MANUEVER MANUAL
SLING 2 NGT

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GLASS COCKPIT AVIATION

Please refer to ACS for all Standards listed for each maneuver

POWER-ON STALL

Objective: Recognize and recover from a stall in the Takeoff/Departure configuration

Setup:

1. Pick an appropriate outside visual reference point to fly to.
2. Perform the **Pre-Maneuver Checklist**
3. Set heading bug

Entry:

1. Reduce power to 3500 - 3700 RPM
2. Increase back pressure as necessary to maintain altitude as airspeed decreases.
3. Below 85, lower the first notch of flap (Position 1)
4. Adjust trim to relieve control pressures
5. Maintain wings level or as otherwise specified by Instructor or Evaluator
6. Increase back pressure until airspeed reaches 60 KIAS
7. Apply power to 4500 RPM and gradually increase back pressure
8. Continue to increase back pressure to reduce airspeed
9. Maintain coordination with rudder pedals
10. Recognize the AOA indication of a full stall

Recovery:

1. Immediately pitch down until the nose is slightly below the horizon and all stall indications cease
2. Apply max power
3. Verify increasing airspeed
4. Accelerate to 60 KIAS
5. Pitch up to maintain VX: 65 KIAS
6. Verify positive rate of climb
7. Accelerate to VY: 72 KIAS
8. Verify positive rate
9. Flaps up
10. **Cruise Checklist**

Standards:

1. 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.
2. Select an entry altitude that will allow the Task to be completed no lower than 1,500 feet AGL

POWER-OFF STALL

Objective: Recognize and recover from a stall in the Landing/Approach configuration

Setup:

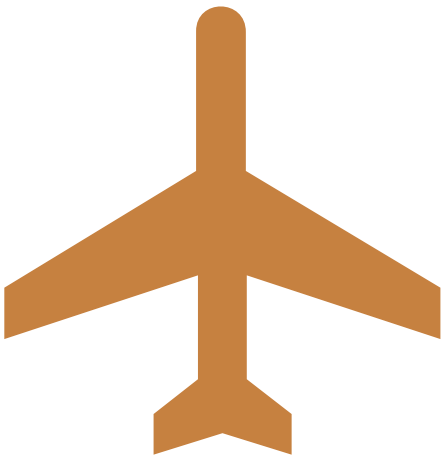
1. Pick an appropriate outside visual reference point to fly to
2. Perform the **Pre-Maneuver Checklist**
3. Set heading bug

Entry:

1. Reduce power to 3500 - 3700 RPM
2. Increase back pressure as necessary to maintain altitude as airspeed decreases.
3. Below 85 KIAS, first notch of flap (Position 1)
4. Adjust trim to relieve control pressures
5. Move flaps to full (Position 3)
6. Maintain wings level or as otherwise specified by Instructor or Evaluator
7. Increase back pressure until airspeed reaches 70 KIAS
8. Lower the nose to simulate the approach (approximately 65 KIAS and 500 ft/min descent)
9. After established, gradually increase back pressure to the horizon
10. Then continue to increase back pressure to reduce airspeed
11. Maintain coordination with rudder pedals
12. Recognize the AOA indication of a full stall

Recovery:

1. Guide a pitch down until all stall indications cease
2. Apply max power (Simultaneous with step 1 of recovery)
3. Move the flap to position 2
4. Verify increasing airspeed
5. Accelerate to 60 KIAS
6. Pitch up to maintain VX: 65 KIAS
7. Verify positive rate of climb
8. Move the flap to position 1
9. Accelerate to VY: 72 KIAS
10. Verify positive rate
11. Flaps up (Position 0)
12. **Cruise Checklist**



Standards:

1. 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.
2. Select an entry altitude that will allow the Task to be completed no lower than 1,500 feet AGL

SLOW FLIGHT

Objective: Maintain positive aircraft control at the speed at which any increase in angle of attack, increase in load factor or reduction in power would result in a stall warning or aerodynamic buffet.

Setup:

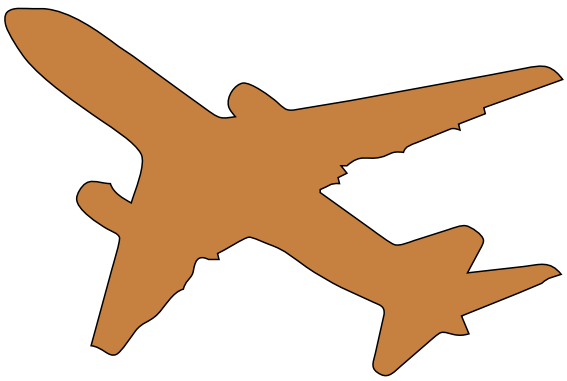
1. Pick an appropriate outside visual reference point to fly to
2. Perform the **PRE-MANEUVER CHECKLIST** (Verify fuel pumps are on and clearing turns)
3. Set heading and altitude bug

Entry:

1. Reduce power to 3500 - 3700 RPM
2. Increase back pressure as necessary to maintain altitude as airspeed decreases.
3. Below 85, first notch of flap (Position 1)
4. Adjust trim to relieve control pressures
5. Move flaps to full (Position 3)
6. Maintain wings level or as otherwise specified by Instructor or Evaluator
7. Increase back pressure until airspeed reaches 60 KIAS
8. Gradually increase power to approximately 4200 RPM
9. Gradually increase back pressure until airspeed is 55 KIAS
10. Adjust trim to relieve control pressures
11. Adjust pitch, power, and bank to maintain desired airspeed, altitude, and heading
12. Continue to fly at 55 KIAS, or the minimum speed to avoid a stall

Recovery:

1. Apply max power
2. Bring the flap to position 2
3. Apply forward pressure and adjust the trim
4. Maintain altitude
5. Verify increasing airspeed to 65 KIAS
6. Bring the flap to position 1
7. Verify increasing airspeed to 72 KIAS
8. Bring the flaps up
9. **Cruise Checklist**



Standards:

1. Maintain the specified altitude, ±100 feet; specified heading, ±10°; airspeed +10/-0 knots; and specified angle of bank, ±10°.
2. Select an entry altitude that will allow the Task to be completed no lower than 1,500 feet AGL

STEEP TURNS

Objective: Steep turns develop smoothness, coordination, orientation, division of attention, and control techniques necessary for the execution of maximum performance turns.

Setup:

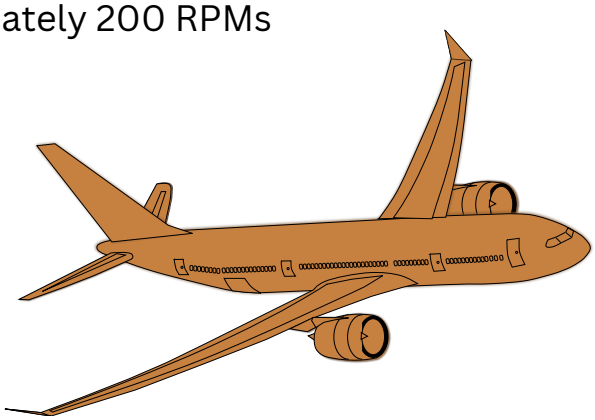
1. Pick an appropriate outside visual reference point to fly to
2. Perform the **PRE-MANEUVER CHECKLIST** (Verify fuel pumps are on and clearing turns)
3. Set heading and altitude bug

Entry:

1. Maintain an airspeed below VA/VO (91 KIAS)
2. Usually 4700 RPM and 85 KIAS
3. Begin a gradual left or right turn to 45 degrees bank
4. When passing 20 degrees of bank, gradually increase back pressure to maintain altitude
5. When in a left turn, the nose of the airplane will be on the horizon. When to the right, the left edge of the cowling will be on the horizon.
6. Increase power by approximately 200 RPMs from where it was set
7. Adjust pitch, power, and bank to maintain altitude and airspeed

Recovery:

1. Begin rolling out 20 degrees before entry heading
2. Gradually decrease your pitch to prevent gaining altitude
3. Reduce power by approximately 200 RPMs
4. **Cruise Checklist**



Standards:

1. Clear the area.
2. Establish the manufacturer's recommended airspeed or, if one is not available, a safe airspeed not to exceed VA.
3. Roll into a coordinated 360° steep turn with approximately a 45° bank.
4. Perform the Task in the opposite direction, as specified by the evaluator.
5. Maintain the entry altitude ±100 feet, airspeed ±10 knots, bank ±5°, and roll out on the entry heading ±10°.

