduction

Thank you for choosing the ApisQueen U2 Underwater Thruster. This manual provides essential information for the safe and efficient operation, setup, and maintenance of your thruster. Please read this manual thoroughly before use to ensure optimal performance and longevity of the product.

2. Safety Information

- Always ensure the thruster is disconnected from power before handling or performing any maintenance.
- Never operate the thruster out of water for extended periods, as this can lead to overheating and damage.
- Keep hands, hair, and loose clothing clear of the propeller during operation.
- Ensure all electrical connections are secure and waterproofed as appropriate for underwater use.
- This thruster requires an Electronic Speed Controller (ESC) for operation. Do not connect directly to a battery.
- Use only power sources within the specified voltage range (12-16V).

3. Product Overview

The ApisQueen U2 Underwater Thruster is a high-performance brushless motor designed for various underwater applications, including kayaks, ROVs, RC boats, and other underwater vehicles. It features a durable, anti-corrosion composite material construction suitable for seawater environments.

Image 3.1: ApisQueen U2 Underwater Thruster with its power cables and connectors.

Image 3.2: Side view of the U2 thruster, highlighting its compact design and protective shroud.

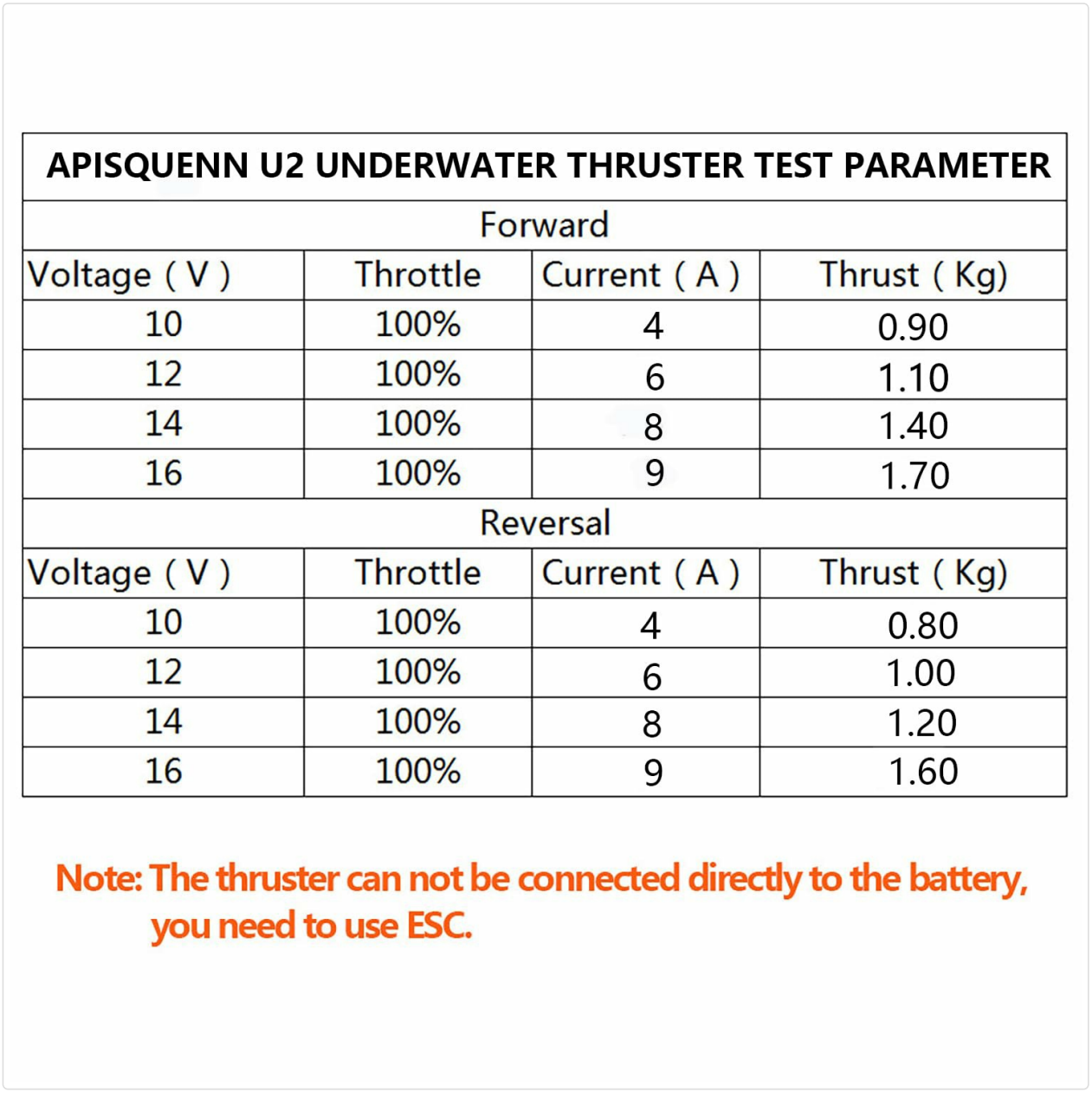
Key Features:

