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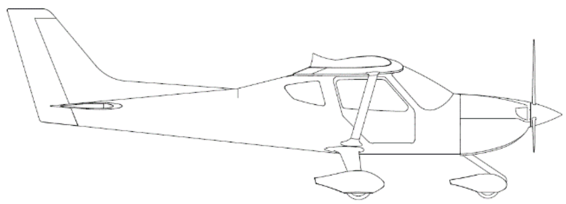

Flight Training Supplement

The Colt 100 Aircraft is manufactured by Texas Aircraft Manufacturing and is approved by FAA regulations as Special Light-Sport Aircraft under the accepted ASTM consensus standards.

Make: Texas Aircraft Manufacturing, INC

Model: Colt 100

Aircraft Configuration: Dual Screen Garmin-VFR-Sterna Propeller- With Parachute-Rotax 912 ULS2-01-Fuel Management System(MoGas System)

Airplane Serial Number:

Airplane Registration Number:

T1-FTS-12

Revision NC
04/15/2025

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Requests for changes should be forwarded to any Manager.

Log of Revisions

Revision	Date	Description of Revision
NC	04/15/2025	Initial Release.

List of Effective Pages

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Introduction to Flight Training Supplement

This Flight Training Supplement has been prepared exclusively for the aircraft Colt 100, manufactured by Texas Aircraft Manufacturing.

The aim of this manual is to ensure the safe flight and the correct use of the aircraft in accordance with the manufacturer procedures.

The disregard of the operating and technical specifications contained inside this manual can result in injury or loss of life.

This Flight Training Supplement is based on Colt 100 data and FAA-H-8083-3B and required by ASTM F2746. This Manual does not substitute an adequate flight instruction, airworthiness guidelines or operational air traffic requirements.

The pilot is responsible to ensure the aircraft airworthiness, if it is acceptable to the safe flight, respecting the operating limitations, instrument indicators and placards. The pilot must study it completely before flight.

Warnings, Cautions and Notes

The following safety definitions are used in this manual:

WARNING

A WARNING STATEMENT IDENTIFIES A SPECIFIC HAZARD TO PERSONNEL OR DAMAGE TO EQUIPMENT. THE ABSENCE OF THE CORRECT PROCEDURE COULD RESULT IN INJURY AND LOSS OF LIFE.

CAUTION

A CAUTION statement identifies the possible risk of damage to aircraft or equipment, if not observed or corrected with the appropriate procedure.

NOTE

A NOTE statement identifies the important or unusual procedure, which is emphasized.

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TEXAS AIRCRAFT

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List of Abbreviations

AOA - angle of attack
ASTM - American Society for Testing and Materials
CG - center of gravity
CTAF - common traffic advisory frequency
FAA - Federal Aviation Administration
IMC - instrument meteorological conditions
MTOW - maximum takeoff weight
PAPI – precision approach path indicator
POH - Pilot's Operating Handbook
S-LSA - Special Light-Sport Aircraft
VASI – visual approach slope indicator
V_A - design maneuvering speed
V_{NE} - never exceed speed
V_S - stalling speed
V_{S0} - stalling speed (flaps fully extended - Landing)
V_{S1} - stalling speed (specific configuration - Takeoff)
V_X - speed for best angle of climb
V_Y - speed for best rate of climb
VFR - visual flight rules

1 Ground Operations

The visual preflight assessment is an important step in mitigating airplane flight hazards. The purpose of the preflight assessment is to ensure that the airplane meets regulatory airworthiness standards and is in a safe mechanical condition prior to flight.

The Colt 100 aircraft has a set of logbooks that include airframe, engine and propeller, which are used to record maintenance, alteration, and inspections performed on the components. It is important that the logbooks be kept accurate and secure but available for inspection. Airplane logbooks are not required to be kept in the airplane. It is recommended the pilot inspect the airplane logbooks prior to flight to ensure that the airplane records of maintenance, alteration, and inspections are current and correct.

1.1 Visual Preflight Assessment

Before each flight, an exterior pre-flight inspection must be done according to the Checklist below.

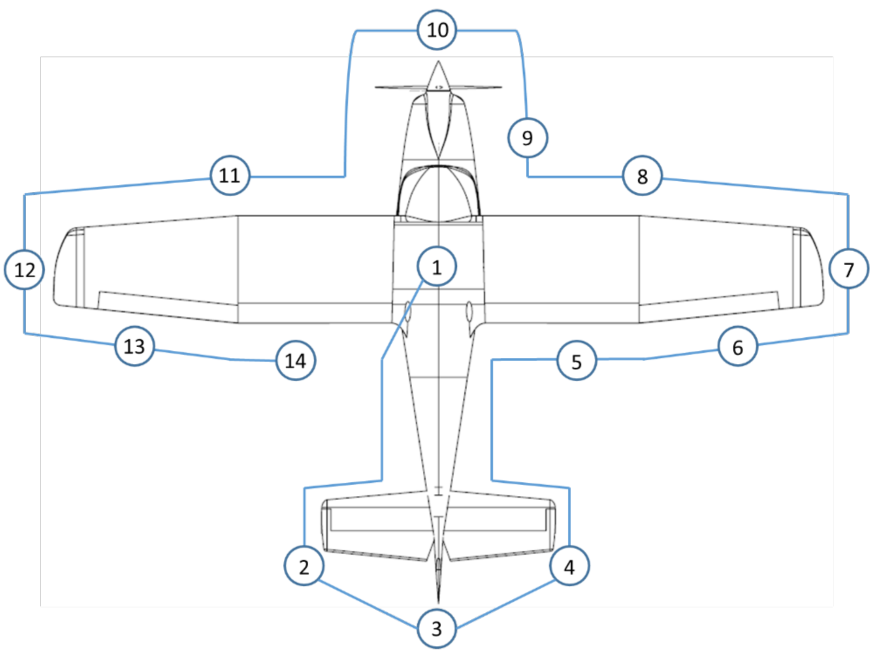


Figure 1.1.1. Exterior Inspection.

Exterior Checklist:

1 Check the fuselage surface for damages and cracks; Sump the fuel in the LH and RH main fuel tank; Check the wing strut LH and RH; Check the VHF antenna. Check the integrity of the main landing gear; Check the integrity and installation of the main landing gear fairing. Check the main wheel and tire condition. Check the main wheels tire pressure for 35 psi.

2 Check the integrity of the empennage and elevator. Check for cracks on the skins; Check the cables and hinges; Check the elevator for freedom of movement.

3 Check the integrity of the empennage and rudder. Check for cracks on the skins; Check the cables and hinges; Check the rudder for freedom of movement; Check the trim tab.

4 Check the integrity of the empennage and elevator. Check for cracks on the skins; Check the cables and hinges; Check the elevator for freedom of movement.

5 Check the integrity of the right flap. Check for cracks on the skin; Check the hinges.

6 Check the integrity of the right aileron. Check for cracks on the skin; Check the aileron for freedom of movement. Check the hinges.

