FlightCerts

STANDARD OPERATING PROCEDURES

TABLE OF CONTENTS

9.4 Crew Resource Management
9.5 Positive Exchange of Flight Controls
9.6 Radio Communications
9.7 Sterile Cockpit Procedures
9.8 Night Operations
9.9 Minimum Fuel Requirements
9.10 Situational Awareness
9.11 Airspace Entry/Exit
9.12 ADS-B Compliance
9.13 Flap Settings

Subpart B: Pre-Flight Procedures

10.1 General
10.2 Aeronautical Decision Making
10.3 Aircraft Dispatch
10.4 Take-Off Data Card\
10.5 Preflight Briefing Requirement

Subpart C: Ramp & Taxi Operations

11.1 General
11.2 Fuel Servicing
11.3 Passenger Briefing
11.4 Seatbelt Use
11.5 Starting Procedures
11.6 Taxi Briefing
11.7 Taxi Guidelines & Restrictions
11.8 Runway Crossings & Holding short
11.9 Equipment Operational Check & Engine Run-Ups

Subpart D: Departure Procedures

12.1 Departure Briefing
12.2 Normal Take-Off & Climb
12.3 Short-Field Take Off & Climb
12.4 Soft-Field Take Off & Climb
12.5 Aborted Take-Offs

Subpart E: Cruising Procedures

13.1 Fuel Management
13.2 Engine Mixture Controls
13.2 Weather Monitoring & Hazards to Safety of Flight

Subpart F: Arrival Procedures

14.1 Approach Briefing
14.2 Descent
14.3 Stabilized Approach Criteria
14.4 Traffic Pattern Operations
14.5 Normal VFR Approaches & Landing
14.6 Crosswind Approaches & Landing
14.7 Gust Factor
14.8 Soft-Field Approach & Landing
14.9 Short-Field Approach & Landing
14.10 Go-Arounds & Missed Approaches
14.11 Instrument Approach Procedures

Subpart G: Post Flight Operations

15.1 General
15.2 Aircraft Post flight Walk Around
15.3 Reporting of Inoperative Equipment
15.4 Post Flight Briefings
15.5 Aircraft Close-out Procedures
15.6 Payment & Reimbursements

IV. Flight Training Maneuvers Guide

Subpart A: General

16.1 General
16.2 Practice Areas
16.3 Clearing Turns

16.4 Maneuvers Ground Instruction
16.5 Scenario-Based Training

Subpart B: Slow Flight & Stall Maneuvers

17.1 Slow Flight
17.2 Power-Off Stalls
17.3 Power-On Stalls

Subpart C: Performance Maneuvers

18.1 Steep Turns
18.2 Chandelles
18.3 Lazy 8’s
18.4 Power-Off 180° Approaches

Subpart D: Ground Reference Maneuvers

19.1 Turns Around a Point
19.2 S Turns
19.3 Eights on Pylons
19.4 Steep Spirals

I. Introduction

1.1 About FlightCerts

FlightCerts was established in April 2019 as a FAA Part 61 flight instruction service. We aim to streamline the Part 61 flight training industry by offering training program designed under the principles of "Advance Qualification Program" under the Federal Aviation Administration.

Our mission is to inspire tomorrows aviators with a highly structured training program built upon concepts that prepare student pilots for a career as professional aviators. By utilizing outside vendors and partnerships, our hope is to save students in training cost ensuring access to affordable aircraft necessary to meet certification experience requirements. We aspire to match our instruction services and curriculums with local flight schools to ensure a safe, quality focused, consistent, and career orientated approach to flight training.

1.2 Purpose of Manual

The following Standard Operating Procedures contained herein, have been adopted to ensure safe, orderly, and efficient operation of our highly technical training environment. Each person connected with FlightCert's flight operation will be expected to fully comply with all prescribed directives. Every attempt will be made to incorporate, in this form, a comprehensive textual version of operational expectations set forth for both student's and instructors by the Director of Training Operations/Chief Flight Instructor. It is recognized that not all possible situations can be foreseen; therefore, unusual situations will be evaluated, and appropriate action taken to address and amend necessary procedures.

1.3 Responsibilities and Revisions

This revision of the Standard Operating Procedures (SOP) supersedes all previous editions. Additionally, students, pilots, and staff members are responsible to incorporate changes into their SOP's as they are made available. A current copy of the SOP will always be available online.

Students, pilots, and staff members of FlightCerts are required to comply with the regulations, policies, and procedures contained within this manual as well as the Federal Aviation Regulations (FAR's). Failure to comply with any of the above may result in disciplinary action including dismissal from training and/or employment. If it is found that operational procedures conflict with Federal Regulation, Federal Regulation supersedes the procedure and that specific item become invalid.

Throughout the remainder of this manual, the term "student pilot" refers to a pilot who has not yet attained the Private Pilot's Certificate; the term "student" refers to anyone participating in a course of training at FlightCerts; the term "pilot" refers to students, instructors, staff, and anyone else piloting a FlightCerts operated aircraft.

II. Company Policies & Daily Operations

Subpart A: Administration

2.1 Business Partners & Other Vendors

FlightCerts utilizes a network of vendors and partners to achieve our mission of providing quality flight training. These are included but not limited to fuel service providers, maintenance technicians, aircraft owners (via leasebacks), independent instructors, and airport administrative staff. These partners, as a whole, are responsible for ensuring regulatory compliance as well as working cooperatively to ensure the safety of flight training operations by way of these procedures.

2.2. Chief Flight Instructor

The Chief Flight Instructor is responsible for ensuring the quality of training in all areas of instructing and instructing staff. The Chief Flight Instructor has all the responsibilities of a flight instructor with the following additional responsibilities:

- Point of contact for certifying training records, stage-checks, and check-rides.
- Acting as a training resource and subject matter expert to other flight instructors on staff
- Writes and updates all training materials and SOPs.
- Point of contact for FAA communications and air traffic control issues.
- Manages and serves as final authority to all activities related to daily flight operations.

2.3. Flight Instructors

Flight instructors (CFI's) are responsible for conducting all flight instruction, ground instruction, and briefings in accordance with Federal Aviation Regulations, FlightCerts policies, curriculums, and training materials. Flight Instructors shall instruct students in a classroom setting, conduct training flights, determine student proficiency, report on student progress and develop new teaching methods. They are responsible for training students in subjects such as aircraft systems, operating procedures, handling emergencies, problem analysis, aircraft navigation, radio operation and aerodynamics.

Subpart B: Safety Program

3.1 Purpose

The goal of FlightCerts Safety Program is to eliminate unsafe situations through standardized operational practices, non-retaliatory reporting of unsafe incidents, and promotion of superior training practices conducive to student success in flight education.

3.2 Philosophy

The philosophy of the safety program is to identify and eliminate unsafe situations in order to prevent injury or equipment damage.

FlightCerts will collect safety related information and disseminate this data to all students, pilots, and staff members in an effort to educate and apply safety procedures in order to create a safe work and flight environment where safety is a way of thinking.

3.3 Reporting Accidents and Incidents

Accidents or accidental damage to FlightCerts property, aircraft, or otherwise, must be reported immediately to FlightCerts management staff or representative. NTSB notification is also required for parties involved when applicable.

3.4 Reporting Hazardous Events and Observed Behaviors

In the interest of safety, all staff and students are responsible for reporting any hazardous events, potentially hazardous situations, observed unsafe behaviors, or security threats immediately to FlightCerts management.

Subpart C: Scheduling

4.1 Scheduling

Students are expected to schedule training activities via Flight Schedule Pro. This platform is available online or via downloadable mobile app. FSP offers convenient online, 24-hour, up to the minute scheduling.

4.2 No Show & Tardiness Policy

Failure to notify your instructor or the flight school of cancellation may result in a No Show charge to your account. “No Show” fees are calculated as 50% of the associated reservations activity type (ie. Ground lesson, Flight Lesson, Aircraft Rental). Cancelation notice must be given 24 hours prior to the scheduled activity. If cancelation is not received by either the student’s instructor or via written email to the school greater than 24 hours, a cancelation fee may be applied.

Students arriving late to scheduled training activities beyond 30 minutes, and without prior notification to their students Instructor, are subject to a “late arrival” fee charged at the rate of the instruction service provided at the discretion of that student’s flight instructor.

4.3 Policy for CFI Lateness

Should a CFI arrive 15 minutes late for a scheduled training activity, the following will take place:

- On the first time arriving late, the CFI will receive a verbal warning.
- On the second time arriving late, the CFI will receive a written warning.
- For all occasions after the second time being late, the CFI will receive disciplinary action without pay and this is considered grounds for termination.

4.4 Reservation Periods

Students and renters are able to generate, edit, and cancel four main types of reservations. They are: Ground Lessons, Flight Lessons, Cross Countries, and Checkrides. Every attempt should be made to schedule aircraft for only the period needed.

Ground and Flight lessons (local) should only be scheduled for a recommended period of no more than 2 hours. Cross Countries and Checkrides should be scheduled for at most 4 hours. This is to help improve aircraft availability and ensure ample access to training resources for all school students.

4.5 Overnight Rentals

Overnight rentals are only authorized by obtaining written permission for the Chief Instructor permission. This can be achieved by completing an overnight rental request available on the FlightCerts website resources page.

Overnight rental charges will be charged based on a minimal required 3 flight hours per day rate, regardless of if the hours were accrued during the rental period or not.

4.6 Cancelations

Cancelation notice should be given as soon as possible. For cancelations occurring within 24 hours, other than those related to weather for flight activities, may be subject to a cancelation fee. Cancelation fees are calculated as a 50% charge of the scheduled services which were to be provided (Ground Instruction, Flight Instruction, Aircraft Rental). Extenuating circumstances may be considered solely at the discretion of the Chief Instructor.

Students or renters who cancel within 24 hours on more than 3 occasions without acceptable cause may be subject to restriction or suspension of scheduling privileges.

Subpart D: Operating Restrictions & Limitations

5.1 General

Without an instructor on board, some may be tempted to take risks or conduct flights differently than they would with an instructor present.

Failure to follow procedures or careless or reckless behavior presents a significant safety hazard and leads to a breakdown of in-flight discipline. It may result in certificate action by the FAA or lead to student dismissal from training programs. Report any safety concerns or reckless behavior to FlightCerts Flight Operations immediately.

5.2 Carriage of Firearms

The transporting or carrying of firearms, ammunition, or deadly weapons aboard Flightcerts operated aircraft at any time, for any reason, is strictly prohibited. The possession of such weapons is prohibited on the airport ramp, FlightCerts facilities, and FlightCerts sponsored functions.

5.3 Alcohol and Drug Restrictions

All FAR's in the area of alcohol and/or illegal drug use will be strictly enforced by FlightCerts. Pilots and staff members are prohibited from performing duties for a period of 12 hours after the intake of alcoholic beverages. Pilots must adhere to FAR's under Part 91 with respect to over-the-counter medication at all times.

5.4 Spin & Aerobatic Restrictions

- At no time may student pilots practice spins solo.
- Spins will only be practiced when accompanied by an authorized FlightCerts instructor.
- Spins must be only practiced in aircraft approved for spins.
- Spins will not be permitted on federal airways.
- Spins must be recovered prior to 2000' AGL.

5.5 Flight / Duty Time Restrictions

- Instructors are limited to 8 hours of flight time within a 24 hours period
- All flight instructors are to remain at the airport, or within the immediate vicinity, through out the first half hour of their student's checkride in case of any discrepancies.
- If a student chooses to use an examiner other than who is available at their primary training airport, the flight instructor will accompany the student and remain at the airport at which the checkride will be conducted until the completion of the checkride.

5.6 Flight Instructor Currency

Providing quality instruction starts with the instructor. This requires the CFI to be proficient in all areas of which the instructor provides flight education. The Chief Flight Instructor is responsible for administrating a continuing education program with all program instructors. This will include FlightCerts providing free and/or reduced cost access to training resources as CFI's work to maintain regulatory currency.

Beyond regulatory currency, FlightCerts utilizes the FAA Wings Program to assist instructors with an ongoing training initiative to improve training operational safety. This requires at a minimum of 1 phase of Wings completed each 12 calendar month period.

5.7 Endorsements

- Instructors will complete all endorsement and IACRA certification activities at least 24 hours prior to a scheduled Checkride event.
- Student pilots must carry a physical version of required endorsements in their possession during all flight training activities.
- Students are not to be endorsed for solo limitations higher than that prescribed in the weather section of this SOP.

5.8 Student Weather Minimums

For operating under visual and instrument flight rules (VFR and IFR, respectively), FlightCert's weather minimums are more restrictive than the FARs. This ensures that training flights are conducted in the safest possible environment and provides a safety margin in case of unexpected weather.

The following weather minimums are in effect for all VFR flight operations.

- Ceiling 3,000' AGL
- Visibility greater than 5 statute miles
- Max Wind Component: 15 knots
- Max Crosswind Component (takeoff & landing – including gusts): 10 knots
- No Active Sigmets within 20nm of operating airspace.

The following weather minimums are in effect for all IFR flight operations.

- Ceiling 500' AGL
- Visibility greater than 3 statute miles
- Freezing level greater than 7,000' MSL
- No Active Sigmets within 20nm of operating airspace.

Weather conditions must be at or above these minimums for the departure airport. If there is a destination airport, conditions must also be forecasted to be at or above these minimums from one hour prior to one hour after the estimated time of arrival. If weather or fuel considerations are close to FlightCert's limitations, the Chief Flight Instructor should be consulted. The flights acting Pilot-In-Command is responsible for monitoring weather conditions and for complying with all limitations. If weather changes or is outside of limitations, contact the Chief Instructor.

5.9 Practice Areas

Local procedures, practice areas, and designated training airports will be prescribed by FlightCerts management and/or the Chief Pilot. These are subject to change and must be complied with by all students and instructors.

5.10 Touch & Go Landings

"Touch and go" practice is not authorized for airports with less than 2 times the required landing and take-distance required using normal take-off procedures as defined in this document.

5.11 Class B Operations & Requirements

Student pilots must have received training, instructor logbook endorsement, and ATC clearance prior to entering specific Class B airspace. During all operations in Class B airspace, all student pilots are to have, in their possession, a printed or electronic version of current Terminal Area Chart depicting that Class B airspace, applicable transition procedures, and any related documentation critical to flight safety. A copy of any endorsements made by the instructor must be kept in the student's training record. Student pilots are not permitted to enter any Class B airspace without the above requirements being met. The regulatory requirements for Class B operations are prescribed in FAR 91.131.

Subpart F: Maintenance

6.1 Aircraft Care & Preventative Maintenance

Flight instructors and appropriately licensed renters are responsible for ensuring preventative maintenance of FlightCert's aircraft. This includes non-complex procedures such as the replenishment of fluids such as oil and coolant (if equipped), cleaning of aircraft windscreen, and ensuring the aircraft is properly secured after operation.

6.2 Aircraft Discrepancies

All operators of FlightCert's aircraft are responsible for reporting equipment malfunctions as well as any damage discovered on pre/post-flight to FlightCert's Flight Operations. When necessary, the Chief Flight instructor will appropriately "Squawk" faulty equipment/damage and list the aircraft's status as either "In-Service" or "Down" in the Flight Schedule Interface. If an aircraft discrepancy is discovered requiring the "Down" status of an aircraft, the next renter should be notified as soon as possible by either FlightCert's Operations or the current aircraft renter.

6.3 Operation with Inoperative Instruments and / or Equipment

If a discrepancy is found which does not require the "down" status of an aircraft, the appropriate "Minimum Equipment List" procedure should be adhered to. This should be conducted with respect to the aircraft's Pilot Operating Handbook (POH) as well as the FARs. Only a flight instructor may determine if an aircraft is airworthy, if an aircraft discrepancy is discovered during pre-flight. The general procedure for all aircraft squawks is as follows:

1. Damage or Inoperative Equipment is discovered.
2. Determination is made by a FlightCert's Flight Instructor of airworthiness condition.
3. If not airworthy, the Flight Instructor will notify the Chief Instructor and Squawk the aircraft as "Down", coordinate maintenance, and notify subsequent renters.
4. If airworthy, the Flight Instructor will Squawk the aircraft as "In-Service" and provide appropriate description. The respective equipment will be placarded as "INOP" and its power source will be disconnected by a licensed A&P Mechanic. The Chief Instructor will be notified via email and will coordinate repairs with maintenance.

6.4 Inspections and Scheduled Maintenance

The Chief Flight Instructor is responsible for coordinating the training schedule with regard to aircraft maintenance needs. Aircraft will be regularly scheduled for necessary inspections and servicing by blocking off the aircraft in the Flight Schedule Interface. When aircraft are within a 20 hour threshold of the 100-inspection, the Chief Flight Instructor will be notified by flight instructor staff.

Subpart G: Student Enrollment

7.1 Eligibility

All FlightCert's students must be at least 16 years of age, be eligible to train in the United States under FARs; as well as read, speak, and write in the English language. Students must hold a valid FAA Student Pilot Certificate, FAA Airman Medical Certificate, have completed the online enrollment application, and sign an agreement to comply with these Standard Operating Procedures.

7.2 Discovery Flights

Discovery flights will be provided only to those interested in learning to fly. It is not necessary for individuals to have satisfied the age requirement, FAA Student Licenses, or Medical certification requirements prior to the discovery flight; however, individuals must be able to verify United States citizen. This is to be completed upon the student's arrival for their flight by providing either a US

Birth Certificate and government issued Photo I.D. or a US passport. The Flight Instructor will retain copies of these documents and provide a TSA endorsement in the prospective student's logbook before the start of the flight.

