

Training Syllabus – Powered Paragliding Foot Launched Self-Propelled Hang Glider (SPHG)

The exercises in Phases 1, 2, 3, 5 and 6 are arranged in sequential order and must be completed in that order – the exception being Phase 4 which can be complete at any time before Phase 5.

Exercises 1 to 7 inclusive should only require checking / refreshing for those students who are of at least PG EP skill level and show the required level of ground handling skill.

Ensure that each section is signed off before progressing to the next. The Instructor and student should read each objective carefully, and be certain that the exercise has been completed in full before signing that it has been achieved.

Phase 1: Ground training Unpowered

Objective: The student should have a basic understanding of the sport and its risks, a basic understanding of the equipment and the site environment, and understand how to avoid/minimise injury as a result of a mishap. The student must also complete the mandatory administration steps.

1. **Introductory talk:** Airfield briefing; Introduction to canopy and equipment - parts and functions of canopy, harness, helmet; Daily Inspections explained.
2. **Avoiding / minimising injury:** PLFs explained, demonstrated and practiced to a good degree of competence.
3. **Pre-flight checks:** These checks should include: Wind and weather, Instruments (set, on), Fuel (on and sufficient), Helmet (on and fastened), Straps and security (harness buckled and correctly adjusted, no loose items or open pockets), Controls (trimmers set as required), Powercheck, Performance limitations, Eventualities, All clear.

The three exercises above have been completed satisfactorily

Instructor's signature

Student's signature

Date

Phase 2: Ground handling Unpowered

Objective: Through ground-based activity the student should achieve a reasonable and consistent level of competence at preparing the equipment for flight; inflating the canopy; running with it whilst looking ahead; maintaining direction; flaring and collapsing the canopy.

4. **Briefing:** Importance of taking off and landing into wind - airspeed control - flare/stall - directional control.
5. **Preparation:** Putting on the helmet and harness - canopy layout - pre-flight checks.
6. **Launch and landing procedures i** (Nb. The power unit is not worn during these exercises.) Take-offs practiced to stage of moving with an inflated canopy (fwd / reverse inflation method as appropriate to the conditions) - canopy inflation - maintaining direction - flare - collapsing the canopy - post-flight control and moving of the canopy.

The three exercises above have been completed satisfactorily

Instructor's signature

Student's signature

Date

Phase 3: Unpowered hops

Objective: The student should combine the skills practised on the ground in Phase 2 to make straight ground-skimming flights, gaining familiarity with canopy handling and control.

The unpowered flights below may be completed using hand pushes, single person hand tows, from a slope* or using a winch* (*if the Instructor is so qualified). It is expected that

non paraglider pilot students will spend several days mastering and consolidating the skills acquired through exercises 6 and 7, which underpin all ppg flight.

7. **Launch and landing procedures ii** (Nb. The power unit is not worn during this exercise.) Take-offs practiced to stage of 'flights' across the field with an inflated canopy (fwd / reverse inflation method as appropriate to the conditions) - canopy inflation - controlling direction and making turns – glide approach from 20 feet agl - flared landing on feet - collapsing the canopy - post-flight control and moving of the canopy.

Exercise 7 completed satisfactorily

Instructor's signature

Student's signature

Date

8. **Launch and landing procedures iii** OPTIONAL: Due to the difficulties of getting a student (with power unit) airborne by hand towing, this exercise may be omitted at the Instructor's discretion. (Nb. The power unit is worn during this exercise – engine not running.) Take-offs practiced to stage of 'flights' across the field with an inflated canopy (fwd / reverse inflation method as appropriate to the conditions) - canopy inflation - controlling direction and making turns – glide approach from 20 feet agl - flared landing on feet - collapsing the canopy - post-flight control and moving of the canopy.

Exercise 8 completed satisfactorily

Instructor's signature

Student's signature

Date

Phase 4: The Power Unit

Objective: The student should be fully familiarised with the power unit.

