

# LESSON 2

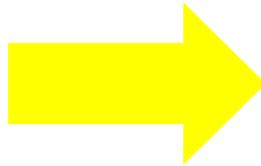
## AEROCHUTE FAMILIARIZATION

An aerial view from an aircraft cockpit looking out over a coastline at sunset. The sun is low on the horizon, creating a bright, shimmering reflection on the water. The coastline curves from the foreground towards the horizon, showing a mix of land and water. The sky is a clear, deep blue. The cockpit's interior is visible in the foreground, including the seat and part of the instrument panel.

Aim: Become familiar with the Aerochute, Aerochute training, the RAA, the Pilot Certificate and aircraft registration requirements

# The Big Picture!

- CASA (Civil Aviation Safety Authority) regulate Aviation in Australia.
- CASA has delegated this responsibility to regulate recreational aviation to the RAA (Recreational Aviation Australia).



- Rules and regulations which we must abide by are contained in various publications, namely: Civil Aviation Orders (CAO's), Civil Aviation Regulations (CAR's) and RAA documents.
- The CAO's and CAR's can be found online at [www.casa.gov.au](http://www.casa.gov.au).

# RAA Documents

- The RAA Manual Parts I and II are issued with your membership.
- Part I is the Operations Manual and contains information on your privileges and limitations as a pilot, your responsibilities and extracts from the CAO's that affect us as powered parachutists.

