The Olympia 465

A Brief History by Mark Wills.

About this book

A brief history of the EoN Olympia 465.

Cover photo EoN 465 in a field at Hamstead Marshall after a field landing. The glider had just completed a flight from Lasham to Birdlip Hill a distance of about 200 Km.

A brief history of the Elliots of Newbury Olympia 465.

This book is intended to give a brief description of the Olympia 465 glider mainly in pictures. The example shown is the only existing example of the original 2 built. The gliders were originally constructed by Elliots for the 1965 World Gliding Championships held at South Cerney. The pair of gliders came about as the result of Anthony Deane Drummond flying an EoN 463 in the 1963 world championships in Argentina. He concluded that performance could be improved considerably by reducing the frontal area of the fuselage and cockpit while removing the skid, raising the wheel and employing an all moving tail. Deane Drummond put this to the managing director of Elliots, Horrace Buckingham, who built two prototypes the first with a standard 463 wing section and the second with a thinner wing section with the intention of improving high speed performance. The 465's also had mass balanced ailerons rather than the Frieze ailerons of the 463 with a sealed hinge line. Various other small modifications were also made to reduce drag and smooth the airflow around the airframe.

Horrace Buckingham died in the summer of 1965 and the board of directors decided that glider production was un-profitable. Several 463's were completed after 65, probably from parts that were in stock, but the 465 design was not developed. Glass fibre was coming in at this time and the days of wooden glider manufacture were numbered.

The phase 1 465 was destroyed in a fatal accident at Bloemfontein Gliding Club South Africa in 2001.

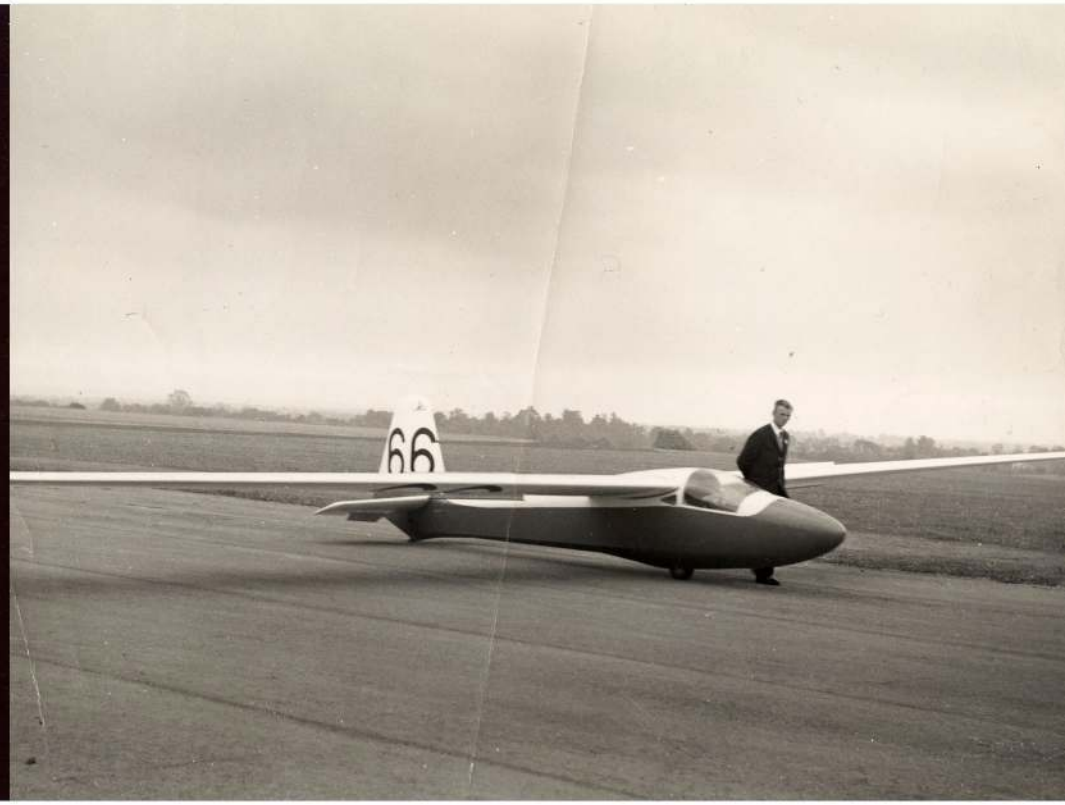
EoN 465 Phase 2.

