AIRCRAFT OPERATING INSTRUCTIONS
Light Sport Aircraft

EDGE XT 912 L - STREAK 3 L MICROLIGHT
EDGE XT 912 L - CRUZE MICROLIGHT
EDGE XT 912 L - MERLIN MICROLIGHT
EDGE XT 912 L - SST MICROLIGHT
EDGE XT 912 L - ARROW MICROLIGHT

Approved:

Delegate of *A*irBorne WindSports Pty Ltd

Date: 31st May 2012

Serial No. Base	**XT-912-**
Serial No. Wing	
Registration No.	

This manual is compliant with the ASTM designation f2457 – 05 Standard Specification for Required Product Information To Be Provided With Weight-Shift-Control Aircraft.

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Part # 107605

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AIRCRAFT OPERATING INSTRUCTIONS - DETAILS

Issued By	
Date	
For AirBorne WindSports Pty. Ltd.	

Table 1 Section 0. Aircraft Operating Instructions - Details

MANDATORY SERVICE BULLETINS

AS THE SERVICE HISTORY OF THE AIRFRAME EVOLVES AIRBORNE WILL FROM TIME TO TIME ISSUE MANDATORY SERVICE BULLETINS, WHICH DETAIL ANY CHANGES TO THE MAINTENANCE MANUALS, AIRCRAFT OPERATING INSTRUCTIONS, OR ANY OTHER DETAILS THAT AIRBORNE DEEMS NECESSARY FOR OWNERS TO BE NOTIFIED OF.
THE WEB ADDRESS FOR SERVICE BULLETINS IS:
HTTP://WWW.AIRBORNE.COM.AU/
IT IS THE RESPONSIBILITY OF THE OPERATOR TO KEEP UP TO DATE WITH ANY ROTAX DIRECTIVES THROUGH THE ROTAX WEBSITE.

DATA PACKAGE

This Aircraft Operating Instructions constitutes one part of the complete data package that accompanies the aircraft. Following is a list of each of the components, which are required.

• **Aircraft Operating Instructions**	+
• **XT 912 Maintenance Manual**	
• **XT 912 Illustrated Parts Catalogue**	
• **Wing Maintenance Manual**	
• **Wing Illustrated Parts Catalogue**	
• **Rotax Owners Manual**	
• **Rotax Maintenance (Compact Disk)**	
• **Radio Manual – If Installed**	
• **BRS Parachute Manual – If Installed**	

Table 2 Section 0. XT 912 Data Package

Certification documentation is held by the aircraft manufacturer,
Contact Information:

Airborne WindSports Pty Ltd
PO Box 7042 Redhead
NSW Australia 2290

Telephone +61 2 49449199
Web address: airborne.com.au

Or for recovery of the certification documentation, should the above contact not be available, contact the Civil Aviation Safety Authority of Australia.

Website
http://www.casa.gov.au/

AMENDMENT RECORD SHEET

Amendment Date	Affected Sections	Affected Pages	Date Inserted	Signature

Table 3 Section 0. Amendment Record Sheet

Manuals will be revised from time to time and re-issue of amended pages will be achieved by sending the pages to the current owner registered on Airborne's database. Amendments will also be available on the Airborne website (http://www.airborne.com.au/). The amended pages should be printed and the prior page replaced in the manuals folder as soon as possible. The amendment table should at that time be updated with the appropriate details and date.

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1 GENERAL

The Aircraft Operating Instructions (AOI) has various sections to comply with the ASTM standard. The General Aviation Manufacturers Association (GAMA) format has been adopted and used where applicable for this weight shift controlled microlight.

The AOI contains information for the XT 912 base coupled with either the Streak 3, Cruze, Merlin, SST or Arrow wings. All relevant information is supplied for either configuration, but please note that unless otherwise shown, data for the SST and Arrow wings is as per the Streak 3. The operator must ensure that the correct data is referenced for the particular wing base combination.

1.1 Introduction

This microlight series has been designed and manufactured in accordance with the ASTM designation 2317-04 Standard Specification for Design of Weight-Shift-Control Aircraft.

As an Australian Company, we are proud of our range of microlight aircraft. Our microlights have been developed to provide the economy and durability required to meet the exacting demands of our Australian conditions.

The success of our microlights is based upon a high standard of product quality, innovative design engineering and exceptional standards of reliability and performance that have been established since 1983.

Regular maintenance is required to keep your microlight in a safe condition. Detailed maintenance requirements are outlined in the wing and base maintenance manuals. Please reference these manuals to ensure your microlight is maintained correctly.

In the USA, the FAA registers and administers Light Sport Aircraft.

The AirBorne Team has developed from the long-standing friendship of a group of enthusiasts who share conviction in the intrinsic advantages of weight shift controlled aircraft. The AirBorne Team is confident your new microlight will provide you with many years of enjoyable flying, and we wish you and your family safe and happy flying for the future. The operating procedures outlined in this handbook are the result of AirBorne's knowledge and experience gained since 1983.

NOTE

AirBorne data packages will be revised from time to time. It is therefore important that owners promptly notify Airborne of any changes to their contact details. Owners registered on AirBorne's database will be notified of any changes to data and directed to the AirBorne web site (http://www.airborne.com.au/) for the applicable pages. The amended pages should be printed and the replacement pages inserted in the folder as soon as possible. The amendment table should at that time be updated with the appropriate details and date. Revised pages will be sent by mail if requested from AirBorne WindSports, the contact details are at the front of this manual.

1.1.1 Warning Notice

WARNING

OPERATIONS OUTSIDE THE RECOMMENDED FLIGHT ENVELOPE SUCH AS AEROBATIC MANOEUVRES OR ERRATIC PILOT TECHNIQUE MAY ULTIMATELY PRODUCE EQUIPMENT FAILURE RESULTING IN PERSONAL INJURY OR DEATH. YOU ARE REFERRED TO THE OPERATING LIMITATIONS IN SECTION 2 OF THIS MANUAL.

WARNING

THERE ARE INHERENT RISKS IN THE PARTICIPATION IN RECREATIONAL AVIATION AIRCRAFT. OPERATORS AND PASSENGERS OF RECREATIONAL AVIATION AIRCRAFT, BY PARTICIPATION, ACCEPT THE RISKS INHERENT IN SUCH PARTICIPATION OF WHICH THE ORDINARY PRUDENT PERSON IS OR SHOULD BE AWARE. PILOTS AND PASSENGERS HAVE A DUTY TO EXERCISE GOOD JUDGMENT AND ACT IN A RESPONSIBLE MANNER WHILE USING THE AIRCRAFT AND TO OBEY ALL ORAL OR WRITTEN WARNINGS, OR BOTH, PRIOR TO AND DURING USE OF THE AIRCRAFT.
THE OWNER AND OPERATOR MUST UNDERSTAND THAT DUE TO INHERENT RISK INVOLVED IN FLYING A MICROLIGHT/ULTRALIGHT/TRIKE/POWERED HANG GLIDER, NO WARRANTY IS MADE OR IMPLIED, OF ANY KIND, AGAINST ACCIDENTS, BODILY INJURY OR DEATH OTHER THAN THOSE, WHICH CANNOT BY LAW BE EXCLUDED.
THE SAFE OPERATION OF THIS AIRCRAFT RESTS WITH YOU, THE PILOT.
WE BELIEVE THAT IN ORDER TO FLY SAFELY YOU MUST MATURELY PRACTICE AIRMANSHIP.
THE SETTING UP AND BREAKING DOWN OF A MICROLIGHT/ULTRALIGHT/TRIKE/POWERED HANG GLIDER, TRANSPORTATION AND FLYING WILL HAVE AN EFFECT OVER TIME ON ITS STRUCTURAL INTEGRITY.
THE AIRCRAFT WILL REQUIRE MAINTENANCE AS OUTLINED IN THE APPLICABLE MAINTENANCE MANUALS.
LIKE ANY AIRCRAFT, SAFETY DEPENDS ON A COMBINATION OF CAREFUL MAINTENANCE AND YOUR ABILITY TO FLY INTELLIGENTLY AND CONSERVATIVELY.
WE HOPE THAT YOUR AIRCRAFT WILL PROVIDE YOU WITH MANY HOURS OF SAFE AND ENJOYABLE FLYING.

1.1.2 Definitions

Definitions used in the Aircraft Operating Instructions such as **WARNING, CAUTION** and **NOTE** are employed in the following context.

WARNING

OPERATING PROCEDURES, TECHNIQUES, ETC. WHICH IF NOT FOLLOWED CORRECTLY, MAY RESULT IN PERSONAL INJURY OR DEATH.

CAUTION

OPERATING PROCEDURES, TECHNIQUES, ETC. WHICH IF NOT STRICTLY OBSERVED, MAY RESULT IN DAMAGE TO THE AIRCRAFT OR ITS INSTALLED EQUIPMENT

NOTE

Operating procedures, techniques, etc. which it is considered essential to highlight.

1.2 General Description

1.1.3 Two View Photos

(XT 912 Streak shown in photographs)

Figure 1 Section 1. Aircraft Front View

Figure 2 Section 1. Aircraft Side View

1.1.4 General Dimensions

1.1.4.1 XT 912 / Streak

DIMENSIONS	Australian	European	USA
Wing Span	9.97 m	9.97 m	32.7 ft
Wing Area	13.5 sq m	13.5 sq m	146 sq ft
Aspect Ratio		7.4	
Wing Weight	50 kg	50 kg	110 lbs
Overall Height (Control Bar Fwd)	3.65 m	3.65 m	11.9 ft
Trike Width	1.91 m	1.91 m	6.3 ft
Trike Length	2.8 m	2.8 m	9.2 ft
Wheel Track	1.7 m	1.7 m	5.6 ft
Wheel Base	1.89 m	1.89 m	6.2 ft
Trike Height	2.53 m	2.53 m	8.3 ft
Cockpit Width	0.7 m	0.7 m	2.3 ft
Wing (Packed) Length	5.6 m	5.6 m	18.4 ft
Wing Length (Short Packed)	4.2 m	4.2 m	13.8 ft

Table 1 Section 1. General Dimensions Streak 3

1.1.4.2 XT 912 / SST

DIMENSIONS	Australian	European	USA
Wing Span	9.97 m	9.97 m	32.7 ft
Wing Area	13.5 sq m	13.5 sq m	146 sq ft
Aspect Ratio		7.4	
Wing Weight	58 kg	58 kg	128 lbs
Overall Height (Control Bar Fwd)	3.07 m	3.07 m	10.1 ft
Trike Width	1.91 m	1.91 m	6.3 ft
Trike Length	2.8 m	2.8 m	9.2 ft
Wheel Track	1.7 m	1.7 m	5.6 ft
Wheel Base	1.89 m	1.89 m	6.2 ft
Trike Height	2.53 m	2.53 m	8.3 ft
Cockpit Width	0.7 m	0.7 m	2.3 ft
Wing (Packed) Length	5.6 m	5.6 m	18.4 ft
Wing Length (Short Packed)	4.2 m	4.2 m	13.8 ft

Table 2 Section 1 General Dimensions SST

1.1.4.3 XT 912 / Cruze

DIMENSIONS	Australian	European	USA
Wing Span	9.97 m	9.97 m	32.7 ft
Wing Area	14.4 sq m	14.4 sq m	155 sq ft
Aspect Ratio		6.9	
Wing Weight	51 kg	51 kg	112 lbs
Overall Height (Control Bar Fwd)	3.65 m	3.65 m	11.9 ft
Trike Width	1.91 m	1.91 m	6.3 ft
Trike Length	2.8 m	2.8 m	9.2 ft
Wheel Track	1.7 m	1.7 m	5.6 ft
Wheel Base	1.89 m	1.89 m	6.2 ft
Trike Height	2.53 m	2.53 m	8.3 ft
Cockpit Width	0.7 m	0.7 m	2.3 ft
Wing (Packed) Length	5.6 m	5.6 m	18.4 ft
Wing Length (Short Packed)	4.2 m	4.2 m	13.8 ft

Table 3 Section 1 General Dimensions Cruze

1.1.4.4 XT 912 / Merlin

DIMENSIONS	Australian	European	USA
Wing Span	9.97 m	9.97 m	32.7 ft
Wing Area	13.4 sq m	13.4 sq m	145 sq ft
Aspect Ratio		7.4	
Wing Weight	49 kg	49 kg	108 lbs
Overall Height (Control Bar Fwd)	3.65 m	3.65 m	11.9 ft
Trike Width	1.91 m	1.91 m	6.3 ft
Trike Length	2.8 m	2.8 m	9.2 ft
Wheel Track	1.7 m	1.7 m	5.6 ft
Wheel Base	1.89 m	1.89 m	6.2 ft
Trike Height	2.53 m	2.53 m	8.3 ft
Cockpit Width	0.7 m	0.7 m	2.3 ft
Wing (Packed) Length	5.6 m	5.6 m	18.4 ft
Wing Length (Short Packed)	4.2 m	4.2 m	13.8 ft

Table 4 Section 1 General Dimensions Merlin

1.1.4.5 XT 912 / ARROW

DIMENSIONS	Australian	European	USA
Wing Span	9.46 m	9. 46 m	31.0 ft
Wing Area	12.9 sq m	12.9 sq m	139 sq ft
Aspect Ratio		6.9	
Wing Weight	57 kg	57 kg	126 lbs
Overall Height (Control Bar Fwd)	3.07 m	3.07 m	10.1 ft
Trike Width	1.91 m	1.91 m	6.3 ft
Trike Length	2.8 m	2.8 m	9.2 ft
Wheel Track	1.7 m	1.7 m	5.6 ft
Wheel Base	1.89 m	1.89 m	6.2 ft
Trike Height	2.53 m	2.53 m	8.3 ft
Cockpit Width	0.7 m	0.7 m	2.3 ft
Wing (Packed) Length	5.3 m	5.3 m	17.4 ft
Wing Length (Short Packed)	4.2 m	4.2 m	13.8 ft

Table 5 Section 1 General Dimensions Arrow

1.1.4.6 XT 912 Outback

DIMENSIONS	Australian	European	USA
Trike Length	2.73 m	2.73 m	9.0 ft
Height Trike Base (propeller)	1.63 m	1.63 m	5.3 ft
Height Minimum Trike Base	1.30 m	1.30 m	51.2 ft

Table 6 Section 1 General Dimensions XT 912 Outback

1.1.5 General Description

1.1.5.1 Base

Tourer Model

The XT 912 trike base is a two seat (in line) weight shift controlled aircraft. A Rotax 912 four-stroke engine producing 80 HP powers the base. The layout is typical of this class of two seat trike design, with the pilot passenger "pod" being suspended by a triangular frame, hinged from the mast head about the pitch and roll axes, to provide for weight shift control.

The full XT cockpit has a windscreen for improved wind deflection and is cut away at the sides to allow for easier pilot access. The wide rear 6-inch wheels remain a feature of the XT base but the wheel pants/spats have been redesigned and include integrated aerodynamic fins to improve base yaw stability.

Tundra Model

The XT Tundra version has a cockpit with the inclusion of the larger Tundra tyres. The tundra version allows the comfort of the cockpit design with the added advantage of unprepared ground landing ability. Larger rear wheel spats are included to improve base yaw stability at higher speeds

Outback Model

The XT Outback has a spacious instrument housing with windscreen for the comfort of the pilot. The reduced lateral area of the instrument housing and windscreen with the absence of cockpit allows the use of large open wheels with no fins and tundra tyres for use on unprepared ground.

1.1.5.2 Wings

The Streak 3, Cruze, Merlin, SST and Arrow wings are the result of continued refinement of AirBorne trike wings. The wings are fairly typical of an established class of swept, tapered, flexible fabric wings with a relatively high aspect ratio.

Both the Streak and Cruze sail have several cloth and velcro shear ribs, which combined with an excellent sail "fit" producing a wing that has light handling with impressive "feel" in turbulence. The batten ends are a unique design, which can be adjusted to vary tension for tuning the wing. The batten mechanism allows easy installation and removal of the battens. An airfoiled aluminium section is used for the down tubes and king post. Clever engineering features fittings that look smart and are positioned to achieve minimum drag.

The Merlin wing is a state of the art open cross bar design that has been designed to have an unprecedented combination of stability in turbulence and manoeuvrability at low speeds. The Merlin retains many of the features of the Streak Cruze series wings, with further emphasis on simplicity.

The SST reflects the requests of customers to develop a "topless" wing, that is, a wing without a kingpost and top rigging. The SST is based on the Streak 3 and so has similar features but has the benefits of being able to fit in more confined hangars, and improved handling and speed ranges due to less drag.

The Arrow is based on the Streak SST wing, but with span decreased by 0.6m, and root reduced by 0.2m. Stall speeds are similar to its big brother, while the smaller span provides a very nimble feel with quicker roll rate and excellent stability. Further sail and airfoil refinements have yielded an even greater speed range whilst retaining impressive slow speed performance. The Arrow is also our first microlight wing to utilise Mylar for the complete top surface. Its smooth finish increases the wing's flying efficiency and helps keep the wing clean as a side benefit.

1.1.5.3 XT 912 Streak

The XT 912 combined with the Streak 3 wing has proven to be an excellent combination. The total fuel capacity is 70 litres and combined with the Rotax 912 delivering a smooth 80 HP, allows long cross-country flights. The combination produces a very stable microlight, which is perfectly suited to cross country flying.

1.1.5.4 XT 912 Cruze

The Cruze wing was developed as an intermediate wing with lower stall speed and lower top speed. Additional sail area has been added to the tip of the wing with a reduction in the sail luff curve. The result of the XT 912 coupled with the Cruze is a very stable wing with a "softer" feel than that of the Streak wing. The Cruze wing is a good all round wing with lower top speed than the Streak 3. The stall speed is also lower with shorter take off and landing distance required.

1.1.5.5 XT 912 Merlin

The Merlin wing was developed to expand the low speed performance capability of the XT microlight. At high wing loadings, the take off, landing and stall speed performance is improved over that of the Cruze wing, however at lighter wing loadings, the Merlin truly excels.

The Merlin is a superb slow speed wing, with wide speed range, a lower top speed than the Cruze wing and maintains cross-country flying capability. The slow speed allows for landing the Tundra and Outback version trikes on soft sandy terrain or unprepared landing fields. The Merlin wing is ideal for aerotowing hang gliders or towing advertising banners.

The Merlin has a high camber sail with higher aspect ratio and reduced sail area in comparison to the Cruze. It is a highly manoeuvrable wing with a slow, gentle stall. The Merlin has a steady feel in turbulent air, expanding the range of conditions that it is comfortable to fly in.

1.1.5.6 XT 912 SST

The SST wing is a high performance flex wing, which utilises struts to react the negative flight and landing loads imposed on the wing airframe. Removal of the king post and associated top rigging results in a significant decrease in drag, which improves cruise performance and reduces fuel consumption.

The SST matched with the XT 912 will appeal to the pilot who likes a cleaner, lower profile look to their aircraft. Handling is improved and speed ranges are increased.

As the strutted wing has no king post and therefore no reflex bridles, pitch stability is achieved by using wire braced washout struts or sprogs. The sprogs are contained within the sail further assisting in drag reduction. The sprogs only become active at low angles of attack. The rear of the sprog tubes act upwards on transverse battens, which serve to keep the trailing edge of the sail raised, maintaining washout and therefore pitch stability.

The SST retains all of the great handling characteristics of the Airborne wing range. The performance benefit of the strutted version; with the added advantage of a sleek looking wing with low hanger ability makes the XT912 SST aircraft a good choice for the discerning cross-country pilot.

1.1.5.7 XT 912 Arrow

Smaller than the SST, but with increased handling and performance, the Arrow is our second strutted wing. Undersurface shaping developed for our high-performance hang gliders has been used on the Arrow that allows the undersurface to blow-down producing a "tear drop" airfoil at the tips when high speeds are reached. The change in airfoil shape reduces tip mean camber, which moves the lift distribution inboard, improving roll and pitch stability. The benefit is a comfortable feel with easy handling in turbulence at all speeds. Compared to the SST, slower landing speeds in turbulence can be achieved because of the wing's increased authority, and decreased susceptibility to turbulence, which contributes to shorter landing rolls in rougher air.

Coupled with the XT 912 we have an aircraft with a cruise speed of 75 knots at the same rpm as for the XT 912 SST, this is an effective increase in cruise speed and a decrease in fuel consumption, further extending the cross-country range of the XT 912. The XT 912 Arrow stands 2.53m high, only 130mm taller than a Jabiru, but only 2.8m long, making it very convenient for hangarage.

1.2 Symbols Abbreviations and Terminology

In this handbook:

"AOI" means Aircraft Operating Instructions

"Airfield Pressure Altitude or QNE" means the altitude of the airfield as indicated on an altimeter with the subscale adjusted to 1013.2 millibars or hectopascals.

"AUW" (**A**ll **U**p **W**eight) means the weight of the aircraft including occupants, fuel quantity, engine fluids, and removable and disposable equipment.

"CG" means the Centre of Gravity.

"Empty Weight" Refer to the note at Section 6.2 for the defined empty weight.

"FAA" United Stated Federal Aviation Administration

"fpm" means feet per minute.

"HGFA" means the Hang Gliding Federation of Australia.

"KCAS" means Knots Calibrated Airspeed

"KIAS" means Knots Indicated Airspeed as displayed on the cockpit mounted airspeed indicator.

"kg" means weight in kilograms.

"Landing Approach Speed" means the airspeed that allows control in turbulence, wind gradient or sudden engine failure during landing.

"Manoeuvring Speed" means the indicated airspeed above which the pilot may not make full or abrupt control movements.

"QNH" – means the pressure setting, that if set on the subscale of a sensitive altimeter, will cause the altimeter to indicate the correct local altitude above mean sea level.

"RAA" means the Recreational Aviation Australia.

"Stall Speed" means the indicated airspeed at which an uncontrolled downward pitching motion of the aircraft occurs or the forward control bar limit is reached.

"Take Off Safety Speed" means the airspeed that allows control in turbulence, wind gradient or sudden engine failure during the climb following take-off.

"Trim Speed" means the indicated airspeed at which the aircraft remains in a stabilised condition without pilot input.

"V_a" means the aircraft stall speed.

"V_a" means the aircraft stall maximum rough air speed.

"V_d" means the aircraft design diving speed.

"V_h" means maximum level speed.

"V_{NE}" means the indicated airspeed that the aircraft is never to exceed.

1.3 Use of metric / imperial units

This AOI uses the metric unit system as the basic system of measurement. Where common usage or available instrumentation refer to the Imperial system both units are quoted. The following conversion factors are presented as a ready reference to the conversion factors that have been used in this manual.

1 Pound (lb)	=	0.4536 Kilogram (kg)
1 Pound per sq inch (psi)	=	6.895 Kilopascal (kPa)
1 Inch (in)	=	25.4 Millimetres (mm)
1 Foot (ft)	=	0.3048 Metre (m)
1 Statute mile	=	1.609 Kilometres (km)
1 Nautical mile (NM)	=	1.852 Kilometres (km)
1 Millibar (mb)	=	1 Hectopascal (hPa)
1 Millibar (mb)	=	0.1 Kilopascal (kPa)
1 Imperial gallon	=	4.546 Litres (l)
1 US gallon	=	3.785 Litres (l)
1 US quart	=	0.946 Litre (l)
1 Cubic foot (ft^3)	=	28.317 Litres (l)
1 Degree Fahrenheit (F)	=	(1.8 X C)+32
1 Inch Pound (in lb)	=	0.113 Newton Metres (Nm)
1 Foot Pound (ft lb)	=	1.356 Newton Metres (Nm)

Table 7 Section 1 Metric/Imperial Conversion Factors

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LIMITATIONS

2 LIMITATIONS

2.1 General

The limitations section of this AOI outlines the various operating limitations, instrument function and placards necessary for the safe operation of this aircraft, engine and standard equipment.

2.2 Airspeed Limitations

2.2.0.1 XT 912 Streak 3, XT 912 SST, XT 912 Arrow

Speed	KIAS	KCAS	Comments
Never Exceed Speed (V_{ne})	85 knots	74 knots	Do not exceed this speed in any operation
Maximum Manoeuvring Speed (V_a)	80 knots	70 knots	Do not make full or abrupt control movements above this speed

Table 1 Section 2 Streak 3, SST, Arrow Airspeed Limitations

2.2.0.2 XT 912 Cruze

Speed	KIAS	KCAS	Comments
Never Exceed Speed (V_{ne})	73 knots	65 knots	Do not exceed this speed in any operation
Maximum Manoeuvring Speed (V_a)	73 knots	65 knots	Limited by Vne *

Table 2 Section 2 Cruze Airspeed Limitations

2.2.0.3 XT 912 Merlin

Speed	KIAS	KCAS	Comments
Never Exceed Speed (V_{ne})	66 knots	59 knots	Do not exceed this speed in any operation
Maximum Manoeuvring Speed (V_a)	66 knots	59 knots	Limited by Vne *

Table 3 Section 2 Merlin Airspeed Limitations

*V_{ne} is limited by the maximum speed capable of being demonstrated in a dive, this results in a V_{ne} less than the nominal V_a for nominal 4g loading. It is difficult to attain speeds high enough to reach 4g loadings in smooth air in these aircraft.

