

THE BHPA TECHNICAL MANUAL

WARNING

1. Hang Gliding, Paragliding and Parascending are adventurous aviation sports which include an element of risk of injury to participants.
2. This Manual is not a do-it-yourself guide and the information contained within is intended to supplement training received and carried out under the control of persons properly qualified by the BHPA.

This manual is published by the British Hang Gliding and Paragliding Association (BHPA), 8 Merus Court, Meridian Business Park, Leicester LE19 1RJ. Tel.0116 289 4316

It is a modern treatise comprising information previously contained in the School Proprietor's Manual (produced by the former British Hang Gliding Association) and the Operating Procedures for Ascending Parachutes, which was in turn superseded by the Operations Manual for Paragliding, each of which were produced by the former British Association of Paragliding Clubs. All three of these reference works are superseded by this manual but remain the property of the British Hang Gliding and Paragliding Association.

The Manual is a living document which The Association will strive to keep current; any comments or suggestions for improvement and/or amendment are welcomed.

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The Technical Manual

The BHPA Technical Manual (TM) is the primary reference manual for operating the various disciplines of the sport safely and effectively and is based on experience gained over many years.

Its purpose is to provide a single, central technical information resource for the Association and its licenced members.

As the Technical Manual is now an electronic document, the posting of amended sections to all registered licenced members has been withdrawn. Instead, an electronic copy of the entire Manual containing the latest amendments will be available to download. Members will be notified through Skywings magazine each time an amended version of the Technical Manual is available. Registered licenced members are to familiarise themselves with the amendments listed on page iv.



Throughout the text of the manual certain procedures which are deemed to be paramount to safe operating are identified by this symbol.

TERMINOLOGY

Throughout the text of the manual, the words “must” and “shall” are used to indicate a mandatory requirement. The words “expect” and “should” are used to indicate strong obligation. The word “may” is used to indicate discretion.

GENDER PROTOCOL

Purely to aid clarity and simplify the text the identification of gender is by means of 'he, him, his', etc. All interpretation is to be taken as including all genders and sexual orientations.

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Chapter pages are numbered in the top right hand corner.

Acknowledgements

This manual was initially compiled and edited by Tom Beardsley BA, the Safety & Development Officer who, on behalf of the BHPA gratefully acknowledges the work of the numerous authors and contributors to this and the preceding manuals.

Items revised, deleted or added in this Amendment No. 15 (November 2015).

Section / Chapter No. / Item No.	Page	Title of revised Section or Item <i>(Untitled Sections or items are described in this column in italics)</i>	Amendment type
-	ii	TERMINOLOGY	added
1.2.7	6	The Examination and Inspection Panel: Terms of Reference - Inspectors	amended
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1.3.6	4	Personal Log Books	amended
1.3.18	6	Log Books for licensed activities	added
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2.1.6	7	Instruction in schools: Repetition	amended
4.1.4	2	Procedures for Examination and Assessment: Assessment	amended
4.1.5	2	Annual Renewal: Instructors and all discipline specific Coaches / Senior Coaches	amended
4.1. Appendix A	-	OBTAINING A LICENCE IN ALL DISCIPLINES: EXAMINATIONS	amended
4.2.7	12	The Dual Pilot: Assessment / Examination	amended
4.3.1	2	The Air Experience Instructor: Assessment / Examination	amended
4.3.2	2	The Senior Air Experience Instructor: Becoming a Senior Air Experience Instructor	amended

SECTION 1 POLICIES

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1.1.1 **Organisational Outline**

The British Hang Gliding and Paragliding Association (BHPA) is recognised by the appropriate government bodies as the UK National Governing Body of the sports of hang gliding, paragliding and parascending.

The objectives of the BHPA include promoting high standards of safety within the Sport through pilot and Instructor training and qualification schemes, airworthiness schemes and the dissemination of safety information. The Executive Council of the BHPA delegate these tasks to the Flying and Safety Committee (FSC).

Safety and training at school and club level are normally the responsibility of the Chief Flying Instructor or the Chief Coaches respectively: at the National level the BHPA's Flying and Safety Committee (FSC) set the standards, monitor activities and ensure that the Association's aims are being met.

Conventions

As members progress their flying expertise they gain awards through the Pilot Rating Scheme; instructors progress in a similar manner. All such awards are 'qualifications', but to differentiate between the schemes the FSC has decided that any member who 'does something to another' (eg trains directly) needs to be LICENSED accordingly; whereas those who wish to progress on a personal basis do so by achieving RATINGS. Hence all

Instructors, Coaches, Operators and Dual Pilots are licensed, and it is to those members that this Manual is directed.

1.1.2 **Clubs**

All groups registered with the BHPA are 'Clubs' although the facilities offered by each fall into two distinctly separate categories as shown below. The role of each is the same - to provide a hang gliding / paragliding / parascending discipline to the best benefit of its membership.

The School

Schools concentrate on providing instruction for the ab-initio enthusiast and also provide continuation training for qualified pilots. Such instruction or training is for remuneration or other consideration. Under the close supervision of qualified Instructors the student is provided with the necessary tuition to become a competent, responsible and safe pilot of a flying craft.

The Club

Clubs, being non-profit entities, cater for the needs of qualified pilots by securing flying sites, producing site guides and regular newsletters, organising social and informative evenings and events, etc. Clubs are encouraged to offer a level of continuation training for qualified pilots through the medium of Coaches.

1.1.3 Instructors

The Chief Flying Instructor and his team of Senior Instructors and Instructors provide tuition within registered schools for ab-initio and qualified members. Instructors may also hold any coaching license but all training activities carried out in an activity (Hang gliding, Paragliding, Parascending) in which he is a licensed Instructor are subject to the Instructor level of Indemnity cover.

1.1.4 Coaches

The Chief Coach and his team of Senior Coaches and Coaches provide continuation training within clubs for qualified pilots on a voluntary basis without remuneration or other consideration. Coaches may also hold any Instructors License but all training activities carried out in an activity (Hang gliding, Paragliding, Parascending) in which he is a licensed Instructor are subject to the Instructor level of Indemnity cover.

1.1.5 Publications

The BHPA has produced informative publications – ‘The Elementary Pilot Training Guide’ and ‘The BHPA Pilot Handbook’ - designed to supplement the practical training given by instructors. Whilst primarily intended as reference documents for students and pilots, these publications are complementary to the Technical Manual and every BHPA Licensed Instructor is expected to be familiar with them.

1.1.6 Geography

The British Hang Gliding and Paragliding Association is primarily focussed on the governance of these sports in the United Kingdom of Great Britain and Northern Ireland. It also seeks to serve the needs of all Britons, wherever domiciled, as far as is practicable. Furthermore, it is willing to offer membership to any person of any nationality, wherever domiciled, who is willing to be bound by the BHPA rules.

Members based abroad:

The BHPA accepts membership from persons of all nationalities, wherever domiciled. (Nb. Persons domiciled outside the UK have no benefits under BHPA insurance, except when flying within the UK. See Section 1: Chapter 3: Appendix B.)

Clubs based abroad:

Schools: The BHPA accepts the registration of schools based abroad that comply with all BHPA standard requirements and additionally:

1. Are located in Europe*.
2. Have their own insurance cover for all their training and third party liabilities.
3. Comply with local regulations, particularly with respect to accident reporting.

Recreational Clubs: The BHPA does not accept the registration of recreational clubs based abroad, except those for serving members of HM Forces.

• means:

Albania	Belarus	Channel Islands	England
Andorra	Belgium	Corsica	Estonia
Armenia	Bosnia and	Croatia	Finland including
Austria	Herzegovina	Cyprus	Lapland
Azerbaijan	Bulgaria	Czech Republic	France
Azores	Canary Islands	Denmark	Fuerteventura
Balearic Islands	Cape Verde	El Hierro	Georgia

Germany	Macedonia	Norway	Serbia
Gibraltar	Madeira	Poland	Sicily
Greece	Majorca	Portugal	Slovakia
Hungary	Malta	Republic of	Slovenia
Ibiza	Mediterranean	Ireland	Spain
Iceland	Islands (not	Romania	Sweden
Isle of Man	otherwise	Russia west of	Switzerland
Italy	specified)	the Ural	Tenerife
La Gomera	Menorca	mountains	Tunisia
La Palma	Moldova	(known as	Turkey
Lanzarote	Monaco	European Russia)	Ukraine
Latvia	Montenegro	San Marino	Vatican City State
Liechtenstein	Morocco	Sardinia	Wales
Lithuania	Netherlands	Scilly Isles	
Luxembourg	Northern Ireland	Scotland	

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1.2.1 The Flying and Safety Committee (FSC)

Purpose of the FSC

- To monitor safety and to provide advice, assistance and training.
- To re-assess, improve and update the Technical Manual and relevant handbooks.
- To consider incident reports with the objective of learning from the occurrences and avoiding further injury or damage through similar causes.
- To stimulate and guide the development of equipment, training and operating techniques for use in the sport.
- To approve or classify operational equipment according to its suitability for purpose.
- To approve the syllabi and course instructors for all 'BHPA Approved' potential Instructor and Coach courses.
- To liaise with specialists on various subjects to keep abreast of modern developments and seek advice on particular problems.
- To liaise with safety and training organisations of related sports to the benefit of hang gliding, paragliding and parascending.
- To maintain an Examiners' Panel for the independent examination of candidates for Licences
- To carry out regular periodic inspections of registered training and coaching establishments.
- To monitor the annual renewal of Licences.

Structure and membership of the FSC

The FSC is led by a Chairman who is appointed by the Executive Council. The Committee consists of a number of experienced instructors or pilots, selected for the depth of their knowledge, experience and their good sense, who each co-ordinate the work of a series of specialised Panels. The size and membership of each Panel is determined by the co-ordinator who, having been invited to lead a particular panel and subject to FSC assent, may vary the Panel size to suit the current circumstances.

While FSC members remain active in the sport and can contribute to the work of the Committee their appointments are open-ended. At the discretion of the Chairman FSC the Committee reviews and adjusts its own membership, although appointments are subject to Executive Council approval.

Release of FSC minutes

The minutes of the FSC are confidential. They are normally circulated only to members of the FSC and members of the Executive Council. The reason for confidentiality is that

sometimes sensitive issues concerning individuals are discussed and it may not be in the best interests of the people concerned to have these made public. Those individuals may request the sections of the minutes that relate to them. A summary of the FSC's discussions is reported to the Executive and included in their minutes, and conclusions and decisions reached are published in Skywings, including those relating to disciplinary cases.

Dissemination of Safety Information

Individual members receive a copy of the Association's magazine Skywings which carries articles relating to safety, training and equipment. It contains a regular 'Safety Matters' page which contains safety and training news and reminders, along with regular summaries of selected incidents.

All BHPA Licensed Instructors, Trainee Instructors (TIs), Coaches and Safety Officers will receive personal copies of relevant Safety Notices issued by the FSC; these should be kept with their TM until cancelled by subsequent amendment. Where it is appropriate to notify pilots of such notices, they will either receive individual copies or the notices will be printed in Skywings.

The procedures regarding the origination, production, approval and distribution of Safety Notices is contained in Appendix A of this Chapter.

1.2.2 FSC Panels - Terms of Reference

Each Panel, whilst carrying out its duties, must also fulfil the following general terms:

1. Ensure effective liaison with other Panels is maintained - especially where unavoidable 'overlap' occurs.
2. Refer all matters of expenditure to the Chairman FSC.
3. Prepare and circulate progress reports in advance of the FSC meetings.
4. Produce detailed Annual Reports in readiness for the Chairman FSC's Report to The Annual General Meeting.

1.2.3 The Accident Investigation and Analysis Panel

The purpose of the AIAP is to record, monitor and analyse reported incidents for signs of emerging trends and to recommend the necessary actions. It is also authorised to carry out investigations into accidents and incidents at the appropriate level.

Terms of Reference

To assist the FSC to fulfil its function the panel is required to:

1. Report and make recommendations to the FSC on all aspects relating to incidents and accidents within the sport.
2. Identify specific areas contributing to incidents and accidents and recommend action with regard to training, equipment, techniques and sites.
3. Undertake, where necessary, BHPA Formal or Informal Investigations in accordance with the standard procedures laid down in Chapter 5 of this Section.
4. Publish incident and accident information, presented in such a way as to provide an educational service to the membership.

1.2.4 The Airspace Panel

An essential service to the membership is provided by this Panel which educates both the membership and fellow air users to the existence, requirements and constraints of the other. It is expected to advise on student and pilot training; to publicise and explain the relevant parts (and amendments) to current airspace legislation; to remain alert to national and international regulations which may affect the sport; and to represent and monitor all other related matters.

Terms of Reference

To assist the FSC to fulfil its function of maintaining Instructional and Operational standards the panel is required to:

1. Ensure effective representation of the Association on the relevant bodies, in particular the following:

National Air Traffic Management Committee (NATMAC).

General Aviation Safety Committee (GASCO).

NATS Secondary Surveillance Radar (SSR) Light Aviation Working Group (LAWG).

European Airports Co-ordinating forum.
2. Seek the continuance of a consultation role to the UK Airprox Board (UKAB) of NATS.
3. Monitor all correspondence from NATMAC, the Civil Aviation Authority (CAA), and any other agency for any airspace or Air Law effects upon the sport both nationally and internationally and at club level, and make appropriate recommendations.
4. Interface between registered tow groups and CAA bodies over long term tow sites, and assist with any other problems over CAA tow site approvals.
5. Where appropriate assist registered tow groups and clubs with negotiations in connection with airspace matters.
6. Liaise with the Military authorities (MATO) with respect to military low flying and the sport.
7. Provide event organisers with the information necessary to notify the relevant airspace authorities.
8. Ensure that a current list of all sites is maintained containing information necessary for liaison with other air users. A suitable version of the list is to be made available to the CAA annually.
9. Have access to current, fully amended versions of:
 - a) The Air Navigation Order (ANO)
 - b) Aeronautical Information Circulars (AICs)
 - c) The UK ICAO 1:500,000 Charts
 - d) The UK Air Pilot
 - e) General Aviation Safety Information Leaflets (GASILs)
10. Where appropriate, and by the most effective means notify the membership of changes in Air Law and other airspace related matters.
11. Carry out a continuous programme of education of the membership through Skywings magazine.
12. Assist in keeping the Association's publications up to date with respect to Air Law and other airspace related matters.
13. Maintain the accuracy of the relevant parts of PRS examination papers.
14. Ensure that the Skywings complimentary list is accurate for people/posts connected with airspace.
15. Liaise with the Association's Sites Officer on relevant matters of sites policy.
16. Ensure that continuity of cover is maintained by keeping the necessary people informed regarding work in progress and pending.

17. Assist as required in the investigation of incidents, airmisses and accidents.

1.2.5 The Airworthiness Panel

The safety of pilots is paramount and depends largely on the airworthiness of their craft. The Panel's aim is to ensure that, as far as is practicable, all equipment used in the sport is suitable for the purpose. Its main concern is the certification of gliders to a recognised standard although it is also responsible for inspecting accessories and associated ground based equipment.

Terms of Reference

To assist the FSC to fulfil its function of maintaining operational standards the panel is required to:-

1. Establish and maintain procedures for ensuring the airworthiness of hang gliders, paragliders and parascending canopies, and for ensuring the suitability of ancillary equipment as necessary.
2. Maintain any and all test equipment necessary in the proving of airworthiness and suitability for use; and ensure the availability of the services of the appropriately qualified personnel.
3. Manage the airworthiness certification scheme as it relates to the membership.
4. Monitor hang glider, paraglider and parascending materials and design development, ensuring compliance with good engineering and aeronautical practice.
5. Establish and maintain effective liaison with all the relevant certification and authoritative bodies.
6. Educate the membership in all aspects of equipment suitability.
7. Assist in the investigation of incidents where equipment is or may be suspect.

1.2.6 The Development Panel

The FSC encourages experienced Instructors and pilots to develop new techniques. To avoid 'pioneering' something which has already been tried members should consult the FSC to gain the benefit of previous work and other useful information. This consultation may lead to informal working groups being set up under the supervision of the Development Panel, bringing together people with the same interests or objectives.

Terms of Reference

To assist the FSC to fulfil its function of stimulating and guiding the development of equipment, training and operating techniques for use in the sport the panel is required to:

1. Encourage the development of new disciplines and techniques.
2. Determine the best means of conducting the relevant trials and then present the project outline to the FSC for approval before commencement.
3. On completion of the trials to prepare reports and recommendations for the FSC

1.2.7 The Examination and Inspection Panel

The purpose of this Panel is to maintain high standards of safety and training in the sport by carrying out examinations of potential licence holders and existing licence holders seeking additional licence categories. The Panel also inspects registered training or coaching centres. Examiners have the authority to approve the issue of a new licence at the completion of an appropriate examination. They are also empowered to withdraw a licence in the interests of the Association and its membership, the public or the instructor; as a matter of course the instructor's CFI and the Chairman FSC are informed as quickly

as possible in such cases.

Membership of the Panel

The membership of the Panel is determined by the FSC as follows:

- a) Members of the Panel must be experienced and qualified in the relevant discipline.
- b) New members are introduced on probation and may not take charge of an examination until approved by the Panel Co-ordinator (chief examiner).
- c) Members must maintain currency in their stated discipline.
- d) Members must be prepared to carry out examinations and/or inspections regularly.

While all Examiners and Inspectors are members of the Panel it would be unwieldy for all to attend Panel management meetings. A small number of selected Panel members with sufficient expertise to cover all disciplines are nominated to attend these meetings.

The need for examinations

The CFI is responsible for safety within his club and by definition for the standards of his instructors. He must satisfy himself as to the attitude, aptitude, knowledge and skill of TIs before submitting them for examination, including a written report of his evaluation of the candidate for the benefit of the Examiners. The Examiners will be providing a service of cross-checking the CFI's opinion of a candidate against a national standard, and also identifying any faults which may have developed within the school. Examiners do not qualify their own TIs but submit them in the usual way for independent examination. The CFI will be debriefed by the Examiners on a candidate's performance. The independent examination of new instructors is one way of avoiding in-bred faults which have been known to develop in schools and if left uncorrected can lower safety standards. Therefore, Examiners are not appointed for each group or section of schools and they do not examine on a regional basis.

The Examiners' Seminar

The purpose of the Examiners' Seminar is to provide a forum for all Examiners and potential Examiners to discuss the conduct of examinations and the standards required both to apply for, and to pass an examination.

Terms of Reference - members of the Panel

To assist the FSC to fulfil its function of maintaining Instructional and Operational standards the members of the panel are required to:

1. Attend Examination and Inspection Panel meetings.
2. Approve the appointment of additional Examiners and Inspectors.
3. Monitor the training of Examiners and Inspectors.
4. Consider the format of instructor examinations by discipline, advise on standards and set the topics for the examiners seminar.
5. Consider all matters arising from instructor examinations and school inspections and advise the FSC accordingly.
6. Arrange periodic external verification of the conduct of examinations and assessments.
7. Remain active in their own areas of specialisation.

Terms of Reference - Examiners

To assist the Panel to maintain the established standards of instruction and operations an appointed Examiner is expected to:

1. Be available to conduct examinations on a regular basis.
2. Attend such seminars and undertake such training as is deemed necessary by the Panel.
3. Maintain current practice in the relevant disciplines.
4. Maintain an awareness of current examination procedures and fulfil those that apply

to his or her discipline.

5. Provide such material as may be needed to conduct an examination.
6. Examine only those candidates allocated by the examination co-ordinator.
7. Conduct examinations in an impartial way, so that examinations are seen to be unbiased. Any interest which could appear to affect impartiality must be declared.
8. Decide whether the performance of the candidate has met the accepted standard. Should the candidate fail to reach the required standard, the Examiner is expected to recommend to the Chief Examiner the minimum time period that should elapse before the candidate be permitted to apply for re-examination.
9. Inform the candidate of the result of the examination, identifying the candidate's strengths and weaknesses as necessary.
10. Discuss with the successful candidate the Chief Examiner's brief as provided.
11. Personally return the examination pro forma to the Chief Examiner as soon as is practical on completion of the examination.
12. Make comments on the candidate's performance to the Chief Examiner who may use these as a basis for his observation to the candidate's CFI.

Terms of Reference - Inspectors

When undertaking an inspection of a BHPA School, an Inspector should examine for adequacy, suitability and serviceability, as appropriate:

- | | | |
|------------------------------|---|--|
| 1. Records | - | a complete School Operations Manual and other relevant documentation. |
| | - | a random selection of Daily Fight Logs |
| | - | a random selection of Student Training Records |
| | - | check all Permits and Letters of Agreement for validity |
| | - | check Introductory Membership book usage against the master record provided by the BHPA office |
| 2. Incident Reports | - | a selection of recent IRs received from that School/Club will be provided which the Inspector should discuss with the CFI to see what, if any, lessons have been learned |
| 3. Equipment | - | a random selection of gliders which may be up to 100% |
| | - | a random selection of peripheral equipment, including helmets, the percentage of which is at the discretion of the inspector |
| | - | training equipment (eg harness suspension rig) |
| | - | tow vehicle/winch and associated equipment |
| | - | all radio communications |
| 4. Sites | - | a selection of training sites must be visited and assessed |
| 5. CFI's Personal Flying Log | - | to be checked for current activity |
| 6. Students | - | through discussion to check for correct training and approach by the Instruction team |
| 7. Club Pilots | - | through discussion to check for correct training and approach by the Instruction team |
| 8. Instructors and TIs | - | through discussion and practical checks to ensure active involvement in all stages of training |
| 9. Training and operations | - | assessment of the standards and effectiveness of the training and operations conducted by the school during the inspection period. |

Should it be necessary the Inspector is to immediately correct any safety violations or administrative errors.

On completion of the inspection the Inspector is to report to:

- a) The CFI on points arising
- b) The Panel Co-ordinator using the Inspection check sheet provided

The Inspector is empowered to suspend operations in case of serious concern; and to suspend any BHPA licence after first discussing it with the Chairman FSC and/or the Chief Examiner.

1.2.8 The Publications Panel

To assist in achieving the credibility which is desirable in a high profile sport the FSC aims to standardise its publications and seek a professional presentation and production and it is through the expertise of the membership of the Publications Panel that this is sought. All documents such as handbooks, manuals, and report forms are overseen by the Panel, which does not necessarily generate the information but is responsible for the final product.

Terms of Reference

To facilitate the FSC's aim of being identified as an authoritative, professional and credible body the panel is required to:

1. Ensure a uniform style and suitable quality of design for documents.
2. Ensure that the content of such documents is accurate, well written and consistent with all aspects of FSC policy.
3. Amend, update and revise publications as necessary.

THE TRAINING PANELS

It has to be accepted that training is the foundation of safety in the sport - it is also, naturally, a major facility and draws heavily on resources. To ease the work load the FSC separated training in the sport into two distinct divisions; that for pilots and that for those who train the pilots - Instructors and Coaches.

1.2.9 The Instructor and Coach Training Panel

This Panel is concerned with the training and coaching requirements of all those licensed officials who are involved in the supervision of others. The panel is also responsible for reviewing the annual licence renewals; school and club registrations; and addressing specific problems connected with these.

Terms of Reference

To assist the FSC to fulfil its function of maintaining Instructional and Operational standards the panel is required to:

1. Monitor the syllabuses established for those involved in the training or supervision of students and pilots and amend as necessary.
2. Arrange and publish a schedule of Coach and Instructor Courses and staff as required.
3. Monitor the annual renewal of qualifying licences; also review the allied administrative procedures and amend as necessary.
4. Approve the technical standards for new schools and clubs prior to registration.
5. Monitor the performance of currently registered schools and clubs.
6. Address, to the benefit of the membership, any difficulties arising out of (1 to 5) above.

1.2.10 The Pilot Training Panel

This panel is specifically responsible for all student and pilot training programmes, techniques and procedures operating within the school structure.

Terms of Reference

To assist the FSC to fulfil its function of maintaining pilot training standards the panel is required to:

1. Monitor established student and pilot training procedures and techniques (including written examination papers) and recommend amendments as necessary.
2. Evaluate and prove any new student and pilot training procedures and techniques for recommendation to the FSC.

1.2.11 The Pilot Development Panel

This panel is specifically responsible for post CP pilot training programmes, techniques and procedures operating within the Coaching Structure.

Terms of Reference

To assist the FSC to fulfil its function of maintaining and developing pilot training standards the panel is required to:

1. Develop, evaluate and prove new post CP pilot development procedures and techniques for recommendation to the FSC.

1.2.12 The Tow Panel

Of all the Panels this is the most diverse; whether tow launching by aerotow, vehicle, winch or boat the procedures differ in their detail and need monitoring constantly as developments emerge. The requirements of the various tow launched disciplines are serviced by the Tow Panel; in particular the specific procedures and techniques as they apply to each discipline.

Terms of Reference

To assist the FSC to fulfil its function of maintaining Operational standards the panel is required to:

1. Monitor established tow launch procedures and techniques and amend as necessary.
2. Prove new tow launch procedures and techniques for recommendation to the FSC.

1.2.13 The Power Panel

This Panel is responsible for monitoring and developing flying and safety matters within BHPA SPHG and SSDR operations.

Terms of Reference

To assist the FSC to fulfil its function of maintaining Operational standards the panel is required to:

1. Monitor SPHG and SSDR procedures and techniques and amend as necessary.
2. Prove new SPHG and SSDR procedures and techniques for recommendation to the FSC.
3. Represent SPHG and SSDR matters within the FSC.

APPENDIX A

Procedures for issuing and distributing SAFETY NOTICES

Introduction

Safety Notices are issued on the authority of the Chairman of the Flying & Safety Committee for the protection of students and pilots. By their definition it is essential that these Notices are produced and distributed to the appropriate person as quickly as possible and by the most effective means and the FSC has agreed on the following standard procedures.

Initiation

When any FSC Panel identifies an area or item of concern the co-ordinator of that Panel raises it immediately with the Chairman FSC. If the consensus is that a Safety Notice is required then the following decisions are required:

1. The content of the Notice
2. What priority category is needed - URGENT SAFETY NOTICE, or SAFETY NOTICE

Content

All categories of Safety Notice will:

Clearly depict the category; state to whom it is directed and show the date of issue; indicate the originating authority (normally the Chairman FSC) and give a reference number; be printed on PINK paper.

The precise wording of the text is to be agreed through consultation with all interested parties and a Final Draft must be approved by the Chairman FSC.

Distribution

The responsibility for printing and distribution will rest with the BHPA office liaising closely with a Technical Officer.

URGENT SAFETY NOTICES will be posted immediately by individual first class mail and published in Skywings.

SAFETY NOTICES will be posted by the next available mailing and included in Skywings.

Externally generated Safety Notices

Manufacturers and suppliers will be informed of the above procedures. If they wish to originate their own Notices they should adopt the following guidelines:

- a) Safety Notices are not advertising platforms. They should be concise, factual and their safety message clear. The BHPA, Chairman FSC, and Editor of Skywings reserve the right to edit Notices accordingly.
- b) All Safety Notices intended for publication in Skywings will be submitted to the Chairman FSC for approval.

See the sample format overleaf

Sample format

British Hang Gliding and Paragliding Association **(URGENT) SAFETY NOTICE**

Issued by XXXXXXXXX, Chairman of the Flying and Safety Committee: Date XXXXXXXXX
All Instructors, Trainee Instructors, Operators and pilots must READ, DIGEST AND TAKE ACTION, where appropriate, on the contents of this Notice and keep it for future reference. If you have a copy of the BHPA Technical Manual this Notice must be inserted into it and retained until it is withdrawn or superseded on instructions from the Chairman FSC.

MAIN TITLE

Sub Title

Introduction - explanation/origin/history

Main Directive

Definitions

Explanatory diagrams may be inserted where necessary

Discretions/exemptions etc

Serial/reference number in the form:

BHPA - SN/year/unique number allocated in chronological order

APPENDIX B

Approved Activities

		Tow			Hill	Power	Aerotow
		Fixed line	Variable line				
		Vehicle	Static Winch	Pay-out winch			
PA	Round	✓					
	Square	✓	✓	✓			
PG		✓	✓	✓	✓	✓	
Speed Gliding (non-soaring)					✓		
HG			✓	✓	✓	✓	✓
HPA						✓ (human)	
SSDR						✓	

Explanation of matrix

The 'tick' marks indicate the activities currently available; for instance, Paragliders may be launched from a hill side or tow launched using a vehicle or winch, or as a foot launched powered aircraft - but not aero-towed. Similarly, hang gliders are hill launched, winch tow launched or aero-towed, but not tow launched using a fixed line length behind a vehicle. However, the sport is continually adapting and if the need arises then the FSC may agree to developmental trials with a view to approving new activities.

SECTION 1 POLICIES

Chapter 3 ADMINISTRATION

1.3.1	Introduction	1.3.14	Insurance Requirements
1.3.2	Individual Membership	1.3.15	Site Sovereignty and Registration
1.3.3	Club Registration	1.3.16	Student Training Abroad
1.3.4	The Club Safety Officer	1.3.17	Post Ab-initio Training
1.3.5	Pilot Rating Scheme	1.3.18	Log Book for licensed activities
1.3.6	Personal Log Books	1.3.19	Operations Manual
1.3.7	FAI Observer		
1.3.8	Dual Flying		
1.3.9	Qualification Validity and Withdrawal		
1.3.10	Daily Flight Records		
1.3.11	Student Training Records		
1.3.12	Incident Reports		
1.3.13	Inspections		

Appendices	
A	- Site Sovereignty Policy
B	- Insurance Cover details
C	- Training Guidelines for Qualified Pilots

1.3.1 Introduction

This chapter describes the administration procedures developed for the BHPA, its members, and member clubs. The Appendices contain information on policies. The relevant forms are located on the BHPA website.

1.3.2 Individual Membership

The BHPA is an Association of individuals who form the membership and to whom the Executive Council is responsible for providing the benefits set down in the Articles of Association in return for a series of membership fees.

Temporary membership

Short-term Introductory and Training membership of the BHPA is available to provide an inexpensive introduction to the sport and is recorded on a certificate handed to the applicant at the time of joining.

Annual membership

Annual membership allows pilots to progress through the Pilot Rating Scheme, ensures they are kept in touch with the sport via information in Skywings magazine, and provides insurance cover. Membership is open to anyone, whether they are regular pilots or simply wish to maintain contact with the sport on a non-flying basis, and all annual members have the right to vote at the Annual General Meeting. There are categories of membership to satisfy most circumstances.

Note - To be eligible for any BHPA rating (Club Pilot (novice) or above) or license the individual must hold Annual Flying Membership.

The disabled person

Membership is open to all persons. Progress through flying training for everyone is dependent upon their ability. To encourage participation there is a 'Flyability' programme within the Association; details are available from the BHPA office.

1.3.3 Club Registration

The BHPA requires any group wishing to organise and operate hang gliding / parasailing / paragliding to do so as a BHPA registered properly constituted club. An application for club registration must show the names of certain responsible persons, the equipment to be used and the intended site(s); and the application is vetted on behalf of the Executive Council and the Flying and Safety Committee. The application must be made on the proper form, accompanied by the relevant site maps and details, and sent to the BHPA Office together with the appropriate fee. Annual renewal fees are set at the AGM and are due for payment in advance for registration and insurance cover to remain valid. There are 2 distinct categories of club:

- A School** - is a registered centre which may train from ab-initio level and beyond, providing it has the services of a Senior Instructor licensed in each discipline it intends to offer.
- A Coaching Club** - is a registered centre, preferably with a coaching structure, aimed at Club Pilot or above.

Acceptance of BHPA authority

A school and its staff which applies for registration must accept that the BHPA has jurisdiction in matters of registration and de-registration and that the BHPA may from time to time vary the requirements relating to registration and training.

'Constituted' Schools and Clubs

Schools must be properly constituted as Clubs and only those which meet this requirement will be registered by the BHPA.

Conditions of Registration

It must be understood and accepted that:

- a) School registration is for twelve months unless renewed or revoked. The BHPA are under no obligation to renew a school's registration.
- b) School registration is valid only for those pre CP activities conducted within the United Kingdom – or in the case of registered schools based abroad, is valid for those pre-CP activities conducted in that country. Approval for pre CP training elsewhere may be given by the FSC. (See Section 1: Chapter 3: Point 16)
- c) Registration may be suspended or withdrawn, permanently or temporarily in accordance with procedures laid down in this manual.
- d) In the pursuance of the exercise of the BHPA's duty of care, any person(s) acting on behalf, and with the authority of the FSC may suspend registration immediately if safety to any trainee or member of the public is in jeopardy or thought to be in jeopardy.
- e) Without exception, all club / school members must also be BHPA members. In the case of schools this applies to all training staff and students in addition.
- f) The requirements, standards, regulations and procedures relevant to the discipline and level of registration of the school must be complied with at all times.
- g) The requirements, standards, regulations and procedures may be amended by the FSC at any time and without consultation or consent.
- h) Schools shall allow access to authorised BHPA inspectors at any times when tuition is taking place; and at any other time given reasonable notice.

Failure to comply with the conditions laid down may result in the immediate

suspension of registration.

Registration Renewal

Club registrations are renewable annually providing the FSC is satisfied that standards have been maintained. There is provision, however, for the FSC to refuse renewal or to impose conditions for renewal. Under these circumstances the club will be invited to provide arguments in its favour.

Clubs will receive renewal reminders and must renew by the expiry date. Under special circumstances a period of grace not exceeding 3 months may be allowed at the discretion of the FSC on the understanding that registration will be continuous. Subsequent application for registration may be treated as an initial registration which may not be backdated.

Disciplinary Procedures

If any club is found not to have complied with BHPA Rules and Regulations it may face disciplinary action as indicated in Chapter 6 of this Section.

De-Registration and Re-Registration

The procedures for de-registration and subsequent re-registration after disciplinary action are contained in Chapter 6 of this Section.

Legal Liability

Whilst the BHPA will use its best endeavours to ensure that clubs, licensed staff and club equipment reach the standards required:

- a. Registration of a club by the BHPA shall not create any contract between the BHPA, its officers, servants or members and any club so registered. Nor does it imply any warranty by the BHPA, its officers, servants or members that any club so registered meets the requirements of the BHPA Club Registration Scheme for the time being in force, or that any instructor of such club is of any standard of competency or that any aircraft or equipment of such club is airworthy.
- b. The BHPA, its officers, servants and members shall not be liable for any loss, damage or injury whether consequential or otherwise arising in any way from any breach of warranty or contract by any registered club or by the negligence of any club, the proprietor of any club or any agents or servants of such club, nor for any loss or damage otherwise arising from the registration of any club or revocation or cancellation of such registration.

1.3.4 The Club Safety Officer

Within the framework of the club there should be a responsible and knowledgeable pilot who acts as the local technical officer. If the club appoints a Club Safety Officer it should also provide the necessary support for the CSO to fulfil the role.

Responsibilities

- a) Disseminate Safety Notices and information within the club.
- b) Act as a technical reference source within the club.
- c) Support the coaching team in their efforts to ensure that accidents and incidents within the club are reported to the FSC.
- d) Maintain, through a programme of continuous education and encouragement, an awareness of flying and technical safety standards within the club.
- e) Keep up-to-date with current information.

Appointment

This is a club appointment which must be based primarily on his or her ability to carry out the responsibilities listed above.

Nb. In a school or tow club this role will be assumed by the CFI or Chief Coach respectively.

1.3.5 Pilot Rating Schemes

The BHPA Pilot Rating Schemes (PRS) are designed to provide an incentive to students and pilots to progress in their training and gain experience in the sport. The schemes offer an indication of proficiency and may be used by outside organisations towards their awards (e.g. CAA, FAI Awards Scheme, the Duke of Edinburgh Award Scheme, the Scout Association). Within the BHPA the schemes are used as a basis for assessing competence for licenses and for entry to competitive events. Details of the various ratings are given in Section 3 Chapter 1.

1.3.6 Personal Log Books

Pilots should maintain a personal record of their hang gliding and/or paragliding training and experience in a suitable Flight Log Book. Apart from being a fascinating reminder of an individual's flying history, the records are necessary when moving between clubs, applying for a BHPA Pilot Rating or FAI badge award, or seeking an instructor qualification.

1.3.7 FAI Observer

Responsibilities

The responsibilities and duties of an FAI Observer are determined by the FAI.

Appointment

All instructors and coaches are automatically appointed as FAI Observers. The FAI Records Officer may appoint other members as appropriate.

