

# ZERO-X<sup>®</sup>

••• RAVEN DRONE •••



## USER MANUAL

PRODUCT CODE: ZXRVN

[www.zero-x.com.au](http://www.zero-x.com.au)

[www.zero-x.co.nz](http://www.zero-x.co.nz)



**Thanks for purchasing a Zero-X Raven Drone, get ready to have the time of your life! We're sure your Zero-X Raven drone will bring you a world of great experiences in the air.**

**Please take the time to read the following safety warnings and operating instructions carefully.**

## **Before you get up in the air**

Connect the Raven drone battery to the included USB charging cable and insert the USB charging cable into the supplied USB wall charger. While the battery is charging the LED on the charging cable will turn off. Once charging is complete the light will glow red. While the battery is charging please take the time to read the instructions and familiarise yourself with the controls of your Zero-X Raven drone.

## **General Safety**

Please familiarise yourself with your local legislation regarding drone usage before you begin using your Zero-X Raven drone.

Included in the package contents of your Zero-X Raven drone are the Australian CASA guidelines, please carefully read and understand this information as operating a drone outside of these guidelines may result in legal issues. The manufacturer takes no responsibility for operation of this product outside of what is legally permissible in your local area.

- Do not fly your Raven drone any closer than 30 metres from people, animals, or buildings. Check to make sure you are no closer than 5.5 kilometres from any airfields or airports.

For more information on CASA's Australian legislation visit: <http://www.casa.gov.au/> For information outside Australia please visit the website of your local aviation authority.

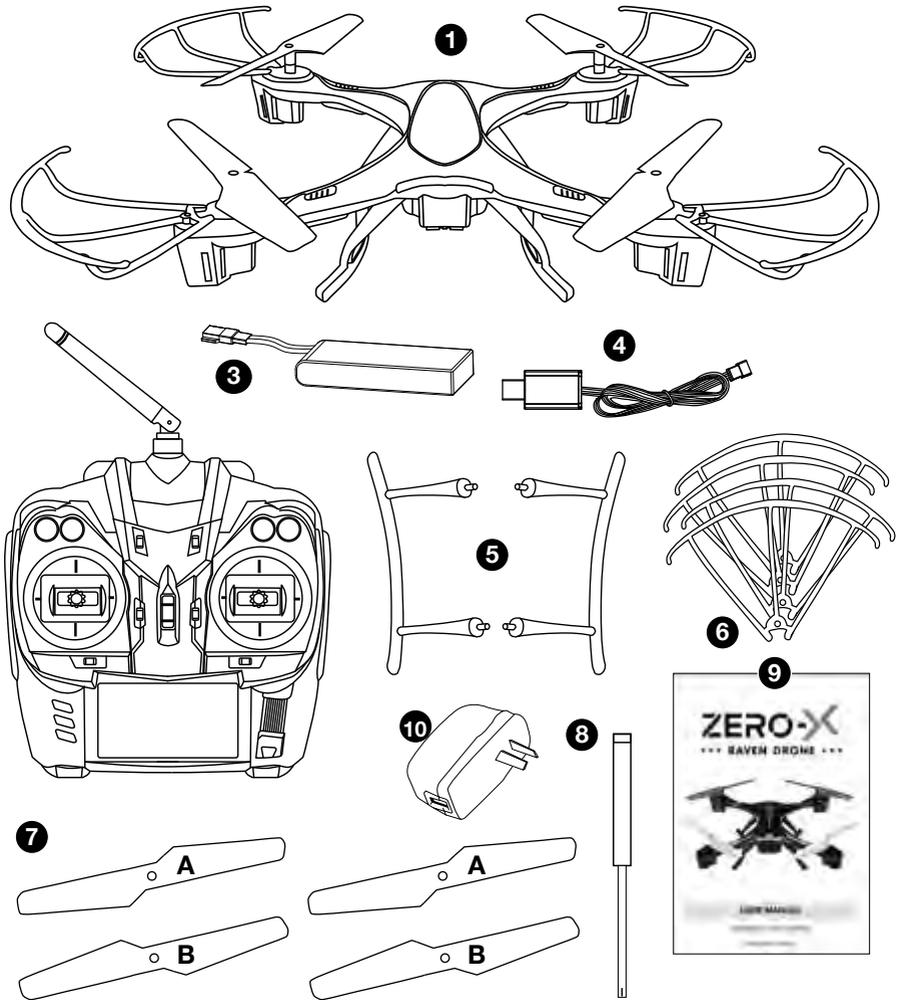
- Do not attempt to modify the Raven drone or any of its components in any way, doing so will void your warranty and may affect the operation of the drone.
- Do not use the Raven drone in any conditions that could affect, damage, or impair your view of the Raven drone including rain, wind, snow, fog or low light. Avoid getting your Raven drone wet, dusty, or sandy. These elements will damage the components of your Raven drone.
- Please do not attempt to touch the Raven drone when the Remote Control is powered on, or if the rotor blades are turning.
- When flying your Raven drone, please keep in mind the privacy of others.

