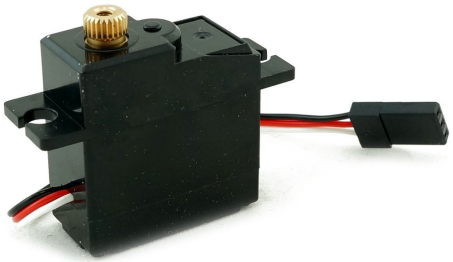
Mojito Servo

Digital servo with metal gears
User Manual



Read this entire manual before first use and keep it for future reference.

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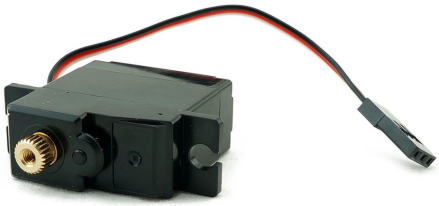
1. Product description

1.1 Intended use

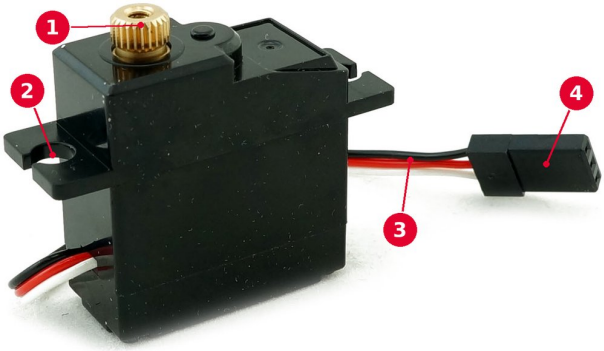
The **TBS Mojito Servo** is a digital servo with metal gears made by Team BlackSheep (TBS). It is designed for the **TBS Mojito** flying wing, where it drives the elevons or the brakes. It is a standard RC servo, so it can also be used in other RC models that need a servo of this size and performance.

The servo converts the PWM control signal from the receiver or flight controller (FC) into rotation of the output shaft. The servo arm fitted on the shaft transfers the movement via a pushrod to the control surface of the model. With a standard 1000–2000 µs signal, the travel is 90°.



TBS Mojito Servo

1.2 Parts



Servo parts

① Splined output shaft for the servo arm (25 teeth, Ø 5.9 mm)

② Mounting tabs for screwing the servo into its bay in the model

③ Lead (black, red and white wire)

④ JR connector, 3-pin, 2.54 mm pitch

1.3 Specifications and package contents

Package contents: 1× TBS Mojito Servo, 1× servo arm.

Not included: receiver or flight controller (FC), servo power supply (BEC), pushrods, pushrod connectors, extension leads and tools.

Parameter	Value
Product designation	TBS Mojito Servo (Team BlackSheep)
Type	digital servo, PWM control
Supply voltage	4.8–6 V DC
Dimensions	30 × 13.25 × 28 mm
Weight	19 g (without arm)
Gears	metal, gear ratio 1:403
Motor	cored motor
Rated torque	2.8 kg·cm (4.8 V) 3.2 kg·cm (6 V)
Maximum torque	≥ 4.5 kg·cm (4.8 V) ≥ 5.5 kg·cm (6 V)
No-load speed	≤ 0.26 s / 60° (4.8 V) ≤ 0.24 s / 60° (6 V)
Standby current	≤ 20 mA
No-load current	≤ 70 mA (4.8 V) / ≤ 80 mA (6 V)
Stall current	≤ 1.1 A (4.8 V) / ≤ 1.3 A (6 V)
Pulse width	500–2500 µs, centre 1500 µs
Travel	90° ± 10° (1000–2000 µs) max. 180° ± 10° (500–2500 µs)
Direction of rotation	counter-clockwise for pulse change 500 → 2500 µs
Dead band	≤ 5 µs
Signal period	3–30 ms (default 20 ms)
Connector	JR, 3-pin, 2.54 mm pitch
Case material	ABS
Temperature	operation −10 to +50 °C storage −20 to +60 °C
Humidity (operation and storage)	≤ 90 % RH

2. Connection and use

2.1 Safety instructions

- Power the servo only with a voltage of **4.8–6 V**. A higher voltage will destroy the servo.
- Connect and disconnect the servo only with the model's power switched off.
- When testing and adjusting the servo in the model, disconnect the flight battery or remove the propeller – the motor may start unexpectedly.
- The servo must not push continuously against the mechanical stop of the pushrod or control surface. A stalled servo draws up to 1.3 A, heats up and overloads the power supply.
- Size the servo power supply (BEC) with a margin for the total current of all connected servos.
- Protect the servo from water, moisture, dust and sand, and operate it only within the operating temperature range.
- Do not disassemble or modify the servo.
- When operating the model, follow the regulations of the country in which you operate it – the law of that country is decisive.

2.2 Connection

Plug the JR connector ④ into a servo output on the receiver or flight controller (FC). Observe the correct polarity according to the output marking:

Wire	Function
black (or brown)	GND (−)
red (middle)	power + (4.8–6 V)
white (or orange)	PWM signal

- Check the voltage present on the servo outputs of your receiver or flight controller. It must be within 4.8–6 V.
- If the flight controller powers its servo outputs from a separate source (a separate BEC), this source must be connected and switched on, otherwise the servo will not respond.
- Route the lead so that it does not rub against sharp edges and is not under tension over the full range of movement.