Both of the 465's were flown in the 1965 world championships, the first by Anthony Deane Drummond for the UK and the second by Alan Cameron for New Zealand.

Deane Drummond achieved an overall 9th position although he came joint first on the first day of the contest and flew a Slingsby Dart on one day, due to veering off course and hitting runway markers on the ground run in light variable wind conditions. This was a particular issue with the 460 series caused by the belly hook position. The 465 2 was fitted with a nose hook when we renovated it to avoid this problem. Cameron was 41st. I have been told that Cameron found navigation very difficult in the less than clear visibility in 60's UK, compared to the conditions he was used to in New Zealand. The phase 2 465 was landed in standing corn and the tail assembly damaged at some time in 65. It was repaired with the all moving tailplane higher up on the fuselage, possibly to improve ground clearance.

The Photo's and descriptions in this book include a range of pictures from the full restoration which was undertaken in the 80's by Keith Green and myself. The aircraft is now un-airworthy due to corrosion in the aluminium parts of the main spar. This problem was not known about until after the restoration.
Mark Wills.

Left photo shows a 460. Note the skid, fabric covered rear fuselage separate elevator and lift off canopy. The right picture shows 2 463's with non structural fibreglass on the rear fuselage.



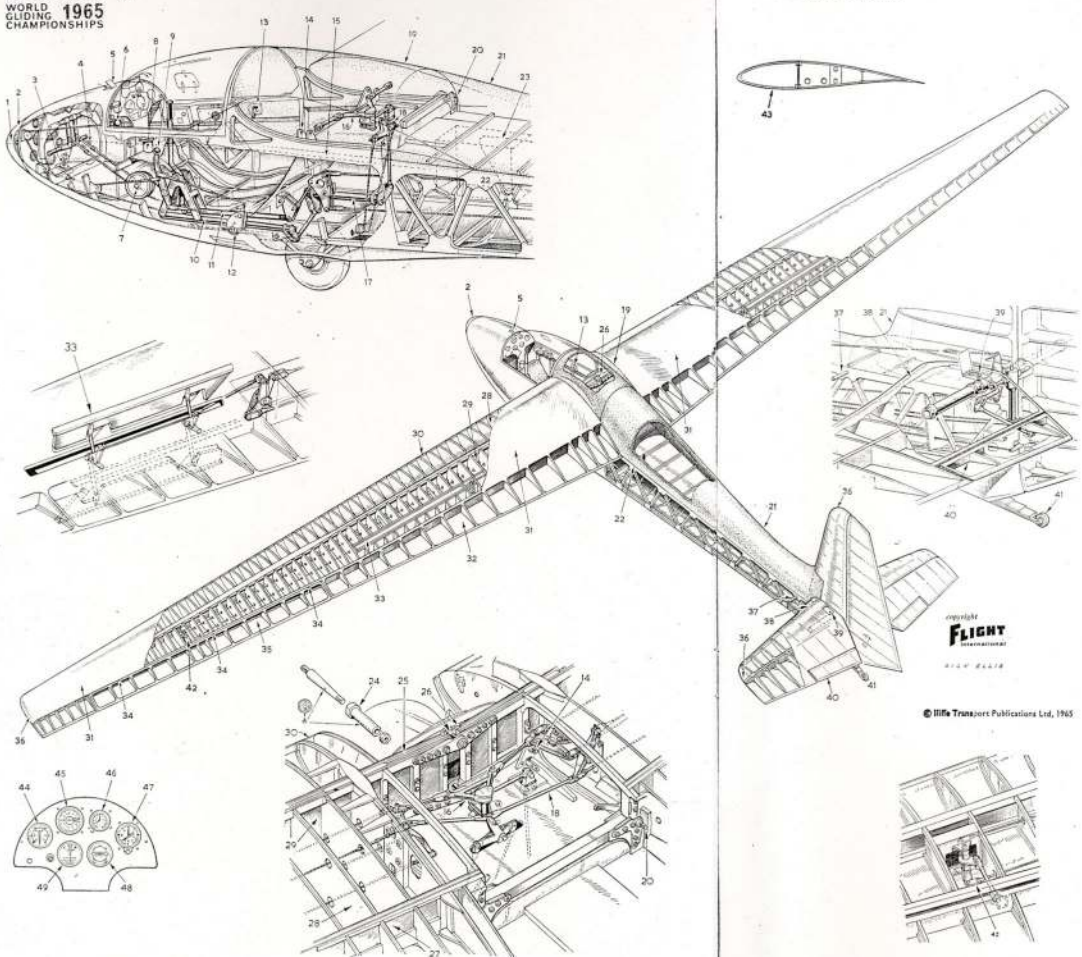
Left photo shows the Phase 1 465 at South Cerney with Deane Drummond. Right photo shows the phase 2 at Bicester with Alan Cameron. The colour scheme was white and fawn.