2.3 Airspeed Indicator markings

The standard pressure airspeed indicator on the left side of the dash has multiple red radial markings indicating V_{ne} for the wing base combinations. The pilot should be aware of the combination of wing and base and be familiar with the appropriate V_{ne} marking.

2.4 Power Plant Limitations

2.4.1 Engine

Manufacturer: Rotax Bombardier

Model: Rotax 912 UL (4 Stroke)

Gearbox ratio: 2.43 : 1

2.4.2 Engine Limitations

ENGINE LIMITATIONS	Metric		Imperial	
ENGINE SPEED				
Take Off (Max 5 mins)	5800	rpm	5800	rpm
Maximum Continuous	5500	rpm	5500	rpm
PERFORMANCE				
Take -off Performance	59.6	kW	80	hp
Maximum Continuous Performance	58	kW	78	hp
OIL PRESSURE				
Max (Allowable for short period at cold start)	7	bar	102	psi
Minimum (Below 3500 rpm)	0.8	bar	12	psi
Normal (Above 3500 rpm)	2.0 - 5.0	bar	29 - 73	psi
OIL TEMPERATURE				
Maximum	140	deg C	285	deg F
Minimum (Note 1)	50	deg C	120	deg F
Normal Operating Temperature	90 -110	deg C	190-230	deg F
CYLINDER HEAD TEMPERATURE				
Maximum	150	deg C	300	deg F
EXHAUST GAS TEMPERATURE				
Maximum at Max TO power	880	Deg C	1620	deg F
Maximum at Max Continuous Power	850	Deg C	1560	deg F
Normal Temperature	800	Deg C	1472	deg F
AMBIENT START & OPERATING TEMPERATURE				
Maximum	47	deg C	116	deg F
Minimum	-25	deg C	13	deg F
Maximum at Max Continuous Power	800	Deg C	1472	deg F

Table 4 Section 2 Engine Limitations

NOTE

Minimum oil temperature of 50 deg C should be reached before take off. Operate for 2 min at 2000 rpm continue at 2500 rpm until minimum temperature is reached.

2.4.3 Fuel Grades

FUEL	
Preferred Fuel Type	En228 Premium/Regular. Super grade gasoline, lead free, min RON 90
Optional Fuel Type	AVGAS (see note)

Table 5 Section 2 Fuel Specification

NOTE
Due to higher lead content in AVGAS, the wear of the valve seats and deposits in the combustion chamber will increase. Therefore, use AVGAS only if you encounter problems with vapour lock or if the other fuel type is not available.

Use of AVGAS requires higher frequency maintenance intervals. Refer to the maintenance manual.

Refer to section 2.6.7 for fuel capacities and limitations

2.4.4 Lubricating Oil

The 912 UL engine has an external sump, and the entire system is standard to the Rotax 912 engine. The oil specification is given in the Rotax Operators Manual, Section 10.2.3, Lubricants. In general use only synthetic or semi synthetic oil, API classification “SF” or “SG” or later quality oils. Multigrade is recommended. These oil types are detergent types.

Oil Capacity: 3 litres maximum, 2 litres minimum, consumption 0.06 litres/hr maximum.

Two oils, which are recommended by the Rotax Service instruction 18, UL 97 for use with both Avgas and unleaded fuels are:

SHELL, Advance VSX 4, APISG, SAE 15W-50

VALVOLINE, Dura Blend Synthetic, APISJ, SAE 10W-40

2.4.5 Cooling System

WARNING
DO NOT OPEN THE COOLING SYSTEM WHEN THE ENGINE IS HOT. SEVERE SCALDING AND OTHER INJURIES MAY RESULT.

Water-cooling system capacity is 2.5 litres. See maintenance manual for further details.

Coolant Specification
A MANDATORY Rotax Directive was issued on the 25th of November 2004, which requires a change in the type of coolant that must be used with the Rotax 912 type engine. From the 23rd Feb 2005 the new coolant Evans NPG+ waterless coolant is to be used. The reason for the change is “In some instances conventional coolant (mixture ratio of 50% water and 50% antifreeze) can vaporize or boil before the maximum permissible cylinder head temperature is reached.” Rotax Service bulletin SB-912-043, pg # 1.

Earlier Airborne trikes have had a silicate free type, high quality and long life antifreeze coolant (which is red), Airborne Part Number 106644, installed in the radiator. This coolant must be changed to the newly recommended coolant.
The directive requires that the new coolant be used, and a sticker be placed on the coolant cap, which prohibits the use of water in the coolant system.

The coolant should be replaced according to the Rotax maintenance manual, current issue. Please refer to the directive, which is available from the Rotax website: SB-912-043, September 04.

WARNING

WATER OR WATER CONTAINING COOLANT MUST NOT BE ADDED IN ANY CASE TO THE COOLING SYSTEM WITH THE NEW EVANS NPG+ COOLANT.

Field service Instructions:
"If EVANS NPG+ coolant is not locally available, temporarily top off the system with propylene glycol antifreeze and be sure not to add water. Within 15 days the temporary coolant should be completely drained and the system refilled with EVANS NPG+ coolant." Rotax SB-912-043, Pg # 5.

2.4.6 Propeller

The XT propeller is a carbon fibre composite, three bladed propeller.

Two alternate propeller/hub assemblies are available on the aircraft.

Bolly

Blade Description: BOS 3 , 68 X 58 SL 3B

Hub/Engine Type: BOS 3, to suit Rotax 912

True Propeller size: 66" (1676mm)

Warp Drive

Blade Description: Warp Drive 68 INCH, 3 blades

Hub/Engine Type: HPL-R 914 Pattern

True Propeller size: 67.7" (1720mm)

The maximum propeller speed of 2387 RPM has been determined by test. The maximum propeller speed occurs when the engine RPM reaches 5800 RPM. Pitch settings can be found in section 61.10.20 of the maintenance manual

2.4.7 Engine Instrument Markings

The GX 2 instrument has preset alarm limit thresholds. If any of these temperature or pressure limitations are reached the red light on the instrument panel will start to flash. Limitations can be found in section 2.4.

2.5 Weight Limits

	Metric	Imperial
Max take off weight	450 kg	992 lb
Typical empty weight *	223 kg	492 lb
Maximum empty weight *	265 kg	584 lb
Permitted range of pilot weights (Front seat)	55-100 kg	121-220 lb
(Rear seat)	0-100 kg	0-220 lb
Total maximum crew weight	200 kg	440 lb
Maximum under seat storage load per bag	2kg	4 lb

Table 6 Section 2 Weight Limits

* Includes 3 litres (2kg) unusable fuel. Wing option will vary empty weight. Empty weight is defined in section 6.2.

2.6 Operational Limits

2.6.1 Centre of Gravity limits

Centre of gravity limits are not critical on the base of a flex wing microlight. Having the trike unit attached to the wing from a single universal bracket, variations of cockpit loading and fuel loading cannot influence the aircraft's balance. The Edge XT is therefore not critical in regards to centre of gravity although the distribution of load in the trike base has a minor affect on the in-flight attitude of the trike base.

Base Suspension Range (Measured from the line joining the leading edge nose bolts to the suspension point.)	**Dimension (Imperial)**	**Dimension (Metric)**
ARROW WING	49.01 inch +/- 0.8	1245 mm +/- 20mm
SST WING	49.80 inch +/- 0.8	1265 mm +/- 20mm
STREAK III / CRUZE WING	48.6 inch +/- 0.8	1235 mm +/- 20mm
MERLIN WING	50.2 inch +0.98 / - 0.8	1275 mm +25/ -20mm

Streak, Cruze middle U-bracket hole only.
Merlin rear U-Bracket permitted for aerotow MTOW

Table 7 Section 2 Centre of Gravity Limits

NOTE

The rear hole on the wing suspension bracket on the Streak and Cruze wing has been blanked off so that it cannot be used. Using the rear hole was found to show non-compliance to the minimum required trim speed of 1.3 V_s.

2.6.2 Manoeuvring Limits

All aerobatic manoeuvres including spinning are prohibited.

Aerobatic manoeuvres including whipstalls, stalled spiral descents and negative "G" manoeuvres are not permitted. It must be emphasised that a whipstall, spiral descent or negative G manoeuvre can never be conducted safely. These manoeuvres put the aircraft outside the pilots control and put both the aircraft and its occupants in extreme danger.

Do not pitch nose up or nose down more than 45 degrees from the horizontal. The front support tube of the trike and the pilot's chest limits the fore and aft movement of the control bar respectively.

2.6.3 Bank Angle

Do not exceed 60 degrees of bank angle. In roll there is no stop for the control movement. For the purpose of pre-flight freedom, check by lowering each wing to within 10 cm off the ground (on ground level).

2.6.4 Flight Load Factor Limits

Max positive manoeuvring load factor	4.0 G
Negative load factors	Prohibited
Load factors below 1.0 G	To be avoided

Table 8 Section 2 Flight Load Factor Limits

2.6.5 Flight Crew Limits
Minimum flight crew is 1 person (front seat).

2.6.6 Kinds of Operation Limits
The aircraft is only to be flown under visual flight rules (VFR), and the minimum equipment required to operate under VFR conditions are an air speed indicator, altimeter and instruments required by the engine manufacturer.

In Australia, when operated at a public aerodrome or on a cross-country flight, a compass and reliable timepiece are required. Additional equipment may be required for some overseas operations.

2.6.7 Fuel Limitations

Maximum Usable Fuel	67 litre	17.7 US Gal
Unusable Fuel capacity	3 litre	0.8 US Gal
Sump Capacity	500 ml	0.13 US Gal

Table 9 Section 2 Fuel Limitations

CAUTION

SIGHT GAUGE 10 LITRE GRADUATIONS INDICATE TOTAL FUEL, NOT USABLE FUEL. ZERO USABLE FUEL IS INDICATED WHEN THE FUEL IS LEVEL WITH THE BOTTOM OF THE SIGHT GAUGE

2.6.8 Maximum Passenger Seating Limits
One passenger maximum allowed.

2.6.9 Minimum Pilot Weight
The microlight aircraft must only be flown solo from the front seat**.** Minimum pilot weight flown solo shall not be below 55 kg. Maximum power at minimum TOW can cause an abrupt climb rate that, if uncorrected, may cause a wing attitude of greater than the placarded maximum of 45 degrees. Approximately 2/3 of maximum take off power is considered comfortable for a minimum weight takeoff. Take-off distance will be extended at reduced power.

2.6.10 Other Limitations

Maximum Cross Wind	14 mph plus gust	12 knots plus gust	22 km/hr plus gust
Maximum Wind Strength	23 mph plus gust	20 knots plus gust	37 km/hr plus gust
Maximum Ambient Operating Temperature	116 deg F	47 deg C	

Table 10 Section 2 Other Limitations

NOTE

A maximum gust factor of 5 – 10 knots is nominated to cover the range of expected pilot experience and skill. Less experienced pilots should use the lower limits.

The skill of the pilot and the “quality” of the wind must be taken into account when assessing conditions for flight, for example, a new pilot with minimal exposure to thermic and/or gusty conditions may find flight conditions more appropriate in smooth consistent light breezes with little to no gust; while a pilot with many hours experience of flying in rough conditions may assess conditions of moderate winds with varying gust to be within his and the aircraft’s abilities.

No person who is untrained or unqualified in weight shift controlled flight or, who is unfamiliar with the wing and base combination, should ever attempt to pilot the aircraft unless under professional instruction.

CAUTION

MOISTURE ON THE WING CAN INCREASE STALL SPEED AND SHOULD BE REMOVED PRIOR TO TAKE OFF.

The effect of light rain on the aircraft can increase the stall speed. It is extremely important to maintain speeds in excess of the take off and landing safety speeds when the wing is wet. If the aircraft has been left out in the rain or heavy dew it is necessary to wipe the wing down prior to take off. It is also recommended that the aircraft be flown solo first to ensure all excess moisture is removed. A chamois or sponge is recommended to remove the water.

Continued operation in heavy rain is not recommended due to the abrasive effect of raindrops on the propeller. Do not use waterproofing agents on the wing as the consequent beading of water droplets can significantly increase the stall speed.

2.7 Placards

The placards on the aircraft are designed to provide information regarding general aircraft limitations and other details for the safe operation of the aircraft. Listed on the following pages are details of the placards fitted to the aircraft.

2.7.1 Flight Limitations Placard

62mm

ENGINE LIMITATIONS ROTAX 912 UL	ENGINE RPM	MAX EGT
5 MINUTES MAX	5800 rpm	880 Deg C
CONTINUOUS	5500 rpm	850 Deg C
	MIN	MAX
OIL PRESSURE	0.8 bar	7 bar
OIL TEMPERATURE	50 Deg C	140 Deg C
CYLINDER HEAD TEMP		150 Deg C
FUEL TANK CAPACITY		70 Litres
USEABLE FUEL		67 Litres

LOADING LIMITATIONS - SEE AIRCRAFT OPERATING INSTRUCTIONS SECT 6.3.3 FOR FUEL LOAD LIMITATIONS.

EMPTY WEIGHT		
MAX TAKEOFF WEIGHT		450kg
	MIN	MAX
WEIGHT OF OCCUPANTS	55kg	200kg

FLY SOLO FROM FRONT SEAT ONLY

72mm

PART No.107599

62mm

ENGINE LIMITATIONS ROTAX 912 UL	ENGINE RPM	MAX EGT
5 MINUTES MAX	5800 rpm	1620 Deg F
CONTINUOUS	5500 rpm	1560 Deg F
	MIN	MAX
OIL PRESSURE	12 psi	102 psi
OIL TEMPERATURE	120 Deg F	285 Deg F
CYLINDER HEAD TEMP		300 Deg F
FUEL TANK CAPACITY		18.5 USGal
USEABLE FUEL		17.7 USGal

LOADING LIMITATIONS - SEE AIRCRAFT OPERATING INSTRUCTIONS SECT 6.3.4 FOR FUEL LOAD LIMITATIONS.

EMPTY WEIGHT		
MAX TAKEOFF WEIGHT		992lbs
	MIN	MAX
WEIGHT OF OCCUPANTS	121lbs	440lbs

FLY SOLO FROM FRONT SEAT ONLY

72mm

PART No.107600

62mm

AIRBORNE WINDSPORTS Pty. Ltd.
Newcastle. NSW. Australia
www.airborne.com.au

AIRCRAFT TYPE EDGE XT

FLIGHT LIMITATIONS

DO NOT PITCH NOSE DOWN OR NOSE UP MORE THAN 45 DEGREES FROM HORIZONTAL.
DO NOT EXCEED 60 DEGREES OF BANK.
NO NEGATIVE G.
NO AEROBATIC MANOEUVRES.
NO INTENTIONAL SPINS.
NO WHIPSTALLS.
NO STALLED SPIRAL DESCENTS.
APPROVED FOR DAY VISUAL METEOROLOGICAL CONDITIONS ONLY.

WARNINGS

NO SMOKING.
ALWAYS PREFLIGHT AIRCRAFT.
ENSURE MAST LOCKED IN POSITION BEFORE STARTING ENGINE.
OPERATE IN ACCORDANCE WITH LIMITATIONS AND PROCEDURES DETAILED IN THE AIRCRAFT OPERATING INSTRUCTIONS.

72mm

PART No.107596

Location	The flight limitation placards are located on the dash either side of the mast brace. Engine limitations placard option of metric 107599 or imperial 107600
Series	Edge XT Series

Table 11 Section 2. Flight Limitations Placards

2.7.2 Dash Placard Locations

Figure 1 Section 2. Flight Limitations, Airspeed, Circuit Breaker, Power Socket and Operators Handbook Placard Locations

2.7.3 Aircraft Operating Instructions Placard applicable for LSA

110mm

20mm

THE AIRCRAFT OPERATING INSTRUCTIONS SHALL BE CARRIED WITH THE AIRCRAFT. OCCUPANTS MUST BE FAMILIAR WITH INFORMATION NECESSARY FOR SAFE OPERATION.

PART No.107592

110mm

20mm

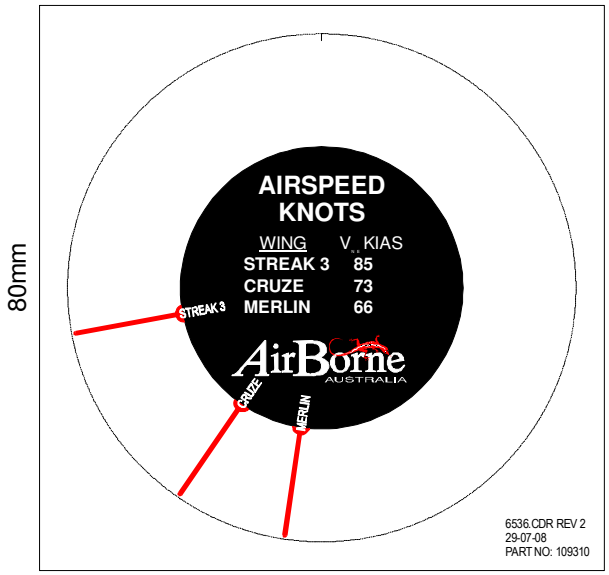
THIS AIRCRAFT WAS MANUFACTURED IN ACCORDANCE WITH THE LIGHT SPORT AIRCRAFT AIRWORTHINESS STANDARDS AND DOES NOT CONFORM TO STANDARD CATEGORY AIRWORTHINESS REQUIREMENTS.

PART No.109519 PLACARD LSA WARNING AUSTRALIA

Location	The hand book placard 107592 is located on the trike dash below the GX2 Instrument. The airworthiness placard 109519 is used on Australian LSA and is located located below the ignition switch
Series	Edge XT Series

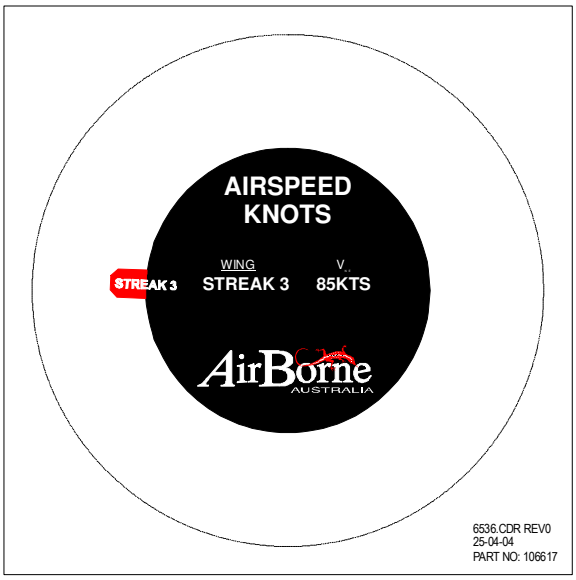
Table 12 Section 2. Hand Book and Airworthiness Placard

2.7.4 Wing V_{ne} ASI Placard



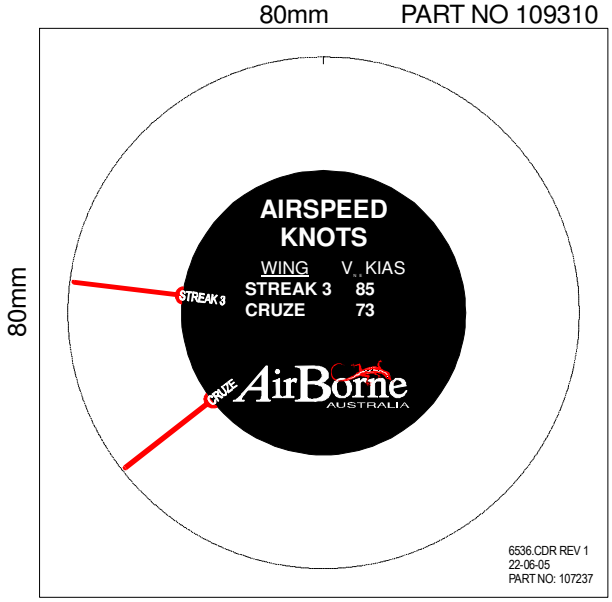
80mm

80mm PART NO 109310



80mm

80mm PART NO 106617



80mm

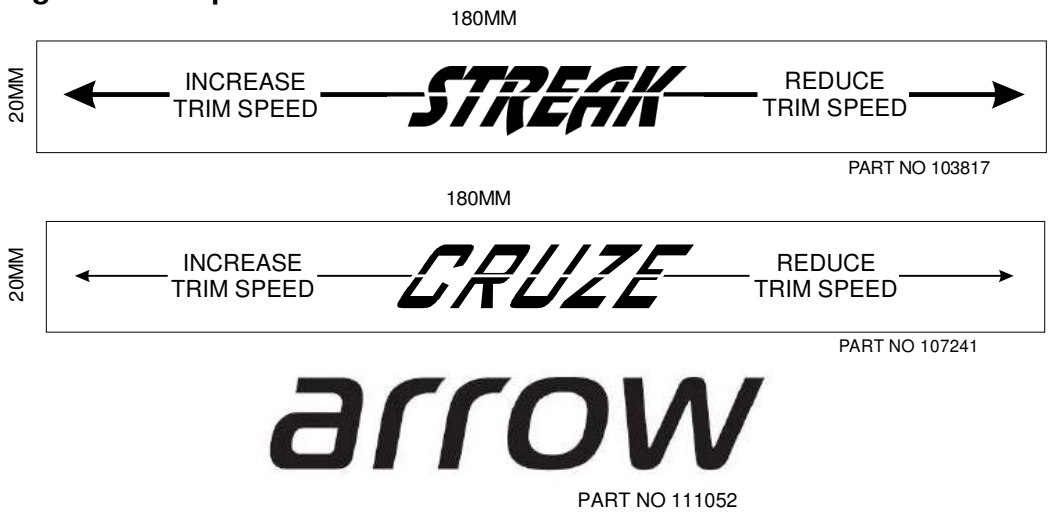
80mm PART NO 107237

PART NO 111050

Location	The V_{ne} Placard is located on the air speed indicator on the left side of dash. Part no 106617 and 107237 are early issue parts suitable for use with the wings identified on the respective placards.
Series	Edge XT Series

Table 13 Section 2. Wing Vne ASI Placard

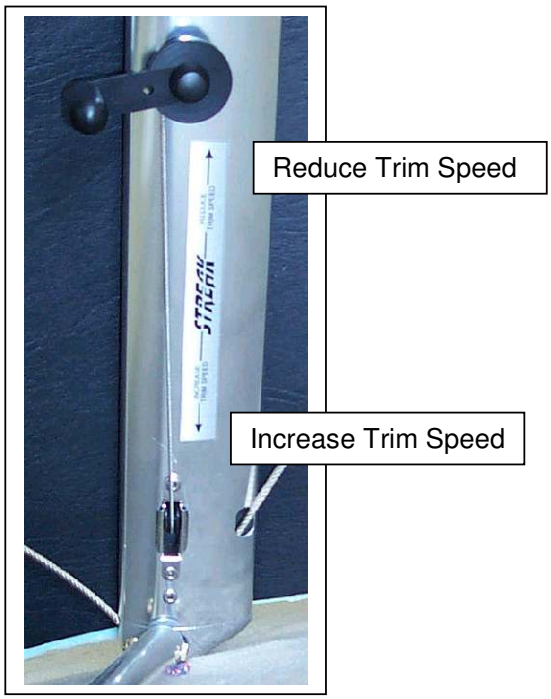
2.7.5 Wing Trimmer Operation Placard



Location	The wing trimmer operation placard is located on the right side control frame down tube adjacent to the trimmer knob. The placard is installed so that the "Increase trim speed" arrow faces downward on the down tube. Arrow label is placed on top of the STREAK placard as an interim measure.
Series	Streak 3 / SST and Cruze

Table 14 Section 2. Wing Trimmer Operation Placard

2.7.6 Trimmer Placard Location



NOTE
Ensure that the Placard is the correct orientation, as shown by the text boxes beside the photograph (Streak placard shown in photo).

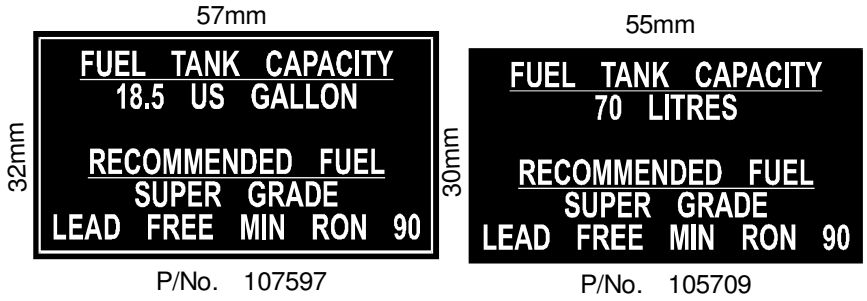
Figure 2 Section 2. Trimmer Placard Location

2.7.7 Placard Basebar Arrow

Figure 3 Section 2. Basebar Placard

The basebar placard is positioned in the center of the basebar, oriented so the pilot can easily see them when the wing is assembled.