2.3 Mounting and fitting the servo arm

1. Place the servo into its bay in the model and screw it in by the mounting tabs ②. Do not overtighten the screws, otherwise the tabs may crack.
2. Connect the servo, switch on the radio first and then the model's power. Set the output to centre (1500 µs).

3. Fit the arm on the shaft ① so that in the centre position it is as perpendicular to the pushrod as possible, and secure it with the arm screw.
4. Connect the pushrod. With the servo centred, the control surface must be in its neutral position; make fine adjustments with the pushrod length.
5. The pushrod must move freely and without play over the full range of movement, and must not bind or bend.

2.4 Setting direction, centre and travel

Set the direction of movement, centre and end points in the radio mixer or in the flight controller configurator.

- **Direction:** if the control surface moves the wrong way, reverse the output.
- **Centre:** fine-tune small deviations of the neutral position with the centre offset (subtrim). Correct a larger deviation by moving the arm by one tooth or with the pushrod length.
- **End points:** the standard range of 1000–2000 µs corresponds to 90° of travel. The range can be extended up to 500–2500 µs (180°), but only if the model's mechanics allow it.
- Set the end points so that the servo does not hit a stop in the end positions. A servo that buzzes in an end position is overloaded – reduce the travel.
- The signal period of the output (refresh rate) must be within 3–30 ms; the default value is 20 ms.

2.5 Maintenance and troubleshooting

- After every flight, and especially after a hard landing, check the servo mounting, the arm screw, the pushrod and the lead.
- Make sure the arm has no play on the shaft and the servo moves smoothly without jerking.
- Store the servo in a dry place at −20 to +60 °C.

Problem	Possible cause and solution
Servo does not respond	The connector is plugged in reversed or into a different output; there is no power on the servo outputs (no BEC); the output is not assigned in the configuration.
Servo moves the wrong way	Reverse the output in the radio or flight controller.
Servo buzzes and heats up	It hits a stop or the pushrod binds. Reduce the end points and free the pushrod.
Servo jerks or jitters	Weak or overloaded power supply, damaged lead or connector, unsuitable signal period (outside 3–30 ms).
Arm has play	Loose arm screw or worn arm spline. Tighten the screw or replace the arm.

3. Information for the EU and Czech Market

3.1 Importer and responsible person in the EU

The product is placed on the European Union market by the importer stated below, who is at the same time the responsible person within the meaning of Article 16 of Regulation (EU) 2023/988 of the European Parliament and of the Council on general product safety (GPSR).

Importer / responsible person in the EU	Rotorama, s.r.o.
Company ID (IČO)	051 57 692
VAT ID (DIČ)	CZ05157692
Registered office	Okrajová 1351, 674 01 Třebíč, Czech Republic
E-mail	info@rotorama.cz
Phone	+420 252 252 098
Website	www.rotorama.com

3.2 Product conformity

CE

- The product bears the **CE** marking and complies with the requirements of the applicable European Union harmonisation legislation.
- A copy of the **EU Declaration of Conformity** is available from the importer at the address stated above or at the e-mail address info@rotorama.cz.
- **Product identification:** the type designation (TBS Mojito Servo) is given on the product or on its packaging.

3.3 Disposal of electrical equipment



- The crossed-out wheeled bin symbol on the product, its packaging or in the documentation means that at the end of its service life the product **must not be disposed of together with mixed municipal waste**.
- Hand it over at a take-back point for electrical equipment – at a collection yard, at a take-back point of a collective system, or at the retailer when purchasing a new equivalent product. Take-back is free of charge for the end user.
- The obligations under Act No. 542/2020 Coll., on end-of-life products, are fulfilled by the importer through a collective take-back system.
- Proper disposal helps prevent negative impacts on the environment and human health and contributes to the reuse of secondary raw materials.

Through its contractual partner **ASEKOL a.s.**, the company ensures the take-back of waste electrical equipment from households and the separate collection of waste electrical equipment, batteries and accumulators in accordance with the applicable legislation. The customer is entitled to hand over old electrical equipment or a battery or accumulator at any collection point of the above contractual partner. The addresses of these take-back points are listed at www.asekol.cz, www.ecobat.cz and also https://visoh2.mzp.cz/RegistrMistZO/RegistrMistZOPublic/MapaMistZpetOdberu.

4. Warranty and rights arising from defective performance

The rights and obligations of the contracting parties are governed by Czech law, in particular by Act No. 89/2012 Coll., the Civil Code, and Act No. 634/1992 Coll., on consumer protection.

- The seller is liable to the buyer for the product being free of defects on receipt. If the buyer is a consumer, a defect may be notified **within two years of receipt** of the product (Section 2165 of the Civil Code).
- If a defect appears within **one year** of receipt, the product is deemed to have been defective already at the time of receipt (Section 2161(5) of the Civil Code).
- When purchasing online, a consumer has the right to **withdraw from the contract within 14 days** of receiving the goods without giving a reason (Section 1829 of the Civil Code).
- Claims should be made with the retailer from whom you purchased the product. The importer's contact details are given in Chapter 3.1.
- The competent body for out-of-court settlement of consumer disputes is the **Czech Trade Inspection Authority**, Štěpánská 796/44, 110 00 Prague 1, www.coi.cz.