- One-piece open mold design using composite materials for anti-corrosion and anti-oxidation.
- Low power consumption and high efficiency.
- Supports 12-16V (3-4S LiPo) input.
- Front and rear protective ribs to prevent foreign object entry.
- Equipped with a 500KV high-speed motor.

4. Specifications

Specification	Value
Model Number	UT001
Product Dimensions	5.43 x 2.5 x 7.8 inches
Item Weight	7.83 Ounces

Specification	Value
Voltage Range	12-16 Volts (3-4S LiPo)
Horsepower	300 Watts
Motor KV	500KV
Thrust (Max)	1.7 Kg (at 16V, 100% throttle)



APISQUENN U2 UNDERWATER THRUSTER TEST PARAMETER			
Forward			
Voltage (V)	Throttle	Current (A)	Thrust (Kg)
10	100%	4	0.90
12	100%	6	1.10
14	100%	8	1.40
16	100%	9	1.70
Reversal			
Voltage (V)	Throttle	Current (A)	Thrust (Kg)
10	100%	4	0.80
12	100%	6	1.00
14	100%	8	1.20
16	100%	9	1.60

Image 4.1: Performance test parameters for the ApisQueen U2 Thruster, showing thrust at various voltages and throttle settings for both forward and reverse operation.

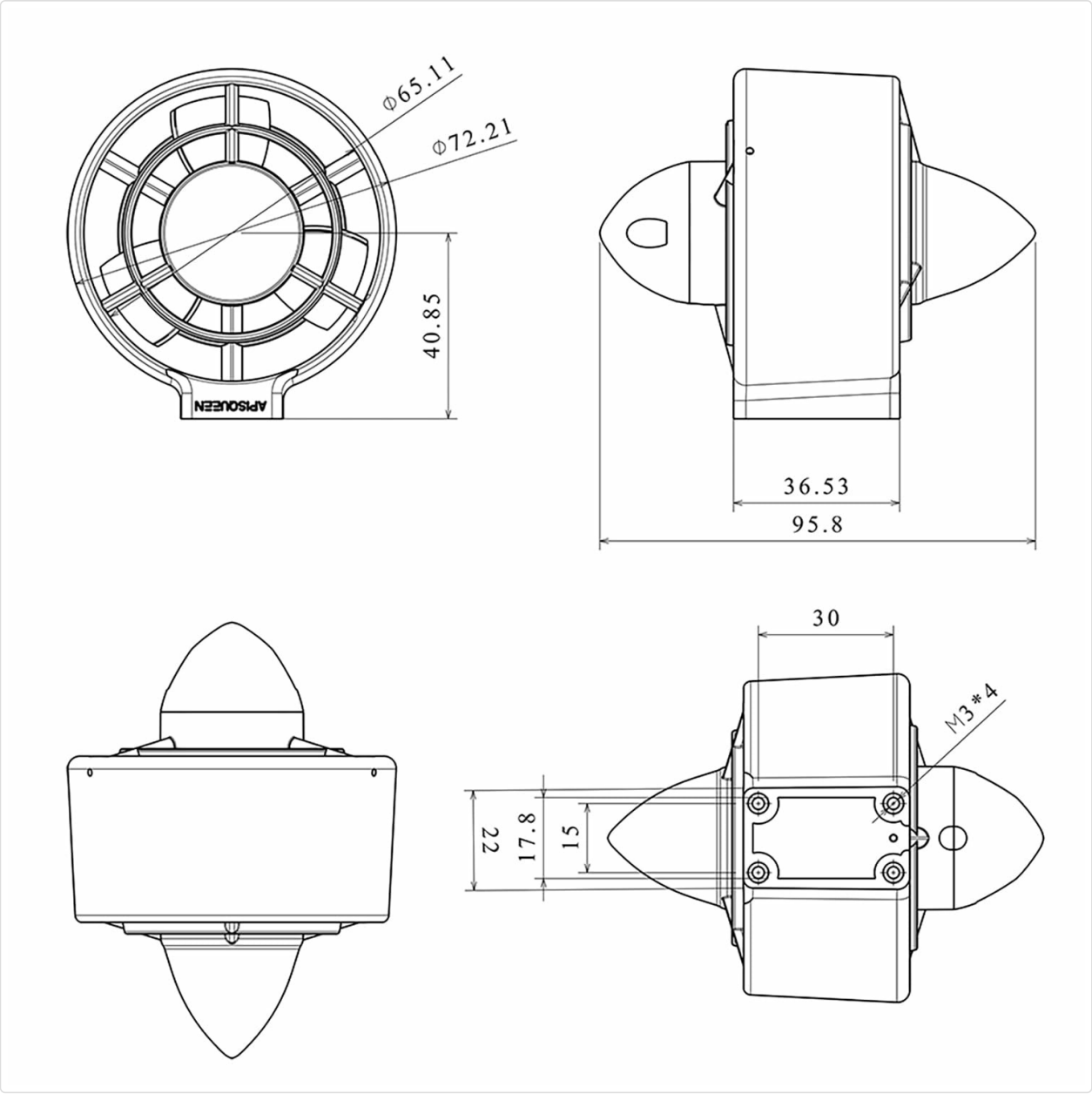


Image 4.2: Detailed technical drawing illustrating the dimensions of the U2 Underwater Thruster.

5. What's in the Box

The ApisQueen U2 Underwater Thruster package includes:

- 1 x U2 CCW Underwater Thruster

6. Setup

Proper setup is crucial for the safe and effective operation of your U2 Underwater Thruster. This thruster requires an Electronic Speed Controller (ESC) for power regulation and control. **Do not connect the thruster directly to a battery.**

6.1. Wired Control Method

For wired control, connect the thruster to an ApisQueen ESC, which is then connected to a PWM modulator or similar control device. Ensure correct polarity and secure connections.

