STANDARDIZATION MANUAL
and
AMPLIFIED PROCEDURES

AMERICAN CHAMPION 7ECA
CITABRIA

Revised June 2024

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GENERAL INFORMATION

This standardization manual is published to serve as a master reference document for expanded aircraft procedures during training. It does not replace the Pilot's Operating Handbook or any other document published by the manufacturer, nor does it replace the Airplane Flying Handbook or any other document published by the FAA.

References to "POH" indicate the aircraft Pilot's Operating Handbook for the 1966 American Champion 7ECA Citabria.

References to "AFH" indicate the Airplane Flying Handbook, FAA-H-8083-3C.

With regards to emergencies, "Land as Soon as Practical" means that a return to the home base airport (21D) is recommended. "Land as Soon as Possible" means a landing at the nearest suitable airport or landing site is recommended, and return to the base airport should not be prioritized.

This manual's reference airspeeds are in STATUTE MILES PER HOUR, abbreviated as MPH or MIAS (MPH INDICATED AIRSPEED).

Operating Rules – Tailwheel Training

Tailwheel training will only take place under VFR conditions.

Tailwheel aircraft will not be available for solo/PIC rental.

Tailwheel training wind limits: No operation into any airport or runway reporting greater than 15 knots total wind and/or more than 10 knots crosswind component.

During tailwheel training, the safest way to save a landing is often to go around and try it again.

Upset recovery training will commence with a planned recovery altitude (hard deck) of 3000' AGL.

Revision History

- 1/3/2024 Initial version published.
- 4/29/2024 Replaced remaining instances of KIAS with MIAS, fixed Normal Takeoff procedure.
- 6/3/2024 Added UPRT hard deck altitude.

TAILWHEEL TRAINING COURSE OUTLINE

LESSON 1: WELCOME TO LEA TAILWHEEL OPS

Pilot is introduced to Lake Elmo Aero procedures and tailwheel flight operations, and performs basic flight maneuvers to become accustomed to the aircraft. At least one takeoff and landing is demonstrated by the instructor, with pilot following on controls. Multiple pattern repetitions can be introduced if time allows. If weather/field conditions allow, perform pattern repetitions on grass/soft field.

LESSON 2: THREE-POINT LANDINGS

Pilot is introduced to three-point landings and begins practice repetitions. If weather/field conditions allow, perform pattern repetitions on grass/soft field. Only continue to wheel landings when pilot's three-point landing technique requires little to no instructor intervention.

LESSON 3: WHEEL LANDINGS

Pilot is introduced to wheel landings and begins practice repetitions accordingly.

LESSON 4: REVIEW LANDINGS

Pilot practices repetitions of all introduced landing techniques. If possible, crosswind conditions should be sought for at least one flight.

LESSON 5: TAILWHEEL ENDORSEMENT

Pilot is able to explain and demonstrate proficiency, competence and safety in all aspects of tailwheel flying, and is granted an endorsement for tailwheel PIC operations under FAR 61.31(i).

QUICK REFERENCE GUIDE

V-Speeds

V_S	50 MIAS	Stall speed – 0 degrees bank
V_X	58 MIAS	Best angle-of-climb speed
V_Y	69 MIAS	Best rate-of-climb speed
V_G	65 MIAS	Best glide speed
V_A	120 MIAS	Maneuvering speed
V_{NO}	120 MIAS	Maximum structural cruising speed
V_{NE}	162 MIAS	Never-exceed speed

Takeoff Data

(Assumes no wind/ISA/max weight)	Sea Level	2000’ MSL	4000’ MSL
Ground Roll	455 feet	520 feet	600 feet
Total to Clear 50’ Obstacle	895 feet	1050 feet	1260 feet

Landing Data

(Assumes no wind/ISA/max weight)	Sea Level	2000’ MSL	4000’ MSL
Ground Roll	400 feet	424 feet	450 feet
Total to Clear 50’ Obstacle	775 feet	800 feet	830 feet

Weight and Balance Information

	N5103T
Basic Empty Weight	1023.1 lb
Maximum Takeoff Weight	1650 lb
Baggage Area Load Limit	100 lb
Usable Fuel Capacity	35 gal
Useful Load	626.9 lb
Useful Load – Full Fuel	416.9 lb

SYSTEMS INFORMATION

Engine

Ref: POH 7-15

The Citabria engine is a Lycoming O-235-C1. It produces 115HP at full power, under sea level standard conditions (ISA). It burns 100LL Avgas and is serviced with Phillips XC 20W-50 oil.

The O-235-L2C is a reciprocating (non-turbine), carbureted (not fuel injected), four-stroke, normally-aspirated (no forced induction system, such as a turbocharger), four-cylinder engine, with 235 cubic inches of displacement.

The engine's ignition is supplied by a dual-redundant magneto system, which is fully independent and does not require electrical power to operate.

Fuel System

Ref: POH 7-19

The Citabria has two fuel tanks, one in each wing. Each tank normally holds 18 gallons of 100LL fuel, for a total of 36 gallons. 1 gallon of fuel is unusable, for a total of 35 gallons of usable fuel.

Fuel from each wing tank flows by gravity to a shutoff valve, then through the fuel strainer and into the carburetor. There are no auxiliary or electric fuel pumps installed in this system.

Electrical System

Ref: POH 7-23

The Citabria is powered by a one-battery, one-alternator electrical system.

The 12-volt battery is located on the firewall, on the instructor's side of the aircraft.

The 14-volt alternator is located on the front of the engine, and is belt-driven by the crankshaft just aft of the spinner. This alternator is voltage-protected, and should automatically trip off in the event of excessive voltage.

The electrical system is protected by a combination of fuses and circuit breakers, which are mostly located on the light/radio switch panel.

