CYCLONE AX3/503

OWNER'S MANUAL

Cyclone Airsports Ltd.,
Elm Tree Park
Manton
Marlborough
SN8 1PS

Tel: 01672 861578
Fax: 01672 861550

CONTENTS

PAGE

IMPORTANT NOTICE

EFFECT OF HIGH CRUISE SPEEDS ON CONSUMPTION AND ENGINE LIFE

Cruising at excessive engine RPM **will** cause premature engine wear and possible failure and **will** result in high fuel consumption. The correct method of setting up cruise flight on the Cyclone AX3/503, in common with most aircraft types, is to follow the steps, attitude, power, trim (mnemonic APT):
A Attitude - From the climb lower the pitch to the cruise attitude.
P Power - Set the cruise RPM.
T Trim - Trim to level flight.

The resulting cruise speed will depend upon weight of aircraft, weather (pressure, temperature and wind conditions) and balance of flying controls. Due to the larger differences between dry weight and MAUW of microlights compared with light aircraft, more significant cruise speed changes will occur with differing condition of flight. Typical AX3 cruise speeds are as follows:

Flight 1 - Weight 390kg, RPM 5500, Hot humid windy day with many control inputs to overcome gusts. Average Speed 50mph, Fuel 13½Lph.
Flight 2 - Weight 280kg, RPM 5500, Calm crisp day. Speed 62mph, Fuel 13½Lph.
Flight 3 - Weight 390kg, RPM 5200, Hot humid day. Speed 44mph,Fuel 11Lph.
Flight 4 - Weight 280kg, RPM 5200, Calm crisp day. Speed 55mph, Fuel 11Lph.

Remember - to double the airspeed approximately 8 times the power is required, guess what happens to the fuel consumption! If you reduce RPM from 6000 to 5000 a fuel saving of 40% will be made. Based on our experience servicing and repairing Rotax engines for many years, we believe that all other aspects being equal, you can expect double the life before major engine failure by selecting 5000 RPM cruise rather than 6000 RPM.

TYPICAL AX3 FUEL CONSUMPTION FIGURES.

RPM	4000	4500	5000	5500	6000	6500
L/hr	6.5	8.5	10.5	13.5	17	20

These figures are based on prop/engine matching to correct RPM, 6500 at full throttle on climb out. Some problems resulting from incorrect propeller matching are: Too high RPM (7000 RPM) - High engine temperatures, particularly at cruise settings and possible piston seizure. Too low RPM (5900 RPM) - Low power, crankshaft fatigue, excessive cruise fuel consumption.

FUEL CONSUMPTION

If EGT readings are low then enhanced cruise fuel consumption may be obtained by lowering the carburettor needles. It is absolutely essential that full throttle RPM on climb out does not exceed 6500 and EGT gauges are fitted to both cylinders before the needles are adjusted. EGT Temperatures must not exceed 1250°f in the cruise or 1200°f full throttle. Max CHT 480°f.

If the needles have been lowered then the aircraft must not be put into a dive with cruise power set, free running the propeller at cruise settings will cause excessive temperatures and possible seizures. Monitoring of the EGT must become part of the normal instrument scan.

SUMMARY

1) Set cruise RPM and accept the resulting cruise airspeed.
2) Do not cruise at more than 5500 RPM, (recommended 5200 - 5400).
3) Ensure propeller is matched to 6500 RPM full throttle in climb.

AMENDMENT LIST

Amendments No.	Date	Iss	DESCRIPTION	Pages Affected
R01	01.1.93	-	Insert sheet - Effect of high cruise speeds....	Insert Sheet Only
R02	01.1.93	-	Airframe and engine log sheets	Insert sheets only
R03	01.1.93	2	Maintenance schedule	17
R04	18.1.93	2	Transporting, De-rigging and rigging procedures	18 to 22
R05	18.1.93	2	Specification	23
R06	18.1.93	2	Weights, dimensions and placards	24 & 25

1. FLIGHT MANUAL

1.1 GENERAL

The Cyclone AX3 is a three axis control aircraft with conventional control systems. Apart from its light controls and low weight it handles in much the same way as conventional light aircraft. Pilots trained on these will quickly become familiar with the AX3.

The aeroplane was conceived by John Chotia, an ex NASA engineer, who designed it to be strong and simple, and as a result, one of the most economic microlights on the market.

The structure is made of 6261 T6 aluminium alloy which combines high strength with corrosion resistance and flexibility. It has been designed to be light and very strong. Many parts of the fuselage and wings are triangulated and form an integrated structure capable of absorbing a great deal of energy without permanent deformation. This type of construction ensures that the aircraft remains in good condition even after a long and hard life.

The fabric covering is Ultralam, a coarse weave, high strength polyester laminated both sides with Tedlar film. The fabric has been specially developed for microlight applications and provides resistance to UV degradation typically twice that of conventional polyester fabrics such as Dacron. This means that the aircraft may be safely stored outside for prolonged periods.

Each page of the manual carries an issue number. As and when it becomes necessary to amend the manual, individual sheets will be up-issued and sent to registered owners. Please ensure that you insert them in the correct place in the manual and discard the old sheet(s).

A significant part of this manual is devoted to safety, both from a flying and maintenance point of view. It is essential to remember that the pilot is responsible for his own safety. Flying is not inherently dangerous, but is terribly unforgiving of carelessness, incapacity or neglect. Please read this manual thoroughly before taking to the air.

Aerobatics, including spinning, are prohibited. Operation is restricted to daytime VFR conditions.

1.2 THE DAILY INSPECTION

For rigging instructions, see Maintenance Manual, Section 2.
A thorough Daily Inspection (DI) and Pre-Flight Check are essential for safe flying and it is important to be systematic when carrying them out. Give yourself time to do the checks properly and avoid being interrupted. Repeat the DI at the start of <u>each flying day.</u>

<u>1.2.1 Powerplant:</u> carry out the recommended Rotax daily inspection routine given in the Rotax Engine Manual. In addition check:

- the engine support, ensure that the anti-vibration mounts are in proper ontact with their supports.
- the general appearance of the air cooling fins; ensure they are not blocked.
- that there is the proper mix of oil in the petrol, (50:1)
- that there is no possiblity of air entering the fuel system on the tank side of the fuel pump.

1.2.2 Airframe starting at the front and working down the aircraft's left side, check:

- front fork assembly and fittings secure.
- front tyre in good condition and properly inflated.
- throttle cable freedom and security.
- starter rope condition and handle security.
- top and bottom of the front fuselage brace.
- bolts' security at the main strut/tie bar connection.
- wing struts at the stainless steel tangs, top and bottom.
- jury struts' security, top and bottom.
- undercarriage leg secure and undamaged.
- wheel and tyre in good condition and properly inflated, tyre creep marks aligned.
- leading edge to fuselage attachments.
- sail condition at the leading edge.
- wing tip locations in the leading edge and trailing edge fittings.
- sail condition at the trailing edge.
- proper closure of the wing ribs' Velcros.
- wing compression struts, both ends.
- aileron bearings' security at their attachments to the trailing edge (wing nuts and safety rings)
- trailing edge to fuselage attachments through the inspection flap.
- aileron operation.
- aileron cables and fittings.
- the inboard aileron fitting (wing nut & safety ring)
- fuel filler cap security.

