

SKYCAT XS PARACHUTE LAUNCHER

USER MANUAL v1.2 - 6/2016

Thank you for choosing Skycat!

We want to offer uncompromised customer service to all of our old and new customers. Our team members have years of experience in various fields of the UAV industry and based on this experience and feedback from our clients, we recognize the importance of customer oriented approach. Our first goal is to stand out from the crowd, in a positive way.

Please read and follow the instructions carefully. This manual is updated regularly. In case you have any questions, ideas or feedback, please don't hesitate to contact us at www.skycat.pro/contact

Fly safe!

Skycat team



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HOW DOES SKYCAT XS PARACHUTE SYSTEM WORK?

Parachute is folded into a compact package and loaded into the Skycat XS launcher. Patent pending servo release mechanism holds the catapult in standby, minimizing stress to the servo.

Servo can be controlled by an RC receiver, autopilot or other device. When launch is requested, servo releases the cover and the spring loaded catapult ejects the parachute away from the propellers.

IMPORTANT KNOWLEDGE AND SAFETY

Latest manuals and videos available at:

<http://www.skycat.pro/downloads-1>

Please read and follow these instructions carefully to ensure successful operation and to stay within warranty limits.

Careful installation, parachute folding, parachute arming and radio setup is essential in order to achieve best possible performance. We recommend loading and launching Skycat a few times as exercise, before mounting it to your aircraft.

In case of any uncertainty, please don't hesitate to contact us for assistance.

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General safety

- Only launch Skycat towards free airspace. Never point or launch towards people or animals.
- Do not expose Skycat system to rain or use near flammable materials.
- Don't try to repair damaged components. Contact Skycat for repair and spare part services.
- Do not use in high G-force applications.
- Use reliable, digital RC control systems to reduce risk of unwanted eject.
- Use of excessive force should not be required at any point of arming, loading or installation.

Skycat X5 Launcher

- Only use Skycat launcher to eject a parachute and not other items.
- Only use original Skycat cloth for parachute folding.
- If launcher stays loaded over two months without launching, it is recommended to open and refold the parachute. This can decrease opening distance in an emergency.

Operating specifications

Operating temperature range: 0°C to 40°C (32°F to 104°F)

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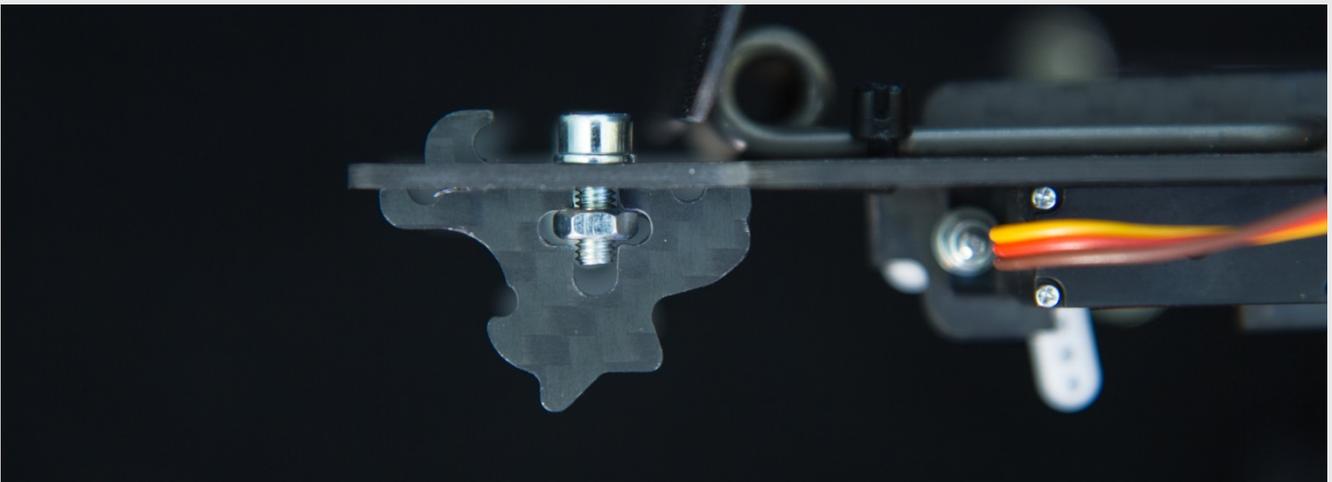
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ASSEMBLY

Attach the spring with zip ties as indicated in the picture (locks on the inside).



Attach hooks to the base with supplied bolts, washers and nuts.