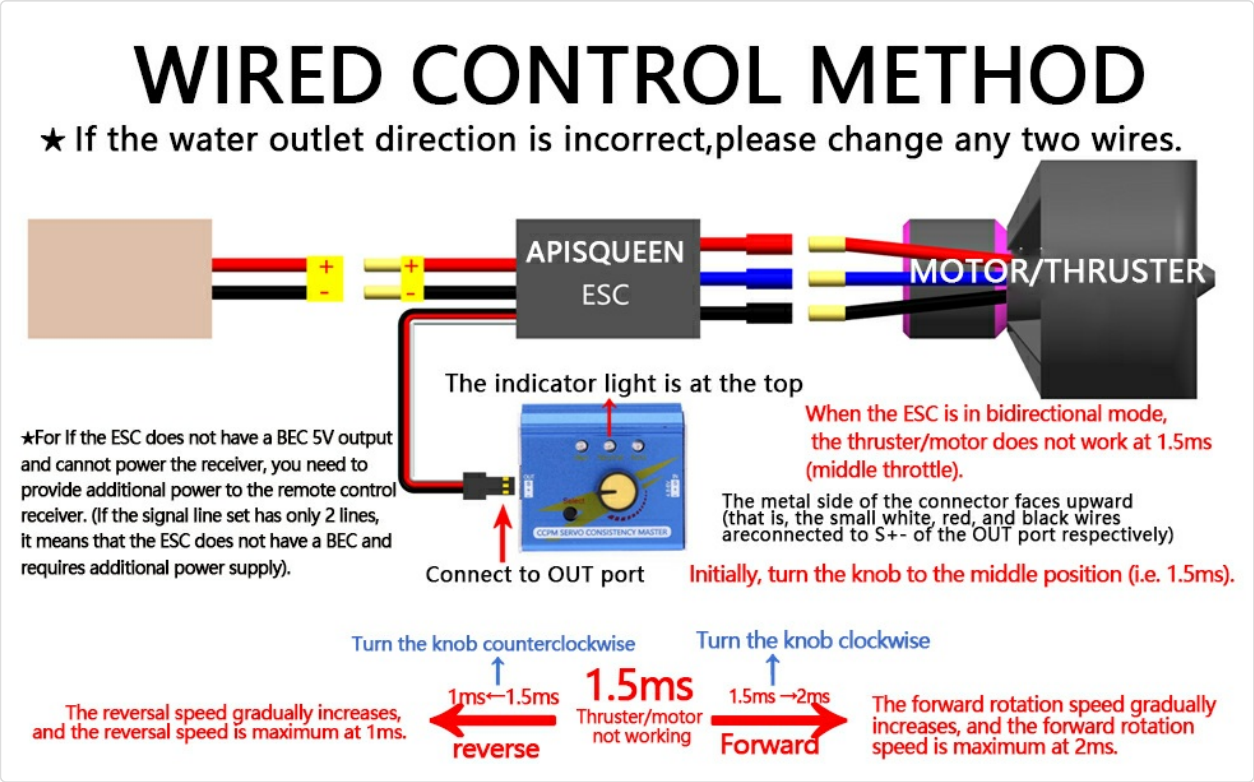


Image 6.1: Wiring diagram for the wired control method, showing connections between battery, ESC, PWM modulator, and thruster. Note the indicator light on the PWM modulator and the 1.5ms neutral throttle position.

- Connect the thruster's three wires to the ESC's motor output.
- Connect the ESC's power input to your battery (12-16V).
- Connect the ESC's signal wire to the 'OUT' port of your PWM modulator.
- If the ESC does not have a BEC (Battery Eliminator Circuit) 5V output and cannot power the receiver, you will need to provide additional power to the remote control receiver. If the signal line set has only 2 wires, it indicates the ESC does not have a BEC and requires an external power supply.
- Initially, turn the knob on the PWM modulator to the middle position (1.5ms).

6.2. Wireless Control Method

For wireless control, the ESC connects to a receiver, which in turn communicates with a remote control. This setup allows for remote operation of the thruster.