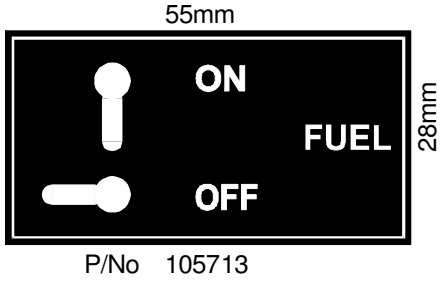
Fuel Capacity Placard



Location	The fuel capacity placard is located on the right side shock absorber. Metric or imperial placard required
Series	Edge XT Series

Table 15 Section 2. Fuel Capacity Placard

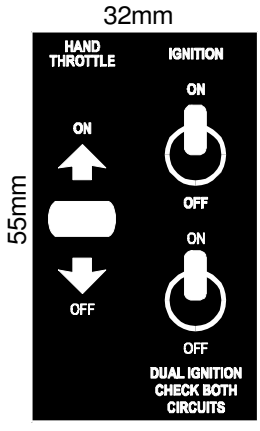
2.7.8 Fuel Tap Placard



Location	The fuel tap placard is adjacent to the fuel tap on seat mast block on the left side of the aircraft.
Series	Edge XT Series

Table 16 Section 2. Fuel Tap Placard

2.7.9 Hand Throttle and Ignition Placard



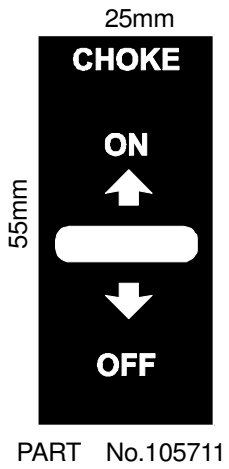
Location	The hand throttle placard is located on the right side seat frame adjacent to the hand throttle lever.
Series	Edge XT Series

Table 17 Section 2. Hand Throttle and Ignition Placard

2.7.10 Pilots Right Seat frame Placard

Figure 4 Section 2. Hand Throttle and Ignition Placard

2.7.11 Choke Placard



Location	The hand choke placard is located on the left side seat frame adjacent to the hand choke lever.
Series	Edge XT Series

Table 18 Section 2. Choke Placard

2.7.12 Mast Block Placard Locations

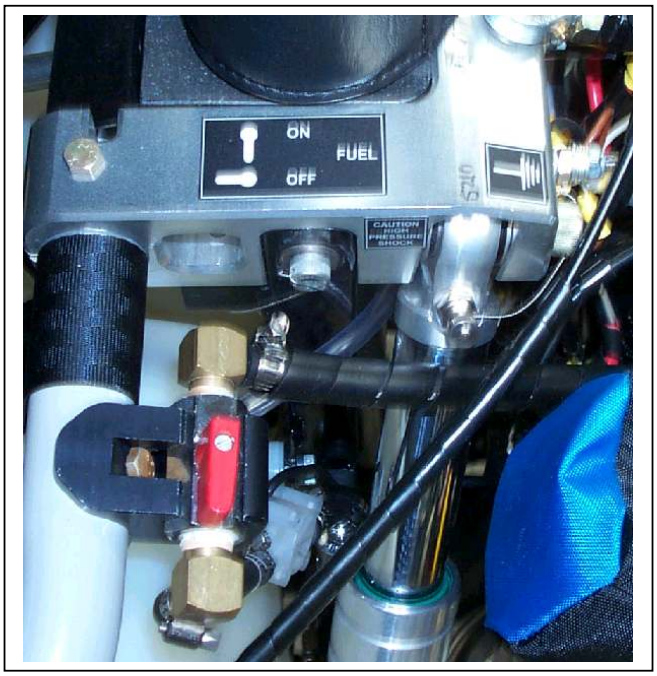
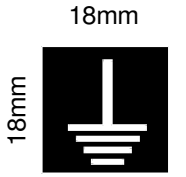


Figure 5 Section 2. Fuel Tap, Shock Absorber Pressure and Earth Placard Locations

2.7.13 Pilots Left Seat frame Placards

Figure 6 Section 2. Choke Placard Location (Under Seat Bag Placard in Background)

2.7.14 Earth Placard

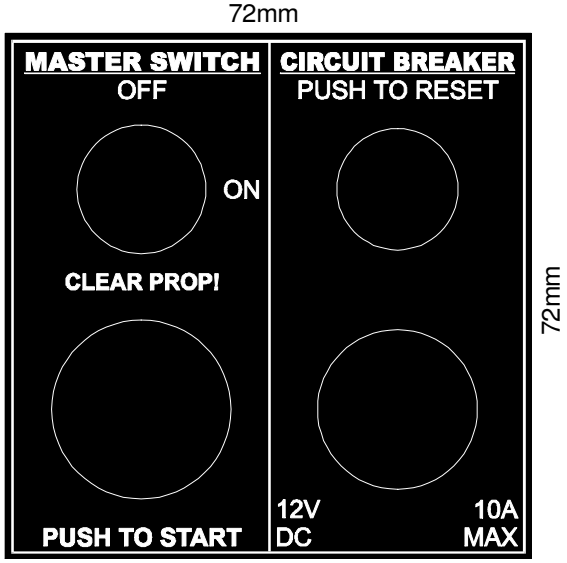


P/No. 105710

Location	The engine earth placard is located on the rear of the seat mast block on the left side
Series	Edge XT Series

Table 19 Section 2. Earth Placard

2.7.15 Circuit Breaker and Power Socket Placard



P/No. 105715

Location	The master switch / circuit breaker placard is located on the right side dash.
Series	Edge XT Series

Table 20 Section 2. Circuit Breaker and Power Socket Placard

2.7.16 Oil Tank Capacity Placard

P/No. 107598

P/No. 106648

Location	The oil tank capacity placard is located on the oil tank on the left side below the engine. Metric or imperial placard required.
Series	Edge XT 912 Series

Table 21 Section 2. Tank Oil Capacity Placard

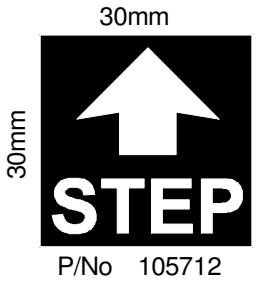
2.7.17 No Step Placard

P/No. 105718

Location	The “no step” placards are located on the floor of the cockpit, either side of the base tube.
Series	Edge XT Series

Table 22 Section 2. No Step Placard

2.7.18 Step Placard



Location	The step placard is on the trike base tube at the hinge point for the rear foot rest
Series	Edge XT Series

Table 23 Section 2. Step Placard

2.7.19 Step and No Step Placards

Figure 7 Section 2. Step and No Step Placards

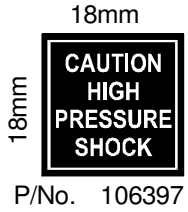
NOTE
There is a symmetrical No Step Placard on the other side of the Pod.

2.7.20 Clear Prop Placard

Location	The clear prop placard is located on the right and left side compression struts
Series	Edge XT Series

Table 24 Section 2. Clear Prop Placard

2.7.21 Shock Absorber Pressure Placard



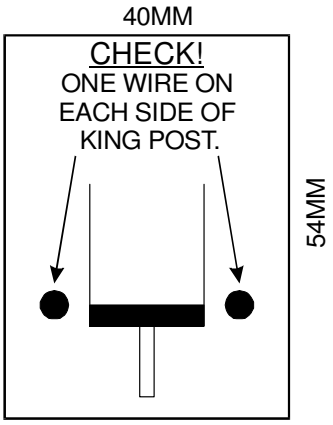
Location	The shock placard is located on the main block near the top of the shock
Series	Edge XT Series

Table 25 Section 2. Shock Absorber Pressure Placard

2.7.22 Right Hand Suspension Strut Placards

Figure 8 Section 2. Clear Prop and Fuel Spec Placards

2.7.23 King Post Placard

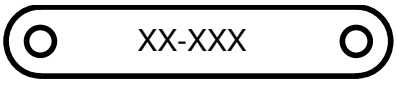


PART NO 104622

Location	The king post placard is located on the rear of the keel tube of the wing
Series	All wing except SST

Table 26 Section 2. King Post Placard

2.7.24 Wing and Base Data Plates

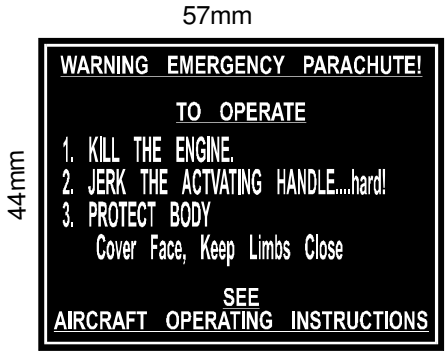


WING PLATE PART NO 102358

Location	The wing data plate 102358 is located on the negative block of the universal bracket. The base data plate 107566 is located on the seat mast block on the left side of the aircraft.
Series	XT base and applicable wing

Table 27 Section 2. Data Plates

2.7.25 Emergency Parachute



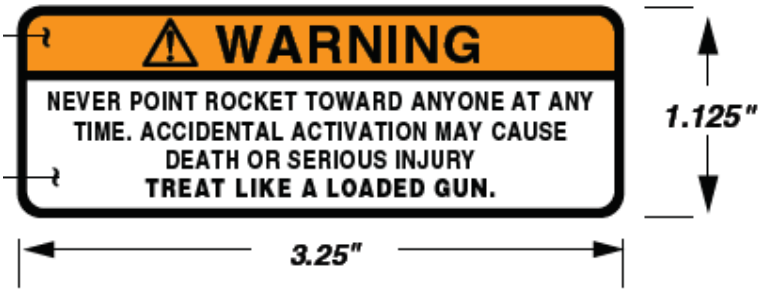
Location	The emergency parachute (when installed) placard is located on the inside left rear of the cockpit when the optional emergency parachute is fitted.
Series	Edge XT Series

Table 28 Section 2. Emergency Parachute

2.7.26 Emergency Parachute Placard Location

Figure 9 Section 2. Parachute Placard Location – (Pilots Left on Pod near to Seat Frame)

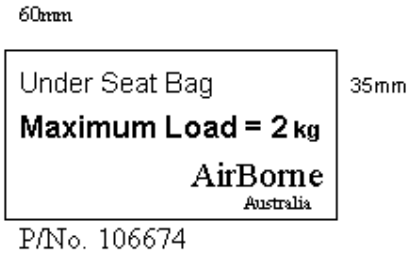
2.7.27 Emergency Parachute Warning Placard



Location	The emergency parachute warning placard is located on the parachute rocket on the rear of the aircraft.
Series	Edge XT Series (Optional Fitment)

Table 29 Section 2 Emergency Parachute Warning

2.7.28 Under Seat Bag Placard



Location	The under seat placard is located under the front seat, one placard per side beside the start of the zip.
Series	Edge XT Series

Table 30 Section 2. Under Seat Placard

EMERGENCY PROCEDURES

3 EMERGENCY PROCEDURES

3.1 General

This section of the AOI describes the procedures to be adopted in the event of an emergency or abnormal situation occurring in this aircraft.

These procedures are arranged in the sequence considered to be the most desirable in the majority of cases. Steps should be performed in the order listed unless a suitable reason to deviate exists.

This section contains operating procedures for flight and system emergency conditions that are essential for the continued safe operation of the aircraft.

Always maintain correct airspeed and altitudes in the circuit area.

Never fly in uncertain weather conditions and always fly within your proven ability. Be sure only to extend your capabilities under planned training situations.

Carry out safe airmanship whilst flying and be aware of possible emergency landing areas along your flight path. If possible check these areas from the ground as you enter the airfield or flying site. This technique is for safety reasons as engines are susceptible to stopping, no matter how reliably manufactured or maintained.

Keep a good lookout for other aircraft, always be thoughtful and show your intentions. Demonstrate good airmanship always!

It should be remembered that the manufacturer cannot foresee all conceivable circumstances. Particular circumstances such as multiple or unanticipated emergencies, adverse weather etc. may require modification to these procedures. A thorough knowledge of the aircraft and its systems is required to analyze the situation correctly and to determine the best course of action.

3.2 Airspeeds for Emergency Operations

3.2.1 XT 912 / Streak / SST / Arrow

Speed	IAS
Maximum Manoeuvring Speed (V_a)	70 knots
Best Glide	50 knots

Table 1 Section 3 Airspeeds for Emergency Operations

3.2.2 XT 912 / Cruze

Speed	IAS
Maximum Manoeuvring Speed (V_a)	66 knots
Best Glide	45 knots

Table 2 Section 3 Airspeeds for Emergency Operations

3.2.3 XT 912 / Merlin

Speed	IAS
Maximum Manoeuvring Speed (V_a)	66 knots
Best Glide	44 knots

Table 3 Section 3 Airspeeds for Emergency Operations

3.3 Emergency Procedures Check List

3.3.1 Engine Failure on Climb Out

If your engine fails on climb out, maintain airspeed, reduce angle of attack and land straight ahead if possible. Proceed as follows:

C Maintain **C**ontrol

A Maintain **A**irspeed - take off safety speed

L Forced **L**anding (straight ahead if possible)

3.3.2 Engine Failure at Height

If the engine stops while operating at cruise or full power when the aircraft is well clear of the ground, check:

C Fuel **C**ontents

F **F**uel tap on

I **I**gnition on

If your engine fails in flight, do not attempt to restart the engine unless one of these items is found to be incorrect and is able to be rectified. Relax and maintain control whilst concentrating on correct forced landing techniques.

3.3.3 Full Power Engine Shutdown (In Flight)

If the throttle should jam full open in flight proceed as follows:

C Maintain **C**ontrol

H Get **H**eight. With engine at full power adjust height and ground position to improve the outcome of a forced landing

A Increase **A**irspeed to keep the climb angle less than 30 degrees above the horizontal.

I Switch off **I**gnition

L Prepare for forced **L**anding

3.3.4 Forced Landings

Proceed as follows:

C Maintain **C**ontrol and airspeed - nominated approach speed

T **T**hrottle Closed

I **I**gnition off

F **F**uel tap off

S **S**eat belts tight

H **H**elmets tight

L **L**imbs (arms and hands) inside seat frame

L Carry out final approach and **L**anding as closely as possible to normal power off landing procedure

3.3.5 In Air Engine Fire

For fire occurring whilst in flight, the initial procedure would be to maintain control of the aircraft and evaluate the extent of the fire. This emergency is unlikely to occur but to avoid any further problems, use common sense and land the aircraft safely. Proceed as follows:

C Maintain **C**ontrol

F **F**uel tap off

T Full **T**hrottle (to exhaust engine system fuel as soon as possible and maximise slipstream to clear flames from passengers and airframe).

When fuel is exhausted then:

I **I**gnition off

L Forced **L**anding

B After landing release seat **B**elt

P Release **P**assenger seat belt

E **E**vacuate aircraft

3.3.6 On Ground Engine Fire

For fire occurring whilst in motion on the ground proceed as follows:

C Maintain **C**ontrol

S Use remaining **S**peed to clear people, aircraft and buildings

T **T**hrottle closed

I **I**gnition Off

B After stopping release seat **B**elt

P Release **P**assenger seat belt

F **F**uel tap off

E **E**vacuate aircraft

3.3.7 Propeller Damage

The indication of propeller damage is usually felt by extreme vibration and lack of thrust.

C Maintain **C**ontrol

T **T**hrottle closed

F **F**uel tap off

I **I**gnition off

L Forced **L**anding

WARNING

AT FULL ENGINE REVS THE TIP OF THE PROPELLER IS SPINNING AT SPEEDS IN EXCESS OF 650 KILOMETRES PER HOUR. EVEN SMALL OBJECTS CAN CAUSE SIGNIFICANT DAMAGE TO THE PROPELLER.

This problem may be avoided if precautions are taken prior to take off. Inspect the strip or ground you are to use as your take-off area for sticks, rocks or any debris that may be flicked up by the tyres and sucked through the propeller.

Ensure that all items carried by occupants (such as cameras and sunglasses) are secured so they are not able to come loose and pass through the propeller.

3.3.8 Sail Damage

If you encounter damage to the sailcloth during flight, the first procedure is to maintain control of the aircraft. If the sail damage is not impairing the flight characteristics of the aircraft, land at the nearest landing field to inspect the damage.

3.3.9 Emergency Parachute

The emergency ballistic parachute can be fitted as an option.

The parachute-operating handle is fitted with a safety pin. This pin should be removed before each flight and the safety pin must be replaced before the pilot alights from the aircraft. A force of approximately 15 – 20 kg pull on the actuating handle is required to activate the BRS rocket motor.

The parachute is only to be used in emergency situations as a last resort and when you are certain that:

- the aircraft has suffered structural damage to the extent that control is not possible; or
- if the aircraft is in an irrecoverable situation where structural damage is likely to occur.

WARNING

IT IS IMPORTANT TO REALISE THAT WHILST THE PARACHUTE CONTROLS THE RATE OF DESCENT, THE PILOT WILL HAVE NO CONTROL OVER THE PLACE THE AIRCRAFT WILL "LAND".

To operate the parachute pull the handle at least twenty centimetres for the parachute rocket projectile to be activated. The parachute will allow the complete aircraft to be lowered to the ground. The aeroplane

will descend with a steep nose down attitude and tilted to the left. Further information can be found in section 7.17.

Proceed as follows:

T **T**hrottle closed

I **I**gnition off

S **S**eat belts tight

P Check parachute **P**in removed

D **D**eploy parachute

L Forced **L**anding

3.3.10 Ignition Circuit Failure

The Rotax engine requires a short circuit on the ignition circuit to stop the engine. If the ignition circuit is broken using full choke to flood the engine should stop the engine.

It is possible to starve the engine by switching the fuel tap off. This method is not as quick as using the chokes.

Do not restart the engine until the fault has been fixed.

3.3.11 Spins and Spiral Descents

Deliberate spinning is prohibited.

A spiral dive may develop after a stall if the bar is maintained at the forward limit and a large roll rate is allowed to develop. If this condition is not corrected it will lead to large and increasing roll attitudes (beyond the 60 degree limit). Increasing attitude, increasing speeds and large control bar feed back forces will occur. Incipient spiral dives can be terminated at any time by rolling wings level. If the spiral dive is allowed to develop to extreme roll attitudes, recovery is expedited by relieving control bar forces before rolling wings level and recovering from high-speed condition.

WARNING

DO NOT ATTEMPT TO SPIN THE AIRCRAFT.

SPIRAL DIVES SHOULD NOT BE ATTEMPTED.

DURING DESCENDING TURNS AIRCRAFT ATTITUDE MUST BE KEPT WITHIN PLACARDED PITCH, ROLL AND AIRSPEED LIMITS.

3.3.12 Unusual Attitudes

Unusual attitudes where the nose is raised or lowered more than 45 degrees from the horizontal are to be avoided. On recognising a situation where the aircraft is approaching these pitch angles proceed as outlined below.

3.3.12.1 Nose High Attitude

To recover from the situation where the nose of the aircraft is pitched up more than 45 degrees from the horizontal proceed as follows:

H **H**old attitude - Do not attempt to pull control bar in

P Reduce **P**ower

O As energy dissipates the aircraft will rotate nose down - keep control bar **O**ut

P once the attitude lowers level the wings and increase **P**ower to prevent over pitching

R **R**ecover from dive and **R**esume desired flight path

3.3.12.2 Nose Down Attitude

To recover from the situation where the nose of the aircraft is pitched down more than 45 degrees from the horizontal proceed as follows:

O Raise attitude - push **O**ut

P Apply **P**ower

R **R**ecover from dive and **R**esume desired flight path

3.3.13 Instrument Failure

Instrument failure may occur through an electrical fault or through exposure to High Intensity Radio Fields (HIRF).

The aircraft is equipped with an analogue ASI as well as a digital engine management system. The analogue ASI will not be effected by either an electrical fault or HIRF. If there is a problem with the digital system the correct procedure is to fly to the nearest safe landing area and investigate the cause of the malfunction.

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NORMAL PROCEDURES

4 NORMAL PROCEDURES

4.1 General

This section of the AOI describes procedures for normal operations of this aircraft.

WARNING

NO ATTEMPT SHOULD BE MADE TO FLY THE AIRCRAFT WITHOUT APPROPRIATE WEIGHT SHIFT AIRCRAFT FLIGHT TRAINING WITH AN APPROVED INSTRUCTOR.

4.1.1 XT 912 / SST Speeds for Normal Operation

Trim Speed	60-66 knots
Stall Speed at Maximum Take Off Weight	35 knots
Take Off Safety Speed & Nominated Approach Speed at MTOW	49 knots
Maximum Speed in Turbulence (V_a)	70 knots
Maximum Level Speed (V_h)	80 knots
Max wind operating conditions (At ground level)	20 knots
Cross winds of up to	12 knots

Table 1 Section 4. SST Speeds for Normal Operation

4.1.2 XT 912 / Streak 3 Speeds for Normal Operation

Trim Speed	55-60 knots
Stall Speed at Maximum Take Off Weight	35 knots
Take Off Safety Speed & Nominated Approach Speed at MTOW	49 knots
Maximum Speed in Turbulence (V_a)	70 knots
Maximum Level Speed (V_h)	80 knots
Max wind operating conditions (At ground level)	20 knots
Cross winds of up to	12 knots

Table 2 Section 4. Streak 3 Speeds for Normal Operation

4.1.3 XT 912 / Cruze Speeds for Normal Operation

Trim Speed	47-52 knots
Stall Speed at Maximum Take Off Weight	34 knots
Take Off Safety Speed & Nominated Approach Speed at MTOW	45 knots
Maximum Speed in Turbulence (V_a)	66 knots
Maximum Level Speed (V_h)	70 knots
Max wind operating conditions (At ground level)	20 knots
Cross winds of up to	12 knots

Table 3 Section 4. Cruze Speeds for Normal Operation

4.1.4 XT 912 / Merlin Speeds for Normal Operation

Trim Speed	47-52 knots
Stall Speed at Maximum Take Off Weight	33 knots
Take Off Safety Speed & Nominated Approach Speed at MTOW	44 knots
Maximum Speed in Turbulence (V_a)	66 knots
Maximum Level Speed (V_h)	66 knots
Max wind operating conditions (At ground level)	20 knots
Cross winds of up to	12 knots

Table 4 Section 4. Merlin Speeds for Normal Operation

4.1.5 XT 912 / Arrow Speeds for Normal Operation

Trim Speed	60-70 knots
Stall Speed at Maximum Take Off Weight	35 knots
Take Off Safety Speed & Nominated Approach Speed at MTOW	49 knots
Maximum Speed in Turbulence (V_a)	70 knots
Maximum Level Speed (V_h)	80 knots
Max wind operating conditions (At ground level)	20 knots
Cross winds of up to	12 knots

Table 5 Section 4. Arrow Speeds for Normal Operation

4.1.6 Normal procedures Checklist

This section is provided to supply the pilot with more comprehensive information of the normal procedures required to operate this aircraft and is written assuming the pilot has been trained in the assembly and use of a weight shift controlled microlight.

The ultimate responsibility for determining whether the aircraft is in a safe condition to be flown is with **YOU** the pilot in command. Pre-flight inspections are outlined in the following sections and are your responsibility if you are the pilot in command. Unlike the highway, there is no place to pull over and remedy an unsafe problem once you are airborne.

4.2 Wing Assembly Procedure – Streak 3, Cruze and Merlin

The following instructions apply to the Streak 3, Cruze and Merlin wings. The sequence of procedures assumes that the wing is packed up. If the wing and base were already assembled this section is not required. Your instructor should demonstrate the correct assembly and disassembly procedures for your microlight. This section is intended as a reference only and assumes prior knowledge of assembly. AirBorne trike wings should be assembled standing on the control frame. Assembling the wing on the control frame keeps the sail off the ground and therefore less prone to being soiled or damaged. The suggested assembly procedure is as follows:

4.2.1 Unzip Wing Bag

Lay the wing down with the zip up and the nose facing approximately 120 degrees from the wind direction. Unzip the bag but do not completely remove it from the wing. Undo centre 2 clips.

4.2.2 Assemble Control Frame

Remove control bar and down tube padding. Spread the control bar down tubes out and insert the base bar onto the alloy knuckle. The pip pin is then inserted from front to back. Ensure that the pip pin end cap is secure. It should not be possible to remove the cap without depressing the pip pin button. Check that all the rigging wires are outside the control frame.

Figure 1 Section 4. Assemble Control Frame

Optional:
If training bars are to be fitted to the control frame follow this procedure.
The fitment of the left hand side training bar is illustrated, showing the correct attachment of the bar on the inside of the control frame. The detail view shows the sequence of components.

1. Bolt, head to the inside of the control frame.
2. Tube
3. Nylon Washer
4. Down Tube Clamp (both sides)
5. Wing Nut, turned until both side of the down tube clamp contact. Ensure the training bars are held securely
6. Safety Pin

Note:
The attachment to the base bar, a pip pin or bolt secures the training bar to the base bar, and also secures the control frame knuckle. A longer PIP pin is necessary for the larger diameter tube of the training Bar.