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POWER SUPPLY AND SPECS

Servo

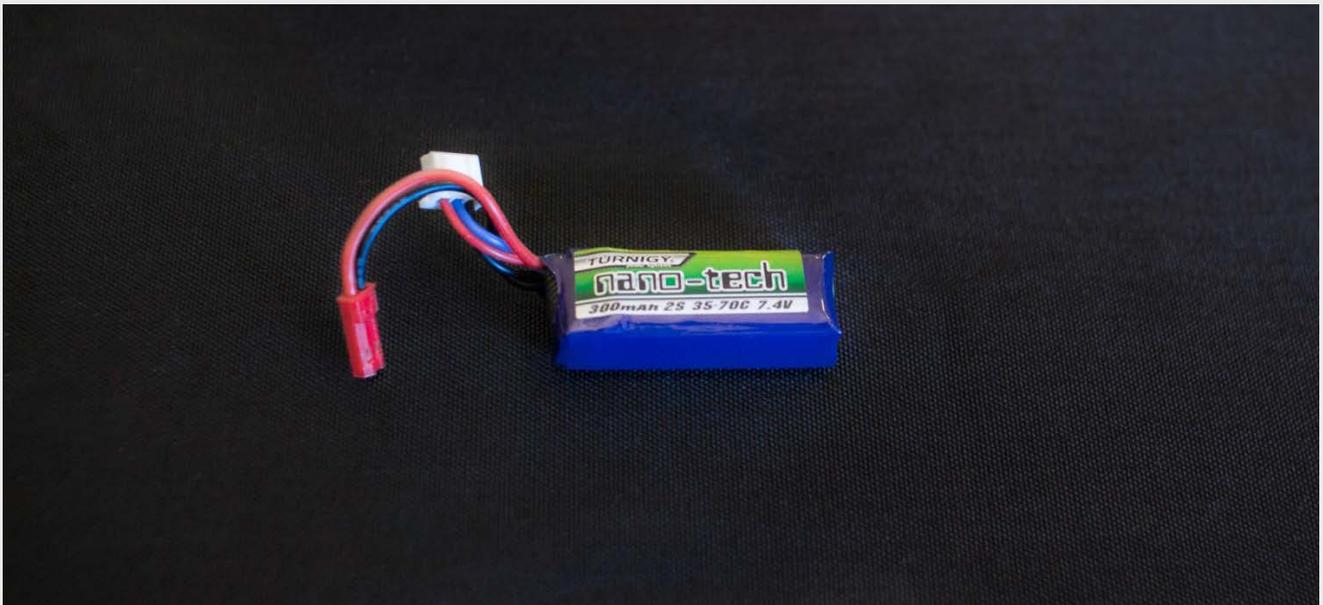
Servo is powered through the three pin PWM wire. Operating voltage range of the servo is 4,8 – 6,0 V.

Power supply

If needed, use a regulator to convert power supply voltage to 4,9 – 6,1 volts.

A dedicated battery is required, if XS launcher operates separated from aircraft electronics (as required with Phantom 3). Any small Li-Po battery may be used, for example 2s 300mAh.

XS can also be powered through aircraft's receiver or other controlling device.

