

## Overview

The operation here at the Borders Gliding Club is very much a team effort with all of our team being volunteers, and you will also have your part to play in keeping the operation both safe and efficient. All of your flying training will be carried out by BGA rated instructors under the guidance of our Chief Flying Instructor. The instructors will also help to train you for the ground operations, and to complement them we have a small team of experienced club members who are able take you through the training required to become an effective part of the ground operation.

Initially you will be asked to help with the moving of gliders too, from and about the launch areas, soon you will become part of the launch and retrieve team. Here under the guidance of the duty instructor or their duty pilot, you will assist the pilot with their pre launch checks, hold the wing or attach the rope to a glider about to launch, signal and keep the log, or retrieve a glider that has just landed.

There is much to learn, the training is above all to make sure that you become a safe part of our operation, with the added bonus that you will also be able to make the operation more efficient. We have a large membership and until the other members know you they may well assume that you know what you are doing, and ask you to help them with a task. It is important not to attempt a task until you have been properly shown! If asked and you are not qualified for the task then please say that you need to be trained first.

Most of the training is based on common sense along with British Gliding Association standard operation procedures, plus some specific rules applicable to our site here at Milfield.

The intention of these ground-training notes is therefore to give you a point of reference to use before and during your training with the ground trainers, and of course as an aide-memoire after your training.

1. ....General Safety.
2. ....Hangar Operations.
3. ....Aircraft Ground Handling.
4. ....Launch Point Operations.
5. ....Log Keeping and Radio.
6. ....Glider Retrieving.

## General safety

This is a common sense part, and we will try to look after you at all times, but please remember that you are very much your own safety manager.

As with all airfields we operate a hangar side and an airside and when we are flying the airside is not open to the general public. We keep the operation safe by allowing only trained club members free movement on the airside and restrict vehicle access where possible. If you take your vehicle onto the airside then this will be at your own risk, and please check your insurance, as you may well not be covered whilst airside.

At Milfield we operate from different launch points depending on the wind direction. When you are airside it is very important that you are always aware of any aircraft that are either about to take off or land, to do this you must always make a good look out all around and above you before you move about on the airfield. When driving between the launch points keep your windows open and stop regularly to assess what is going on around you, remember to expect aircraft to land from any direction. If you see an aircraft about to take off or land then stop your vehicle as close to the edge of the airfield as possible and wait until the aircraft movement is complete. Always walk or drive behind a parked aircraft never in front, and watch out for the glider wingtips, as they are easy to trip up or drive over. If you see a glider with its wings level then assume that it is about to launch.

The tugs are used to aero tow launch the gliders, and when they are on the ground they can be very dangerous, never touch the propeller at all and never walk in front of the tug when the engine is running. When you see the tug landing remember that it will have 150 feet of rope trailing behind, so wait until the tug and rope are well clear before you assume that it is safe.

**This is not an exhaustive list and the ground team will cover all of the general points with you but please try to stay safe at all times by**

- ❑ Keeping a good look out
- ❑ Walk or drive only in the correct places
- ❑ Stop if you see an aircraft approaching
- ❑ Pass behind gliders
- ❑ Watch for gliders that are wings level assume they are about to launch
- ❑ Never drive over ropes
- ❑ Keep clear of the tugs propeller
- ❑ Stay behind the tug

If you have any doubt at all then there is no doubt!

**STOP**

Wait until you are certain that it is safe.

## **Hangar Operations**

The hangar has to be unpacked at the start of each flying day, and repacked when flying has finished. This must only be done under the supervision of the DI or his assistant.

When walking in the hangar take care, as it is easy to either trip up on a wingtip on the floor or walk into a wing that is at head height, never jump over a wing or fuselage, but go around each time.

All of the kit must be inspected; this includes the gliders and ground equipment. The tractors must be checked for any sign of leaks underneath, and it is important to check the oil, coolant, fuel and the condition of the tyres. Before driving any of our ground equipment you must be checked out. Before driving anything in the hangar make sure that you have someone watching you from the outside as it is very easy to run into a parked glider, do as they instruct and stop as soon as you are told to.

The gliders must also have a daily inspection, it is important that this must only be carried out by a qualified club member. The inspections are best done outside the hangar but before moving the gliders out they can be fitted with their batteries and parachutes. The parachute storeroom is on the same side of the corridor as the toilets, and as it is heated please keep the door closed at all times. The club parachutes are kept in large plastic boxes, with the identification letters of the relevant glider on the box. Check that the parachutes are not due to be repacked, there is a label on each parachute with the repack due date; if in date place them in the cockpit of the glider.