Follow the fuselage to the tail and check:

- elevator horn attachments.
- operation of the elevator.
- stabilisor strut attachments.
- the upper part of the rudder.
- tail general symmetry.
- trim tab connection.
- rear tail support brace.
- open the sub-fin window and check the elevator leading edge attachment (wing nut & safety ring).
- balance: push down the tail, the aeroplane should balance with the tail skid between 50 and 250 mm off the ground. (Nominally 150 mm with the cockpit empty and one tank 2/3 full) Complete weight and balance checks are given in para. 2.3.8.
- with the tail still depressed, swing the rudder to left and right to check for full and free operation.

Move up the right hand side of the aeroplane now and check:

- inboard aileron fitting (wing nut and safety ring)
- aileron cables and fittings.
- aileron operation.
- trailing edge to fuselage attachment.
- through the double surface, the main fuselage tube, and leading edge roots.
- the seats' attachments.
- the control stick and the fairleads fitted to the brackets beneath the stick.
- the condition of the rudder cables, especially at the point where they pass under the fairleads. NOTE: IT IS ESSENTIAL TO CHECK THAT THE RUDDER CABLES ARE CROSSED.
- fuel tank breather.
- tank supports and pockets

- fuel filter condition, check for water.
- fuel line connections; check particularly that no air leaks can exist at the pump inlet.
- open the fuel tank water drain on the bottom of the tank and check for contamination. Ensure it is closed properly on completion.
- undercarriage leg secure and undamaged.
- wheel and tyre in good condition and properly inflated, tyre creep marks aligned.
- bolts' security at the main strut/tie bar connection.
- the wing struts at the stainless steel tangs, top and bottom.
- jury struts' security, top and bottom.
- wing compression struts, both ends.
- the sail condition along the trailing edge.
- proper closure of the wing ribs' Velcros.
- the wing tip locations in the leading edge and trailing edge fittings.
- the sail condition along the leading edge.
- the air speed indicator sensor head and its tube.

Inside the cockpit, check:

- ailerons, move the stick to the left and check that the right hand aileron moves down and the left one up.
- throttle is free and closes properly.
- elevator control is free.
- baggage is secure in its area and cannot interfere with controls.

1.3 PRE-FLIGHT CHECKS

Carry out the following checks before each flight. (These are covered by the above DI checks for the first flight of the day)

Starting at the front of the aeroplane check:

- propeller bolts are secure.
- propeller is undamaged.
- spark plug caps are secure.
- exhaust is secure and there are no cracks in it.
- carburettor fuel bowl and fuel filter for water or other contamination.

Move down the left hand side of the aeroplane and check:

- wing struts' security, top and bottom.
- undercarriage, wheel and tyre undamaged, creep marks aligned.
- proper location of the left wing tip in its fittings.
- wing rib Velcros properly closed.
- aileron security and operation.
- fuel tank filler cap secure.

Continue down the left side of the aeroplane and check:

- tail empennage secure.
- elevator, elevator horn and control cables secure.
- rudder, rudder horn and rudder control cables secure.
- balance: if the aeroplane loading has been changed in any way since the DI, push down the tail, the aeroplane should balance with the tail skid between 50 and 250 mm off the ground.

Move up along the right hand side of the aeroplane and check:

- aileron security and operation.
- wing rib Velcros properly closed.
- proper location of the right wing tip in its castings.
- undercarriage, wheel and tyre undamaged, creep marks aligned.
- wing struts' security, top and bottom.
- nose wheel and nose wheel leg.

Inside the cockpit, check:

- controls for full and free operation.
- throttle free and closes properly.
- fuel tank(s) contents are adequate.
- fuel cock is ON.

1.4 ENGINE START

1.4.1 Engine Cold:

1. Ensure the fuel cock is turned ON. (It should normally be left in this position)
2. Check ignition is OFF.
3. Turn the engine over by pulling 4 or 5 times on the starter cord.
4. Turn the ignition ON, open the choke and close the throttle.

   NOTE - The Bing carburettor fitted to the Rotax 503 relies on the throttle being completely closed for the choke to operate. Opening the throttle even slightly will make cold starting difficult or impossible.

5. Check that the area in front of the aeroplane and within the propeller arc are clear. Shout "CLEAR PROP".
6. Pull the recoil starter firmly. Normally the engine will start within 3 or 4 pulls.
7. After the engine starts, leave it idling fast until it warms and begins to run "rough", then carefully close the choke and open the throttle gently. If the engine sounds as if it is going to cut, immediately shut the throttle and open the choke again.
8. Never leave the engine idling at very low speeds; the resulting vibration can cause accelerated wear to gearbox and airframe components.

1.4.2 Engine Hot

1. When restarting with the engine hot, turn the ignition ON, close the throttle and pull the recoil starter. The engine will normally start immediately.
2. If restarting after more than 15 minutes from engine stop, open the choke and follow the routine in 1.4.1 above.

NOTE: If the engine refuses to start when cold, first check that the throttles are not inadvertently slightly open; ensure that the throttle's Bowden cable outers are fully engaged in their sockets and the inners slack. Next examine the spark plugs; it may be necessary to clean, adjust or change them. If this does not cure the problem, refer to the engine manual.

1.5 TAXIING AND VITAL ACTIONS

You are now sitting in the cockpit; you have closed and secured the door and tightened your safety harness. The engine is warmed and running smoothly. Check that you can operate the controls fully and comfortably.

The AX3 front wheel control is conventional in operation - push the left pedal to go left, the right pedal to go right. Use the brake carefully and slow the aircraft down progressively. If you push too hard on the brake pedal, you risk locking the wheels or damaging the tyres. Always taxi slowly, raising the elevator to reduce the load on the front wheel. On very rough fields, taxi at a speed sufficient to lift the front wheel off the ground with the elevator. Steering with the rudder alone starts to be effective at 10 mph.

Prior to take-off, point the aeroplane into wind and check:

Full and free controls.
Fuel adequate.
Fuel cock turned ON.
Turn each of the ignition swithes off in turn and check that the engine runs smoothly.
Both ignition swithes ON.
Instruments set.
Harness(es) and doors secure.
Clear airspace.
Power checks: hold the brakes on as hard as possible and open the throttle until the aeroplane just starts to move.
Check there are no other aircraft in the circuit. If necessary turn through 360° to ensure a complete check.
If everything is in order, take off.

1.6 TAKE OFF

NOTE! It must be emphasized that the following instructions do not constitute a flying course and cannot take the place of sound professional tuition from a qualified flying instructor.

Make early flights in no more than moderate winds. Point into wind and progressively open the throttle fully. As the speed builds up, pull the stick back a little to reduce the load on the front wheel.

At 25 mph, pull back the stick, maintaining your heading using the rudder. At 28 to 30 mph the aircraft will lift off.

Maintain level flight for a few seconds to allow the speed to build up, and then climb positively at 45mph up to about 300 feet. The climb rate is around 500 fpm at maximum AUW. During the climb check that the maximum cylinder head temperature does not exceed 250 deg.C, 480 deg.F.

On reaching 300 ft., reduce the throttle setting but maintain 40 mph air speed; climb to your intended cruising height. Reduce the throttle setting further to maintain level flight at about 45 to 50 mph, the economic cruise speed.

