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› Surpass Hobby 2948 4800 KV 4-Pole Brushless Motor for RC Boat with Water Cooling Jacket Instruction Manual

Surpass Hobby 2948

Surpass Hobby 2948 4800 KV 4-Pole Brushless Motor for RC Boat with Water Cooling Jacket

Instruction Manual

1. INTRODUCTION

Thank you for choosing the Surpass Hobby 2948 4800 KV 4-Pole Brushless Motor. This high-performance motor is specifically designed for RC boats ranging from 650mm to 800mm in length, offering exceptional power and efficiency. This manual provides essential information for the proper installation, operation, and maintenance of your motor to ensure a long and reliable service life.



Image 1.1: Surpass Hobby 2948 4800 KV Brushless Motor with Water Cooling Jacket. This image shows the complete motor assembly, highlighting its compact design and integrated water cooling system.

2. SAFETY INFORMATION

Please read and understand all safety warnings before operating this product. Failure to do so may result in injury or damage to the product or property.

- Always disconnect the battery before performing any maintenance or installation.
- Ensure all electrical connections are secure and properly insulated to prevent short circuits.
- This motor operates at high RPMs. Keep fingers, loose clothing, and other objects away from rotating parts.
- The motor can become hot during operation. Allow it to cool before handling.
- Always use a suitable Electronic Speed Controller (ESC) that matches the motor's specifications.
- Ensure the water cooling system is properly installed and functioning before operation to prevent overheating.

- Operate RC boats in open water, away from people and obstacles.

3. PACKAGE CONTENTS

Verify that all items are present in your package:

- 1 x Surpass Hobby 2948 4800KV Motor
- 1 x Water Cooling Jacket
- 2 x Rubber O-rings

4. PRODUCT FEATURES

The Surpass Hobby 2948 4800 KV Brushless Motor incorporates advanced design and materials for superior performance:

- **4-Pole 12-Slot Design:** Provides high torque and efficiency.
- **CNC Machined 6061 T6 Billet Aluminum Heatsink Can:** Ensures excellent heat dissipation and durability.
- **High Purity Copper Windings:** Maximizes electrical efficiency.
- **High RPM ABEC5 Oversized Bearings:** Offers precision, durability, low noise, and minimal friction.
- **Precision Balanced Rotor:** Guarantees smooth operation, reliability, and maximum RPM.
- **Super-Thin (0.2mm) Stator Laminations:** Enhances motor performance.
- **Removable/Replaceable Rotor:** Allows for easier maintenance and customization.
- **Designed for 650-800mm RC Boats:** Optimized for specific boat sizes.
- **Overall Efficiency:** Exceeds 95%.
- **Durable Metal Shell:** Provides robust protection and an attractive appearance.

2948 Brushless Motor for RC Boat



- ★ 4 Pole 12 Slot Hi-torque Motor Design
- ★ CNC Machined 6061 T6 Billet Aluminum Heatsink Can
- ★ High Purity Copper Windings Maximizes Efficiency
- ★ High RPM ABEC5 Oversized Bearings



Image 4.1: Key features of the 2948 Brushless Motor. This image highlights the 4-pole 12-slot design, CNC machined aluminum heatsink, high purity copper windings, and ABEC5 oversized bearings.

5. SETUP

Follow these steps for proper installation of your motor:

1. **Motor Mounting:** Securely mount the 2948 motor into your RC boat's motor mount using appropriate screws. Ensure it is aligned correctly with the propeller shaft.
2. **ESC Connection:** Connect the three motor wires to your Electronic Speed Controller (ESC). The motor wires are typically color-coded (blue, yellow, orange) and connect to the corresponding ESC output wires. If the motor spins in the wrong direction, swap any two of the motor wires.
3. **Water Cooling Jacket Installation:** Slide the water cooling jacket over the motor. Ensure the two rubber O-rings are properly seated to create a watertight seal.
4. **Water Cooling System Connection:** Connect the inlet and outlet tubes of your boat's water cooling system to the

nozzles on the water cooling jacket. Ensure water flow is unobstructed.

5. **Propeller Installation:** Attach your propeller to the motor shaft, ensuring it is securely fastened and balanced.