9. **Safety:** The pilot under training will gain an understanding of:
- (a) Dangers to self and others: propellers (clutches), fuel
 - (b) Kill switch and engine stopping.
 - (c) Procedures in the event of fire.
 - (d) Safety equipment – first aid kit, fire extinguisher, helmet, eye protection, ear defenders
 - (e) In-flight dangers:
 - Engine failures
 - Loose items
 - Fire

10. Introduction to the power unit and associated equipment

The pilot under training will gain a basic understanding of all the component parts of the motor unit and their inter-relationships. Particular emphasis will relate to:

- (a) Power unit component parts.
- (b) Assembly and packing away.
- (c) Safety cages and the importance of maintaining them in good condition.
- (d) Daily Inspection of power unit.
- (e) Controls: ignition switch; throttle(s); choke; starter mechanism; harness controls.
- (f) Correctly rigging the motor to the glider with safety straps in accordance with the manufacturer's recommendations.
- (g) Adjustments for different pilots (weight, thrust angle).

- (h) Other equipment; windsock / streamers; tools; basic spares (plug, pull start spring), water trapping funnel, fuel catching tray.
- (i) Suitability of chosen canopy – weight range, flying characteristics, control line lengths/trim position – and the effects of differing hang point positions.

11. **Fuel:** The pilot under training will gain an understanding of:

- (a) Dangers from fuels.
- (b) Petrol / oil mixtures (different mixtures/oils for running in, synthetic / semi-synthetic oils etc.).
- (c) Water in fuel.
- (d) Storage and transport

12. **Maintenance and repair:** The pilot under training will gain an understanding of:

- (a) Servicing
- (b) Use of manufacturer's parts whenever possible.
- (c) Care of propellers (balance, repair limits (Don't repair!))
- (d) Vibration and fatigue life of parts

13. **Starting Procedures:** The pilot under training will gain an understanding of starting procedures, including:

- (a) Daily Inspection of complete aircraft.
- (b) Preparation before starting engine (ie fuel line bleeding), priming.
- (c) Suitability of area.
- (d) Pre engine start checks (fast – fuel, all clear, security, throttles shut).
- (e) Bracing and starting sequence.
- (f) Normal shutting down procedures and in emergency.
- (g) Ground running considerations.

Phase 4 completed satisfactorily

Instructor's signature

Student's signature

Date

Phase 5: Power preparation

Objective: The student should be familiar with all the elements of his first powered take-off.

14. **Torque effects:** With the power unit in position on the student's back, engine running, no wing, gain familiarity with primary propeller effects.

Exercise 14 completed satisfactorily

Instructor's signature

Student's signature

Date

15. **Launch Procedure and abort:** With power unit (developing thrust) and wing, practice full launch procedure. All pre and post flight routines to be completed satisfactorily.

Exercise 15 completed satisfactorily

Instructor's signature

Student's signature

Date

Phase 6: Powered flights

Objective: The student should make his first powered flights.

These exercises MUST be completed in the order listed.

(At this stage the Instructor should ideally test fly/demonstrate the actual machine combination that the student will fly. The Instructor must ensure that things like brake line lengths / hang points, climb rate and general suitability are checked.)

16. **Eventualities briefing** - the need to prepare, before take-off, plans to deal with the unexpected.
17. **Commands and communications briefing** - this must include signal bats, radio, etc., as appropriate.
18. **Responsibilities briefing** - from this point the student becomes the 'pilot-in-command' and will be in a position to determine the course of the flight. The student must clearly understand their level of responsibility for the safe conduct of any flight and be confident of their ability to undertake this step. **The radios may fail. The engine may fail. The student must be completely prepared to deal with both eventualities and to land safely.**

The three briefings above have been completed and understood

Instructor's signature

Student's signature

Date

19. **Flights (i) – Local Circuit** Complete a minimum of 3 powered 'local circuit' flights from a flat site with approximately 600ft.ground clearance, with unassisted take-off runs, gentle 90 deg. turns including good airspeed and throttle control and finish with stand-up power-off (switched off) landings (including full deflation of the canopy between flights). Instructor must have one-way radio communication with the student. (The environment must allow the student continuous opportunity to make a safe landing in the event of engine or radio failure at any point of the circuit.)

