P2006T

STANDARDIZATION MANUAL

VERSION R1.1

EFFECTIVE 01/24/2024

Introduction:

This Manual is a compilation of standardized flight training maneuvers and procedures for the P2006T. It is designed to provide standardized procedures for each flight maneuver listed in the respective flight course syllabus. We strongly suggest other references to be used to help develop a complete understanding of each maneuver prior to attempting the maneuver in flight.

The purpose of the standardization manual is to provide flight instructors and students with standard procedures related to each flight maneuver. The pitch attitudes and power settings are approximate, and some changes may be required to get the expected performance. The individual flight instructor is required to demonstrate to the student the referenced pitch attitudes using the natural horizon during all visual maneuvers. The student is expected to use outside references. Collision avoidance during these maneuvers cannot be understated. While performing instrument maneuvers under simulated meteorological conditions, the student is expected to set the pitch attitudes in reference to the attitude indicator

All students must use a combination of the airplane standardization manual, FAA Airman Certification Standards, Practical Test Standards, FAA Flight Training handbook and other approved aviation sources to guide them through each maneuver.

A summary of completion standards is provided with applicable maneuvers to assist in learning the standards that are required for different certificates and ratings. These summaries are provided for convenience and are not inclusive of all the requirements for each maneuver. The Airman Certification Standards or Practical Test Standards, for the certificate or rating being sought, are controlling and should be referred to as the original source of this information. When a more advanced certificate or rating has higher completion standards for certain elements of a maneuver, only the elements that have a higher standard than the lower certificate or rating are shown in the summary. Completion standards for the CFI rating are based on the ability to demonstrate and simultaneously explain the key elements of a Task at the Commercial Pilot skill level.

Table of Contents

V-Speeds

V-Speeds

V-speeds are airspeeds often published by the manufacturer which are important for pilots to know in order to remain within the correct operating limitations of the aircraft.

- **Vso** (stall speed in landing configuration) – **54 KIAS**
- **Vs1** (stall speed in clean configuration) – **66 KIAS**
- **Vmc** (minimum controllable airspeed) **– 62 KIAS**
- **Vref** (landing reference speed) **– 70 KIAS**
- **Vsse** (safe single-engine speed) - **>70 KIAS**
- **Vx** (best angle of climb) – **79 KIAS**
- **Vxse** (single engine Vx speed) **– 80 KIAS**
- **Vy** (best rate of climb) – **85 KIAS**
- **Vyse** (single engine Vy speed) **– 84 KIAS**
- **Vfe1** (takeoff flaps extended speed) **– 122 KIAS**
- **Vfe2** (full flap extended speed) – **93 KIAS**
- **Vlo** (max gear operating speed) – **122 KIAS**
- **Vle** (max gear extended speed) **– 122 KIAS**
- **Va** (maneuvering speed) – **122 KIAS**
- **Vno** (max structural cruising speed) – **138 KIAS**
- **Vne** (never exceed speed) – **171 KIAS**
- **Cruise climb – 100 KIAS**

Takeoffs and Traffic Pattern Operations

Before Take-off Briefing

Objective
To develop the student's ability to prepare for a normal take-off and brief any unexpected events which could occur

Normal Take-off

- Confirm departure runway is the runway you are holding short
- Confirm wind direction and state whether it will be a right or left crosswind
- State rotation speed and climb out speed
- State the point at which a rejected takeoff will be executed if rotation speed has not been reached

Abnormalities

Engine Abnormality During Takeoff Roll

- Maintain Directional Control
- Reduce power to idle
- Apply sufficient braking to prevent overrun
- If able, exit runway at next available taxiway and alert tower

Engine Abnormality Just After Liftoff with Gear Down

- Maintain Directional Control
- Pitch down to maintain at least 62 KIAS
- Land back on runway
- Apply sufficient braking to prevent overrun
- Brace for overrun

Engine Abnormality with Gear in Transit/or Gear Up

- Maintain Directional Control
- Mixtures, Props, Throttles Full Forward
- Flaps up if set for T/O
- Maintain V_{yse}
- Dead foot, dead engine
- Identify, Verify, Feather
    - If able to climb, do so to pattern altitude and return to the field

Engine Abnormality Above 2000 ft AGL

- Maintain Directional Control
- Mixtures, Props, Throttles, Full Forward
- Maintain airspeed, no less than V_{sse}
- Dead foot, dead engine
- Identify, Verify, **and Attempt FIX the failed engine**
- Alert ATC or local traffic you are returning to the airport
- If insufficient power remains to maintain altitude
    - Maintain best at least Vsse
    - Execute a turn back to the airport environment
    - Choose a safe landing area
        - Note: All turns back to the airport should be made into the operating engine, unless there is a risk factor such terrain if the turn is made in that direction.
    - Alert ATC or local traffic you are returning to the airport

Takeoff Briefing Example:

This will be a normal take-off from runway 33, which we are currently holding short of. The wind is from 360@8kts, so we will have a light right crosswind. Our rotation speed will be 65 KIAS and our climb out speed will by 84 KIAS to 1000 feet AGL.

OVERVIEW

This is a (normal/short field) take off on runway (____). Single engine climb rate is 79-83 Vxse, 80-84 V_{yse}. Vmc is 62, while Vr is 65. Normal climb rate is 85 Vy, and cruise climb is 100.

Engine Abnormality or Failure On the Ground

If engine failure occurs on takeoff roll below Vmc, or Vr, throttles will be closed, rudder will be used to maintain directional control, break heavily if need and brace for overrun.

Engine Abnormality or Failure After Rotation

If engine failure occurs in the rotation or just after take-off, throttles will be closed, rudder will be used for directional control, we will land back on the runway, break heavily if need and brace for overrun.

Engine Abnormality or Failure Out of Usable Runway Below 2000 FT

If out of usable runway, gear is in transit, or gear is up if engine failure occurs, I will maintain direction control, dead foot dead engine, airspeed 84 KIAS, props, throttles, full forward, flaps up if they are not already. Identify and verify the dead engine. Since this is below 2000 ft AGL, we will feather the dead engine. Maintain directional control and airspeed of 84 KIAS, begin a turn back towards the airport and notify ATC.

Normal Takeoff and Climb

Objective
To develop the student's ability to safely takeoff and depart the area

Setup
- Complete Pre-Takeoff Checklist
- Set Flaps T/O
- Align aircraft with runway centerline
- Center rudder pedals
- Apply appropriate crosswind correction

Execution
- Smoothly apply full power
- **Call outs and airspeeds**
    - **Power Set – Gauges Check – Airspeed Alive**
    - **Vmc 62 KIAS**
    - **Vr 65 KIAS**
    - **V_{yse} 84 KIAS**
- Rotate at 65 KIAS (T/O Flaps) or 70 KIAS (Flaps Up)
    - Environmental conditions may require a higher rotation speed
- Accelerate to and maintain V_{yse}
- Gear up (positive rate and no runway remaining)
- Flaps up (300 feet AGL and clear of obstacles)
- Maintain runway centerline during initial climb-out
- **1000 Feet AGL**
    - Throttles 27" MP (or less)
    - Props 2200 RPM (below yellow line)
    - Cruise climb 95-105 KIAS
    - Electric Fuel Pumps – OFF one at a time-check pressure
    - Lights as required
    - Climb Checklist- Complete

Common Errors
- Improper crosswind correction
- Improper application of power
- Poor directional control
- Improper pitch attitude during liftoff
- Failure to establish and maintain proper climb configuration and airspeed
- Drift from centerline during climb-out

Completion Standards

- **Commercial:**
  Maintain VY ±5 knots to a safe maneuvering altitude.
- **CFI:** See Commercial Above

Short-Field Takeoff

Objective
To teach the student to obtain maximum performance during the takeoff phase to minimize runway length required for takeoff

Setup

- Complete Pre-Takeoff Checklist,
- Set Flaps T/O
- Set Trim slight nose up
- Taxi to beginning of takeoff area and align aircraft with runway centerline while utilizing all available runway
- Center rudder pedals
- Apply appropriate crosswind correction.