1.3.8 Dual Flying

Before a member may pilot a glider carrying another person certain requirements must be satisfied; the FSC will then license that person to act as a Dual Pilot. (See also Section 4: Chapter 2: Point 7.)

1.3.9 Qualification Validity and Withdrawal

All qualifications (licences and pilot ratings) are valid only for the person named and may be withdrawn by the Chairman FSC or a delegated official. (See also Chapter 6 of this Section.)

Lapsed Membership and Qualifications

All Ratings and Environments are non-expiring. When membership has lapsed, returning members are issued with an information sheet giving guidance on the safe rejuvenation of their flying skills.

All Licences lapse on expiry of membership. Subject to any disciplinary sanctions and providing membership is valid and the application is accompanied by the written support of the CFI, the following will apply:

1. For lapses up to 3 months the licence will be reinstated provided that membership is backdated to the date of expiry.
2. For lapses of more than 3 months the FSC will consider applications for licence reinstatement on merit.

1.3.10 **Daily Flight Records**

All schools and tow clubs are required to keep a daily flight record. It should name the operating site, the students and pilots, instructor(s) and tow unit drivers, and list the gliders and tow-line lengths used (where relevant) plus the training exercises or types of flight carried out. Weather and wind conditions should also be recorded and where appropriate, take-off and landing times. The flight record sheets must be kept for a minimum of 6 years.

1.3.11 **Student Training Records**

All schools are required to maintain a record of each student's training and progress using the appropriate official BHPA published Student Training Record booklet (see Section 3). These records must be kept for a minimum of 6 years.

1.3.12 **Incident Reports (IRs)**

Incident reports (IRs) are the primary means by which the Association can monitor and maintain safety in the sport. An IR may require follow up action quickly, or simply be used for analysis of trends e.g. in minor injuries. Selected reports are summarised and publicised to enable all instructors, operators, coaches and pilots to benefit by understanding the causes of incidents. IRs must be submitted to the BHPA Office for any injury or damage any equipment malfunction, or any circumstance which was unusual or could have led to an injury or damage, or which might lead to an insurance claim or adverse publicity. Further details of the procedures for reporting incidents are contained in Chapter 5 of this section.

1.3.13 **School Inspections**

One of the FSC's responsibilities is to monitor standards in schools and this is achieved through the inspection scheme. Every effort is made to visit each school every two years or so, using a team of BHPA Inspectors. At the conclusion of the inspection the CFI is debriefed on the results. A written report is forwarded to the Panel Co-ordinator for analysis, and a copy provided for the CFI.

1.3.14 **Insurance Requirements**

Third party legal liability and instructor indemnity insurance cover is provided by a block policy held by the BHPA. Full details are available from the office (see Appendix B). For any insurance to be valid, the operation must be carried out in accordance with the current regulations, procedures and rules. Further information can be obtained from the BHPA Insurance Officer.

1.3.15 **Site Sovereignty and Registration**

Whenever a club (or other airport) has negotiated the use of a site then it is regarded by the BHPA as the 'resident club' and any other clubs or pilots wishing to fly from that site must contact that club before approaching the site owner or entering the site. (See Appendix A.)

Site registration

Any school or club planning to negotiate the use of a site is required to seek clearance from the BHPA to avoid conflict, and any club obtaining the use of a site must register it with the BHPA to be recognised as the resident club. (Site database entry form TWH290994 is available from the BHPA office.)

Tow sites

The CAA requires that where it is intended to tow launch within an ATZ or to a height exceeding 60 metres agl, then CAA permission must be sought and given. (Application form for CAA Tow Site Permit TWH 090796 is available from the BHPA office.)

1.3.16 Student Training Abroad

A. General

1. There is no restriction on schools or clubs which wish to take BHPA qualified Club Pilots abroad for flying purposes.
2. For schools wishing to train students in countries other than the one the school is based in (i.e. abroad), in addition to all normal BHPA training requirements the following conditions apply (British Forces Alpine PC excepted):
 1. The 'Student Training Abroad Notification' form must be completed and lodged with the BHPA Office before each and every trip.
 2. All students and personnel must have medical repatriation insurance that specifically covers para/hang gliding.
 3. Students must be UK resident BHPA members.
 4. Schools and instructors are reminded that an individual instructor and any of their student members are only covered under the BHPA insurance policy outside the UK for a maximum of 120 days in any membership year. No cover exists for USA and Canada, and special criteria apply for Australia. (See Section 1: Chapter 3: Appendix B.)
 5. The instructor in charge must have previous flying and training experience of the intended sites.
 6. Formal arrangements must have been made with the relevant local foreign school or club, giving agreement to use of the intended sites (where applicable.)
 7. The sites must be fully suitable for the training exercise.
 8. In all training situations a person must be present who has a good working knowledge of both English and the local language.
 9. The instructor in charge must have written details of how to contact the emergency services and of A&E hospital locations.

1.3.17 Training of Qualified members

For BHPA policy and advice on the training of qualified members see Appendix C.

1.3.18 Log Books for licensed activities

Any BHPA Member undertaking a licensed activity (including Operator and Dual flying activities) must ensure the activity is appropriately logged.

1.3.19 Operations Manual

All schools and tow clubs must maintain and use an Operations Manual that is formally reviewed at least annually by the Chief Flying Instructor or someone specifically authorised to review the Manual on his behalf. The Manual must contain details of operating procedures put in place by the school / tow club to ensure compliance with requirements in the Technical Manual. As a minimum it must include all of the relevant content indicated in the BHPA template Operations Manual.

APPENDIX A

SITE SOVEREIGNTY - CODE OF PRACTICE

To avoid inter-club and inter-sport disputes and help protect existing sites the following Code of Practice applies to both Clubs and individual pilots.

1. Before attempting to use any site the following steps must be taken, and in reasonable time before the proposed use:
 - (a) check with the local BHPA Club(s) to see if the site has been adopted by any air related user.
 - (b) if it is already in use following the existing site rules
 - (c) if it is not seek permission from the landowners and ask if there is any other air related sport using the site
 - (d) if there is any existing air related sporting Club using the site all negotiations with the landowners must be made in conjunction with that club - it may advise you to go ahead on your own subject to certain conditions
 - (e) in view of landowners' differing attitudes to the necessity of written agreements it should be noted that the existence of a written agreement is not a prerequisite to prove existing club usage
2. In the event of a new site being negotiated the following procedure should be adopted to protect your interests:
 - (a) register the site on the Sites Database - this will result in the allocation of a site code (for use with Freephone 0800 515544) and the notification of the CAA and the military of the site's existence
 - (b) if it is a surface based towing site it cannot be used to tow launch within an ATZ or above 60 metres agl until a valid CAA Tow Site Permission has been obtained
 - (c) try to agree with the landowners that in the interests of safety, and convenience to them, all future enquiries from other air related sports will be passed to your club

By following this procedure your club will be recognised as being the operating authority (Resident Club) for that site and you will be supported as such in the event of any site problems.

3. If you choose not to use any site any more you should ask for the entry in the Sites Database to be removed. If your Club ceases to exist as an Association Club or the relevant CAA Tow Site Permission lapses, it will be assumed that you have relinquished all claims as Resident Club.
4. Clubs are expected to provide reasonable assistance to other pilots wishing to fly their sites. It must not be forgotten that it can cost a Club considerable time and expense negotiating and keeping a site and that it is the landowner's wishes that are paramount.
5. This Code of Practice depends upon the integrity of both individual Pilots and the Clubs for its practicality.
6. Our flying depends upon the use of other's land and this must not be jeopardised by internal disputes or thoughtless behaviour.

BHPA Executive Council

APPENDIX B

INSURANCE COVER

Whilst participating in BHPA Approved Activities members of the Association have the benefit of liability insurance cover. Briefly and subject to the Master Policy, this covers:

- (i) A registered school's liability in law to a third party
- (ii) A registered school's liability in law to the student
- (iii) The student's / member's liability in law to a third party
- (iv) Any member's liabilities arising from carrying out official duties on behalf of a school, club or the Association

Note: A reduced indemnity applies to all activities involving dual flying, ab-initio and/or commercial training.

At all times, applicable Air Law and the rules and regulations of the BHPA must be followed. Deliberate or reckless contravention will lead to loss of cover.

LIMIT OF COVER

Schools, Clubs and Instructors are reminded that cover does NOT extend to the following:

- a) Servicing, maintenance or repair as an occupational trade
- b) An employer's statutory obligation to employees
- c) Equipment of any kind
- d) Operations in the USA or Canada under any circumstances

GEOGRAPHICAL LIMIT - TRAINING OPERATIONS

Normal operational cover for BHPA registered Schools is confined to Great Britain, Northern Ireland, the Channel Islands, the Isle of Man, and British Armed Forces bases overseas.

This training cover may be extended on an occasional basis for schools running courses outside the UK in accordance with Section 1: Chapter 3: Point 16.

Schools intending to provide such approved operations overseas are reminded that many countries require insurance to a value which is greater than that provided by the BHPA, in which case schools are responsible for securing the additional cover.

Schools, instructors and coaches are reminded that both they and any of their student/trainee members are only covered for training outside the UK for an aggregate maximum of 120 days in any membership year. Non-UK resident members have no cover abroad. They must ensure they join the respective national association or obtain separate third party cover whilst engaged in activities outside the UK.

Any period of time spent abroad either equipped to instruct or with an intention to instruct, by an instructor will count as time abroad by his/her school and the onus of showing that the 120 days has not been exceeded rests with the school and instructor. The policy operates as an excess to any other policy that the school or instructor may have.

ADMISSION OF LIABILITY

You must not make any admission of liability or payment or offer or promise of payment without the written consent of the insurance company.

GENERAL

At all times, coverage is subject to the terms, limitations, conditions and exclusions contained in the Master Policy which may be inspected at the offices of the BHPA. At renewal, members will receive a current Evidence of Insurance outlining the main policy terms. For further information about the BHPA's insurance and related matters, please contact the BHPA insurance officer.

APPENDIX C

TRAINING GUIDELINES FOR QUALIFIED PILOTS.

A CP qualified pilot is regarded as being suitably skilled to make his own decisions. Nevertheless, there are further skills that the pilot should aspire to master: many of these are documented in the Pilot Rating scheme. Whilst the latter stages of the PRS are primarily written as a self-coaching guide, obtaining advice from suitably qualified persons can be a very efficient method of making progress with these and other skills. The following sets out the BHPA's position on training for qualified members.

- Training for qualified members is defined as any situation where a new factor is being deliberately introduced to a pilot already qualified to fly that craft type. This factor may be a skill or a significantly different environment (eg mountains).
- All training for qualified members is regarded as being a form of 'coaching'. (Formal 'Instruction' ends with the issue of the CP (novice).)
- Any provider of training for qualified members must be suitably qualified. This means that as a minimum they must hold a Club Coach rating and have the necessary experience of whatever it is that they are teaching and the environment being used. Ideally such providers will also hold a BHPA Senior Coach or Instructor licence. (For many activities (eg tow conversions, power conversions) precise qualification requirements are stipulated.)
- 'Guiding' (ie introducing suitably qualified pilots to a new geographical area where the pilots will use their existing skills and knowledge) is not regarded as 'training'. Persons providing guiding services still have a legal Duty of Care to their clients.
- Offering comments/information on flying conditions experienced, landing fields in use etc. is the duty of every pilot, and is not considered to be training.
- Please note that coaches are only permitted to provide their services voluntarily. If remuneration or other consideration is involved, coaches risk losing their cover under the BHPA's liability insurance policy.

Advice to Qualified Pilots:

Various individuals and organisations offer services for qualified pilots. These can be loosely separated into two categories - 'guides' and 'training providers'. Irrespective of the type of service that you are receiving, you are reminded that the final decision to fly is your own, and the same applies to all manoeuvres and activities undertaken in flight.

'Guides':

If being 'guided' in a new geographical area, understand that there are no BHPA qualification criteria for 'guides', who may well have no instructional or coaching qualification or skills. Their function is only to get you to the site and introduce you to it. Local knowledge and site familiarity are invaluable, and should be tapped into – but the bottom line is that you have to be certain that the site, weather etc. is suitable for you to fly.

'Training providers':

Check out carefully the qualifications and relevant experience of any person providing training. Be realistic about your own experience level and only consider appropriate courses. Ensure that the course provider's aims are similar to your own. (A badly run or inappropriate course will teach you nothing and may have a detrimental effect on your development as a pilot).

APPENDIX C

If attending a course abroad, ensure that you take out medical repatriation insurance that specifically covers para/hang gliding.

Advice to Training Providers:

You must meet the general qualification criteria above, and any specific requirements for the type of training you are offering. Your cover under the BHPA's policy will be affected otherwise. Ensure that your trainees are suitably qualified for the training proposed and current. If running a course abroad, ensure that all participants take out medical repatriation insurance that specifically covers para/hang gliding. Ensure that your training is not negligent, that you carry out regular Risk Assessments and that you fully exercise your Duty of Care to your trainees.

See also BHPA Fact Sheet on SIV courses.

Schools, instructors and coaches are reminded that both they and any of their student/trainee members are only covered under the BHPA insurance policy outside the UK for a maximum of 120 days in any membership year. No cover exists for USA and Canada, and special criteria apply for Australia. Please remember that non-UK residents have no cover abroad. They must ensure they join the respective national association or obtain separate third party cover whilst engaged in activities outside the UK. (This requirement is part of our insurance terms.)

Please remember, failure to comply with the Rules, Regulations and Operating Procedures of the BHPA may lead to loss of your BHPA Insurance cover. For further information about the BHPA's insurance and related matters, please contact the BHPA insurance officer.

SECTION 1 POLICIES

Chapter 4 SAFETY REQUIREMENTS AND PRACTICES

1.4.1 Introduction	1.4.4 BHPA Regulations
1.4.2 Safety Requirements	1.4.5 Alcohol and Drugs
1.4.3 Recommended Practices	

1.4.1 Introduction

Hang Gliding, Paragliding and Parascending participants are expected to train, operate and use equipment in accordance with the guidelines described in this Technical Manual. Minor improvements in training, procedures or equipment may be introduced at club level on the authority of the CFI or Senior Coach, who is permitted to develop these improvements and authorise their continued use by club instructors or coaches. Where a club intends to undertake major development or make any significant variation from normal practice, the CFI or Senior Coach must gain approval from the Chairman FSC in advance, in writing. In order to maintain a good safety record in the sport, certain procedures, training and equipment are identified as Safety Requirements and Recommended Practices, and all Instructors, Coaches and pilots are expected to comply with these. The FSC is alert to the need to revise these practices as the sport progresses and will also consider granting waivers applied for by a CFI, either when one of the Requirements is not sensible to a particular circumstance, or when a development project seeking new techniques is undertaken. These waivers only apply when given in writing from the Chairman FSC, or his delegated representative, to the CFI, Senior Coach, or pilot and are for a specified period only. In the following paragraphs reference to 'Instructors' includes registered Trainee Instructors.

Specific Bans

- B1. The tow line must not be connected to a fixed object.
- B2. The harness-to-glider connectors must not be single action release systems.
- B3. Inflatable boats must not be used as tow units.
- B4. Two or more square canopies must not be tow launched one behind the other on the same tow line.

Insurance

Whilst every effort is made to provide insurance to cover claims of negligence against instructors, operators, coaches or pilots, the BHPA's insurers have provided cover on condition that the Associations rules are complied with. Therefore, any deliberate or reckless contravention of safety requirements, recommended practices, or rules may render the liability insurance void. If any change in published procedures or accepted normal practices is required to be made, it should not be implemented to any extent until confirmation has been received from the FSC Chairman that such change is acceptable. In addition, where the FSC consider it necessary, such confirmation may require prior consultation with the BHPA's Insurers to ensure that insurance cover will not be adversely affected.

1.4.2 Safety Requirements

General

- G1. Hang gliding, paragliding and parascending Instructors, Coaches and pilots must comply with the current requirements as laid down in the Air Navigation Order.
- G2. Where necessary the relevant authority (as identified on CAA Tow Permits; or via the Civil Aircraft Notification Procedure - 0800 51 55 44) must be informed before flying commences.
- G3. During Training Exercises in a school effective launch and site control must be maintained, through a delegated Duty Instructor, who must be identified to all students and pilots.
- G4. When students are under instruction a wind sock should be positioned at the nominated landing area.
- G5. All equipment must comply with the standard as laid down in this Technical Manual.
- G6. Pilots must don and fix a suitable helmet before fitting their harness to the glider.
- G7. All new participants must be given appropriate landing training before flying. Where a potential hazard is present (water, tree, obstacle etc) the relevant briefing must be given.
- G8. Students and pilots undergoing training from Instructors or Senior Tow Coaches must receive, or declare, pre-flight and post-flight briefings or intentions.
- G9. A standard pre-flight check must be carried out before take-off.
- G10. Elementary Pilot and above must record the details of all flights in a personal Flight Log Book.
- G11. The pilot-in-charge of a glider carrying 2 or more persons must hold the relevant BHPA qualification (Dual Pilot). Round canopies may only be flown/towed/operated solo.
- G12. Round canopy pilots must not use steering controls on tow, except for rear riser or peripheral band suspension line steering.

1.4.3 Recommended Practices

- RP1. Water landings should be avoided at all costs; experienced pilots anticipating flying over or near to significant areas of water should ensure that a safe dry landing area is always within reach, wear suitable buoyancy aids and carry a suitable webbing cutting implement.
- RP2. When using the hand tow controlled training technique the tow line should not exceed 5 metres.
- RP3. When flying with qualified pilots, students on achieving EP, are to display a red streamer attached to the seat area of the PG harness (kingpost top HG), and secured to avoid fouling rigging, etc, as a warning to other pilots. It may be dispensed with when the pilot has reached CP rating plus 10 hours logged flying time. For the Paragliding hill environment it may be dispensed with after CP rating plus 10 hours logged flying time and top landings signed off by a club coach.
- RP4. The tow unit should be such that the driver can maintain an unobstructed view of the launch and subsequent towed flight.
- RP5. Fixed length parascending tow lines should not be shorter than 100 metres for land tows, and 45 metres for water tows (For PA Square Exercise 8 (static) the tow line should not exceed 5 metres and the student's feet must remain on the ground.)
- RP6. In the event of an emergency tow line release a mobile tow unit should be positioned so as to be able to assist and advise the pilot if needed.
- RP7. At least one anchor man should be used when the pilot is being harnessed to a canopy which is already attached to a tow line.
- RP8. Metal tow lines should not be used in the vicinity of power lines.
- RP9. When attaching 2 or more harnesses to a single hang point or riser system, physical separation, or a satisfactory means of preventing fouling of the connectors, must be ensured.
- RP10. Paraglider and parascending square canopy pilots should maintain steering control throughout inflation, launch, tow and free flight phases.
- RP11. Where the public have access to a tow launch site a board should be displayed

prominently carrying the words "WARNING - TOW CABLES".

1.4.4 BHPA Regulations

General Administrative Regulations

- A1. All BHPA members acting in an authorised supervisory capacity are responsible for ensuring that Safety Requirements and Recommended Practices are complied with.
- A2. BHPA membership must be held by all who participate or assist in operations. (See also Section 4 Chapter 2 Point 7 'Passenger Membership Conditions' for dispensation for passengers of licenced dual pilots).
- A3. Participants must sign a declaration on joining (and annually thereafter): 'I understand that before I fly I must be physically and mentally fit to do so. Before undergoing any training I undertake to inform my instructor / coach if I suffer from any mental or physical defect, infirmity previous injury, disease or condition which could increase the risk of an accident or the severity of an injury.'
- A4. All ab-initio training must be conducted under the supervision of a suitably qualified and licenced BHPA Instructor.

Age limits

- a) There is no upper age limit.
- b) A person must be at least 14 years old to act as a Pilot in Command of a hang glider or paraglider.
- c) A person must be at least 14 years old to be eligible for a BHPA PRS rating.
- d) For flights where the instructor has direct control, such as dual flights or towed flights where the tow line is not released, then the above age limits may be waived at the discretion of the CFI - but the Duty Instructor must ensure that the student is of sufficient mental and physical maturity to follow and understand flight briefings.

If a school does plan to train youngsters they must take into account child protection issues, risk assessments and equipment suitability. BHPA research has concluded that there is no legal requirement for our schools to be registered under child protection laws due to the nature of their work. Guidelines have been drawn up in consultation with the Child Protection and Support Section of the NSPCC. These can be accessed at www.bhpa.co.uk/pdf/BHPA_Child_Protection_Policy.pdf

NOTE: a parent's/guardian's consent form is necessary for minors (under 18 years).

1.4.5 Alcohol and Drugs

According to the Air Navigation Order Article 66(2). "A person shall not, when acting as a member of the crew of any aircraft or being carried in any aircraft for the purpose so acting, be under the influence of drink, or a drug to such an extent as to impair his capacity so to act."

In addition to the basic requirement of the law the Association insists that instructors, students and pilots do not consume alcohol nor intoxicating drugs within eight hours of commencing flying or conducting flying operations.

SECTION 1 POLICIES

Chapter 5 INCIDENT REPORTING AND ACCIDENT INVESTIGATION

1.5.1	Introduction
1.5.2	Incident Management
1.5.3	Investigating and Reporting
1.5.4	Incident Report Analysis
1.5.5	Formal Investigations

1.5.6	Reportable Accidents
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Appendices

A	Initial Response Procedures
B	Primary Contact Recording Log

1.5.1 Introduction

Hang gliding and paragliding are risk activities and carry with them the danger of injury to participants. However, when an incident occurs it is important to find out why it has happened and what might be done to prevent a repeat, especially if someone has been hurt. This chapter explains the investigation, reporting and analysis of incidents in the BHPA; it also describes the processes of informal and formal investigations and defines 'reportable accidents'.

1.5.2 Incident Management

The initial reaction to an incident is important. Life may be saved by the right actions being taken quickly. Everyone must know who is taking charge; in a School this will usually be the Duty Instructor, whereas in a club it may be a Coach or simply a fellow pilot. A serious incident is not the time for committee meetings about what to do, especially if someone is injured. Depending on the incident and the apparent severity of any injuries, carry out some or all of the following actions:

Liability - Under no circumstances should you admit any fault or liability to any person.

1 Take charge.

Everyone must know who is taking charge; in a School this will usually be the Duty Instructor, whereas in a club it may be a Coach or simply a fellow pilot. This prevents confusion and enables the incident to be tackled quickly and methodically. It also prevents multiple calls to the emergency services.

2 Remove further danger.

Remove further danger to yourself and then to the casualty and others. Do not become a second casualty!

3. Administer minimum First Aid as necessary.

Knowledge is more important than resources - Instructors are trained and most have access to a First Aid kit. Every pilot should make an effort to attend a First Aid course.

4. Call the Emergency Services.

Although it is essential not to waste time it is extremely important to assess the injuries so that precise information can be relayed to the Emergency Service which can then decide which form the rescue will take - ambulance or helicopter. Either telephone or radio may be used to summon aid. Everyone should know beforehand, or be told what form of contact will be used and where it is located. In most cases (especially fatal or potentially fatal) the information is relayed directly to the Police who may attend. In a group situation (School, Club or Event), to avoid the nuisance of multiple or false alarms, a person should be appointed (and identified to others present) to make any emergency call. Ideally, the caller should take a companion - one can then return to confirm that help is on the way whilst the other guides the rescuers to the

site. Also, in the unfortunate event of the caller suffering an accident on the way then the call can still be made.

5. Ensure evacuation.

If the emergency services are not coming, or the accident does not warrant their use, then you must have a plan to evacuate the casualty. Knowing the location of the nearest A&E hospital is essential.

6. Record, but do not disturb equipment.

If possible photograph it; sketch it or draw someone else's attention to it. The Police may impound it in some circumstances, so record its state as soon as possible. **Do not test it.** Often, when equipment was a possible cause, it had been packed away before an experienced investigator had had a chance to look at it (vital information can be gained from studying the equipment as it looks immediately after an incident).

7. Identify witnesses.

Take names, contact details and addresses of witnesses including bystanders if possible. A serious incident requiring further investigation needs information from several sources to build up a picture of what really happened. Sometimes bystanders are better witnesses because they describe exactly what they saw rather than interpret what happened using their own flying experiences.

8. Get witness statements.

Have witnesses write down what they **saw or heard**. A more accurate picture will emerge from individual reports of what happened rather than group consensus. It is usual for statements to conflict; these should be resolved only when drawing conclusions about an incident not when gathering information about it.

The Incident Report Form (IRF) is to be submitted online via the BHPA website within 48 hours accompanied by the statements, but if any statements are delayed then send them later.

9. Notify relatives.

If there has been a fatality or serious incident the Police will notify next of kin - as they have been trained for such a situation, let them do it. In lesser cases notifying family or friends indicates a responsible attitude and can help to avoid acrimony and the pursuit of liability claims.

10. In serious cases inform the BHPA immediately and directly.

Telephone numbers are listed on the BHPA answer phone - do not leave messages but go through the list until you can talk to someone in person. Very serious incidents will need the support of experienced BHPA officials, for example in liaising with the relatives, press, police, CAA and any other organisations concerned, and where appropriate, in undertaking a Formal Investigation.

Any incident, whether serious or not, can be reported by telephone for advice and encouragement.

Dealing with the media.

Very often the media, in any of its forms, is on the scene very soon after the incident. Aggressive and leading questions may be posed at a time when defences are down and those involved may be in various stages of shock. Under these circumstances statements and comments may be made which could be misquoted, or subsequently damage the image of the sport, or create difficulties for any subsequent investigation. Faced with such a situation it is best for an appointed person (say the CFI or Senior Coach) to provide a short statement such as: *"I can tell you that X has suffered a fatal/serious injury and has been taken to hospital and the Police and/or the BHPA have been informed. An inquiry may be carried out by the Association but for further details you should contact our Press Officer through BHPA office."* They should then be directed to the Police Information Centre where a Press Release is usually available within a very short time.

1.5.3 Investigating and Reporting

The purpose of incident/ accident investigation is to identify any lessons which might be learned and so prevent any repetition.
Investigations conducted by the Accident Investigation and Analysis Panel of the FSC fall into two distinct categories:

1. An Informal Investigation which might include a short telephone enquiry to clarify specific points through to a visit to examine, for instance, equipment or to follow up initial reports.
2. A Formal Investigation (see para 1.5.5 of this chapter)

Reporting

Almost anything that causes or could have caused injury or damage, or is simply unusual or inexplicable is considered reportable. Moreover, failure to submit a BHPA Incident Report Form promptly may jeopardise an instructor's legal standing and insurance cover in the event of a claim of negligence. But most importantly, the Incident Report could probably contribute to saving another pilot from injury.

In a school training situation the school is responsible for completing and submitting Incident Reports, including the Supplement. Pilots of CP level or above are expected to complete and submit Incident Report forms in their own right.

BHPA Reportable incidents are:

1. Those involving injury, whether to participants or others.
2. Those involving damage to property, whether or not it is third party.
3. Those in which an insurance or legal claim might arise.
4. Those involving the use of non-standard procedures or training.
5. Those in which equipment has broken or failed to function, or has malfunctioned.
6. Anything that might highlight safety points or was unusual.
7. Those from which the sport may learn.

The BHPA Incident Report Form

A BHPA Incident Report (IR) form should still be submitted even when a telephone report has been made, and the reporting timetable is important. The IR is to be submitted via the link on the BHPA website within 48 hours of the incident occurring. Anybody submitting an IR form must enable 'cookies' to ensure that information on all pages of the online IR form is retained by the browser and not cleared when moving to a subsequent page. Every effort must be made to complete the form as fully as possible; if information is not available, for example about the forecast length of stay in hospital, then this should not delay submitting the Incident Report - it can be communicated to the BHPA office as additional information later.

The Response Process

To avoid any delay or duplication of work it is essential that a procedure for responding to reported incidents is provided for the Accident Investigation and Analysis Panel as a reference. This process is detailed in Appendix B, which also contains the BHPA definitions of the various categories of accidents and incidents

1.5.4 Incident Report Analysis

The data from every IRF is entered onto the BHPA Accident Database by the appointed BHPA 'Investigating Officer', who also compiles a narrative report. The contents of all BHPA Incident Reports are treated in confidence by officers of the BHPA. Any subsequent publication of that information does not include reference to the club or persons concerned.

A selection of these narrative reports are published in the Skywings magazine.

Any particular type of incident may receive more detailed analysis to uncover further facts and similarities. This usually requires further reference by the FSC to each Incident Report where a fact or comment previously thought to be insignificant can prove to be the vital clue to the real cause of many incidents. Therefore, instructors and pilots should understand the importance of putting thought and effort into completing each Incident Report comprehensively.

1.5.5 Formal Investigations

Launching a Formal Investigation

The Co-ordinator of the Accident Investigation and Analysis Panel decides whether a Formal Investigation is required and selects the Lead Investigator on the basis of their experience and training in conducting Formal Investigations and their availability.

The Lead Investigator is responsible for all further proceedings of the investigation.

Terms of Reference

A Formal Investigation may be given specific Terms of Reference or may operate to standard Terms of Reference. The 'standard' Terms of Reference task the investigation with investigating the accident/incident and

- a) Determining the sequence of events.
- b) Establishing, if possible, the cause or most likely cause.
- c) Where appropriate, making recommendations to the FSC for the benefit of future safety in the sport.
- d) Producing a written report in the standard format for FSC approval.

Although the apportioning of blame is specifically outside the remit of the investigation, where necessary it may bring to the attention of the FSC any serious matters arising from its investigation.

The proceedings of the Formal Investigation must be confidential until such time as the FSC approve the final report.

The Formal Investigation must have proper regard for the BHPA's legal liability insurance and must avoid any action or public statement that may prejudice the interests of BHPA insurers in handling any potential claim resulting from the incident.

The Formal Investigation Report

The Report is made to the FSC which is responsible for acting upon its findings and recommendations. Each Report follows a standard layout and conforms to the following format:

- a) The front page containing the title; date and place of the incident; a summary of the incident; and the FSC ratification and date taken.
- b) Then follows the body of the Report comprising:
 - i) *Factual information* - in which the verified facts of Personnel, Training, Equipment, Site, Conditions, and Flight (and any other area judged to be valuable) are recorded.
 - ii) *Analysis* - where the evidence is examined and evaluated; and the sequence of events determined.
 - iii) *Conclusions*
 - iv) *Safety Recommendations*, if any

Report Stages and Publication

The Lead investigator, once all the evidence is received, analysed and assessed, will if deemed appropriate, prepare a Review Stage for circulation to all primary parties for any corrections of factual evidence. In the light of any responses the Lead Investigator may elect to amend the Report accordingly, or include them in an Appendix.

The Final draft stage of the Report is presented to the AIAP for comment and onward transmission to the FSC for ratification. Under normal circumstances the Report is accepted or rejected in toto - if the FSC is dissatisfied with the Report it should return the report to the Lead Investigator or convene another investigation. The Chairman FSC reserves the right, however, to call for minor amendments in content or wording without jeopardising the original Formal Investigations Findings or Conclusions.

All original and copies of any working documents of the Board are retained at the BHPA Office together with the original, signed copy of the Formal Investigations Final Report when ratified by the FSC. The final ratified report will be published on the BHPA website and a summary published in Skywings.

In the event that HM Coroner requires a preliminary report this may be prepared on the authority and after liaison with the Chairman FSC.

1.5.6 Reportable Accidents

Under the Civil Aviation (Investigation of Air Accidents) Regulations 1996 there is a legal obligation to report air accidents. A 'Reportable Accident' is defined as:

"An occurrence taking place between the time any person boards an aircraft with the intention of flight until such time as all persons have disembarked, in which:

a) Any person suffers death or serious injury while in or upon the aircraft, or by direct contact with the aircraft, or anything attached thereto; or

b) The aircraft receives substantial damage."

Following the BHPA reporting procedures is interpreted as complying with the requirement.

Whenever anyone is killed at or in the vicinity of, and as a result of a hang gliding and paragliding event the local police must be informed at once.

Appendix A

PROCEDURES FOR RESPONDING TO INCIDENT REPORTS

If any responsible officer hears of, witnesses or has an incident reported to them, first obtain as much information on the incident as possible, write it down and remind the person reporting it to complete an Incident Report form (IR form) within 48 hours of the incident, using the link on the BHPA's website. If they do not have access to the online IR form take the name and contact details so that a member of the BHPA technical team can telephone them and submit the IR form on their behalf. Depending upon the Category Classification (see the list attached to this Appendix) take the appropriate action:

1. Fatal or Serious Accidents

Call the 'primary contact' or one of the Technical Staff immediately; if unsuccessful try each of the other listed investigators. Pass on the information - they will then take over the responsibility for further action and pursue the matter. Names and telephone numbers are listed on the BHPA's website.

2. Minor Accidents

Ensure that an IR form has been submitted online within 48 hours of the incident.

3. Incidents

Treat as a Minor Accident unless there is a good reason for greater urgency.

4. Airprox

All Airproxes are to be reported **IMMEDIATELY** to the Association's Airspace Officer who will advise and assist in submitting a formal report if necessary - a BHPA Incident Report must also be submitted **IN ALL CIRCUMSTANCES**.

- a) If involving aero models then no AIRPROX is to be filed but a BHPA Incident Report form is to be submitted - this will be copied by the BHPA Office to the BMFA and SMAE.
- b) If involving a glider, microlight aircraft or powered aeroplane it is to be reported by telephone immediately after landing to:
 - i) the local Air Traffic Control Centre, and/or
 - ii) West Drayton on 0800 515544

If the identity of the conflicting aircraft is uncertain West Drayton can use radar tracing techniques if the report is made quickly.

Written reports, using the CAA Airprox Report Form (available from the BHPA office) must be sent to the UK Airprox Board within 7 days.

INTERNAL PROCEDURES

Once an initial report has been received by any investigator or member of the Technical Staff the following procedures will be followed:

1. Alert the Panel Co-ordinator or a senior investigator and:

- a) Decide who will take what action in the following areas:
 - i) the level of investigation necessary
 - ii) liaison with the authorities:-
 - HM Coroner and Police - local
 - Air Accident Investigation Branch, Duty Officer on 01252 512 299
 - Mobile RAF Pathology Team, Duty Pathologist on 01296 623535 ext 7-567

- iii) media liaison - inform the BHPA Press Officer and agree a statement for release.
 - b) Agree on the constitution of any investigation team.
 - c) Ensure the involvement of any other relevant Panel (Airworthiness, Airspace etc)
 - d) Inform the Chairman FSC if necessary.
2. If necessary record the details (or leave a message) in the Panel Co-ordinator's IR log.
 3. Circulate brief details to the remainder of the Accident Investigation and Analysis Panel.

BHPA ACCIDENT CATEGORIES - DEFINITIONS

SERIOUS - Category 'S'

An accident resulting in death or serious injury to the pilot or other person(s); or in which the glider suffered major failure or was otherwise severely damaged whilst the pilot was attached.

MINOR - Category 'M'

An accident in which the pilot or other person(s) received only slight injuries and/or the glider received only minor damage.

INCIDENT - Category 'I'

An occurrence, often of a technical nature, which, in less favourable circumstances might have led to an accident, and about which information should be circulated.

AIRPROX - Category 'A'

A situation in which, in the opinion of a pilot or controller, the distance between aircraft as well as their relative positions and speed have been such that the safety of the aircraft involved was or may have been compromised.

SUMMARY OF DEFINITIONS

- Accident -** An occurrence in which a person is fatally or seriously injured as a result of being in, or being struck by, an aircraft.
or:
The aircraft sustains damage or structural failure, (except for engine failure or damage which is limited to the engine or propeller).
- Fatal Injury -** An injury sustained by a person in an accident which results in his/her death within thirty days of that accident.
- Serious Injury -** Injury sustained by a person in an accident which:
a) requires hospitalisation for 48 hours or more.
b) results in the fracture of any bone, except simple fractures of fingers, toes or nose.
c) involves severe haemorrhage, nerve, muscle or tendon damage.
d) involves injury to any internal organ.
e) involves second or third degree burns.
- Minor Injury -** Any injury of less severity than those categorised as Serious.
- Incident -** An occurrence, other than an accident, associated with the operation of an aircraft, which affects or would affect the safety of operation.
- Serious Incident -** An incident involving circumstances indicating that an accident nearly occurred.