(The maximum speed in turbulent air is 60 mph)

1.6.1 Power Failure on Take off

In case of loss of power or engine failure during the climb out up to 150 feet, immediately push the stick forward to maintain flying speed and try to land ahead. Any bank will result in an increased sink rate.

Keep the aeroplane pointing into wind to minimise the ground speed on landing, especially if the forced landing is anticipated in a rough field.

Try to relax, the AX3 glides very well without power, remains perfectly controllable and lands slowly. Try to maintain a speed in excess of 40 mph two up, and 35 mph solo. (Airspeed for minimum sink is 38mph).

1.6.2 Power Failure en-route

Re-trim the aircraft for minimum sink rate (38 mph) and seek out a suitable landing area. If there is sufficient time, try to establish the cause of the power failure. If it is not quickly apparent, concentrate on the landing. For maximum range in the glide, fly at a little higher speed than 38 mph. Turn off the fuel and ignition switches, ensure occupants' harnesses and helmets are secure, and if possible call a MAYDAY.

1.7 BANKED TURNS

Banked turns on the AX3 can be accomplished easily and control is positive. Both pitch and roll control are quite sensitive. At least initially, use small inputs until the effects of the controls are felt.

Maintain your banking attitude as long as necessary; then simply level the wings by returning the stick to the neutral position. Some adverse yaw will be experienced; this is readily corrected by proper use of the rudder.

To begin with, limit bank angles to no more than 10 deg. and remember that when banking your stall speed increases with the angle of bank.

eg. from 30 mph in horizontal flight, it rises to 42 mph in a 60 deg. bank.

Never forget that aerobatic manoeuvres in microlight aircraft are forbidden and dangerous.

1.8 FLIGHT IN TURBULENCE

While getting to know your AX3 do not fly in high or gusty winds. With experience, you will be able to fly in some turbulence, but learning is difficult and hazardous under these conditions and must be avoided.

The recommended maximum speed to fly in turbulence is 60 mph.

It is a mistake to attempt to correct all the disturbances experienced by the aeroplane. Due to its significant dihedral and wing sweep, the AX3 is very stable, and will return to straight and level automatically from most disturbances.

When flying in high winds, remember that wind gradient can induce stalls at low altitude when landing. The same risk is present when turning quickly out of a headwind into a tailwind - under these conditions, turn slowly and allow the speed to build up gradually.

Refrain from overbanking and fly steep turns at 45 mph or more.

1.9 THE STALL

A necessary part of becoming completely familiar with your machine is stall practice. The AX3 stalls gently and predictably under most conditions and shows little tendency to drop a wing.

Climb to a minimum of 1500 ft. and begin stall practice with the engine at idling speed. Carry out the necessary checks prior to stall exercises and head the aircraft into wind. Trim for a cruise speed of 45 mph.

1.9.1 Engine Idle Stalls: Slowly, but positively, bring back the stick to reduce the airspeed at a rate of around 1 to 2 mph per second. Keep the wings level.

At around 31 mph the nose will begin to sink gently. Open the throttle all the way and return the stick to the neutral position; the nose will drop through about 60° and the speed will build rapidly. The aircraft needs a maximum of 35 feet to recover from gentle stalls such as these. In a turning stall this may increase to 45 feet.

Beware of allowing excessive speed to build up in the recovery; as soon as flying speed is reached, return the aircraft to its normal cruise attitude, and drop the throttle back. Practice stalls and stall recovery with the aims of developing a true stall, then recovering flying speed with the minimum height loss.

1.9.2 Power on Stalls: At full power, the nose drop will be more severe, up to 70° and the sink rate will be higher. The maximum altitude loss should be 100 feet with a fully loaded aircraft; this will not be exceeded in a turning stall.

Pay particular attention to the speed build up on recovery with power on. A fairly fast response is often required immediately following the nose drop to minimise height loss. As soon as the nose starts to drop, return the stick to the neutral position, otherwise the speed will build rapidly. Ease back the stick to regain the normal attitude and reduce the throttle setting.

1.9.3 Asymmetric Stalls: The asymmetrical stall (one wing low) results in a greater loss of altitude. To recover, return the stick to neutral as described above and then lift the dropping wing with the rudder then aileron. If a severe bank has developed, requiring large aileron inputs, rudder will be required to compensate for the resulting adverse yaw. Avoid trying to lift the wing before the airspeed has built up.

1.10 FLIGHT AT HIGH SPEED

At speeds over 55 mph the aircraft has a tendency to climb. Apply a forward pressure on the stick to maintain level flight. Alternatively, retrim the aircraft for the new speed if sustained high speed flight is required. Flight at high speeds is not economical.

1.11 APPROACH AND LANDING

Choose a landing strip into wind whenever possible.

To start the descent, reduce the throttle setting and establish an airspeed of 45 mph. In windy conditions increase this approach speed to 50 mph. Set the trim accordingly.

Remember that you adjust the speed with the stick and the approach angle with the throttle. If it appears you are going to overshoot, reduce the power. If it appears you are going to undershoot, increase the power, but at all times maintain the proper approach speed with the stick.

Keep a safe height above the runway threshold; at the end of the approach, at a height of about 15 to 20 feet, cut the throttle to a fast idle, and then round out. To minimise the touch down speed, the aim normally should be to touch the ground just as the aircraft is beginning to stall. (In turbulent or windy conditions this method is unsafe and the aircraft should be flown on to the ground).

The principle of maintaining a safe height over the threshold and keeping a reserve of airspeed, is safer for landing on non-airport fields. It gives you the opportunity of avoiding last minute obstacles such as fences, wires, stones, ruts etc.

(The long flat approach, normally adopted by conventional aircraft should be reserved for landing at airports with clear and safe approaches and unobstructed fields)

After touchdown, keep pulling back on the stick until the front wheel touches the ground. In this way the high angle of attack will provide braking and the front wheel will be protected in the event of hitting a stone or rough ground.

NOTE: If you have any doubts about completing a safe landing, don't hesitate to overshoot and go round again.

1.12 CROSS WIND TAKE OFF AND LANDING

Never take off with more than 12 mph (10 KTS) of cross wind component until you have accumulated a lot of experience with your AX3.

On landing, crab on the approach and touch the ground first with the into-wind wheel; then straighten the aircraft placing the second wheel on the ground.

Bear in mind that because of its short rolling distance you will almost always be able to take off and land into a head wind. The stronger the wind, the shorter will be your rolling distance. In many cases it will be possible to strike a compromise between landing directly into wind and landing in line with a long roll out path. Never be too proud to land diagonally across a wide runway if this represents the safest option in a stiff crosswind.

1.13 FORCED LANDINGS

IMPORTANT: Never forget that all microlight aeroplanes are fitted with engines having lower reliability than conventional aircraft. For this reason it must be assumed that an engine failure can occur at any time.

* ALWAYS maintain sufficient altitude to give you the choice of a safe emergency landing field.

* NEVER fly over a congested area, a wood or water without climbing high enough to permit a safe landing outside the dangerous area.

* ALWAYS plan and update your emergency landing field on a cross country flight.

1.13.1 On Corn or other Crops: Maintain the lowest speed you can and stall the aircraft when the wheels touch the tops of the crop. The main hazard here is that of heavy retardation from the drag of the crop.