Execution

- Apply full brakes and smoothly apply full power
- **Call outs and airspeeds**
  - **Power Set – Gauges Check – Airspeed Alive**
  - **Vmc 62 KIAS**
  - **Vr 65 KIAS**
  - **V_x 78 KIAS**
- Release brakes
- Rotate at 65KIAS
  - Environmental conditions may call for a higher rotation speed
- Accelerate to and Maintain 78 KIAS
- Gear up (positive rate and no usable runway remaining)
- Flaps up (300 feet AGL and clear of obstacles)
- Maintain runway centerline during initial climb-out
- **1000 Feet AGL**
  - Throttles 27” MP (or less)
  - Props 2200 RPM (below yellow line)
  - Cruise climb 95-105 KIAS
  - Electric Fuel Pumps – OFF one at a time-check pressure
  - Lights as required

Climb Checklist- Complete

Common Errors

- Failure to utilize maximum takeoff area
- Improper crosswind correction
- Improper application of power and brakes
- Poor directional control
- Improper pitch attitude during liftoff
- Failure to establish and maintain proper climb configuration and airspeed to clear obstacle
- Drift from centerline during climb-out

Completion Standards

- **Commercial:**
  - Rotate and lift off at the recommended airspeed and accelerate to the recommended obstacle clearance airspeed or VX, ±5 knots.
  - Establish a pitch attitude that will maintain the recommended obstacle clearance airspeed or VX, ±5 knots until the obstacle is cleared or until the airplane is 50 feet above the surface.
  - Establish a pitch attitude for VY and accelerate to VY ±5 knots after clearing the obstacle or at 50 feet AGL if simulating an obstacle.
  - VY ±5 knots to a safe maneuvering altitude.
- **CFI:** See Commercial Above

Traffic Pattern Operations

Objective

To develop the student's ability to conduct safe and efficient arrival and departure procedures at controlled and uncontrolled airports

Setup

- Complete the Before Landing Checklist
- Determine traffic pattern altitude (approx. 1,000ft. above field elevation)
- Check local weather conditions and determine active runway
- Establish traffic pattern altitude at least 3 miles prior (if you are not planning to overfly the field)
- If planning to overfly the field for pattern entry descend to Pattern Altitude +500
- Slow the aircraft to 100-110KIAS. (approx. 20" MP)
- or as advised by ATC
- Determine pattern entry, or execute entry as directed by ATC

Execution

- If approaching field from opposite side of downwind leg
    - position the aircraft to overfly the mid-field of the active runway at a perpendicular angle 500 ft above traffic pattern altitude
    - Once aircraft has passed desired downwind leg, continue flying for two miles. Then begin descent to pattern altitude while making a 270º turn in the appropriate direction to join the downwind leg at the midfield point.
- If approaching from the same side as the intended downwind, turn onto downwind leg approx. 1 mile from the active runway and maintain 100-110KIAS.
- Maintain parallel ground track to runway by correcting for wind drift
- Complete Downwind Checklist Abeam midfield, or 5 miles to fly
    - Gas (Correct Tanks)
    - Boost Pumps (Fuel Pumps)
    - Ignitions (On)
    - Carb heat (as required)
    - Undercarriage Select Down (Below 122 KIAS)
    - Lights Set

- When abeam the point of intended landing, set Flaps T/O, advance Propeller Controls to full forward, lower nose and trim to achieve approx. 500 fpm descent rate.
- When the touchdown point is positioned 45º behind the wing of the aircraft, and/or there has been a 200ft. decrease in altitude from pattern altitude, turn onto base leg
- Plan the turn to final leg so that the aircraft is aligned with runway centerline,
- Below 93 KIAS add full flaps, and slow to final approach speed.
    - Flaps Up: 80-90 KIAS
    - Full Flaps: 70-80 KIAS

Closed Traffic Pattern Procedures

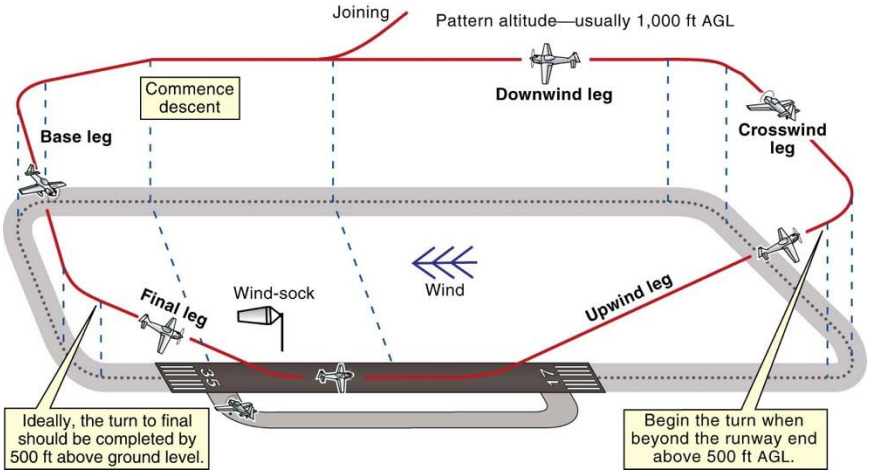
- Clear area for traffic and turn crosswind leg beyond departure end of the runway, AND within 300ft of pattern altitude Level wings for 3-5 seconds in crosswind, scan for aircraft in downwind, then turn downwind
- Continue with Traffic Pattern Execution steps

Common Errors

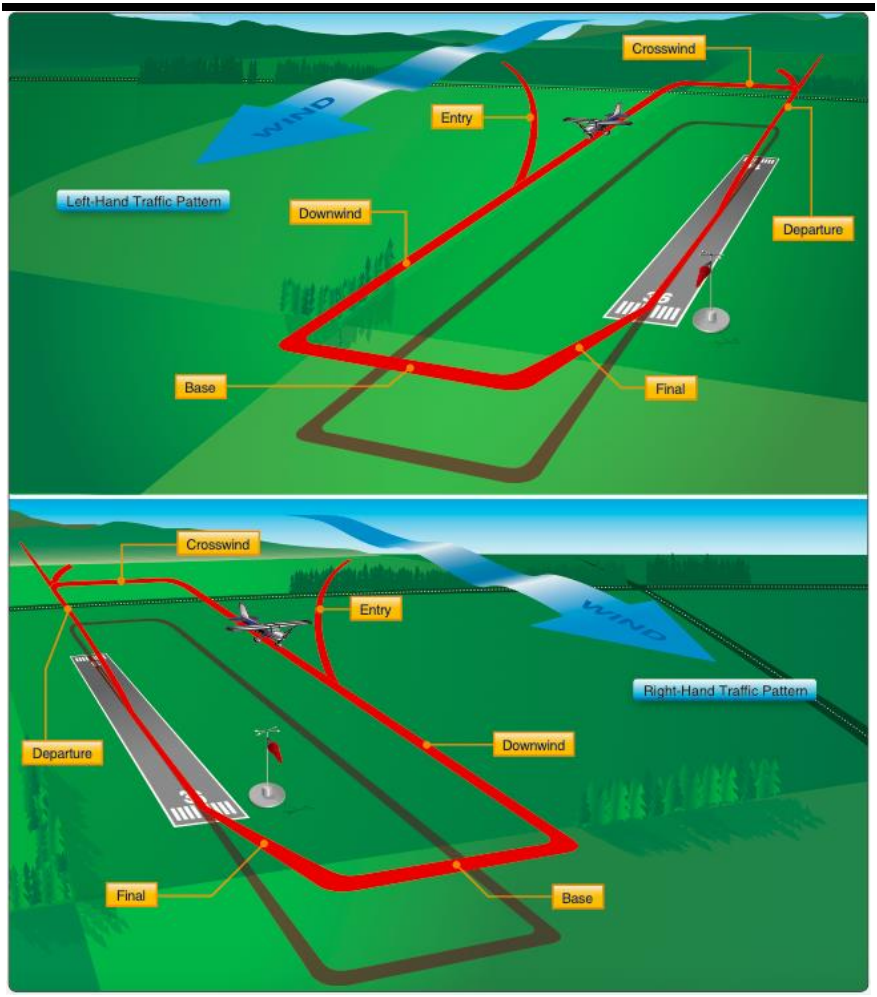
- Failure to maintain adequate separation between other traffic
- Failure to maintain proper airspeed
- Failure to maintain proper wind correction
- Failure to maintain proper distance from runway
- Failure to maintain patten altitude
- Inadequate division of attention