EMERGENCY DESCENT

Objective: The objective is to descend the airplane as soon and as rapidly as possible while not exceeding any structural limitations of the airplane.

Setup:

1. Pick a target altitude above 2,500 feet AGL
2. Perform the **PRE-MANEUVER CHECKLIST**

Entry:

1. Reduce power to idle
2. Begin a bank of 30-45 degrees in the direction of choice
3. Pitch to increase airspeed (not to exceed Vne)
4. Clear the engine every 1000 feet with a short application of power

Recovery:

1. When approaching target altitude, return to level attitude
2. Increase power setting
3. Verify engine instruments are in the green
4. **Cruise Checklist**

Standards:

1. Clear the area.
2. 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.
3. Demonstrate orientation, division of attention and proper planning.
4. Use bank angle between 30° and 45° to maintain positive load factors during the descent.
5. Complete the appropriate checklist.

NORMAL APPROACH AND LANDING

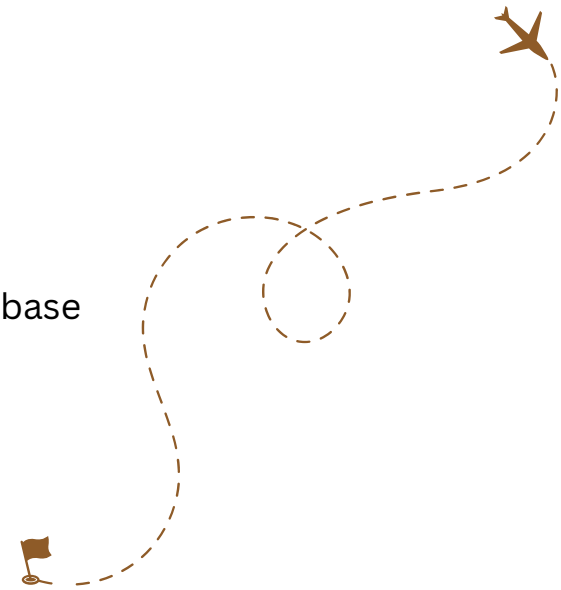
Objective: Set up a stabilized approach and landing.

Setup:

1. Figure out how to enter the traffic pattern
2. Go over the **Before Landing Checklist**
3. Scan for traffic on the downwind and other areas of the traffic pattern
4. Verify 1000 ft AGL
5. Verify Checklist with BCGUMPS (Boost, Carburetor, Gas (highest tank), Undercarriage, Mixture, Prop and Seatbelts)

Approach:

1. Have power set to 4700 RPM and maintain 90 KIAS
2. Once abeam the numbers, pull power to 3500 RPM
3. Apply back pressure to maintain altitude
4. Below 85 KIAS, lower to position 1 of the flap
5. Let the pitch come down to maintain 75 KIAS
6. Trim to relieve pressure
7. Once the numbers are 45 degrees off your tail, turn base
8. Go to position 2 flap and maintain 75 KIAS
9. Trim to relieve pressure
10. Search for traffic on final and turn final
11. Go to position 3 flap and maintain 75 KIAS
12. Trim to relieve pressure



Landing:

1. When landing is assured, bring the power to idle and maintain descent profile
2. Airspeed will naturally fall to below 65 KIAS
3. Apply appropriate wind correction with aileron and rudder
4. Roundout, flare, and touchdown
5. Safely exit the runway
6. Perform **Clear of Runway Checklist**

Standards:

1. Touch down at a proper pitch attitude, within 400 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.

SHORT FIELD LANDING

Objective: Set up a stabilized approach and landing, land with obstacles on the approach end of the runway, and land in a short distance while maximizing the landing surface.

Setup:

1. Figure out how to enter the traffic pattern
2. Go over **Before Landing Checklist**
3. Scan for traffic on the downwind and other areas of the traffic pattern
4. Verify 1000 ft AGL
5. Verify Checklist with BCGUMPS (Boost, Carburetor, Gas (hightest tank), Undercarriage, Mixture, Prop and Seatbelts)

Approach:

1. Have power set 4700 RPM and maintain 90 KIAS
2. Once abeam the numbers, pull power to 3500 RPM
3. Apply back pressure to maintain altitude
4. Below 85 KIAS, lower to position 1 of flap
5. Let the pitch come down to maintain 75 KIAS
6. Trim to relieve pressure
7. Once the numbers are 45 degrees off your tail, turn base
8. Go to position 2 flap and maintain 75 KIAS
9. Trim to relieve pressure
10. Search for traffic on final and turn final
11. Go to position 3 flap and maintain 65-70 KIAS
12. Trim to relieve pressure

Landing:

1. When landing is assured, bring the power to idle and maintain descent profile
2. Airspeed will naturally fall to below 65 KIAS
3. Roundout, flare and touchdown
4. Apply appropriate wind correction with aileron and rudder
5. Minimize the float
6. After touchdown, apply maximum braking
7. Pull the stick all the way back for aerodynamic braking
8. Safely exit the runway
9. Perform **Clear of Runway Checklist**

Standards:

1. Touch down at a proper pitch attitude within 200 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.

SOFT FIELD LANDING

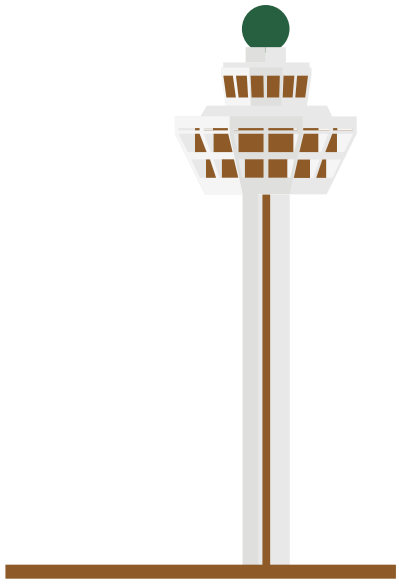
Objective: Set up a stabilized approach and landing while landing on a soft runway surface proficiently with correct inputs

Setup:

1. Figure out how to enter the traffic pattern
2. Go over **Before Landing Checklist**
3. Scan for traffic on the downwind and other areas of the traffic pattern
4. Verify 1000 ft AGL
5. Verify Checklist with BCGUMPS (Boost, Carburetor, Gas (highest tank), Undercarriage, Mixture, Prop and Seatbelts)

Approach:

1. Have power set to 4700 RPM and maintain 90 KIAS
2. Once abeam the numbers, pull power to 3500 RPM
3. Apply back pressure to maintain altitude
4. Below 85 KIAS, lower to position 1 of flap
5. Let the pitch come down to maintain 75 KIAS
6. Trim to relieve pressure
7. Once the numbers are 45 degrees off your tail, turn base
8. Go to position 2 flap and maintain 75 KIAS
9. Trim to relieve pressure
10. Search for traffic on final and turn final
11. Go to position 3 flap and maintain 75 KIAS
12. Trim to relieve pressure



Landing:

1. When landing is assured, bring the power to idle and maintain descent profile
2. Airspeed will naturally fall to below 65 KIAS
3. Roundout and begin to flare
4. Apply appropriate wind correction with aileron and rudder
5. Maximize the float
6. Just before touchdown, increase your RPM by approximately 50 to make touchdown as soft as possible
7. After touchdown, keep your nose of the runway until it falls onto the surface with the stick all the way back
8. Reduce power when told to do so by the Instructor or Examiner
9. Exit the first, safest taxiway without using brakes
10. Safely exit the runway
11. Perform **Clear of Runway Checklist**

Standards:

1. Make smooth, timely, and correct control inputs during the round out and touchdown, and, for tricycle gear airplanes, keep the nose wheel off the surface until loss of elevator effectiveness.