1.13.2 On Water: Take great care estimating your height over water, it is easy to be misled. Proceed as follows:

- If you have a radio, call a MAYDAY.
- Direct the aeroplane into wind if the wind is significant, if not, consider landing along the swell.
- Retain your helmet and cover your safety belt release button with your free hand.
- Unfasten the door.
- Clear away any articles which could impede your exit, eg. radio, map board, intercom.
- Prepare mentally for your landing, ie. have a clear idea about how you will exit the aircraft, try to determine the best direction to swim away - normally rearwards. Be prepared to swim downwards, if necessary, before surfacing. If you are carrying a passenger, make the plan clear to him too.
- Touch the water as slowly as you can, slightly nose up.
- Once in the water, don't panic, leave the aircraft and do not try to take anything with you.

The AX3 is made of strong and durable materials. It will most probably be salvageable even after immersion in salt water. (One AX3 has been recovered from a depth of 60 metres and still flies)

1.13.3 In Trees: If you have an option, choose to land in low and dense trees. Tighten your safety belt and helmet and maintain normal approach speed; the air is often turbulent over trees. Aim for gaps between trees to allow the wings to absorb the impact.

As soon as you hear the first leaves strike the aircraft, pull the stick all the way back to reduce speed to a minimum. Aim to descend as vertically as possible on to the trees.

1.14 PERFORMANCE

Weight to power ratio	7.8 kg/hp
Maximum static thrust	130 kg
Minimum flying speed	31 mph
Maximum speed, straight & level	75 mph
V_{NE} (never exceed speed)	90 mph
V_A (turbulent air safe speed) *	62 mph
V_C (cruise speed)	69 mph
V_S (stall speed)	31 mph
Max. climb rate	500 fpm
Min descent rate	400 fpm at 35 mph
Glide ratio, engine off	9 to 1 at 40 mph

Take off roll, no wind		60 m
T/O distance to clear 15 m obstacle		90 m
Landing roll, without brakes	90 m	
Ceiling		10,000 feet
Take off and landing cross wind limit	15 KTS	
Max roll rate, 45° to 45°		3.5 sec
Fuel consumption:		
at 55 mph		11 litres per hour
at 69 mph		15 litres per hour
at 75 mph		19 litres per hour

* V_A is also the maximum airspeed at which full control deflection is permitted.

1.15 WEIGHT AND BALANCE

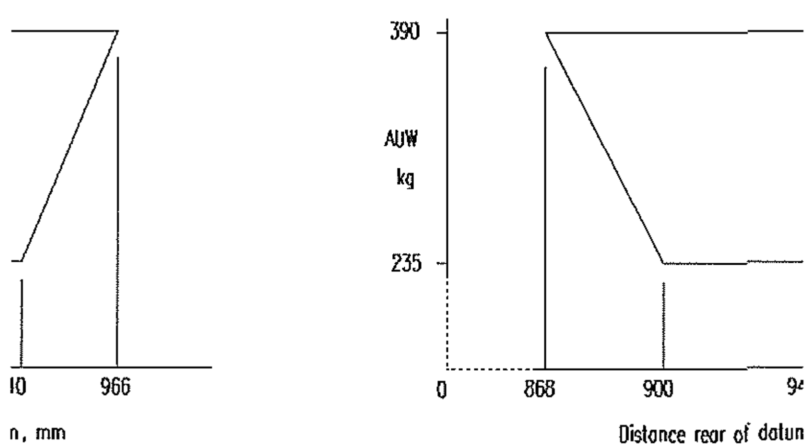
Dry empty weight	195 kg
Max. take off weight	390 kg
Max. payload (occupants + baggage)	195 kg

1.15.2 Centre of Gravity

The design of the aeroplane makes it impossible to displace the centre of gravity beyond safe limits provided that the maximum all up weight (AUW) of 390 kg is not exceeded and no heavy items are carried in the fuselage behind the fuel tanks or in the nose.

The C of G can be readily, if roughly, checked by depressing the tail to find the balance point. With the cockpit empty and the aircraft standing on level ground, push down the tail until the aeroplane just balances on its main wheels. The tail should then be between 50 mm and 250 mm off the ground. With one tank, 2/3 full, this balance point should be 150 mm off the ground.

The maximum authorised take off weight is 390 kgs. The centre of gravity datum is the leading edge wing root bolt on the keel. The permissible range of centre of gravity is shown below.



Iss.1

2. MAINTENANCE MANUAL

2.1 SYSTEMS DESCRIPTIONS AND MAINTENANCE

The systems and structure of the AX3 are simple and require only basic skills for their maintenance and repair. If a part of the aircraft is damaged, first inspect the area thoroughly for further consequential or concealed damage. Replace the item with a factory supplied part, where appropriate, and have the repair checked by an approved inspector. Record the repair in the aircraft's technical logbook.

Where you are unsure of your abilities to repair or maintain the AX3, refer to Cyclone Airsports Ltd. or an AX3 main dealer.

2.1.1 Elevator- the elevator is controlled by a simple push tube running from the base of the stick to a relay arm mounted on the keel. A second tube runs from this relay arm to the elevator horn. The push tube is split in this way to increase its strength under compression loads.

The rear tube is factory set by adjustment to the telescopic rear section of the tube; no adjustment should be made without reference to the manufacturer. Oil the elevator bearing sparingly with light oil as necessary. Replace the bearings when significant wear develops.

2.1.2 Ailerons- the ailerons are controlled by cables running from the stick base, around pulleys mounted on the keel, then forwards to connect to the aileron horns. It is important that these cables are set to the correct tension and they should be checked as follows. Apply a load of 1 kg to the mid-point of the cable between the pulley and the aileron horn; the deflection should be between 40 and 50 mm. No adjustment is available; if the tension is outside this range, refer to the manufacturer.

The ailerons' inner bearings only should be lubricated with light oil as necessary. Do not lubricate the plastic bearings attached to the trailing edge.

2.1.3 Rudder- cables run from the top of the pedals, pass under the seat support, and terminate on the rudder horn. IT IS ESSENTIAL THAT THESE CABLES ARE CROSSED.

Cable tension should be checked as follows: With the rudder locked central and the nose wheel clear of the ground, the rudder pedals must return to their neutral positions after a firm push. If significant play exists, it must be removed by adjustment of the steering rose joints. Equal adjustments must be made on each side.

The cable pulleys and pedals should be lubricated with WD40 or similar and the bearings with light oil. Replace the bearings when significant wear develops.

2.1.4 Fuel System- fuel is drawn from a dip tube suspended from the top of the tank and a filter is fitted on the lower end of this dip tube. (The tube is a single length from the tank filter to the first pump to minimise the risk of air ingestion). The filter should be cleaned by back flushing with petrol and replaced at the intervals defined in the Maintenance Schedule. Two pumps are used to ensure an adequate supply of fuel under worst case conditions.

2.1.5 Bowden cables- the control cables for throttle, choke, brakes and trim (where fitted) must be lubricated using only thin machine oil or WD40. The inner cable must be inspected carefully where it exits the outer termination and at its attachment points at each end. The inner cable must be replaced if a strand is broken.