Completion Standards

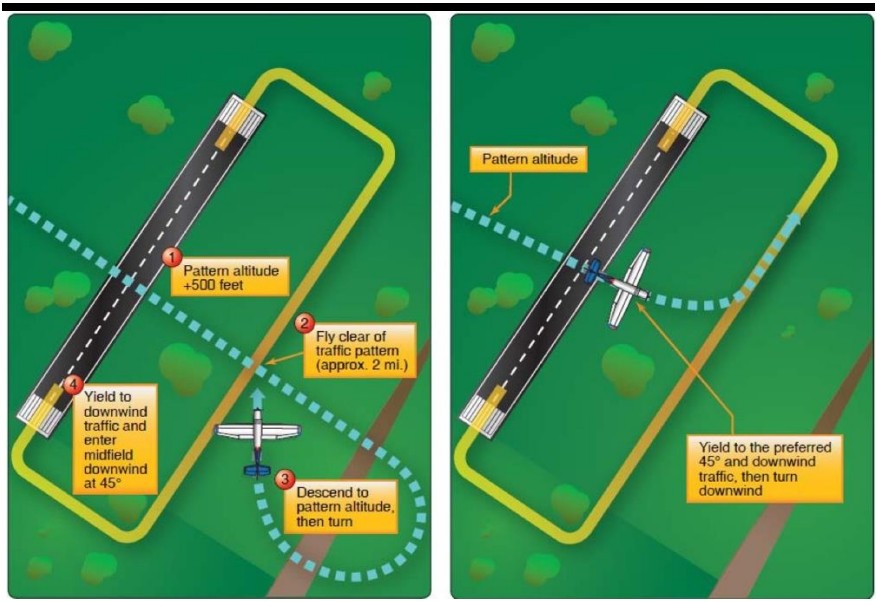
- **Commercial:**
    - Identify and interpret airport runways, taxiways, markings, signs, and lighting.
    - Comply with recommended traffic pattern procedures.
    - Correct for wind drift to maintain the proper ground track.
    - Maintain orientation with the runway/landing area in use.
    - Maintain traffic pattern altitude, ±100 feet, and the appropriate airspeed, ±10 knots.
    - Maintain situational awareness and proper spacing from other aircraft in the traffic pattern.
- **CFI:** See Commercial Above



ASA School Figure Traffic Pattern Operations



FAA Airplane Flying Handbook Figure 7-1 Traffic Pattern



FAA Airplane Flying Handbook Figure 7-4 Preferred entry from upwind leg side of airport (A). Alternate midfield entry from upwind leg side of airport (B).

Landings

Normal and Crosswind Approach and Landing

Objective
To develop the student's proficiency in normal and crosswind approaches and landings

Setup

- Select the correct entry procedure and altitude for the runway in use (refer to traffic pattern operations)
- Select an appropriate touchdown point, 200ft. past the threshold and within the first 1/3 of the runway

Execution

- Select a visual aiming point (runway threshold recommended)
- Apply proper wind correction / side slip for landing
- Maintain 70-80 KIAS. On final approach
    - If the winds are gusting or LLWS conditions exist, increase final approach speed by ½ of the gust factor, not to exceed 10KIAS
    - For strong crosswinds use the minimum required flap setting required for the field length
- Prior to 500ft. AGL set full flaps and complete pre landing flow
    - Gas (Correct Tanks)
    - Boost Pumps (Fuel Pumps)
    - Ignitions (On)
    - Carb heat (as required)
    - Propeller set (Verify Full Forward)
    - Undercarriage (Verify 3 Green)
    - Seat belts, and switches (Lights, etc) On

- Establish appropriate final approach airspeed based on the desired Landing Checklist and flap setting
- Verify and announce "*stabilized*" by 500ft. AGL
    - A stabilized approach is defined as being fully configured , maintaining a constant airspeed, constant descent rate, and in a safe position to land
- Cross the threshold at Vref (70 KIAS, Full Flaps or 80 KIAS, Flaps Up), then begin to slow to a touchdown speed of 60 KIAS
- Begin to round-out approximately 10ft. above the ground transitioning to a landing pitch attitude
- Maintain the longitudinal axis of the aircraft aligned with the runway centerline without drift using opposite rudder to keep the

longitudinal axis aligned with the centerline and crosswind correction to lower the upwind wing
- Touchdown with the main wheels first (for crosswind, upwind main wheel should touch first)
- During rollout maintain runway centerline and apply proper crosswind correction
- After clear of active runway, complete After Landing Checklist

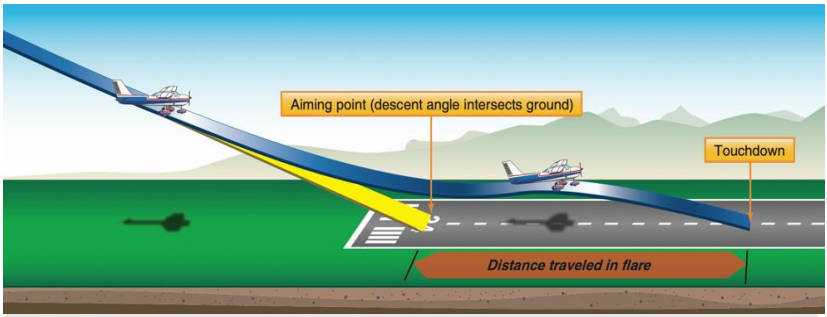
Recovery
- If necessary, a go-around may be initiated at any time during the landing phase of flight, however, a go-around must be initiated if approach is not stabilized by 500ft. AGL, or if weather conditions calls for a go around closer to the ground.

Common Errors
- Failure to calculate proper performance data and limitations
- Failure to establish a stabilized approach by 500ft. AGL
- Failure to execute a go-around as needed
- Improper control of your rate of descent
- Improper use of flaps during the landing phase
- Failure to correct for wind drift
- Rounding out too high or low
- Touching down further than the first 1/3 of the runway
- Failure to keep the longitudinal axis of the aircraft aligned with the runway, resulting in a side load condition on the main gear
- Poor directional control after touchdown
- Improper use of brakes during the rollout

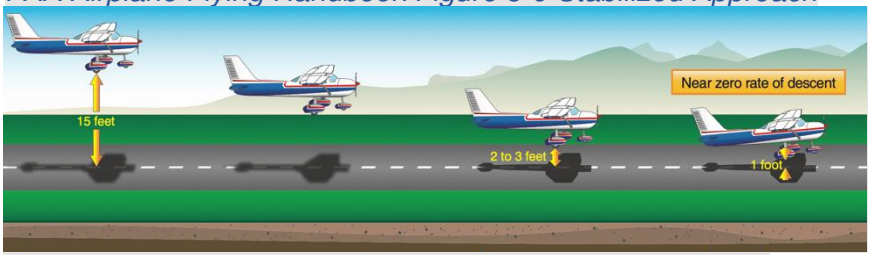
Completion Standards
- **Commercial:**
  - Ensure the airplane is aligned with the correct/assigned runway or landing surface.
  - Scan runway or landing surface and the adjoining area for traffic and obstructions.
  - Select and aim for a suitable touchdown point considering the wind, landing surface, and obstructions.
  - Establish the recommended approach and landing configuration and airspeed, and adjust pitch attitude and power as required to maintain a stabilized approach.
  - Maintain manufacturer's published approach airspeed or in its absence not more than 1.3 VSO, +10/-5 knots with gust factor applied.