7 Check the right-wing tip structure for damages and cracks; Check that the position lighting is operational;

8 Check the right leading-edge surface for damages and cracks; Check if the fuel filler cap is in place and locked. Check if the fuel filler cap locking lever is into the aft position for stream line condition;

9 Drain the fuel in the firewall gascolator valve; Verify the engine oil and coolant level; Check for any oil, coolant and fuel leaks; Close and lock the cowling.

WARNING

RISK OF BURNING AND SCALDINGS. CONDUCT CHECKS ON THE ENGINE WITH CAUTION.

10 Check the integrity of the propeller and spinner; Check the taxi and landing lights; Check that the ram air inlet is not obstructed; Check the integrity and installation of the nose landing gear fairing; Check the nose wheel and tire condition. Check the nose tire pressure for 25 psi.

11 Remove the Pitot tube cover; Check if the Pitot tube is not obstructed; Check the tank vents for obstruction; Check the left wing leading edge surface for damages and cracks. Check if the fuel filler cap locking lever is into the aft position for stream line condition;

CAUTION

Do not blow inside the Pitot tube to clear the instrument and line. This procedure will cause damage to the system.

12 Check the left-wing tip structure for damages and cracks; Check that the position lights is operational;

13 Check the integrity of the left aileron. Check for cracks on the skin; Check the aileron freedom of movement. Check the hinges.

14 Check the integrity of the left flap. Check for cracks on the skin; Check the hinges.

CAUTION

Using the proper, approved grade of fuel is critical for safe, reliable engine operation. Without the proper fuel quantity, grade, and quality, the engine will likely cease to operate.
In this airplane, MoGas can be used as an appropriate fuel as long as it has 91 octane, is regulated by EN 228 Super Standard and has a maximum of 5% ethanol

It is imperative that the pilot visually verify that the airplane has the correct quantity for the intended flight plus adequate reserves. The pilot should always ensure that the fuel caps have been securely replaced following each fueling.

1.2 Seat and Seat Belt Adjustment

Before starting the engine, the pilot should adjust the seat and seat belt.

Pull or push the handle on the glass shield and pull to outside the seat adjustment pin at the same time.

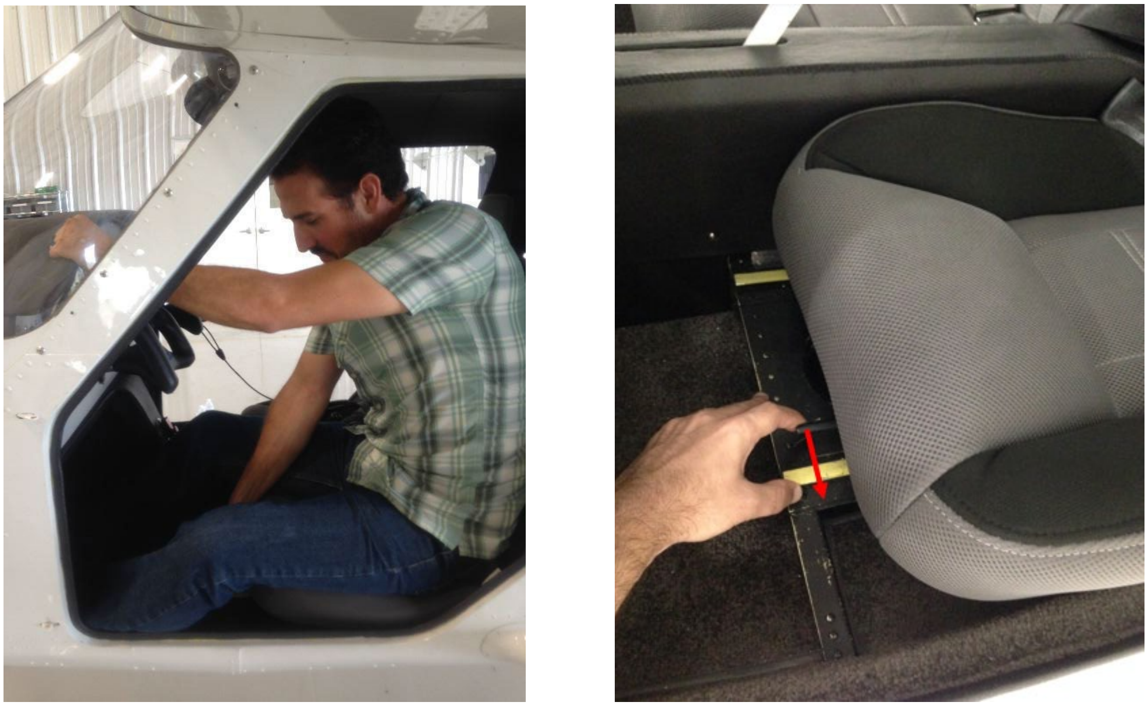


Figure 1.2.1. Seat Adjustment.

The Colt 100 is equipped with a seat belt 4 point harness. Below is shown the sequence to fasten the seat belts.

1 Place the shoulder lap belt over the upper torso;

2 Position one side of the lap belt and place the buckle tongue into the shoulder lap;

3 Insert the buckle tongue into the buckle in the opposite lap belt until you hear the “click”.

4 Tighten the lap belt over the pelvic crest;

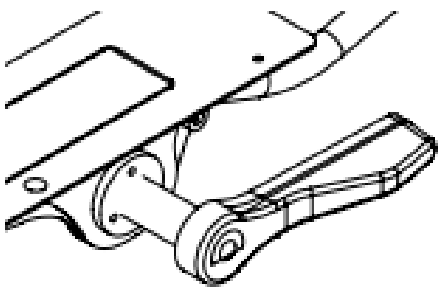
5 Tighten the shoulder straps.

Figure 1.2.2. Seat Belt Adjustment.

1.3 Doors

The doors have latches with two actions outside the airplane and a lock with keys.

1. Turn the handle according to the placards installed on the door;



Inside the cockpit, just pull the handle up to open the door and return to the initial position to close it.

Before starting the engine, adjust the seat, fasten the seat belt, close and lock the doors.

1.4 Baggage Compartment

The baggage compartment is located behind the seats. The volume is 12.75 ft^3 and the maximum weight allowed is 44 lbs. You should place the baggage as forward as possible and always use a baggage net.

Figure 1.4.1. Baggage tie down.

CAUTION

Always use a net to secure the baggage.

1.5 Engine Starting

Prior to engine start, the pilot must ensure that the ramp area surrounding the airplane is clear of persons, equipment, and other hazards from coming into contact with the airplane or the propeller. Also, an awareness of what is behind the airplane prior to engine start is standard practice. A propeller can produce high velocities, resulting in damage to property, and injure those on the ground.

Just prior to starting the engine, the pilot should always call "CLEAR" out of the side window and wait for a response from anyone who may be nearby before engaging the starter.

