
# INSTRUCTOR REFERENCE CARDS

# Table of Contents

# INTRODUCTION

This document has been designed as a pocket guide to key points in the various instructional sequences. After each main heading, the GFA Instructor's Handbook (2001 release) page reference will be found.

The following breakdown of any sequence in the training syllabus should be adhered to: -

- Pre-flight briefing
- Airborne demonstration and patter
- Handover / takeover (*"You have control / I have control" or similar*)
- Student practice and feedback
- Fault analysis and prompting
- Post-flight debriefing

Always give a briefing before an instructional flight. Augment these cards with your own notebook.

During demonstrations, tell your student what you are going to do **before** you do it, i.e. *When I move the stick forward, the nose of the glider will go down* — **then** move the stick forward. This arms the student against the unexpected, and when the glider responds, reinforces what you have said.

**NOTE**: this epub will be updated periodically.

# PRE-TAKE-OFF CHECKS

# (Sailplane)

Refer MOSP, Part 2 - Appendix 1.

## *Pre-Boarding Check*

**A - AIRFRAME** Walk around check for damage and/or defects. Maintenance Release checked, including DI validity.

**B - BALLAST** Glider loading is within placarded limitations and trim ballast secure.

**C - CONTROLS** Check controls, including airbrakes and flaps, for correct sense and full deflections.

**D - DOLLIES** All dollies and ground handling equipment removed.

## *Post-Boarding Check*

**C - CONTROL ACCESS** Seat adjustments secure and positioned to allow for comfortable access to all flight controls, panel switches/knobs and the tow release. Rudder pedals adjusted for reach if applicable.

**H - HARNESS** secure, lap belt low on hips, both pilots.

**A - AIRBRAKES and FLAPS** Airbrakes cycled and set for launch or closed and locked. (if fitted) cycled, set as required for take-off.

**O - OUTSIDE** Airspace and take-off path clear. Wind velocity checked. Sufficient competent ground crew available.
**OPTIONS** Evaluate emergency plan, identify aircraft critical speeds.

**T - TRIM** Trim set as required, ballast confirmed.

**I - INSTRUMENTS** (altimeter set, other instruments reading normally, no apparent damage. Radio on and on the correct frequency.

**C - CANOPY** Closed, locked and clean.
**CARRIAGE** Undercarriage down and locked.
**CONTROLS** Checked for full and free movement.

# PRE-TAKE-OFF CHECKS

# (Powered Sailplane)

Refer MOSP, Part 2 - Appendix 1.

## *Pre-Boarding Check*

**A - AIRFRAME** Walk around check for damage and/or defects. Bungs and covers removed, gear safety locking pins/blocks removed, steering bar and chocks stowed, Maintenance Release checked, including DI validity.

**B - BALLAST** Powered sailplane loading is within placarded limitations and trim ballast secure.

**C - CONTROLS** Check controls, including airbrakes and flaps, for correct sense and full deflections.

**D - DOLLIES** All dollies and ground handling equipment removed.

**E - ENGINE** Oil quantity checked sufficient for flight, oil cap/stick secure, cooling fluid level checked if required, Propeller checked for condition and serviceability. Run the fuel boost pump with the fuel turned on and check for fuel leaks.

**F - FUEL** Dipped, quantity sufficient for flight, correct type and octane, oil mix correct if two-stroke, fuel caps on and tight.

## *Post Boarding Check*

**C - CONTROL ACCESS** Seat adjustments secure and positioned to allow for comfortable access to all flight controls, panel switches/knobs and the tow release. Rudder pedals adjusted for reach if applicable.

**H - HARNESS** Secure, lap belt low on hips, both pilots.

**A - AIRBRAKES and FLAPS** Airbrakes cycled and set for launch or closed and locked. Flaps (if fitted) cycled, set as required for take-off.

**O - OUTSIDE** Airspace and take-off path clear. Wind velocity checked. Sufficient competent ground crew available.
**OPTIONS** Evaluate emergency plan, identify aircraft critical speeds.

**T - TRIM** Set trim as required, ballast confirmed.

**I - INSTRUMENTS** Altimeter set, radio on and set to correct frequency, voltage and amperage normal, other instruments reading normally and no apparent damage.

