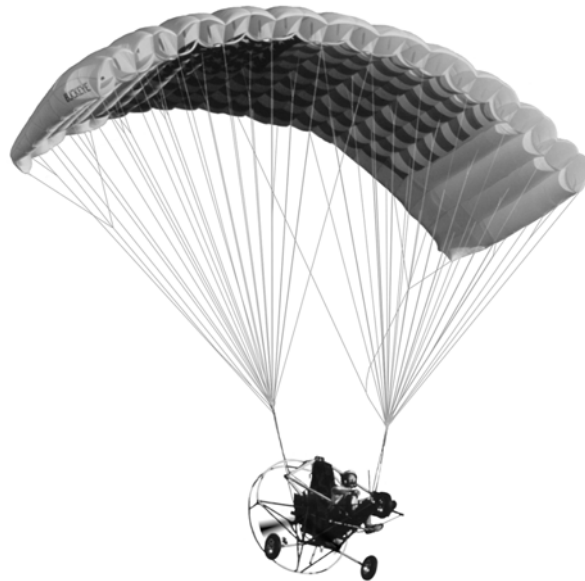




Training Guide for Powered Parachute Ultralights

Safety Information for

Instructors and Students



Introduction

Ultralight aviation in the United States is the most unencumbered opportunity for solo flight in the world. Tremendous freedoms are given to ultralight pilots. However, at the same time there are strict limitations that must be followed. With this freedom, however, come responsibilities to ensure the safety of other individuals in the airspace as well as on the ground.

In 1982 the FAA issued Federal Aviation Regulation Part 103, Ultralight Vehicles. With this regulation, the FAA chose to identify ultralights as vehicles and not aircraft. Because they are vehicles and not aircraft, this regulation allows individuals to operate ultralight vehicles without requiring FAA pilot or vehicle certification.

Upon publishing Part 103 the FAA said it did not wish to issue pilot certificates for ultralight operators. Instead, the FAA said individuals who want to fly ultralights should participate in industry-established self-regulation and training programs. Since 1983 EAA has maintained programs to support Part 103 and has held an exemption to Part 103 that allowed the operation of 2-place ultralight training vehicles by authorized ultralight flight instructors.

In 2004, the FAA passed the sport pilot & light-sport aircraft regulations. One specific purpose of this new rule was to transition 2-place ultralight training vehicles to experimental light-sport aircraft. As a result, after the training exemption expires on 1/31/08 there will no longer be a way to fly a 2-place ultralight to train ultralight pilots. The FAA has said they intend ultralight pilot training to be conducted in N-numbered aircraft by FAA flight instructors.

The EAA Ultralight & Light-Sport Aircraft Council has developed this information guide for those individuals interested in ultralight flight training, FAA certified flight instructors (CFI), student ultralight pilots, or pilots transitioning to ultralights from other aircraft. This guide sets forth recommendations to students and flight instructors who wish to learn and train to fly ultralight vehicles under the rules of Part 103.

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Message to Students

Flying a powered parachute ultralight is an enjoyable and rewarding experience. There is nothing quite like the freedom of flying in the open air and soaring like a bird as the countryside slowly unfolds below you. EAA highly recommends that if an enthusiast wants to fly an ultralight that he/she receives flight instruction from a competent person. Flying ultralights has proven to be a safe recreational aviation activity when done in accordance with recommended safety practices. The most important recommendation EAA can make to a new student is to find a qualified flight instructor and obtain dual flight instruction in a 2-place aircraft.

Enclosed in this booklet the student will find many recommendations to safely learn and participate in ultralight aviation. For his/her benefit and safety, please consider taking the time to become familiar with the information in this booklet and proficient to the recommended flight training standards that are enclosed.

EAA recommends that existing pilots transitioning to ultralights from heavier aircraft also would benefit from transition training. There are some significantly different flight characteristics between larger, heavier aircraft and powered parachutes that existing pilots should become familiar with.

A valuable source of information is other ultralight pilots. Find pilots flying the same type ultralight you want to fly, ask questions, and learn. The EAA Flight Advisor program has individuals experienced in test flying homebuilt and ultralight aircraft.

Although the FAA does not require flight training to fly an ultralight, flight training is an investment in the student's knowledge and ability. Trying to fly without proper instruction could be disastrous!

Finding a Flight Instructor

One of the more important yet challenging aspects of learning to fly an ultralight is to find a flight instructor who has the desire to provide flight instruction for an ultralight student pilot. As a student look for a flight instructor who has a powered parachute available for the flight training and a good understanding of ultralight vehicle flight characteristics.

Here are a few suggestions to locate a flight instructor:

- EAA's online directory of sport pilot flight instructors, www.sportpilot.org/instructors
- National Association of Flight Instructors (NAFI), www.nafinet.org/directory/flight_lookup.html
- Local EAA chapter network, www.eaa.org/chapters/locator/
- Ultralight manufacturer's dealer network
- Visit local airport and ask around
- Other ultralight pilots

Message to Flight Instructors

FAA certified flight instructors (CFI) are a key link in ultralight pilot flight training. EAA encourages any CFI to become familiar with the flight characteristics of ultralight vehicles and make themselves available to potential new students seeking training to safely learn to fly an ultralight vehicle.