*Licensing requirements*

*Where to fly*

*Height to fly*

*Medical Requirements*

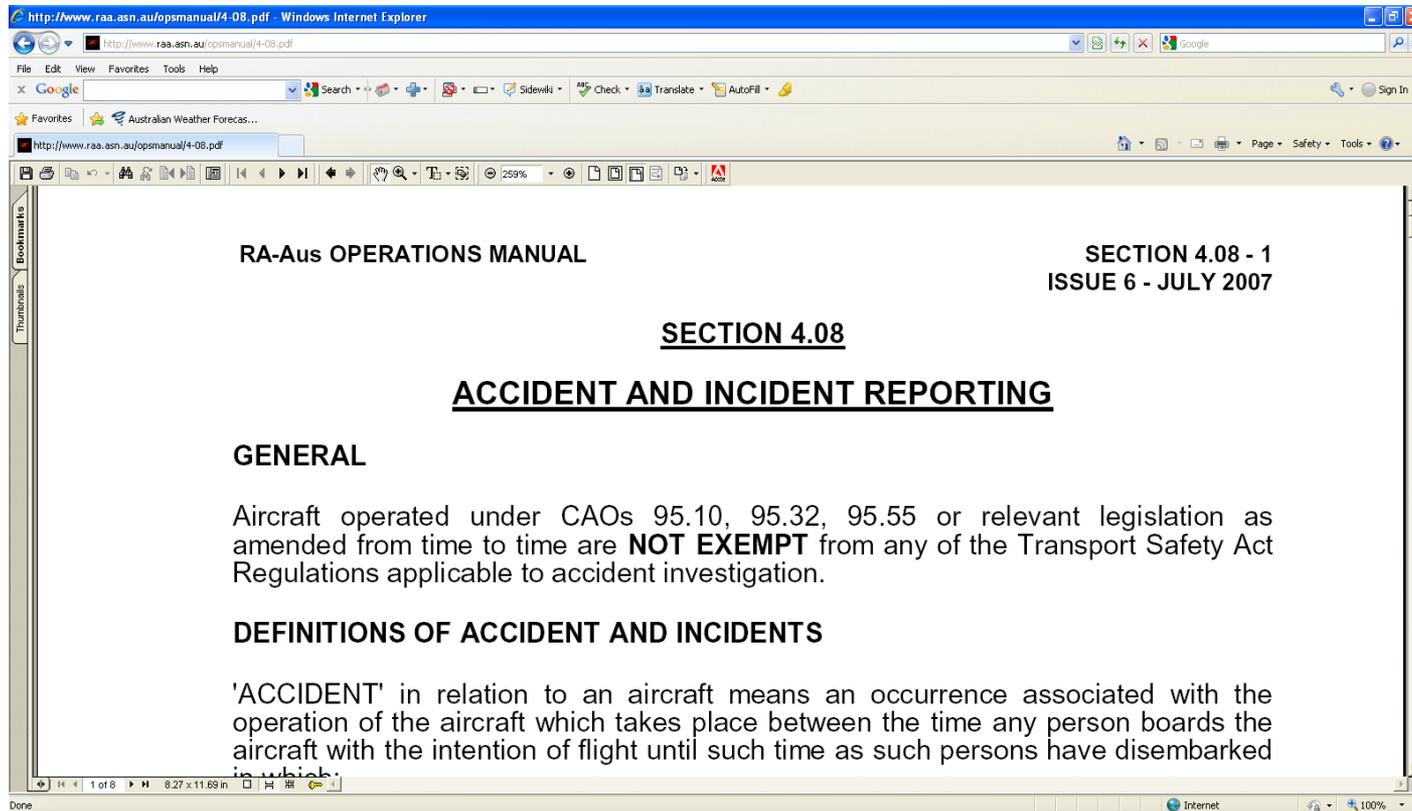
*Weather to fly in*

*Accident reporting*

- Part II is the Technical Manual.
- The current RAA forms (endorsements, registration transfer etc.) and the current RAA manuals are available online at RAA web page: [www.raa.asn.au](http://www.raa.asn.au)

# Accidents/Incidents

- The RAA Operations Manual paragraph 4.08 details the requirements for Accident and Incident reporting.



- If you are involved in an incident that you think may be reportable, consult the RAA ops manual for guidance on what to do and/or ask an instructor.

# The RAA Pilots Certificate

- The certificate is issued by the RAA, initially as a Student Pilot then upgraded to a Pilots Certificate on completion of training.
- The certificate details the aircraft type as Group “D” which is a powered parachute. Note that it is not type specific and the certification allows you to fly any type of powered parachute.
- To act as student or pilot of another aircraft group requires another certificate.
- The certificate lists your approved maintenance level. Level 1 refers to the owner who can maintain his own aircraft. Level 2 refers to a person who can maintain someone else's aircraft and can carry out level 2 servicing's that are required for hire and reward or on registration transfer to another person.
- The certificate also lists your endorsements. The decode for the abbreviations is found in the RAA Operations manual.



- To maintain your certificate you must maintain your RAA Membership and fly a Bi-annual Flight Review (BFR) once every 2 years with an instructor.
- Your RAA membership is renewed yearly and also provides 3 party liability insurance. Details are found at [www.raa.asn.au](http://www.raa.asn.au)
- Your certification can be withdrawn by the RAA or CASA for breaches of rules or procedures.
- The RAA requires that the student pilot has completed Human Factors Training prior to certification as a pilot.