**C - CANOPY** Closed, locked and clean**.**
**CARRIAGE** Undercarriage down and locked.
**CONTROLS** Checked for full and free movement.

**NOTE:** The following additional checks should be used unless the Aircraft Flight Manual (AFM) specifies otherwise. Engine run up checks are to be completed in accordance with the AFM.

**I - IGNITION** Magneto check carried out, magneto or magnetos on both.

**F - FUEL** On and sufficient, most full tank selected if applicable.

**P - PROPELLER** Set for take-off/ fine position, plus checks required by AFM.

**C - CHOKE/CARBURETTOR HEAT** (off)/**COWL FLAPS** (if fitted).

**R - RADIO/TRANSPONDER** Correct frequency, volume set, call as required/ Transponder 1200 Mode C.

**B - BRAKES** Wheel brakes released, airbrakes locked.

# PRE-LANDING CHECK

Refer MOSP, Part 2 - Appendix 1.

## (Sailplane)

**F - FLAPS** Set as required.

**U - UNDERCARRIAGE** Down and locked. Confirmed down against placard.

**S - SPEED** Safe speed near the ground.

**T - TRIM** Set for selected speed, disposable ballast drained.

## (Powered Sailplane)

**F - FLAPS** Set as required.

**U - UNDERCARRIAGE** Down and locked.

**S - SPEED** Safe speed near the ground.

**T - TRIM** Set for selected speed, disposable ballast drained.

**I - IGNITION** Magneto switches on or both.

**F - FUEL** Selected to the fullest tank if applicable, boost pump on if landing engine on.

**P - PROPELLER** Set as required (fine pitch engine on, feathered engine off).

**C - CHOKE/CARBURETTOR HEAT** Off/Set as required).

**R - RADIO/TRANSPONDER** Correct frequency, volume set, call as required.

**B - BRAKES** Wheel brake/brakes off.

# PRE-AEROBATIC CHECK

(PRE-STALLING, SPINNING, etc.)

Refer MOSP, Part 2 - Appendix 1.

**H - HEIGHT** Sufficient for recovery by 1,000ft AGL (2,000ft if within a 2-mile radius of a licenced aerodrome).

**A - AIRFRAME** Flaps, airbrakes, undercarriage set as required. Trim as required. Hatches and vents closed and locked as appropriate.

**S - SECURITY** Harness secure. Loose objects stowed.

**E - ENGINE and PROPELLER** Power and propeller set as required, engine off/ propeller feathered, engine retracted for retractable pop tops.

**L - LOCATION** Clear of built-up areas, cloud, controlled airspace.

**L - LOOKOUT** 180 degree turn plus a 90 degree turn in the opposite direction, checking carefully around, above and underneath. Do not do a 360 degree turn.

# VITAL ACTIONS (Powered Sailplanes)

Refer MOSP, Part 2 - Appendix 1.

## *Emergency Checklist*

**C -** **CARBURETTOR HEAT** Off, if fitted.

**F -** **FUEL** On and correct tank, fuel boost pump is on.

**M -** **MIXTURE** Choke off, full rich as required.

**O -** **OIL PRESSURE** (Checked).

**S -** **SWITCHES** Checked ON, or BOTH.

**T -** **THROTTLE and LINKAGE** Checked.

## *After Take Off*

**C -** **CARBURETTOR HEAT** Off, if fitted

**F -** **FUEL** On and correct tank, fuel boost pump is on.

**M -** **MIXTURE** Choke off, full rich as required.

# AIR EXPERIENCE FLIGHTS

(IH Part 2, p2)

Key points:

- It is the passenger's flight, not yours.
- Safety first - do not take unnecessary risks in order to prolong the flight.
- As a general principle, no aerobatics.
- Monitor passenger carefully for signs of discomfort, especially when thermalling on hot and/or rough days.
- Accept a reduced rate of climb in thermals in preference to circling tightly.
- Remember that the future membership of your club depends on a person's impressions of the first flight.

# ORIENTATION

(IH Part 2, p7)

Key points:

- Pre-flight briefing
- Introduce third dimension. Stress that it takes all of us some time to get used to this.
- Use key landmarks to assist in orientation.
- Teach **lookout** - keep the passenger's head out of the cockpit right from the start. Encourage the passenger to report ALL aircraft and glider sightings. Praise sightings, even if already seen.
- Post flight debriefing.