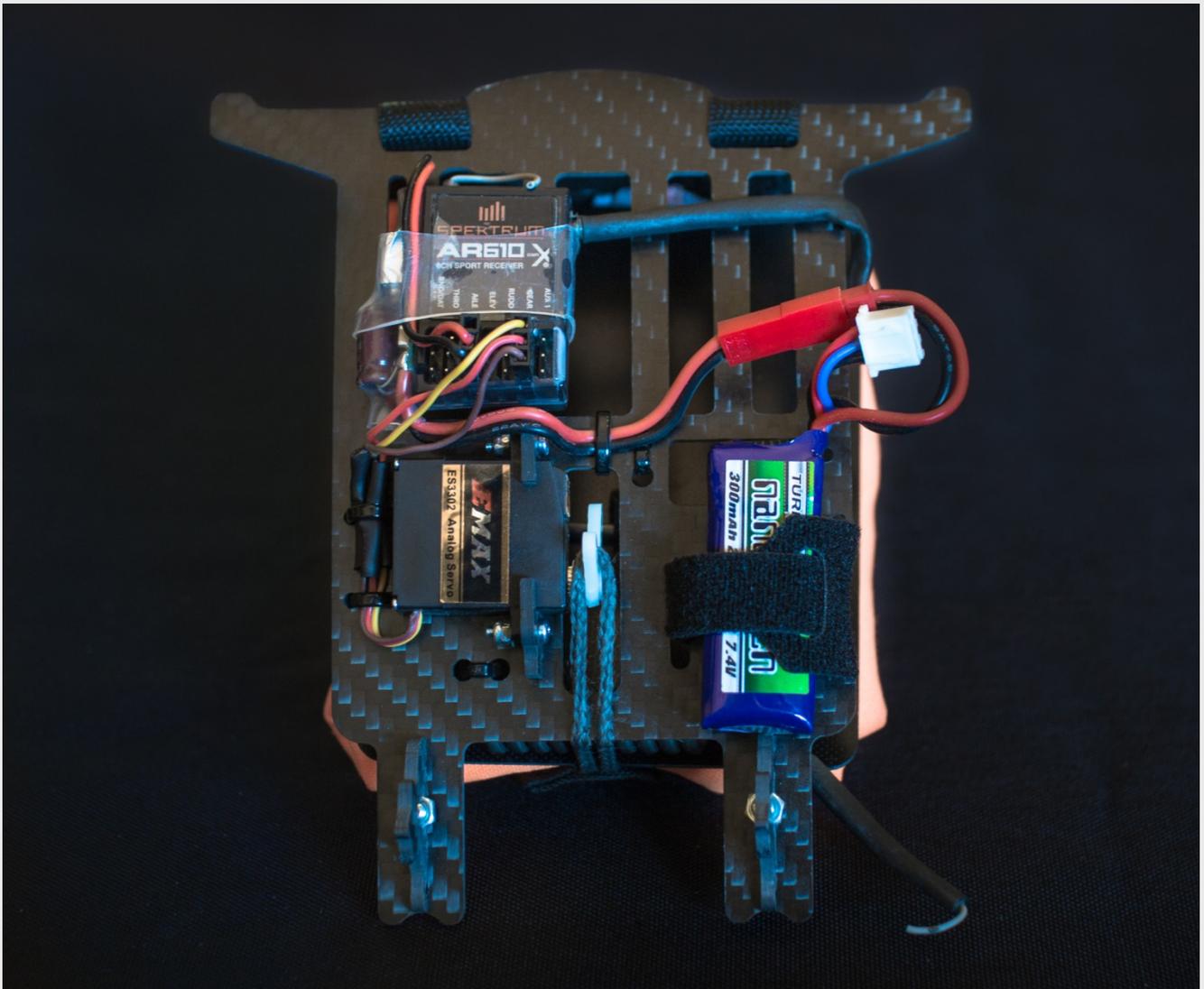


ELECTRICAL INSTALLATION

Use zip ties and velcro straps to fasten components to the back plate.

Following components are required to operate XS separated from the aircraft electronics (as required with Phantom 3):

- Radio transmitter (one free channel).
- Small and light receiver.
- 4,8 – 6,0 V voltage regulator.
- Power supply.



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RADIO SETUP

For detailed instructions, please refer to the manuals of your transmitter and autopilot. We have made instructions for some transmitters, you can find them at our download page: www.skycat.pro/downloads-1

DJI Phantom 3

- 1) Decide which transmitter switch or button and channel you want to use to launch the parachute.
- 2) Connect Skycat XS servo lead to your receiver.
- 3) Configure your transmitter so that when you flip the switch, parachute is released.

Motors need to be stopped from DJI radio. Please refer to the manual of the DJI Phantom for further instructions.

Other models

- 1) Decide which transmitter switch or button and channel you want to use to launch the parachute.
- 2) Connect Skycat XS servo lead to your receiver.
- 3) Configure your transmitter so that when you flip the switch:
 - Servo moves to release position.
 - Motors are stopped in all flight modes.

Remove propellers and test functionality:

- 1) Apply 10-30% throttle.
- 2) Flip the parachute switch. Motors should stop and servo should move to release position.
- 3) Repeat in all flight modes (manual, ATTI, GPS etc.)