NORMAL TAKEOFF AND CLIMB

Objective: Smoothly transition the aircraft from the runway into the air.

Before Takeoff:

1. Perform **Before Takeoff Checklist**
2. Set flaps to position 1 before taxiing to the runway and verify fuel pumps on
3. Visually confirm that the runway and final Approach areas are clear (both directions)
4. Taxi onto the runway
5. Apply appropriate wind corrections using the ailerons and elevator
6. Line up on and aligned with the assigned runway centerline

Takeoff:

1. Smoothly apply full power
2. Check engine gauges and listen for any abnormalities
3. Verify airspeed is alive and climbing
4. When airspeed is at VR (55 KIAS), begin rotation
5. Begin pulling the yoke back smoothly until the nose wheel is off the ground and the aircraft starts to climb.
6. Maintain back pressure on the yoke.

Climb:

1. Establish and verify a positive rate of climb
2. Maintain VY: 72 KIAS
3. Relieve control pressures with trim
4. Once 300 ft AGL or clear of obstacles, bring flaps up to position 0
5. Continue to climb at VY
6. At 700 ft AGL, turn crosswind or as otherwise directed as ATC
7. When reaching 1000 ft AGL, lower your pitch to accelerate to cruise climb: 75-90 KIAS
8. Perform **Climb Checklist**

SHORT FIELD TAKEOFF AND CLIMB

Objective: Smoothly transition the aircraft from the runway into the air while using the least amount of runway and clearing any obstacles in the departure path.

Before Takeoff:

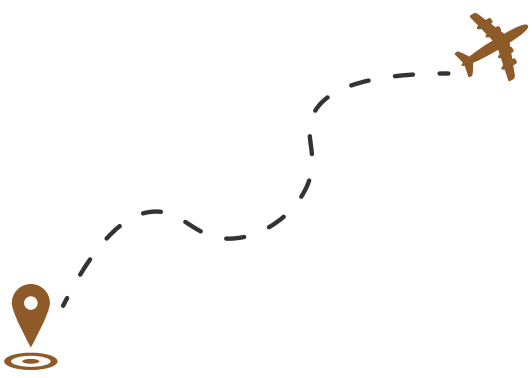
1. Perform **Before Takeoff Checklist**
2. Set flaps to position 2 before taxiing to the runway and verify fuel pumps on
3. Visually confirm that the runway and final Approach areas are clear (both directions)
4. Taxi onto the runway
5. Position the aircraft to use as much of the available runway as possible
6. Apply appropriate wind corrections using the ailerons and elevator
7. Line up on and aligned with the assigned runway centerline

Takeoff:

1. Smoothly apply full power and continue to apply full brakes
2. Check engine gauges and listen for any abnormalities
3. Verify airspeed is alive and climbing
4. When airspeed is at VR (55 KIAS), begin rotation
5. Begin pulling the yoke back smoothly until the nose wheel is off the ground and the aircraft starts to climb.
6. Maintain back pressure on the yoke.

Climb:

1. Establish and verify a positive rate of climb
2. Maintain VX with pitch: 65 KIAS
3. Confirm aircraft has cleared any real or simulated obstacles, go to flap 1
4. Accelerate to VY: 72 KIAS
5. Once established at VY, bring flaps up to position 0
6. Continue to climb at VY
7. At 700 ft AGL, turn crosswind or as otherwise directed as ATC
8. When reaching 1000 ft AGL, lower your pitch to accelerate to cruise climb: 75-90 KIAS
9. Perform **Climb Checklist**



SOFT FIELD TAKEOFF AND CLIMB

Objective: Smoothly transition the aircraft from a soft field runway into the air while keeping pressure off the nose wheel.

Before Takeoff:

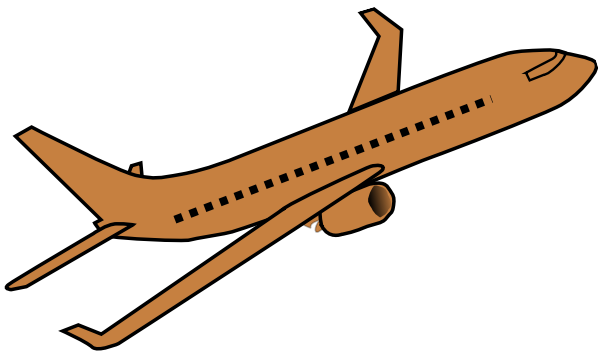
1. Perform **Before Takeoff Checklist**
2. Set flaps to position 2 before taxiing to the runway and verify fuel pumps on
3. Visually confirm that the runway and final Approach areas are clear (both directions)
4. Verify the stick is held all the way back
5. Taxi onto the runway
6. Do not use any brakes, make a shallow turn onto the runway
7. Apply appropriate wind corrections using the ailerons and elevator
8. Line up on and aligned with the assigned runway centerline

Takeoff:

1. Smoothly apply full power
2. Check engine gauges and listen for any abnormalities
3. Verify airspeed is alive and climbing
4. When the nose comes off the ground, hold the nose just below the end of the runway
5. Allow the airplane to come off the ground at the minimum liftoff speed
6. Once liftoff is obtained, lower the pitch to stay in ground effect
7. Once airspeed reaches 72 KIAS, begin normal VY climb

Climb:

1. Establish and verify a positive rate of climb
2. Once established at VY or VX, and clear of obstacles, bring flaps up to position 1
3. Continue to climb at VY, then retract other flap
4. At 700 ft AGL, turn crosswind or as otherwise directed as ATC
5. When reaching 1000 ft AGL, lower your pitch to accelerate to cruise climb: 75-90 KIAS
6. Perform **Climb Checklist**



TURNS AROUND A POINT

Objective: Understand and compensate for the effects of wind by flying a 360-degree constant-radius turn around a single ground-based reference point.

Setup:

1. Determine the wind direction
2. Select an appropriate feature on the ground as a reference point to fly a circular pattern
3. Select an altitude between 600 - 1000 feet AGL
4. Select a starting point 1/2 to 1 mile away from the reference point and visualize a symmetric circle around the chosen point
5. Perform the **Pre-Maneuver Checklist**

Entry:

1. Configure for cruise at 5000 RPM
2. Enter the maneuver with wings level while flying downwind directly toward the Starting Point
3. When the aircraft is abeam the point, begin the turn in the chosen direction (note entry heading)
4. Fly the visualized circle around the reference point
    a. Maintain constant distance from the reference point
    b. Maintain altitude and airspeed
    c. Adjust the bank to maintain distance
5. After completing the 360-degree turn, return to wings level (on entry heading)

Recovery:

1. Turn 45 degrees away from the reference point to depart and complete the maneuver
2. Perform **Cruise Checklist**

Standards:

1. Enter at an appropriate distance from the reference point, 600 to 1,000 feet AGL at an appropriate distance from the selected reference area.
2. Maintain altitude ±100 feet; maintain airspeed ±10 knots.

TURNS AROUND A POINT

Objective: Adjust the aircraft in turns to allow the airplane's ground track to resemble two opposite but equal half-circles on each side of a selected ground-based straight-line reference.