After the flight, the prospective student will be informed of the required enrollment criteria. This must be satisfied by the 5th flight lesson of their training syllabus. If these items are not yet complete, the instructor should discontinue flight training and advise the student that they will not be eligible to schedule until enrollment criteria is fulfilled.

7.3 Application Procedure

Following a prospective student's discovery flight, the student should schedule an information session with their flight instructor so that the enrollment process can begin. During this meeting, the instructor will assist the student in applying for their FAA Student Pilot Licenses as well as inform them of the FAA Medical Certification process (if needed). The student will then be asked to complete FlightCert's online enrollment application and an online scheduling account will be created by the student's instructor. The student may only schedule up to their 5th flight lesson until all enrollment criteria is met. Failure to complete these items may result in cancelation of future flight training activities until necessary requirements are fulfilled.

7.4 Student Dismissal

FlightCert's reserves the right to deny training services to any student. Student dismissal from the training program may occur as a result of a students failure to pay, continuous late arrival or "No Show" to scheduled activities, disrespect to FlightCert's staff, failure to comply with Standard Operating Procedures, or reckless/careless operations.

Subpart E: Aircraft Checkouts & Pilot Rental

8.1 Eligibility & Checkout Procedure

All individuals who plan to rent FlightCerts aircraft without the presence of a FlightCert's Instructor must go through the standard checkout process. Renter's must hold at least a Private Pilot Certificate, be 18 years of age or older, carry non-owned rental insurance, agree to uphold these Standard Operating Procedures, and be found competent by a FlightCert's Instructor to rent aircraft solo. Aircraft Checkouts are specific to each aircraft model flown. FlightCert's reserves the right to deny or suspend rental privileges at any time.

8.2 Required Non-Owned Rental Insurance

All students and renters must provide proof of Non-Owned Rental Insurance before solo flight in FlightCerts aircraft can be authorized. A minimum of 2,000 of hull coverage is required. Evidence of this coverage should be given to the student's flight instructor. Students/renters should be informed of this requirement during their initial information session.

8.3 Pilot Currency

All students and renters are required to comply with pilot currency requirements set forth by FARs. In addition, specific currency requirements may be instituted for specific aircraft models. This is to ensure the safety and recency of flight experience for aircraft renters. Aircraft renters may be required to provide evidence of currency at the discretion of the FlightCerts Flight Operations.

8.4 Suspension of Rental Privileges

FlightCerts reserves the right to deny rental privileges at its sole discretion at any time. Notification of suspended rental privileges will be provided in written form and will provide an explanation as to why rental privileges have been suspended. Reinstatement of privileges may be possible based on the nature of the suspension and at the sole discretion of the Chief Flight Instructor.

If it is determined that a student or renter is ineligible for reinstatement, detailed explanation will be provided. Failure to disclose damage to aircraft or willful disregard for Federal Aviation Regulations will always result in immediate revocation of rental privileges without recourse.

III. Normal Operating Procedures

Subpart A: General

9.1 Applicability

The following Normal Operating Procedures are to be used as a model by which training operations should be conducted. All students are expected to be familiar with these policies, procedures, and their appropriate use.

Aircraft renters will be expected to be familiar with these procedures; however, it is ultimately their responsibility to ensure compliance with Federal Aviation Regulations. Rental privileges will only be granted to those who have agreed to uphold fundamental operational principals set forth in these SOPs to ensure safety of flight. Failure to uphold operational safety measures set forth in these Normal operating Procedures may result in revocation or suspension of aircraft rental privileges.

9.2 Checklist Usage

"Checklists" constitute tools that support flight crew airmanship and memory and ensure that all required actions are performed without omission and in an orderly manner. FlightCerts Checklists are unique and specific to aircraft types. They are can be found in the aircraft operations binder, on our website, or in the Aircraft's Pilot Operating Handbook. Checklist use is required for all FlightCerts flight operations. The use of aircraft operational checklists fall into two categories respective to the operation type for which they are applicable.

- Read & Do Lists: these procedures relate to all ground operations procedures as well as many non-normal (abnormal and emergency) procedures. Procedure items to be completed in this way will appear in GREY on FlightCerts Checklists.
- Challenge & Response Checklists (Do & Verify): these procedures relate to flight operations where the aircraft is airborne or when the task item must be completed quickly for emergency purposes. The important distinction with these checklists is that they are airborne-phase related actions and are performed from memory using a cockpit flow pattern then subsequently verified with the checklists. Critical items are checked /cross-checked using a challenge-and-response checklist, whereby the Pilot Monitoring (PM) reads the items to be checked and the Pilot Flying (PF) confirms the proper status/configuration of the appropriate items.

9.3 Crew Roles & Pilot-In-Command Authority

Operating as a crew requires careful coordination and standardization. This enhances safety and efficiency by logically distributing cockpit workload and clearly identifying crewmember roles and responsibilities through the use of standard operating procedures (SOPs).

Adhering to standard operating procedures promotes confidence and precision within the flight crew, and discourages unsafe practices and carelessness. It also enables a good working relationship between pilots and supports good judgment and professionalism. That said, there are three working roles covered in these standard operating procedures. They are as follows:

- **Pilot Flying (PF)** – This role generally exercises the role of Pilot-In-Command authority. They operate the aircraft from the left seat and serve as the final authority of the flight. He/She is, therefore, chiefly responsible for the aircraft's safe operation. The PF is the crew function responsible for control/manipulation of the flight controls.

- **Pilot Monitoring (PM)**-- The right seat pilot is referred to as the Pilot Monitoring (PM). The PM is responsible for: Radio communications, programming the radios and navigation, monitoring the flight path and ensuring compliance with clearances, performing safety pilot duties required by FAR §91.109(c), including scanning for and avoiding traffic, terrain, and obstacles, and acting as PIC while the PF is using a view limiting device.

- **Flight Instructor (FI) –** The Flight Instructor serves as the Pilot-In-Command on all training flights regardless of who is acting as PF. The Instructor assists student pilot in the development of the critically important skills of crew resource management and single pilot resource management. This is done by alternately performance both PF and PM roles as needed to accomplish training objectives.

9.4 Crew Resource Management

Crew Resource Management (CRM) is an integral part of all flight operations at FlightCerts or any airline, and is a significant contributor to a high level of flight safety. All pilots are expected to use these skills with their fellow pilot in the cockpit, as well as with support personnel (such as Air Traffic Control and FlightCerts Flight Operations) with whom they interact with in the course of flight operations.

To ensure the effective use of crew resources, the Pilot Flying (as PIC) should:

- Encourage participation of the Pilot Monitoring.
- Set a professional tone for the flight.
- Each pilot must:
- Offer input and feedback in a calm, professional, and productive way.
- Provide proper support.
- Ask questions to encourage open and interactive communication.
- Manage workload.
- Ensure continuous cockpit discipline, attention to task, and adherence to SOPs.
- Demonstrate, through personal example, what behavior is expected of others.

Crew Communication

The degree to which the free and open exchange of information occurs in the cockpit is a function of the team building efforts used during the preflight activities. Pilots are expected to communicate, manage conflict, be assertive and debrief when appropriate. These are among the primary skills which ensure effective pilot coordination.

Crew Coordination Callouts

Callouts are highly professional procedures which ensure crews maintain situational awareness, communicate pertinent information, and clarify pilot intentions during flight operations. Although their practice is highly encouraged, they are not required for licensed renters. Their practice is; however, required for students training at FlightCert's. Standardized call-out items are incorporated in relevant sections of these Standard Operating Procedures with italicized text in quotes and will specify which crew function is responsible for that respective call-out. Color codes will also delineate which crew member is responsible for that call-out. NAVY BLUE colored text indicates Pilot Flying (PF) callouts, RED colored texts are for Pilot Monitoring (PM) callouts. GREY text is used to identify callouts applicable to both PF & PM roles. BLACK text indicates communications annunciated by either the Flight Instructor (FI) or Air Traffic Control (ATC) Aircraft checklists will also include standardized call-outs. These will be important for students to memorize as they progress through their training.

Briefings

Briefings assure the crew preparedness, mitigate confusion on procedures, and help crews come to mutual understanding of upcoming procedures.

Assertion

Each pilot must clearly and quickly communicate any significant operational development to the other pilot. This communication shall be respectful and specific to the nature of the problem, but with appropriate persistence until there is a clear resolution.

Conflict Management

Each pilot is responsible for objectively evaluating problems and pointing out concerns. Pointing out these concerns, without emotion, from an objective point of view will assist in resolving any conflict. Feedback should always be offered objectively and accepted non-defensively. If your crew cross-country partner expresses a concern, it is not a criticism of you or your skills as a pilot. It is simply an observation that something can be done to make the flight safer.

Debriefings

Debriefings will be conducted after every flight during which a significant operational deviation, event, or conflict has occurred. Deviations from standard operating procedures should be thoroughly reviewed and discussed. Utilize the following debriefing format:

1. What happened during the flight?
2. What did you think about what happened?
3. What should we do differently next time?
4. Recap what went well/what could be improved.

9.5 Positive Exchange of Flight Controls

A positive three-step process on the exchange of flight controls between pilots has been adopted to help eliminate confusion and ensure safety in the training environment. This is used to ensure there is a clear understanding between crewmembers regarding who has control of the aircraft. Designating the PF is a required component of the initial preflight briefing. The use of these procedures should be used thereafter to exchange duty responsibilities until the conclusion of the flight. The procedure is to be executed as follows:

Example:

Flight Instructor (PF) to Student (PM): *"Your Flight Controls"*
Student (PF) to Flight Instructor (PM): [Assumes Control] *"My Flight Controls"*
Flight Instructor (PM) to Student (PF): [Visually Verifies Control) *"Your Flight Controls"*

9.6 Radio Communications

Clear and concise use of radio communications is critical to flight safety. It ensures understanding of expectations set forth by Air Traffic Control (ATC) as well as effectively communicates intentions to other aircraft. Students and renters should always assume a professional etiquette while in-contact with ATC, and while operating on air-to-air or CTAF Frequencies. Language should be consistent with that prescribed in the Aeronautical Information Manual and should effectively communicate with as few words as possible.

9.7 Sterile Cockpit Procedures

Similar to airline operations, FlightCerts students must adhere to the sterile cockpit policy. During critical phases of flight, activities are limited to those required for the safe operation of the aircraft – nothing else.

During sterile cockpit, nonessential conversation (other than training) or any other activity that could interfere with either pilot's duties or the safe operation of the flight are prohibited. Critical phases of flight include:

- All ground operations, including taxi, takeoff, and landing.
- All flight operations, except for cruise flight following the completion of the Cruise Checklist and prior to the completion of the In-Range/ Descent Checklist.
- Within 1,000' of assigned altitude during a climb or descent. This helps prevent altitude deviations by allowing pilots to carefully monitor the transition to the assigned altitude.

9.8 Night Operations

Per federal regulation, navigation lights must always be on during night operations. When performing night training operations, FlightCerts aircraft must be compliant with IFR instrument requirements (even if operating VFR). IFR procedures should be used when possible. Renters are admonished to maintain instrument currency before completing any night operations and to file IFR if possible.

9.9 Minimum Fuel Requirements

FlightCert's minimum fuel requirements are more restrictive than FAA regulations. A 1.5 hour fuel reserve must be maintained in the aircraft at all times. This is calculated by appropriately determining the fuel required to complete the training flight, plus the added reserve fuel. This means local training flights must not depart with less than 2.5 hours of fuel on board providing a 1 hour planned training flight.

Full fuel tanks are required for all cross-country training flights. Crews may depart with less than full tanks only if unable to fly safely due to operational necessity (weight and balance or performance).

9.9 Altitude Awareness

Upon receipt of a new altitude assignment, the PM will write down the assigned altitude and read it back to ATC using standard phraseology. The PF then confirms with the PM to ensure both pilots have the same understanding of the clearance.

> Example ATC: "N472FC climb and maintain niner thousand"
>
> PM to ATC: (writes clearance) "*Climb to niner thousand, 472FC*"
>
> PF to PM: "*Niner thousand*" (begins climb)

The PM must hear the PF's confirmation and verify it is correct. If any discrepancy or confusion exists, the PM must immediately contact ATC for clarification. While climbing or descending to a new altitudes, the PF must also make standardized callouts to help maintain altitude and clearance awareness.

1,000' Altitude Call

The PF must perform the 1,000' call when within 1,000' from the assigned altitude during a climb or descent. For example, when climbing to 6,000', the callout is "*Five for Six Thousand*". When descending to 6,000', the callout is "*Seven for Six Thousand*". This is preferable over "1,000 to go" or "1,000 feet". These procedures minimize the chances of an altitude deviation.

100' Altitude Call

The PF must perform the 100' call when within 100' from the assigned altitude during a climb or descent. For example, when climbing to 6,000', the callout is *"100 to go"*. When descending to 6,000', the callout is *"100 to go"*.

9.9 Heading and Course Awareness

Upon receipt of a new heading or course assignment, the PM will write down the clearance and read it back to ATC using standard phraseology. The PF then confirms with the PM to ensure both pilots have the same understanding of the clearance.

Example ATC: "N472FC proceed direct XYZ VOR"
PM to ATC: (writes clearance) "*Direct XYZ VOR, 472FC*"
PF to PM: "*Direct XYZ*"

The PM must hear the PF's confirmation and verify it is correct. If any discrepancy or confusion exists, the PM must immediately contact ATC for clarification.

The PM is responsible for inputting the clearance in the GPS and navigation radios as appropriate. The PF must visually verify all GPS or NAV inputs before the PM executes the change (presses ENT or switches frequencies). This helps eliminate deviations by having both pilots confirm all route changes before proceeding on the new course. The PF is responsible for setting the heading bug and course on the HSI unless he or she requests assistance from the PM.

9.11 Airspace Entry/Exit

Anytime the aircraft is operating within the confines of controlled class B, C, or D airspace, exterior aircraft lighting should be on. This increases aircraft visibility to other aircraft and helps ensure traffic avoidance. The use of the landing light, specifically, should also be used as a reminder to the pilot of their airspace entry/exit clearance if applicable. This can help reduce the risk of pilot deviation and is an excellent habit to perform as a routine procedure.

9.12 ADS-B Compliance

The FAA requires ADS-B Out capability in the continental United States, in the ADS-B rule airspace designated by FAR 91.225 These are as follows:

- Class A, B, and C airspace;
- Class E airspace at or above 10,000 feet msl, excluding airspace at and below 2,500 feet agl;
- Within 30 nautical miles of a Class B primary airport (the Mode C veil);
- Above the ceiling and within the lateral boundaries of Class B or Class C airspace up to 10,000 feet;
- Class E airspace over the Gulf of Mexico, at and above 3,000 feet msl, within 12 nm of the U.S. coast.

In lieu of these requirements, FlightCerts aircraft are equipped with a tail position light system which activates ADS-B capability when the Nav/Position lights are in the ON position. It is recommended that during ANY flight outside of normal practice areas, that the NAV lights be turned on regardless of time of day. This will help to ensure compliance with ADS-B requirements.

9.13 Flap Settings

Anytime the flap position of the aircraft is changed while airborne, it is imperative that crews ensure the aircraft is in a safe position, at a safe airspeed, and within operating limitations to do so. This is accomplished with a challenge and response call out to be performed by both the PF and PM. Flap position should never be changed below 300' AGL unless specific required by a checklist procedure.

Flap Deployment

The flap setting is initiated by the Pilot Flying (or by the flight instructor if training) with the callout **"Speed Check".** The Pilot Monitoring (or flight instructor) will then verify that the aircraft is within operating limitations for flap extension. This is confirmed with the PM callout **"Verified"**. The PF will then call out the desired flap position and perform said action.

Example:	Pilot Flying	Pilot Monitoring
	"Speed Check"	*"Verified"*
	"Flaps 25"	

If the flap position is being extended to the full position the ***"Flaps Full"*** callout should be used. If it is ever determined that the aircraft is not within safe operating speed, the Pilot Monitoring should withhold their ***"Verified"*** call out until it is safe to do so. The Pilot Flying should never adjust the flaps until the PM (or FI) has provided appropriate verification.

Flap Retraction

Flap Retraction is initiated by the Pilot Flying (or by the flight instructor if training) with the callout ***"Speed Check"***. The Pilot Monitoring (or flight instructor) will then verify that the aircraft is at a safe airspeed for flap retraction to avoid an aerodynamic stall. This is confirmed with the PM callout "Verified". The PF will then call out the desired flap position and perform said action.

Example:	Pilot Flying	Pilot Monitoring
	"Speed Check"	***"Verified"***
	"Flaps 25"	

Flap retraction while airborne should always be done incrementally (at least 3 seconds at each position) to allow for laminar airflow to rejoin the upper camber of the wing between flap positions. If the flaps are being retracted from their level 1 setting the "***Flaps Up"*** callout should be used. If it is ever determined that the aircraft is not within safe operating airspeed, the Pilot Monitoring should withhold their ***"Verified"*** call out until it is safe to do so. The Pilot Flying should never adjust the flaps until the PM (or FI) has provided appropriate verification.

