

HobbyPark HD3522MG

HobbyPark Waterproof 35KG High Torque Servo Motor User Manual

MODEL: HD3522MG

Brand: HobbyPark

[Introduction](#) [What's in the Box](#) [Setup](#) [Operation](#) [Maintenance](#) [Troubleshooting](#) [Specifications](#) [Warranty & Support](#)

1. INTRODUCTION

This manual provides detailed instructions for the installation, operation, and maintenance of your HobbyPark Waterproof 35KG High Torque Servo Motor (Model HD3522MG). This digital servo is designed for various RC applications, including 1/8, 1/10, and 1/12 scale RC crawlers, trucks, cars, airplanes, boats, and robotics, offering robust performance in challenging environments.

Key Features:

- **Waterproof & Programmable:** IP67 waterproof protection and 180° programmable rotation for flexible setup options. Ensures dependable operation in wet, muddy, or rugged terrains, supporting all-weather RC adventures.
- **Coreless Motor & Metal Gears (Stainless Steel):** Smooth operation with high efficiency and enhanced durability for long-term use.
- **Strong 35KG High Torque Output:** Offering powerful and stable steering performance. Ideal for 1/8, 1/10, and 1/12 RC crawlers, trucks, cars, airplanes, boats, and robotics.
- **High Voltage (HV):** Supports up to 8.4V input for faster response and stronger performance.
- **Wide Compatibility and Easy Installation:** Includes a 25T servo horn for straightforward installation, ensuring versatile use in various DIY and RC projects.



Image 1.1: The HobbyPark 35KG Coreless Digital Servo, highlighting its IP67 waterproof and dust prevention features, suitable for outdoor and harsh environments.

2. WHAT'S IN THE BOX

Upon opening the package, please verify that all components are present:

- 1x HobbyPark Waterproof 35KG High Torque Servo Motor (Model HD3522MG)
- 1x Metal Servo Horn (25T)
- Assorted Servo Accessories (screws, grommets, etc., as shown in product images)

3. SETUP AND INSTALLATION

3.1 Component Overview

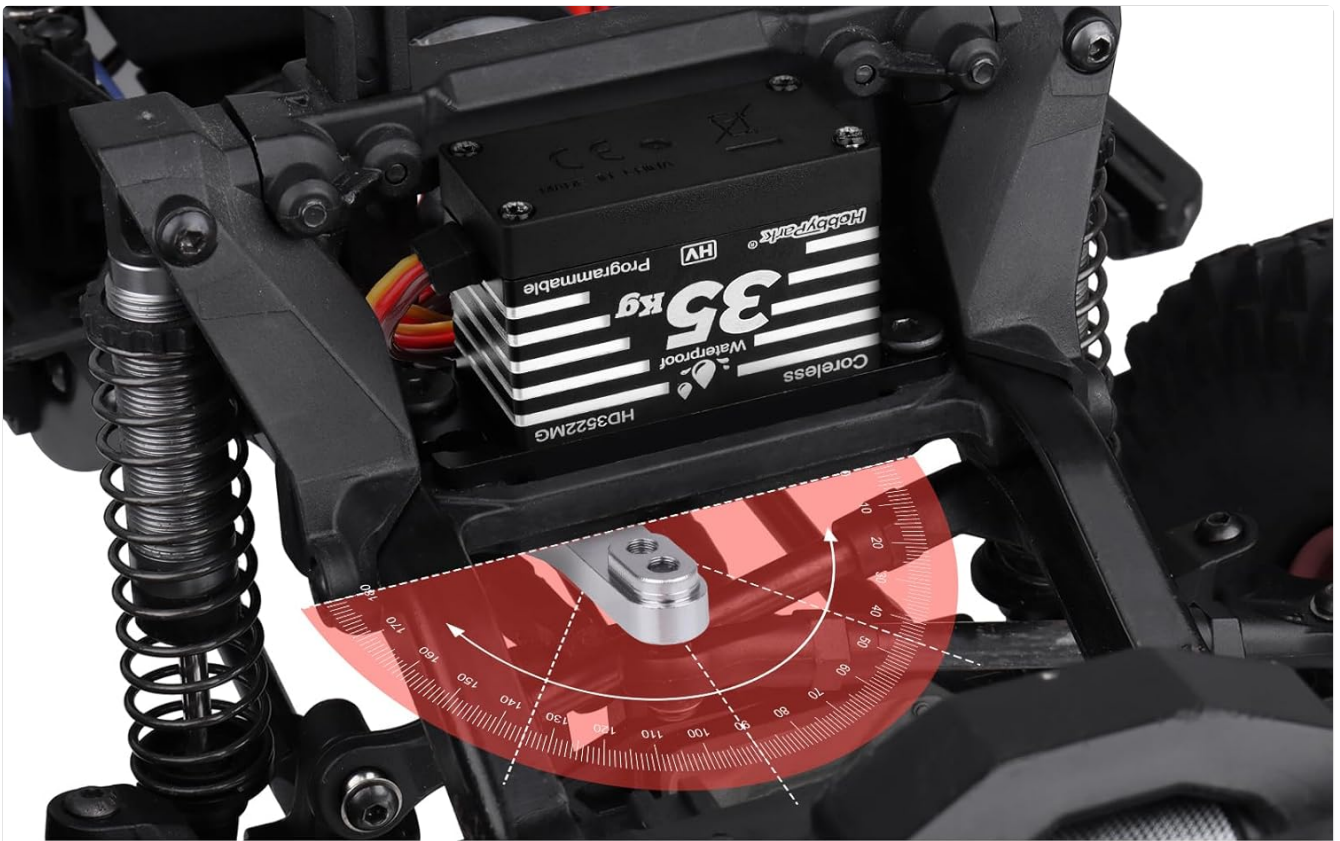
Familiarize yourself with the servo's internal components and design features before installation.