2.1.6 Undercarriage- the main undercarriage legs are composite structure (fibreglass) and capable of absorbing landing and taxiing shocks. Each leg is fitted with a stop which restricts vertical movement of the wheel to around 50 mm from its static position. The stop consists of two telescoping tubes which can wear against one another, especially if rough ground taxiing is undertaken. Inspect the tubes at the intervals defined on the schedule and replace them when significant wear is observed.

The front wheel runs on a roller bearing; it should be dismantled, cleaned, and its roller bearing greased at the intervals defined. Check carefully for undue chafing of the plastic wheel material on which the bearing runs. When this gives rise to significant slack in the wheel, replace it. The main wheels run on ball races and the wheels should be removed, cleaned and checked for smooth running at the stated intervals.

The brakes are simple drum brakes whose shoes operate from a cam turned by the brake cables. This cam mechanism should be dismantled, cleaned and greased at the stated intervals. The bearing surfaces of the cam and shoe should be treated with an anti seize compound such as Copaslip.

Jacking points for the aircraft are beneath each brown polyurethane block on the composite undercarriage. Take care not to damage the composite axle legs during jacking operations.

2.1.7 Structure- The aircraft structure should be checked for cracks and corrosion at the intervals indicated on the schedule. Where the aircraft is exposed to a salty or otherwise corrosive atmosphere, the frequency of inspection should be increased. Fittings should be examined for security and wear at these intervals.

Forces should not be applied to the elevator, ailerons or fairing when moving the aircraft. The recommended handling points are the keel, wing struts' ends and axles.

2.1.8 Propeller- The AX3/503 uses a GSC 64" ground adjustable pitch propeller with machined aluminium alloy hub and wooden blades. The pitch should be set to 46" (17° angle measured on the flat under surface of the blade at 75% or 24" radius).

If the propeller is ever disassembled, the pitch must be correctly set on reassembly, or the Permit to Fly and Noise Certificate will be invalidated. A pitch indicator label is fixed to each blade, and should be used to check the propeller for correct adjustment. If the pitch indicator label ever becomes defaced, then the propeller must be returned to Cyclone Airsports for resetting and relabelling. The pitch indication label shows the blade angle at 75% radius.

With the propeller pitch correctly set, the engine should reach its correct rpm at full throttle. A check of full throttle enine rpm on the ground should be carried out at intervals. The engine speed will vary depending on the condition of the engine, and the atmospheric conditions prevailing at the time of test, but in any case must be between 6000 and 6400 rpm. If it is outside these limits, do not fly, but check the engine for faults and the propeller for correct pitch setting. If in doubt, consult Cyclone Airsports.

2.1.8.1 Propeller Mounting Configurations

There are two possible propeller mounting configurations depending on the type of flange fitted to the Rotax gearbox output shaft.

Configuration 1 - used when the propeller flange has 6 **threaded holes** tapped ¼" UNF and 6 threaded holes tapped M8. Six M8 torque studs (spiggots) are screwed into the M8 threaded holes in the flange, secured by Loctite.

The propeller is secured to the flange by six ¼" UNF bolts. These bolts require a 7/16" AF spanner. Tighten them in sequence, a little at a time, until the correct torque of 12 Nm (8.5 ft.lb) is reached, then check the torque of the 4 x ¼" bolts on the hub arms, 12 Nm (8.5 ft.lbs). Recheck the torque setting of the 6 prop. mounting bolts then, while holding the bolt heads with a spanner, fit and tighten the ¼" UNF Nyloc nuts on the protruding threads of the 6 bolts. Make sure that the bolt threads protrude through the Nyloc nuts by at least 1½ threads.

Configuration 2 - used when the propeller flange has six ¼" **clearance** holes and six threaded holes tapped M8. Six torque studs are screwed into the M8 threaded holes and secured with Loctite. The propeller is secured to the flange by 6 x ¼" UNF bolts with Nyloc nuts. The plain shanks of the bolts pass through the clearance holes in the flange; these bolts and nuts require a 7/16" AF spanner. Tighten these in sequence, little by little, by holding the nut with one spanner and tightening the bolt with a torque wrench. Tighten to 12 Nm (8.5 ft.lbs), then check the torque of the 4 x ¼" bolts on the hub arms (12Nm). Recheck the torque setting of the mounting bolts. Make sure that the bolt threads protrude through the Nyloc nuts by at least 1½ threads.

2.1.8.2 Inspection, Routine Maintenance and Repair

The propeller must be maintained in top condition to ensure correct performance and safety. Frequently check for cracks, splits and dents in the blades; the tip region is especially susceptible to dents and cracking of the leading edges.

Frequently check that both blades are set to the same (and correct) pitch, otherwise poor performance and severe vibration will result. Check the security of the propeller mounting bolts (6 off) every 10 hours using one of the methods below, depending on configuration. **DETERMINE THIS FIRST** as follows:

Slacken the 6 x ¼" Nyloc nuts behind the flange. If it is not possible, or very difficult, to rotate the 6 bolts clockwise, then you have a configuration 1 mounting with ¼" UNF tapped holes in the flange.

If it is possible to rotate the bolts freely, then you have a configuration 2 mounting, with ¼" through holes in the flange.

Configuration 1 - with the Nyloc nuts slackened, tighten the 6 bolts to 12 Nm (8.5 ft.lbs.), then hold each bolt head with a spanner and tighten the lock nut behind the flange. Finally check the torque of the 4 bolts on the hub arms 12 Nm (8.5 ft.lbs) **WARNING - Configuration 1 mounting cannot be checked by simply testing the tightness of the Nyloc nuts, they must be slackened first, the bolts tightened, then the nuts tightened on the flange.**

Configuration 2 - hold each Nyloc nut with a 7/16" AF spanner, and tighten the bolts, using a 7/16" socket and torque wrench, to 12 Nm (8.5 ft.lbs) Tighten the bolts little by little. Finally check the torque of the 4 bolts on the hub arms (12 Nm, 8.5 ft.lbs)

Propeller repairs should be limited to small dents. These should be filled with epoxy resin and sanded smooth. Revarnish with good quality polyurethane varnish and rebalance.

Fine balancing can be carried out with varnish at the propeller tips, or by using washers under the heads of the mounting bolts. If washers are used, check that the bolts still protrude 1½" through the Nyloc nuts.

Check propeller balance and tracking at least every 25 hours of operation, and immediately if the propeller is even slightly chipped or damaged. The propeller should be balanced to better than 1 gm metre. Tracking should be within _" at the tips. If in doubt, consult Cyclone Airsports.

2.2 MAINTENANCE SCHEDULE

Maintain the engine in accordance with the Rotax engine manual. Clean, adjust, check or replace items listed below on the aircraft at the **intervals** indicated. Spaces are left free at the bottom for you to add items which you find from experience require attention in your specific environment.

EVERY:	10 hrs	25 hrs	100 hrs	250 hrs	500 hrs
Propeller	clean	balance			
Engine					overhaul
Dacron covering (1)			inspect		replace
Stainless tangs					replace
Airframe bolts				check	
Bowden cables	lubricate	check			
Rudder cables		check		replace	
Aileron cables		check		replace	
Cable pulleys	lubricate	check			
Fuel lines			check		replace
Fuel filter		clean	replace		
Air filter		clean		replace	
Rivets in reinforcing sleeves			check		
Brake cables		adjust			
Brake mechanism		lubricate			
Nose wheel (2)	(note 3)	grease			
Main wheels		check	lubricate		
Suspension stops				check	
Control bearings		lubricate			
Structure				check	
Tyre pressure 15lbs	check				

(1) "Ultralam" requires no maintenance, clean as necessary.
(2) Pack nose wheel bearings with HMP grease.
(3) If long distance taxying is normal then grease every 10 hrs.

