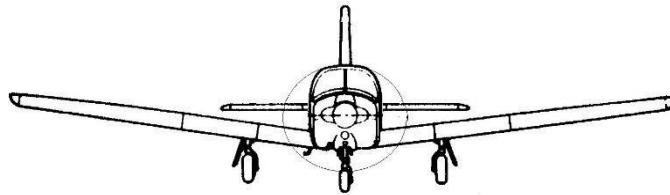


PA-28R-201 ARROW

COMMERCIAL COURSE



University of Dubuque

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CALLOUTS

CONDITION	CALLOUT
Parking Brake Released	CLEAR LEFT, CLEAR RIGHT, PARKING BRAKE RELEASED
After Takeoff Power has been Set	POWER STABLE, GAUGES GREEN
Airspeed Indicator is Increasing	AIRSPEED ALIVE
Airspeed Reaches V_R	ROTATE
Positive Rate of Climb After Takeoff	POSITIVE RATE, GEAR UP (Ensure KIAS is less than 107)
1,000 Feet From Assigned Altitude	1,000 FEET
200 Feet From Assigned Altitude	200 FEET
Any Flap Change	BELOW 103, FLAPS (##^o), TARGET (## knots)
Landing Gear Retraction	BELOW 107, GEAR UP (Not required in conjunction with the "Pos Rate" call after TO)
Landing Gear Extension	BELOW 129, GEAR DOWN
Three Green Gear Indicator Lights	THREE GREEN, NO RED
Turning Final	FINAL CLEAR

GUMPPS CHECKLIST

G—GasFuel selector set to the fullest tank
 U—UndercarriageLanding gear is down with 3 green lights visible
 M—MixtureFull rich
 P—PropsFull forward
 P—PumpElectric fuel pump on
 S—SwitchesLights and electrical switches are on and set

V-SPEEDS PA28R-201

References:

POH PA28R-201

Speeds:

Rotation (Normal)	75 KIAS
Rotation (Short Field MTOW)	60 KIAS
V_X Best Angle of Climb (Gear Down)	72 KIAS
V_X Best Angle of Climb (Gear Up)	78 KIAS
V_Y Best Rate of Climb (Gear Down)	78 KIAS
V_Y Best Rate of Climb (Gear Up)	90 KIAS
En-Route Climb	104 KIAS
V_A Maneuvering Speed (2750)	118 KIAS
V_A Maneuvering Speed (1856)	96 KIAS
Practice Maneuvering Speed	110 KIAS
V_{NE} Never Exceed	183 KIAS
V_{NO} Maximum Structural Cruising	146 KIAS
V_{LE} Maximum Landing Gear Extended	129 KIAS
V_{LO} Maximum Landing Gear Operating (Down)	129 KIAS
V_{LO} Maximum Landing Gear Operating (Up)	107 KIAS
V_{FE} Maximum Flaps Extended	103 KIAS
Maximum Emergency Gear Extension	87 KIAS
V_{S1} Stall (Clean)	60 KIAS
V_{SO} Stall (Gear and Flaps Down)	55 KIAS
Final Approach (Normal)	75 KIAS
Final Approach (Short Field MLW)	72 KIAS
Best Glide (MTOW)	79 KIAS
Demonstrated Crosswind Component	17 Knots

NORMAL AND CROSSWIND TAKEOFF AND CLIMB

References:

Airplane Flying Handbook, POH PA-28R-201, Commercial PTS

Description:

The common takeoff technique when the runway is firm and of sufficient length to permit the airplane to gradually accelerate to normal lift-off and climb-out speed, and there are no obstructions along the takeoff path.

Objective:

Develop the skills necessary to perform normal and crosswind takeoffs.

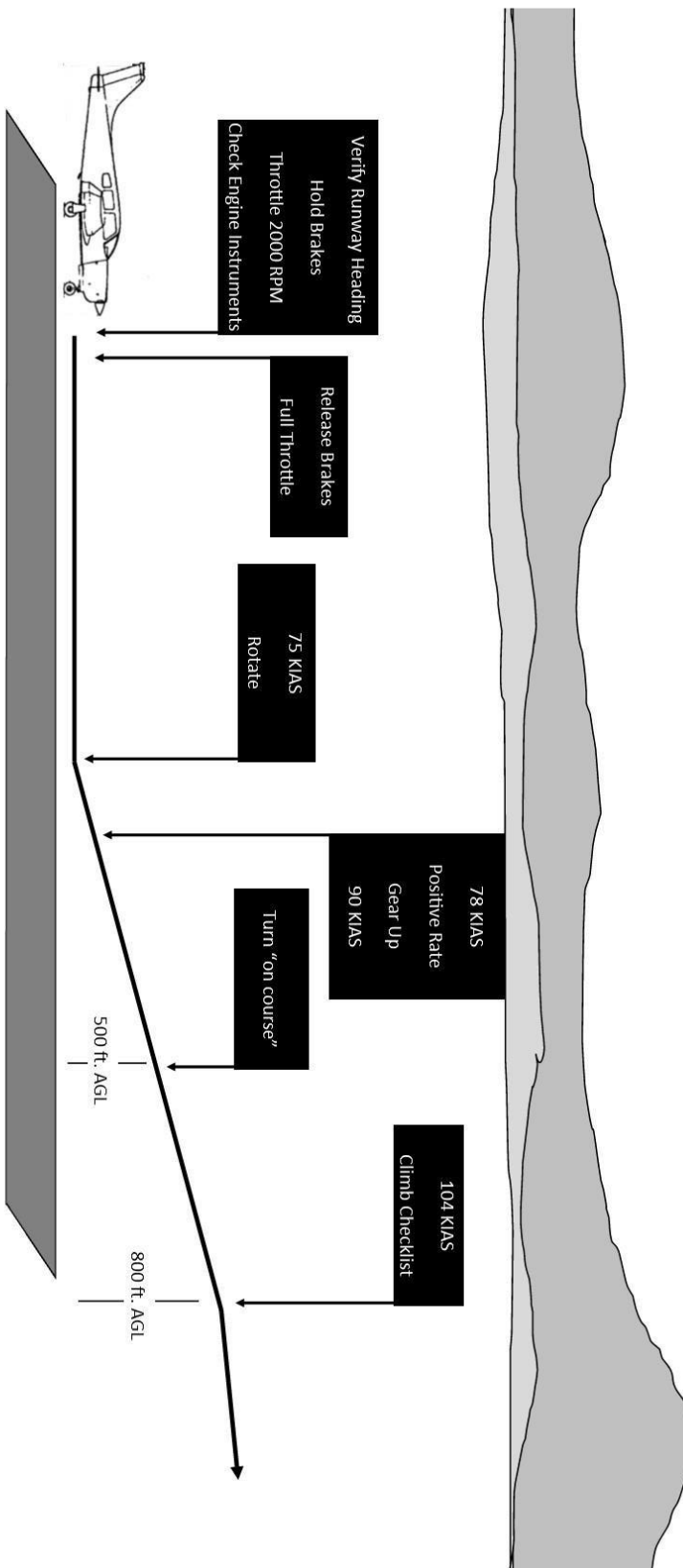
Procedure:

- 1 > Taxi the airplane onto the runway centerline
- 2 > Ensure the aircraft heading matches the charted runway heading
- 3 > Apply proper crosswind correction with the ailerons
- 4 > Hold the brakes (unless executing an "immediate takeoff")
- 5 > Throttle to 2000 RPM
- 6 > Verify that the engine instruments all indicate in the normal range
- 7 > Release the brakes
- 8 > Apply full throttle
- 9 > Apply appropriate control inputs to correct for crosswind and torque effects
- 10 > Verify the airspeed is "alive"
- 11 > At 75 KIAS, rotate smoothly and allow the airplane to fly off the ground
- 12 > After liftoff, crab into the wind to maintain the runway centerline track
- 13 > Accelerate to V_Y (78 KIAS, gear down at MTOW)
- 14 > After a positive rate of climb is established, tap the brakes and retract the landing gear
- 15 > Accelerate to V_Y (90 KIAS, gear up at MTOW)
- 16 > 800 feet AGL, or higher safe altitude, transition to a cruise climb (104 KIAS at MTOW)
- 17 > Execute the climb checklist