## Battery Safety

When handled incorrectly, Lithium polymer batteries can be dangerous and can potentially harm and do damage to persons or property. The manufacturer does not accept any liability for damage to persons or property if the battery is not correctly charged, stored or protected.

- Always unwind all cables before charging.
- Do not over charge the battery. Once the charging process is completed, remove the battery from the charger as soon as possible.
- Only use the included or replacement Zero-X Raven chargers and batteries.
- You must charge the LiPo battery in a safe area away from flammable materials.
- The battery is only to be charged under adult supervision, do not leave charging batteries unattended. You should always remain in constant observation to monitor the charging process and react immediately to any potential problems that may occur.
- Do not charge the battery in temperatures hotter than 40°C or colder than 0°C.
- After each flight & or crash, please check battery for any damage or swelling.
- Do not cover the batteries when charging. Do not leave batteries in direct sunlight.
- If the battery is damaged, leaking, making noise, punctured or malformed in any way DO NOT attempt to use it. Please dispose of the battery immediately and safely in the correct manner.
- Do not bend, puncture, crush or scratch the drone's battery. Do not store batteries in your pockets, on your person, or in extreme temperatures.
- After flying/discharging the battery you must allow it to cool to ambient/room temperature before recharging.
- If at any time during the charge or discharge process the battery begins to balloon or swell, discontinue charging or discharging immediately. Quickly and safely disconnect the battery, then place it in a safe, open area away from flammable materials to observe it for at least 15 minutes. Continuing to charge or discharge a battery that has begun to balloon or swell can result in a fire. A battery that has ballooned or swollen even a small amount must be removed from service completely.
- Never plug in a battery and leave it to charge unattended overnight.
- Non-compliance with the above warnings may result in the failure of the battery.

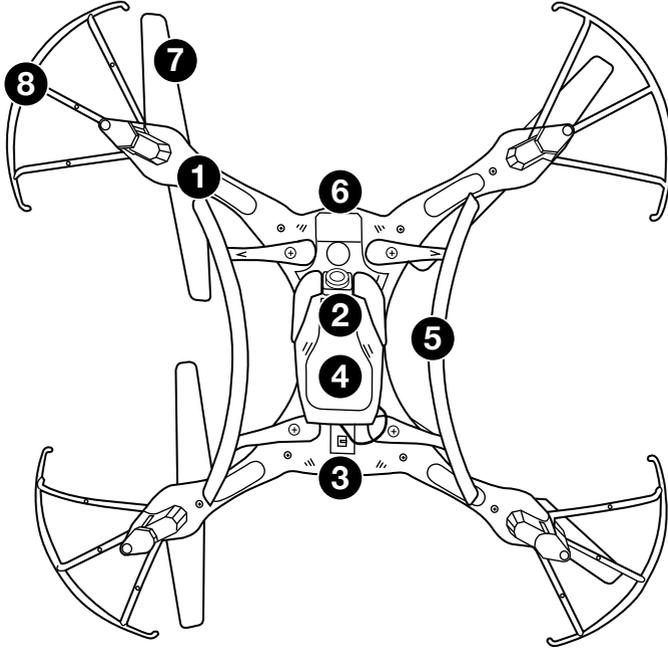
# Package Contents



1. Raven Drone	2. Remote Control
3. Drone battery	4. Drone battery charger
5. Drone Feet	6. Rotor Guards
7. Spare Rotor Blades	8. Screwdriver
9. Manual	10. USB Wall Charger