When activating the starter, the wheel brakes must be pressed and one hand is to be kept on the throttle to manage the initial starting engine speed.

Table 1.5.1. Engine Starting, Checklist.

Before Engine Start	
1. Seats	ADJUSTED and LOCKED
2. Safety Harnesses	FASTENED and SECURE
3. Brakes	FIRM and EVEN
4. Throttle	IDLE
5. Fuel Selector Valve	LH or RH
6. Master Switch	ON
7. Avionics Switch	ON
8. EFIS	ON
9. Carburetor Heat (if installed)	OFF
10. Choke	AS REQUIRED
11. Electric Fuel Pump	ON 4 SECONDS Then OFF
12. Start	ENGAGE

WARNING

DO NOT, UNDER ANY CIRCUMSTANCES, START THE ENGINE IF ANY PERSON IS CLOSE TO THE AIRCRAFT.

CAUTION

Continuous starter activation for max. 10 seconds only. This procedure avoids the overheat of the starter motor. If the engine does not start, release the ignition switch start button, wait 2 minutes and repeat the start procedure.

After starting the engine, the following checklist must be accomplished.

Table 1.5.3. After Starting the Engine Checklist.

After Engine Start	
1. Oil Pressure	VERIFY
2. Throttle	2000 RPM*
3. Choke	OFF
4. Carburetor Heat (if installed)	AS REQUIRED
5. Alternator	ON (Charging)
*Do not exceed 2500 RPM until the oil temperature is 120°F or higher. Warm up may be conducted at 2300 RPM.	

NOTE

When the electric fuel pump is turned off after the starting engine, only the mechanical fuel pump is supplying fuel to the engine. Verify the engine is working without the electric fuel pump for at least 2 minutes. If the engine continues operating, the mechanical fuel pump is OK.

Before Taxiing the Checklist below should be performed.

Table 1.5.4. Before Taxiing Checklist.

1. Weather, Wind and Visibility	Check/VFR Condition
2. Taxi Lights	on*
3. Throttle	As required
4. Controls	Differential brake and rudder
5. Brakes	As required

* Only for VFR Night

1.6 Taxiing

Turns during taxi are accomplished with rudder pedals and brakes depending the speeds. To turn the airplane on the ground at low speeds, the pilot should apply power and brake to control the taxi speed. The brake should be held in the direction of the turn until just short of the point where the turn is to be stopped. Brake pressure is then released or opposite pressure is applied as needed.

More engine power may be required to start the airplane moving forward, or to start a turn to the left, than is required to brake to the right pedal to control the track.

Table 1.6.1. Taxiing Checklist.

1. Weather, Wind, Visibility	Check
2. ATIS	Check
3. Runway	Check
4. Traffic	Check
5. Taxi lights	ON*
6. Throttle	As required
7. Control	Pedals
8. Minimum turn radius	5.95 m / 20 ft
9. Brakes	As required
10. Oil Temperature	min. 50° C**

* Only for VFR Night.

** Before you exceed 2500 RPM engine oil temperature needs to be 120F.

1.7 Before-Takeoff Check

Normally, the before-takeoff checklist is performed after taxiing to a run-up position near the takeoff end of the runway. Check if the oil temperature reaches a minimum value as stated in the EFIS display markings and POH before takeoff power is applied. Taxiing to the run-up position usually allows sufficient time for the engine to warm up to at least minimum operating temperatures.

Table 1.7.1. Before Takeoff CheckList.

Before Takeoff	
1. Brakes	HOLD
2. Flight Controls	FREE and CORRECT
3. Throttle	4000 RPM*
4. Ignition Switch	CHECK RPM DROP (Must Not Exceed 300 RPM) VERIFY MAX RPM DIFFERENCE (Must Not Exceed 115 RPM Between Circuits)
5. Carburetor Heat (if installed)	CHECK DROP in RPM (100 RPM Minimum)
6. Engine Instruments	CHECK
7. Throttle	VERIFY IDLE Then 2000 RPM
8. Transponder	SET
9. Flight Instruments	VERIFY
10. Electric Fuel Pump	ON then OFF (Verify Increase in Fuel Pressure)
11. Lights	AS REQUIRED
12. Fuel Selector Valve	VERIFY
13. Trim Tab	SET for TAKEOFF
14. Flaps	SET for TAKEOFF (0° - 10°)
15. Parachute Launching Handle	UNLOCKED and AVAILABLE**
16. Doors	LOCKED and LATCHED
*Do not exceed 2500 RPM until the oil temperature is 120°F or higher. **Do not activate Ballistic Parachute Rescue System below 1000ft AGL.	

1.8 Takeoff Checks

The last check on the engine as power is brought to full takeoff power.

Table 1.8.1. Takeoff Checklist.

1. Brakes	Released
2. Flap	Takeoff (0° - 10°)
3. Throttle	Full
4. Rotation speed	Approximately 50 knots

1.9 After Landing

During the after-landing roll, while maintaining airplane track over runway centerline with ailerons and heading down runway with rudder pedals, the airplane should be gradually slowed to normal taxi speed with normal brake pressure.

Table 1.9.1. After Landing Checklist.

1. Flaps	Retracted
2. Transponder	Standby
3. Trim Tab	Center
4. Taxi Lights	ON*

* Only for VFR night.

1.10 Clear of Runway and Stopped, Engine Shutdown

Table 1.10.1. Engine Shutdown Checklist.

Engine Shut Down	
1. Throttle	Idle
2. Fuel Selector Valve	OFF
3. Lights	OFF
4. Electric Fuel Pump	OFF
5. Alternator Switch	OFF
6. Avionics Switch	OFF
7. Master Switch	OFF
8. Ignition Switch	OFF
9. Parachute Launching Handle	Locked

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2 Basic Flight Maneuvers

The Basic Flight Maneuvers are based on four main tasks: straight-and-level flight, turns, climbs, and descents.

In order to accomplish the Basic Flight Maneuvers, the Colt 100 cockpit and controls are shown below.

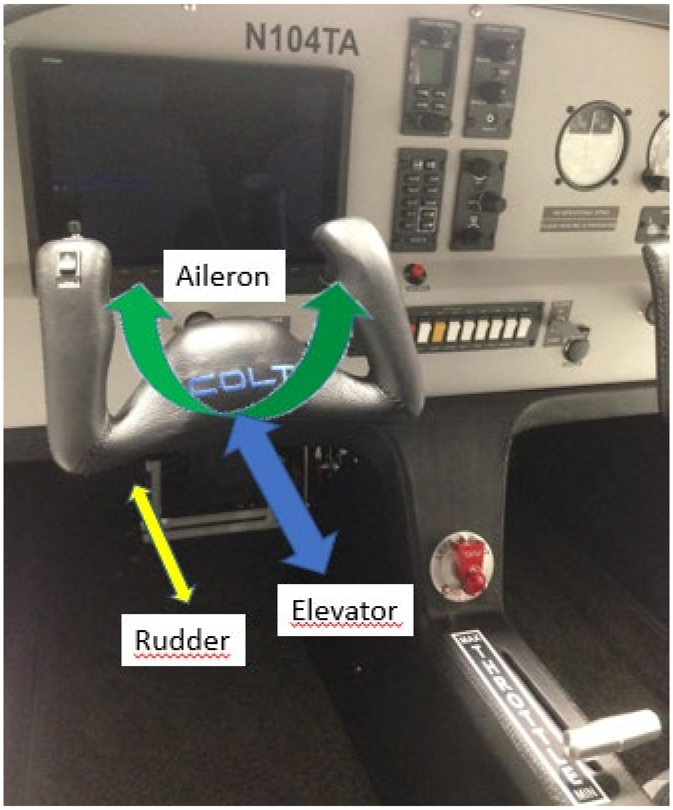

Figure 2.1. Colt 100, Cockpit Panel.