External Lights

Navigation (Position) Lights

Navigation Lights consist of one rear-facing white light on the rudder, one red light on the left wingtip, and one green light on the right wingtip. These should always be on any time the aircraft is electrically powered. Lake Elmo Aero checklists dictate that this switch should be left in the On position.

Multiple aircraft in the Lake Elmo Aero fleet are equipped with a uAvionix SkyBeacon, which is a 1090MHz ADS-B transmitter attached to one of the navigation lights. For this reason, navigation lights must remain powered on whenever the aircraft is in operation; failure could result in noncompliance with FAR 91.225(b) regarding ADS-B in required airspace.

Strobe Lights

The Strobe Lights are a set of two white flashing lights located on the wingtips. They should be turned on any time the aircraft's engine is powered.

Landing Light

The Landing Light is a forward-facing white light, angled to provide optimal visibility during a takeoff or an approach to landing. It should be turned on before to takeoff and landing, but can be turned off in flight at the pilot's discretion.

In the absence of a taxi light being installed, the landing light can be turned on before taxi. Use caution when taxiing parallel to an active runway, and consider turning the landing light off if it could cause a hazard to arriving aircraft.

NOTE: When operating in Lake Elmo Aero practice areas, leaving all external lights on during flight is recommended.

COMMON TASKS

Traffic Pattern Arrival

Ref: AFH Ch. 7, AC 90-66B

1. Complete the Descent Checklist.
2. At least 10nm from the airport, attempt to determine the runway in use*.
3. At least 2nm from the runway, enter the traffic pattern at the published Traffic Pattern Altitude on a 45-degree entry to the downwind leg, maintaining a ½-mile distance from the runway once established.
    a. If approaching from the opposite side of the airport, overfly the airport at least 500’ above Traffic Pattern Altitude.
4. Complete the Before Landing Checklist.

The above procedure assumes an ideal traffic pattern situation. Other traffic, ATC, local traffic pattern restrictions, obstacles, etc may require a modification of these procedures. In all cases, the pilot shall exercise good judgement and maintain positive airplane control.

* If the runway in use cannot be determined, overfly the airport at least 500’ above Traffic Pattern Altitude to observe traffic and/or wind direction indicators to determine a runway for use.

Traffic Pattern Departure

Ref: AFH Ch. 7, AC 90-66B

If departing the traffic pattern…

1. Climb straight out on runway heading until above traffic pattern altitude, or…
2. Exit with a 45-degree turn to the left (assuming left-hand traffic) beyond the departure end of the runway, OR exit on the downwind leg once above traffic pattern altitude.
3. Pitch to an appropriate speed that balances climb performance with engine cooling.
4. Complete the Climb Checklist.

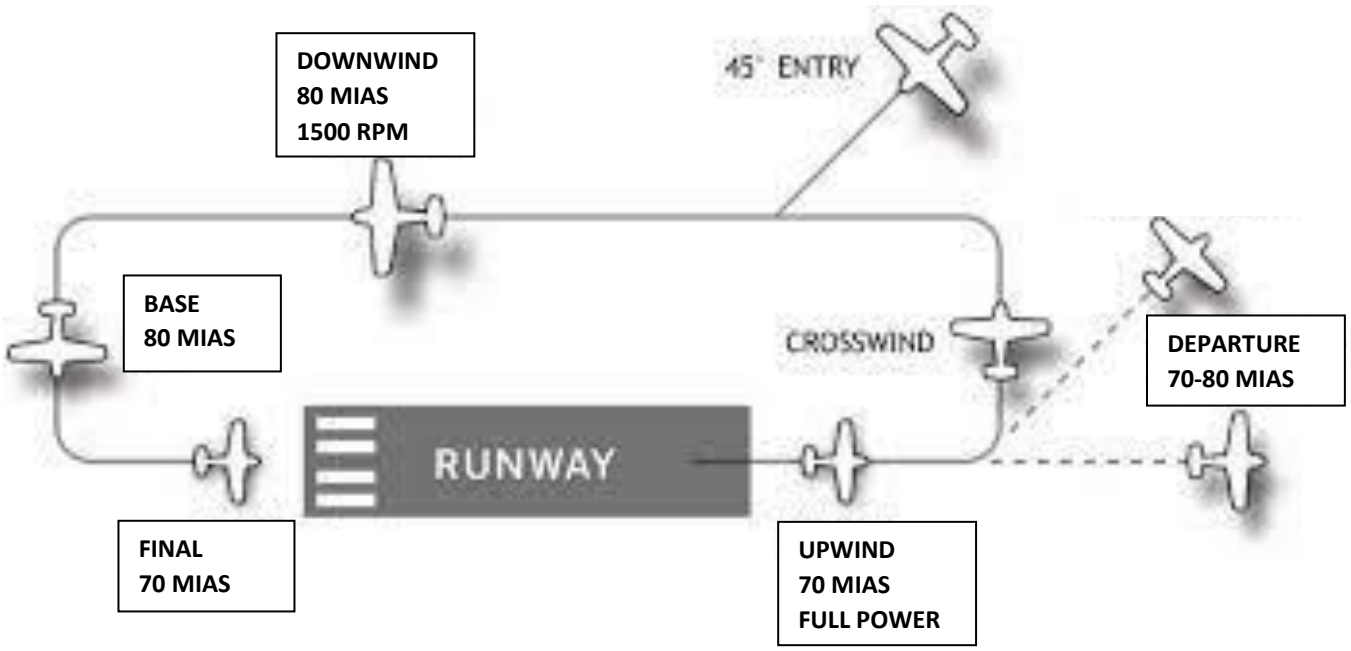
If remaining in the traffic pattern…

1. Begin a turn to the crosswind leg when beyond the departure end of the runway and within 300 feet of Traffic Pattern Altitude.