Image 3.1: Exploded view of the servo, detailing its coreless motor, stainless steel spline gear (25T), waterproof seals, aluminum anodized CNC machined casing, cooling grooves, and programmable DC 4.8V-8.4V input.

3.2 Installation Steps

1. **Remove Old Servo:** Disconnect the existing servo from your RC vehicle or robot. Carefully remove any mounting screws and the servo horn.
2. **Mount New Servo:** Secure the HobbyPark HD3522MG servo into the designated servo mount using appropriate screws. Ensure it is firmly seated to prevent movement during operation.
3. **Attach Servo Horn:** Select the appropriate 25T metal servo horn provided. Align the servo horn with the servo spline and secure it with the included screw. Ensure the horn is centered before tightening.
4. **Connect Wiring:** Connect the servo's three-wire cable (typically brown/black for ground, red for positive, orange/yellow/white for signal) to the corresponding channel on your receiver or flight controller. Refer to your RC system's manual for correct pin assignments.
5. **Initial Power-Up and Centering:** Power on your RC system (transmitter first, then receiver/vehicle). The servo should move to its neutral (centered) position. If the servo horn is not perfectly centered, remove it, re-center the servo using your transmitter's trim, and then reattach the horn in the correct centered position.



90°-180° Digital RC Steering Servo

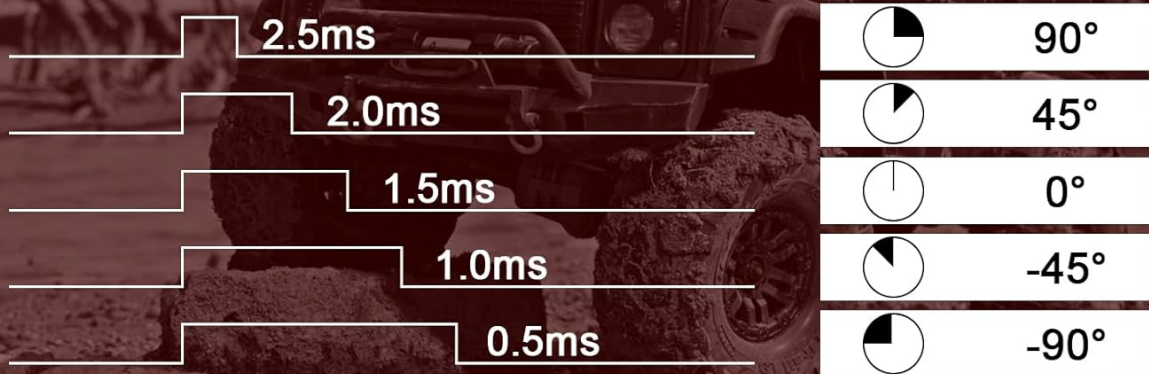


Image 3.2: The HD3522MG servo installed in an RC crawler, demonstrating its placement and connection to the steering mechanism.