# STABILITY

(IH Part 2, p7)

**Demonstration only**

## *Pitch*

Key points:

- Pre-flight briefing.
- Demonstrate stable platform, glider trimmed hands-off.
- Draw student's attention to nose attitude relative to horizon.
- Show glider displacement from trimmed attitude and tendency to return to trimmed attitude. Keep displacement small and movements gentle.
- Post-flight debriefing.

## *Roll*

Key points:

- First, demonstrate that pitch stability still works positively, irrespective of the glider being banked.
- Demonstrate glider's tendency to stay in a gentle bank, with no tendency for bank to increase or decrease.
- Keep bank angles gentle during these demonstrations.

# CONTROLS

(IH Part 2, p9-18)

**Demonstration with student practice**

## *Elevator*

Key points:

- Pre-flight briefing.
- Start and finish at the stable platform. Isolate the controls (student's right-hand on stick, feet off rudder pedals). Lookout.
- Commence from minimum sink airspeed so that student gets an appreciation of stick movement. Point out how nose goes down as stick is **eased** forward (and vice versa). Cue changes in wind noise and airspeed.
- Draw attention to horizon at start of demonstration.
- Demonstrate nose-down movement first or you will run out of time.
- Ensure student understands relationship between attitude and speed. Emphasise attitude as primary reference.
- Establish positive handover/takeover procedure ("You have control / I have control" or similar). Do not relinquish control until student has responded to handover cue.
- Practice under supervision. Prompt as necessary, further practice as required.
- Keep head out of cockpit unless checking something specific. Emphasise importance of good lookout.
- Post-flight debriefing.

## *Ailerons*

Key points:

- Pre-flight briefing.
- Start and finish at the stable platform. Isolate the controls (student's right-hand on stick, feet off rudder pedals). Lookout.
- Demonstrate that glider will roll when ailerons are applied and stop rolling when ailerons are centralised.
- Cue the student as to where to look and to notice the wing going up or down in relation to the horizon.
- Ensure student understands that returning the ailerons to neutral will not return the glider to straight flight - it will result in the glider staying at the applied bank angle. Return to straight flight requires application of opposite aileron.
- Handover / takeover. Practice under supervision.
- Prompting and further practice.
- Re-emphasise LOOKOUT.
- Post-flight debriefing.
- AILERON IS THE PRIMARY TURNING CONTROL - Turns result from bank. Aileron controls bank angle.

## *Rudder*

Key points:

- Pre-flight briefing.
- Start and finish at stable platform. Student should have their feet on the rudder pedals and hand off the stick. Lookout.
- For best effect, have the student look over the nose at a selected ground point or line so that they may observe the glider continuing to track straight ahead towards the ground feature despite the change in heading (the instructor will maintain wings level with crossed ailerons).
- Demonstrate that glider will yaw when rudder is applied. It will yaw only so far and then it will stop, despite the rudder still being applied. When the glider is yawed to the right with the left-hand vent open, point out the increased wind flow through the vent.
- The above demonstration emphasises that rudder does not turn the glider.
- Ensure student understands that when one foot goes forward, the other must consciously come back. Strange as it may seem, this is a common stumbling block.
- Handover / takeover. Practice under supervision.
- Prompting and further practice.
- Re-emphasise LOOKOUT.
- Post-flight debriefing.
- Rudder is mainly a balancing control.

## *Adverse Yaw, Coordination*

Key points:

- Pre-flight briefing.
- Start and finish at stable platform. Student should have their right-hand on stick and feet on rudder pedals. Lookout.
- Adverse yaw - application of aileron initially causes YAW in opposite direction. This yaw is ADVERSE to the objective.
- Commence from minimum sink airspeed speed, as aileron drag will be more pronounced.
- Use positive stick movement and be sure to use no rudder.
- Handover / takeover. Practice and prompting.
- Instructor regains controls.
- Coordination - use enough rudder to cancel out adverse yaw. Keep control deflections small and of short duration at demonstration stage.
- If the student doesn't see the adverse yaw in the first demonstration, move the aileron smoothly in the other direction and the adverse yaw will be much more pronounced.
- Handover / takeover. Practice under supervision.
- Prompting and further practice.
- Re-emphasise LOOKOUT.
- Post-flight debriefing.