Appendix B

PRIMARY CONTACT RECORD LOG

Name of recorder _____ Date of record _____

Name of reporter _____ Tel. No. _____

Name of injured party _____ Date of incident _____

Incident site _____ Discipline _____

Nature of injury/damage _____

Actions taken:	Contact	Date	Notes
Panel Co-ordinator	_____	_____	_____
Tech Staff (1)	_____	_____	_____
Tech Staff (2)	_____	_____	_____
Office	_____	_____	_____
PRO	_____	_____	_____
Police	_____	_____	_____
AAIB (01252 512 299)	_____	_____	_____
HM Coroner (Name, address & Tel)	_____	_____	_____
Press	_____	_____	_____

Any other information _____

SECTION 1 POLICIES

Chapter 6 DISCIPLINARY PROCEDURES

- 1.6.1 Introduction
 - 1.6.2 Disciplinary Procedures
 - 1.6.3 Appeals Procedure
-

1.6.1 Introduction

The sport is potentially hazardous to participants therefore certain safety and training safeguards are required which clubs, instructors and pilots must comply with to minimise the risks. There are also Association policies that are necessary to promote good relations within the sport and with outside agencies. Any club or member who contravenes these safeguards or policies may be subject to disciplinary processes, but in keeping with current conventions the Association has defined a set of procedures to ensure an objective and fair approach.

1.6.2 Disciplinary Procedures

In the event of a breach of BHPA Rules and Regulations, disciplinary action may be taken against individual members or against clubs. When action is taken against a club it is the club CFI who is normally required to represent the club.

The procedure followed depends on whether in the opinion of the Chairman FSC (or Technical Officers operating under his delegated authority) the breach is minor, serious or extreme:

- A.** Minor breaches are dealt with by the member/club CFI concerned being given written notice detailing:

1. The areas of concern.
2. A timescale by which improvements must be in place.
3. The fact that disciplinary action(s) will follow in the event of non-compliance.

If, within the stated period, no response is received or the concerns are ignored or not addressed to its satisfaction then the FSC will regard the matter as a serious breach.

- B.** For serious breaches the member/club CFI concerned will be provided with a written invitation to attend an FSC meeting which will set out the areas of concern to be discussed. One other person may accompany the member/club CFI at the hearing.

If as a result of these discussions the FSC decide that disciplinary sanctions and/or remedial actions are appropriate then the member/club CFI will be informed at that meeting of the FSC's decision - which in the case of:

1. Individual members may include withdrawal of qualification or other sanctions,
2. Clubs may include a financial penalty, a temporary suspension of registration or a permanent withdrawal of registration.

The FSC will then:

- a) Confirm its decision in writing, listing any penalties, remedial actions and drawing attention to the Appeals Process.
- b) Inform, as necessary, any other member(s) who may be affected by the action.

c) Report the facts (at the discretion of the Chairman FSC).

The member/club will have the right of appeal under paragraph 1.6.3 below

C. In extremis, BHPA Technical Staff, FSC members, Exec members and Examiners may suspend qualifications/registration on the spot with immediate effect. When this is the case the procedure laid out under B (serious breaches) above will apply, but with the following additional preliminary steps:

1. The member/club CFI will immediately be informed verbally as to the reason for suspension and be made aware of the meaning and consequences of the suspension.
2. This will be followed as quickly as possible by confirmation in writing from the Chairman FSC.

NOTE: If there are implications that significantly affect school or club members the FSC will write to those members and keep them informed.

Qualification/Registration re-instatement

Following disciplinary action a qualification/registration may be reinstated providing that all normal criteria and the additional conditions set out by the FSC and confirmed in writing have been met.

1.6.3 **Appeals Procedure**

Any club or member subjected to disciplinary action has the right of appeal to the Executive Council, which may appoint an independent tribunal to consider the issue. Appeals must be submitted in writing to the Chairman of the Executive Council within 28 days of receiving formal notice of the penalty or penalties imposed.

SECTION 2 OPERATING PROCEDURES

Chapter 1 GENERAL

2.1.1 Introduction	Appendices
2.1.2 The Site	A Signals
2.1.3 Site control	B The Pre-flight Check
2.1.4 Equipment	C Weak Link Values
2.1.5 Signals	
2.1.6 Instruction in Schools	
2.1.7 Training Facilities in Schools	

2.1.1 Introduction

This section contains separate chapters devoted to the procedures for operating the various hang gliding/paragliding/parascending disciplines. This first chapter contains some general information common to all disciplines.

2.1.2 The Site

The choice of site will be affected by several factors:

- a) If it is in regulated air space the relevant authorisation must be obtained.
- b) The Site Sovereignty Code guidelines must be followed prior to registering the site with the Association.
- c) Local Bye-laws may control certain activities (eg the use of power boats on specific waters, or anti-noise constraints).
- d) Site sharing requires effective and constant liaison with other users.
- e) Every site (including landing areas) should be surveyed for potential hazards - ground and air obstacles (eg trees, walls, rocks, significant areas of water; power lines, localised turbulence, proximity of other airborne craft).
- f) Where the public have access to a tow launch site a board "WARNING - TOW CABLES" should be displayed prominently.

The launch point should be chosen with the following points in mind:

1. There should be sufficient clear ground in the immediate vicinity to:
 - i) allow the glider to get safely airborne, and
 - ii) minimise the danger in the event of an emergency on or shortly after take-off. This includes an abort space to the front, sufficient 'blow-back' space, and clearance to either side in case of side-slip or rotation.
 - iii) allow other pilots to make their gliders ready for flight.
2. The ground surface should be soft; grass or sand is better than concrete or tarmac if anyone falls over during the launch.
3. In tow operations the launch point must be visible from the tow unit so that all signals can be seen and the tow unit operator can observe the glider in the early stages especially.
4. The "park" for members' and visitors' cars and equipment should be situated at a safe distance from the launch point.
5. The proximity and the effect of the sport upon other users of the site and passers by (eg cars on a nearby road; horse riders) should be considered.
6. The direction of launch should be as near as possible into wind.

7. It should be appropriate to the level of training or competency of the student or the pilot.

The landing area should be chosen with the following points in mind:

1. It should be of suitable size; both for the level of student or pilot competency and the intended exercise.
2. It should be clearly defined; where an alternative landing area is available it, too, should be clearly marked.
3. It should be suitable for the identified wind directions, and the approaches should be hazard free.
4. It should not be prone to turbulent effects.
5. Where appropriate it should be clearly visible to a tow unit driver practicing controlled descents.
6. To avoid congestion pilots should be able to clear the landing area quickly and easily.

2.1.3 Site Control

In a school situation a Duty Instructor is appointed on a daily basis by the CFI and is responsible for taking the lead, allocating duties to other Instructors, and maintaining overall control (especially of the operations and the site). This is necessary to anticipate and prevent confusion, thus minimising the possibility of unsafe procedures which might lead to incidents or accidents. The Duty Instructor should be identified to students and pilots, who will gain confidence from, and respond to the presence of this authoritative source.

2.1.4 Equipment

WARNING The dangers attached to moving machinery and tow lines must be made clear to all participants at regular and frequent intervals. Hands and feet, in particular, must be kept well clear. In a commercial situation proprietors are reminded of their duties under the current Health and Safety at Work Act which requires that all moving machinery must be guarded in such a way as to effectively protect operators and bystanders.

The regular and careful inspection of equipment is essential for the continuing safety of students and pilots alike.

In addition to regular periodic checks on an annual or seasonal basis, all equipment should be given a thoroughly detailed Daily Inspection at the start of the flying day. This should not be confused with the Pre-Flight Check which is carried out by the student or pilot just prior to take-off and which is described in the Appendix B of this chapter.

Checking all equipment brought on to the site avoids the danger of overlooking a glider which, although not immediately required, might be brought into service later in the day. In a training situation it is the Duty Instructor's responsibility to ensure that these inspections are carried out although experienced pilots are expected to be responsible for their personal equipment and perform daily inspection and pre-flight checks themselves. Unserviceable gliders should be marked with the red tag to ensure they are not used until they have been repaired. These tags are not to be removed by any other person than a CFI or qualified rigger.

Gliders

BHPA members should fly only certificated hang gliders, paragliders or parascending canopies. If they wish to accept the risks of flying uncertificated aircraft they must complete a Pilot's Declaration.

'Certificated' means tested to an approved standard by a body acceptable to the BHPA.

School gliders

- a. All hang gliders, paragliders and parascending canopies used in schools must be certified and carry a sail badge, label or keel sticker confirming this.
 1. In the case of hang gliders, acceptable certification bodies are BHPA, LTF or HGMA.
 2. For paragliders BHPA, LTF or EN are recognised. Recognised certification for load testing and flight safety characteristics is required for all paragliders (including wings for paramotoring) except speed flying mini wings.
 3. For parascending canopies BHPA certification is recognised.

Dispensation:

Parascending. The FSC intends that all parascending training and dual flying will be conducted on certified gliders only. At the moment suitable certified parascending canopies are not available, so the FSC will allow suitable canopies already registered in the Grandfather category to be used for training and dual flying. This dispensation will be withdrawn as soon as practicable once suitable certified canopies become available.

1. The registration list for grandfathered category parascending canopies was closed on December 1st 2001.
2. Round canopies may only be used for solo flight.

Speed flying mini paraglider wings. A category encompassing mini wings, speed flying wings and speed riding wings, are small paraglider wings (usually under 20 sq. metres in flat surface area, with a high wing loading). The FSC has decided that, in the absence of any certification scheme for mini/speed wings, they must only be used in BHPA schools for speed flying (non-soaring) tuition by appropriately qualified Instructors, and ground handling tuition.

- b. All gliders used in schools must be clearly marked with the weight limits ('clip-in' for hang gliders; 'total weight in flight' for paragliders and parascending canopies). These limits must be complied with.
- c. Instructors must ensure that the glider in use is suitable for the training exercise being attempted.
- d. All gliders in use must be maintained in an airworthy condition. Any damage that occurs must be rectified before further use. (The practice of straightening hang glider uprights in front of students is prohibited.)
- e. Modifications to gliders, however slight, must have the written approval of the manufacturer or BHPA. (Temporary removal of hang glider tip struts is a modification and is not permitted, irrespective of the type of flight being undertaken or technique used.)
- f. A student may use his own glider within a school providing all the above criteria are met. The CFI is responsible for checking this compliance.

Wheels on Training Hang Gliders

Wheels of at least 9" diameter must be firmly attached on to the control frame of hang gliders flown by students prior to gaining the CP rating.

Protective Head and Foot Wear

The School should ensure that suitable and properly fitting protective headgear and suitable footwear is worn. Helmets used by students must conform to CE EN966.

A simple way to check for fit (which all students should be taught) is to don and fasten the chin strap; look over the shoulder and check the helmet doesn't impede the movement. Looking forward, shake the head from side to side and make sure the helmet stays firm. Finally tilt the head forward, place a hand under the back of the helmet and push up - the helmet should remain firmly in place.

Footwear should provide firm sole and ankle protection; lacing hooks should be avoided or taped over to prevent the danger of entanglement.

When paragliding dual flying is intended, there is a possible danger that the pilot-in-charge could suffer facial injury when, after an awkward landing, the face comes into contact with the co-pilot's helmet. It is therefore strongly recommended that the pilot-in-charge wears a suitable full face helmet to afford better protection.

Harnesses (hang glider)

- a. From the Accident Statistics collected over the years it is officially recognised that seated training has many drawbacks, some of these only reveal themselves later in the pilot's flying career. As a result of this schools may only teach in a semi-prone position.
- b. Initial training must be carried out with the stirrup removed completely
- c. The stirrup should be introduced only if the student is ready and weather conditions are suitable.
- d. All harnesses must be constructed in an approved manner and made from suitable material. Harnesses in use must be in good repair and properly adjusted to suit the pilot and glider.
- e. Only "screw gate" or "twist lock" Karabiners carrying the UIAA approved mark should be used in the pilot's main line of suspension.

Note: It is believed that aluminium 'karabiners' are far less durable and more susceptible to blows than their steel counterparts.

Harnesses (paraglider)

There are, usually, two sets of straps to secure on a paragliding harness - the chest strap and the leg straps. There have been instances of the canopy inflating in the period (however, short) between fastening each set and of injuries being sustained. The choice rests between:

- a) fastening chest straps first - in which case, if the canopy then inflates the chest strap can be pulled up and under the pilot's throat, and he is pulled over on to his back with considerable force. In the worst case, that of high performance paragliders, the pilot might become airborne in a strangled position and unable to reach the controls.
- b) on the other hand, if the leg straps are fastened and an inflation occurs then the force acting on the thighs will jack-knife the pilot backwards; he will however, be in a better position to reach the controls. On balance the risk is less in b) and so the recommendation is that the leg straps should be secured first - conversely, they should be unfastened last when taking the harness off.

Harness - Paraglider dual type

There is a particular danger when fitting both pilots into a dual harness when 'spreader' bars are used and a reverse launch is used. As both rigging and spreaders must be crossed it is essential that both are crossed the same way, so to reduce the risk of confusion the following sequence is strongly recommended:

- a) harnesses on
- b) spreaders fitted to student (if not already attached)
- c) spreaders fitted to pilot-in-charge
- d) canopy fitted to spreaders - ensuring that both pilots are facing forwards

First Aid

The School is responsible for the provision of adequate First Aid arrangements at each site used. An Incident Book must be kept and all accidents to students recorded - in addition to submitting a BHPA Incident Report form.

Simulators

A good hang gliding simulator is recommended for tuition purposes. Suspended harness systems for paragliding tuition are recommended.

Wind Meter

A suitable wind speed measuring device should be introduced to students and used whenever appropriate to measure wind speed.

Wind socks and Streamers

One or more wind socks or streamers should be available especially during early training. For hill training a wind sock must be positioned in the landing area, identified to the students, and its purpose explained.

2.1.5 Signals

General

The Duty Instructor is to ensure that all those involved in the operation are fully conversant with these signals which are to be regarded as standard.

Ground to ground signals

The Duty Instructor appoints a Launch Marshal or Signaller who is then responsible for signals made from the launch point to the tow unit. Whatever method of signalling is used (bats, radio, lights or other) there must be no possibility of mistaking the **STOP** signal - in fact the absence of a positive signal to proceed should be taken by the tow unit operator that there is a potential problem and the tow should be abandoned. There are four basic signals for launching a glider:

- a) **"Take up slack"** is a positive, repeated signal meaning all is clear at the launch point and the tow unit can take up the slack in the tow line, stopping short of launching the glider.
- b) **"All out"** signal indicates to the tow unit that he can proceed to launch the glider.

Notes:

- 1. The signal used at international events is 'DRIVE'
- 2. The 'All out' signal in some parascending circumstances has become obsolete, and at the discretion of the CFI the 'Take up slack' signal may be used throughout the launch phase providing there is no chance of a misunderstanding arising.

- c) **"Stand by"** (bat held out to the side) indicates that there is a problem at the launch point which needs correcting before the launch can proceed.
- d) **"STOP"** is a warning to the tow unit operator that there is a problem at the launch point and the launch should not proceed; the action required of the operator depends upon the stage of the launch, the tension in the tow line, and any indications which the tow unit operator may have as to the cause.

In order to avoid confusion the signals must be distinctly different (see Appendix A of this Section).

When using radio communications the commands may be shortened for clarity - reference should be made to the specific chapter which deals with each discipline and which defines these and other signals. Words like 'No' or 'Go' should be avoided for obvious reasons. The tow vehicle may signal "I am ready to proceed" to the Launch Marshal by switching on its hazard warning lights, which also indicates to other airfield users that this is a moving vehicle. Alternatively, and for similar reasons, a flashing strobe light may be mounted on the tow unit to indicate that a launch is proceeding.

Air to ground signals

A pilot may signal a 'request to release' by opening wide his legs and keeping them open. The tow unit operator should normally respond to this signal by removing the tension from the tow line thus allowing the pilot to release; at this point the pilot may close his legs. However, particularly with students, the driver may decide to continue the tow until the glider is more safely positioned. Proficient paraglider pilots under tow may indicate to the driver/winchman the following requests:

- i) "Please increase the tow tension" - both arms out to the side and waved up and down (for round canopies only).
- ii) "Please decrease the tow tension" - both legs opened and closed repeatedly.

Ground to air signals

Where parascending students, in particular, are being introduced to self-release it can be useful for the tow unit driver to wave a signal bat as an indication that it is safe to release.

Radio communications

All forms of radio communications used in hang gliding and paragliding must comply with the current legal requirements. Particular attention must be paid to such regulations when using air-to-air or ground-to-air communications, with pilots trained to understand the proper procedures.

It is recommended that schools should use an approved ground to air radio for the longer solo flights. This is a requirement when only one instructor is present for the student's high solos.

Appendix A to this chapter contains details of the signals mentioned above.

2.1.6 Instruction in schools

Training is carried out in strict accordance with the specific Student Training Programme as given in Section 3 Chapter 2. Instructors are to also take note of the following points:

Supervision - Students should at all times be under qualified supervision; this will range from the Day 1 situation of 'very close supervision' through to near-CP award of 'watchful attention'. Very close supervision means that the instructor is in direct audio/visual contact with the student - they are close enough for there to be no misunderstanding as to what is intended and, in case of problems, the necessary corrective actions can be taken. Watchful attention means the instructor knows what the student intends, has assessed it as reasonable, and is observing the task so as to be able to debrief effectively and, where appropriate, sign off the task.

Fundamental technique for practical instruction -

Introduction

Explanation and Demonstration

Practice with feedback

This is the most effective tool in the Instructor's armoury

Repetition – Successful repetition is an important part of learning. As a general guide for practical tasks the student should complete a number of consecutively satisfactory flights to demonstrate competency in a particular skill (controlled 90° turns for instance). Where applicable, the minimum number of successful attempts required to complete an exercise is specified in the relevant sections of the Student Training Record Books.

Dress - should be suitable for the planned exercise, bearing in mind the environment and weather; good footwear with firm soles and ankle protection; well fitting safety helmets offering effective protection; gloves may also be needed, and bare limbs should be avoided.

Fitness - Instructors have a duty of care which includes assessing the student for fitness to undertake any part of the training. They should continually assess students for fatigue, particularly in the early stages when bottom landings are likely or when weather extremes may accelerate the effects.

Duty Instructors should also bear in mind that fatigue can also affect Dual Pilots.

Communications - students must receive a thorough briefing on the method of communications which will be used during the exercises. Whether verbal, radio or semaphore instructions or directions must be simple and not capable of being misunderstood. In the early stages, when direct briefings or instructions are usual, the student should always be asked to repeat them back to the Instructor. As students become more proficient the briefings should become increasingly discursive (eg "What do you think you should be doing next?"). The student should always be debriefed after landing, in the manner of "What did we agree you would do?" : "What did you actually do?" : and, if there is an error "Why do you think you did (or did not do) that?".

Sequential checks

There are numerous instances of incidents occurring after a sequence has been interrupted, then continued but with a point missed out. Students (and Instructors) should be constantly reminded that once a sequence has started it should be completed without interruption. If necessary it should be repeated from the beginning.

Balanced Instruction

- a. Students attend schools with one view. They wish to be taught how to fly gliders. But in addition to the practical skills involved a student must have a sound theoretical knowledge if they are to achieve a full understanding.
- b. Some schools tend to lecture new students for the first half of their first day - which can involve 2 to 3 hours of theory (classroom) work. Other schools initiate their students with basic practical training as early as possible, and then introduce them to theory on an 'as required' basis. The latter approach gives the students something to which they can relate and is by far:
 - i. the most practical and effective (weather permitting).
 - ii. the most interesting and rewarding for the student.
 - iii. the more constructive method of teaching.
- c. The structure of the first day depends upon the type of discipline but in any event should be flexible.
 - i. If weather conditions are suitable, students should be introduced to the gliders and

- start ground handling, as quickly as possible. A short 30 minute basic theory session could be appropriate, if not too much time has been absorbed with administration and introductions. Theory thereafter should be carefully controlled to ensure that it is introduced at the most appropriate time - this could save schools having to cancel part of their courses due to inclement weather.
- ii. If the weather on the first morning is unsuitable for practical work then an introduction to theory can be made providing it is kept within reasonable bounds and not laboured.

Bad Weather Programme

Schools are encouraged to compile a programme of attractive activities for students to take advantage of when poor weather prevents further training.

Training Programmes

Experience built up over many years has resulted in the Student Training Programmes listed in Section 3. Student safety is paramount and depends upon following this planned and progressive series of exercises. These are the building blocks of the sport - before a student is awarded any rating the CFI must be satisfied that all aspects of the programme, including theory, have been properly and fully covered and that the student has been tested and has successfully completed all the requirements.

Part Trained Students

BHPA schools may be attended by students who have undertaken some training elsewhere. To prevent unnecessary repetition, students who have recently completed such training need not repeat exercises already carried out, providing that the experience was reasonably current and the procedure below is followed.

1. The student must provide the BHPA Instructor with satisfactory evidence of attendance at a previous school, and of the standard achieved (eg. relevant IPPI rating). If the previous school was a BHPA school then a copy of the STRB must be obtained.
2. The student and BHPA Instructor must clarify the extent of the student's previous training by signing the Student Training Record booklets only where an exercise was completed in full. (The 'Exercise x completed satisfactorily' line should be annotated with the previous school's name and country.)
3. Starting from exercise one, any exercise not completed (or not fully completed) **should** be thoroughly reviewed and completed satisfactorily (and the Student Training Record Booklets signed) before any new exercises are introduced.

NB. Students trained in foreign schools will usually be unfamiliar with the UK flying environment (small hills, wind). It is essential that Instructors anticipate and address these gaps in the student's knowledge / ability.

Irrespective of all the above, when practical training commences Instructors should carefully gauge the student's true ability by setting and monitoring how well they perform simple basic exercises.

Invigilation of examination papers

Schools (and clubs) should have suitable facilities to allow students and pilots to remain undisturbed whilst an examination paper is attempted. CFI's and Senior Coaches should make every effort to maintain the integrity of the scheme by briefing invigilating officers (Instructors, Coaches and Safety Officers) accordingly.

Landing emergencies

Students should be trained to make every effort to avoid the following situations, but it is accepted that emergencies will arise and all students should be made aware of the following

procedures. It must be stressed to the student, however, that every scenario is different and instructors should discuss with the student the problems, the variables and the options which might be open to them.

Tree landings

Instructors should stress that falling out of the tree is the greatest danger. If a tree landing is inevitable, aim the glider squarely at a large one if possible and try to ensure firm contact. It is advisable to point the closed legs and try to crash through to the centre trunk and, having found a firm footing, hang on. Crossing the legs may help protect the groin, and placing an arm across the face will protect the eyes. **DO NOT TRY TO CLIMB DOWN;** make sure the glider cannot drag you off your perch - and await rescue.

Water landings - paragliders

Instructors must stress the probability, except within the most strictly controlled environment, that a water landing is not survivable and must be avoided at all costs. Pilots should, if flying near water, make sure that a safe dry landing is within easy reach at all times.

If, however, it is impossible to make a dry landing (even with the risk of injury) then, the real danger lies in the potential for entanglement with the paraglider suspension lines. It is therefore imperative to get clear of the paraglider as quickly as possible. On approach sit well back and unclip the chest strap and loosen the leg straps. On entering the water release the leg straps (or riser-to-harness connectors) and **FLOAT** clear with the minimum of movement. If an inflatable life jacket is worn it should be inflated.

If a modern seat harness is worn then sit well back and unfasten the chest and leg straps; continue to lean back in the seat; just before entering the water draw the elbows well in and tuck the head down. As the feet hit the water allow the body to roll forward out of the harness, which should then be dragged clear by the still-flying canopy. **FLOAT** clear with the minimum of movement. If an inflatable life jacket is worn it should be inflated.

Depending on the type of paraglider it should be controlled to land as far away as possible; this keeps the suspension lines taut and away from you.

It is not advisable to drop from the paraglider before impact - it is often difficult to assess height above water, especially if it is calm.

Water landings - hang gliders

Instructors must stress the probability, except within the most strictly controlled environment, that a water landing is not survivable and must be avoided at all costs. Pilots should, if flying near water, make sure that a safe dry landing is within easy reach at all times.

A dry landing, even with the risk of injury, will always be the better option.

2.1.7 Training Facilities in Schools

Classroom

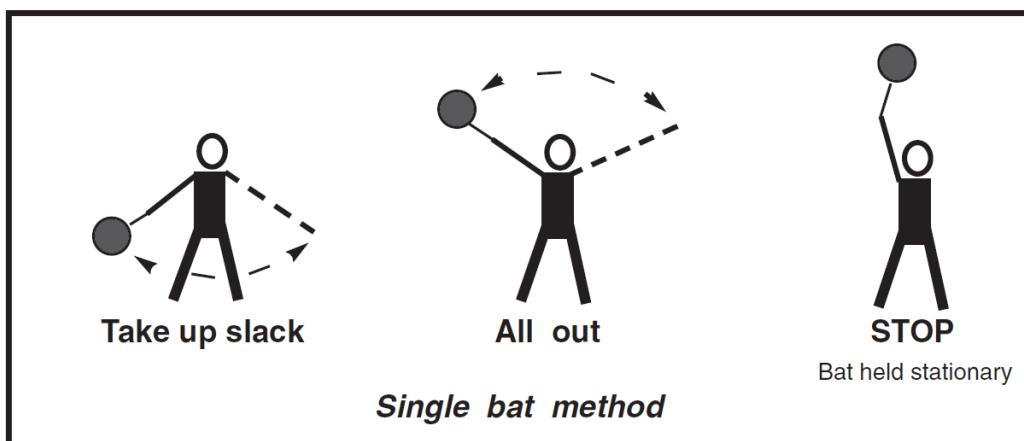
To give proper theoretical instruction Schools should have access to and use a classroom in which full use of visual aids is made.

Wherever possible a classroom should be equipped with a range of resources:

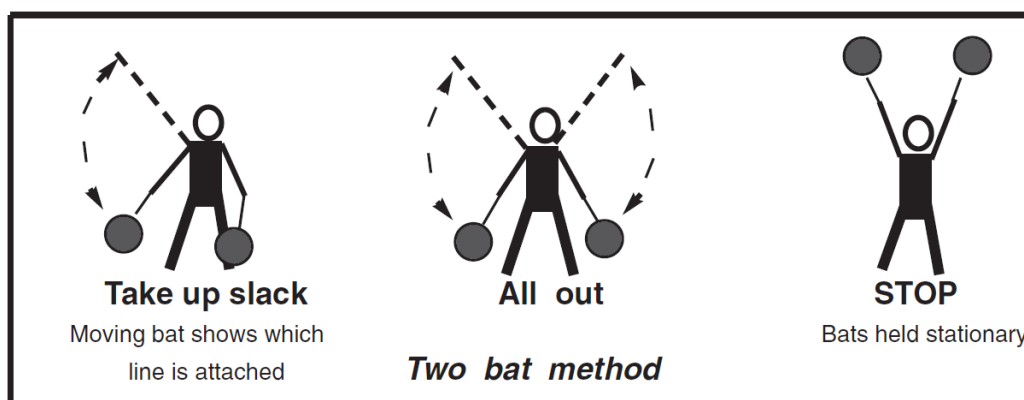
- i. White board and/or flip chart
- ii. DVD projection equipment
- iii. PowerPoint projection equipment
- iv. An overhead projector
- v. Models, posters, drawings, current charts, photographs etc. should be used and displayed to enrich the learning environment.

APPENDIX A

SIGNALS



Signals as seen from the tow unit



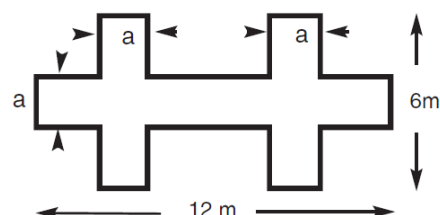
	Take up slack	All out	STOP
Radio	Repeat 'Take up slack' 3 times	Repeat 'All out' 3 times	Repeat 'STOP' 3 times
White lights	3 second dashes at 3 sec intervals - repeatedly	1 second dots at 1 sec intervals - repeatedly	Continuous white light(s)

In-flight signals to tow unit:

Legs spread wide = "STOP, I want to release"
Any apparent pilot signal should be treated in the
same way; although students should not be
released if it is unsafe.
Refer also to para 2.1.5

Glider tow cable sign

Displayed on the 'airfield' (*in white*) as a warning
to airmen that there are tow cables in use.
Measurement $a=1$ metre



All operations for towing higher than 60 metres AGL
or within an ATZ require a CAA Permit to tow.
Normally restricted to 2000 ft AGL maximum
it is possible that lower or higher is permitted (indicated on the Permit).

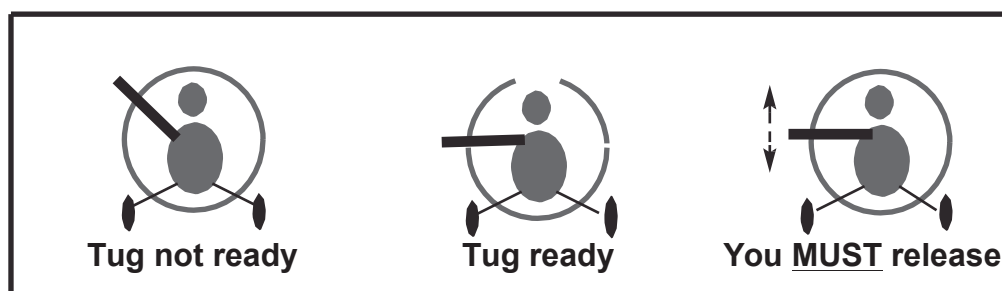
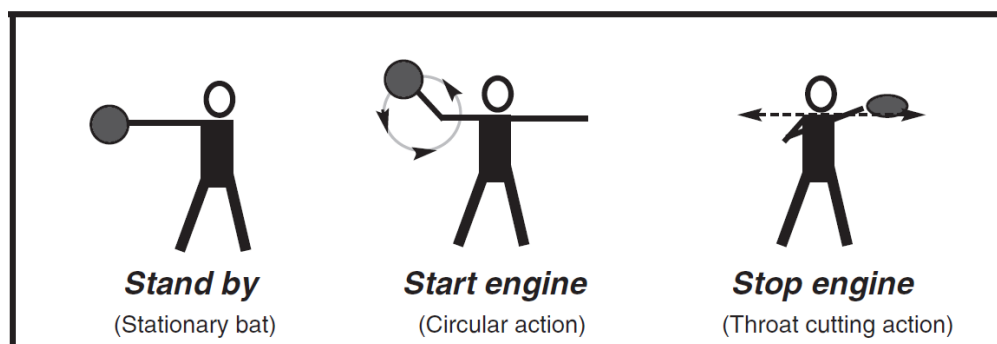
Additional aero-tow signals

'Take up slack/tension'

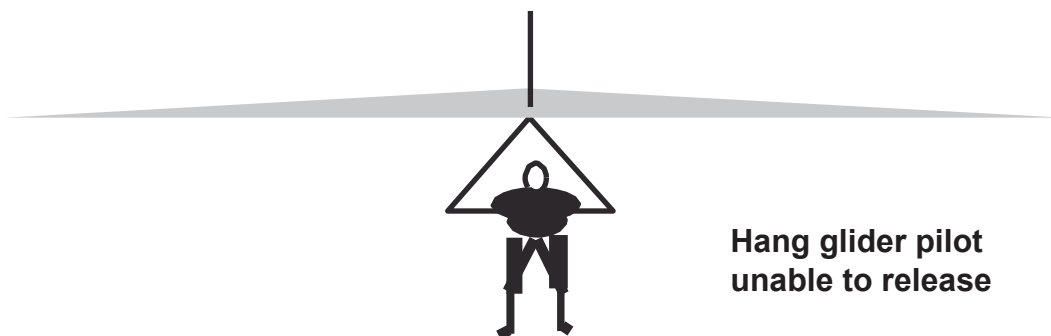
'All out'

'STOP'

are standard signals (see preceding page)



Tug aircraft signals



Hang glider pilot
unable to release

APPENDIX B

The Pre-flight Check

All students must learn the importance of that final check before they attempt to take off - the pre-flight check. The following easy to remember list of the vital actions that must be covered before every launch should be used by paraglider pilots and hang glider pilots alike. The memory aid is the phrase - '**Will Geordie Have His Cat Aboard?**' - with the first letter of each word being the prompt.

Paragliding

Will Geordie Have His Cat Aboard (Today)

W= Wind and Weather

Check:

- Wind direction - is it shifting around?
- Wind strength - is it varying much? Is it satisfactory for your level of experience? Will it remain so?
- Visibility - will the visibility remain satisfactory?
- Weather - any rain approaching, any signs indicating likely turbulence?

G= Glider

Give your glider a quick 'once over' to confirm nothing has altered since your **DI**.

Check:

- Laid out properly
- Cells clear
- Lines untangled.

NB for tow launching:

Check that the tow release is securely fastened to the harness and that it is functioning correctly.

H= Helmet

Check:

- That it fits snugly and will not drop over your eyes
- That it fits snugly and will not drop over your eyes
- That it is fastened - and won't fall off.

H= Harness

Check the Five Main

Points:

- Left leg strap
- Right leg strap
- Chest strap (fastened and correctly adjusted for semi-cross bracing)
- Left maillon/karabiner
- Right maillon/karabiner

Check any cross bracing straps, speed system etc

Check the Emergency Parachute is stowed correctly and the handle is within reach.

C= Controls

Check:

- Control handles in the correct hands
- Correct risers held appropriately
- Control lines free running.

A= All Clear

Check:

- Your take off path is clear - nothing to trip you or wrench your ankles
- No bushes, posts etc. or roving people/livestock within leading edge range
- No gliders or people about to appear mysteriously from below the brow, on their way up
- Airspace above, in front and below you is clear from other air users and will remain so during your take off sequence
- No one is about to overshoot their top landing and need the airspace you are about to occupy.

(T= Turn Direction)

- If using the standard reverse launch, check which riser is on top: that shoulder must go back when you turn to face into wind.

You are now ready to launch.

The Pre-flight Check (cont)

Hang Gliding

For Hang Glider pilots the memory aid and check list order is almost identical - just a few minor changes.

Will Geordie Have His Cat Aboard?

W= Wind and Weather

Check:

- Wind direction - is it shifting around?
- Wind strength - is it varying much? Is it satisfactory for your level of experience? Will it remain so?
- Visibility - will the visibility remain satisfactory?
- Weather - any rain approaching? Any signs indicating likely turbulence?

G= Glider

Give your glider a quick 'once over' to confirm nothing has altered since your DI.

Check

- Quick release points
- Batten elastics
- Tip sticks
- Under surface zips and inspection points
- Luff lines not caught under battens.

NB for tow launching:
Check that the tow release has at least 5cm clearance above the base bar; that it is securely fastened to the harness and is functioning correctly

H= Helmet

Check:

- That you are wearing one
- That it fits snugly and will not drop over your eyes.
- That it is fastened - and won't fall off.

H= Harness

Carry out the hang check. This is accomplished in one of two ways;

a) Lying Down (preferred way): With assistance from the nose man lie down and check:

- You are clipped in properly and your karabiners are locked
- Swing back and forth to check that clearance above the base bar is sufficient (about a fist)
- Your harness is worn properly and is comfortable
- Your harness straps are not twisted
- Your legs are through the leg loops.

b) Stand Up Method: Stand up and, holding on to the front wires, lean forward to tighten the straps.

Turn your head and check:

- You are properly clipped in and the karabiners are fastened
- The harness is worn properly and seems to be comfortable
- The straps are not twisted
- Your legs are through the leg loops.

NOTE: This method does not allow you to check that you are clear of the bottom bar.

C= Controls

Check:

- Vb set for take-off.

A= All Clear

Check:

- Your take off path is clear - nothing to trip you or wrench your ankles
- No bushes, posts etc. or roving people/livestock within leading edge range
- No gliders or people about to appear mysteriously from below the brow, on their way up
- Airspace above, in front and below you is clear from other air users and will remain so during your take off sequence
- No one is about to overshoot their top landing and need the airspace you are about to occupy.

You are now ready to launch

APPENDIX C

Approved maximum weak link values for tow launch operations.

1. All weak link values stated are maximums.
2. All weak link values stated are for professionally purpose built calibrated weak links such as Tost and Koch. These values must be reduced by 20% if using any other type of weak link.
3. 1daN is approximately 1kg force.