The FAA has no ultralight pilot or vehicle certification requirements. As a result there are many ultralight pilots over the years who either trained themselves or had very minimal training. While some pilots have succeeded in this manner, EAA strongly discourages it. This guide sets forth recommendations for both students and instructors in order to assure the training and knowledge necessary for flying an ultralight safely.

EAA is recommending that ultralight pilots be trained to a standard similar to a sport pilot. However, the instructor must consider the type of ultralight the student will fly and the type of environment they will be flying in and adjust the training so it is relevant. For the convenience of the flight instructor and the student, this booklet contains a slightly modified reprint of the FAA sport pilot practical test standards. We have used these as the recommended ultralight pilot flight training standards.

The following steps will help guide the instructor through the recommended process to train an ultralight student:

- Have the student register with EAA as a ultralight student, complete the online form located at the following web site, www.eaa.org/ultralights/forms
- Provide relevant flight and ground training to the student
- If student wants to complete ultralight pilot registration with EAA then:
 - Ensure you have given 10 hours flight training, and the student has passed the recommend written test, oral test, and flight test.
 - Have the student complete the online pilot registration. Forms available online at: www.eaa.org/ultralights/forms.

Ultralight Pilot Training

EAA recommends that people who want to learn to fly an ultralight should seek qualified flight instructors teaching in powered parachutes that exhibit ultralight-like flight characteristics. FAA flight instructors are authorized by the FAA to provide flight instruction for FAA pilot certificates. To fly an ultralight under the rules of Part 103 no FAA pilot certificate is required. However, to safely fly an ultralight it is critical that people get the appropriate level of training from a qualified person.

EAA recommends that the student and flight instructor determine the suitability of a particular powered parachute for use as a training aircraft. Further, it is important that the flight instructor be able to explain the differences in flight characteristics between the training aircraft and the ultralight vehicle to be flown. Many powered parachute ultralights are similar and fly like existing 2-place powered parachutes and are suitable for dual flight training.

Flight Training Standards

EAA recommends that flight instructors train ultralight pilots in accordance with the FAA sport pilot practical test standards (PTS). A slightly modified copy of the sport pilot PTS is reprinted in this booklet. Flight instructors should tailor their flight-training program to suit the student and the type of powered parachute vehicle the student will fly. For example there may be some tasks that should not be trained because it would not be relevant to the type of ultralight flying the student will do.

Ultralight pilot training standards previously published by EAA, United States Ultralight Association (USUA), and Aero Sports Connection (ASC) are also suitable standards and recommended by EAA.

The ultimate goal with the flight training should be to prepare the student to successfully and safely fly his/her ultralight vehicle. Instructors should tailor a flight-training program for each student with this ultimate goal in mind.

Flight Test

If the student wants to register as an ultralight pilot with EAA, then at the completion of the flight training program the instructor should conduct a flight test with the student. The recommended flight-training test standard in this guide should be used as the standard for conducting the test. EAA recommends that the flight instructor test only those items that are appropriate to the type of ultralight the student will fly. To register as an ultralight pilot with EAA, a flight test is required.

Oral Test

If the student wants to register as an ultralight pilot with EAA, then at the completion of the flight training program the instructor should conduct an oral test with the student. The flight instructor should use his or her own discretion on the extent and detail of the oral test. Ultralight pilot registration with EAA requires that the instructor test the student's knowledge through verbal discussion.

Written Test

If the student wants to register as an ultralight pilot with EAA, then at the completion of the flight training program the instructor should administer a written test to the student. Included in this guide is a recommended written test. The test is required for those who want to register as an EAA ultralight pilot. The test represents an assortment of questions that would be useful for an ultralight pilot to know. A passing score would be 70%.

EAA Ultralight Programs

The EAA Ultralight registration programs are maintained for the benefit of EAA members. EAA and FAA highly recommend voluntary participation in these programs. By participating it enhances safety for everyone involved in the sport and helps ensure the privileges of Part 103 for future ultralight enthusiasts. Registration programs include: vehicle, student, and pilot registration. Registration can be completed online at: EAA Ultralights web site, www.eaa.org/ultralights/forms or call EAA at 920-426-4821.

Student registration should be done at the start of any flight training. Student registration allows the student to use time flown in an ultralight vehicle to count toward a FAA-issued sport pilot certificate, in accordance with FAR 61.52.

Pilot registration can be done at the completion of the pilot training program. This shows that the student has been trained and tested to a minimum standard. To register as an ultralight pilot EAA recommends a minimum of 10 hours flight instruction, 3 hours supervised solo, and 25 takeoffs and landings and successfully pass a written, oral, and flight test. Included in this booklet are the recommended written and flight test standards. The oral test should be at the discretion of the flight instructor to determine the student's knowledge to safely fly an ultralight.

Vehicle registration should be done with all ultralight vehicles. EAA assigns a vehicle registration number that begins with the letter "E"; an example is "E001AB." Once the vehicle registration number is assigned it can be placed on the vehicle and used to show you are complying with the self-regulation intent of FAR Part 103. It also works great for radio communication purposes.

EAA Membership

EAA is a membership organization that has developed and administers ultralight self-regulation programs. EAA members include ultralight, homebuilders, light plane, warbird, vintage, flight instructors and aerobatic enthusiasts, and people who simply love aviation. If you are not already a member of EAA, we ask that you consider joining to support EAA's goals to preserve, promote, and protect recreational aviation.

EAA is pleased to furnish this information booklet and hopes that it will benefit you. EAA encourages and promotes safe and responsible ultralight flying activities.