Setup:

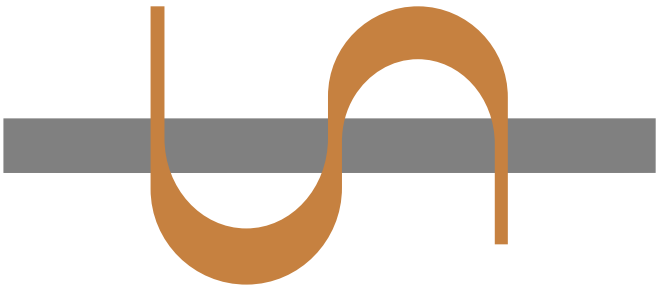
1. Determine the wind direction
2. Select an appropriate feature on the ground as a reference line to fly a S pattern (usually a long discernable road)
3. Visualize a ground track with two opposite but equal half-circles
4. Select an altitude between 600 - 1000 feet AGL
5. Perform the **Pre-Maneuver Checklist**

Entry:

1. Configure for cruise at 5000 RPM
2. Enter the maneuver with wings level while flying downwind directly toward your reference line
3. When the aircraft is over the line with wings level, begin the turn in the chosen direction (note entry heading)
4. Fly the visualized first half of the circle around the reference line
    a. Maintain an equal radius with the bank based on your ground track
    b. Maintain altitude and airspeed
    c. Adjust the bank to go wings level when over the reference line
5. After completing the 180-degree turn, return to wings level (on entry heading)
6. Begin the same procedure in the other direction

Recovery:

1. Once you complete the S, go wings level and exit the maneuver
2. Perform **Crusie Checklist**



Standards:

1. Enter perpendicular to the selected reference line, 600 to 1,000 feet AGL at an appropriate distance from the selected reference area
2. Maintain altitude ±100 feet; maintain airspeed ±10 knots.

RECTANGLE COURSE

Objective: This training maneuver is a maneuver in which the airplane maintains an equal distance from all sides of the selected rectangular references. The maneuver is accomplished to replicate the airport traffic pattern that an airplane typically maneuvers while landing.

Setup:

1. Determine the wind direction
2. First locate a square field, a rectangular field, or an area with suitable ground references on all four sides
3. Visualize a ground track either over or just to the side of the rectangle
4. Select an altitude between 600 - 1000 feet AGL
5. Position the aircraft at a 45-degree angle to the downwind leg to begin
6. Perform the **Pre-Maneuver Checklist**

Entry:

1. Configure for cruise at 5000 RPM
2. Enter the maneuver from the 45 with wings level while flying on towards the downwind side
3. When the aircraft is close to the downwind side of the rectangle, turn and track the visualized ground track around the chosen rectangle
   a. Maintain the rectangle with the bank based on your ground track
   b. Maintain altitude and airspeed
   c. Adjust the bank and turn to go wings level when at the chosen distance from the reference line on each side of the rectangle
4. When approaching the next segment, begin the turn when the chosen reference line is abeam the aircraft
5. Repeat for each segment

Recovery:

1. Once the rectangle is completed, turn 45 degrees away from the rectangle on the downwind leg
2. Perform **Crusie Checklist**

Standards:

1. Enter at an appropriate distance from the reference point, 600 to 1,000 feet AGL at an appropriate distance from the selected reference area
2. Maintain altitude ±100 feet; maintain airspeed ±10 knots

COMMERCIAL MANEUVERS

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Please refer to Commercial ACS and Airplane Flying Handbook for full descriptions

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STEEP SPIRAL

Objective: This is a gliding turn wherein the pilot maintains a constant radius around a surface-based reference point—similar to the turns around a point maneuver, but in this case the airplane is rapidly descending.

Setup:

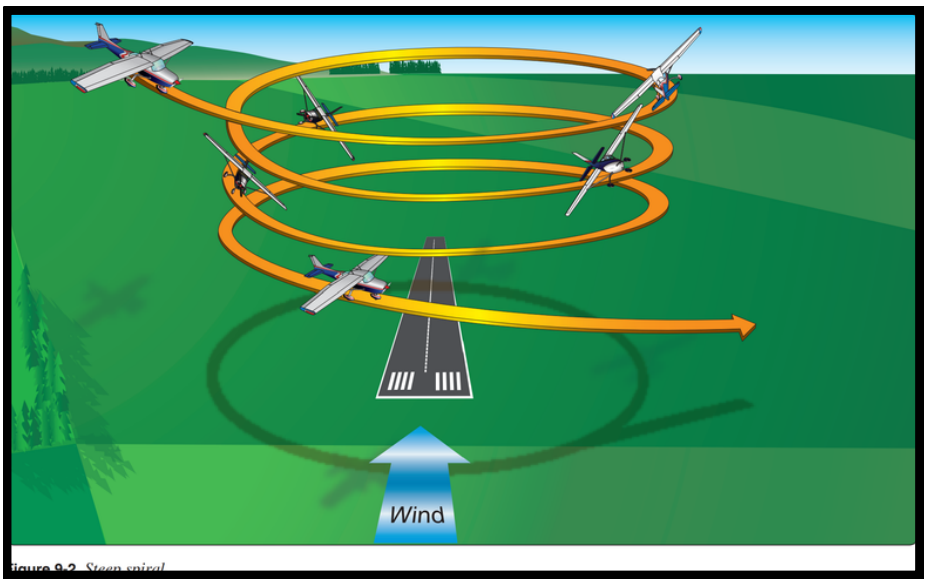
1. Determine the wind direction
2. First locate a ground reference (Tree, home. etc)
3. Select an altitude around 4000 feet AGL
4. Position the aircraft to fly downwind right next to ground reference
5. The radius should be around 1/4 of a mile
6. Perform the **Pre-Maneuver Checklist**

Entry:

1. Just before the ground reference, go power idle
2. Pitch for Vg: 72 KIAS
3. Complete 3 turns around the point
    a. Maintain constant radius around the reference point with bank
4. Bring power briefly to max and back to idle while completing each turn

Recovery:

1. Once the third rotation is complete, exit the steep spiral
2. The maneuver should be completed above 1500 ft AGL
3. Perform **Crusie Checklist**



Standards:

1. Establish and maintain a steep spiral, not to exceed 60° angle of bank, to maintain a constant radius about a suitable ground reference point.
2. Apply wind drift correction to track a constant radius circle around selected reference point with bank not to exceed 60° at steepest point in turn.
3. Divide attention between airplane control and ground track, while maintaining coordinated flight.
4. Maintain the specified airspeed, ±10 knots, rolls out toward object or specified heading, ±10°.

CHANDELLE

Objective: The purpose of the chandelle maneuver is to execute a 180 degree climbing turn with minimum turn radius. The chandelle demonstrates the relationship between speed and rate of turn, and the left-turning tendencies.

Setup:

1. Choose a visual reference 90 degrees off the wing in which the turn will be made
2. Note the airplanes heading
3. Perform the **Pre-Maneuver Checklist**

Entry:

1. Configure for cruise at 5000 RPM
2. Enter a 30-degree turn
3. Apply max power
4. Begin to pitch up and hold max pitch when arriving at 45-degree point
    a. Maintain coordination throughout the maneuver
5. On the last 90 degrees of the turn, maintain the pitch-up attitude
6. Relieve the bank to go wings level at 180 degrees with max pitch up attitude
7. Airspeed should be at minimum controllable airspeed (55 KIAS)
8. Hold airspeed without stalling

Recovery:

