Miuzei MG90S Servo

Miuzei MG90S Micro Servo Motor

INSTRUCTION MANUAL

1. Introduction

The Miuzei MG90S is a compact and lightweight micro servo motor featuring metal gears for enhanced durability and performance. It is suitable for a wide range of applications including remote-controlled vehicles, robotics, and various electronic projects requiring precise angular control.

2. Package Contents

Verify that all components are present in your package:

- MG90S Micro Servo Motor(s)
- Assorted Servo Horns (e.g., cross, star, bar types)
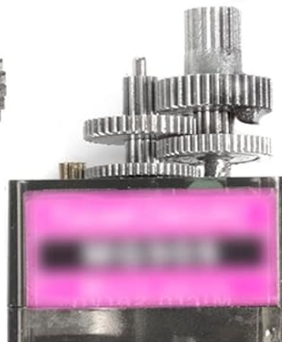- Mounting Screws for Servo Horns and Servo

Image: Miuzei MG90S Micro Servo Motor with various servo horns and mounting hardware.

3. Setup and Connection

Follow these steps to properly set up and connect your MG90S servo motor:

1. **Identify Servo Wires:** The MG90S servo typically has three wires:

   - **Brown/Dark Wire:** Ground (GND)
   - **Red Wire:** Power (VCC, 4.8V-6V)
   - **Orange/Yellow Wire:** Signal (PWM input)

2. **Connect to Controller:** Connect the servo wires to your microcontroller (e.g., Arduino) or RC receiver according to the pinout diagram of your specific board. Ensure correct polarity for power and ground connections to prevent damage.

3. **Attach Servo Horn:** Select the appropriate servo horn for your application and securely attach it to the servo's output shaft using the provided screw. Ensure the servo is centered (usually by sending a 1500µs pulse) before

attaching the horn to ensure proper alignment.

MG90S Parameter

Weight	Transmission Type
13.5g	Metall

Size	Technology
22.4*12.1*22.8mm	CNC-Prozess

Rotation angle
180°±3°(when500~2500usec)

Downtime
2kg/cm

Operating Voltage	
4.8V	6.0V

Idle Speed	
0.1sec/60°	0.08sec/60°

Dead Zone
5 Mikrosekunden

Stall Torque
1.8 kg/cm (4.8V) /2.0 kg/cm (6V)

Cable Length
250 mm / 9,84 Zoll

Colour Represented

Grey	Negative Pole
Grey	Positive Electrode
Yellow	signal

Image: Detailed parameters and a color-coded wiring diagram for the MG90S servo motor, showing grey for negative, red for positive, and yellow for signal.

Video: An official Miuzei video demonstrating the MG90S Micro Servo Motor in an RC car application, showcasing its movement and functionality.

4. Operating Instructions

The MG90S servo operates by receiving Pulse Width Modulation (PWM) signals from a microcontroller or RC receiver. The width of the pulse determines the angular position of the servo arm.

- **Angular Range:** The servo has a rotation angle of approximately 180 degrees.
- **Pulse Width Control:** Typically, a pulse width of 1000µs corresponds to 0 degrees, 1500µs to 90 degrees (neutral position), and 2000µs to 180 degrees. These values may vary slightly depending on the specific servo and controller.
- **Power Supply:** Ensure the servo is powered within its specified operating voltage range of 4.8V to 6V. Inadequate

