MXP-740 (Savannah)

Operators Manual

This manual applies to aircraft

G-_ _ _ _ Serial No.: BMAA/HB/_ _ _

Approving Authority

British Microlight Aircraft Association
The Bullring
Deddington
Banbury
Oxon
OX15 0TT
United Kingdom
by delegation from the United Kingdom Civil Aviation Authority

Importer

Aircraft Kits and Spares are imported / manufactured by:

Sandtoft Ultralights Partnership
Low Lodge
Main Street
West Haddlesey
North Yorkshire
YO8 8QA

This manual is a legal document which is approved for use with the MXP740 (Savannah) microlight aircraft issued with a United Kingdom Homebuilt Permit to Fly. It must remain with the aircraft, and not be amended or altered without authority from either the BMAA or UK CAA.

All pilots should read this manual before flying as pilot in command of the aircraft to which it refers.

Approved for issue:-

G B Gratton
Chief Technical Officer
British Microlight Aircraft Association

T P Cripps
Project Test Pilot

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TABLE OF AMENDMENTS

Amendment No.	Date incorporated	Signed
Initial Issue	April 2003	-
Amendment 1	October 2005	

1 Introduction

The MXP-740 is a conventional 3-axis microlight aeroplane, it was certified in the United Kingdom to the requirements of British Civil Airworthiness Requirements (BCAR) Section S issue 2; which at the time of writing is arguably the highest airworthiness standard in the world which is applied to microlight aircraft.

This manual is not intended to teach you to fly the aircraft, or to build it. Learning to fly should be accomplished under the supervision of a light aircraft or microlight flying instructor experienced on the type; at time of writing it is legal to learn to fly on a MXP-740 so long as you are the sole owner of the aircraft (or spouse). A separate build manual exists to instruct you in building a MXP-740 from a kit.

What this manual will do, is provide the information which a qualified pilot requires to safely fly this aircraft (although a conversion by an instructor, familiar with the type is recommended), and to carry out routine maintenance and minor repairs. Manuals exist for this aircraft for use overseas which also include guidance on fitting modifications to the MXP-740; all modifications to a British MXP-740 must be approved by either the British Microlight Aircraft Association, or the UK Civil Aviation Authority. In general, the BMAA offers the cheapest and most straightforward route for approving modifications.

The licenses which would be required to fly this aircraft are a UK NPPL(Microlights), with or without operating restrictions. The holder of a UK or JAA PPL(Aeroplanes), BCPL(Aeroplanes), CPL(Aeroplanes) or ATPL(Aeroplanes) who has also completed suitable differences training may also fly the aircraft. Pilots used to larger types are particularly recommended to obtain conversion from a microlight QFI since microlight aircraft have flying characteristics, which, although not unsafe, can bite the unfamiliar.

This aircraft must be operated using two separate logbooks, for the airframe and the engine (or the BMAA combined logbook, reference BMAA/AW/036). All entries must be made in the logbook in ink and within 7 days. If the aircraft is fitted with an in-flight adjustable propeller, a separate logbook must also be held for that; it is recommended that CAP400, which is issued by the CAA and available from most pilot shops is used for this purpose.

2 Description of the Aircraft

The MXP-740 (Savannah) is a STOL type monoplane, with two side-by-side seats, fitted with a high wing supported by struts. The wing presents a "high lift" NACA 650-18 modified aerofoil with fixed leading edge slats along the full wing span and Junkers type flaperons (aileron and flap). The horizontal tailplane features a symmetrical bi-convex airfoil. The rudder is attached to the fixed vertical fin and a dorsal fin is fitted to improve the directional stability.

The aircraft is fitted with a tri-cycle type undercarriage. The main landing gear comprises a single-piece aluminium alloy single-leaf spring. The nose landing gear is fitted with a telescopic elastic chord shock absorber and is steerable from the rudder pedals.

Ancestry.

The MXP-740 was developed by I.C.P. srl, via Torino 12, 14020 Piovà Massaia (Asti), Italy.

It is supplied in the U.K. in kit form for "homebuilders" and requires approximately 400 hours to construct.

Construction.

The MXP-740 comprises a full metal airframe (6061 T6 aluminium alloy) with load resisting panels. Injection moulded plastic tips are fitted to the wings, horizontal stabiliser, fin, rudder, elevator, slats and flaperons.

Construction employs ribs and sheet metal riveted with aluminium and steel "pop" and solid rivets to produce box and "d" structures.

Flying Controls.