2.3 TRANSPORTING THE AX3

Wherever possible it is advisable to rig and de-rig on grass or soft surfaces to avoid scuffing the sail cover and scratching the tubes. Before commencing de-rigging, read and understand the whole procedure, then go back and follow the instructions step by step, some procedures will not make sense until later operations are covered.

Two situations have been considered:

2.3.1 Covering a short distance at towing speeds under 50 mph.

2.3.2 Covering longer distances at reasonable towing speeds.

2.3.1 DE-RIGGING - for short distance low speed towing.

For short distances the rudder, horizontal stabiliser and elevator can remain in place. All moving tail surface parts should be secured with ropes or bungees to prevent them from moving in transit. Within the cockpit, the stick should be tied firmly into the neutral elevator position. The pitch trim tab should be set to the neutral position. **WARNING** - when trailering be aware of the stabiliser's width.

If you are using a trailer that will transport the fuselage with assembled wings, and you wish to cover only a very short distance, then it may be possible to leave the ailerons in place, consult your trailer manufacturer. Soft packing to avoid abrasion at the wing support points is essential.

De-rigging can be accomplished by one person. To make single handed de-rigging easy a wing tip stand should be used, this can be a step ladder or a purpose made trestle. The following procedure assumes one person is carrying out the work, a helper will always be useful and will speed up the operation. Before commencing it may be handy to have a soft mallet, pin punch and a bag (not the wife) to hold the loose pins, safety rings and wing nuts.

1. Release the top centre wing cover attached by velcro, and likewise the lower centre wing cover from between the wings.

2. Remove the wing tensioning straps from the root battens of each wing. Disconnect the ASI pitot tube at the wing root, at the top of the jury strut and at the pitot head.

3. Remove the safety rings from the following fasteners:
   - a. Main wing strut connecting pins - 4 each strut.
   - b. Jury strut connecting pins - 2 each strut.
   - c. Aileron hinge wing nuts - 3 each aileron.
   - d. Aileron inner pivot pin - 1 each aileron.
   - e. Wing leading edge root pin - 1 each wing.
   - f. Wing trailing edge root pin - 1 each wing.

4. Reach into the access pocket in the top of the rear enclosure and disconnect the aileron

return cable from each aileron horn. The shackle with its pin and safety ring should be refitted to the end of the cable for safe keeping. The two ends of the return cable should be connected together to avoid losing it in transit.

5. Disconnect the aileron control cable from each aileron horn and refit the shackle to the cable. Leave the control cable ends dangling at this point.

6. From here on, work on one wing until it is detached from the aircraft. The aircraft is stable with only the weight of one wing attached, however if it is windy you should take the precaution of staking the main wheel axles down to prevent the attached wing from lifting. The doors need to be closed for the rest of the operation, however if you have trouble removing a trailing edge root pin when you come to it, it may be easier to work through the removable flap inside the rear of the cockpit, ensure that the door is closed again afterwards.

You may find it easier to remove pins with a pin punch and soft mallet, so have one at hand. If a pin is unduly tight then it is probable that a load is present that can be relieved by re-aligning the component **do not use more than a gentle tap with the mallet.** The order of working has been chosen to ensure that each pin being removed has been relieved of load, for this reason if you do find a tight pin, check your working order.

7. Remove the wing nuts from the 3 aileron hinges and, working from the wing tip, ease aileron away from the trailing edge. When the inner hinge has cleared the trailing edge, the aileron root pivot pin can be pulled clear of the root bracket. The pivot bearing is a bush that may be loose in the bracket, if it is at all loose, then remove it and place it on the aileron pivot pin and replace the safety ring. The three aileron hinge bolts should be tucked inside the velcro flaps provided in the fabric cover. Place the aileron in a safe place away from the immediate de-rigging area.

8. If you are removing the battens then do so at this stage, withdraw them slowly to avoid burning the fabric or the nylon batten ends, as you withdraw them, hold them away from the fabric over the trailing edge.

9. Remove the front jury strut lower connecting pin, angle the jury strut to allow the best access to the top connecting pin and remove it as well. Repeat with the rear jury strut. Place the jury struts in a safe place away from the immediate de-rigging area.

10. Support the wing tip with a trestle, or get a helper to assist (see note 1 below). Working at the top end of the front strut, remove the lower of the two strut connecting pins, rotate the stainless tang downwards until the top connecting pin head is clear of the leading edge and withdraw it. Be careful that you do not rotate the tang too far or it may tear the fabric. Once the joint has been disconnected the tang should be rotated back into the wing to avoid damage. Repeat this operation on the rear strut top connection. If you have no trestle or helper then see note 3 below.

11. At this point the wing struts are supported by their lower connections only and they are extremely vulnerable, be very careful not to walk into them. (See note 2 below). Support the weight of the front strut and remove both lower pins. Repeat with the rear strut. Note that you cannot remove the rear strut pins first if the pin heads are correctly placed towards the wind. Place

the struts in a safe place away from the immediate de-rigging area.

12. If you are using a helper, carry on with the next stage. If not then lower the wing tip onto a cardboard box or padded step about 30 centimetres high. If you are working on a hard surface then you should prepare a blanket on the floor. The blanket needs to be placed in a position to allow the wing tip to slide out to clear the fuselage when the trailing and leading edges have been released.

13. Remove the trailing edge root pin and gently lower the trailing edge until it is supported in the rear enclosure pocket. Remove the leading edge root pin and, still supporting the leading edge, ease yourself into position under the centre of the wing root. Lift the wing root until the trailing edge clears the rear enclosure, move the wing out clear of the fuselage and lower it to the floor.

14. Repeat the procedure with the other wing.

15. Place the two aileron control cable ends into the access pocket in the rear enclosure and close the pockets firmly on to the cables, this will keep them secure during transport.

16. To dismantle the wing if necessary: Turn the wing over (lower side up). Remove the wing nut attaching the internal brace wire to the trailing edge. Lift the trailing edge a few centimetres from the floor, remove the safety rings and pins from the trailing edge/compression strut connections, take a note of the position of the washers and brace wire tang.

17. Disconnect the tip tube from the trailing edge, note that the tip tube is not only located in a slot in the trailing edge tip casting, but is also inserted into a counter-bored hole within the slot. Remove the tip tube.

18. Carefully slide the trailing and leading edges out from within the cover, note that one of the compression struts and a brace wire have to be drawn through a hole in the fabric, be careful not to let it get caught up.

19. Fold the wing covers loosely, avoid hard crease lines and place them in the cockpit for transport.

20. The struts, jury struts, trailing edges and leading edges should be strapped together with plenty of protective padding, or stowed in a purpose made wing tube bag. The bag or bundle can be either: stowed on the car roof rack; stowed on the trailer wing rack or if plenty of padding is utilised it can be firmly strapped to the fuselage keel.

