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PA28-161 Standard Operating Procedures

Standard Briefings

Departure Briefing

The departure briefing shall include the following items by referencing a chart or MFD along with the airport diagram:

- Runway distance and width available - review
- Takeoff distance required - review ground roll distance to clear a 50-foot obstacle, as appropriate
- Airspeeds - review V_R, V_X, and V_Y, as appropriate
- Crosswind component and gust factor - describe control inputs and airspeed adjustment needed
- Terrain / obstacles - review location and avoidance method
- Wake turbulence and wind shear - review avoidance method
- Runway contamination - review impact to performance
- Noise abatement - review pertinent procedures
- Departure plan and airspace review - review and note restrictions
- Sterile flight deck - review the times and / or locations it will be in effect
- Emergency procedures - review pertinent procedures for malfunctions occurring before rotation, after rotation with runway remaining, and after rotation with no runway remaining

Arrival Briefing:

When operating VFR, the arrival briefing shall include the following items by referencing a chart or MFD along with the airport diagram:

- Arrival plan and airspace review - review and note restrictions
- Traffic pattern entry and altitude - review
- Traffic watch (how many aircraft in the pattern) - review
- Runway distance and width available - review
- Landing distance required - review distance to clear a 50-foot obstacle and ground roll, as appropriate
- Planned touchdown point - review
- Runway exit point - review and note other runways in close proximity
- Final approach speed / V_{REF} - review

- Crosswind component and gust factor - describe control inputs and airspeed adjustment needed
- Runway contamination and braking conditions - review impact to performance
- Terrain/obstacles - review location and avoidance method
- Noise abatement - review pertinent procedures
- NOTAMs - review
- Sterile flight deck - review the times and/or location it will be in effect

Standard Callouts

When executing a takeoff:

ACTION	PF SAYS	PM SAYS	EXPLANATION
After lining up with the runway centerline for any takeoff but before beginning the takeoff roll	*"Runway (Runway Number, verified."*	*N/A*	Check the magnetic compass and/or DG/ HSI to ensure the airplane is lined up on the correct runway. The PM shall make a silent verification of the proper runway alignment.
After advancing full power and beginning the takeoff roll	*"In the green."*	*N/A*	Check that the appropriate engine instruments are indicating properly and the engine is developing full power.
As the airplane accelerates for takeoff	*"Airspeed alive."*	*N/A*	Check that the airspeed indicator is functioning normally.
Rejecting a takeoff due to malfunction, emergency, or hazard	*"Abort, abort, abort."*	*N/A*	Notify the PM that the takeoff is being rejected. The PM may also make the callout and the PF should reject the takeoff.
Attaining rotation speed, V_R	*"Rotate."*	*N/A*	Acknowledge the airplane has reached a safe airspeed to liftoff without stalling
Establishing a positive rate of climb	*"Positive rate."*	*N/A*	Acknowledge the airplane is climbing and will safely clear obstacles and hazards.

When executing visual approach to landing:

ACTION	PF SAYS	PM SAYS	EXPLANATION
After lining up with the extended runway centerline for landing	*"Runway (Runway Number, verified."*	*N/A*	Check the magnetic compass and/or DG/ HSI to ensure the airplane is lined up on the correct runway. The PM shall make a silent verification of the proper runway alignment.
Reaching 200 feet AGL during final approach to any landing	*"200 feet, stabilized, continuing."* *or* *"200 feet, not stabilized, going around."*	*N/A*	Decide whether or not the approach is stabilized and the approach to landing can be safely continued.
Anytime a go-around/ rejected landing is initiated	*"Going around."*	*N/A*	Acknowledge that the landing attempt cannot continue safely and should be rejected.

Before Takeoff Final Items:

1. Traffic…CHECK
2. Fuel Selector…APPROPRIATE TANK
3. Mixture Control…FULL FORWARD
4. Lights…AS REQUIRED
5. Pitot Heat…AS REQUIRED

Before Landing Final Items:

1. Fuel Selector…APPROPRIATE TANK
2. Mixture Control…FULL FORWARD
3. Fuel Pump…ON
4. Lights…AS REQUIRED

Takeoff, Climb and Departure

Normal Takeoff and Climb

1. Note the wind direction and ensure that the DEPARTURE CHECKLIST and BEFORE TAKEOFF FINAL ITEMS are complete.

2. Taxi into takeoff position utilizing all runway possible, positioning the flight controls for existing wind conditions (full ailerons into the wind and neutral elevator). After lining up with the runway, verify the magnetic heading matches the assigned/intended takeoff runway and call out, *"Runway (Runway Number), verified."*
3. Smoothly and continuously apply full throttle, maintaining directional control and runway centerline with the rudder pedals.
4. Check engine instruments and tachometer (RPM) and call out, *"In the green."*
5. Verify the airspeed is increasing and call out, *"Airspeed alive."*
6. During the ground roll, decrease aileron input to keep wings level.
7. At V_R (55 KIAS), call out, *"Rotate."* Increase control wheel back pressure to pitch up until the top of the glare shield meets the horizon (approx. 9-10°). Add 1/2 of the gust factor to V_R.
8. After liftoff, establish and maintain V_Y (79 KIAS) while maintaining the flight path over the runway centerline. Trim as necessary.
9. With a positive range of climb and no available landing area remaining, depress the brake pedals and call out, *"Positive rate."*
10. During the climb out (no less than 200' AGL), lower the nose momentarily to ensure that the airspace ahead is clear, and the re-establish and maintain V_Y (79 KIAS), maintaining the flight path over the extended runway centerline. Trim as necessary.
11. At 500' AGL, lower the pitch (approx. 7-8°) to establish and maintain 87 KIAS.
12. Execute a departure procedure, or remain in the traffic pattern, as appropriate.

<u>Short-Field Takeoff and Maximum Performance Climb</u>

1. Note the wind direction and velocity, verify the flaps are set to 25°, and ensure that the DEPARTURE CHECKLIST and BEFORE TAKEOFF FINAL ITEMS are complete.
2. Taxi into takeoff position utilizing all runway possible, positioning the flight controls for existing wind conditions (full ailerons into the wind and neutral elevator). After lining up with the runway, verify the magnetic heading matches the assigned/intended takeoff runway and call out, *"Runway (Runway Number), verified."*
3. Firmly depress the brake pedals to ensure holding the airplane in position during full power run-up.
4. Smoothly and continuously apply full throttle, checking engine instruments and tachometer (RPM) and call out, *"In the green."*
5. Release the brakes, maintaining directional control and runway centerline with the rudder pedals. Verify the airspeed is increasing and call out, *"Airspeed alive."*

6. During the ground roll, decrease aileron input to keep wings level.
7. At V_R (52 KIAS) call out, *"Rotate."* Increase control wheel back pressure to pitch up (approx. 11-12°). Add 1/2 of the gust factor to V_R.

NOTE

V_R is dependent upon the airplane's gross takeoff weight and configuration. Determine the appropriate speed using the Piper Warrior III POH 25° Flaps Takeoff Performance charts. The "50 FT. Barrier Speed", interpolated for the correct weight, should be used for V_R. (Sec. 5-17)

8. After liftoff, establish and maintain obstacle clearance speed (57 KIAS) until all obstacles are cleared (50' AGL), while maintaining the flight path over the runway centerline. Add 1/2 of the gust factor to the obstacle clearance speed.
9. With a positive rate of climb and no available landing area remaining, depress the brake pedals and call out, *"Positive rate."*
10. With obstacle(s) cleared:
11. Establish a V_Y climb attitude (approx. 9-10° up).
12. At or above 60 KIAS, retract the flaps to 10°.
13. At or above 65 KIAS, retract the flaps to up.
14. Establish and maintain V_Y (79 KIAS). Trim as necessary
15. During the climbout (no less than 200' AGL), lower the nose momentarily to ensure that the airspace ahead is clear, and then re-establish VY (79 KIAS), while maintaining the flight path over the extended centerline. Trim as necessary.
16. At 500' AGL, lower the pitch (approx. 7-8°) to establish and maintain 87 KIAS.
17. Execute a departure procedure, or remain in the traffic pattern, as appropriate.

<u>Soft-Field Takeoff and Climb</u>

1. Note the wind direction and velocity, verify the flaps are set to 25°, and ensure that the DEPARTURE CHECKLIST and BEFORE TAKEOFF FINAL ITEMS are complete.
2. Taxi toward the takeoff position while maintaining the control wheel slightly aft of neutral and positioning the ailerons for existing wind conditions (full ailerons into the wind). After lining up with the runway, verify the magnetic heading matches the assigned/intended takeoff runway and call out, *"Runway (Runway Number), verified."*
3. Without stopping the airplane, smoothly and continuously apply full throttle, checking engine instruments and tachometer (RPM). Call out, *"In the green."*
4. Add enough control wheel back pressure to lift and maintain the nose wheel off the runway surface at the start of the takeoff roll (7-8° nose up).

Do not begin the takeoff roll with full aft elevator. After applying full power, do not allow the airplane to pitch up excessively. Either action may cause a tail strike.

5. Maintain directional control and runway centerline with the rudder pedals.
6. Verify the airspeed is increasing and call out, *"Airspseed alive."*
7. During the ground roll, decrease aileron input to keep wings level.
8. As the main wheels lift off the runway, lower the pitch attitude to establish and maintain a level flight attitude while remaining in ground effect and accelerating to obstacle clearance speed (57 KIAS), then:
9. *With no obstacle(s)*
   a. Establish a V_Y (79 KIAS) climb attitude (approx. 7-9° up).
   b. Maintain the flight path over the runway centerline. Trim as necessary.