The aircraft is fitted with dual controls and is equipped with a single, centrally mounted, "Y" shaped stick and dual conventional rudder pedals fitted with toe operated hydraulic disc brakes on the pilot's side. The aircraft is fitted with either, an electrically actuated aerodynamic trimmer with a bar graph type LED position display, or a Bungee type pitch trimmer attached through a cleat on the rear of the control stick. This is normally operated by moving the stick so that it is in the desired trim position, then adjusting the elastic bungee so that there is no force required upon the stick. Take-off trim position is indicated by aligning the illuminated bar with the take-off position mark in the case of the electric trimmer or by adjusting the bungee so that the bottom of the control stick is aligned with the take-off trim mark on the cockpit floor.

Full span trailing edge "flaperons" (combined flap and aileron) are fitted. Flaperon deployment is via a floor mounted lever on the pilot's side. With the lever fully forward the flaps are retracted. In the intermediate position the flaps

are extended to 18^{0} ($\pm 3^{o}$). With the flap control lever fully back the flaps are extended to 36^{o} ($\pm 3^{o}$).

3 Limitations

This section includes the basic operating limitations for the MXP740. The full limitations are contained in Homebuilt Aircraft Data Sheet (HADS) HM10, which is used by the Inspector at Annual Permit renewal to ensure, amongst other things, that the correct limitations are placarded in the cockpit.

When noting limitations, it is important to ensure that the limitations which you are using use the same units and calibrations as the instruments in the cockpit. The limitations shown below use knots CAS (Calibrated Airspeed); your aircraft may have an instrument in mph, and in any case will read IAS (Indicated Airspeed). The difference between IAS and CAS is basically the accuracy of your pitot-static system. The IAS limits for your aircraft were determined when the aircraft was test flown, and are shown in Annex A to this manual. There will also be a placard in the cockpit and coloured markings on the airspeed indicator, however space is allowed below for you to insert the IAS limitations and calibration details for your aircraft.

3.1 Operational Limitations

The MXP740 must only be flown in day VMC conditions, with sight of the surface. It may not be flown over built up areas.

The MXP740 is certified to a "permit to fly" standard. This prohibits aerial work, other than flying instruction of the owner and flight testing of the aircraft for initial approval or approval of subsequent modifications.

This aircraft is certified to a UK only standard, this means that permission is required from the host country to fly it overseas. However a reciprocal agreement for homebuilt aircraft means that no permission is required for flights to other ECAC (European Civil Aviation Conference) member states.

For flight the following instruments must be fitted and serviceable;-

- Air speed indicator
- Altimeter
- Engine tachometer
- Magnetic compass
- Oil temperature gauge
- Cylinder head temperature gauge
- Fuel pressure manometer

- Slip ball

For newly qualified or inexperienced pilots it is recommended that the MXP740 is not flown where a crosswind component above 20 knots is predicted, (crosswind components of up to 32 knots have been demonstrated however considerable experience is required for landings in crosswinds in excess of 20 knots).

Do not fly above 10,000ft standard pressure altitude without the use of personal oxygen.

3.2 Flight Limitations

Never exceed speed, Vne, is 110 kn CAS [IAS] this is marked by a red radial line on the ASI dial.

Manoeuvring Speed, Va is 60 kn CAS [IAS] Speeds above this are marked by an amber arc on the ASI dial.

Flap deployment limit is 56 kn CAS [IAS] Safe speeds for flap selection are marked by a white arc on the ASI dial.

Maximum Bank angles are 60° either way.

Maximum Pitch attitudes are 40^{o} up and down.

Normal acceleration limits are +4 / -2g.

At least 55 kg (121lb / 8 stone 9 lb) must be in the cockpit for flight, no more than 120 kg (264 lb / 18 stone 12 lb) may be carried in each seat.

Maximum Take-off weight is 450 kg.

Aerobatics and deliberate spinning are prohibited.

3.3 Engine Limitations

The limitations for the engine are contained in Annex B, they are also placarded in the cockpit.

IAS Calibration Card for MXP740 G-_____.

Kn CAS (calibrated)	**28 V_{S0}**	**30 V_{S1}**	**40 App**	**46** Glide	**50**	**56 V_F**	**60 V_A**	**70**	**80**	**90**	**100**	**110 V_{NE}**
			←	**Climb**	→							
Kn/Mph* IAS (indicated)												