Exercise 19 completed satisfactorily

Instructor's signature

Student's signature

Date

20. **Flights (ii) - Out of Circuit** Complete 2 satisfactory flights of at least 15 minutes each involving climbing to a minimum of 1500ft a.t.o. and making left and right turns under power before rejoining the circuit. The student should show good airspeed and throttle control and finish with stand-up power-off (switched off) landings (including full deflation of the canopy between flights). Instructor must have one-way radio communication with the student. (The Instructor should take steps to minimise the danger of the student losing sight of the field and becoming lost during this flight.)

Exercise 20 completed satisfactorily

Instructor's signature

Student's signature

Date

Phase 7: Restricted SPHG written examination

21. **Restricted SPHG examination** completed and all incorrect answers de-briefed and discussed. (The exam must be passed by all pilots regardless of their qualifications.)

Instructor's signature

Student's signature

Date

Final assessment of Restricted Stage

22. I have checked that the training detailed above has been completed and confirm that, to the best of my knowledge, this student has the right attitude to flying and has reached the standard of airmanship required to fly safely and competently within the terms of a Restricted Endorsement.

Instructor's signature

Date

The Pilot is now qualified to fly unsupervised provided that he keeps within two miles of his take-off point and that a BHPA Instructor / Coach has checked the site airspace. (As with all new BHPA pilots, the pilot is encouraged to fly under the guidance of a Coach.)

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Additional tasks for full endorsement

These exercises may be completed in any order under the guidance of an Instructor (Power) PG / Senior Power Coach PG / Power Coach PG.

Phase 8: Improving skills

23. **Planned approaches and accurate landings:** Reach a reasonable and consistent level of competence at planning and completing accurate landing approaches in various conditions. At least three accurate landings in a closely defined area should be achieved. Techniques should include the 'constant aspect approach' and 'S' turns. The engine should be killed at approx. 100 feet agl. The Instructor/PC must have one-way radio communication with the restricted pilot as an emergency back-up.

(1) complete 3 power-off landings within 20m of a defined spot in winds of less than 5 mph.

Dates and number of flights:

Flights attempted

Successful flights

(2) complete 3 power-off landings within 20m of a defined spot in winds of more than 5 mph.

Dates and number of flights:

Flights attempted

Successful flights

Exercise 23 completed satisfactorily

Instructor's/PC signature Restricted pilot's signature Date

24. Forward Launch Technique: Show consistently good forward launch technique.

Exercise 24 completed satisfactorily

Instructor's/PC signature Restricted pilot's signature Date

25. Reverse Launch Technique: Show consistently good reverse launch technique.

Exercise 25 completed satisfactorily

Instructor's/PC signature Restricted pilot's signature Date

26. 360 deg. Turns: Fly co-ordinated 360 deg. turns under power in both directions (avoiding over-banking tendency).

Exercise 26 completed satisfactorily

Instructor's/PC signature Restricted pilot's signature Date

27. Engine failure practice: Carry out an accurate power-off landing to the satisfaction of the Instructor from at least 500ft. Instructor must have one-way radio communication with the student for emergency back-up use.

Exercise 27 completed satisfactorily

Instructor's/PC signature Restricted pilot's signature Date

28. Weightshift & Pitch / Roll Co-Ordination in Turns: Show a reasonable and consistent level of competence at making smooth co-ordinated turns in both directions using weightshift and pitch / roll co-ordination. Note that weightshift is difficult to achieve on solid hang-point paramotors.

Exercise 28 completed satisfactorily

Instructor's/PC signature Restricted pilot's signature Date

29. 'Big Ears': Show safe and effective use of the 'Big Ears' rapid descent technique. (Nb. If the equipment does not allow 'Big Ears' then the technique should be discussed.)