The welded base bar attachment has been made to be slightly loose, for ease of fitment.

The right hand side training bar is secured in the same way and is also on the inside of the control frame.

Figure 2 Section 4. RHS Training Bar Attachment

4.2.3 Stand The Wing Up

Rotate the control frame to the vertical position so that the wing is resting on the control bar. Do not attempt to connect the nose catch now. Remove the glider bag and unclip all the wing straps.

Figure 3 Section 4. Stand the Wing Up

4.2.4 Spread Leading Edges

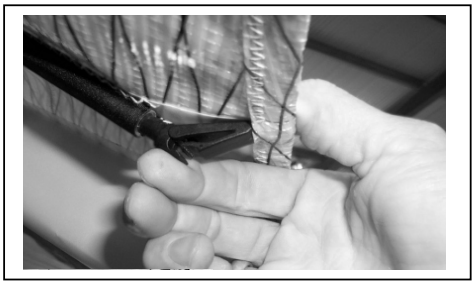
Carefully spread both leading edges out half way then spread them both out to the approximate flying position. It is essential that the keel and the leading edges are kept in the same plane or damage will result. Each wing should be kept low to the ground whilst moving forward.

4.2.5 Insert King Post

Remove kingpost base padding and plug the kingpost into the socket on the rear most hole of the keel. Make sure that the cross bar wires are not twisted and are on either side of the king post.

Figure 4 Section 4. Insert King Post

4.2.6 Insert Main Sail Battens



Remove the battens from the bag. Lay out the top surface battens (curved) in order of descending length toward the tip. Place the “red” battens in the left wing (curve forwards), and the “green” battens in the right. Insert the top surface battens except for the last three battens. Start with the battens closest to the keel. The battens are inserted into the pocket with gentle pressure until they meet resistance. When securing the battens lift trailing edge, push fitting in to sail pocket and rotate fitting downward to lock hinge.

Figure 5 Section 4. Insert Main Sail Battens

4.2.7 Tension Cross Bars

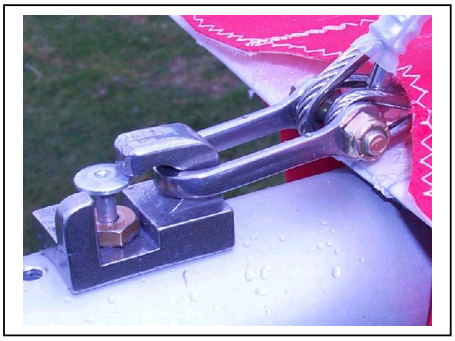


Figure 6 Section 4. Tensioning Cross Bar and Shackle Located in Block.

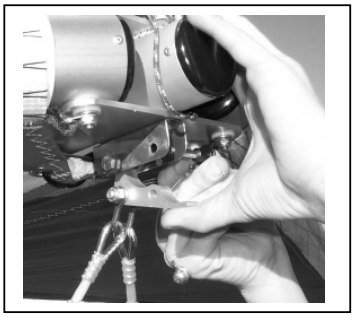
Pull the webbing handle to tension the crossbars. The handle pull back system gives a mechanical advantage of 2:1. Tension until the cross bar wire shackle is located in the quick clip block, behind the safety button.

4.2.8 Install Pull Back Cover

Ensure that the front Velcro tabs are folded back and secured to the top of the cover.

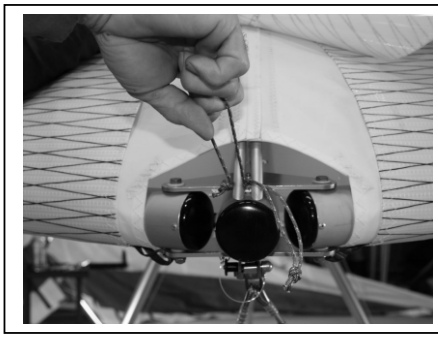
Figure 7 Section 4. Install Pull Back Cover

4.2.9 Attach Nose Catch



The nose catch should now be attached so that the pip pin is inserted through both the nose catch and channel. Ensure the pip pin cap is secure.

Figure 8 Section 4. Attach Nose Catch



4.2.10 Locate Nose Battens

Insert both nose battens tail end first. Locate the front of the batten on the alloy stubs on the front of the keel tube.

Figure 9 Section 4. Locate Nose Battens

4.2.11 Install Nose Fairing

Attach the nose fairing by applying the top Velcro first then gently tension over the nose plates and attach the Velcro to the undersurface.

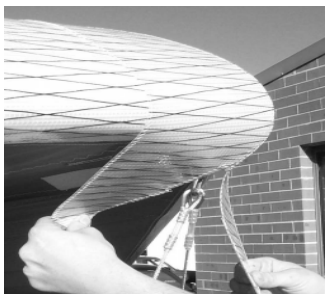


Figure 10 Section 4. Install Nose Fairing

4.2.12 Insert Remaining Main Sail Battens

Remove tip bags. Insert remaining main sail battens at the tips.

4.2.13 Insert Undersurface Battens

Streak and Cruze wings:

The undersurface battens should be inserted as far as possible, without forcing them. The batten should then be pushed with your thumb so that the end is inside the pocket. Use the string to pull the batten back to the rear of the pocket.

Figure 11 Section 4. Insert Remaining Sail Battens

4.2.14 Load Tip Strut – Clip Type

Insert the tip strut into the batten pocket. There is a strut each for the left side and right side. When holding the strut with the clip end toward you and with the clip hook facing up, the white clip should be outboard and then rotate toward the keel to tighten. The left hand side is pictured as a guide. The struts are floating and do not locate at the front other than by sliding them into their pockets. Locate the hook in the sail eyelet by moving the trailing edge onto the batten hook. Close the clip along the shaft gently but firmly.

Figure 12 Section 4. Load Tip Strut

4.2.15 Load Tip Strut – Hinge Type

Early model wings have an aluminium folding tip strut as illustrated in the figure below. To install, reach in through the tip and feed the end of the strut out through the undersurface and locate on red webbing. Pull on the bracket in the center of the strut until the strut over centers. Position hand so that it will not get caught in lever mechanism (note photo shows undersurface undone for improved clarity of operation).

Figure 13 Section 4. Load Tip Strut

You are ready for the wing pre-flight inspection. It is imperative that you carry out this inspection **every time you rig and before you fly.**

CAUTION

ONCE THE WING HAS BEEN PRE-FLIGHTED. CHECK THAT ALL INSPECTION ZIPS ARE FULLY CLOSED.

4.3 Wing Assembly Procedure – SST / Arrow

The following instructions apply to the strutted wings. The sequence of procedures assumes that the wing is packed up. If the wing and base were already assembled this section is not required. Your instructor should demonstrate the correct assembly and disassembly procedures for your microlight. This section is intended as a reference only and assumes prior knowledge of assembly. AirBorne trike wings should be assembled standing on the control frame. Assembling the wing on the control frame keeps the sail off the ground and therefore less prone to being soiled or damaged. The suggested assembly procedure is as follows:

4.3.1 Unzip Wing Bag

Lay the wing down with the zip up and the nose facing approximately 120 degrees from the wind direction. Unzip the bag but do not completely remove it from the wing. Undo centre 2 clips.

4.3.2 Assemble Control Frame

Remove control bar and down tube padding. Spread the control bar down tubes out and insert the base bar onto the alloy knuckle. The pip pin is then inserted from front to back. Ensure that the pip pin end cap is secure. It should not be possible to remove the cap without depressing the pip pin button. Check that all the rigging wires are outside the control frame.

Figure 14 Section 4. Assemble Control Frame

4.3.3 Stand The Wing Up

Rotate the control frame to the vertical position so that the wing is resting on the control bar. Do not attempt to connect the nose catch now. Remove the glider bag and unclip all the wing straps.

Figure 15 Section 4. Stand the Wing Up

4.3.4 Spread Leading Edges

Carefully spread both leading edges out half way then spread them both out to the approximate flying position. It is essential that the keel and the leading edges are kept in the same plane or damage will result. Each wing should be kept low to the ground whilst moving forward.

4.3.5 Connect Control Frame To Wing Struts

Place the right hand strut so that it is in line with the right hand downtube. Ensure the strut has the airfoil facing forward, and note there is a left hand and a right hand strut that ensures correct angle of attack. Insert the bolt from the front and secure the wingnut using the safety pin. Repeat for the other side.

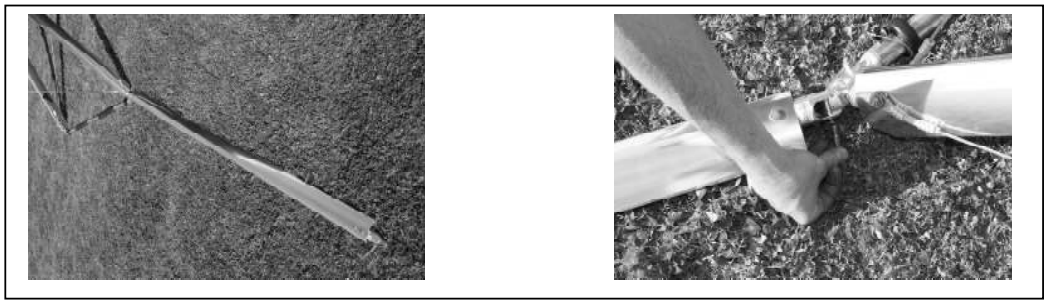
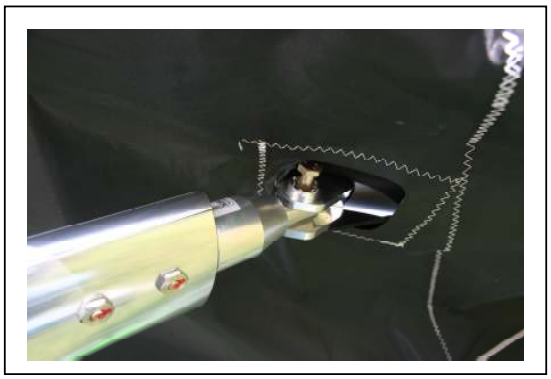


Figure 16 Section 4. Connect Control Frame To Wing Struts

4.3.6 Connect Strut at Leading Edge



Move the strut so that it is under the leading edge. Move the strut and leading edge together to line up the brackets. Insert the bolt from the front and check that it seats flush on the bracket. Secure using the wingnut and safety pin. Repeat for the other side.

Figure 17 Section 4. Connect Strut at Leading Edge

4.3.7 Insert Main Sail Battens

Remove the battens from the bag. Lay out the top surface battens (curved) in order of descending length toward the tip. Place the “red” battens in the left wing (curve forwards), and the “green” battens in the right. Insert the top surface battens except for the last three battens. Start with the battens closest to the keel. The battens are inserted into the pocket with gentle pressure until they meet resistance. When securing the battens lift trailing edge, push fitting in to sail pocket and rotate fitting downward to lock hinge.

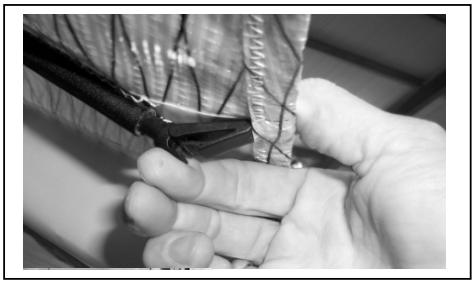


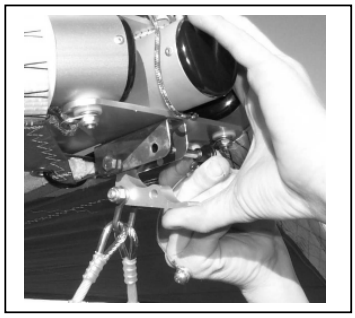
Figure 18 Section 4. Insert Main Sail Battens

4.3.8 Tension Cross Bars

Figure 19 Section 4. Tensioning Cross Bar and Shackle Located in Block.

Pull the webbing handle to tension the crossbars. The handle pull back system gives a mechanical advantage of 2:1. Tension until the cross bar wire shackle is located in the quick clip block, behind the safety button.

4.3.9 Attach Nose Catch



The nose catch should now be attached so that the pip pin is inserted through both the nose catch and channel. Ensure the pip pin cap is secure.

Figure 20 Section 4. Attach Nose Catch

4.3.10 Locate Nose Battens

Insert both nose battens tail end first. Locate the front of the batten on the alloy stubs on the front of the keel tube.

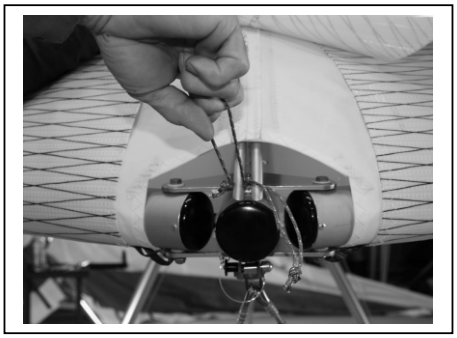


Figure 21 Section 4. Locate Nose Battens

4.3.11 Install Nose Fairing

Attach the nose fairing by applying the top Velcro first then gently tension over the nose plates and attach the Velcro to the undersurface.

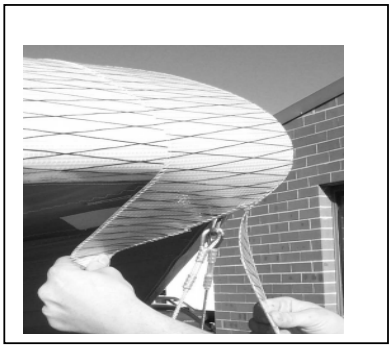


Figure 22 Section 4. Install Nose Fairing

4.3.12 Place U-Bracket Padding Inside Sail

Place the U-Bracket padding inside the sail and zip up the undersurface

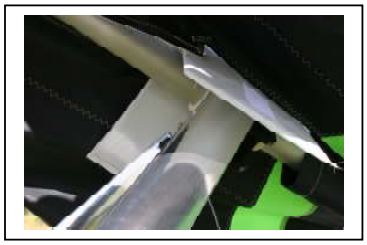


Figure 23 Section 4. Place U-Bracket Padding Inside Sail

4.3.13 Insert Remaining Main Sail Battens

Remove tip bags. Insert remaining main sail battens at the tips.

4.3.14 Arrow only Load Outer Two Battens – Clip Type

Insert the batten into the batten pocket. There are battens each for the left side and right side. When holding the batten with the clip end toward you and with the clip hook facing up, the white clip should be outboard and then rotate toward the keel to tighten. The left hand side is pictured as a guide. The battens are floating and do not locate at the front other than by sliding them into their pockets. Locate the hook in the sail eyelet by moving the trailing edge onto the batten hook. Close the clip along the shaft gently but firmly.

4.3.15 Insert Undersurface Battens

The undersurface battens should be inserted as far as possible, without forcing them. The batten should then be pushed with your thumb so that the end is inside the pocket. Use the string to pull the batten back to the rear of the pocket.

Figure 24 Section 4. Insert Remaining Sail Battens

4.3.16 Load Inboard And Outboard Sprogs

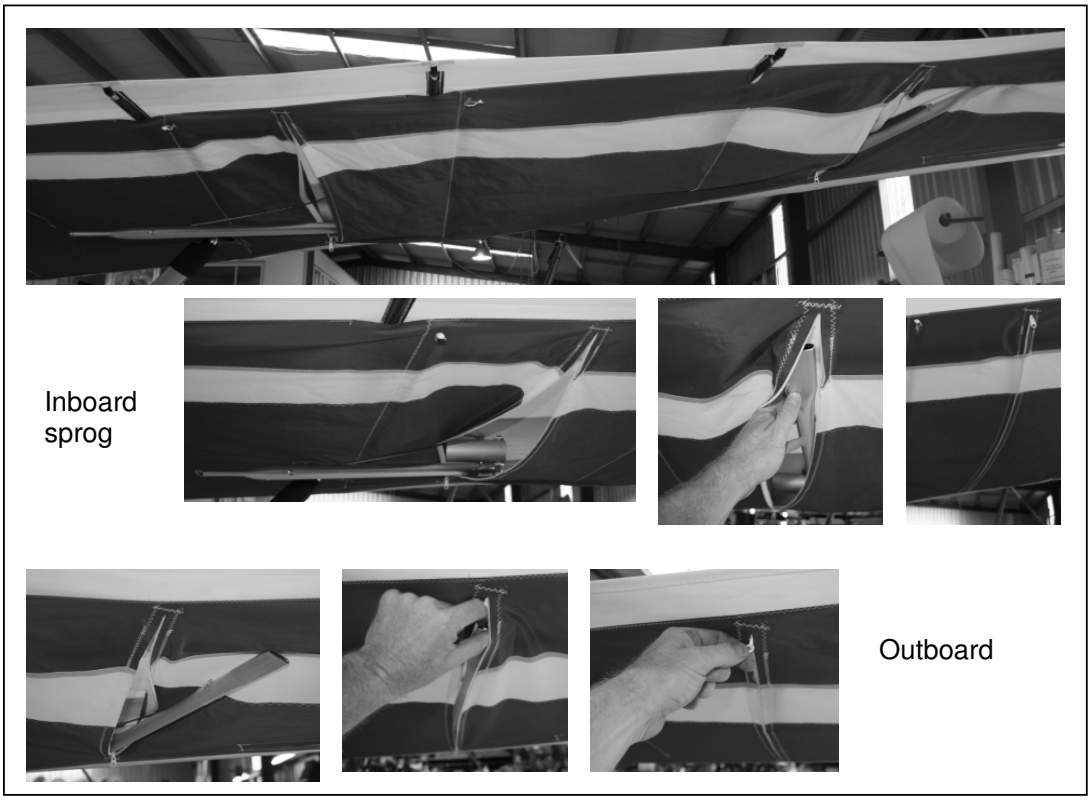


Figure 25 Section 4. Load Sprogs

Load the inboard and outboard sprogs by guiding them into the inside of each pocket. You may have to lift the trailing edge to aid placement. Secure the sprogs in place by closing the zippers.

4.3.17 SST only – Load Tip Over-Centre Battens

Insert the last mainsail battens. The acetyl roller unit should be located on the webbing and use the lever to close the hinge. Ensure fingers are clear of lever to avoid injury.

Figure 26 Section 4. Load Over-Centre Battens

You are ready for the wing pre-flight inspection. It is imperative that you carry out this inspection **every time you rig and before you fly.**

CAUTION

ONCE THE WING HAS BEEN PRE-FLIGHTED. CHECK THAT ALL INSPECTION ZIPS ARE FULLY CLOSED.

4.4 Wing Pre-flight inspection

The design of the wing is such that junctions not open to view may be reached from zipped inspection panels. Start at the nose and move around the wing making the following condition inspections, check for damage, wear and security.

Wing pre-flight inspection	SST Arrow	Streak 3 Cruze Merlin
Nose catch, nose bolts, sail tangs, Nose battens.	√	√
Nose cone aligned.	√	√
Leading edge tubing.	√	√
Crossbar hinge junction & cross bar tubing.	√	√
Centre undersurface zip.	√	√
Sail tip secure and webbing.	√	√
Tip struts / Battens	√	√
Battens secure and pockets free from damage.	√	√
Reflex bridle lines.	**NA**	√
Cross bar tensioner routing and catch.	√	√
Velcro pull back cover.	√	√
Hang-point / universal bracket & bolts.	√	√
Control frame tubes, hinges, knuckles, connections.	√	√
Trimmer operation, routing pulleys, twists.	√	√
Control frame cables fittings & terminations both ends.	√	√
Junction cross bar & leading edge.	√	√
Top rigging, kingpost located.	**NA**	√
Struts located correctly ie Leading edge forward and on correct side	√	**NA**
Sprog hinge free to pivot. Wires secure	√	**NA**
All zips closed	√	√
Sail condition inspection, tears, abrasion, stitching & attachment.	√	√
Sail free from water accumulation.	√	√
General inspection of complete wing.	√	√
Full / free movement of the wing when attached to the trike base – see section 4.8.1.	√	√
Inspect all cables – Inspect for kinks fraying, corrosion – particularly around the NICO press fittings.	√	√

Table 6 Section 4. Wing Pre Flight Inspection

If the wing has been left fully set up for any period, then the following additional checks should be performed:

Extended set up Wing pre-flight inspection	
The symmetry of the wing (batten profile check).	√
All tubes straight, undamaged and without cracks.	√
All cables undamaged, no fraying with secure thimbles/swages.	√
All nuts and bolts secure and locked appropriately.	√
All quick-release fittings secure.	√
Universal bracket undamaged, heart-bolt and back-up strap secure.	√
Sail tension settings correctly aligned and symmetrical.	√
Battens undistorted, and in good condition.	√
All sail seams intact, with no frayed stitching.	√
No tears or nicks in the sail.	√
Trimmer functional and wires not damaged.	√

Table 7 Section 4. Extended Wing Pre-flight

4.5 Attaching Wing to Base

WARNING

THE TRIKE MAST IS FITTED WITH A GAS STRUT TO ASSIST LIFTING THE WING. NEVER ALLOW THE MAST TO BE UNLOADED TOO QUICKLY. HANDS OR OTHER FOREIGN OBJECTS WILL BE SEVERELY DAMAGED IF CAUGHT BETWEEN THE MAST AND SEAT / ENGINE BLOCK.

4.5.1 Attach Mast Retaining Strap

The mast has a gas assist strut to assist lifting the wing when the mast is raised. To hold the mast in position for wing attachment the mast retaining strap should be routed around the rear steering bracket and over the mast. The strap can be adjusted to pull the mast down to the correct height.

Figure 27 Section 4. Attach Mast Retaining Strap

4.5.2 Position The Trike And Wing

Position the wing on its control frame, facing into the wind, with the nose on the ground. The mast tube of the trike should be held down using the strap as described above. Check the ignition switches are off. Wheel the trike behind the wing, rolling the front wheel over the control bar. Apply the trike park brake.

Figure 28 Section 4. Position the Trike and Wing

4.5.3 Attach Mast To Wing U-Bracket

Allow the main tube to rise by loosening the strap until high enough to connect the universal junction to the wing. Insert the bolt with bolt head retaining unit. Tighten wing nut firmly and secure safety pin. The wing should only be attached using the central hole on the U-bracket as shown. Remove mast-retaining strap.

Figure 29 Section 4. Attach Wing to Wing U-Bracket

4.5.4 Position Heart Bolt Retainer in U-Bracket

The standard position for the heart bolt in the U-bracket is in the centre hole, which is the only available point for attachment. The heart bolt retainer is positioned in rear open hole to prevent rotation of the bolt.

Figure 30 Section 4. Heart Bolt Retainer Position

4.5.5 Attach Back Up Loop

Connect back up loop so that it passes over the keel and back to the mast. Ensure safety pin is installed.

4.5.6 Attach Trimmer To Mast – SST & Arrow only

Connect trimmer to wishart clip on the mast. Ensure it is threaded through the pulley on the keel first.

Figure 31 Section 4. Attach Trimmer to Mast

4.5.7 Remove Keel Extension

Disengage the brake of the trike, lift the nose of the wing to allow the front wheel to be rolled rearward over the control frame so that the base bar is forward of the cockpit. Re-engage the brake.

Remove the keel extension by removing safety ring and pulling out the clevis pin. Remove keel extension. Store with pack up gear.

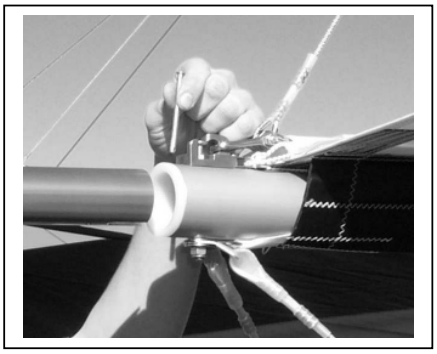


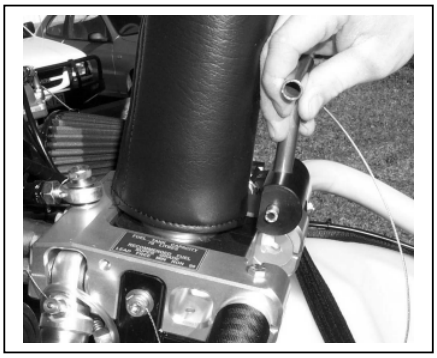
Figure 32 Section 4. Remove Keel Extension

4.5.8 Rotate Wing

Go to the nose of the wing and with the mast brace tube in one hand and the control bar in the other lift the base bar. Rotate the wing until the rear of the keel rests on the mast. In strong winds maintain a firm grip on the wing.

Figure 33 Section 4. Rotating Wing

4.5.9 Insert Mast Lever



Insert the lever so that the flat section is facing toward the mast.

4.5.10 Attach Mast Brace

Bring mast brace into position and allow the outer sleeve to slide into position. Install the top pip pin and cap. Install lower pip pin and cap.