The above procedure assumes an ideal traffic pattern situation. Other traffic, ATC, local traffic pattern restrictions, obstacles, etc may require a modification of these procedures. In all cases, the pilot shall exercise good judgement and maintain positive airplane control.

Traffic Pattern Quick Reference

Pattern Departure	**70-80 MIAS**
Upwind	**70 MIAS [V_Y = 69 MIAS]**
Downwind	**80 MIAS**
Base	**80 MIAS**
Final	**70 MIAS**



Clearing Turns

Ref: AIM Sec. 4

1. Visually scan the area to the left and right of the aircraft.
2. Select a visual landmark off the wingtip in the direction of the turn to be executed as a 90-degree reference point.
3. Enter a 30-degree bank in the direction of the visual landmark.
4. Continuously scan the area above, below, and ahead of the flight path. Use the aircraft's wing position to your advantage; in a high wing aircraft, the best visibility will be on the side from which you are turning away.
5. After completing a 90-degree turn, roll wings level on the selected landmark.
6. Select another visual landmark off the opposite wingtip in the direction of the next 90-degree turn.
7. Enter a 30-degree bank in the direction of the visual landmark.
8. Continuously scan the area above, below, and ahead of the flight path.
9. After completing the second 90-degree turn, roll wings level on the selected landmark. The aircraft should now be on its original heading.

Note: Clearing turns do not absolve a pilot of his/her responsibility to see and avoid traffic while performing training maneuvers.

Configuring the Aircraft for Maneuvers

Prior to commencing any maneuvers, the following configuration settings should be considered. Recommendations are offered below for individual maneuvers.

BOOST/FUEL PUMP

No auxiliary fuel pumps are installed on the Citabria; this step can be disregarded for this aircraft.

CARBURETOR HEAT

Carburetor heat should be used any time the engine will experience continuous RPM settings below 2000 RPM.

GAS/FUEL TANKS

The Fuel Shutoff Valve should always be in the "on" position.

UNDERCARRIAGE/LANDING GEAR

Brakes should never be set in flight. Brake pressure can be checked before ground reference or landing maneuvers by briefly pressing on both toe pedals and feeling for feedback/pressure.
If operating an aircraft equipped with retractable landing gear, the down-and-locked position should be ensured if required by the maneuver. The Citabria is not equipped as such.

MIXTURE

Mixture should always be set to full rich for maneuvers.

POWER/PROPELLER

Engine power and/or propeller RPM should be set as needed for the maneuver to be performed.

SEAT BELTS

All occupants' seat belts should be fastened at all times, and any baggage that may shift during maneuvers should be secured with seat belts if possible.

SWITCHES

All aircraft lights should be on for maneuvers. Additionally, pitot heat should be used if entering instrument conditions or in any form of visible moisture.

The preceding configuration can be accomplished by following the acronym: **BCGUMPSS**

Boost Pump
Carburetor Heat
Gas
Undercarriage
Mixture
Power
Seat belts
Switches

TAKEOFFS AND LANDINGS

Normal Takeoff and Climb

Ref: AFH 6-3 and 14-3

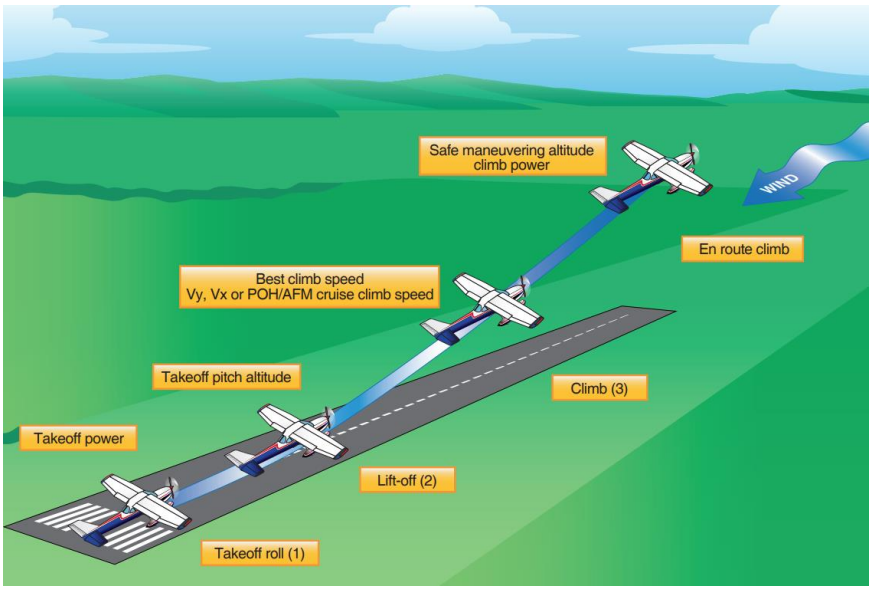
1. Complete the Before Takeoff Checklist.
2. Center the aircraft on the runway centerline with the nose pointed straight ahead.
3. If a crosswind exists, apply aileron deflection into the wind, commensurate with the wind speed.
4. Advance the throttle to full power.
5. Check engine instruments as power increases.
6. Use rudder control to maintain centerline.
7. Apply slight forward pressure to raise the tail.
8. Once the tail leaves the ground, release forward pressure and maintain present attitude.
9. When accelerating through approximately 50 MIAS, the aircraft will leave the ground in this flight attitude.
10. When practical, accelerate to 69 MIAS [V_Y] and climb on centerline. Trim as necessary.