- Maintain directional control and appropriate crosswind correction throughout the approach and landing.
- Make smooth, timely, and correct control application during round out and touchdown.
- Touch down at a proper pitch attitude, within 200 feet beyond or on the specified point, with no side drift, and with the airplane's longitudinal axis aligned with and over the runway center/landing path.
- Execute a timely go-around if the approach cannot be made within the tolerances specified above or for any other condition that may result in an unsafe approach or landing.
- Utilize runway incursion avoidance procedures

- **CFI:** See Commercial Above



FAA Airplane Flying Handbook Figure 8-9 Stabilized Approach



FAA Airplane Flying Handbook Figure 8-8 A Well Executed Round-out

Short-Field Approach and Landing

Objective
To develop the student's ability to perform a maximum performance maneuver during the landing phase to minimize runway usage and land on a desired aiming point

Setup
- Select the correct entry procedure and altitude for the runway in use (refer to traffic pattern operations)
- Select an appropriate touchdown point, 100ft. past the threshold and within the first 1/3 of the runway

Execution
- Select a visual aiming point
- Apply proper wind correction
    - If the winds are gusting or LLWS conditions exist, increase final approach speed by ½ of the gust factor, not to exceed 10KIAS and reduce use of flaps
- Prior to 500ft. AGL set full flaps and complete pre landing flow
    - Gas (Correct Tanks)
    - Boost Pumps (Fuel Pumps)
    - Ignitions (On)
    - Carb heat (as required)
    - Propeller set (Verify Full Forward)
    - Undercarriage (Verify 3 Green)
    - Seat belts, and switches (Lights, etc) On
- Establish a final approach speed of 70 KIAS
- Verify and announce "*stabilized*" by 500ft. AGL
    - A stabilized approach is defined as being fully configured maintaining a constant airspeed, constant descent rate, and in a safe position to land
- Begin to round out approximately 10ft. above the ground, transitioning to a landing pitch attitude
- Maintain the longitudinal axis of the aircraft aligned with the runway centerline without drift
- Touchdown with the main wheels first
- After touchdown retract flaps to 0º, apply maximum back pressure on the yoke and maximum braking to stop in the shortest distance consistent with safety
- After clear of active runway, complete After Landing Checklist

Recovery

- If necessary, a go-around may be initiated at any time during the landing phase of flight, however, a go-around must be initiated if approach is not stabilized by 500ft. AGL

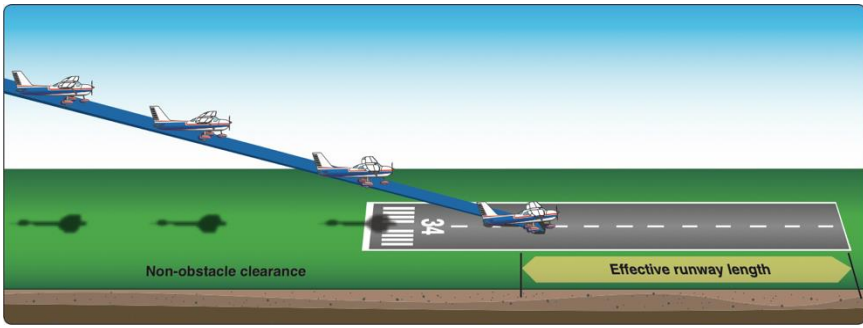
Common Errors

- Failure to calculate proper performance data and limitations
- Failure to establish a stabilized approach by 500ft. AGL
- Failure to execute a go-around as needed
- Improper control of your rate of descent
- Improper use of flaps during the landing phase
- Failure to correct for wind drift
- Rounding out too high or low
- Touching down further than 100ft. from desired touchdown point
- Failure to apply maximum disc and aerodynamic braking
- Failure to keep the longitudinal axis of the aircraft aligned with the runway, resulting in a side load condition on the main gear
- Poor directional control after touchdown
- Improper use of the brakes during the rollout

Completion Standards

- **Commercial:**
  - Maintain manufacturer's published approach airspeed or in its absence not more than 1.3 VSO, +10/-5 knots with gust factor applied.
  - Touch down at a proper pitch attitude within 100 feet beyond or on the specified point, threshold markings, or runway numbers, with no side drift, minimum float, and with the airplane's longitudinal axis aligned with and over runway centerline.
  - Use manufacturer's recommended procedures for airplane configuration and braking.
  - Execute a timely go-around if the approach cannot be made within the tolerances specified above or for any other condition that may result in an unsafe approach or landing.

CFI: See Commercial Above



FAA Airplane Flying Handbook Figure 8-21 Landing on a Short Field

Go-Around and Rejected Landing

Objective
To develop the student's ability to recognize the need to go-around and the importance of making good, timely decisions in relation to flaps, pitch, and coordination during a go-around

Setup

- If necessary, a go-around may be initiated at any time during the landing phase of flight, however, a go-around must be initiated if approach is not stabilized by 500ft. AGL

Execution

- Smoothly add full power, select carb heat cold (if required))
- Level the wings and transition to a climb pitch attitude of approximately 10º nose up
- Retract Flaps to T/O
- Gear up (positive rate)
- Flaps up (300 feet AGL and clear of obstacles) Maintain Vy
- **1000 Feet AGL**
    - Throttles 27" MP (or less)
    - Props 2200 RPM (below yellow line)
    - Cruise climb 95-105 KIAS
    - Electric Fuel Pumps – OFF one at a time-check pressure
    - Lights as required
- Complete Climb Checklist

Common Errors

- Failure to execute a go-around when necessary
- Improper power application
- Failure to maintain coordination
- Improper trim technique / incorrect pitch
- Improper wing flap retraction
- Poor division of attention

Completion Standards

- **Commercial:**
    - Apply takeoff power immediately and transition to climb pitch attitude for VX or VY as appropriate ±5 knots.
    - Maintain VY ±5 knots to a safe maneuvering altitude.
- **CFI:** See Commercial Above

VFR Maneuvers

Clearing Turns

Objective
To teach the student to exercise continuous surveillance of the airspace prior to the performance of a maneuver, and to provide the student with a means to configure the aircraft prior to each maneuver

Setup
- Select an altitude, which will assure recovery above minimum recovery altitude for selected maneuver
- Select a heading/visual landmark to initiate maneuver

Execution
- First 90º clearing turn:
  - Visually clear the area to the left and the right
  - Announce "*clear left, center and right*"
  - Pick a visual reference point off the wingtip in the direction of turn to roll out on
  - Clear area by entering a 20-30º bank turn while looking for traffic and maintaining altitude
  - After 90º turn is complete, roll out wings level on your selected heading / visual landmark
  - Reduce power as needed
- Second 90º clearing turn:
  - Visually clear the area to the left and the right
  - Announce "*clear left, center and right*"
  - Pick a visual reference point off the wingtip in the direction of turn to roll out on
  - Clear area by entering a 20-30º bank turn while looking for traffic and maintaining altitude
  - Roll out on original heading / visual landmark

Common Errors
- Failure to maintain selected altitude during clearing turns
- Over or under banking during clearing turns
- Failure to select or rollout on proper heading / visual landmark
- Failure to continually scan the area above, below and ahead of the flight path for traffic

Slow Flight

Objective
To teach the student to recognize changes in aircraft flight characteristics and control effectiveness at minimum controllable airspeeds in various configurations

Setup
- Confirm clearing turns have been completed
- Select an entry altitude which will allow for recovery no lower than minimum recovery altitude of 3,000ft. AGL
- Set power to approximately 18" MP to slow the aircraft while maintaining altitude
- Complete pre-maneuver flow
    - Gas (Correct Tanks)
    - Boost Pumps (OFF)
    - Ignitions (On)
    - Carb heat (as required)
    - Propellers 2100 RPM
    - Undercarriage Up
    - Seat belts, and switches (Lights, etc) On

Execution
- <122 KIAS Gear Down
- <122 KIAS Flaps T/O
- <93 KIAS Flaps Full
- Slow to airspeed as described in applicable ACS standards
- Power set to 20" or as required to maintain altitude and airspeed
- Adjust pitch and power to maintain minimum controllable airspeed and altitude
- Trim aircraft as necessary
- While maintaining coordinated flight, practice climbs, turns and descents as specified by instructor

Recovery
- Props Full Forward
- Power set to Full
- Flaps set T/O >78 KIAS
- Gear Up
- Flaps Up (clean)
- Run Cruise Checklist

Common Errors

- Excessive variations of altitude, heading and or bank
- Poor coordination of flight controls
- Entering a stalled condition
- Failure to maintain minimum controllable airspeed

Completion Standards

- **Commercial:**
  - Select an entry altitude that will allow the Task to be completed no lower than 1,500 feet AGL (ASEL, ASES) or 3,000 feet AGL (AMEL, AMES).
  - 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., airplane buffet, stall horn, etc.).
  - Accomplish coordinated straight-and-level flight, turns, climbs, and descents with the airplane configured as specified by the evaluator without a stall warning (e.g., airplane buffet, stall horn, etc.).
  - Maintain the specified altitude, ±50 feet; specified heading, ±10°; airspeed, +5/-0 knots; and specified angle of bank, ±5°.