Rigging To rig the aircraft, simply reverse the above steps and follows these simple tips:

1. Spray the leading edges, trailing edges and battens with silicone before commencing.

2. Fit the battens after the wing is attached to the fuselage but before the tension straps are tightened. To engage the rear of the batten in its pocket, use a piece of tube or other implement through the cord in the batten to help push the batten forward. With a finger nail or blunt

screwdriver, lift one side of the batten pocket flap and slide the end of the batten under the flap. As you push the batten, be careful not to force it down onto the fabric covering the trailing edge, it is easy to damage and burn it.

3. Fit and apply tension to the eight tension straps (5 top and 3 lower) before attempting to fit the ailerons, it may be necessary to "tease" the wing covers along the trailing edge towards the root to expose the aileron hinge attachment holes in the trailing edge.

4. Before fitting the centre covers, give a little extra tension to the wing covers. Utilise a load binder strap temporarily fitted next to the tension strap, pull the covers together, then remove the slack in the tension strap. Do this in the following order (battens numbered 1 - 5 from the front):

a. Number 3 batten at the top centre cord position.

b. Number 2 batten.

c. Number 4 batten.

d. If creases still exist along the leading and trailing edges then very carefully tension battens numbers 1 & 5.

Warning - don't over do it, tremendous force can be applied with load binder straps. Battens 1 & 5 are particularly vulnerable due to their close proximity to the end of the pocket.

5. If you have removed the rudder cables then **ensure they are crossed** when you re-connect them.

6. When you fit the centre covers ensure that you leave the recoil rope on the outside.

7. Fit the aileron return cable (inside the rear enclosure) before you attach the main aileron control cables, this should save you having to release tension to make the last connection.

2.3.2 <u>DE-RIGGING</u> - for long distance reasonable speed towing.

1. If you find it necessary to remove the tail, procede as follows: Disconnect the rudder and pitch trim cables and stow them within the fuselage. Remove the two rudder safety rings, wing nuts and hinge pin bolts and place the rudder aside. Remove the elevator control rod from the elevator horn. Remove the safety ring, wing nut and bolt from the centre elevator bearing and the two safety rings, wing nuts and bolts from the aerial plate and stabiliser leading edge. Note that the elevator cannot easily be removed from the horizontal stabiliser, place the assembly aside.

2. The elevator and horizontal stabiliser can be carried in the cockpit, slightly fold them and slip them between the seats. Slide the rudder onto the seats and fix it there. You may find that with the tail surfaces in the cockpit, it will be easier to stow the wing covers in the tow vehicle.

WARNING - Check carefully that there is no chaffing between any of the parts and do not drive over 70 mph with the aircraft on the trailer. Microlights normally wear out faster from rigging, de-rigging and transit than they do from flying.

Note 1. A suitable trestle can be a step ladder, however be very careful to ensure that it is stable, well padded and cannot slip.

Note 2. The reason for removing the upper strut connections first is that with the wing in place the lower pins are extremely difficult to remove. Particularly so due to the policy of keeping pin heads to wind. By first relieving the load on the pins they can be easily removed without force.

Note 3. If no helper or trestle is available, then with care, the wing can be still be removed. The higher of each of the lower strut fixing pins should be removed. Note that the higher of the rear strut pins cannot be fully withdrawn at this stage, but it should be pushed out far enough to clear the stainless tang. With the wings still in position, these pins may be tight.
Follow the procedure in 10 until each strut is free at the top end and can be lowered to the floor with your foot, while supporting the wing on your head and shoulders. Without the ailerons or battens, the weight of the wing at the struts is not unduly heavy.

2.4 SPECIFICATION

2.4.1 Wings: D 65 SP aluminium alloy equivalent to 6062T6

- Leading edge	64 x 2mm
- Trailing edge	52 x 2mm locally sleeved.
- Compression struts	38 x 1.5 mm
- Wing drag bracing	Internal cables
- Wing tip	25 x 1.5 mm
- Wing struts	Streamlined extrusion, 74 x 28.4 mm by 1.5 mm
- Profile	Set by wing ribs, 19 x 1 mm
- Sail fabric	Ultralam 91-00, 155 gr/sq m

2.4.2 Ailerons

- Leading edge	35 x 1mm
- Trailing edge	19 x 1mm
- Profile	12 ribs, 10 x 1, pop riveted

2.4.3 Fuselage

- Fuselage boom	64 x 2 sleeved with 60 x 2 mm inserts.
- Seat	Bucket seat with head rest
- Front wheel	300 mm dia., steerable
- Main wheels	400 mm dia. wheels
- Brakes	Drum brakes on main wheels (optional)

2.4.4 Controls

- Rudder pedals	Linked to front wheel through connecting rods.
- Stick	Central, between legs, dual control.
- Throttle	Bowden cable operated, dual controls

2.4.5 Miscellaneous

- Bolts	Aircraft quality, metric sizes
- Tangs	Stainless steel, 3 mm thick

2.4.6 Structural Stress Limits

At 390kg all up weight	+ 4g - 2g (limit)
	+ 6g - 3g (ultimate)

2.4.7 Weights and Dimensions

- Dry empty weight	195 kg
- Max. take off weight	390 kg
- Max. safe payload (occupants + baggage)	195 kg
- Length	5.00 m
- Overall height	1.75 m
- Wing span	9.8 m
- Mean chord	1.68 m
- Wing surface	16.54 sq m
- Dihedral angle	1.75 deg.
- Wing sweep	28 deg.
- Wing twist	4 deg.
- Sub-fin surface	0.33 sq m
- Rudder surface	0.60 sq m
- Stabilisor surface	1.37sq m
- Elevator surface	0.87sq m
- Aspect Ratio	5.11
- Main wheels track	1.7 m
- Wheel base	1.32 m

2.4.8 Engine

Manufacturer	ROTAX
Type	503 2-V, Two cylinder, 2 stroke.
Cooling	Free air.
Power	52 HP at 6500 rpm
Capacity	496.7 cc
Fuel/oil mixture	2% (50:1)
Starter	Manual
Ignition	Dual ignition, electronic.
Carburation	2 BING, 36 mm carburettors.
Reduction gear	Gear box, with cush-drive.
Ratio	2.58 to 1
Fuel	Minimum MON 83 or RON 90 octane rating

For complete technical details of the engine and its running in and maintenance procedures, refer to the Rotax engine manual in Appendix A.

2.4.9 Propeller

Type	GSC, two blade, wood
Diameter	1.65 m (64")
Maximum speed	2600 rpm

2.4.10 Primary Structure

The structure carrying critical in flight loads consists of the wings' leading and trailing edge tubes, the wing struts, wing strut tie bar (beneath the seat) and the two (near vertical) tubes running from the tie bar ends to the keel. The tail empennage and keel must also be considered as elements of the primary structure.