   With obstacle(s)
   a. Establish and maintain obstacle clearance speed (57 KIAS) until all obstacles are cleared (50' AGL). Add 1/2 of the gust factor to the obstacle clearance speed.

NOTE

Obstacle clearance speed is dependent on the airplane's gross takeoff weight and configuration. Determine the appropriate obstacle clearance speed using the Piper Warrior III POH 25° Flaps Takeoff Performance charts. The "50 FT. Barrier Speed", interpolated for the correct weight, should be used for obstacle clearance speed.

   b. Maintain the flight path over the runway centerline. Trim as necessary
   c. With obstacle(s) cleared, establish a V_Y (79 KIAS) climb attitude (approx. 9-10° up).
10. With a positive rate of climb and no available landing area remaining, depress the brake pedals and call out, *"Positive rate."*
11. At or above 60 KIAS, retract the flaps to 10°, at or above 65 KIAS, retract the flaps to up.
12. Establish and maintain V_Y (79 KIAS). Trim as necessary.
13. During the climbout (no less than 200' AGL), lower the nose momentarily to ensure that the airspace ahead is clear, and then re-establish VY (79 KIAS), while maintaining the flight path over the extended centerline. Trim as necessary.
14. At 500' AGL, lower the pitch (approx. 7-8°) to establish and maintain 87 KIAS.
15. Execute a departure procedure, or remain in the traffic pattern, as appropriate.

Arrival, Approach, and Landing

Stabilized Approach To Landing

NOTE

A stabilized approach to landing is defined as a landing approach in which the pilot establishes and maintains a constant angle glide path towards a predetermined point on the landing runway. It is based on the pilot's judgment of certain visual cues, and depends on the maintenance of a constant final descent airspeed and configuration.

1. Choose a pre-determined aiming point on the runway based on:
   - Runway distance available, landing distance required, and the type of landing
   - Landing surface conditions and braking effectiveness
   - Runway exit point
   - Final approach airspeed
   - Wind conditions
   - Terrain and obstructions
   - Visibility and lighting
   - Hazards such as wind shear and wake turbulence
   - ATC restrictions such as LAHSO
2. Maintain the glide path at a constant angle relative to the ground and verify the airplane is traveling toward the pre-determined aiming point on the runway.
3. Verify the airplane is positioned over the extended runway centerline.
4. Maintain a constant pitch attitude and power setting.
5. Maintain a constant airspeed with +/-10 KIAS of V_{REF} (63 KIAS).
6. Establish landing configuration and trim the airplane to relieve control pressures.
7. Complete the BEFORE LANDING FINAL ITEMS.
8. The pilot-in-command shall determine the landing can be completed safely.

NOTE

A stabilized approach shall be achieved prior to 200 feet AFE and maintained thereafter.

9. If the approach is stabilized at 200 feet AFE
   a. Call out, *"200 feet, stabilized, continuing."*
   b. Continue the appropriate approach to landing procedure.
   c. Be prepared to execute a go-around at any time if necessary.

WARNING

Do not commit to a landing if it becomes unsafe. Even after the callout is made, go around if necessary.

10. If the approach is not stabilized at 200 feet AFE
    a. Call out, *"200 feet, not stabilized, going around."*
    b. Execute a GO-AROUND / REJECTED LANDING

Normal Approach and Landing

1. Abeam the point of intended landing, or approximately 3 nm from the runway, set power to 1500 RPM. At or below V_{FE} (103 KIAS), call out, *"(Current Airspeed) knots, flaps 10."*
2. Establish a descent at 80 KIAS (1° nose down). Trim as necessary.
3. At the 45° point to the intended touchdown point (or as appropriate for wind conditions), commence a turn to the base leg.
4. On the base leg or approximately 2 nm from the runway, call out, *"(Current Airspeed) knots, flaps 25."* Set the flaps to 25°, and establish and maintain 70 KIAS (3° nose down). Trim as necessary.
5. Visually verify that the final approach (including the extended final and opposite base leg) is clear, and turn final.
6. Verify the magnetic heading matches the assigned/intended landing runway and call out, *"Runway (Runway Number), verified."*
7. When landing is assured, call out, *"(Current Airspeed) knots, flaps full."* Set the flaps to full. Establish and maintain V_{REF}. Add 1/2 of the gust factor to V_{REF}. Trim as necessary.
8. Establish and maintain a STABILIZED APPROACH TO LANDING.
9. Transition from a crab angle to a side slip (wing low method) to correct for wind drift.
10. After determining the approach is stabilized and deciding to continue, begin the roundabout on short final approximately 100 to 200 ft. Above the touchdown elevation by gradually reducing power and increasing the angle of attack (flaring) while continuing to descend toward the touchdown point. Maintain a side slip for wind drift control.