EAA membership is \$40 a year, which includes the *EAA Sport Pilot & Light Sport Aircraft* magazine. Call 1-800-JOIN-EAA to become a member.

For Additional Information:

EAA Aviation Services, PO Box 3086, Oshkosh, WI 54903, 920-426-4821, www.eaa.org/ultralights

FEDERAL AVIATION REGULATION PART 103
ULTRALIGHT VEHICLES

SOURCE: Docket No. 21631, 47 FR 38776, Sept. 2, 1982, unless otherwise noted.

SUBPART A - GENERAL

§103.1 Applicability.

This part prescribes rules governing the operation of ultralight vehicles in the United States. For the purposes of this part, an ultralight vehicle is a vehicle that:

- (a) is used or intended to be used for manned operation in the air by a **single occupant**;
- (b) Is used or intended to be used for recreation or **sport purposes** only;
- (c) Does not have any U.S. or foreign airworthiness certificate; and
- (d) If unpowered, weighs less than 155 pounds; or
- (e) If powered:
 - (1) Weighs less than 254 pounds empty weight, excluding floats and safety devices which are intended for deployment in a potentially catastrophic situation;
 - (2) Has a fuel capacity not exceeding 5 U5. gallons;
 - (3) Is not capable of more than 55 knots calibrated airspeed at full power in level flight; and
 - (4) Has a power-off stall speed which does not exceed 24 knots calibrated airspeed.

§103.3 Inspection requirements.

- (a) Any person operating an ultralight vehicle under this part shall upon request, allow the Administrator or his designee, to inspect the vehicle to determine the applicability of this part.
- (b) The pilot or operator of an ultralight must, upon request of the Administrator, furnish satisfactory evidence that the vehicle is subject only to the provisions of this part.

§103.5 Waivers.

No person may conduct operations that require a deviation from this part except under a written waiver issued by the Administrator.

§103.7 Certification and registration.

- (a) Notwithstanding any other section pertaining to certification of aircraft or their parts or equipment, ultralight vehicles and their component parts and equipment are not required to meet the airworthiness certification standards specified for aircraft or to have certificates of airworthiness.
- (b) Notwithstanding any other section pertaining to airman certification operators of ultralight vehicles are not required to meet any aeronautical knowledge, age, or experience requirements to operate those vehicles or to have airman or medical certificates.
- (c) Notwithstanding any other section pertaining to registration and marking of aircraft, ultralight vehicles are not required to be registered or to bear markings of any type.

SUBPART B - OPERATING RULES

§103.9 Hazardous operations.

- (a) No person may operate any ultralight vehicle in a manner that creates a hazard to other persons or property.
- (b) No person may allow an object to be dropped from an ultralight vehicle if such action creates a hazard to other persons or property.

§103.11 Daylight operations.

- (a) No person may operate an ultralight vehicle except between the hours of sunrise and sunset.
- (b) Notwithstanding paragraph (a) of this section, ultralight vehicles may be operated during the twilight periods 30 minutes before official sunrise and 30 minutes after official sunset or, in Alaska, during the period of civil twilight as defined in the Air Almanac, if:
 - (1) The vehicle is equipped with an operating anticollision light visible for at least 3 statute miles; and
 - (2) All operations are conducted in uncontrolled airspace.

§103.13 Operation near aircraft right-of-way rules.

- (a) Each person operating an ultralight vehicle shall maintain vigilance so as to see and avoid aircraft and shall yield the right-of-way to all aircraft.
- (b) No person may operate an ultralight vehicle in a manner that creates a collision hazard with respect to any aircraft.
- (c) Powered ultralights shall yield the right-of-way to unpowered ultralights.

§103.15 Operations over congested areas.

No person may operate an ultralight vehicle over any congested area of a city, town or settlement, or over any open air assembly of persons.

§103.17 Operations in certain airspace.

No person may operate an ultralight vehicle within Class A, Class B, Class C, or Class D airspace or within the lateral boundaries of the surface area of Class E airspace designated for an airport unless that person has prior authorization from the ATC facility having jurisdiction over that airspace.

[Doc. No 24456, 56 FR 65662, Dec. 17 1991]

§103.19 Operations in prohibited/restricted areas.

No person may operate an ultralight vehicle in prohibited or restricted areas unless that person has permission from the using or controlling agency, as appropriate.

§103.20 Flight restrictions in the proximity of certain areas designated by notice to airmen.

No person may operate an ultralight vehicle in areas designated in a Notice to Airmen under Sec.91.137, Sec.91.138, Sec.91.141, Sec.91-143 or Sec.91-145 of this chapter, unless authorized by:

- (a) Air Traffic Control (ATC); or
- (b) A Flight Standards Certificate of Waiver or Authorization issued for the demonstration or event.

[Doc. No. FAA-2000-8274, 66 FR 176, Sept. 11, 2001]

§103.21 Visual reference with the surface.

No person may operate an ultralight except by visual reference with the surface.

§103.23 Flight visibility and cloud clearance requirements.

No person may operate an ultralight vehicle when the flight visibility or distance from clouds is less than that in the table found below. All operations in Class A, Class B, Class C, and Class D airspace or Class E airspace designated for an airport must receive prior ATC authorization as required in §103.17 of this part.

