

Gliding Australia Training Manual

Trainer Guide



Unit 13S

Launch & Release (Self-Launch)

Unit 13S - Launch & Release (Self-Launch)

AIM

To develop and demonstrate the skills and knowledge required to safely fly a self-launching glider through a normal climb and engine shut down to transition to soaring pilot.

PREREQUISITE UNITS

- GPC Units 1-10
- GPC Unit 12 – Slow Flight & Stalling

COMPLEMENTARY UNITS

This unit should be read in conjunction with:

- GPC Unit 14S – Take-Off (Self Launch).
- GPC Unit 20S – Launch Emergencies (Self Launch).

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COMPETENCY ELEMENTS AND PERFORMANCE STANDARDS

ELEMENT	PERFORMANCE STANDARDS
1. Self-launch is conducted above 300' AGL.	<ul style="list-style-type: none"> • Demonstrate: <ul style="list-style-type: none"> ○ Transition to V_y (best climb rate speed) if climbing at V_x (best angle of climb speed) for obstacle clearance purposes. ○ Full scan lookout, lowering nose momentarily if necessary to clear ahead. ○ Climbing turns no steeper than 15° unless using thermal assistance. ○ Engine parameter check with close monitoring of any tendency to overheat.
2. Use of appropriate launch pattern.	<ul style="list-style-type: none"> • Demonstrate: <ul style="list-style-type: none"> ○ Maintaining runway heading until 500' AGL unless keeping within gliding range of the airfield. ○ Situational awareness of and provide separation between the launch and any other powered traffic (especially towing combinations). ○ Remaining clear of any winch launch area. ○ Good airmanship by avoiding climbs using thermal assistance in the normal circuit area. ○ Regular engine parameter checks until top of launch height.
3. Engine management in accordance with the Flight Manual and transition to soaring flight.	<ul style="list-style-type: none"> • Demonstrate: <ul style="list-style-type: none"> ○ Shut down procedure in accordance with the Flight Manual. ○ Appropriate level of lookout while shutting down the engine. ○ Smooth transition to soaring pilot (or landing pilot if conducting circuits). ○ Restart procedure in accordance with the Flight Manual above a safe restart height. ○ Safety procedures after engine failure to start.

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KEY MESSAGES

- Care must be taken in operating low powered self-launchers in high density altitudes or in the lee of mountain ranges as sink areas may prove in excess of the powered climbing performance.
- Conduct regular engine parameter checks until top of launch height.
- Where possible avoid climbing under power using thermal assistance in the active circuit area and through the normal towing pattern. Avoid all conflict with winch launching aircraft.
- Every different type of self-launcher has a different shut down and restart procedure which must be observed otherwise engine damage may result.
- Engine restarts must be initiated above a safe height that in the event of failure to start, a normal circuit and landing to a suitable landing area can be achieved.

LESSON PLANNING AND CONDUCT

Briefing

Close study of the self-launching glider's Aircraft Flight Manual is required to obtain:

- Expected climb rates at ambient air temperatures.
- Temperature limitation on operations. Cooling mechanism limitations for the self-launch method (e.g., air vs. liquid).
- Any limitations on use of full throttle (e.g., Rotax 912 maximum 5,800 RPM with five-minute limitation on full throttle above 5,500 RPM).
- Detailed shutdown procedure involving cooling down before engine shutdown and/or retraction.
- Detailed in-flight restart procedure.
- Safe heights for restarts and safety procedures in the event of a failure to engine start.

Flight Exercises

- Specific demonstration and practice required:
- Trainer demonstrates normal climb, shutdown and restart.
- Student practice (under supervision) practices normal climb, shutdown, and restart.
- Student should not shut down too early as it is likely more height will be lost while they are learning this procedure.
- Ideally lift is identified and the glider "parked" in it.
- Motor correctly shutdown, cooled and stowed iaw the FM. The engine may take some minutes to cool down.
- In flight relight
 - Select safe landing area first with engine-up reduced glide considered.

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- Start engine according to AFM
- Manage application of power according to AFM (some may require warming before full power)
- Manage climb speed
- Brief fuel endurance for engine “retrieves”
- Brief and demonstrate saw-tooth cruise.

Notes

- Do not let shutdown or restart procedures distract pilots from the primary duty to see and avoid.
- If shutdown and restart procedure is complex, use of a printed checklist is strongly recommended to prevent engine or airframe damage.
- Retractable usually have operational speed limits, the engine may not deploy or restart if those limits are not observed.

COMMON PROBLEMS

Problem	Probable Cause
<ul style="list-style-type: none"> ● Failing to monitor engine parameters. 	<p>Student distraction or confusion.</p> <p>On the ground get the student to note position of key gauges and identification of normal operating ranges (green arcs). Ensure monitoring of parameters is part of the launch work cycle.</p>
<ul style="list-style-type: none"> ● Maintaining throttle outside engine operating limits. 	<p>Student distraction or failure to note passage of time.</p> <p>Brief student on engine operating restrictions. Note the need to confirm the engine is operating within required limits throughout the launch.</p>
<ul style="list-style-type: none"> ● Failure to climb at expected rate. 	<p>Best climb speed is not being maintained.</p> <p>Brief student to monitor airspeed during launch and note attitude for Best Climb.</p>

THREAT AND ERROR MANAGEMENT

- Adequate lookout must continue to be made during shutdown and restart.
- Follow through early student attempts at shutdown and restart procedures to ensure student observance to prevent engine or airframe damage.
- Engine restart attempts at low altitudes present significant threats to flight safety, consider landing safely as an alternate.



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TRAINING MATERIALS AND REFERENCES

- Aircraft Flight Manual
- GPC Pilot Guide Unit 13S
- Powered Sailplane Manual: GFA Ops 0009 Aug 2015