Most damage to our gliders is done while in or near the hangar! So when moving them about in the hangar we must take great care. The section on aircraft ground handling covers how to safely handle the gliders, please read this before attempting to assist with the movement of the gliders.

When moving aircraft, nominate only one person to be in charge of each aircraft to be moved, and act promptly on his/her instructions.

On gliders only one wingtip is to be held at any time, but as you may need to change the tip being held a number of times it is important that the following system is used. When changing wings the new tip holder takes the tip and calls out "my wing" the original tip holder then calls out "your wing" before letting go of the tip.

The 2 seat gliders only just fit through the hangar entrance so please make sure that the doors are fully open and that somebody checks each tip to see that it is clear.

The tugs should only be moved under the control of a tug pilot! The tugs and motor glider are fabric covered and therefore quite fragile when being ground handled, use only the struts above or below the wing to pull or push on and listen for any instructions that the tug pilot is giving.

## **NEVER USE THE PROPELLER TO PUSH OR PULL ON**

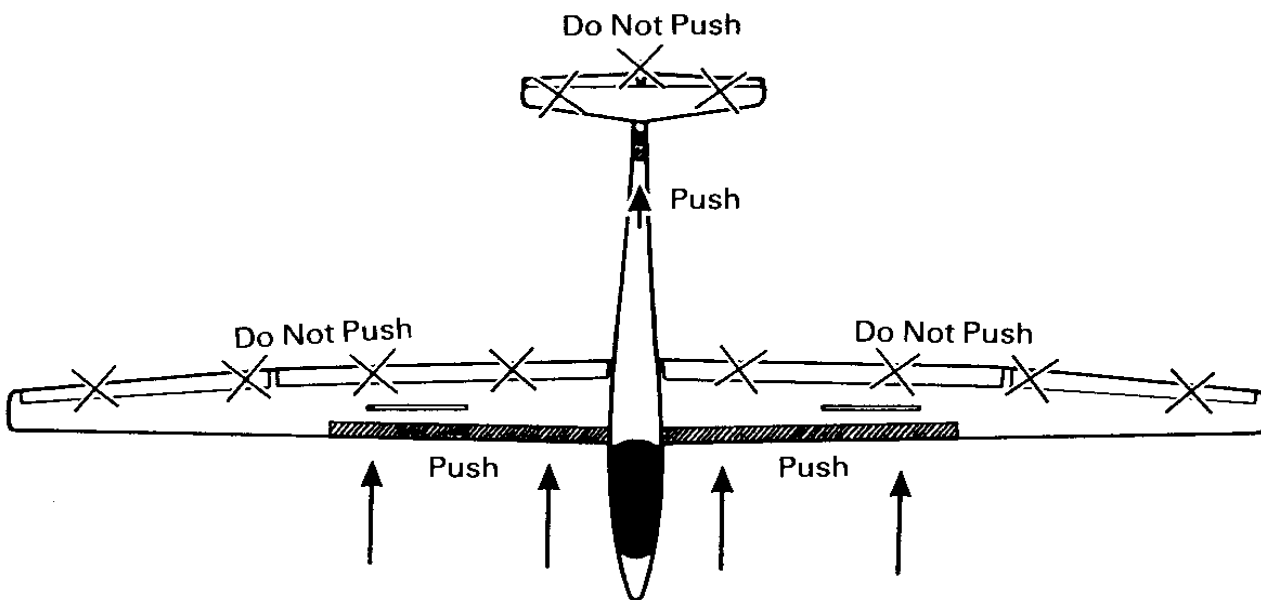
### **Remember when working in the Hangar:**

- ❑ Watch where you step and never jump over the gliders
- ❑ Keep a good look out at head height
- ❑ Check for leaks, oil, coolant, fuel and tyres before starting engines
- ❑ Never drive without being watched
- ❑ Only one person in charge of the glider
- ❑ Use correct wing change procedure
- ❑ Careful where you push on the tug
- ❑ Leave aircraft parked safely

## Aircraft Ground Handling

Gliders may appear elegant in the air, but on the ground they are heavy and require much ground handling in order to prepare them for a launch. They can withstand great aerodynamic loads imposed in flight and quite heavy loads during take off and landing but they are not so well designed for any mishandling they may get while on the ground. It is therefore important that you learn just how to handle the gliders while on the ground.

There are two main types of glider in use at Milfield; wood/fabric and fibreglass. Both types are to be found amongst the private fleet, whilst our two seat training gliders and the Astir single seater are of fibreglass construction. This glass fibre type of glider is much stronger on the ground than the older wooden types. All gliders need to be handled correctly and as a general rule it is easier to move a glider backwards, with the leading edge of the wing close to where the wing meets the fuselage being the best place to push. Never push on the control surfaces, tail plane area or the canopy!