If departing the pattern…

11. Execute a Traffic Pattern Departure procedure as applicable.
12. Above 1000’ AGL, complete the Climb Checklist.

If remaining in the pattern…

13. Begin a turn to the crosswind leg when beyond the departure end of the runway and within 300 feet of Traffic Pattern Altitude.



Three-Point Landing

Ref: POH 3-10, AFH 9-15 and 14-5

Recommended for soft or rough fields.

1. Enter the traffic pattern as described in this manual – see Traffic Pattern Arrival.
2. Abeam the point of intended landing on downwind, reduce throttle to 1500 RPM and allow the airplane to begin descending at 80 MIAS.
3. Apply carburetor heat.
4. When the touchdown point is 45 degrees to the rear of the wing root (or as appropriate for wind conditions), turn to the base leg.
5. Continue to maintain appropriate descent rate (500-700 fpm) and adjust power if necessary.
6. Visually verify that the final approach (including the extended centerline and the opposite base) is clear of traffic, then turn to final.
7. Maintain 70 MIAS on final approach (+ ½ gust factor, if applicable). Trim for minimum control input on a stable descent to the runway.
8. When landing on runway is assured, reduce power to idle. Keep the nose of the airplane at or below level until within 10 feet of the ground.
9. When in close proximity to the runway, pitch the nose up so that the main wheels will touch down at roughly the same time as the tail wheel. This will require more aft stick as airspeed decreases.
10. Maintain directional control and crosswind correction on centerline with rudder and ailerons throughout flare, landing and rollout.
11. Avoid use of brakes until aircraft is slowed to taxi speed.

NOTE: If the approach is unstable at or below 200’ AGL, execute a go-around.

Wheel Landing

Ref: POH 3-10, AFH 9-15 and 14-5

Recommended in windy conditions.

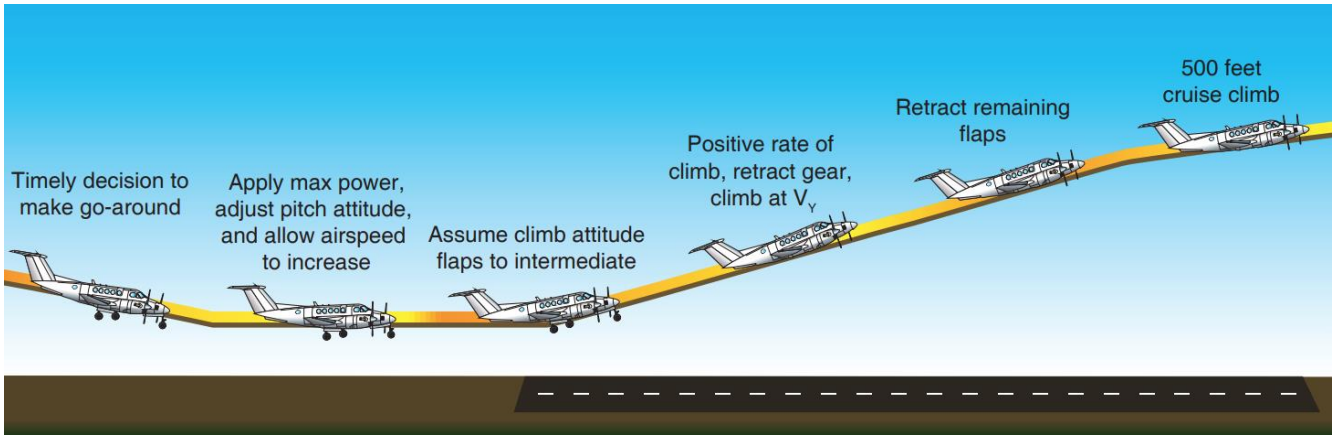
1. Enter the traffic pattern as described in this manual – see Traffic Pattern Arrival.
2. Abeam the point of intended landing on downwind, reduce throttle to 1500 RPM and allow the airplane to begin descending at 80 MIAS.
3. Apply carburetor heat
4. When the touchdown point is 45 degrees to the rear of the wing root (or as appropriate for wind conditions), turn to the base leg.
5. Continue to maintain appropriate descent rate (500-700 fpm) and adjust power if necessary.
6. Visually verify that the final approach (including the extended centerline and the opposite base) is clear of traffic, then turn to final.
7. Maintain 70 MIAS on final approach (+ ½ gust factor, if applicable). Trim for minimum control input on a stable descent to the runway.
8. When main wheels are just above pavement, reduce power to idle.
9. Keep the airplane's pitch relatively level during final descent to the runway, so that the main wheels touch down before the tail wheel.
10. When the main wheels touch down, apply slight forward stick pressure to keep them on the ground, but not to much as to nose the airplane over.
11. As the airplane's speed decreases, gradually release forward stick pressure to allow the tail wheel to touch down.
12. Maintain directional control and crosswind correction on centerline with rudder and ailerons throughout flare, landing and rollout.
13. Avoid use of brakes until aircraft is slowed to taxi speed.

Go-Around/Balked Landing

Ref: AFH 9-10

Objective: To safely abandon a landing and climb away from the runway, to return to the traffic pattern.

1. Apply full throttle to initiate the go-around procedure. Close carburetor heat for maximum climb performance.
2. Pitch the aircraft's nose up to establish a positive rate of climb.
3. Ensure aircraft's main gear remains aligned with the runway centerline as airspeed increases.
4. Maintain a climb speed of at least 55 MIAS.
5. When clear of obstacles, accelerate to 69 MIAS [V_Y].
6. Follow departure procedures listed in this manual (see "Traffic Pattern Departure") as appropriate.