Parascending

Square wings:

Green (300daN) for 70kg upward canopy maximum recommended payload.

Yellow (400daN) for 94kg upward canopy maximum recommended payload.

White (500daN) for 117kg upward canopy maximum recommended payload.

Rounds:

White (500daN)

Paragliding

Paragliders:

Up to 125 kg total weight in flight: 125daN weak link

More than 125 kg total weight in flight: 150daN weak link

Hang Gliding

Hang glider winch tow:

Up to 150kg clip-in weight: 125daN weak link

More than 150kg clip-in weight: 150daN weak link

Hang glider Aerotow: (Glider end of tow rope)

Up to 75kg clip-in weight: 100daN weak link

75kg to 150kg clip-in weight: 125daN weak link

More than 150kg clip-in weight: 150daN weak link

Tug Aerotow: (Tug end of tow rope)

Up to 150 kg glider clip-in weight: 150 - 180daN weak link

More than 150kg glider clip-in weight: 180 - 225daN weak link

SECTION 2 OPERATING PROCEDURES

Chapter 2 TOW LAUNCHED HANG GLIDING

2.2.1 Introduction	2.2.5 General Requirements
2.2.2 Personnel	2.2.6 Equipment Requirements
2.2.3 Signals and Commands	2.2.7 Winch Requirements and Approval
2.2.4 Tow Line Tension	2.2.8 Fixed Line System

2.2.1 Introduction

Depending upon the type of tow unit and/or the equipment used certain procedures differ in varying degrees and are mentioned where appropriate. Instructors and Tow Coaches must make themselves aware of these differences and the relevant circumstances.

2.2.2 Personnel

In a club registered as a school a suitably qualified Instructor must be present and take charge of the operation. In other clubs (ie where no form of ab-initio training occurs), a suitably qualified Tow Coach must be present and take charge.

A Launch Marshal, who has received relevant practical training, but is neither the pilot nor a dual flight student, must supervise at the launch point.

The tow unit must at all times be operated or driven by an appropriately licenced Operator, or a potential Operator training under supervision.

2.2.3 Signals and Commands

Reference should also be made to Section 2: Chapter 1: Appendix A.
Effective communication between all concerned is of the utmost importance. In addition to the standard procedures as listed in items 1 and 2 below, the launch instructor should, where appropriate, relay the following information to the winch operator who will then acknowledge it:

- a) the proficiency and any known faults of the pilot
- b) the objective(s) of the next flight

This will ensure that the winch operator knows what to expect, how high/gently to launch the pilot and where to halt proceedings if things do not conform to plan.

The following standard procedures should be adopted for every launch. They can be given using voice alone, by radio, by visual signal system, or by a combination of all. The chosen method must work properly and efficiently.

1. Pilot information via the Launch Instructor to the winch Operator.

Name, weight and experience as appropriate - any possible pilot problem should be

included.

If using radios the winch Operator repeats the messages as necessary.

2. 'Winch Live' - is indicated by switching on the flashing light.

3. Safety Checks

The signaller/Launch Instructor asks the pilot: **"Is the glider checked?"**

If all is clear the Pilot replies: **"Glider checked and satisfactory"**

The signaller/Launch Instructor then asks **"Hang check?"**

Pilot completes a hang check.

When the checks are complete the winch operator is told: **"All checks completed"**.

The winch Operator can repeat the message by radio if appropriate.

4. Tow Line Attachment

Only when items 1, 2 and 3 above have been completed can the Pilot:

- a) connect the tow line
- b) operate the release system to check its satisfactory operation.
- c) re-connect the tow line and check that it is properly attached.

5. Tensioning the Line

When ready the pilot shouts clearly: **"Take up tension"**.

This is relayed via the signal man to the winch Operator by:

- a) Visual - by bat : clear, steady, underarm swings of the bat from 4 o'clock to 8 o'clock.
- b) Visual - by light : clear, steady, slow flashes.
- c) Radio/Audio : the command **"Take up tension"**

6. The Take Off

When ready pilot asks **"Clear above and behind?"**

The signaller checks and if all clear repeats **'Clear above and behind'**.

The pilot then shouts clearly **"All out"**.

This is relayed via the signal man to the winch operator by:

- a) Visual - by bat : clear, **rapid**, overarm swings of bat from 10 o'clock to 2 o'clock.
- b) Visual - by light : clear, steady fast flashes.
- c) Radio/Audio : the command **"All out; All out; All out"**

7. Emergency Stop.

To terminate a launch once the "All Out" signal has been given:

- a) Visual - by bat : held stationary directly overhead (12 o'clock).
- b) Visual - by light : continuous beam of light.
- c) Radio/Audio : **"STOP, STOP, STOP,"** repeated.

8. Other Signals

- i) When the pilot wants slack in the tow line before the **"All Out"** signal but after

the **"Take Up"** signal has been given:

- a) Visual - by bat : discontinue underarm swings.
 - b) Visual - by light : discontinue flashing and switch off light.
 - c) Radio/Audio : the command **"GIVE SLACK"**. The winch operator repeats the command **"Slack"**. At this point the pilot should release the tow line for safety reasons. When ready the launch proceeds from 3 above.
- ii) If the winch operator no longer wishes to go ahead with the launch, for whatever reason, he switches off the flashing light. If appropriate he relays the reasons to the pilot/Launch Instructor. The pilot must then release the line if it has been attached. When the winch operator is ready to go ahead again, he switches the light back on. The launch can then proceed from item 3 above.

2.2.4 Tow Line Tension

- a) First flight tow line tensions should be kept to the necessary minimum.
- b) Tow line tension must be adjusted to allow for the differences in pilot weight, glider type and pilot experience.

2.2.5 Additional Requirements for Tow Training

- a) Maximum wind strength for any training is 30 mph - at this level only full tethered training can be carried out.
- b) Maximum wind strength for:
 - i) Solo flights is 15 mph measured at ground level
 - ii) First solo is 10 mph measured at ground level
- c) Maximum variation in wind strength must not exceed 5 mph in 10 seconds.
- d) Only an instructor may take control of pitch tethers.

2.2.6 Equipment Requirements

Winch Systems and Towing Equipment

General

The equipment must be safe to use for pilots, launch crews and instructors and free from hazard to bystanders, under both normal and emergency conditions.

The system must permit all BHPA towing signals to be implemented.

The system must provide a smooth continuous tow at a controlled tension.

It must be safe for the winch operator to operate in normal and emergency situations.

Tow Equipment

The Weak Link

A weak link must be used. See Section 2: Chapter 1: Appendix C.

The Tow line

1. The release(s) must be reliable whether on or off load.
2. On failure of the weak link no more than 1.5m of line, but preferably none, shall dangle below the control bar with the pilot in the upright landing position.
3. When towing with 100% of the tow force applied to a chest release with two gates (for the top line and bottom line), the longer (bottom) line should measure 2.5m (± 5 cm) and the shorter (top) line 1.5m (± 5 cm). This ensures that the bottom line does not interfere with the base bar during take-off, whilst minimising the shock load on the top line when the bottom line is released.
4. A flag or parachute is required, attached to the line below the weak link, so that the winch operator can observe release on weak link failure.
5. An effective means of cutting the tow line at the winch **immediately** in an emergency must be provided; a fixed wire cutter or guillotine is required for a wire tow line.
6. When a fixed line tow launch is used, prior to launch the paid out length of tow line must be capable of stretching 6m when a 100kg load is applied to it.
7. Because of the difficulty of maintaining accurate observation over long distances from a moving vehicle it is recommended that for fixed line systems the tow line does not exceed 500 metres. Longer lengths may be used with static winches as long as accurate observation can be maintained.

The Bridle or tow yoke

1. The bridle must provide a safe tow with no danger of inducing any unnatural flying state for the glider.
2. At least 50% of the tow line tension must be applied through the pilot's harness.
3. The bridle may also be connected to the airframe but only to the keel forward of the hang point and not more than 20cm from it.
4. It should not be possible to continue the tow from a bridle connection to the keel after release of the bridle connection to the pilot.
5. On release bridle parts must not strike the pilot.
6. After release bridle lines must not hang more than 1.5m below the control bar.
7. Bridles used for step-towing must self-release on backward tension.
8. 3-ring releases must have a cover to shield the pin end to remove the risk of entanglement.
9. 3-ring releases must only be used with a matching ring at the end of the line, NOT a rope loop or eye.

2.2.7 Winch Requirements and Techniques

All winches must be fitted with appropriate guards in accordance with the Health and Safety at Work Act.

STATIC WINCH

All static winches must be fitted with the following safety devices:

- a) the engine speed control lever (throttle) must be sprung loaded to idle.

- b) a guillotine or cutting tool, controlled by the winch operator, capable of severing the tow line in one action
- c) a tow line tension indicator.
- d) a weak link (fitted in the tow line) of the correct breaking load. See Section 2: Chapter 1: Appendix C.
- e) an automatic means of distributing the line across the width of the drum as it reels in.
- f) The end of the line, which may have a flag or streamer, must be free to pull clear of the drum.

Additionally it is recommended that a static winch should have the following facilities:

- g) differently shaped handles/knobs on throttle and brake controls
- h) colour coded drums and lines on a twin drum system, such that, viewed from the launch point the left hand line is, for instance, red; and the right hand line is green.

Operating a Static Winch

This information is based on operating certain 'Koch' type winches and derivatives. Operators of other winch types should refer to the User's Manual for specific differences.

Preparation

Standard daily inspection checks are carried out, with particular attention being paid to any special equipment (eg gearbox) fitted. The winch is positioned facing into wind and effectively secured to prevent the winch moving or swivelling. Set and latch the guillotine(s) taking care to keep the hands well clear during the cocking operation. Feed the tow line(s) through the guide(s) (gloves should be worn to protect the hands) ensuring the cables do not fall down the side of the runners, nor foul any mechanical part. Attach the drogue parachute(s).

The tow lines(s) are then ready to be towed out to the launch point as follows:

- a) Set drum brake(s) ON and check that the clutch is dis-engaged
- b) Start the winch engine and leave idling
- c) Attach the tow line(s) to the retrieve unit using a weak link
- d) Release the drum brake(s), then apply just enough brake(s) to prevent drum over-run
- e) Drive the retrieve unit slowly to the launch point, in a straight line. Where two tow lines are being run out care must be taken that they do not cross each other
- f) The retrieve unit should slow down as it nears the launch point to avoid drum over-run
- g) Apply drum brake(s) firmly when it is clear that the tow line(s) are fully paid out
- h) Stop the winch engine

Pre-tow checks

- a) Check that the tow line is free and has not over-run the drums
- b) Set both drum brakes firmly ON
- c) Check that the clutch is dis-engaged
- d) Switch the battery ON
- e) Start the winch engine

Towing

On receiving '**Take up slack**' signal

a) Engage clutch

b) Progressively release the relevant drum hand brake, controlling and holding the winching-in rate by use of the throttle until receiving either a '**Stand by**' signal or the '**All Out**' signal. On receiving the '**All out**' signal increase the drum speed to start the ascent.

NOTE : If a '**STOP**' signal is given at any time the launch should be aborted. When the cause has been ascertained and corrected the launch may then proceed but from the beginning.

c) If the pilot is using a two line release, when the glider reaches approx. 30m (100ft) reduce the tow tension until the pilot has released the top line. Then smoothly re-apply tension.

d) On seeing the 'release' signal from the pilot, use the throttle to reduce tension (in high winds first dis-engage the clutch)

e) After the pilot has released the tow line (and it has fallen away) open the throttle to retrieve the remainder - reducing the tension each time the drogue 'chute hits the ground. When the drogue is 15m (50ft) away from the winch close the throttle and use the drum brake to slow the intake down.

f) When the drogue is 3m (10ft) away dis-engage the clutch and slow the drum to a stop.

g) Stop the engine (unless a 2nd line is ready for immediate use)

Wire tow line preparation - forming a closed loop

a) Cut the cable cleanly

b) Slide two swages on to the cable

c) Loop the cable back on itself and slide through the first swage pulling cable through to form a loop some 3 to 5cms between the swage and the end of the loop

d) Crimp the first swage firmly

e) Twist the cable half a turn and slide through the second swage

f) Crimp the second swage firmly - as near the cut end as possible -the distance between the two swages should be approximately 5 to 7cms.

g) Pick up debris to avoid possible danger to animals/people/gliders/equipment

Wire tow line preparation - in-line repair

a) Cut the tow cable cleanly

b) Place both swages on one cable, then slide the second cable through both, making sure that there is half a turn twist between each swage

c) Crimp each swage as close to the respective ends as possible - the distance between each swage when finished should be approximately 5 to 7cms.

d) Pick up debris to avoid possible danger to animals/people/gliders/equipment

PAY OUT WINCH

All pay out winches must be fitted with the following safety devices:

- a) A tow line tension indicator. Alternatively an adjustable stop is required to limit the maximum line tension, and a means is required of checking that tension between launches. The smoothness and efficiency of winch brakes has been found to vary considerably between launching sessions (depending on storage conditions) and also as they warm up with use. Winches should be stored under cover and checked frequently when in use.
- b) If internal expanding brakes are used it is recommended that they are of the double trailing shoe type.
- c) There must be an operator controlled, single action, effective means of cutting the tow line at the vehicle immediately in an emergency (e.g. a guillotine or cutting tool). A fixed wire cutter or guillotine is required for a wire tow line.
- d) A tow line weak-link of the correct breaking load.
- e) The end of the line, which may have a flag or streamer, must be free to pull clear of the drum.
- f) There must be a means of distributing the line across the drum during rewind.
- g) A secure seat is required for the winch operator so that he can operate the brake smoothly during a rough ride.
- h) Recommended trailer dimensions are: hitch to wheel axle(s) 1.8m (6 ft); minimum wheel size 13 inches
- i) The vehicle, such as a hatch-back or van should allow the winch operator to sit comfortably with a clear view of the glider under tow, with immediate access to the release and in direct communication with the driver.

2.2.8 Fixed Line System

Fixed Line Hang Glider towing requires specific FSC approval.

All fixed line tow systems must include the following safety devices:

- a) A line tension indicator. It is recommended that the tension indicator scale is direct reading to avoid errors, and is mounted where the driver can see it while driving without turning his head. An audio read out is ideal.
- b) An approved release at the vehicle (unless the line is hand-held), immediately to hand for the operator from the towing position.
- c) There must be an operator controlled, single action, effective means of cutting the tow line at the vehicle immediately in an emergency (e.g. a guillotine or cutting tool). A fixed wire cutter or guillotine is required for a wire tow line.
- d) A tow line weak-link of the correct breaking load.
- e) The vehicle, such as a hatch-back or van should allow the operator to sit comfortably with a clear view of the glider under tow, with immediate access to the release and in direct communication with the driver.

SECTION 2 OPERATING PROCEDURES

Chapter 3 TOW LAUNCHED PARAGLIDING OVER LAND

2.3.1 Introduction	2.3.5 Winches: Requirements and Techniques
2.3.2 Personnel	2.3.6 Fixed Line (vehicle) Towing
2.3.3 Signals and Commands	2.3.7 Emergencies from the Tow Unit
2.3.4 Equipment General	

2.3.1 Introduction

Paragliders can be tow launched using a pay-out winch, a static winch or with a fixed line vehicle tow. Depending upon the type of tow unit and/or the equipment used certain procedures differ in varying degrees and are mentioned where appropriate. Instructors and Tow Coaches must make themselves aware of these differences and the relevant circumstances.

2.3.2 Personnel

In a club registered as a school a suitably qualified Instructor must be present and take charge of the operation. In other clubs (ie where no form of ab-initio training occurs), a suitably qualified Tow Coach must be present and take charge.

A Launch Marshal, who has received relevant practical training, but is neither the pilot nor a dual flight student, must supervise at the launch point. The Launch Marshal need not be a qualified Instructor.

The tow unit must at all times be operated or driven by an appropriately licenced Operator, or a potential Operator training under supervision.

If fixed line towing then a Lookout and a Tensiometer Reader are strongly recommended:

- Lookout: Relays the launch marshal's signals to the Operator/driver. Looks ahead and warns operator/driver of obstacles. Warns operator/driver of approaching runway end by counting down.
- Tensiometer Reader: Calls out tension readings every 2 – 3 seconds. Has a suitable cutting implement ready for cutting the tow line if ordered by the Operator/driver.

2.3.3 Signals and Commands

The signals and commands used when tow launching paragliders can either be those developed for Hang Gliding or those developed for Parascending (See Section 2: Chapter 4: Point 3). The fundamental difference between the two systems is that with the HG system the pilot is in command of the launch (with the Launch Marshall relaying his commands) whilst with the Parascending system the Launch Marshall is in command of the launch. Both systems are well proven.

It is essential that any pilot new to the club is fully briefed on the system in use.

Hang Gliding Signal and Command System:

See Section 2: Chapter 2: Point 3.

Parascending Based Signal and Command System:

All the commands at the launch point are given by one person - the Launch Marshal. After confirming that the pilot is ready (student has been briefed or stated his flight plan), and has completed his pre-flight checks (including checking the wind line), connecting the tow line and checking that the launch area on the ground and in the air is clear, the Launch Marshal should:

- a) Check that the pilot is ready for the launch by asking, **"Ready in harness?"** and receiving the positive reply, **"Ready!"**
- b) Check that the area ahead and behind is clear, then warn everyone that he is proceeding with the launch by shouting, **"Taking up slack"** as he gives the signal. This signal is continued whilst the pilot launches the wing, takes off and climbs on tow.

2.3.4 Equipment General

The equipment must be safe to use for pilots, launch crews and instructors and free from hazard to bystanders, under both normal and emergency conditions.

The system must permit all BHPA towing signals to be implemented.

The system must provide a smooth continuous tow at a controlled tension.

It must be safe for the winch operator to operate in normal and emergency situations.

All releases must be reliable whether on or off load.

The Weak Link

A weak link must be used. See Section 2: Chapter 1: Appendix C.

The Tow line

1. On failure of the weak link no more than 1.5m of line shall remain attached to the pilot.
4. A flag or parachute is required, attached to the line below the weak link, so that the winch operator can observe release or weak link failure.

2.3.5 Winches: Requirements and Techniques

All winches must be fitted with appropriate guards in accordance with the Health and Safety at Work Act.

STATIC WINCH

All static winches must be fitted with the following safety devices:

- a) the engine speed control lever (throttle) must be sprung loaded to idle
- b) a guillotine or cutting tool, controlled by the winch operator, capable of severing the tow line in one action

- c) a tow line tension indicator.
- d) a weak link (fitted in the tow line) of the correct breaking load. See Section 2: Chapter 1: Appendix C.
- e) an automatic means of distributing the line across the width of the drum as it reels in.
- f) The end of the line, which may have a flag or streamer, must be free to pull clear of the drum.

Additionally it is recommended that a static winch should have the following facilities:

- g) differently shaped handles/knobs on throttle and brake controls
- h) colour coded drums and lines on a twin drum system, such that, viewed from the launch point the left hand line is, for instance, red; and the right hand line is green.

Operating a Static Winch

This information is based on operating certain 'Koch' type winches and derivatives. Operators of other winch types should refer to the User's Manual for specific differences.

Preparation

Standard daily inspection checks are carried out, with particular attention being paid to any special equipment (eg gearbox) fitted. The winch is positioned facing into wind and effectively secured to prevent the winch moving or swivelling. Set and latch the guillotine(s) taking care to keep the hands well clear during the cocking operation. Feed the tow line(s) through the guide(s) (gloves should be worn to protect the hands) ensuring the cables do not fall down the side of the runners, nor foul any mechanical part. Attach the drogue parachute(s).

The tow lines(s) are then ready to be towed out to the launch point as follows:

- a) Set drum brake(s) ON and check that the clutch is dis-engaged
- b) Start the winch engine and leave idling
- c) Attach the tow line(s) to the retrieve unit using a weak link
- d) Release the drum brake(s), then apply just enough brake(s) to prevent drum over-run
- e) Drive the retrieve unit slowly to the launch point, in a straight line. Where two tow lines are being run out care must be taken that they do not cross each other
- f) The retrieve unit should slow down as it nears the launch point to avoid drum over-run
- g) Apply drum brake(s) firmly when it is clear that the tow line(s) are fully paid out
- h) Stop the winch engine

Pre-tow checks

- a) Check that the tow line is free and has not over-run the drums
- b) Set both drum brakes firmly ON
- c) Check that the clutch is dis-engaged
- d) Switch the battery ON

e) Start the winch engine

Towing

On receiving '**Take up slack**' signal

a) Engage clutch

b) Progressively release the relevant drum hand brake, controlling and holding the winching-in rate by use of the throttle until the canopy is inflated and flying above the head of the pilot. If either the Launch Marshal or the pilot is unhappy at this stage the Launch Marshal should show a '**Stand by**' signal until the problem is corrected. If all is well the Launch Marshal will indicate '**All out**' and the winch operator can then increase the drum speed to start the ascent. Tow tension indicator = 50% of target initially until the paraglider is approximately 100ft AGL, rising to 100% of target to allow optimum rate of ascent. (The target tow tension will usually be around 80kgs to 100kgs, less for training. Higher tensions increase risk much more than height!)

NOTE: If a '**STOP**' signal is given at any time the launch should be aborted. When the cause has been ascertained and corrected the launch may then proceed but from the beginning.

c) On seeing the '**release**' signal from the pilot, use the throttle to reduce tension (in high winds first dis-engage the clutch)

d) After the pilot has released the tow line (and it has fallen away) open the throttle to retrieve the remainder - reducing the tension each time the drogue 'chute hits the ground. When the drogue is 15m away from the winch close the throttle and use the drum brake to slow the intake down.

e) When the drogue is 3m away dis-engage the clutch and slow the drum to a stop.

f) Stop the engine (unless a 2nd line is ready for immediate use)

Notes on towing

Tow tension in the early stage must be kept at a steady level which just allows the canopy to ascend. Too high a tension will cause the wing to pitch up to an unsafe angle.

Wire tow line preparation - forming a closed loop

a) Cut the cable cleanly

b) Slide two swages on to the cable

c) Loop the cable back on itself and slide through the first swage pulling cable through to form a loop some 3 to 5cms between the swage and the end of the loop

d) Crimp the first swage firmly

e) Twist the cable half a turn and slide through the second swage

f) Crimp the second swage firmly - as near the cut end as possible -the distance between the two swages should be approximately 5 to 7cms.

g) Pick up debris to avoid possible danger to animals/people/canopies/equipment

Wire tow line preparation - in-line repair

a) Cut the tow cable cleanly

- b) Place both swages on one cable, then slide the second cable through both, making sure that there is half a turn twist between each swage
- c) Crimp each swage as close to the respective ends as possible - the distance between each swage when finished should be approximately 5 to 7cms.
- d) Pick up debris to avoid possible danger to animals/people/canopies/equipment

PAY OUT WINCH

All pay out winches must be fitted with the following safety devices:

- a) A tow line tension indicator. Alternatively an adjustable stop is required to limit the maximum line tension, and a means is required of checking that tension between launches. The smoothness and efficiency of winch brakes has been found to vary considerably between launching sessions (depending on storage conditions) and also as they warm up with use. Winches should be stored under cover and checked frequently when in use.
- b) If internal expanding brakes are used it is recommended that they are of the double trailing shoe type.
- c) There must be an operator controlled, single action, effective means of cutting the tow line at the vehicle **immediately** in an emergency (e.g. a guillotine or cutting tool). A fixed wire cutter or guillotine is required for a wire tow line.
- d) A tow line weak-link of the correct breaking load.
- e) The end of the line, which may have a flag or streamer, must be free to pull clear of the drum.
- f) There must be a means of distributing the line across the drum during rewind.
- g) A secure seat is required for the winch operator so that he can operate the brake smoothly during a rough ride.
- h) Recommended trailer dimensions are: hitch to wheel axle(s) 1.8m (6 ft); minimum wheel size 13 inches
- i) The vehicle, such as a hatch-back or van should allow the winch operator to sit comfortably with a clear view of the glider under tow, with immediate access to the release and in direct communication with the driver.

Notes on towing

Tow tension in the early stage must be kept at a steady level which just allows the canopy to ascend. Too high a tension will cause the wing to pitch up to an unsafe angle.

2.3.6 Fixed Line (vehicle) Towing

The basic techniques for Fixed Line (vehicle) Towing are covered in Section 2: Chapter 4: Point 4. These should be studied along with the notes below.

All fixed line tow systems must include the following safety devices:

- a) A line tension indicator. It is recommended that the tension indicator scale is direct reading to avoid errors, and is mounted where the driver can see it while driving without turning his head. An audio read out is ideal.

- b) An approved release at the vehicle (unless the line is hand-held), immediately to hand for the operator from the towing position.
- c) There must be an operator controlled, single action, effective means of cutting the tow line at the vehicle **immediately** in an emergency (e.g. a guillotine or cutting tool). A fixed wire cutter or guillotine is required for a wire tow line.
- d) A tow line weak-link of the correct breaking load.
- e) The vehicle, such as a hatch-back or van should allow the operator to sit comfortably with a clear view of the glider under tow, with immediate access to the release and in direct communication with the driver.
- f) When a fixed line tow launch is used, prior to launch the paid out length of tow line must be capable of stretching 6m when a 100kg load is applied to it.

2.3.7 Emergencies from the Tow Unit

Training in emergency procedures, including regular dummy practice - especially by Trainee Operators - is an essential part of a paragliding operation.

Tow line breaks/ jettisoned tow lines

Normally the tow line should not be released under tension – but in an emergency situation it should be guillotined without hesitation.

Rotation / 'lock-out' on launch

The term 'rotation' describes the condition where the canopy ceases to ascend vertically but attempts to turn away from the direction of tow; the resulting increase in tow line tension will accelerate the turning action and, if not corrected, cause the canopy to dive rapidly to the ground.

Paragliders will change their heading off to one side or the other and their perceived shape will change; the angle between the tow line and the canopy heading must never exceed 45°.

Symptoms

The canopy flies off to one side - it may be slow or rapid, and it may occur before the pilot's feet leave the ground, or at a later stage.

Corrective actions

- a) If the turn is slow: reduce the tow tension to allow gravity (and the pilot) to assist in recovery; once stabilised and flying true, increase the tension and try again. If the ascent is now true then continue with the launch in the normal manner. If, however, the divergence recurs, the launch must be abandoned by gently removing the tow tension.
- b) If the turn is rapid and at very low altitude: reduce the tow tension immediately by guillotining the tow line.

Causes of rotation on launch

- a) Incorrect canopy trim - canopy damage (tears etc)
- b) Tangled, knotted or broken suspension/control line
- c) Incorrectly adjusted / ill-fitting harness

- d) Partial cell collapse or front edge tuck
- e) Failure of pilot to correct partial collapse/tuck - or over-correction
- f) Pilot induced problem
- g) Wind shear

SECTION 2 OPERATING PROCEDURES

Chapter 4 PARASCENDING

2.4.1 Introduction	2.4.5 Winch Towing
2.4.2 Personnel	2.4.6 Emergencies from the Tow Unit
2.4.3 Signals and Commands	2.4 Appendix A1 & A2 The Parachute Landing
2.4.4 Fixed line (Vehicle) Towing	Fall

2.4.1 Introduction

Parascending canopies (Rounds and Squares) are normally launched using a fixed line vehicle tow. It is also possible to launch Squares with a powerful static winch. The general procedures remain the same – the differences being in the operation of the tow unit.

2.4.2 Personnel

In a club registered as a school a suitably qualified Instructor must be present and take charge of the operation. In other clubs (ie where no form of ab initio training occurs), a suitably qualified Tow Coach must be present and take charge.

A Launch Marshal, who has received relevant practical training, but is neither the pilot nor a dual flight student, must supervise at the launch point. The Launch Marshal need not be a qualified Instructor.

The tow unit must at all times be operated or driven by an appropriately licenced Operator, or a potential Operator training under supervision.

If fixed line towing then a Lookout and a Tensiometer Reader are strongly recommended:

- Lookout: Relays the launch marshal's signals to the Operator/driver. Looks ahead and warns operator/driver of obstacles. Warns operator/driver of approaching runway end by counting down.
- Tensiometer Reader: Calls out tension readings every 2 – 3 seconds. Has a suitable cutting implement ready for cutting the tow line if ordered by the Operator/driver.

2.4.3 Signals and Commands

All the commands at the launch point are given by one person - the Launch Marshal. After confirming that the pilot has been briefed or stated his flight plan, ensuring that all pre-flight checks have been done (including checking the wind line), connecting the tow line and checking that the launch area on the ground and in the air is clear, the Launch Marshal should:

- a) Check that the pilot(s) and each member of the launch crew (eg wing tip holders, steady-man) are ready for the launch by asking, **"Ready in harness?"** and receiving the positive reply, **"Ready!"** from all concerned.
- b) Check that the area ahead and behind is clear, then warn everyone that he is proceeding with the launch by shouting, **"Taking up slack"** as he gives the signal.

c) Give the appropriate commands for the canopy to be inflated when there is sufficient tension in the tow line for the prevailing conditions (see sections below on 'launching').

For round canopies, **"Stand up"** requires the wing tip holders to hold the canopy up for

inflation, and **"Let go"** requires them to let go of the canopy precisely on the word **"Go"**.

For square canopies the launch marshal gives the command, **"Launch"**, following which the canopy holders work together to launch the wing with one of them giving the commands to **"Let go"** at each stage of inflation.

Round Canopy Launching

Once ready for launch, and particularly when the tow line has been connected, the wing-tip holders should remain at their positions to prevent the canopy from inflating inadvertently. Each wing tip holder should face the direction of launch and, taking hold of gores 10 and 15 (adjust according to canopy type) grasp the canopy by its suspension line (at the point where the suspension line meets the fabric) using the hand nearest the canopy and allowing the line to rest across the hand; twisting the line around the hand or fingers could result in injury.

On the command **"Stand up"** both wing tip holders stand and hold the canopy up high, with their upstretched arms at approximately the same height (wing tip holders need to be either of roughly the same height or the taller one needs to match the height at which the other holds his wing tip).

On the command **"Let go"** both wing tip holders must release the canopy at the same moment (to avoid a rotation) and should release on the word 'Go'. They should then turn outwards, away from the inflating canopy, and if touched by the canopy should fall to the ground to avoid becoming entangled.

The point at which the command **"Stand up"** should be given varies depending on (mainly) the wind speed at the launch point. In very light winds the canopy can be held aloft before the tow line becomes taut; in high winds the tow line must be taut first to prevent the pilot from being toppled backwards by the inflating canopy. The timing of the command is a skill gained by experience.

The point at which the command **"Let go"** should be given depends on the degree to which the canopy has inflated and its chances of completing the inflation successfully. If the wingtip holders hold on too long there is the danger of a rocket take-off or a rotation. If the wing tip holders let go too soon the canopy may stall and drop to the ground or be dragged into a rotation. The most common faults in launching are the wing tip holders not letting go together and the launch marshal giving the **"Let go"** command too late. The timing of the command is a skill gained by experience.

In some operations the canopy remains inflated between launches while the pilot who has just flown is unclipped and the new one clipped in. In these circumstances there must be a steady-man available ready to prevent an inadvertent take-off.

Square Canopy Launching

The principle behind launching a wing is to first inflate the cells then allow it to lift itself into a flying attitude with the wing tip holders keeping it level and stable.

The canopy is best laid on its back (i.e. with the upper surface in contact with the ground, trailing edge tucked in close to the pilot's heels, and the canopy stretched out flat with all lines clear and free).

Each wing tip holder positions himself at opposite leading edges and should grasp the top outer corner of the end cell in one hand, and with the other hand take hold of the outermost

'A' or 'B' line (experience will determine the most suitable) where it meets the stabilising panel fabric. Care must be taken to hold these two points in such a manner that the arms will not cross at any stage of the launch - nor must they ever take hold of the canopy steering lines as this will prevent the pilot from steering the canopy during the inflation and take-off.

On the command **"Launch"** they then raise the leading edge of the canopy, presenting the cells to the wind and inflating them.

It is important to keep the leading edge and the suspension lines taut. As the canopy rises off the ground the wing tip holders keep the leading edge level and parallel to the ground - helping it lift until they must let go the lines - first the higher then the lower one on a previously agreed signal given either by one of them or the launch marshal.

At the end of the sequence they should turn outwards, away from the canopy, and if touched by the canopy should fall to the ground to avoid becoming entangled. With some larger canopies or under difficult wind conditions it may be necessary for the wing tip holders to alternately transfer their hands through all lines (A, B, C and D) in turn in a 'climbing' motion; it may also assist in launching to have a 'extra hands' at the rear to lift the centre cells of the leading edge in unison with the wing tip holders.

On the command **"Launch"** it is important that the wing tip holders stand up together and hold the canopy at the same height to prevent a rotation from developing. Their subsequent movements in 'lifting' the canopy into the air must also be coordinated, again to prevent a rotation.

The point at which the command **"Launch"** is given will largely depend on the wind speed at the launch point. In very light winds the canopy can be held aloft in its first stage of inflation before the tow line becomes taut; in high winds the tow line must be taut first to prevent the pilot from being toppled backwards by the inflating canopy. The timing of the command is a skill gained by experience.

The sequence and number of suspension lines worked through by the wing tip holders depends on the canopy type and sometimes on the wind speed: in low winds a canopy may need a lot of coaxing to launch it, whereas in high winds it may be better to release it quickly rather than keep hold of it. Letting go too early may let the canopy drop back in a stalled state and be uncontrollable by the pilot. There are several dangers associated with holding on too long; a rocket take-off may ensue; a rotation may be induced; the leading edge may collapse. The timing of when to finally release the canopy is a skill gained by experience. The pilot may, as the canopy starts to lift, assist the launch by pushing forward on the front risers until the canopy is above his head. He must, however, be in a position to control the directional stability of the canopy if it veers off course.

2.4.4 Fixed Line (vehicle) Towing

Equipment Requirements

All fixed line tow systems must include the following safety devices:

- a) The tow line must be attached to a tensiometer (line tension indicator) capable of providing the Operator with an analogue of tow line tensions.
- b) A quick release (QR) must be fitted to both ends of the tow line such that they can be easily operated by the Operator or pilot respectively.
- c) The pilot's quick release must be fitted with a protective cover.

- d) The tow unit must be equipped with a suitable tow line cutting tool for use in the event of QR failure or tow line entanglement.
- e) A weak link must be fitted in the tow line system so that approved maximum tow tensions cannot be exceeded. (See Section 2: Chapter 1: Appendix C)

Determining Tow Line Lengths

The minimum tow line length is 100 metres. This is because canopies (especially round ones) need time to recover and 'fill' after release and the descent rate is increased during this time.

The appropriate tow line length should be used such that the height ranges indicated for the relevant Training Exercises are achieved. (See appropriate Student Training Record Booklet.)

Sometimes the physical size of a site will impose limitations - reducing the towing distance - or its shape may limit the suitable landing areas after release. Where towing distance is the limiting factor greater heights can often be achieved by using a shorter tow line rather than struggling with a longer line and risking running out of towing space. Some exercises may not be possible on particular sites or in certain conditions of wind direction or speed. In all cases the judgement of the instructor is more important than blind acceptance of the recommended lengths - but variance must be justifiable.

Effects of Tow Line Materials and Lengths

All materials behave differently when tensioned and this is true of tow lines; for example, polypropylene has a low elasticity, hollow braid nylon is much higher and parafil nylon stretches at lower tensions but behaves like steel wire at higher tensions. Elasticity is proportional to length and although the tension in the tow line is read at the tow unit, it is the tension at the parascender end which is affecting the canopy. Therefore, the driver needs to take account of the elasticity of the tow line and its length when taking up slack and reacting to canopy fluctuations and changes in tensiometer readings.

Tow Line Management

The tow line should ideally be laid out in a straight line and in a direction directly into wind. A small amount of slack should be retained at the launch point to avoid the launch crew having to move forward onto the tow line and to give the launch marshal some warning as the tow line slack is taken up during the initial stage of the launch. Large loops or excess slack should be eliminated as 'side-slipping' or snatch launches may result. When returning the tow line to the launch point after a previous flight the route taken should ensure that the tow line is laid out as described above - large loops should be avoided, so should any knots or tangles that could arise from towing the tow line over itself or another line. The surface over which the line is being dragged should be considered and towing speed should be kept low where a vulnerable tow line is being dragged over an abrasive surface. In some cases it is useful to have a line holder equipped with a stick-mounted pulley wheel through which the tow line is pulled to help in laying it out. Sometimes it will be necessary to arrange with the launch point for the tow line to be stretched out to remove any bowing. Drivers retrieving lines should take care to watch out both in their direction of travel and for any obstructions in the path of the tow line.

