

GLOSSARY

Abeam – Along side. At a right angle to the fuselage.

Adiabatic – A process that changes the temperature of a parcel of air by changing the pressure, without adding or subtracting heat.

Advection – The horizontal movement of an air mass.

Adverse Yaw – A yawing motion toward the wing that is creating the most lift.

AGL – Altitude Above Ground Level

Aileron – Control surfaces located at the trailing edge of the wing, used to create a rolling moment.

Airbrake – A control surface that creates drag, used to control the glide slope of the glider.

Aircraft – A device used for flight.

Airfoil – The cross-section of a surface that creates an aerodynamic force when it interacts with the relative wind.

Airplane – An engine-driven, fixed-wing, heavier-than-air aircraft.

Airspace – Segments of the sky divided into different classes for the purpose of air traffic control.

Airspeed – The speed of the glider with respect to the air.

Ambient – The condition of the air immediately surrounding the glider.

Angle of Attack – The angle between the relative wind and the chord line of an airfoil.

Aspect Ratio – The ratio of the span to the average chord length of a wing.

Atmospheric Sounding – A measurement of atmospheric conditions at different altitudes.

Atmospheric Stability – The tendency of a parcel of air to return to its original altitude after being vertically displaced.

Attitude – The angle of the glider's axes with respect to the horizon.

Aviation Medical Examiner – A physician designated by the FAA and given authority to perform physical examinations and issue airman medical certificates.

Ballast – Weight carried either to modify the wing loading, or the location of the center of gravity, of the glider.

Bank Angle – The angle between the pitch axis of the glider and the horizon.

Bearing – The magnetic direction.

Bernoulli's Equation – States that the pressure along a streamline is inversely proportional to the square of the velocity.

Best Glide Speed – The indicated airspeed that results in the greatest distance covered over the ground.

C.G. – see *Center of Gravity*

Ceiling – The height above the ground of the lowest broken or overcast layer of clouds.

Center of Gravity – The location of the balance point of the glider. Usually expressed as a distance from a known reference point, or datum.

CFI-G – Certified Flight Instructor in Gliders

Check Ride – see *Practical Test*

Chord Line – An imaginary straight line joining the leading and trailing edges of an airfoil.

Clearance – Permission granted by Air Traffic Control to enter a specified airspace, or perform a specified action.

Control Authority – The ability of a controls surface to produce the desired result.

Convection – Vertical movement of an air mass.

Convergence – The area where two different air masses come together.

Coordinate – To keep the glider aligned with the relative airflow by properly using the ailerons and rudder.

Course – The desired track over the ground.

Crab – To correct for a crosswind by flying the glider with the heading not aligned with the track. Also, a small, delicious crustacean.

Critical Angle of Attack – The angle of attack, which if exceeded, will cause the airfoil to stall.

Cross-Country – As related to soaring, any flight out of gliding range of the takeoff airfield.

Crosswind – The wind component perpendicular to the track of the glider. Also, the leg of the landing pattern flown perpendicular to the runway direction, followed by the downwind, base, and final.

Density Altitude – Pressure altitude corrected for nonstandard temperature.

Deviation – see *Magnetic Deviation*

Dew Point – The temperature to which a parcel of air must be cooled to become completely saturated with water vapor.

Dive Brake – A type of glide slope control device that extends from both the top and the bottom of the wing surface.

Diverge – When two air masses flow away from each other.

Downburst – A localized area of rapidly descending air.

Drag – A force parallel to the relative wind, resisting the movement of the glider.

Dust Devil – A vortex that forms at the base of a thermal, made visible by the entrainment of dust and debris.

Elevator – Horizontal control surface located at the tail of the glider, used to create a pitching moment.

Endorsement – Signature of a CFI-G verifying the specified level of proficiency.

F.B.O. – see *Fixed Base Operator*

FAA – Federal Aviation Administration, the governing body for aviation in the United States.

FAI – Fédération Aéronautique Internationale, the international governing body for aviation contests and records.

Fixed Base Operator – An aviation related business that operates from a fixed location, as opposed to one that is mobile.

Flaps – Control surface located at the trailing edge of the wing, used to create additional lift.

Flare – The transition from the final approach to a flight path parallel with the landing surface.

Flight Test – see *Practical Test*

Foehn – A descending flow that is warmed adiabatically.

Fuselage – The body of the glider, containing the cockpit and controls.

Glide Slope – The ratio of the distance covered over the ground to the altitude lost. The glide slope is dependant on wind and lift/sink.

Glider – A fixed wing aircraft with no source of propulsion.

Glide Ratio – The ratio of the distance flown through the air to the altitude lost. The glide ratio is independent of the wind and lift/sink.

Go-Around – To abort a landing, re-enter the pattern, and attempt the landing again. A maneuver not possible in a pure glider.

Gradient – The change in a variable over a distance, e.g., wind speed, wind direction, or temperature.

Ground Effect – The increase in lift and decrease in drag resulting from the interaction between the ground and a wing's trailing vortices.

Ground Loop – A violent, abrupt turn that occurs when the glider is rolling on the ground.

Ground Speed – The speed of the glider with respect to the ground.

Gyroscopic – Exploiting the principles of spatial rigidity exhibited by spinning objects.

Heading – The direction the nose of the glider is pointing.

Headwind – The wind component opposite the direction of flight.

Horizon – The distant line where the earth and sky appear to meet, not considering any local obstructions.

IFR – see *Instrument Flight Rules*

Inertia – The resistance of an object to change its speed or direction.

Instrument Flight Rules – Flight rules applicable during conditions of low visibility and ceilings, or when operating in controlled airspace under the guidance of ATC.

Inversion – An increase in temperature with altitude.

Kinetic Energy – The energy a body possesses because of its speed.