1. Slowly lower the angle of attack and don't lose altitude
2. Perform **Crusie Checklist**

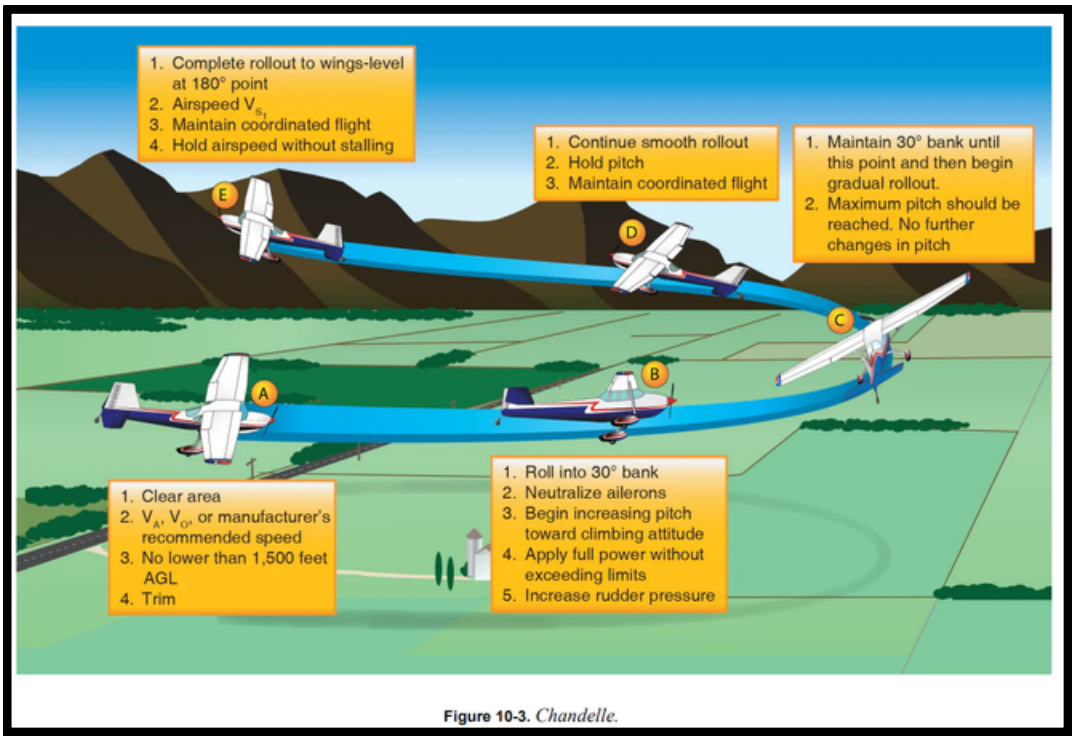


Figure 10-3. *Chandelle.*

Standards:

1. Establish the angle of bank at approximately 30°.
2. Simultaneously apply power and pitch to maintain a smooth, coordinated climbing turn, in either direction, to the 90° point, with a constant bank and continually decreasing airspeed.
3. Begin a coordinated constant rate rollout from the 90° point to the 180° point maintaining power and a constant pitch attitude.
4. Complete rollout at the 180° point, ±10° just above a stall airspeed, and maintaining that airspeed momentarily avoiding a stall.

ACCELERATED STALLS

Objective: The purpose of the accelerated stall maneuver is to understand the aerodynamics associated with accelerated stalls in various airplane configurations, including the relationship between angle of attack, airspeed, load factor, power setting, airplane weight and center of gravity, airplane attitude, and yaw effects.

Setup:

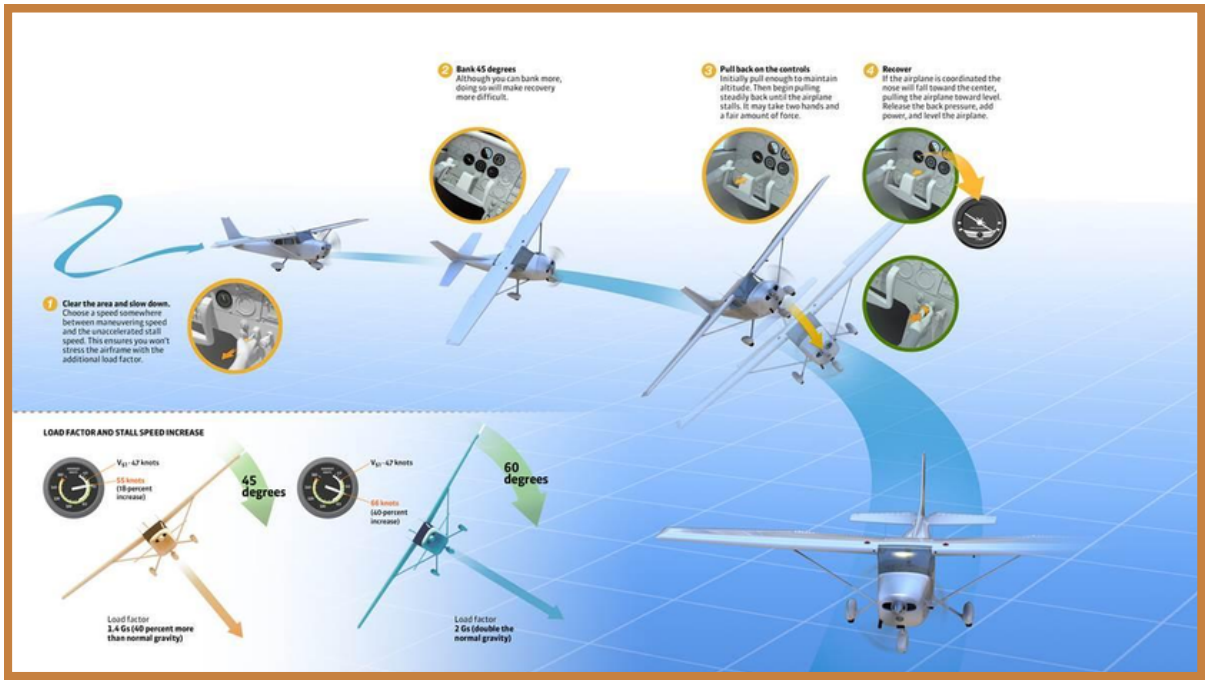
1. Verify proper altitude (above 3,000 feet AGL)
2. Verify airspeed is below maneuvering speed
3. Perform the **Pre-Maneuver Checklist**

Entry:

1. Enter a 45-degree turn
2. Apply back pressure to increase the load factor
3. Airspeed will begin to decrease
    a. Verify coordination with the rudder
4. Continue until stall indications occur or full stall (as indicated by instructor or examiner)

Recovery:

1. Lower the angle of attack by relaxing back pressure and returning wings to level flight
2. Add power as necessary
3. Perform **Crusie Checklist**



Standards:

1. Clear the area.
2. Select an entry altitude that will allow the Task to be completed no lower than 3,000 feet AGL.
3. Set power appropriate for the configuration, such that the airspeed does not exceed the maneuvering speed (VA) or any other applicable POH/AFM limitation.
4. Establish and maintain a coordinated turn in a 45° bank, increasing elevator back pressure smoothly and firmly until an impending stall is reached.
5. Acknowledge the cue(s) and recover promptly at the first indication of an impending stall (e.g., aircraft buffet, stall horn, etc.).

LAZY EIGHTS

Objective: The lazy eight is a maneuver that is designed to develop the proper coordination of the flight controls across a wide range of airspeeds and attitudes

Setup:

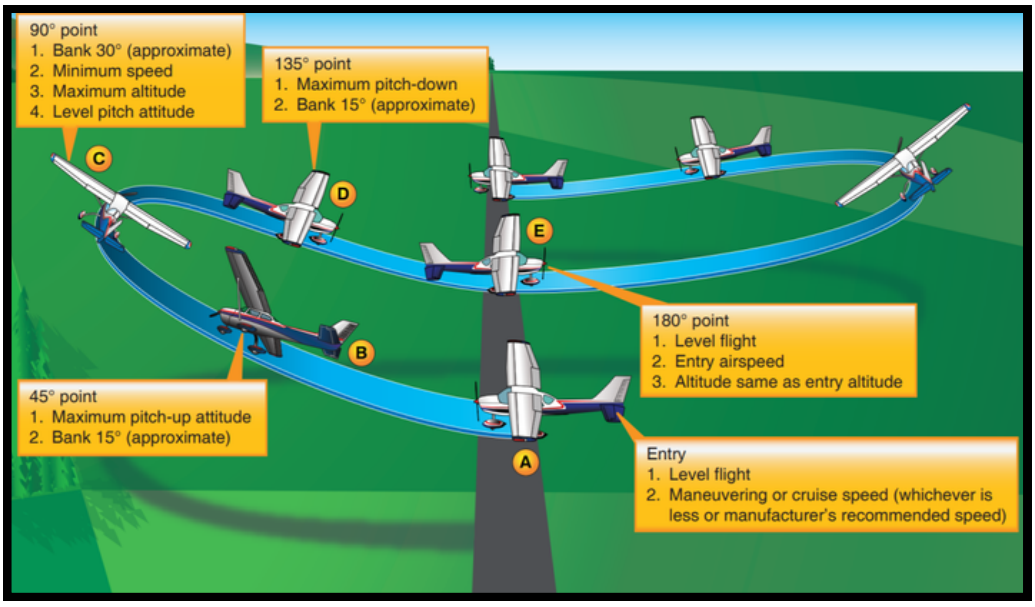
1. Choose a visual reference 90 degrees off the wing in which the turn will be made
2. Pick a 45-degree and 135-degree point
3. Note the airplane heading and altitude
4. Perform the **Pre-Maneuver Checklist**