Figure 34 Section 4. Insert Mast Lever

4.5.11 Load Mast Lever

Once the lever is located correctly rotate the lever down 180 degrees until it is securely loaded. Fold the seat back up into position.

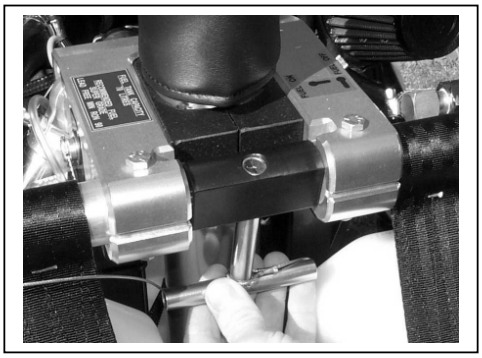


Figure 35 Section 4. Load Mast Lever

4.5.12 Install Optional Windscreen XT 880mm

Remove windscreen from protective cover.
Press the clip (Part # 108917) onto the trike mast brace. Wrap the hook and loop around the clip and the mast brace.

Figure 36 Section 4. Secure Windscreen XT 880mm

Locate the bottom centre hole of the windscreen on the centre locator on the cockpit. Fasten by placing the O-ring, washer and then the retaining pin. Repeat for the bottom sides.

Inspect the windscreen attachment prior to every flight.

Figure 37 Section 4. Secure Windscreen Extension Bottom

Clean the windscreen using a soft clean cloth and mild detergent as necessary. Wiping the windscreen in one direction only for the life of the windscreen is good practice. Nominaly verticaly.

4.5.13 Fit the Engine Cowl

If the engine cowl has been removed for a pre flight check the following procedure should be used to re-fit the cowl

Line up the mounting post with the hole in the cowl, guide the cowl over the post and line up the cowl so that the thin end points to the rear.

Place the large washer (Part # 102099) over the peg and cowl, press down firmly and guide the humpback retaining pin (Part # 108820) through the hole until the hump goes around the peg.

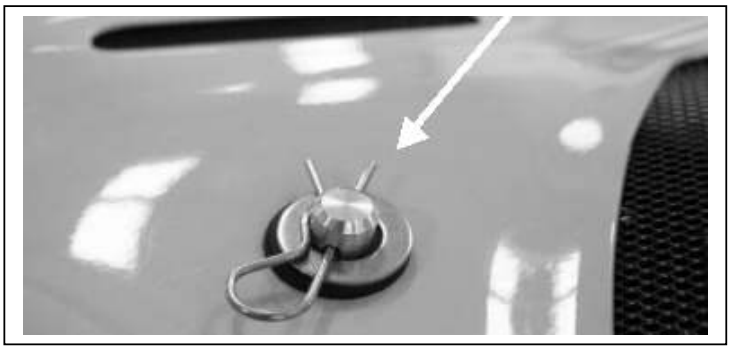


Figure 38 Section 4. Engine Cowl Retention Pin

Loop the rubber cord over the button at the front of the cowl.

Inspect the following now and regularly:

- Cowl for secure fit and possible wear points.
- Washer and retaining pin for security.
- Rubber loop for wear and security
- Cables and lines aren't fouled.

Figure 39 Section 4. Engine Cowl Retention Rubber Cord

4.5.14 Park The Aircraft

The aircraft should be parked in a crosswind position with the wings base tube secured to the mast brace with the bungie supplied.

NOTE
The wingtip facing the wind should be lowered.

Figure 40 Section 4. Park the Aircraft

4.6 Complete Trike Pre-Flight inspection

Ensure that the ignition switches are off prior to inspection. Daily inspections as outlined in the Rotax Operator's Manual should be carried out in conjunction with the following inspections.

Trike base Pre-flight Inspection	
No leaks from fuel system and engine, fuel lines secure.	√
No Leaks from oil system and engine.	√
Fuel On/Off valve in the ON position.	√
Fuel filter clean and operational.	√
Fuel drain valve - check for any water in tank sump by draining a small quantity into a container.	√
Sufficient fuel for flight.	√
Oil level for oil injection OK (see photo below fig 22).	√
Coolant Level. Between max and min level on coolant bottle.	√
Rotary Valve oil level OK.	√
Radiator hoses secure and operational.	√
Propeller: free of splitting, denting, delamination, nicks. Blade tape condition.	√
Propeller hub assembly secure and tie wired.	√
No cracking in tyre treads, or evidence of cracking around the rim.	√
Rear end and Wheel Spats secure.	√
No bolts bent, fractured or evidence of corrosion.	√
Electrical & instrumentation system secure and operational.	√
Throttle operation, both foot and hand throttle. Verify free and full movement.	√
Seat belt attachments secure.	√
Steering damper - adjust to desired setting.	√
All engine components secure - air filter, muffler, plug leads, locking wires	√
Mast race PIP pins secure.	√
Mast over centre latch loaded and secure.	√
Windscreen extension secured (if fitted)	√
Engine cowl secured (if fitted)	√
Vents: oil tank, fuel tank, Pitot entry.	√
Mechanical Components. Rotate propeller clockwise and observe for noise or excessive resistance.	√
General inspection of complete trike.	√
Wing & base universal bracket secure. Back up webbing strap secure.	√

Table 8 Section 4. Complete Trike Pre-Flight Inspection

4.7 Fuelling

Fuel flow is from a single fuel tank fitted with a self-venting tube. The fuel system is fitted with a shut off valve located on the rear left hand side of the seat frame. Be sure this valve is in the **ON** position before starting engine.

Never refuel if fuel could be spilled on hot engine components. Use only safety approved fuel containers and never transport fuel in an unsafe manner.

The fuel tank has a water drain mounted at the base and to the rear of the tank. The fuel system has an in-line fuel filter, which is mounted at the front of the tank. This filter can be easily disassembled for cleaning and inspection (see base maintenance manual).

WARNING

ENSURE THE AIRCRAFT IS EARTHED TO AVOID STATIC DISCHARGE IGNITING FUEL DURING THE REFUELLING OPERATION

The Edge XT series fuel levels are marked on the right side of the fuel tank. The fuel levels are marked at 10 litres, 20 litres, 30 litres, 40 litres, 50 litres and 60 litres.

4.7.1 Fuel Tank Capacity

The properties of the fuel tank material cause an increase in capacity after the first 2 to 3 tanks of fuel. Initial capacity is 64 litres with the "aged" capacity 70 litres. The fuel level markings have been positioned for the fuel tank capacity at 70 litres.

4.7.2 Fuel Quantity

A sight gauge is provided on the starboard side of the aircraft, visible through the soft side. Its purpose is to provide fuel volume measurement for calculation of aircraft weight during fuelling of the aircraft and to provide the pilot with a visual indication of the quantity of the remaining fuel. The calibration is valid for the aircraft sitting on level ground and indicates total fuel, not usable fuel.

The trike base assumes various flight attitudes according to weight, flight, speed and power affecting the indicated value of fuel quantity in flight. The useable fuel quantity is selected for the worst-case condition of aircraft attitude.

Zero useable fuel is indicated by the fuel level reaching the bottom of the sight gauge during level flight.

When the level indicates zero useable fuel, the tank contains 3 litres of unusable fuel.

4.8 Helmet Recommendation

The open cockpit of the Edge XT exposes the occupants to the elements during flight and exposes them to objects outside of the aircraft in an emergency situation.

Helmets and eye protection are recommended for occupants for protection from precipitation, strike by insects and birds. Helmets are also recommended for risk reduction during an emergency landing of the aircraft. The helmets recommended for use in the aircraft are those certified to the EN 966 standard, that is applicable to helmets for air sports. The standard prescribes tests for penetration resistance, shock absorbing properties, field of vision and head mobility.

4.9 Normal Procedures Check List

The following checklists should be used as a reference. More detailed procedures are found in the Amplified Procedures section, which follows.

Prior to flight a thorough pre-flight inspection of the aircraft should be carried out. Details of the pre-flight inspection are shown earlier in this section.

4.9.1 Before Starting Engine

Pre-flight Inspection	Completed
Full / free movement of the wing when attached to the trike base	Completed
Passenger Briefing	Completed
Safety Belts	Secure
Helmets	Secure
Intercom Connection	Secure
Brakes	On / Park
Intercom Connection	Secure
Parachute (if fitted)	Remove Safety Pin

Table 9 Section 4. Before Starting Engine Check

4.9.2 Starting Engine

Park Brake	On
Fuel Cock	Open
Hand and Foot Throttle	Off - (Idle Position)
Key	On
Instrument	On
Ignition	On
Choke	On
Propeller	Clear
Depress Start Button	Push - When engine fires Release
Oil Pressure	Check - (2 Bar (30psi) within 10 secs)
Choke	Off
Engine Running	Adjust Idle to 2000 rpm (2 mins)

Table 10 Section 4. Starting Engine Check

4.9.3 Before Take Off

Park Brake	On
Choke	Off
Warm Up	Adjust Idle to 2500 rpm (Temp to reach 50 deg C)
Oil	Check temperature and pressure
Ignition Check	4000 rpm Speed drop with only one ignition must not exceed 300 rpm
Trimmer	Set Fast (Increase trim speed)
Fuel Quantity	Check Sufficient for task
Instruments	Check
Circuit Breaker	Check
Harnesses	Secure
Helmets	Secure
Throttle Response	Full On (3 seconds)
Controls	Pitch and Roll Full and free movement – completed before engine start as well as just prior to take off.

Table 11 Section 4. Before Take Off Check

4.9.4 Take Off and Initial Climb

Pitch Control	**Neutral**	
Hand Throttle	Off	
Foot Throttle	Full On (Reduce for minimum TOW)	
Directional Control	Nose Wheel Steering Straight	
Rotate at TOSS	STREAK / SST / ARROW	49 KIAS
	CRUZE	45 KIAS
	MERLIN	45 KIAS

Table 12 Section 4. Take Off and Initial Climb Check

4.9.5 Climb

Foot Throttle	Full On (Reduce for minimum TOW)	
RPM	5000 RPM (Reduce to 5000 rpm once climb established. No change if using a reduced power take off)	
Airspeed	STREAK / SST / ARROW	49-55 KIAS
	CRUZE	45-50 KIAS
	MERLIN	45-50 KIAS

Table 13 Section 4. Climb Check

4.9.6 Cruise Speeds

Hand Throttle	**Adjust for Level Flight**	
Airspeed	ARROW	60-75 KIAS
	SST	60-70 KIAS
	STREAK	55-60 KIAS
	CRUZE	50-55 KIAS
	MERLIN	50-55 KIAS

Table 14 Section 4. Cruise Check

4.9.7 Descent

Foot Throttle	**Reduce**	
Hand Throttle	Off	
Airspeed	STREAK / SST / ARROW	49-55 KIAS
	CRUZE	45-50 KIAS
	MERLIN	45-50 KIAS

Table 15 Section 4. Descent Check

4.9.8 Landing

Hand Throttle	**Off**	
Airspeed	STREAK / SST / ARROW	49 KIAS
	CRUZE / MERLIN	45 KIAS
Directional Control	Nose Wheel Steering Straight	
Braking	Off Then as required	

Table 16 Section 4. Landing Check

4.9.9 After Landing

Parking Brake	On As required
Ignition Switch	Off
Electrical Switch	Off
Radio Equipment	Off
Controls	Secure
Parachute (If fitted)	Insert Safety Pin

Table 17 Section 4. After Landing Check

Amplified Procedures

4.9.10 Before Starting

Safety is everyone's business. Included are only some important safety tips. Keep a good lookout, be thoughtful and always show your intentions prior to starting.

Prior to flight a thorough pre-flight inspection of the aircraft should be carried out. Details of the pre-flight inspection are shown earlier in this section. Make sure all engine controls are operative and you understand the on/off positions of the throttle and ignition. These controls are readily accessible and you must be able to operate them instinctively without hesitation.

The primary throttle control is foot-operated and complemented by the hand throttle (forward for full power and rearward for power off). The ignition switches are on the right hand side of the seat frame (forward for on and rearward for off).

Never run the engine on the ground with the propeller turning unless you are doing so in a run up area and can observe anyone or anything entering the danger area. It is recommended that the engine not be run for any long periods whilst stationary on the ground. Possible damage to the engine may occur due to overheating of the engine fluid.

WARNING
LOCK THE WHEEL BRAKE TO REDUCE ANY POSSIBILITY OF DANGER TO ANY PERSON/S DURING ENGINE STARTING.

Before starting your engine you should read and be familiar with the engine manual.

Run through the following checklist (pronounced "twimpfish") prior to starting the engine for each and every flight.

T **T**hrottle - full and free movement

Tyres - inflated and serviceable

W **W**ind - check direction and strength

Wires - secure and airworthy

M **M**ixture - chokes off

P **P**ins - fitted and secured

F **F**uel - On and sufficient

I **I**nstruments - check, set and operational

S **S**witches - ignition check (all switches on)

C **C**ontrols - pitch and roll - full and free movement

Chocks - removed (secured in aircraft)

H **H**arness and **H**elmet in place and secure

Remember that the pilot in command has the ultimate responsibility for the airworthiness of the aircraft in which they fly.

4.9.11 Starting the engine

All controls should be checked with the ignition OFF. Passengers should have seat belts secure and be briefed for the flight.

The engine should be started with the pilot in the front seat. The following procedure should be used:

- Park Brake is locked in the on position
- Fuel cock open
- Hand and foot throttle off

CAUTION
REMEMBER CLEAR PROP!

- Turn key switch and power up instrument
- Switch both ignitions **ON**
- Apply full choke unless the engine is hot
- Check visually that the propeller area is clear and call **"Clear Prop"** out loud
- Depress start button. If the engine refuses to start switch off the ignition before investigation
- When the engine starts, increase the engine RPM to a little above idle and release the chokes
- Oil pressure should indicate within 10 seconds
- Warm up the engine. Minimum Temperature should be reached before take off. Operate for 2 min at 2000 rpm continue at 2500 rpm until minimum temperature of 50 deg C is reached

WARNING

NEVER LEAVE YOUR AIRCRAFT UNATTENDED WHILE THE ENGINE IS RUNNING.

Keep an aircraft log and enter any unusual engine behaviour. Do not fly unless you have corrected a given problem and recorded the correction in the log.

4.9.12 Taxiing

Taxiing in normal conditions is fairly straight forward.

With the engine idling the brake lever should be depressed which will disengage the park brake. The control frame should be positioned so that it is in the approximate position for normal trim speed. The pilot's feet actuate steering on the ground. Left turn occurs when the right footrest is pushed forward. Right turn occurs when the left footrest is pushed forward.

NOTE

Control sense for turning is opposite to that of a conventional three axis aircraft.

When taxiing in strong wind conditions the following procedures apply:

- **Head Wind** conditions requires the nose of the wing to be lowered just below the trim position
- **Down Wind** conditions requires the nose of the wing to be raised just above the trim position
- **Cross wind** conditions requires the upwind tip to be lowered

4.9.13 Before take off

Before flight a full-throttle check is to be carried out. During this operation the pilot must be seated in the cockpit and prepared to switch off the ignition at very short notice if an emergency should arise.

CAUTION

BEWARE OF LOOSE STONES IN THE RUN UP AREA. LOOSE STONES CAN BE SUCKED UP BY THE PROPELLER AND CAUSE SEVERE PROPELLER DAMAGE IN A VERY SHORT TIME. RUN UPS ARE BEST CONDUCTED ON A CLEAR SEALED SURFACE OR ON GRASS, NEVER ON GRAVEL.

The two ignition circuits should be tested with the engine running at 4000 rpm. Ignition one should be switched off and the RPM drop should not exceed 300 rpm. Both ignitions should be in the on position and ignition two should be turned off and the RPM drop should not exceed 300 rpm. Ensure both switches are in the on position after ignition circuit testing.

During take off and landing the recommended trimmer setting is in the fast trim position. It is acceptable to set the trim as far as mid trim position for take off and landing. The trimmer decal on the control frame upright, adjacent to the trimmer knob indicates the trim position.

4.9.14 Take Off

AirBorne trike wings have a neutral static balance allowing a safe take off that is controllable under all suitable flying conditions.

Take off should be made on full power with only the foot activated throttle used during take off.

The take off run is the measured ground distance covered until the aircraft reaches a height of 50 feet above the average elevation of the runway used. Refer to Section 5 for details of take off performance.

During the take off run, the wing should be held in the trim position with the wings level. Accelerate smoothly to the take off safety speed. If the aircraft is fully loaded you will require full power.

When the aircraft reaches the take off safety speed the control bar should be pushed steadily forward until the trike lifts and rotates quickly on the main wheels. As the aircraft leaves the ground the control bar must be eased back to maintain take off safety speed.

CAUTION

HIGH-ANGLE CLIMB-OUTS NEAR THE GROUND SHOULD BE AVOIDED.

Maintain your engine in top condition and assume it's going to stop running at any time. Leave yourself a way out for an unexpected engine failure.

Never fly your aircraft at locations, airspeeds, altitudes, or under any circumstances from which a successful engine off landing cannot be attempted.

4.9.15 Climb

Initial climb out should be made on full power for maximum take off weight. Approximately 2/3 of maximum take off power is considered comfortable for a minimum weight take off. Take off distance will be extended at reduced power.

WARNING

AT LOW ALL UP WEIGHTS, THE TAKE OFF CLIMB OUT AT THE TAKE OFF SAFETY SPEED CAN RESULT IN HORIZONTAL PITCH INCLINATIONS IN EXCESS OF THE PLACARDED 45 DEGREES MAXIMUM. THE PILOT MUST BE AWARE OF THIS AND SHOULD KEEP WITHIN THE PLACARDED LIMITATIONS BY LOWERING THE ATTITUDE OR REDUCING ENGINE POWER.

Once climb is established, power should be reduced to below maximum continuous power of 5500 rpm. A minimum of take off safety speed should be used. At this speed the aircraft would round out nicely into a glide should the engine fail.

Avoid pitching the nose of the wing up more than 45 degrees to the horizon. Very steep climbs are dangerous and can result in a stall followed by a severe pitching of the nose forward. Professional training is required for the correct procedures of unusual attitude recovery.

WARNING

REDUCED POWER TAKE OFFS WILL EXTEND TAKE OFF DISTANCE. IT IS THE PILOTS RESPONSIBILITY TO ENSURE THAT THERE IS SUFFICIENT RUNWAY AVAILIABLE TO CLEAR ALL OBSTACLES WHEN CONDUCTING REDUCED POWER TAKE OFFS.

4.9.16 Cruise

When the desired flight altitude is reached the aircraft may be levelled out and throttle reduced to that required to maintain level flight.

The hand-operated throttle on the right side of the seat frame can be used to set engine rpm. Once the hand throttle is adjusted the pressure on the foot pedal may be removed. When the hand throttle is actuated increased power can still be achieved with the use of the foot throttle. The rpm will always return to the cruise setting when foot pressure is removed. If the hand throttle is set a reduction in RPM is not achievable using the foot throttle. The hand throttle must be in the off position to achieve low RPM.

4.9.17 Stalls

In practice it is only possible to induce a nose down stall of the aircraft in level flight at high take off weights. The onset of stall is indicated by a significant increase in control bar loads.

WARNING

NEVER STALL THE AIRCRAFT WITH THE NOSE PITCHED UP BEYOND 45 DEGREES. MANOEUVRES BEYOND THIS ARE DANGEROUS AND CAN RESULT IN A TAIL SLIDE FOLLOWED BY A SEVERE TUMBLE.

REFER TO SECTION 3.3.12 OF THIS FLIGHT MANUAL FOR DETAILS OF THE PROCEDURES FOR RECOVERY FROM UNUSUAL ATTITUDES.

Recovery from a mild stall is very gentle, whether power is on or off. Recovery is quick, with height loss of less than 50 ft with no tendency to break away suddenly. A stall would have to be forced violently, to induce a danger.

When practising stalls make sure you have sufficient altitude. Push the control bar out so that the airspeed is reduced at a maximum of 1 knot per second, and the aircraft will reach a minimum steady flight speed without dropping a wing. The sink rate will increase in this minimum speed mode more than two fold.

If the airspeed is decreased by rapidly raising the nose the wing will stall. Rapid decrease of airspeed in the order of 2-3 knots per second will see an altitude loss of up to 100ft. See section 3.3.12 for recovery procedures.

Never stall with the nose pitched up too high. This is a dangerous manoeuvre and can result in a tail slide followed by a severe tumble. As a guideline, the nose up angle at which the aircraft stalls is about the nose down angle it will recover at.

4.9.18 Descent, Approach and Landing

Landing should always be into wind with a long straight approach.

The landing distance specified in Section 5 is the measured ground distance covered from an approach at 50 feet above the average elevation of the runway used until the aircraft makes a complete stop.

An approach to the airstrip may be made with or without power, but in either case the airspeed should be maintained above the nominated approach speed.

During take off and landing the recommended trimmer setting is in the fast trim position. It is acceptable to set the trim as far as mid trim position for take off and landing. The decal on the control frame upright, adjacent to the trimmer knob indicates the trim position.

The aircraft should be flown on final approach at or above the nominated safety speed. The additional airspeed allows for wind gradient, and to provide greater controllability in the rough air that may lie close to the ground. Maintaining airspeed on final is very important for engine-off landings, allowing a margin for round out before touchdown.

The trike is designed to land with the rear wheels touching down slightly before the nose wheel. Once firmly on the ground aerodynamic braking may be achieved by pulling in the control bar, then applying the front nose wheel brake.

NOTE

In the case of a heavy landing the maintenance manuals for both the wing and the base should be referenced. It must be noted that after a hard landing, your aircraft must be completely checked.

4.9.19 Cross Wind Landing and Take Off

Pilots with less experience should avoid landing or taking off in conditions with high crosswind components, as skills do not always match the capabilities of the aircraft. Crosswind landings or take off with low wind components up to 8 knots are quite safe and controllable, even to the inexperienced pilot.

The nominated approach speed should be increased by 5 knots when landing in cross wind conditions of 10 knots or more.

After touchdown in cross wind conditions the relative airflow over the wing will become increasingly span wise (from tip to tip) as the aircraft slows down. The upwind wing tip should be lowered slightly (the amount depends on the wind strength), and the undercarriage wheels will retain firm contact with the ground.

Take off procedure is unchanged for the nominated crosswind limit. The upward wing may need to be lowered at the start of the take off procedure in higher cross winds.

4.9.20 Baulked Landing

During a situation where a baulked landing (go around) is required, normal take off power and procedures should be used.

4.9.21 Stopping the Engine

To stop the engine after a period of running, the ignitions should be switched off at idle. Switching off at high RPM floods the engine and makes restarting difficult. If the engine has been running under full power allow the engine to cool at idle, before switching off.

4.10 After Landing / Securing

After landing and when in the parking area apply parking brake and lock. Switch the ignition, Electrical switch and radio equipment off. The aircraft should be parked in a crosswind position with the base tube secured to the mast brace with the bungie supplied. The emergency parachute safety pin should be inserted before leaving the aircraft.

4.10.1 De-Rigging Procedure

Careful attention to the recommended rigging and de-rigging sequences will protect the aircraft from the risk of unnecessary damage.

The de-rigging procedure is a direct reversal of the rigging procedure. A summary of the procedure follows:

4.10.1.1 Remove Wing from Base

See Section 4 (Attaching Wing to Base) and use reverse procedure

- Apply park brake.
- T – series only: Undo the trimmer by unclipping it from the wishart clip on the mast, see Figure 30.
- Remove pip pins from the front support compression tube. Slide outer mast brace up and insert pip pin through lower hole (this will secure the inner and outer tubes for the lowering phase).
- Unload and remove over centre latch.
- Lower the wing until the control bar is on the ground.
- Secure mast with strap to base tube.
- Unbolt the trike from the U-bracket; remove safety loop and wheel out the trike unit.
- Reinstall keel extension tube.

4.11 Wing Break Down Procedure – Streak 3, Cruze and Merlin

This section assumes that the wing has been removed from the base. The wing should have the keel extension fitted with the clevis pin and ring installed. This section is intended as a reference only and assumes prior knowledge of the break down procedure. Further reference for cover positioning can be found in the wing Illustrated Parts Catalogue (IPC).

4.11.1 Unload Tip Struts – Clip Type

Push the Tip Strut so that it opens the clip. Remove the hook from the sail eyelet. Remove the strut.

Figure 41 Section 4. Detension Tip Strut

4.11.2 Unload Tip Struts – Hinge Type

Fold the tip struts pushing the hinge joint towards the center of the wing. Once the sail end of the strut is inside the undersurface fold the strut forward and towards the tip of the wing and locate on top of leading edge.

