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## Futaba FUTM0031

# Futaba S3003 Standard Servo Instruction Manual

Model: FUTM0031

## 1. INTRODUCTION

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The Futaba S3003 is a standard servo designed for various remote control applications, including cars, boats, and other models requiring precise control. This manual provides essential information for the proper installation, operation, and maintenance of your S3003 servo to ensure reliable performance.

Key features include Surface Mount Technology (SMT) for improved reliability against vibration, an impact-resistant and fuel-proof case, through-the-hole circuit board plating, a heavy-duty output shaft, and durable nylon gears.

## 2. SAFETY INFORMATION

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- **Power Supply:** Ensure your power supply (receiver battery) can deliver sufficient current. This servo can draw high current, especially under load. Using NiMH or LiPo batteries requires verifying their current output capability.
- **Voltage Range:** Operate the servo within its specified voltage range (4.8V to 6V). Exceeding this range can damage the servo.
- **Installation:** Securely mount the servo using the provided hardware. Loose mounting can lead to vibration and reduced performance.
- **Wiring:** Connect the servo to the receiver correctly. Incorrect polarity can cause damage. The "J" type connector typically has three wires: signal, positive, and negative.
- **Environmental Conditions:** While the case is fuel-proof, avoid prolonged exposure to extreme temperatures or moisture.

## 3. PACKAGE CONTENTS

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Verify that all items are present in the package:

- Futaba S3003 Standard Servo (1)
- Brass eyelets (4)
- Black rectangular rubber grommets (4)
- Servo mount screws (4)
- Servo wheel 1.375 in (35 mm) in diameter (1)

- X-shape servo arm 1.5 in (38 mm) across (1)
- Star shaped arm 1.25 in (32 mm) across (1)



Figure 3.1: Futaba S3003 Standard Servo with various servo horns, mounting hardware, and a servo wheel.

## 4. SETUP AND INSTALLATION

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### 1. Mounting the Servo:

Insert the brass eyelets into the servo's mounting tabs. Then, place the rubber grommets over the eyelets. This provides vibration isolation. Secure the servo to your model's servo tray using the provided servo mount screws. Ensure the servo is firmly mounted but do not overtighten the screws, as this can distort the servo case.



Figure 4.1: Example of the Futaba S3003 servo mounted within an RC vehicle chassis.

## 2. Attaching a Servo Arm/Horn:

Select the appropriate servo arm (X-shape, star-shape, or servo wheel) for your application. Center the servo by connecting it to your receiver and turning on your RC system. The servo will move to its neutral position. Carefully press the chosen servo arm onto the output shaft, ensuring it is perpendicular to the servo body or aligned as required by your model. Secure the arm with the small screw typically found in the center of the servo arm.



Figure 4.2: Futaba S3003 servo with an attached servo arm and linkage, demonstrating a typical installation.

### 3. Connecting to Receiver:

Plug the servo's "J" type connector into the designated channel on your RC receiver. Ensure the polarity is correct (signal, positive, negative). Refer to your receiver's manual for specific channel assignments.



Figure 4.3: The Futaba S3003 servo showing its three-wire "J" type connector for receiver connection.

## 5. OPERATING INSTRUCTIONS

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Once installed and connected, the Futaba S3003 servo operates by receiving pulse width modulation (PWM) signals from your RC receiver. The pulse width determines the servo's angular position.

- **Centering:** Always power on your transmitter first, then your receiver/model. The servo will typically move to its neutral (centered) position upon power-up if it receives a valid signal.
- **Control:** Use your transmitter's stick or dial to control the servo's movement. The servo will respond by moving to the commanded position.
- **End Points:** Adjust the end points on your transmitter (if available) to prevent the servo from over-traveling and binding, which can cause damage or excessive current draw.
- **Power Consumption:** Be aware that the servo draws more current when under load or when rapidly changing positions. Ensure your battery and receiver can handle the peak current demands.

## 6. MAINTENANCE

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- **Cleaning:** Keep the servo case clean from dirt, dust, and debris. Use a soft, dry cloth. Avoid using solvents that

could damage the plastic.

- **Gear Inspection:** Periodically inspect the servo gears for wear or damage. While the nylon gears are durable, excessive force or impacts can cause damage.
- **Wiring:** Check the servo lead for any cuts, fraying, or loose connections. Damaged wiring can lead to intermittent operation or failure.
- **Mounting:** Ensure the servo remains securely mounted. Re-tighten screws if necessary, but avoid overtightening.

## 7. TROUBLESHOOTING

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Problem	Possible Cause	Solution
Servo does not respond.	No power to receiver/servo, incorrect wiring, faulty receiver channel, damaged servo.	Check battery connection and charge. Verify servo lead is correctly plugged into receiver. Test with a different receiver channel or servo.
Servo jitters or shakes.	Insufficient power supply, electrical noise, mechanical binding, faulty servo.	Ensure power supply can deliver at least 1 amp. Check for loose connections or interference. Verify linkage moves freely.
Servo moves slowly or lacks torque.	Low battery voltage, excessive mechanical load, incorrect voltage setting.	Charge or replace battery. Reduce mechanical load on the servo. Ensure operating voltage is 6V for maximum torque.
Servo makes grinding noises.	Damaged gears, mechanical binding.	Inspect gears for damage. Check for any obstructions preventing smooth movement of the servo arm.

## 8. SPECIFICATIONS

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Figure 8.1: Product packaging showing detailed specifications for the Futaba S3003 servo.

Characteristic	Value
Model Number	FUTM0031
Speed (4.8V)	0.23 sec/60°
Speed (6V)	0.19 sec/60°
Torque (4.8V)	44 oz-in (3.2 kg-cm)
Torque (6V)	57 oz-in (4.1 kg-cm)
Dimensions (L x W x H)	1.6 x 0.8 x 1.4 in (40 x 20 x 36 mm)
Weight	1.3 oz (37 g)
Connector Type	"J" type with approx. 5 in lead
Gears	Nylon
Case Material	Impact Resistant, Fuelproof Plastic

## 9. WARRANTY AND SUPPORT

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The Futaba S3003 Standard Servo comes with a **one-year warranty** from the date of purchase, covering manufacturing defects. Please retain your proof of purchase for warranty claims.

For technical support, service, or warranty inquiries, please contact your local Futaba distributor or the retailer where the product was purchased. You may also visit the official Futaba website for further assistance and contact information.