- **CFI:** See Commercial Above

Power On Stall

Objective
To teach the student to recognize the flight conditions that are conducive to a power on stall and how to apply the necessary corrective action for a prompt, positive and effective recovery with a minimum loss of altitude

Setup
- Confirm clearing turns have been completed
- Select an entry altitude which will allow for recovery no lower than minimum recovery altitude of 3000 ft. AGL
- Clearing Turns Complete
- Engine Instruments Check
- Throttles 15" MP
- Complete pre-maneuver flow
    - Gas (Correct Tanks)
    - Boost Pumps (On)
    - Ignitions (On)
    - Carb heat (as required)
    - Propellers (Full Forward)
    - Undercarriage (Up)
    - Seat belts, and switches (Lights, etc) On

Execution
- <122 KIAS Flaps T/O (Instructor discretion on flap setting)
- Slow aircraft to ~ 85 KIAS
- Throttles 25" MP
- Pitch to 20 degrees nose up to stall
- Apply proper rudder correction to maintain coordination

Recovery
- At first indication of stall, Immediately reduce the angle of attack by positively releasing back-elevator pressure
- Use rudder to prevent a spin and keep wings level
- Apply Full Throttle
- Accelerate and Climb at V_y (85 KIAS) Blue Line
- Flaps Up
- Complete Cruise Checklist

Common Errors

- Failure to maintain coordinated flight
- Delayed stall recovery
- Excessive altitude loss
- Improper pitch and bank control
- Inability to recognize an approaching stall condition through feel for the airplane

Completion Standards

- **Commercial:**
  - Select an entry altitude that will allow the Task to be completed no lower than 1,500 feet AGL (ASEL, ASES) or 3,000 feet AGL (AMEL, AMES).
  - Establish the takeoff, departure, or cruise configuration, as specified by the evaluator, and maintain coordinated flight throughout the maneuver.
  - Set power (as assigned by the evaluator) to no less than 65 percent power.
  - Transition smoothly from the takeoff or departure attitude to the pitch attitude that will induce a stall.
  - Maintain a specified heading ±10° if in straight flight; maintain a specified angle of bank not to exceed 20°, ±10° if in turning flight, while inducing the stall.
  - Acknowledge cues of the impending stall and then recover promptly after a full stall occurs.
  - Execute a stall recovery in accordance with procedures set forth in the POH/AFM.
  - Configure the airplane as recommended by the manufacturer, and accelerate to VX or VY.
  - Return to the altitude, heading, and airspeed specified by the evaluator.
- **CFI:** See Commercial Above

Power Off Stall

Objective
To teach the student to recognize the flight conditions that are conducive to a power off stall and how to apply the necessary corrective action for a prompt, positive and effective recovery with a minimum loss of altitude

Setup
- Confirm clearing turns have been completed if this is the first maneuver
- Select an entry altitude which will allow for recovery no lower than minimum recovery altitude of 3000ft. AGL
- Clearing Turns Complete
- Engine Instruments Check
- Throttles 15" MP to slow to Vle
- Complete pre-maneuver flow
    - Gas (Correct Tanks)
    - Boost Pumps (On)
    - Ignitions (On)
    - Carb heat (as required)
    - Propellers (Full Forward)
    - Undercarriage (Down below 122 KIAS)
    - Seat belts, and switches (Lights, etc) On
- Below 122 KIAS Flaps T/O
- Below 93 KIAS Flaps Full

Execution
- Maintain altitude until 70 KIAS.
- Establish a stabilized descent at 70 KIAS
- Once descent is stabilized, Throttles to Idle
- Pitch to 10° Nose Up to induce a stall

Recovery
- Immediately reduce the angle of attack by positively releasing back-elevator pressure
- Use rudder as required for recovery
- Apply full throttle
- Flaps T/O
- With Flying Speed to Initiate Climb, Positive Rate Gear UP
- Accelerate and Climb at V_{yse} (84 KIAS) Blue Line
- Flaps Up
- Return aircraft to straight and level flight
- Complete Cruise Checklist

Common Errors

- Failure to maintain coordinated flight
- Delayed stall recovery
- Excessive altitude loss
- Improper pitch and bank control
- Inability to recognize an approaching stall condition through feel for the airplane

Completion Standards

- **Commercial:**
  - Select an entry altitude that will allow the Task to be completed no lower than 1,500 feet AGL (ASEL, ASES) or 3,000 feet AGL (AMEL, AMES).
  - Configure the airplane in the approach or landing configuration, as specified by the evaluator, and maintain coordinated flight throughout the maneuver.
  - Establish a stabilized descent.
  - Transition smoothly from the approach or landing attitude to a pitch attitude that will induce a stall.
  - Maintain a specified heading ±10° if in straight flight; maintain a specified angle of bank not to exceed 20°, ±5° if in turning flight, until an impending or full stall occurs, as specified by the evaluator.
  - Acknowledge cues of the impending stall and then recover promptly after a full stall occurs.
  - Execute a stall recovery in accordance with procedures set forth in the POH/AFM.
  - Configure the airplane as recommended by the manufacturer, and accelerate to VX or VY.
  - Return to the altitude, heading, and airspeed specified by the evaluator.
- **CFI:** See Commercial Above

Accelerated Stall

Objective
To teach the student the factors of an accelerated stall and to demonstrate that a stall is a function of angle of attack rather than airspeed

Setup

- Confirm clearing turns have been completed if this is the first maneuver
- Select an entry altitude which will allow for recovery no lower than minimum recovery altitude of 3,000ft. AGL
- Set power to approximately 17" MP to slow the aircraft to 90 KIAS while maintaining altitude
- Clearing Turns Complete
- Engine Instruments Check
- Complete pre-maneuver flow
    - Gas (Correct Tanks)
    - Boost Pumps (On)
    - Ignitions (On)
    - Carb heat (as required)
    - Propellers (Full Forward)
    - Undercarriage (Up)
    - Seat belts, and switches (Lights, etc) On

Execution

- Props Full Forward
- KIAS below Maneuvering Speed
- Roll aircraft into at a 45º bank
- Firmly increase back elevator pressure until an imminent or full stall occurs. (To achieve a full stall, the power must be reduced to idle when the aircraft reaches a 45º bank)

Recovery

- Immediately reduce the angle of attack by positively reducing back-elevator pressure
- Use ailerons, and coordinate with rudder to return to a wings level attitude
- Apply Full Power
- Accelerate and Climb at V_{yse} (84 KIAS) Blue Line
- Complete Cruise Checklist

Common Errors

- Failure to decrease airspeed below maneuvering speed
- Bringing aircraft to a full stall
- Improper coordination during the maneuver and recovery
- Excessive loss of altitude