# Raven Drone Diagram

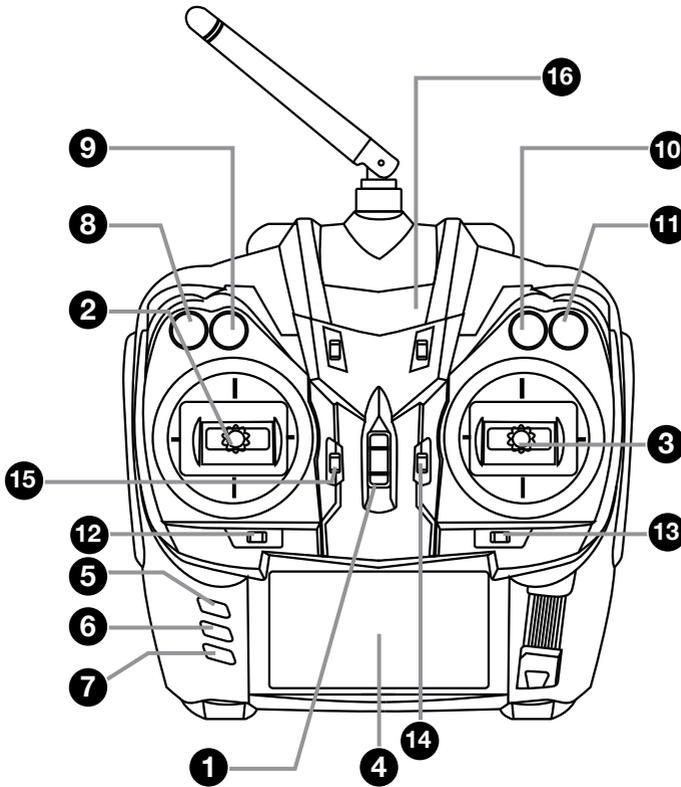
Under Side View



1. LED Lights	2. Camera
3. Power Switch	4. Micro SD Card Slot*
5. Feet	6. Battery Hatch
7. Rotor Blades	8. Rotor Guards

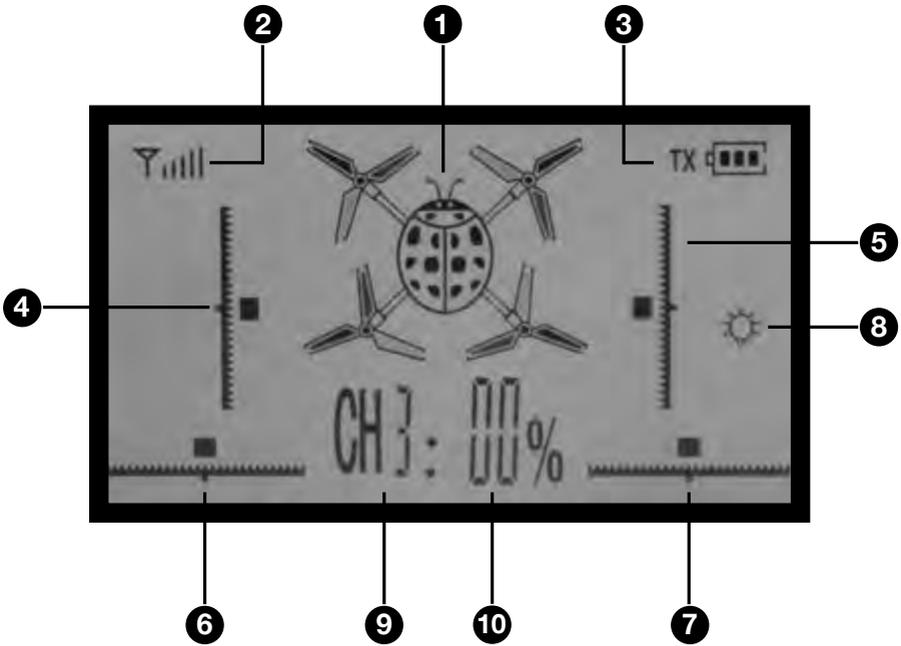
\* Micro SD Card not included

## Remote Control Diagram



1. Power Switch	2. Left Thumbstick (Acceleration / Yaw)
3. Right Thumbstick (Pitch / Roll)	4. LCD Screen
5. Photo Button	6. Video Button
7. Light Button	8. Directional Lock Button
9. Assisted Return Button	10. Speed Button
11. Flip Button	12. Yaw Trim Controller
13. Roll Trim Controller	14. Pitch Trim Controller
15. Camera Tilt Controller	16. Indicator LED

## Remote Control LCD Diagram



1. Drone Diagram	2. Connection Strength
3. Remote Battery	4. Acceleration Level
5. Pitch Trim Balance	6. Yaw Trim Balance
7. Roll Trim Balance	8. Light Indicator
9. Channel connection	10. Acceleration