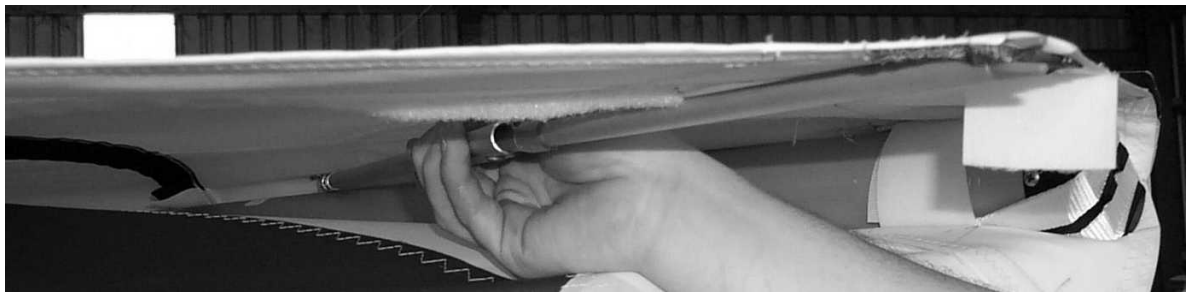
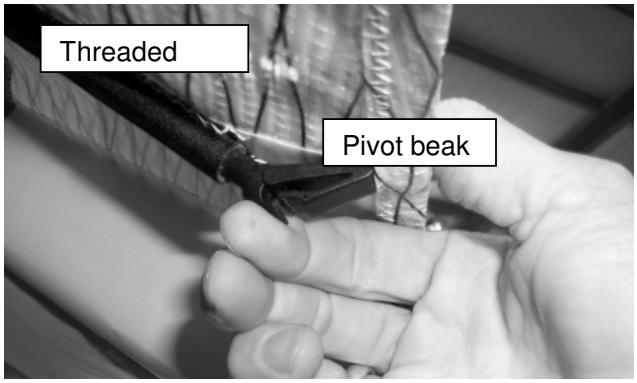


Figure 42 Section 4. Detension Tip Strut

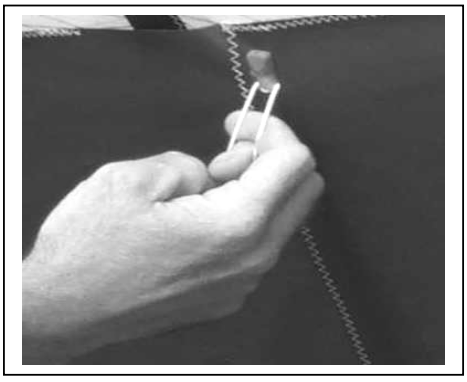
4.11.3 Remove Tip Battens



Remove outermost three tip battens. Unclip 'pivot beak' from 'threaded end'. Rotate *pivot beak* and remove from sail as shown. To adjust batten load tension, release *pivot beak* from sail and rotate batten clip. See maintenance manual for adjustment details.

Figure 43 Section 4. Remove Tip Battens

4.11.4 Remove Undersurface Battens



Insert finger through string loop and pull batten forward. Once the batten is forward pull string down to remove from oval pocket. Slide batten rearward until all the way out.

Figure 44 Section 4. Remove Undersurface Battens

4.11.5 Fit Tip Bags

Roll sail at the tips inwards and parallel to the leading edge. Slide the tip bag over the end of the leading edge. The barrel lock unit can be used to tension the bag bungee.

Figure 45 Section 4. Fit Tip Bags

4.11.6 Fit U-Bracket Cover

Unzip undersurface approximately 1 metre to allow better access to fit the U-bracket cover. Pass the cover up over the keel with the webbing strap facing to the rear of the wing. Locate on hook and loop fasteners around each down tube, (photo shown is a rear view).

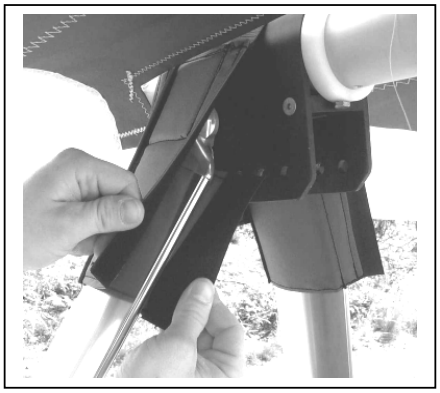
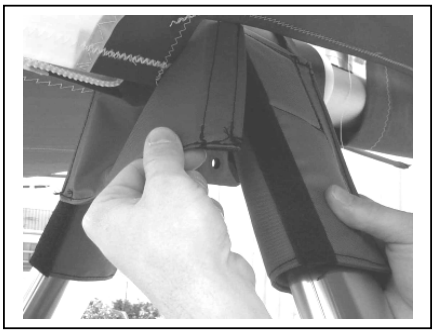


Figure 46 Section 4. Fit U-Bracket Cover

4.11.7 Velcro U-Bracket Face Cover



Position the face cover so that it is facing forward. The cover is designed to protect the wing bag when packed (photo shown is a front view).

Figure 47 Section 4. Velcro U-Bracket Face Cover

4.11.8 Trimmer Cover

If applicable, position the trimmer handle so that the handle is at 90 degrees to the down tube with the knob facing forward. Fit the trimmer cover.

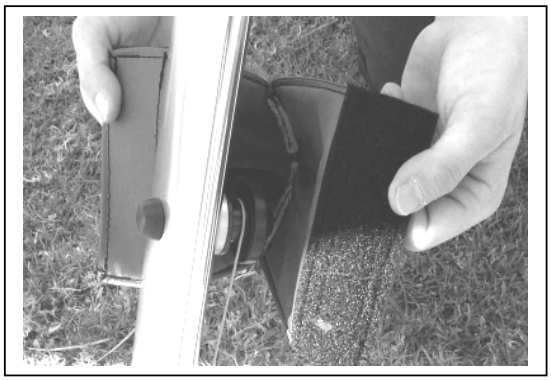


Figure 48 Section 4. Trimmer Cover

4.11.9 Disconnect Nose Catch and Remove Nose Cone

Remove the nose cone. Disconnect nose catch by removing the pip pin. The pip pin button should be depressed with the thumb while simultaneously pulling the pip pin out. Re-insert pip pin in nose channel.

Figure 49 Section 4. Disconnect Nose Catch and Remove Nose Cone

4.11.10 Remove Sail Cowling

Undo the securing Velcro tabs at the front of the cowl. Remove the sail cowling from the top of sail.

Figure 50 Section 4. Remove Sail Cowling

4.11.11 De-Tension Pull Back Cable

Depress quick clip with left thumb. Use right hand to pull on the webbing handle. Remove the shackle from the quick clip block and allow webbing handle to move forward.

Figure 51 Section 4. De-tension Pull Back Cable

4.11.12 Remove Main Sail Battens

Pull the leading edges together approximately 1/2 metre. Remove the remaining main sail battens. Insert battens in the batten bag.

NOTE
The straight battens are inserted in separate pockets.

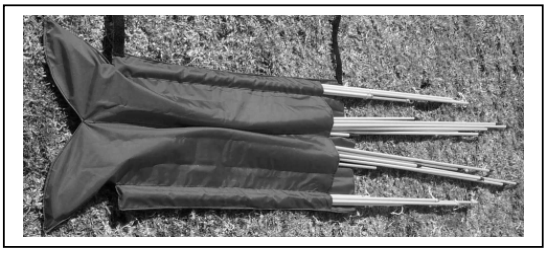
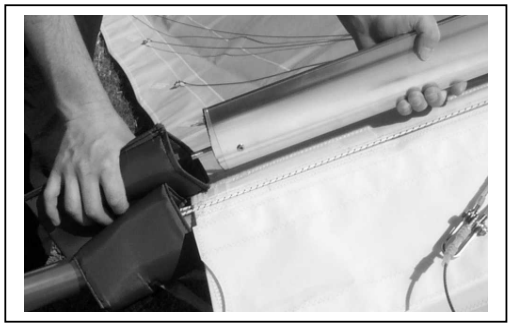


Figure 52 Section 4. Remove Main Sail Battens

4.11.13 Remove Kingpost



Remove the kingpost by lifting upward. Fit the quick clip Kingpost base cover around the quick clip. Insert the kingpost in to pouch.

Figure 53 Section 4. Remove Kingpost

4.11.14 Fold Leading Edges

Fold both wings in symmetrically, bringing both leading edges back at the same time or in small steps side to side.

Roll the sail inwards parallel to the leading edge. Attach a strap around one wing. Repeat for the other side. Fit the keel end pouch.

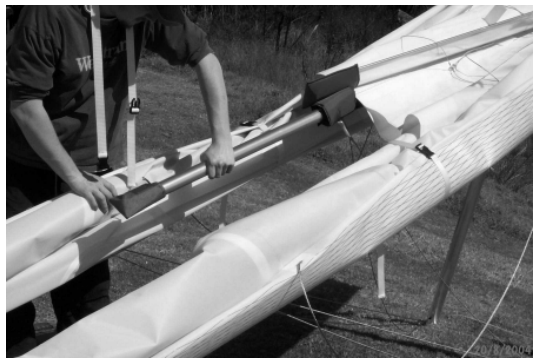


Figure 54 Section 4. Fold Leading Edges

4.11.15 Attach Straps

Once the leading edges are together apply slight pressure downwards on the keel to raise the leading edges above the down tubes and attach strap around both wings and keel. Attach remaining straps so that they are evenly spaced

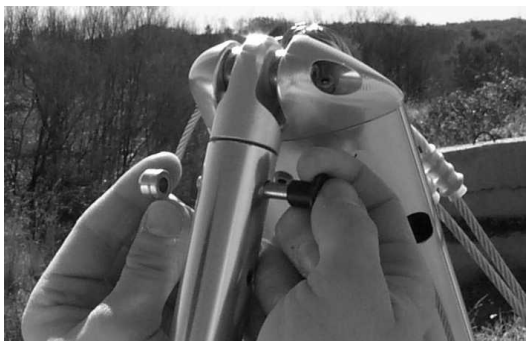
4.11.16 Fit Wing Bag

Position the wing bag to the nose of the wing. Stretch bag down the wing to enclose the tips.

4.11.17 Roll Wing

Hold the wing and down tube and roll the wing onto its back with the control frame to the side.

4.11.18 Disconnect Base Bar



Depress pip pin button and remove pip pin from base bar. Fold down tubes together with base bar folded out. Re insert the pip pin.

Figure 55 Section 4. Disconnect Base Bar

4.11.19 Fit Padding

Fit the base bar and down tube covers. Velcro the base bar cover in whilst holding the base bar in position.

Figure 56 Section 4. Fit Padding

4.11.20 Fold Control Frame

Undo centre two wing straps. Route flying wires between the down tube and lower the control frame into the wing whilst holding tension on wires. Avoid kinking the flying wires.

4.11.21 Position Battens

Stow the battens with the curve down at the rear of the glider bag. Reattach wing straps so that the control frame and battens are within the leading edge pockets. Zip up the wing bag.

Figure 57 Section 4. Position Battens

4.12 Wing Break Down Procedure – SST & Arrow

This section assumes that the wing has been removed from the base. The wing should have the keel extension fitted with the clevis pin and ring installed. This section is intended as a reference only and assumes prior knowledge of the break down procedure.

4.12.1 Unload Sprogs

Undo the zips and remove the sprog tubes from their pockets inside the sail. Note the inboard sprog folds toward the keel, and the outboard sprog folds toward the wing tip.

Figure 58 Section 4. Unload sprogs.

4.12.2 Unload Over-Centre Tip Battens

Unload the lever remove the acetyl roller unit from the sail webbing and remove the batten from the pocket.

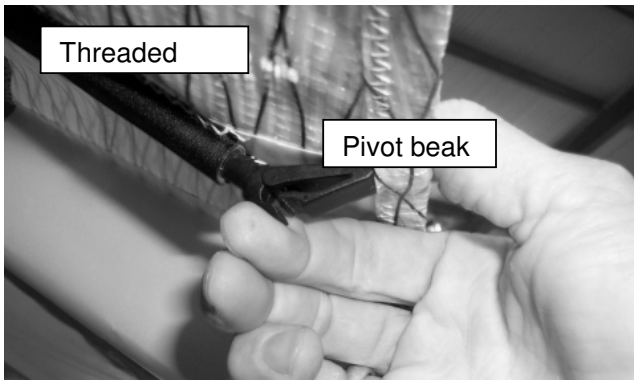
Figure 59 Section 4. Unload Over-Centre Tip Battens

4.12.3 Unload Tip Struts – Clip Type

Push the Tip Strut so that it opens the clip. Remove the hook from the sail eyelet. Remove the strut.

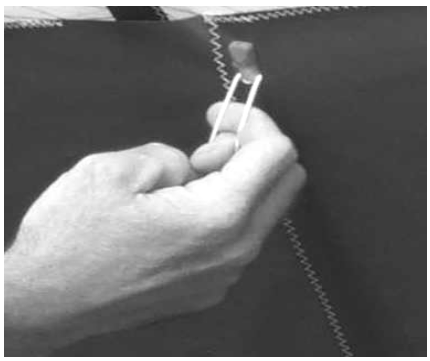
Figure 60 Section 4. Detension Tip Strut

Remove Tip Battens



Remove outermost three tip battens. Unclip 'pivot beak' from 'threaded end'. Rotate *pivot beak* and remove from sail as shown. To adjust batten load tension, release *pivot beak* from sail and rotate batten clip. See maintenance manual for adjustment details.

Figure 61 Section 4. Remove Tip BattensRemove Undersurface Battens



Insert finger through string loop and pull batten forward. Once the batten is forward pull string down to remove from oval pocket. Slide batten rearward until all the way out.

Figure 62 Section 4. Remove Undersurface Battens

4.12.4 Fit U-Bracket Cover

The U-Bracket cover stays in the sail when the wing is assembled. Unzip the centre zip and pull each side of the padding down and over the tops of the U-Bracket and downtubes. Fit each of the down tube padding on the downtubes.

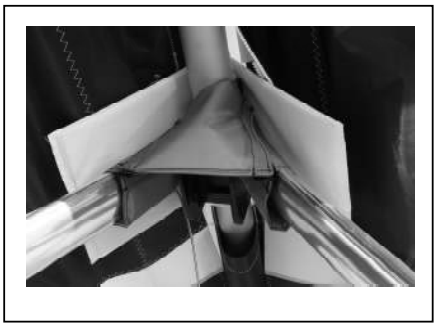


Figure 63 Section 4. Fit U-Bracket Cover

4.12.5 Fit Tip Bags

Roll sail at the tips inwards and parallel to the leading edge. Slide the tip bag over the end of the leading edge. The barrel lock unit can be used to tension the bag bungee.

Figure 64 Section 4. Fit Tip Bags

4.12.6 Trimmer Cover

If applicable, position the trimmer handle so that the handle is at 90 degrees to the down tube with the knob facing forward. Fit the trimmer cover.

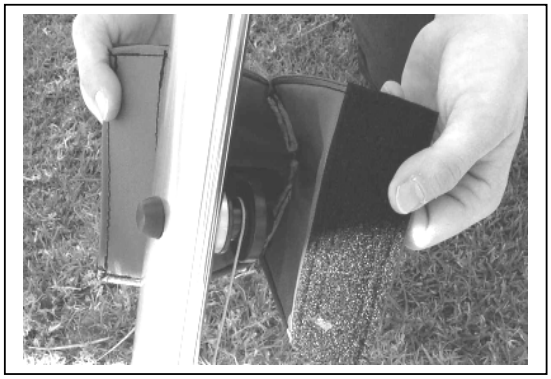


Figure 65 Section 4. Trimmer Cover

4.12.7 Disconnect Nose Catch and Remove Nose Cone

Remove the nose cone. Disconnect nose catch by removing the pip pin. The pip pin button should be depressed with the thumb while simultaneously pulling the pip pin out. Re-insert pip pin in nose channel.

Figure 66 Section 4. Disconnect Nose Catch and Remove Nose Cone

4.12.8 Undo Strut Bolts at Leading Edge

Remove the safety pin and wingnut from the connecting bolt. Gently move the leading edge forward or rearward to take any weight off the bolt and slide it out. Replace the bolt, wingnut and pin into the strut. Repeat for the other side.

Figure 67 Section 4. Remove Strut to Leading Edge Connecting Bolt

4.12.9 Remove Control Frame Connecting Bolt

Expose the control frame wingnut by moving the strut forward to be line with the downtube. Remove the safety pin, undo the wingnut and remove the bolt. Replace the bolt in the strut once removed.

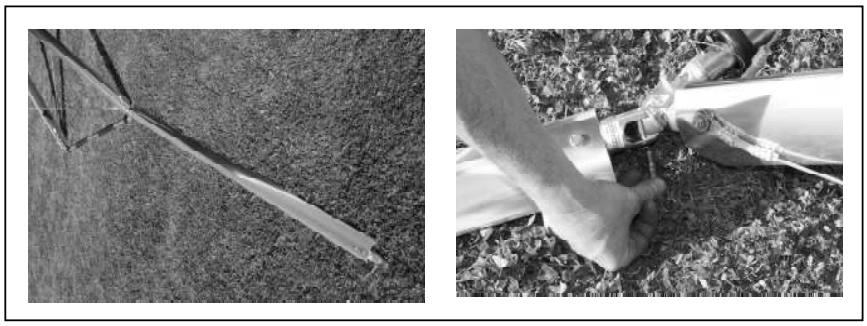


Figure 68 Section 4. Remove Control Frame Connecting Bolt

4.12.10 De-Tension Pull Back Cable

Depress quick clip with left thumb. Use right hand to pull on the webbing handle. The webbing handle is located underneath the sail, next to the keel. Remove the shackle from the quick clip block and allow webbing handle to move forward.

Figure 69 Section 4. De-tension Pull Back Cable

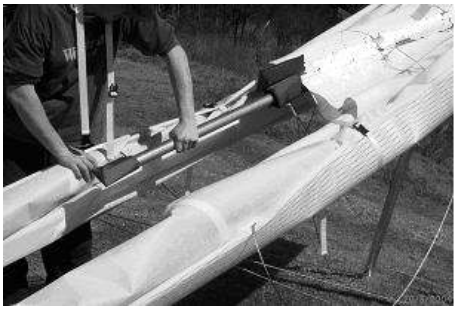
4.12.11 Remove Main Sail Battens

Pull the leading edges together approximately 1/2 metre. Remove the remaining main sail battens. Insert battens in the batten bag.

NOTE
The straight battens are inserted in separate pockets.

Figure 70 Section 4. Remove Main Sail Battens

4.12.12 Fold Leading Edges



Fold both wings in symmetrically, bringing both leading edges back at the same time or in small steps side to side.

Roll the sail inwards parallel to the leading edge. Attach a strap around one wing. Repeat for the other side. Fit the keel end pouch.

Figure 71 Section 4. Fold Leading Edges

4.12.13 Attach Straps

Once the leading edges are together apply slight pressure downwards on the keel to raise the leading edges above the down tubes and attach strap around both wings and keel. Ensure the nose wire is disconnected before pushing down on the keel. Attach remaining straps so that they are evenly spaced

4.12.14 Fit Wing Bag

Position the wing bag to the nose of the wing. Stretch bag down the wing to enclose the tips.

4.12.15 Roll Wing

Hold the wing and down tube and roll the wing onto its back with the control frame to the side.

4.12.16 Disconnect Base Bar

Depress pip pin button and remove pip pin from base bar. Fold down tubes together with base bar folded out. Re insert the pip pin.

Figure 72 Section 4. Disconnect Base Bar

4.12.17 Fit Padding

Fit the base bar and down tube covers. Velcro the base bar cover in whilst holding the base bar in position.

Figure 73 Section 4. Fit Padding

4.12.18 Fold Control Frame

Undo centre two wing straps. Route flying wires between the down tube and lower the control frame into the wing whilst holding tension on wires. Avoid kinking the flying wires.

4.12.19 Position Battens

Stow the battens with the curve down at the rear of the glider bag. Reattach wing straps so that the control frame and battens are within the leading edge pockets. Zip up the wing bag.

Figure 74 Section 4. Position Battens

4.12.20 Position Struts

Figure 75 Section 4. Fit Padding

4.13 Transportation and Storage

The wing must always be transported inside its bag, and the bag zip should face downwards to prevent the entry of rainwater. During transportation, or when stored on slings, the wing must be supported at its centre and at two points not more than one metre from each end. The padding supplied with the wing must be used to prevent chaffing during transport.

Supports should be softly padded, and any support systems used for transport, such as roof racks, must use attachment straps that are sufficiently secure to eliminate the possibility of damage from vibration and movement.

Avoid damage to your wing by using well-padded racks. As the wing is quite heavy a strong set of racks are required. Flat straps should be used for tie downs to avoid damage to leading edge Mylar.

When transporting the trike base the use of trike and prop covers to protect your aircraft from road grime (and idle fingers) is recommended. Tie the propeller to the trike to stop it from rotating at speed.

Check that the back of the wing is well clear of the front mast with the trike on the trailer. Remember that you have an overhanging load when manoeuvring in tight places.

Store the wing in a dry room off the ground; air the wing out regularly to avoid mildew, and never store wet.

See your Rotax Manual for precautions to be observed if you intend to store the aircraft without use for extended periods.

4.14 Noise Characteristics

The Edge XT 912 has been certificated to UK Air Navigation (Environmental Standards) Order 2002, schedule 3 for two seat microlight aeroplanes. Noise levels were recorded at 78.2 dB(A).

Airservices Australia have found compliance to CAO 101.55 with resultant noise levels of 62.7 dB(A).

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PERFORMANCE

5 PERFORMANCE

5.1 General

The performance data in the following section has been computed from actual flight tests with the aircraft and power plant in good condition and using average piloting techniques. It should be noted that piloting techniques, climatic conditions and aircraft condition will cause significant variation to these performance figures.

5.2 Take Off and Landing

5.2.1 Take Off XT 912 / Streak & SST

Performance at MTOW	Metric	Imperial
Take off Distance to 15 m (50 ft)	247 m	810 ft

Table 1 Section 5. Streak and SST Take Off

5.2.2 Take Off XT 912 / Cruze

Performance at MTOW	Metric	Imperial
Take off Distance to 15 m (50 ft)	210 m	689 ft

Table 2 Section 5. Cruze Take Off

5.2.3 Take Off XT 912 / Merlin

Performance at MTOW	Metric	Imperial
Take off Distance to 15 m (50 ft)	204 m	669 ft

Table 3 Section 5. Merlin Take Off

5.2.4 Take Off XT 912 / Arrow

Performance at MTOW	Metric	Imperial
Take off Distance to 15 m (50 ft)	235 m	771 ft

Table 4 Section 5. Arrow Take Off

Takeoff distances are specified for:

Sea Level with:

Max Take Off Power

A level dry runway

With short grass

Still wind

And temperature of 15 deg C.

The following factors will increase takeoff distance:

Reduced Power Take Off

Higher drag runway surfaces such as wet or long grass

Tail wind

Uphill takeoff

OAT above 15 deg C

Runway altitude above sea level

The pilot is required to take into account the effect of the above when determining takeoff distance

5.2.5 Landing XT 912 / Streak and SST

Performance at MTOW	Metric	Imperial
Landing Distance from 15 m (50 ft)	325 m	1066 ft

Table 5 Section 5. Streak and SST Landing

5.2.6 Landing XT 912 / Cruze

Performance at MTOW	Metric	Imperial
Landing Distance from 15 m (50 ft)	306 m	1004 ft

Table 6 Section 5. Cruze Landing

5.2.7 Landing XT 912 / Merlin

Performance at MTOW	Metric	Imperial
Landing Distance from 15 m (50 ft)	306 m	1004 ft

Table 7 Section 5. Merlin Landing

5.2.8 Landing XT 912 / Arrow

Performance at MTOW	Metric	Imperial
Landing Distance from 15 m (50 ft)	320 m	1050 ft

Table 8 Section 5. Arrow Landing

Landing distances are specified for:

Sea Level with

A level dry runway

With short grass

Still wind

And temperature of 15 deg C

The following factors will increase landing distance:

Lower drag runway surfaces such as tarmac

Tail wind

Down hill landing

OAT above 15 deg C

Runway altitude above sea level.

The pilot is required to take into account the effect of the above when determining landing distance.

Crosswind components of up to 12 knots at maximum AUW are within aircraft operating limitations.

Always exercise judgement when selecting locations for take-off and landing. Leave adequate margin for appropriate control action in the event of sudden engine failure or turbulence being encountered.

CAUTION

TAKE OFF AND LANDING DISTANCES MUST BE INCREASED BY 20% FOR EACH 1000 FEET OF ALTITUDE ABOVE SEA LEVEL.

5.3 Climb

5.3.1 XT 912 / Streak and SST

Performance at MTOW	Metric	Imperial
Climb rate (49 kts)	4.2 m/sec	825 ft/min
Best Climb Speed	49 kts	49 kts
Sea Level Gradient of Climb	17.8%	17.8%

Table 9 Section 5. Streak and SST Climb

5.3.2 XT 912 / Cruze

Performance at MTOW	Metric	Imperial
Climb rate (45 kts)	5.0 m/sec	976 ft/min
Best Climb Speed	45 kts	45 kts
Sea Level Gradient of Climb	23%	23%

Table 10 Section 5. Cruze Climb

5.3.3 XT 912 / Merlin

Performance at MTOW	Metric	Imperial
Climb rate (45 kts)	3.9 m/sec	764 ft/min
Best Climb Speed	45 kts	45 kts
Sea Level Gradient of Climb	17%	17%

Table 11 Section 5. Merlin Climb

5.3.4 XT 912 / Arrow

Performance at MTOW	Metric	Imperial
Climb rate (49 kts)	4.7 m/sec	925 ft/min
Best Climb Speed	49 kts	49 kts
Sea Level Gradient of Climb	18.6%	18.6%

Table 12 Section 5. Arrow Climb

Climb data is for ISA conditions (Sea Level at 15 deg C)

5.4 Airspeed Calibration

All Air Speeds in this AOI are expressed as Knots Indicated Air Speeds (KIAS) unless otherwise noted. Below is a table showing the relationship between Indicated Air Speed and Calibrated Airspeed. The table assumes zero instrument error.