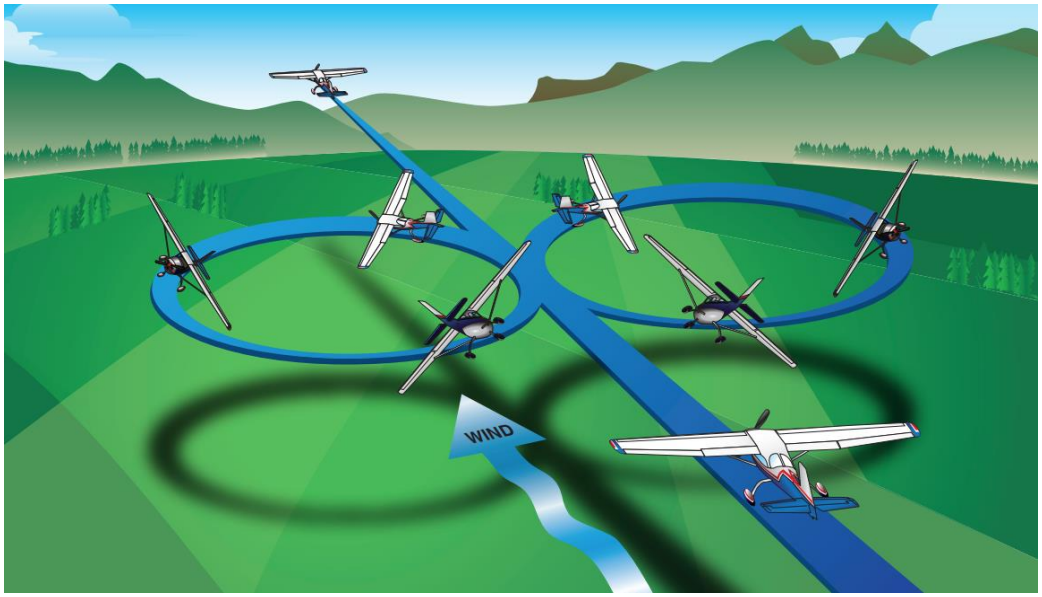


PERFORMANCE MANEUVERS

Steep Turns

Ref: AFH 10-1

1. Complete clearing turns and configure the airplane for maneuvering.
2. Establish airspeed of 95 MIAS and trim as necessary for level flight.
3. Choose a prominent landmark straight ahead and/or note current aircraft heading.
4. Roll into a 45-degree bank in your direction of choice and begin a 360-degree turn.
5. Add power as required to maintain altitude and airspeed. A typical power setting for this maneuver is 2300 RPM.
6. If necessary, use nose-up pitch input and/or trim to maintain altitude.
7. Begin rolling the wings level approximately 15-20 degrees prior to the original landmark or heading. They should be level upon reaching the original heading.
8. Immediately roll into a 45-degree bank to begin a 360-degree turn in the opposite direction. Be careful to maintain altitude while rolling through wings level by using nose-down input or trim as applicable.
9. Begin rolling the wings level approximately 15-20 degrees prior to the original landmark or heading. They should be level upon reaching the original heading.
10. Return to cruise power.



Slow Flight

Ref: AFH 5-9

1. Complete clearing turns and configure the airplane for maneuvering.
2. Reduce throttle to 1500-1700 RPM and apply Carburetor Heat to begin slowing the airplane.
3. As the airplane's speed decreases, use nose-up trim to maintain altitude.
4. Slow to a speed just above the first indication of a stall (about 50 MIAS).
5. Upon reaching the target speed, add power to maintain altitude.
6. Use pitch to make minor corrections in airspeed, while continuing to use throttle to make minor corrections in altitude.

To recover…

7. Add full throttle and close carburetor heat.
8. Use trim to maintain altitude.
9. When aircraft is stable, return to cruise power.

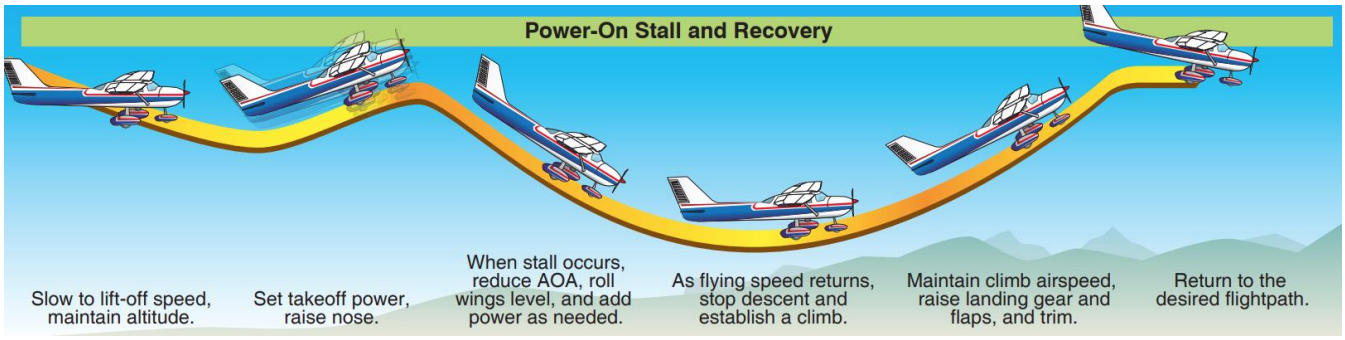
Power-On Stall

Ref: AFH 5-18

1. Complete clearing turns and configure the airplane for maneuvering. Plan to recover by 1500' AGL.
2. Reduce throttle to 1500-1700 RPM and apply Carburetor Heat to begin slowing the airplane.
3. As the airplane's speed decreases, use nose-up trim to maintain altitude.
4. When at or below 70 MIAS, increase throttle to full power. Add bank if desired for training purposes.
5. Pitch aircraft up to approximately 10 degrees nose-up. Airspeed will decay and stall indication may sound.
6. While decelerating, use rudder input to maintain aircraft coordination at all times.