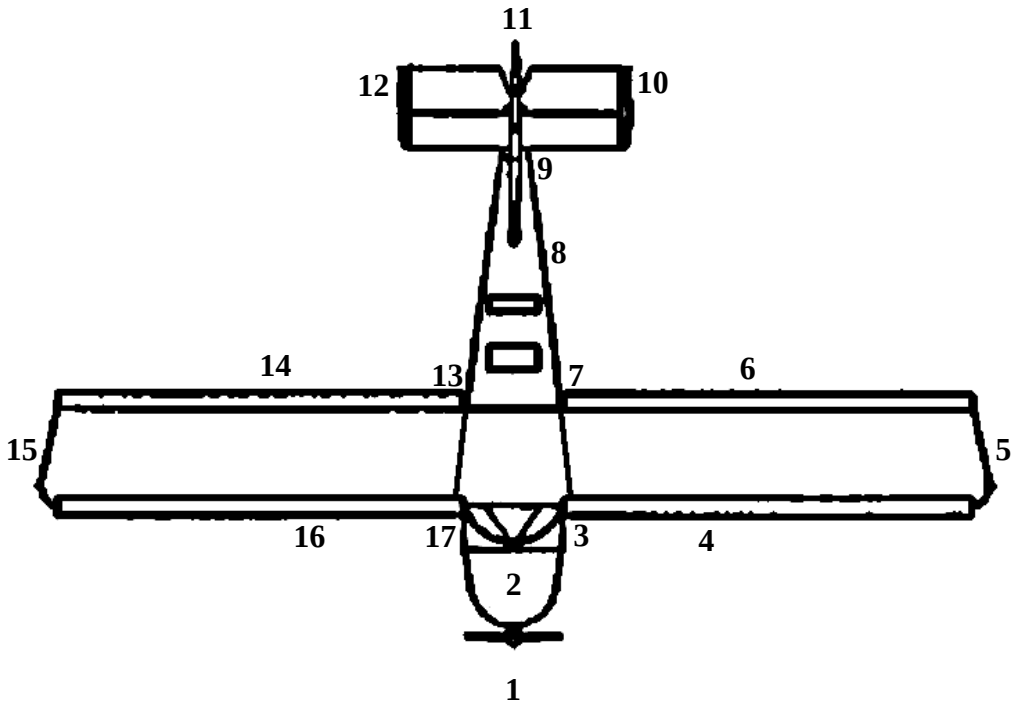
Stall speeds given are at aft CG, they may appear to increase by up to 7kn CAS with forward CG

**delete as applicable*.

4 Flying the MXP740

4.1 Pre-Flight Inspection.

Aircraft "Walk around"



1) Check propeller for damage and security of fixing

2) Remove top engine cowling. Inspect nosewheel bungee, fuel filter and hoses, air filter attachment, oil cooler attachment, spark plugs and leads, throttle and choke cables, engine oil level and general conditions inside cowlings.

3) Inspect nosewheel attachment bolts, wheel / tyre general condition and tyre creep. Inspect lift struts lower attachment bolts. Inspect main undercarriage securing bolts / rubber bush and general condition of wheel / tyre and tyre creep. Open door and check door hinge attachment screws. Inside cockpit check wing attachment bolts.

4) Check lift struts upper attachment bolts. Remove pitot cover. Check general condition of slat leading edge and slat to wing attachment bolts. Ensure wing tank filler cap in place and vent tube exits below wing.

5) Visually check wing shape for deformation or damage.

6) Confirm full and free movement of flaperon. Check all flaperon attachment bolts and cotter pins.

7) Inspect flaperon hinge bolt for condition of nylon washers and cotter pin in place. Inspect pushrod to flaperon attachment.

8) Open inspection door and check condition of control cables paying particular attention to the taped areas of the elevator cables where they cross for abrasion.

9) Confirm security of attachment of the fin and horizontal stabiliser.

10) Check full and free movement of the elevator. Check for play in the elevator pivot bolts.

11) Check rudder attachment bolts, rudder cables attachment bolts and cotter pins and elevator control horn cable attachments. Check for play in the rudder pivot bolts.

12) Check full and free movement of the elevator. Check for play in the elevator pivot bolts.

13) Inspect flaperon hinge bolt for condition of nylon washers and cotter pin in place. Inspect pushrod to flaperon attachment.

14) Confirm full and free movement of flaperon. Check all flaperon attachment bolts and cotter pins.

15) Visually check wing shape for deformation or damage.

16) Check lift struts upper attachment bolts. Check general condition of slat leading edge and slat to wing attachment bolts. Ensure wing tank filler cap in place and vent tube exits below wing.

17) Inspect lift struts lower attachment bolts. Inspect main undercarriage securing bolts / rubber bush and general condition of wheel / tyre and tyre creep. Open door and check door hinge attachment screws. Inside cockpit check wing attachment bolts.

Underside

1) Drain a small amount of fuel from the drain tap and check for water.

2) Remove inspection panel and visually inspect rudder cables, elevator cables and flaperon actuator assembly. Check all bolts and cotter pins.

Inside the Cockpit

1) Ignition switches OFF.