NOTE

The point at which the roundabout begins is dependent on descent angle, flaps setting, side slip, ground speed, and other factors. Time the power reduction and flare so speed is reduced from V_{REF} at the start of the round out to near the stalling speed at touchdown.

11. Touchdown at minimum controllable airspeed (near stalling speed) with a power-off stall pitch attitude, on the upwind main wheel first, followed by the

downwind main wheel. After both main wheels touch down, maintain back pressure but allow the nose wheel to gently touch down.

NOTE

Prior to touchdown, ensure proper foot placement so as to not inadvertently apply wheel brakes.

12. As the airplane decelerates, increase aileron deflection into the wind, maintain directional control with the rudder, and use aerodynamic braking throughout the rollout, slowing sufficiently before turning onto a taxiway. Minimize the use of wheel brakes.

NOTE

After exiting the runway, ensure the airplane is fully clear of the runway hold short marking before stopping. Continue to pull up all the way to and hold short of the next taxiway interception, if applicable. This will allow other aircraft to clear the runway behind you.

13. Complete the AFTER LANDING CHECKLIST.

Short-Field Approach and Landing

1. Abeam the point of intended landing, or approximately 3 nm from the runway, set power to 1500 RPM. At or below V_{FE} (103 KIAS), call out, *"(Current Airspeed) knots, flaps 10."*
2. Establish a descent at 80 KIAS (1° nose down). Trim as necessary.
3. At the 45° point to the intended touchdown point (or as appropriate for wind conditions), commence a turn to the base leg.
4. On the base leg or approximately 2 nm from the runway, call out, *"(Current Airspeed) knots, flaps 25."* Set the flaps to 25°, and establish and maintain 70 KIAS (3° nose down). Trim as necessary.
5. Visually verify that the final approach (including the extended final and opposite base leg) is clear, and turn final.
6. Verify the magnetic heading matches the assigned/intended landing runway and call out, *"Runway (Runway Number), verified."*
7. When landing is assured, call out, *"(Current Airspeed) knots, flaps full."* Set the flaps to full. Establish and maintain V_{REF} (63 KIAS). Add 1/2 of the gust factor to V_{REF}. Trim as necessary.
8. Establish and maintain a STABILIZED APPROACH TO LANDING.
9. Transition from a crab angle to a side slip (wing low method) to correct for wind drift.
10. After determining the approach is stabilized and deciding to continue, begin the roundabout on short final approximately 100 to 200 ft. Above the touchdown elevation by gradually reducing power and increasing the angle of attack

(flaring) while continuing to descend toward the touchdown point. Maintain a side slip for wind drift control.

NOTE

The point at which the roundabout begins is dependent on descent angle, flaps setting, side slip, ground speed, and other factors. Time the power reduction and flare so speed is reduced from V_{REF} at the start of the round out to near the stalling speed at touchdown.

NOTE

The flight path should not round out and the aiming point and touchdown point should be the same.

NOTE

Avoid closing the throttle rapidly, which may result in an immediate increase in the rate of descent and a hard landing.

11. Touchdown at minimum controllable airspeed (near stalling speed) with a power-off stall pitch attitude, on the upwind main wheel first, followed by the downwind main wheel. After both main wheels touch down, maintain back pressure but allow the nose wheel to gently touch down.

NOTE

Prior to touchdown, ensure proper foot placement so as to not inadvertently apply wheel brakes.

12. At nose wheel touchdown:
    a. Retract the flaps to the up position (for maximum braking effectiveness).
    b. Hold the control wheel full back, and
    c. Apply braking as necessary to stop within the shortest distance possible, consistent with safety and controllability,
13. As the airplane decelerates, increase aileron deflection into the wind and maintain directional control with the rudder throughout the rollout, sowing sufficiently before turning onto a taxiway.

NOTE

After exiting the runway, ensure the airplane is fully clear of the runway hold short marking before stopping. Continue to pull up all the way to and hold short of the next taxiway interception, if applicable. This will allow other aircraft to clear the runway behind you.

14. Complete the AFTER LANDING CHECKLIST.

Soft-Field Approach and Landing

1. Abeam the point of intended landing, or approximately 3 nm from the runway, set power to 1500 RPM. At or below V_{FE} (103 KIAS), call out, *"(Current Airspeed) knots, flaps 10."*
2. Establish a descent at 80 KIAS (1° nose down). Trim as necessary.
3. At the 45° point to the intended touchdown point (or as appropriate for wind conditions), commence a turn to the base leg.
4. On the base leg or approximately 2 nm from the runway, call out, *"(Current Airspeed) knots, flaps 25."* Set the flaps to 25°, and establish and maintain 70 KIAS (3° nose down). Trim as necessary.
5. Visually verify that the final approach (including the extended final and opposite base leg) is clear, and turn final.
6. Verify the magnetic heading matches the assigned/intended landing runway and call out, *"Runway (Runway Number), verified."*
7. When landing is assured, call out, *"(Current Airspeed) knots, flaps full."* Set the flaps to full. Establish and maintain V_{REF} (63 KIAS). Add 1/2 of the gust factor to V_{REF}. Trim as necessary.
8. Establish and maintain a STABILIZED APPROACH TO LANDING.
9. Transition from a crab angle to a side slip (wing low method) to correct for wind drift.
10. After determining the approach is stabilized and deciding to continue, begin the roundabout on short final approximately 100 to 200 ft. Above the touchdown elevation by gradually reducing power and increasing the angle of attack (flaring) while continuing to descend toward the touchdown point. Maintain a side slip for wind drift control.