<u>Airspace</u>	<u>Flight Visibility</u>	<u>Distance from Clouds</u>
Class A	Not Applicable	Not Applicable
Class B	3 statute miles	Clear of Clouds
Class C	3 statute miles	500 feet below 1,000 feet above 2,000 feet horiz.
Class D	3 statute miles	500 feet below 1,000 feet above 2,000 feet horiz.
Class E		
	Less than 10,000 feet MSL:	
	3 statute miles	500 feet below 1,000 feet above 2,000 feet horiz.
	At or above 10,000 feet MSL:	
	5 statute miles	1,000 feet below 1,000 feet above 1 sm. horizontal
Class G		
	1,200 feet or less above the surface:	
	1 statute mile	Clear of clouds
	More than 1,200 feet above the surface but less than 10,000 feet MSL:	
	1 statute mile	500 feet below 1,000 feet above 2,000 feet horiz.
	More than 1,200 feet above the surface and at or above 10,000 feet MSL:	
	5 statute miles	1,000 feet below 1,000 feet above 1 sm. Horizontal

[Amdt. 103-17, 56 FR 65662, Dec. 17, 1991]

**RECOMMENDED POWERED PARACHUTE ULTRALIGHT PILOT
FLIGHT TRAINING STANDARDS**

I. PREFLIGHT PREPARATION

A. TASK: CERTIFICATES AND DOCUMENTS

Objective. To determine that the applicant exhibits knowledge of the elements related to certificates and documents by:

1. Explaining—
 - a. ultralight pilot privileges.
 - b. pilot logbook or flight records.
2. Locating and explaining—
 - a. airworthiness and registration.
 - b. operating limitations, placards, instrument markings, and flight training supplement.
 - c. weight and loading.

B. TASK: AIRWORTHINESS REQUIREMENTS

Objective. To determine that the applicant exhibits knowledge of the elements related to airworthiness requirements by:

1. Explaining—
 - a. required instruments and equipment for ultralight pilot privileges.
 - b. procedures and limitations for determining if the aircraft, with inoperative instruments and/or equipment, is airworthy or in a condition for safe operation.
2. Explaining—
 - a. safety directives.
 - b. maintenance/inspection requirements and appropriate record keeping.

C. TASK: WEATHER INFORMATION

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to real time weather information appropriate to the specific category/class aircraft by consulting weather reports, charts and forecasts from aeronautical weather reporting sources.
2. Makes a competent “go/no-go” decision based on available weather information.
3. Describes the importance of avoiding adverse weather and inadvertent entry into instrument meteorological conditions (IMC).
4. Explains courses of action to safely exit from an inadvertent IMC encounter.

D. TASK: CROSS-COUNTRY FLIGHT PLANNING

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to cross-country flight planning appropriate to the category/class aircraft.
2. Uses appropriate and current aeronautical charts.
3. Properly identifies airspace, obstructions, and terrain features.
4. Selects easily identifiable en route checkpoints, as appropriate.
5. Selects most favorable altitudes considering weather conditions and equipment capabilities.
6. Determines headings, flight time, and fuel requirements.
7. Selects appropriate navigation system/facilities and communication frequencies, if so equipped.
8. Applies pertinent information from NOTAMs, A/FD, and other flight publications.

E. TASK: NATIONAL AIRSPACE SYSTEM

Objective. To determine that the applicant exhibits knowledge of the elements related to the National Airspace System by explaining:

1. Ultralight pilot privileges applicable to the following classes of airspace:
 - a. Class B.
 - b. Class C.
 - c. Class D.
 - d. Class E.
 - e. Class G.
2. Special use and other airspace areas.
3. Temporary flight restrictions (TFRs).

F. TASK: OPERATION OF SYSTEMS

Objective. To determine that the applicant exhibits knowledge of the elements related to the operation of systems on the ultralight vehicle by explaining the following systems, if applicable:

1. Canopy/riser and control system.
2. Flight instruments and engine instruments.
3. Landing gear.
4. Engine and propeller.

5. Fuel, oil, electrical and coolant system (if liquid cooled).
6. Avionics and auxiliary equipment, as installed.

G. TASK: AEROMEDICAL FACTORS

Objective. To determine that the applicant exhibits knowledge of the elements related to aeromedical factors by explaining:

1. The effects of alcohol, drugs, and over-the-counter medications.
2. The symptoms, causes, effects, and corrective actions of at least three (3) of the following—
 - a. hypoxia.
 - b. hyperventilation.
 - c. middle ear and sinus problems.
 - d. spatial disorientation.
 - e. motion sickness.
 - f. carbon monoxide poisoning.
 - g. stress and fatigue.
 - h. dehydration.
 - i. hypothermia

J. TASK: PERFORMANCE AND LIMITATIONS

Objective. To determine the applicant:

1. Exhibits knowledge of the elements related to performance and limitations by explaining the effects of temperature, altitude, humidity, and wind.
2. Determines if weight and loading is within limits.
3. Describes the effects of atmospheric conditions on the PPC's performance and limitations.
4. Explains the effects and hazards of high winds, referencing the ground speed, high rates of turn, and power requirements on making downwind turns in close proximity to the ground.

K. TASK: PRINCIPLES OF FLIGHT

Objective. To determine the applicant exhibits knowledge of the following aerodynamic principles:

1. Aerodynamics with respect to steering.
2. Propeller/Engine Torque Compensation.
3. Pendulum effect in PPCs.
4. Load factor effects in level flight and turns.
5. Wing flaring characteristics.