Knot – A nautical mile per hour.

Landing Pattern – A rectangular flight path around the landing area flown in preparation for landing. Consists of the crosswind, downwind, base, and final legs.

Lapse Rate – The change in the properties of the atmosphere with a change in altitude.

Lift (aerodynamic) – The force perpendicular to both the wingspan and the relative wind, created by the wing as it moves through the air.

Lift (soaring) – Rising air adequate to sustain flight in a glider.

Load – The force created by the glider structure.

Load Factor – The ratio of the load to the weight of the glider.

Magnetic Deviation – Compass errors caused by magnetic disturbances from electrical fields and metal components of the glider.

Magnetic Variation – Compass errors caused by the difference between true and magnetic north.

Maneuvering Speed – The maximum airspeed where full, abrupt control movements can be used without overstressing the glider.

Medical Examiner – see *Aviation Medical Examiner*

Moment – A “twisting” force resulting from a force being applied at a distance from an axis.

Moment Arm – The distance between an applied force and an axis.

MSL – Altitude relative to Mean Sea Level.

MVFR – Marginal VFR conditions, with ceilings between 1,000 and 3,000 feet, and visibility between 3 and 5 miles.

Nautical Mile – The distance of the length of one minute of arc at the equator. Approximately 6,076 feet.

Negative Flaps – Deflecting the flaps upward to increase the high speed performance of a glider.

NETTO – A type of compensation such that the variometer indicates the movement of the

air mass, not of the vertical velocity of the glider.

N-Number – The registration number of the glider. All U.S. registration numbers start with the letter “N”.

Overdevelopment – Convective cloud development to the extent that the sky is covered with clouds, cutting off the sunshine that produces thermals.

Pattern – see *Landing Pattern*

Pilot Operating Handbook – Manual provided by the glider manufacturer, covering operating procedures and limitations for the particular make and model of glider.

Pitch Attitude – The angle between the roll axis and the horizon.

POH – see *Pilot Operating Handbook*

Positive Control Check – Confirmation of the control linkages performed by moving the control against pressure applied at the control surface.

Potential Energy – The energy a body possesses because of its altitude.

Practical Test – A flight and knowledge test administered by an employee of the FAA or an FAA-designated examiner that must be passed to qualify for a pilot certificate.

Radiant Energy – Energy transmitted through electromagnetic waves.

Relative Wind – The direction of the airflow with respect to the glider. The relative wind is parallel to and opposite in direction of the flight path of the glider.

Retrieve – The task of finding and returning the glider and pilot to the departure airport after a cross-country flight.

Rotor – A turbulent, sometimes violent, swirling flow located downwind of mountain or ridge, often associated with wave lift.

Rudder – Vertical control surface located on the tail of the glider, used to create a yawing moment.

Sailplane – A glider that is efficient enough to allow soaring flight.

Sea Breeze – Wind created when cool, dense air flows inland to replace rising warm air.

Separation – Detachment of flow from the top of an airfoil when the critical angle of attack is exceeded.

Shear – Variation in wind direction or speed over a short distance.

Shear Line – The boundary between two air masses with differing wind speeds or directions.

Sink – Descending air.

Soar – To extend a flight in a sailplane by using lift.

Solo – A flight in which the pilot is the sole occupant of the glider.

Sounding – see *Atmospheric Sounding*

Speed Made Good – The speed on a course, calculated by dividing the distance covered by the sum of the time spent climbing and the time spent cruising.

Speed-to-Fly – The indicated airspeed that will result in the highest speed made good.

Spoiler – A type of glide slope control device that extends from the top of the wing surface.

SSA – Soaring Society of America. The governing body of the sport of soaring in the U.S.

Stall – The separation of the airflow from the surface of an airfoil that results when the critical angle of attack is exceeded, resulting in decreased lift and increased drag.

Statute Mile – A distance of 5,280 feet.

Stick – The control that actuates the ailerons and elevator.

S-turn – Alternating left and right turns.

Sublimate – To change from a solid directly to a gas. Ice sublimates into water vapor.

Tailwind – The wind component in the direction of the flight path.

Thermal – A mass of air that is rising because it is warmer than the surrounding air. Also, to circle in such an air mass to gain altitude.

Threshold – The beginning of the runway.

Total Energy Compensation – A type of compensation such that the variometer indicates what the vertical velocity of the glider would be if it were being flown at a constant airspeed.

Track – The direction the glider moves over the ground.

Trim – The control used to eliminate the pressure on the control stick such that the glider will fly at the desired airspeed without any control pressure from the pilot. Also, the act of adjusting this control.

Tropics – Areas of the Earth within 20° north or south of the equator.

Turnpoint – A point defined by either latitude and longitude, or a landmark on the ground, defining one end of a contest, badge, or record course or task.

Ultralight – A light aircraft operated for sport or recreation that does not require aircraft or pilot certification.

V_A – Maneuvering speed

Variation – see *Magnetic Variation*

Vector – A quantity with a magnitude and a direction, such as force, or velocity.

VFR – see *Visual Flight Rules*

Visual Flight Rules – Flight rules applicable during conditions of good visibility. Aircraft flying under VFR are responsible for their own separation from other aircraft and are not required to be in contact with Air Traffic Control.

V_{NE} – The never-exceed speed of the glider.

Vortex – A swirling air flow, increasing in velocity as you approach the axis of rotation.

V_S – Stall speed

Wave – Lift produced by the interaction of wind and terrain, often extending to very high altitudes.

Wave Window – A “box” in Class A airspace created by ATC so that gliders can legally exceed an altitude of 18,000 feet.

Weak Link – A short section of rope that meets the FAA requirements for breaking strength that is attached between the glider and the tow rope, or the tow rope and the tow plane.

Wing Loading – The weight of the glider divided by the wing area.