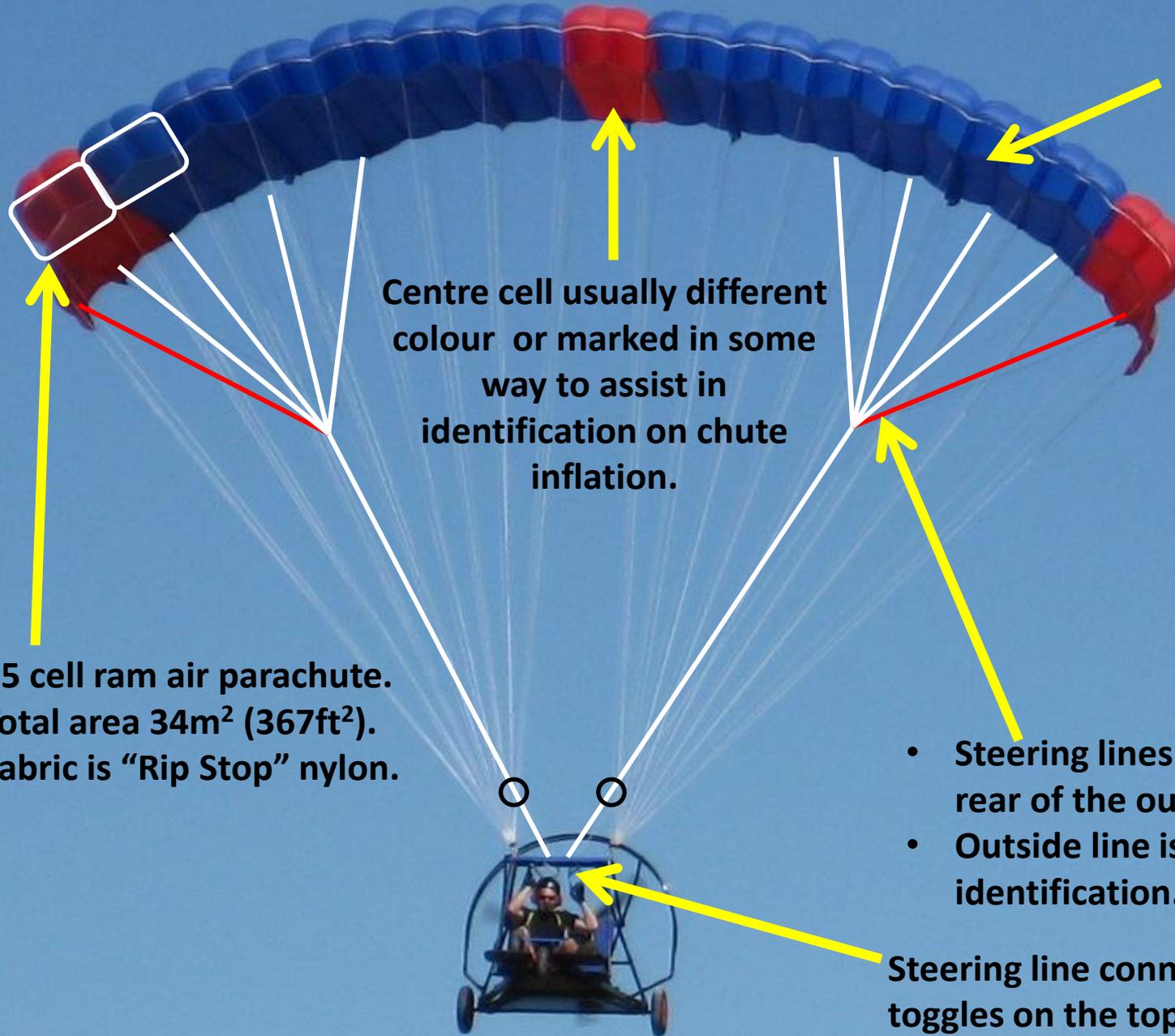
# AEROCHUTE TRAINING - 1

- A minimum of 20 Hours is required for certification as a pilot unless the student has previous flying experience. If this is the case the certification requirement is a minimum of 5 hours.
- All training must be supervised by an instructor.
- The average student can expect to fly his first solo in approx 3 to 5 hours.
- After the first solo, training is mostly solo flying with dual checks appropriately spaced.
- Theory training is conducted as a self study package.
- There are 2 exams to complete:
  - Pre first solo
  - Prior to certification as a pilot.
- Passenger endorsement can be obtained after logging 10 flying hours after certification.
- Other endorsements (i.e. radio, cross country etc) are in addition to the basic training.

# AEROCHUTE TRAINING - 2

- The Aerochute wind limit is 15 knots however, initial training usually restricted to less than 10 knots.
- Expect to fly 2-3 hours per day initially. Once first solo is solo achieved this can increase up to 4 hrs per day, depending on student fatigue.
- The usual profile for training is:
  - Brief on content of lesson
  - Aerochute Pre-Flight
  - 3 Minute engine warm-up.
  - Push Aerochute to the take-off area and lay out the Chute.
  - Take-off for the airborne lesson.
  - Land and pack up the chute.
  - Vacate the landing area.
  - Debrief.

# Familiarization - The Parachute - 1



Cells are cross-vented to assist in inflation.