6. Explain the characteristics of improper chute rigging.

II. PREFLIGHT PROCEDURES

A. TASK: PREFLIGHT INSPECTION

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to preflight inspection. This shall include which items must be inspected, the reasons for checking each item, and how to detect possible defects.
2. Inspects the powered parachute with reference to an appropriate checklist, or procedure.
3. Ensures that risers are properly attached and the chute is properly trimmed.
4. Verifies the powered parachute is in condition for safe flight.

B. TASK: CANOPY LAYOUT

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements of canopy layout.
2. Explains how to identify a line-over and demonstrates how to remove a line-over.
3. Verifies that canopy and riser system is laid out properly and in condition for inflation.
4. Demonstrates the ability to untwist twisted canopy suspension/steering lines.
5. Verifies suspension and steering lines are not tangled or twisted.

C. TASK: ENGINE WARM UP / STARTING

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to recommended engine starting/warm up procedures.
2. Positions the powered parachute properly considering structures, surface conditions, other aircraft, and the safety of nearby persons and property.

D. TASK: COCKPIT MANAGEMENT

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to cockpit management procedures.
2. Ensures all loose items in the cockpit are secured.

3. Organizes material and equipment in an efficient manner so they are readily available.
4. Briefs occupant on the use of safety belts, shoulder harnesses, methods of egress, and other emergency procedures.

E. TASK: TAXIING (CANOPY INFLATED)

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements of taxiing with canopy inflated.
2. Positions PPC properly for existing wind conditions.
3. Monitors position and shape of canopy/riser system during taxi.
4. Centers the chute using power and steering as required.
5. Avoids other aircraft and ground hazards.
6. Controls direction and speed for 100 feet of forward movement.
7. Completes proper engine shutdown and canopy deflation procedure.

G. TASK: BEFORE TAKEOFF CHECK

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to the before takeoff check. This shall include the reasons for checking each item and how to detect malfunctions.
2. Reviews takeoff performance, takeoff distances, departure, and emergency procedures.
3. Positions the powered parachute properly considering wind, other aircraft, and surface conditions.
4. Ensures that engine temperature is suitable for run-up and takeoff.
5. Ensures the powered parachute is in safe operating condition.
6. Avoids runway incursions and/or ensures no conflict with traffic.

III. AIRPORT OPERATIONS

A. TASK: RADIO COMMUNICATIONS

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to radio communications airports without operating control towers.
2. Selects appropriate frequencies.
3. Transmits using recommended phraseology.

4. Receives, acknowledges and complies with radio communications and complies with instructions.

B. TASK: TRAFFIC PATTERNS

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to traffic patterns and shall include procedures at airports with and without operating control towers, prevention of runway incursions, collision avoidance, wake turbulence avoidance, and wind shear.
2. Complies with proper local traffic pattern procedures.
3. Maintains proper spacing from other aircraft.
4. Corrects for wind drift to maintain the proper ground track.
5. Maintains orientation with the runway/landing area in use.
6. Maintains traffic pattern altitude, ± 100 feet.

C. TASK: AIRPORT RUNWAY MARKINGS AND LIGHTING

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to airport/seaplane base, markings and lighting with emphasis on runway incursion avoidance.
2. Properly identifies and interprets airport markings and lighting.

IV. TAKEOFFS, LANDINGS, AND GO-AROUNDS

A. TASK: NORMAL TAKEOFF AND CLIMB

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to normal takeoff and climb operations and rejected takeoff procedures.
2. Clears the area.
3. Divides attention inside and outside the cockpit.
4. Makes smooth and appropriate throttle applications as the canopy transitions from ground pickup through maximum drag to taxi position.
5. Checks canopy, ensuring that all end cells are fully inflated and canopy is centered, lines

are free and unobstructed and in condition for takeoff.

6. Establishes and maintains the most efficient climb attitude.
7. Maintains takeoff power to a safe maneuvering altitude.
8. Maintains directional control and proper wind-drift correction throughout the takeoff and climb.
9. Complies with noise abatement procedures.

B. TASK: NORMAL APPROACH AND LANDING

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a normal approach and landing.
2. Adequately surveys the intended landing area.
3. Considers the wind conditions, landing surface, obstructions, and selects a suitable touchdown point.
4. Establishes the recommended approach and landing configuration and adjusts power as required.
5. Maintains a stabilized approach.
6. Makes smooth, timely, and correct control application during the flare and touchdown.
7. Touches down smoothly.
8. Maintains directional control throughout the approach and landing sequence and touchdown.
9. Completes proper engine shutdown and canopy deflation procedure.

G. TASK: GO-AROUND/REJECTED LANDING

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a go-around/rejected landing.
2. Makes a timely decision to discontinue the approach to landing.
3. Applies takeoff power immediately after a positive rate of climb is established.
4. Maneuvers to the side of the runway/landing area to clear and avoid conflicting traffic, if appropriate.
5. Maintains appropriate power to a safe maneuvering altitude.
6. Maintains directional control and proper wind-drift correction throughout the climb.

V. PERFORMANCE MANEUVER

A. TASK: CONSTANT ALTITUDE TURNS

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to constant altitude turns.
2. Plans the maneuver no lower than 200 feet AGL.
3. Rolls into a constant bank 360° turn.
4. Performs the task in the opposite direction, as specified by the examiner.
5. Divides attention between powered parachute control and orientation.
6. Maintains altitude, ± 100 feet.