To recover…

7. At the first indication of a stall, immediately reduce the angle of attack by using forward pressure to lower the nose.
8. Apply full throttle (if not already full).
9. When the aircraft speed reaches 70 MIAS or above, return to cruise power.



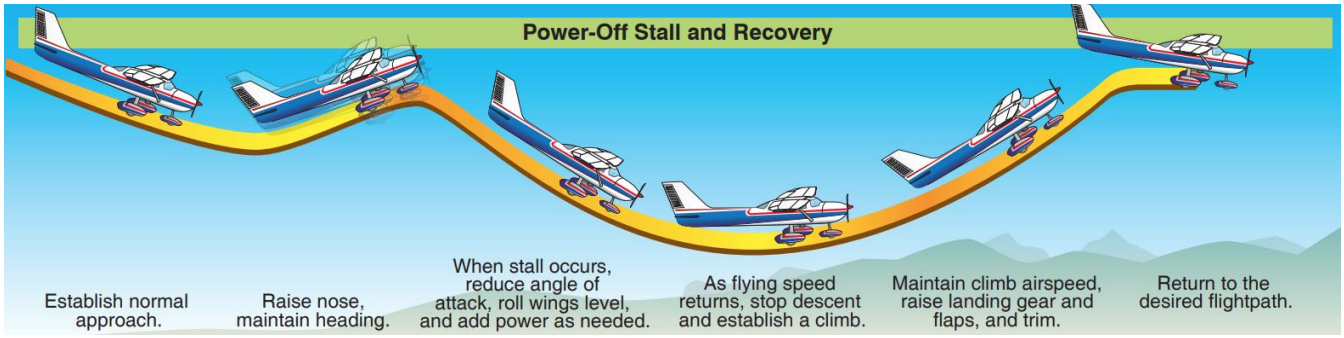
Power-Off Stall

Ref: AFH 5-11

1. Complete clearing turns and configure the airplane for maneuvering.
2. Reduce throttle to 1500-1700 RPM and apply Carburetor Heat to begin slowing the airplane.
3. As the airplane's speed decreases, use nose-up trim to maintain altitude.
4. To simulate a final approach path, establish a descent at about 500 feet per minute at 60 MIAS.
5. When at or below 60 MIAS, decrease throttle to idle. Add bank if desired for training purposes.
6. Pitch up to simulate a landing flare. Allow airspeed to decay.
7. While decelerating, use rudders to maintain aircraft coordination at all times.

To recover…

8. At the first indication of a stall, immediately apply full power and reduce the angle of attack by using forward pressure to lower the nose slightly.
9. When airspeed exceeds 60 MIAS, begin climbing back to original altitude. Ensure that minimum altitude is lost by maintaining a slight climb angle, but be careful not to induce a secondary stall by adding too much nose up pitch.
10. When the aircraft speed reaches 70 MIAS or higher, return to cruise power.



INSTRUMENT FLIGHT

Recovery From Unusual Attitudes

1. Scan primary flight instruments (Attitude indicator, Airspeed indicator, Altimeter) to assess the situation.

If the aircraft is in a nose-low unusual attitude:

2. Reduce power to idle.
3. Roll the wings to level with aileron input.
4. Pitch the aircraft to level with elevator input.
5. When aircraft is flying straight and level, return to cruise power. Carefully monitor primary flight instruments.

If the aircraft is in a nose-high unusual attitude:

2. Immediately add power to full and pitch the aircraft's nose to level with aileron input.
3. Roll the wings to level with aileron input.
4. When aircraft is flying straight and level, return to cruise power. Carefully monitor primary flight instruments.

NOTE: Remember the phrase "slow is smooth, and smooth is fast". Do not rush unusual attitude recoveries, or you may make incorrect inputs that worsen the situation.

EMERGENCIES

Engine Failure in Flight

Ref: AFH 18-2, POH 2-4

Objective: To safely configure the aircraft in the event of a complete loss of engine power.

1. Level the wings and pitch to establish flight at 65 MIAS [V_G].
2. Locate the nearest suitable landing field and immediately begin flying towards it. Take the following into consideration:
    a. Wind
    b. Obstructions
    c. Field Length
3. Confirm both Magnetos are turned On.
    a. If the propeller is stopped, briefly engage the starter. DO NOT attempt this if the propeller is still spinning to prevent additional engine damage.
4. Set the mixture to Full Rich.
5. Confirm the Fuel Shutoff Valve is set to On.
6. Apply Carburetor Heat.
7. Confirm the Primer is in the Locked position.
8. If engine power is not restored, proceed to the Power-Off Landing procedure.

NOTE: Remember the following mnemonic in the event of a loss of engine power: **A, B, C, D.**

- **A. Airspeed**. Immediately establish flight at V_G.
- **B. Best Landing Site**. Find somewhere the airplane can be landed, and fly towards it. Keep in mind this may be behind or underneath you; take your time and find the safest option.
- **C. Checklist**. Proceed with the appropriate memory items and checklists as described above.
- **D. Declare**. If already in radio contact with a controller, *remain on the frequency* and declare your emergency to the controller. Otherwise, tune to VHF Guard (121.5 MHz) and broadcast your emergency, including your callsign and the word “Mayday”. DO NOT SWITCH TO 121.5 if you are already in radio contact with a controller; this will cause confusion and delay any emergency response, if required.

Engine Failure on Takeoff

Ref: AFH 18-7, POH 2-4

Objective: To safely glide, secure, and land the aircraft in the event of a complete loss of engine power shortly after takeoff.