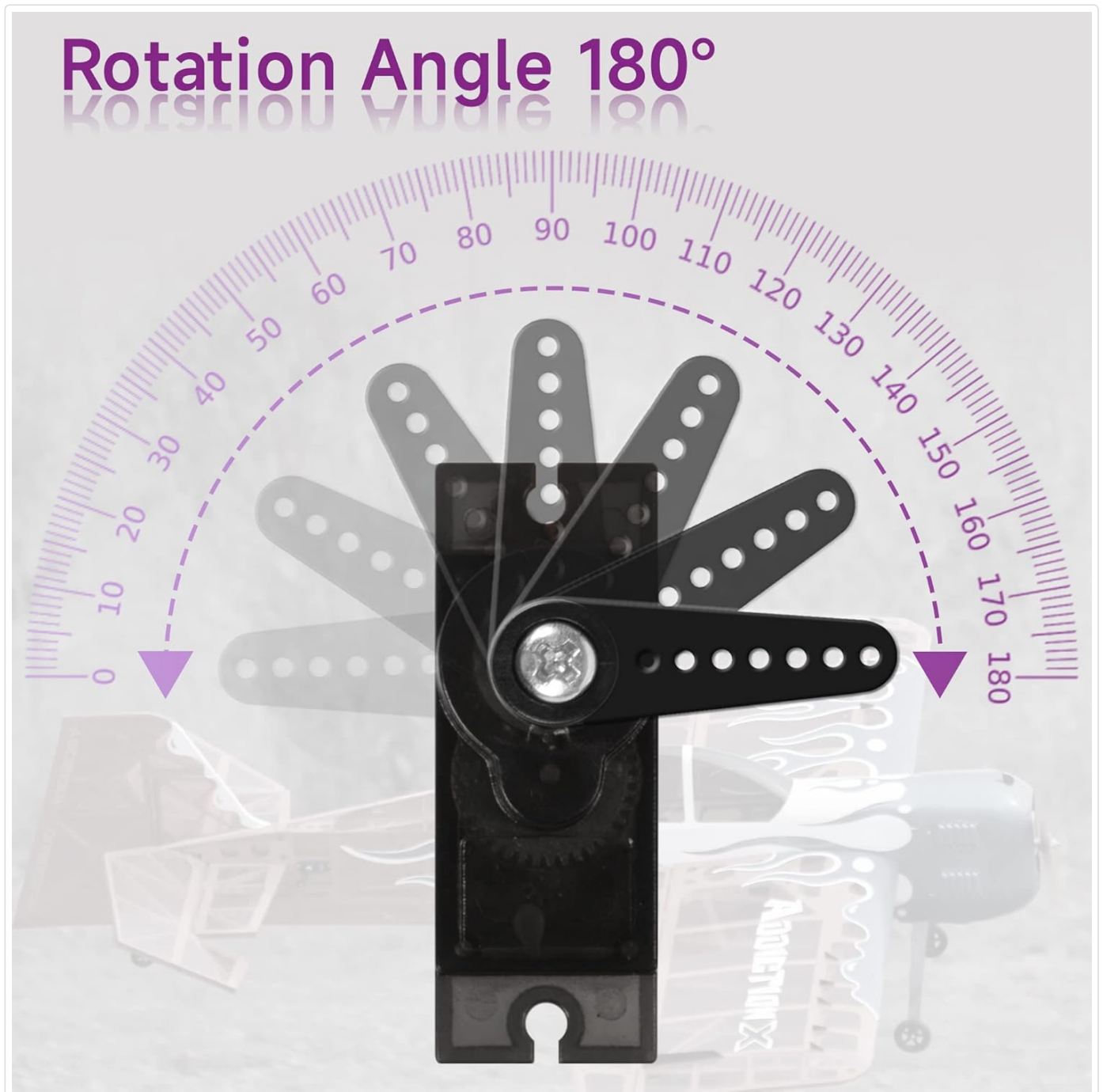power can lead to erratic behavior or reduced torque.

Image: Illustration of the MG90S servo's 180-degree rotation capability, showing various angular positions.
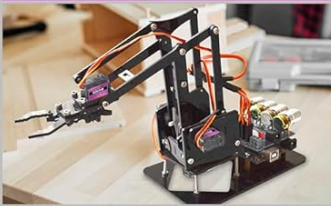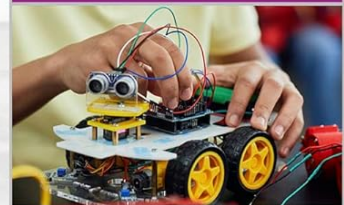
Image: Examples of the MG90S servo's application in robots, manipulators, ship models, cars, aircraft, and DIY projects.

5. Maintenance

Proper maintenance ensures the longevity and optimal performance of your MG90S servo motor:

- **Keep Clean:** Regularly clean the servo to prevent dust, dirt, or debris from entering the internal mechanism, especially around the output shaft.
- **Avoid Overloading:** Do not apply excessive force or torque beyond the servo's rated stall torque. This can damage the gears or motor.
- **Check Connections:** Periodically inspect all wiring connections for looseness or damage.
- **Storage:** Store the servo in a dry, clean environment away from extreme temperatures.