2) Throttle OFF.

3) Master switch ON.

4) Check operation of electric elevator trimmer and indicator or check for full movement of bungee trimmer. Set trim to take-off position.

5) Check condition and security of all flying controls.

6) Check harnesses are properly fitted and not frayed.

7) Check seats are secure.

8) Check sufficient fuel for planned flight.

9) Press "Reserve In Use" warning light test button.

4.2 Starting.

The BMAA standard manual pre-start checks [**STAIP**] are recommended. The actual starting procedures for a particular engine are contained in Annex B to this manual. The STAIP checks are :-

- Aircraft, Crew, Equipment, **Secure.**
- **Throttles** full and free, and closed.
- **Area** around and behind aircraft clear.
- **Ignition** as required.
- **Pull**, start the engine.

4.3 Taxiing.

Taxiing the MXP740 is accomplished by the application of low levels of power with flying controls in neutral position. The rudder pedal linked nosewheel steering is sufficient for normal taxiing. Where space is limited a tighter turning circle may be achieved by the use of differential braking. In strong winds apply "into wind" aileron. Where there is a strong tailwind apply up elevator (stick back) and if strong nosewind apply down elevator (stick forward), this will allow positive contact of the nosewheel for steering.

4.4Take-off.

Prior to take-off, it is recommended that the BMAA standard pre-take-off checks [**CHIFTWAP,** see below] are used, including a check to ensure that the parking brake (if fitted) is off. The pitch trimmer should be in the take-off position (illuminated bar on display aligned with take-off position mark).The pilot must ensure that the engine has been run successfully at take-off power prior to take-off, and has in any case run for several minutes and the choke is off.

- **Controls** full and free, **Choke** off
- **Harnesses** and **Helmets** (if worn), secure.
- **Instruments** all serviceable, reading correctly. **Ignition** checked for mag drop and selected to both.
- **Fuel** on, sufficient for the flight, filter clear of debris, pressure in limits.
- **Trim** set to take-off position (illuminated bar on display aligned with take-off position mark (electric trimmer) or bottom of control stick aligned with take-off position mark).
- **Approach** to the selected runway clear of aircraft.
- **Power** checked, and the pilot is satisfied that the aircraft can sustain take-off power.

Take-off is normally performed with 18^{o} flap selected. Be sure to maintain heels on cabin floor to avoid inadvertent brake operation during the take-off roll. Fully open throttle, observe tachometer to be assured of full power, when rolling apply gentle back pressure on the stick. Obtain directional control by rudder operation. The aircraft will take-off at 25 kn CAS [IAS] and will continue to climb at 40 kn CAS [IAS]. At a safe altitude retract the flaps and continue the climb at 45 to 50 kn CAS [IAS]. When required altitude achieved adjust attitude for cruise, reduce power and trim control forces (A-attitude, P-power, T-trim).

In crosswinds remember to apply “into wind” aileron whilst maintaining directional control with rudder input. As airspeed increases the amount of “into wind” aileron required will reduce. When take-off is achieved the aircraft will “weathercock” into wind. Continue to track the runway centre line on climb out.

4.5 Landing

During the descent gradually reduce engine power so as not to “shock cool” the engine. Reduce throttle, adjust attitude for desired airspeed and trim control forces (P-power, A-attitude, T-trim). At times during the descent select a higher power setting, this will warm the engine and engine oil (if Jabiru engine fitted), carburettor heating is via a hot oil heat exchanger in contact with the carburettor body. When established on base leg at an airspeed of not more than 56 kn CAS [IAS] select first stage of flap (18^{o}). When

established on finals at an airspeed of 40 kn CAS [IAS] select second stage flap $(36)^{o}$, the recommended approach speed is marked by a yellow triangle on the ASI dial. When crossing the threshold at around 10 ft airspeed should be reduced to 35 kn CAS [IAS] and throttle reduced to idle. Continue to gradually "bleed off" airspeed as aircraft descends. Touchdown should be around 25 kn CAS [IAS] in a nose-up attitude. Relaxing back pressure will allow the nosewheel to lower for effective nosewheel steering. Directional control may be achieved either by the nosewheel steering or the differential application of the brakes.

4.6 <u>Landing in a Crosswind</u>.

Landing with even a small crosswind component can create a significant amount of drift on approach. By crabbing, the aircraft can fly the approach tracking the runway centreline with a nose into wind attitude. In the last 200 metres of the approach it is essential to align the aircraft directionally with the runway, by feeding in out-of-wind rudder, combined with into-wind aileron and corresponding into-wind bank. In this way, the aircraft should be stabilised in a drift-free flight path. Touchdown on the into wind mainwheel first, the other mainwheel then the nosewheel.

