These guidance notes are personal, without status, written by martin selby to remind himself about correct procedures, to provide a fuller picture than one gets just by shadowing others, and to speed up the knowledge transfer to other "newbies". It has been read by the Shalbourne Gliding CFI and amended as a result, but BGA rules and advice, which active members should become familiar with, must take precedence. This sort of advice will change with time so these notes will become out of date. The date of this version is 12/9/2022.

GROUND CREW INSTRUCTIONS

Basic Airfield Safety

A one page airfield safety briefing should have been issued to all new members. Please ensure you read and inwardly digest the contents. The general speed limit at the airfield is 30 mph.

Emergencies / First Aid:

In the filing cabinet of the Launch Point Vehicle is a folder labelled **Immediate Actions.** This is primarily for the Duty instructor but ground crew should be aware of its location and its importance as they may have to follow parts of it themselves.

There is a first aid box in the Launch Point Vehicle (LPV).

There are fire extinguishers in the workshop, the clubhouse, the winch, the generator container, the cars and the LPV.

Training method

Safety is not automatic or intrinsic to the airfield. It relies on correct procedures being followed.

There will be a Duty Instructor in charge each day, who decides what can and cannot happen. He/she will give a daily briefing before the start of flying each day.

Only club members (SGC and SUGC) who have been briefed, trained and checked may carry out the ground crew activities described below. New members are issued with a Ground Training Progress Card covering these activities, and must be trained and signed off before carrying out these activities.

The trainee pilot is expected to be pro-active in asking for advice and assistance to progress in all aspects and activities at SGC. [But please don't interrupt someone carrying out daily inspections or glider rigging which require great concentration] We endeavour to help identify a suitable mentor for each member who needs one. If in doubt ask. If you don't understand something, ask; never assume.

Parachutes

BGA rules require a parachute be worn, because very, very occasionally a glider becomes uncontrollable at height, e.g. after a collision. A parachute reduces the gliding fatality risk-factor cost-effectively. Parachutes must be:

- inspected daily before use: check pull chord engagement and no damage to harness & buckles
- worn as instructed
- the leg clips re-bucked when not in use (prevents a long flail with metal end)
- placed buckles-down on the glider seat (buckles get hot in the sun)
- never allowed to become damp, so never put on the ground or wet chair. Parachutes should be on pilot's back, or upside down on a glider seat, or on an LPV shelf, or in the clubhouse locker.

Hanger

Gliders are easily damaged in the hanger. Great care should be taken using as many people as necessary to keep an eye on each wing and tail. Manoeuvre slowly to give plenty of time to halt all movement if "stop" is called. The Puchacz tail fins and rudders are very vulnerable to collision with the top steel of the doorway so a person holding down the tail is a must.

Glider Canopies

Your quality of look-out when in the air depends on a clean undamaged canopy. Perspex (aka Plexiglass) canopies are more delicate than other parts of gliders and are easily cracked and easily scratched. Large crack repairs are not repairable and a replacement canopy costs ££thousands + many weeks' loss of the use of the glider. Light scratches can be polished out but it's very time consuming and skilled work. Scratches tend to accumulate and cause a progressive loss of visual acuity, and is most noticeable on modern gliders with very raked canopies when the sun is low, e.g. in winter. Hence:

- Always close the glider canopy before walking away, even for a few seconds, because the wind can rock the glider and cause the canopy to slam shut and it will crack.
- Never reach for controls (apart from the canopy release) through the DV panel, which is a stress raiser where many cracks originate.
- Never put any weight on the canopy especially when getting in or out of the glider.
- Treat the Perspex with kid gloves (in all meanings of the phrase)
- Never wear a hat with anything hard at the apex
- Clean the canopy using clean water and a clean cloth
- Polish the canopies using proprietary Perspex spray cleaner kept in a drawer in the Clubhouse.

The launch signalling protocol

- Pilot is in charge of the sky they can see, only accept the cable if you are happy to launch. Release if the situation changes.
- The person hooking is the person who signals the launch
- The person who signals the launch should confirm that the sky is clear above and behind
- They signal the launch with verbal signals and clear arm signals
- The person on the lights in the LPV is a repeater, they **must follow the command of the signaller**. Do not pre-empt them. **Anyone** can, of course, stop the launch at any time if they see a hazard.