Driving Position and Techniques

The operator/driver must sit where he can reach the controls of the tow unit but must be able to view the canopy throughout the launch, flight and landing. Most drivers find it comfortable to sit diagonally across the driver's seat and (assuming a RHD vehicle) by resting the left arm on the bulkhead behind them can see the canopy over their left arm. The quick release cord is within reach, the operator/driver can reach the pedals with both feet, steer with the right hand and is able to change gear with either the left or right hand. The choice of 2 or 4 wheel

drive on land will depend on the traction the vehicle has on the surface. Unless 4 wheel drive is necessary to gain traction it should not be used since it creates more mechanical wear and can lead to greater tyre wear and possible half-shaft damage when the vehicle is turned on firm surfaces. It should be possible to change into 4 wheel drive when on the move. The choice of gear for commencing a tow will depend on the optimum towing speed which itself will depend on the wind speed, canopy type and pilot weight. It is not always advisable to start off in 1st gear as a change to 2nd gear to gain speed might need to be made at the critical time after inflation when the driver's full concentration should be on the canopy in readiness to react to a rotation. Thus a gear should be chosen which can be kept throughout the initial phase of the launch.

Where 4 wheel drive is found to be necessary and towing speeds are low the combination of gears (High/Low ratio and 1,2,3 or 4) should be chosen to achieve maximum traction.

Taking Up Slack

Before reacting to the 'take up slack' signal the driver should ensure he is aware of the type of launch that is required and that all preparation, briefing and checking has been carried out at the launch point. The driver will brief or warn the crew of his tow unit and check that the course of the tow unit and the launch path of the canopy are clear. He will then move the vehicle slowly forward watching primarily for the inflating canopy and listening to the rise of the tensiometer readings but also being prepared for a stop signal, the absence of the take up slack signal, any intruder into his path or the canopy launch path and any abnormality with the inflating canopy.

The driver's eyes remain fixed on the launch point; his look-out is required to watch for the stop signal and subsequently check that the path of the tow unit is clear. As the tow line becomes taut the driver should react to the behaviour of the canopy and any changes to tow line tension resulting from canopy type, student ability and wind speed. For example, if the wind is high the driver may need to ease off the accelerator as the canopy inflates in order to prevent a rocket take-off; on the other hand, in low winds the driver must assist the canopy to inflate by accelerating to prevent the canopy (and pilot) from being dragged along the ground. When launching squares it is particularly important to increase the tension as soon as the canopy has been inflated - this will impart sufficient airspeed so to stabilise and lift the canopy as quickly as possible.

Where the tow line cannot be laid out directly into wind the canopy must be faced into wind to reduce the possibility of a rotation when it is first inflated. The pilot should be briefed to use the controls (rear risers only on round canopies) to hold the canopy into wind during the critical take-off phase.

Launching and Controlling the Canopy to Self-Release

The most critical height range for a fast rotation or tow line break is from ground level to about 75 ft since even a rapid emergency response may not be sufficient to allow the canopy time to recover before the pilot hits the ground. Therefore, once the canopy has been successfully inflated it should be climbed at steady but fairly low tensions. When the canopy has passed 100 ft the tensions can be increased to give the optimum rate of climb for the distance towed. The canopy type, age and trim and the weight of the pilot will all affect the tensions required to gain and maintain height; and wind shear or gradient can exert an influence.

During the launch the driver must continue to observe the canopy, judging from its attitude and behaviour and from variations in the tow line tensions how best to adjust the tow unit's speed. The direction the tow unit takes is not critical; indeed, where winds are very low it is possible to tow around in a circle or a 'figure-of-eight'.

Release Procedures

It is usual for the driver to respond to a release request from an experienced pilot but the

driver must remember that he is responsible for agreeing to the release and may decide that the pilot should stay attached until in a safer position to release. For students in the early stages of training the driver will determine where they should release and may agree a signal to indicate that they are clear to release. In some clubs a 'clear to release' signal is always given. When operating the release the intention is to slacken the tow line to the point that neither it nor the canopy will experience a shock due to disconnection. Since tension is reducing during this slackening period the canopy will stop climbing and start to descend so it is desirable to achieve a slack tow line quickly and this can be done by bringing the tow unit to a stop and reversing; by turning the tow unit around and driving towards the canopy; or just by bringing the tow unit to a stop. The method chosen depends mainly on the wind speed and thus the tow speed, and to some extent driver preference, though each method must be practised regularly, particularly by trainee Operator/drivers, to improve the effectiveness of this emergency procedure.

! Once the tow has finished it is essential that the operator confirms that the tow line has released from the glider. If there is any doubt, the operator must release the line from the vehicle immediately. The driver must then keep the vehicle positioned in order to assist the pilot should an emergency occur.

Controlled Descents (Round Canopies only)

Controlled descents cover any descent where it is planned to keep the student attached to the tow line either for a gentle touch down without a landing roll or for subsequent landing training. Descents in which the tow line is allowed to go completely slack whilst remaining attached to both vehicle and student must not be attempted. The control of the altitude of the round canopy on tow is excellent practice for an operator/driver. Where a gentle touch down is intended the student should be given a smooth ride as possible at an altitude between 100 and 150ft. The final descent should be steady with tension being maintained in the tow line at all times. The touch down can be held off to bring the student to the desired touch down point but he should not be hovered close to the ground for too long as this is disconcerting. Once the student's feet touch the ground the landing must be completed - the canopy should not be allowed to ascend again, unless there is an emergency. The final descent must be adjusted to achieve a gentle and controlled touch down - care must be taken not to bring the student in too fast in low wind speeds, nor should the tow line be jettisoned too soon in high wind speeds (danger of catapulting back as the tension is removed).

For landing roll training the student is brought to the ground with some tension in the tow line but the descent rate is allowed to continue until the student has landed and executed a roll. Care is needed to avoid too heavy an impact, or dragging the student through the roll after touching down, and the moment at which the vehicle stops towing is critical. By towing out of wind during the final descent the round canopy can be made to travel obliquely across the ground and the student eased into a landing roll to one side. For parascending it may be appropriate to learn the Parachute Landing Fall (PLF), which is described in Section 2 Chapter 4 Appendix A.

2.4.5 Winch Towing

The basic requirements and techniques for operating a static winch are covered in Section 2: Chapter 3: Point 5: These should be studied along with Fixed Line Towing Techniques and the notes below.

Notes on Winch Towing Parascending canopies:

1. Tow tension in the early stage must be kept at a steady level which just allows the canopy to ascend. Too high a tension will cause the wing to rotate about its pitch axis with the consequent danger of stalling. Trying to compensate for pilot input may cause pitch

oscillation, again leading to possible stall condition.

2. The standard procedures for vehicle towing apply, particularly in the event of an emergency, except of course, that the winch cannot be moved. This means that the cutting of the tow line may be more frequent on a winch than with a vehicle tow, and the winch operator must be thoroughly conversant with the relevant technique for repairing tow lines (see below).

3. It is inadvisable to attempt 'controlled descents' using a winch - except in a low level emergency situation.

4. It is not considered good practice to attempt to launch round canopies from a winch.

5. The winch must be anchored so that it cannot move under extreme tow loads.

2.4.6 **Emergencies from the Tow Unit**

Training in emergency procedures, including regular dummy practice - especially by Trainee Operators - is an essential part of a parascending operation.

Tow line breaks/ jettisoned tow lines

Except in an emergency the tow line should never be released under tension. There are however, occasions when this is preferable to severe, or even fatal pilot injury, and the philosophy which prevails is that, providing there is sufficient altitude for the pilot to recover, it is better that the parascender is disconnected from the tow unit.

For the tow unit driver to be able to assess an emergency situation and react accordingly, the effects of releasing the line under tension must be understood.

a) It will reduce the life of the tow line - but in an emergency this factor is ignored.

b) The pilot will swing back under the canopy at a rate dependent upon the level of tension in the tow line (it has been known, under very high tensions, for a pilot to catapult into, and foul, the canopy or suspension lines).

c) An oscillation will occur, possibly driving the canopy repeatedly into and out of a stalled condition, but (given enough altitude) gradually damping out until it ceases and the canopy stabilises. Again, the rate of oscillation will depend upon the level of tow line tension at the point of release.

Add to these the effects depending upon whether the canopy is round or square - and whether the problem occurs at low or high altitude - and the variables become such as to explain why so much emphasis is placed on these corrective procedures.

Rotation on launch

The term 'rotation' describes the condition where the canopy ceases to ascend vertically' (as viewed from the tow unit) but attempts to turn away from the direction of tow; the resulting increase in tow line tension will accelerate the turning action and, if not corrected, cause the canopy to dive rapidly to the ground.

For round canopies the tail rotor, instead of appearing symmetrically positioned will move off-centre. The greater the displacement the more rapidly will it rotate; the upper edge of the tail rotor must never be allowed to rotate beyond the 3 o'clock or 9 o'clock position. Ram air canopies will change their heading off to one side or the other and their perceived shape will change; the angle between the tow line and the canopy heading must never exceed 45°.

Symptoms

The canopy flies off to one side - it may be slow or rapid, and it may occur before the pilot's feet leave the ground, or at a later stage.

Corrective actions

- a) If the sideslip is slow: reduce the tow tension to allow gravity (and the pilot) to assist in recovery; once stabilised and flying true, increase the tension and try again. If the ascent is true then continue with the launch in the normal manner. If, however, the divergence recurs, the launch must be abandoned by gently easing the parascender down to earth - once the pilot is safely on the ground the tow unit driver should jettison the tow line and return to the launch point to investigate, determine and rectify the fault.
- b) If the sideslip is rapid and at very low altitude : reduce the tow tension by reversing the tow unit and letting the pilot sink to the ground; jettison the tow line as quickly as possible to prevent inadvertent re-launch. Winches, of course, cannot reverse, so the only remedy is to close the throttle, disconnect the clutch and guillotine the tow line.
- d) If the sideslip is rapid but at higher altitude : reduce the tow line tension by reversing or turning the tow unit through 170° and jettison the tow line. Static winch Operators must close the throttle, disconnect the clutch and guillotine the tow line.

Notes:

- 1. Sideslip at altitudes greater than, say, 200 ft AGL may be due to wind shear – the instructor must be able to differentiate between the causes
- 2. When a rotation is rapid and the decision is taken to jettison the tow line the following procedure is to be followed:

! a) from the instant that the driver realises there is an emergency his first action is to pull the release cord of the quick release (or guillotine if a winch is used) and to keep pulling until the quick release operates (or the tow line severs).

At the same time:

- b) Shout to warn the tow unit crew of your intentions - they should have been briefed to hold on tight in the tow vehicle or keep well clear of the winch under these circumstances, and,
- c) Reduce tow line tension by the most effective means (reversing/turning; or disengaging the winch clutch) whilst pulling on the release cord
- d) If the quick release fails to operate shout 'CUT, CUT, CUT' to the person who has been briefed on that operation - if necessary the tow unit driver must himself cut the tow line.

Then:

- e) Drive back towards the pilot - ready to offer assistance or free a snagged tow line.
- 3. It may be that, in reversing/turning at c) above, the tow line becomes entangled with the tow unit - thus rendering the quick release useless - in this case the tow line must be cut immediately.
- 4. To improve the chances of releasing the QR at high tow tensions it is better to use a series of short, very sharp, snatches on the release line, rather than pulling it.

Summary of actions

These actions are so important that it is worth summarising:

RELEASE - BRAKE/TURN - CUT

Causes of rotation on launch

- a) Incorrect canopy trim (especially on ex-parachuting canopies where 'opening shock' has deformed one or more panels) - canopy damage (tears etc)
- b) Tangled, knotted or broken suspension/control line (crown lines/apex knot on round canopies)
- c) Incorrectly adjusted / ill-fitting harness
- d) Round canopy front riser dropped and caught under pilot's arm pits
- e) Wing tip holders not releasing symmetrically
- f) Partial cell collapse or front edge tuck on wing canopies
- g) Failure of pilot to correct in e) or f) - or over-correction
- h) Pilot induced problem
- i) Wind shear

APPENDIX A1

PARACHUTE LANDING FALLS

Parachute Landing Falls

The British "Landing Roll" technique was developed for parachutists at Ringway early during the second World War and has proved to be the most effective method of taking normal and severe landings without injury. The technique is not naturally acquired in other sports.

If injury occurs it can nearly always be attributed to two causes, firstly to a faulty position prior to touch down and secondly to faulty landing roll technique.

Objective

The three main aims of the technique are:

- 1) To spread the impact shock progressively and smoothly over a large area of the body
- 2) To spread the impact shock over a (comparatively) long period of time.
- 3) To avoid ground contact with the head, elbows, hands or the base of the spine.

Method

The sequence of events is a controlled fall to one side followed by a rolling motion of the upper body.

Direction of Landing Roll

As the pilot may be approaching the ground travelling in any direction, s/he must be trained to cope with any situation. A straight forward or backward roll should be avoided.

Preparing to land

1. Toes and heels firmly together, feet flat and parallel to the ground, knees together and slightly bent; the back and shoulders rounded.
2. Head down, chin on chest, with eyes watching the ground; elbows tucked in.
3. Hands holding the appropriate controls. The hands must not be used to cushion the fall.
4. The whole body is relaxed but alert.
5. Assess the direction of travel over the ground and turn the feet so that the outside of the 'leading' boot will touch down first - NOT THE TOES OR THE HEELS !
6. Turn the shoulders away from the direction of travel - if the ground is approaching from the left, twist the shoulders to the right, and vice-versa.

On 'touch down'

Feet flat and firmly together; fall and roll progressively and smoothly - the side of the leg then the thigh and buttock; at this point keep the legs together but lift them off the ground and flip them up and sideways in the opposite direction to roll the back on to the opposite shoulder. Keep the elbows tucked in and the head forward with chin on chest throughout the fall and roll.

Training and Practice


It is usual to teach students to practice 'sideways to the left and right'; followed by 'diagonally to the left and right' etc. It must, however, be stressed that impact can occur at any point within the 'circle' and they should be ready to make last minute adjustments before impact.

APPENDIX A2

the parachute landing fall

Photographs from Touching Clouds, courtesy of Ian Currier and Rob Cruickshank

A useful technique for surviving hard paraglider landings unscathed



"The situation was deteriorating. I was too low. Ahead of me were trees and three barbed wire fences; to the left and right more obstacles. Behind me to the right, a large field; I would have to go for this, the safest option, but I would be landing downwind.

"The ground came up very fast. I assumed the Parachute Landing Fall position and executed a forward left landing, letting my body relax totally as it hit the ground. I also flared the canopy fully as my feet touched down.


'Jumping to my feet and pulling in on the brake lines, I gathered my canopy and tried to look a lot cooler than I felt as a fellow pilot came over to check that I was OK...'

The landing roll technique was developed by the Army's Parachute Training School during World War II and is the most effective way of avoiding injury in circumstances similar to the above. Why then are some paraglider pilots reluctant to carry it out? There are times when a stand-up landing is inadvisable, to say the least. It is essential to practice your PLF technique until it becomes an automatic drill in an emergency. Many pilots can bring to mind occasions when a good PLF has saved them from serious injury, and more than a few will admit a PLF has saved them from almost certain disablement or death.

what is the purpose of a PLF?


To spread the shock of impact smoothly over a large area of the body and over a long period of time, and to avoid hitting the ground with head, elbows or hands.

the position



Legs together, toes and heels pressed against one another, feet flat and parallel to the ground, knees bent and pressed together. Back rounded, chin on chest, eyes watching the ground. Hands holding control handles, elbows in. The whole body must be relaxed on touching the ground but alert to keep the extremities pressed in, to maintain the position and assist the landing roll.

sideways landings




Relax the body on touchdown and be ready to twist the upper body away from the direction of travel.




Roll along the side of the leg, thigh and then buttock across the back to the opposite shoulder, keeping the head forward with the chin on the chest. When the thigh touches the ground keep legs together, lift off the ground and roll over.

forward landings



The same principles as above apply, but obviously twist the legs and feet at a 45-degree angle to the ground before touchdown and prepare to twist the shoulders in the opposite direction during the roll.



If the ground is approaching from the left, twist the shoulders to the right during the roll and vice versa.

backward landings

As above but looking behind you as the ground approaches under the elbow. Twist the lower body in the direction of travel and the shoulders away from the ground on touch-down and roll.

Always try to land into wind, although in an emergency this may not be possible, as in the above incident. It is preferable to land downwind if it is necessary to avoid obstacles such as power cables, etc.

The PLF will be available when you need it if you practice, practice, practice it. It's no good if you can't remember what to do when the ground is coming up fast.

finally

While perfectly-executed PLF can save you from serious injury, the reality in paragliding is that it may be quite some time before you ever need to attempt one, and expecting perfection is unrealistic. If you find yourself in a situation where a crash landing is inevitable, remember the following:

- **Keep everything (arms, legs and chin) tucked in.**
- **Keep everything slightly bent.**
- **Relax!**

SECTION 2 OPERATING PROCEDURES

Chapter 5 HILL LAUNCHED HANG GLIDING

2.5.1 Solo Flights and Emergencies	2.5.4 Wind Speed Limits
2.5.2 Pitch Tether	
2.5.3 Hand Towing	

2.5.1 Solo Flights and Emergencies

- a. Students must be taught for their initial solo flight on a slope which only just exceeds the glide angle of the training glider used.
- b. When a student is given his/her first high solo flights two qualified instructors must be present; one at the top of the hill and one at the bottom. If radios are used then only one instructor need be present provided s/he is at the take off point. However in case of an emergency in the landing field the instructor must ensure that he can reach the incident quickly and efficiently by either running or driving down the slope. If either of these are not reasonably quick then the instructor must keep a glider rigged for his use.

2.5.2 Pitch Tether

In winds of over 18 mph training must only be conducted with the assistance of effective tethering. Only an Instructor may take control of pitch tethers.

2.5.3 Hand Towing

- a. The use of "hand towing" is permitted provided that :
 - (i) The instructor in charge has a Tow Environment
 - (ii) Approved equipment is used in a proper manner
 - (iii) Heights are restricted to no more than 40ft AGL
 - (iv) None of the flights count towards those required on the task forms.
- b. Hand towing below 10ft AGL will be deemed to be tethering and may be conducted by qualified instructors without tow environments.
- c. No towing, apart from that described above, is permitted at schools registered for hill training only. Should a school wish to use towing, it must seek the appropriate registration (Tow Schools).
- d. Schools which use both hill and tow training must take care, when signing off pilot ratings, not to confuse the disciplines. As a general rule schools should issue the rating appropriate to the last high flights accomplished by the student.
- e. Extra special care must be exercised when transferring students from one take off method to the other - and back again.

2.5.4 **Wind Speed Limits for Ab-initio Training**

- a. For first solos the wind speed must not be greater than 10 mph.
- b. For subsequent solos the wind speed should not be greater than 18 mph

Absolute limits

No training should take place if the wind speed is greater than 25 mph.

The maximum variation in wind strength must not exceed 5 mph. in 10 seconds.

SECTION 2 OPERATING PROCEDURES

Chapter 6 HILL LAUNCHED PARAGLIDING

- 2.6.1 Introduction
 - 2.6.2 Sites
 - 2.6.3 Equipment
 - 2.6.4 Training Techniques
-

2.6.1 Introduction

Developments and techniques in this field have resulted in a greater self-responsibility being placed on the competent pilot, whilst that of the Instructor has reduced to the point where, on completion of training little or no supervisory presence is required. The pilot will carry out many of the pre-launch functions which in other disciplines are completed by support crews; and the all-important assessment of flying conditions and associated techniques will be made by the pilot in relative isolation. This individually responsible aspect requires a concentration and application of training skills for which the pilot must be prepared during the training stages.

This section will concentrate on identifying those operating areas and techniques with which an Instructor will need to be familiar in order to properly prepare the prospective pilot.

NOTE : The Instructor should also refer to Section 1 Chapter 4 for information on Recommended Practices and Safety Requirements

2.6.2 Sites

In addition to the points identified in Section 2 Chapter 1 particular attention should be paid to the effect which the smallest obstacle (eg twigs, small shrubs, rocks) can have in a 'committed' situation. Just as important is the danger of a small hole or grass tussock to the pilot whose concentration is fixed on the canopy above his head. It is also worth noting that the self-launched situation has certain additional needs such as a 'nursery' slope and access to intermediate and advanced sites.

The Instructor must also initiate the student in the skill of site assessment, selection and use; paying particular attention to the importance of seeking advice and guidance from local pilots before flying unfamiliar sites.

The nursery slope

Basic ground handling techniques and first hops are best learned on a slope which is neither too steep nor hazardous - the bottom slope of a hill is usually chosen to limit the possibility of student error and/or injury. Instructors should be satisfied with the student's ability to control the paraglider, particularly on take-off and landing, before allowing attempts at higher take-offs.

Progressive sites

The latter CP exercises call for the student to be progressively trained in more advanced techniques and this requires access to, for instance, ridge sites which are needed for 'soaring' practice. The Instructor will need to introduce the student to more demanding sites and conditions to fully prepare them for post graduate situations.

2.6.3 Equipment

In addition to the general information contained in Section 2 Chapter 1 the Instructor must ensure that the pupil is given thorough training in the detailed inspection and maintenance of what will ultimately be an expensive and personal possession. The student (whether Student Pilot or Club Pilot) must be made to understand the importance of selecting a paraglider which conforms to accepted standards and which also matches both the ability and size of the pilot. An introduction should be given on the various enhancements and modifications found on harnesses and paragliders; the use of instruments should be explained and if possible demonstrated; and a thorough knowledge of emergency equipment, particularly the emergency parachute is necessary. All these areas should form part of the training which an Instructor provides above and beyond the Training Programme.

Particular attention should be paid to explanations and demonstrations of advanced flying techniques such as 'big-ears' (deliberately collapsing outer cell sections to reduce glide angle), or 'B-rising' (pulling down the relevant riser to induce a controlled stall condition). By providing this comprehensive foundation the Instructor will be secure in the knowledge that the pupil will be a competent and proficient pilot.

2.6.4 Training techniques

Instructors should also refer to the contents of Chapter 1 of this Section which contains general information on training techniques and facilities required; syllabuses and Training Exercises are contained in Section 3 Chapter 1.

Communicating - this is probably the most difficult area to prepare for; once the student takes off there should be an effective way of communicating corrections. The ideal is to have a radio link between Instructor and student, but there are disadvantages even with this. Having another Instructor at the landing point (easily identifiable) giving bat signals is a very useful method providing the problem of 'mirror' signals is overcome. Relying on purely verbal instructions is not an effective method as there are too many associated problems.

Landing training - Students should practice landing training (basic PLFs) until they are comfortable with the concept of keeping feet together, knees together and bent, arms and head tucked in and the body relaxed. Whereas this is a practical exercise, it does not necessarily involve the need to roll or fall on the ground - it can be practised by jumping into the appropriate position. Instructors should discuss with students the situations where this may be required, for example in the event of a fast / down-wind landing. It should be emphasised to students that although every landing should be into wind, it is better to land out of wind with a basic PLF rather than attempting a low level tight turn into wind. Top landing and slope landing techniques should be discussed in detail so that the student gains a full understanding of all the factors involved. Landing emergencies (e.g. trees, water) should be discussed with particular reference to the dangers associated with water.

The Pre-flight check - this is carried out immediately before take-off and consists of the last minute safety checks. See Chapter 1, Appendix B of this section.

Take-off - the Instructor must explain the importance of a committed launch run; keeping the wing constantly loaded; and achieving flying speed as quickly as possible. Demonstrations followed by student practice will prove the points. Instructors will also need to show students how to make themselves safely comfortable in the harness once they are well clear of the ground.

Canopy inflation - the process of preparing the paraglider for launch is demonstrated and both forward and reverse inflation methods explained and demonstrated when conditions allow. It is explained that the choice between the two is dependent upon the flying speed of the paraglider in conjunction with the wind speed; if the wind speed is such that, after inflating and launching the canopy the student would have to keep moving forward to keep

the canopy overhead then a forward launch is chosen. If the wind speed were higher, then a reverse launch would be used.

Safe flight considerations - a pilot should always be aware of his height above the ground and his position relative to the ground and other air users in the vicinity. A thorough knowledge, application of and compliance with the Rules of the Air and particularly those for Collision Avoidance is essential. The Instructor must take every opportunity to instil these skills and awareness into students at all times by, for instance, allowing them to watch other pilots and analyse their flying.

Emergencies - flexible paragliders are prone to tucks and cell closures and Instructors must explain the factors, causes and effects of invisible things like porosity, turbulence, rotors, curl-overs and eddies - to name but a few. More importantly the student must be equipped with the skill to recognise the symptom and react rapidly to recover from a threatening situation. Some of the unstable manoeuvres called for in the various training stages are designed to instil a better understanding and ability to recover and the Instructor must set a high standard of training in these areas. The use of simulators and video films (eg.'Instability') are of immeasurable value and should be used at every opportunity.

SECTION 2 OPERATING PROCEDURES

Chapter 7 AEROTOWING HANG GLIDERS

2.7.1 Introduction	Appendices
2.7.2 Administration	A Wind Component Chart
2.7.3 Personnel	B Tug & HG positioning Views
2.7.4 Equipment Requirements	C Aerotowing Two-Place Hang Gliders
2.7.5 Sites	D Aerotow speed matching
2.7.6 Operating Policy	E Fins for Aerotowing
	F First solo aerotow glider approval

2.7.1 Introduction

This chapter describes the operational and administrative procedures necessary for the safe conduct of aerotowed hang gliding.

2.7.2 Administration

General Requirements and Policy

A. BHPA, BMAA and CAA areas of responsibility

The CAA will issue individual tug aircraft with a Permit to Fly specifically permitting aerotowing operations only in accordance with an approved operating procedures Manual. This document has been so approved.

In addition to the requirements of this manual, the operation of the tug aircraft will also have to comply fully with all normal CAA microlight requirements as regards licencing, inspections, Permit revalidation etc.

All other aspects of the aerotow clubs' operations come under the BHPA's control.

NOTE: No changes may be made to tug aircraft without the required BMAA/CAA approval.

B. Aerial Work

The privileges of a PPL (Aeroplanes) allow the holder to carry out Aerial Work which consists of the towing of a glider in an aircraft owned, or operated under arrangements entered into, by a club of which the holder of the licence and anyone carried in the aeroplane or glider are members. This privilege is conditional on (amongst other things) the licence holder not being remunerated for services as a pilot. (ANO Schedule 8).

C. The Law

The ANO lays down the special legal requirements for aerotowing gliders, all of which have been incorporated into this manual.

(An exemption from the ANO requirement for tug aircraft to have a C of A is being prepared by the CAA. This will allow Permit to Fly microlights to tow hang gliders if the aircraft's Permit to Fly specifically allows this activity.

2.7.3 Personnel

In a club registered as a school a suitably qualified Instructor must be present and take charge of the operation. In other clubs (ie where no form of ab initio training occurs), a suitably qualified Aerotow Coach must be present and take charge.

A Launch Marshal / Primary Signaller. A launch marshal who has received relevant practical training, but is neither the pilot nor a dual flight student, must supervise at the launch point.

The tow unit (tug) must at all times be operated (flown) by an appropriately licensed Operator, or a potential Operator training under supervision.

Tug Master: The aerotow club should have an appointed tug master.

A. Launch Marshall and Primary Signaller

1. Requirements

- a) These duties should be undertaken by one person
- b) The minimum age for undertaking these duties is 16.

2. Appointment

Appointed by the Aerotow Coach when he is satisfied that the person is fully competent in the duties.

3. Duties and Responsibilities

These involve being generally responsible (under the CAC) for the smooth and safe running of the launch point.

- a) Marshalling (in agreement with CAC) rigging areas, landing areas (ideally there should be separate landing areas for tugs and hang gliders) and take off areas
- b) Working through the pre-launch check list (see para 2.7.4 A d) Signalling bats) with the HG pilot before every launch
- c) Using the three signals as directed by the HG pilot
- d) Attaching the tow line at both the tug end (Engine Off only!) and glider end when and as required.

B. Tug Master

1. Accountability

The Tug Master is responsible to the CAC

2. Requirements

The Tug Master must hold an Operator (Tug Pilot) Licence

3. Application Procedure

This is a club appointment. The BHPA Office must be informed of any changes.

NB. The same person may act as CAC and Tug Master simultaneously.

4. Duties and Responsibilities

The Tug Master is in charge of and responsible for ensuring that all the club's Tug aircraft are serviced, maintained, inspected and legal.

5. Currency

The Tug Master must remain in current practice as a Tug pilot

C. Log keeper

1. Requirements
 - a) This duty may be combined with either Launch Marshall or Second Signaller
 - b) The minimum age for undertaking this duty is 16.
2. Appointment

Appointed by the Aerotow Coach when he is satisfied that the person is fully competent in the duties.
3. Duties and Responsibilities

Keeping the log accurately and tidily.

D. Second Signaller

1. Requirements

The minimum age for undertaking this duty is 16.
2. Appointment

Appointed by the Aerotow Coach when he is satisfied that the person is fully competent in the duties.
3. Duties and Responsibilities

Repeating the three signals when and as directed by the Primary Signaller.

NOTE: All other qualification details are in Section 3 and 4 of this manual.

2.7.4 EQUIPMENT REQUIREMENTS

A. Club Equipment (launch point)

- a) Fire extinguisher
- b) First Aid kit
- c) Windsack
- d) Signalling bats - these must have readiness check list attached. This will be worded:

IT IS THE LAUNCH MARSHALL'S RESPONSIBILITY TO ENSURE THAT THE FOLLOWING CHECKS ARE COMPLETED BEFORE EVERY ATTACHMENT OF THE LINE.

1. GLIDER CHECK
2. HELMET
3. LEG LOOPS
4. HANG CHECK
5. BAR CLEARANCE CHECK
6. RELEASE CHECK

NOW LISTEN FOR THE GLIDER PILOT'S INSTRUCTIONS.

B. Tug Aircraft

- a) The machine must hold a valid 'Permit to Fly' which specifically permits aerotowing
- b) The tug release operation must be placarded
- c) The tug's minimum and maximum towing speeds should be clearly placarded.

Nb. Aerotowing has been found to result in accelerated wear on hang brackets and gearbox shims. These should be checked regularly.

C. Hang Glider

- a) The glider must be matched to the tug in accordance with the BHPA 'Aerotow Speed Matching' procedures set out in Appendix D.
- b) Suitably sized wheels must be fitted to the glider for all conversion course flights. They are **STRONGLY RECOMMENDED** at all other times.
- c) It is recommended that a vertical fin is fitted for all conversion course flights. (The fin must comply with Appendix E 'Fins for Aerotowing'.)
- d) Gliders used for ab-initio students making first solo aerotow flights must be individually approved by the FSC. The application form is in Appendix F.
- e) Gliders converted to fixed landing gear must comply with the BHPA 'Fixed Landing Gear Requirements' appendix to the Hang Glider Airworthiness Manual.

D. Harness

- a) Cocoon Harnesses must not be used (other than for trolley launches)
- b) Stirrup Harnesses must be fitted with a backstrap
- c) Pod type harnesses are ideal
- d) All harnesses must be checked regularly to ensure that the tow bridle mounting loops are secure, and that the tow bridle remains virtually in the 'at rest' position (relative to the pilot's chest) when under towing loads - otherwise it can jam against the bottom bar.

E. Hang Glider Bridle

Chest Bridle

- a) The entire tow load should only be applied to the centre of the upper chest region of the pilot's harness, or equally to both shoulders
- b) Spinnaker, tube and rigid chest releases have all been used. Spinnaker releases are light, cheap and simple, but have the down side that the release cord moves around, and there is always a possibility of the clasp springing back and striking the pilot's face. Rigid chest releases (as used in winch towing) are heavier, more complex and more expensive. The release lever is always in the same place and so can be reached without even looking. The down side is that they could cause injury in a failed landing (especially if the pilot is not using a chest mounted parachute) - though no reports of such injury have originated from many thousand winch launches.
- c) The release must be operable with a one-handed single movement
- d) The release must have two separate mountings - a single cord through the release is not sufficient
- e) The release must operate and release the line under conditions of zero line tension, so if for example a speed oscillation has developed the glider pilot can drop the line before the next surge
- f) Pilots who already use a chest release for winch launching are strongly recommended to use the same release for aerotowing, providing it meets all the other requirements.

50/50 Bridle

Ideally when towing hang gliders the tow force should be applied to the combined centre of mass of the aircraft. But the combined centre of mass is a point somewhere above the pilot (say 80kg) and below the glider (say 30kg). A Chest Bridle applies the tow force 100% to the pilot, so below the centre of mass, and this results in a pitch-up tendency. This is easily controlled on gliders with light pitch that are being towed only a little faster than trim speed (e.g. advanced gliders). It is much less easily controlled on gliders with heavier pitch (beginner and intermediate gliders) that are being towed at near their maximum speed – or even above their maximum free-flight speed – where there is a strong low angle of attack pitch-up tendency necessary for pitch stability. The 50/50 bridle splits the tow load 50% to the glider and 50% to the pilot. This helps reduce the pitch up and the amount of nose-down control required. Normally the attachment to the glider is made at a position on the keel close to the

hang point, but by bringing that attachment point forward along the keel, a further pitch-down force is applied. This makes the tow more manageable for the less experienced pilots who tend to own these slower beginner / intermediate gliders. But there are limits to how far this 'trimming' can be taken: when the tow is released in an emergency (by the pilot, or by the tug pilot or perhaps the weak link parting) then the resulting pitch up (or pitch in if the glider is banked) can be extremely difficult to control. A second factor is that if the glider is 'trimmed' for the aerotow by applying the glider portion of the tow force significantly ahead of the hang point, then this nose-down force will make lift-off during a foot launch potentially extremely difficult, if not impossible.

- a) The attachment point for the release mechanism should be on the keel forward of the hang point. The precise distance in front of the hang point should be arrived at by reference to the manufacturer and/or the set up on other similar gliders.
- b) The test flying and trimming of the glider / bridle attachment should be performed by a suitably experienced and knowledgeable pilot. Generally the distance in front of the keel should be varied in 5cm steps until an acceptably low but positive (nose-up) pitch force is experienced on tow.
- c) Foot launching must not be attempted.
- d) The release lever should be such that the pilot can operate the release without first having to locate it. A bicycle style 'brake lever' positioned on the base bar where the hand naturally locates during the tow or a release cord loop worn on the hand both meet this criteria.
- e) The attachment to the pilot's harness must incorporate an emergency release.
- f) The attachment to the pilot's harness should only be to a suitably strong location in the centre of the upper chest region of the harness, or equally to suitably strong locations on both shoulder / side of upper chest areas.
- g) The sorts of gliders likely to be towed using a 50/50 bridle are subject to special requirements. Ensure compliance with 2.7.4 C above.

F. Tow Line (including drogue and weak links).

With long tow lines the angles change less rapidly so they are ideal for training and long tows (e.g. cross country retrieves). But turns must be kept to very low bank angles otherwise there is a genuine possibility of wrapping the line around the hang glider's wing. With shorter tow lines, out-of-position problems rapidly magnify, but there is much less risk of wrapping the rope around the hang glider. Therefore:

- a) For aerotow conversion course solo flights and for aerotow ab-initio first solo flights the tow line must be 100m long (± 5 m).
- b) For general flying with qualified aerotow pilots the tow line must be 75m long (± 5 m).
- c) For experienced aerotow pilots the tow line may be reduced to no less than 50m. This length can be useful in thermic conditions (both a/c are kept in the 'same' air) and for shorter fields.
- d) For long distance tows the tow line may be increased to no more than 100m.

THE LEGAL MAXIMUM LENGTH FOR THE TUG, GLIDER AND LINE COMBINATION IS 150 METRES

- d) Weak links must be incorporated at both ends of the tow line. The tug end weak link should always be the stronger; this way an excessive load will usually break the glider end weak link, leaving the tug able to tow the line back down as normal. A weak link is incorporated at both ends so that one will still be 'in play' even if the tow rope was wrapped around some part of either aircraft's structure.