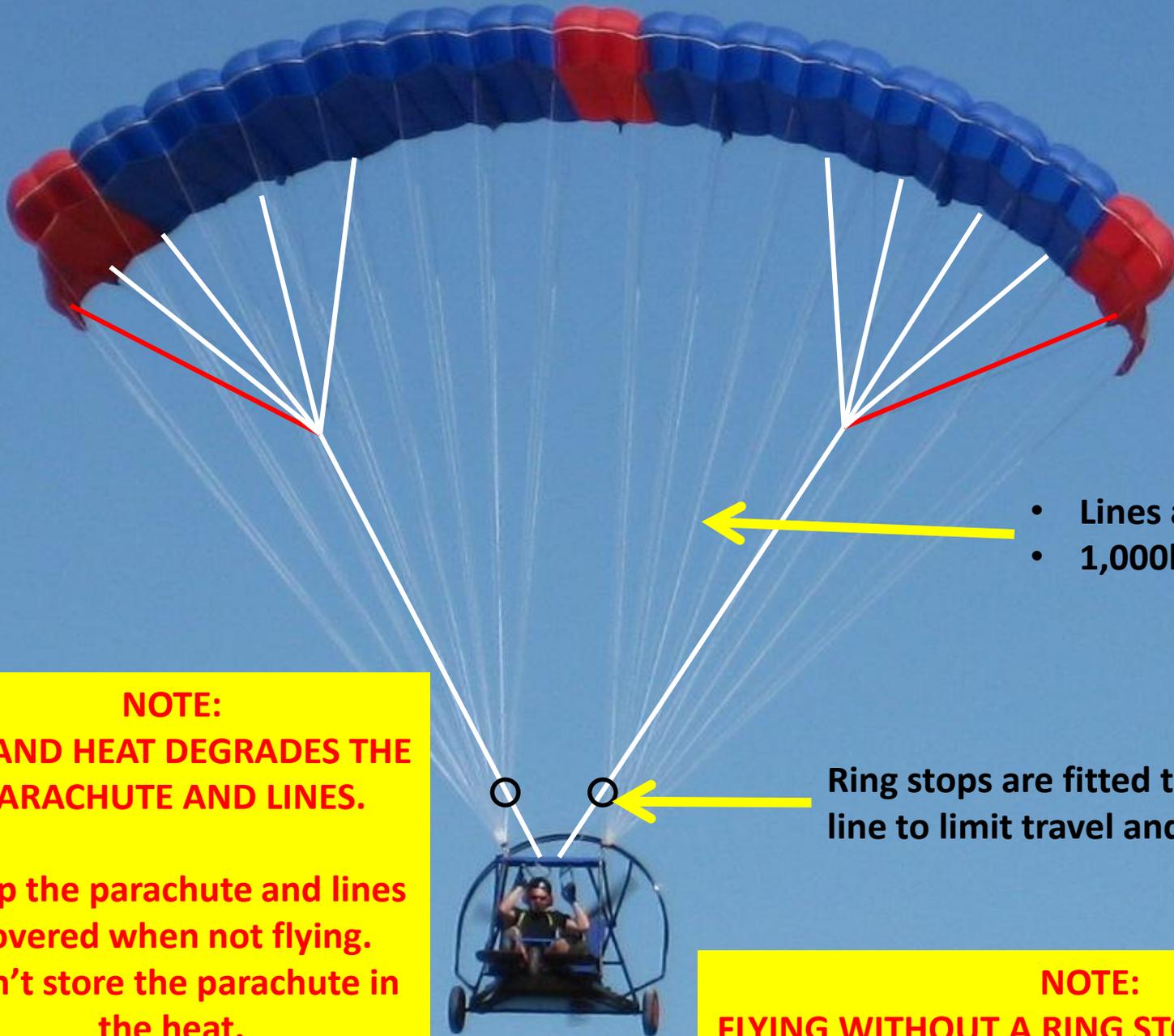
Centre cell usually different colour or marked in some way to assist in identification on chute inflation.

- 15 cell ram air parachute.
- Total area 34m<sup>2</sup> (367ft<sup>2</sup>).
- Fabric is "Rip Stop" nylon.

- Steering lines connected to the rear of the outside 5 cells.
- Outside line is red for identification.

Steering line connected to hand toggles on the top plate

# Familiarization - The Parachute - 2



- Lines are "Spectra".
- 1,000lb breaking strain.

**NOTE:**  
**UV AND HEAT DEGRADES THE PARACHUTE AND LINES.**  
**Keep the parachute and lines covered when not flying.**  
**Don't store the parachute in the heat.**

Ring stops are fitted to the steering line to limit travel and prevent stalling.

**NOTE:**  
**FLYING WITHOUT A RING STOP IS PROHIBITED**

# Familiarization – Engine & Airframe



## AEROCHUTE DUAL

- Rotax 503 - 500cc produces approx 50hp (37Kw). Air cooled

## HUMMERE CHUTE

- Rotax 582 - 580cc produces approx 64hp (48Kw). Water cooled.