By using this technique, with an approach speed of around 35 kn CAS [IAS], crosswind components of up to 20 knots may be handled without significant difficulty, although the pilot should expect to have to apply considerable concentration and should brief any passenger accordingly. Crosswind components above 20 knots should not be attempted other than by experienced pilots fully familiar with the type.

4.7 <u>Cruise</u>.

Cruise speeds from 50 kn CAS [IAS] to 85 kn [IAS] are achieved by utilising the trim system (electric or bungee). Desired airspeed is set with the control stick and forces trimmed out by actuating the trim rocker switch, or, in the case of the bungee trimmer, "pulling" or releasing the bungee. Although reasonably high cruise speeds can be achieved, take care not to overstrain the engine – also slightly lower cruise speeds tend to give better range and endurance.

4.8 <u>Turning</u>.

Turning is achieved by operation of the ailerons (flaperons) via the control stick, rudder input is also required to initiate the turn avoiding adverse yaw. As with any other aircraft, the stall speed will increase with bank angle. However, pre-stall buffet and control stick forces give a good warning of the impending stall.

4.9 Flight in Turbulence.

The MXP740 may be safely flown in turbulence at airspeeds up to the manoeuvre speed of 60 kn CAS [IAS] , that is the area below the amber arc shown on the ASI. Below this speed the worst thing a gust can do to you is stall the wing or one of the control surfaces. Above that speed, it is possible for strong gusts to overstress the aircraft.

4.10 Stalling.

Most microlights suffer from under-reading ASIs at low speed. In the Savannah, the error is such that ASI readings at the stall are commonly below the recorded scale, which stops at 20mph. The actual stalling speed of course varies with flap/power setting, AUW, C of G and load factor, over a range of roughly 25kt to 35kt CAS [to IAS]. The rate of deceleration also has a slight affect on the lowest speed attained, and a considerable effect on the pitch attitude. A deceleration rate of 5kts/sec should be regarded as a safe maximum. Pulling up more violently than that will lead to extremely steep nose-up attitudes (of the order of 70 degrees), from which it will not be possible to prevent a nose-drop of similar angle, with a height loss of 200ft and a risk of exceeding flap limiting speed.

Wings Level Power Off:

Warning of the stall is usually provided by a steep nose-up attitude (25-35 degrees), and by slight buffet, perceptible on the stick, 4-5kts before the nose drops. The stick will be approaching its full aft position and the pilot will find that his elbow is touching the seat backrest, necessitating quite awkward wrist movement to obtain full rear stick. At the forward C of G limit, (not usuallyattainable), full aft stick will be reached before the nose drops, and the aircraft will settle in a 'mush' descending, with full lateral control, at about 500ft/min. Some gentle pitch nodding may occur and the elevator will feel sloppy. Pilots should avoid aggravating the nodding by coarse use of the elevator, or a more violent nose-drop and wing drop may be induced. In the normal CG range, there will be a clear nose-drop with little or no wing-drop. Recovery is instantaneous upon centralising the stick. Height loss can be confined to 50ft if power is used or about 100ft without. Use of flap slightly steepens the pitch attitude and ensures that the speed reached will be on or near the ASI bottom stop.

Wings Level Power On:

The use of power improves the airflow around the tailplane, thus increasing elevator authority and enabling steeper attitudes to be reached. It also reduces the buffet warning, so that it is easily missed altogether. Pitch

angles of 40 degrees are common, especially with full flap, and wing-drops of 20 degrees or so are normal. The direction of wing-drop will be much affected by the pilot's ability to neutralise the strong left yaw, which develops as speed is reduced below 30mph.
Up to 2/3rds right rudder will be needed. If the pilot is not careful in controlling the yaw, the wing-drop can reach about 45 degrees. The ensuing recovery is somewhat extreme and it would be easy to exceed Vf, as well as losing about 200ft. Pilots will find that, in the baulked landing configuration, elevator forces will be lighter than usual and speed control will need greater care. On an actual climb-out, flap should be raised as soon as a safe speed has been reached.

Pilots should be aware that prolonged flight below 40 mph will cause the engine temperatures to rise quite rapidly and limits could easily be exceeded.

Stalls in Turning Flight:

It requires a fairly careful and determined effort to stall the Savannah in turning flight, especially with power on and full flap. Conscious effort is needed to stop the bank angle increasing beyond 30degrees. The manoeuvre easily turns into a visibly extreme climbing turn before the stall break can be induced. In right turns the aircraft tends to roll in an additional 15-20 degrees bank in marked buffet at the break, while, when turning left, the aircraft tends to roll to wings level. Recovery occurs immediately upon relaxing the stick and there is little or no height loss, as the aircraft only momentarily reduces its rate of climb. In gliding flight, the behaviour is more gentle, and the aircraft tends to roll slowly out of the turn at the stall."

