3 PREPARATION FOR FLIGHT

SPL syllabus: Exercise 3 Preparation for Flight			
(i)	**Pre-flight briefings**	**(v)**	**Pre-flight external and internal checks**
(ii)	**Required documents checked and on board as required**	**(vi)**	**Verifying in-limits mass and balance**
(iii)	**Equipment required for the intended flight**	**(vii)**	**Harness, seat or rudder pedal adjustments**
(iv)	**Ground handling, rigging including connection of control surfaces, movements, tow out, parking and security**	**(viii)**	**Pre-launch checks**

INTRODUCTION

Flight safety is always of paramount importance, but it is sobering to look at how many accident reports include failure of adequate preparation prior to the flight as contributory factors. Distractions and/or hurried processes are common. The objective is that the trainee should not only understand the process, but carry it out with diligence, in a calm, unhurried environment. It may be helpful to introduce the concept of a 'sterile environment' i.e. no-one is allowed to interrupt or distract an individual whilst undertaking key functions such as rigging or pre-flight checks. Making cultural changes like this take a concerted effort of both education and repeated re-enforcement.

The individual

Gliding requires full concentration, so it is essential that an individual is mentally and physically fit to fly. Learning and instructing can be even more stressful. Chapter A contains advice including the CAA IMSAFE checklist, to help judge whether you should be flying on a given day. Do not put other people at risk by ignoring the signs that you are not in a fit condition to fly.

The instructor needs the appropriate valid instructor rating and to comply with the current medical and recency requirements. Ensure the trainee is aware of the medical requirements to fly solo.

Briefings

There is a legal obligation to brief any passenger – trainee or otherwise, to cover normal and emergency procedures. (CAA Sailplane rulebook SAO.OP.110)

As a minimum this covers:

- straps
- emergency canopy opening
- parachute; oxygen dispensing equipment and any other emergency equipment provided for individual passenger use.

From an instructing perspective, a well-planned and prepared flight should cover a pre-flight briefing to include the aims of the flight, as well as key instructions such as handover procedure *'I have control/ you have control'* etc, and TEM discussion.

Glider preparation and documentation

There are certain legalities contained in BGA and CAA operational procedures that apply. As the pilot in command (PIC) you are responsible for ensuring the glider complies with these.

- All clubs are required to keep logs/flight-time sheets as an accurate record of the club's flying operations.
- The glider must comply with the relevant airworthiness requirements and have appropriate insurance.

Up to date information about documentation to be carried can be found in the CAA s Annex II, Sailplane Rulebook section *Air Operations*, specifically SAO.GEN.130 and SAO.GEN.155. The regulations allow for documents be retained at the aerodrome or operating site for flights: (1) intending to remain within the sight of the aerodrome or operating site; or (2) remaining within a distance or area determined by the CAA. (This is currently considered to be the UK.)

If flying out of glide range, an up-to-date chart clearly marked with controlled and regulated airspace must be carried in the aircraft.

If the glider has been rigged that day, independent rigging checks must be carried out and documented in the DI book. This must include positive control checks.

The daily inspection (DI) must be carried out diligently, by an experienced and trained individual. By the time they complete their bronze certificate or SPL, the trainee is required to be able to undertake a DI. It is logical that by the time they go solo they should have been trained to do this. After all, as the pilot in charge of an aircraft, they are responsible for ensuring the aircraft is safe to fly. There is no requirement to be a qualified pilot to be trained to do a DI.

However, exactly when you and the club are happy to sign off an individual after appropriate training, will depend on their background and previous experience. As example, engineers might be expected to develop the skills more quickly than youngsters with relatively little experience.

It is helpful if the club teaches a specific system DI process, so that trainees do not get confused by different systems taught by different instructors. Using the pre-take mnemonic is common, but not mandatory. Although a generic system can be used, the Flight Manual should be checked for any specific requirements for that aircraft.

The objectives of the DI are:

1. to ensure the aircraft is correctly rigged and serviceable
2. to identify and document defects
3. to comply with the maintenance schedule.

