XiaoR Geek XR-TH chassis

Smart Robot Car Tank Chassis Kit User Manual

Model: XR-TH chassis | Brand: XiaoR Geek

Product Overview

The XiaoR Geek Smart Robot Car Tank Chassis Kit is an agile tracked platform designed for DIY robotics projects. Constructed from high-strength aluminum alloy, this chassis offers durability and a stable foundation for various applications. It features low noise operation and is easy to control, making it suitable for educational learning, smart robot car competitions, and general entertainment. The upgraded version includes enhanced motors and motor cables for improved quality and longevity.

The track system is made from engineering plastic, providing excellent damping effects and substantial road grip. High-speed motors ensure swift movement across different terrains. This platform is compatible with popular controllers such as Jetson Nano, Raspberry Pi, UNO R3, and Mega 2560, allowing users to integrate various sensors, servos, turntables, and other components using its multiple mounting holes.

Figure 1: Assembled Smart Robot Car Tank Chassis Kit. This image displays the complete tank chassis with its tracks and yellow-gold aluminum alloy frame.

What's in the Box

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

- 1x Wrench
- 1x Screwdriver
- 2x Motors
- 2x Tracks
- 2x Drive Wheels
- 10x Driven Wheels
- 1x Instruction Manual (PDF available online)
- 1x Set Base (Aluminum Alloy Plates)
- 1x Set Screw Accessory (various screws and nuts)

Figure 2: Kit Contents. This image shows all individual parts of the tank chassis kit neatly arranged, including the metal plates, motors, tracks, wheels, and assembly tools.

Safety Information

This product contains small parts. To prevent accidental swallowing, adult supervision is required during assembly and operation, especially when children are present.

Setup and Assembly

The tank chassis kit is provided unassembled, requiring a DIY approach for construction. Step-by-step instructions are available to guide you through the process. The assembly typically takes approximately 75-90 minutes at a comfortable pace.
For detailed assembly instructions, please refer to the official PDF manual:Installation Manual (PDF).