Image 5.1: Labeled components of the 2948 Brushless Motor. This image shows the super high current silicon wires, CNC machined 6061 T6 billet aluminum heatsink can, 4mm gold-plated plugs, and alloy steel output shaft.

2948 Brushless Motor for RC Boat



- ★ 4 Pole 12 Slot Hi-torque Motor Design
- ★ CNC Machined 6061 T6 Billet Aluminum Heatsink Can
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Image 5.2: The 2948 Brushless Motor with the 29-S Water Cooling System installed. This image demonstrates how the water cooling jacket integrates with the motor.

6. OPERATING INSTRUCTIONS

Before operating your RC boat with the Surpass Hobby 2948 motor, perform the following checks:

- Ensure all connections are secure and the battery is fully charged.
- Verify that the water cooling system is properly connected and that water can flow freely through it.
- Place the boat in water before starting the motor. Never run the motor at high RPMs out of water, as this can cause damage due to lack of cooling.
- Gradually increase throttle to check for proper motor function and direction.
- Monitor motor temperature during initial runs. If the motor becomes excessively hot, reduce run time or check for issues with the cooling system or propeller load.

7. MAINTENANCE

Regular maintenance will extend the life and performance of your motor:

- **Cleaning:** After each use, especially in saltwater, rinse the motor and water cooling jacket with fresh water to prevent corrosion. Dry thoroughly.
- **Bearing Inspection:** Periodically check the motor bearings for smooth operation. If they feel rough or noisy, they may need lubrication or replacement.
- **Water Cooling System:** Inspect the water cooling tubes and jacket for blockages or leaks. Ensure water flows freely through the system.
- **Connections:** Regularly check all electrical connections for tightness and signs of wear or corrosion.
- **Propeller:** Ensure the propeller is free of damage and balanced. An unbalanced propeller can cause excessive vibration and stress on the motor.

8. TROUBLESHOOTING

If you encounter issues with your motor, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
Motor not spinning	Loose connections, faulty ESC, dead battery, motor damage	Check all wiring, test ESC, charge/replace battery, inspect motor for physical damage.
Motor overheating	Insufficient water cooling, excessive propeller load, faulty ESC, prolonged high-throttle use	Check water cooling system for blockages, use a smaller propeller, verify ESC settings, reduce continuous high-throttle operation.
Motor runs in wrong direction	Incorrect motor wire connection	Swap any two of the three motor wires connected to the ESC.
Reduced power/efficiency	Damaged propeller, worn bearings, battery issues	Inspect/replace propeller, check/replace bearings, ensure battery is fully charged and healthy.

9. SPECIFICATIONS

Detailed specifications for the Surpass Hobby 2948 4800 KV Brushless Motor:

Specification	Value
Brand	Surpass Hobby
Model Number	2948
KV (RPM/Volt)	4800KV
Max RPM	60000
Watts	1000W
Max Current	82A

Specification	Value
Max Voltage	12V
Winding Type	WYE (2Y)
No-load Current	2.2A
Motor Dimensions (Diameter x Length)	29mm x 48mm
Shaft Diameter	3.175mm
Connector Type	4mm Gold Banana Connector
Motor Weight	145g
Water Cooling Jacket Dimensions	37mm x 41.6mm
Material	Aluminum, Metal
Recommended Boat Length	650mm - 800mm
UPC	768486238651

2948 Brushless Motor For Boat



Image 9.1: Dimensions of the 2948 Brushless Motor. This image provides a visual representation of the motor's diameter (29mm) and length (48mm).

29-S Water Cooling system

$\Phi 4.5\text{mm}$

O-ring rubber seals



39mm

$\Phi 37\text{mm}$

Image 9.2: Dimensions of the 29-S Water Cooling System. This image shows the diameter (37mm) and length (39mm) of the water cooling jacket, along with the O-ring rubber seals.