Examples of what might constitute a defect include:

- Actual failure: cracked, broken or deformed materials e.g. glass/carbon fibre, wood, plastic or metal.)
- Deterioration (e.g. rotten wood, brittle fabric, rusty steel) and/or excessive wear, looseness or lack of lubrication.
- Incorrect assembly, wrong adjustment or actual loss of a particular part.

Diligence in reporting defects is important. Having a robust system in place to identify and act on defect reporting is an essential part of the safety culture.

The Daily Inspection (DI) book

BGA laws and rules state that:

'All gliders operated from BGA club sites shall be inspected before flying on each day and that…(they) must be inspected by club approved persons who must sign that the glider is serviceable before it is flown on that day.'

The BGA strongly recommend that details of work done, and defects found should be recorded in the aircrafts' DI book. On completion of a Daily Inspection, the person carrying out the inspection must complete and sign the (DI) book, signifying that the task has been completely and correctly carried out and the aircraft is 'Serviceable' (S) or 'Unserviceable' (U/S) Any minor defects must also be entered in the DI book.

If a defect or condition is found that has rendered the glider not fit for flight, then an 'Unserviceable' (U/S) entry must be recorded in the DI Book.

Fuller details of the recommended procedure for DI can be found in Chapter L.

Before the glider is parked at the front of the launch queue, make sure the trainee can get comfortably seated and strapped in. They need to be able to adjust the rudder pedals as required and easily be able to reach all the controls, including the cable release. Is a seat back required or better removed? Common issues are ergonomic problems such as not being able to get full extension of the airbrakes.

Note: Energy absorbing cushions under pilots are essential unless the pilot cannot fit with them. Any cushions or packing behind the pilots must be non-compressible. Compressible cushions are potentially dangerous, because:

- *If the packing compresses during the initial take-off acceleration of a winch launch, the pilot may slide backwards and be unable to reach the release or other controls. Instinctively, the pilot may try to stop themself from sliding backwards by pulling hard on the stick. The moment the glider becomes airborne it will pitch up rapidly and there is a very real danger of it stalling and flicking.*
- *in the event of a heavy landing, they increase the likelihood of the pilot sustaining serious injuries.*

Walk round checks

The BGA recommends a walk round check before flying. This is because some time may have passed since the DI and rig check and things change - for instance damage may have occurred during towing out or the glider may have been interfered with by unwitting individuals whilst left unsupervised. Better to pick up a problem before you pull on-line, than miss something because you do not want to hold everyone up. If the trainee is not trained in a culture where these checks are routine, they will not build it into their own routine as a solo pilot.

ABCDE checks:

Airframe - Look for anything unusual or that may have happened since the DI. Include: soft tyres, damaged trailing edges or control surfaces etc. no signs of damage.

Ballast – has the previous pilot put ballast in? Remember water ballast in the tail. Check that the pilot can meet the ballast limits.

Controls – all still connected and moving in the correct sense – you probably can't see the elevator once you are sat in the glider.

Dollies - check the tail and wing dollies have been removed.

Environment – a last look at the sky/wind for weather changes that may affect the launch or early stages of flight. (e.g. low cloud.) and any other potential issues affecting the launch.

Pre-flight checks

Pre-flight checks are often the first piece of 'homework' we give to trainees. Learning them gives an early sense of achievement and builds the concept that safety matters. They should be thorough but concise and undertaken without distraction. If interrupted, go back to the beginning. A recent review of accidents/incidents showed more than half involved aircraft on an instructional flight and of those a significant number involved failure to adequately check canopy or brakes

Controls: Once **both** pilots are strapped in, move each individual control slowly and smoothly to the limit of its travel, to check full and free movement.

Ballast: Check that the glider will be flown within the placarded weight limits. (For early solo or conversion flights ensure the pilot(s) are at least 13kg/30lbs over it.)

Check should also include water ballast if appropriate; is the CoG still within limits? Is the glider within other loading limitations?

Straps: Ensure lap strap is over the pelvis and as tight as possible and shoulder straps are pulled down. Check for a 5th strap. The trainee's check should include checking the rear seat pilot is properly strapped in.