See Section 2: Chapter 1: Appendix C

- e) A drogue chute must be incorporated in the line approximately two thirds of the distance towards the towed glider so that the tow tension holds it closed during

the tow. After release the drogue prevents the line shooting forward into the tugs propeller, and keeps the line in tension for the descent and landing.

- f) In order to reduce the risk of the aft section (glider end) of the tow line drifting back into the control frame (with the risk of looping around instruments etc.) if any slack is induced, the aft 3 metres of the tow line should be either: - relatively heavy (5mm braided) or - encased in relatively stiff nylon piping to make it less flexible.
- g) The line must be capable of carrying loads of 200 kg.

G. Launch Trolley

A launch trolley can be a useful aid in light winds, for unfit pilots, for launching dual hang gliders and for launching in situations where the tug's initial acceleration may be degraded (long grass, upslope, hot and high).

Launch Trolleys should incorporate all of the following design features:

Key Design Features:

- a) Base first triangular design
- b) Distance between front wheels approx. 1.75 metres
- c) Light weight (to minimise inertia and momentum effects)
- d) Two castoring front wheels, one fixed rear
- e) The glider should sit at a low +ve angle of attack (keel at approx 18° - high angles of attack produce problems with wind gusts)
- f) Pneumatic tyres of 10" diameter minimum
- g) The glider base bar should be below 45 cms (18") above the ground. This low CG aids stability (and makes mounting the glider less difficult)
- h) The pilot's weight should be supported fully by the glider (ie no direct contact with the trolley)
- i) It must be possible for the pilot to hold onto the trolley with the fingers of both hands whilst these are normally placed on the glider's base bar. -
- j) The glider should be supported close to each end of the base bar and by the keel (behind and clear of the rear rigging wires).
- k) It must be possible to use wheels on the hang glider base bar.

The trolley should be checked to ensure:

- a) It is not subject to wheel shimmy at any possible take off speed. (Damping and or tie bars can be effective in preventing this.)
- b) It is not possible to hook the trolley rope over the glider base bar.
- c) The glider base bar support cut outs are suitably shaped to allow the glider to move forward and upward out of the trolley without jamming.

2.7.5 SITES

A. General

Whilst this section lays down some minima which must be followed, the CAC shall be expected to exercise his own judgement in deciding on additional safety factors due to particular circumstances (eg: high sites, soft ground, sloping fields etc.).

B. Size

1. Minimum length in the take-off direction - 300 metres
2. Add 10 metres for every metre height of obstacle/hedge at either end of the field (This allows for a safe climb out, keeps the combination clear of the effects of turbulence which will noticeably prolong the ground roll, and gives the tug pilot adequate clearance to land back into the field with the tow line.)

(40mph initial climb at 500 fpm = 1:7 x 1.3 safety factor = 1:9. 1:10 is easy safe side figure.)

C. Surface

1. Short grass is preferred (hard surfaces are unforgiving for the hang glider pilot but do provide shorter take-off ground roll distances)
2. If the grass is long enough to reach the cable between the tug's rear wheels the ground run is increased and the initial acceleration reduced. In light winds this will make foot launch take-off difficult for the hang glider pilot.

D. Flight Paths

1. Climb out routes should be chosen with due regard to the low flying rules and to good relations with neighbours. Particular consideration should also be given to the fact that the tow rope could be dropped by both pilots simultaneously so avoid overflying roads, railways and power lines.
2. Approach paths should be chosen with due regard to 75 - 100 metres of dangling line.

2.7.6 OPERATIONAL POLICY

A. General Operating Procedures and Signals

1. Airfield Procedure and Discipline
On each flying day the CAC's responsibilities will include nominating areas for rigging, take off, HG landings, tug landings and tow rope dropping. (The tow rope dropping area must be marked with a yellow X).
2. Tow Line Attachment - Tug
This must only be done with the tug engine off. All pilots and signallers must be taught how to do this.
3. Ground Marshalling Signals: (See also Section 2, Chapter 1, Appendix A)
Cut Engine : Throat cutting motion
Start Engine: Circular motion of right arm at head level (as though cranking a tall car)
4. Launch Procedure
The following launch procedures and actions will be followed to the letter on each launch. If a launch is interrupted for some reason the whole procedure will be repeated.

Only one glider at a time is permitted in the take-off area.

On entering the take-off area the Launch Marshall will work down the check list (see Section 2, Chapter 7, Paragraph 4 A d) Signalling bats) in the written order:

- i) GLIDER CHECK
The launch marshal asks the pilot: "Is the glider checked?"
- ii) HELMET
On and fastened.
- iii) LEG LOOPS
Engaged
- iv) HANG CHECK

Clipped in, correct loops, krabs locked, sufficient bar clearance.

v) **BAR CLEARANCE CHECK**

The pilot, in prone, hooks his thumbs behind the release and pushes down to check that there is still at least 5cms clearance above the bar and any ancillary equipment. Also checks that the release is securely attached to the harness.

vi) **RELEASE CHECK**

The launch marshal attaches the tow line and checks the releases functioning. (On releases with two handles - for winch launching - use the gate that is operated by both handles.)

The Pilot is now ready to start the launch sequence.

Nb. See also Section 2, Chapter 1, Appendix A for further details of the signals.

a. **Cable on**

The tow line is re-attached and pull tested for security.

b. **All clear above and behind**

When all is ready, the pilot asks the signaller to check the airspace above and behind him by asking: "All clear above and behind?"

c. **Take up**

If there is slack in the tow line the pilot may take a few steps back or may ask for the tug to ease forward by shouting "Take up" to the signaller.

Take Up Signal: Underarm bat swings, 4 o'clock to 8 o'clock.

d. **Stand by (optional)**

If, once the slack is taken up, the pilot wishes to pause before going to all out (eg to rebalance the glider) he may ask for the tug to cease easing forward by shouting "Stand by" to the signaller.

Stand By Signal: bat held stationary at 3 o'clock position.

e. **All Out**

The Hang glider pilot, when balanced, shouts "All Out" to the signaller.

All Out Signal: Overarm bat swings, 10 o'clock to 2 o'clock. (Means, 'the glider pilot is ready if you, the tug pilot, consider it safe to take off'.)

f. **Stop**

If at any time in the launch any member of the launch crew spot anything which make the proposed launch potentially unsafe they must shout 'Stop'.

Stop Signal: Bat held up vertical.

The same signal is used at any stage of the launch procedure to stop proceedings.

g. **In Flight Signals - Tug**

If at any time in the tow the tug pilot wishes the glider to release he should use the 'wave-off signal'.

Wave Off Signal: Up and down movements of an outstretched arm.

h. **In Flight Signals - Hang Glider**

If the hang glider pilot is unable to release the line he should lower his legs. The tug pilot will then tow the HG to within easy gliding range of a large suitable

landing area before releasing the line. (Hang Glider pilots are advised to carry a webbing cutter to use in these circumstances.)

Unable To Release Signal: Legs down.

B. Launch Information and Logging

1. The pilot's name and time of launch must be entered. (When the tug returns the release height can also be entered)
2. Any tows that, after the All Out signal, fail to result in a normal voluntary release at the chosen height must be logged as 'incomplete' and the reason detailed.

C. Launch Trolley Procedures

1. Vb strings and any other glider parts that could snag on the trolley should be secured out of the way
2. The pilot should use his feet or enlist the aid of a helper to stop the trolley rolling forward after 'up slack'
3. The tug pilot should feed the power in progressively
4. The hang glider pilot should hold onto the trolley with the index fingers of both hands, and release both simultaneously once an adequate margin above minimum flying speed has been gained (usually when the trolley front wheels just leave the ground).

D. Cross winds

The tug must always operate within its Aircraft Manual cross wind limitations. (eg. In the case of the Solar Wings XL the Aircraft Manual states a maximum cross wind component of 11 mph.)

1. Foot Launch

- a. In winds of more than 3 mph, the maximum angle between the direction of tow and the wind should be 45°
- b. The Wind Component chart (Fig. 1) is marked to show both limiting factors, thus defining the safe operating environment
- c. The hang glider pilot should angle slightly into wind at the start of the take off
- d. The Safe Operating Environment has been defined by experienced test pilots. Less experienced hang glider pilots, and pilots on conversion courses should only be allowed to operate well within these limits (eg the maximum angle between the direction of tow and the wind should be 20°.)

2. Trolley Launch

The maximum cross wind component for launching from trolleys built to the Key Design Features list is 8 mph.

NOTE: Refer to Appendix A of this Chapter (Wind Component Chart for aerotow operations using a Solar Wings 462 XL tug and foot launch)

E. Tug Operating Procedures

1. Technical

- a. Daily Inspections: The tug must have a Daily Inspection book which should be kept on the machine. This must be signed (after the inspection) each morning. Always check the operation of the line release during D.I.'s.
- b. Snag Recording: All defects must be entered in the D.I. book. If a defect renders

the machine unsafe to fly a notice should be fastened to the seat or instruments to that effect. In either case the Tug Master should be informed.

- c. Fuel: Only mixed, filtered fuel should be used. The tug master should supervise all mixing to ensure an adequate supply of safe fuel.
- d. Engine Handling: Long slow climbs on full power followed by rapid descents plays havoc with engines. Closing the throttle and diving is the worst thing a tug pilot can do after release: this cuts off all lubrication (from the fuel oil mix) and reduces the coolant flow at a time when the engine is likely to be extremely hot. It is a recipe for an engine seizure.
Instead: Ensure the engine is warmed up before any towing. Avoid climbing at full power for more than 3 minutes. After release close the throttle in gentle stages and carry out steep descending turns. Clear the engine every thirty seconds with a gentle application of increased throttle; this will keep it warm and will prevent the plugs fouling. Monitor the water temperature gauge!
- e. Glider Types: Take special care with small pilots on big, early, slow CFX gliders (check speed range compatibility figures as per para 2.7.4 D), for pilots with very few hours on their glider, and for gliders that tend to weave at speed.

2. The Aerotow

- a. Purpose: The purpose of the tow is usually to launch the glider on a soaring flight. Therefore the tug pilot should not merely gain height but should tow towards likely lift sources.
- b. Logging the Tow: Because of the problems of carrying and using writing equipment on the tug, all logging should be done by a log keeper on the ground. Memorise the release height to pass on to log keeper after landing.
- c. Engine Starting: If you do not already know and use a check list which covers all the following points use **STICS** as a check list.

- S** Strapped in and loose objects secure. Facing away from objects
- T** Throttles closed, Choke as required
- I** Ignition on
- C** Clear Prop (shout it out loudly and visually check that no person is near the prop, and that the tow line is well clear)
- S** Start

On windy days do not start up or leave the machine ticking over with the tow line attached unless it is facing into wind.

- d. Pre Take off: The tug pilot should complete a normal pre take off check before each and every take off. If you do not already know and use a check list which covers all the following points use **WIFSCA** :

- W** Say 'Wind and Weather': Wind gustiness and direction should be noted. These will not only effect the go / no go decision but also where to take the glider. Under weather the pilot should assess the visibility, cloud base, precipitation, Cb activity etc
- I** Say 'Instruments': Check zeroed and operating
- F** Say 'Fuel': Visual check switched on and sufficient for the proposed flight
- S** Say 'Straps and Security ': Check straps are tight and that there are no loose objects
- C** Say 'Controls': Check for full and free movement
- A** Say 'All Clear': Check for obstructions on strip and aircraft landing. (This check is repeated at take-off, and reinforced by glider 'all clear above and behind' check.)

Now plan the tow, self-brief on emergency actions, check the movement required to operate the line release and set the trimmer. Use **PERT**:

- P** Plan
- E** Emergency actions

- R** Release location
- T** Trimmer set

Once all the above actions are complete, signal that you are ready by giving a thumbs up.

1. Take-up slack
Use slow ground roll & feel for the line coming taut. Hold tension on throttle.
2. Hold Signal
Hold position with brake. Reduce revs.
3. On receiving the 'All Out' signal
Check ahead and, if satisfied, then accelerate using full throttle, watching the glider in the mirror (Eyes 90% mirror / 10% ahead). Use the 'bar out' take off technique. As soon as the tug lifts pull the bar in to prevent a rapid climb, otherwise the sudden change in the tug's path will both slacken the line and put the glider in the tug's propwash. Settle into steady full power climb straight ahead at towing speed.

Remember that the tug pilot is in command of the combination. The glider pilot signals that he is ready; the tug pilot decides if it is safe.

e. The Tow

1. Maintain full power and a constant speed. Once above 500ft power can gradually be reduced so that a steady 600 fpm climb rate is established.
This will aid lift detection.
2. Eyes 75% mirror, 25% ahead and scanning. (Monitor the glider's position relative to the horizon. But don't forget that you are responsible for collision avoidance)
3. Do not fly low over unlandable areas - an engine failure or failure will hazard one or other of the pilots.
4. Make the first turn into wind so that the glider is always within gliding range of the strip.
5. Keep all turns gentle and fly smoothly. With long training tow lines (75m, \pm 5m) never exceed 10° of bank, and never circle. With shorter thermalling tow lines (less than 55m) 20° to 30° bank is the maximum permitted. (As a very rough guide, placing your wing tip on the horizon will give about 10° of bank, whilst putting the lower side wires / wing junction against the horizon gives over 30° and should never be exceeded)
6. Do not fly into the glare of the sun
7. Do not tow the glider downwind of the strip without good reason (or the pilot's specific request). Remember that the effects of wind gradient over flat sites may make it impossible for the hang glider to penetrate, even when the surface wind appears to be only moderate.
8. Station keeping is primarily the hang glider pilot's responsibility. The correct normal position is for the hang glider to be just above the horizon (See Appendix B).
However:- If the glider tends to be too high you are probably towing too fast. Slow the tug down a little by pushing out slightly. DO NOT REDUCE POWER. - If the glider tends to be too low you are probably towing too slowly. Increase speed by pulling in slightly. - 'Damp out' thermals by pulling in as you cross them, and easing back out as the hang glider climbs in it.

f. Emergencies

If time, height and the situation permits, the glider should be waved off using the standard up and down movement of the pilot's outstretched left arm. Otherwise the tug release should be operated immediately.

EXPECT CONVERSION PILOTS TO GET OUT OF POSITION - RELEASE THEM IMMEDIATELY IF THIS STARTS TO HAPPEN.

g. The Release

When the tug pilot feels the glider release he should check visually then pull the bar right in (full speed), reduce the power, and fly straight ahead to clear the area.

h. The Descent

Keep a good lookout. Also remember that other pilots are probably waiting on the ground and the club is not providing fuel for your private flying. Ensure you employ good engine handling techniques.

i. Circuit Patterns

Ideally the tugs will do (say) a left hand circuit to a dedicated tug landing area whilst gliders do right hand circuits to their landing area. At all times gliders have right of way.

j. Landing

Never land at the same time as other aircraft. Never land towards parked or just landed aircraft or obstructions (Air law says you should keep them on your left). Never forget that you have up to 100 metres of line behind you which will fall to one side in a cross wind. Do not drag it over parked gliders! After landing check nothing else is landing before turning (Left) and taxiing clear.

k. Overshoots

If overshooting from short finals climb straight ahead until clear of the field. Do not do a 'quick 360°' as other gliders may be on the approach and will remain obscured by your wing.

l. Dropping The Tow Rope

With some sites it will be necessary to drop the tow rope on a low pass rather than risk it catching in a hedge during the landing approach.

1. A good lookout and high standard of airmanship is required
2. The law requires that ropes are only dropped in a designated area (identified with a yellow cross) and in the 'normal direction of landing' unless otherwise arranged with the person in charge.
3. Make absolutely sure the rope has dropped before doing a low approach.

3. Noise Abatement

a. The Need Explained

Aerotowing brings with it a problem new to hang gliding - noise. A few Sunday afternoon's worth of grinding upwards on full power over the retired magistrate's previously tranquil cucumber sandwich gatherings will lose an aerotow site.

b. Places To Avoid

All tug pilots should be fully conversant with sensitive zones in the local area. A map should be marked up for all to see. Try to vary the paths used when towing. In any case avoid flying over farms and houses.

F. Hang Glider Operating Procedures

1. (See para 2.7.6 D for cross wind procedures)

2. The Take Off

Before attempting very light wind take offs the pilot should practice holding the glider at the required slightly more nose-up angle (compared to hill launches). The importance of not pulling in during the take-off run until airborne must also be understood.

After lift-off maintain a height of approximately 3 m until the tug lifts off. (As the tug will still be accelerating you will need to progressively increase speed to avoid climbing.) Once the tug lifts off, maintain your position relative to the tug until it becomes possible to use the horizon.

3. Straight Flight

Keep the tug's kingpost top on the horizon. (See Appendix B.) Avoid over-correcting as this will build into oscillations. With minor lateral 'excursions' allow the tug to pull the glider back into line. With greater lateral excursions, after the corrective input start to straighten up before coming into line behind the tug, otherwise you will 'overshoot'. If at any time you become badly out of position (exceeding or likely to exceed 40° off line) release at once. Lockouts or lockups will develop instantaneously once started.

If you find you are being towed too fast fly a little higher than normal. Similarly if you are being towed too slowly fly a little lower than normal. The tug pilot will adjust his speed. (Remember he cannot see whether you are having to pull in excessively or otherwise; he can only see whether you are a little high or a little low.)

4. Turns

If the glider flies directly behind the tug it will cover the same distance. If the glider flies to the outside of the turn it will cover more distance in the same time, so will travel faster and will try to climb. If the glider flies inside the turn it will travel a smaller distance in the same time, so will fly more slowly and will tend to sink (or to climb less vigorously). Fly directly behind the tug unless there is a good (speed) reason not to. Watch the tug pilot and anticipate the tug's movements - turn with it rather than after it.

5. The Release

On release the glider should carry out a climbing left turn.

6. Emergencies

The glider should release immediately if it has a problem.

7. Circuit Patterns

Gliders should fly a right hand pattern (or as locally agreed). This should be the opposite direction to the tug pattern. Use the constant aspect 'square' circuit. Avoid 'S' turns- they block the approach for tugs and other gliders.

8. Parking

In crosswind conditions, gliders should park on the upwind side of the approach path so that the tow rope is not dragged across them.

APPENDIX A

Wind component chart for hang glider aerotow operations using a Solar Wings 462 XL tug and foot launch

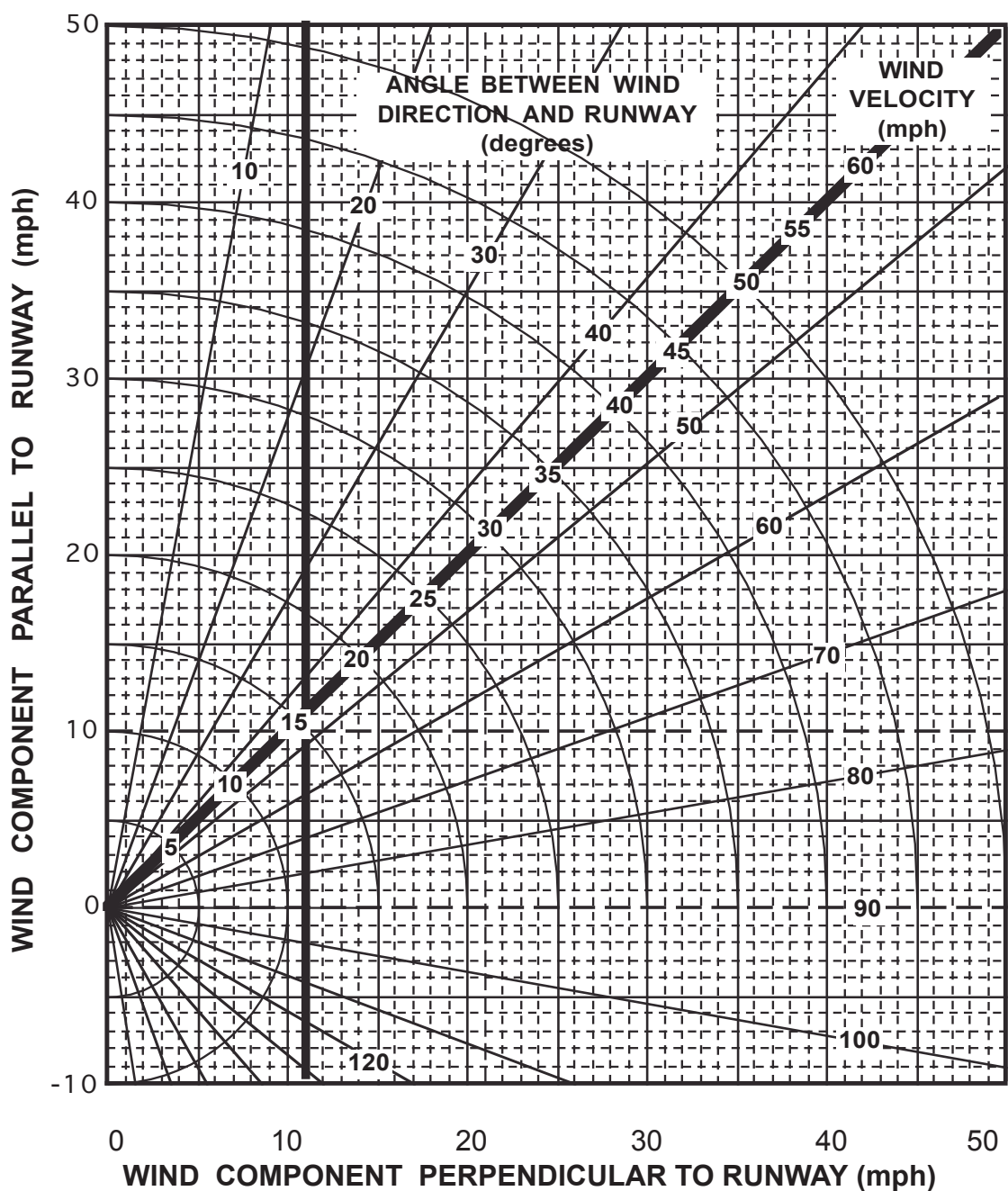


Figure 1: WIND COMPONENT CHART

APPENDIX B

Positioning Views

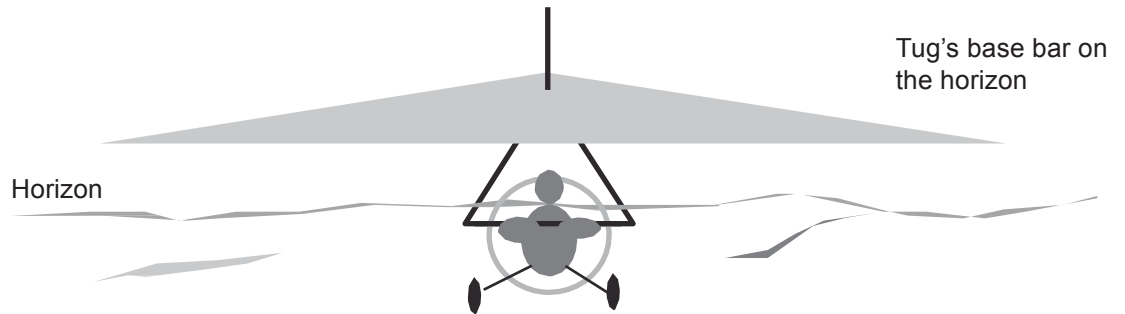


Figure 1 The view of the tug that shows that the hang glider is positioned correctly

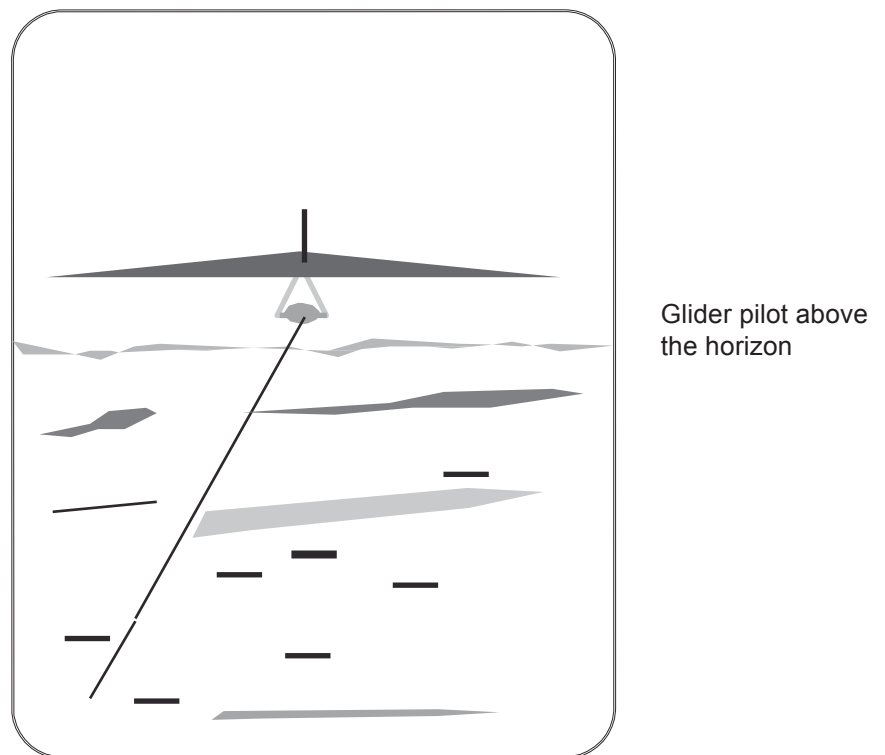


Figure 2 The view in the tug mirror of a correctly positioned hang glider

APPENDIX C

TWO PLACE HANG GLIDERS

General

There are several areas where the requirements and operational techniques for this activity need to be slightly modified from those specified in Chapter 7. For ease of use all those points are listed below. For aerotowing two place hang gliders the points specifically detailed below take precedence over the main body of Chapter 7, but in all other aspects the main body of Chapter 7 must always be complied with.

The Tug

Check that the Hang Glider's All Up Weight is within the limits stipulated on the tug's Permit to Fly.

Ratings

The pilot in command of the hang glider must also hold a BHPA Dual Pilot (HG) rating, with a 'two place' aerotow environment. The award of this environment will involve a short course (including practical and theoretical elements) and an assessment.

The Take Off

The use of a launch trolley (or similar BHPA Approved castoring wheeled launch system) is mandatory when launching two place hang gliders in winds of less than 10mph, and is recommended for all launching of two place hang gliders.

Wheels

The hang glider must be fitted with wheels of at least 9" diameter for all two place aerotow flights.

Hang Glider Tow Bridles

The tow bridle for aerotowing two-place hang gliders may be either the 'Tow Leg' 2:1 system (rigged as detailed below) or the 50/50 system rigged so that the 50% applied to the pilots is shared equally between them. Both bridle types are illustrated in the BHPA Dual Flying Factsheet.

MODIFIED RIGGING OF THE BRITISH 'TOW LEG' 2:1 SYSTEM:

The two ends of the billy cord yoke, which would normally connect to a solo pilot's left and right hip harness loops, must be attached one to the pilot's and the other to the passenger's hip harness loops. Assuming that the passenger is on the left of the pilot then the passenger's right hip loop and the pilot's left hip loop should be used. The billy cord must be routed through the control frame (ie over the base bar). An additional weak link of 50 daN breaking strain must be incorporated at the release end of the threader to prevent any possibility of a tow continuing from the glider in the event of a malfunction of any part of the system.

Sites

The reduced climb rate when aerotowing two place hang gliders means that a larger site must be specified. Where the main manual Section IV SITES B.2.states an additional distance (over and above the minimum of 300 metres) of 10 metres for every metre height of obstacle/hedge this must be increased to 16 metres at the upwind end when towing two place hang gliders.
(34mph initial climb at 250fpm = 1:12 x 1.3 safety factor = 1:15.6. 1:16 is easy safe side figure.)

Tug Operating

AT THE ALL OUT SIGNAL: With the additional inertial loads it is even more important that the tug pilot feeds the power in progressively on receiving the 'all out' signal, otherwise the weak link may fail or there is unnecessary 'cavitation' of the propeller.

DURING THE TOW

Compared to modern solo hang gliders most two place flexwing hang gliders have a markedly inferior glide performance. Because of this it is particularly important that the tug pilot pays special attention to keeping the hang glider within this reduced gliding range of the site throughout the tow (unless the hang glider pilot specifically requests otherwise). It should be borne in mind that a badly planned tow could result in the glider being unable to regain the operating site in the event of an early release. This would then expose the pilot and passenger aboard a two place hang glider to the hazards associated with making an unplanned wheeled landing in strange field with an unknown surface.

APPENDIX C

TWO PLACE HANG GLIDERS: KEY SAFETY POINTS

1. The difference between being a little out of position and being locked out is very small when on tow with a dual hang glider.
2. Tug pilots should be specifically briefed if the dual instructor is thinking of letting the student do any part of the tow. The tug pilot must pay very close attention to the glider behind him, and release it sooner rather than later if it starts to get out of position.
3. On tow the Pilot in Command must have his hand actually on the release at all times. 'Near' the release is not close enough! When you have two hands completely full of locked-out glider, taking one off to go looking for the release guarantees that your situation is going to get worse before it gets better.
4. If the student is flying the glider on tow and gets the least bit out of position release immediately! You will not fight it back into position, and the situation will go from inconvenient to dangerous in an instant. This is especially important below 1000 feet agl.
5. If you get low on the tow such that recovery would involve a big push out, release immediately! Attempting to recover from this position exposes you to the possibility of a tow line failure and a very severe stall.
6. Full control of a dual glider requires the pilot to be situated with both hands widely spaced on the base bar, chest no more than six inches above the bar, and able to push out to full arm extension and pull in to knees over the bar.
7. The only people who should ever have control of the glider below 1000 feet are:
 - Fully qualified dual aerotow pilots.
 - Students who have completed all requisite preceding exercises and have demonstrated good control on tow above 1000 feet.
 - Fully qualified solo aerotow pilots who are being trained as a dual aerotow pilot and have completed at least one dual flight as a passenger where good control on tow was demonstrated above 1000 feet.
8. Hang glider pilots converting to aerotow benefit from an initial dual flight to show them the correct positioning behind the tug. This can be combined with 'site familiarisation' on the way back down. There is no benefit to be gained from letting them handle the controls during the tow.

APPENDIX D

AEROTOW SPEED MATCHING

Matching the glider to the tug is a critical safety factor in aerotowing. Slow gliders must only be towed by slow tugs. The following procedure must be followed:

METHOD A

The core methodology 'A' is using speed data to work out the glider's max weight mid-speed figure, and then establishing that this lies within the tugs approved towing speed range. The speed data must come from the original test flight reports. Where these are unavailable or the available figures unreliable, then Flight Tests should be conducted. In this case the BHPA flight test proforma is used by a suitably qualified pilot, and tests 10 and 13 conducted in accordance with the procedures and warnings. Clear video evidence showing the ASI and horizon is required. Using standard formulae the results can then be used to produce stall and top speed data for the max A UW case.

METHOD B

An alternative methodology 'B' is available. This uses the glider's Aspect Ratio to match it to the tug type. (Aspect Ratio data is much more easily obtained than accurate speed data.) Consideration of a wide variety of glider types, and their aerotowing experience to date, led to the following Aspect Ratio ranges (the results of which are a close match with the speed range approach, where reliable figures are known).

- HG A/R greater than or equal to 7.2 = May be towed by: Quantum / Fun / XL
- HG A/R 6.3 to 7.19 = May be towed only by: XL / Fun
- HG A/R 5.7 to 6.29 = May be towed only by: XL / Fun using a 50/50 bridle only, no foot launch.
- HG A/R 5.4 to 5.69 = May be towed only by: Fun using a 50/50 bridle only, no foot launch.
- HG A/R less than 5.4 = No aerotow.

If there is any doubt or dispute as to whether this method has accurately classified a particular glider type, then Method 'A' will be used and aerotow flight testing if necessary.

A chart depicting known glider types matched to suitable tug types (AR_tug_matching) will be maintained on the BHPA website. Suggestions and data for adding new glider types should be addressed to the BHPA Technical Manager.

Tandems:

Flown dual by Aerotow Instructors (including Aerotow AElS) using fixed undercarriage and 50/50 bridles: XL / Fun / Quantum (*Tow speed must be less than glider Va. E.g. Falcon 3 tandem Va 43mph.*)

APPENDIX E

FINS FOR AEROTOWING

A vertical fins fitted to the rear keel produces a worthwhile improvement in hang glider directional stability during aerotowing, which is especially beneficial when pilots are first learning to aerotow. In order to encourage this usage, the FSC has decided that the addition of a fin to a hang glider is not regarded as a modification provided that:

1. Maximum weight: 0.5 kg (including fittings).
2. Maximum vertical area: 0.2 m².
3. The fitment does not compromise the primary glider structure.
4. The fitment is suitably secure. (*No permanent deformation or displacement following 5kg force sideways applied at top of fin*).
5. If the rear keel is removable, then the sections must be through bolted or pinned (not spring button etc).
6. No protruding elements are introduced below the keel that could interfere with a rear trolley support.
7. Flight tested by SAC/SAI (to include pitch trim adjustment to compensate for weight of fin assembly, high-speed straight flight and checking for any adverse effects on normal handling off tow).

APPENDIX F

Glider Approval for First Solo Aerotow usage

First solo aerotow hang gliders must be individually approved by the FSC.

Glider manufacturer:

Glider type:

Glider size:

Original Glider certified clip-in weight range:

Undercarriage weight:

Usable clip-in weight range:

(The minimum is unaltered as the pilot needs control authority. The maximum is reduced by the weight of the undercarriage.)

50/50 bridle top fastening point:

50/50 bridle release type and location:

Threader length:

Undercarriage details:

(attach photos and confirmation of compliance with BHPA undercarriage requirements)

Fin details:

(attach photos and confirmation of compliance with BHPA fin requirements)

To be towed only by:

Tug manufacturer:

Tug model:

Engine:

Registration:

Tow Rope: Minimum length 100 metres, maximum 120 metres.

The above combination is approved for first solo use:

Signed:

Print:

Date:

SECTION 3 PILOT TRAINING

Chapter 1 INTRODUCTION TO THE PILOT RATING SCHEME

- 3.1.1 Introduction
 - 3.1.2 The Ratings
-

3.1.1 Introduction

The Pilot Rating Scheme provides structured learning programmes for each discipline, based upon progressive flying tasks and theoretical knowledge tests. It also functions as a proficiency indicator system.

There are three key concepts that underpin the scheme:

- a. **Discipline:** The craft type the pilot is qualified to fly (HG, PG, PA).
- b. **Rating:** The pilot's ability level on that craft type (CP or P or AP).
- c. **Environment:** The launch methods/environments the pilot is trained/qualified to use (Hill, Tow, Aerotow, Power).

The three disciplines HG, PG and PA are distinct. (Ratings and environments earned on one class of aircraft only apply to that class of aircraft.)

A pilot gains his first qualification in a discipline (HG, PG, PA) which is recorded as a rating (CP, P, AP) and an environment (Hill, Tow, Aerotow, Power).

The pilot can subsequently raise this rating level (P, AP).

The pilot can also add new environments (Hill, Tow, Aerotow, Power).

Initial training is completed under the guidance of instructors within schools, and ends with the award of the Club Pilot (Novice) rating and whichever environment the training involved. This takes the ab-initio pilots to a level where they are able to fly safely without the need for supervision. The subsequent stages (Pilot and Advanced Pilot) are completed as a self-learning process, where the pilot builds upon those basics within clubs, with the assistance of Coaches.

The EP and CP training programmes

The EP and CP training programmes consist of a number of exercises that have been grouped together in phases. The programmes detail when and how these exercises are taught, and the level of ability that needs to be acquired before the student is progressed. As both the Instructor and student must refer to the programmes frequently during training, they are formatted as a series of booklets entitled 'BHPA Student Training Record' followed by the precise discipline and environment.

Instructor Notes

The Instructor Notes provide further clarification for the Instructor as to the precise delivery of the EP and CP training programmes.

The Pilot and Advance Pilot tasks

The P and AP tasks for all disciplines are detailed in the BHPA Pilot Task Book.

3.1.2 The Ratings

The BHPA Pilot Rating Scheme consists of one award and three ratings that may be gained separately in any discipline.

Elementary Pilot award (EP)

This is awarded by the school during the student's training to mark the successful completion of the introductory phase, and to indicate the student's suitability to undertake the further school training required to gain the first rating.