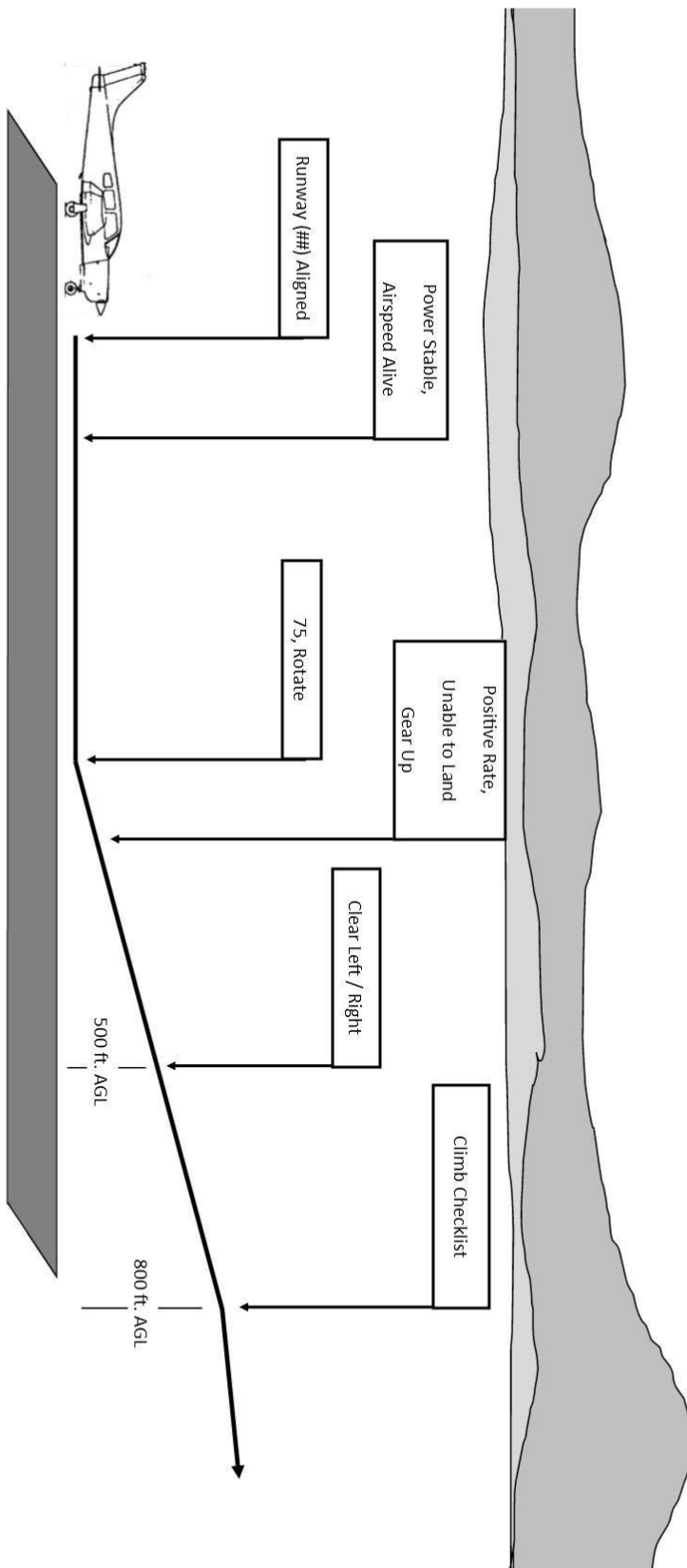
Notes:

When checking the engine instruments, include the tachometer to make sure sufficient power is being produced. Factor such as heat and altitude will affect engine performance.

NORMAL TAKEOFF PROFILE—PA-28R



NORMAL TAKEOFF CALLOUTS—PA-28R



SOFT-FIELD TAKEOFF AND CLIMB

References:

Airplane Flying Handbook, POH PA-28R-201, Commercial PTS

Description:

The takeoff technique when the runway is soft, rough, grass, dirt, etc.

Objective:

Develop the skills necessary to perform takeoffs on soft or unimproved runways.

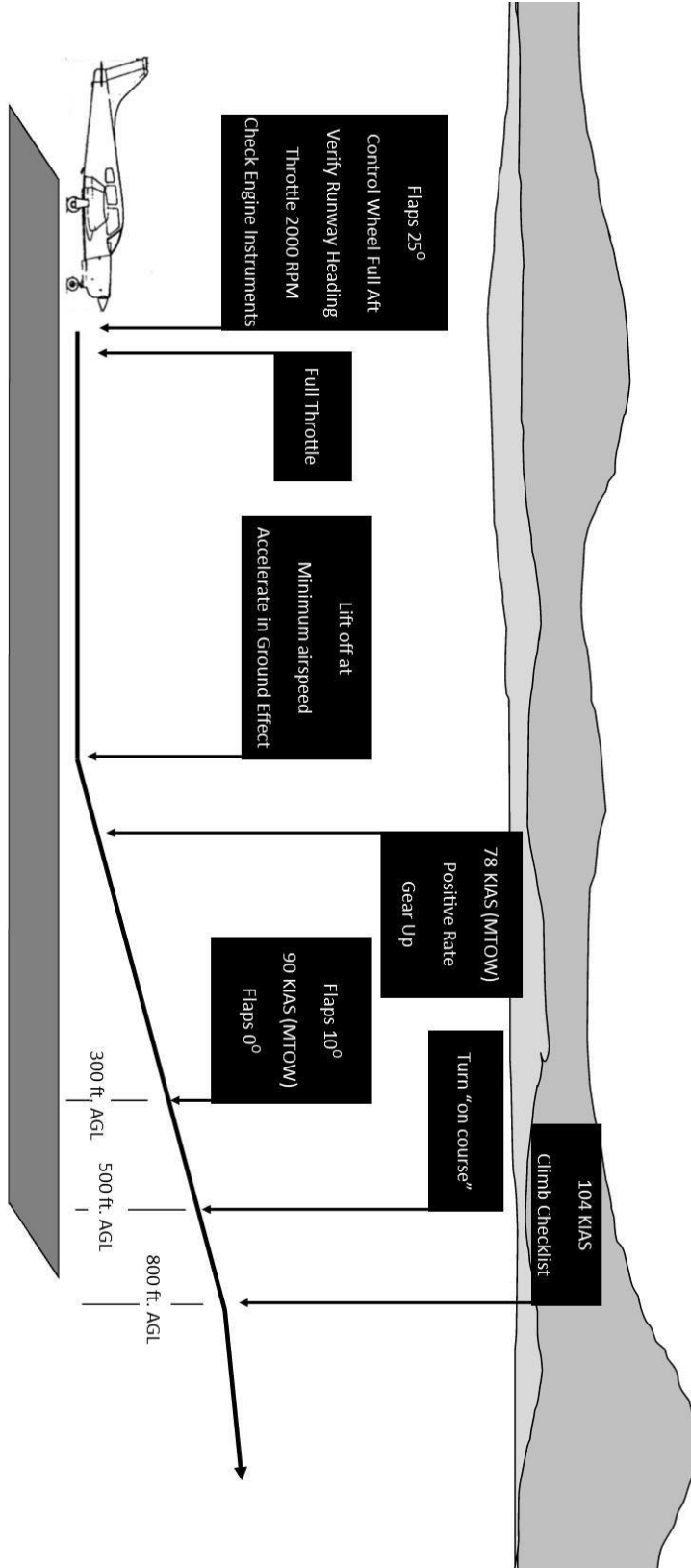
Procedure:

- 1 > Extend the flaps to the 25° position
- 2 > Position the control wheel full aft and apply the proper crosswind correction with the ailerons
- 3 > Taxi the airplane onto the runway centerline
- 4 > Ensure the aircraft heading matches the charted runway heading
- 5 > Throttle to 2000 RPM
- 6 > Verify that the engine instruments all indicate in the normal range
- 7 > Apply full throttle
- 8 > Apply appropriate control inputs to correct for crosswind and torque effects
- 9 > Verify the airspeed is “alive”
- 10 > Lift off at minimum airspeed
- 11 > After liftoff, lower the nose to remain in ground effect
- 12 > Crab into the wind to maintain the runway centerline track
- 13 > Accelerate to V_Y (78 KIAS, gear down at MTOW)
- 14 > After a positive rate of climb is established, tap the brakes and retract the landing gear
- 15 > 300 feet AGL, gradually retract the flaps and accelerate to V_Y (90 KIAS, gear up at MTOW)
- 16 > 800 feet AGL, or higher safe altitude, transition to a cruise climb (104 KIAS at MTOW)
- 17 > Execute the climb checklist