Whenever the glider is being moved, someone must hold onto one wingtip. This is to control the direction by steering the glider and to ensure that the glider cannot be blown over by a gust of wind. The into wind wing must always be held, change wings if necessary and when changing wings use only the correct handover routine. Whenever you are moving a glider in strong winds make sure that the rudder cannot be blown from side to side, get someone hold it if required or get somebody to sit in the cockpit to hold the controls.

Canopies are easily damaged and expensive to repair. Never use the canopy to push on, and never leave the canopy open when the glider is unattended always close and lock the canopy. Avoid reaching through the direct vision panel to close the airbrakes or release the cable, and never reach through the direct vision panel when the glider is moving. Never lift the canopy by the edge of the DV panel.

Manhandling is the preferred method when moving short distances or downhill, and it is always preferable to move the glider backwards. If a tailskid is fitted it must be lifted clear of the ground, use the handle provided or if a tail dolly or removable wheel is available then use this. On gliders fitted with a nose or tail wheel do not attempt to turn the glider with the this wheel still on the ground, make sure that you lift the wheel clear of the ground during the turn or better still use a tail dolly.

Towing is the best method when the glider needs to be moved over a greater distance or uphill such as from the hangar to the launch point.

Safe towing needs the following points to be observed: The towing rope should be fitted with correct glider rings and be not less than one wing's length and should preferably be a wingspan in length. This will keep the glider clear of the tow car if it is turned while on tow. Always attach the rope to the winch hook of the glider, where fitted in preference to the aero tow hook. This is to ensure that if the glider is ground looped or overruns then the rope will back release avoiding further damage.

Always have a wingtip holder and a minimum of at least one more crewmember walking in front of the wing to act as a brake if required. The tow car driver must have his window down and radio turned off and be able to stop on command at all times. They must keep a constant watch on the wing tip holder. When releasing the rope stop the car and glider first and then back release the rope manually, do not reach through the DV panel to pull the release knob.

Gliders should always be parked so that they are secure and stable and cannot be blown over or damaged by a gust of wind. The built in stability of a glider will cause it to weathercock into wind, the wings will generate lift and it is then possible for the glider to blow over or run down any slope on its own. To avoid this happening please take the following precautions at all times:

Never leave an unattended glider parked facing into wind! They should always be parked with one wing into wind, and with the airflow from slightly behind the trailing edge. In normal wind conditions the into wind wing on a fibre glass glider can be left up as this will help to steady the glider, but in gusty wind conditions the into wind wing must be held firmly on the ground. Do this by using pickets such as tyres or ballast that cannot damage the wing tip, make sure that the tyre is fully on the wing tip. Take care when selecting a parking place so that the glider will not be able to run away on any slope.

Gliders with their centre of gravity over or in front of the main wheel sit nose heavy and can easily weathercock. So at all times when these types are left parked unattended in windy conditions the nose must be wedged up to keep the tail firmly on the ground. Use a good size tyre to do this and place another tyre behind the main wheel and another on the downwind side beside the tail wheel. If you cannot guarantee the safety of a glider then do not leave it unattended in windy conditions. Other tail heavy gliders that sit firmly on their tail such as the clubs Astir can be left with the into wind wing up, but check with a private owner before leaving their glider parked. Remove all tail dollies and removable tail wheels and in windy conditions it may be wise to lock the airbrakes in the open position. Make sure that the canopy is closed and locked and that the DV panel is closed.

### **Some of the main points when ground handling are: -**

- ❑ Always push or lift a glider by the correct handling points.
- ❑ For short distances push the glider backwards.
- ❑ For longer distances tow the glider with the rope attached to the winch hook if fitted.
- ❑ Have enough people on the glider to stop it from running away or blowing over, and have the into wind wing tip held.
- ❑ Never push on a canopy.
- ❑ Only reach through a DV panel to open or close the canopy lock, and make sure that the canopy is closed and locked whenever you leave a glider.
- ❑ Park a glider in such a way that it cannot be blown over or moved by the wind.
- ❑ If left unattended in windy conditions a glider must be parked with one wing into wind and supported to stop the glider from weather cocking
- ❑ A nose heavy glider must never be left unattended in windy conditions without the nose being supported to keep the tail firmly on the ground.
- ❑ Get to know which gliders need a tail dolly when being moved.
- ❑ When turning gliders make sure that only the main wheel is in contact with the ground.