## Set Up

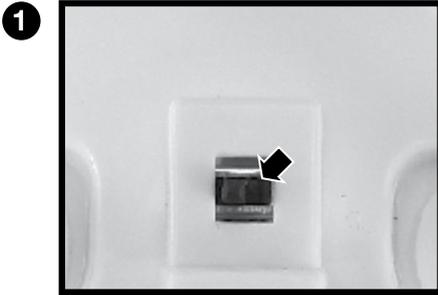
### Charging the Battery

Fully unwind the included USB charging cable and plug the USB end into the included USB wall charger. Only use the USB charging cable and wall charger included with the Raven drone. If you are unable to use the supplied wall charger, please ensure that the charger that you use is C Tick certified and has an output minimum of DC 5V/1A and maximum of DC 5V/2.1A. Chargers above or below this range can potentially damage the battery and charger. When connected to a charging source the LED light in the charger will glow red. Connect the drone battery to the charging cable and the light will glow red indicating charging is in process. The LED on the USB charging cable will begin to glow green again once charging is complete. To keep the battery life as long as possible avoid removing the battery from the charging cable before charging is complete. If you have just finished flying your Raven drone, please allow the battery to cool down for at least 30 minutes before recharging.

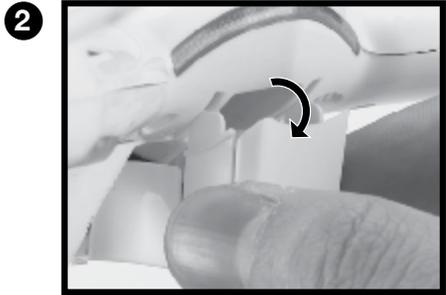
- If the battery is being charged by computer, make sure to pull out the USB cable if you want to shut down the computer.
- When connecting the USB cable with the battery, make sure to follow the correct polar indicator.

## Set Up

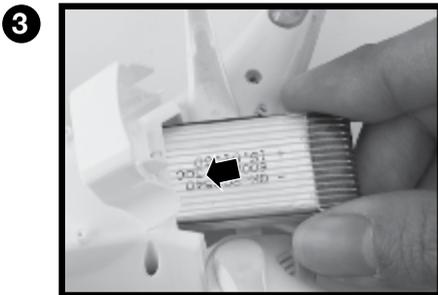
### Installing the Battery



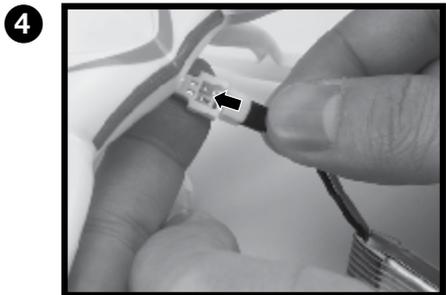
Ensure that the Raven drone's power switch (3) is in the OFF position.



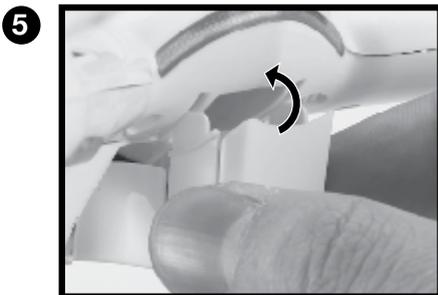
Release the battery hatch lock by gently squeezing the sides of the door at the front of the Raven drone.



Insert the fully charged battery with the charging wires facing outwards.



Connect the battery cable to the Raven drone's power cable & tuck the cable into the battery opening.



Close the battery hatch making sure the door clicks into place.

## **Set Up**

### **Camera**

The camera on the Raven drone should already be connected. It is advised that the camera is not removed and reconnected as this can potentially damage the camera connection.

If it is necessary to plug the camera cables in, make sure that the plugs are facing the correct way as plugging these in incorrectly could permanently damage the connection pins on the Raven drone.

### **Installing a Micro SD Card**

With the Raven drone upside down and facing away from you insert the Micro SD card into the rear of the camera ensuring that the text side of the Micro SD Card is face down and the notched side of the card is on the left side.

Gently press the card in until you hear the lock click into place.

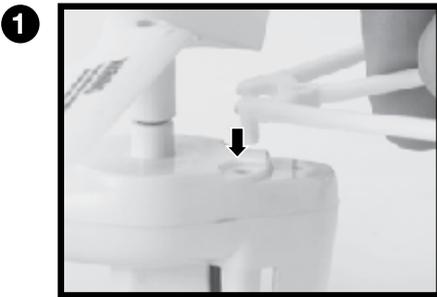
(Micro SD Card not included)

## Set Up

### Rotor Guards

Rotor Guards are an optional fitting on the Raven drone, however for safety reasons we strongly advise you to attach them. Whether Rotor Guards are attached or not, please be very careful when handling the drone. To avoid injury, do not touch the drone while the blades are turning or the remote control is powered on.