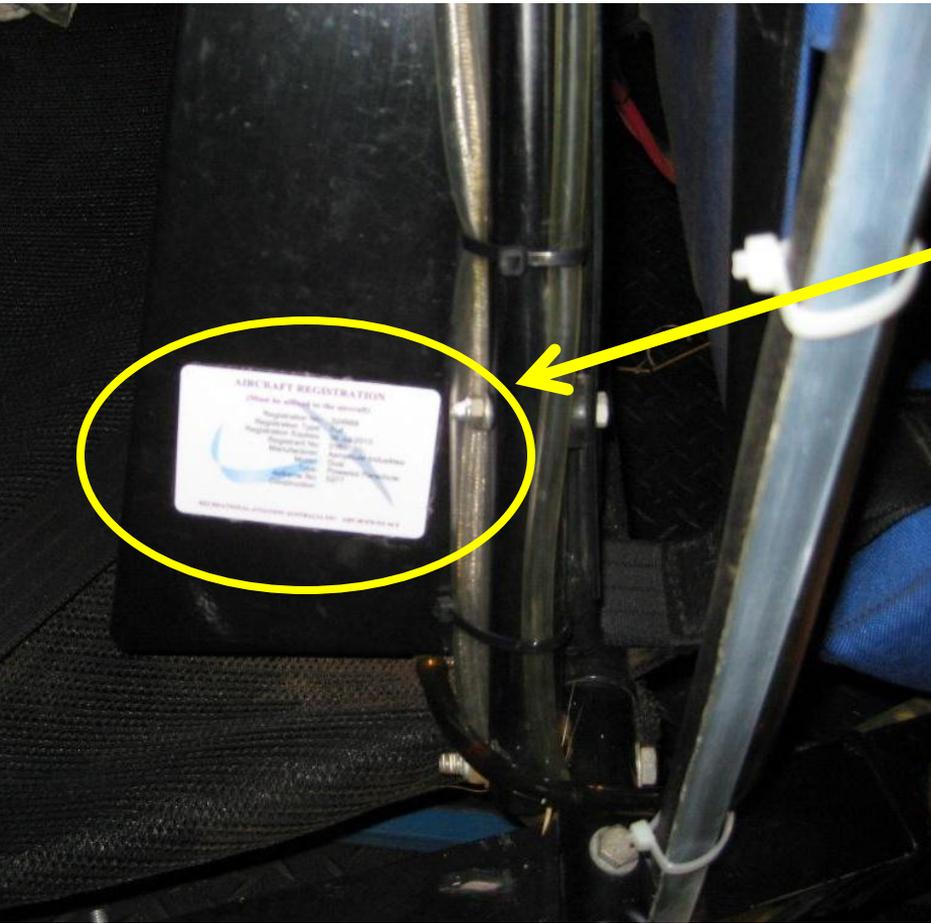
- 2 cylinder, twin carburetors, 2 stroke.
- Dual ignition.
- 30 Litre fuel tank (29 litre usable).
- Approx 1:15hr dual endurance, 1:45 solo endurance.
- 50:1 pre-mixed 2 stroke fuel.
- Fuel grade 98 Octane.
- Fuel level sight gauge on LHS of the fuel tank.
- Reduction gear box drives propeller (2.5:1 reduction ratio).
- 3 blade composite propeller.
- Maximum operating temperature = 40°C.

# Familiarization – Engine & Airframe

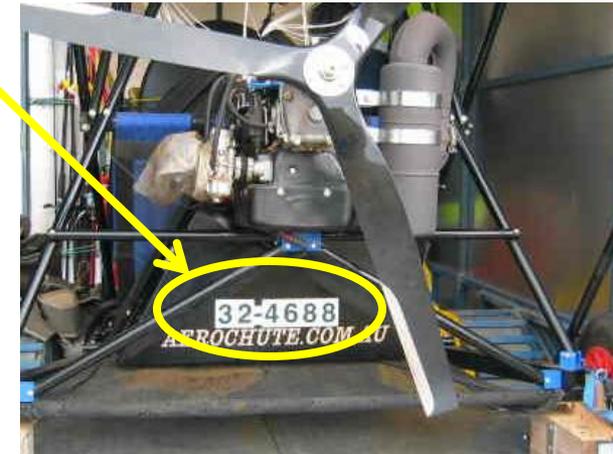


- The frame made of Aluminum.
- Seats 2 people.
- A foot throttle controls engine RPM.
- Tricycle undercarriage, 25psi tire pressure.
- The Aerobute is not steerable.
- The parachute attaches via 4 shackles on top plate.
- Maximum Weight 300kg.
- Empty Weight approximately 107Kg (depending on options)
- Cockpit weight (fuel and pilots) approximately 193Kg.
- Maximum wind for take-off = 15 knots (28Km/h)
- Maximum crosswind for take-off = 0 knots
- Maximum crosswind for landing = 5 knots (10Km/h)
- Cruise speed = approximately 30 knots (55Km/h)

# Aircraft Registration



- Aircraft Registration is renewed annually.
- For renewal the yearly hours and landings are submitted to the RAA.
- The registration certificate must be fixed to the aircraft.
- The registration number must be fixed to the rear of the fuel tank (32- XXXX). 32 category is for powered parachutes. The required size of the numbers is found in the RAA Technical Manual.



**It is a Civil Aviation Offence to:**

- Fly an unregistered aircraft
- Fly without a valid licence.

# The Shackles



- The Length of the trailing edge lines are adjusted depending on the weight in the cockpit.

- $>120\text{kg}$  = 1 shackle on the trailing edge.

- $<120\text{kg}$  = 2 shackles on the trailing edge.