Club Pilot (Novice) (CP)

This is the 'novice' qualification. It marks the end of the student's formal basic instruction, and qualifies the student to leave the school environment and to fly without formal instruction in BHPA member clubs. The student will still be very much in a learning phase, and so should seek advice and guidance from coaches as he perfects his skills and works towards the Pilot rating.

Pilot (P)

This is the 'fully qualified' rating. The pilot will now possess well-rounded skills and abilities, along with enough experience to know how and when to exercise them! Pilots should hold this rating before embarking on cross-country flights.

Advanced Pilot (AP)

This rating is for the above-average pilot who is a total master of his or her aircraft and is enjoying to the full the challenges the sport can offer.

If the pilot wishes to progress beyond the AP level he should turn to the Federation Aeronautique International (FAI) Delta or Eagle Award Schemes (see Section 3: Chapter 4 : Point 7.).

SECTION 3 THE PILOT RATING SCHEME

Chapter 2 STUDENT TRAINING PROGRAMMES (EP AND CP)

- 3.2.1 PG hill Student Training Record book
- 3.2.2 PG hill Instructor Notes
- 3.2.3 PG tow Student Training Record book
- 3.2.4 PG tow Instructor Notes
- 3.2.5 HG hill & tow Student Training Record book
- 3.2.6 HG hill & tow Instructor Notes
- 3.2.7 PA Student Training Record book (squares)
- 3.2.8 PA Student Training Record book (round)
- 3.2.9 PG power Student Training Record Book
- 3.2.10 PG power Instructor Notes
- 3.2.11 HG Aerotow Student Training Record
- 3.2.12 HG Aerotow Instructor Notes

The above books and notes are not reproduced in the electronic copy of the Technical Manual. Instructors are to obtain the current edition of the Student Training Record books and Instructor Notes from the BHPA Head Office. A list of current editions is published on the BHPA website under 'Versioned Training Documents'.

SECTION 3 THE PILOT RATING SCHEME

Chapter 3 PILOT AND ADVANCED PILOT TASKS

3.3.1 Pilot Task Book

The above book is not reproduced in the electronic copy of the Technical Manual. Registered licensed members are to obtain the current edition of the Training Record book from the BHPA Head Office. A list of current editions is published on the BHPA website under 'Versioned Training Documents'.

SECTION 3 THE PILOT RATING SCHEME

Chapter 4 ASSOCIATED INFORMATION

3.4.1	Alternative Entry to the PRS	3.4.6	International Pilot Proficiency Identification (IPPI) card
3.4.2	Transferring between disciplines	3.4.7	FAI proficiency badges
3.4.3	Environment Conversion Courses		
3.4.4	The Red Ribbon System	Appendices	
3.4.5	The 'Para Pro' and 'Safe Pro' Schemes	A	International Training Standard

3.4.1 Alternative Entry to the PRS

In order to address unusual situations, an alternative entry method is available to the Pilot Rating Scheme.

This method is designed to allow existing pilots into the **BHPA PRS** without them having to work through the system from the beginning. There are two steps:

- i. Prove pilot proficiency to Technical Officer's satisfaction. This can be:
 - By producing an 'International Pilot Proficiency Identification' card (see Appendix A)
 - By providing logbook evidence of flying experience to enable a Technical Officer (on behalf of the FSC) to decide which rating is most appropriate.
 - Through Coach **observation** of flying skills. In this case the Coach must provide written support vouching that the pilot's demonstrated skill level equals or surpasses that required for the rating applied for.

Note: The Coach may only observe: the Coach must not place himself in the position of assuming any level of responsibility for an unqualified pilot other than the normal Duty of Care owed by one citizen to another. No coaching or supervision should take place.

- ii. Pass the relevant BHPA examination. The papers will be marked by the BHPA office staff. (Alternatively or previously qualified pilots may be exempt this requirement if they can show an equivalent and current knowledge of UK Airlaw and Flight Theory topics demonstrated through an equivalent examination.)

In this way the pilot proves his practical and theoretical experience.

3.4.2 Transferring Between Disciplines

There are no 'short-cut' courses for converting between main disciplines (HG<>PG<>PA). The pilot must train from the start. The only concession is that when the pilot reaches the Pilot and Advanced Pilot level in the new discipline, there is no requirement to re-sit the examinations if already passed.

3.4.3 Environment Courses

A sensible, safe approach is required for those adding additional environments. Unnecessary duplication should be avoided although revision of topics is to be encouraged. It should not, however, be assumed that a competent pilot in one environment will automatically show the same skill in another.

Where a candidate has less than the required entry qualification the environment course cannot be attempted. A suitably qualified instructor always has the option of putting the candidate through the ab-initio training programme in that environment so the student gains competency (and qualification) in the desired launch method that way.

Hang Gliding

a. HG Tow or Aerotow to HG Hill (The 'Hill Environment')

1. Course run by:
Instructor (Hill).
2. Pilot Entry Qualification:
CP (Tow) or CP (Aerotow)
3. General:
Suitably sized wheels must be fitted to the glider base bar. Avoid nil wind conditions for first flights.
4. Course Syllabus:
This course requires completion of the STRB HG (Hill), with unnecessary duplication avoided where proficiency at skills acquired in other HG environments are demonstrated by the candidate.
 - i) At training slope master ground handling and take-off techniques.
 - ii) Ridge soaring theory. To include site assessment (including hazards, turbulence and rotor), weather assessment (including wind gradient on slope face, the effects of the wind being slightly off the hill, venturi effect), flight planning (including the importance of making all turns away from the hill, building in options). Rules of the air / ridge protocols and the need to keep a good look out.
 - iii) At large easy ridge site master higher launches, ridge soaring practical, top landings, flying with others.
 - iv) Pass the HG Hill Environment exam.

Pass an assessment by the supervising Instructor (Hill).

b. HG Hill or Aerotow to HG Tow (The 'Tow Environment')

1. Course run by:
A Senior Tow Coach or Instructor (Tow).
2. Pilot Entry Qualification:
CP (Hill) + 10 hours soaring on hang gliders **or**
Aerotow CP+ signed off by an Aerotow Instructor as competent at foot take offs and landings.
3. General:
Suitably sized wheels must be fitted to the glider base bar. Avoid nil wind conditions for first flights.
4. Course Syllabus:
 - i) Basic training in environment / technique / equipment differences / signals.
 - ii) The correct rigging and attachment of tow bridles.
 - iii) Glider launch and control on tow.
 - iv) Release and emergency drills.
 - v) 10 flights (min) including at least 2 launches to over 600ft and at least 4 launches using a 'chest release'.
 - vi) Pass the HG Tow Environment exam.

Pass an assessment by the supervising Instructor (Tow) or Senior Tow Coach.

c. HG Hill or Tow to Aerotow (The 'Aerotow Environment')

1. Course run by:
Senior Aerotow Coach
2. Pilot Entry Qualification:
P rating
3. General:
Suitably sized wheels must be fitted to the glider base bar. Avoid nil wind conditions for first flights. Ensure that the pilot is competent at flying the glider to be used. The tow line must be 100m (\pm 5m). A fin is highly recommended (see Section 2, Chapter 7, Appendix E).
4. Course Syllabus:
 - i) Ground crew theory session covering duties of Launch Marshall, Primary signaller, Second signaller and Log keeper
 - ii) Aerotow theory session covering signals and procedures, emergency procedures (especially actions in the event of the tug releasing the line and weak-link failures), station keeping in straight and turning flight, nil-wind take off techniques, following the tug back to the field if disorientated
 - iii) Observe practical demonstrations.
 - iv) 4 satisfactory launches flying normal aerotow pattern to minimum of 1500ft a.t.o.
 - v) 4 satisfactory launches involving horizontal 8's to minimum of 1500ft a.t.o. and being waved off.
 - vi) Have successfully completed at least two trolley launches and at least two foot launches.
 - vii) 1 experience of the tug releasing the line
 - viii) Pass the HG Aerotow Environment exam.

Pass an assessment by the supervising Senior Aerotow Coach.

Paragliding

d. PG (Tow) to (Hill) - (The 'Hill Environment')

1. Course run by:
Instructor (Hill).
2. Pilot Entry Qualification:
CP (Tow)
3. Course Syllabus:

This course requires completion of the STRB PG (Hill), with unnecessary duplication avoided where proficiency at skills acquired in other PG environments are demonstrated by the candidate.

 - i) At training slope master ground handling, take-off techniques.
 - ii) Ridge soaring theory. To include site assessment (including hazards, turbulence and rotor), weather assessment (including wind gradient on slope face, the effects of the wind being slightly off the hill, venturi effect), flight planning (including the importance of making all turns away from the hill, building in options). Rules of the air / ridge protocols and the need to keep a good look out.
 - iii) At large easy ridge site master higher launches, ridge soaring practical, top landings, flying with others.
 - iv) Pass the PG Hill Environment exam.

Pass an assessment by the supervising Instructor (Hill).

e. PG (Hill) to (Tow) - (The 'Tow Environment')

1. Course run by:

A Senior Tow Coach or Instructor (Tow).

2. Pilot entry qualification:
CP (Hill) and have logged a minimum of 10 flying hours.
3. Course Syllabus:
 - i) Basic training in the differences in environment, techniques, equipment and signals
 - ii) Practical training covering inflation and launch methods whilst attached to the tow line.
 - iii) Sufficient towed flights to gain an appreciation of the control-under-tow, and subsequent self-release skills.
 - iv) A total of 10 flights minimum.
 - v) Emergency procedures training.
 - vi) Pass the PG Tow Environment exam.

Pass an assessment by the supervising Instructor or Senior Tow Coach.

Environment Issue Procedure

On successful completion of the environment course the pilot must send a completed 'Additional Environment Registration Form' and the appropriate fee to the BHPA Office. This must be received within seven days of it being signed by the Senior Tow / Aerotow Coach or Instructor.

Providing the procedure above has been followed, the pilot may act in the role of pilot qualified in the specified environment whilst awaiting an updated membership card from the BHPA Office.

3.4.4 The Red Ribbon System

This system is intended to:

- (i) identify inexperienced pilots on the hill.
- (ii) encourage inexperienced and experienced pilots to make contact with each other and give advice when necessary.

Although this system is designed to cope with the problems found away from the school, schools still play an important role within it.

Students should be told to wear a red ribbon on gaining the EP rating.

The ribbon may be dispensed with when a pilot achieves CP plus 10 hours logged flying time.

3.4.5 The 'Para Pro' and 'Safe Pro' Schemes

These are Pilot Rating Schemes initiated by the FAI's hang gliding and paragliding sub-committee (CIVL). Although popular in some countries, most national governing bodies have retained their own systems.

3.4.6 International Pilot Proficiency Identification (IPPI) Card

This internationally recognised 'identification' card for pilots has been introduced by the FAI as a record of the proficiency levels based on the Para and Safe Pro schemes. The BHPA encourages those who intend to fly abroad to carry an IPPI Card. They are obtainable from the BHPA office (see Appendix A for more information for CFIs and Senior Coaches on using the Card).

3.4.7 **FAI** (Fédération Aéronautique Internationale) **Proficiency Badges**

Once pilots have completed basic training they are encouraged to advance their skills as pilots by flying their gliders further, higher and for longer. The FAI Badge Awards encourage this by awarding badges for distance, height gain and duration (in free flight) at the levels of silver, gold and diamond. There is also a bronze badge awarded at national rather than international level. 'Delta' badges are for pilot's flying hang gliders of Classes 1, 2; 4 and 5. 'Eagle' badges are for paraglider pilots. Application forms for the Eagle and Delta Bronze awards are on the BHPA website.

Full Details are in the FAI Sporting Code Section 7D which can be found on the FAI website.

APPENDIX A

INTERNATIONAL TRAINING STANDARDS

RECOGNITION OF PROFICIENCY

This Appendix contains advice for CFI's or Senior Coaches when approached by someone with an IPPI Card who wants it taken into account during their training or flying with a BHPA club. BHPA membership is mandatory for a school situation; in a club environment the pilot must at least show proof of current insurance and the appropriate rating on an IPPI card.

The FSC's policy is that it isn't possible to formally recognise every other nation's pilot and Instructor schemes individually but as most nations (including the UK) have recognised the IPPI scheme then it is a useful standard on which to assess the level of those who have not been trained under the BHPA system. Although this is an FAI document it is issued by the National Aero Club or its delegated body - in the UK this is the BHPA.

Remember that the Safe Pro and Para Pro stages do not exactly match our own - and the same is probably true of most other nations where hang gliding and paragliding are established. This means that you must carry out some checks to satisfy yourself as to the holders' ability - and to correct where necessary before accepting them into the school or allowing them to fly club sites. This should not, however, prove an obstacle, and you are encouraged to carry out only those checks which, based on safety, are necessary.

Safe Pro, Para Pro - the FAI IPPI Card and the BHPA Pilot Rating Schemes

The FAI International Pilot Proficiency Identification card is a neat, internationally recognised card which indicates the level of the holder's pilot proficiency.

It is based upon a common format; for hang gliding this is the Safe Pro, and for paragliding it is the Para Pro. Both these are detailed training and proficiency syllabuses set out in five levels. The BHPA schemes are divided into four larger steps so the FSC has compared them and set the following equivalents:

Hang Gliding:

Elementary	=	Safe Pro Stage 1
Club (Novice) Pilot	=	Safe Pro Stage 2
Pilot	=	Safe Pro Stage 4
Pilot*	=	Safe Pro Stage 5
Advanced Pilot	=	Safe Pro Stage 5

Pilot*: Pilots wishing to obtain an IPPI rating on this basis must submit a statement from a Club Chairman/Club Chief Coach/CFI confirming that they have checked the applicant's logbooks and are satisfied that he has a total of at least 50 flying hours on hang gliders and has completed at least 5 cross-country flights in various types of lift (flights conducted solely in ridge lift or along the same ridge do not count).

Paragliding:

Elementary	=	Para Pro Stage 2
Club (Novice) Pilot	=	Para Pro Stage 3

Pilot = Para Pro Stage 4

Advanced Pilot = Para Pro Stage 4

Para Pro Stage 5: Pilots wishing to obtain this IPPI rating must hold a Pilot or Advanced Pilot rating, and must submit a statement from a Club Chairman/Club Chief Coach/CFI confirming that they have checked the applicant's logbooks and are satisfied that he has a total of at least 100 flying hours on paragliders and has completed at least 5 cross-country flights using various types of lift (flights conducted solely in ridge lift or along the same ridge do not count).

Those purchasing IPPI cards from the BHPA will find they have been credited with a Safe Pro or Para Pro rating on this basis

Note: These ratings are based on hill launching. We cannot issue IPPI ratings to Tow pilots unless they hold the appropriate 'hill' launch environments.

SECTION 4 LICENSING

Chapter 1 INTRODUCTION

4.1.1	Introduction	4.1.5	Annual Renewal
4.1.2	Trainee Instructor Registration	4.1.6	First Aid Certificates
4.1.3	Progression		
4.1.4	Procedures for Examination and Assessment	Appendices	
		A	- Obtaining a Licence

4.1.1 Introduction

Licences are issued to those members who have been authorised by the FSC to carry out activities that involve taking on some responsibility for another member. Instructing, Coaching, Operating a tow device and Dual Piloting are all activities where the person concerned has a greater or lesser degree of responsibility for a second person, so these are all activities that must only be undertaken by those holding the particular licence.

The relationship between the Instructor and the Coach

In simple terms the relationship can be set out as follows:

- a) Instructors teach ab-initio members (below CP (novice) level). In other words Instructors are the ab-initio specialists. However, it is perfectly normal for Instructors (operating in registered schools and subject to the approval of the CFI) to also conduct post-ab-initio pilot development training.
- b) Coaches coach existing pilots (i.e. from CP (novice) upwards). i.e. coaches assist the qualified pilot with improving/developing/fixing skills. (In the case of the Senior Coach this remit is expanded in specific instances to include teaching/coaching/ training specific new skills.) It is not permitted for Coaches to become involved in pre-CP training. (The only exception to this is in HG hill where coaches may teach Phase 9: See Student Training Record HG for details.)

4.1.2 Trainee Instructor Registration

Potential Instructors must be duly registered with the BHPA before the relevant training can commence. Applications for registration should be made by the CFI on the correct form (see BHPA website) accompanied by the registration fee. Registration will be signified by a replacement membership card duly endorsed.

4.1.3 Progression

An Instructor or Coach should be encouraged to progress to the next higher level providing the pre-requisites are held, and the procedures given in 4.1.4 below are followed.

4.1.4 Procedures for Examination and Assessment

One of the final stages in a candidate's progression to becoming a licence holder is a thorough evaluation of his abilities. The BHPA has formulated two kinds of evaluation. For some licences this evaluation stage is termed an 'Assessment', which means that it is conducted within the home club, by a club member who has been appointed as an Assessor, under the auspices of the CFI/Chief Coach. For other licences the evaluation

required is an 'Examination', which means that an independent outside examiner is appointed to put the candidate through his paces.

Examination

On completion of training and following a successful pre-examination by the CFI, an Application for Examination (see BHPA website) is submitted by the CFI, with the appropriate fee. Arrangements will then be made by the Examination and Inspection Panel to provide a qualified Examiner at the earliest opportunity. Candidates can only be examined in one discipline at a time. Successful candidates will be issued with a temporary licence on the day of the examination, and a replacement membership card showing the new qualifications will be issued as soon as possible thereafter.

Assessment

Assessments are conducted internally under the authority of the CFI or Chief Coach. Assessors are appointed by the CFI or Chief Coach and must be duly qualified in the relevant discipline and environment. When appointed as an assessor this must be recorded in their Instructor/ Flight Log Book (as appropriate) by the CFI.

On completion of an assessment, if the candidate is successful the assessor must enter the details in the candidate's Flight Log Book and return the completed Assessment pro-forma for processing by the BHPA office. There is no assessment fee, but a Registration fee must accompany the completed Assessment Pro-Forma.

4.1.5 Annual renewal

All Coach and Instructor Licences must be renewed / revalidated annually, at the time of membership renewal. The annual revalidation of licences plays a key role in ensuring that standards are maintained. Chief Coaches and CFIs must take this responsibility very seriously.

Club Coaches and Senior Coaches (non-discipline specific)

Renewal / revalidation requires the submission of a Declaration of Support, signed by the Club's Chief Coach at membership renewal time. This states that: *'As the licence holder's Chief Coach, I can confirm that he/she continues to be a valuable active member of the club's coaching team'*. (In the unlikely event of the club having no nominated Chief Coach then the club Chairman should sign this.)

The FSC also recommends that coaches should re-attend the Coach Course at least every five years to ensure that nothing gets forgotten and that they are fully up-to-date with current thinking. (The course fee is reduced by £10 for re-attendees.)

Instructors and all discipline specific Coaches / Senior Coaches.

Renewal / revalidation requires the submission of a Declaration of Support, completed and signed by the licence holder's CFI (in the case of Instructor's) or Chief Coach (in the case of Coaches).

The following details must be checked before completing the Declaration of Support:

1. The licence holder's Flight Log Book entries to prove flying currency. (The minimum acceptable is 25 flights or 15 hours in the previous 12 months.)
2. The licence holder's Instructor Log Book (where relevant) to prove instructional/operational currency. (The minimum acceptable is 10 days instructing in each discipline and environment that the renewal is being sought for, in the previous 12 months.)

3. The licence holder's relevant First Aid Certificate.

In the case of Instructors, the CFI must also ensure that a formal 'Instructor Competence Assessment' has been carried out within the last twelve months. The 'Instructor Competence Report' form (see BHPA website) form details the areas to be assessed, and the accompanying 'Instructor Objective Skills Levels' document gives details of the scoring method to be used. A copy of the completed 'Instructor Competence Report' must accompany the Membership Renewal form and Declaration of Support. The CFI should keep a file copy of the 'Instructor Competence Report'.

4.1.6 **First Aid Certificates**

The following is a summary of minimum First Aid Certificate requirements:

- * Operator: recommended to have completed a basic First Aid Course.
- * All Coaches other than Club Coach: must have completed a one day First Aid Course.
- * Air Experience Instructor: must have completed a one day First Aid Course.
- * Instructor: There is such a profusion of suitable certificates that it is not possible to list all those that are considered appropriate. Any Certificate will be considered as suitable providing the course provider satisfies the criteria set by the HSE, and the course:
 1. Was of at least 16 hours duration.
 2. Was of a Pass/Fail nature.
 3. Included the standard Elementary First Aid elements.
 4. Contained the diagnosis and management of spinal injuries.
 5. Contained an Incident Management element.
 6. Contained a Casualty Management element.

Item 4 and 5 should ideally involve 'Remote Location' issues

APPENDIX A

OBTAINING A LICENCE IN ALL DISCIPLINES

A summary explaining how any BHPA Licence can be obtained - and who can do what during the process. Please refer to relevant section in Section 4: Chapter 2 or 3 for detail.

ASSESSMENTS

What needs an Assessment	Who can train*	Who assesses
Operator Licence	SI(Tow) or STC / SAC	SI(Tow) or STC / SAC
Coach / Senior Coach	Chief Coach	Chief Coach/Club Chairman
Tow Coach	STC	STC
Aerotow Coach	SAC	SAC
Power Coach	SPC	SPC
Extension to existing Licence	SI	SI

Assessors must be licenced in the appropriate discipline, appointed by the CFI or CTC and have it entered in their Log Book.

* = Initial training must be done by a Senior XX where shown, but subsequent supervision may be at discretion of CFI/CTC

EXAMINATIONS

What needs an Examination	Who can train*	Who examines
Dual Pilot Licence	DP	Examiner
AEI (Dual)	SI + Dual Pilot	Examiner
Senior Tow Coach	STC	Examiner
AEI (Solo)	SI	Examiner
Instructor	SI	Examiner
Senior Instructor	SI	Examiner
Senior Aerotow Coach	SAC	Examiner
Senior Power Coach	SPCI	Examiner
Senior AEI	SI (Dual) or SAEI	Examiner

Examiners are appointed by the Chief Examiner.

SECTION 4 LICENSING

Chapter 2 THE COACH, OPERATOR, EPS and DUAL PILOT SCHEMES

4.2.1	The Club Coach	4.2.6	The EPS Licence holder
4.2.2	Discipline Specific Coaches	4.2.7	The Dual Pilot
4.2.3	The Senior Coach		
4.2.4	The Chief Coach	Appendices	
4.2.5	The Operator	Appendix A	The Coach Scheme

4.2.1 The Club Coach

Role and responsibilities

- Provide information, guidance and help in a safe, proven manner to club pilots qualified for the activity undertaken.
- Support and assist the Senior Coach(es) by sharing coaching duties.
- Improve their own flying and coaching skills and knowledge in various ways, including studying handbooks, articles in Skywings (especially the Safety Matters Page) and Incident Summaries and Safety Notices.
- Operate safely within their known skills and personal environments in accordance with the recognised procedures and regulations.
- Promote the use of the Incident Reporting scheme within the club.
- Maintain and promote a positive attitude to the sport, the FSC and the BHPA.
- Uphold their duty of care to other members and members of the public.

Becoming a Club Coach

Pre-requisites: A potential Club Coach must first:

- Be a BHPA Annual Flying Member.
- Hold a CP rating with 10 hours (hill) or 50 flights (tow) logged since achieving CP.
- Successfully attend a Club Coach course.
- Be recommended by his/her club. (Chief Coach and Chairman's signature required.)

Appointment / Licence issue

After the candidate has attended the Club Coach course, and has met the other pre-requisites, the club's Chief Coach should, if supporting the appointment, countersign the form issued to the candidate on the course and return it to the BHPA office for issue of the licence.

4.2.2 Discipline Specific Coaches

The Tow Coach

Tow Coach Licences – Types

The Tow Coach licence is available in the following categories:

Tow Coach PG
Tow Coach HG
Tow Coach PA Square
Tow Coach PA Round

Role and responsibilities

In addition to the responsibilities of the Club Coach the Tow Coach may, when delegated by the Chief Tow Coach as 'Duty Coach in Charge of Tow Operations':

- a) Authorise the flying of qualified tow pilots.
- b) Authorise qualified Operators to man the tow unit.

Becoming a Tow Coach

Pre-requisites: Before commencing training to become a Tow Coach, the potential Tow Coach must first:

- a) Hold Pilot rating with an appropriate Tow Environment. (If a Tow Coach licence in another discipline is already held, then CP with the appropriate Tow Environment is acceptable).
- b) Be aged 18 years minimum.
- c) Have logged 50 + tow launched flights since achieving CP.
- d) Have attended a Club Coach Course.
- e) Possess a current 1st Aid Certificate. (See Section 4: Chapter 1: Point 6.)
- f) Possess, and be familiar with the relevant Sections and Chapters of this Manual.
- g) Be recommended by his/her club. (Chief Tow Coach and Chairman's signature required.)

The Training Programme for Tow Coaches

The potential Tow Coach must be briefed on his role and responsibilities and the trainer must be satisfied that he is capable of carrying them out satisfactorily.

Assessment / Examination

After completing training the potential Tow Coach must pass an Assessment. (See Section 4: Chapter 1: Point 4.)

The Aerotow Coach

Role and responsibilities

In addition to the responsibilities of the Club Coach the Aerotow Coach may, when delegated by the Chief Aerotow Coach as 'Duty Coach in Charge of Aerotow Operations':

- a) Authorise the flying of qualified aerotow pilots.
- b) Authorise qualified Operators to man the tug aircraft.

Becoming a Aerotow Coach

Pre-requisites: Before commencing training to become an Aerotow Coach, the potential Aerotow Coach must first:

- a) Hold Pilot rating with an Aerotow Environment.
- b) Be aged 18 years minimum.
- c) Have logged 50 + aerotow launched flights.
- d) Have a total of over 200 hrs logged on hang gliders.
- e) Have attended a Club Coach Course.
- f) Possess a current 1st Aid Certificate. (See Section 4: Chapter 1: Point 6.)
- g) Possess, and be familiar with the relevant Sections and Chapters of this Manual.
- h) Be recommended by his/her club. (Chief Aerotow Coach and Chairman's signature required.)

The Training Programme for Aerotow Coaches

The potential Aerotow Coach must be briefed on his role and responsibilities and the trainer must be satisfied that he is capable of carrying them out satisfactorily.

Assessment / Examination

After completing training the potential Aerotow Coach must pass an Assessment (See Section 4: Chapter 1: Point 4.)

The Power Coach

Power Coach Licences – Types

The Power Coach licence is available in the following categories:

Power Coach PHG

Role and responsibilities

In addition to the responsibilities of the Club Coach, the Power Coach may, for pilots holding a HG CP rating and Power Environment:

- a. Assist the pilot in checking the airspace at the site he will be using.
- b. Train and qualify such pilots in accordance with 'The Hang Glider Power: Pilot Stage' syllabus.

Becoming a Power Coach

Pre-requisites: Before commencing training to become a Power Coach, the potential Power Coach must first:

- a) Hold Pilot rating and a Power Environment.
- b) Be aged 18 years minimum.
- c) Have logged 50 + Power launched flights.
- d) Have attended a Club Coach Course.
- e) Possess a current 1st Aid Certificate. (See Section 4: Chapter 1: Point 6.)
- f) Possess, and be familiar with the relevant Sections and Chapters of this Manual.
- g) Be recommended by his/her club. (Chief Power Coach and Chairman's signature required.)

The Training Programme for Power Coaches

The Potential Power Coach must be briefed on his role and responsibilities and the trainer must be satisfied that he is capable of carrying them out satisfactorily.

Assessment / Examination

After completing training the potential Power Coach must pass an Assessment. (See Section 4: Chapter 1: Point 4.)

4.2.3 The Senior Coach

Role and responsibilities

In addition to the responsibilities of the Club Coach the Senior Coach must support and assist the Chief Coach in:

- a) Organising and co-ordinating coaching within the club.
- b) Encouraging pilots to use the club coaching facility through effective promotion and education.
- c) Establishing and maintaining an effective coaching team within the club.
- d) Maintaining an effective liaison with the Club Safety Officer.
- e) Supervising and monitoring the development of potential coaches, and assisting in the selection and appointment of Club Coaches.

Becoming a Senior Coach

Pre-requisites: A potential Senior Coach must first:

- a) Hold a Club Coach appointment.
- b) Possess P rating with good active experience.
- c) Attend the Instructor course.
- d) Be recommended by his/her club. (Chief Coach and Chairman's signature required.)

Assessment / Examination

After completing training the potential Senior Coach must pass an Assessment. (See Section 4: Chapter 1: Point 4.)

The Senior Tow Coach

Senior Tow Coach Licences – Types

The Senior Tow Coach licence is available in the following categories:

Senior Tow Coach PG
Senior Tow Coach HG
Senior Tow Coach PA Square
Senior Tow Coach PA Round

Role and responsibilities

In addition to the responsibilities of the Tow Coach and Senior Coach, the Senior Tow Coach will additionally, when directed by the Chief Tow Coach:

- a) Train and assess potential Tow Coaches and Operators.
- b) Train and qualify pilots for the Tow Environment.

Becoming a Senior Tow Coach

Pre-requisites: A potential STC must first:

- a) Complete the requirements for the Senior Coach.
- b) Hold a Tow Coach Licence in the discipline.
- c) Hold an Operator Licence in the discipline.
- d) Attend the Instructor Course.
- e) In this discipline have logged 300 launches minimum as an Operator (150 if converting HG<->PG and if STC is held in the other discipline)
- f) In this discipline have logged a minimum of 100 flights as pilot.
- g) Be recommended by his/her club. (Chief Tow Coach and Chairman's signature required.)
- h) Gain a recognised valid First Aid Certificate. (See Section 4: Chapter 1: Point 6.)

The Training Programme for Senior Tow Coaches

The Potential Senior Tow Coach must be trained as necessary such that he becomes capable of fulfilling the role and responsibilities.

Assessment / Examination

After completing training the potential Senior Tow Coach must pass an Examination. (See Section 4: Chapter 1: Point 4.)

The Senior Aerotow Coach

Role and responsibilities

In addition to the responsibilities of the Aerotow Coach and Senior Coach, the Senior Aerotow Coach will additionally, when directed by the Chief Aerotow Coach:

- a) Train and assess potential Aerotow Coaches.
- b) Train and qualify pilots for the Aerotow Environment.
- c) If Operator (tug pilot) qualified with a minimum of 100 launches logged in that

capacity, train and assess potential Operators (tug pilots)

Becoming a Senior Aerotow Coach

Pre-requisites: A potential SAC must first:

- a) Complete the requirements for the Senior Coach.
- b) Hold an Aerotow Coach Licence in the discipline.
- c) Attend the Instructor Course.
- d) In this discipline have logged a minimum of 100 flights as pilot.
- e) Have logged 200 flying hours minimum.
- f) Be recommended by his/her club. (Chief Aerotow Coach and Chairman's signature required.)
- g) Gain a recognised valid First Aid Certificate. (See Section 4: Chapter 1: Point 6.)

The Training Programme for Senior Aerotow Coaches

The Potential Senior Aerotow Coach must be trained as necessary such that he becomes capable of fulfilling the role and responsibilities.

Assessment / Examination

After completing training the potential Senior Aerotow Coach must pass an Examination. (See Section 4: Chapter 1: Point 4.)

The Senior Power Coach

Definition

The term Senior Power Coach denotes those who are licensed to convert existing Pilot rated members to Power.

Senior Power Coach Licences – Types

The Senior Power Coach licence is available in the following categories:

Senior Power Coach PHG

Role and responsibilities

In addition to the responsibilities of the Senior Coach, the Senior Power Coach will additionally, with the authority of the club's Chief Power Coach:

- a) Train and qualify pilots for the Power Environment. Nb. The Senior Power Coach may teach the whole course to any student holding a HG Pilot rating or above. The Senior Power Coach may teach 'The Hang Glider Power: Pilot Stage' syllabus to any pilot holding a HG CP rating and Power environment.
- b) Ensure that safety standards are maintained throughout operations.
- c) Adhere to student group size limitations: The maximum size group of power students that a Senior Power Coach can train is four.
- d) Maintain a log of all training.
- e) Provide potential Senior Power Coaches with a high standard of training.
- f) Teach prone phg or supine phg as long as he has a minimum of five hours and ten take-offs logged flying powered in that position.

Becoming a Senior Power Coach

Pre-requisites: Before commencing the 'Training Programme for Senior Power Coaches' the potential Senior Power Coach must first:

- a) Complete the requirements for the Senior Coach
- b) Hold a BHPA HG Pilot rating and Power Environment.
- c) Possess a personal copy of and be familiar with the Technical Manual.
- d) Possess a personal copy of and be familiar with the Power Environment syllabus, Instructor Notes and Conversion Record Pack.

- e) Have logged at least 200 flying hours total (hg/phg).
- f) Have logged at least 75 hours phg.
- g) Hold a recognised valid First Aid Certificate. (See Section 4: Chapter 1: Point 6.)
- h) Minimum age 18 years.
- i) Be recommended by his/her club. (Chief Power Coach and Chairman's signature required.)

The Training Programme for Senior Power Coaches

These training requirements may be carried out in any order subject to experience.

The Potential Senior Power Coach must:

- a) Be thoroughly trained in and practice the relevant theory and practical skills and techniques listed in the power environment syllabus.
- b) Maintain a log of all training completed.
- c) Complete a minimum of 4 days instructional experience in the PHG discipline, either working at a power school as a Power TI or assisting a Senior Power Coach within a club. This should concentrate on:

Ensuring sufficient understanding of power related theory to be able to teach it.
Best practice regarding setting kit up (stability cords etc.).
Common faults that conversion pilots make.
Best practice regarding teaching the exercises.
Best ways of teaching effects of power, propeller dangers, fuel mixing etc..

- d) Be signed off by the CFI/CPC as competent to instruct in all training exercises in the relevant discipline.
- e) Record 1 day (minimum) acting as a Duty Instructor (under supervision).

Assessment / Examination

After completing training the potential Senior Power Coach must pass an Examination.
(See Section 4: Chapter 1: Point 4.)

4.2.4 The Chief Coach

Role and responsibilities

- a) Organise and co-ordinate coaching within their club.
- b) Provide information, guidance and help in a safe, proven manner to club pilots qualified for the activity undertaken.
- c) Encourage pilots to use the club coaching facility through promotion and education.
- d) Establish and maintain an effective coaching team within the club.
- e) Establish and maintain an effective liaison with the Club Safety Officer; where there is no CSO to assume his responsibilities. (See Section 1: Chapter 3: Point 4.)
- f) Supervise and monitor the development of potential coaches, and select and appoint Club Coaches and Senior Coaches.
- g) Operate safely within their known skills and personal environments in accordance with the recognised procedures and regulations contained in the TM.
- h) Improving their own flying and coaching skills and knowledge in various ways, including studying the TM, handbooks, articles in Skywings (especially the Safety Matters Page) and Incident Summaries and Safety Notices.
- i) Promote the use of the Incident Reporting scheme within the club.
- j) Maintain and promote a positive attitude to the sport, the FSC and the BHPA.
- k) Uphold his duty of care to the student and members of the public.
- l) Maintain an effective liaison with the FSC. Chief Coaches should have regular contact with the FSC, and in particular they should keep the FSC fully informed of new ideas or any difficulties occurring in their clubs.

The Chief Tow Coach will additionally

- a) Arrange the training and assessment of potential Tow Coaches and Operators.
- b) Arrange, as necessary, Conversion Courses for pilots seeking Tow Environments.
- c) Support, or not, the annual renewal of licence holders within the club.

The Chief Aerotow Coach will additionally

- a) Arrange the training and assessment of potential Aerotow Coaches and tug pilots.
- b) Arrange, as necessary, Conversion Courses for pilots seeking Aerotow Environments.
- c) Support, or not, the annual renewal of licence holders within the club.

The Chief Power Coach will additionally

- a) Arrange the training and assessment of potential Senior Power Coaches.
- b) Arrange, as necessary, Conversion Courses for pilots seeking Power Environments.
- c) Support, or not, the annual renewal of licence holders within the club.

Appointment

A Chief Coach will normally be selected from the ranks of Senior Coaches in a club. This is a club appointment that must be recorded at the BHPA office. A Chief Coach requires a certain amount of administrative and leadership skill. The appointment of a Chief Coach must be based primarily on his or her ability to carry out the responsibilities listed above.