VI. GROUND REFERENCE MANEUVERS

A. TASK: RECTANGULAR COURSE

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to a rectangular course.
2. Selects a suitable reference area, considering all obstacles.
3. Plans the maneuver so as to not descend below 200 feet above ground level at an appropriate distance from the selected reference area, 45° to the downwind leg.
4. Applies adequate wind-drift correction during straight-and-turning flight to maintain a constant ground track around the rectangular reference area.
5. Divides attention between powered parachute control and the ground track while maintaining coordinated flight.
6. Maintains altitude, ± 100 feet.

B. TASK: S-TURNS

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to S-turns.
2. Selects a suitable ground reference line, considering all obstacles.
3. Plans the maneuver so as to not descend below 200 feet above the ground.
4. Applies adequate wind-drift correction to track a constant radius turn on each side of the selected reference line.
5. Reverses the direction of turn directly over the selected reference line.

6. Divides attention between powered parachute control and the ground track while maintaining coordinated flight.
7. Maintains altitude, ± 100 feet.

C. TASK: TURNS AROUND A POINT

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to turns around a point.
2. Selects a suitable ground reference point, considering all obstacles.
3. Plans the maneuver so as to not descend below 200 feet above the ground, at an appropriate distance from the reference point.
4. Applies adequate wind-drift correction to track a constant radius turn around the selected reference point.
5. Divides attention between powered parachute control and the ground track while maintaining coordinated flight.
6. Maintains altitude, ± 100 feet.

VII. NAVIGATION

A. TASK: PILOTAGE AND DEAD RECKONING

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to pilotage and dead reckoning, as appropriate.
2. Follows the preplanned course by reference to landmarks.
3. Identifies landmarks by relating surface features to chart symbols.
4. Verifies the aircraft's position within 3 nautical miles of the flight-planned route.
5. Determines there is sufficient fuel to complete the planned flight, if not, has an alternate plan.
6. Maintains the appropriate altitude, ± 200 feet and headings, $\pm 15^\circ$.

B. TASK: DIVERSION

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to diversion.
2. Selects an appropriate alternate airport or landing area and route.
3. Determines there is sufficient fuel to fly to the alternate airport or landing area.

4. Turns to and establishes a course to the selected alternate destination.
5. Maintains the appropriate altitude, ± 200 feet and headings, $\pm 15^\circ$.

C. TASK: LOST PROCEDURES

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to lost procedures.
2. Selects an appropriate course of action.
3. Maintains an appropriate heading and climbs if necessary.
4. Identifies prominent landmarks.
5. Uses navigation systems/facilities and or contacts an ATC facility for assistance, as appropriate.

VIII. EMERGENCY OPERATIONS

A. TASK: EMERGENCY APPROACH AND LANDING (SIMULATED)

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to emergency approach and landing procedures.
2. Analyzes the situation and selects an appropriate course of action.
3. Plans and follows a flight pattern to the selected landing area considering altitude, wind, terrain, and obstructions.
4. Prepares for landing or go-around, as specified by the examiner.

B. TASK: SYSTEMS AND EQUIPMENT MALFUNCTIONS

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to causes, indications, and pilot actions for various systems and equipment malfunctions.
2. Analyzes the situation and takes action, appropriate to the aircraft used for the practical test, in at least three (3) of the following areas, if applicable—
 - a. engine/oil and fuel.
 - b. electrical.
 - c. carburetor or induction icing.
 - d. smoke and/or fire.
 - e. flight control/trim.
 - f. rotor and/or propeller.
 - g. any other emergency unique to the powered parachute flown.

**C. TASK: EMERGENCY EQUIPMENT
AND SURVIVAL GEAR**

Objective. To determine that the applicant exhibits knowledge of the elements related to emergency equipment appropriate to the following environmental conditions:

1. Mountainous terrain.
2. Large bodies of water.
3. Desert conditions.
4. Extreme temperature changes.

IX. POSTFLIGHT PROCEDURES**A. TASK: AFTER LANDING, PARKING,
AND SECURING**

Objective. To determine that the applicant:

1. Exhibits knowledge of the elements related to after landing, parking, and securing procedures.
2. Observes runway hold lines and other surface control markings and lighting.
3. Parks in an appropriate area, considering the safety of nearby persons and property.
4. Follows the appropriate procedure for engine shutdown.
5. Protects canopy/riser system from the hot engine while stowing/securing.
6. Exhibits knowledge of proper packing and stowage of canopy and suspension lines.