Indicated Air Speed (KIAS)	Calibrated Air Speed (KCAS) Standard Windscreen	Calibrated Air Speed (KCAS) Windscreen Extension Fitted
35	34	32
40	39	36
45	43	41
50	47	45
60	56	52
70	65	61
80	74	70
85	79	74

Table 13 Section 5. Airspeed Calibration

5.5 Stall Speeds

5.5.1 XT 912 / Streak, SST and Arrow

Stall Performance	
Stall Speed @ MTOW	35 kt
Stall Speed @ 320 kg TOW	31 kt

Table 14 Section 5. Streak and SSt Stall Speeds

5.5.2 XT 912 / Cruze

Performance	Metric
Stall Speed @ MTOW	34 kt
Stall Speed @ 320 kg TOW	28 kt

Table 15 Section 5. Cruze Stall Speeds

5.5.3 XT 912 / Merlin

Performance	Metric
Stall Speed @ MTOW	34 kt
Stall Speed @ 320 kg TOW	28 kt

Table 16 Section 5. Merlin Stall Speeds

5.6 Glide

Glide figures have been determined with the engine off at maximum take off weight with the trimmer set in the fast configuration.

5.6.1 XT 912 / Streak, SST and Arrow

Performance - 54 kts at MTOW	Metric	Imperial
Descent Rate	3.9 m/s	770 ft/m
Descent Gradient	15.3%	15.3%
Glide Distance from 1000ft AGL	2 km	1.2 miles

Table 17 Section 5. Streak and SST Glide

5.6.2 XT 912 / Cruze

Performance - 45 kts at MTOW	Metric	Imperial
Descent Rate	3.0 m/s	590 ft/m
Descent Gradient	14%	14%
Glide Distance from 1000ft AGL	2.2 km	1.4 miles

Table 18 Section 5. Cruze Glide

5.6.3 XT 912 / Merlin

Performance - 45 kts at MTOW	Metric	Imperial
Descent Rate	3.15 m/s	621 ft/m
Descent Gradient	14.4%	14.4%
Glide Distance from 1000ft AGL	2.1 km	1.3 miles

Table 19 Section 5. Merlin Glide

Glide data is for ISA conditions (Sea Level at 15 deg C).

5.7 Cruise Performance

5.7.1 XT 912 / SST

Performance at MTOW	Australian	European	USA
Cruise Speed	70 kts	130 km/hr	80 mph
Typical Fuel Burn @ Cruise (See Note)	11 lt/hr	11 lt/hr	2.9 gal/hr
Range @ Cruise	730 km	730 km	453 miles

Table 20 Section 5. SST Cruise

5.7.2 XT 912 / Streak

Performance at MTOW	Australian	European	USA
Cruise Speed	65 kts	120 km/hr	75 mph
Typical Fuel Burn @ Cruise (See Note)	12 lt/hr	12 lt/hr	3.2 gal/hr
Range @ Cruise	670 km	670 km	416 miles

Table 21 Section 5. Streak Cruise

5.7.3 XT 912 / Cruze

Performance at MTOW	Australian	European	USA
Cruise Speed	50 kts	92 km/hr	57 mph
Typical Fuel Burn @ Cruise (See Note)	9.5 lt/hr	9.5 lt/hr	2.5 gal/hr
Range @ Cruise	650 km	650 km	403 miles

Table 22 Section 5. Cruze Cruise Performance

5.7.4 XT 912 / Merlin

Performance at MTOW	Australian	European	USA
Cruise Speed	47 kts	87 km/hr	54 mph
Typical Fuel Burn @ Cruise (See Note)	9.5 lt/hr	9.5 lt/hr	2.5 gal/hr
Range @ Cruise	613 km	613 km	381 miles

Table 23 Section 5. Merlin Cruise Performance

5.7.5 XT 912 / Arrow

Performance at MTOW	Australian	European	USA
Cruise Speed	75 kts	157 km/hr	98 mph
Typical Fuel Burn @ Cruise (See Note)	11 lt/hr	11 lt/hr	2.9 gal/hr
Range @ Cruise	786 km	786 km	488 miles

Table 24 Section 5. Arrow Cruise

NOTE
Fuel consumption figures are included as a guide only. The consumption figures should not be used for planning purposes. Changes in aircraft configuration, load, altitude, wind strength and direction as well as climatic conditions will cause significant variation in fuel consumption.

WEIGHT BALANCE AND EQUIPMENT

6 WEIGHT BALANCE AND EQUIPMENT

6.1 General

This aircraft must only be flown solo from the front seat. All aircraft operations may be carried out whilst solo, as when the aircraft is flown dual.

The fuel capacity must always be considered when measuring the AUW of the aircraft. Remember that fuel is measured at 0.7 kg per litre and fuel quantity will alter the aircraft's performance during take off and landing. A fuel volume calculator can be found in section 6.3.2.

6.2 Aircraft Weight

The table in section 6.2.1 shows the weight of the aircraft as weighed during final Quality Assurance at the factory. The following page shows, if applicable, the options that were included when the aircraft was weighed. The empty weight shown below can also be found on the limitations placard on the aircraft dash panel. A second issue section is included which allows the weight to be revised if any additional equipment is installed or if the empty weight of the aircraft changes for any reason. If the empty weight has changed then revised placards are available from Airborne. The weight calculators allow for additional weight to be accounted for.

6.2.1 Aircraft Weighing Information

Typical wing weights are SST (58 kg) Streak 3 (50 kg), Cruze (51 kg), Merlin (49 kg), and Arrow (57kg).

Aircraft Type: AirBorne WindSports EDGE XT 912 STREAK / CRUZE / MERLIN				
	Serial No	Issue	Date	Empty * Weight (kg)
Trike Base	XT912-	1		kg
Unusable Fuel	3 Litres	1		2 kg
Wing	-	1		kg
Training Bars	1.4 kg (If applicable)	1		
			Issue 1 Aircraft Empty Weight*	kg

Trike Base	XT912-	2		kg
Unusable Fuel	3 Litres	2		2 kg
Wing	-	2		kg
Training Bars	1.4 kg (If applicable)	2		
			Issue 2 Aircraft Empty Weight *	kg

Table 1 Section 6. Aircraft Weight

*Empty Weight for the aircraft comprises of:

- Standard equipment as per section 6.2.2
- Optional equipment as per section 6.2.3
- Full coolant, full engine oil and unusable fuel

The keel extension and pack up gear are not included in the empty weight.

6.2.2 Standard Equipment

STANDARD EQUIPMENT	Fitted (Yes/No)
Engine Type	ROTAX 912 UL 2
Engine Serial Number	
Carburettor Heating	Std
Airspeed Indicator (Knots)	Std
GX2 Instrument	Std
Tool Kit & Mast Strap Hold Down Strap	Std

Table 2 Section 6. Aircraft Weight Standard Equipment

6.2.3 Alternate Equipment

ALTERNATE EQUIPMENT	Fitted (Yes/No)
Gear Box Type 2.27 : 1	
Gear Box Type 2.43 : 1	
Propeller Type BOLLY BOS 66 INCH with BOS 3 hub	
Propeller Type Warp Drive 3 67.7 INCH Blade with Warp Drive hub	

Table 3 Section 6. Aircraft Alternate Equipment

6.2.4 Optional Equipment

OPTIONAL EQUIPMENT	FITTED (Yes/No)
BRS Emergency Parachute	
Radio	
Intercom	
Training Bars	
Disk Brakes	
Engine Cowl	
Windscreen XT 880mm	

Table 4 Section 6. Aircraft Weight Optional Equipment

6.3 Typical Aircraft Weights

Empty Weight + 172 kg crew + 1 hr Fuel (18 litres /13 kg)	406 kg	895 lb
Empty Weight + 86 kg pilot + full fuel (70 litres / 49kg)	356 kg	785 lb

Table 5 Section 6. Typical Aircraft Weights

6.3.1 Weighing Procedure

The trike base should be lifted by the suspension point on the top of the mast.

Prior to weighing ensure that all fuel is drained and all baggage is removed from the aircraft. The weight, if changed due to option fitment should be recorded as a new issue and dated accordingly in section 6.2.

6.3.2 Weight Calculator

The weight calculator has been designed to assist in the calculation of maximum allowable fuel so that MTOW does not exceed 450kg. The calculator uses the typical empty weight of the microlight as stated above. Adjustments must be made if the microlight is not the "typical weight" i.e. if additional options are included.

Instructions

Find the intersection of the pilots weight versus the passenger weight (plus additional weight), this gives the maximum amount of fuel to be used without exceeding the MTOW.

6.3.3 Metric Fuel Calculator

Airborne XT Series Aircraft Fuel Volume Calculator (Metric)

Rear Occupant +20 kg Additional equipment	Rear Occupant+10 kg Additional	Rear Occupant kg \ Front Occupant kg	60	65	70	75	80	85	90	95	100
		0									
		5									
	0	10									
	5	15									
0	10	20									
5	15	25									
10	20	30									
15	25	35									
20	30	40									
25	35	45									
30	40	50									
35	45	55									
40	50	60	Tank filling volume calculated in liters								
45	55	65									
50	60	70			Full Tank						
55	65	75									
60	70	80									67
65	75	85								67	60
70	80	90							67	60	53
75	85	95						67	60	53	46
80	90	100					67	60	53	46	39
85	95					67	60	53	46	39	32
90	100				67	60	53	46	39	32	25
95				67	60	53	46	39	32	25	18
100			67	60	53	46	39	32	25	18	11

Example: Pilot 75kg, 10kg additional equipment, Passenger 100kg = 60L fuel

Imperial	Metric

UNIT CONVERSION

Gallons US	Litres	lb	kg
0.2642	1	2.205	1
2.9	11	11.0	5
4.8	18	22.0	10
6.6	25	33.1	15
8.5	32	44.1	20
10.3	39	55.1	25
12.2	46	66.1	30
14.0	53	77.2	35
15.9	60	88.2	40
17.7	67	99.2	45
18.5	70	110.2	50
14.5	55	121.3	55
15.9	60	132.3	60
17.7	67	143.3	65
18.5	70	154.3	70
Fuel capacity 70L subject to:		165.3	75
MTOW kg	450	176.4	80
Payload kg	223	187.4	85
Empty weight kg	222	198.4	90
Unuseable fuel L	3	209.4	95
Additional equipment:		220.5	100
eg BRS of 10kg		231.5	105
Fuel consumption at full power		242.5	110
L/Hr	18	253.5	115
25L=73 minutes useable fuel at full power		264.6	120

Table 6 Section 6. Metric Fuel Calculator

6.3.4 Imperial Fuel Calculator

Airborne XT 912 Series Aircraft Fuel Volume Calculator Imperial (US)

Rear Occupant +40 lb Additional equipment	Rear Occupant +20 lb Additional Equipment	Rear Occupant	Front Occupant 120	130	140	150	160	170	180	190	200	210	220
60	80	100											
70	90	110											
80	100	120											
90	110	130											
100	120	140				Tank filling volume calculated in US gallons							
110	130	150											
120	140	160											
130	150	170											
140	160	180											17.1
150	170	190				FULL TANK						17.1	15.4
160	180	200									17.1	15.4	13.8
170	190	210								17.1	15.4	13.8	12.1
180	200	220							17.1	15.4	13.8	12.1	10.4
190	210							17.1	15.4	13.8	12.1	10.4	8.8
200	220						17.1	15.4	13.8	12.1	10.4	8.8	7.1
210						17.1	15.4	13.8	12.1	10.4	8.8	7.1	5.4
220					17.1	15.4	13.8	12.1	10.4	8.8	7.1	5.4	3.8

Metric	Imperial
Fuel capacity 18.5 gal(US) subject to:	
MTOW lb	992
Payload lb	492
Empty weight lb	489
Unuseable fuel gal	0.79
Additional equipment:	
eg BRS of 20.7 lb	
Fuel consumption at full power	
4.6	gal / hr
7.1 gal = 82minutes useable fuel at full power	

UNIT CONVERSION

Gallons US	Litres	lb	kg
0.2642	1	2.205	1
1.0	3.8	1	0
3.8	14.4	10	5
5.4	20.4	20	9
7.1	26.9	40	18
8.8	33.3	70	32
10.4	39.4	120	54
12.1	45.8	160	73
13.8	52.2	200	91
15.4	58.3	240	109
17.1	64.7	280	127
		320	145
		360	163
		400	181
		440	200
		480	218
		503	228
		520	236
		560	254
		600	272
		640	290
		992	450

Example: Pilot 200 lb, 20 lb additional equipment, Passenger 190 lb = 15.4 gallons of fuel maximum

Table 7 Section 6. Imperial Fuel Calculator

AIRCRAFT & SYSTEMS DESCRIPTION

7 AIRCRAFT & SYSTEMS DESCRIPTION

7.1 General

This section provides descriptions of the aircraft and its systems as well as methods of operation where appropriate.

Information on the aircraft flight controls is detailed in this section, but it is mandatory that you receive professional training prior to any solo flight. It is illegal to operate this aircraft in Australia without a licence issued by the HGFA or RAA.

7.2 Airframe

Wing

The Streak 3, Cruze, Merlin wings are high performance wire braced weight-shift controlled microlight wings. The SST and Arrow wings are high performance strut braced weight-shift controlled microlight wings. The airframe is constructed from 6061-T6 multi sleeved aluminium tubing.

The multi sleeved leading edge construction is 63.5, 60.0 and 57.0 mm tube. This large diameter construction designed along with the sail luff curve, acts to preload the leading edge and maximise trailing edge tension throughout the speed range.

The sails are constructed using latest technology in the sail making industry. The leading edge is constructed using a PX 20 Mylar cloth. Except the Arrow, the mainsail cloth is 6 oz Dacron with a Mylar insert in leading edge pocket. A trailing edge band provides minimum stretch when loaded that not only gives long sail life, but also improves the top speed by controlling twist. The Arrow mainsail has “rim and fill” PX Mylar.

AirBorne wings are load tested in excess of 2450 kg. Excellent engineering contributes to the relatively lightweight of 58 to 49kg.

Base

Attached to the wing by way of a universal joint is the trike base. The universal joint allows the free movement of the trike base in pitch and roll by which control is effected. The trike base includes the characteristic tricycle undercarriage, power plant and cockpit.

The engine is mounted to the engine platform at the base of the engine. A compression rod is used at the top of the engine and attached to the seat / mast block. A long-range fuel tank is mounted beneath the engine platform.

The pilot cockpit is designed to allow for various size pilots. The standard instruments used on the XT are a Skydat GX2 and additional analogue airspeed indicator in knots. The cockpit has soft sides attached to the pod and encloses the trike base tube and most of the fuel tank.

The maximum tyre pressure is 30 psi (205 kPa) and optimum pressure for general operations is 15 psi (103 kPa).

7.3 Flight Controls

Flight controls are as follows:

- Control bar move right = Left turn
- Control bar push out = Pitch up
- Push right toe = Throttle open
- Hand throttle forward = Throttle open
- Tighten trim cable = Slow trim

7.4 Ground / Flight Control

Ground controls are as follows:

- Push left pedal = Taxi steering right
- Push Left Toe = Brakes on
- Ignition switch forward = Switch on
- Choke forward = Choke on
- Fuel Tap Aligned with tap body = Fuel on

7.5 Trimmer operation

7.5.1 Streak 3 and Cruze Wings

The trimmer system allows in flight trim adjustment by rotating the trimmer wheel on the right downtube. Rotation of the trimmer wheel clockwise raises the reflex bridles causing extra reflex in the root section of the wing. This causes a reduction in trim speed of 10-15 knots. The swage on the trimmer wire is used as a pointer on the trimmer placard.

7.5.2 SST and Arrow Wing

Turning the trim handle pulls the keel down at the rear, acting like a counterweight. This causes a reduction in trim speed of 10-15 knots

For all wings during take off and landing the recommended trimmer setting is in the fast trim position. It is acceptable to set the trim as far as mid trim position for take off and landing. The decal on the control frame upright, adjacent to the trimmer knob indicates the trim position.

There is a slight increase in roll pressures as the trimmer is used to decrease trim speed.

The aircraft is designed to be stable at trim under all loads with a small increase in trim airspeed as the AUW is increased.

7.6 Instrument panel

The instrument panel consists of an analogue airspeed indicator (knots) on the left side with the digital GX2 instrument mounted centrally in the dash. A power circuit breaker, power switch, 12V DC outlet and starter button can be found on the right side of the dash.

Figure 1 Section 7. Instrument Panel

7.7 Undercarriage System

The microlight uses a tricycle undercarriage with a braking system via a nose wheel drum brake unit. Oil dampened front shock absorbers are used.
The rear suspension is a swinging wish bone design in conjunction with a 45mm compression strut which houses an oil pneumatic shock absorber.

7.8 Seat Adjustment

The front seat backrest on the Edge XT trike has a simple for and aft adjuster on the base tube. To adjust the seat backrest forward the following procedure should be adopted:

1) Remove pin and bolt from channel.
2) Rotate seat back forward and replace bolt in channel one hole further forward.
3) Replace safety pin through bolt.

To move backrest rearward the bolt should be moved one hole back.

7.9 Occupant Restraint Harness

Both front and rear seats are fitted with a 3-point restraint harness system. The shoulder inertia reel system is fitted to the mast and requires attachment on the male section of the lap belt during lap belt fastening (see photo).

When flying the trike solo it is important to fasten the rear seat belt to prevent contact with hot engine components in flight.

Figure 2 Section 7. Restraint harness, shoulder sash & buckle fitting.

7.10 Engine

The power unit is a Rotax 912 UL 80hp 4 stroke engine designed and built in Austria. The Rotax engine is fitted with a gearbox, which delivers smooth thrust via a reduction drive. This power unit is complemented with a ground adjustable propeller giving the ultimate in performance and reliability. The engine is fitted with Bing carburettors with an external dry filter.

7.11 Carburettor heating

The system is designed to minimize the risk of carburetor icing. A heater block is attached directly to the carburetor body with radiator coolant passing through the block. The heat from the carburetor body is also transferred to the carburetor spindle and butterfly. No significant heating of the intake air takes place so there is negligible loss of engine power. All flight performance data has been obtained with the heaters fitted and operational.

The carburetor heating system will work automatically when on. An occasional check that the heater bodies are getting warm is advisable after engine running.

The system has not been tested under all possible conditions that may prevail, therefore its effectiveness cannot be guaranteed in all circumstances. Aircraft equipped with this device should never be flown in circumstances where a successful 'no power' landing cannot be made in the event of engine failure.

7.12 Propeller

The aircraft is equipped with a 3-blade composite propeller with ground adjustable pitch. The hub is anodised alloy.

Two alternate propeller/hub configurations are available for use on the XT912, these include:

Warp Drive 3 Blade with Warp Drive hub

67.7 inches (172 cm) diameter

Bolly BOS3 68 x 58 (left hand version) with BOS 3 hub

66 inches (167.6 cm) diameter.

Engine	Propeller	Reduction Drive Ratio	Tip Angle
912 UL	Bolly	2.43	12°
912 UL	Bolly	2.27	9°
912 UL	Warp Drive	2.43	12°
912 UL	Warp Drive	2.27	9°

Table 1 Propeller pitch and gearbox ratio table

The gear set part number stamped on the gearbox housing corresponds to the gearbox ratio at time of manufacture. Note that replacement gears are available to change the ratio within the gearbox.

Gearbox Ratio	Rotax Gear Set Part Number
2.27	996 605
2.43	887 680

Table 2 Rotax Gear Set Part Numbers

The propeller pitch setting and checking procedure is outlined in the Base Maintenance Manual. The pitch setting is determined as a part of certification of the aircraft. Settings outside this specification have an unknown effect on aircraft performance, and are not approved.

7.13 Brake System

A front wheel drum brake system or an optional rear wheel disk brake system is used on the aircraft. Depressing the brake lever on the left hand side of the front footrest actuates the brake, on aerotow equipped trikes the aerotow release is the lever on the top left, painted yellow. A brake lever lock is provided. To engage, depress foot lever and raise locking lever by hand. To disengage, depress the foot lever.

Use wheel chocks when leaving the disk brake equipped aircraft unattended for a period of time.

7.14 Electrical System

An electrical schematic for the aircraft is shown in the diagram on the following page.

The Electrical circuits comprise:

- an instrumentation circuit. The 12 V DC supply is protected by a 20 amp fuse at the battery and a 10 amp circuit breaker mounted on the dash. The master switch on the dash, when in the off position, disables the DC power socket, flight instrument and the electric start push button;
- an engine management circuit; and
- an ignition circuit.

It should be noted that the ignition circuit is a fail-safe system whereby the engine will run in the event of the ignition circuit becoming disconnected. Switching the coil to ground stops the engine.

When stopping the engine both switches on the side of the seat should be switched off. The master switch on the dash should then be turned to the off position to remove supply to the accessories.

If necessary the motor can be stopped using the chokes as detailed in section 3.3.10 of this AOI.

Refer to the Rotax manual for more details for the engine electrical system.

7.14.1 XT 912 Electrical Schematic

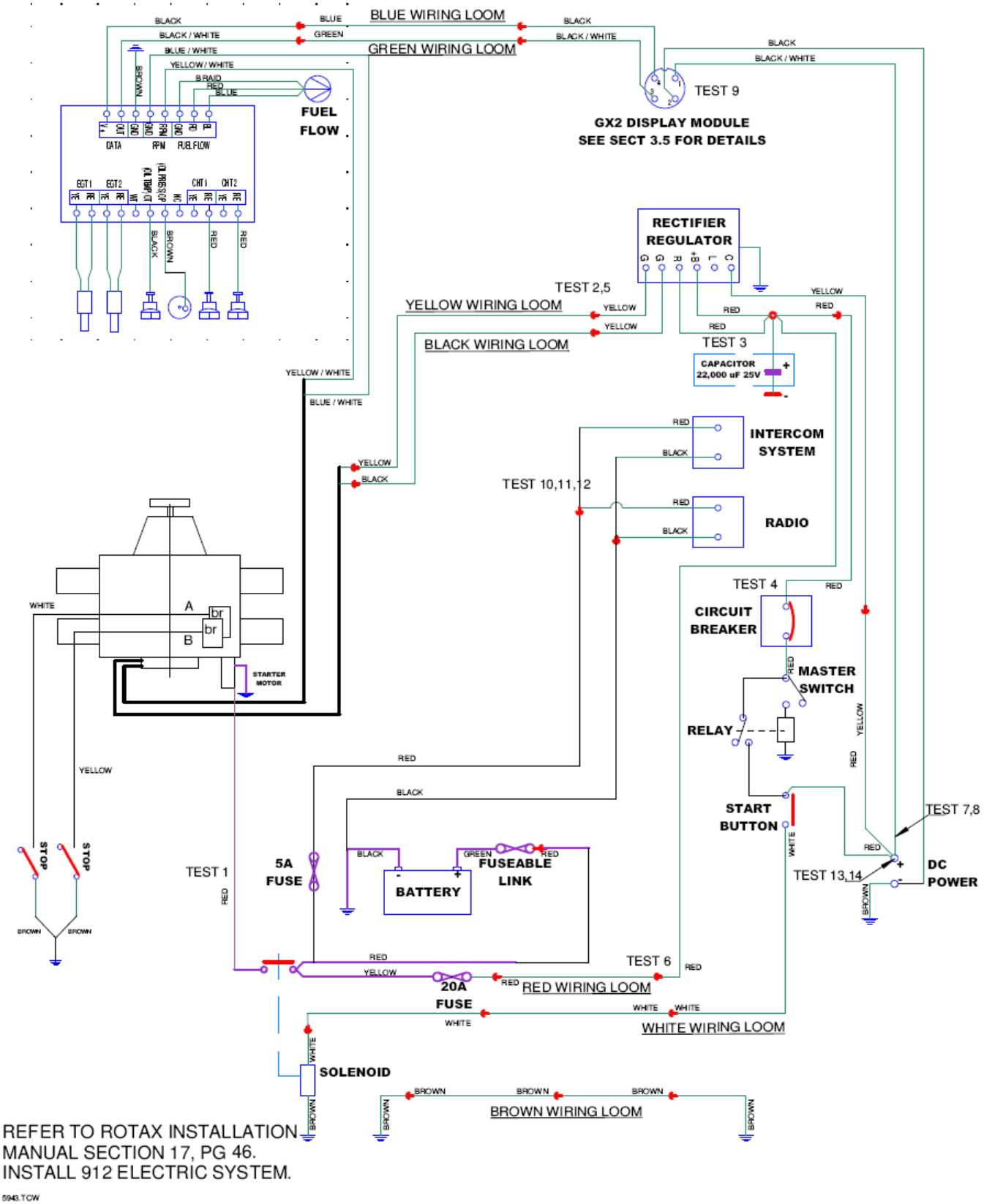


Figure 3 Section 7. Electrical Schematic

7.15 Pitot Static System and Instruments

The Pitot static system supplies ram air pressure to the air speed indicator from the nose of the cockpit. The static pick up is at the rear of the instrument under the dash

7.16 GX2 Instrument Function

The GX2 instrument has preset alarm limit thresholds. If any of the temperature or pressure limitations are reached the red light will start to flash.