- This is checked as part of the “Before Take-off Checks”



Use the rhyme

“1 person – 2 shackles”

“2 people – 1 shackle”

**ON THE TRAILING EDGE ONLY**

# Servicing Requirements

- Your new Aerochute is sold with an Aerochute Operators Manual, a Ram Air Parachute Owners Manual and a Rotax Manual (usually on CD).
- With a level 1 maintenance certification you can service your own aircraft without the need to employ a qualified mechanic. Servicing another persons aircraft is prohibited unless you hold a Level 2 maintenance certification.

## ENGINE

- Bert Flood imports ([www.bertfloodimports.com.au](http://www.bertfloodimports.com.au)) is the Australian Rotax distributor.
- Maintenance schedules for the Rotax engine are contained in the CD documentation that accompanied your new aircraft or may be downloaded from the Bert Flood Imports web page.

## PARACHUTE

- Major repairs or re-trimming of lines should be carried out by a Australian Parachute Federation qualified parachute rigger.
- Minor field repairs to the parachute can be carried out by the owner. Details are contained in the Owners Manual.
- Periodic inspection of the parachute should be carried out every 50 hours or 12 months. If your parachute is fouled on objects consider getting a trim check carried out to ensure the length of the lines is within acceptable limits.

# EFFECTS OF CONTROLS - Engine

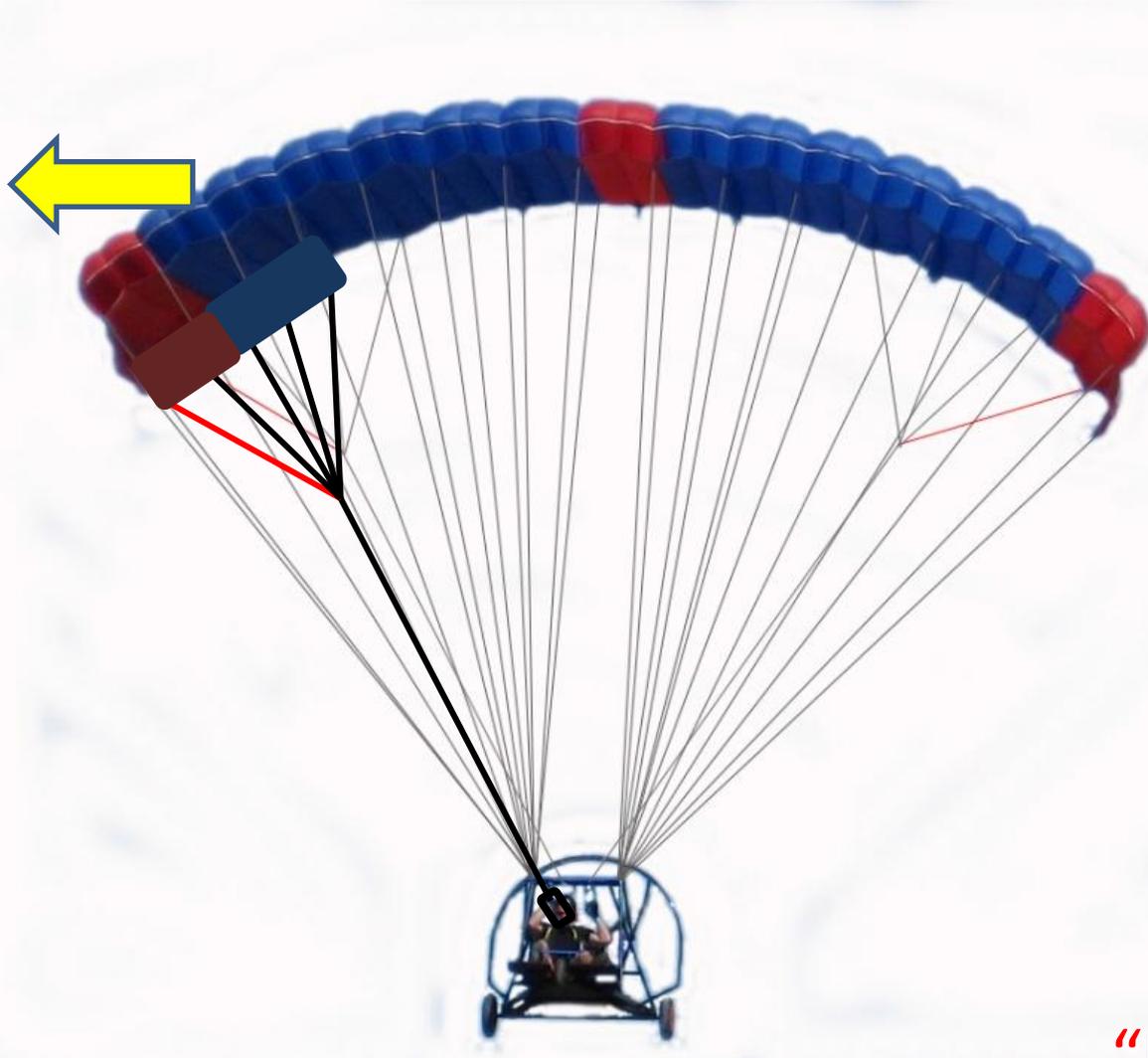
- Once off the ground **power controls height.**
- Pushing down on the foot throttle increase engine RPM.
- Increasing the RPM increases the thrust and the Aerochute climbs.
- Reduce power and Aerochute levels or descends.