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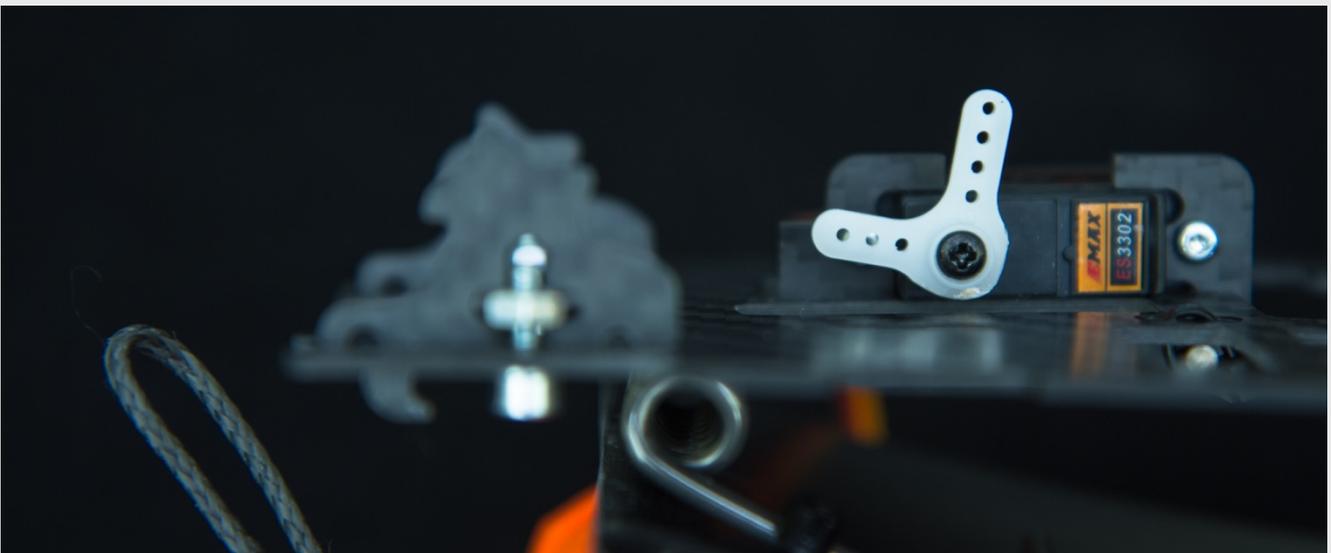
Servo travel

Set servo travel range as wide as possible to minimize stress to the servo arm and to guarantee reliable ejection in an emergency situation. Servo travel range and loop position is OK when servo does not bind (emit high pitch noise). Binding will reduce battery life and may damage the servo over time.

Standby position.



Release position.



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FAIL-SAFE SETUP

DJI Phantom 3

Decide what you want to happen if dedicated transmitter's signal is lost. Setup your transmitter's failsafe accordingly. Recommended setting is "no action".

- a. **No action.** Setup failsafe so that servo stays in standby position.
- b. **Parachute launch.** Setup failsafe so that servo moves to release position. This action is not recommended for normal flying.

To test failsafe:

- 1) Turn on your dedicated transmitter and power up the XS launcher.
- 2) Turn off your transmitter. Launcher should enter chosen fail-safe mode.

Other models

This applies, if XS is connected to your aircraft's receiver. Please refer to Phantom 3 instructions above, if a dedicated transmitter is used. Decide what you want to happen if transmitter signal is lost. In most cases, recommended setting is "autopilot failsafe".

- a. **Autopilot failsafe.** Setup failsafe so that autopilot enters failsafe mode (for example "return to home" and servo stays in standby position).
- b. **Parachute launch.** Setup failsafe so that servo moves to release position and motors are stopped in all flight modes. This action is not recommended for normal flying.

Remove propellers and test failsafe:

- 1) Apply 10-30% throttle.
- 2) Turn off your transmitter. Aircraft should enter chosen fail-safe mode.

SHOCK CORD

A shock cord is recommended for normal flying. It has many advantages:

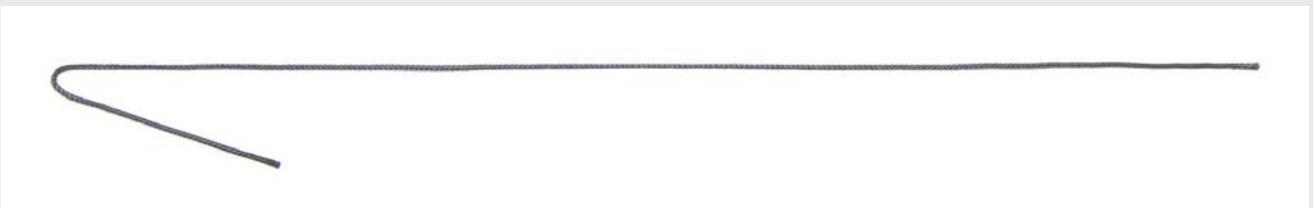
- Protects parachute lines and reduces the risk of entanglement.
- Reduces oscillations and swinging, especially in windy conditions.



Instructions

80 cm (31.5 in) shock cord is recommended for Skycat XS launcher. To achieve this, cut 100 cm (39.4 in) portion of parachute line.

1. Fold 8cm (3.1 in) segment of parachute line.



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2. Make a figure-of-eight knot according to the image below.



3. Make a figure-of-eight knot to the other end. Shock cord is completed.



Shock cord is connected to the parachute by joining the loops together.



PARACHUTE FOLDING AND LOADING

- Always pack and load on a clean and dry surface!
- Connect shock cord before folding.
- Opale parachutes come with a red bag attached. The bag is not needed with Skycat XS and **should be removed**.
- If launcher stays loaded over two months without launching, it is recommended to open and refold the parachute. This can decrease opening distance in an emergency.