Entry:

1. Configure for cruise at 5000 RPM
2. Add a slight bank to the direction of the lazy eight
3. Begin to pitch up with bank
   a. 45-degree point - max pitch-up attitude (approximately 13 degrees) and approximately 15 degrees of bank
   b. 90-degree point - approximately 30 degrees of bank, minimum speed (55 KIAS), maximum altitude and level pitch attitude
   c. 135-degree point - max pitch down and bank approximately 15 degrees
   d. 180-degree point - level flight, entry airspeed and entry altitude
4. The maneuver should include a constant change in bank and attitude through the first 180 degrees
5. Repeat step 2 and 3 in the other direction

Recovery:

1. Exit at entry altitude, heading and airspeed
2. Perform **Crusie Checklist**



Standards:

1. Complete the maneuver in accordance with the following:
   a. Approximately 30° bank at the steepest point
   b. Constant change of pitch and roll rate and airspeed
   c. Altitude at 180° point, ±100 feet from entry altitude
   d. Airspeed at the 180° point, ±10 knots from entry airspeed
   e. Heading at the 180° point, ±10 degrees
2. Continue the maneuver through the number of symmetrical loops specified, then resume straight-and-level flight.

EIGHTS ON PYLONS

Objective: Eights on pylons is a maneuver is designed to help in dividing attention to outside references to keep a sight picture. It involves mastering flight controls.

Setup:

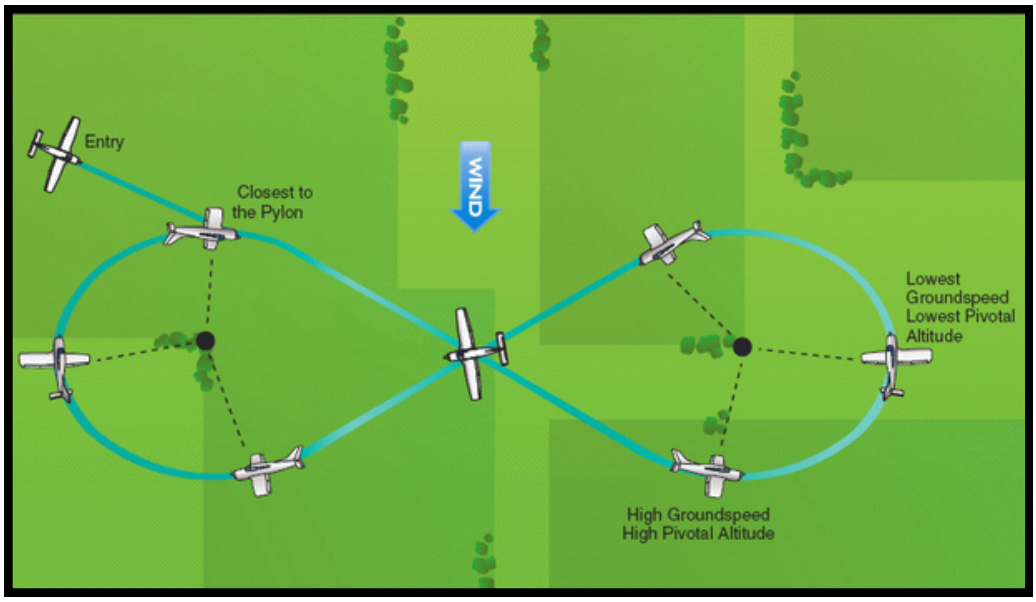
1. Choose two visual references that will act as the pylons
    a. The distance should be approximately 1/2 to 1 mile from each other
    b. Should be in a line perpendicular to the wind direction
2. Determine pivotal altitude from the ground speed on the downwind (Do this before entering maneuver)
3. Note the airplane heading and pivotal altitude
4. Perform the **Pre-Maneuver Checklist**

Entry:

1. Configure for cruise at 5000 RPM
2. Enter at a 45-degree angle in between the two pylons on the downwind at pivotal altitude
3. Begin your first half of the figure eight when abeam the pylon
    a. Adjust pitch to maintain pivotal altitude to keep pylon at the same spot in relation to wing tip
4. When flying to the next pylon, momentarily bring the wings level
5. Enter the next turn
6. Go through step 3 for the second pylon

Recovery:

1. Exit at entry altitude, heading and airspeed
2. Perform **Crusie Checklist**



Standards:

1. Correctly enter the maneuver at the appropriate altitude and airspeed.
2. Establish the correct bank angle for the conditions, not to exceed 40°.
3. Apply corrections so that the line-of-sight reference line remains on the pylon.
4. Divide attention between accurate, coordinated airplane control and outside visual references.

POWER OFF 180

Objective: The purpose of the maneuver is to develop a feel for a gliding descent to landing.

Setup:

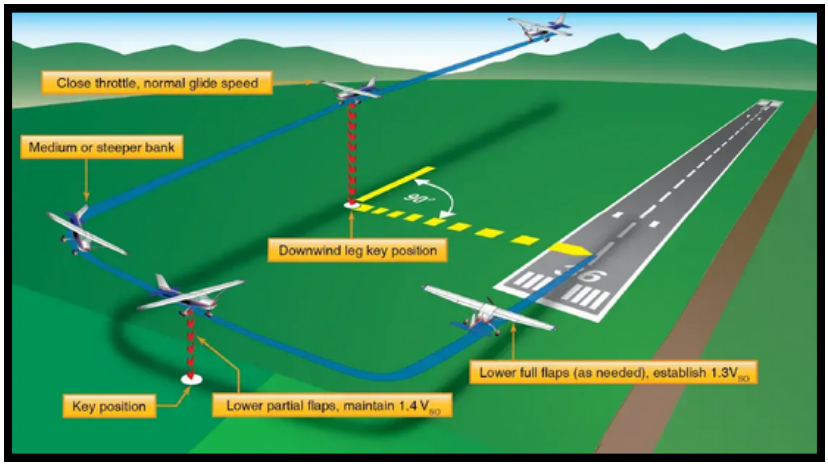
1. Figure out how to enter the traffic pattern
2. Go over the **Before Landing Checklist**
3. Scan for traffic on the downwind and other areas of the traffic pattern
4. Verify 1000 ft AGL
5. Verify Checklist with BCGUMPS (Boost, Carburetor, Gas (highest tank), Undercarriage, Mixture, Prop and Seatbelts)

Approach:

1. Have power set to 4700 RPM and maintain 90 KIAS
2. Once abeam the numbers, pull power to idle
3. Apply back pressure to Vg: 72 KIAS
4. Judge descent rate to land on the chosen point
5. Turn base and final, looking for traffic
    a. Note the wind direction to adjust the length of the legs of the traffic pattern to ensure landing on the spot
6. Use flaps, forward slips, and other techniques to adjust the descent rate

Landing:

1. Apply appropriate wind correction with aileron and rudder
2. Roundout, flare, and touchdown
3. Safely exit the runway
4. Perform **Clear of Runway Checklist**



Standards:

1. Position airplane on downwind leg, parallel to landing runway
2. Correctly configure the airplane
3. As necessary, correlate crosswind with direction of forward slip and transition to side slip for landing
4. Touch down within -0/+200 feet from the specified touchdown point with no side drift, minimum float, and with the airplane's longitudinal axis aligned with and over the runway centerline.