It is strongly recommended to download and read these presentations:

https://members.gliding.co.uk/library/safety/stop-the-drop/

http://members.gliding.co.uk/bga-safety-management/safe-winching/

Wing tip runner

This role is more complex than it looks. The responsibilities of the wing tip runner make this a safety critical task. Study Stop The Drop and ask others about it if unclear.

Lift and hold the wing after the cable has been connected. Ensure the correct height and the wings are level – different heights are needed for different gliders. Maintain eye contact with the pilot so that he/she can indicate that you need to raise or lower slightly – it is the pilot's call.

If as wingman you are having to apply a consistent significant downwards or upwards force, you must call to the pilot (and ground controller) so that the pilot will know to apply aileron correction. This should be done before 'Take Up Slack' has been called, but if 'Take up Slack' has already been called, shout STOP to allow the pilot time to steady the aircraft and the gust to pass.

Walk/jog with the glider until it moves too fast. Prevent it from rolling or **yawing**. On release, take care **not** to impart any upwards or downwards push.

In strong cross wind, always hold the down-wind wing, hold it a few inches above horizontal (the up-wind wing will then be slightly lower than the downwind wing). On 'All Out', be prepared to counter-act likely weather-cocking by stopping the downwind wing from racing forward ahead of the glider.

Signaller / Launch Controller THIS IS THE SENIOR RESPONSIBLE ROLE

Do not touch cables without checking that it is safe to do so. THINK BEFORE TOUCHING. In particular, two cables can become entangled, so when the winch is operating do not handle the other cable. Treat both cables as potentially LIVE unless you KNOW they are not. ALWAYS handle a cable such that you can let go and it will pull **away** from you if it starts pulling.

Select and connect the correct weak link for the next launch and place the cable near the glider. The drogue and cable must be pulled across to be in front of the glider so the initial pull from the winch does not yaw the glider.

Keep a watchful eye on the sky for returning gliders or other craft wishing to land or flying past. Keep a watchful eye on the field ahead for horse riders and walkers using the bridle-path and for vehicles using or likely to be using the field between the launch point and the winch. Unless the 45 degree arc either side of straight ahead off the nose of the glider wishing to fly is clear, the launch must be paused. Keep the pilot informed; situation awareness is vital as he/she will decide.

If safe to do so, offer up the cable when requested to do so by the pilot – make sure that he has confirmed that his brakes are closed and locked and canopy is secure. Test the cable in tension and inform the pilot that the cable is "secure on a [red/blue/brown/white] link". Then repeat the sky and ground observations as above and walk to be behind the wing of the glider, preferably on the LPV side. If safe, call "All clear above and behind; Up Slack" and signal "Up Slack" with an underarm wave. Continue to monitor the sky. When cable is taut AND GLIDER STARTS TO MOVE, call "All Out" and signal "All Out" with an over-arm wave until glider has departed. If for any reason it becomes unsafe to launch shout STOP and signal with both arms vertical above head.

Launch-Point Vehicle Setting up

The duty instructor will decide where the launch-point should be. Max 15 mph on tow but slow down at bumps.

Leave sufficient room to drive the cable retrieve and other vehicles between the caravan and the hedge/boundary. Use the check sheet on the LPV wall to do the following:

- LPV lined up with winch – use the vehicle sides for sighting the winch.

- Also check the lights are pointing approximately horizontally.
- Brake on and legs down.
- Battery connected; Cooker switch is on; check volts.
- LPV windsock up.
- Parachutes in racks.
- Mobile phone on charge & switched on; transfer trial lesson messages to the flying sheet
- VHF radio is on charge & switched on.
- Winch vehicle radio on charge (yellow); when showing green take to the vehicle.
- 4 cones placed 20/22m* from doorway; & weak links.
  * NB: leaving excess width will cramp the landing area.
- Tyres ready if windy.
- Mole spanner ready.
- Lights & radio check in conjunction with the winch driver.
- Flying list to the Duty Instructor [Solo flyers must be approved and signed off beforehand].