Subpart B: Pre-Flight Procedures

10.1 General

Pre-flight includes all activities leading up to the start of any flight operation. It includes mission critical tasks such as briefings, obtaining a weather briefing, necessary performance calculations, and inspection of the aircraft for airworthiness. Completing a thorough preflight is one of the best ways to ensure a safe flight.

10.2 Aeronautical Decision Making

Aeronautical Decisions Making should be integrated as a core lesson concept for every flight. The Flight Instructor should inform students of appropriate strategies, FAA resources, as well as incorporate scenario based instructional methods to challenge student's critical thinking skills.

During training, Flight Instructors are chiefly responsible for the safety of flight and key decision making. However, as students' progress, instructors should increasingly transition these responsibilities to the student. Regardless of ultimately responsibility, flight safety is always a team effort and requires all parties to execute the highest degree of risk awareness and decision making. Making the go/no-go decision is one of the first of these decisions. It requires careful consideration of conditions, flight objectives, and self-awareness of pilot abilities. It is key to the pre-flight process.

10.2 Aircraft Dispatch

Pilots and student aircraft renters may schedule their flight activities using our online schedule application. Renters should arrive 15 minutes prior to their scheduled flight activity to ensure adequate time to complete preflight procedures and avoid delays. Upon arrival, Students should "Check-Out" their aircraft in the flight schedule software and brief relevant Squawks, upcoming maintenance items, as well as make note of those who may have the aircraft reserved following their reservation.

Information will be provided to renters on the location of their aircraft's operations binder. The binder will contain the aircraft's keys, Weight and Balance information, operations log, and any information pertinent to the renters attention. It is imperative that the renter verify and transcribe the "Hobbs" and "Tach" times noted in the operations log section at the start and end of aircraft operation.

10.3 Take-Off Data Card (TOLD)

14 CFR § 91.103 of the Federal Aviation Regulations requires that all pilots complete a pre-flight action to include knowledge of: Notices to Airman (NOTAMs), weather, known air traffic control delays, runway lengths of intended use, alternates (if required), fuel requirements, as well as take-off/landing distances. Pilots should complete a Take-Off Data Card also known as Take-Off and Landing Data (TOLD) card within at least one hour of anticipated departure. It is available on the FlightCerts website as well as in the aircraft operations binder.

10.5 Preflight Briefing

All training operations should start with a preflight briefing between the student and the instructor. This should cover lesson concepts, objectives, as well as clearly set expectations for the student based on lesson requirements. Student's should try to get appropriate questions answered before the start of the lesson and ensure complete understanding of lesson concepts prior to the start of the flight. It should be during this discussion that a risk assessment also undertaken by the student and instructor to finalize the "go/no-go" decisions. Aeronautical Decision-Making models should be utilized whenever possible and all training decisions should be made jointly between crewmembers. During the preflight briefing, the Flight Instructor should also review the students TOLD card for accuracy and complete a preflight weather briefing with the student.

Subpart C: Ramp & Taxi Operations

11.1 General

The risk for aircraft related incidents and damage is most high during ramp operations and taxi operations. Many avoidable accidents occur as a result of pilots rushing through taxi operations, failing to complete necessary checklists, or operating too closely to other vehicles or obstructions. The use of these procedures is intended to reduce ground operation incidents and provide a best practice guide for students and renters.

11.2 Fuel Servicing

Fueling is only to be completed by FlightCerts authorized personnel. If away from base, an FBO should always be utilized if available for fuel servicing. Students and aircraft renters may only utilize self-service fueling after receiving training and/or verbal permission from an authorized instructor.

11.3 Passenger Briefing

Title 14 of the Code of Federal Regulations (14 CFR) §91.107—require pilots to brief passengers on how to fasten and unfasten seat belts and (if installed) safety harnesses. To ensure this requirement is appropriately satisfied as well as to ensure the safety of those passengers aboard FlightCerts we have adopted the following acronym to standardize our preflight passenger briefings. These items must be reviewed as necessary prior to the starting of the aircraft's engine.

S – Seat Belts: Explain how to operate to passengers.

A – Air Vents: Show passengers the location and operation of air vents

F – Fire Extinguishers: Point out their location in the aircraft (if equipped) and their use.

E – Exits: Brief your passengers on the location and operation of aircraft exits.

T – Talking & Traffic: Explain the sterile cockpit concept as well as alerting the pilot to air traffic.

Y – Your Questions: Cover any questions your passengers may have.

11.4 Seatbelt Use

Federal Regulations require the briefing and use of seatbelts during taxi, takeoff, and landing. Flightcerts goes beyond this regulation by also requiring students to use shoulder harnesses during training operations if equipped in the aircraft.

11.5 Starting Procedures

Appropriate checklists should always be utilized whenever executing engine start procedures. The beacon or Anti-collision light is required to be illuminated before starting the aircraft's engine. The aircraft should always be position in such a way to ensure propeller wash will not affect nearby persons or equipment. The PF should open a window and advise those nearby of the intention to start the engine with the call out ***"CLEAR PROP".*** The PF & PM should be diligent to verify the propeller and surrounding area are clear prior to engaging the starter.

11.6 Taxi Clearances & Briefing

The taxi briefing should occur immediately after receiving an appropriate clearance from ground control or upon initial taxi to departure runways. The pilot should always write down their taxi clearance from the ground controller and immediately confirm instructions once received. The PF should then reference the airports current taxiway diagram and verify the taxi route with the PM (or FI) being sure to note any Hot Spots or special considerations. If the airport does not have an active controller, the PF should complete the taxi brief before making a traffic advisory/radio call.

11.7 Taxiing Procedures & Restrictions

During taxiing, the aircraft should always be operated at a safe speed no faster than brisk walking speed. Aircraft should always be on taxiway centerlines when available and within areas approved for aircraft ONLY. Proper controls from wind should be used per manufacturer guidelines. Aircraft are never to be taxied into/out of Hangar spaces. If it is ever necessary to maneuver an aircraft into a confined space or fueling facility the aircrafts engine should be shut down and the aircraft towed or manually pushed into the correct position.

Anytime the aircraft is in motion the PF should focus his/her attention strictly outside of the cockpit and eliminate distractions. The PM should assist the PF with duties inside the cockpit as well as ensure the appropriate clearing of areas. Pilots should avoid taxi over objects, deteriorated pavement, and rocky areas. If the pilot becomes lost or is unfamiliar with the airport, the aircraft should be stopped and "Progressive Taxi" requested from the from appropriate controller (if available). If taxiing at night, aircraft position lights should always be in the ON position.

Brake Check

The crew should always perform a brake check of all braking systems upon initial taxi. This is done by PF initiating the call out "Brake Check" then both pilots exchanging flight controls and testing their set of brake pedals or control lever (if installed). Pilots should apply a small amount of power then apply braking to ensure the aircraft can safely be brought to a complete stop.

Instrument Cockpit Check (ICC)

The PF is responsible for ensuring the completion of an Instrument Cockpit Check upon initial taxi. This is especially critical when operating under Instrument Flight Rules. The ICC is the only Challenge and Response/Flow check completed while on the ground. It is a verification of the gyroscopic instruments as well as the magnetic compass to ensure their correct operation. The ICC and its respective callouts should be completed as follows during the first turn of taxi:

Pilot Flying	Pilot Monitoring (or PF)	Action
"Magnetic Compass"	*"True & Correct"*	Moves freely and correct with turn
"Attitude"	*"Level"*	Remains level throughout turn
"Heading"	*"DG Verified Correct"*	Rotates into correct direction & Heading
"Turn Coordinator"	*"Banking into Turn"*	The wings bank into the direction of turn
"Inclinometer"	*"Outside of the turn"*	"ball" drifts outside & opposite the turn

Taxiways, Controlled Areas, & Movement Area Entry

When the aircraft maneuvers into the movement area the PF should appropriately announce (Call Out) the entry of that space as well as any controlled areas thereafter (ie: ***"Entering the Movement Area"***, "*Entering Taxiway Bravo"*, ect). Upon entry of intersections and transition areas the PF and PM should also appropriately clear the area. This should be accomplished and confirmed with the following callout as appropriate: *PF: "Clear Left, Clear Center, Clear Right" PM: "All Clear"*.

11.8 Runway Incursion Avoidance

Pilots should be especially vigilant when operating near active runways, crossings, hold short areas, or upon exiting the runway after landing. These areas present uniquely high risks for runway incursion incidence. Therefore, the highest degree of situational awareness should be paid while operating in these areas. If while taxing, instructed to "hold short" of an active runway, pilots should be careful to approach hold short lines slowly and position the aircraft at a safe distance away from other vehicles or obstructions.

Runway entry is ONLY authorized after obtaining an appropriate ATC clearance (or making appropriate radio advisory announcement), verifying runway signage, and visually ensuring the final approach path and runway environment is clear of persons, vehicles, and obstructions. This is affirmed in the cockpit by the PF announcing, *"Final Clear, Runway Clear, Entering Runway [insert runway number]".* At which point the pilot will illuminate all exterior aircraft lighting and expedite taxi across the runway environment. Upon exiting of any active runway, the PF should announce *"Clear of [runway number]"* as appropriate at which point appropriate exterior lighting may be extinguished. Radio calls should be made as appropriate at uncontrolled fields as soon as practicable to ensure runway safety.

11.9 Equipment Operational Check & Engine Run-Ups

A pre-departure operational check is required for every departure unless for stop and go activities where the aircraft's engine was in continuous operation. Each FlightCert's aircraft will have its respective run-up checklist and respective call-outs in the aircraft operations binder. If this is unavailable, your aircraft's Pilot Operating Handbook will contain an appropriate checklist which may be used in lieu of this requirement. Aircraft run-ups should only be completed in approved areas on the airport. Before the start of the checklist, the aircraft should be positioned so that propeller wash does not affect nearby aircraft or equipment.

Subpart D: Departure Procedures

12.1 Departure Briefing

Take-off is a very fast paced operation where it is critical for crew members to be well-prepared and have a clear understanding of applicable procedures. Therefore, prior to each takeoff, it is important for pilots to clearly state and agree to a plan of action. This is especially important in the event of an emergency

The brief should review flight fuel requirements, required runway lengths and performance, departure procedures, weather considerations, as well as a plan to deal with an engine failure or other emergency during takeoff. Reviewing the plan between both pilots reduces the risk for a pilot deviation as well as increases safety since both pilots are better prepared to handle an emergency.

Since each takeoff is unique – with different runways, potential landing sites, weather conditions, changing pilot-flying/pilot-monitoring roles, various airplanes and performance capabilities – there is no such thing as a standard briefing. Crews must be prepared to meet the demands of each takeoff, and must conduct briefings accordingly. Briefings for each takeoff also provide the opportunity for both crewmembers to participate, learn from each other, and work better together as a crew. Below is an example of a Departure Briefing:

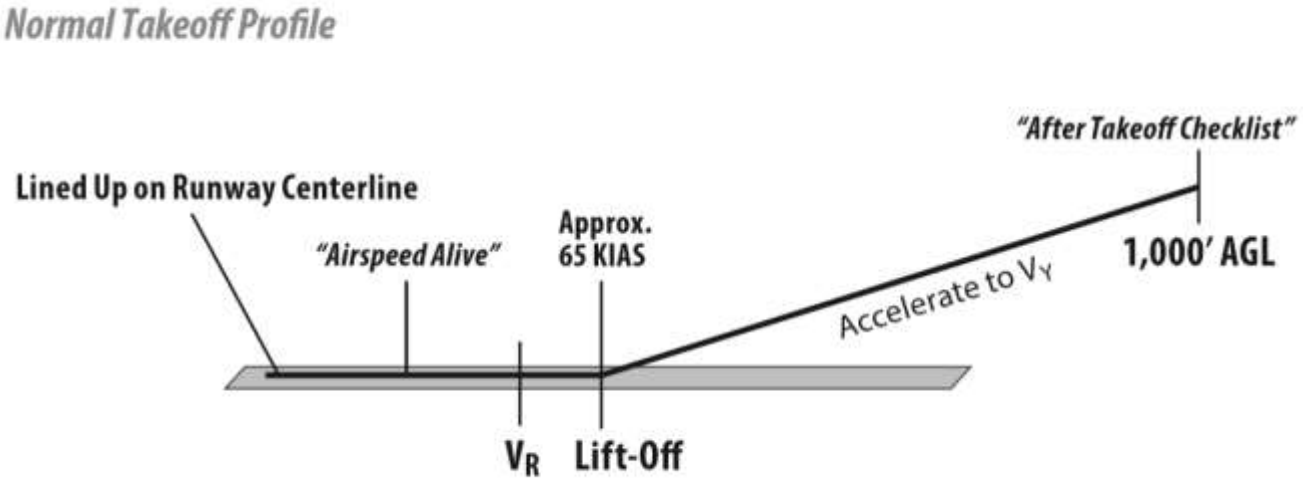
"Today we are going to be departing runway 26 Right. There is 4,500' of available runway. With a current density altitude of 1,200' we will need 450' for take-off. There is currently an 8 kt crosswind during takeoff. Rotation speed will be 50 kts, climb speed will be 80 kts. We will be climbing to an initial altitude of 4,000'; anticipating a left downwind departure and contact flight service for flight following on 122.2.

In the event of an emergency: I will be the Pilot-In-Command and you will be the pilot monitoring. If we have an abnormal indication while on our take off roll we will call "abort", decelerate and exit the runway. If we are airborne and experience a power failure under 500 feet AGL and do not have remaining available runway to land, we will pick a suitable landing spot straight ahead, and you will turn off all avionics and unlatch your door. If we are over 500feet and below 1000ft AGL we will pick a landing position within 30 degrees of our heading avoiding obstacles. If above 1000ft AGL, we will attempt to return to the field and land on the nearest available runway."

12.2 Normal Take-Off

The following procedure should be followed for all Normal Take-off procedures. Runway entry should only occur after completing the appropriate checklists, visually verifying the runway/approach environment is clear, obtaining an appropriate clearance (or advisory call), and completing the appropriate associated crew call outs. ***Do not delay on the runway.***

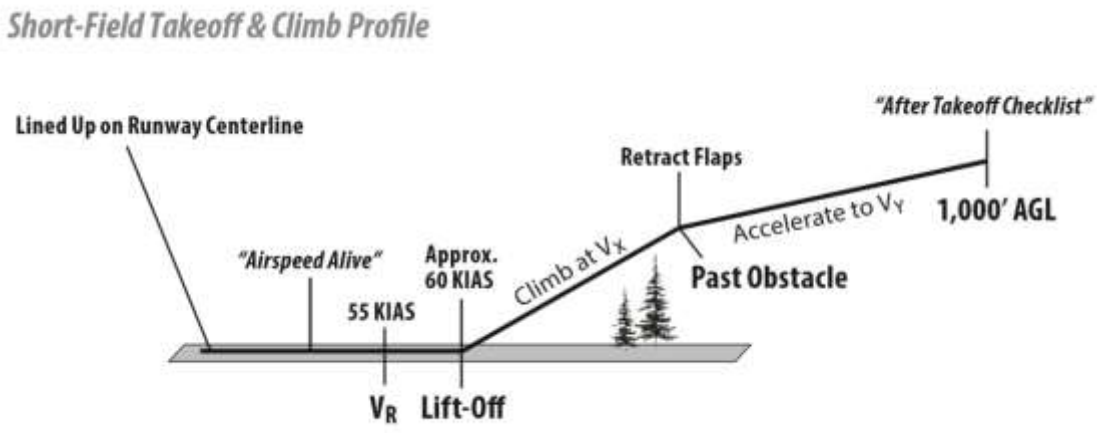
Procedure	**Call Out**
1. Line up on centerline, position controls for wind	
2. Verify the runway heading with the Directional Gyro (DG)	*"Heading" "Verified"*
3. Advance to Full-Throttle	*"Full Throttle"*
4. Hold Brakes	
5. Check engine gauges and ensure operating within normal range.	*"Engine Normal" "Check" ("Abort")*
6. Release brakes	
7. Accelerate on runway (Reduce wind correction as airspeed increases)	*"Airspeed Alive"*
8. Decision point, commit to take-off or complete abort procedure	*"Continue" ("Abort")*
9. Reach Rotation Speed (Vr)	"Rotate"
10. Verify Positive VSI. Establish Best Rate of Climb	*"Positive Rate, Vy"*
11. Reaching 1,000' AGL, PM Initiates After Takeoff Checklist	*"After Takeoff Checklist"*



12.3 Short-Field Take Off & Climb

When it is not possible for the aircraft to be airborne within the first 1/3 of the runway the Short-Field Take Off and Climb procedure should be used. This is based on the aircraft's calculated takeoff performance referenced by the TOLD card. Runway entry should only occur after completing the appropriate checklists, visually verifying the runway/approach environment is clear, obtaining an appropriate clearance (or advisory call), and completing the appropriate associated crew call outs. ***Do not delay on the runway.***

Action	**Call Out**
1. Set flaps to 25°	*"Flaps 25" "Set"*
2. Taxi aircraft to very edge of runway & position controls for wind	
3. Verify the runway heading with the Directional Gyro (DG)	*"Heading" "Verified"*
4. Hold brakes	
5. Advance to Full-Throttle	*"Full Throttle"*
6. Check engine gauges and ensure operating within normal range.	*"Engine Normal" "Check" ("Abort")*
7. Release brakes	
8. Accelerate down runway	*"Airspeed Alive"*
9. All indications normal & committing to take-off	*"Continue" ("Abort")*
10. Begin Rotation when within 5 kts of normal Vr)	*"Rotate"*
11. Establish Max Angle of Climb (Vx)	*"Positive Rate, Vx"*
12. Obstacle Clearance altitude reached; Establish Best Rate of Climb	*"Vy"*
13. Verify Safe Airspeed for flap retraction	*"Speed Check" "Verified"*
14. Retract Flaps to 0° (Ensure above 500' AGL)	*"Flaps Up"*
15. Reaching 1,000' AGL, PM Initiates After Takeoff Checklist	"After Takeoff Checklist"