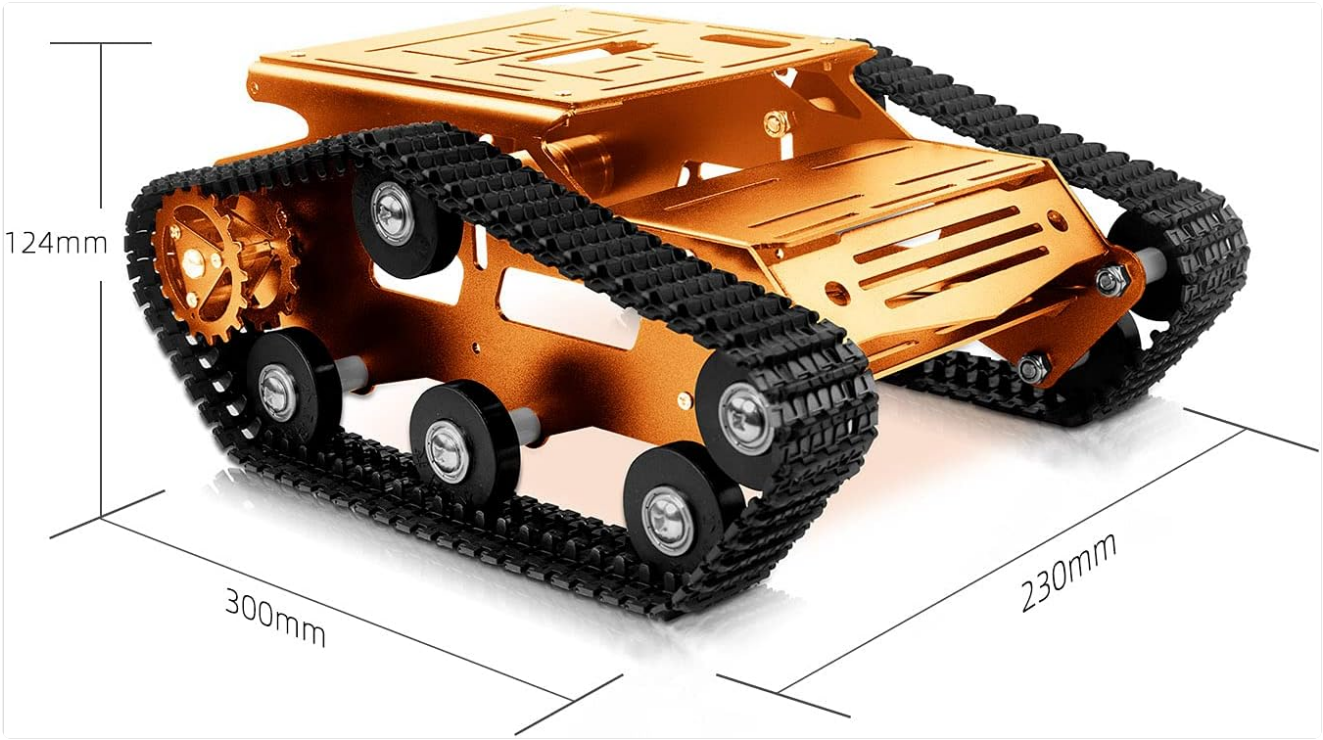

Figure 3: Product Dimensions. This diagram illustrates the overall dimensions of the assembled chassis, which are important for planning your robot's design and integration.

Figure 4: Material Details. This image provides a close-up of the bearing wheels and the plastic track, emphasizing the quality of the components used in the chassis construction.

Operating Instructions

The XiaoR Geek Tank Mobile Platform is designed for versatility and can be integrated with various microcontrollers to achieve diverse functionalities. Once assembled and connected to a compatible controller (such as Jetson Nano, Raspberry Pi, UNO R3, or Mega 2560), the platform can be programmed for tasks like tracing, obstacle avoidance, distance testing, speed testing, and wireless remote control.

Ensure your chosen controller is properly mounted and wired according to its specific documentation and the chassis's mounting points. Power the motors with an appropriate voltage supply (e.g., 12V for optimal performance, as the motors are rated for 12V). The high-speed motors and durable tracks enable the robot to move swiftly and navigate various environments.