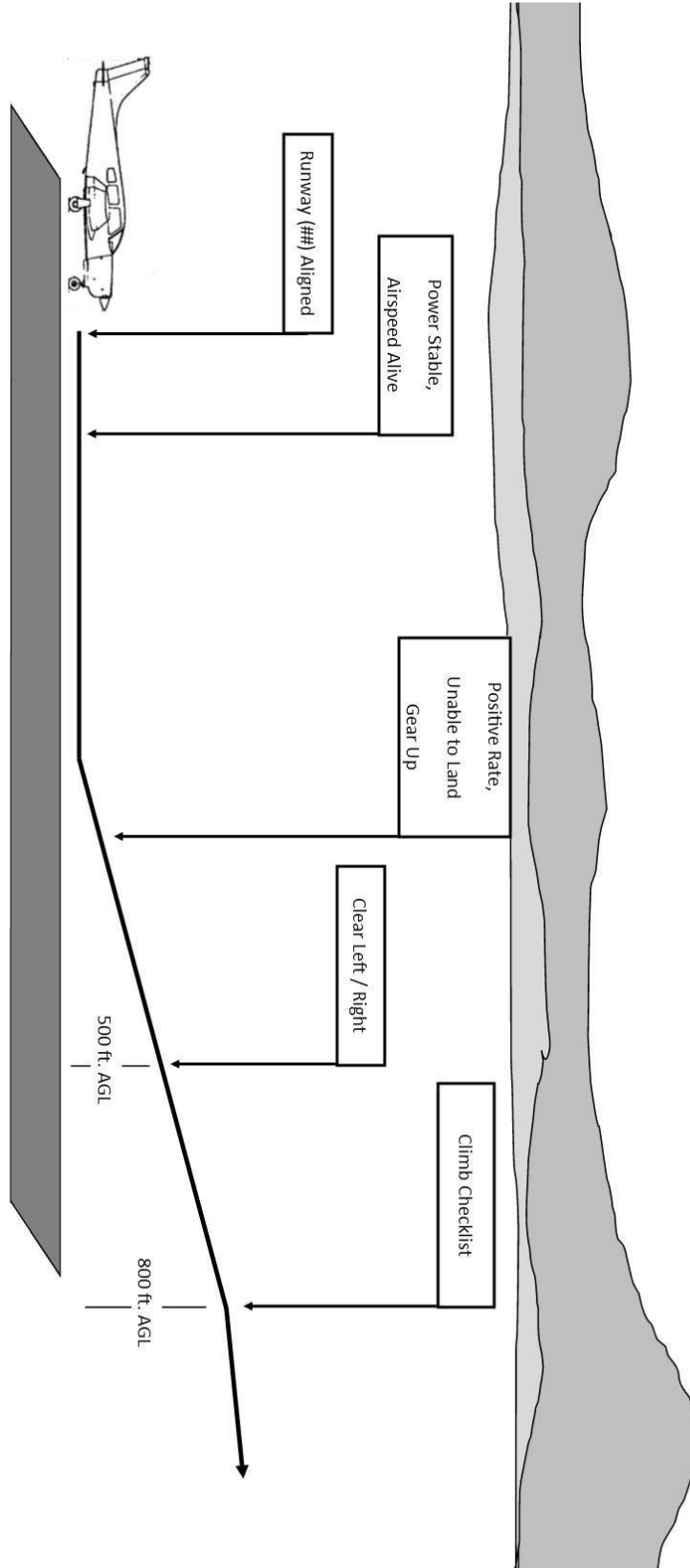
Notes:

When checking the engine instruments, include the tachometer to make sure sufficient power is being produced. Factor such as heat and altitude will affect engine performance.

SOFT-FIELD TAKEOFF PROFILE—PA-28R



SOFT-FIELD TAKEOFF CALLOUTS—PA-28R



SHORT-FIELD TAKEOFF AND MAXIMUM PERFORMANCE CLIMB

References:

Airplane Flying Handbook, POH PA-28R-201, Commercial PTS

Description:

The takeoff technique when the runway is not of sufficient length to permit the airplane to gradually accelerate to normal lift-off and climb-out speed, or there are obstructions along the takeoff path.

Objective:

Develop the skills necessary to perform takeoffs on short runways and runways with obstacles present.

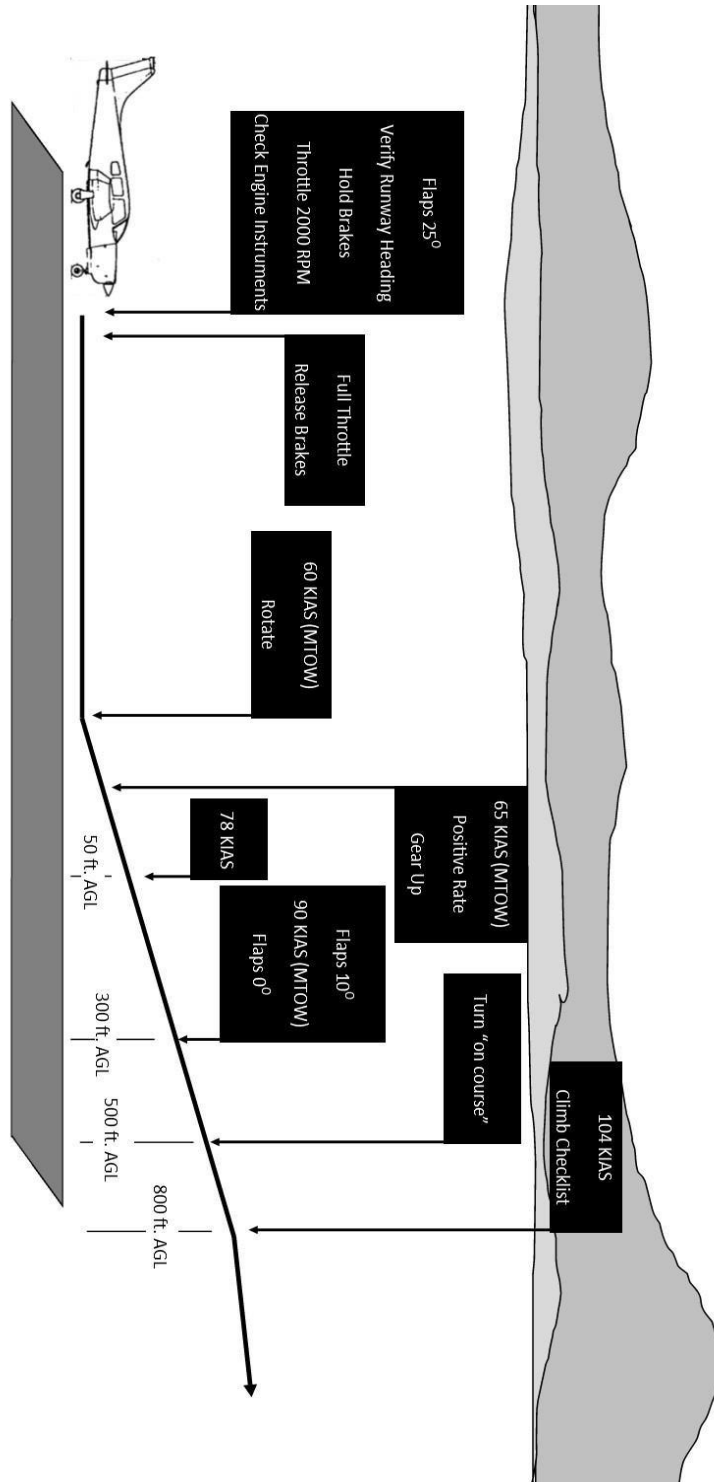
Procedure:

- 1 > Extend the flaps to the 25° position
- 2 > Taxi the airplane onto the runway centerline as close to the end as safely possible
- 3 > Ensure the aircraft heading matches the charted runway heading
- 4 > Hold the brakes
- 5 > Throttle to 2000 RPM
- 6 > Verify that the engine instruments all indicate in the normal range
- 7 > Apply full throttle
- 8 > Apply appropriate control inputs to correct for crosswind and torque effects
- 9 > Verify the airspeed is “alive”
- 10 > At 60 KIAS (MTOW), apply back pressure to rotate and lift off the runway
- 11 > Crab into the wind to maintain the runway centerline track
- 12 > Accelerate to 65 KIAS (MTOW)
- 13 > After a positive rate of climb is established, tap the brakes and retract the landing gear
- 14 > 50 feet AGL and clear of the obstacle, accelerate to V_Y (78 KIAS, gear down at MTOW)
- 15 > 300 feet AGL, gradually retract the flaps and accelerate to V_Y (90 KIAS, gear up at MTOW)
- 16 > 800 feet AGL, or higher safe altitude, transition to a cruise climb (104 KIAS at MTOW)
- 17 > Execute the climb checklist

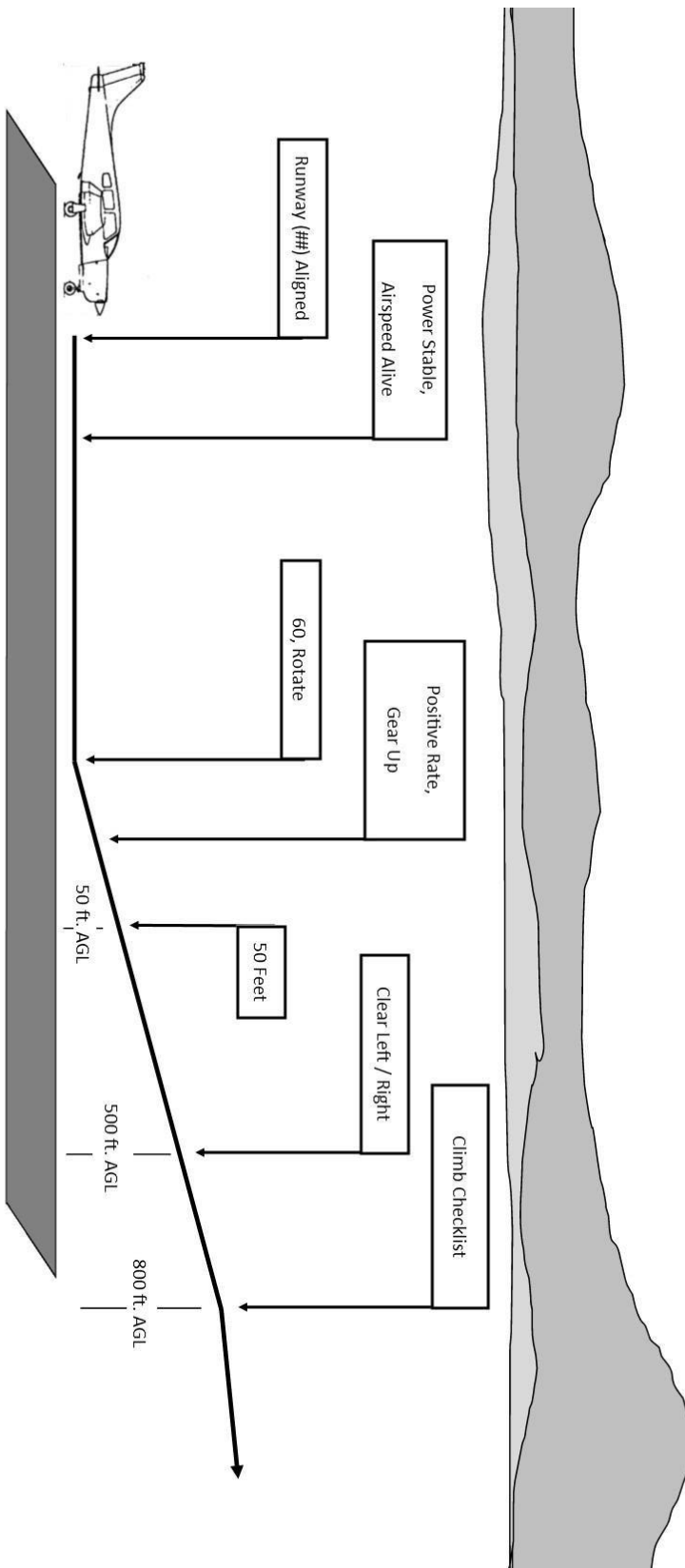
Notes:

