# Servo Airdrop

Aluminium payload release mechanism
User Manual



**Read the entire manual before assembly and first use. The servo is not included.**

*www.rotorama.com*

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# 1. Product description

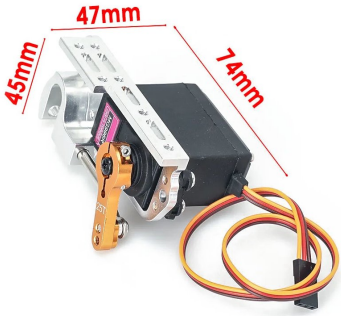
## 1.1 What it is for

Servo Airdrop is an aluminium mechanism for easy servo-controlled release of a payload. It can be used for dropping objects from drones, for towing gliders or for launching RC aircraft. The payload (its hanging eye or loop) is hung on a hook that is closed by a metal pin. On a command from the transmitter, the servo rotates its arm, pulls the pin out of the hook and the payload is released.

The body is CNC-milled from 6061 aluminium, so it is light and strong; the pin and the servo arm are also made of aluminium. Thanks to the prepared threaded holes, the mechanism can be attached to a drone frame or to a model relatively easily. The mechanism is designed for a standard-size servo; the recommended servo is the MG996R.



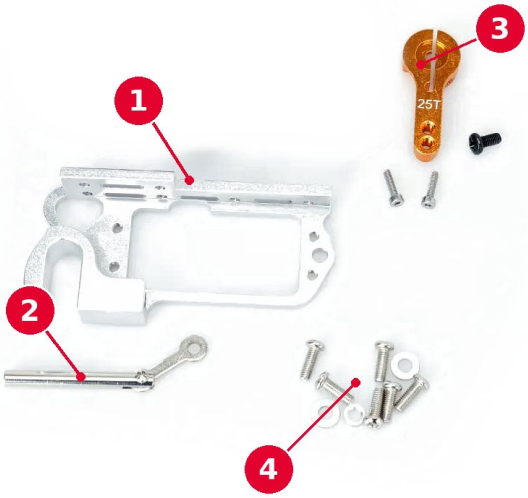

*Servo Airdrop with an MG996R servo fitted (servo not included)*




*Dimensions of the mechanism with servo fitted*

## 1.2 Specifications and package contents

| | |
|---|---|
| Product designation | Servo Airdrop |
| Material | 6061 aluminium (body, pin, arm) |
| Dimensions | 45 × 47 × 74 mm (including servo) |
| Weight | 30 g (without servo) |
| Max. load | 15 kg |
| Recommended servo | MG996R (not included) |
| Servo arm | 25T spline |




*Package contents*

① 1× aluminium body with hook

② pin with eye for connection to the arm

③ 1× aluminium servo arm

④ 1× screw set

**※ The package does not include a servo or any wiring. The servo is sold separately.**

# 2. Use

**Before first use, read chapter 3 – dropping objects from a drone is prohibited in normal (open category) operation.**

## 2.1 What else you need

- A standard-size **servo** with a 25T output spline; the MG996R is recommended.
- A drone or model with a free servo output – a receiver channel or a flight controller (FC) output that can be controlled by a switch on the transmitter.
- An adequately rated servo power supply (BEC) according to the servo manufacturer's specifications.
- Screws for attaching to the frame that match the thread in the body holes and the frame thickness.
- A screwdriver or hex key matching the screws from the set.

## 2.2 How the mechanism works

The pin passes through holes in the hook and closes its open side. Its eye is connected to the servo arm. In the **closed** position the pin is pushed through the entire hook and the payload cannot slip out. When the servo rotates to the **open** position, the arm pulls the pin out of the hook, the hook opens and the payload falls under its own weight.

## 2.3 Mounting the servo and servo arm

① Insert the servo into the body frame so that the output shaft is in the same place as in the picture in chapter 1.1.

② Fasten the servo to the body through the servo mounting ears using screws from the set. Tighten the screws gently – threads in aluminium are easily damaged by overtightening.

③ Connect the servo to the receiver or flight controller (FC) and switch on the power. On the transmitter, move the servo to the position you want to use as **closed**.

④ In this position, fit the arm onto the servo shaft so that the pin connected to the arm passes through the entire hook. Secure the arm with the centre screw; if the arm has a clamping screw, tighten it as well.

⑤ Attach the eye of the pin to the hole at the end of the arm with a screw from the set. The joint must not have play but must rotate freely.

## 2.4 Setting the end positions

Set the servo end positions in the transmitter or in the flight controller (FC) configuration – typically using the channel end points.

