

# 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.

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

---

### Self-Launch above 300 Ft AGL

- To ensure clearance of obstacles, transition to  $V_y$  (best climb rate speed) rather than  $V_x$  (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  $15^\circ$  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.

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

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

### HOW DO YOU DEMONSTRATE COMPETENCE?

Demonstrate

- use of  $V_y$  (best climb rate speed) and  $V_x$  (best angle of climb speed).
- Full scan lookout, lowering nose momentarily if necessary to clear ahead.
- Climbing turns no steeper than  $15^\circ$  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.