- Line up the guide pegs on the Rotor Guards with the holes on the arms of the Raven drone so that the screw in the Rotor Guard matches up with the screw hole in the Raven drone.



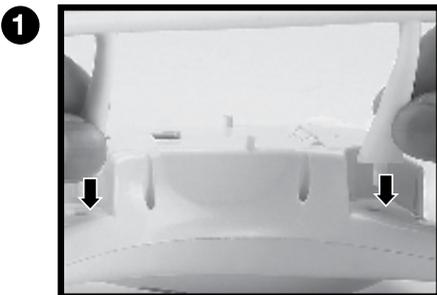
Firmly press the Rotor guard into position.



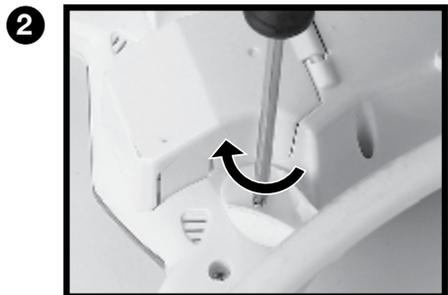
Using the included screwdriver tighten the screws making sure not to over tighten.

### Feet

Line up the guide pegs on the feet with the holes on the underside of the Raven drone's body so that the screws in the feet match up with the screw holes on the underside of the Raven drone.



Firmly press the feet into position.

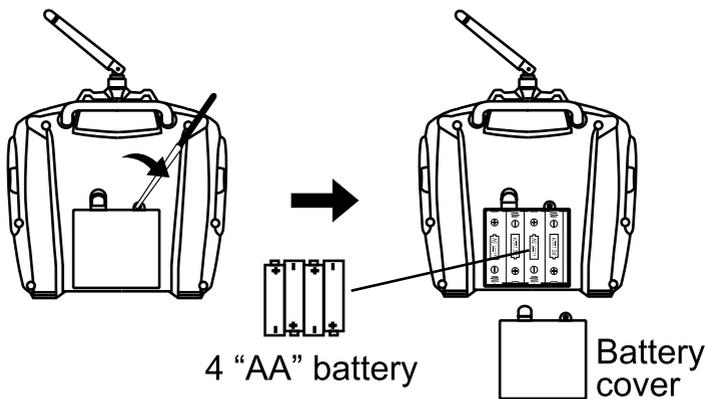


Using the included screwdriver tighten the screws making sure not to over tighten.

## Set Up

### Remote Control

1. Ensure that the Remote Control power switch (1) is in the OFF (down) position.
2. With the included screwdriver unscrew the battery cover on the rear of the Remote Control.
3. Open the battery cover by pressing down the open tab.
4. Insert 4 x AA batteries (AA batteries not included) making sure that they are in the orientation specified.



### Flight Safety

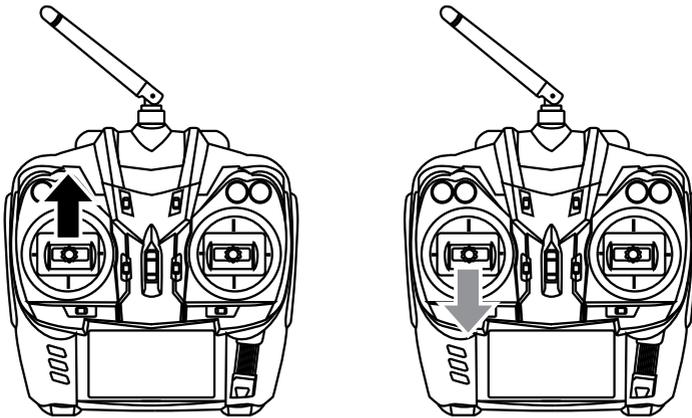
Before flying your Raven drone make sure that you are in a safe setting.

CASA restrictions regarding flying drones require the drone to be no closer than 5.5kms from any airport or airfield whilst flying. Drones should also not be flown over populated areas or any closer than 30 metres from vehicles people or animals.

It is also required that you check your surroundings before taking off making sure there are no obstacles or dangers in the area including overhead power lines and bodies of water. If there are hazards present in your intended area of flight, please consider an alternative location.