LPV Signaller

Accurate log-keeping is a legal requirement; log-keeping errors also result in members being over-or under-charged which is bad for the member or bad for the club. Ensure legibility – someone will have to transcribe this log into Logomatic. Try to keep log sheet slightly ahead as gliders and pilots assemble ready to fly and maybe write the glider type in the margin ready**. Only club members (SUGC & SGC), temporary members or reciprocal members may fly** and you should check this. There is an alphabetical list of club members taped to the LPV desk. Others must fill in an application form. Use the printed sheets -off above/left for names and aircraft references.

- Radio communicate with "Shalbourne Winch" under your call sign "Shalbourne Base".
- Pass in and out any messages e.g. "Pilot please lay off to the [east/west]"
- Ensure you have unobstructed view of ground controller.
- When a canopy closes and the ground controller is ready to apply the cable, call:
- "Shalbourne Winch. Launching [type of glider]; [1or2] pilots, on ["field/"road]-side cable." The message MUST BE READ BACK by the winch driver before you signal by lights.

THE GROUND CONTROLLER IS IN CHARGE OF THE LAUNCH. The LPV signaller is a relay for them. Operate the toggle switch in exact response to his/her signals for "Up Slack/All Out/Stop". Some winch drivers may ask you to radio-call "up-slack" and "all out" as well as signalling, particularly when the sun is in the same direction as the launch point. But you must have secure and reliable signal communications – do not launch if communications are suspect.

> [Anyone can call STOP and you should respond by pressing the stop button immediately and also call "STOP" over the radio.]

Hold the All Out switch until the glider is high enough for the winch driver to see it.

Immediately log the take-off time based on the clock on the desk (not your watch). Log landing times as they occur, taking care not to miss them due to distractions. This log is a legal requirement, and the basis for calculating members' monthly flying fees. It is very easy to be distracted and fail to log a glider landing time: this needs vigilance.

Meeting & greeting visitors is also very important for the club, but you must **prioritise the legal and safety tasks** described above. Therefore, at busy times it is best to delegate; ask someone else to do the meeting and greeting and form filling.

Ensure that visitors are welcomed, looked after, and briefed on essential airfield safety. Non members wishing to fly with an instructor must fill in BOTH SIDES of the temporary membership application form. Provide the safety briefing for them to read. Explain as required. Arrange weigh-in with parachute. Name(s) go into the "wish to fly" list. Receive any pre-payment voucher and write the details in the flying log. If cash payment made, put cash in an envelope write details on the envelope and place in the black cashbox on the LPV counter.

Likewise, for reciprocals -members of other clubs.

Launch-Point Caravan Putting Away: Reverse of setting up. Final checks: **C**ooker switch off; Mobile radio in its charger (check for orange light) in overhead locker; Switch mobile phone off leave but plugged in to charger. Return parachutes to clubhouse cupboard. Park LPV in front of hanger. Keep the LPV on the gravel road in winter as it will sink into wet ground by the clubhouse.

GLIDER GROUND HANDLING

Only Full Club Members (SUGC & SGC), with a current driving licence may drive club vehicles; members without a licence need to be approved after showing that they can safely control the manual and/or automatic vehicles. The risk of collision with bystanders, parked cars and gliders is higher than normal due to congestion, distractions, and skiddy grass; so greater than normal care and attention must be applied to this role. Avoid reversing unless absolutely necessary in which case have someone outside the car watching. Always check right round the rear of gliders, winches LPV, tow-out trailer etc before starting to tow anything.

Vehicles should be checked daily: Tyres; engine oil, fan-belt, radiator water, diesel. Once DI'd, the vehicles should be started and left running for at least 20 minutes, bringing the engines up to a reasonable working temperature. Use common sense during the day to leave them running occasionally to keep batteries topped up.

The sky must be carefully scanned before driving into the landing area. Even if all our gliders are on the ground, an aircraft from another club could be on approach. If in doubt hug the hedge.

Do not approach a glider at speed; aim off as you approach it. Assume traction/braking is limited. Best practice is to drive right round the glider to U-turn the vehicle.