Becoming a Chief Coach

Pre-requisites: A potential Chief Coach must first: a)

- Hold a Senior Coach or Club Coach Licence.
- b) Possess P rating with good active experience.
- c) Be recommended by his/her club. (Chairman's signature required.)

Becoming a Chief Tow Coach

Pre-requisites: A potential Chief Tow Coach must first:

- a) Complete the requirements for the Chief Coach.
- b) Hold a Senior Tow Coach.

In exceptional circumstances the FSC may allow the CTC appointment of a Tow Coach. In such cases the temporary CTC must not exceed the privileges of his personal Tow Coach licence.

Becoming a Chief Aerotow Coach

Pre-requisites: A potential Chief Aerotow Coach must first:

- a) Complete the requirements for the Chief Coach.
- b) Hold a Senior Aerotow Coach.

In exceptional circumstances the FSC may allow the CAC appointment of a Aerotow Coach. In such cases the temporary CAC must not exceed the privileges of his personal Aerotow Coach licence.

Becoming a Chief Power Coach

Pre-requisites: A potential Chief Power Coach must first:

- a) Complete the requirements for the Chief Coach.
- b) Hold a Senior Power Coach or Power Coach Licence.

4.2.5 The Operator

Definition

The term 'Operator' means any BHPA member who is licensed to operate a tow unit. Tow units may only be operated by a trained and qualified Licensed Operator, as authorised by a Tow Coach, Aerotow Coach or Instructor (Tow) in charge of the operation.

Operator Licences – Types

The BHPA Operator Licence is available as:

Operator Winch (static / pay-out) HG
Operator Winch (static / pay-out) PG
Operator Winch (static / pay-out) PA Square
Operator Vehicle fixed line PG
Operator Vehicle fixed line PA Round
Operator Vehicle fixed line PA Square
Operator Aerotow Tug (flexwing) HG
Operator Aerotow Tug (3 axis) HG

Role and responsibilities

- a) Operate safely in accordance with the TM and as authorised by the Instructor or Tow Coach present and in charge of the operation, subject to the qualifications shown on his Membership Card and Licence, and the extension(s) shown in his log.
- b) Comply with Air Law where relevant and take the necessary precautions with regard to other air and water users.
- c) Improve their own skills and knowledge in various ways, including studying the relevant sections of the TM, handbooks, articles in Skywings (especially the Safety Matters Page) and Incident Summaries and Safety Notices.
- d) Maintain a log of all towing completed.
- e) An Operator may only tow a student (ie below CP) aloft when there is a suitably licensed Senior Instructor or Instructor present and supervising the operation.
- f) An Operator may tow a pilot (tow qualified member rated CP or above) aloft when there is a Senior Tow Coach or Tow Coach present and supervising the operation.
- g) Must regularly practice the relevant emergency procedures - with authorisation of the person in charge of the operation.
- h) Tug pilot:
 - i) Responsible for checking fuel, oil and general serviceability of tug and tow rope.
 - ii) Must satisfy himself that the proposed tow launch can be safely accomplished with the prevailing factors (wind, weather, glider, glider pilot, operating strip etc.)
 - iii) Must maintain Licence, Medical and Certificate of Experience up to date.

Becoming an Operator

Pre-requisites: Before commencing the 'Training Programme for Operators' the potential Operator must first:

- a) Be an annual flying member of the BHPA
- b) Be aged 18 years or over except for Aerotow where a lower age limit may apply.
- c) Hold as appropriate:
 - i) For vehicle tow operations a full Driving Licence for type
 - ii) For Aerotow:
 - Pilot licence as legally allowed to fly in the UK
 - 50 hrs on weight-shift microlights (or at least 150 hours on weight shift, of which at least 25 hours must be P1 on microlights) OR 50 hrs on 3-axis microlights (or at least 150 hours on 3-axis aircraft, of which at least 25 hours must be P1 on microlights).

It is recommended that Operators hold a current basic First Aid Certificate.

The Training Programme for Operators

These training requirements may be carried out in any order subject to experience.

Under training the potential Operator must:

- a) Be familiar with the relevant sections of the current edition of the BHPA Technical Manual.
- b) Maintain a log of all training completed.
- c) Complete the training detailed below as appropriate to the tow unit type and aircraft type under the supervision of a Senior Tow Instructor or Senior Tow Coach or Senior Aerotow Coach who is qualified in the relevant discipline and is present on site throughout. Until authorised by the CFI/CTC/CAC the Operator under training must not drive or operate the tow unit unaccompanied by a licensed Operator in the tow unit (except for aerotow tugs – these may only tow when flown solo).

A. All Land based towing:

- a. Theory
 - i. Weather - local wind effects
 - ii. Flight theory - how a glider flies and is controlled
 - iii. Safety - the relevant Regulations, Requirements, Bans, Recommended Practices and purpose of weak links.
- b. Practical
 - i. Equipment - operation and maintenance of tow unit; repair and maintenance of tow lines; knots and splices; use of weak links; inspection routines
 - ii. Signals - all methods
 - iii. Tow control - tow unit handling; tow line management; take-off, tow and landing control as appropriate; reactions to glider attitude; control in varying wind conditions.
 - iv. Emergencies - discipline specific eg - rotations; lockouts; tow line breaks; release failures etc. (Emergency actions and procedures should be taught through a mixture of role play and theoretical discussion. The Operator under training should have actually experienced firing the guillotine or its equivalent on other tow systems.)
 - v. Complete the following minimum:

Vehicle (Fixed line)	4 days minimum	45 tows minimum
Winch	2 days minimum	30 tows minimum

Notes:

1. During training it is important that only one new factor is introduced at a time.

B. Aerotowing:

- a. Theory
 - i. Ground crew: duties of Launch Marshall, Primary signaller, Second signaller and Log keeper.
 - ii. Full briefing on Aerotow procedures, responsibilities and emergency actions.
 - iii. Safety - the relevant Regulations, Requirements and Recommended Practices, purpose of weak links.
- b. Practical
 - i. Equipment - operation and maintenance of tug; repair and

maintenance of tow lines; knots and splices; use of weak links; inspection routines.

- ii. Signals
- iii. Tug familiarisation:
 - 1. If dual seat available -15 mins minimum
 - 2. Solo free flying tug to include at least 5 take offs (60 mins minimum).
 - 3. Solo free flying tug with line attached, to include at least 2 landings (20 mins minimum).
- iv. Aerotows:
 - Nb. The Senior Aerotow Coach running the course must carefully select experienced pilots to be towed as part of all practical exercises. The first five tows must be in smooth conditions.
 - 1. 6 satisfactory launches flying normal aerotow pattern to minimum of 1500ft a.t.o.
 - 2. 4 satisfactory launches involving horizontal 8's to minimum of 1500ft a.t.o.
 - 3. Simulate emergency actions.

Assessment / Examination

After completing training the potential Operator must pass an Assessment. (See Section 4: Chapter 1: Point 4.)

Extending the Operator Licence

For any Operator licence extension the pre-requisites must be met, and the supervising Senior Tow Instructor or Senior Tow Coach must ensure that the appropriate new or altered elements of the Training Programme are completed. The operator must then pass an Assessment. (See Section 4: Chapter 1: Point 4.)

4.2.6 The Emergency Parachute Systems License

Definition

The term Emergency Parachute Systems (EPSL) denotes those who are licensed to install, inspect and repack emergency parachutes systems in accordance with BHPA published procedures.

Role and responsibilities

- a) Install, inspect and repack emergency parachutes systems in accordance with BHPA published procedures.
- b) Maintain the required BHPA paperwork records
- c) Maintain currency.
- d) Operate safely and in accordance with the Technical Manual.
- e) May supervise trainee EPSLs who have completed the BHPA EPSL course and are gaining the required experience before examination.
- f) May supervise/assist/advise individual members who are installing/inspecting/repacking their own emergency parachute systems.
- g) Improve their own skills and knowledge in various ways, including studying the TM, handbooks, articles in Skywings (especially the Safety Matters page) and Incident Summaries and Safety Notices.
- h) Maintain and promote a positive attitude to the sport, the FSC and the BHPA.
- i) Uphold their duty of care to their customers and members of the public.

Becoming an Emergency Parachute Systems licence holder

The potential Emergency Parachute Systems licence holder must first:

- a) Be a BHPA annual Flying Member
- b) Be aged 18 or over

The Training Programme for Emergency Parachute Systems licence holders

These training requirements may be carried out in any order subject to experience. Under training the potential EPS licence holder must:

- a) Attend a BHPA EPSs course
- b) Record a minimum of twenty system inspections /repacks operating under the direct supervision of a qualified EPS licence holder.

Assessment / Examination

After completing training the potential EPS licence holder must successfully pass an Examination.

Extending the Emergency Parachute Systems Licence

The EPS licence cannot be extended to any other type of licence.

4.2.7 The Dual Pilot

Definition

The term 'Dual Pilot' means any pilot duly qualified and licensed to carry another person on a single paraglider or hang glider or parascending canopy (square) designed and duly certified for the purpose.

Dual Licences – Types

The BHPA Dual Licence is available as:

- a) Dual Pilot Paraglider (Tow)
- b) Dual Pilot Parascending (Square)
- c) Dual Pilot Paraglider (Hill)
- d) Dual Pilot Hang Glider (Tow)
- e) Dual Pilot Hang Glider (Hill)
- f) Dual Pilot Hang Glider (Aerotow)

Role and responsibilities

- a) Operate safely in accordance with the Dual Pilot Operational Requirements (below) and the dual flying advice given in the BHPA Dual Flying Fact Sheet.
- b) Improve their own skills and knowledge in various ways, including studying the TM, handbooks, articles in Skywings (especially the Safety Matters Page) and Incident Summaries and Safety Notices.

Becoming a Dual Pilot

Pre-requisites: Before commencing the 'Training Programme for Dual Pilots' the potential Dual Pilot must first:

- a) Be an Annual Flying Member of the BHPA
- b) Be aged 18 years or over
- c) Hold Pilot rating (and environment) minimum in the relevant discipline
- d) **General discipline experience.** Have logged (solo) in the discipline 100 flying hours or 250 launches or 50 flights (PA Squares)
- e) i). **Specific environment / discipline experience.** Have completed 40 launches in the environment and discipline for which the Dual Licence is being sought
ii). **Specific environment/discipline currency.** Have completed 20 launches in the preceding 12 months, in the environment and discipline for which the Dual Licence is being sought.
- f) Produce a letter of support or recommendation from his Club Chairman or CFI.

The Training Programme for Dual Pilots

These training requirements may be carried out in any order subject to experience.

Under training a potential Dual Pilot must complete the appropriate training detailed below flying only with a Licensed Dual Pilot:

- A. PG and PA (Squares)
 - a) Care and briefing of the passenger
 - b) Complete a minimum of two launches in the passenger role and position
 - c) Complete a minimum of ten launches as Pilot in Charge
 - d) Demonstrate a high standard of ground handling and inflation ability
- B. HG
 - a) Care and briefing of the passenger
 - b) Complete a minimum of one launch in the passenger role and position
 - c) Wheeled / stand up landings
 - d) Complete a minimum of four launches as Pilot in Charge

Plus for tow or aerotow launch

 - e) Setting up and checking bridles and equipment
 - f) Trolley/wheeled launches

Aerotow only

 - g) Be familiar with the contents of Section 2: Chapter 7: Appendix C.

Assessment / Examination

After completing training the potential Dual Pilot must pass an Examination. (See Section 4: Chapter 1: Point 4.)

Extending the Dual Pilot Licence

Where a Dual Pilot licence is held in one discipline and a dual pilot licence extension is sought for an alternative launch method then all requirements must be met in full, the Training Programme must be completed in full, and the candidate must pass an Assessment. (See Section 4: Chapter 1: Point 4.)

Dual Pilot Operational Requirements

A Dual Pilot must comply with the following requirements:

Tuition and Valuable Consideration

To carry another person for 'valuable consideration' the licensed Dual Pilot must also be a qualified Instructor or Air Experience Instructor (dual), must operate within a registered BHPA School, and the dual flight must have a clear training content. Dual Pilots who are not licensed Instructors/AEI's are not permitted to accept 'valuable consideration'. (These rules are framed carefully to comply with the BHPA's interpretation of UK Air law.)

Passenger Membership conditions

All persons flown within a school must be registered as members of the BHPA. For reasons of practicality a dispensation exists whereby persons flown outside a school are encouraged to take out BHPA membership, but this is not mandatory.

Licensed AEIs (dual) and Instructors dual flying outside the school

Outside a school AEIs and Instructors may not teach. However, if the AEI or Instructor is also a Licensed Dual Pilot then, when outside the school they may dual fly solely in accordance with the role and responsibilities of a Licensed Dual Pilot. Persons flown by them outside a school are encouraged to take out BHPA membership, but this is

not mandatory. However, in the event of a claim for injury being brought against the dual pilot by a non-member passenger, it will be the burden of the dual pilot to prove that the flight in question was in no way connected to the school. Use of school equipment, sites and participation of a student at the school would amount to such a connection. Failure to produce such proof will result in loss of the BHPA's insurance cover for the incident. Therefore, if the flight could be regarded as connected to the school then the passenger must be a BHPA member to avoid the risk of losing cover for the flight in question. As above, valuable consideration cannot be accepted for dual flights outside school.

Passenger Age limits

There is no upper age limit but the general health and fitness of the person must be taken into consideration.

There is no lower age limit but the harness used must be suitable in size and construction, and the person must be of sufficient physical and mental maturity to follow and understand flight briefings.

Written parental permission must be obtained for those under the age of 18 years.

Briefing

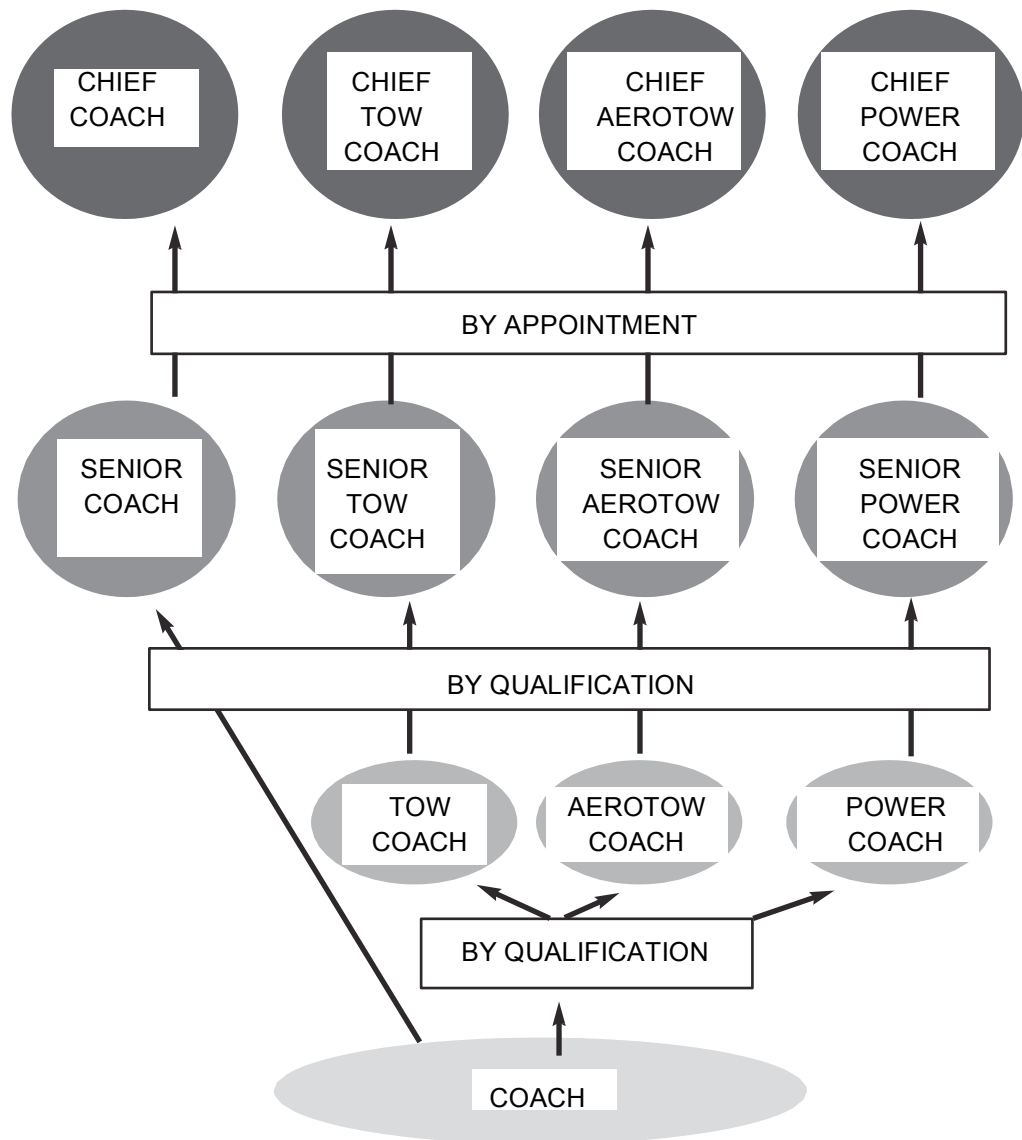
Dual Pilots have a legal responsibility to give their passenger a pre-flight safety briefing. This should be part of the normal passenger briefing – see the Dual Flying Fact Sheet.

Equipment

- a) Only certified dual gliders may be used. (A dispensation currently exists that allows parascending canopies individually registered in the grandfather category to be used for dual flying, if suitable. See Section 2: Chapter 1: Point 4.) NB Round Canopies must not be used for dual flights.
- b) The recommended weight range for the glider must be adhered to.
- c) Dual Pilots must thoroughly familiarise themselves with any new dual glider before carrying inexperienced passengers.
- d) Both pilots must have a properly fitted harness.
- e) Personal flight logs must be raised and maintained by all Dual Pilots.
- f) A suitable emergency parachute must be carried. (Due to the nature of parascending operations, in this discipline carriage of an Emergency Parachute is optional.)

APPENDIX A

COACH SCHEME



SECTION 4 LICENSING

Chapter 3 THE INSTRUCTOR SCHEMES

-
- 4.3.1 The Air Experience Instructor
 - 4.3.2 The Senior Air Experience Instructor
 - 4.3.3 The Instructor
 - 4.3.4 The Senior Instructor
 - 4.3.5 The Chief Flying Instructor
-

Appendices

Appendix A - Maximum Supervision Ratios

4.3.1 The Air Experience Instructor

Definition

The term Air Experience Instructor (AEI) denotes those who are licensed to fly novices whilst providing a strictly limited training element.

Air Experience Instructor (AEI) Licences - Types

The BHPA Air Experience Instructor (AEI) Licence is available as:

AEI (solo) PA Round Land
AEI (dual) HG Tow
AEI (dual) HG Hill
AEI (dual) HG Aerotow
AEI (dual) PG Tow
AEI (dual) PG Hill
AEI (dual) PA Square Tow

Role and responsibilities

- a) Operate only under the direct authority of a properly qualified Senior Instructor or Senior Air Experience Instructor within a registered school.
- b) AEI solo: PA Round Land: Conduct fixed line round canopy non-released (ie controlled descent) Air Experience flights where the round canopy is controlled by the AEI from the tow vehicle.
- c) AEI dual: Carry students on dual Air Experience flights where the aircraft is piloted by the AEI, using only the craft type and launch method in which AEI qualified.
- d) Introduce members of the public to the sport, the pilot rating scheme and the BHPA.
- e) Provide novices with necessary ground training and briefings.
- f) Ensure that all students are made fully aware of the inherent risks attached to the sport.
- g) Maintain currency.
- h) Understand the membership requirements and ensure that all clients become BHPA members before any Air Experience activity takes place.
- i) Operate safely and in accordance with the Technical Manual.
- j) Improve their own skills and knowledge in various ways, including studying the TM, handbooks, articles in Skywings (especially the Safety Matters page) and Incident Summaries and Safety Notices.
- k) Maintain and promote a positive attitude to the sport, the FSC and the BHPA.
- l) Uphold their duty of care to the student and members of the public.

Becoming an Air Experience Instructor

The potential Air Experience Instructor must first:

- a) Be a BHPA annual Flying Member b)
Be aged 18 or over
- c) Be supported by the CFI
- d) Have recorded the following minimum experience in the relevant discipline:
 - i. Air Experience Instructor (solo) – CP
 - ii. Air Experience Instructor (dual) - Dual Pilot Licence

The candidate must now be registered as a Trainee Instructor with the BHPA.

The Training Programme for Air Experience Instructors

These training requirements may be carried out in any order subject to experience.

Under training the potential AEI must:

- a) Obtain a personal copy of the current edition of the Technical Manual
- b) Be thoroughly trained in and practice the relevant theory and practical skills and techniques listed in Section 2 (Operating Procedures) of this Manual
- c) Maintain a log of all training completed, including a towing record
- d) Gain a recognised valid First Aid Certificate (minimum is the 1st Response Certificate)
- e) AEI dual: attend a Coaching Course
AEI solo: gain an Operator Licence

Assessment / Examination

AEI solo: after completing training the potential AEI must successfully pass an Examination. AEI dual: after completing training the potential AEI must successfully pass an Examination. (See Section 4: Chapter 1: Point 4.)

Extending the Air Experience Instructor Licence

AEI solo licences may not be extended.

AEI dual licences may be extended between launch types and craft types using the licence extension and assessment system, if all prerequisites are met and training completed.

The AEI licence cannot be extended to any other type of Instructor licence.

4.3.2 The Senior Air Experience Instructor

Definition

The term Senior Air Experience Instructor denotes a Licensed Air Experience Instructor further licensed as a result of gaining substantial practical experience in the discipline and additional managerial and administrative skills - necessary to prepare him for, if necessary, appointment as a Chief Flying Instructor within an Air Experience School.

Role and responsibilities

In addition to the responsibilities of the Air Experience Instructor the Senior Air Experience Instructor must:

- a) Under the authority of the CFI, provide potential Air Experience Instructors and potential Operators with a high standard of training.

Becoming a Senior Air Experience Instructor

A potential Senior Air Experience Instructor must:

- a) Hold an AEI Licence
- b) Attend a BHPA Instructor Course

- c) Maintain an Instructor Log Book
- d) Since gaining the AEI Licence have logged a minimum of:
 - i. 100 tows for solo operations
 - ii. 50 tows for dual operations

Examination

SAEI Licences are gained through Examination.

Extending the Senior Air Experience Instructor Licence

The SAEI licence cannot be extended to any other type of Instructor licence.

4:3:3 The Instructor

Definition

The term Instructor denotes those who are licensed to train novices to CP level and beyond.

Instructor Licences – Types

The Instructor licence is available in the following categories:

Instructor HG Power
Instructor HG Hill
Instructor HG Tow
Instructor HG Aerotow
Instructor PG Power
Instructor PG Hill
Instructor PG Tow
Instructor PA Round Tow (Land)
Instructor PA Square Tow (Land)

Role and responsibilities

- a) Operate safely within a registered school in accordance with the TM and the instructions of the CFI and Senior Instructors. Any and all contraventions of rules and regulations **should** be reported, in confidence, to the FSC.
- b) Operate under the direct authority of a properly qualified Senior Instructor.
- c) Ensure that safety standards are maintained throughout the appropriate operations.
- d) Provide students and pilots with a high standard of training to enable them to achieve their potential.
- e) Ensure that all students are made fully aware of the inherent risks attached to the sport.
- f) Confirm the ability of, and authorise visiting students and pilots to operate with the school.
- g) Improve their own flying and instructional skills and knowledge in various ways, including studying the TM, handbooks, articles in Skywings (especially the Safety Matters page) and Incident Summaries and Safety Notices.
- h) Assist with any BHPA investigation or inspection in the school.
- i) Under the authority of the CFI, train his own group of students in a specific discipline without the need for supervision.
- j) Adhere to student group size limitations: The maximum size group of students that an Instructor can train is six. (See also 'I' below.)
- k) An Instructor may not train TIs.
- l) An instructor may, with his CFI's authorisation (entered in his Instructor Log Book), be assisted by a TI who has, in turn, been authorised by the CFI (signed off) to teach the exercise in question. In this case the maximum student group size can be increased to eight (see diagram Section 4: Chapter 3: Appendix A). **N.B.** The TI cannot have a separate group of students.
- m) Maintain and promote a positive attitude to the sport, the FSC and the BHPA.
- n) Uphold his duty of care to the student and members of the public.

- o) Instructors may train only in those disciplines for which they are licensed, but once licensed they are regarded as being registered as Trainee Instructors in all other disciplines without the need for formal registration as TIs, subject to all other pre-requisites being satisfied - including the CFI's approval.

Becoming an Instructor

The potential Instructor must first:

- a) Be a BHPA annual Flying Member
- b) Be aged 18 or over
- c) Be supported by the CFI
- d) Hold a Pilot rating in the discipline (CP for PA Round)
- e) Have recorded the following minimum experience in the relevant environment:
 - i. Hill, Tow, Power, Aerotow = 25 launches in that environment.
 - ii Air Experience Instructor (SOLO) - CP
 - iii Air Experience Instructor (DUAL) - Dual Pilot Licence

The candidate must now be registered as a Trainee Instructor with the BHPA.

The Training Programme for Instructors

These training requirements may be carried out in any order subject to experience.

The Trainee Instructor must:

- a) Obtain a personal copy of the current edition of the Technical Manual.
- b) Be thoroughly trained in and practice the relevant theory and practical skills and techniques listed in Section 2 (Operating Procedures) of this Manual.
- c) Maintain a log of all training completed, including a towing record.
- d) Gain a recognised valid First Aid Certificate (See Section 4: Chapter 1: Point 6).
- e) Attend a BHPA Coaching Course.
- f) Attend a BHPA Instructor Course.
- g) Increase their number of launches in the relevant environment to a total of at least 50.
- h) In tow launching - qualify as an Operator (as relevant), and be trained and signed off by the CFI as competent to tow ab-initio.
- i) Complete a minimum of 10 days instructional experience.
- j) Must have worked for at least two days at each of two schools minimum.
- k) Be signed off by the CFI as competent to instruct in all training exercises up to CP level in the relevant discipline.
- l) Record 3 days (minimum) acting as a Duty Instructor (under supervision).

The supervision of Trainee Instructors

- a) For each Training Exercise the TI should first spend time observing the SI teach the students - the SI should back this up with explanations to the TI.
- b) The TI may then be used to assist the SI but without taking sole charge of students.
- c) Gradually the TI may (under close SI supervision) increase his input to the student.
- d) Eventually the SI may sign off the TI for a specific Training Exercise - only when he considers the TI is capable of teaching the exercise without close supervision.
- e) The TI may now, under the supervision of an SI, teach and supervise students attempting that specific Exercise.

A 'signed off' TI, supervised by an SI, may teach a maximum of four students. (See also diagram, Section 4: Chapter 3: Appendix A.)

N.B. Supervision Terminology

'Assist' means helping the Instructor/SI teach the Instructors/SI's group of students.

'Close Supervision' means that the SI is in direct audio/visual contact with the TI – within a few metres and paying close attention to the TI's training.

'Supervise' means generally overseeing the activity of the TI. The supervising SI would need to

be in easy visual contact (few hundred metres maximum) and would periodically during a training day make direct audio/visual contact (within a few metres and paying close attention). The supervising SI would know what the TI intends, would have assessed it as reasonable, and would keep fully aware of the general progress of the day.

Examination

Instructor Licences are granted by the FSC on the recommendation of the CFI after successful independent Examination.

Extending the Instructor Licence

Any extension between hang gliding, paragliding and parascending is treated as a new licence. After completion of all pre-requisites and training, the CFI must apply to have the candidate examined.

Subsequent Licences applied for within the hang gliding main discipline:

Additional hg launch categories may be added to an existing HG instructor licence by meeting all pre-requisites, completing the training, and successfully passing an assessment.

Subsequent Licences applied for within the paragliding main discipline:

Additional pg launch categories may be added to an existing PG instructor licence by meeting all pre-requisites, completing the training, and successfully passing an assessment.

Subsequent Licences applied for within the parascending main discipline: A PA Round instructor licence cannot be extended.

A PA Square instructor licence may be extended to PA Round by meeting all pre-requisites, completing the training, and successfully passing an assessment.

4.3.4 The Senior Instructor

Definition

The term Senior Instructor denotes a Licensed Instructor further licensed as a result of gaining substantial practical experience in one or more disciplines and additional managerial and administrative skills - necessary to prepare him for, if necessary, appointment as a Chief Flying Instructor.

Nb. Every school must have at least one Senior Instructor licensed in each discipline which is offered.

Role and responsibilities

In addition to the responsibilities of the Instructor:

- a) The Senior Instructor (Non Instructor Training) has no specific additional roles and responsibilities beyond those of a Licensed Instructor until he achieves CFI appointment and/or the 'Instructor trainer' licence extension.
 - (i) If operating under the supervision of a CFI who is qualified to train Instructors, then he may operate with the assistance of signed-off TIs, Licensed Instructors and Licenced Operators and must provide a high level of leadership, but is not qualified to train them.
 - (ii) If operating under the supervision of, or in the role of a CFI who is **not** qualified to train Instructors, then he may operate with the assistance of Licensed Instructors and Licenced Operators and must provide a high level of leadership, but is not qualified to train them.
- b) The Senior Instructor with an Instructor Training licence extension may additionally, under the authority of the CFI:
 - (i) train Instructors, Trainee Instructors and potential Operators.
 - (ii) sign off TI tasks.

Becoming a Senior Instructor (Non Instructor Training)

A potential Senior Instructor must:

- a) Complete a minimum of 25 days logged instructional experience as a licensed Instructor, and have instructed each and every ab-initio Training Exercise on several separate occasions.
- b) Pass a BHPA Senior Instructor course.
- c) Maintain an Instructor Log Book.
- d) Be signed off by the CFI as able and ready to take on the responsibilities of a SI.
- e) Pass an examination by an independent Examiner.

Examination

SI Licences are granted by the FSC on the recommendation of the CFI after a successful independent examination.

Extending the Senior Instructor Licence

Once licensed as an SI, the SI licence can be extended to other disciplines where an Instructor licence is held and SI pre-requisites 'a' and 'd' are met. Written application for such SI licence extension is to be made to the BHPA office accompanied by documentary evidence of fulfilling pre-requisites 'a' and 'd'.

Instructor Training Extension

To extend the SI licence to include Instructor training the SI must:

- a) Have logged 50 days as a Senior Instructor.
- b) Achieve a high level of proficiency at classroom and practical teaching, such that he would provide a model for future Instructors
- c) Be signed off by the Chief Examiner as able and ready to take on the responsibilities of Instructor Training
- d) Instructor Training Extensions are granted by the FSC and are subject to an examination.

4.3.5 The Chief Flying Instructor (CFI)

Definition

The Chief Flying Instructor is the head of operations within a registered school.

Role and responsibilities

In addition to the responsibilities of the Instructor and Senior Instructor, the CFI must:

- a) Be responsible for all operational and administrative activities within the school.
- b) Seek exemption for any proposed deviation from the published Safety Requirements by written permission from the Chairman FSC.
- c) Ensure that equipment is maintained to a safe standard and consult with the FSC when considering the use of non-standard equipment within the school.
- d) Ensure that the flight and instructional standards are maintained.
- e) Support (or not) the annual renewal of the licences of instructors and operators operating within the school.
- f) Confirm the qualifications of and, at his discretion, authorise visiting instructors to operate with the school.
- g) Supervise the training of Trainee Instructors including assessing and signing them off as competent to instruct specific training exercises and carrying out a mock examination prior to proposing them for examination.
- h) Supervise the training of Operators and their formal assessment and BHPA licensing.
- i) Monitor the training standards within the school; and support applications for pilot rating awards.
- j) Make the school available for inspection.

- k) Ensure that incidents occurring within the school are submitted promptly to the BHPA
- l) Carry out internal investigations, or assist with a BHPA Board of Inquiry following an accident or incident, if called upon.
- m) Assume the responsibilities of the Club Safety Officer (See Section 1: Chapter 3: Point 4.)
- n) Maintain an effective liaison with the FSC.

Becoming a Chief Flying Instructor

The CFI role is a school appointment: it is not a BHPA Licence. A CFI requires a certain amount of administrative skill but need not be the most senior school member, chairman, proprietor or officer in charge. The appointment of a CFI must be based primarily on his or her ability to carry out the responsibilities listed above. A CFI must hold a current BHPA Senior Instructor Licence, the appointment cannot be shared, nor can a CFI act for more than one school; and the FSC will advise a school as to suitability following the nominee's attendance at an FSC meeting, whilst retaining the authority to reject any candidate nominated for the post.

Delegation of position

Whilst retaining the overall responsibility for the school, a CFI may delegate, on a temporary basis, his role and responsibilities to a Senior Instructor. If the delegation period exceeds 1 month the FSC must be informed. In exceptional circumstances the FSC may approve the delegation to an experienced Instructor, with the exception that they may not carry out formal assessments or support pilot rating awards.

APPENDIX A

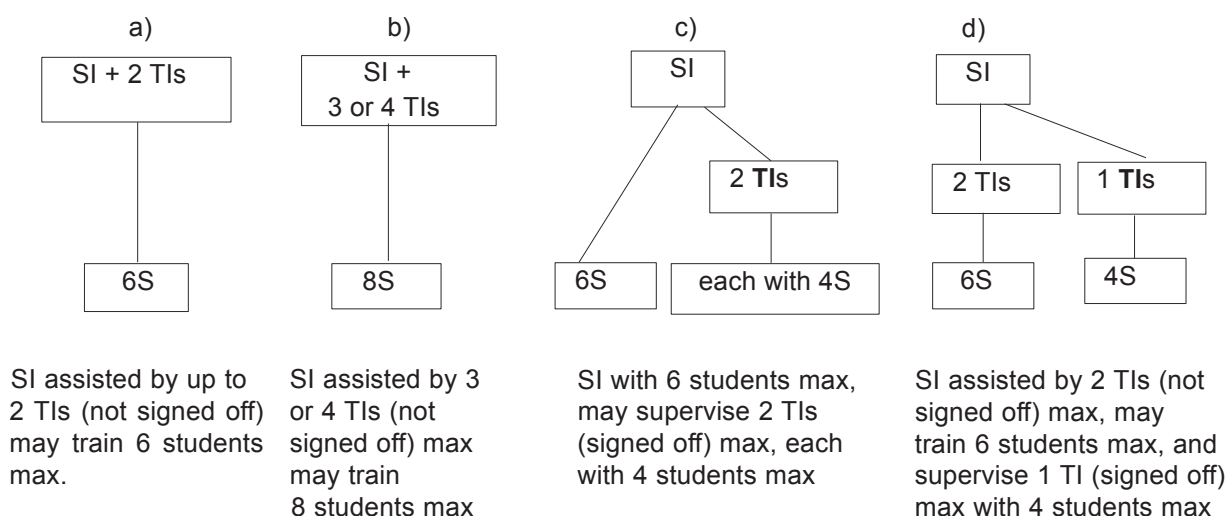
Maximum Supervision Ratios

It is the FSC's intention that students will be taught by Senior Instructors and Instructors. It is however, necessary to for future Instructors to be trained and as part of this they must practice working with students. This is permitted (under controls set out in 4.3.3), but to ensure safety the following maximum supervision ratios must not be exceeded. (It is expected that these will only ever be approached during dedicated Instructor training courses.)

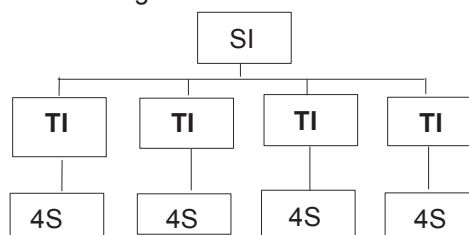
NOTES

1. When a TI has been signed off by his CFI as competent to instruct in a specific exercise (shown below in bold letters) he may directly train students in that exercise, under the supervision of a SI; until then he may only assist an Instructor or SI.
2. Only a Senior Instructor can, with the authority of the CFI, train and sign off a TI.
3. All figures are the maximum number permitted.

Example 1 - A Senior Instructor with his own group of students (indicated by 'S')



Example 2 - A Senior Instructor with no students of his own may supervise a maximum of 4 signed off TIs each with a maximum of 4 students.



Example 3 - An Instructor with a group of students

