

RTFM: READ THE FLIGHT MANUAL

The BGA Safety Team explains why the glider's flight manual is there to be read

■ Clubs can obtain printed copies of Safety Briefings from the BGA Office.

EVERY certified aircraft comes with a Pilot's Operating Handbook or Flight Manual, which is an officially approved document describing the aircraft systems, performance, operating limits, assembly and daily checks. It's specific to the individual aircraft, subject to amendments and additions, and is the definitive guide to how to fly and operate the aircraft. It is effectively part of the aircraft and, indeed, it can be a legal requirement to have a copy to hand as you fly [1]. In the event of an accident, it's one of the first documents the AAIB consults.

However, few of us enjoy reading books of instructions, and glider pilots historically

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have paid less attention to their glider's flight manual than perhaps they should.

There are several reasons for this. Firstly, many gliders are very similar in their basic operation and flight characteristics so, with our memorised checklists assisted by cockpit labels and placards, little in the flight manual seems essential. It's generally impractical to carry a bulky flight manual within the glider cockpit, or to consult it on a blustery airfield, so it's frequently kept safely out of reach. It may have been printed in another language, or poorly translated. And, notwithstanding its definitive status, it's sometimes just not very good.

There are nonetheless good reasons to be familiar with what's in the flight manual.

The glider could have rigging, control or adjustment mechanisms with which you're unfamiliar, or which have vulnerabilities of which you were unaware. The flight manual will tell you the approved way to assemble and dismantle your glider; and it'll give performance data, recommended flying speeds and approach techniques.

A Cirrus pilot was shocked recently to find that he'd flown with an insecure tailplane because the locking procedure described in the flight manual hadn't been followed; and a Ventus was damaged in a groundloop after landing with an inappropriate flap setting.

The flight manual will sometimes alert you to unusual handling characteristics – which could have been handy for a pilot who crashed on the first flight in a glider known to be twitchy when flown with an aft C of G. It will tell you how performance



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is affected by rain, and maximum airspeed V_{NE} by altitude. It will often tell you the best way to perform and recover from aerobatic manoeuvres which, as anyone who's read about spinning the K-21 with tail ballast will know, aren't always what you'd expect. The flight manual will give full details of speed and load limitations, weak link requirements and tyre pressures. It also contains glider-specific tips, such as how to adjust a Perkoz seat back, or avoid filling an Astir fuselage with ballast water.

Keeping up to date

For modern gliders at least, apart from a few in the 'Single Seat Deregulated' (SSDR) category, the flight manual will have been approved by a national airworthiness authority such as the German Luftfahrt Bundesamt (LBA) or Polish Urząd Lotnictwa Cywilnego (ULC), or the European Aviation Safety Agency (EASA), to which certification of EU gliders was transferred in 2003. These authorities are also responsible for approving Airworthiness Directives (ADs), which can involve mandatory glider inspections, part replacements and flight manual updates. Such revisions can also be prompted by ADs for aircraft components such as l'Hotellier control connections, rather than the glider itself. Your inspector will check that your manual is complete and up to date at each ARC renewal, and its opening pages should list all such amendments.

It can nonetheless be instructive to look up some of the ADs yourself: they'll be listed in the glider logbook. Details are usually distributed between the manufacturer and national [2] or international authorities [3]. If you have difficulty telling your EASA from your LBA, the datasheets and compendium on the BGA airworthiness website [4] will usually provide the answers.

Tailored to your glider

The flight manual will have been issued for the individual glider, which might have been constructed differently from previous or subsequent aircraft to leave the factory. There could be unusual mechanisms, flight limitations or servicing requirements.

As well as the revisions mentioned above, there may be other additions to the flight manual. Flight manual supplements can accompany aircraft modifications, equipment installations and extensions to the conditions of use. In this way, a PIK 20D, for example, can be used for aerobatics; and many pre-2003 UK gliders have an extended weight

range and winch weak link rating thanks to a flight manual supplement included when the glider entered the EASA airworthiness system [5].

With luck, you're now convinced that the flight manual, if not gripping reading, nonetheless contains some important and valuable information – and that it's important to refer to the maintained copy for your glider, rather than a scan of indeterminate origin downloaded from the internet. The maintenance manual can be well worth reading too.

Beyond the flight manual

Unfortunately, flight manuals vary in quality, and are generally unforthcoming about how things can go wrong – you'll find little, for example, about the potential for mis-rigging l'Hotellier connections [6]. Much useful information can be found in Technical Bulletins (TB, TN, TM, TNS) issued by manufacturers and the BGA [4]. The BGA compendium is a great starting point to begin assembling a folder of briefing notes to accompany your flight manual: put this together with instrument manuals and, if not included in the flight manual, up-to-date weighing data. Magazine articles and internet discussions can also provide good tips, particularly for older, complex and unusual designs – but take them, as always, with a pinch of salt.

If you're stuck for something to do over a wet weekend, read through your flight manual, assemble a file of related material, and make sure your syndicate partners or fellow pilots have access to a copy. If you're converting to a new glider, read the manual beforehand and discuss it with an instructor. If you're instructing, guide your students through the flight manual for the glider they fly.

IF YOU HAVE DIFFICULTY TELLING YOUR EASA FROM YOUR LBA, THE BGA AIRWORTHINESS WEBSITE WILL USUALLY PROVIDE THE ANSWERS

■ Once you've read your glider's flight manual, check ADs, technical bulletins and the BGA's Technical News Sheets (TNS) for relevant details: the BGA's airworthiness website [4] is a great place to start.

[1] For gliders, SAO.GEN.155(a) (1)(b) in EASA's Sailplane Rule Book (2020) allows placards and reference cards in its place <https://tinyurl.com/flyright2204>

[2] See 'Useful links' on EASA's AD page <https://tinyurl.com/flyright2205>

[3] EASA Safety Publications Tool <https://tinyurl.com/flyright2206>

[4] BGA Airworthiness and Maintenance <https://tinyurl.com/flyright2207>

[5] While the UK has withdrawn from EASA, current regulations for Part-21 gliders remain identical.

[6] G MacDonald, Understanding how Wederkind connections work (2021) <https://tinyurl.com/flyright2208>

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