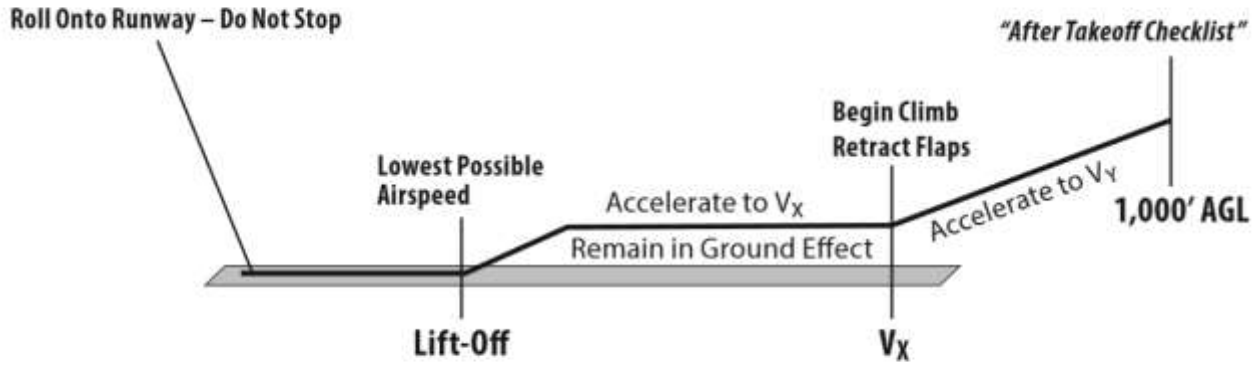


12.4 Soft-Field Take Off & Climb

When operating on runway surfaces other than asphalt or for training operations the Shoft-Field Take Off and Climb procedure should be used. Runway entry should only occur after completing the appropriate checklists, visually verifying the runway/approach environment is clear, obtaining an appropriate clearance (or advisory call), and completing the appropriate associated crew call outs. ***Do not delay on the runway.***

	Action	**Call Out**
1.	Set flaps to 25°	*"Flaps 25" "Set"*
2.	Continuous taxi of aircraft onto runway. Controls full-aft. Avoid stopping	
3.	Verify the runway heading with the Directional Gyro (DG)	*"Heading" "Verified"*
4.	Position flight controls for wind	
5.	Smoothly advance to Full-Throttle	*"Full Throttle"*
6.	Check engine gauges and ensure operating within normal range.	*"Engine Normal" "Check" ("Abort)*
7.	Accelerate down runway (Maintain aft elevator pressure)	*"Airspeed Alive"*
8.	All indications normal & committing to take-off	*"Continue" ("Abort")*
9.	Lift off at lowest possible airspeed	*"Airborne"*
10.	Accelerate to Vx in ground effect	
11.	Establish Max Angle of Climb (Vx)	*"Vx, Positive Rate"*
12.	Obstacle Clearance altitude reached; Establish Best Rate of Climb	*"Vy"*
13.	Verify Safe Airspeed for flap retraction	*"Speed Check" "Verified"*
14.	Retract Flaps to 0° (Ensure above 500' AGL)	*"Flaps Up"*
15.	Reaching 1,000' AGL, PM Initiates After Takeoff Checklist	"After Takeoff Checklist"

Soft-Field Takeoff & Climb Profile



12.5 Aborted Take-Offs

At any time during a takeoff procedure, ANY crewmember determines it is unsafe to continue the take-off, the "Abort" callout should be announced. The PF should immediately retard the throttles, apply braking as necessary, make appropriate radio transmission, and exit the runway as soon as practicable. No crewmember is ever to question the judgement of the member calling for the abandonment of the take-off procedure. The Abort procedure is compulsory upon its announcement.

Subpart E: Cruising Procedures

13.1 Fuel Management

Fuel Selectors

Many accidents and forced landings have occurred because pilots failed to manage their fuel properly, resulting in an engine "failure" due to fuel starvation. In fact, fuel starvation is a leading cause of engine "failures" in general aviation aircraft. In many cases, aircraft with plenty of fuel on board crashed or experienced forced landings because the fuel selector was positioned in a way that prevented fuel from reaching the engine. During flight operations, both students and instructors are responsible for monitoring fuel levels and maintaining balanced fuel loads.

Changing Fuel Selector Position

The changing of fuel selector position may only be changed once airborne, at a safe altitude of at least 1,000' AGL, and established in cruise flight. Do not change the fuel selector position at any time during a critical phases of flight, including takeoff and landing operations below pattern altitude, unless specifically called for by an emergency checklist. Also, do not switch the fuel tanks or change the fuel selector position once the run-up has been completed. An engine may run on the fuel in the lines for several minutes after the fuel supply has been interrupted, so switching tanks just before takeoff can cause an engine failure during takeoff.

Keeping Track of Fuel Burn & Time Enroute

Some aircraft may not have a fuel selector which allow for the BOTH position. Pilots must monitor fuel burn as the flight progresses to maintain a balanced fuel load. Throughout operation, checklists will call for "Fuel Selector...Proper Tank". "Proper Tank" usually means the fullest tank, indicating pilots should alternate tanks at regular intervals. During long cross-country flights, set a timer and switch to the fullest tank every 15 minutes, or as prescribed by the aircrafts operating handbook, to maintain a balanced fuel load.

It is the crew's responsibility to plan for and keep track of fuel consumption and flight duration as the flight progresses. If an in-flight delay will extend a flight's duration over the authorized limits, the crew must divert to a suitable alternate airport.

13.2 Engine Mixture Controls

Adjusting of the aircraft's engine mixture control is a safety sensitive task which should only be done after thorough training on its correct technique. Flight instructors should brief students on their first lesson to ensure clear distinction of the engine control lever as they can sometimes be confused by students. Instructors should also be vigilant to monitor students anytime the aircraft's mixture is adjusted.

13.3 Weather Monitoring & Hazards to Safety of Flight

Enroute Weather

In addition to the departure and destination airport, the route selected must also allow for potential diversion airports which also comply with above stated VFR and IFR minimums.

Deteriorating Weather Enroute

Weather may deteriorate while enroute. Crews should obtain weather updates enroute with Flight Service to ensure that weather ahead has not changed. If hazardous weather is detected ahead, a route change or diversion may be necessary.

High Terrain

High terrain may be obscured by clouds or low visibility conditions, and fewer alternate/diversion airports may be available in high terrain areas. Crews must use extreme caution while operating in mountainous terrain in instrument conditions. Monitor progress using VFR charts and always be aware of MEAs, MORAs, and OROCAs.

Hazardous Weather

Thunderstorms

Avoiding thunderstorms starts with preflight planning, which must include a review of radar observations and convective SIGMETs. Once enroute, a good visual scan is your best tool for thunderstorm avoidance. ATC can relay groundbased radar information to pilots, but their responsibility is traffic separation, not weather avoidance. Choosing a route that avoids thunderstorms is your responsibility. Do not hesitate to request deviations to avoid weather, and do not accept an ATC clearance that would result in flying into hazardous weather.

If a safe flight path cannot be found, divert to a suitable alternate airport and wait for the weather to pass. Continuing into a thunderstorm will expose your aircraft to extreme hazards to flight: hail, turbulence, icing, lightning, etc., which can cause loss of control or structural failure.

Icing

FlightCert's adheres to the clean aircraft concept, which prohibits takeoff when any frost, snow or ice is adhering to any part of the aircraft including the airframe, propellers, windshield, powerplants, pitot-static system, wings, tail, or control surfaces. If the aircraft is not completely free of contamination, do not fly. Contact FlightCert's Flight Operations for instructions.

Known Icing Conditions

FlightCert's aircraft are not certified for flight into known icing conditions. Icing conditions are most likely to occur at temperatures between +2° C and -10° C when visible moisture is present. Turn the pitot heat ON and regularly cycle the Carburetor Heat (if equipped) any time the outside temperature is 10° C or less and visible moisture is present. Crews must avoid icing by checking freezing levels along the route of flight and by planning an altitude that ensures a minimal risk of an icing encounter. Check for icing PIREPs to determine areas of known icing that must be avoided. If available, check the altitudes of cloud bases and tops, to determine whether you can safely climb or descend out of visible moisture. Select pitot heat ON any time the temperature is 10° C or less and visible moisture is present. If any trace of ice is observed apply windshield heat and escape the icing conditions immediately.

Induction Icing

Carburetor Icing can pose a significant risk to flight operations when encountered and can result in in-flight power loss or complete powerplant failure. This form of icing can be encountered in outside air temperatures as high as 70° F when moisture is present. It is important to closely monitor engine performance via the RPM gauge and manifold pressure gauge (if equipped) as well as listen for potential changes in engine function. If a loss of either RPM or Manifold pressure is detected or an auditory change is noticed in engine function, Carburetor heat should be applied until ice is cleared from the induction system and engine performance is restored. It is recommended to regularly operate this system, especially while operating at reduced power settings. It is best practice to cycle the carburetor heat at least every 30 minutes.

Escaping Icing

Encountering icing conditions in an aircraft not certified for flight into icing conditions is an emergency and should be treated accordingly. Should an inadvertent icing encounter occur, immediately:

1. Select pitot heat and windshield heat – ON
2. Regularly Cycle the Carburetor Heat (if equipped)
3. Climb, descend or change course to escape icing conditions.
4. Declare an Emergency.

Even a small buildup of icing can affect the performance and controllability of an aircraft, and icing conditions can change rapidly. What begins as a slow accretion of ice can quickly change to a rapid, extremely dangerous accumulation.

Turbulence

Turbulence intensity is reported in PIREPs and other weather products using the following terminology:

- Light turbulence: momentarily causes slight erratic changes in altitude and/or attitude.
- Moderate turbulence is similar to light turbulence, but of greater intensity. Changes in altitude and/or attitude occur, but the aircraft remains in positive control at all times. It usually causes variations in indicated airspeed.
- Severe turbulence causes large, abrupt changes in altitude and/or attitude. It usually causes large variations in indicated airspeed and the aircraft may be momentarily out of control.
- Extreme turbulence exists when the aircraft is violently tossed about and is practically impossible to control. It may cause structural damage.

Turbulence can be encountered anywhere, during any phase of flight, but the risk of significant turbulence is greatest near mountainous terrain where mountain wave activity may be present, when winds aloft (below 10,000' AGL) are reported greater than 30mph, and in areas of convective activity. Look for signs of turbulence during preflight planning by checking AIRMETs, PIREPs along your route, and by planning routes that avoid convective activity or mountainous terrain during periods of high winds.

Despite even the best planning efforts, not all turbulence can be avoided. If moderate or greater turbulence is encountered, slow the aircraft to maneuvering speed, Va. During severe or greater turbulence, focus on maintaining a wings-level flight attitude, not necessarily on maintaining altitude, as attempts to do so can result in unnecessary stress on the airframe. Maintain a wings-level pitch attitude and advise ATC you are unable to maintain altitude due to turbulence.

Obtaining Weather Updates Enroute

Contacting Flight Service to contact Flight Service, you can transmit a request on the general Flight Service Station frequency of 122.2. However, you will often get help more quickly by contacting a specific FSS. To do so, locate on your enroute chart the VOR or remote communications outlet (RCO) closest to your current location that indicates Flight Service Station frequencies. The frequency above the VOR or RCO information box may be utilized to communicate with the Flight Service Station.

PIREPs

Pilot reports, also known as PIREPs, allow pilots to provide (and receive) up-to date weather information including general weather info, sky cover, cloud bases and tops, winds, turbulence, and icing. Check PIREPs while obtaining a preflight weather briefing with a briefer or by using the ForeFlight PIREPs feature. If time allows, consider filing a PIREP inflight to assist your fellow pilots. You can do so by contacting any FSS. To make filing a PIREP easier, ForeFlight's Scratchpad feature contains a PIREP template that lists all possible PIREP components, although you do not need to provide every possible piece of information to submit a valid PIREP. For example, to submit a turbulence PIREP, provide the location, time, altitude, type of aircraft, and turbulence observation (using the intensity levels discussed above).

Subpart F: Arrival Procedures

14.1 Approach Briefing

Before beginning the initial decent, conduct an approach briefing. This is required for IFR flights by reviewing the approach plate but should also be used for VFR operations. The approach briefing solidifies a plan of action and ensures effective communication between pilots. The briefing should be specific to each approach and landing and address all items covered in IFR approach plates in addition to those items covered in VFR operations.

Below are Important items to incorporate in an Approach Briefings:

IFR Approach Briefing

Approach Name & Type
Initial Approach Fix
Field Elevation
NAV Frequency
Course Glideslope Intercept or FAF
Altitude Minimums
Missed Approach Procedure

VFR Approach Briefing

Landing Runway & Length
Review Performance data (Landing Distance)
Traffic Pattern Altitude & Direction
Expected Arrival Routing
Wind Direction & Speed (Note Crosswinds)
Approach Speeds
Aiming & Touchdown Point
Go-Around Criteria & Plan

14.2 Descent

The descent checklist and approach briefing (if landing) should be complete prior to the initiation of any decent. Mixture should be returned to the full-rich position if a descent is being made to altitudes of 2,000' MSL or less. Airspeed and or VSI indications should be used as a primary reference (by FI) to govern descent criteria as much as possible.

14.3 Stabilized Approach Criteria

Ensuring a stabilized approach is critical to ensure a safe landing. At any point along final approach, or passed the FAF, the approach is to become unstable an go-around or missed approach procedure should be executed. Stabilized approach criteria must be met prior to 300' AGL for Visual Approaches, and 1,000' AGL for Instrument Approaches. Criteria is as follows:

- **Aircraft Configured**: Flaps set, trim set, landing gear down & locked, cabin secured

- **On Airspeed**: Stable airspeed and within +10 and -0 of target airspeed.

- **On Glide Path & Descent Rate**: The aircraft should be on a safe and consistent glide path to the runway. Utilize VASI or PAPI for visual approaches (if available), use Glide Slope for Precision Approaches. The Vertical Speed should generally not exceed 500 ft/min. The aircraft must be able to touch down with the first 1,000' of available runway.

- **On Centerline:** The aircraft is centered on the runway centerline or remain within a 2 dot deflection of the CDI deflection for instrument approaches.

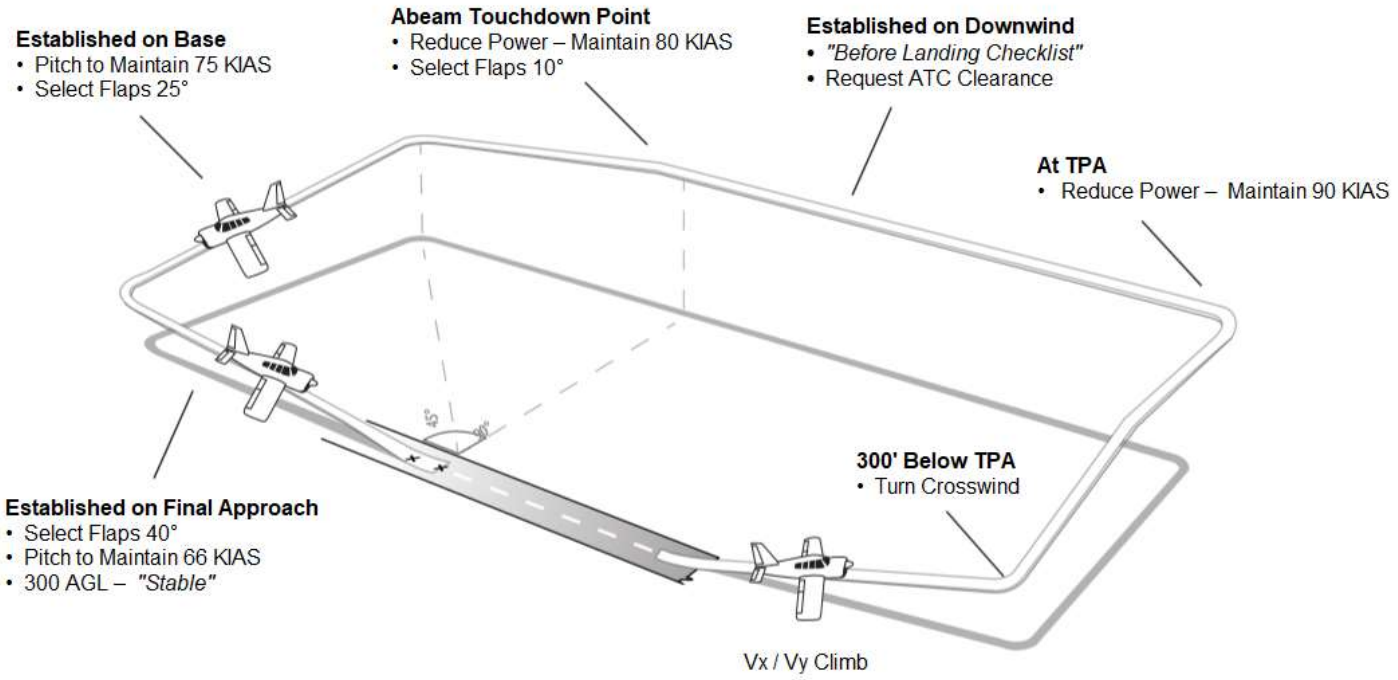
14.4 Traffic Pattern Operations

When operating in the traffic pattern for the purposes of take-off and landing practice, the following procedures should be used. Environmental and applicable restrictions may sometimes necessitate amendment to meet operational needs. Refer to section 14.7 Gust Factor for applicable approach speed adjustments when wind conditions necessitate.