For training purposes, this maneuver should NEVER be taken all the way to a landing. When the student makes a corrective action, recover immediately to avoid ground contact.

1. Immediately pitch the nose down to establish flight at 65 MIAS.
2. If necessary, make small direction changes to fly towards the least hazardous landing site available. Altitude and airspeed are seldom sufficient to execute a 180-degree gliding turn to the runway.
3. Prior to touchdown, unlatch door to avoid becoming trapped in the event of structural buckling.
4. Touch down at the slowest possible ground speed, and heavily apply brakes to stop in the shortest distance possible.
5. Upon stopping the aircraft, immediately evacuate all occupants and move upwind in case of a fire.
6. CALL 911 FIRST IF NECESSARY, then call Lake Elmo Aero at 651-777-1399 to activate Emergency Response procedures. Refer to Lake Elmo Aero Safety Policies and Procedures manual for emergency contact procedures when safely outside of the airplane.

Power-Off Landing

Ref: AFH 18-3, POH 2-6
Objective: To safely glide, secure, and land the aircraft in the event of a complete loss of engine power.

1. Pitch to establish flight at 65 MIAS for final approach.
2. Set the Mixture to Idle Cutoff, to secure the fuel system and prevent a fire.
3. Set the Fuel Shutoff Valve to Off, to secure the fuel system and prevent a fire.
4. Set the Magneto Switches to Off, to secure the engine and prevent inadvertent engine firing during evacuation.
5. When the airplane is fully configured for landing, turn the Master Switch Off, to secure the electrical system and prevent a fire.
6. Prior to touchdown, unlatch both doors to avoid becoming trapped in the event of structural buckling.
7. Touch down at the slowest possible ground speed, and heavily apply brakes to stop in the shortest distance possible.
8. Upon stopping the aircraft, immediately evacuate all occupants and move upwind in case of a fire.
9. CALL 911 FIRST IF NECESSARY, then call Lake Elmo Aero at 651-777-1399 to activate Emergency Response procedures. Refer to Lake Elmo Aero Safety Policies and Procedures manual for emergency contact procedures when safely outside of the airplane.

NOTE: Any control inputs that would cause an actual loss of engine power, such as Fuel Selector or Ignition Off, should only be simulated in a training scenario. Lake Elmo Aero does not permit actual engine-out training scenarios in single-engine aircraft, with no exceptions.

Engine Fire in Flight

Ref: AFH 18-9, POH 2-2
Objective: To safely extinguish an engine fire in cruise flight.

1. Set the Mixture to Idle Cutoff.
2. Set the Fuel Shutoff Valve to Off.
3. Turn the Magneto Switches Off.
4. Turn the Master Switch Off (if no further radio communications are required).
5. Close Cabin Heat and Cabin Air Vents on panel to minimize smoke intake from engine compartment. Overhead vents can be opened for fresh air if needed.
6. Lower the nose and increase speed airframe limitations.
7. Go to Engine Fire in Flight Checklist.

If fire extinguishes…

8. Proceed to Power-Off Landing procedure.

If fire does not extinguish…

9. Proceed to Emergency Descent procedure.

NOTE: Any control inputs that would cause an actual loss of engine power, such as Fuel Selector or Ignition Off, should only be simulated in a training scenario. Lake Elmo Aero does not permit actual engine-out training scenarios in single-engine aircraft, with no exceptions.

Engine Fire on Start

Ref: POH 2-2

Objective: To safely extinguish an engine fire during the starting process.

1. Continue cranking starter to attempt to suck flames and accumulated fuel back into the engine.

If engine starts…

2. Run engine at 1700 RPM for about one minute to ensure all flames have been extinguished.

If engine does not start…

3. Fully open Throttle and reduce Mixture to Idle Cutoff.
4. Continue cranking starter until fire is safely out. Obtain assistance from ground personnel with fire extinguishers if possible.

When fire is extinguished and engine is no longer running…

5. Discontinue cranking starter (if applicable) and turn off Master Switch, Magneto Switches, and Fuel Shutoff Valve.
6. Evacuate aircraft as soon as practical.

Electrical Fire

Ref: AFH 18-10, POH 2-3
Objective: To safely extinguish an electrical fire in cruise flight.

1. Turn the Master Switches Off.
2. Turn all individual radio and electrical switches Off.
3. Close Cabin Heat and Cabin Air Vents to minimize smoke intake. Overhead vents or cabin windows can be opened for fresh air if needed.
4. If available, use a fire extinguisher on the afflicted area.
5. Proceed to Electrical Fire Checklist.

If fire does not extinguish…

6. Land as soon as possible. Consider off-airport landing if necessary for safety of occupants.

If fire extinguishes…

7. Land as soon as practical.
8. If electrical power is necessary for continuance of flight, turn Master Switch On.
9. Check circuit breakers/fuses for signs of a faulty circuit. Do not reset any breakers that have been tripped.
10. Turn on individual electrical components one at a time, and ensure that a fire does not restart.
11. Open Cabin Air and Cabin Heat Vents as applicable.

Emergency Descent

Ref: AFH 18-8

Objective: To safely and rapidly descend the aircraft.

1. Reduce the Throttle to Idle.
2. Enter a steep bank (30-45 degrees).
3. Lower the nose of the aircraft and pitch for 120 MIAS [V_{NO}].
4. Plan to recover by 1000’ AGL.

To recover…

5. Level the wings to the horizon and stop the descent.
6. Apply throttle when airspeed decreases safely below 120 MIAS [V_A].
7. Return to cruise flight or complete the Power-Off Landing procedure, as applicable.

NOTE: In a non-training scenario requiring this action, descent at up to 162 MIAS [V_{NE}] is permitted if necessary.