PRE-MANEUVER CHECKLIST

Chaps Acronym

This will be done before each maneuver to ensure proper set up and safety

C - Clearing Turns
H - Heading
A - Altitude
P - Position
S - Set Up (Fuel Pumps On and Lights On)

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Sling NGT

Flight Training Supplement

GLASS COCKPIT AVIATION

Table of Contents

Section I
Introduction

Purpose of this Flight Training Supplement (FTS)

This FTS provides guidance on how to operate the Sling NGT. The FTS has been prepared with the goal of enabling new pilots, or pilots transitioning from other aircraft, to properly operate the SLG-2 and understand the unique characteristics of Special Light Sport Aircraft (S-LSA) in order to provide for a safe operation and increase reliability and longevity of the airplane and associated systems.

Audience

The primary audience of this FTS is new pilots receiving primary instruction(private/sport), certified pilots transitioning from standard category aircraft, and newly hired CFIs who are yet to fly, or instruct, in S-LSA.

Recommended Reading Material

Pilot's Operating Handbook:
https://www.glasscockpitaviation.com/wp-content/uploads/2023/09/Sling-LSA-POH-1.pdf

Rotax 912is Operator's Manual (OM):
https://www.rotax-owner.com/manuals/OM_912iSeries_ED2_R1.pdf

Weight and Balance Sheet:
https://www.glasscockpitaviation.com/wp-content/uploads/2023/09/WB-N101AV_0001-1.pdf

Make and Model Quiz:
https://www.glasscockpitaviation.com/wp-content/uploads/2023/09/Sling-Make-and-Model-Quiz.docx-3.pdf

Transition to Light Sport Airplanes (LSA):
https://www.faa.gov/sites/faa.gov/files/regulations_policies/handbooks_manuals/aviation/airplane_handbook/18_afh_ch17.pdf

Section II
S-LSA Standards

FAA Accepted S-LSA Standards

Light-sport aircraft are not type-certificated by the FAA and are therefore not issued with a Type Certificate Data Sheet (TCDS). It is important to note that the FAA has instead accepted the consensus standards of light-sport aircraft as outlined by the American Society of Testing and Maintenance (ASTM).

ASTM Industry Consensus Standards for LSA cover the following areas:

- Design and performance
- Required equipment
- Quality assurance
- Production acceptance tests
- Aircraft operating instructions
- Maintenance and inspection procedures
- Identification and recording of major repairs and major alterations
- Continued airworthiness
- Manufacturer's assembly instructions(E-LSAaircraft)

Required Equipment

S-LSA are issued Special Airworthiness Certificates and thus do not fall under the standard category U.S. airworthiness certificates required equipment of §91.205. As ASTM does not publically release the equipment requirements for light-sport aircraft it is therefore incumbent upon the operator of any light-sport aircraft to use the equipment requirements outlined in the POH. If no minimum equipment is issued in the POH then §91.205 is a suitable substitute as it is typically a more restrictive list than the ASTM equipment requirements.

Note to CFIs: Although technically speaking the required equipment of §91.205 does not apply to the SLG-2 or other light-sport aircraft, it is still a regulation, along with §91.213, that DPEs will expect students to know and understand.

Continued Airworthiness

Airworthiness Directives (AD) are not issued for special category aircraft. It is instead through the medium of Special Airworthiness Information Bulletins (SAIB or SB) that problematic and post-certification issues are addressed. For light-sport aircraft, SBs are mandatory, whereas, for normal category aircraft, they are not.

All other maintenance and inspections of §91.409(Annual/100hr), §91.411(Altimeter/Pitot-Static), §91.413(Transponder), §91.171(VOR Check) and §91.207(ELT) must still be complied with.

Permitted Flight Rules

ASTM has only issued VFR equipment requirements and as such flight in meteorological conditions less than those prescribed for VFR is prohibited. If the aircraft is properly equipped under §91.205(d), and all applicable inspections are complied with, then the aircraft is permitted to fly on an IFR flight plan but to remain in VMC at all times. It is, therefore, possible to receive instrument instruction, obtain instrument aeronautical experience, and take a checkride in an appropriately equipped light-sport aircraft.

Section III
Pre-Flight Inspection

Embarking the Aircraft

Care should be taken when climbing onto the wing when embarking the aircraft. Due to the aft position of the step relative to the main wheels, if two people were to climb up on their respective sides at the same time, the C.G. could shift from forward of the main wheels to aft of the main wheels causing a tailstrike. Though this is not a concern if the individuals are relatively light, please use caution when climbing onto the wing, it is *strongly recommended that only one person climb up onto the wing and be seated at a time.*

Using the provided step and handhold is the only support the pilot or passenger should use when climbing onto the wing. *Do not apply pressure on the canopy when embarking or disembarking the aircraft.*

Section III
Pre-Flight Inspection

When entering the cockpit, there is a handhold provided that is located between the two seats. The weight of the pilot/passenger should not be placed on the headrest, seatback, or on top of the instrument panel when climbing into the cockpit.

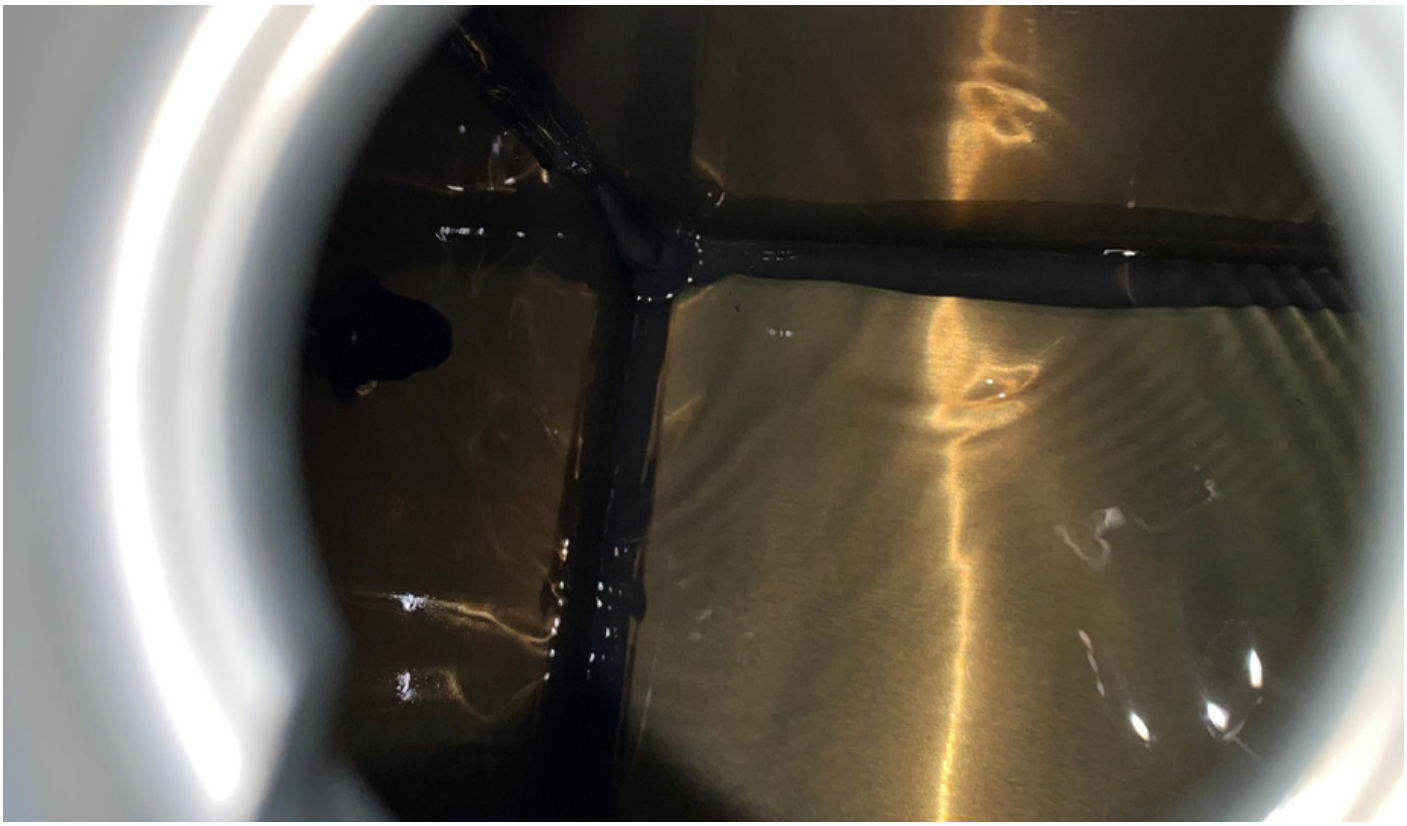
Fueling the Airplane

There is a 19.8-gallon fuel tank located in each wing. The fuel tanks are relatively long, ranging from about ⅓ to ½ the length of the wing. Due to the length of the fuel tanks, there are a series of bulkheads dividing the tanks into sections which prevent excess sloshing and instability in-flight. The bulkheads slow the rate at which the fuel flows between sections and as such can be a cause of concern if filling the tanks from near empty at a rapid rate. This would result in the pilot filling up the farthest outboard section of the tank up to full before the inboard sections are full which could result in significantly less fuel than the pilot would expect in the fuel tanks and could lead to fuel starvation.