When checking the engine instruments, include the tachometer to make sure sufficient power is being produced. Factor such as heat and altitude will affect engine performance.

SHORT-FIELD TAKEOFF PROFILE — PA-28R



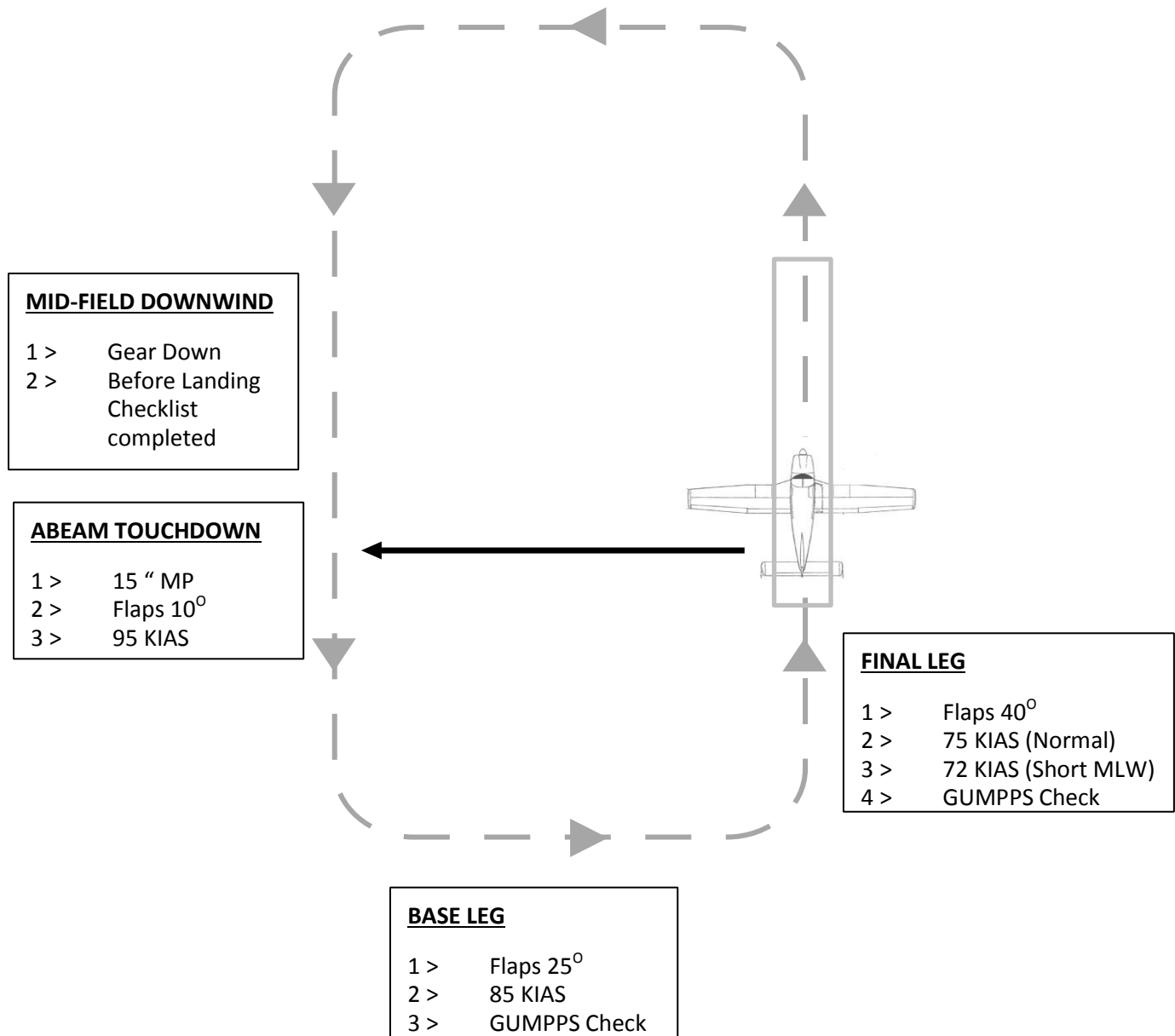
SHORT-FIELD TAKEOFF CALLOUTS—PA-28R



TAFFIC PATTERN

References:

POH PA28R-201



NORMAL AND CROSSWIND APPROACH AND LANDING

References:

Airplane Flying Handbook, POH PA-28R-201, Commercial PTS

Description:

The landing technique when the runway is of sufficient length to permit the airplane to gradually decelerate, and there are no obstructions along the approach path.

Objective:

Develop the skills necessary to perform normal and crosswind landings.

Procedure:

- 1 > Complete the before landing checklist prior to the mid-field downwind
- 2 > At the mid-field downwind, extend the landing gear (below 129 KIAS) and verify "3 green"
- 3 > Designate the point of intended touchdown
- 4 > Abeam the touchdown point
 - a. Reduce power (approximately 15" MP)
 - b. Flaps 10°
 - c. Airspeed 95 KIAS
- 5 > On the base leg
 - a. Flaps 25°
 - b. Airspeed 85 KIAS
 - c. GUMPPS Check
- 6 > On final
 - a. Flaps 40°
 - b. Airspeed 75 KIAS
 - c. GUMPPS Check
- 7 > If crosswind conditions are encountered, use a side slip to maintain the correct ground track and runway alignment
- 8 > Reduce the throttle and increase the pitch attitude in order to smoothly touchdown at the intended landing point as the throttle reaches idle
- 9 > After touchdown, apply the brakes as required and increase crosswind control input as necessary

SOFT-FIELD APPROACH AND LANDING

References:

Airplane Flying Handbook, POH PA-28R-201, Commercial PTS

Description:

The landing technique when the runway is soft, rough, grass, dirt, etc.

Objective:

Develop the skills necessary to perform landings on soft or unimproved runways.

Procedure:

- 1 > Complete the before landing checklist prior to the mid-field downwind
- 2 > At the mid-field downwind, extend the landing gear (below 129 KIAS) and verify "3 green"
- 3 > Designate the point of intended touchdown
- 4 > Abeam the touchdown point
 - a. Reduce power (approximately 15" MP)
 - b. Flaps 10°
 - c. Airspeed 95 KIAS
- 5 > On the base leg
 - a. Flaps 25°
 - b. Airspeed 85 KIAS
 - c. GUMPPS Check
- 6 > On final
 - a. Flaps 40°
 - b. Airspeed 75 KIAS
 - c. GUMPPS Check
- 7 > If crosswind conditions are encountered, use a side slip to maintain the correct ground track and runway alignment
- 8 > Reduce the throttle and increase the pitch attitude in order to smoothly touchdown at the intended landing point as the throttle reaches idle
- 9 > Touch down with the main gear first using some power to smoothly transfer the weight of the airplane from the wings to the main gear
- 10 > After touchdown, continue to apply back pressure to keep the nose wheel off the runway as long as possible, and increase crosswind control input as necessary
- 11 > Use minimal braking until off of the soft surface

SHORT-FIELD APPROACH AND LANDING

References:

Airplane Flying Handbook, POH PA-28R-201, Commercial PTS

Description:

The landing technique when the runway is not of sufficient length to permit the airplane to gradually decelerate, or there are obstructions along the approach path.

Objective:

Develop the skills necessary to perform landings on short runways and runways with obstacles present.

Procedure:

- 1 > Complete the before landing checklist prior to the mid-field downwind
- 2 > At the mid-field downwind, extend the landing gear (below 129 KIAS) and verify "3 green"
- 3 > Designate the point of intended touchdown
- 4 > Abeam the touchdown point
 - a. Reduce power (approximately 15" MP)
 - b. Flaps 10°
 - c. Airspeed 95 KIAS
- 5 > On the base leg
 - a. Flaps 25°
 - b. Airspeed 85 KIAS
 - c. GUMPPS Check
- 6 > On final
 - a. Flaps 40°
 - b. Airspeed 72 KIAS (at MLW)
 - c. GUMPPS Check
- 7 > If crosswind conditions are encountered, use a side slip to maintain the correct ground track and runway alignment
- 8 > Reduce the throttle and increase the pitch attitude in order to smoothly touchdown at the intended landing point as the throttle reaches idle
- 9 > Touch down at a full stall with the main gear first
- 10 > After touchdown, retract flaps as required for maximum braking
- 11 > Position the control wheel full aft and apply the brakes as necessary

Notes:

When practicing short-field landings on runways of adequate length, simulate the use of maximum braking by announcing "maximum braking". Some brake pressure should still be used to reinforce technique should it be required on an actual short runway.