Completion Standards

- **Commercial:**
  - Select an entry altitude that will allow the Task to be completed no lower than 3,000 feet AGL.
  - Establish the configuration as specified by the evaluator.
  - Set power appropriate for the configuration, such that the airspeed does not exceed the maneuvering speed (VA) or any other applicable POH/AFM limitation.
  - Establish and maintain a coordinated turn in a 45° bank, increasing elevator back pressure smoothly and firmly until an impending stall is reached.
  - Acknowledge the cue(s) and recover promptly at the first indication of an impending stall (e.g., aircraft buffet, stall horn, etc.).
  - Execute a stall recovery in accordance with procedures set forth in the POH/AFM.
  - Configure the airplane as recommended by the manufacturer, and accelerate to VX or VY.
  - Return to the altitude, heading, and airspeed specified by the evaluator.
- **CFI:** See Commercial Above

Steep Turns

Objective
To develop the student's smoothness, coordination, orientation, division of attention and control techniques, while executing high performance maneuvers

Setup

- Confirm clearing turns have been completed if this is the first maneuver
- Select an entry altitude which will allow for recover no lower than minimum recovery altitude of 3000ft. AGL
- Set power to approximately 20" MP to obtain maneuvering speed, while maintaining altitude
- Clearing Turns Complete
- Engine Instruments Check
- Complete pre-maneuver flow
    - Gas (Correct Tanks)
    - Boost Pumps (OFF)
    - Ignitions (On)
    - Carb heat (as required)
    - Propellers (set for cruise)
    - Undercarriage (Up)
    - S- Seat belts, and switches (Lights, etc) On

Execution

- 20" MP (add 2 inches of MP once passing 30 degrees)
- Airspeed <122 KIAS ~ 110 KIAS is ideal
- Roll into left or right turn, as specified by instructor
- Through 30º of bank increase back-pressure and add power as needed to maintain altitude and maneuvering speed.
- Upon reaching appropriate bank angle (50º commercial) maintain level flight by referencing the nose of the aircraft to the horizon
- If desired trim the aircraft as necessary during the turn to relieve back pressure
- Lead roll-out by ½ your bank angle
- Take out any back-pressure, trim, and power you put in at the beginning of the maneuver to return to level flight at maneuvering speed, on your original heading
- After completion of first turn immediately start a steep turn in the opposite direction, repeating the above steps

Recovery

- Complete Cruise Checklist

Common Errors

- Failure to use correct pitch, bank and power settings during entry and rollout
- Failure to release back-pressure, or trim, and remove power during rollout, resulting in a gain of altitude
- Improper bank angle
- Improper use of power during the maneuver
- Improper coordination of the flight controls, resulting in a skid or slip
- Failure to choose and reference outside visual cues during the maneuver
- Failure to lead rollout by at least ½ your bank angle

Completion Standards

- **Commercial:**
  - Establish the manufacturer's recommended airspeed; or if one is not available, an airspeed not to exceed VA.
  - Roll into a coordinated 360° steep turn with approximately a 50° bank.
  - Perform the Task in the opposite direction, as specified by evaluator.
  - Maintain the entry altitude ±100 feet, airspeed ±10 knots, bank ±5°, and roll out on the entry heading ±10°.
- **CFI:** See Commercial Above

FAA Airplane Flying Handbook Figure 4-1 Coordinated Flight in a Turn

VMC DEMO

Objective
To develop the student's ability to recognize and recover from a loss of directional control with the critical engine inoperative

Setup
- Ensure that your altitude is no lower than 3000 ft. AGL
- Clearing Turns Complete
- Choose an appropriate heading to maintain during the maneuver
- Engine Instruments Check
- Complete pre-maneuver flow
    - Gas (Correct Tanks)
    - Boost Pumps (On)
    - Ignitions (On)
    - Carb heat (as required)
    - Propellers (Full Forward)
    - Undercarriage (Up)
    - Seat belts, and switches (Lights, etc) On

Execution
- Throttles 15" MP
- Close the left throttle while maintaining the selected heading
- Increase right throttle to full power while maintaining the selected heading
- Establish a pitch attitude that achieves 10 KIAS above Vsse (80 KIAS)
- Establish a 5° bank into the operative engine
- Establish a pitch attitude which will result in a one knot per second decrease in airspeed
- Continue adding back pressure to maintain desired pitch

Recovery
- Recover at the first sign of:
    - At imminent stall (stall horn/buffet)
    - Full Rudder Deflection
    - Loss of Directional Control
- Reduce pitch attitude below the Horizon while simultaneously reducing power on the right engine
- Once control or rudder effectiveness is regained, Increase Power on the right engine while maintaining heading
- Airspeed V_{yse} (84 KIAS)
- Maintain 5° of bank into the right engine

- Maintain V_{yse} until entry altitude or other as specified
- Once maneuver is complete, return both throttles to desired power setting
- Run Cruise Checklist

Common Errors

- Failure to recognize the first signs of VMC
- Failure to reduce power rapidly on the operating engine
- Failure to maintain aircraft control
- Pitching up to rapidly and not maintaining 1 KT per second
- Failure to not recognize the first signs of VMC resulting in a loss of control

Completion Standards

- **Commercial**
  - Configure the airplane in accordance with the manufacturer's recommendations, in the absence of the manufacturer's recommendations, then at VSSE/VYSE, as appropriate, and:
    (a) Landing gear retracted
    (b) Flaps set for takeoff
    (c) Cowl flaps set for takeoff
    (d) Trim set for takeoff
    (e) Propellers set for high RPM
    (f) Power on critical engine reduced to idle and propeller windmilling
    (g) Power on operating engine set to takeoff or maximum available power
  - Establish a single-engine climb attitude with the airspeed at approximately 10 knots above VSSE
  - Establish a bank angle not to exceed 5° toward the operating engine, as required for best performance and controllability.
  - Increase the pitch attitude slowly to reduce the airspeed at approximately 1 knot per second while applying rudder pressure to maintain directional control until full rudder is applied.
  - Recognize indications of loss of directional control, stall warning, or buffet.
  - Recover promptly by simultaneously reducing power sufficiently on the operating engine, decreasing the angle of attack as necessary to regain airspeed and directional control, and without adding power on the simulated failed engine.
  - Recover within 20° of entry heading.
  - Advance power smoothly on the operating engine and accelerate to VSSE/VYSE, as appropriate, ±5 knots during recovery.

DRAG DEMO (Instructor Demonstration Only)

Objective
To develop the student's ability to recognize how VMC is affected by drag.

Setup
- Ensure that your altitude is no lower than 3000 ft. AGL
- Clearing Turns Complete
- Engine Instruments Check
- Choose an appropriate heading to stay on during the maneuver
- Complete pre-maneuver flow
    - Gas (Correct Tanks)
    - Boost Pumps (On)
    - Ignitions (On)
    - Carb heat (as required)
    - Propellers (Full Forward)
    - Undercarriage (Up)
    - Seat belts, and switches (Lights, etc) On

Execution
- Throttles 15" MP
- Slow to V_{yse} (84 KIAS) Blue Line
- Close the left throttle while maintaining heading and airspeed
- Increase right throttle to max power while maintaining heading and up to 5 degrees of bank into the right engine.
- Maintain half deflection on the turn coordinator
- Check VSI for climb rate
- Maintain 84 KIAS during the following sequence. Let the aircraft stabilize after each new configuration change and note descent or climb rate
    - Flaps T/O
    - Gear Down
    - Flaps Full
- Set Left Engine Throttle to 13.5" MP (zero thrust) and complete the same sequence in reverse

Recovery

- Return Throttles to the same power setting
- Run Cruise Checklist

Common Errors

- Failure to maintain V_{yse}
- Failure to maintain proper heading
- Failure to maintain aircraft control
- Failure to not recognize the first signs of VMC resulting in a loss of control

Single Engine Instrument Approach Procedure

Objective
To develop the student's ability to shoot an approach with one engine inoperative, and maintain positive control of the aircraft.