The pilot is always considered the referenced center of effect as the flight controls are used. Therefore:

- When pulling the elevator pitch control toward the pilot, the airplane's nose will rotate upward.
- When pushing the elevator pitch control toward the instrument panel the airplane rotates the nose downward.
- When right pressure is applied to the aileron control the airplane's right wing banks downward.
- When left pressure is applied to the aileron control the airplane's left wing banks downward.
- When forward pressure is applied to the right rudder pedal, the airplane's nose moves to the right in relation to the pilot.
- When forward pressure is applied to the left rudder pedal, the airplane's nose moves to the left in relation to the pilot.

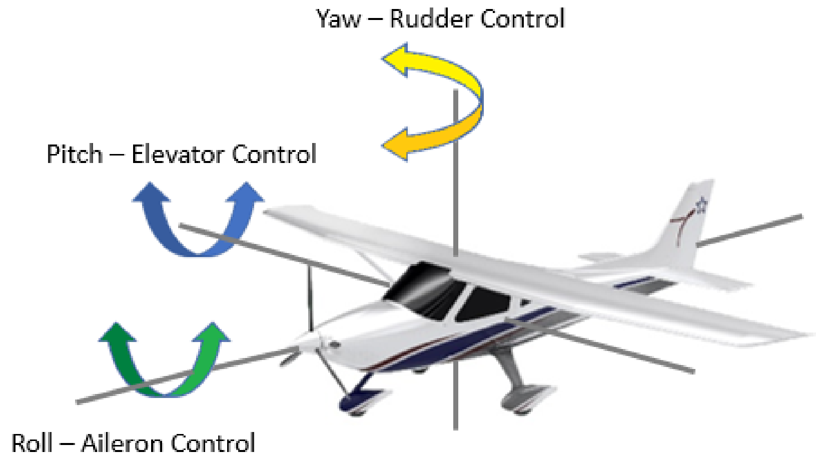

Figure 2.2. Flight Controls.

2.1 Straight and Level Flight

Straight-and-level flight is the flight in which heading and altitude are constantly maintained.

Straight-and-level flight is a matter of consciously fixing the relationship of a reference point on the airplane in relation to the natural horizon. The establishment of reference points should be initiated on the ground as the reference points depend on the pilot's seating position, height, and manner of sitting. It is important that the pilot sit in a normal manner with the seat position adjusted, which allows for the pilot to see adequately over the instrument panel while being able to fully depress the rudder pedals to their maximum forward position without straining or reaching.

2.1.1 Trim Control

Trim control surfaces are required to offset any constant flight control pressure inputs provided by the pilot.

The elevator trim is used to null the pressure exerted by the pilot on the pitch flight control, which is being held to produce the tail down force required for a specific AOA. This relieves the pilot from holding a constant pressure on the flight controls to maintain a particular pitch attitude. Adjust the trim tab in flight just pressing up or down in the trim control at the yoke.

Figure 2.1.1.1. Trim Surface and Control.

2.2 Level Turn

A turn is initiated by banking the wings in the desired direction of the turn through the pilot's use of the aileron flight controls. Left aileron flight control pressure causes the left wing to lower in relation to the pilot. Right aileron flight control pressure causes the right wing to lower in relation to the pilot. In other words, to turn left, lower left wing with aileron by left yoke. To turn right, lower the right wing with right yoke. At high bank angles the airplane will continue to turn with ailerons neutralized. So, the sequence should be like the following:

(1) bank airplane, adding either enough power or pitching up to compensate for the loss of lift;

(2) neutralize controls as necessary to stop bank from increasing and hold desired bank angle;

(3) use the opposite yoke to return airplane to level;

(4) then take that control out to again neutralize the ailerons for level flight

- Shallow turns—bank angle is approximately 20° or less. This shallow bank is such that the inherent lateral stability of the airplane slowly levels the wings unless aileron pressure in the desired direction of bank is held by the pilot to maintain the bank angle.

- Medium turns—result from a degree of bank between approximately 20° to 45°. At medium bank angles, the airplane's inherent lateral stability does not return the wings to level flight. As a result, the airplane tends to remain at a constant bank angle without any flight control pressure held by the pilot. The pilot neutralizes the aileron flight control pressure to maintain the bank.

The purpose of the rudder in a turn is to coordinate the turn. As lift increases, so does drag. When the pilot deflects the ailerons to bank the airplane, both lift and drag are increased on the rising wing and, simultaneously, lift and drag are decreased on the lowering wing. This increased drag on the rising wing and decreased drag on the lowering wing results in the airplane yawing opposite to the direction of turn. To counteract this adverse yaw, rudder pressure is applied simultaneously with the aileron in the desired direction of turn. This action is required to produce a coordinated turn.

Coordinated flight is important to maintaining control of the airplane.

2.3 Climb

Normal climb speed is generally higher than the airplane's best rate of climb. The additional airspeed provides for better engine cooling, greater control authority, and better visibility over the nose of the airplane. Normal climb is sometimes referred to as cruise climb. Before presenting the recommended setup for climb, an explanation regarding the V_y and V_x is described below.

Best rate of climb (V_y)—produces the most altitude gained over a given amount of time. This airspeed is typically used when initially departing a runway without obstructions until it is safe to transition to a normal or cruise climb configuration.

Best angle of climb (V_x)—performed at an airspeed that produces the most altitude gain over a given horizontal distance. The best angle of climb results in a steeper climb, although the airplane takes more time to reach the same altitude than it would at best rate of climb airspeed. The best angle of climb is used to clear obstacles, such as a strand of trees, after takeoff.