Demonstration videos:

Opale 1.0 m2 parachute: <http://tinyurl.com/skycat-xs-opale-1m2>

Fruity Chutes IFC 36 parachute: <http://tinyurl.com/skycat-xs-fruity-36SL>



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HARNESSES LINES - DJI PHANTOM 3

Measure and cut 117cm (46 in) portion of supplied parachute line.



Fold 13cm (5 in).



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Make a knot but don't tighten yet.



Route the line around the front left boom. Slide the free end of the line through the knot and tighten lightly.



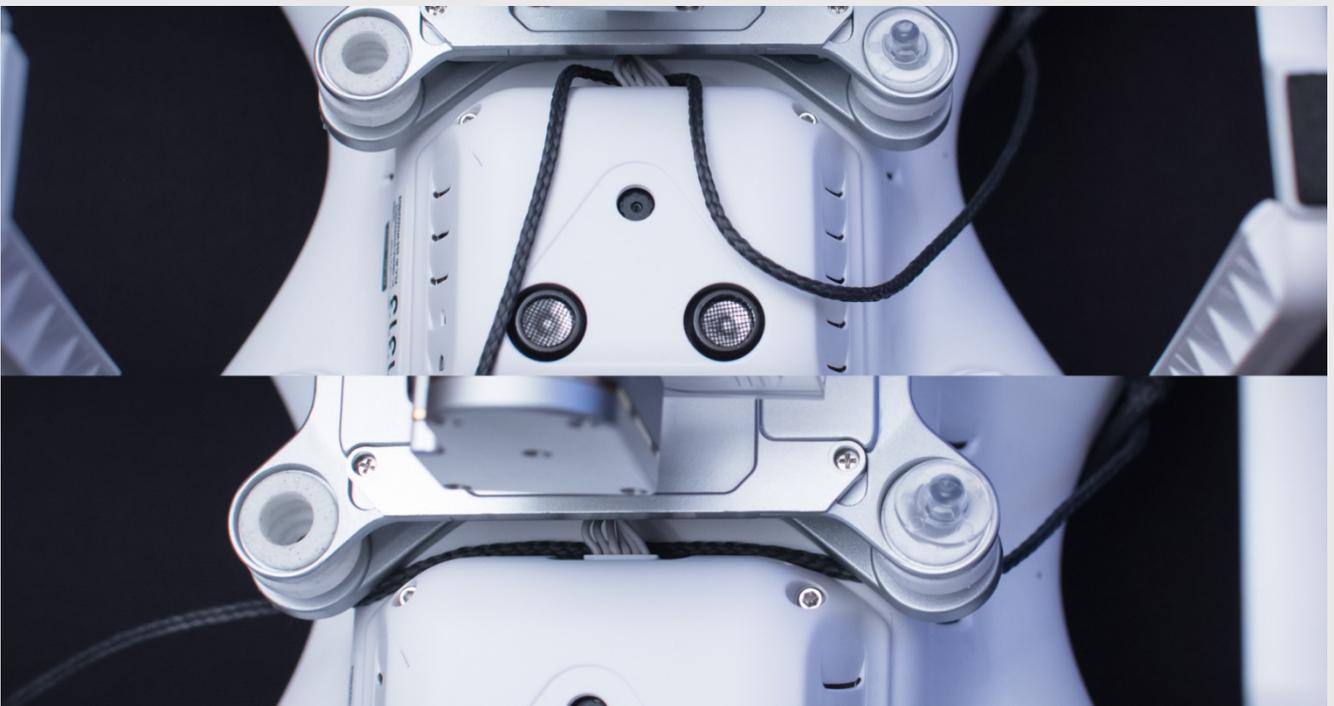
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Length it OK, when the loop reaches the the center of the frame while the knot is at the side.



Route the free end of the line under the gimbal wires. Be careful.