## *Rolling on Point*

Key points:

- Pre-flight briefing.
- This exercise is used to develop hand/feet coordination.
- Keep bank angles small, about 5 degrees.

# TRIMMING

Key points:

- Pre-flight briefing.
- Attitude is primary reference, regardless of stick load.
- Attitude equals speed in any given configuration, regardless of stick load.
- Trim control is used to remove stick load and to reduce pilot workload in maintaining a constant attitude.
- Elevator is the speed control.
- Post-flight debriefing.

# TURNING

(IH Part 2, p16-18)

Key points:

- Pre-flight briefing.
- Aileron is the primary turning control. The glider will only turn if it is banked. The higher the bank angle, the faster the rate of turn and the quicker the aircraft will roll to the desired bank angle. Monitor the nose attitude relative to the horizon to observe bank angle and rate of roll.
- Three stages of turn -

    1. Rolling in. LOOKOUT, especially in the direction of turn. Then look ahead and apply aileron and rudder together. Centralize both at required bank angle.
    2. Maintaining. Apply small amount of back-pressure to maintain correct attitude. Monitor Aileron, Rudder and Elevator in turn. ARE we maintaining a correct turn? Monitor nose attitude and ensure good LOOKOUT.
    3. Rolling out. Apply opposite aileron and rudder until just before glider is level (this develops anticipation). Relax back pressure as glider straightens out. Monitor nose attitude.

- Post-flight debriefing.

**NOTE:** Any tendency to pitch up and down during a turn means that the student is watching the ASI and not monitoring the nose attitude.

# ADDITIONAL CONTROLS

(IH Part 2, p19 - 20)

## *Spoilers*

Key points:

- Spoilers are not speed-limiting.
- They cause nose-down trim change.
- They increase stalling speed.

## *Airbrakes*

Key points:

- Airbrakes are used to control rate of descent (Elevator is used to control attitude and airspeed).
- Airbrakes cause more drag than spoilers.
- They may cause a nose-up or nose-down trim change.
- The trim change may alter its sense as the airbrake setting changes.
- They necessitate gently lowering the nose when extended to prevent a loss of speed.
- They increase stalling speed.

## *Flaps*

Key points:

- Downward deflection of flaps increases drag and steepens the approach path. It also causes a decrease in stalling speed and worsens the glide angle.
- Upward (reflex or negative) deflection of flaps increases the stalling speed and may or may not improve the glide angle (usually not).
- Downward deflection of flaps enables lower approach speeds to be used.
- Unlike spoilers or airbrakes, **flaps must never be retracted near the ground.**

**Note:** When using airbrakes and flaps - Identify - Operate. Verify correct control lever is being used. Verify flap position against placard.

# STALLING

(IH Part 2, p21 - 24)

Sub-1'g' sensitivity should be checked before stalling sequences and carefully monitored.

Key points:

- Pre-flight briefing.
- Pre-aerobatic check.
- Do not raise nose too high. Keep stick progressively coming back.
- Use whatever cues are present in your glider type as pre-stall symptoms (e.g. nose attitude higher than normal, controls becoming less effective (sloppy), wind noise getting quieter, stick moving aft but nose not raising, possible vibration through stick and airframe buffeting).
- Ensure recovery action is positive. If wing drops before nose drops, take recovery action using wing-drop as primary cue. Use of forward stick will cure wing-drop.
- Even if nose drops naturally, ensure positive forward stick movement is used in recovery.
- After stall recovery, look for safe speed before recovering back to level flight.
- Ensure student looks at horizon during stall and recovery, not inside cockpit.
- Highlight altitude loss after recovery. Start with gentle stalls, then steeper.
- Handover / takeover. Practice under supervision.
- Prompting and further practice.
- Post-flight debriefing.

# SPINNING

(IH Part 2, p25 - 29)

## *Incipient spin*

Key points:

- Pre-flight briefing.
- More realistically carried out from a gentle turn than from straight flight.
- Use positive forward stick to un-stall wing and cure wing drop. Use only enough opposite rudder to prevent yaw developing in the direction of dropping wing.
- Do not try to pick up dropping wing with coarse use of rudder.
- Develop confidence by allowing incipient spins to progress toward full spin, showing that recovery can be made at any stage.
- If the nose is allowed to drop to the vertical, the incipient stage is over and the full spin has started.
- Highlight altitude loss after recovery.
- Handover/takeover. Practice under supervision. Prompting and further practice.
- Post-flight debriefing.