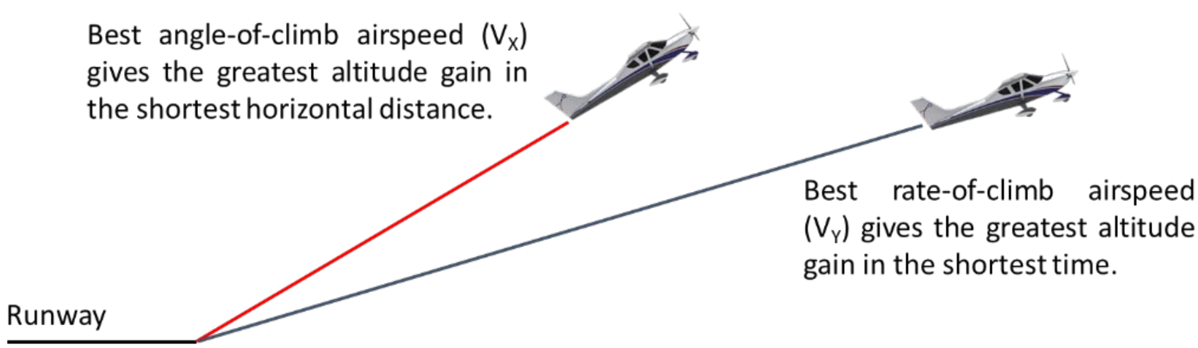

Figure 2.3.1. V_x and V_y.

Table 2.3.1. Climb Checklist.

1. Throttle	Full
2. Flaps	Takeoff (10°)
3. Electric fuel pump	OFF
4. Airspeed	Vx, for Best Angle of Climb = 60 knots
	Vy, for Best Rate of Climb = 64 knots
	Higher than Vy and less than 75knots
5. Taxi and Landing Lights	OFF

If a climb is started from cruise flight, the airspeed gradually decreases as the airplane enters a stabilized climb attitude. The thrust required to maintain straight-and-level flight at a given airspeed is not sufficient to maintain the same airspeed in a climb. In this case, do not use flaps.

The propeller in most airplanes rotates clockwise when seen from the pilot's position. As pitch attitude is increased, the center of thrust from the propeller moves to the right and becomes asymmetrical. This asymmetric condition is often called the "P-factor." This is compensated by the pilot through right rudder pressure. In addition, torque that acts opposite to the direction of propeller rotation causes the airplane to roll to the left. Under these conditions, torque and P-factor cause the airplane to roll and yaw to the left. To counteract this, right rudder and aileron flight control pressures must be used.

2.4 Descents

Since induced drag is decreased as lift is reduced in order to descend, excess thrust will provide higher airspeeds. This causes an increase in total thrust and a power reduction is required to balance the forces.

CAUTION

Check the engine instruments and airspeed during the descent. Engine can reach RPM higher than normal operation.

2.5 Glides

A glide is a basic maneuver in which the airplane loses altitude in a controlled descent with little or no engine power.

The best glide airspeed is used to maximize the distance flown. This airspeed is important when a pilot is attempting to fly during an engine failure. Colt has a best glide airspeed of 60 knots. To reach this speed the pilot should control the AOA of the aircraft. The best airspeed for gliding is one at which the airplane travels the greatest forward distance for a given loss of altitude in still air.

The next table shows airspeeds and distances reached after 1000 ft of altitude loss, considering MTOW of 600 kg (1320 lb), most fwd CG and flaps retracted.

Table 2.5.1. Glide information, Colt 100.

Power	Speed [KIAS]	Glide Ratio	Distance reached after 1000 ft altitude loss
Idle	60	11.3/1	1.86 NM
	65	9.0/1	1.48 NM
off	60	9.9/1	1.62 NM

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3 Maintaining Aircraft Control

It is important for pilots to recognize and maintain a heightened awareness of situations that increase the risk of loss of control. Those situations include: uncoordinated flight, equipment malfunctions, pilot complacency, distraction, turbulence, and poor risk management – like attempting to fly in instrument meteorological conditions (IMC) when the pilot and/or aircraft are not qualified/equipped.

WARNING

FLIGHT OPERATIONS IN IMC ARE PROHIBITED.

To maintain aircraft control when faced with these or other contributing factors, the pilot must be aware of situations where loss of control can occur, recognize when an airplane is approaching a stall, has stalled, or is in an upset condition, and understand and execute the correct procedures to recover the aircraft.

FAA has defined an upset as an event that unintentionally exceeds the parameters normally experienced in flight or training. These parameters are:

- Pitch attitude greater than 25°, nose up;
- Pitch attitude greater than 10°, nose down;
- Bank angle greater than 45°;
- Within the above parameters, but flying at airspeeds inappropriate for the conditions.

3.1 Coordinated Flight

A pilot should develop a sensitivity to side loads that indicate the nose is not yawed into the relative wind, and the airplane is not slipping or skidding. A correction should be made by applying rudder pressure.

Figure 3.1.1. Slip/skid ball, Digital and Analog installed on the cockpit panel.

When the ball is out of the boundary to the right, then the right pedal should be under pressure. So, when the ball is out to the left, the left pedal should be pressed (step on the ball).

3.2 Angle of Attack (AOA)

The stall condition is the result of exceeding the critical AOA, not of insufficient airspeed. In this case, the lift load in that situation is not able to sustain the aircraft in flight.

Table 3.2.1. Critical AOA, Colt 100.

Flap	AOA
Retracted	10°
Takeoff (10°)	11°
Landing (30°)	11°

3.3 Slow Flight

The objective of maneuvering in slow flight is to understand the flight characteristics and how the airplane’s flight controls feel near its aerodynamic stall-warning. It also helps to develop the pilot’s recognition of how the airplane feels, sounds, and looks when a stall is impending.

Maneuvering at 10 knots above the stall speed maintaining controlled flight without activating the stall warning is a good practice to know the aircraft behavior.

Before performing Slow Flights, it is indispensable to know stall airspeeds at wings level and banked. See, Stalls Chapter and Steep Turn Chapter.

3.4 Stalls

It is important to understand factors and situations that can lead to a stall, and develop proficiency in stall recognition and recovery. Performing intentional stalls will familiarize the pilot with the conditions that result in a stall, assist in recognition of an impending stall, and develop the proper corrective response if a stall occurs. Stalls are practiced to two different levels:

• Impending Stall—an impending stall occurs when the AOA causes a stall warning, but has not yet reached the critical AOA.

• Full Stall—a full stall occurs when the critical AOA is exceeded. Indications of a full stall are typically that an uncommanded nose-down pitch cannot be readily arrested. In a coordinated stall, when the ball is at the center, the tendency of the aircraft is to keep the straight flight, without roll.

Although it depends on the degree to which a stall has progressed, some loss of altitude is expected during recovery. Colt presents an altitude loss of about 300 ft with flaps retracted, MTOW of 1320 lb and throttle at idle. The use of flaps should decrease the loss altitude. Intentional stalls should be performed at an altitude higher than 2500 ft above the ground for recovery and return to normal level flight.

Colt 100 is equipped with stall warning. The aural alert alerts the pilot when approaching the critical AOA.

Table 3.4.1. Stall Speed in level Flight.