During closed traffic operations, the fuel selector should only be transitioned every 4 cycles. The fuel pump should always remain active and the mixture at full rich unless otherwise instructed. Transfer of tanks should be kept at a minimum and only done as necessary. See below section for applicable crew coordination call-out procedures:

	Action	**Call Out**
1.	Complete Normal Take-Off Procedures	[See 12.2 Normal Take-Off]
2.	Reach Rotation Speed (Vr)	"Rotate"
3.	Verify Positive VSI. Establish Best Rate of Climb	"Positive Rate, Vy"
4.	Complete Traffic Pattern Radio Calls for each leg segment	
5.	On Downwind complete Abbreviated Approach Briefing	
6.	Immediately after Briefing	*"Before Landing Checklists"*
7.	Verify Safe Airspeed for each flap deployment	*"Speed Check" "Verified"*
8.	Select appropriate flap position	*"Flaps 10°, Flaps 25°, Flaps 40°"*
9.	At 300' AGL established on Final Approach	*"Stable, Landing"* [or Going Around]

Traffic Pattern Operations Profile

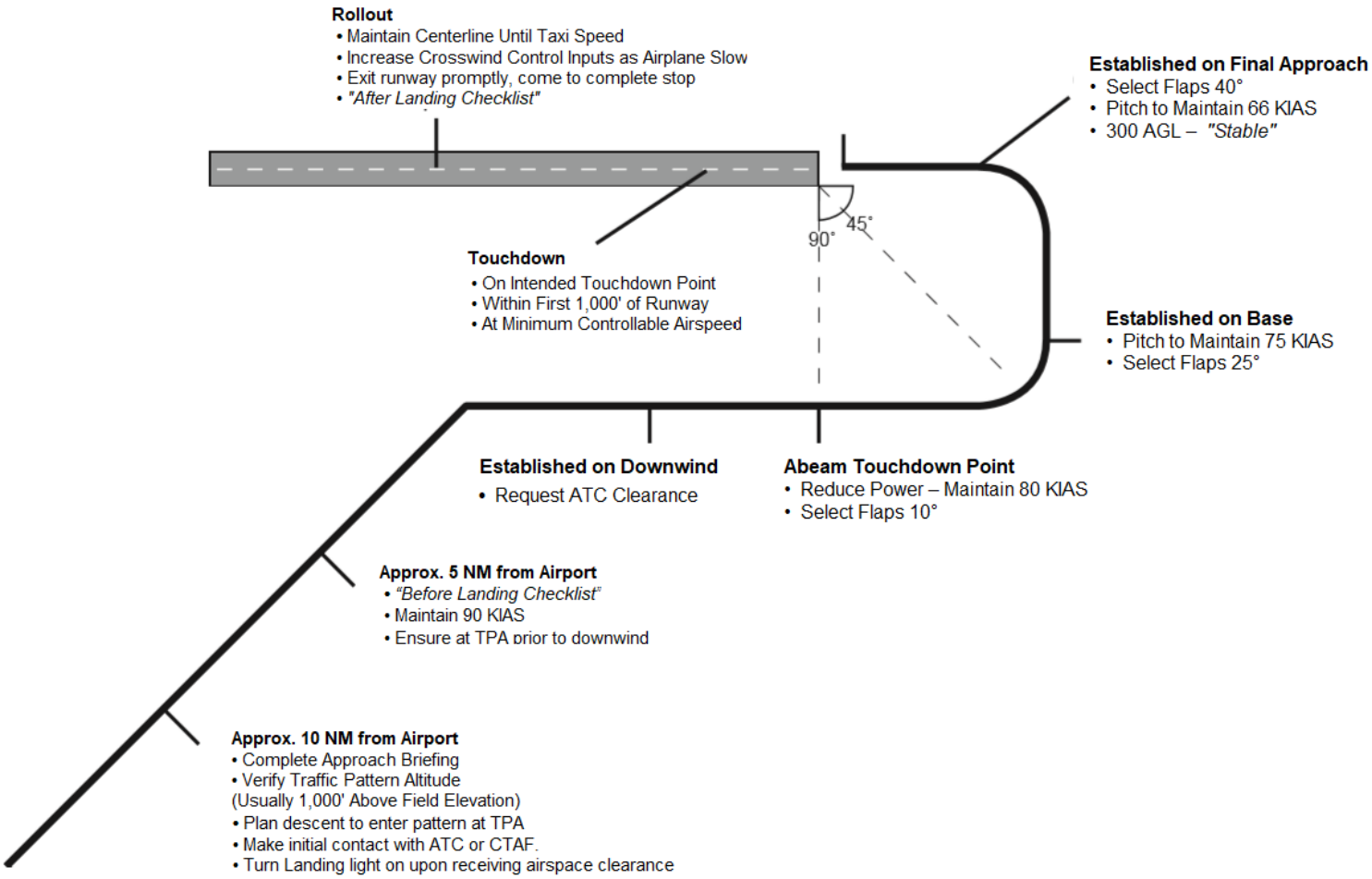


14.5 Normal VFR Approaches & Landing

During the normal VFR approach procedure, effective crew resource management should be used to ensure appropriate workload during safety critical times. All checklists and briefings should take place as early as practicable. At the point of airspace entry, attention of the crew should be predominantly shifted outside of the cockpit for traffic avoidance.

Every approach is different; however, whenever possible, a 45° entry on the downwind leg should be used. For other approved approach entries, refer to the Aeronautical Information Manual. Since every approach is different and presents different risk factors, an effective approach briefing should include special considerations made for each approach. Ultimately, the aircraft's configuration and cockpit task management are left to the pilot's discretion. See below for a sample visual approach.

The stabilized approach corridor is required for visual approaches in FlightCert's aircraft. The aircraft must be stabilized by 300' AGL on final approach. If this is not achieved a "Go-Around" procedure (See Section 14.10) should be performed.



14.6 Crosswind Approaches & Landing

Carefully planned adjustments must be made to the normal approach and landing procedure to safely complete a crosswind approach and landing. Crosswind procedures require a great deal of skill and practice. Consideration should be given to a pilot's personal limitations before operating aircraft in such conditions. When a pilot is out of proficiency with crosswind techniques, he/she should plan to fly with an instructor before attempting to do so solo.

Planning

Before entering the traffic pattern, brief how your approach and landing will be different by acknowledging the wind direction, crosswind component, planned flap setting, and how your traffic pattern ground track will differ as a result of the winds. It may be necessary to increase approach speeds to allow for greater rudder control authority.

Ground Track

Plan a crab angle on downwind to maintain a uniform distance from the runway. Begin the base turn so the airplane is established on base at the appropriate distance from the runway. Do not allow the winds to blow the airplane off the intended ground track. Turning final, adjust for the winds to not over or undershoot the runway centerline.

Control Technique

Establish a crab angle to maintain the proper ground track on final, then transition to the wing-low sideslip technique by no later than 200' AGL and below. Maintain the wing-low technique until touchdown and throughout the landing roll. After landing, increase aileron input into the wind as the airplane slows to prevent the upwind wing from rising, reduce side-loading tendencies on the landing gear, and minimize the risk of roll-over accidents due to the upwind wing lifting.

Judgment

Consider your aircraft's demonstrated crosswind component found in the Pilot Operating Handbook. Regardless of reported winds, if the required bank to maintain drift control is such that full opposite rudder is required to prevent a turn toward the bank, the wind is too strong to safely land the airplane. Select another runway or airport and go-around any time the outcome of an approach or landing becomes uncertain. Remember to set, and be mindful of, your personal limitations.

14.7 Gust Factor

Wind conditions have led to a large percentage of loss of control general aviation accidents. These usually occur on takeoff and landing when the aircraft is at lower airspeeds. High variance in winds can greatly affect variance in airspeeds destabilizing an aircraft's approaches. Operating in high winds also significantly increases ground speeds leading to a greater likelihood for pilots to overshoot turns along approach. Pilots will typically use a higher bank angle in these cases, increasing load factor, and increasing the likelihood of an aerodynamic stall.

To avoid these risks, slightly higher approach speeds should be used under turbulent or gusty wind conditions. Add ½ the gust factor to the normal approach speed. For example, if the wind is reported 8 gusting to 18 knots, the gust factor is 10 knots. Add ½ the gust factor, 5 knots in this example, to the normal approach speed.

14.8 Soft-Field Approach & Landing

Starting from abeam the touchdown point, the soft-field approach procedures is identical to the normal visual approach procedure. Differences to the procedure are as follows and should be incorporated in the approach briefing:

1. On short final when landing is assured, select flaps 40° and slow to 66 KIAS.
2. Fly the airplane onto the ground, slowly transferring the weight from the wings to the main landing gear.
3. Touch down on intended touchdown point at minimum speed with a nose-high pitch attitude.
4. Keep the nosewheel off the ground as airplane slows by increasing elevator pressure.
5. Prevent nosewheel from rapidly falling by maintaining aft elevator pressure

14.9 Short-Field Approach & Landing

Starting from abeam the touchdown point, the short-field approach procedures is identical to the normal visual approach procedure. The approach may be steeper than that of a normal approach for considerations of obstacle clearance. This may require early deployment of flaps to help fly a steeper approach. Be sure to mention these considerations in the approach briefing. Differences to the procedure are as follows:

1. Select flaps 40° and slow to 66 KIAS on final when landing is assured.
2. Close throttle slowly during flare – touch down on intended touchdown point with little or no floating.
3. Prevent nosewheel from slamming onto the runway.
4. Retract the flaps after touchdown.
5. Apply (or Simulate for training & Checkride) and announce ***"Max Braking"***

14.10 Go-Arounds & Missed Approaches

Go-Around Procedure A go-around procedure must be initiated any time the conditions for a safe approach and landing are not met. Some examples of unsatisfactory approach and landing conditions are:

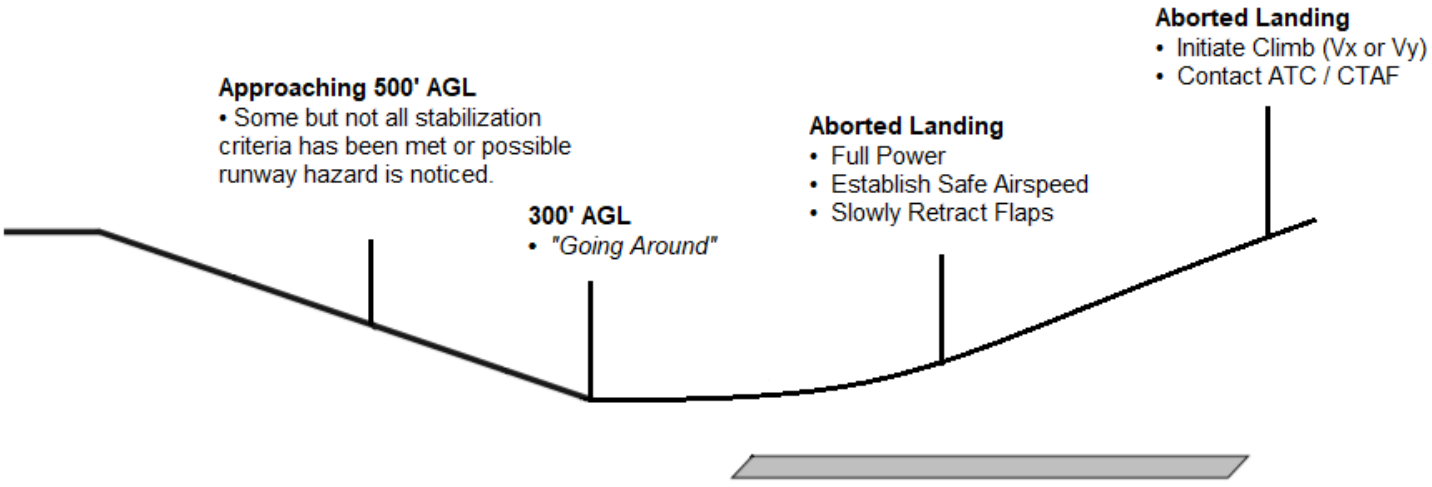
- Unstable approach path or airspeed.
- Improper runway alignment.
- Unexpected hazards on the runway or on final.
- Anything that jeopardizes a safe approach and landing.

Any time unsafe or unsatisfactory conditions are encountered, a go-around must be immediately executed, and another approach and landing should be made under more favorable conditions.

Go-Around / Missed Approach Procedure:

1. *"Go Around"*
2. Throttle – full power.
3. Establish safe airspeed and climb – 76 KIAS (Vy).
4. Perform *"Speed Check" "Verified"* and incrementally retract flaps (above 300' AGL)
5. *"After Takeoff Checklist"* at pattern altitude or out of 1,000' AGL.

If the go-around or missed approach is due to conflicting traffic, maneuver as necessary during the climb to clear and avoid conflicting traffic.

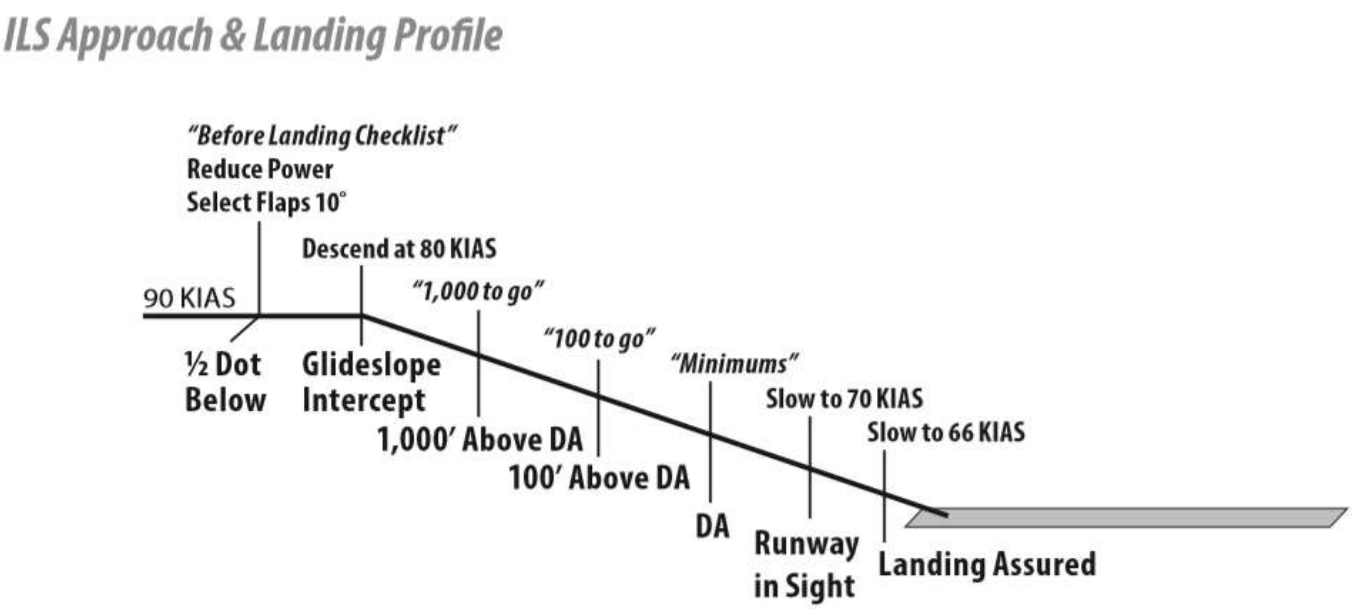


14.11 Instrument Approach Procedures

Precision Approach & Landing

FlightCerts recommends setting flaps 10° at glideslope intercept for ILS precision approaches. Flaps 10° allows for a stabilized approach to touchdown.

1. Complete the *"Approach Checklist"* and identify the localizer as early as possible.
2. Slow to 90 KIAS on vectors or when on final approach course inbound.
3. Announce *"Localizer Alive"* when localizer begins moving towards the center.
4. Announce *"Glideslope Alive"* when glideslope begins moving towards the center.
5. Verify no flags at glideslope intercept altitude and marker.
6. ½ dot below glideslope intercept: *"Before Landing Checklist."*
7. Reduce power, perform a *"Speed Check"* *"Verified"* and select *"Flaps 10°"*.
8. Descend on glideslope at 80 KIAS.
9. Announce at 1,000' above DA: *"1,000 to go, Stable"*
10. Announce at 100' above DA: *"100 to go."*
11. *"Minimums, Runway In Sight, Landing"* [or ***"Going Missed"***]
12. Descend and slow to 70 KIAS.
13. When landing is assured, slow to 66 KIAS until the roundout.