4. OPERATION

4.1 Basic Functionality

The HobbyPark HD3522MG servo operates as a standard digital servo. Control its movement using your RC transmitter. The servo provides 180° of rotation, allowing for precise steering or articulation in your RC model.

Application Fields



RC Planes & Helicopters



RC Cars



RC Boats/Submarines



Robotic Arm



RC Robots



DIY Smart Projects

Image 4.1: Diagram showing the 90-180 degree operational range of the digital RC steering servo, correlating pulse width (e.g., 1.5ms for 0°) to specific angles.

4.2 Programmable Features

This servo is programmable, allowing for customization of various parameters such as rotation angle, speed, and torque. To access programming features, you will need a compatible HobbyPark servo programmer (sold separately) and a Windows computer.

1. **Connect Servo:** Connect the servo to the HobbyPark servo programmer.
2. **Connect Programmer to PC:** Connect the servo programmer to your Windows computer via USB.
3. **Download Software:** Download and install the official HobbyPark servo programming software from the manufacturer's website.
4. **Adjust Parameters:** Use the software interface to adjust desired servo parameters. Refer to the software's help documentation for specific instructions on each setting.

Intelligent Programmable

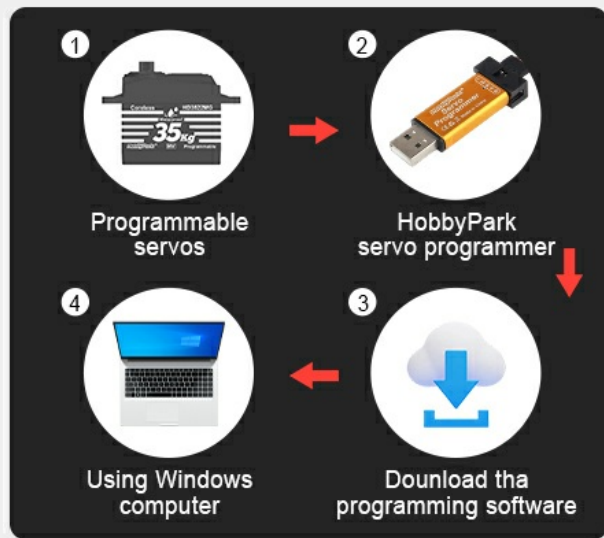


Image 4.2: Illustration of the programmable feature, showing the servo connected to a HobbyPark servo programmer, which is then connected to a Windows computer for software-based parameter adjustments.

4.3 Video Demonstration: Waterproof and Performance

This video demonstrates the waterproof capabilities and performance of the HobbyPark 35KG servo, showcasing its durability and speed in various conditions.

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Video 4.3: Official HobbyPark video demonstrating the waterproof nature, high torque, and fast response of the 35KG servo in various RC applications, including underwater operation and off-road driving.

5. MAINTENANCE

- **Regular Inspection:** Periodically check the servo for any signs of damage, loose screws, or excessive wear on the gears.
- **Cleaning:** Although waterproof, it is recommended to clean the exterior of the servo after use in wet or muddy conditions to prevent dirt buildup. Use a soft, damp cloth. Do not use harsh chemicals.
- **Gear Lubrication:** The metal gears are designed for durability. If excessive noise or stiffness occurs, a small amount of high-quality servo gear grease can be applied to the gear train. Avoid over-lubrication.
- **Wiring Check:** Ensure all wiring connections are secure and free from cuts or abrasions.

