

## **Aero RC Club Flying Proficiency: Basic Quadcopter Flying 1.0**

There are 12 key things that are required under Part 101 - you must:

1. not operate an aircraft that is 25 kg or larger and always ensure that it is safe to operate
2. at all times take all practicable steps to minimize hazards to persons, property and other aircraft (ie, don't do anything hazardous)
3. fly only in daylight
4. give way to all crewed aircraft
5. be able to see the aircraft with your own eyes (eg, not through binoculars, a monitor, or smartphone) to ensure separation from other aircraft (or use an observer to do this in certain cases)
6. not fly your aircraft higher than 120 metres (400 feet) above ground level (unless certain conditions are met)
7. have knowledge of airspace restrictions that apply in the area you want to operate
8. not fly closer than four kilometres from any aerodrome (unless certain conditions are met)
9. when flying in controlled airspace, obtain an air traffic control clearance issued by Airways
10. not fly in special use airspace without the permission of the administering authority of the area (eg, military operating areas or restricted areas)
11. have consent from anyone you want to fly above
12. have the consent of the property owner or person in charge of the area you are wanting to fly above.

This list should not substitute for a full reading of Part 101. You should conduct a thorough assessment of your operation and understand the rules that apply to your operation before deciding whether to operate under Part 101 and 102.

(<https://www.caa.govt.nz/rpas/>)

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### Pre-Flight Checklist:

If you have brought your own drone bring it to Pres or the UAV Team for approval.

Make sure the transmitter battery is charged.

Make sure the quadcopter battery is charged.

Insert the battery.

Make sure the battery is inserted securely.

Make sure each propeller is secure.

Check that there are no loose parts on the quadcopter.

Check for missing or loose screws.

Turn on the transmitter. Ensure to bind only one drone at a time. The Symas can multi-bind.

If your copter needs to calibrate and get satellite lock, wait until it finishes.

Make sure there is enough room for launch and flight.

Make sure the throttle (left stick) is all the way down.

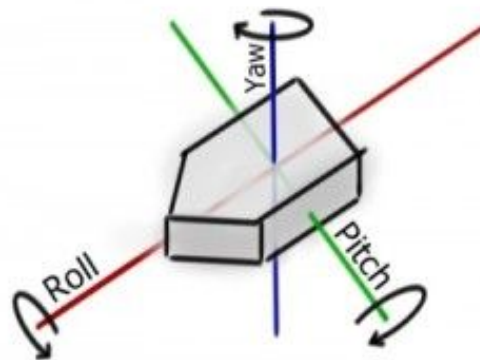
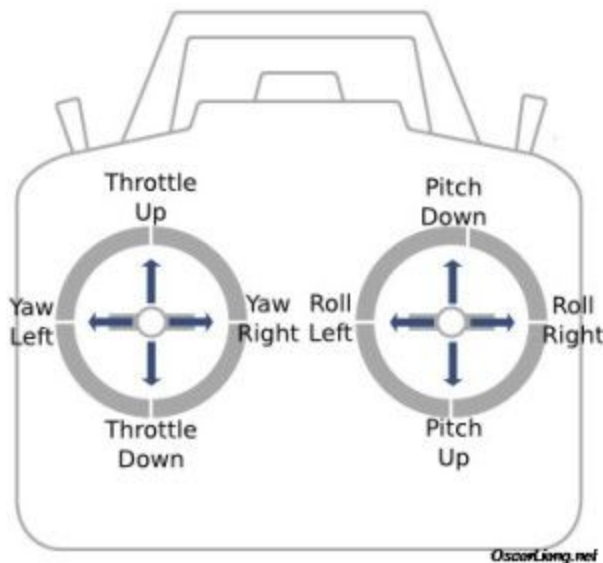
Turn on the transmitter.

Back away 3 or 4 steps (or to a safe distance).

Keep facing the quadcopter the entire time.

Keep a direct line of sight at all times when flying, so you can always see your quadcopter. You want to keep a direct line of sight so you know when you're about to crash. Also, sometimes, quadcopters can fly out of the range of the transmitter's signal, which can cause your copter to fly off on its own (bye bye quadcopter). Keep the transmitter's range in mind, and don't let your quadcopter fly out of that range.

(<http://uavcoach.com/how-to-fly-a-quadcopter-guide/#Checklist>)



(<http://blog.oscarliang.net/quadcopter-tutorial-how-to-fly-drone/>)

(<http://blacktieaerial.com/>)

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**Show** basic understanding of controls.

**Demonstrate** hopping between two points. Landing and throttle.

**Orientation.** Rotate to 10 o'clock and just hover. Then rotate to 2 o'clock and just hover. Then 3

**Out and Back:** (Translational Flight)

Fly the quadcopter into a distance straight and back while maintaining altitude.

Repeat this until it becomes second-nature.

(Fly into the wind if you can).

**Nose-in hovering:**

Hovering with nose facing you to reverse the controls.

Now hop with nose-in.

**Intro to Tuning:**

Hover-rotate. Then quickly hover.

**Walk the multirotor.**

Half a meter off the ground

Then Zig zag and walk it.

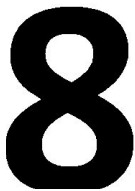
**Fly in a square.**

**Fly in circles.**

Left-circles.

Right-circles.

**Master-8 Flight.**



**Demonstrate flying skill by flying in a number eight formation. Crossing the eight and back** (Advanced)

**Out and Back:** (Translational Flight)

Fly the quadcopter into a distance straight and back while maintaining altitude.

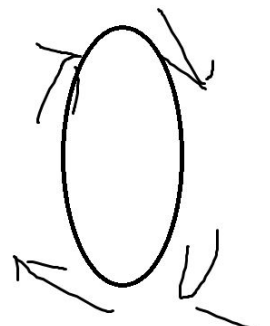
Repeat this until it becomes second-nature.

(Fly into the wind if you can).

**Turning:**

Repeat above but turn the quad around and fly back and forth.

Rinse and repeat until it becomes second-nature.



## Aero RC Club Flying Proficiency: Basic Quadcopter Flying 1.0

### Bank turning:

Left-rudder[Right stick], left-roll[Yaw/Left Stick] . Forward pitch

Right-rudder[Right stick], right-roll[Yaw/Left Stick]. Forward pitch

In order to bank a turn you need to fly the copter and then when you want to turn bring it around in a circle-like fashion. It is essentially similar to circling a target subject.

### More on Bank Turning:

<http://quadcopter101.blogspot.co.nz/2013/10/quadcopter-flying-tutorial-3-turning.html>

### Distance Flying:

If it's out of sight. Pitch it forward, and notice which direction it is moving.

If it's moving left, then turn left and its nose will eventually face you.

If it's moving right, then turn right and its nose will eventually face you.

### Additional Resources:

<http://quadcopter101.blogspot.co.nz/2014/02/flight-school-5-power-efficiency-hover.html>

<http://quadcopter101.blogspot.co.nz/2014/02/flight-school-6-distance-flying-keeping.html>

<http://quadcopter101.blogspot.co.nz/2014/10/vortex-ring-state-wobble-of-death.html>

<http://quadcopter101.blogspot.co.nz/2015/01/flight-school-9-rapid-descent-thermals.html>

Disclaimer: This training is not official or commercial training and should not be viewed as such.