## *Fully-developed spin*

Key points:

- Pre-flight briefing.
- Enter spin from a normal nose attitude in a turn. Refer to IH Part 2, p27 for exact details of simulated accidental spin entry.
- Allow spin to develop fully.
- Carry out recovery action -
  - Full opposite rudder.
  - With ailerons central, stick progressively forward until spin stops.
  - Centralize rudder.
  - Recover from dive.
- Highlight altitude loss after recovery, and reinforce the importance of spin symptom recognition and correct recovery technique.
- Handover/takeover. Practice under supervision. Prompting and further practice.
- Post-flight debriefing.

**Notes:**

1. Ensure that student experiences plenty of spin entries, spread over a number of flights. Note that spin training extends over pre and post-solo training, and at annual flight reviews.
2. The force required to apply full rudder in spin recovery is about three times that required in normal flight.
3. Reinforce "safe speed near the ground" concept.
4. Stall-spin averse students may relax back pressure too early, causing glider to enter a spiral dive.

# LAUNCH - WINCH & AUTO TOW

(IH Part 2, p30 - 36)

Taken in two stages, starting at the top of the launch.

## *Full climb and release*

Key points:

- Pre-flight briefing.
- Establish working speed band (between 1.3Vs and maximum winch launch speed (Vw)).
- Maintain climb by slowly increasing back-pressure, easing the pressure as top of launch is approached.
- If speed tends to be too high, give "too fast" signal.
- If speed falls toward lower limit and is still falling, lower the nose and release the cable.
- At top of launch, lower nose and pull release twice.
- Set safe flying attitude and check safe airspeed before commencing any turn.
- Post-flight debriefing.

## *Ground run, separation and initial climb*

Key points:

- Pre-flight briefing.
- Demonstrate take-off attitude to separation.
- Check speed is building up to required value (1.3Vs) before allowing glider to progressively climb away.
- Ensure that the climb is correctly graded into the full climb stage and there are no "steps".
- On next flight, allow student to try, as per demonstration.
- Post-flight debriefing.

**Notes:**

1. There is no "Too Slow" signal.
2. The pilot must keep their hand on the release knob during the ground run and initial stages of the climb.
3. Although radio may be used in lieu of signals to communicate with the winch driver, the emergency signals must be taught as a backup in the case of radio failure or 'no radio' operations.

# LAUNCH FAILURE - WINCH / AUTO

(IH Part 2, p36 - 42)

Treat all launch failures as real. Never assume that any launch failure is a simulation.

## *Cable breaks*

Key points:

- Pre-flight briefing.
- First priority safe speed near the ground.
- Pull cable release twice. Check safe nose attitude and airspeed. Land ahead if possible; if not carry out modified circuit as applicable. (Cable break work cycle is AAA = Attitude, Airspeed, Assess).
- Think ahead, anticipate a failure and do not allow glider to enter non-manoeuvring area.
- Post-flight debriefing.

## *Winch / tow-car failure*

Key points:

- Pre-flight briefing.
- Much more difficult than cable-break.
- Pilot decision required to abandon launch when speed gets down to 1.3Vs. When decision has been made, priorities and actions are as for cable-break.
- Post-flight debriefing.

## *Glider overrunning cable on ground*

Refer to IH Part 2 p41.

Key points:

- Take all measures to prevent glider flying:
  - operate the release twice;
  - turn the glider away from the cable if possible;
  - call on the radio to abort the launch;
  - full forward stick; and
  - open the airbrakes fully.

# LAUNCH - AEROTOW

(IH Part 2, p43 - 51)

As in winch/auto launching, the top part of the launch is taught before the more difficult and critical early stage.

Do not put students onto aero tow too early in their training. They should at least be competent at coordination and have acquired some anticipation.