Gross Weight (600 kg / 1320 lb)	Airspeed
Flap Landing (30°)	V_{S0} = 38 knots
Flap Takeoff (10°)	V_{S1} = 40 knots
Flap Retracted	V_S = 44 knots

3.5 Stall Characteristics

Section 23.201(b) (14 CFR Part 23) defines when the airplane can be considered stalled when one of three conditions occurs, whichever occurs first. The conditions are:

(i) Uncontrollable downward pitching motion;

(ii) Downward pitching motion resulting from the activation of the stall warning;

(iii) The control reaches the stop.

In order to perform the stall in Colt 100, the sequence is:

1. Throttle at idle;
2. Increase in pitch;
3. Decrease of speed during the increase of pitch;
4. The control reaches the stop, then the stall speed is reached;
5. The aircraft maintains uncontrollable during the recover, when the nose is pitching downward;
6. Altitude loss during the recovery;
7. Flight is recovery after the gain of speed and decrease of pitch.

3.6 Fundamentals of Stall Recovery

The Colt 100 aircraft presents a non-abrupt stall when the aircraft is in a level flight. The recovery is considerable easy for experienced pilot, however the procedures below must be taken:

1. Disconnect the autopilot; (if it is turned on)
2. Push forward on the flight controls to reduce the AOA;
3. Adjust the power as needed;
4. Wings leveled; (Adjusts in yaw should be also done to prevent spin)
5. Return to the flight path.

3.7 Spin Awareness

Spin is characterized by a nose down attitude and continuous rotations in its vertical axis. The airplane is basically descending due to gravity, rolling, yawing, and pitching in a spiral path.

A spin occurs when the airplane's wings exceed their critical AOA (stall) with a sideslip or yaw acting on the airplane or during turning flight stalls with high speed reduction.

WARNING

ACROBATIC MANEUVERS AND INTENTIONAL SPINS ARE PROHIBITED.

3.8 Spin Recovery

In case of spins, the pilot must follow the procedures described below:

1. Disconnect the autopilot; (if it is turned on)
2. Engine throttle to idle;
3. Elevator and aileron to neutral position;
4. Rudder in the opposite direction to the spin;
5. When the aircraft stop spinning, put the rudder to neutral position and recover to level flight, pitching up smoothly to avoid the overload in the wings;
6. When the nose is at the horizon, accelerate as needed with power as in a stall recovery.

3.9 Autopilot Setup

Colt is equipped with autopilot and knob control. Press the button AP to activate and disconnect the autopilot. The red button located on the panel also disconnects the autopilot. The GMC 507 solves that issue with three knobs for the most used functions: Altimeter setting (ALT SEL), Heading bug(HDG TRK), and the Altitude bug (ALT).

Figure 3.9.1. GMC 507 Auto Pilot Pannel

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4 Takeoffs and Departure Climbs

As a minimum before every takeoff, all engine instruments should be checked for proper and usual indications, and all controls should be checked for full, free, and correct movement. In addition, the pilot must make certain that the approach and takeoff paths are clear of other aircraft. At non towered airports, pilots should announce their intentions on the common traffic advisory frequency (CTAF) assigned to that airport. When operating from a towered airport, pilots must contact the tower operator and receive a takeoff clearance before taxiing onto the active runway.

It is not recommended to take off immediately behind another aircraft due to the wake turbulence. If an immediate takeoff is necessary, plan to minimize the chances of flying through an aircraft's wake turbulence by avoiding the other aircraft's flightpath.

4.1 Normal Takeoff

A normal takeoff is one in which the airplane is headed into the wind. If available, find the best runway to takeoff with head wind. With normal conditions the takeoff checklist must be obeyed.

Table 4.1.1. Takeoff Checklist.

1. Brakes	Released
2. Flap	Takeoff (0° - 10°)
3. Throttle	Full
4. Rotation speed	Approximately 50 knots

After releasing the brakes, advance the throttle smoothly and continuously to take off power. An abrupt application of power may cause the airplane to yaw sharply to the left because of the torque effects of the engine and propeller, and brake pressure is necessary to correct the takeoff path.

The rudder pedals are used to keep the nose of the airplane pointed down the runway and on the centerline. With an airspeed between 15-20 knots the rudder has sufficient aerodynamic load to control the aircraft and no brakes are necessary for corrections.

CAUTION

The pilot should avoid the use of brakes for steering purposes on takeoff as this will slow acceleration.

The ideal takeoff attitude requires only minimum pitch adjustments shortly after the airplane lifts off to attain the speed for the desired climb airspeed.

When all the flight controls become effective during the takeoff roll, the pilot should gradually apply back-elevator pressure to raise the nose-wheel slightly off the runway, thus establishing the takeoff. This is the "rotation" for lift off and climb, which occurs around 50 knots. As the airplane lifts off the surface, the pitch attitude to hold the climb airspeed should be held with elevator control to maintain that pitch attitude without excessive control pressures. The wings should be leveled after lift-off and the rudder used to ensure coordinated flight.

4.2 Initial Climb

Table 4.2.1. Initial Climb Checklist.

1. Throttle	Full Max. 5 min limit at 5800 RPM Max. Continued 5500 RPM
2. Flaps	As required
3. Airspeed	For Best Angle of Climb, V_x = 60 knots
	For Best Rate of Climb, V_y = 64 knots
4. Taxi and Landing Lights	OFF

NOTE

Airspeeds higher than V_x or V_y provide better engine cooling, greater control authority, and better visibility over the nose of the airplane

4.3 Crosswind Takeoff

The technique used during the initial takeoff roll in a crosswind is generally the same as the technique used in a normal takeoff roll, except that the pilot must apply aileron pressure into the crosswind. This raises the aileron on the upwind wing, imposing a downward force on the wing to counteract the lifting force of the crosswind; and thus preventing the wing from rising.

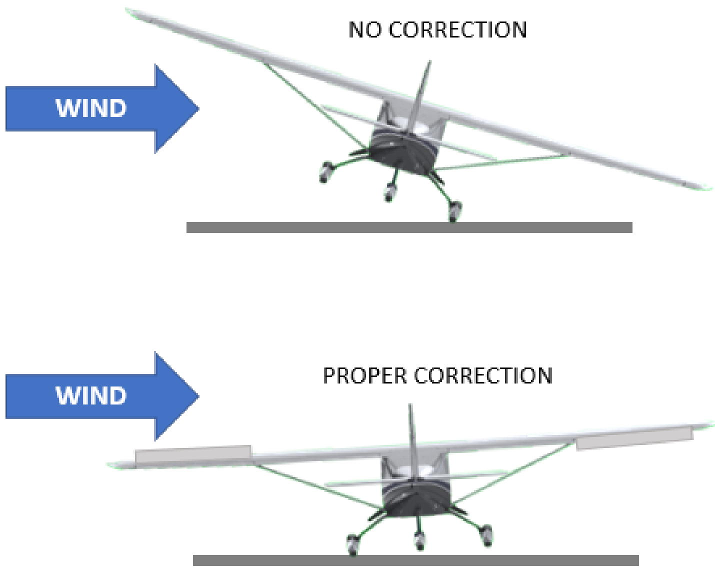

Figure 4.3.1. Crosswind effect and proper correction.