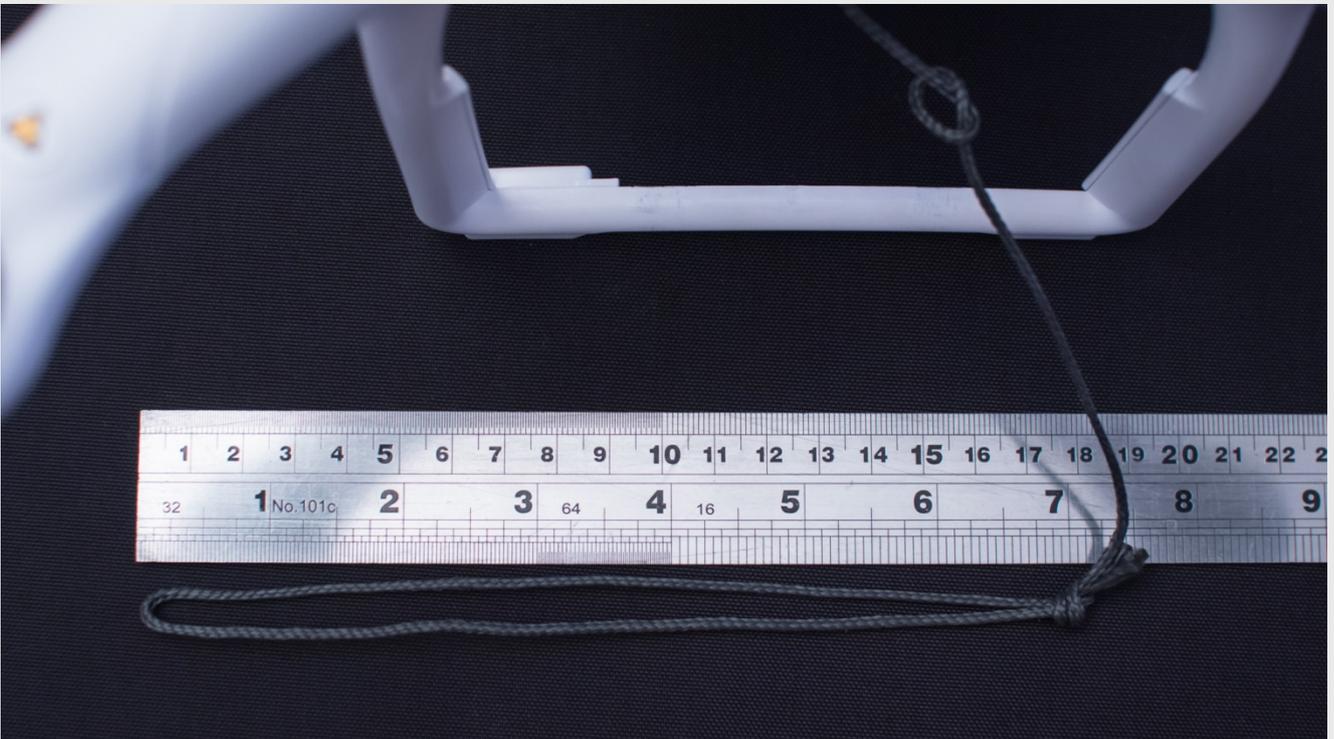
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Make a basic knot in the middle of the frame. Do not tighten yet.



Fold 18cm (7 in) portion of the line and make a knot.



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Route the line around the rear right boom and through the open knot and tighten lightly.



Slide the second loop through the first loop.



Add the small quick lock as shown in the picture. Make sure all lines go through the quick lock.



Snap the parachute in place and close the quick lock. Use tape to secure the harness in place. Make sure that harness lines cannot get to the propellers.



