

# Gliding Australia Training Manual

## Pilot Guide



### Unit 13S

#### Launch & Release (Self-Launch)

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

### WHAT THIS UNIT IS ABOUT

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.

### WHAT ARE THE PRE-REQUISITES FOR THIS UNIT?

- GPC Units 1-10, and
- 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

### 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.
- Don't climb under power using thermal assistance under and through the towing pattern, normal circuit area or in conflict with any winch launching.
- 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.

### PILOT GUIDE FOR THIS UNIT

#### Review Aircraft Flight Manual

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.
- 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.

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### Self-Launch above 300 Ft AGL

- To ensure clearance of obstacles, transition to Vy (best climb rate speed) rather than Vx (best angle of climb speed) for obstacle purposes.
- Conduct 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.
- Maintaining runway heading until 500' AGL unless keeping within gliding range of the airfield.

### Take-off pattern

- Situational awareness of and provide separation between the launch and any other powered traffic (especially towing combinations).
- Aerotow traffic will typically climb better than self-launch, so be aware of the aerotow launch pattern and adopt a pattern to avoid conflict.
- Remain clear of any winch launch area.

### Engine Management

- To shut down the engine requires focus on key procedures in accordance with the Flight Manual. For complex procedures use of a printed checklist is strongly recommended to prevent engine or airframe damage.
- Ensure an appropriate level of lookout while shutting down the engine. It is easy for the pilot to become distracted.
- Smooth transition to soaring pilot (or landing pilot if conducting circuits).
- Demonstrate restart procedure in accordance with the Flight Manual above a safe restart height. Restart at low altitude has potential to place the glider too low for a safe landing if the engine fails to start.
- Review Safety procedures after engine failure to start. This relates to maintaining situational awareness with a priority to fly the glider at a safe speed and height, ensuring access to a safe landing area, removing excess drag (feather propeller, retract engine), fuel management.

#### Notes

- Do not let shutdown nor restart procedures distract you 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.
- Gliders with a retractable engine usually have operational speed limits, the engine may not deploy or restart if those limits are not observed.

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### THINGS YOU MIGHT HAVE DIFFICULTY WITH

COMMON PROBLEMS	
Problem	Probable Cause
<ul style="list-style-type: none"> <li>Failing to monitor engine parameters.</li> </ul>	<p>Pilot distraction or confusion.</p> <p>Note position of key gauges and identify normal operating ranges (green arcs).</p> <p>Ensure monitoring of parameters is part of launch work cycle.</p>
<ul style="list-style-type: none"> <li>Maintaining throttle outside engine operating limits.</li> </ul>	<p>Pilot distraction or failure to note passage of time.</p> <p>Note need to confirm engine is operating within required limits throughout the launch.</p>
<ul style="list-style-type: none"> <li>Failure to climb at expected rate.</li> </ul>	<p>Best climb speed is not being maintained.</p> <p>Monitor airspeed during launch and note attitude for Best Climb.</p> <p>Heavy sink or incorrect aircraft settings, or tailwind will impact on climb performance. Monitor performance minima and abort launch if these are reached.</p>

### HOW DO YOU DEMONSTRATE COMPETENCE?

Demonstrate

- use of Vy (best climb rate speed) and Vx (best angle of climb speed).
- 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
- Situational awareness ensuring separation between the launch and any other traffic.
- Shut down procedure and restart procedure in accordance with the Flight Manual

### RESOURCES & REFERENCES

- Aircraft Flight Manual.
- Powered Sailplane Manual: GFA Ops 0009 Aug 2015.

### SELF-CHECK QUESTIONS

Use these questions to test your knowledge of the unit.

- Explain engine start, shutdown and restart procedures.
- State the engine parameter limits for your glider.
- State the parameters that would require you to abort the takeoff.