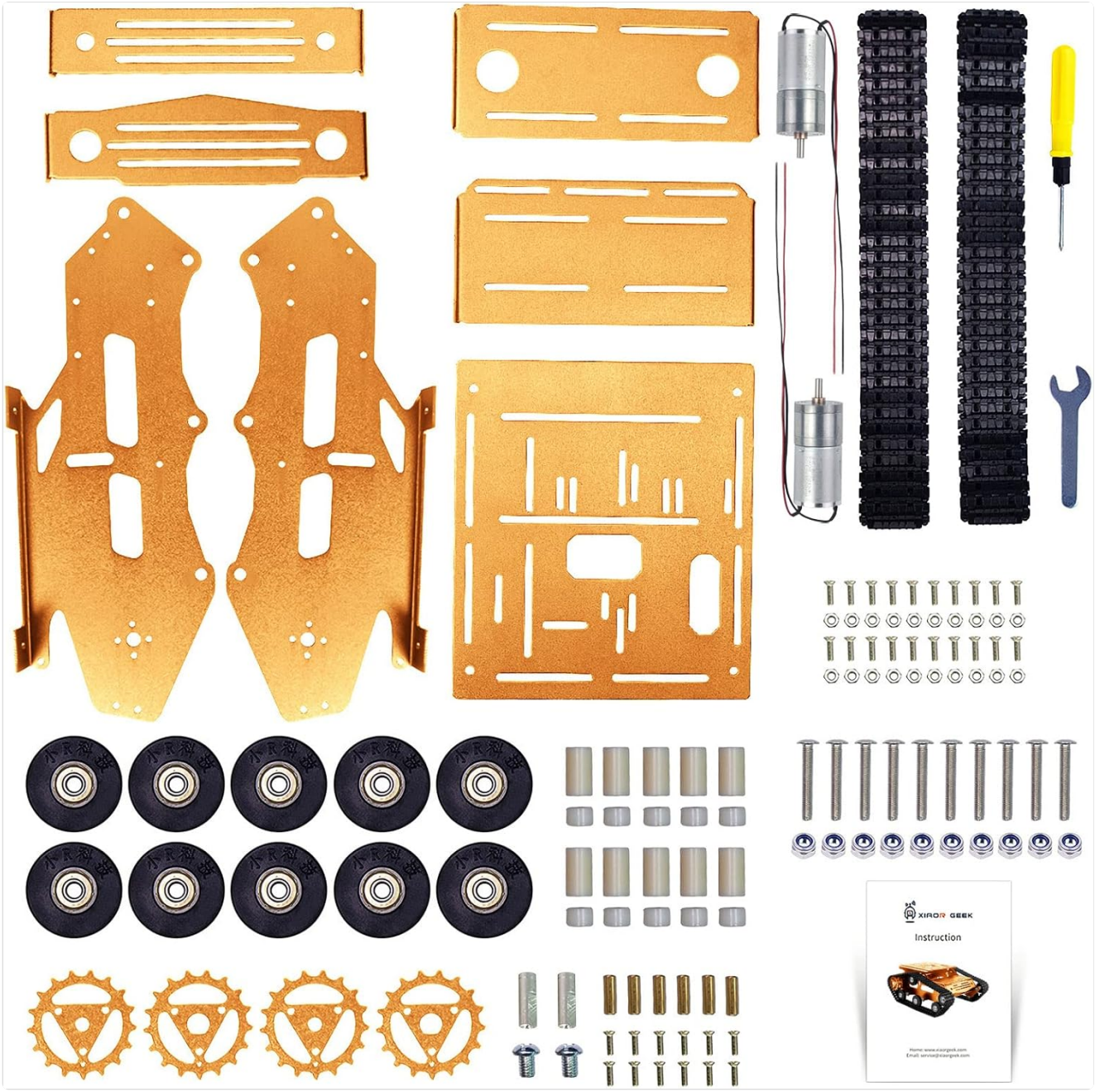

Figure 5: Climbing Capability. This image illustrates the tank chassis's ability to climb inclines, specifically demonstrating a 30-degree climbing angle on a textured surface.

Maintenance

Regular maintenance helps ensure the longevity and optimal performance of your robot chassis. Consider the following:

- **Cleaning:** Periodically clean the tracks and wheels to remove dust, dirt, or debris that may hinder movement or cause wear. Use a soft brush or cloth.
- **Track Tension:** Inspect the tracks for proper tension. Tracks that are too tight can cause excessive strain on the motors, while loose tracks may slip. Adjust as necessary.
- **Lubrication:** If wheels or bearings show signs of friction or stiffness, a small amount of lubricant (e.g., WD40, applied sparingly) can improve rotation. Avoid applying lubricant to the tracks or drive gears.
- **Fasteners:** Check all screws and nuts regularly to ensure they are secure. Apply blue (medium strength) threadlocker to critical screws, especially those on sprocket wheels, to prevent loosening from vibrations.
- **Motor Wires:** Ensure motor wires are securely connected and free from damage.

Troubleshooting

- **Robot not moving or moving sluggishly:**
  - Check power supply: Ensure the battery or power source provides sufficient voltage (e.g., 12V for optimal motor performance) and current.
  - Inspect motor connections: Verify that motor wires are correctly connected to the motor driver and controller.
  - Check track tension: Tracks that are too tight can impede motor movement. Adjust tension if necessary.
  - Examine wheels: Ensure all wheels rotate freely and are not binding due to overtightened nuts.
- **Tracks are too tight:**
  - This can be a common issue. Ensure the top tensioner wheel is adjusted correctly. If tracks remain too tight, consider disassembling and reassembling the track system, ensuring proper alignment of drive gears and non-driven wheels.
- **Missing or damaged parts upon arrival:**
  - If any significant components are missing or damaged, contact technical support immediately for assistance.
- **Difficulty aligning sprocket drive gears:**
  - Ensure the bushing is positioned correctly on the motor shaft. If alignment issues persist, slight adjustments to the metal parts may be necessary, or ensure the gear set is properly seated.

Product Specifications

Feature	Detail
Product Dimensions	11.81 x 9.06 x 4.88 inches (300 x 230 x 124 mm)
Item Weight	2.65 pounds
Model Number	XR-TH chassis
Manufacturer	XiaoR GEEK
Recommended Age	0 - 3 years (Note: Adult supervision is required due to small parts)

Motor Specifications (XR25-370 Reduction Motor)

Figure 6: Motor Parameters. This table provides detailed electrical and mechanical specifications for the XR25-370 reduction motors included in the kit.

Parameter	DC 6.0 V	DC 12.0 V
No-load speed	170 rpm	350 rpm
No-load current	0.15 A MAX	0.2 A MAX
Rated load	2.5 kg.cm	5.0 kg.cm
Rated speed	100 rpm	200 rpm
Rated current	0.6 A MAX	1.5 A MAX
Rated power	1.3 W	8.5 W
Stall torque	> 6.0 kg.cm	> 12 kg.cm
Stall current	≤ 2.7 A	< 5.5 A
Gear reduction ratio	1:34.02	

Support and Warranty

For any technical issues, questions, or support needs regarding your Smart Robot Car Tank Chassis Kit, please contact the XiaoR Geek technical support team. They are available to assist with assembly, operation, and troubleshooting.
While specific warranty details are not provided in this manual, XiaoR Geek is committed to customer satisfaction. Please retain your proof of purchase for any warranty claims or support requests. For further assistance, refer to the contact information provided with your product or visit the official XiaoR Geek website.