POWER-OFF 180° ACCURACY APPROACH AND LANDING

References:

Airplane Flying Handbook, POH PA-28R-201, Commercial PTS

Description:

An approach and landing made from the downwind leg by gliding with the engine at idle to a specific touchdown point. Proper estimations of distance to touchdown and glide angle are required.

Objective:

Develop the skills necessary to accurately plan and judge a power-off approach to a safe landing.

Procedure:

- 1 > Complete the before landing checklist prior to the mid-field downwind
- 2 > Establish the airplane on downwind parallel to the runway , no higher than 1000 feet AGL
- 3 > Designate the point of intended touchdown
- 4 > At the mid-field downwind, extend the landing gear (below 129 KIAS) and verify "3 green"
- 5 > Abeam the touchdown point, smoothly reduce the throttle to idle
- 6 > Reduce airspeed to best glide (79 KIAS at MTOW)
- 7 > Extend flaps as required
- 8 > Maintain best glide speed until able to reduce speed to ensure touchdown in a normal landing attitude.

GO-AROUND / REJECTED LANDING

References:

Airplane Flying Handbook, POH PA-28R-201, Commercial PTS

Description:

The maneuver that is used when a landing is rejected. The airplane is brought from a landing configuration and attitude to a climb configuration and attitude.

Objective:

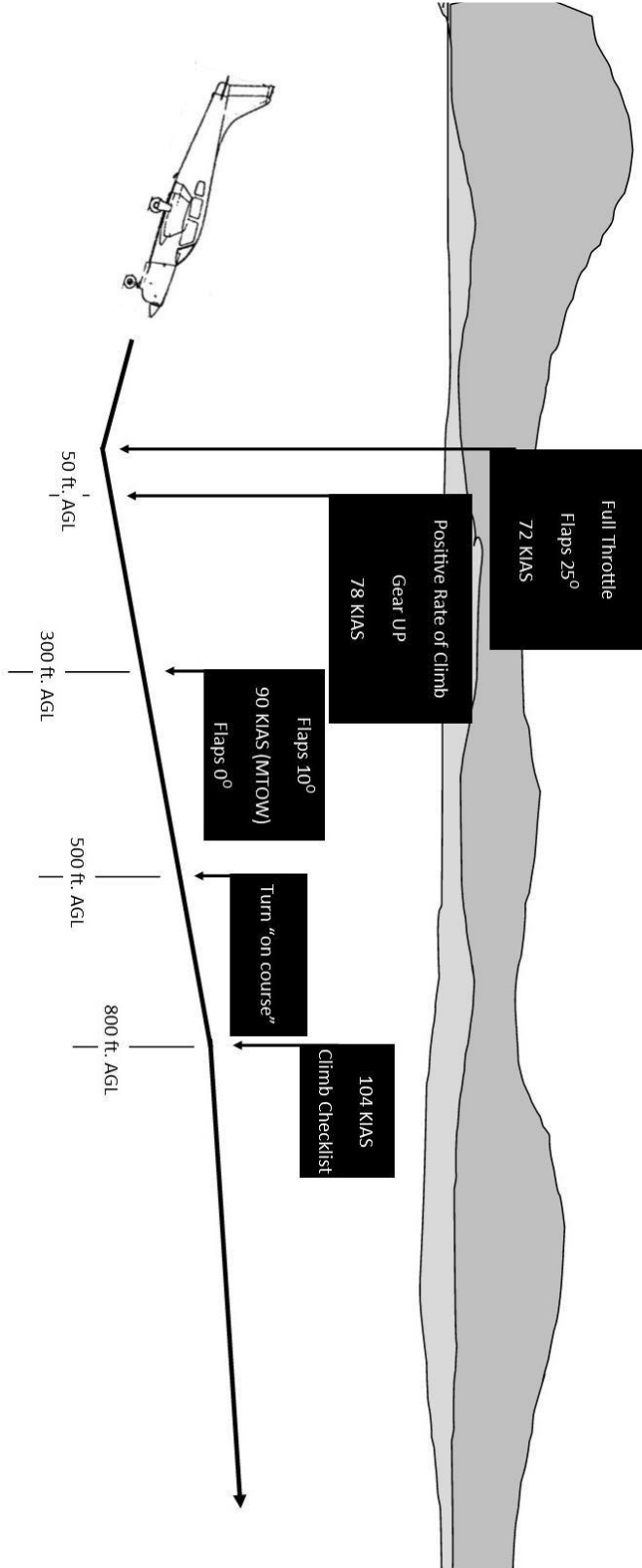
Develop the skills necessary to safely reject a landing by applying the proper procedures.

Procedure:

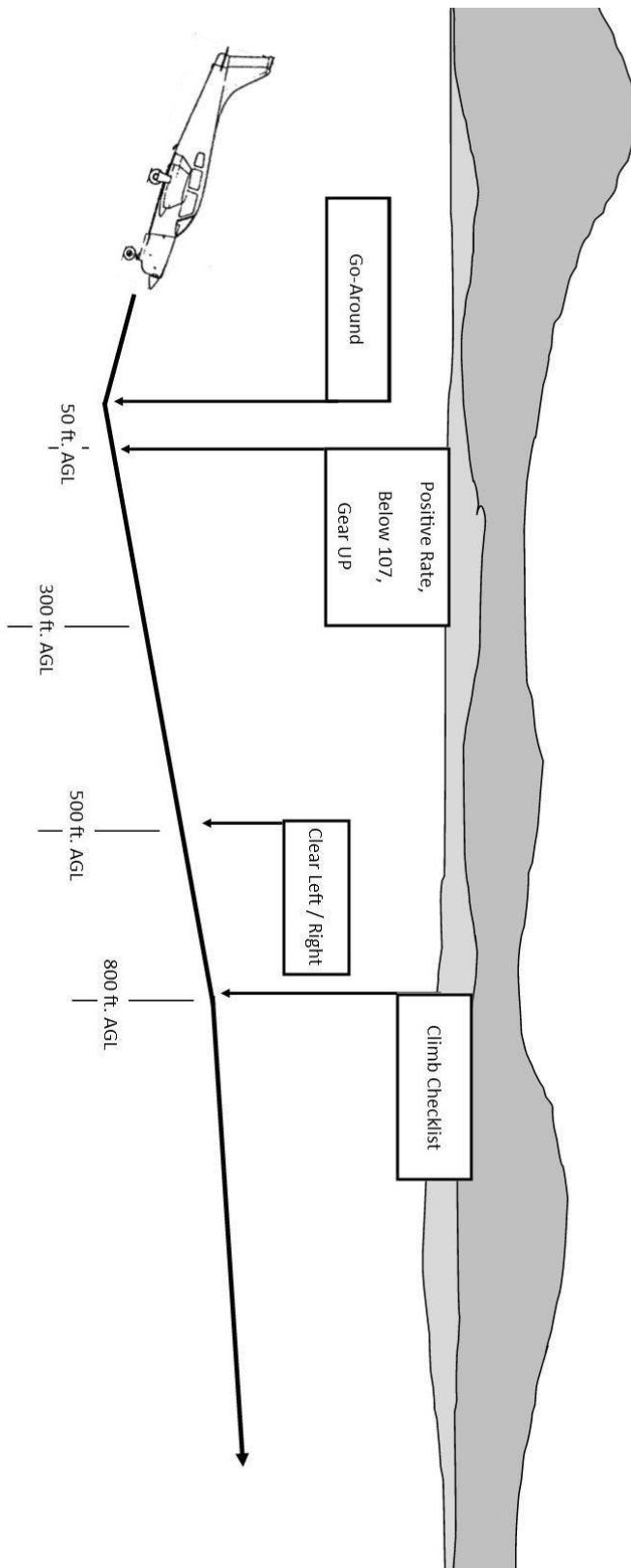
- 1 > **POWER UP:** Ensure the propeller lever is full forward and apply full throttle
- 2 > **PITCH UP:** Increase pitch attitude to initiate a climb at V_x
- 3 > **CLEAN UP:** Retract flaps to 25°
After a positive rate of climb is established, retract the gear (below 107 KIAS)
Retract flaps to 10°
- 4 > Maintain V_x (78 KIAS gear up at MTOW) until clear of any obstacle
- 5 > 50 feet AGL and clear of the obstacle, accelerate to V_Y (78 KIAS, gear down at MTOW)
- 6 > **SPEAK UP:** Announce to tower (or CTAF) that you are "going around"
- 7 > 300 feet AGL, retract the flaps and accelerate to V_Y (90 KIAS, gear up at MTOW)
- 8 > 800 feet AGL, or higher safe altitude, transition to a cruise climb (104 KIAS at MTOW)
- 9 > Execute the climb checklist

Piper PA-28R-201 Arrow Commercial Course

Go-Around Profile—PA-28R



Go-Around Callouts—PA-28R



STEEP TURNS

References:

Airplane Flying Handbook, POH PA-28R-201, Commercial PTS

Description:

This maneuver consists of two 360° turns in opposite directions, while maintaining the airplane in level flight with a 50° angle of bank.