## Launching your Raven drone

1. After installing a fully charged battery and installing 4 x AA batteries (AA batteries not included) into the remote control and conducting a complete check of your surroundings, turn the Power Switch (3) on the Raven drone to the ON position.
2. Once on, the LED lights on the arms of the Raven drone should flash signalling a connection to the Remote Control. Place the Raven drone on the ground facing away from you and move back three metres.
3. With the Left Thumbstick (Acceleration/Yaw) (2) in the lowest (down) position power on the remote control (1). The remote should beep once to indicate power up has been successful.
4. To activate the connection between the remote and the Raven drone, move the Left Thumbstick (Acceleration/Yaw) (2) on the Remote Control to the highest (up) position. Hold for one second and then return the Left Thumbstick (Acceleration/Yaw) (2) to the lowest (down) position.



The remote should beep again, the lights on the arms of the Raven drone should shine solid and the onscreen display will show the Rotor Blades spinning, indicating that the connection has been successful and the drone is ready to fly.

## Do not approach the drone again until the remote has been powered off

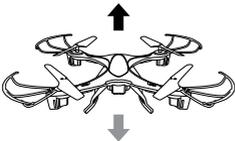
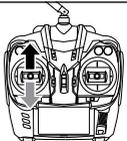
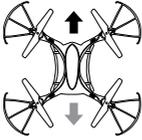
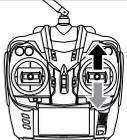
If for any reason the Raven drone does not work after following the above steps please check the following.

- The Raven drone battery is fully charged, correctly connected and not damaged.
- The batteries in the Remote Control are the same brand, have an equal amount of charge and have enough charge to power the remote control correctly (using an assortment of batteries will affect the performance of the Remote Control).
- The connection between the Remote Control and the Raven drone may not have been completed correctly. Ensure that when activating the connection, the Left Thumbstick is moved all the way to the top and then all the way to the bottom. If this is not completed the connection will not activate.

Once these elements have been checked, turn both the Raven drone and the Remote Control off and start the launching process again.

## Controlling your Raven Drone

### Basic Controls

<b>Lift Descent</b>		Push the left control stick up / down, Raven ascends / descends accordingly.	
<b>Yaw left / right</b>		Push the left control stick left / right, Raven turns left / right accordingly.	
<b>Pitch forward / back</b>		Push the right control stick up / down, Raven moves forward / backward.	
<b>Roll left / right</b>		Push the right control stick left / right, Raven rolls left / right.	

## **Speed Modes**

The Raven drone has 3 speed modes that control the acceleration and manoeuvrability of the drone.

To cycle through the Speed Modes, use the Speed Button (10) marked H/L on the top right of the controller.

### **LOW**

When the Raven drone is powered up it will start in LOW speed mode.

In this mode the Raven drone will control and fly slowly. It is advised that beginners use this mode to learn the basics before moving onto the two higher modes.

### **MID**

Push the Speed Button (10) once and the Remote Control will beep twice indicating that the Raven drone is now in the medium Speed Mode.

In this mode the sensitivity of both the acceleration, and directional control of the Raven drone will be increased, making the Raven drone more nimble and quick.

### **HIGH**

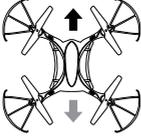
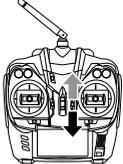
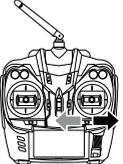
Push the Speed Button (10) a second time and the Remote Control will beep three times indicating that the Raven drone is now in its highest Speed Mode.

In this mode the sensitivity of both the acceleration and directional control will be increased again. It is advised that this mode is only used in a very open space once the pilot has gained significant drone flight experience.

## Trimming

Trimming is used to balance the Raven drone when flight is off centred.

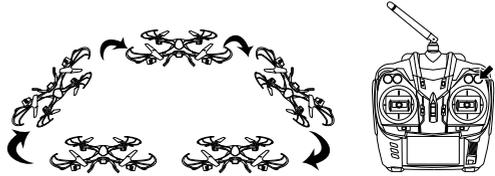
Please check before attempting to use trimming that the Raven drone's flight is not being affected by outside forces such as wind.

<b>Trimming Pitch</b>		To trim the Raven drones' pitch, use the Pitch Trim Controller which is the small switch on the Remote Control to the left of the Right Thumbstick. This will balance the forward and back movement of the Raven drone.	
<b>Trimming Roll</b>		To trim the Raven drones' roll, use the Roll Trim Controller which is the small switch on the Remote Control below the Right Thumbstick. This will balance the left and right movement of the Raven drone.	
<b>Trimming Yaw</b>		To trim the Raven drones' yaw, use the Yaw Trim Controller which is the small switch on the Remote Control below the left Thumbstick. This will balance the left and right spin of the Raven drone.	