Internal Structure

1. **Metal Gear** Durable & Sturdy

2. **CNC-Process High Precision** No Angular Deviation

3. **Copper shaft Not easy.** to break, reduce shaking

4. **Stable Chip** High Performance & Safety
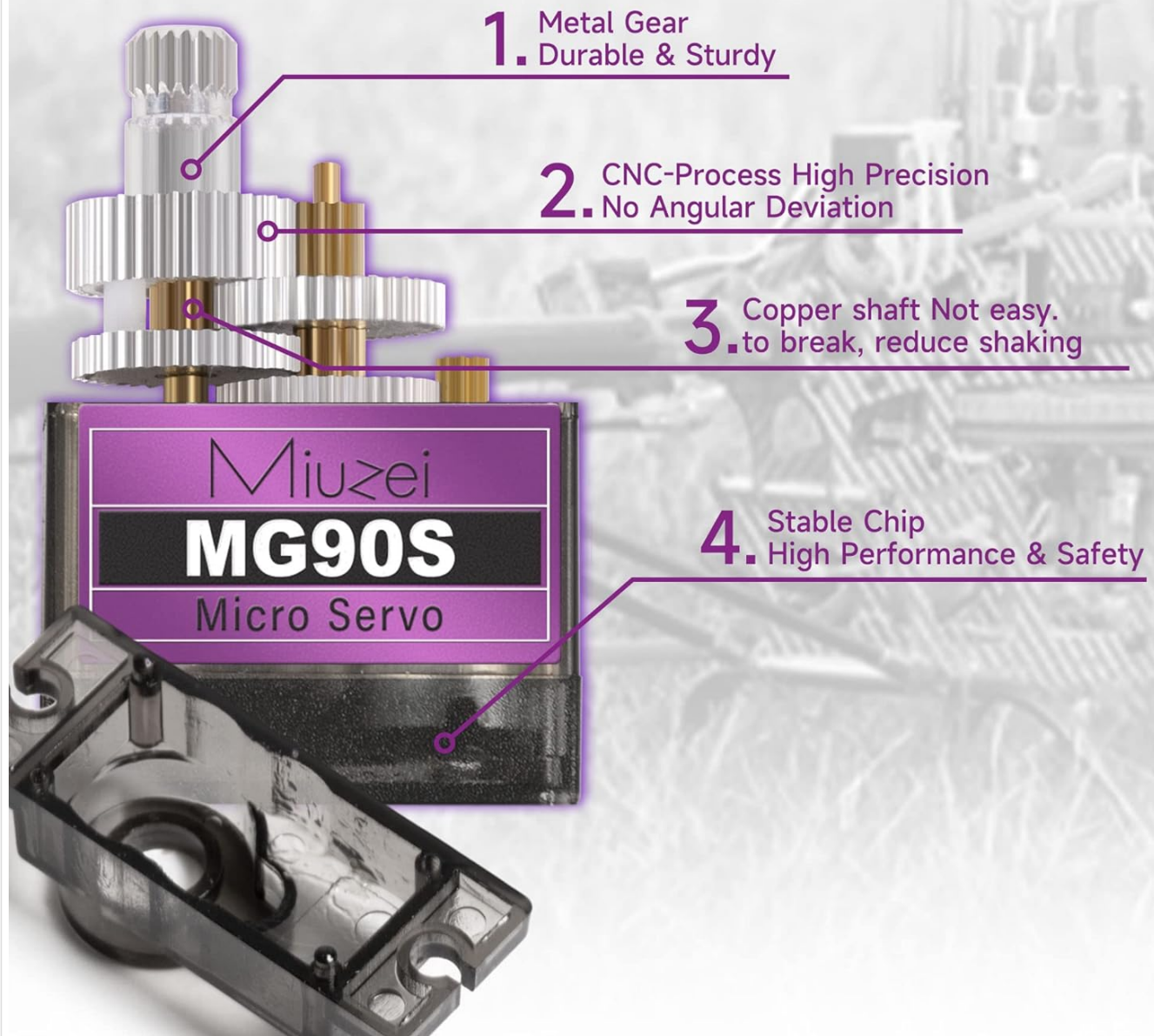
Miuzei
MG90S
Micro Servo

Image: An exploded view of the MG90S servo, showing its internal metal gear structure for durability and precision.

6. Troubleshooting

If you encounter issues with your MG90S servo, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
Servo does not move	Incorrect wiring, insufficient power, no signal, damaged servo.	Check all connections (power, ground, signal). Ensure power supply is within 4.8V-6V. Verify signal generation from controller. Test with a known working servo or controller.
Erratic or jittery movement	Noisy power supply, signal interference, loose connections, servo overload.	Ensure a stable power supply. Check for signal interference. Secure all connections. Reduce load on the servo.

Problem	Possible Cause	Solution
Weak or no torque	Low voltage, excessive load, internal gear damage.	Verify power supply voltage. Reduce the mechanical load on the servo. If gears are damaged, replacement may be necessary.
Unusual noise during operation	Gear wear, foreign objects, servo overload.	Inspect gears for wear or damage. Check for any obstructions. Ensure the servo is not continuously stalled or overloaded.

7. Specifications

Key technical specifications for the Miuzei MG90S Micro Servo Motor:

Feature	Specification
Model	MG90S
Weight	9 Grams (0.317 ounces)
Dimensions	22.4 x 12.1 x 22.8 mm (0.88 x 0.49 x 0.9 inches)
Operating Voltage	4.8V - 6V
Stall Torque (4.8V)	1.8 kg/cm
Stall Torque (6V)	2.0 kg/cm
Operating Speed (4.8V)	0.11 seconds/60 degrees
Operating Speed (6V)	0.08 seconds/60 degrees
Rotation Angle	180 degrees (when 500-2500µs pulse)
Gear Type	Metal Gear
Dead Zone Width	5 Microseconds
Cable Length	250 mm / 9.84 inches

Product Size

Image: Technical drawing showing the precise dimensions of the MG90S servo motor in millimeters and inches.

8. Warranty and Support

For warranty information and technical support, please refer to the documentation provided with your purchase or contact Miuzei customer service directly. Keep your proof of purchase for any warranty claims.