### **Launch Point Operation.**

The overall responsibility for our flying operation at Milfield belongs to our Chief Flying Instructor, but on a daily basis this responsibility is taken over by the Duty Instructor and their word in any operational or flying matter during that day is final. As the D.I. will spend most of their duty flying, then the club appoints a Duty Pilot who runs the ground operation, and also manages the flying list. All of our duty pilots are experienced solo glider pilots, who are fully qualified in every aspect of the ground operation.

The launch point is one of the most hazardous areas on the gliding field, with a number of risks. As you will be involved with the launch point operation from an early stage it is of paramount importance that you are aware of the safety precautions which need to be observed at all times. Your trainers will guide you through all of the operations that are needed at the launch point, but you you will not be allowed to undertake the role of Launch Controller until you are fully competent in all aspects of the launch point operation.

The launch operation is very much a team effort and to get one glider in the air when we are launching we need six people on the ground, the duty pilot. manages this ground team. It is therefore important that before we undertake a launch there must be a duty pilot or another qualified person appointed by the D.I. to take charge of the operation.

If there are plenty of people available the glider pilot can prepare for the launch while parked and then be pushed out with the glider once it is safe to do so. The rope is attached to the rear of the tug with a weak link fitted at both the glider and the tug end. The person who goes to pick up the rope assumes the role of the launch controller and must make sure that the airspace around the launch area is safe before starting the launch. The rope must be checked for knots or damage, and the integrity of the weak links. If any knots are present then they must be removed before it can be used. Be careful as the rope can burn your hand due to friction. Once the rope has been confirmed as satisfactory to use, the launch controller waits for the instruction from the pilot to attach the rope. Take care as some gliders are fitted with both winch and aerotow hooks, and you will cause the pilot possible control difficulties if you attach the rope to the winch hook by mistake. If unsure check with the pilot.

The wingtip holder normally lifts the upwind wing of the glider taking account of any crosswind, and once the rope has been attached the launch controller confirms all clear above and behind, before moving into position behind the gliders wing to signal the launch.

The preferred method is to use the BGA signals relayed to the tug pilot by a forward signaller who is positioned well forward and out to the side of the tug. The signaller must be in a position to clearly see the launch controller and tug pilot whilst remaining safe at all times.

We use the following standard BGA signals. With the rope attached and the airspace safe the launch controller signals take up slack, by moving their arm to and fro below waist height, the tug pilot will move slowly forward until the rope is tight. Once all of the slack has been taken out of the towrope and with clear airspace the launch controller can then give the all out, by moving the arm to and fro above head height. The tug will start the ground run, which may be slow to start, the wing tip holder must be prepared to run with the wing keeping the wing level, until such time as the pilot establishes sufficient aileron control to hold the wings level. If there is any degree of crosswind, it is usual for the upwind wing to be held. However some gliders may have poor directional control and are liable to weathercock into wind, in this case the downwind wing must be held, so be prepared for the pilot to specify which wing they prefer.

During the take up slack phase the launch controller will constantly be checking for problems on the ground and in the air, and will stop the launch if a problem is identified. Remember that the motor glider operates from the airfield, so look out for this in the circuit in addition to the gliders and tugs when checking the airspace. The stop signal is given by holding both arms stationary and vertical above the head, at the same time calling out 'STOP'. Once the combination has passed the forward signaller, it is impossible to stop the launch, the tug or glider pilot will now make any decision to stop the launch if required.

Once the combination has taken off then it is important that the landing area is left clear at all times, if a glider lands and needs towing back to the launch point then ensure that this is done promptly, keeping as close to the airfield boundary as possible.

### **When on the launchpoint remember;**

- ❑ The Duty Pilot manages the launch point operation.
- ❑ Treat all ropes as live.
- ❑ Do not attach the rope to a glider until the pilot asks for the rope.
- ❑ Stand in the correct position to signal, you must be able to see and be seen.
- ❑ Check the circuit and sky before starting a launch.
- ❑ Use BGA signals only.
- ❑ Watch the rope during up slack and be prepared to stop the launch if you are not 100% certain that it is safe.
- ❑ Do not stop the launch once the combination is airborne.
- ❑ Keep landing areas clear.
- ❑ Retrieve gliders that have landed as soon as possible.
- ❑ Try to keep the launch rate high but above all keep the launch operation safe!

### **Log Keeping and Radio**

It is a BGA regulation that every flight undertaken from the club must be logged, and for this we have a log keeper. A record must be made of the glider type and identification details along with details of the pilot(s), the time of the launch and the landing. Keep an eye on the launch point at all times and as you see the glider being made ready to launch start to fill out the log details.

The log sheet should be filled in while the glider occupants are preparing for the launch leaving only the launch and landing times still to enter. If you are not sure of the glider type or crew details then ask the duty pilot to get the details.