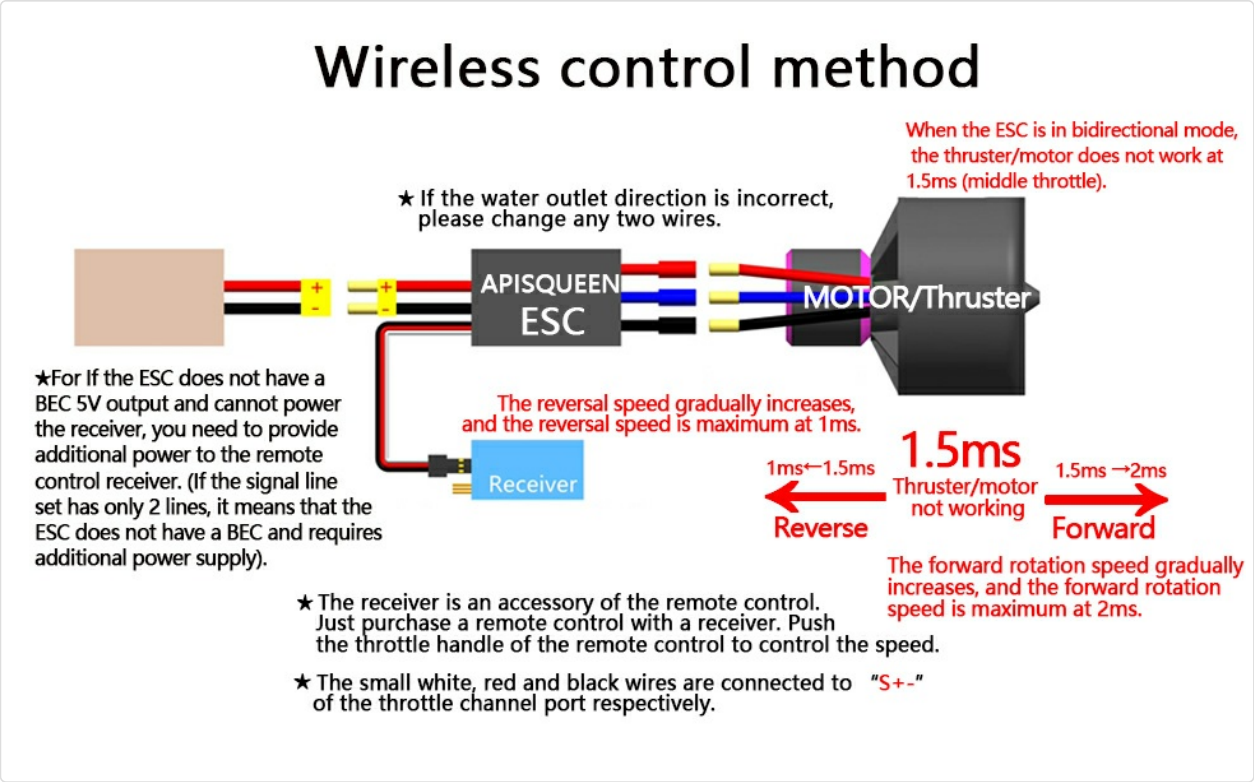


Image 6.2: Wiring diagram for the wireless control method, showing connections between battery, ESC, receiver, and thruster. The receiver is an accessory of the remote control.

- Connect the thruster's three wires to the ESC's motor output.
- Connect the ESC's power input to your battery (12-16V).
- Connect the ESC's signal wire to the appropriate channel on your remote control receiver. The small white, red, and black wires are connected to the "S+" of the throttle channel port respectively.
- If the ESC does not have a BEC 5V output and cannot power the receiver, you will need to provide additional power to the remote control receiver.
- Ensure your remote control is properly bound to the receiver.

7. Operating Instructions

Once the thruster is correctly set up with an ESC and control system, you can begin operation. The U2 thruster supports both forward and reverse thrust.