## *Launch*

Key points:

- Pre-flight briefing.
- Demonstrate stable platform on tow. Never hand over an untrimmed glider to a student (unless of course the glider cannot be trimmed for some reason).
- Emphasise slipstream as the reference point.
- Demonstrate allowable out-of-position limits. Emphasise regaining normal towing position unhurriedly.
- Initially above 800ft. Handover / takeover. Practice under supervision.
- Prompting and further practice.
- Post-flight debriefing.

## *Release*

Key points:

- Pre-flight briefing.
- Airmanship - ensure good lookout in the areas which glider and tug are about to occupy.
- Locate and identify the release knob before attempting to operate it.
- Release from whichever towing position the glider is in. Pull the release once and observe that the rope releases.
- Upon hearing the student shout "rope gone", commence clearing turn to right.
- Student tries on subsequent flight.

## *Ground run and separation*

Key points:

- Determine whether glider is of "nose dragger" or "taildragger" layout. Carry out pre-flight briefing accordingly.
- The student should have their hand near the release knob during the initial stages of the launch.
- Adopt take-off attitude as soon as possible. Glider will lift off in this attitude when it is ready.
- Hold position just above ground, no higher than the height of the tug's fin.
- When tug lifts off, maintain station directly behind and climb through low level wind gradient.
- When the tug is positively established in the climb, move smoothly and positively into low-tow.
- Re-trim as necessary.
- Post-flight debriefing.

**Caution:** Flying too high during any stage of the launch may cause a tug upset. The tug pilot will release the tow to prevent elevator authority being lost.

**Note:** The procedure for a high-tow launch is identical, except that the glider does not move through the slipstream into low-tow.

## *Aerotow variations*

Key points:

- Changing station. Do so smoothly and unhurriedly. Student and instructor keep their left hand near the release knob.
- Boxing the slipstream. Go to the right first. Stop at each comer for 2 seconds. Keep left hand near release knob. If a significant bow develops in the rope, rather than attempt to rescue the situation the instructor should release from tow. This should be done just before the slack is taken up to minimise the risk of the rope and rings contacting the glider.
- Flying level on tow. Watch for slack rope – use airbrakes as required. Great difference in trim of glider - re-trim as required.
- Descending on tow. As for flying level on tow, but more so. Airbrakes will certainly be required.

**REMEMBER** - if glider pilot(s) lose sight of tug, release immediately.

# AEROTOW EMERGENCIES

(IH Part 2, p47 - 48)

**Note:** Although radio may be used in lieu of signals to communicate with the tow pilot, the emergency signals must be taught as a backup in the case of radio failure or 'no radio' operations.

## *Wave Off - Emergency release*

Key points:

- Pre-flight briefing.
- Tug rocks wings - release immediately. Any delay and tug pilot may release the rope at tug end.
- Maintain at least 1.5Vs.
- Assess options - land ahead if possible.
- Post-flight debriefing.

## *Airbrakes out signal*

Key points:

- Pre-flight briefing.
- Tug waggles rudder.
- Glider pilot checks airbrakes closed and locked, flap setting correct, and tail-chute jettisoned.
- Post-flight debriefing.

**Note:** If the tug pilot waggles the rudder, there is concern about a low rate of climb. This could be due to glider drag, or protracted sink, or tug engine performance. If the rate of climb does not improve, then a wave-off can be expected.

## *Release failure*

Key points:

- Pre-flight briefing.
- Glider flown out to left - tug pilot must acknowledge.
- Return to low tow behind tug.
- Climb to high-tow and stabilize.
- Tug-pilot releases rope.
- Glider returns to land, making higher than normal approach.
- Post-flight debriefing.

## *Double release failure, landing on tow*

This is optional.

Key points:

- Pre-flight briefing.
- Glider in high tow, tug fails to release rope.
- Tug begins gentle descent. Return to low tow. Glider maintains station using airbrakes as necessary.
- Tug-pilot controls descent rate with power.
- Approach angle will be shallower than for a normal glider approach, and the aiming point may be further forward.
- Glider maintains low-tow to touchdown.
- Glider does all the braking on the ground. Tug pilot does not touch brakes.
- Post-flight debriefing.

# CIRCUIT, APPROACH & LANDING

(IH Part 2, p52 - 64)

The objective of circuit planning is to position the glider on the required final approach path to touchdown, with a safe margin over all obstacles.