Instruments: Check set the instruments to zero or as appropriate. Check they are reading correctly and that the glass faces are not cracked or broken.

Check the correct operation of any electrically powered instruments and on as required. Check radio on as required to correct frequency.

Encourage the trainee to always make a mental note of the panel position of critical instruments like the ASI. So, they identify quickly in the event of a launch failure.

Flaps: Identify whether fitted. If fitted, set for take-off.

Trim: When setting the trim, take account of the type of launch and conditions.

For a winch launch the trim lever should be set for approach speed - usually a little forward of neutral. Further forward in strong wind conditions.

For aerotow, set for anticipated aerotow speed. These initial settings can only be estimates of what is required, so re-trimming may be necessary later.

Discourage trainees in the early stages of training from trying to re-trim shortly after take-off as this can lead to Pilot Induced Oscillations.

Brakes - Checked on both sides, above and below the wing making sure they close together. Locking is critical, make sure If the over-centre lock is engaged.

Eventualities

As a minimum:

- Hand on the yellow knob to release immediately if the pilot is unable to keep the wings level.
- Procedure in the event of a launch failure: in particular the brief to lower the nose to the recovery attitude and wait for the nominated speed.
- A look round for any last interruptions or potential complications to the launch (wind changes/personnel in the launch area etc

It is NOT the time for a re-brief, so keep it short and to the point.

Canopy

Canopy closed and locked including a physical check with upward pressure on the canopy **frame.** Close the DV panels before take-off. In a two-seater both pilots should verbally confirm that their '*canopy is closed and locked.*'

Note: Interpreting the weight and balance can be complex, so explaining the weight placard for the glider is best done as part of the pre-flight briefing, rather than whilst sat in the glider about to launch. After a few flights, the trainee should be encouraged to read and interpret the placard weight limitations and remind themselves of key the speed limitations before the launch

Be vigilant when a trainee first flies solo, as they may need ballast that was not needed when flying dual. It can be challenging to keep concentrating to check that the pre-flight checks are done thoroughly when you are on the 16th flight of the day but taking off with an open canopy or worse could be the consequence of not monitoring it properly.

TEM	
Threats:	**Mitigation:**
Distraction	Interruptions during rigging, DIs and pre-flight checks are unacceptable. If interrupted, go back to the start and repeat the checks.
Errors:	
Incorrect ballast	Check trainees' understanding weight and balance placard, and ensure ballast appropriately fitted or removed

Ground handling

A significant part of the insurance we pay is due to ground handling accidents. In our enthusiasm to get our trainees airtime, it is easy to overlook the importance of the ground handling aspects. A dedicated teaching session is extremely worthwhile. Using aspiring instructors to undertake this (properly trained in what to deliver) can be a useful exercise for both parties. A ground-handling progress card, such as the example on the BGA website, is useful to ensure all areas are covered. Written information such as club handbooks, or

better still videos, help ensure a consistent and thorough approach.

Key areas:

- General airfield safety – including winch cable and hardware hazards, aerotow rope hazards.
- Moving aircraft by hand: where to push, pull or lift, which wing to hold – who is steering and 'changing wing' drill.
- Canopies – how to handle, fragility, how to open, close and lock. How to keep clean and where cleaning equipment is kept.
- How to do positive checks.
- Batteries – charging and **safely installing** in the glider
- Parking gliders – which wing down, orientation to wind and picketing methods.
- Towing gliders - who can drive the vehicles, procedures, hazards etc – (especially down slopes) and lookout.
- Hooking on gliders - weak links checks, which hook to use etc.
- Lookout and signals for the launch - who can shout 'stop' and why, what to do – or not do.
- Wing running how to run the wing, hazards, e.g. wing tip loads.
- Retrieving cables safely.
- Powered aircraft safety issues – incl. propellors.
- What to do in an emergency.

Most clubs should and do have policies covering most of the areas above, so it is beyond the scope of manual to cover them in further detail.

Fuller details about general aspects of ground handling can be found in chapter I.