Setup
- Ensure you have completed the securing engine checklist
- When instructed by ATC to "expect" an approach, complete the ABC's
    - **A**TIS - Obtain the latest ATIS information
    - **B**uild - the expected approach in the GPS
    - **B**rief - the expected approach plate
    - **B**ug - the approach minimums, applicable headings, and altitudes (identify nav source)
- **C**hecklist - Complete Before Landing Checklist

Execution
- When cleared for the approach, descend to published altitude or maintain cleared altitude
- When Localizer or Lateral Navigation begins to indicate course interception, call "localizer/ lateral navigation alive"
- When Glide Slope is 1 dot high set flaps to T/O
- Intercept the glide slope and begin descent
- Prior to the FAF complete pre landing flow
    - Gas (Correct Tanks)
    - Boost Pump (Operative Engine-On)
    - Ignitions (Operative Engine-On)
    - Carb heat (as required)
    - Propeller set (Verify Full Forward)
    - Undercarriage Down (Verify 3 Green)
    - Seat belts, and switches (Lights, etc) On
- Verify missed approach altitude set in altitude select before FAF
- Adjust power as needed to maintain high than 84 KIAS (V_{yse})
- Pitch and trim for computed descent rate
- Check and confirm the aircraft altitude at the published Glide Slope intercept altitude
- At 1000ft. above DA, announce:
    - Boost Pump (Operative Engine-On)
    - Propeller set (Verify Full Forward)
    - Undercarriage Down (Verify 3 Green)
    - Lights Set

- At 500ft. above DA, announce:
  - "*500 ft", stabilized*"
- At 100 ft. above DA, announce:
  - *"Approaching Minimums"*
- At the DA:
  - Announce "*Minimums*"
  - Continue approach to landing (a go around should only be considered if landing would be more dangerous)

Common Errors

- Failure to maintain V_{yse}
- Failure to maintain proper heading
- Failure to maintain aircraft control
- Failure to maintain proper glide slope and LOC
- Failure to understand the proper procedures of an instrument approach

Completion Standards

- **Commercial**
  - Promptly recognize engine failure and maintain positive airplane control.
  - Set the engine controls, reduce drag, identify and verify the inoperative engine, and simulate feathering of the propeller on the inoperative engine. (Evaluator should then establish zero thrust on the inoperative engine).
  - Use flight controls in the proper combination as recommended by the manufacturer or as required to maintain best performance, and trim as required.
  - Follow the manufacturer's recommended emergency procedures.
  - Monitor the operating engine and make adjustments as necessary.
  - Request and follow an actual or a simulated ATC clearance for an instrument approach
  - Maintain altitude ±100 feet or minimum sink rate if applicable, airspeed ±10 knots, and selected heading
  - Establish a rate of descent that will ensure arrival at the MDA or DA/DH, with the airplane in a position from which a descent to a landing on the intended runway can be made, either straight in or circling as appropriate.
  - On final approach segment, maintain vertical (as applicable) and lateral guidance within ¾-scale deflection
  - Avoid loss of airplane control or attempted flight contrary to the operating limitations of the airplane.
  - Comply with the published criteria for the aircraft approach category if circling.
  - Execute a normal landing
  - Complete the appropriate checklist.

Emergencies

Aborted Take-off Prior to Lift-off

Objective
To develop the student's ability to recognize an emergency during the take-off role and take the necessary actions to prevent a hazard from occurring

Setup
- Ensure there is sufficient runway to accomplish the maneuver
- If maneuver is to be completed at a towered airport, request with tower
- If at a non-towered airport, alert local traffic
- Determine point at which the abort will occur, providing enough runway to come to a complete stop without excessive braking
- Align aircraft on runway centerline

Execution
- Smoothly apply full power
- **Call outs and airspeeds**
  - **Power Set – Gauges Check – Airspeed Alive**
  - **Vmc 62 KIAS**
  - **Vr 65 KIAS**
  - **V_{yse} 84 KIAS**
- In the event of any abnormality throttles IDLE, Rudder for directional control
- Apply heavy breaking if needed
- Brace for overrun
- Master and Ignitions OFF
- Fuel Selectors off
- Continue straight ahead, avoid obstacles if able
- (If for practice refer to T/O checklist and depart the area)

Recovery
- Bring aircraft to a full stop
- Exit runway as directed by ATC

Common Errors
- Failure to recognize the need to abort the take-off
- Failure to reduce power rapidly enough to prevent risk of overrun
- Failure to maintain aircraft control after abort decision has been made
- Failure to bring both throttles back right away

Completion Standards

- **Commercial**
  - Close the throttles smoothly and promptly when a simulated engine failure occurs.
  - Maintain directional control and apply brakes (AMEL), or flight controls (AMES), as necessary

Engine Failure After Lift-off (Gear Down)

Objective
To develop the student's ability to recognize an engine failure just after rotation and take the necessary actions to maintain aircraft control and safely land back on the runway, return to the airport, or the most suitable landing area available.

NOTE: This is a scenario that should be talked about on the ground, it should not be practiced in the aircraft. Practicing this scenario in a Multi Engine aircraft adds an unnecessary amount of risk in the training environment. It is not a required task on the check ride

Execution

- **If sufficient runway remains to land**
  - Maintain Directional Control
  - Adjust throttle on operating engine as necessary to land straight ahead
  - Brace for an overrun
- **If insufficient runway remains to land**
  - Maintain Directional Control
  - Pitch for V_{yse} (84 KIAS)
  - PROP, THROTTLES, FULL FORWARD
  - IDENTIFY, VERIFY, and **FEATHER**
  - Identify by determining which foot is not pushing on the rudder, that is the dead engine side
  - Verify by reducing the throttle on the suspected dead engine throttle by two inches, if no reaction is noted, that is the dead engine, and that throttle can be reduced to idle
  - Feather by pulling the dead engine prop lever fully aft. **DOUBLE CHECK YOU ARE FEATHERING THE CORRECT ENGINE!**
  - Maintain V_{yse} (84 KIAS)
    - If unable to establish a climb at V_{yse} with the dead engine feathered, you may continue to increase pitch to attempt to establish a climb but do not allow the airspeed to decrease below 70 KIAS
    - If still unable to establish a climb or at least level flight at 70 KIAS, determine whether a return to the airport is possible. If you have insufficient

altitude to return given the sink rate, pick the most suitable landing option within and execute an emergency landing

- If able, climb to pattern altitude. If unable to climb, maintain current altitude
- When workload permits, notify ATC or local traffic you are returning
- 3-5 °of bank into the operative engine
- Half deflection on skid and slip indicator
- Adjust the throttle on the operative engine as necessary
- Dead Engine – Secure (Use checklist)

Execute a single engine approach and landing. Return to the airport making all turns to be into the operative engine

Engine Failure During Climb (Gear UP)

Objective
To develop the student's ability to recognize an engine failure during initial climb out and take the necessary actions to maintain aircraft control and safely return to the airport, or the most suitable landing area available.

BELOW 2,000 AGL

- Maintain Directional Control
- Pitch for V_{yse} (84 KIAS)
- PROP, THROTTLES, FULL FORWARD
- IDENTIFY, VERIFY, and **FEATHER**
- Identify by determining which foot is not pushing on the rudder, that is the dead engine side
- Verify by reducing the throttle on the suspected dead engine throttle by two inches, then reducing the prop on the suspected engine by two inches, if no reaction is noted, that is the dead engine, and that throttle can be reduced to idle
- Feather by pulling the dead engine prop lever fully aft. **DOUBLE CHECK YOU ARE FEATHERING THE CORRECT ENGINE!**
- Maintain V_{yse} (84 KIAS)
    - If unable to establish a climb at V_{yse} with the dead engine feathered, you may continue to increase pitch to attempt to establish a climb but do not allow the airspeed to decrease below 70 KIAS (Vsse)
    - If still unable to establish a climb or at least level flight at 70 KIAS, determine whether a return to the airport is possible. If you have insufficient altitude to return given the sink rate, pick the most suitable landing option within and execute an emergency landing
- If able, climb to pattern altitude. If unable to climb, maintain current altitude
- When workload permits, notify ATC or local traffic you are returning
- 3-5 °of bank into the operative engine
- Half deflection on skid and slip indicator
- Adjust the throttle on the operative engine as necessary
- Dead Engine – Secure (Use checklist)
- Execute a single engine approach and landing. Return to the airport making all turns to be into the operative engine