## *The circuit*

Key points:

- Pre-flight briefing.
- Establish positive break-off concept and configure the aircraft for landing (e.g. lower the undercarriage).
- Enter circuit, establish correct angle / distance relationship. Assess wind. (Downwind work cycle AAAL = Attitude, Airspeed, Angle, Lookout).
- Monitor angle (too steep / too shallow or steepening / shallowing) – move in or out as necessary.
- On the downwind leg, complete the pre-landing check, select an aiming point, and imagine the final approach path sloping upwards from the aiming point.
- Increase your speed to allow for wind (1.5Vs plus ½ wind speed) and re-trim as you approach a position adjacent to the intended landing point.
- Select the base-leg turn point to intercept the approach path for a straight final approach from a safe height.
- Post-flight debriefing.

## *The approach*

Key points:

- Pre-flight briefing.
- After turning onto the base teg, locate and identify the airbrakes / spoilers.
- Maintain base leg heading so as to intercept the final approach path. Allow at least one wingspan clearance over obstacles on final approach.
- Move base leg into wind or downwind as necessary to achieve the correct intercept.
- Guard against shallow, over-ruddered, final turn, and over-banking in a wind gradient.
- On windy days, the turn onto final should be made higher than usual to allow for the effect of wind gradient and wind shear.
- After final turn, check;
  - direction
  - speed
  - rate of descent.
  - Establish overshoot situation.
- Monitor the work cycle on finals (AAL = Aim point, Airspeed, Line-up)
- When an overshoot situation is identified, establish a rate of decent with airbrakes / spoilers. Control speed using elevator.
- Monitor aiming point for overshoot / undershoot.
- Post-flight debriefing.

## *The landing*

Key points:

- Pre-flight briefing.
- Under about 50ft, fix the airbrake setting, but see note below.
- As the aiming point approaches, look well ahead to the end of runway.
- Raise the nose gently toward the horizon (Round-out). Stop stick movement momentarily when the rate of descent has arrested.
- When glider is flying level near ground, resume backward stick movement (Hold-off) until touchdown on two points.
- After touchdown, stick back, keep wings level using ailerons and keep straight with rudder.
- Post-flight debriefing.

**Note:** This is an ideal situation. Spoiler / airbrake setting may have to be reduced if round-out or hold-off is mishandled or if rate of descent is too high.

# FIRST SOLO

(IH Part 2, p68 - 72, **Level 2 or higher instructor only**)

Key points:

- Safety before polish with the skill to handle the degree of responsibility given.
- Never force a student to go solo against their will.
- In the pre-flight briefing, mention the reduced weight without instructor may cause more rapid pitch change and quicker ground roll and separation. Do not get too high after separation.
- Before solo, the student must have a satisfactory performance in the following essential minimum skills and knowledge: -

    - Good lookout.
    - Flight radiotelephone operator's logbook endorsement.
    - Circuit planning - especially recognising getting low in the circuit.
    - Approach Control - able to recognise and correct for an undershoot and understand the need to turn in early if necessary.
    - Spot landings - not necessary, but if the glider has good airbrakes they ought to be competently done.
    - Stalling - competent at recognising even disguised stalls and consistently making efficient recoveries.

…continued overleaf

- Spinning - can recognise a spin and take the correct recovery action and is also able to put the glider into a spin and recover with minimum height loss. If a spin doesn't develop (a not uncommon occurrence), the student should be able to recognise and recover correctly from the ensuing spiral dive.
- Speed and directional control - should be good, especially on approach.
- Launch failures - should have been satisfactorily handled by the student without any 'help' from the instructor
- Satisfactory take-off and launch - including a clean take-off avoiding PI0s, adopting the correct climb attitudes at the correct moments on a winch launch, and boxing the slipstream and recovering from an 'out of position' on aerotow.
- Thermal Soaring - the student should have some understanding of centring techniques and know/be sufficiently skilled not to keep falling out of thermals.
- Basic rules of the air.