Non-Precision Approach & Landing

1. Load approach into the GPS, and select appropriate nav source and frequency.

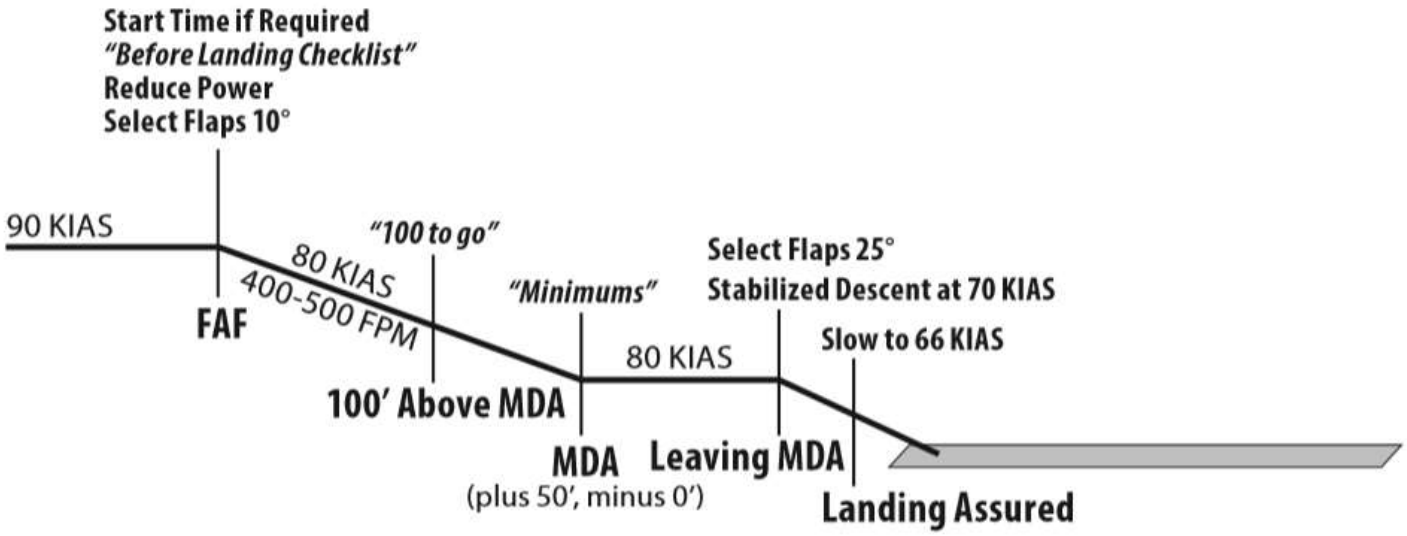
Within 30 NM of the airport, if flying a GPS approach, the GPS will display "TERM."

2. When Direct To IAF or on vectors, set the desired course on the CDI.
3. Complete the ***"Approach Checklist."***
4. Slow to 90 KIAS when on a published segment of the approach or if on vectors.

At 2 NM prior to the FAF on a GPS approach, verify green APCH flag on GPS. If no flag appears, DO NOT DESCEND at the FAF.

5. At FAF, complete ***"Before Landing Checklist"***
6. Perform a *"Speed Check"* *"Verified"* & select *"Flaps 10°"*. – Slow to 80 KIAS.
7. At FAF: start time if required.
8. Descend at 400-500 FPM (unless steeper descent required) at 80 KIAS.
9. Announce at 100' above MDA: ***"100 to go."***
10. Increase power 50' prior to reaching MDA to maintain 80 KIAS at level off.
11. ***"Minimum, Stable"***
12. Maintain MDA (plus 50', minus 0').
13. ***"Runway in sight, Landing"*** [or ***"Going Missed"***] descend at predetermined VDP or maintain MDA to MAP.
14. Do not leave MDA until landing can be accomplished using a stabilized descent angle and normal maneuvers.
15. When descending from MDA: Perform a *"Speed Check"* *"Verified"* & select *"Flaps 25°"* - 70 KIAS.
16. When landing assured, slow to 66 KIAS until the roundout.

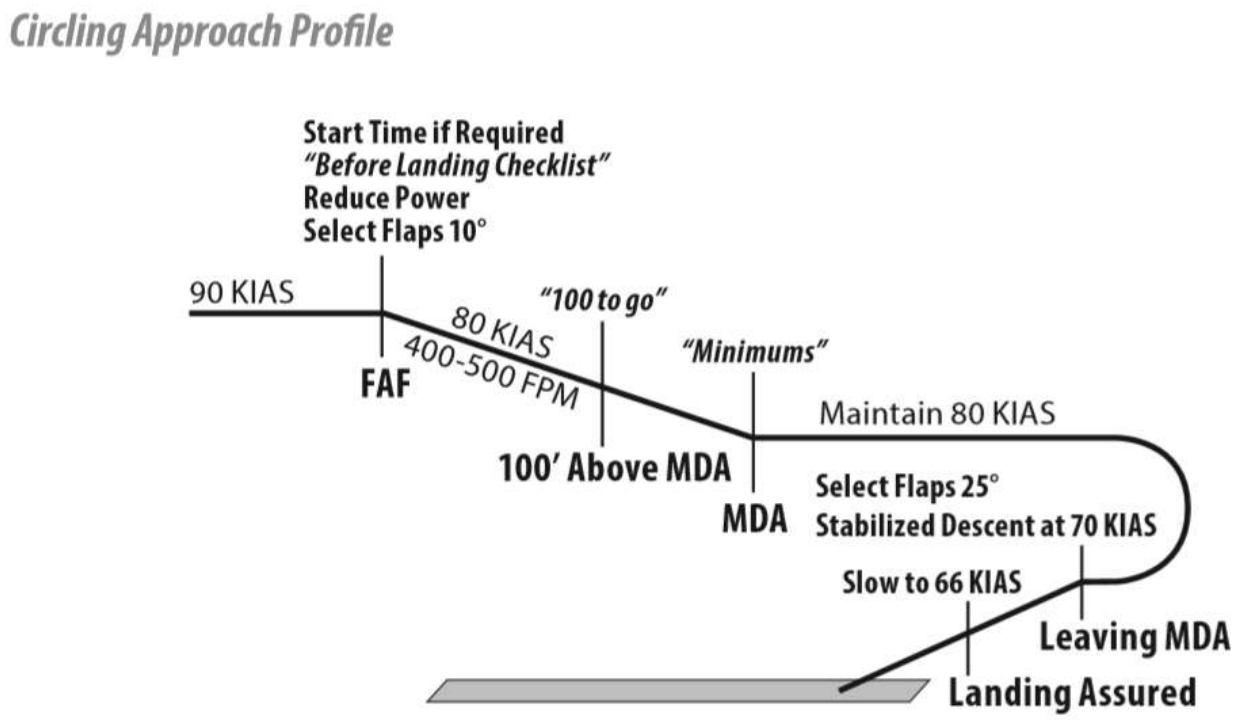
Non-Precision Approach & Landing Profile



Circling Approach

When conducting a circling approach (precision or non-precision), execute the approach with the same speeds at "***Flaps 10°***" to the published circling minimums. Maintain circling minimums at 80 KIAS, until in a position from which a normal landing may be made.

When descending from MDA (circling minimums): Perform a *"Speed Check"* *"Verified"* & select *"Flaps 25°"* - 70 KIAS. Slow to 66 KIAS when landing is assured.



Holding Procedures

1. Slow to 100 KIAS holding speed 3 minutes prior to fix
2. Make proper entry
3. As the fix is crossed announce *"Crossing Fix, [specify entry type]"*
4. Report altitude and time at holding fix
5. As each turn is completed announce *"Wings level, [specify: 'Inbound/Outbound']"*
6. Hold at 100 KIAS, with 1 minute leg to the inbound fix (unless otherwise specified)

Subpart G: Post Flight Operations

15.1 General

At the completion of every flight a thorough post flight procedure should be completed to include:

- Completion of the Aircraft Rental Log
- Properly Secure the Aircraft
- Close any active flight plans
- Report Squawks or Maintenance Abnormallies via appropriate procedure
- Post Flight De-Briefing to include grading of the student's lesson (if applicable)
- Check-in aircraft and complete payment via the Flight Schedule Pro app or other acceptable means

15.2 Aircraft Post flight Walk Around

The Pilot In Command (PIC) is responsible for ensuring the completion of the post flight walk around. This is done to verify that no damage or structural anomaly took place during a particular flight operation. During this, the student and instructor should appropriate secure the aircraft by first verifying that all electrical equipment is in the off position, installing the control wheel lock (or other approved means), using all available tie-downs (wings and tail), chocking the landing gear, and securing of the aircraft's coverings (fuselage and Pitot tube).

15.3 Reporting of Inoperative Equipment

If malfunction of equipment or component is noted during the flight the following procedure should be taken:

- Complete the appropriate Squawk form located in the aircraft rental binder
- Notify the Chief Flight Instructor via call and/or text. Who will then note the squawk in FSP.
- The equipment should then be deactivated by the Chief Instructor and placarded as INOP and its power source removed.
- Maintenance should be notified as soon as possible, and Flight Schedule Pro updated to reflect any relevant details regarding the squawk.

15.4 Post Flight Debrief

Ensuring student success is a fundamental part of instructional duties. Completion of Post-Flight Debrief is a fundamental time where this takes place where the CFI provides feedback on areas the student performed well, reaffirm overall lesson objectives, as well as provide feedback on areas of improvement. Thorough Debriefings should take approximately 10 minutes. It is in this time the instructor will also complete the lesson's evaluation form as well as inform the student of the next lessons objective and student resources.

15.5 Aircraft Close-out Procedures

Once the renter has completed their scheduled activity, respective flight times should be transcribed in the operation log. The renter should then login to their flight schedule account and “Close Out” their flight. This is done by filling in the necessary times in the “Completed Flight” prompt and saving the users updates.

15.6 Payment & Reimbursements

Payment for instruction and aircraft rental activities are to be assessed immediately following the scheduled activity. Payment can be completed via the online system or directly with your flight instructor using acceptable methods. If a block purchase was made, these times will be deducted from the students training account. A credit card is always required to be on file with the flight school. If payment is more than 72 hours past due, the students schedule access may be temporarily restricted until payment is complete. Students may not schedule nor complete future training activities until all fees are assessed from outstanding account balances.

Fuel Reimbursements

Times may require for students to fuel aircraft at airports other than the aircraft’s home-base. If required, students will be responsible for the initial purchase of fuel. This may be deducted from rental costs or reimbursed to the renter upon providing a service receipt.

IV. Flight Training Maneuvers Guide

Subpart A: General

16.1 General

This portion of the Standard Operating Procedures cauterizes flight training maneuver procedures which may be unique to FlightCerts operations. Procedures here should be used with reference to the FAA Airmen Certification Standards respective to the airmen certificate sought. A more detailed textual description of these training maneuvers can be found in the Airplane Flying Handbook. This is available for free on the FAA's website. Where questions exist, please ask your CFI for clarification. These procedures are not meant to supersede any material published by the FAA and should only be used as a best practice guide by which FlightCerts instruction is administered.

16.2 Practice Areas

Before the completion of any inflight training maneuvers, it is the responsibility of all active crew members to ensure the aircraft is in appropriate airspace to conduct such operations. *Practice areas* are designated as those "which are at a safe distance from airports, congested airspace, and allow for suitable landing areas in the event of an emergency". Flight instructors will brief students on areas suitable for these types of operations. Applicable safety precautions should be taken to improve safety when operating in these areas. This includes the use of aircraft exterior lighting for collision avoidance, making appropriate advisory radio calls, and diligence scanning for traffic.

16.3 Clearing Turns

Before completing training maneuvers, a clearing turn should be executed to visually check for other traffic and obstacles. This is done by completing two consecutive 90 degree turns, starting to left, then to the right.

16.4 Maneuvers Ground Instruction

Flight Instructors are responsible for appropriately reviewing applicable aerodynamic and flight operating procedures with students relevant to the respective maneuvers to be practiced prior to departure. This is to verify appropriate student understanding of concepts critical to improving flight safety, as well as to improve student understanding and knowledge retention.

16.4 Scenario-Based Training

Where deemed appropriate, Flight Instructors should incorporate Scenario-Based Training into the student's curriculum. This can be accomplished by using the footnoted lesson SBT items which can be found in some training maneuvers. Doing so may help students to conceptualize learning objectives; allowing them to better apply skills and knowledge more effectively to real-world, every day, flying. These items can also provide a healthy measure by which instructors can analyze and evaluate student performance. SBT is a fundament part of helping to introduce aeronautical decision making skills as well as risk management into the training curriculum.

Subpart B: Slow Flight & Stall Maneuvers

17.1 Maneuvering During Slow Flight

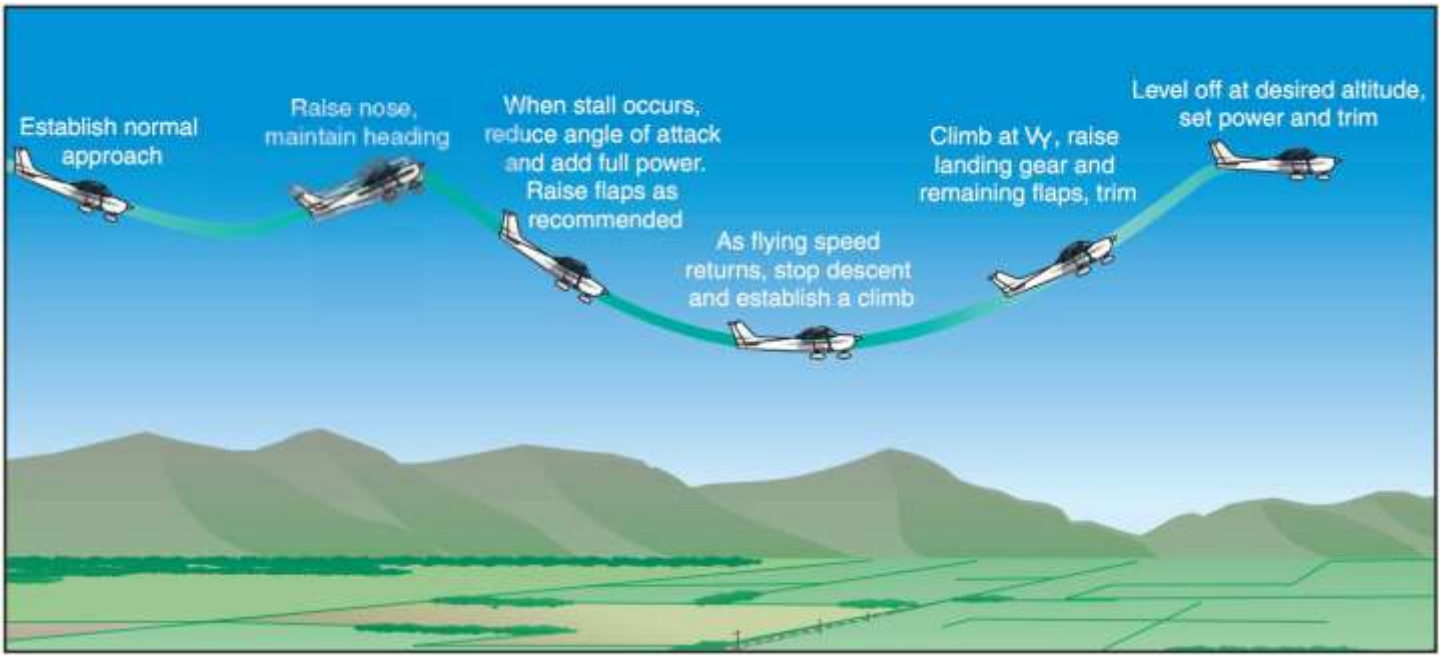
Slow flight is to be accomplished at an entry altitude that will allow completion above 1,500' AGL. Establish and maintain an airspeed at which any further increase in angle of attack, increase in load factor, or reduction in power would result in a stall warning (e.g., aircraft buffet, stall horn, etc.).

1. Perform clearing turn and *"HELL Check"*
2. Landing configuration flow:
    a. *"Lights—ON"*
    b. *"Fuel Pump—ON"*
    c. *"Gas—Fullest Tank"*
    d. *"Mixture—RICH"*
    e. *"Seatbelts—Fasten"*
    f. Reduce power (approx. 1,500 rpm for PA28-140)
    g. Increase aft pitch pressure to maintain altitude
    h. *"Flaps [announce each setting]"*
3. Maintain altitude – slow to just above stall warning activation (approximately 50-55 KIAS). Trim as necessary.
4. Power as required to maintain airspeed and altitude. (Pitch for airspeed, throttle for altitude)
    Note: properly apply right rudder pressure with application of power to maintain aircraft coordination.
5. Accomplish level flight, climbs, turns, and descents as required without activating a stall warning (Shallow turns)
6. *"Recover"* –
    a. *"Full Power"* (maintain altitude): Apply right rudder as power increases to maintain coordination.
    b. Establish safe airspeed and Reduce flaps to 0° Example: *"Speed Check" "Verified"—"Flaps 25°"*
    c. Retrim as necessary
7. Accelerate to Vx
8. *"Cruise Checklist"*

17.2 Power-Off Stalls

Aerodynamic stalls can occur when the aircraft's critical angle of attack is exceeded. In flight training, we train this maneuver to familiarize pilots with an aircraft's stall characteristics, improve the student's ability to identify an impending stall, as well as demonstrate proper recovery technique; making returning the aircraft to positive control an intuitive maneuver which is intrinsic to the pilot's abilities. The Power-OFF stall is specifically practiced to familiarize the student with approach to landing type stalls since this type of maneuver involves a low and slow, landing configuration.

