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Bottom view of Dagou Wild Thumper 6WD chassis (silver version).

## Overview

This rugged, 6-wheel-drive chassis from Dagou Electronics is designed to excel at traversing rough terrain and steep inclines, making it a great platform for any robot that needs to perform tasks in a complex outdoor environment. It features six powerful DC motors with brass brushes and 34:1 or 75:1 steel gearboxes that drive large (120mm diameter) spiked tires, and a unique “super-twist” suspension system acts to keep each wheel in contact with the ground for maximum traction, even when driving over uneven or bumpy surfaces. The suspension can be adjusted to suit different loads and conditions. The chassis is made from a 2mm-thick corrosion-resistant anodized aluminum plate, all of the nuts, bolts, and screws are stainless steel, and the brass fittings and suspension springs are nickel-plated.

When powered at 7.2 V, the version of the chassis with 34:1 gearboxes can reach a top speed of approximately 7 km/h (4.5 mph), and each motor has a stall torque of roughly 5 kg-cm (70 oz-in). At the same voltage, the version of the chassis with 75:1 gearboxes can reach a top speed of approximately 3 km/h (2 mph), and each motor has a stall torque of roughly 11 kg-cm (150 oz-in).

## Using the Chassis

The chassis' aluminum plate has 4mm holes spaced every 10mm, providing plenty of options when it comes to mounting your control electronics, sensors, and additional hardware, and with a maximum recommended payload of 5 kg (11 lb), this platform is capable of carrying a lot of cargo! Two compartments in the chassis have been designed to hold 7.2V sub-C battery packs (not included) that are commonly used in RC cars. A total of four such battery packs can fit in these compartments. The interior of the chassis also features convenient screw terminals for connecting your battery and motor driver leads. The motor leads are pre-connected to these screw terminals.



Side view of Dagu Wild Thumper 6WD chassis (black version).



Dagu Wild Thumper wheel  
120×60mm (chrome) with Pololu  
25D mm metal gearmotor.

This is a differential-drive chassis, meaning that turning is accomplished by driving the motors on the two sides of the platform at different speeds. The three motors on each side of the robot are wired in parallel, so only two channels of motor control are required to get this chassis moving. The motors are intended for a maximum nominal operating voltage of 7.2 V (2V minimum), and each has a stall current of 6.6 A and a no-load current of 420 mA at 7.2 V. Since the motors will briefly draw the full stall current when abruptly starting from rest (and nearly twice the stall current when abruptly going from full speed in one direction to full speed in the other), we recommend a motor driver capable of supplying the 20A combined per-channel stall current of these motors at 7.2 V. We offer several motor controllers that meet these power requirements and make it easy to get this chassis moving:

- **The Simple High-Power Motor Controllers offer a variety of control interfaces: USB, TTL serial, analog voltage (for control from a potentiometer or analog joystick), and RC hoj servo pulses.** These controllers are highly configurable and the USB interface makes them very easy to set up and use. Since the SMC is a single-channel controller, you would need to use two with the Wild Thumper, one for each side of the chassis.
- **The qik 2s12v10 dual serial motor controller provides a simple serial interface and offers features such as acceleration control and current limiting.** This is a dual motor controller, so a single unit can independently control the two sides of the chassis.
- **The TReX dual motor controller offers an RC interface for human control (it can act as a simple ESC right out of the box) and a serial interface for autonomous operation, and it features the ability to blend the two to make a robot that can optionally respond to RC control.** Like the qik, the TReX is a dual motor controller, so you can control the chassis with a single unit.
- **The dual VNH5019 motor driver shield for Arduino is easy to control with an Arduino, and it can also be used with other microcontroller boards as a general-purpose dual motor driver.** Since this is just a driver, it lacks many of the advanced features of the motor controllers listed above (like built-in acceleration limiting or high-level interfaces such as USB and RC), but such features might not be necessary if your goal is to make a basic autonomous robot.

- The programmable Orangutan X2 robot controller can be the entire control center of an autonomous robot based on this chassis.



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Dagu Wild Thumper 6WD all-terrain chassis, silver.



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Dagu Wild Thumper 6WD all-terrain chassis, black with chrome-colored hubs.

## Specifications

- **Size:** 420 × 300 × 130 mm (16.5" × 12" × 5")
- **Weight:** 2.7 kg (6.0 lb)
- **Ground clearance:** 60 mm (2.5") when lightly loaded
- **Maximum recommended payload:** 5 kg (11 lb)
- **Recommended motor voltage:** 2 – 7.5 V
- **Stall current at 7.2 V:** 6.6 A per motor
- **No-load current at 7.2 V:** 420 mA per motor
- **No-load output shaft speed at 7.2 V:**
  - 350 RPM for the version with 34:1 gearboxes
  - 160 RPM for the version with 75:1 gearboxes
- **Stall torque at 7.2 V:**
  - 5 kg-cm (70 oz-in) per motor for the version with 34:1 gearboxes
  - 11 kg-cm (160 oz-in) per motor for the version with 75:1 gearboxes

## Chassis Options

This chassis is available in two different colors (silver and black) and with two different gear ratios (34:1 and 75:1):

- **Silver (chrome-colored hubs), 34:1**
- **Silver (chrome-colored hubs), 75:1**
- **Black (chrome-colored hubs), 34:1**
- **Black (metallic-red or gold hubs), 75:1**



Dagu Wild Thumper 4WD all-terrain chassis, black.

If you are looking for a smaller, less expensive chassis, consider one of the Wild Thumper 4WD models:

- **Silver (chrome-colored hubs), 34:1**
- **Silver (chrome-colored hubs), 75:1**
- **Black (metallic-red or gold hubs), 34:1**
- **Black (metallic-red or gold hubs), 75:1**

If you are looking for a bigger robot that is better at scaling inclines, consider one of the Wild Thumper 6WD models:

The higher gear ratio version has a lower top speed but can produce greater torque. Note that while the Wild Thumper chassis includes six wheels, the wheels can be purchased in pairs for use as replacement Wild Thumper parts or as wheels for custom chassis. The wheels are available with metallic-red hubs and chrome-colored hubs. We also offer the Wild Thumper gearmotors individually in a wide range of gear ratios (versions with integrated quadrature encoders are also available, though these will not work with the Wild Thumper chassis).

### **Videos**

34:1 gear ratio version with black chassis and metallic-red hubs driving around a construction site:

34:1 gear ratio version with black chassis and metallic-red hubs driving up and down a set of stairs:

75:1 gear ratio version with silver chassis and chrome-colored hubs driving on snow:

**[Documentation on producer website.](#)**