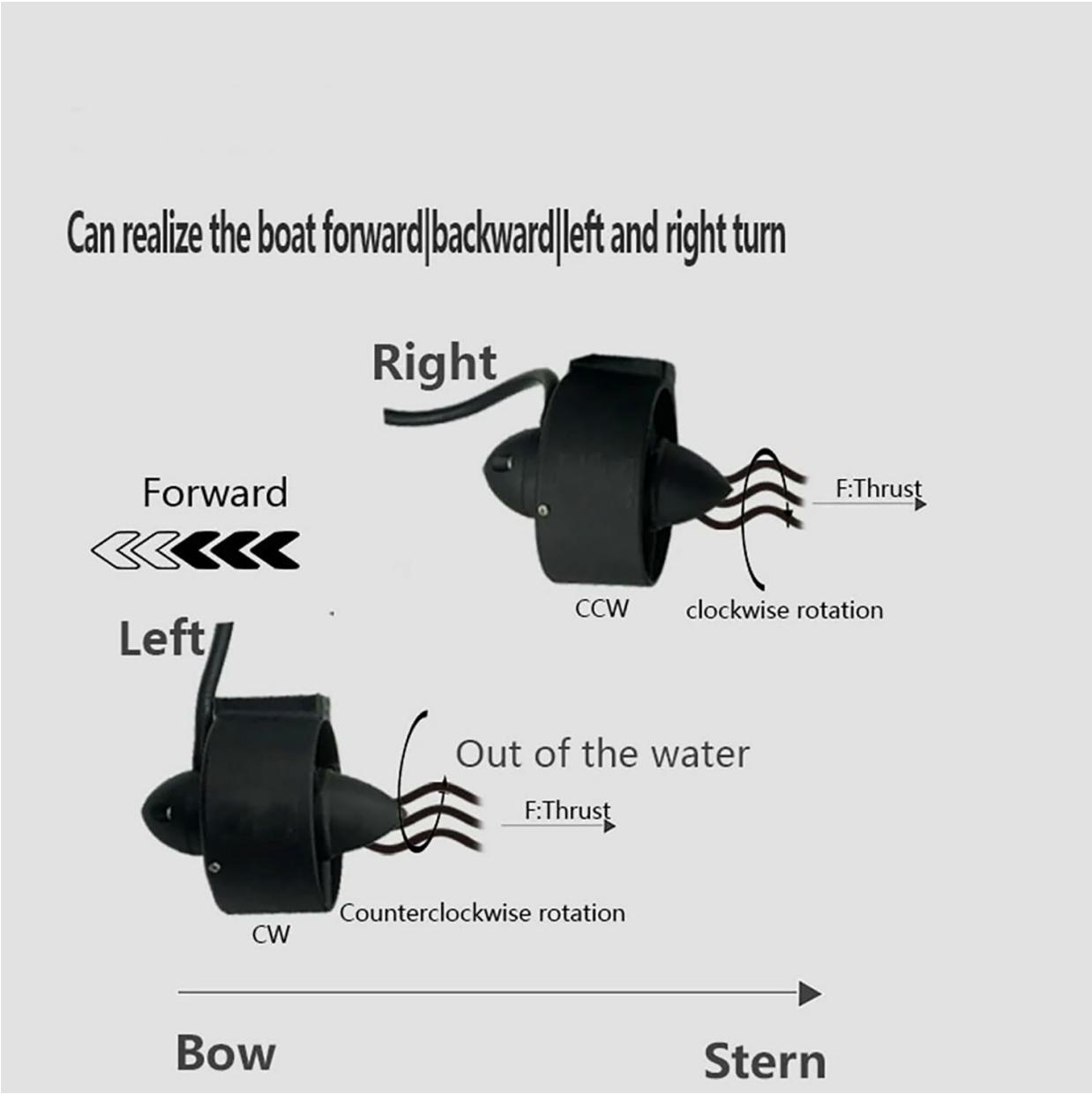


Image 7.1: Illustration of how thruster rotation (clockwise/counter-clockwise) can be used to achieve forward, backward, left, and right movement for a boat or vehicle.

7.1. Throttle Control

- When the ESC is in bidirectional mode, the thruster/motor will not operate at the middle throttle position (1.5ms). This is the neutral point.
- **Forward Rotation:** Increasing the throttle from 1.5ms to 2ms will gradually increase the forward rotation speed. Maximum forward speed is achieved at 2ms.
- **Reverse Rotation:** Decreasing the throttle from 1.5ms to 1ms will gradually increase the reversal speed. Maximum reverse speed is achieved at 1ms.

7.2. Direction Adjustment

- If the water outlet direction (thrust direction) is incorrect relative to your control input, you can reverse the motor's rotation by changing any two of the three wires connecting the thruster to the ESC.

8. Maintenance

Regular maintenance ensures the longevity and reliable performance of your ApisQueen U2 Underwater

Thruster.

- After each use in saltwater, rinse the thruster thoroughly with fresh water to prevent salt buildup and corrosion.
- Inspect the propeller for any debris, fishing lines, or damage. Remove any obstructions carefully.
- Check all electrical connections for corrosion or loose contacts. Ensure waterproof seals are intact.
- Periodically inspect the motor housing for cracks or damage.
- Store the thruster in a dry, cool place when not in use.

9. Troubleshooting

This section addresses common issues you might encounter with your U2 Underwater Thruster.

9.1. Motor Not Starting

- **Symptom:** Motor does not start within three seconds when throttle is increased.
- **Cause:** The ESC's start-up protection has activated. This can occur due to poor or broken contact between the ESC and motor wires, or the propeller being blocked by an object.