Use of the rudder may be required to keep the airplane in the runway.

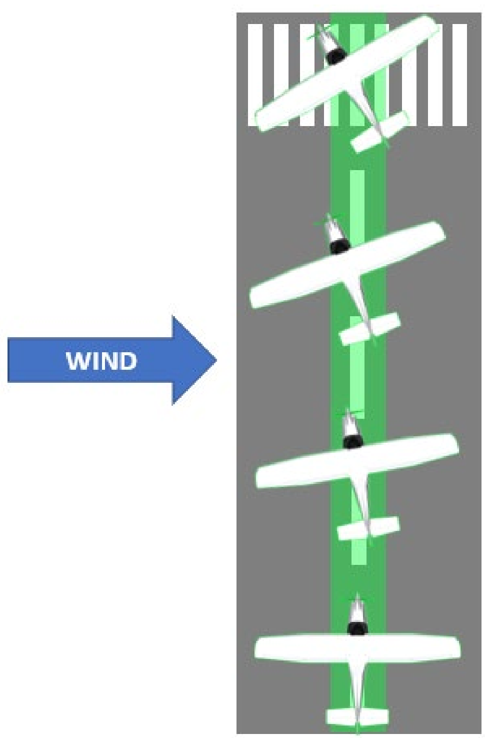

Figure 4.3.2. Crosswind climb flightpath.

In cases of gusty wind or other turbulent air currents, the pilot should allow the airplane to stay on the ground longer to attain more speed; then make a smooth, positive rotation to leave the ground.

Colt 100 should not fly with a crosswind component higher than 17 knots. Use the chart below to determine if the crosswind speed is within the allowable for any case.

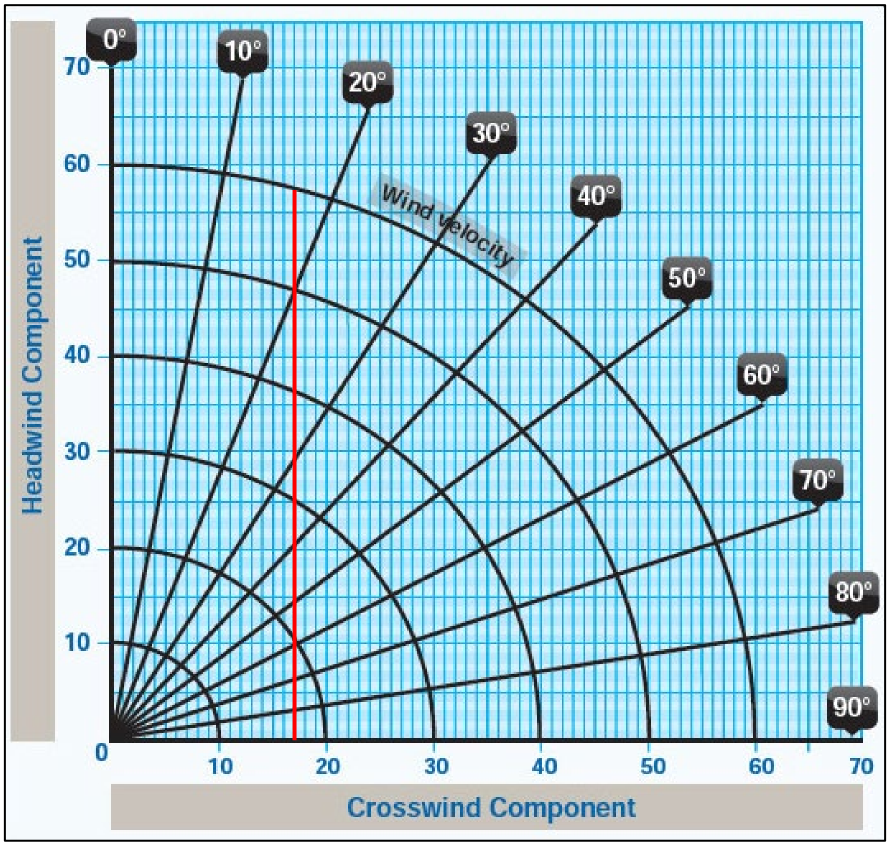

Figure 4.3.3. Crosswind Component Chart.

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5 Approaches and Landings

The approach to landing starts with turning onto the base leg. It is recommended to crosswind in this phase. Set the flaps to takeoff position (10°) and adjust the throttle and AOA to reach an airspeed of 64 knots. For normal conditions, where the engine is available and wind is very light, the base leg is 1000 ft of altitude from the runway. The descent during the base leg and final approach should be gradual until 500 ft.

Table 5.1. Approach Checklist.

1. Fuel selector valve	Fullest tank
2. Landing Lights	ON*
3. Throttle	As required
4. Trim Tab	Set (as required)
5. Airspeed	V_{app} (65 knots / 74 mph)

* It is recommended even for VFR day.

CAUTION

It is not recommended steep turns greater than 30° during the approach procedure due to the risk of stall or spin.

When the base-to-final approach turn is completed, altitude should be 500 ft. Then, set the flaps to landing configuration at 30° and finish the landing with a constant angle glide path and touchdown speed between 45 and 50 knots.

Table 5.2. Landing Checklist.

1. Flaps	As desired 0° – 30°
2. Throttle	Set to required airspeed
3. Trim Tab	Set (as required)
4. Airspeed	Normal approach 55 – 65 kts

5. Airspeed (1.3 V_{S0})	50 kts / 58 mph

NOTE

Airspeeds contained in the Approach and Landing tables are reference values considering smooth air, very low wind, without gust and turbulence. Always consider the wind effect in low altitude, steep turns and low speeds. In cases of rear wind component, add it in the reference values.

WARNING

STEEP TURNS WITH LOW SPEED CAN RESULT IN SPIN AND LOSS OF LIFE AT LOW ALTITUDE. CHECK THE TURNING STALLS AND ALWAYS CONSIDER THE WIND TO PROCEED THE APPROACH AND LANDING.

If the aircraft is pointing shorter than the desired touchdown point, an increase in pitch attitude and engine power is needed. And, if it is farther than the desired touchdown point, the glide path is steepened by a simultaneous decrease in pitch attitude and power.

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6 Maneuvers

In this Section is presented some maneuvers allowed to be performed by light sport aircraft.

CAUTION

Before starting any practice maneuver, the pilot must ensure that the area is clear of air traffic and other hazards.

NOTE

The load factor is limited to +4g / -2g with flaps retracted and +2g / 0g with flaps extended.

6.1 Steep Turns

Steep turns consist of single to multiple 360° to 720° turns, in either or both directions, using a bank angle between 45° to 60°.