4.11 Aerobatics.

Aerobatics are not permitted in this aircraft.

4.12 Departures from Controlled Flight

The Spin.

Deliberate spinning of the MXP740 is prohibited. However, it is possible through mishandling of the aircraft to inadvertently enter a spin, either through stalling the aircraft in a turn, or by failing to keep the rudder pedals straight at the point of stall. Should this happen, the spin can be seen by a steep nose-down pitch attitude (about 45° nose down) and the aircraft yawing to one side or the other, some higher than normal 'g' forces may also be experienced. Should this occur, close the throttle and centralise the stick and rudder pedals immediately. The aircraft will usually quickly exit the spin but is likely to recover to either a spiral dive or a steep straight dive. The pilot must then recover fairly quickly so as to

avoid exceeding Vne (or if flaps were selected, the lower flap limiting speed), although not pulling so hard as to exceed the aircraft's 4g limit.

Other Departures.

Other departures from controlled flight are likely either to be due to damage to the aircraft, or hazardous flying conditions. In either case, land as soon as possible and examine the aircraft, particularly the flying controls, for any damage.

5 Performance.

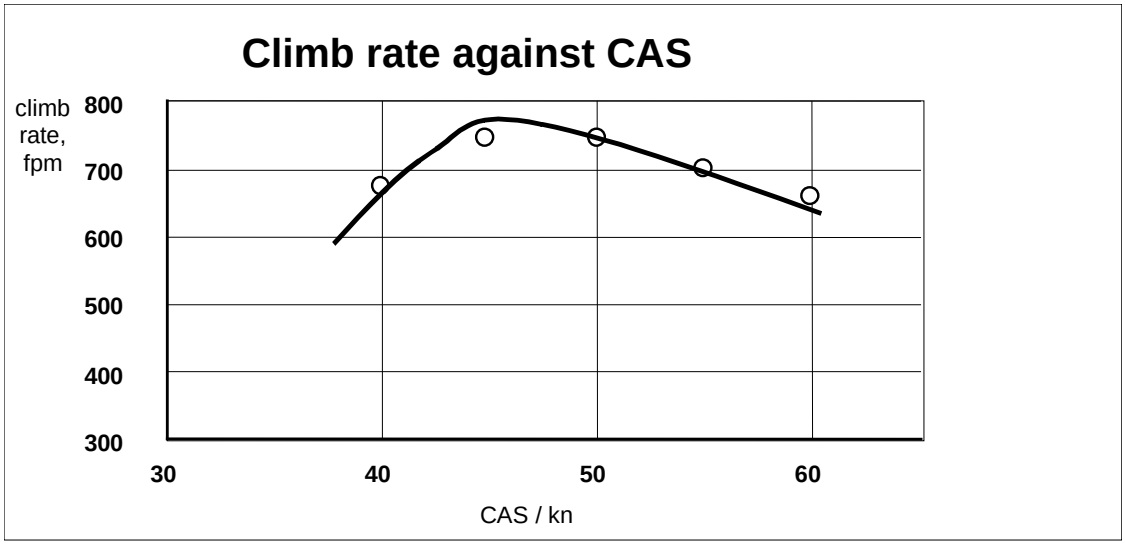
The following data were obtained in the original UK prototype, G-CBBM Changes from this data for your particular aircraft will be at Annex A. When using the data for planning purposes, apply sensible safety factors, such as are contained in CAA Safety Sense leaflet 7B (aircraft performance), part of which is reproduced here by kind permission of the CAA.

The best climb speed is 40 to 50 kn CAS [to IAS]. The graph below shows climb performance against CAS for the test aircraft at approximately 450 kg and 2000 ft, in practice the best climb speed will vary with conditions and a pilots should pick a speed within this range that gives acceptable climb performance. When selecting a climb speed, always remember that should anything go wrong, more speed gives you more time to sort your problems out. Climb performance will also vary with the powerplant of your aircraft. Specific performance figures for your aircraft will be in Annex A.

The best glide speed is 45 kn CAS [IAS], at which a glide ratio of around 7.5 to 1, or about 1.2nm per 1000 ft may be expected.

Because microlight aircraft are very strongly affected by weight, engine condition, propeller matching, wind and air temperature, it is very hard to give any reliable information concerning the cruise performance of the MXP740. The captain is encouraged to plan very conservatively until sufficient experience is gained of the fuel consumption and cruising speeds at the conditions in which he or she normally fly the aircraft.