- **Solution:** Return the throttle to its lowest point. Check all wiring connections and ensure the propeller is free from obstructions. Then, attempt to restart the motor.

9.2. Sudden Power Cut-off

- **Symptom:** The thruster suddenly loses power during operation.
- **Cause:** The ESC's over-load protection has activated due to a sudden, extremely heavy load. If the motor and ESC are out of sync, the ESC may also attempt to restart automatically.
- **Solution:** Reduce the throttle to zero. Identify and remove any obstruction or excessive load on the propeller. The thruster should then resume normal operation.

9.3. Unintended Continuous Rotation

- **Symptom:** Propeller continues to rotate at high speed without throttle input.
- **Cause:** The ESC's throttle signal loss protection has activated. This occurs if the ESC detects that the throttle remote control signal has been lost for more than 0.32 seconds.
- **Solution:** Re-establish the remote control signal. The ESC will restore the corresponding power output once the signal is restored. Ensure your remote control battery is charged and within range.

9.4. Incorrect Thrust Direction

- **Symptom:** The thruster provides thrust in the opposite direction of the intended control input.
- **Cause:** The motor's rotation direction is reversed.
- **Solution:** Disconnect power. Swap any two of the three wires connecting the thruster to the ESC. This will reverse the motor's rotation direction.

10. Warranty and Support

For warranty information and technical support, please contact ApisQueen directly through their official channels or the retailer from whom you purchased the product. Keep your purchase receipt as proof of purchase.
Manufacturer: ApisQueen