SBT: create an imaginary "deck" altitude to simulate a low to ground altitude. Demonstrate a tight turn from base-final maneuver starting at a simulated 300 agl where a stall indication is created.



Step by Step Procedure

1. Ensure a safe altitude (at least 1,500 ft AGL) and perform a clearing turn and *"HELL Check"*
2. While maintaining altitude and heading, complete the Landing configuration flow:
    a. *"Landing Checklist"*
    b. *"Lights—ON"*
    c. *"Fuel Pump—ON"*
    d. *"Gas—Fullest Tank"*
    e. *"Mixture—RICH"*
    f. *"Seatbelts—Fasten"*
    g. *"Flaps [as specified]"*
    h. [visually verify checklist] *"Landing Checklist Complete"*
2. Reduce power (approx. 1,500 rpm for PA28-140), establish decent at 80 kts KIAS (Approx. 500 fpm).
    a. *"Flaps [announce each setting]"*
3. Continue to increase aft elevator pressure to reduce airspeed to aggravate an aerodynamic stall.

5. Maintain aircraft coordination via reference to the inclinometer and applying necessary rudder input.

4. As the aircraft approaches an aerodynamic stall (Vs1), note control sluggishness, increased need for control input, and longitudinal static instability.

6. Upon notice of any stall indication (Ie: stall horn, stall light, control buffet, loss of control effectiveness), announce *"Stall Indicated"* – immediately proceed to recovery.

   NOTE: If specified by your instructor or examiner, continue maneuver to a FULL stall. This will result in an exacerbation of the stall characteristic which will lead to a sudden loss of flight control and/or sudden un-commanded nose-down pitch attitude. IN CASE OF SPIN ENTRY: Immediately apply opposite rudder, neutral aileron, pitch forward, and reduce power, smoothly return aircraft to level flight.

8. *"Recover"* –

   a. *"Full Power"* Apply right rudder as power increases to maintain coordination.

   b. Reduce the angle of attack by applying forward pitch and reestablish positive control (minimal loss of altitude)

   b. Establish safe airspeed (60 kts KIAS), Reduce flaps incrementally to 0°, and initiate a climb at Vy.

   Example: *"Speed Check" "Verified"—"Flaps 25°"*

   c. Retrim as necessary

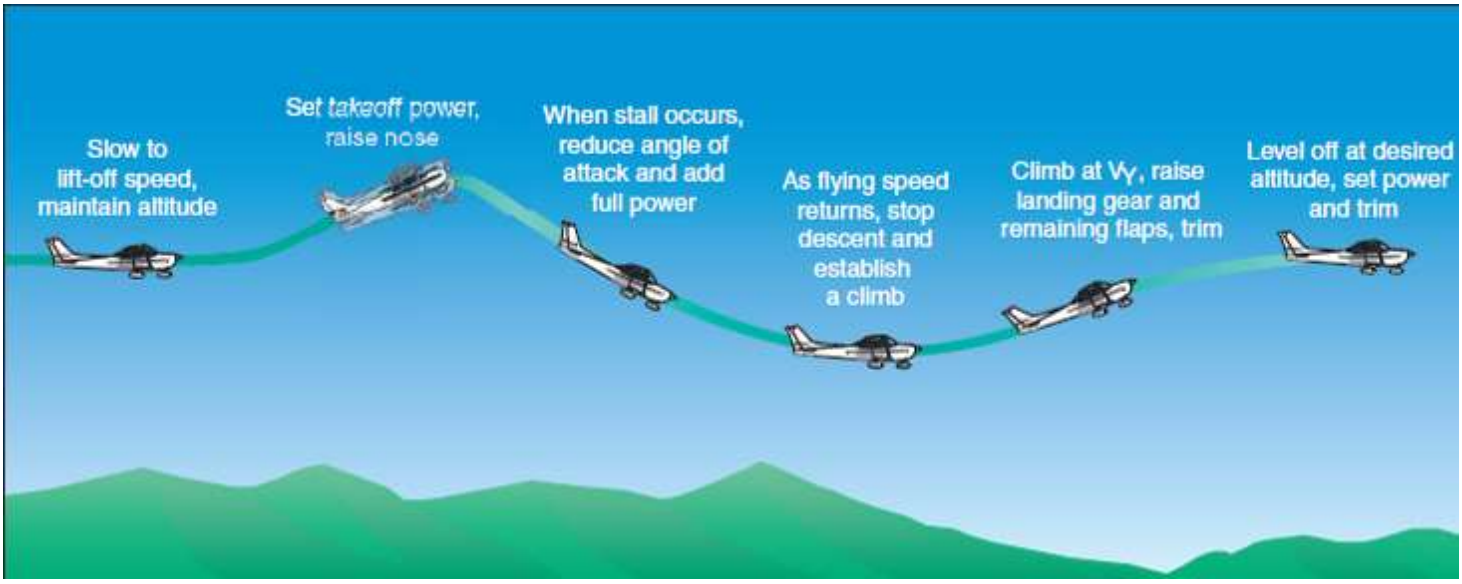
9. *"Cruise Checklist"*

‘

17.3 Power-On Stalls

Aerodynamic stalls can occur when the aircraft's critical angle of attack is exceeded. In flight training, we train this maneuver to familiarize pilots with an aircraft's stall characteristics, improve the student's ability to identify an impending stall, as well as demonstrate proper recovery technique; making returning the aircraft to positive control an intuitive maneuver which is intrinsic to the pilot's abilities. The Power-ON stall is specifically practiced to familiarize the student with a departure or climb type stall, since this type of maneuver involves a low and slow, take-off configuration.

SBT: create an imaginary "deck" altitude to simulate an airport altitude. Demonstrate a takeoff from this deck altitude and induce a stall immediately after rotation to demonstrate low altitude recovery. (can also be completed in Simulator)



Step by Step Procedure

1. Ensure a safe altitude (at least 1,500 ft AGL) and perform a clearing turn and *"HELL Check"*
2. While maintaining altitude and heading, complete the Landing configuration flow:
   a. *"TakeOff Checklist"*
   b. *"Lights—ON"*
   c. *"Fuel Pump—ON"*
   d. [visually verify checklist] *"Takeoff Checklist Complete"*
3. Reduce power (approx. 1,500 rpm for PA28-140), maintain altitude by increasing aft elevator pitch.
4. Continue to increase aft elevator pressure to reduce airspeed rotation speed (Vr).
5. At rotation speed, apply "Full Power", Maintain aircraft coordination via reference to the inclinometer and applying necessary rudder input. Simulate liftoff by calling "Rotate" and abruptly pitching up to establish a pitch attude which will aggravate a stall.

5. As the aircraft approaches an aerodynamic stall, note control sluggishness, increased need for control input, and longitudinal static instability. Ensure adequate right rudder as high pitch attitude with high engine settings can induce severely uncoordinated flight aggravating a possible spin.

6. Upon notice of any stall indication (Ie: stall horn, stall light, control buffet, loss of control effectiveness), announce" Stall *"Stall Indicated"* – immediately proceed to recovery.

   NOTE: If specified by your instructor or examiner, continue maneuver to a FULL stall. This will result in an exacerbation of the stall characteristic which will lead to a sudden loss of flight control and/or sudden un-commanded nose-down pitch attitude. IN CASE OF SPIN ENTRY: Immediately apply opposite rudder, neutral aileron, pitch forward, and reduce power, smoothly return aircraft to level flight.

7. *"Recover"* –

   a. *"Full Power"* Apply right rudder as power increases to maintain coordination.

   b. Reduce the angle of attack by applying forward pitch and reestablish positive control. (minimal loss of altitude)

   b. Establish safe airspeed (60 kts KIAS), Reduce flaps incrementally to 0°, and initiate a climb at Vy.

   Example: *"Speed Check" "Verified"—"Flaps 25°"*

   c. Retrim as necessary

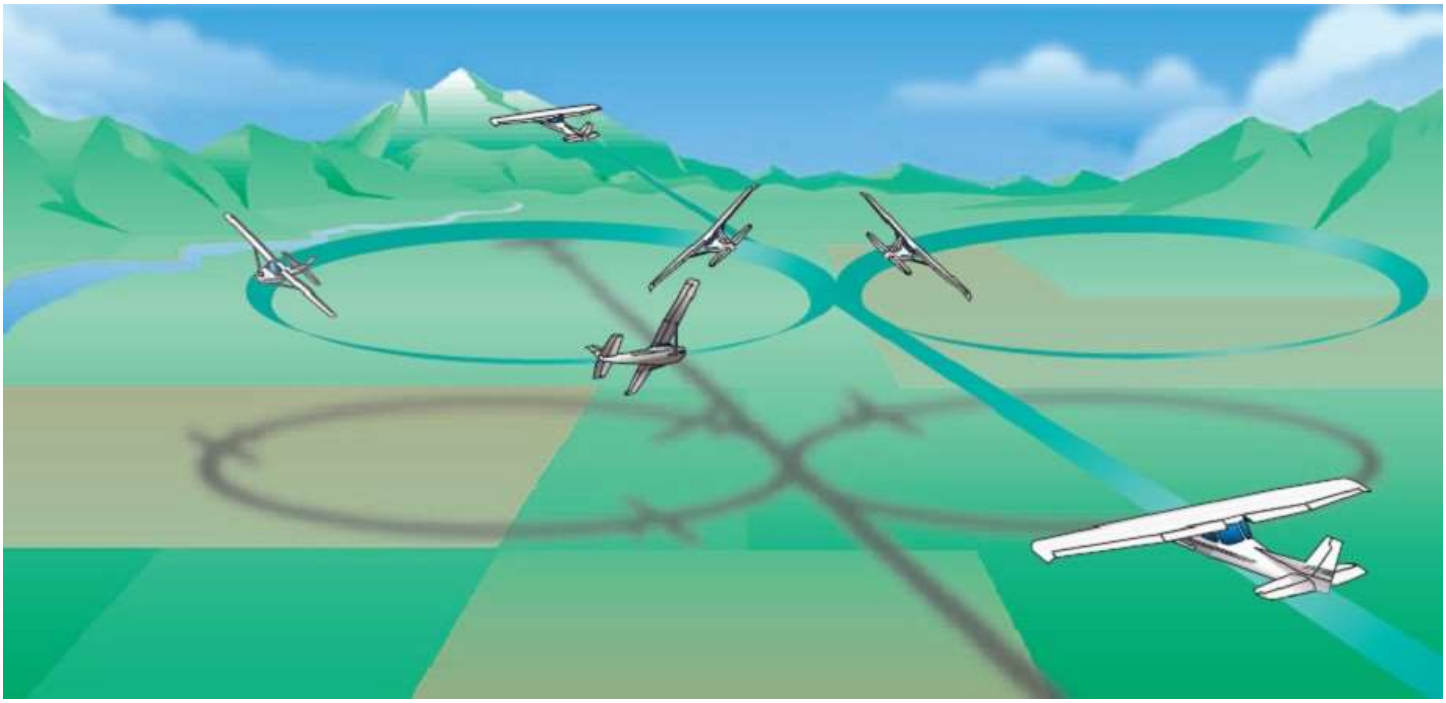
9. *"Cruise Checklist"*

Subpart C: Performance Maneuvers

18.1 Steep Turns

Steep turns are to be accomplished above 3,000' AGL. Roll into one coordinated 360˚ turn, then follow with another coordinated 360˚ turn in the opposite direction. Roll into and out of turns at approximately the same rate.

1. Perform two 90° clearing turns followed by a *"HELL Check"* – Note an outside heading reference
2. Enter at 90 KIAS verify this by Completing a *"Speed Check – Below Maneuvering Speed (Va)"*
3. Roll into 45° bank using coordinated aileron and rudder to maintain aircraft coordination.
5. Maintain altitude and airspeed (+ back pressure, + approx. 1-200 RPM) It may be necessary to apply opposite aileron pressure to prevent an overbanking tendency while in bank attitudes in excess of 30°
6. Roll out ½ bank angle prior to entry heading
7. Clear traffic and roll in opposite direction
8. Roll out ½ bank angle prior to entry heading (outside reference) using coordinated aileron and rudder pressure.
9. *"Cruise Checklist"*



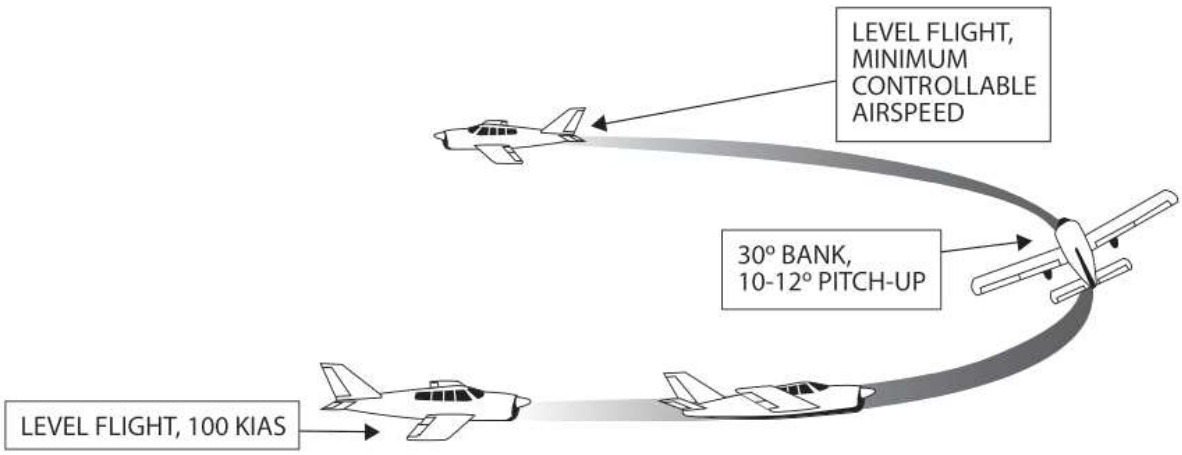
18.2 Chandelles

Chandelles are to be accomplished at an entry altitude that will allow completion no lower than 1,500' AGL, and consist of one maximum performance climbing turn beginning from straight-and-level flight, and ending at the completion of a precise 180° turn in a wings-level, nose-high attitude at the minimum controllable airspeed.

1. Perform two 90° clearing turns and complete *"HELL Check"*
2. 100 KIAS (approx. 2300 RPM), maintain altitude
3. Clean configuration flow
4. Choose a reference point off wing
5. Establish / maintain 30° bank
6. Full throttle – increase pitch to attain approx. 10-12° pitch up at 90° point

   1st 90° of turn – Bank = constant 30°, Pitch = increasing to 10-12° pitch up
7. 90° point – maintain pitch, reduce bank angle to attain level flight at 180° point

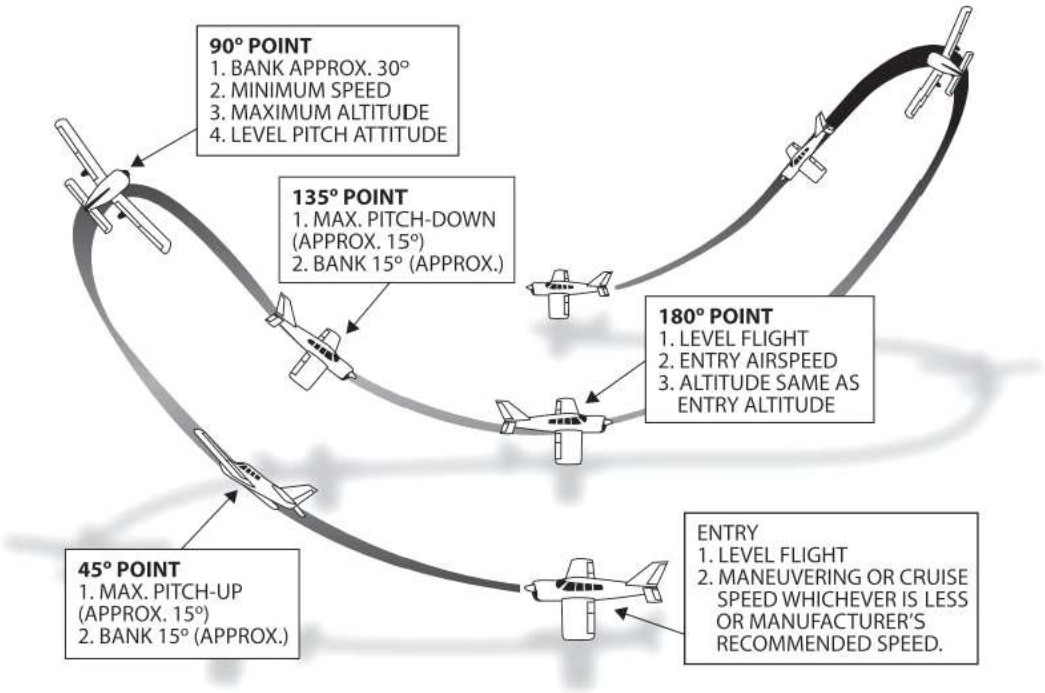
   2nd 90° of turn – Pitch = constant 10-12° pitch up, Bank = decreasing to level flight
8. 180° point – wings level, minimum controllable airspeed
9. Accelerate while maintaining level flight
10. *"Cruise Checklist"*



18.3 Lazy 8's

Lazy Eights are to be accomplished at an entry altitude that will allow the task to be completed no lower than 1,500' AGL. The applicant is required to maintain coordinated flight throughout the maneuver, with a constant change of pitch and roll rate.