ABOVE 2,000 AGL

- Maintain Directional Control
- Pitch for V_{yse} (84 KIAS)
- PROPS, THROTTLES, FULL FORWARD
- IDENTIFY, VERIFY, and **Attempt to Fix**
- When workload permits, notify ATC or local traffic you are returning
- Identify by determining which foot is not pushing on the rudder, that is the dead engine side
- Verify by reducing the throttle on the suspected dead engine throttle by two inches, then reducing the prop on the suspected engine by two inches, if no reaction is noted, that is the dead engine, and that throttle can be reduced to idle
- Refer to in Engine Restart Checklist
    - If a restart is not achieved, refer to the Engine Securing Checklist
- Feather by pulling the dead engine prop lever fully aft. **DOUBLE CHECK YOU ARE FEATHERING THE CORRECT ENGINE!**
- Maintain V_{yse} (84 KIAS)
    - If unable to establish a climb at V_{yse} with the dead engine feathered, you may continue to increase pitch to attempt to establish a climb but do not allow the airspeed to decrease below 70 KIAS (V_{sse})
    - If still unable to establish a climb or at least level flight at 70 KIAS, determine whether a return to the airport is possible. If you have insufficient altitude to return given the sink rate, pick the most suitable landing option and execute an emergency landing
- If able, climb to pattern altitude. If unable to climb, maintain current altitude
- 3-5 °of bank into the operative engine
- Half deflection on skid and slip indicator
- Adjust the throttle on the operative engine as necessary Execute a single engine approach and landing. Return to the airport making all turns to be into the operative engine

Completion Standards

- **Commercia**
  - Promptly recognize an engine failure, maintain control, and utilize appropriate emergency procedures.
  - Establish VYSE; if obstructions are present, establish VXSE or VMC +5 knots, whichever is greater, until obstructions are cleared. Then transition to VYSE.
  - Reduce drag by retracting landing gear and flaps in accordance with the manufacturer's guidance.
  - Simulate feathering the propeller on the inoperative engine (evaluator should then establish zero thrust on the inoperative engine).
  - Use flight controls in the proper combination as recommended by the manufacturer, or as required to maintain best performance, and trim as required.
  - Monitor the operating engine and make adjustments as necessary.
  - Recognize the airplane's performance capabilities. If a climb is not possible at VYSE, maintain VYSE and return to the departure airport for landing, or initiate an approach to the most suitable landing area available.
  - Simulate securing the inoperative engine.
  - Maintain heading ±10° and airspeed ±5 knots.
  - Complete the appropriate checklist.

Single Approach and Landing (Traffic Pattern)

DO NOT ALLOW YOURSELF TO GET LOW, SLOW, OR FLAT ON A SINGLE ENGINE APPROACH AND LANDING !

Downwind

- Throttle – As required to maintain >84 KIAS or at least 70 KIAS
- Complete Downwind flow
    - Gas (Correct Tanks)
    - Boost Pumps (Operative Engine-On)
    - Ignitions (Operative Engine-On)
    - Carb heat (as required)
    - Propeller set (Operative Engine-Verify Full Forward)
    - Undercarriage (Keep up until Final)
    - Seat belts, and switches (Lights, etc) On

Base

- Plan the turn from downwind to base such that you have enough time on final to extend the landing gear.
- Maintain greater than V_{yse} >84 KIAS or at least 75 KIAS
- Maintain directional control and positive control of the aircraft

Final

- Gear Down (Verify Three Green)
- Airspeed V_{yse} >84 KIAS or at least 75 KIAS
- Aircraft should be stabilized and in landing configuration by 500' AGL
- Adjust throttle and rudder as needed to maintain centerline with the aircraft, there will be some yawing motions with a feathered engine on landing.

Common Errors

- Failure to maintain directional control of the aircraft
- Getting to slow >84 KIAS
- Not competing the appropriate checklist

Completion Standards

- **Commercia**
  - Promptly recognize an engine failure and maintain positive aircraft control.
  - Set the engine controls, reduce drag, identify and verify the inoperative engine, and simulate feathering of the propeller on the inoperative engine. (Evaluator should then establish zero thrust on the inoperative engine).
  - Use flight controls in the proper combination as recommended by the manufacturer, or as required to maintain best performance, and trim as required.
  - Follow the manufacturer's recommended emergency procedures.
  - Monitor the operating engine and make adjustments as necessary.
  - Maintain the manufacturer's recommended approach airspeed ±5 knots in the landing configuration with a stabilized approach, until landing is assured.
  - Make smooth, timely, and correct control application before, during, and after round out and touchdown.
  - Touch down on the first one-third of available runway/landing surface, with no drift, and the airplane's longitudinal axis aligned with and over the runway center or landing path.
  - Maintain directional control and appropriate crosswind correction throughout the approach and landing.
  - Complete the appropriate checklist.

Engine Failure During Cruise

- Maintain Directional Control
- Pitch for V_{yse} (84 KIAS)
- PROP, THROTTLES, FULL FORWARD
- IDENTIFY, VERIFY, and **Attempt to fix**
- Identify by determining which foot is not pushing on the rudder, that is the dead engine side
- Verify by reducing the throttle on the suspected dead engine throttle by two inches, then reducing the prop on the suspected engine by two inches, if no reaction is noted, that is the dead engine, and that throttle can be reduced to idle
    - Complete the inflight engine restart checklist
        - If no restart is achieved continue to securing engine checklist
    - Feather by pulling the dead engine prop lever fully aft. **DOUBLE CHECK YOU ARE FEATHERING THE CORRECT ENGINE!**
    - Maintain V_{yse} (84 KIAS) or if able, a higher speed which will allow you to maintain your altitude
        - If you determine a climb is necessary, be sure to maintain V_{yse} or higher in the climb.
- Determine the closest suitable airport for landing
- When workload permits, notify ATC or local traffic you are returning
- 3-5 °of bank into the operative engine
- Half deflection on skid and slip indicator
- Adjust the throttle on the operative engine as necessary
- Execute a single engine approach and landing. Return to the airport making all turns to be into the operative engine

Emergency Descent

Objective
To develop the student's ability to descend the airplane as rapidly as possible, within the structural limitations of the airplane

Setup
- Select an entry altitude which will allow for recovery no lower than minimum recovery altitude of 1,500ft. AGL
- Set power to approximately 18" MP to obtain maneuvering speed, while maintaining altitude
- Complete pre-maneuver flow
    - Gas (Correct Tanks)
    - Boost Pumps (On)
    - Ignitions (On)
    - Carb heat (as required)
    - Propellers (Full Foward)
    - Undercarriage (Up)
    - Seat belts, and switches (Lights, etc) On
- Brief passengers and altitudes

Execution
- Smoothly bring throttle to idle
- Lower pitch to maintain 5 KIAS lower then Vno and roll into a 30-45° bank
    - Maneuver can also be completed by verifying airspeed below Vfe and set flaps to FULL
    - Lower pitch to maintain 5 KIAS below Vfe and roll into a 30 to 45º banked turn (to maintain a positive load factor)
    - However, it depends on the situation, if the aircraft is on fire, no attention needs to be given to over speeding the flaps
- Complete circling maneuver or S-turns as needed to lose altitude

Recovery
- Plan to level off at assigned altitude
- Smoothly advance power to cruise (approximately 24" MP) and retract flaps below Vfe
- Complete Cruise Checkout

Common Errors

- Failure to adequately clear area below descent path
- Failure to maintain proper airspeed
- Failure to level off at assigned altitude

Completion Standards

- **Commercial:**
  - Establish and maintain the appropriate airspeed and configuration appropriate to the scenario specified by the evaluator and as covered in POH/AFM for the emergency descent.
  - Maintain orientation, divide attention appropriately, and plan and execute a smooth recovery.
  - Use bank angle between 30° and 45° to maintain positive load factors during the descent.
  - Maintain appropriate airspeed, +0/-10 knots, and level off at specified altitude, ±100 feet.
  - Complete the appropriate checklist.
- **CFI:** See Commercial Above
- **CFI:** See Commercial Above