- In the **closed** position the pin must pass through the entire hook, but the servo must not push against a mechanical stop.
- In the **open** position the pin must leave the hook hole completely.
- A servo that buzzes or gets warm in an end position is set beyond the stop. Reduce the travel – otherwise the servo is overloaded and draws unnecessarily high current.
- Assign the release function to a dedicated switch that cannot be flipped by mistake.
- Set the **failsafe** of the servo channel so that the payload is not released unintentionally on signal loss (the servo stays in the closed position).
- Test the mechanism several times without a load and then with the load on the ground – with the motor power disconnected or the propellers removed.

## 2.5 Attaching to a drone or model

- Attach the body using the prepared threaded holes. The screws must not protrude into the servo space or obstruct the movement of the pin.
- Place the hook as close as possible to the centre of gravity of the drone or model so that neither the hanging payload nor its release significantly affects the balance.
- The hook must point downwards and its open side must remain free so that the payload can fall out unobstructed once opened.
- Neither the payload nor its suspension may reach the propellers, antennas or landing gear in flight.
- Use medium-strength threadlocker on the screws and check that they are tight after the first flights.

## 2.6 Loading the payload and releasing it

① Switch the servo to the **open** position.

② Insert the hanging eye, ring or loop of the payload (the tow line when towing) into the hook.

③ Switch the servo to the **closed** position and check that the pin has passed through the entire hook and the payload is secured.

④ Before take-off, check that the release switch is in the closed position.

⑤ Release the payload by switching to the **open** position only over a safe, clear area.

**The maximum load of 15 kg applies to the mechanism itself. The payload you can actually use is limited by the lifting capacity of the drone or model, the strength of the frame mounting and the force of the servo. Never exceed the maximum take-off mass of your drone or model.**

# 3. Safety and operating rules

## 3.1 The law of the country of operation applies

Regulations (EU) 2019/947 and 2019/945 apply in all member states of the European Union, but national implementing rules differ from country to country. The information in this chapter describes the situation in the Czech Republic. If you operate a drone or model in another country, you must follow the regulations of the country in which you fly.

## 3.2 Dropping objects from drones

Under Article 4(1)(f) of Regulation (EU) 2019/947, one of the conditions for operation in the **open category** is that the unmanned aircraft does not carry dangerous goods and **does not drop any material**. Dropping objects from a drone is therefore not permitted in the open category.

- Dropping a payload is possible only in operations that expressly allow it – for example in the **“specific” category** under an authorisation from the competent authority (in the Czech Republic the Civil Aviation Authority, www.caa.gov.cz), or within the authorisation of a model aircraft club or association, if its conditions allow it.
- Dangerous goods must never be carried.
- The operator and the pilot are responsible for compliance with the regulations, not the seller of the mechanism.
- Check with the competent authority or your model aircraft club whether the same restrictions also apply to towing and launching gliders or RC aircraft.

## 3.3 Safety instructions

- Never drop a payload over people, animals, vehicles or buildings, or in places where the fall could cause damage.
- A hanging payload changes the flight characteristics, extends the braking distance and shortens the flight time. Releasing it causes a sudden change in mass – expect the drone or model to jerk.
- When handling the payload on the ground, always keep the motors in the **Disarm** state (motors switched off) or the battery disconnected.
- Do not put your fingers into the hook while the servo is powered – the pin may move unexpectedly.
- Use only a payload that is securely attached by an eye or loop and cannot swing into the propellers in flight.
- Do not use the mechanism or the servo if damaged, bent or with loose screws.

# 4. Maintenance and troubleshooting

- Before every flight, check that the screws of the body, servo, arm and pin eye are tight.
- Check that the pin moves easily in the hook without catching. Remove dirt and sand with a dry brush.
- Do not use a bent pin or a damaged hook – the mechanism might not open reliably or hold the payload.
- Store in a dry place; protect the aluminium parts against impacts that could bend the hook.

| Problem | Possible cause and solution |
|---|---|
| Payload is not released | The pin is catching or the servo lacks force under load. Clean the hook, check that the pin is straight and increase the travel towards the open position. Test the release with the actual payload on the ground. |
| Servo buzzes and gets hot | The end position is set beyond the mechanical stop. Reduce the channel end point (chapter 2.4). |
| Servo does not respond | Check the servo power supply, the connection to the receiver or FC and the assignment of the channel to the switch. |
| Unintended release | Check the failsafe setting and the switch assignment; in the closed position the pin must pass through the entire hook. |
| Arm slips on the shaft | Tighten the centre (and, if present, the clamping) screw; make sure the servo has a 25T spline. |

# 5. Information for the EU and Czech Market

## 5.1 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 |

## 5.2 Disposal

The body, pin and arm are metal parts without electronics. At the end of their service life, hand them in for recycling as metal waste – at a municipal collection point or a scrap metal yard.

- Sort the packaging according to local separate collection rules.
- The servo (sold separately) is electrical equipment. It must not be disposed of with mixed municipal waste – hand it in at a collection point for electrical equipment.

# 6. 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 5.1.
- 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.