Objective:

Develop the pilot's coordination, division of attention and smoothness at the controls with performing a high performance turning maneuver.

Procedure:

- 1 > Complete the pre-maneuver checklist
- 2 > Ensure the maneuvering area is clear of traffic and obstructions
- 3 > Establish an altitude to allow the maneuver to be completed no lower than 1500 feet AGL
- 4 > Select a ground reference point and note the corresponding heading for entry and exit
- 5 > Establish an airspeed of 110 KIAS (or V_A if V_A is less than 110 KIAS based on actual weight)
- 6 > Roll into a coordinated left or right 50° bank turn
- 7 > Adjust pitch to maintain altitude
- 8 > Adjust power to maintain airspeed (add approximately 10% of entry MP setting)
- 9 > Begin the rollout approximately 25° prior to the entry heading
- 10 > Rollout on entry heading
- 11 > Adjust pitch and power to maintain altitude and airspeed
- 12 > Check the area for the second turn in the opposite direction
- 13 > Execute a turn in the opposite direction (steps 5-10)
- 14 > Resume straight and level flight

STEEP SPIRAL

References:

Airplane Flying Handbook, POH PA-28R-201, Commercial PTS

Description:

This maneuver combines elements of turns around a point with a descending glide. A constant radius circle is flown around a point on the ground while descending in a spiraling glide, with the steepest bank angle not exceeding 60°. Constant airspeed is maintained throughout.

Objective:

Develop the pilot's ability to divide attention and maintain positive aircraft control in a steep glide.

Procedure:

- 1 > Complete the pre-maneuver checklist
- 2 > Ensure the maneuvering area is clear of traffic and obstructions
- 3 > Select a suitable ground reference point, prominent enough to be seen from altitude
- 4 > Establish the airplane at an altitude sufficient to complete at least three complete 360° turns
- 5 > Maneuver the airplane to enter on the downwind leg approximately ¼ nm from the selected point 6 > Reduce the throttle to idle
- 7 > Roll into a coordinated turn (either direction)
- 8 > Establish an airspeed of 85 KIAS
- 9 > Apply wind drift correction throughout the descent to maintain a constant radius around the point
- 10 > Recover after three turns at or above 1000 feet AGL
- 11 > Resume straight and level flight

Notes:

Minimum recovery altitude is 1000 feet AGL

If sufficient altitude is not available, due to ceilings, this maneuver may be practiced with reduced turns.

Operating the engine at idle for a prolonged period can cause spark plug fouling and excessive engine cooling. The engine should be cleared periodically (on the upwind leg)

For winter operations, use 15" MP and extend the landing gear to prevent shock cooling the engine.

CHANDELLES

References:

Airplane Flying Handbook, POH PA-28R-201, Commercial PTS

Description:

This maneuver is a high performance climbing turn. The airplane turns 180° while climbing in order to gain the maximum altitude without stalling.

Objective:

Develop the pilot's coordination and division of attention between the instruments, the airplane's attitude and outside visual references.

Procedure:

- 1 > Complete the pre-maneuver checklist
- 2 > Ensure the maneuvering area is clear of traffic and obstructions
- 3 > Establish an altitude to allow the maneuver to be completed no lower than 1500 feet AGL
- 4 > Select a suitable ground reference point to identify the 90° point in the maneuver
- 5 > Establish an airspeed of 110 KIAS
- 6 > Roll into a coordinated 30° bank
- 7 > Apply full power (propeller first, then throttle)
- 8 > Begin to increase pitch attitude
- 9 > Maximum pitch up should be achieved at the 90° point
- 10 > Begin a slow, smooth, coordinated rollout to arrive at 0° bank at the 180° point
- 11 > Continue to increase back pressure as required to maintain the maximum pitch attitude until reaching the 180° point
- 12 > Upon completing the 180° turn, the wings are level and the airspeed should be close to stall speed
- 13 > Recover by gradually decreasing the pitch attitude and allowing the airspeed to accelerate while maintaining the altitude that was reached at the 180° point
- 14 > Resume straight and level flight

Notes:

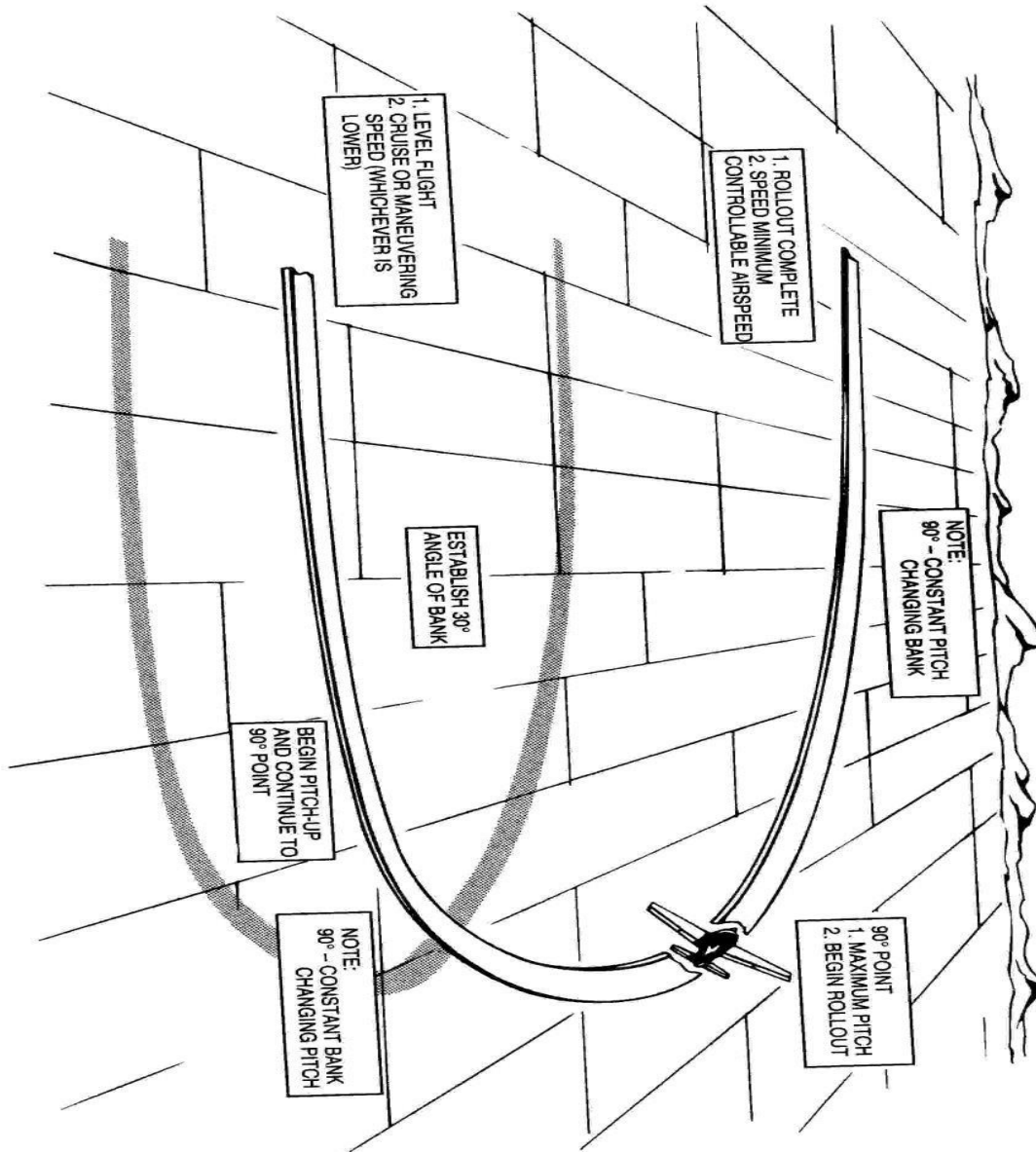
When possible perform while turning into the wind to cover less ground in the practice area

See diagram on next page

CHANDELLE DIAGRAM

References:

Airplane Flying Handbook



LAZY EIGHTS

References:

Airplane Flying Handbook, POH PA-28R-201, Commercial PTS

Description:

This maneuver consists of two 180° turns, in opposite directions, while making a climb and a descent in a symmetrical pattern during each turn.

Objective:

Develop the pilot's feel for varying control forces, and the ability to plan and remain oriented while maneuvering the airplane with positive, accurate control. The pilot must constantly change pitch and bank throughout the maneuver.