“Power ON” and you climb  
“Power Off” and you descend



# EFFECTS OF CONTROLS - Turning

The Aerochute is turned by using the toggles



- Pulling one toggle pulls down the rear of the outside 5 cells.

- Drag increases on that side and Aerochute turns to that side.

- Release the toggle and Aerochute returns to straight flight.

- The ring stops on the steering lines limit the travel of the toggles to prevent stalling the parachute.

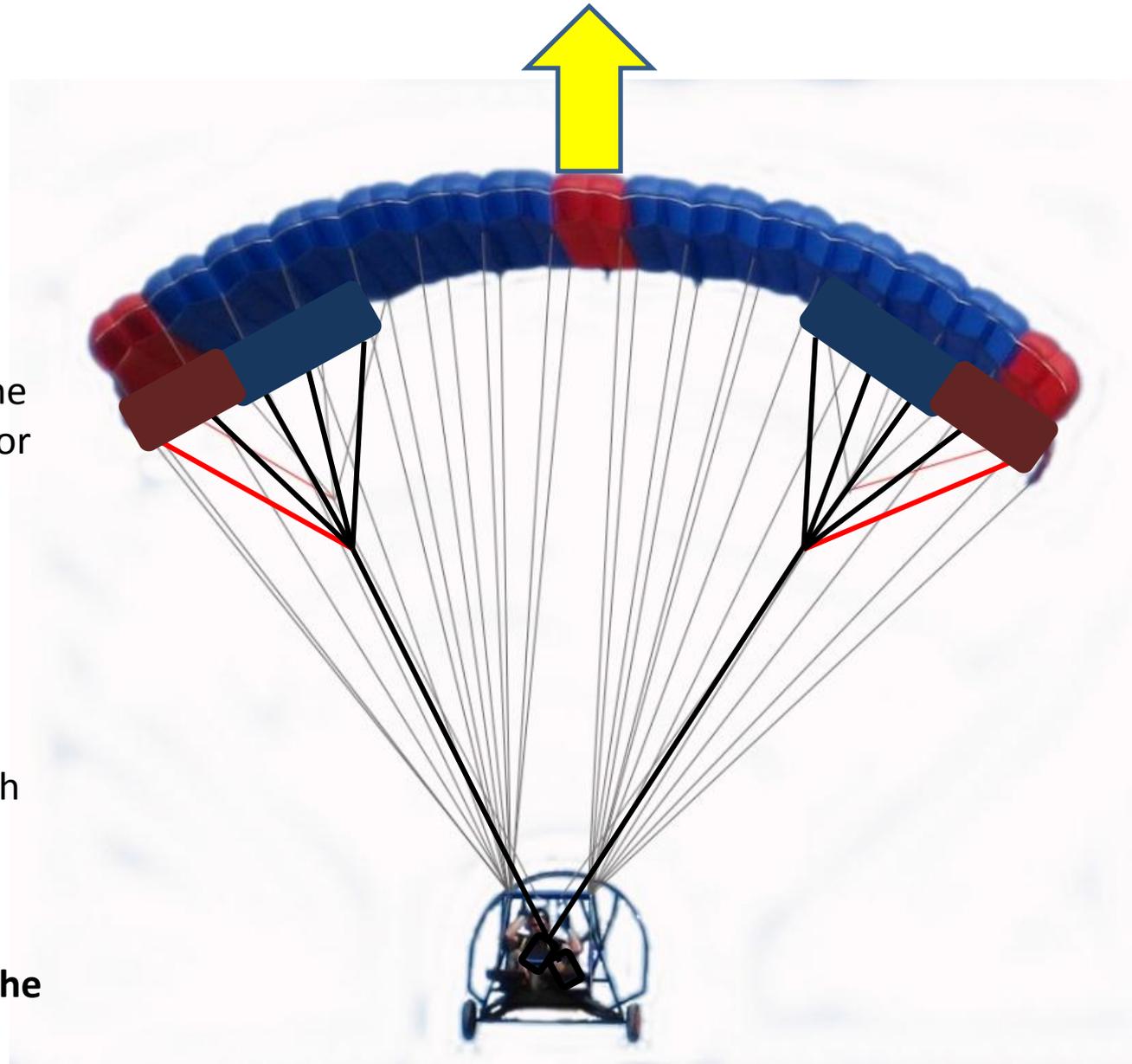
**In summary:**

**“Left Toggle” turns left**

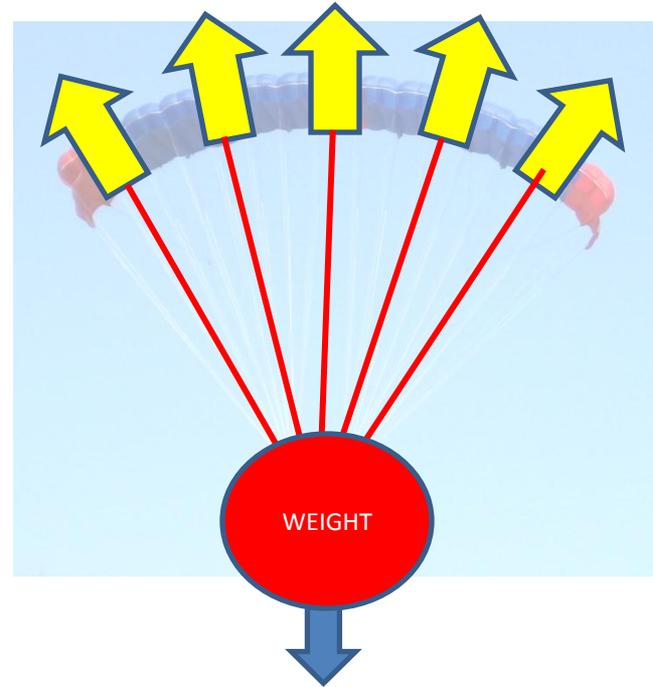
**“Right Toggle” turns right**

# EFFECTS OF CONTROLS - Flare

- Pulling both toggles simultaneously is called “Flaring”.
- Flaring increases lift and slightly reduces speed .
- Flaring is used to cushion the landing or when low flying for quick height corrections.
- Releasing the flare causes “sink”.
- Applying  $\frac{1}{4}$  flare gives best climb rate however, too much flare causes too much drag.
- Note that flare is **more responsive than increasing the power.**



# STABILITY



The Aerochute acts as a Pendulum where the weight is suspended underneath the parachute.

If you encounter turbulence the Aerochute will “rock around” and self centre under the parachute.

The Aerochute is inherently stable and can be flown “HANDS OFF”. Even with full toggle applied the Aerochute cannot “roll over”.

# Comparison - AEROCHUTE versus AIRCRAFT



- ✓ Flexible “Wing”
- ✓ Exposed Cockpit
- ✓ Pusher Propeller