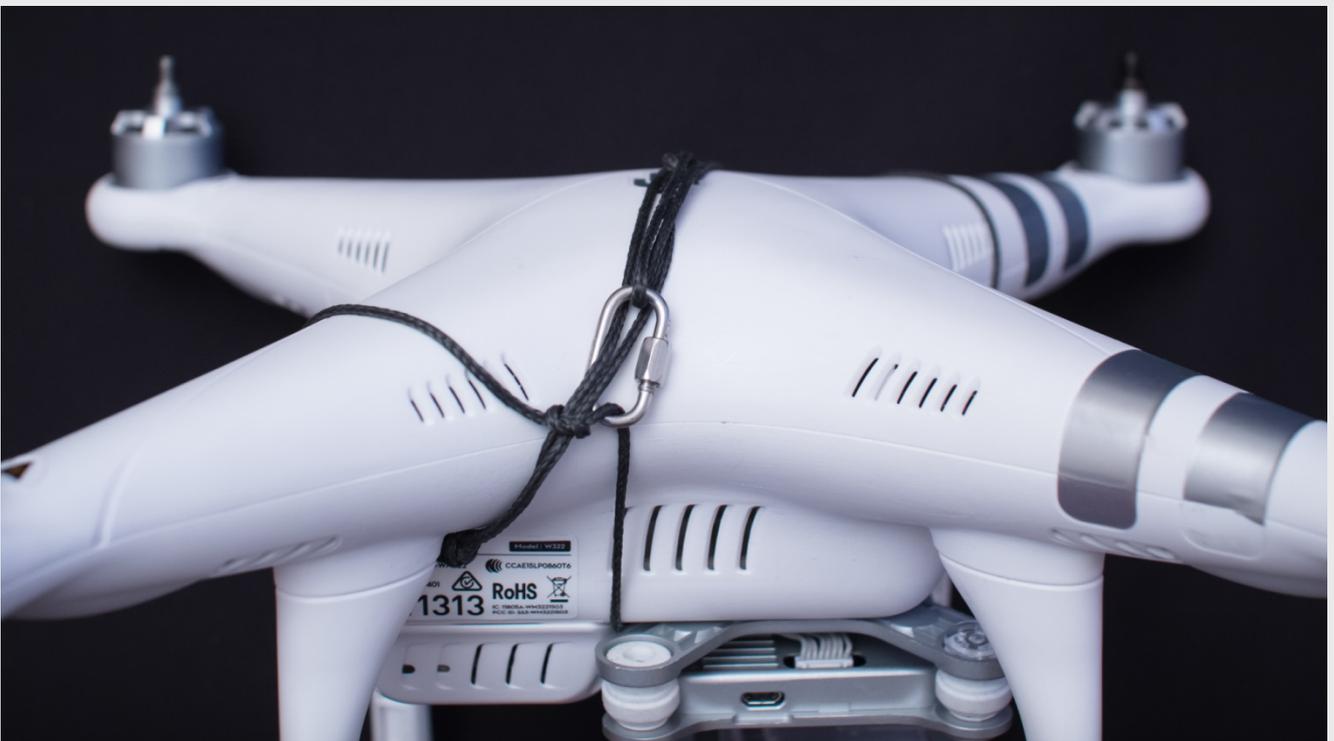
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Finished installation.



When flying without the XS, route the base line through the quick lock as shown in the picture. Make sure lines are tight and cannot get to the propellers.



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HARNESSES LINES – OTHER MODELS

Harness lines distribute the force of the parachute to the airframe. Choose the strongest points of your airframe such as the arms. Depending on your airframe, 3 or 4 harness lines can be used.

Instructions

Decide the optimal length of the harness lines for your model.

20 cm (8 in) of extra line needs to be added to target harness line length. For example, cut 60 cm segments for 40 cm target length.

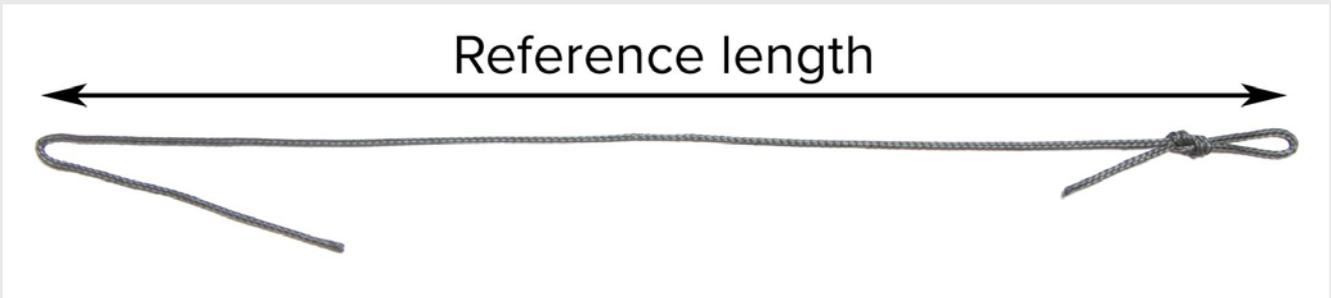
1. Fold a 8cm (3.1 in) segment at the end of the line.