NOTE

The point at which the roundabout begins is dependent on descent angle, flaps setting, side slip, ground speed, and other factors. Time the power reduction and flare so speed is reduced from V_{REF} at the start of the round out to near the stalling speed at touchdown.

11. Continue the round out so the airplane is held 1-2 feet off the surface in ground effect as long as possible (to gradually dissipate forward speed).

NOTE

Use power (typically 1200-1300 RPM) after the level-off and during touchdown to ensure touching down softly and at the slowest possible speed.

12. Touch down at minimum controllable airspeed (near stalling speed) with a power-off stall pitch attitude, on the upwind main wheel first, followed with the downwind main wheel. Continue to use power during and after touchdown.

NOTE

Prior to touchdown, ensure proper foot placement so as to not inadvertently apply wheel brakes.

NOTE

Use power and control wheel back pressure (elevator deflection) to control the rate at which the airplane's weight is transferred to the main wheels.

13. As the airplane decelerates, increase back pressure to hold the nose wheel off the surface, increase aileron deflection into the wind, maintain directional control with the rudder, and use aerodynamic braking throughout the rollout, slowing sufficiently before turning onto a taxiway.

NOTE

On an actual grass or other soft surface, continue to use power thought the after lading roll. For training purposes on hard-surfaced runways, the power may be reduced to idle and the nose wheel allowed to gently touch down after demonstrating the ability to hold the nose wheel off the surface.

NOTE

Conduct all taxi operations with the control wheel fully aft. On softer surfaces, additional power may be needed to maintain taxi speed and avoid becoming stuck. Avoid the use of brakes to prevent imposing a heavy load on the nose gear, causing the nose gear to "dig" into the soft surface.

NOTE

After exiting the runway, ensure the airplane is fully clear of the runway hold short marking before stopping. Continue to pull up all the way to and hold short of the next taxiway interception, if applicable. This will allow other aircraft to clear the runway behind you.

14. Complete the AFTER LANDING CHECKLIST.

Flight Maneuvers

Pre-Maneuver Flow

1. Verify that the Fuel Pump is ON and the Fuel Selector is on the fullest tank.
2. Set the Mixture to Full Rich.
3. Determine that the horizontal and vertical distance to nearby airspace areas is sufficient to complete the maneuver and that airspace equipment and communications requirement are met.

4. Determine that the horizontal and vertical distance from nearby clouds is sufficient to complete the maneuver, that the visibility is sufficient to safely identify and avoid any hazards and other traffic, and other weather conditions do not pose a hazard to safe completion of the maneuver.
5. Set power to 2350 RPM.
6. First 90° clearing turn:
    a. Select a visual landmark off the wing tip in the direction of the turn to be executed as a 90° reference point to roll onto.
    b. Visually scan the area to the left and right of the aircraft for traffic.
    c. Enter into a 30° bank turn in the direction of the visual landmark.
    d. Continuously scan the area for traffic above, below, and ahead of the flight path.
    e. After 90° of turn has been completed, rollout to winds level on the selected landmark.
7. Second 90° clearing turn:
    a. Select a visual landmark off the wing tip in the direction of the turn to be executed as a 90° reference point to roll onto.
    b. Visually scan the area to the left and right of the aircraft for traffic.
    c. Enter a 30° bank turn in the same or opposite direction.
    d. Continuously scan the area for traffic above, below, and ahead of the flight path.
    e. Transmit a position report on the ECAC practice area frequency (123.5).
    f. After 90° of turn has been completed, rollout to winds level on the selected landmark.

Maneuvering During Slow Flight

1. Select an altitude that will allow the maneuver to be completed no lower than 1500’ AGL.
2. Perform the Pre-Maneuver Flow and make a position report.
3. Identify a visual reference ahead of the airplane to assist in maintaining heading.
4. Reduce the power to 1500 RPM, adjusting pitch (trim) to maintain altitude.
5. For flaps full (landing configuration)
    a. Below V_{FE} (103 KIAS), call out, *“(Current airspeed) knots, flaps 1”*.
    b. Below V_{FE} (103 KIAS), call out, *“(Current airspeed) knots, flaps full”*.

c. Slow the airplane until the stall warning activates.

d. Increase power (approx. 1900 RPM) and set the pitch attitude (trim as necessary) to maintain the minimum airspeed approximately 2 knots above the speed at which the stall warning activates (V_{SO}: 44 KIAS)

NOTE

The minimum airspeed to maintain is a speed that does not activate the stall warning.