Exercise 29 completed satisfactorily

Instructor's/PC signature Restricted pilot's signature Date

30. Exploring the Speed Range: Be competent and confident at using the powered paraglider's normally used speed range. The restricted pilot should also understand the hazards associated with fast & slow flight and be familiar with recognising the symptoms of a stall. Approaching the stall and deliberate stalls must be avoided (other than during ground handling.)

Exercise 30 completed satisfactorily

Instructor's/PC signature Restricted pilot's signature Date

31. Trimmers & Accelerator Systems: Understand the uses and limitations of accelerator systems (and trim setting devices) and be proficient and confident at using an accelerator system.

Exercise 31 completed satisfactorily

Instructor's/PC signature Restricted pilot's signature Date

32. Active Flying: Have a good understanding of the concepts of active flying and coping with turbulence.

Exercise 32 completed satisfactorily

Instructor's/PC signature

Restricted pilot's signature

Date

33. **Airmanship:** Display the ability to fly safety with others, maintaining a good Look Out, complying with the Rules of the Air and exhibiting good Airmanship, and demonstrate an ability to manoeuvre safely, considerately and in accordance with air traffic rules.

Exercise 33 completed satisfactorily

Instructor's/PC signature

Restricted pilot's signature

Date

Exercises 34 to 39 should be 'ticked off' by the Instructor / Power Coach when satisfied.

34. **Weather Assessment:** Show a consistent ability to accurately assess suitable and unsuitable flying weather.

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35. **Total PPG flight time:** Have a minimum of 5 hours logged airtime as pilot in command on powered paragliders, paragliders or microlights of which at least 3 hours must be on powered paragliders.

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36. **Total PPG Flights:**

- (1) Non Pilot rated trainees only: Have a minimum of 25 flights total logged as pilot in command on ppg. (Including full deflation of the canopy between flights.)
- (2) Pilot rated trainees only: Have a minimum of 10 flights total logged as pilot in command on ppg. (Including full deflation of the canopy between flights.)

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37. **Consolidation:** Must have successfully flown paragliders or powered paragliders or microlights as pilot in command on at least 8 separate days within the previous 9 months.

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38. **Navigation:** Complete a 30 km (total) Aeronautical Chart based navigation flight with a pre-declared turn point or as a flight to a declared goal or a triangle. (Holders of BHPA Advanced Pilot rating and/or PPL are exempt this requirement.)

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39. **In-flight engine stop and restart:** This exercise is optional.

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Exercises 34 to 39

Instructor's/PC signature

Date

Phase 9: Full SPHG written examination

Objective: Through lectures, lessons, talks and personal study the student should achieve the required knowledge level in the subject areas.

40. **Full SPHG examination** completed and all incorrect answers de-briefed and discussed. (The exam must be passed by all pilots regardless of their qualifications.)

Instructor's/PC signature

Student's signature

Date

Final assessment of Attitude and Airmanship: 'Full Endorsement' Stage

41. I have checked that the tasks detailed above have been completed and confirm that, to the best of my knowledge, this student has the right attitude to flying and has reached the 'full endorsement' standard of airmanship in this discipline.

Power Coach / Senior Power Coach / Instructor's signature

Date

Theory

Theory: Restricted Level

Air law

The pilot under training will:

- know the collision-avoidance rules: what actions are taken by which pilot, and what priorities prevail, to prevent the danger of collision between two aircraft – when approaching each other, when on converging courses, or when one aircraft wishes to overtake or land.
- be introduced to the way airspace in the UK is divided and how it is depicted on aeronautical charts.
- understand the process for notifying an active site using the CANP.
- know the low-flying rules.
- know the legal definitions of night, sunset and sunrise and the relevant flying restrictions relating to them.
- understand the process for reporting accidents.