## Flipping and Stunts

The Raven drone can perform 360 flips in any direction by pushing the Flip Button (11), and then pushing the Right Thumbstick (Pitch / Roll) (3) in the direction you want to flip the drone.

Please ensure that you have a 2 metre clearance below, and in all directions around the drone before attempting to flip as this manoeuvre requires considerable space.



## Camera

The camera on the Raven drone is controlled via the Video (6) and Photo (5) buttons on the remote control to the left of the LCD screen.

When you are intending to use the camera, please ensure that you have inserted a Micro SD card (not included) into the Micro SD card slot in the Raven drone.

The light on the camera will shine green when a Micro SD Card is detected, and it is ready to record video or take still photos.

If the light on the camera does not activate, try re-inserting the Micro SD Card and restarting the Raven drone.

## Shooting Video

To start recording video, push the Video Button (6) on the remote control. The light on the camera will start flashing red indicating that recording is in progress. To stop recording push the Video Button (6) again and the light on the camera will return to shining green. Ensure you have stopped recording before removing the Micro SD Card, or turning the power off on your Raven drone.

## Shooting Photos

To take a photo with your Raven drone press the Photo Button (5) on the remote control. The light on the camera will flash red once and then return to green.

## Tilt the Camera

The Camera can be angled up and down while on the fly to capture either a bird's eye view of forward facing footage.

To tilt the camera up and down use the Camera Tilt Controls on the Remote Control (15).

To save power the Camera Tilt function deactivates when the Raven drone's battery is low. To reactivate these controls, charge the drone's battery and re-launch the Raven drone.

## Directional Lock

Directional Lock mode is a mode that makes it easy for beginners to fly.

In this mode the direction you and the Raven drone are facing when the Raven drone is launched will always be forward on the controls, no matter which way the Raven drone is facing.

This means that even if you can't see which way the Raven drone is facing you will be able to bring the drone back towards yourself by pulling back on the Right Thumbstick (Pitch/Roll) (3).

### To activate Directional Lock:

1. After powering up the Raven drone and pairing with the controller (see section 'Launching your Raven drone') ensure that you and the Raven drone are facing the same direction.
2. Press the Directional Lock Button (8) on the Remote Control and the lights on the Raven drone will flash indicating that the drone is now in Directional Lock mode.

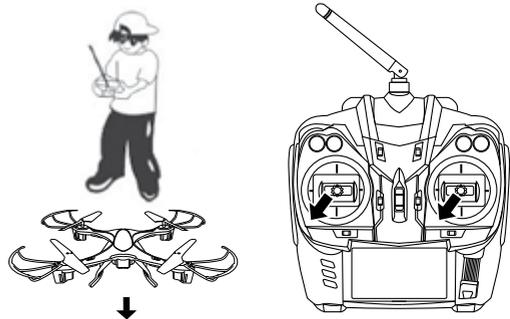
It is important that you do not change the orientation position you are standing in when you activate Directional Lock as this will affect the control of the drone.

3. You will now be able to fly the Raven drone in Directional Lock mode.
4. To exit Directional Lock mode, push the Directional Lock Button (8) again and the Raven drone lights will shine solid again.

### Adjusting Directional Lock:

It is possible to re-adjust your position or angle, or recalibrate Directional Lock by landing the Raven drone in the position that you want to assign as forward, moving behind the Raven drone, facing the same direction as the drone, and then holding both Thumbsticks (2,3) in the bottom Left position.

The drone lights will flicker fast until calibration is complete. Be sure to hold the Thumbsticks in this position until the calibration process is complete and the lights return to flashing at their regular rate.



## Assisted Return Mode

Assisted Return Mode moves the drone backwards from its current position and can be used to aid the return of the Raven drone.

Return mode does not locate or track the user, instead it moves the drone in reverse from the orientation it is in when Assisted Return mode is activated.

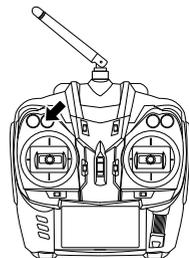
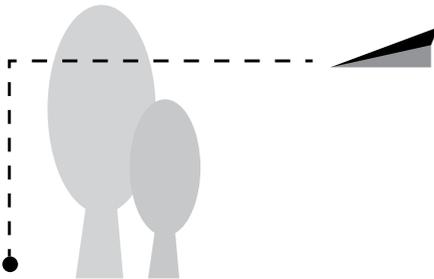
If activated while using Directional Lock, the drone will move backward based on the orientation that has been set when setting up Directional Lock.