RECOMMENDED POWERED PARACHUTE
ULTRALIGHT PILOT WRITTEN TEST

1. The final authority as to the operation of an ultralight is the
 - A FAA.
 - B Manufacturer.
 - C Pilot in-command.
2. Who is responsible for determining if a vehicle is in condition for safe flight?
 - A The owner or operator.
 - B The pilot in command.
 - C A certified aircraft mechanic.
3. True airspeed is
 - A the speed of the wind over the ground.
 - B the speed of the aircraft over the ground.
 - C the speed of the aircraft through the air.
4. Motion of the air affects the speed with which powered parachutes move
 - A over the earth's surface.
 - B through the air.
 - C in a turn.
5. The four forces acting on an aircraft in flight are
 - A lift, weight, thrust, and drag.
 - B lift, weight, gravity, and thrust.
 - C lift, gravity, power, and friction.
6. When are the four forces acting on an aircraft in equilibrium?
 - A During unaccelerated flight.
 - B When the aircraft is accelerating.
 - C When the aircraft is at rest on the ground.
7. The purpose of the fuel tank vent system is to
 - A remove dangerous vapors from the tank and prevent explosion.
 - B allow air to enter the tank as fuel is consumed.
 - C ensure a proper fuel to air ratio.
8. The fuel vent on many powered parachutes is located
 - A in the fuel cap.
 - B adjacent to the crankcase breather.
 - C in the fuel tank pressure relief valve.
9. During flight, advancing thrust will
 - A increase airspeed.
 - B cause the powered parachute to climb.
 - C cause the powered parachute to climb and increase airspeed.
10. The fan guard surrounds the propeller and
 - A increases aerodynamic efficiency.
 - B reduces "P" factor.
 - C protects the parachute suspension lines from damage.
11. A powered ultralight must give right of way to
 - A all other aircraft.
 - B unpowered vehicles.
 - C all of the above.
12. What effect, if any, does high humidity have on ultralight vehicle performance?
 - A It increases performance.
 - B It decreases performance.
 - C It has no effect on performance.
13. What is the one common factor which affects most preventable accidents?
 - A Structural failure.
 - B Mechanical malfunction.
 - C Human error.
14. A Flight Service weather briefing can be obtained any place in the U.S. by
 - A calling 1-800-WXBRIEF.
 - B calling the local FAA office.
 - C checking the local news stations.
15. Cross ports in the parachute ribs aid in
 - A weight reduction of the canopy.
 - B the pressurization of the neighboring cells.
 - C drying the canopy.
16. Splicing severed suspension lines
 - A is permissible if using the same size material as the original line.
 - B is a very dangerous practice.
 - C is an acceptable field repair.

17. What gives your powered parachute wing/canopy its airfoil shape?
- A The risers because, by decreasing the length of the right riser you will get the precise airfoil shape.
 - B The suspension lines as they are precisely measured and fitted to a specific location.
 - C The air as it enters the cell openings on the leading edge of the airfoil.
18. Degradation of the parachute's protective polyurethane coating results in
- A increased takeoff distances, decreased maximum gross weight, and increased fuel consumption.
 - B reduced takeoff distances, increased maximum gross weight, and reduced fuel consumption.
 - C increased takeoff distances increased maximum gross weight, and increased fuel consumption.
19. Flaring allows the pilot to touchdown at
- A higher rate of speed and a slower rate of decent.
 - B lower rate of speed and higher rate of decent.
 - C lower rate of speed and a lower rate of decent.
20. What is absolute altitude?
- A The altitude read directly from the altimeter.
 - B The vertical distance of the aircraft above the surface (AGL).
 - C The height above the standard datum plane.
21. What is true altitude?
- A The vertical distance of the aircraft above sea level (MSL).
 - B The vertical distance of the aircraft above the surface.
 - C The height above the standard datum plane.
22. Notices to Airmen (NOTAMS) must
- A inform pilots of fuel prices.
 - B be complied with by ultralight pilots.
 - C inform aircraft owners of ultralight vehicle safety directives.
23. Flaring during a landing
- A decreases the powered parachute's speed due to increased drag.
 - B increases the powered parachute's speed due to reduced drag.
 - C decreases the powered parachute's drag due to increased speed.
24. Excessively high engine temperatures will
- A cause damage to heat conducting hoses and to the cooling fins.
 - B cause loss of power and possible permanent internal engine damage.
 - C not affect an aircraft engine.
25. Adding more oil to the fuel than specified by the manufacturer of a 2-cycle engine will result in
- A increased engine performance.
 - B increased carbon buildup and engine fouling.
 - C increased engine lubrication and optimal performance.
26. One purpose of the dual ignition system on an ultralight engine is to provide for
- A improved engine reliability.
 - B uniform heat distribution.
 - C balanced cylinder head pressure.
27. Which condition is most favorable to the development of carburetor icing?
- A Any temperature below freezing and a relative humidity of less than 50%.
 - B Temperature between 32 and 50 degrees F and a low humidity.
 - C Temperature between 20 and 70 degrees F and high humidity.
28. The possibility of carburetor icing exists even when the ambient air temperature is as
- A high as 70 degrees F and the relative humidity is high.
 - B high as 95 degrees F and there is visible moisture.
 - C low as 0 degrees F and the relative humidity is high.