Meteorology

The pilot under training will gain an understanding of:

- wind gradient and its effects.
- how ground obstacles can affect local airflow.
- the basic principles of wind and airflow over terrain.
- how turbulence is produced, and its hazards to a pilot.
- basic cloud types and their associated weather.
- key symbols on a weather chart and their meaning.
- how to obtain a forecast.
- the assessment of conditions for flight: to include measuring the wind on site and identifying deteriorating conditions before and during flight.

Airmanship

The pilot under training will understand:

- the need to keep a logbook.
- that power governs climb - and pitch (control position) governs air speed.
- the importance of climbing from take-off with sufficient airspeed and the DANGER of climbing too steeply with power and NOT enough airspeed. (Emphasise that the pilot has to keep a safe, low angle climbing attitude by keeping the controls up.)
- the relationship between airspeed, wind-speed and the resultant groundspeed and be able to work given examples.
- drift and the relationship between course and heading.
- torque effects.
- winding-in characteristics in a turn with power on.
- the dangers of prop wash – in air and on the ground.
- the symptoms of an impending stall.
- selection of a safe flying field including climb-out clearance, ground conditions, turbulence generators, obstructions and overshoot areas.
- safe areas for onlookers.
- noise nuisance and congested areas.
- techniques for avoiding and recovering from tucks, stalls and spins and sudden power loss.
- emergency and safety procedures. (To include discussion of techniques for dealing with a fire in the air. Low turn recovery techniques. Out of wind landing techniques. Water and tree landing procedures. Use of emergency parachute systems. Uses and limitations of alternative control techniques such as weight-shift and rear riser steering in the event of a control line failure. Paraglider certification.)
- the importance of keeping a safe landing field always within reach.

Theory: Full Qualification Level

In addition to all the elements listed in ‘Theory: Restricted Level’ above, the pilot under training needs to complete the following:

Weather (Not required if Pilot rated or above.)

The pilot under training will gain a general understanding of:

- weather patterns, and associated wind direction and strength.
- how weather systems affect flying conditions. This will include:
 - Forecasts.
 - Cloud recognition.

- High and low pressure systems and fronts.
 - Unstable weather, turbulence & gust fronts.
 - Stable weather, effect on visibility and inversions.
 - Stable/unstable conditions.
- how the following localised effects affect flying conditions:
 - Sea-breezes.
 - Thermal cumulus cloud development.
 - Standing waves and their effect.
 - weather in XC Situations. This should include methods of determining wind direction.

Airmanship

The pilot under training will understand:

- the effects of pressure and temperature on take-off performance.
- two stroke and four stroke engine basics.

Air Law and Navigation

The pilot under training will understand air law and the regulations applicable to gliders (which includes Powered Paragliders). This will include:

- being able to name UK Aviation Law official documents, sources and promulgation methods.
- understanding the law regarding glider radios.
- being able to interpret Aeronautical Charts (including scales, differences, validity periods, and symbols).
- knowing the dimensions of ATZs and MATZs.
- understanding the basic structure of Zones, Areas and Airways and how airspace is classified.
- understanding the usage of various altimeter settings (QFE, QNH, 1013mb).
- knowing the Rules of the Air (especially the Low Flying Rules, Right Hand Traffic Rule, Aerial Collision Avoidance rules).
- being able to define VMC/VFR (minima, rules).
- knowing the legal definitions and the relevant flying restrictions relating to night, sunset and sunrise.
- being able to define IMC/IFR (basic differences from VMC rules).
- understanding the factors effecting Compasses (deviation, variation).
- understanding the common causes of navigation error when relying on a GPS.
- understanding commonly used airspace acronyms.

- being able to distinguish between types of airspace that permit Glider entry and those that don't (e.g. AIAAs, MATZs, Danger Areas).
- planning a 30 km (total) Aeronautical Chart based navigation flight either as an out and return flight with a pre-declared turn point or as a flight to a pre-declared goal. (Holders of a PPL are exempt this requirement.)