### To use Assisted Return Mode:

1. When the Raven drone is flying ensure that the drone is facing away from you.
2. Push the Assisted Return Button (9).
3. The Drone will start moving backwards
4. Use the Right Thumbstick (Pitch/Roll) (3) to guide the Raven drone left and right to avoid obstacles while it is moving backwards.
5. Use the Left Thumbstick (Acceleration/Yaw) (2) to lower and land the drone.
6. To cancel the Assisted Return function, either press the Assisted Return Button (9) again or push the Right Thumbstick (Acceleration/Yaw) (2) into the upward position.

Because Assisted Return Mode causes the drone to move quickly, it is advised that this function is only used in an open space and while the drone is not in Directional Lock Mode.

It is also advised that this function is only used when the user can see that the Raven drone is facing away from them. If the drone is facing towards the user when Return mode is activated it will cause the Raven drone to move away from them.



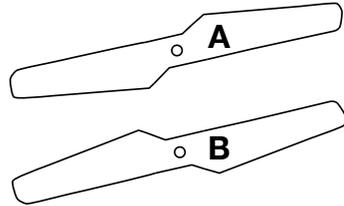
## Maintenance

### Cleaning:

Avoid exposing your Raven drone and its accessories to dust, sand and moisture as these can damage the Raven drone. If the Raven drone is exposed to dust or sand, use a soft brush to remove any visible particles.

### Rotor Blade replacement:

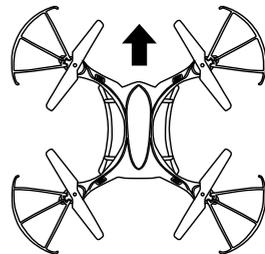
1. Use the Included screwdriver to remove the screw on the top of the Rotor Blade.
2. Gently remove the Rotor Blade.
3. Ensure that you are replacing the Rotor Blade with the correct blade as there are two different orientations of blades which are labelled A and B on the underside of the blade.



**If the incorrect blade is used in the incorrect placement the Raven drone WILL NOT WORK.**

Different colour Rotor Blades are used front and back on your Raven drone so it is easy to identify the front and rear of the Raven drone when flying. To ensure that it is easy to fly the Raven drone make sure that the front and rear blades are different colours. Because Assisted Return Mode causes the drone to move quickly, it is advised that this function is only used in an open space and while the drone is not in Directional Lock Mode.

4. Gently push the replacement Rotor Blade into place. Replace the screw being careful not to over tighten. If the screw will not fit in place, remove the screw and make sure that the holes on both the Rotor Blade and the rod are aligned.



### Parts and Accessories

To purchase parts and accessories for your Zero-X Raven drone, please visit your nearest Zero-X retailer or visit us online at [www.zero-x.com.au](http://www.zero-x.com.au) or [www.zero-x.co.nz](http://www.zero-x.co.nz)

ZXRBRVBW Rotor Blades for Raven - Black and White

ZXRBRVWP Rotor Blades for Raven Value Pack

ZXBATRV700 700mAh Battery for Raven

ZXCHRVDR Battery charger for Raven

## Specifications

Dimensions	37.9cm x 37.9cm
Weight	219g
Channels	4
Battery	700mAh
Transmitter Battery	4 x AA batteries
Screen	LCD
Battery	5V, 1A, USB

Frequency	2.4Ghz
Camera Resolution	720P
Photo Resolution	2MP
Video Format	AVI
Photo Format	JPG
Memory	SD Micro Card*

\*(Up to 32gb)

## Warranty Terms & Conditions

Our goods come with guarantees that cannot be excluded under the Australian and New Zealand Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

This warranty is provided in addition to your rights under the Australian & New Zealand Consumer Law.

Zero-X warrants that this product is free from defects in material and workmanship for a period of 12 months from the date of purchase or for the period stated on the packaging. This warranty is only valid where you have used the product in accordance with any recommendations or instructions provided by Zero-X.

This warranty excludes defects resulting from alterations of the product, accident, misuse, abuse or neglect.

In order to claim the warranty, you must return the product to the retailer from which it was purchased or if that retailer is part of a National network, a store within that chain, along with satisfactory proof of purchase. The retailer will then return the goods to Zero-X. Zero-X will repair, replace or refurbish the product at its discretion. The retailer will contact you when the product is ready for collection. All costs involved in claiming this warranty, including the cost of the retailer sending the product to Zero-X, will be borne by you.

### Zero-X Address:

33 Quinn Drive, Keilor Park Victoria 3042 Australia  
Ph: +61 03 8331 4800 Email: [service@zero-x.com.au](mailto:service@zero-x.com.au)

**ZERO-X**<sup>®</sup>

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