Procedure:

- 1 > Complete the pre-maneuver checklist
- 2 > Ensure the maneuvering area is clear of traffic and obstructions
- 3 > Establish an altitude to allow the maneuver to be completed no lower than 1500 feet AGL
- 4 > Select suitable ground reference points to identify the 45°, 90°, 135° and 180° points of the maneuver
- 5 > Establish an airspeed of 110 KIAS
- 6 > Slowly and smoothly enter a climbing turn
- 7 > Adjust the pitch and bank in order to reach the maximum pitch up attitude and approximately 15° angle of bank at the 45° point
- 8 > Adjust the pitch and bank so that the nose crosses through the horizon with approximately 30° angle of bank at the 90° point
- 9 > Adjust the pitch and bank in order to reach the maximum pitch down attitude and approximately 15° angle of bank at the 135° point
- 10 > Adjust the pitch and bank so that the airplane levels at the entry altitude and airspeed with a 0° angle of bank at the 180° point
- 11 > **IMMEDIATELY** begin a turn in the other direction (repeat steps 5-9)
- 12 > Resume straight and level flight

Notes:

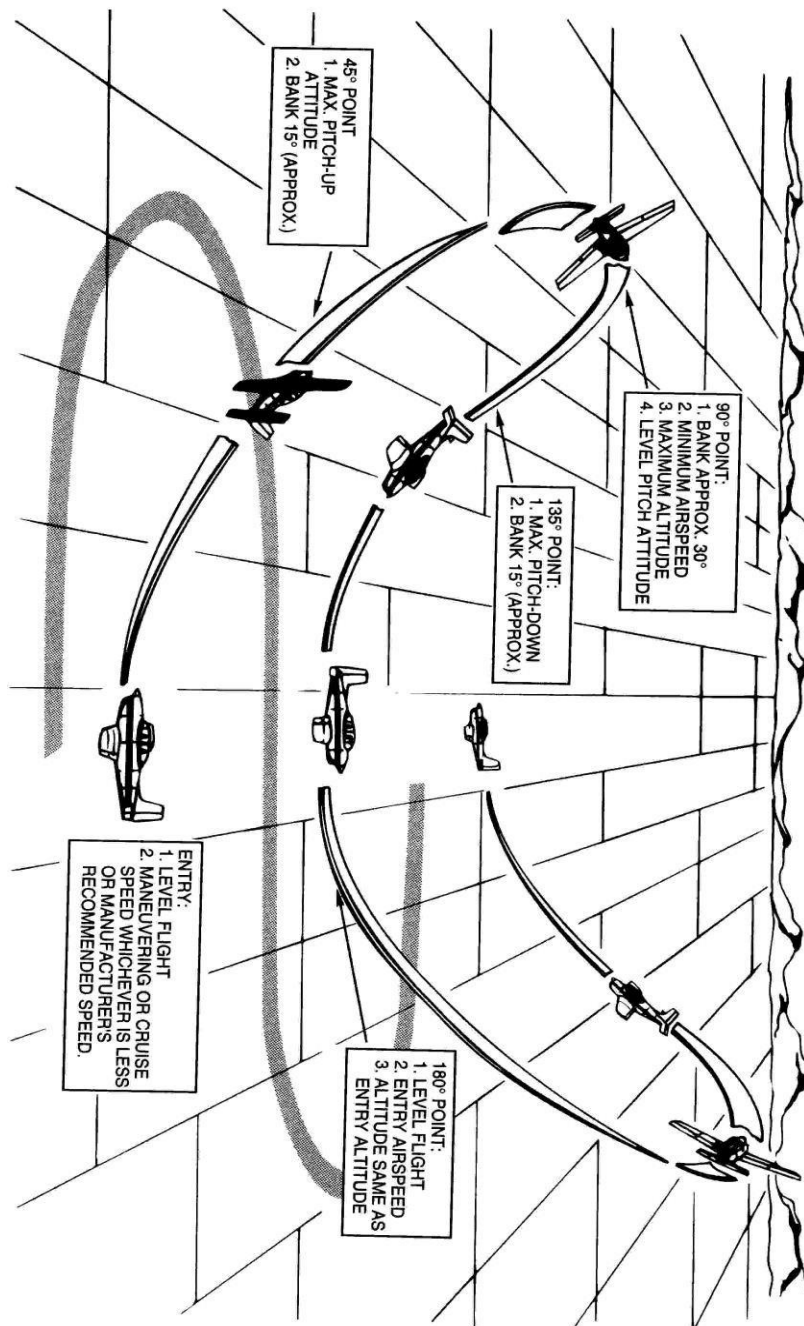
When possible perform while turning into the wind to cover less ground in the practice area

See diagram on next page

LAZY EIGHTS DIAGRAM

References:

Airplane Flying Handbook



EIGHTS ON PYLONS

References:

Airplane Flying Handbook, POH PA-28R-201, Commercial PTS

Description:

The airplane is maneuvered around two preselected points on the ground in a figure "8" pattern, keeping the points fixed to a reference point on the aircraft by varying the altitude and bank angle.

Objective:

Develop the pilot's coordination and division of attention between the instruments, the airplane's attitude and the position with respect to the ground references.

Procedure:

- 1 > Complete the pre-maneuver checklist
- 2 > Ensure the maneuvering area is clear of traffic and obstructions
- 3 > Determine the wind direction (dust, smoke, wind drift circle, nearby airport, fields, flags, etc.)
- 4 > Determine the pivotal altitude (approximately 1100 feet AGL at 110 knot groundspeed)
- 5 > Select two ground reference points perpendicular to the wind and suitable distance apart
- 6 > Establish an airspeed of 110 KIAS
- 7 > Enter the maneuver with a 45° angle between the pylons at pivotal altitude
- 8 > Abeam the first pylon, roll into a coordinated bank toward the pylon in order to place the airplane reference line on the pylon
- 9 > Keep the relative position between the pylon and airplane reference line at the same spot by varying altitude to compensate for varying ground speed throughout the maneuver
- 10 > As the airplane reaches the 45° entry angle to the second pylon, roll out of the turn
- 11 > Fly straight and level until abeam the second reference
- 12 > Roll into a coordinated bank toward the second pylon (repeat steps 8-10)
- 13 > Resume straight and level flight

Notes:

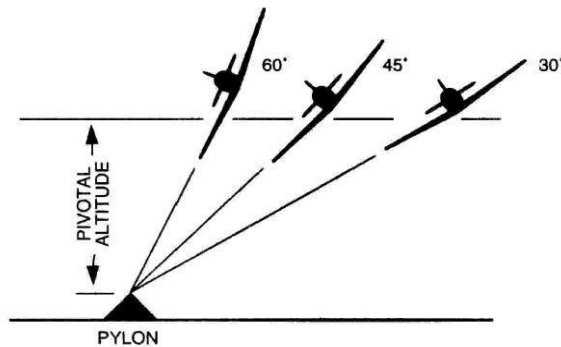
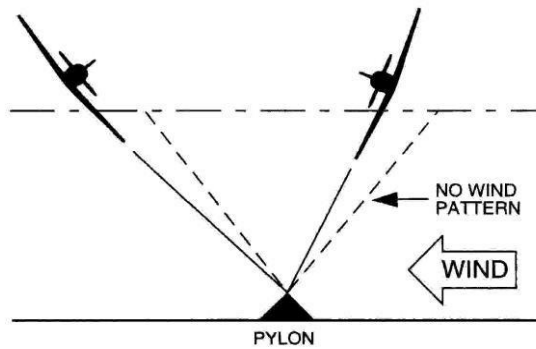
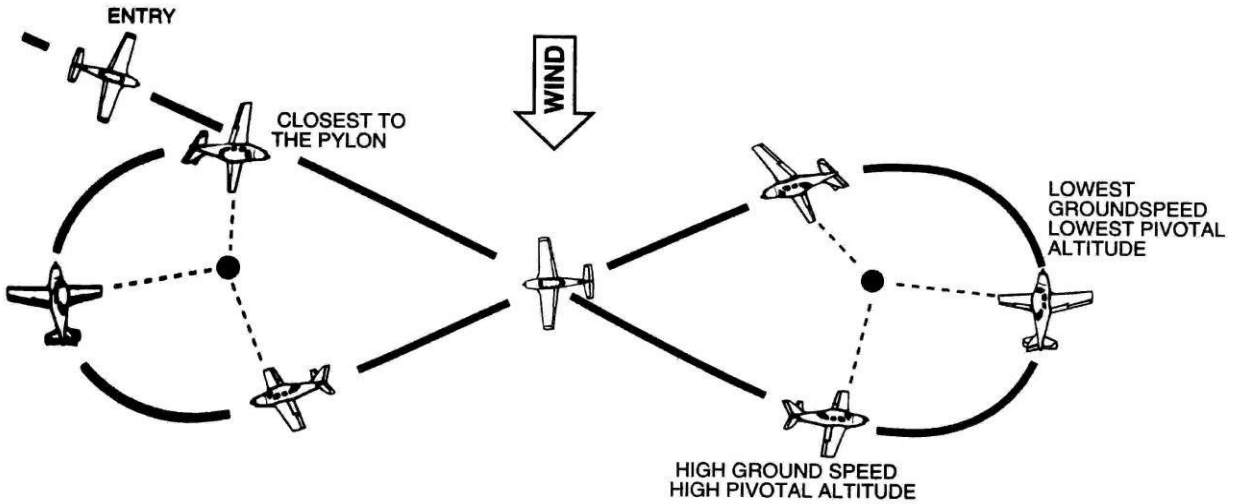
If the maneuver is performed along a road with several possible reference points, it is not necessary to pick both pylons prior to entering the maneuver.