The priority is normally to retrieve any glider that is obstructing launches. i.e. lying in an arc 45º either side of straight ahead w.r.t. the glider to be launched (this arc is a guide - not absolute - and the launch controller and pilot may widen it further particularly on the downwind side, at the pilot's discretion.) It may therefore be helpful to tow the glider towards the side of the field initially.

Towing a glider; BGA guidance

- Confirm the undercarriage is locked down
- Close and secure the canopy
- Check any towing equipment is fitted correctly
- Ensure that all involved including the driver can hear instructions or warnings
- If using a rope to tow, ensure it is long enough to avoid collision on an overrun or other eventuality
- Drive at a slow walking pace

Three retrieval methods are used at Shalbourne:

1. Pushing & pulling by hand. When the ground is dry, the retrieval is downhill, the glider is light and/or no vehicle available, pull the glider by hand. One person must hold up a wing and must steer the glider. One person must be in a position to slow and halt the glider, and so needs to be in front of the wing. Do not push and pull on weak areas such as trailing edges of wings, elevators, rudders, and no hands on the canopy. Steel frames & handles, leading edges near the fuselage and seat belt straps are suitable. In windy conditions, to apply a rudder clamp.

Make sure the tail wheel is on the ground when passing through the hangar entrance because a fin collision can easily occur. The fin is unusually tall on the Puchacz gliders.

2. Vehicle and tow rope. The glider is towed nose-first by a rope with a ring in either the winch launch point or the aero-tow point. One person must hold up a wing. One person must be in a position to slow and halt the glider so needs to be in front of the wing. The wing-person must steer the glider and the vehicle driver needs to steer accordingly keeping to walking pace using low ratio second gear.

Have a rudder lock in each truck, and use them on windy days - otherwise you might break something when the rudder slams over.

Similarly when turning the glider on the ground, turn it nose-through-wind, ie for the sailors, tack rather than gybe.

After reaching the destination, reverse by a metre to take tension off the rope and allow the walkers to unhitch the glider. Coil the rope ideally from the car end and hook it over the rear wiper blade. **Do Not Trail The Rope.**

3. Vehicle and Tow-out gear. The retrieving vehicle will need to load up the necessary items as appropriate for the glider to be retrieved namely:

Rudder clamp, Wing dolly, Towing bar, Tail dolly wheel (on some gliders)

10 mph max. Slow down even more over bumpy terrain. Keep well clear of fixed objects, other gliders, vehicles, people etc – don't forget your combination is nearly 20m wide. If a potential conflict with a landing aircraft arises, gently stop, exit the car, hold or latch the door open and stand by the vehicle. DO NOT DRIVE A GLIDER BACKWARDS ON TOW-OUT GEAR.

Winter Driving: When the field is wet, traction will be limited and slipping tyres do immense damage to the airfield. It is easier to drive your car up the airfield if you keep to the middle and away from the short grass on the west side. As a general rule, to avoid making potholes, wherever possible please drive on green bits and not on brown bits. Please only drive 4WD vehicles (with the 4WD selected !) when on the hangar apron and other muddy areas.

Be smart when using 4WD. It's to be preferred on wet grass where it does far less slipping damage than 2WD. On the other hand do not use 4WD on dry or hard surfaces, where the transmission can 'wind' up and quickly get knackered.

Glider Retrieve after Cable Failure Depending on wind strength and direction, the fences either side of the field can easily snag a cable especially the long cable arising from simulated cable failures. Ideally, simulated cable break tests will be on the second cable of a pair, to allow more time for cable retrieval if needed. Instructors should warn the ground crew of possible simulated cable failures but this is not always possible without alerting the P2. It can also be anticipated to some extent by knowledge of what stage the P2 is at, training-wise. For cable failures it is advantageous to have TWO jeeps ready – one with all the glider tow-out gear pre-installed and one with the walkie-talking pre-installed ready to investigate the cable over the fence.

Parking aircraft; BGI guidance

Gusts or strong winds can easily move, lift or flip gliders.

Always leave unattended gliders with the canopy shut and a tyre on the upwind wing and possibly the tail; tyres to be fully resting on the wing, not half on the ground.

(In strong winds or if a squall is expected, turn the glider crosswind, with a slight tailwind component; it will need two or three tyres on the wing, one on the downwind side of the tail and one under the nose to keep the tail on the ground.)