1. Perform two 90° clearing turns and complete *"HELL Check"*
2. 100 KIAS (approx. 2300 RPM), maintain altitude
3. Clean configuration flow
4. Choose a reference point off of the wing
5. Simultaneously increase pitch and bank (slowly)
6. 45° point – 15° pitch up, 15° bank
7. Reduce pitch / increase bank
8. 90° point – level pitch, 30° bank - min. speed (5-10 knots above stall)
9. Continue reducing pitch and reduce bank
10. 135° point – 15° pitch down, 15° bank
11. 180° point – level flight, entry airspeed and altitude
12. Repeat in opposite direction
13. *"Cruise Checklist"*



18.4 Power-Off 180° Accuracy Approach

1. Begin the maneuver by flying parallel to the runway, correcting for crosswind, at a distance that aligns the runway with the wingtip.

2. When abeam runway end, smoothly reduce power to idle.

3. Maintain altitude while slowing to 80 KIAS, then descend out of TPA.

4. At approximately 10% below TPA (100 feet, for the standard 1,000' TPA), turn base.

5. Begin evaluating distance from runway and wind conditions. Dissipate energy by:

    A. Squaring the base-to-final turn / lengthening the ground track.

    B. Increasing the flap setting.

    C. Slipping the aircraft.

6. Aim to be aligned with the runway by around 400' to 500' AGL. Stronger headwinds on final will require this to occur closer to the runway.

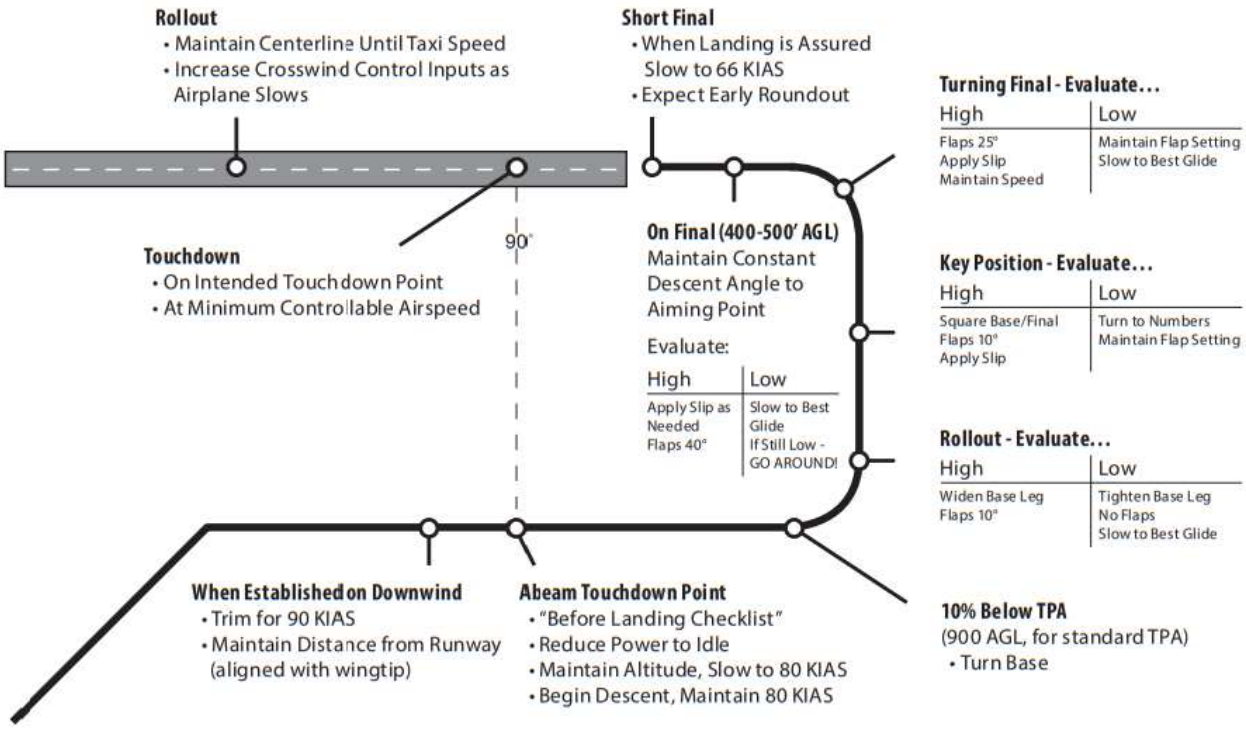
7. On final, maintain a constant descent angle (which will be steeper than for a power-on approach) to the aiming point, and an appropriate speed based on the flap setting:

    A. 0°: 80 KIAS.

    B. 10° to 40°: 75 KIAS.

8. When landing is assured, slow to 66 KIAS until 10' to 20' above the runway.

    A. Because the descent rate is higher than with power, begin the roundout slightly earlier to avoid hard la



Subpart D: Ground Reference Maneuvers

19.1 Turns Around a Point

The Turn around a point is accomplishing by completing one 360° constant radius turn around a single ground based point. The maneuver is designed to build the pilots skill by flying the aircraft over a specified ground track given effects of winds which may cause the aircraft to drift from its course. To complete this maneuver:

1. Perform two 90° clearing turns and complete a *"HELL Check"*

2. Maintain a constant altitude throughout the maneuver approximately 1,000 ft AGL.

3. Approximate the winds direction and speed to anticipate necessary aircrafts control inputs.

4. Begin by choose an appropriate ground reference point (perpendicular crossroads works best)

5. Once abeam the waypoint, and passing over the road, initiate a coordinated turn which will provide a constant radius around the point. (Note: It may help to choose reference points through each 90° segment of the circle.

   - During Headwinds: a slower ground speed will require a shallower bank and slower roll rate should be used to maintain a constant radius ground track. These segments of the maneuver will take longer.

   - During Tailwinds: a higher ground speed will require a faster roller and steeper bank angle to maintain the constant radius ground track. These segments of the maneuver will be completed more quickly.

6. Maintain coordination and a constant altitude throughout the maneuver, adjust bank angle to maintain the constant radius ground track.

7. Approaching the 360° segment of the turn, roll the aircraft to level abeam the entry point. (If performed correctly, the aircraft should be at the same position and attitude as at the entry point)

8. *"Cruise Checklist"*

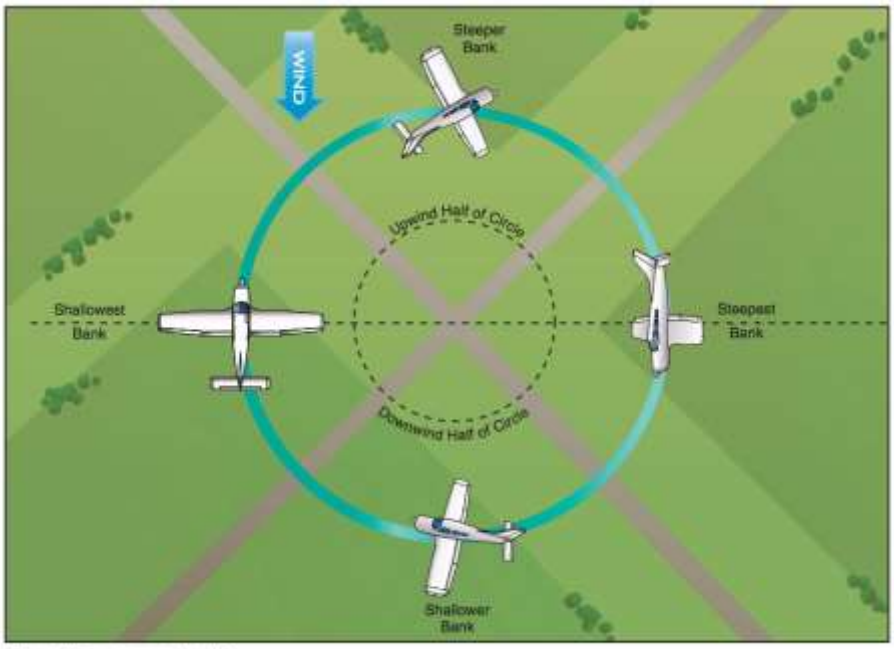
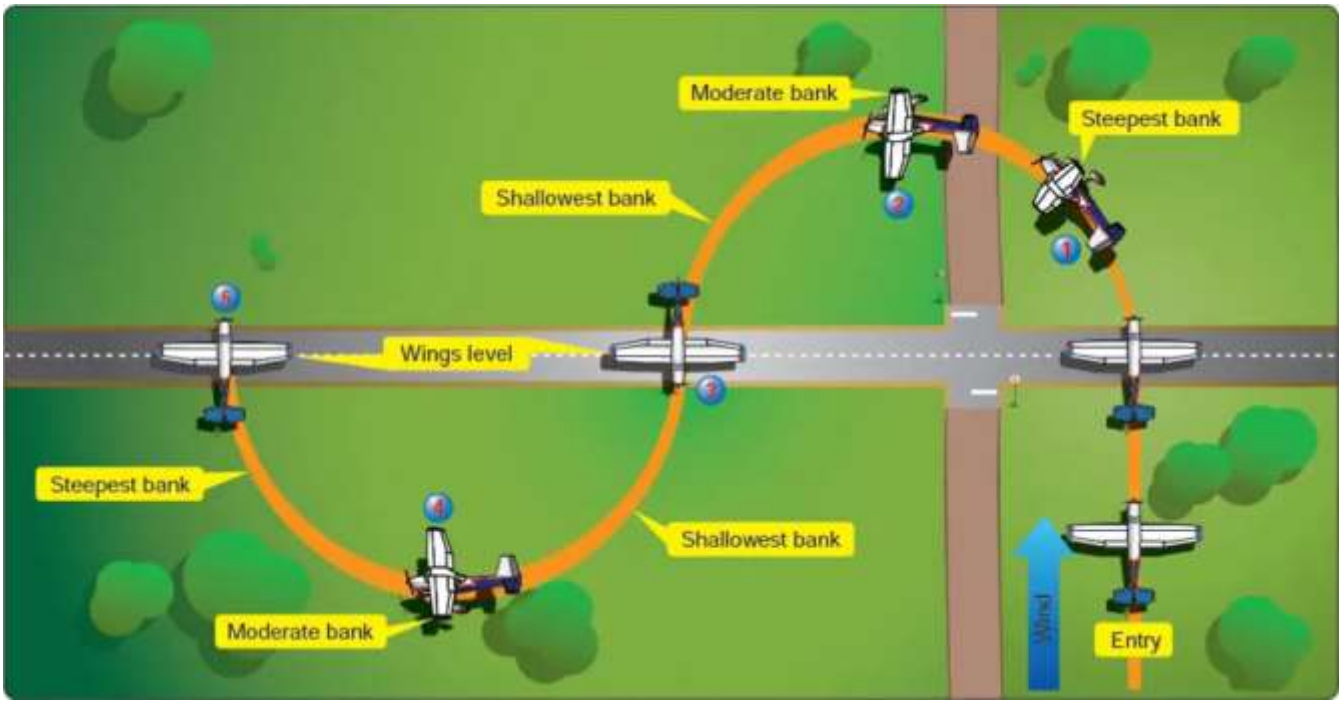


Figure 6-6. Turns around a point.

19.2 S Turns

Similar to the Turn around a point, the “S Turn” is accomplishing by completing a constant radius turns around a ground-based point; however, this maneuver is accomplished along a road. This consists of two evenly sized semi-circles along the road. This maneuver is designed to build the pilots skill by maneuvering the aircraft over a specified ground track given the effects of winds which may cause the aircraft to drift from its course. To complete this maneuver:

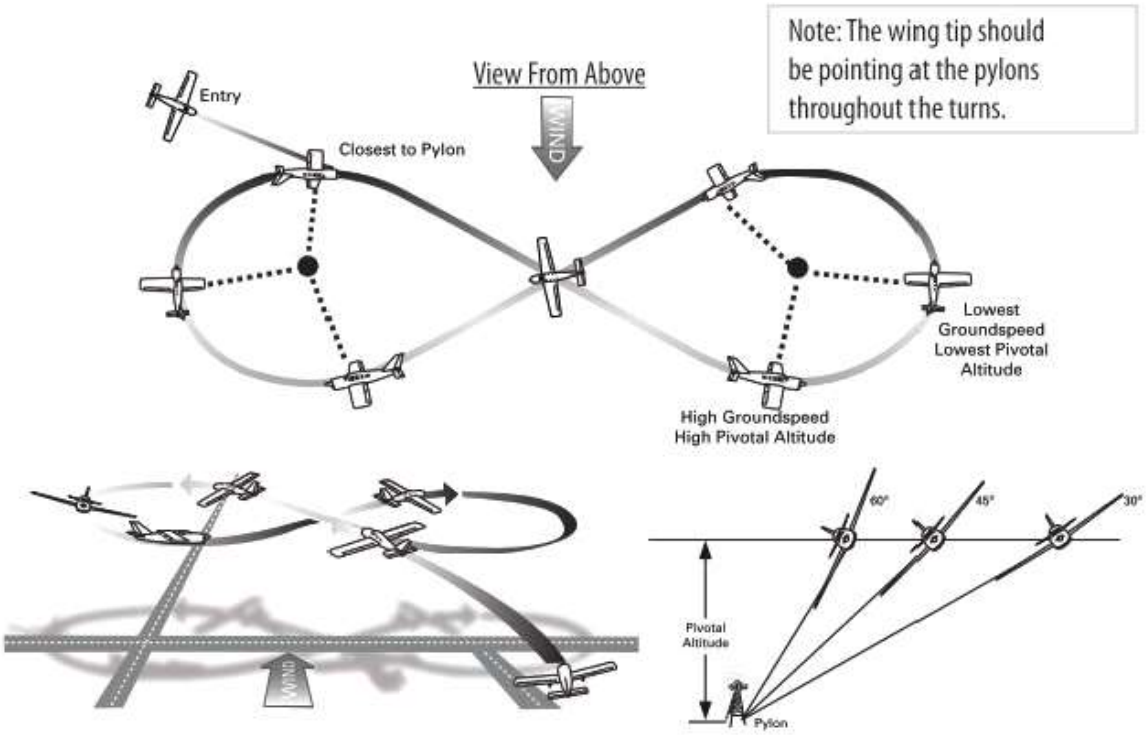
1. Perform two 90° clearing turns and complete a *"HELL Check"*
2. Maintain a constant altitude throughout the maneuver approximately 1,000 ft AGL.
3. Approximate the winds direction and speed to anticipate necessary aircrafts control inputs.
4. Begin by choose an appropriate ground reference point (powerlines or a long straight road works best)
5. Once overpassing over the road (perpendicular), initiate a coordinated turn which will provide a constant radius semi-cirlce along one side of the road. (Note: It may help to choose reference points through each 90° segment)
    - During Headwinds: a slower ground speed will require a shallower bank and slower roll rate should be used to maintain a constant radius ground track. These segments of the maneuver will take longer.
    - During Tailwinds: a higher ground speed will require a faster roller and steeper bank angle to maintain the constant radius ground track. These segments of the maneuver will be completed more quickly.
6. Maintain coordination and a constant altitude throughout the maneuver, adjust bank angle to maintain the constant radius ground track. Upon crossing the road, the wings should be level and perpendicular to the road.
7. Approaching the final segment of the maneuver, roll the aircraft to level abeam the road. (If performed correctly, the aircraft should have completed two evenly halved circles along both sides of the road)
8. *"Cruise Checklist”*



19.3 Eights on Pylons

Eights on Pylons are to be accomplished at the appropriate pivotal altitude (groundspeed2 /11.3), governed by the aircraft's groundspeed. The applicant is required to maintain coordinated flight while flying a figure eight pattern which holds the selected pylons using the appropriate pivotal altitude. At the steepest point, the angle of bank should be approximately 30-40°.

1. Enter pivotal altitude (approx. 900' AGL at 100 KIAS, approx. 2300 RPM)
2. Perform two 90° clearing turns in addition to a *"HELL Check"*
3. Clean configuration flow
4. Select two pylons to allow for minimal time spent wings level between the two
5. Enter maneuver on a 45° midpoint downwind
6. Apply appropriate pitch corrections to compensate for changes in groundspeed and to maintain line of sight reference with the pylon (pitch forward if point moves toward nose and pitch back if point moves toward tail)
7. Begin rollout to allow the airplane to proceed diagonally between the pylons at a 45° angle
8. Begin second turn in the opposite direction of the first
9. Exit maneuver on entry heading
10. *"Cruise Checklist"*



19.4 Steep Spirals

1. Altitude – at least 3,000’ AGL
2. Perform two 90° clearing turns
3. 90 KIAS (approx. 1800 RPM), maintain altitude
4. Clean configuration flow
5. Choose visual reference point
6. Reduce throttle to idle
7. Track at least three constant radius circles around reference point
8. Airspeed – constant
9. Bank angle – adjust for winds, not to exceed 60°
10. Clear engine once every 360° turn
11. Recover – roll out on specified heading (or visual reference)
12. *"Cruise Checklist"’*