See diagram on next page

EIGHTS ON PYLONS DIAGRAM

References:

Airplane Flying Handbook



MANEUVERING DURING SLOW FLIGHT

References:

Airplane Flying Handbook, POH PA-28R-201, Commercial PTS

Description:

The airplane is flown at minimum controllable speed. The desired speed is such that any increase in load factor, increase in angle of attack, or decrease in power will result in an immediate stall. Turns, descents, and climbs can be accomplished while maintaining that airspeed. The aircraft is flown in several configurations.

Objective:

Develop the pilot's ability to control the aircraft in slow flight, recognize the changes in control effectiveness, and rate and radius of turns.

Procedure:

- 1 > Complete the pre-maneuver checklist
- 2 > Ensure the maneuvering area is clear of traffic and obstructions
- 3 > Establish an altitude to allow the maneuver to be completed no lower than 1500 feet AGL
- 4 > Select a ground reference point and note the corresponding heading
- 5 > Reduce the throttle to 15" MP
- 6 > Apply back pressure to maintain altitude as the airplane slows down
- 7 > Below V_{LO} (129 KIAS), extend the gear and verify "3 green"
- 8 > Slow to minimum controllable speed and note the airspeed to be maintained
- 9 > Below 100 KIAS, propeller control full forward
- 10 > Perform a turn while maintaining airspeed and altitude
- 11 > Below V_{FE} (103), set flaps 10°
- 12 > Slow to minimum controllable airspeed in the new configuration, and note the airspeed to be maintained
- 13 > Perform a turn while maintaining airspeed and altitude
- 14 > Below V_{FE} (103), set flaps 25°
- 15 > Slow to minimum controllable airspeed in the new configuration, and note the airspeed to be maintained
- 16 > Perform a turn and a climb (can be accomplished separately or together as desired)
- 17 > Below V_{FE} (103), set flaps 40°
- 18 > Slow to minimum controllable airspeed in the new configuration, and note the airspeed to be maintained
- 19 > Perform a turn and a descent (can be accomplished separately or together as desired)
- 20 > Recover: apply full throttle, flaps to 25° , gear up (below 107 KIAS), flaps 10° , flaps 0°
- 21 > Resume straight and level flight

POWER-OFF STALLS

References:

Airplane Flying Handbook, POH PA-28R-201, Commercial PTS

Description:

This maneuver begins with the aircraft being set up in a landing configuration and in a descent at final approach speed. The throttle is then reduced and the pitch is increased to induce a stall. As the stall occurs, the pilot recovers and returns to straight and level cruise flight.

Objective:

Develop the pilot's ability to recognize the indications leading to stalls and to make a prompt, effective recovery with minimum loss of altitude.

Procedure:

- 1 > Complete the pre-maneuver checklist
- 2 > Ensure the maneuvering area is clear of traffic and obstructions
- 3 > Establish an altitude to allow the maneuver to be completed no lower than 1500 feet AGL
- 4 > Select a ground reference to simulate a runway
- 5 > Reduce the throttle to 15" MP
- 6 > Apply back pressure to maintain altitude as the airplane slows to approach speed
- 7 > Below V_{LO} (129 KIAS), extend the gear and verify "3 green"
- 8 > Below V_{FE} (103 KIAS), incrementally extend the flaps to 40°
- 9 > Below 100 KIAS, propeller control full forward
- 10 > Establish a descent at approach speed (75 KIAS)
- 11 > Reduce throttle to idle
- 12 > Increase pitch attitude to induce a stall
- 13 > Announce the indications of the stall (horn, buffet, loss of control effectiveness etc.)
- 14 > Recover: apply full throttle, reduce the angle of attack, flaps to 25°
- 15 > Establish a climb at V_X (78 KIAS)
- 16 > After a positive rate of climb is established, gear up (below 107 KIAS), flaps 10°
- 17 > Establish a climb at V_Y (90 KIAS), flaps 0°
- 18 > Climb to a specified altitude
- 19 > Resume straight and level flight

Notes:

This maneuver should also be practice while in turns using up to a 20° angle of bank

POWER-ON STALLS

References:

Airplane Flying Handbook, POH PA-28R-201, Commercial PTS

Description:

This maneuver simulates a stall after takeoff, or during departure.

Objective:

Develop the pilot's ability to recognize the indications leading to stalls and to make a prompt, effective recovery with minimum loss of altitude.

Procedure:

- 1 > Complete the pre-maneuver checklist
- 2 > Ensure the maneuvering area is clear of traffic and obstructions
- 3 > Establish an altitude to allow the maneuver to be completed no lower than 1500 feet AGL
- 4 > Reduce the throttle to 15" MP
- 5 > Apply back pressure to maintain altitude as the airplane slows to rotation speed
- 6 > Below V_{LO} (129 KIAS), extend the gear and verify "3 green"
- 7 > Below 100 KIAS, propeller control full forward
- 8 > At rotation speed (normal 75 KIAS), increase throttle (not less than 65% BHP)
- 9 > Increase pitch attitude to induce a stall
- 10 > Announce the indications of the stall (horn, buffet, loss of control effectiveness etc.)
- 11 > Recover: apply full throttle and reduce the angle of attack
- 12 > Establish a climb at V_X (78 KIAS)
- 13 > After a positive rate of climb is established, gear up (below 107 KIAS)
- 14 > Establish a climb at V_Y (90 KIAS)
- 15 > Climb to a specified altitude
- 16 > Resume straight and level flight

Notes:

This maneuver should also be practice while in turns using up to a 20^o angle of bank

This maneuver should also be practiced with various configurations to simulate short-field takeoffs and goaround scenarios

ACCELERATED STALLS

References:

Airplane Flying Handbook, POH PA-28R-201, Commercial PTS

Description:

This maneuver consists of bringing the airplane into a stalled condition above the usual stall speed by increasing the load factor on the airplane.

Objective:

To demonstrate the effects load factor can have on stall speed.

Procedure:

- 1 > Complete the pre-maneuver checklist
- 2 > Ensure the maneuvering area is clear of traffic and obstructions
- 3 > Establish an altitude to allow the maneuver to be completed no lower than 3000 feet AGL
- 4 > Reduce the throttle to 15" MP
- 5 > Apply back pressure to maintain altitude as the airplane slows down
- 6 > Below 100 KIAS, propeller control full forward
- 7 > At 80 KIAS ($V_{S1} + 20$ kts) roll into a coordinated 45° angle of bank turn 8 > Reduce Throttle to idle
- 9 > Apply back pressure firmly to induce a stall
- 10 > Announce the indications of the stall (horn, buffet, loss of control effectiveness etc.)
- 11 > Recover: apply full throttle and reduce the angle of bank and back pressure
- 12 > Resume straight and level cruise

EMERGENCY DESCENTS

References:

Airplane Flying Handbook, POH PA-28R-201, Commercial PTS

Description:

The airplane is configured to lose altitude rapidly in the event of an emergency.

Objective:

Develop the pilot's ability to safely and promptly descend the airplane as rapidly as possible.

Procedure:

- 1 > Complete the pre-maneuver checklist
- 2 > Ensure the maneuvering area is clear of traffic and obstructions
- 3 > Reduce the throttle to idle
- 4 > Below V_{LO} (129 KIAS), extend the gear and verify "3 green"
- 5 > Bank the airplane up to 45° to begin the descent and maintain a 1 "G" load factor
- 6 > Adjust pitch to maintain 125 KIAS (+0/-10 knots) during the descent
- 7 > Propeller control (slowly and smoothly) full forward
- 8 > Lead the level off by 10% of the descent rate
- 9 > Level the airplane at the desired altitude and increase the throttle to a cruise MP setting
- 10 > Clean up (if not continuing to a landing): gear up (below 107)
- 11 > Resume straight and level cruise

Notes:

Minimum recovery altitude is 1000 feet AGL, unless continuing to land at a suitable airport

Students should be able to recognize situations that require an emergency descent and execute it as necessary (ie: engine fires, medical emergencies, etc)

For training purposes, 125 knots is used to provide a safety buffer off of the 129 knot V_{LE} limitation.

EMERGENCY APPROACH AND LANDING

References:

Airplane Flying Handbook, POH PA-28R-201, Commercial PTS

Description:

This maneuver simulates an approach and landing with an engine failure. Idle power is used and the airplane is flown at best glide speed to a suitable emergency landing area.

Objective:

Develop the pilot's ability to perform emergency approaches without power.

Procedure:

- 1 > The Instructor / Examiner reduces the throttle to idle
- 2 > Apply back pressure to maintain altitude until reaching best glide speed (79 KIAS at MTOW)
- 3 > While establishing glide speed, find a suitable emergency landing area
- 4 > Adjust trim to help maintain best glide speed
- 5 > Perform the appropriate emergency checklist (altitude allowing)
- 6 > Simulate a distress call and simulate setting 7700 on the transponder
- 7 > Plan to arrive abeam the intended landing point at approximately traffic pattern altitude
- 8 > Use flaps as required to increase or decrease gliding distance
- 9 > Abeam the touchdown point, extend the landing gear (below 129 KIAS), and verify "3 green"
- 10 > Prepare for landing

Notes:

Minimum recovery altitude is 500 feet AGL, unless continuing to land at a suitable airport

Instructor / Examiner will clear the engine as required to prevent spark plug fouling

At best gliding angle, with the engine windmilling, and the propeller control in full DECREASE rpm, the aircraft will travel approximately 1.6 miles for each thousand feet of altitude (Section 3.15)