TOTAL brought forward

1965 Year

DATE	Flying H.	Time M.	Launches	REPAIRS, ADJUSTMENTS, ETC.	Passed out as Airworthy by— and date
April 3		20	A	initial flight- A D PIGGOTT	J E Stamp 3-4-65
"		30	A	A.J. Deane-Drummond	
" 6	1	0	A	A.D. PIGGOTT	
	2	0	A	A J D D.	
		30	A	A.D.P.	
		30	A	"	
" 8	1	07	2 A	"	
" 9		36	A	"	
" "		35	A	D. GODDARD	
" 13				By road to Bicester.	
		30	A	Comparative test A.J.D.D. BLACKMORE IN Phase 1	
" 19				By road to LASHAM	J E Stamp 19-5-65
" 20		20	A	A.D.P.	
" "		40	A	ALAN CAMERAN	
" "	1			HOXENDALL TEST FOR ARB.	
" "	3		A	A C local soaring	
" "				Special Cat C of A issued A 8330	
TOTAL				Valid to 19-5-66	

Left the first page of the log book showing details of early flights. Right picture shows 465 2 flying over the Welsh borders in October 1978. The glider had been rescued from Carlton Moore, Yorkshire in 1976 having been abandoned for many years. The previous owner had apparently frightened himself in the glider and abandoned it.



ELLIOTTS' TYPE 465

BY ANTHONY DEANE-DRUMMOND

MY experience in flying the EON Type 460 (463) in the 1963 World Gliding Championships in the Argentine led me to believe that this basically excellent design could be considerably improved by attention to minor detail. If everything that stuck out or was not a streamline shape could be removed or faired in, a very much more efficient glider should result.

All this would clearly cost money. I approached Mr Horace Buckingham, chairman and managing director of Elliotts of Newbury, the manufacturers, to see if this project might be possible. He agreed wholeheartedly to go ahead and even made two 465s, one with a thinner wing section which the firm thought might improve the performance even more at higher speeds.

Even the greatest lovers of the previous 463 will admit to its slightly ungainly appearance, although they will hasten to tell you that its excellent performance makes up for its rather angular-looking fuselage. The first problem was to see whether the pilot could squeeze into a very much reduced cross-section area of fuselage. It seemed that, by sitting forward about four inches and by leaning further back, the canopy could be brought nearly level with the top of the wing without altering the width of the cockpit.

The next obvious excrescence was the wheel, with the two square skids fore and aft. The wheel had to come up about three inches and be faired in with glass-fibre, and the skids left off. This produced a problem for the torque tube, which was cunningly taken around the wheel.

The Otfur hook was recessed inside rubber leaves, a system developed by Ken Fripp of Lasham. The exterior Perspex knobs on the clear-vision panel were removed—an example of the philosophy which governed the general policy on the glider.