You may be asked to man the ground to air radio, this may seem daunting at first, you will soon become comfortable with this part of the operation. We use standard radio procedure, which requires the use of the phonetic or ICAO alphabet, so this is something that you will need to learn. Any aircraft calling you will use their aircraft identity letters or numbers such as “Juliet Alpha Delta” or “Three Two Two”, you must use the aircraft identity letter or number to call the pilot.

The logs are a record of the days flying and are not only needed by the treasurer to generate the flying accounts, but in the event of an incident they will be required by any inquiry so please write clearly.

Log keeping is a very important part of the ground operation and you are a vital link in the chain, as a bonus the control van can be a cosy place to be during the winter months.

### **When you are the log keeper:-**

- ❑ Write clearly
- ❑ Watch the launch point and prepare the log sheet as the glider is made ready to launch
- ❑ Know the BGA signals
- ❑ Once the glider is launched double check that you have recorded all of the details
- ❑ Watch the landing area and log the landing

## **Glider Retrieving.**

Details of the launch and landing areas will be given to you at the morning briefing by the duty instructor. Once a glider has landed it should be retrieved as soon as practicable. Keep a good lookout for other gliders that may be in the circuit or landing before walking over to the glider. Ensure that you work by all of the ground handling rules that were covered in a previous chapter, and remember to take the tail wheel or dolly with you if the glider needs one.

If there are gliders waiting to launch then retrieve the glider along the edge of the landing area and not directly towards the launch queue. Once you are in a safe position, i.e. outside of 45 degree line of sight of the pilot waiting to launch, you may see the wing of any glider waiting to be launched go level, assume that the launch will now take place and stop your retrieve making sure that the wing nearest to the launching glider is on the ground.

When you arrive at the launch queue do not cross any ropes and move behind the launch queue rather than in front of it. As you approach the launch queue make sure that the glider is moving at a speed where is possible to stop it immediately, quite a lot of damage can be done if two gliders collide even at quite a slow speed!

For longer retrieves it is better to tow the glider and in the main this will be the case when training is taking place. You must be checked out to drive each club owned vehicle, and we have a minimum age of 16 for all of our drivers. Before setting off to retrieve check that the towrope is secure and will not fall and foul the wheels, and that you have the tail dolly or wheel for the glider if applicable

Keep a good lookout for other landing gliders, and remember to slow down as you approach the glider and aim to turn round to point in the direction you want to go with the tow vehicle just short of the towrope length away from the nose of the glider. If the glider has not yet been turned then a good retrieve driver will allow for the position of the glider when he positions the tow vehicle, this will come with practice. Put the tow vehicle into neutral, and wait until the glider has been attached to the rope and the pilot signalled up slack before you engage gear again. Move off smoothly and then try to drive at walking pace, if you go too fast then the pilot will soon let you know, and allow for the fact that the “trailer” you are now towing is some 15m wide.

Keep a good lookout ahead and pay attention to any launch queue, if you see wings level then stop until the launch is complete, also watch the wing tip holder for signals and if you hear **STOP** then do just that without hesitation.

It may not be possible to tow the glider all the way to the launch point the last bit may have to be done by hand. Stop and confirm with the glider pilot just where they want the glider, it may well need to be stacked rather than back at the launch queue.

Before attempting to drive away wait until the pilot confirms, by calling “clear” that the glider has been released from the rope, and then when you have finished the retrieve coil the rope up and stow it safely on the vehicle.

We cannot operate without launch and retrieve crews, so take your turn as required, for the next time you fly you will be relying on a launch or retrieve crew to come and get you when you land.

**Whenever you are involved with a retrieve:-**

- ❑ Retrieve gliders promptly
- ❑ Make a good lookout before going onto any landing area
- ❑ Short retrieves by hand, for longer retrieves use a tow vehicle
- ❑ Have enough crew to stop the glider running away when towing downhill
- ❑ When towing wherever possible use the winch hook to attach the rope
- ❑ If gliders are waiting to launch then retrieve along the edge of the landing area.
- ❑ If you see a wing up in the launch queue then stop and place your nearest wing on the ground
- ❑ Use tail dolly's and wheels if required
- ❑ Tow at walking pace only
- ❑ Approach the launch queue slowly
- ❑ Wait until you are told that the rope is "clear" before you move away

*These notes should help you understand the reasons behind the ground training, and remember our training team are here to help you put the correct procedure's into place. It may seem daunting to you at first, but you will soon gain the experience and get comfortable with what we are asking you to do, after all one of the first things that I had to learn to do was how to push a glider correctly!*

*Bill Stephen  
Chief Flying Instructor*



*See if you can spot the deliberate mistake in this picture?*