For flaps up (clean configuration)

a. Slow the airplane until the stall warning activates.

b. Increase power (approx. 1700 RPM) and set the pitch attitude (trim as necessary) to maintain the minimum airspeed approximately 2 knots above the speed at which the stall warning activates (V_{S1}: 50 KIAS)

NOTE

The minimum airspeed to maintain is a speed that does not activate the stall warning.

6. Maintain the entry altitude (straight and level) or turn, climb, and descend as directed.
7. To return to cruise flight, smoothly and continuously increase power to full, adjusting pitch to maintain altitude, trim as necessary. Maintain heading.
8. To return to cruise flight from flaps full (landing configuration)
   a. Retract the flaps to 25°.
   b. At or above 60 KIAS, retract the flaps to 10°.
   c. At or above 65 KIAS, retract the flaps to up.
9. Set cruise power.
10. Re-trim as necessary.
11. Complete Cruise Checklist.

Power-Off Stall

1. Select an altitude where recovery will occur no lower than 1500’ AGL.
2. Perform the Pre-Maneuver Flow and make a position report.
3. Reduce power to 1500 RPM, adjusting pitch (trim) to maintain altitude.
4. Below V_{FE} (103 KIAS), call out, *“(Current airspeed) knots, flaps 1.”* Extend the flaps to 10°, adjusting pitch (trimming) to maintain altitude.
5. Below V_{FE} (103 KIAS), call out, *“(Current airspeed) knots, flaps full.”* Extend the flaps to full, adjusting pitch (trimming) as necessary to maintain altitude.

6. Maintain altitude until reaching 70 KIAS, and then establish a stabilized descent (trimmed) at 65 KIAS to simulate a normal approach to landing (3° nose pitch down)
7. Descending no lower than 200" from the entry altitude, simultaneously reduce the power to idle and slowly pitch up to the V_Y attitude in straight flight or in turns with up to 20° bank.
8. For Private Pilot Training
    a. When the stall warning activates, call out, *"Stall warning."*
    b. Continue to slow the airplane until a stall occurs.
    c. After a fully developed stall, reduce the angle of attack to regain control effectiveness.
    d. Apply full power.
9. Maintain coordinated use of the ailerons and rudder to level the wings and prevent a spin.

NOTE

Some altitude loss is expected during the recovery, but re-establishment of controlled flight is paramount. Evaluation criteria should take into account the numerous variables that affect recovery altitude. There should not be a predetermined limitation for altitude loss or requirement to maintain altitude during the recovery.

10. Set a positive pitch attitude and retract the flaps to 25°.
11. At or above 60 KIAS, retract the flaps to 10°. Establish a V_Y climb attitude.
12. At or above 65 KIAS, retract the flaps to up. Trim as necessary.
13. Return to the altitude, heading, and airspeed specified. Complete the Cruise Checklist.

Power-On Stall

1. Select an altitude where recovery will occur no lower than 1500' AGL.
2. Perform the Pre-Maneuver Flow and make a position report.
3. Reduce the power to 1500 RPM, adjusting pitch (trimming) to maintain altitude.
4. At VR (55 KIAS), set full power and slowly increase pitch up to approximately 20° in straight flight or in turns with up to 20° bank.
5. For Private Pilot training
    a. When the stall warning activates, call out, *"Stall warning."*
    b. Continue to slow the airplane until a stall occurs.

c. After a fully-developed stall, reduce the angle of attack to regain control effectiveness.

d. Maintain full power.

6. Maintain coordinated use of ailerons and rudder to level the wings and prevent entering a spin.

NOTE

Some altitude loss is expected during the recovery, but re-establishment of controlled flight is paramount. Evaluation criteria should take into account the numerous variables that affect recovery altitude. There should not be a predetermined limitation for altitude loss or requirement to maintain altitude during the recovery.

7. Establish a VY climb attitude. Trim as necessary.
8. Return to the altitude, heading, and airspeed specified. Complete the Cruise Checklist.