The tailplane next came under attack, and was replaced by an all-flying tail with an exceedingly neat fixing for the two parts of the tailplane which "plug" on to the torque tubes. The rear skid was also faired in with a glass-fibre moulding.

The last modification was to change the ailerons from the Frise type of the 463 to the more-normal pendulum ailerons with a sealed hinge on the upper surface of the wing. A disadvantage of the old Frise ailerons is that a considerable air leak is present, although they did give very pleasant handling.

In early March 1965 the first glider with the normal 463 wing-section was finished. Its early flights soon proved that it was a good performer, with an improved rate of roll. When flown on a

Main features of the 15-metre Elliotts' Type 465 are indicated in this cutaway drawing of the complete aircraft, and amplified in the detailed sketches. This aircraft is the latest in the Elliotts 460 series and is being flown in the standard class at South Cerney by Brigadier Deane-Drummond

1 Hole for pitot
2 Glass-fibre nosecap
3 Optional ballast-weight bolt
4 Rudder-cable adjustment
5 Adjustable ventilator and demist
6 Cable-release knob
7 Tab trimmer
8 Cook compass
9 Airbrakes and wheel-brake
10 Front torque-tube
11 Elevator pushrod
12 Cable-release hook
13 Canopy lock and release
14 Front spar attachment (pip-pin)
15 Spruce longeron through ply-covered nose section to front bulkhead
16 Aileron T-lever
17 Auxiliary torque-tube
18 Airbrakes control linkage
19 Detachable glass-fibre fairing
20 Rear spar attachment (pip-pin)
21 Glass-fibre fairing
22 Continuous gusset
23 Access to battery compartment (starboard)
24 Main spar centre joint (tapered pin inside split sleeve)
25 Alloy laminations on inboard section of main spar
26 Stainless-steel root joint
27 1/16in birch ply rear spar
28 1/32in birch ply rib
29 5/64in birch ply main spar
30 Spruce leading-edge
31 Birch ply skin
32 Fabric-covered wings aft of rear spar
33 Airbrakes
34 Aileron hinge
35 Fabric-covered aileron
36 Balsa wood tip
37 Fixed ground-handling hold
38 Balance weight
39 Pip-pin securing tailplane
40 Tab
41 Sprung tailwheel
42 Aileron control linkage
43 Wing section at root
44 Airspeed indicator
45 PZL variometer
46 Cook variometer
47 Altimeter
48 Artificial horizon
49 Turn-and-slip indicator

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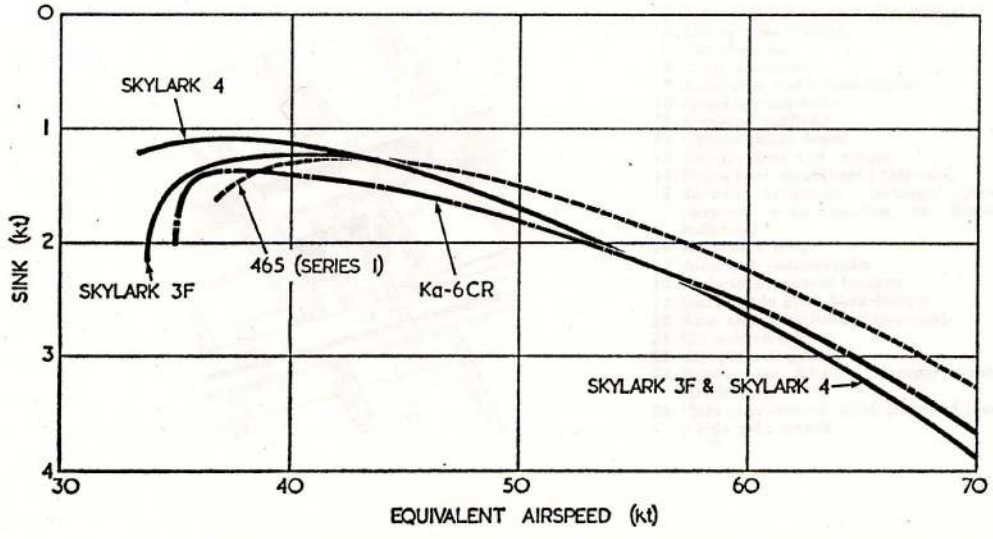
Cutaway diagram of the 465 from Flight International 27th May 1965



Left polar curve graph showing sink rate at different speeds for the phase 1. Right EoN logo taken from the fin of a 463.