- 29.** If the grade of fuel used in an aircraft engine is lower than specified for the engine, it will most likely cause
- A a mixture of fuel and air that is not uniform in all cylinders.
 - B lower cylinder head temperatures.
 - C detonation.
- 30.** The uncontrolled firing of the fuel/air charge in advance of normal spark ignition is known as
- A combustion.
 - B pre-ignition.
 - C detonation.
- 31.** Filling the fuel tanks after the last flight of the day is considered good operating procedure because this will
- A force any existing water to the top of the tank and away from the fuel lines.
 - B prevent expansion of the fuel by eliminating airspace in the tanks.
 - C prevent moisture condensation by eliminating airspace in the tanks.
- 32.** Every physical process of weather is accompanied by, or is the result of, a
- A movement of air.
 - B pressure differential.
 - C heat exchange.
- 33.** What should be the first action after starting an aircraft engine?
- A Adjust for proper RPM and check for desired indications on the engine gauges.
 - B Place the ignition switch momentarily in the OFF position to check grounding.
 - C Test the brakes.
- 34.** Flight over congested areas by ultralight vehicles is only allowed if
- A written waiver is obtained from FAA.
 - B great care is exercised.
 - C it is between the hours of 0800 and 1100.
- 35.** The numbers 9 and 27 on a runway indicate that the runway is oriented approximately
- A 009 degrees and 027 degrees true.
 - B 090 degrees and 270 degrees true.
 - C 090 degrees and 270 degrees magnetic.
- 36.** If an airport's rotating beacon is operating during daylight hours it indicates
- A there are obstructions on the airport.
 - B the weather is below basic VFR weather minimums.
 - C the Air Traffic Control tower is not in operation.
- 37.** Which is the correct traffic pattern departure procedure to use at a noncontrolled airport?
- A Depart in any direction after crossing the airport boundary.
 - B Make all turns to the left.
 - C Comply with any FAA traffic pattern established for the airport.
- 38.** The purpose of a kill switch is to
- A shut off fuel to the carburetor.
 - B ground the lead wire to the ignition coil shutting down the powerplant.
 - C ground the battery eliminating current for the ignition system.
- 39.** How can you determine if another aircraft is on a collision course with your aircraft?
- A The other aircraft will always appear to get larger and closer at a rapid rate.
 - B The nose of each aircraft is pointed at the same point in space.
 - C There will be no apparent relative motion between your aircraft and the other aircraft.
- 40.** Prior to starting each maneuver, pilots should
- A check altitude, airspeed, and heading indications.
 - B visually scan the entire area for collision avoidance.
 - C announce their intentions on the nearest CTAF.
- 41.** The responsibility for collision avoidance rests with
- A the other pilot.
 - B the controlling agency.
 - C all pilots.
- 42.** A blue segmented circle on a Sectional Chart depicts which class airspace?
- A Class D.
 - B Class E.
 - C Class C.

-
- 43.** Unless otherwise authorized, two-way radio communications with ATC are required for landings or takeoffs
- A at all tower controlled airports regardless of weather conditions.
 - B at all tower controlled airports only when the weather is below VFR .
 - C only at Class D airports when the weather is below VFR.
- 44.** An ATC clearance provides
- A priority over all other traffic.
 - B adequate separation from all other traffic.
 - C authorization to proceed under specified traffic conditions in controlled airspace.
- 45.** A typical 2-cycle engine ignition coil is powered by
- A a battery.
 - B a battery or alternator.
 - C a magneto.
- 46.** A 2-cycle engine thrust and fuel efficiency can be greatly compromised when
- A exhaust systems are installed that are not specifically tuned for an engine.
 - B carbon deposits build up on exhaust valves.
 - C intake valve lifters fail to pressurize and provide adequate fuel to the combustion chamber.
- 47.** What is the maximum allowable empty weight for a powered ultralight?
- A No more than 250 pounds.
 - B No more than 350 pounds.
 - C Less than 254 pounds.
- 48.** If an ultralight is equipped with an anti-collision light visible for 3 nm
- A you can fly in Class D airspace.
 - B you can fly at night.
 - C you can fly 30 minutes before sunrise and 30 minutes after sunset.
- 49.** Ultralight vehicles are not allowed operation in Class D airspace unless
- A prior authorization is obtained from the controlling facility.
 - B great care is exercised to avoid other traffic.
 - C you have strobe lights on your vehicle.
- 50.** Under what conditions can objects be dropped from an ultralight vehicle?
- A Only in an emergency.
 - B If precautions are taken to avoid injury or damage to persons or property on the surface.
 - C If prior permission is obtained from the FAA.
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Additional References

Powered Parachute Flying Handbook, published by FAA, item FAA-H-8083-29, available online, www.faa.gov

The Powered Parachute Bible by George A. Begue. Available at: <http://thepoweredparachutebible.com/>

Hamilton Flight Training Systems by Paul Hamilton, available at www.ap-store.com/ultraining.html

Starting Powered Parachuting DVD. Available from EAA, product number F02221

Risk and Reward DVD, Available from EAA, product number F06823

A Professional Approach to Ultralights by Carol & Brian Carpenter, available from EAA, product number F03745

First Flight in your Ultralight video. Available from EAA, product number F10289

Pilots Handbook of Aeronautical Knowledge, published by FAA, item FAA-H-8083-25, available online www.faa.gov

EAA Ultralights web site, www.eaa.org/ultralights

EAA Ultralight Pilot Logbook. Available from EAA, product number E00385

Experimenter Magazine April 1997, article titled Traveling Light, A Primer on the Transition to the Light end of Aviation, by Dan Johnson. Available online at: www.eaa.org/ultralights

Amateur-Built Aircraft & Ultralight Flight Testing Handbook, item AC 90-89A, published by FAA, available online at, www.faa.gov

Pilot Written Test Answers

1. C	9. B	17. B	25. B	33. A	41. C	49. A
2. B	10. C	18. A	26. A	34. A	42. A	50. B
3. C	11. C	19. C	27. C	35. C	43. A	
4. A	12. B	20. B	28. A	36. B	44. C	
5. A	13. C	21. A	29. C	37. C	45. C	
6. A	14. A	22. B	30. B	38. B	46. A	
7. B	15. B	23. A	31. C	39. C	47. C	
8. A	16. B	24. B	32. B	40. B	48. C	



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