Take-off performance for short dry grass for your aircraft is contained in Annex A.



Using the figures above, the following additional safety factors should be applied to the distance to clear a 15metre obstacle (taken from CAA GA Safety Sense leaflet 7B). If unsure, always use these factors to ensure you have sufficient take-off distance available.

10% increase in weight	Multiply take-off distance by 1.2
Per 1000 ft runway height above Sea Level	Multiply take-off distance by 1.1
Per 10°C increase in temperature above 15°C	Multiply take-off distance by 1.1
Wet grass	Multiply take-off distance by 1.1
Dry Tarmac or concrete	Divide take-off distance by 1.1
Per 2% uphill slope	Multiply take-off distance by 1.1
Per 5 knot tailwind component	Multiply take-off distance by 1.2
Soft ground or snow	Multiply take-off distance by 1.25

Landing performance for short dry grass for your aircraft are contained in Annex A.

Using the figures above, the following additional safety factors should be applied to the distance to clear a 15metre obstacle on the approach (taken from CAA GA Safety Sense leaflet 7B). If unsure, always use these factors to ensure you have sufficient runway to avoid using the considerately provided hedge at the far end of the runway.

10% increase in weight	Multiply landing distance by 1.1
Per 1000 ft runway height above Sea Level	Multiply landing distance by 1.05
Per 10°C increase in temperature above 15°C	Multiply landing distance by 1.05
Wet grass	Multiply landing distance by 1.1
Dry Tarmac or concrete	Divide landing distance by 1.1

Per 2% downhill slope	Multiply landing distance by 1.1
Per 5 knot tailwind component	Multiply landing distance by 1.2
Soft ground or snow	Multiply landing distance by 1.25

6 Emergencies

6.1 Engine Failure Before Take-Off.

Close throttle, apply brake, switch off.

6.2 Engine Failure After Take-Off (EFATO).

Lower nose, to establish an approach speed of at least 35 kn CAS [IAS] land straight ahead or near to straight ahead, DO NOT ATTEMPT TO TURN BACK from below 500ft.

6.3 Engine Failure In Flight.

Lower nose, maintain 45 kn CAS [IAS] best glide speed, select a landing site, make emergency radio call if time permits, as time permits check for possible reasons for engine failure and attempt re-start (e.g. ignition switches, fuel cock, lack of fuel pressure), if field is flat land into wind, otherwise uphill. Apply braking only if it is essential to stop within the distance available, and never before all 3 wheels are on the ground.

6.4 Engine Fire in Flight.

Close fuel cock, open throttle fully, make emergency call if time permits, treat as engine failure in flight. Vacate aircraft asap after landing.

6.5 Fire in the cockpit. Close all ventilation, switch off all electrical devices (not the ignition unless there is an engine fire also), land immediately and vacate the aircraft.

6.6 Emergency Landing on Water.

Try to land into wind with as high a nose-up attitude as possible. Before impact, pilot and passenger must be prepared to release their harnesses, it may also be beneficial to release the doors before impact. If wearing lifejackets, do not inflate them until outside the aircraft. Note that it is very hard to judge height above water.

6.7 Emergency Landing in Trees.

Ensure harness(es) tight, try for low bushy trees as far as possible. Try to impact with as steep a nose-up attitude as possible.

6.8 Inadvertent Flight in Hail or heavy rain.

Turn carb heat on (if fitted), reduce power to avoid propeller damage, fly out of the weather as soon as possible.

6.9 Inadvertent Flight in Icing Conditions. Turn carb heat on (if fitted), fly out of conditions as soon as possible, land as soon as possible.

6.10 Use of Ballistic Parachute (if fitted).

Tighten harnesses, fuel cock OFF, ignition OFF, pull handle, make emergency radio call if radio carried. [Note, if a BRS is fitted to this aircraft, the BRS manual will be annexed to this manual.]

7 Weight and Balance.

So long as it is kept within the placarded operating limits, and no unapproved modifications have been made since construction (including the alteration of ballast), the MXP740 can be flown with any permitted fuel, pilot and passenger weights without falling outside of its permitted CG limits. However, pilots should be aware that stick forces and displacements will become lighter with aft CG (typically a lightweight pilot and full fuel) and heavier with forward CG (typically low fuel, pilot and passenger). Flying outside of the permitted CG limits at either extreme is potentially dangerous.

The MXP740 CG datum is at the wing leading edge. Measurements are in inches and kg.

The moment arms of the seats, fuel tank(s) and other items are shown in the Weight and CG report at Annex C.

The MXP740 will have been weighed when first built, and must be re-weighed at intervals as laid down by the BMAA and CAA (typically every 5 years or when it is modified or repaired).