- ✓ Inherent Stability
- ✓ Short Field Performance
- ✓ Compact
- ✓ Transportable

# Revision



1. What is the maximum operating temperature for the Aerochute?
2. What is the maximum cockpit weight of the Aerochute?
3. What is the tyre pressure of the Aerochute?
4. How many shackles are connected to the trailing edge line if there are 2 people in the cockpit?
5. Do we ever connect the extra shackles to the leading edge lines?
6. Which has the quickest way of increasing lift in the Aerochute – applying flare or increasing power?
7. How much flare gives the best rate of climb?
8. What happens if we apply too much flare?
9. If we apply too much toggle can the Aerochute roll inverted?
10. What is the purpose of the ring stops on the steering lines?
11. What happens to the speed of the Aerochute if we apply flare?
12. How is the Aerochute turned?
13. How is height varied in the Aerochute?
14. Who is authorized to carry out MAJOR repairs to the parachute?
15. Who is authorized to carry out MINOR repairs to the parachute?
16. Can you service your own Aerochute?
17. What is the maximum wind strength for the Aerochute?
18. What is the maximum crosswind for take-off in the Aerochute?
19. What is the maximum crosswind for landing in the Aerochute?
20. Where should the aircraft registration sticker be placed?
21. What must you do to maintain your Aerochute Pilots Licence?
22. If you are an RAA member, you do not need to register your aircraft – True or False.