Elevator Trim Stall

1. Select an altitude where recovery will occur no lower than 1500' AGL.
2. Perform the Pre-Maneuver Flow and make a position report.
3. Reduce the power to 1500 RPM, adjusting pitch (trimming) to maintain altitude.
4. Below V_{FE} (103 KIAS), call out, *"(Current airspeed) knots, flaps 1."* Extend the flaps to 10°, adjusting pitch (trimming) to maintain altitude.
5. Below V_{FE} (103 KIAS), call out, *"(Current airspeed) knots, flaps full."* Extend the flaps to full, adjusting pitch (trimming) as necessary to maintain altitude.
6. Maintain altitude until reaching 70 KIAS, and then establish a stabilized descent (trimmed) at 65 KIAS to simulate a normal approach to landing (3° nose pitch down).
7. Descending no lower than 200' from entry altitude, apply full throttle, allowing the airplane to roll left and the pitch to increase to the VX pitch attitude (approx. 12° nose pitch up).
8. Reduce the angle of attack to maintain control effectiveness. If the stall warning activates, call out, *"Stall warning."*
9. Maintain coordinated use of ailerons and rudder to level the wings.
10. Adjust pitch to the VY attitude and retract the flaps to 25° (re-trimming as necessary).
11. At or above 60 KIAS, retract the flaps to 10°.
12. At or above 65 KIAS, retract the flaps to up.

13. Return to the altitude, heading, and airspeed specified. Complete the Cruise Checklist.

Steep Turns

1. Perform the Pre-Maneuver Flow and make a position report.
2. Select a prominent visual reference point directly ahead of the airplane and out towards the horizon.
3. Adjust the pitch and power to maintain altitude and 95 KIAS. Re-trim as necessary.
4. Note the pitch attitude required for level flight.
5. Roll into a 45° bank in the direction previously cleared.
6. Rolling through 30° of bank, increase power (approx. 200 RPM) to maintain airspeed while pitching up (1° nose pitch up) to maintain altitude. Use trim, as necessary, to assist with increasing back pressure.
7. Referencing the selected visual point, initiate your roll out approximately 20-25° before the entry heading.
8. Transitioning through 30° of bank, reduce power to maintain airspeed and decrease pitch (trimming) to maintain altitude.
9. Return to wings level flight at the entry heading, altitude, and airspeed.
10. Check for traffic and roll into a 45° bank in the opposite direction and repeat steps 6 through 9.
11. Set cruise power.
12. Re-trim as necessary. Complete the Cruise Checklist.

Emergency Descent

1. Select an altitude where recovery will occur no lower than 1500’ AGL and a descent will be no more than 2000’.
2. Perform the Pre-Maneuver Flow and make a position report.
3. Pick a visual landmark off the wing tip in the direction of the turn to be made.
4. Simultaneously reduce the throttle to idle (smoothly and slowly to prevent engine backfiring), roll into a 30-45° bank in the direction desired, and lower the pitch to maintain 124 KIAS (approx. 12-15° nose pitch down).
5. Roll out on the 90° point (visual landmark) in the turn, making shallow S-turns to continue checking for other traffic while descending.
6. Approaching the target altitude, begin to level off by increasing pitch to reduce the descent rate.

7. At target altitude, adjust pitch to maintain level flight.
8. Set cruise power.
9. Re-trim as necessary. Complete the Cruise Checklist.

Emergency Approach and Landing (Simulated)

NOTE

When simulating an engine failure, the IP or check instructor will move the throttle smoothly and slowly to idle to prevent engine backfiring and simultaneously call out, *"Simulated engine failure."*

1. Establish best glide attitude for attaining 73 KIAS.
2. Ensure that the flaps are in the up position.
3. When 73 KIAS is attained, trim to maintain that airspeed.
4. Determine wind direction and select a suitable landing site, checking the area in the immediate vicinity of the aircraft's position. Choose a nearby airport within gliding distance if one is available.

NOTE

At nighttime, if the conditions of the terrain in the vicinity of the aircraft is known and suitable, choose an unlighted area in which to make a forced landing. However, if possible, consider making the forced landing close to public access to aid in assistance and rescue.

5. Turn the airplane towards the selected landing site.

NOTE

The student must advise the IP of the site selected and the direction of intended landing.

6. Complete the Engine Power Loss In Flight and Power Off Landing Checklists.
7. If engine restart is unsuccessful, maneuver the aircraft as necessary for the approach and landing.

NOTE

Operating the engine at idle speed for prolonged periods may result in excessive engine cooling or spark plug fouling. The IP or check instructor is responsible for checking engine operation during the glide by "clearing" the engine approximately every 1000'

"Clearing should be done by smoothly advancing the power to a cruise power setting then smoothly reducing the power back to idle. Avoid rapidly closing the throttle as engine backfiring may occur.

NOTE

How to maneuver the aircraft for the pattern and the approach and landing will depend on many variables, including location of the closest suitable landing site to the aircraft's current position, altitude, wind direction, landing direction, obstructions, etc. All variables must be considered when developing a maneuvering plan.

Maneuvering the aircraft from an altitude significantly higher than the desired altitude for the commencement of the approach and landing may require that the landing area is circled (spiral).

Circling over the landing area allows for continual monitoring of the intended landing site(the landing area is always in sight), and allows for making immediate corrections to the planned flight path when necessary.