Weighing should be carried out by a BMAA 3–axis inspector or Technical Team member. A copy of the W&CG report must be retained in this manual at Annex C. Also at each weighing, details of the weighing must be entered in the aircraft logbook. Full instructions on how to weigh a microlight aircraft are contained in BMAA technical information leaflet TIL 012, and specifically for the MXP740 in HADS HM 10.

8 Routine Maintenance.

The aircraft is to be maintained to Microlight Maintenance Schedule MMS-1, which is contained in BMAA Technical Information Leaflet 020.

9 Repairs.

General.

Repairs should either be carried out as described below, or to a scheme approved by the BMAA. After repairs, you should always obtain a "second inspection" from a qualified pilot or (preferably) BMAA inspector after making any repair, who should sign in the logbook that they have inspected the repair and consider it safe. Where this is not possible, draw the repair to the attention of your inspector at the next permit renewal who should oversign your own entry.

Repairs to tubular structure, springs, pulleys, cables, bolts, nuts, etc.

Any damaged such parts must not be repaired and the aircraft must not be flown once the damage has been identified. Identical replacement parts must be fitted before any further flight, and their installation inspected and signed-off in the logbook by a BMAA inspector. The invoice (legally referred to as the certificate of conformity) for the parts fitted must kept with the aircraft logbook. If it is not possible to obtain replacement parts, consult the BMAA Technical Office for advice.

Repairs to the Engine.

These should be carried out in accordance with the maintenance manual for the engine fitted.

Repairs to Instruments.

Microlight aircraft instruments are not usually repairable and should be replaced.

Repairs to Fuel Hose.

Any fuel hose which is found to be cracked or damaged must not be repaired. Replace it with at least automotive quality (preferably aircraft or fire-retardant boat use) re-enforced rubber fuel hose. It is not advised that transparent fuel hose is used, and PVC hose must not be used with fuel under any circumstances.

Take care not to over-tighten cable ties used to secure hose, since this can cause a flow restriction.

Damaged Wiring.

Replace with fireproof or fire resistant wiring of the same or higher current rating, secured in the original manner.

Repairs to Batteries.

A damaged battery must be replaced and all surrounding structure thoroughly inspected for acid damage.

Repairs to Tyres.

An inner tube puncture may be repaired. If there is damage to the tyres which shows the inner canvas, replace the tyre in question.

Damage to the Fuel Tank.

The fuel tank should be drained and removed from the aircraft and replaced with a new fuel tank.

10 **Vital Statistics.**

Weight values for this MXP740 are at Annex C and a description of the aircraft is at section 2. However the following describes the basic dimensions of the aircraft:-

Length	6.4 m (21.3 ft)
Height	2.395m (8 ft)
Span	9 m (30 ft)
Mean chord	1.41m (4 ft 7½in)
Wing area	12.7 m^2 (131 sq.ft)
Dihedral angle	0
Sweepback angle	0
Washout	0 (washout is introduced at the flaperons)
Aspect ratio	6.4
Undercarriage track width	1.5m
Undercarriage wheelbase	1.5m
Fuel capacity	77 litres (17 Imperial gal)
Tyre pressure	0.8 bar (± 0.2)

ANNEX A

MAAN RECOMMENDING ISSUE OF A PERMIT TO FLY

The approval MAAN for this aircraft is to follow this page.

ANNEX B

AIRFRAME AND ENGINE SERVICING MANUALS

A copy of Microlight Maintenance Schedule MMS-1 (BMAA TIL 020) and the operators and maintenance manual for the engine fitted to this aircraft are to follow this page.

ANNEX C

WEIGHT AND BALANCE REPORT

Forms BMAA/AW/028 completed for this aircraft are to follow this page.

ANNEX D

MINOR MODIFICATIONS FITTED TO THIS AIRCRAFT SINCE INITIAL PERMIT ISSUE

Minor modification approval sheets are to follow this page

Minmod No.	Description	Sign and date incorporated

ANNEX E

MAJOR MODIFICATIONS FITTED TO THIS AIRCRAFT SINCE INITIAL PERMIT ISSUE

BMAA MAANs and CAA AANs (other than the original approval MAAN) are to follow this page.

MAAN / AAN No.	Issue	Description	Sign and date incorporated

ANNEX F

INSTRUCTIONS AND MANUALS FOR OTHER DEVICES

FITTED TO THIS AIRCRAFT

No.	Description	Issue or date	Approval Mod No., or original equipment
F1			
F2			
F3			
F4			
F5			
F6			
F7			
F8			
F9			
F10			
F11			
F12			
F13			
F14			
F15			
F16			
F17			