2.4.11 Placards

The following placards are fitted to the aeroplane and should be maintained in a legible state:

PLACARD	LOCATION
Fuel capacity 28 litres	Side of fuel tank
Fuel - ON/OFF	Adjacent to fuel cock
Fuel pressure - Pump 1	Adjacent to fuel pressure gauge 1
Fuel pressure - Pump 2	Adjacent to fuel pressure gauge 2
Stall speed V_S 31 mph	Adjacent to ASI
Mags: 1 & 2	Mags' switch escutcheon plate
AX3 Empty weight 180kg } Max. Take-off weight 390kg } Max. cockpit load 195kg } Min. cockpit load 55kg } Never Exceed Speed V_{NE}90mph } Max. manoeuvring speed62mph } Aerobatics, inc. spinning, prohibited	Dashboard
Max. rpm 6800	Adjacent to tacho
Max. CHT 480°f	Adjacent to CHT gauge
Pitch trim - nose up - nose down	Elevator trim, back plate
Baggage 12.5 kg	Floor tube, left & right
Fuel MOGAS or UK AVGAS Petroil 50:1 only Capacity 28 litres	Adjacent to fuel tank filler

2.4.12 Control Travel

Elevator	27° up 23° down
Ailerons	24° up 24° down
Rudder	37° left & right

2.5 ACCESSORIES

The Cyclone range of accessories is constantly being expanded; ask your dealer for the latest list.

Cyclone Airsports Ltd. reserve the right to amend the design, specification and price without prior notice.

TITLE	AX3 AND AX2000 LIFT STRUT TANGS, BOLTS and MAIN AXIS CABLE
CLASSIFICATION	ADVISORY
COMPLIANCE	AT NEXT PERMIT RENEWAL
APPLICABILITY	AX3 AND AX2000, ALL VARIANTS

Introduction:

Service experience indicates the lift strut tangs are remaining in good condition at the required replacement interval whereas the bolts and pins connecting them are developing wear. Wear of the main axis cable has also been noted in heavily used training aircraft.

Action:

Lift Strut Tangs:
The component replacement life for AX3 and AX2000 lift strut tangs is extended to 750 hours.

At 750 hours, it is possible to further extend the life by 1/3, ie.e a further 250 hours by means of a recognised NDI inspection for fatigue cracks, distortion, wear or corrosion. The life extension must be signed off by a BMAA inspector in the technical log. The NDI examination can be repeated every 250hours thereafter.

Any findings of fatigue cracking or other damage must be reported to us.

Lift Strut Bolts:
The bolts and pins joining the tangs to the structure are subject to wear, removal of plating and corrosion. They must be removed and inspected according to the maintenance schedule, i.e. every 250 hours, and replaced if worn or corroded.

Main Axis Cable:

The main axis 4mm cable tends to wear against the attachment points at each end of the main beam. The cable must be inspected closely for broken strands in these areas every 250 hours. Lubrication with Coppaslip or similar will prolong the life.
It is recommended to renew the main axis cable every 2000 landings or 1000 hours, whichever comes first.

ISSUED BY W.G. Brooks **DATE 21/3/02**

Chief Engineer		Date
Production Manager		Date

Sales Director		Date
Managing Director		Date

Pegasus Aviation, Elm Tree Park, Manton, Marlborough, Wiltshire SN8 1PS, UK
Telephone: +44 (0)1672 861578 Fax: +44 (0)1672 861550
E Mail: technical@pegasusaviation.co.uk Website: www.pegasusaviation.co.uk

PEGASUS AVIATION

Service Bulletin Ref. AX 2016, Issue 1

ISSUE DATE: 19 August 1998

TITLE: AX2000/AX3 rudder bolt lifing

APPLICABILITY: All AX3's and AX2000's

CLASSIFICATION: THIS SERVICE BULLETIN HAS BEEN CLASSIFIED AS MANDATORY BY CAA

COMPLIANCE: AX3 < 1000 hours: inspection before further flight: AX3 > 1000 hours: replace parts before further flight. AX2000: Before further flight

---

INTRODUCTION

One of the two bolts adjoining the vertical rudder bracket on an AX3 with approximately 1500 hours has been found to be broken. As the bolt has been determined to have failed due to fatigue, the components now have a specified life of 1000 hours.

ACTION

AX3: Aircraft with more than 1000 hours. The bolts must be changed before further flight, with additional saddle washers and plain washers inserted as in the Figure on the following page.

Aircraft with less than 1000 hours. Inspect the bolts before next flight. Damaged bolts must be replaced immediately, inserting the additional saddle washers and plain washers. In all cases the bolts must be replaced no later than 1000 hours.

Order part numbers: 2 X Bolt FBM6-70

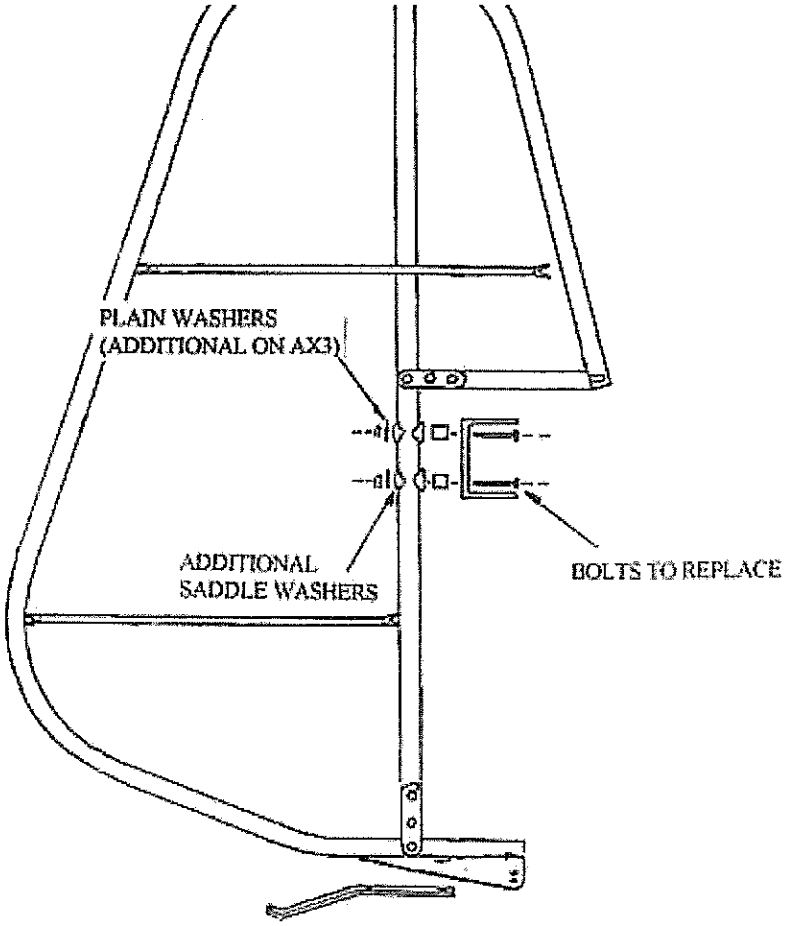
2 X Saddle washer PMS-6-001

2 X Plain washer FW4-T4

2 X Nut FNM6-NT

AX2000

All AX2000 aircraft require the bolts to be changed before further flight (the replacement bolts are a different length). When replacing the bolts insert additional saddle washers as in the Figure on the following page. The correct replacement parts for AX2000's are supplied with this bulletin.



Compliance with this service bulletin must be recorded in the technical log for the aircraft.

ISSUED BY: L. Beale	**DATE:** 19 Aug 1998

©Pegasus Aviation, Elm Tree Park, Manton, Marlborough, Wiltshire, SN8 1PS ENGLAND, UK.
Tel. + 44 (0)1672 861578 FAX. + 44 (0)1672 861550 E-Mail:
info@pegasusaviation.co.uk