If no fuel is visible in the tanks, fill them up and wait several minutes to ensure the inboard sections of the wing tanks are full by visually verifying the fuel level in the fuel tank has not dropped. If the fuel level has decreased then fuel has drained down and begun filling the inboard sections. Repeat this process until the fuel level has stabilized.

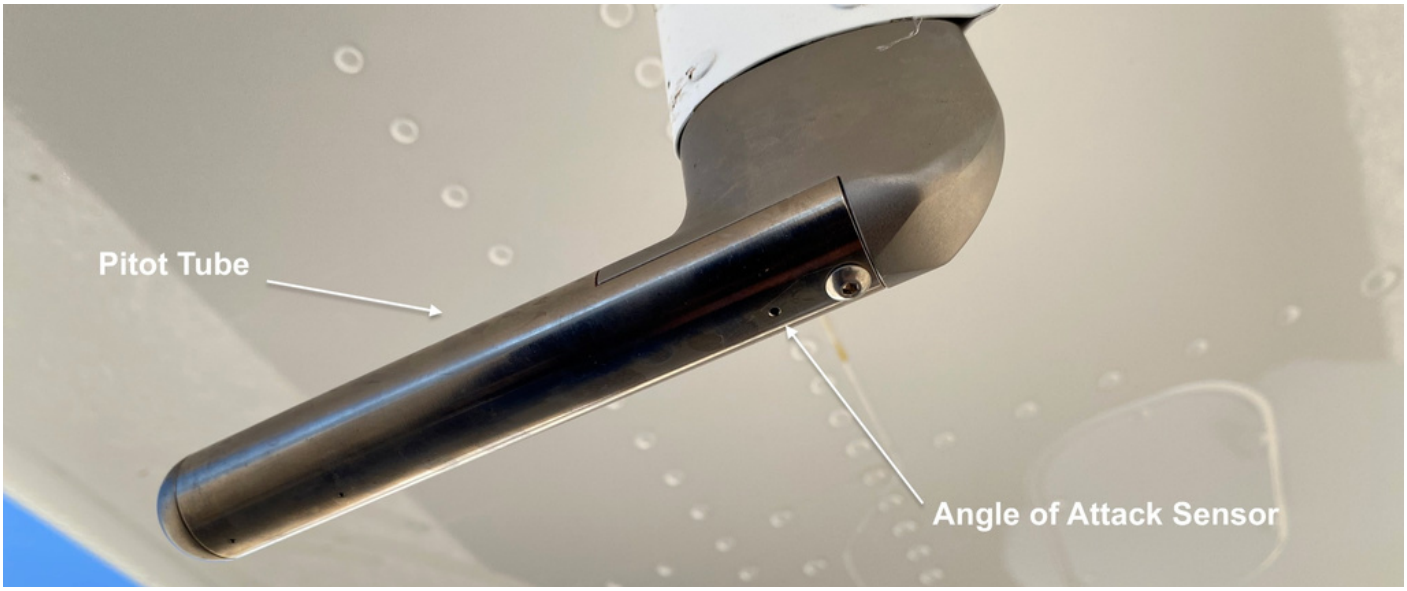
Section III
Pre-Flight Inspection

Always physically verify the fuel level before each take-off. Fuel can be visibly seen, through the filler cap, just covering the (total) bottom of the fuel tank with 8 gallons present. *Approximately 8 gallons pictured below*



Stall Warning Horn

The SLG-2 is not equipped with a stall warning horn but rather it is equipped with an Angle of Attack indicator (AoAI). The port for the AoAI is located on the aft side of the pitot tube.



Section III
Pre-Flight Inspection

Pitot-Static System

This is outlined fairly well in the POH, though some added emphasis is helpful. The pitot tube is located underneath the left wing and the static port is inside the aircraft behind the instrument panel. Due to the static port being located inside the cockpit your ASI, ALT, and VSI, are susceptible to changes of pressure inside the cockpit. This is demonstrated by opening outside air vents when in flight or by opening your canopy when taxiing. Ultimately, the error as a result of this is negligible, though care should be taken all the same.

Tail Section

The SLG-2 is equipped with a steerable nose wheel controlled by the rudder pedals. Contrary to most airplanes however, the rudder control system is not equipped with cables terminating at a bungee or spring which allows full deflection of the rudder when stationary. Therefore, it is not recommended to deflect the rudder unless you are in motion. This can be done during turns when taxiing the airplane.

Engine Pull-Through

The SLG-2 is equipped with a Rotax 912is. This engine uses a dry sump and as such an accurate reading of oil level is only possible if all the oil is located in the sump and not partially in the engine. The process by which we push all the oil out of the engine and back into the sump is called "burping the engine" or pull-through. *Always ensure the ignitions/lanes, master switch, and throttle are in their IDLE or off positions.*

After the engine is safely secured, you may begin rotating the propeller until you hear a gurgling or "burping" sound. It is easier to hear if you have the oil cap removed and is indicative of the majority of the oil having been pushed back into the sump. When rotating the propeller be sure not to go too fast, as it is much more efficient to take your time through each compression stage as you rotate the propeller.

Explanation:

As you rotate the propeller, the crankshaft causes the cylinders to suck air into the combustion chamber and compress it. Under normal circumstances, this air cannot escape due to the air-tight seal around the cylinders created by the circulation of oil. However, if the engine is off, oil isn't circulated, and the air seeps from inside the combustion chamber around the cylinders and into the crankcase. As the propeller continues to rotate this process repeats and the pressure of air inside the crankcase increases and begins to push the oil out and back into the sump. The "burp" sound you hear is when the pressurized air pushes its way through the oil lines and up through the oil sump.

Section IV
Operational Considerations

Engine Operation

Engine Starting – If starting the engine cold (Oil below 120 ºF), the oil filter is bypassed due to the increased viscosity of the oil. Significant throttle settings (>2,500rpm) must not be used during this period, as it may cause damage. It is therefore of great importance to keep RPM between 2,000 RPM and 2,500 RPM.

Shortly following engine start, the RPM should be brought up to (but not exceeding if oil temp is below 120 ºF) 2,500 RPM for more than 5 seconds for the Engine Control Unit (ECU) to bring Alternator B online. Main bus voltage should move up from +/- 12.5V to above 13V and the initial discharge should change to a positive charge reading on the ammeter. Failure to bring Alternator B online will result in excess stress and wear being placed on the Alternator and will greatly reduce its lifespan.

Taxi – As discussed, the SLG-2 is equipped with a Rotax 912is. This is not a direct-drive engine. The propeller is driven through a reduction gearbox, of ratio 2.43, and features an integrated shock absorber. At low RPMs (typically <2000 RPM) the gears of the gearbox will become loose with respect to each other, this will cause excess wear and tear on the gearbox causing engine roughness. *A&Ps recommend keeping RPM above 2,000 RPM when in motion and about 2,500 RPM if stationary.*

Cruise – It is also recommended that cruise RPMs between 5,100 RPM and 5,400 RPM be used to reduce excess wear on the gearbox and engine.