The airplane continues in the direction of the bank even with neutral flight controls unless the pilot provides opposite flight control aileron pressure to prevent the airplane from overbanking. The amount of opposite flight control pressures is dependent on various factors, such as bank angle and airspeed. In general, a noticeable level of opposite aileron flight control pressure is required by the pilot to prevent overbanking.

In a steep turn, the pilot will need to increase pitch with elevator back pressures that are greater than what has been previously utilized in order to not lose altitude. The pilot should keep in mind that as the AOA increases, so does drag. Consequently, power must be added to maintain altitude and airspeed. Therefore, a stall speed table considering MTOW of 600 kg (1320 lb), throttle at idle and most aft CG is shown below.

Table 6.1.1. Stall Speeds.

Gross Weight (600 kg / 1320 lb)	Angle of bank

Flap	Level	15°	30°	45°	60°
Landing (30°)	38 knots	39 knots	41 knots	45 knots	54 knots
Takeoff (10°)	40 knots	41 knots	43 knots	48 knots	57 knots
Retracted	44 knots	45 knots	47 knots	52 knots	62 knots

This maneuver must not exceed the design maneuvering speed (VA) of 87 knots and the structural limit loads of the Colt 100.

WARNING

FLIGHT TURNING STALLS WITH RATE OF SPEED REDUCTION MORE THAN 1 KTS/S SHOULD CAUSE SPINS.

6.2 Steep Spiral

The steep spiral maneuver is especially effective for emergency descents or landings. A steep spiral is a gliding turn where the pilot maintains a constant radius around a surface-based reference point while rapidly descending. The maneuver should not be allowed to continue below 1500 feet above ground level.

Adjust the throttle at idle and gliding speed is established. Once the airspeed is attained, the pitch should be lowered and the airplane rolled to the desired bank angle as the reference point is reached. The steepest bank should not exceed 60° and the stall speeds should be respected according to the previous table. The gliding spiral should be a turn of constant radius while maintaining the airplane’s position to the reference.

CAUTION

Operating the engine at idle speed for any prolonged period during the glide may result in excessive engine cooling and spark plug fouling.

If the pilot maintains a constant airspeed throughout the maneuver, the airspeed tends to fluctuate as the bank angle is changed. So, the pilot should anticipate pitch corrections as the bank angle is varied throughout the steep spirals.

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7 Night Operations

Title 14 CFR part 91 specifies that during the period from sunset to sunrise operating aircraft are required to have a functioning anti-collision light system or rotating beacon and position lights. A red light is positioned on the left wingtip, a green light on the right wingtip, and a white light on the tail. This arrangement provides a means to determine the general direction of movement of other airplanes in flight. If both a red and green light of another aircraft are observed, and the red light is on the left and the green to the right, the airplane is flying the same direction. Care must be taken not to overtake the other aircraft and maintain clearance. If red were on the right and green to the left, the airplane could be on a collision course.

Figure 7.1. Night Operation, Colt 100.

7.1 Preparation and Preflight

Preparation for a night flight includes a thorough review of the available weather reports and forecasts with particular attention given to temperature/dew point spread. A narrow temperature/dew point spread may indicate the possibility of fog.

Check all personal equipment prior to flight to ensure proper functioning and operation. All airplane lights should be checked for operation by turning them on momentarily during the preflight inspection.

7.2 Starting, Taxiing, and Runup

Take extra caution at night to assure the propeller area is clear. Turning the beacon and navigation lights ON, to alert persons nearby to remain clear of the propeller.

Use the checklist for the before takeoff and run-up checks and procedures.

7.3 Takeoff and Climb

Night flying demands more attention from the pilot. The most noticeable difference is the limited availability of outside visual references.

Adjust the panel lights to a minimum brightness that allows reading the instruments and switches but not hinder outside vision. This also eliminates light reflections on the windshield and windows.

The procedure for night takeoffs is the same as for normal daytime takeoffs except that many of the runway visual cues are not available. Check the flight instruments frequently during the takeoff to ensure the proper pitch attitude, heading, and airspeed are being attained. Accomplish this by referring to both outside visual references, such as lights, and to the flight instruments. It is also important to ensure the airspeed is at best climb speed.

7.4 Orientation and Navigation

Generally, at night, it is difficult to see clouds and restrictions to visibility, particularly on dark nights or under overcast. The pilot must exercise caution to avoid flying into clouds. Usually, the first indication of flying into restricted visibility conditions is the gradual disappearance of lights on the ground. If the lights begin to take on an appearance of being surrounded by a halo or glow, use caution in attempting further flight in that same direction.

WARNING

THIS AIRCRAFT IS EQUIPPED FOR VFR NIGHT. UNDER NO CIRCUMSTANCES SHOULD A VFR NIGHT FLIGHT BE MADE DURING POOR OR MARGINAL WEATHER CONDITIONS.

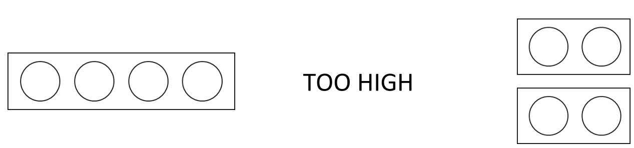
IFR FLIGHTS ARE PERMITTED ONLY UNDER VMC

7.5 Approaches and Landings

Maintain the recommended airspeeds and execute the approach and landing in the same manner as during the day. A visual approach slope indicator (VASI) or PAPI is an indispensable aid in establishing and maintaining a proper glide path. Flaps are used the same as in a normal approach.

At night, the judgment of height, speed, and sink rate is impaired by the lack of vision in the landing area.

If the airport is equipped with PAPI or VASI to correct the flight path and slope, the pilot should use it. The indications are based as shown below.



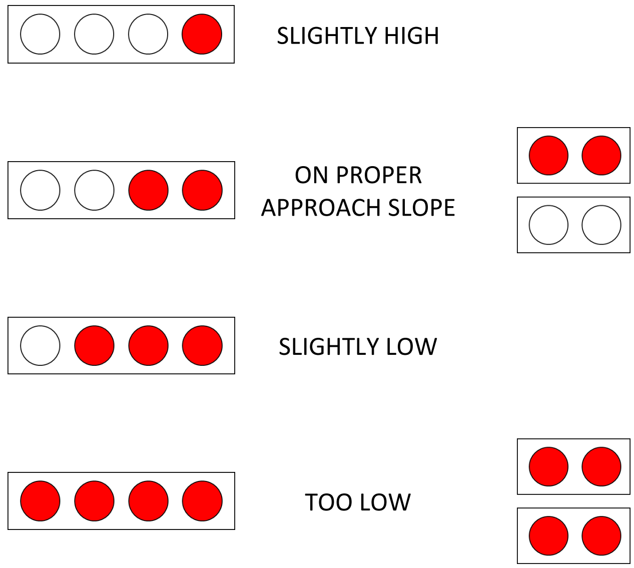


Figure 7.5.1. PAPI and VASI Indications.