SPECIFICATIONS

Product	KV (RPM/Volt)	Max Amps	Max voltage	Max power (W)	Weight (g)	Motor size (mm)	Winding type	No load current	Max RPM	Shaft (mm)	Rotor Poles
2948	6800	116	8	1000	145	Ø29x48	DELTA	4.0A	60K	Ø3.175	4
2948	6600	105	9	1000	145	Ø29x48	WYE	3.8A	60K	Ø3.175	4
2948	5880	98	10	1000	145	Ø29x48	DELTA	2.6A	60K	Ø3.175	4
2948	4800	82	12	1000	145	Ø29x48	WYE	2.2A	60K	Ø3.175	4
2948	3450	60	17	1000	145	Ø29x48	DELTA	1.6A	60K	Ø3.175	4
2958	6500	155	9	1400	165	Ø29x58	DELTA	4.2A	60K	Ø3.175	4
2958	4950	116	12	1400	165	Ø29x58	DELTA	3.9A	60K	Ø3.175	4
2958	4480	108	13	1400	165	Ø29x58	WYE	2.8A	60K	Ø3.175	4
2958	4200	100	14	1400	165	Ø29x58	DELTA	2.1A	60K	Ø3.175	4
2958	3380	78	18	1400	165	Ø29x58	WYE	1.9A	60K	Ø3.175	4
2968	6500	200	9	1800	185	Ø29x68	DELTA	5.2A	60K	Ø4	4
2968	5300	160	11	1800	185	Ø29x68	DELTA	4.2A	60K	Ø4	4
2968	4000	120	15	1800	185	Ø29x68	DELTA	2.9A	60K	Ø4	4
2968	3800	112	16	1800	185	Ø29x68	WYE	2.7A	60K	Ø4	4
2968	3400	105	17	1800	185	Ø29x68	DELTA	2.2A	60K	Ø4	4

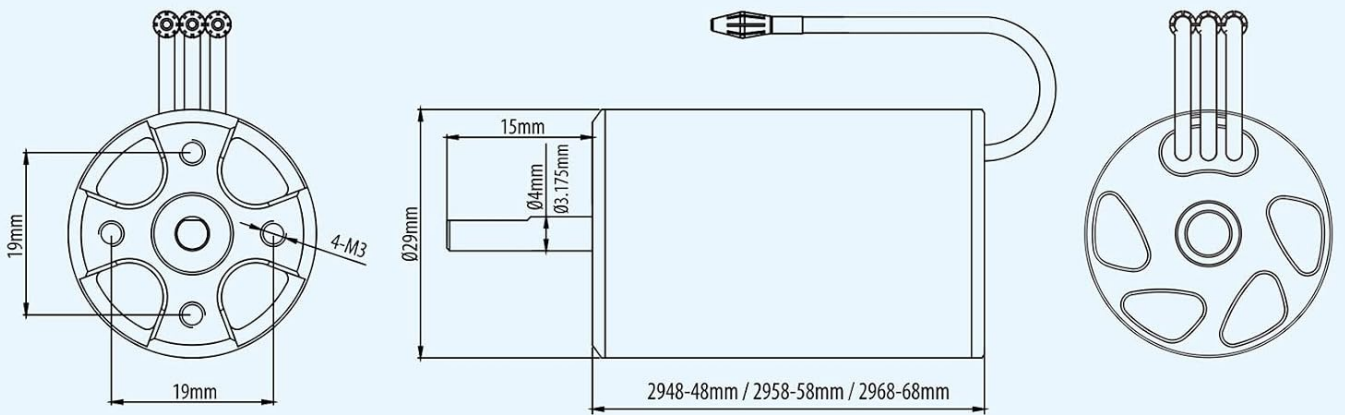


Image 9.3: Comprehensive specifications table for various Surpass Hobby motors, including the 2948 model, along with detailed technical diagrams of the motor and shaft.

10. WARRANTY INFORMATION

Surpass Hobby products are manufactured to high-quality standards. Specific warranty terms and conditions may vary by region and retailer. Please retain your proof of purchase for any warranty claims. For detailed warranty information, refer to the documentation provided with your purchase or contact your retailer.

11. SUPPORT

For technical assistance, troubleshooting beyond this manual, or inquiries regarding your Surpass Hobby 2948 motor, please contact your authorized dealer or the Surpass Hobby customer support channel. Refer to the product packaging or the official Surpass Hobby website for contact details.