# TYPE CONVERSIONS

(IH Part 2, p77 - 79)

Key points:

- The briefing should be conducted by one instructor and not by a crowd of the student's mates, however eager they are to share their own experiences.
- The instructor should be familiar with the type being converted to, and the one from which the conversion is being made.
- An external walk-around similar to a DI can be a useful introduction to the glider, especially if it is a completely unfamiliar type.
- Unless the controls function differently to those of gliders that the student has flown previously, they do not need to be mentioned. The most common items for a mention will therefore be the undercarriage, airbrake and flap levers, which may be subtly different or entirely new.
- The student should sit in the glider for some minutes before the launch (preferably off the launch line) and note the positions of the instruments and controls. They should check that they can get full travel on all the controls, especially full forward stick, without having to stretch. The rudder pedals should be adjusted (if this is possible) until they are comfortable, and the pilot is able to apply full rudder and stick together in the same direction.

…continued overleaf

- While seated in the glider with wings level and the canopy closed, the tail should be lifted and lowered to show the correct attitude at take-off and landing.
- If the student has not flown with parachute before, ensure correct adjustments and operation procedures are fully understood.
- The student should be able to reach the cable release easily. As a minimum he should be able to close his eyes and put his finger on the ASI.
- The limiting speeds - especially manoeuvring speed, winching speed and Vne should be understood, and sensible minimum launch and approach speeds decided.
- The use of ballast is strongly recommended unless the student is an experienced pilot or is at least 10kgs above the placarded minimum figure.
- Point out and explain the canopy latches, jettison procedures and ventilation knobs.

# STEEP TURNS

(IH Part 2, p65)

Key points:

- Pre-flight briefing.
- Increased entry speed due to higher stalling speed.
- The steeper the bank, the more back pressure is needed.
- Anything over 60 degrees of bank is defined as aerobatics.
- Take care a spiral does not develop.
- Use of trim for sustained steep turns is recommended, but remember to have the student re-trim as they roll out to relieve the control pressure.
- Post-flight debriefing.

# SIDESLIPPING

(IH Part 2, pp 65 - 67)

Key points:

- Objective: to increase rate of descent without increasing speed.
- Pre-flight briefing.
- Demonstration apply bank and sufficient opposite rudder to prevent a turn.
- Maintain same attitude in the sideslip as at normal approach speed. Do not use ASI - excessive yaw error.
- Handover / takeover. Practice under supervision.
- Prompting and further practice.
- Post-flight debriefing.

# CROSSWIND LANDINGS

(IH Part 2, p67 - 68)

Key points:

- Pre-flight briefing.
- Demonstration, crabbing method and/or wing down method.
- Student tries on next flight.
- Prompt as necessary.
- Control direction of ground roll with positive use of rudder, noting possible reduced rudder authority to prevent weathercocking into wind.
- Negative flap may improve aileron authority on ground run and reduce ground loop risk.
- Post-flight debriefing.

# RULES OF THE AIR

(GFA Airways & Radio Procedures, p8)

Key points:

- Give way to other aircraft on your right.
- Two aircraft approaching head-on, both turn right.
- To overtake another aircraft, alter course to the right. The exception to this is for hill-soaring, when you must pass between the overtaken glider and the hill.
- When hill-soaring, all turns shall be away from the hill.
- Landing aircraft have priority over aircraft taking off.
- Powered aircraft give way to gliders.
- Gliders give way to balloons and airships.
- First glider in a thermal establishes circling direction. Vertical and horizontal separation - 200ft.
- Aerobatics (including spinning) are not permitted below 1,000ft AGL (or below 2,000ft AGL within 2NM of a certified or registered aerodrome).

**Note:** Alerted see-and-avoid is far more effective than unalerted see-and-avoid. Use radio effectively to enhance situational awareness.

# VISUAL METEOROLOGICAL CONDITIONS (VMC)

(GFA Airways & Radio Procedures, p9)

Gliders are permitted to fly only in VMC. The requirements for VMC are as follows: -

| Height | Flight Visibility | Distance from Cloud | |
|---|---|---|---|
| | | Horizontal | Vertical |
| At or above 10000' AMSL | 8 km | 1500 m | 1000' |
| Below 10000' AMSL | 5 km | 1500 m | 1000' |
| At or below 3000' AMSL or 1000' above terrain – whichever is the higher[1] | 5km | Clear of cloud and in sight of the ground or water | |

[1] Carriage and use of radio is required when operating to these conditions for communication on the CTAF when required within the vicinity of a non-controlled aerodrome.

# CIRCUIT DIAGRAM

Refer to the student's Glider Pilot Training Record.