6. TROUBLESHOOTING

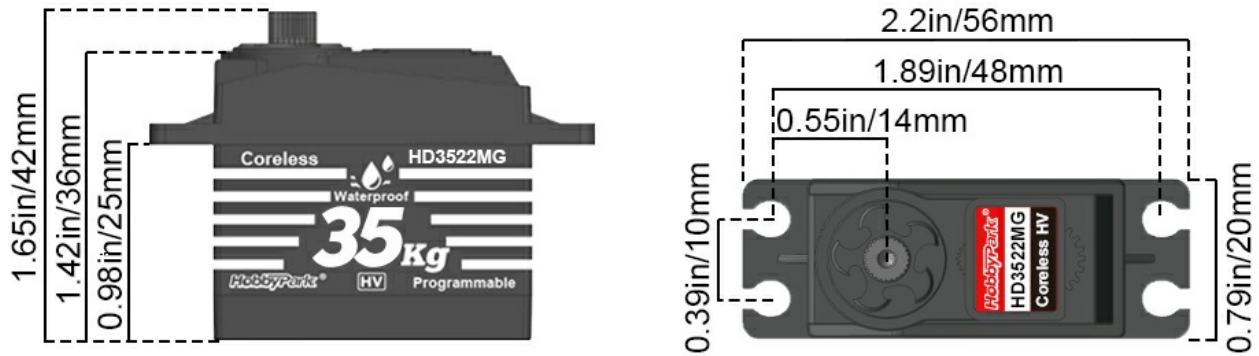
Problem	Possible Cause	Solution
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Problem	Possible Cause	Solution
Servo not responding	<ul style="list-style-type: none"> Incorrect wiring connection No power to receiver/servo Damaged servo or receiver 	<ul style="list-style-type: none"> Check all wiring connections for proper polarity and channel. Ensure battery is charged and connected correctly. Test with a different servo or receiver if available.
Servo jitters or moves erratically	<ul style="list-style-type: none"> Interference (electrical or radio) Low voltage Damaged potentiometer or gears 	<ul style="list-style-type: none"> Ensure proper distance from power wires/motors. Check battery voltage; consider a BEC if voltage drops under load. Inspect gears for damage; replace servo if internal damage is suspected.
Servo lacks torque or speed	<ul style="list-style-type: none"> Insufficient power supply (voltage) Mechanical binding in linkage Servo overloaded 	<ul style="list-style-type: none"> Ensure power supply is within the recommended 4.8V-8.4V range. Check steering/control linkages for smooth movement without obstruction. Verify the servo's torque rating is appropriate for the application.

7. SPECIFICATIONS

Feature	Detail
Model	HD3522MG
Operating Voltage	DC 4.8V-8.4V (High Voltage)
Stall Torque (5.0V)	289 oz-in / 21 kg.cm
Stall Torque (6.0V)	386 oz-in / 28 kg.cm
Stall Torque (7.4V)	483 oz-in / 35 kg.cm
Stall Torque (8.4V)	524 oz-in / 38 kg.cm
Speed (5.0V)	0.17 sec/60°
Speed (6.0V)	0.14 sec/60°
Speed (7.4V)	0.11 sec/60°
Speed (8.4V)	0.09 sec/60°
Gear Type	Stainless Steel Gear

Feature	Detail
Bearing	2BB (Double Ball Bearing)
Waterproof	Yes (IP67)
Spline	Φ5.9 25T
Operating Travel	90-180°
Signal	Digital
Working Frequency	1520μs/333Hz
Dead Band	3μs
Dimensions (L x W x H)	40*20*36.8 (±0.1)mm (1.57 x 0.79 x 1.45 inches)
Servo Lead Length	300mm (±5mm)
Weight	69g (±0.5g)



Coreless Servo HD3522MG

Voltage	Stall Torque	Speed	Running Current	Stall Current
5.0V	289oz-in/21kg.cm	0.17sec/60°	160mA	1.9A
6.0V	386oz-in/28kg.cm	0.14sec/60°	210mA	2.7A
7.4V	483oz-in/35kg.cm	0.11sec/60°	230mA	3.6A
8.4V	524oz-in/38kg.cm	0.09sec/60°	260mA	4.0A
Operating Travel: 90-180°		Signal: Digital		
Gear: Stainless Steel Gear		Bearing: 2BB		
Dimension: 40*20*36.8(±0.1)mm		Waterproof: Yes		
Operating Voltage: DC 4.8v-8.4V		Spline: Φ5.9 25T		
Working Frequency: 1520μs/333Hz		Dead Band: 3μs		
Servo lead length: 300mm (±5mm)		Weight: 69g(±0.5g)		

Image 7.1: Detailed servo parameters and dimensions for the HD3522MG model, including voltage, stall torque, speed, and physical measurements.

8. WARRANTY AND SUPPORT

For warranty information, technical support, or service inquiries, please contact HobbyPark customer service through their official website or the retailer where the product was purchased. Please retain your proof of purchase for warranty claims.

Warning: Choking Hazard - Small parts. Not for children under 6 years. Manufacturer recommended age: 14

years and up.

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