2. Make a figure-of-eight knot according to the image above and pull it tight.



3. Based on desired harness line length, fold the other end of the parachute line.



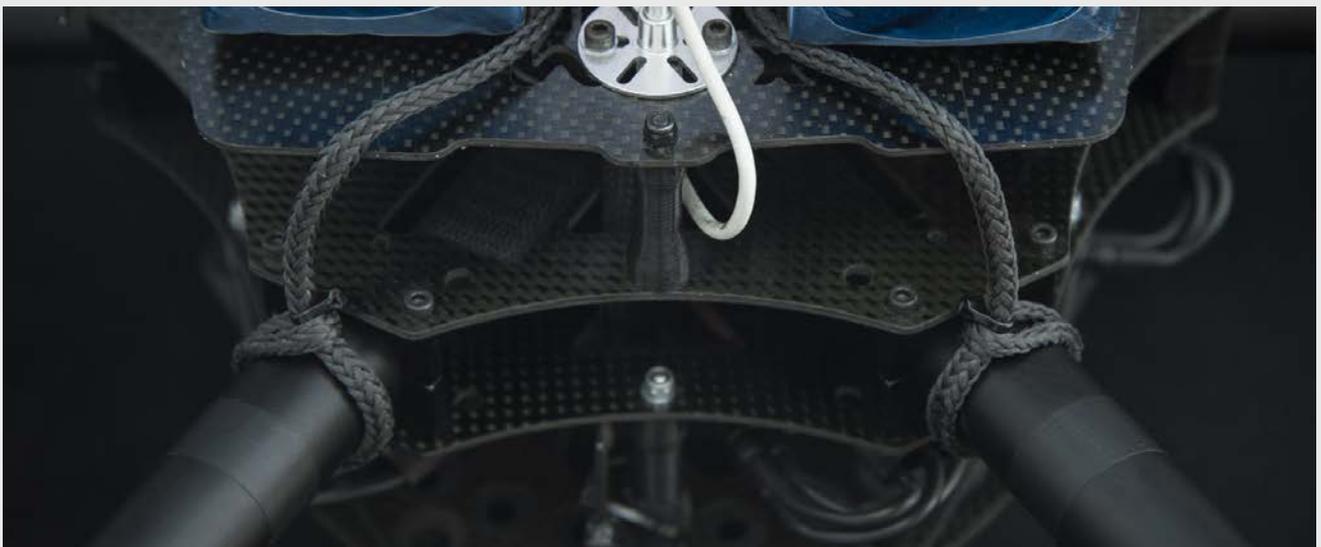
4. Make a figure-of-eight knot to the second loop. Make sure the location of the loop doesn't change during the knotting, otherwise the length will vary. Result is a ready-to-use harness line with fixed length.

Tip: Add some tape to hold the loop while making the knot.



Connecting harness lines to the airframe

Loop the harness line around the boom or other durable location of your airframe and pull the line through the loop.



Connecting harness lines to the parachute

If a shock cord is not used, harness lines and parachute are joined with a quick lock.



Shock cord loop and parachute loop are connected without a quick lock. Harness lines and shock cord are joined with a quick lock.



BASIC MAINTENANCE

We recommend a basic maintenance check after every 10 flights. Check carefully that:

- Parachute harness lines are undamaged and away from sharp edges.
- Wires are undamaged and away from sharp edges.
- Spring is connected to the catapult.
- Servo functions properly.

If launcher stays armed for more than two months without launching, take out and repack the parachute. This can decrease the opening distance in an emergency.

Checking servo functionality

- 1) Turn on your transmitter.
- 2) Power up your receiver.
- 3) Hold the catapult closed with your hand.
- 4) Flip the eject switch. Servo should move to open position.

AFTER LAUNCH CHECKLIST

Check components and functionality after every launch. Check carefully that:

- Parachute and harness lines are not damaged.
- The frame of the XS launcher is not damaged.
- Wires are securely fastened and undamaged.
- Spring is connected to the catapult.
- Servo functions properly.

Do not use or try to repair damaged parts! Skycat offers extensive repair and spare part services, don't hesitate to contact us.

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HOW AND WHEN TO USE SKYCAT PARACHUTE SYSTEM

Only use Skycat parachute system in the case of emergency or testing, not for regular landings. Skycat is designed to reduce the impact energy of your aircraft. It does not remove the possibility of damage to people, surroundings or to your aircraft. Do not take unnecessary risks when planning your flights. Never fly above crowds!

In an emergency, seconds count. Eject parachute as soon as you're certain the aircraft is not in your control anymore. Aircraft with no gliding surface reach very high speed after only a few seconds in freefall.

We highly recommend regular training to improve reaction time and accuracy in emergency situations. Landings can be hard despite the use of Skycat. Building a cheap testing platform is recommended for training purposes. All training should take place at safe locations, away from people, animals, buildings and/or other obstacles.

Recommended testing situations include:

- Hovering
- Fast forward flight
- Motor failure
- Flight power cut-off
- Flight controller failure

All testing is conducted **at your own risk**. Skycat is not liable for any damages. For more information, please read the disclaimer below.

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DISCLAIMER

Skycat is a backup system designed to decrease the kinetic impact energy of your multicopter, UAV or other radio controlled model in the case of emergency.

Skycat cannot prevent your multicopter, UAV or radio controlled model from causing damage at impact. Skycat is strictly a backup device, and does NOT replace proper training and timely execution of appropriate emergency procedures.

Skycat is an electro-mechanical device, and as such, it can fail to work properly, which can result in false activation or no activation at all. Such failure can cause injuries or death.

False activation or intended activation with inappropriate timing can cause your aircraft to glide further and cause more damages, than it would have caused, had it crashed to the ground in free fall.

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