When circling over the landing area, bank angle may be adjusted to vary altitude loss so as to arrive at the abeam point at the appropriate altitude. When appropriate, maneuver the aircraft to arrive at a point abeam the point of intended landing at 1000' AGL (high-key point).

NOTE

In some situations, the remaining altitude may not permit reaching the abeam point as part or the maneuvering plan. In those situations, proceed as appropriate to the point (low-key point) where a judgement can be made as when to turn onto the final approach.

8. If the use of an abeam point was possible, turn onto the base leg when appropriate.
9. From the base leg (low-key point), determine if adjustment of the flight path of the base leg is necessary to conserve or dissipate altitude to ensure reaching the desired landing point. Call out, "(Current airspeed) knots, flaps 1." Set flaps to 10°, if desired.
10. When appropriate, turn onto final, aligning the aircraft's flight path with the landing site, and, if desired, call out, "(Current airspeed) knots, flaps full." Set flaps to full when landing is assured.
11. Ensure that the Engine Power Loss In Flight and Power Off Landing checklists have been completed prior to touchdown.
12. When prompted by the IP or check instructor, execute a Go-Around/Rejected Landing.

NOTE

Unless the approach is made to an ECAC approved airport runway, the simulated emergency approach and landing should be terminated as soon as it can be determined that a safe landing could have been made, or early enough to avoid

flying below 600' AGL, whichever occurs first. The IP or check pilot will notify the student when to go around regardless of what training course the student is in.

Rectangular Course

1. Determine the wind direction.
2. Perform the Pre-Maneuver Flow and make a position report.
3. Select a square or rectangular area, or an area bounded on four sides by section lines or roads, in an area where an emergency landing can be made if necessary.
4. Establish and maintain 100 KIAS and 1000' AGL.
5. Enter on a 45° to the mid-field downwind.

NOTE

Although the maneuver may be entered from any direction, for training purposes, only a downwind entry may be used.

6. Establish a crab angle as necessary to maintain a uniform distance from the area boundaries for each leg of the maneuver.

NOTE

The airplane should be flown parallel to and at a uniform distance 1/4 to 1/2 mile away from the field boundaries (reference last 1/4 of the wing).

7. Begin the turn to next leg when airplane is abeam the corner of the area boundary.
8. Vary the bank angle (not to exceed a 45° bank) to maintain a constant radius during the turns.
9. Depart on a 45° from the downwind turn boundary.
10. Set cruise power.
11. Re-trim as necessary.
12. Complete the Cruise Checklist.

Turns Around a Point

1. Determine the wind direction.
2. Perform the Pre-Maneuver Flow and make a position report.
3. Select a reference point in an area where an emergency landing can be made if necessary.
4. Establish and maintain 100 KIAS and 1000' AGL.

5. Enter on a downwind to one side of the selected point at a distance equal to the desired radius of the turn.
6. Directly downwind (highest groundspeed) and abeam the reference point, roll into the steepest bank (not to exceed 45°) to initiate maintaining a constant radius.
7. AS the turn continues (groundspeed decreases), begin to shallow thebans as necessary to continue maintaining a constant radius.
8. Directly upwind (lowest groundspeed), the bank should be at its shallowest.
9. As the turn continues (groundspeed increases), begin to steepen the bank as necessary to continue maintaining a constant radius.

NOTE

In addition to varying the bank angle, crabbing is also necessary. Crab in during the downwind half of the circle; crab out during the upwind half of the circle.

10. Fly two complete circles, or as directed, and depart on the entry heading.
11. Set cruise power.
12. Re-trim as necessary. Complete the Cruise Checklist.

<u>S-Turns Across a Road</u>

1. Determine the wind direction.
2. Perform the Pre-Maneuver Flow and make a position report.
3. Select a straight ground reference line or road in an area where an emergency landing can be made if necessary, and that lies 90° (perpendicular) to the direction of the wind.
4. Establish and maintain 100 KIAS and 1000’ AGL.
5. Enter on a downwind heading.
6. When directly over the line or road (highest groundspeed), roll into the steepest bank (not to exceed 45°) to initiate maintaining a constant radius.
7. As the turn continues (groundspeed decreases), begin to shallow the bank as necessary to continue maintaining a constant radius.
8. Level the wings when crossing the reference line (lowest groundspeed) and immediately begin a turn back in the opposite direction.
9. As the turn continues (groundspeed increases), begin to steepen the bank as necessary to continue maintaining a constant radius.
10. Level the wings when crossing the reference line (highest groundspeed).

NOTE

The rollouts must be timed in order to be straight and level directly over and perpendicular to the line or road.

In addition to varying the bank angle, crabbing is necessary. Crab in during the downwind half of the circle; crab out during the upwind half of the circle.

11. After completing the second turn, depart on the entry heading.
12. Set cruise power.
13. Re-trim as necessary.
14. Complete the Cruise Checklist