Left photo shows the 465 2 at Lasham shortly after it was purchased by Keith and myself. Note the transparent fairing in the centre section fairing. The glider was in very tatty condition. Right photo shows the fuselage stripped of fabric and filled ready for re covering.

Left to right. Nose section filled and rubbed down. Centre the rear fuselage being re-covered.
Right the nose covered but the fabric is not stretched and doped yet.

Left to Right. Port tailplane uncovered showing large lead balance weight in root of leading edge. One of the very large anti balance trim tabs. The uncovered tailplane half's in position.

Left to right. Fuselage primed rubbed down and ready for a top coat. Sprayed and ready for re-assembly. Note the nose hook now fitted to avoid problems on aerotow. The rudder nice and shiny in its new paint.

The 465 with fuselage recently re-furbished after a winter and most of the summer of 1990.
Several hundred hours work.

Left the wings in the process of being stripped of old fabric. Some re profiling under the leading edges was found, near the wing root. Right the white areas are micro balloon and epoxy resin filler to remove the rippling of the 1.5mm ply between the ribs.

Left one wing covered and partly doped. Right the wings have been sprayed with silver UV protection then a primer surfacer. The primer is being rubbed down with fine wet and dry paper for a good finish. at least 90% of the work is in the preparation.

After another winters work on the wings and ailerons the project is complete. Keith Green in the cockpit awaiting launch. As you can see it's a tight fit.

Left the instrument panel. Right the control connections . The red and green rods connect the ailerons the white ones are air brakes.

Left the inside of the cockpit with instruments removed. Note the green trim wheel, allegedly from a Wellington Bomber, very powerful trim on this glider. Blue air-brake lever, yellow cable release knob and red canopy catch. Right admirers at the launch point.

The reason for the gliders downfall. The thin white line between the metal and mahogany sections of the main spar is anaerobic inter-granular corrosion. This problem was discovered after a fatal accident to a 463. The corrosion on the 465 was worse than the glider which broke up. This is un economical to repair.

Hanging the 465 up in the roof at Woodley. A really interesting problem. Thanks in particular to Julian Ben David and Ray Whittaker who gave up a day to help.

Left all the strops chains and ropes lifting into place. Right the two support cables fixed and the canopy on.

Finally the glider fixed up in the roof and looking great. Clear panels have been put on the underside main spar roots to show the construction.

Acknowledgements

Firstly to Keith Green, 1951 -2008, who was above all a great friend and was responsible for at least 50% of the restoration work and re-built the gliders trailer. We spent many long, dark, cold evenings working on the glider together for it to be condemned a couple of years later.

Major General Anthony Deane-Drummond CB,DSO,MC with bar. Well known for his exploits in the Airborne Regiment and SAS. Without his enthusiasm and observations on the 463 this glider would never have been built.

Horace Buckingham who took Deane Drummond's ideas on board and realised them at a time when producing gliders was clearly a risky business to be in.

Observations

This was not an easy glider to fly, it would easily catch you out if you let it. The elevator was very powerful, the controls heavy, it had quite dramatic spinning characteristics, especially to the left. Having said that once you got used to it and knew what you could get away with it was a very good glider of it's time. There were a number of issues that could have been resolved in developing the type. The fuselage was actually a bit short. A bit more length would have improved stability in yaw. The cockpit could have been a bit bigger for tall pilots. The wing root to fuselage interface could have been blended better. Keith had a theory that it shed vortices at the root which must have generated drag. The amount of mahogany in the spar booms, which appears to have caused the extensive corrosion, could have been addressed although the problem was not understood in 1965.

Mark Wills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Dedicated to the memory of Keith Green.