Engine Roughness

Ref: POH 3-7, AFH 18-11
Objective: To diagnose and rectify a rough-running engine.

1. Apply Carburetor Heat and a high throttle setting (about 2500 RPM). If carburetor ice exists, engine will momentarily run even worse while ice is melted and passes through the engine. Operation should return to normal after 30 seconds. If no change is observed after one minute, close Carburetor Heat.
2. Set the mixture to Full Rich. If already Full Rich, attempt to slowly lean the Mixture by about an inch and a half. This will cause the engine's combustion temperature to increase, which could burn away lead or carbon deposits causing roughness. If no change is observed after one minute, return the Mixture to Full Rich.
3. Switch the Magneto Switches to each individual magneto to test operation. If one magneto runs more smoothly, remain on that magneto and land as soon as practical. If no change is immediately observed, turn both Magneto Switches On.
4. Confirm the Primer is in the Locked position. If not, slowly push the Primer in and rotate it so that it remains locked.
5. If Engine Roughness continues, land as soon as possible and prepare for a loss of engine power.

NOTE: On airplanes with SureFly Electronic Ignition installed, the Left Magneto is the solid-state electronic ignition source.

Loss of Oil Pressure

Ref: POH 3-14, AFH 18-11
Objective: To safely manage a loss of oil pressure in flight.

If Low Oil Pressure is accompanied by **Normal or Low Oil Temperature…**

1. Land as soon as practical.

If Oil Pressure is completely lost, or if Low Oil Pressure is accompanied by **High Oil Temperature…**

1. Prepare for a loss of engine power.
2. If the airplane is climbing, stop the climb.
3. Reduce Throttle to 2200 RPM and maintain level flight.
4. Set Mixture to Full Rich.

If Oil Pressure and Oil Temperature do not return to normal range…

5. Land as soon as possible.

High Oil Temperature

Ref: AFH 18-11
Objective: To safely cool the engine in the event of an overheat.

If High Oil Temperature is accompanied by **Low Oil Pressure…**

1. See "Loss of Oil Pressure" procedure.

If High Oil Temperature is detected, and **Oil Pressure is normal…**

1. If the airplane is climbing, stop the climb.
2. Reduce throttle to 2200 RPM for a minute or so and allow the airplane to accelerate. This will force more air over the engine.

If Oil Temperature returns to normal…

3. Resume normal operations, but climb at a higher-than-normal speed (at least 69 MIAS [V_Y] to facilitate cooling) when required.

If Oil Temperature does not return to normal…

4. Land as soon as practical.

Alternator Failure

Ref: POH 2-3, AFH 18-23

Objective: To manage electrical load and return for a safe landing in the event of an alternator failure.

1. Prepare for the possibility of an electrical fire. Go to the Electrical Fire procedure if applicable.
2. Turn off all unnecessary electrical equipment to reduce system load, including…
    a. External lights (as safe/required).
    b. Secondary communication radio(s).
3. Unplug all devices from the airplane's 12-volt charging socket.
4. Check circuit breakers/fuses.
    a. If no circuit breakers are tripped, cycle the Alternator Master Switch.
        i. If Alternator power is not restored, land as soon as possible.
    b. If one or more circuit breaker(s) is tripped…
        i. If the equipment is unnecessary for the safety of flight, leave it tripped and cycle the Alternator Master Switch.
        ii. If the equipment *is necessary* for the safety of flight, the use of emergency authority to reset the breaker can be used. Land at the nearest suitable airport.
5. Minimize inputs that require heavy electrical load, including…
    a. Transmitting on Communication radios.
    b. Extending or retracting Flaps.
6. Land as soon as practical (if in IMC, land as soon as possible).

NOTE : Resets of circuit breakers protecting necessary equipment can be attempted, but prepare for the possibility of an Electrical Fire and do not attempt to reset the same breaker more than once.

Electrical System Failure

Ref: POH 3-14, AFH 18-13
Objective: To manage electrical load and return for a safe landing in the event of a loss of electrical power.

1. Turn Master Switch Off for 10 seconds.
2. Turn Master Switch On.

If excessive discharge or failure persists…

3. Turn off all nonessential equipment.
4. Land as soon as possible, and prepare for loss of communications.

NOTE: The Citabria is equipped with an overvolt-sensing alternator, which will shut off if output voltage exceeds approximately 16 volts. This will trigger the red “Over Voltage” light, and will take the form of an Alternator failure. Recycling power to the alternator will reset this failsafe system, and can be attempted once to restore electrical power. Multiple resets should not be attempted.

Spin Recovery

Ref: AFH 5-22
Objective: To safely recover from an uncoordinated, aggravated stall.

1. Reduce the Throttle to Idle.
2. Return the Ailerons to the neutral position. Attempting to recover from a spin with aileron input can further aggravate the aspin.
3. Apply Rudder input in the direction opposite to the spin. The aircraft should stop spinning and become oriented in a steep dive.
4. Apply forward pressure on the Elevators to break the stall condition. Do not invert the aircraft or exceed 162 MIAS [V_{NE}].

When the stall is broken and the aircraft is controllable…

5. Gradually recover from the dive and return to level flight with elevator input. Do not recover abruptly in order to avoid overstressing the aircraft beyond its rated structural limits (+3.8G) or inducing a secondary stall.
6. When level flight has been achieved, apply throttle as necessary to return to cruise flight.

NOTE: Remember the following mnemonic in the event of a spin: **PARE**.

Power: Idle.
Ailerons: Neutral.
Rudder: Opposite, to break the spin.
Elevator: Forward, to break the stall. Then back to recover from the dive.

NOTE: Upset recovery training will commence with a planned recovery altitude (hard deck) of 3000’ AGL.