Packing in a hangar can easily result in 'hangar rash', Care should be taken to adequately brief those moving the aircraft and checking clearance.

When moving a glider near an obstacle, steer by holding the wingtip nearest the obstacle. If in doubt, ensure someone is checking clearance at BOTH wings.

Rolling Tyres downhill on an airfield is an absolute No-No.

The Puchacz gliders have high tail rudders whose bearings are easily damaged if it hits the hanger door frame. So:

- Put a rudder clamp on when putting it away. AND
- Have someone on the tail pushing down.

LPV Towing

As for glider towing it is necessary to limit the speed to 15 mph and even slower over bumpy terrain because there is a lot of equipment inside which is not fixed in place.

Winch Towing

Because of the weight of the winch and the geometry of the tow attachment especially on the automatic vehicle, do not make tight turns when towing the winch. Make allowances for this especially when setting up the winch location in the morning and returning to the winch shelter in the evening.

CABLE RETRIEVING - Winch Cable Retrieval/re-laying

The winch driver role is restricted to experienced (solo) pilots requires and not part of this doc. Less experienced club members may assist the winch driver by cable retrieve driving in order to speed up the launch rate. Remember that the Winch driver is responsible for correct laying of cables and may refuse your offer to drive the cable retrieve especially if you cannot show you are trained & competent.

Detailed instructions for cable retrieving are available on the club website
http://www.shalbournegliding.co.uk/members/wiki/index.php5?title=Winch_Driving

and should be read by anyone aspiring to offer to help by cable retrieve driving because the safety procedures may not be fully understood and appreciated merely by copying what others do. Training by 'shadowing' is necessary in addition to reading and understanding the instructions.

Cables being pulled by a vehicle have the potential to cause severe injury so apply great care and caution to this role. Double check: NEVER ASSUME. Use rear-view mirrors. Pull away slowly.

The hand-held VHF radio should be available in the cable retrieve vehicle. [It's not much use in the LPV overhead locker!]

The objective is to lay a pair of cables side by side in a straight line with continuous good separation (~2 m) from the winch to the launch area, taking care not to cause either cable drum to over-run and spill loose cable into its safety cage. It is best to use a jeep with an automatic gearbox to provide instant gear changing when pulling the cables back.

It is usual to retrieve two cables that have been winched in fairly close to the winch. Do not approach the cables until it is clear that the winch is shut down and the winch driver has clearly indicated that it is OK to approach. Drive the recovery vehicle (jeep) in front of the winch so that the trailer is approximately on the straight line between the winch and the launch area in the distance. It is permissible to drive carefully over a cable but not over a weak link strop or drogue. Hook the weak link cord onto the tow out trailer making sure the cables are not crossed between the winch and the trailer.

Confirm with the winch driver that the drum brakes are applied and both drums are de-selected. Carefully take up slack on each cable before gently accelerating. Tow out at 15mph in a straight line by taking a tree-sighting on the horizon. [The gliders will probably dip below the horizon at some stage of the retrieval]. Slight steering off-set may be necessary in damp conditions to overcome the sideways drift where the field slopes left or right.

The rotational inertia of each cable drum is very high and they will continue to rotate in spite of the brake being left on the ~10% setting. Therefore, at any point in the tow out, including arrival, you should ANTICIPATE – and only decelerate gently, to prevent the cable drums from over-running. [However normal emergency braking must be applied to avoid collision, e.g. with a landing glider coming at you head on.]

If you have to stop a retrieve before reaching the launch point, DO NOT restart until you have instructions to do so in case the cable has over-run at the winch. Call by radio, mobile phone, or maybe light signalling. If in doubt, unhook the trailer and drive to the launch point or winch for instructions.

If a cable tow-out weak link breaks at the trailer, an inspection at the winch will be necessary to find the cause. DO NOT just replace the cord and drive on.

After the cables have been hooked, you must do a visual confirmation that BOTH cables are unhooked before driving off because serious injury and damage can be done by a moving cable. Return to the winch without interrupting a launch. The optimum time to return is just after the first glider has launched, keeping behind it and watching for the falling cable especially in the event of a launch failure. General airfield speed limit is 30 mph.