Standard instrumentation includes the AMPtronics GX2 Digital Flight instrument (see description below) and an analogue airspeed indicator in knots.

WARNING

IT IS PROHIBITED TO FLY THIS AIRCRAFT WITH THE AMPTRONIC SKYDAT GX2 ALARM THRESHOLDS SET OUTSIDE THE ENGINE MANUFACTURER'S LIMITS.

7.16.1 Description of Features

The GX2 is a combined avionic instrument with programmable functions. The system consists of two parts: the display module, which is mounted in the dash, and the capture module, which is located on the engine tie rod. The photo shows the layout of the display when set up for the 912 Rotax engine.

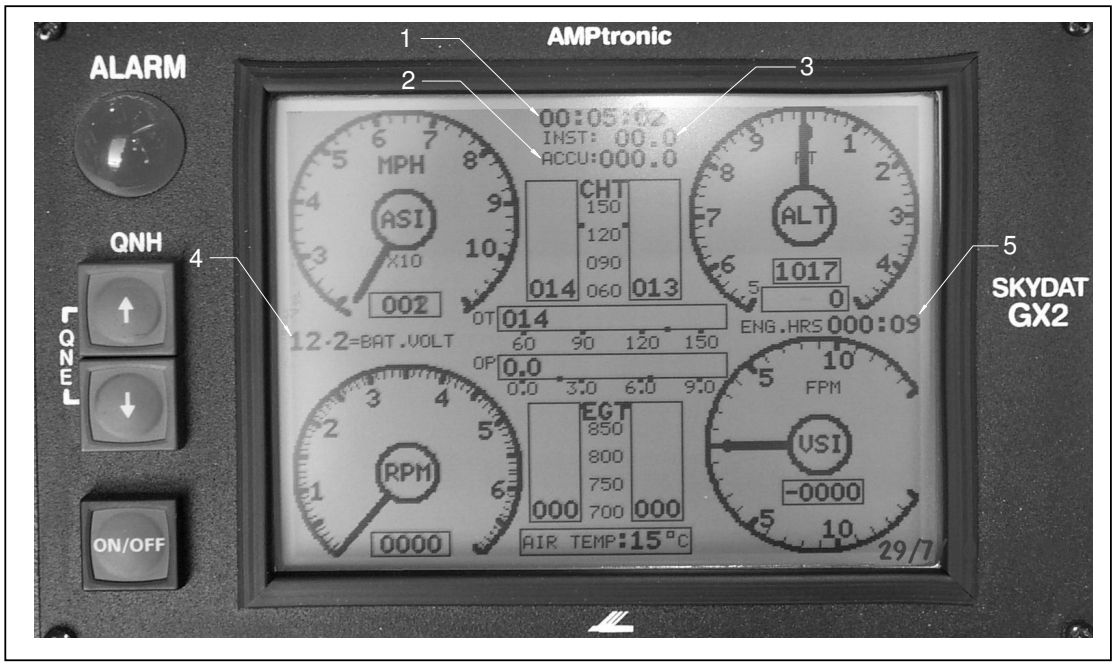


Figure 4 Section 7. GX2 Display

GX2 Features

ASI mph, knots or kilometers	ALT (Altimeter) in feet or meters
RPM (engine revolutions per minute)	VSI (vertical speed indicator) in m/s or ft/min
Flight duration (1), in hours; minutes; seconds	Battery Voltage (4)
Engine Hours (5), in hours, minutes	2 of: CHT (cylinder head temperature) Celsius or Fahrenheit
Oil Temperature	2 of: EGT (exhaust gas temperature) Celsius or Fahrenheit
Oil Pressure, bars or PSI	Air Temperature

Fuel flow data is available.

Accumulative fuel (2) in liters or gallons	Fuel Flow (3) in litres or gallons

Table 3 Section 7. GX2 Features

7.16.2 System Turn On

Turn key clockwise to the on position. Press the **"ON/OFF"** push button of the panel. The alarm lamp will flash briefly. If the lamp does not flash it should be rectified prior to flight as the flashing lamp indicates an over temperature situation.

The display will light up prompting you to reset the flight duration to zero by pressing **"QNH+"**. If the fuel flow option is installed, to reset the accumulated fuel consumed press **"QNH-"**. After a few seconds the different engine measurement indications will be displayed. The green LED on the capture module should be continually flashing.

The preset engine limits can be checked against the limits outlined in section 2.4.2 by noting the position of the larger square bars on the LCD display for the particular gauge.

Altimeter Adjustment

You can adjust the barometric pressure as follows:

QNE - Depress both buttons ↑↓ on the left of the instrument simultaneously to set at 1013mb.

QNH - Depress ↑ to increase altitude pressure. Depress ↓ to decrease altitude pressure.

The pressure display is right under "ALT" in the center of the altimeter. The readout below pressure display is a digital altimeter reading.

The preset limits can be checked against the limits outlined in section 2.4.2 by noting the position of the larger square bars on the LCD display for the particular gauge.

Changing units system

At any time with the instrument turned on press and hold simultaneously the two QNH push buttons.

After a few seconds the displayed units system will change and be memorized.

One of the following unit systems may be selected:

1. **Metric:**
   - Altitude in meters with QNH in mbar
   - ASI in km/h
   - VSI in m/s
   - Temperatures in Celsius
   - Oil pressure in bar
   - Fuel consumption in Litres /hour

2. Imperial (US)
- Altitude in ft with QNH in inches of Hg
- ASI in mi/h (Statute)
- VSI in ft/min
- Temperatures in Fahrenheit
- Oil pressure in PSI
- Fuel consumption in gal (US) /hour

3. Imperial (UK)
- Altitude in ft with QNH in mbar
- ASI in mi/h (statute) or knots
- VSI in ft/min
- Temperatures in Celsius
- Oil pressure in bar
- Fuel consumption in Litres /hour

The sequence of change is: **Metric**
Imperial (UK)
Imperial (US)
Imperial (UK) ASI in knots

NOTE
For Australian operations CASA requires the units to be set to Imperial (UK) with ASI in knots.

7.17 Emergency Parachute – Optional Equipment

NOTE
The parachute is optional unless the governing body of the country where the aircraft is to be flown requires a parachute.

The BRS emergency parachute system has a double acting firing mechanism. The parachute-operating handle is fitted with a safety pin and is located on the left side of the seat frame. This pin should be removed before each flight and the safety pin must be replaced before the pilot alights from the aircraft. A force of approximately 15 – 20 kg pull on the actuating handle is required to activate the BRS rocket motor.

Emergency procedures for use of the BRS can be found in section 3.3.9 of this manual. Additional information including service and maintenance requirements can be found in the BRS manual.

7.18 Ignition Switches
The ignition switches are located on the lower right side of the seat frame. Operation is forward for on and rearward for off. When the switches are in the off position the switch shorts the engine coils to earth causing the engine to stop.

HANDLING SERVICE AND MAINTENANCE

8 HANDLING SERVICE AND MAINTENANCE

8.1 Introduction

This section contains factory recommended procedures for proper ground handling and routine care for your aircraft. Included in this section is relevant information required by the operator.

WARNING

IT IS THE PILOTS RESPONSIBILITY TO ENSURE THAT ALL SERVICE BULLETINS HAVE BEEN ADDRESSED. IT IS ALSO THE PILOTS RESPONSIBILITY TO ENSURE SERVICING AND MAINTENANCE HAS BEEN PERFORMED AS OUTLINED IN THE APPROPRIATE MAINTENANCE MANUAL AND IN ACCORDANCE WITH THE APPLICABLE AVIATION REGULATIONS.

8.2 Identification Plate

The aircraft has two identification plates. The wing identification plate can be found on the negative plate of the universal bracket. The base identification plate can be found on the seat mast block on the left side of the aircraft. The serial number should be quoted when corresponding with the factory.

8.3 Aircraft Documents

The Aircraft Operating Instructions is one of a series of documents required to safely operate this aircraft. A document list can be found in section 0 of this manual under DATA PACKAGE.

8.4 Aircraft Inspection, Maintenance and repair

Maintainer qualifications vary from country to country. The operator / maintainer should be familiar with the local requirements. Maintenance requirements are outlined in the base maintenance manual for the base unit and in the wing maintenance manual for the wing. The following sections have been included because it is considered that the information may be required on a more regular basis.

8.5 Fuel System

8.5.1 Filling Fuel Tanks

The properties of the fuel tank material cause an increase in capacity after the first 2 to 3 tanks of fuel. Initial capacity is 64 litres with the "aged" capacity 70 litres. The fuel level markings have been positioned for the fuel tank capacity at 70 litres.

The XT has a single fuel tank. When the tank is being filled there may be a slight pressure differential between the sides of the tank, causing the fuel cap side to fill slightly faster than the other side. Allow time for the breather valves to equalise the pressure to allow complete filling and check that both sides are sufficiently full. Fill to the neck of the fuel entrance.

8.5.2 Fuel Specification

FUEL	
Preferred Fuel Type	En228 Premium/Regular. Super grade gasoline, lead free, min RON 90
Optional Fuel Type	AVGAS (see note)

Table 1 Section 8. Fuel Specification

NOTE

Due to higher lead content in AVGAS, the wear of the valve seats and deposits in the combustion chamber will increase. Therefore, use AVGAS only if you encounter problems with vapour lock or if the other fuel type is not available.

Use of AvGas requires higher frequency maintenance intervals. If AVGAS is used the Rotax web site

should be referenced for maintenance requirements. See Rotax service information 18-UL-97-D/E
Refer to section 2.12 for fuel capacities and limitations.

8.5.3 Fuel Sampling

There is a draincock on the base of the fuel tank at the left hand side, which may be used to check the quality of the fuel, and to drain fuel if necessary, it is especially important to remove any water that may have been introduced from the system.

8.5.4 Checking Fuel

The fuel is checked for water and contaminants by draining a sample of the fuel into a clear glass container. Once a sample has been taken the quality of the fuel can be checked by looking for any water at the bottom of the glass, and checking for any other visual contaminants.

If the fuel has been sitting for an extended period without use it may be advisable to replace it with fresh fuel.

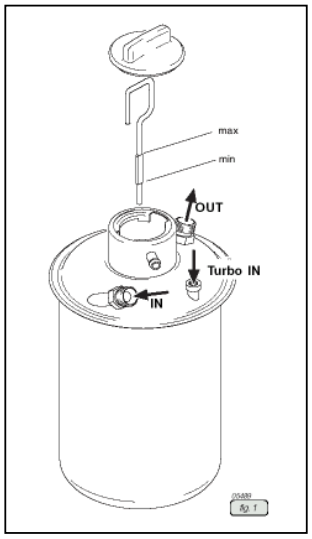
8.5.5 Draining the Fuel

Ensure that a suitable receptacle is found for the fuel that is to be drained, position the trike above the receptacle and depress the draincock. Ensure that there are no ignition sources and that the fuel is disposed of correctly.

8.6 Engine Oil System Replenishment

The minimum oil level is 3 litres, max 3.5 litres. This checked and replenished by removing the oil sump lid. Rotax has provided service instructions, which detail how to check the oil.

Removing the sump plug drains the sump. Ensure that the sump plug is correctly replaced and lock wired prior to refilling the engine with oil. Measure the amount to be replaced, refill, check the level, run the engine and recheck. The opportunity should be taken to replace the oil filter any time that the oil is replaced.



Oil Level Instructions:
Do not overfill the oil system. The difference between the min and max marks on the dipstick is 0.45 litres (0.48 qt).

Figure 1 Section 8. Oil Dipstick Diagram

Rotax Service instructions should be consulted (SI-27-1997 R1)

8.6.1 Lubricating Oil

The 912 UL engine has an external sump, and the entire system is standard to the Rotax 912 engine. The oil specification is given in the Rotax Operators Manual, Section 10.2.3, Lubricants. In general use only synthetic or semi synthetic oil, API classification "SF" or "SG" or later oils. Multigrade is recommended. These oil types are detergent types. Consult the Rotax manual and Rotax service instruction 18 UL 97, for the correct type and grade of oil for the ambient operating temperature.

Two oils, which are recommended by the Rotax Service instruction 18, UL 97 for use with both Avgas and Unleaded fuels are:

SHELL, Advance VSX 4, APISG, SAE 15W-50

VALVOLINE, Dura Blend Synthetic, APISJ, SAE 10W-40

Check oil and replenish as required.

Prior to oil check, turn the propeller by hand several times (in the direction of rotation) or let the engine idle for 1 minute.

The difference between maximum and minimum oil level mark on the dip stick is 0.45 Litre (0.48 qt).

Use caution around the hot exhaust header when removing the oil tank cap and checking the dip stick.

8.7 Cooling System

WARNING

DO NOT OPEN THE COOLING SYSTEM WHEN THE ENGINE IS HOT. SEVERE SCALDING AND OTHER INJURIES MAY RESULT.

Water-cooling system capacity is 2.5 Litre. See maintenance manual for further details.

Coolant Specification

A MANDATORY Rotax Directive was issued on the 25th of November 2004, which requires a change in the type of coolant that must be used with the Rotax 912 type engine. From the 23rd Feb 2005 the new coolant Evans NPG+ waterless coolant is to be used. The reason for the change is "In some instances conventional coolant (mixture ratio of 50% water and 50% antifreeze) can vaporize or boil before the maximum permissible cylinder head temperature is reached." Rotax Service bulletin SB-912-043, pg # 1.

Earlier Airborne trikes have had a silicate free type high quality and long life antifreeze coolant (which is red), Airborne Part Number 106644, installed in the radiator. This coolant must be changed to the newly recommended coolant.
The directive requires that the new coolant be used, and a sticker be placed on the coolant cap, which prohibits the use of water in the coolant system.
The coolant should be replaced according to the Rotax maintenance manual, current issue. Please refer to the directive, which is available from the Rotax website: SB-912-043, September 04.

WARNING

WATER OR WATER CONTAINING COOLANT MUST NOT BE ADDED IN ANY CASE TO THE COOLING SYSTEM WITH THE NEW EVANS NPG+ COOLANT.

Field service Instructions:
"If EVANS NPG+ coolant is not locally available, temporarily top off the system with propylene glycol antifreeze and be sure not to add water. Within 15 days the temporary coolant should be completely drained and the system refilled with EVANS NPG+ coolant." Rotax SB-912-043, Pg # 5.

8.8 Tyre Inflation

The recommended tyre inflation pressures are 13 to 17 PSI (19 to 117kPa) for both the front and rear tyres. When checking the tyre pressures the opportunity should be taken to examine the tyres for wear, cuts, bruises, slippage and other defects.

8.9 Shock Struts

8.9.1 Rear Shocks

WARNING

SPECIALISED PUMPS MUST BE USED FOR THE AIR SHOCKS – PRESSURES UP TO 600 PSI EXIST.

The rear shocks are pressurised to 580 PSI using a schrader valve system. A special pump will be necessary to repressurise the rear shocks to the correct setting. There should be no reason why the rear shock would need to be reinflated, and if they do then a proper investigation of the cause should be undertaken.

8.9.2 Front Shocks

The front shocks should be inflated to 50 psi for each reservoir. The top should be inflated first. Turn the rebound damper fully clockwise, and then anticlockwise for twelve clicks.

8.10 Brake System

A front wheel drum brake system or an optional rear wheel disk brake system is used on the aircraft. Depressing the brake lever on the left hand side of the front footrest actuates the brake, on aerotow equipped trikes the aerotow release is the lever on the top left, painted yellow. A brake lever lock is provided. To engage, depress foot lever and raise locking lever by hand. To disengage, depress the foot lever.

Use wheel chocks when leaving the disk brake equipped aircraft unattended for a period of time.

8.10.1 Brake System Maintenance

Details of brake bleeding and other required maintenance of the braking system can be found in section 32.40.00 in the maintenance manual

8.11 Parking and Ground Handling

Parking and ground handling information can be located in section 4.

8.12 Circuit Breaker and Fuses

The fuses for the electrical equipment are located in two positions.

1. The Lynx intercom system has a 1.5A fuse screwed into the side of the box where the headsets and push to talk cables are plugged in.
2. The power supply cables for the radio are protected at the rear of the aircraft with inline fuses which terminate at the right hand side of the mast block. A 5A fuse is to be used for the radio and intercom power supply. The fuse holder is marked with the correct Current rating for the fuse.

3. The battery charging circuit is protected with a 20A fuse, which also terminates at the right hand side of the mast block. The fuse holder is marked with the correct Current rating for the fuse. A 10 Amp circuit breaker is located on the right hand side of the dash. The circuit breaker protects the dash instrumentation and the DC socket.

8.12.1 Wing Daily Maintenance

If the wing is assembled and disassemble on a frequent basis the batten latch fittings should be checked for security during assembly.

Latch fittings should be sharp and not rounded. Rounded edges can occur from unloading without depressing the latch. Check the unloaded measurement of latch to body of the outer fitting is not less than 2mm to maintain loaded retaining force.

Section 57.10.00 of the wing maintenance manual has further details if fittings are out of tolerance

WARNING

ALWAYS ENSURE THE BATTEN END FITTINGS ARE CLOSED AND LOADED SECURELY BEFORE TAKE-OFF. BATTEN ENDS BECOMING UNLOADED DURING FLIGHT AT HIGHER AIRSPEEDS MAY HAVE SERIOUS EFFECTS ON THE FLIGHT PERFORMANCE AND STABILITY CHARACTERISTICS OF THE WING.

HANDLING SERVICE AND MAINTENANCE

8 HANDLING SERVICE AND MAINTENANCE

8.1 Introduction

This section contains factory recommended procedures for proper ground handling and routine care for your aircraft. Included in this section is relevant information required by the operator.

WARNING

IT IS THE PILOTS RESPONSIBILITY TO ENSURE THAT ALL SERVICE BULLETINS HAVE BEEN ADDRESSED. IT IS ALSO THE PILOTS RESPONSIBILITY TO ENSURE SERVICING AND MAINTENANCE HAS BEEN PERFORMED AS OUTLINED IN THE APPROPRIATE MAINTENANCE MANUAL AND IN ACCORDANCE WITH THE APPLICABLE AVIATION REGULATIONS.

8.2 Identification Plate

The aircraft has two identification plates. The wing identification plate can be found on the negative plate of the universal bracket. The base identification plate can be found on the seat mast block on the left side of the aircraft. The serial number should be quoted when corresponding with the factory.

8.3 Aircraft Documents

The Aircraft Operating Instructions is one of a series of documents required to safely operate this aircraft. A document list can be found in section 0 of this manual under DATA PACKAGE.

8.4 Aircraft Inspection, Maintenance and repair

Maintainer qualifications vary from country to country. The operator / maintainer should be familiar with the local requirements. Maintenance requirements are outlined in the base maintenance manual for the base unit and in the wing maintenance manual for the wing. The following sections have been included because it is considered that the information may be required on a more regular basis.

8.5 Fuel System

8.5.1 Filling Fuel Tanks

The properties of the fuel tank material cause an increase in capacity after the first 2 to 3 tanks of fuel. Initial capacity is 64 litres with the "aged" capacity 70 litres. The fuel level markings have been positioned for the fuel tank capacity at 70 litres.

The XT has a single fuel tank. When the tank is being filled there may be a slight pressure differential between the sides of the tank, causing the fuel cap side to fill slightly faster than the other side. Allow time for the breather valves to equalise the pressure to allow complete filling and check that both sides are sufficiently full. Fill to the neck of the fuel entrance.

8.5.2 Fuel Specification

FUEL	
Preferred Fuel Type	En228 Premium/Regular. Super grade gasoline, lead free, min RON 90
Optional Fuel Type	AVGAS (see note)

Table 1 Section 8. Fuel Specification

NOTE

Due to higher lead content in AVGAS, the wear of the valve seats and deposits in the combustion chamber will increase. Therefore, use AVGAS only if you encounter problems with vapour lock or if the other fuel type is not available.

Use of AvGas requires higher frequency maintenance intervals. If AVGAS is used the Rotax web site

should be referenced for maintenance requirements. See Rotax service information 18-UL-97-D/E
Refer to section 2.12 for fuel capacities and limitations.

8.5.3 Fuel Sampling

There is a draincock on the base of the fuel tank at the left hand side, which may be used to check the quality of the fuel, and to drain fuel if necessary, it is especially important to remove any water that may have been introduced from the system.

8.5.4 Checking Fuel

The fuel is checked for water and contaminants by draining a sample of the fuel into a clear glass container. Once a sample has been taken the quality of the fuel can be checked by looking for any water at the bottom of the glass, and checking for any other visual contaminants.

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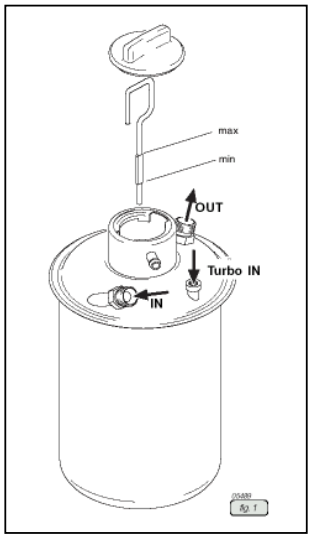

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SUPPLEMENTS

9 TRAINING SUPPLEMENT

9.1 XT-912 Flight Training Supplement

This supplement is intended to outline the unique characteristics of the XT 912 weight-shift control (WSC) airplane. It is not intended to outline all aspects of a WSC aircraft. The supplement is intended to be used by a pilot / operator who already has extensive knowledge of WSC aircraft operation. The performance, procedures and unique features of the XT are summarized here and the details are referenced to the appropriate section within the AOI.

Normal Procedures found in Section 4 of the Aircraft Operating Instructions (AOI) cover all the Normal Procedures in detail.

9.2 Assembly and Break Down

Sections 4.2.4 and 4.10.11 outline wing assembly and break down procedures for the aircraft.
Airborne suggests assembling the wing on the control frame as this method keeps the sail off the ground resulting in less chance of the wing being soiled or damaged.

The wing can be assembled and installed on the base by one person. The mast has a gas-assist strut to help lift the wing into place above the base unit.
It should be noted that the batten tips utilise a unique hinged catch system to secure the battens to the trailing edge. This system allows easy installation and provides extraordinary flexibility in wing tuning.
Ensure that the batten end fittings are depressed fully before unloading. (see wing Maintenance Manual for tuning instructions).

WARNING
IT IS EXTREMELY IMPORTANT THAT THE MAST LEVER IS LOADED CORRECTLY ONCE THE MAST IS RAISED WITH THE WING INSTALLED. SEE 4.4.10 FOR FURTHER DETAILS (SEE PHOTO OPPOSITE).

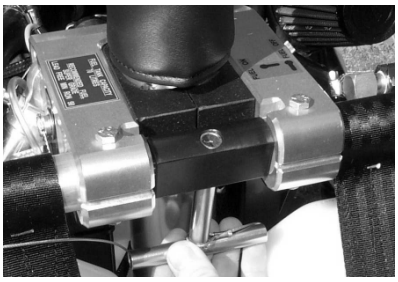

Figure 1 Mast Catch

AOI Section 4.3 contains the wing pre-flight inspection checklist while AOI Section 4.5 contains the base and engine pre-flight checklist.

9.3 Aircraft Operation

Aircraft operation information is contained in AOI Sections 4.8 and 4.9. Section 4.8 covers normal flight operations in checklist form while 4.9 describe those procedures in detail.

9.4 Startup

See AOI Sections 4.8 and 4.9.1-2 for engine start-up details.

The master switch should be turned on (keyed switch on the panel) then depress the Skydat on/off switch for 3 seconds. The instrument display will now power up. Ensure that the fuel tap is in the on position and both ignition switches are on. Once satisfied that all other checks as outlined in section 4.9.1-2 are complete the starter button on the right side of the dash can be depressed.

Warm up the engine. Minimum temperature should be reached before take off. Operate for 2 min at 2000 rpm continue at 2500 rpm until minimum temperature of 50°C (140°F) is reached.

9.5 Take-off

See AOI Section 4.8.3-5 and 4.9.3-6 (Amplified Procedures) for take off and climb procedures.

Many WSC instructors recommend pulling the control bar in towards the pilot past the wings trim position after lift off. As the wing design has the trim speed equal to or greater than 1.3 V_s (Stall Speed) it is not necessary to "pull" the control bar back. The wing will return to the trim speed and achieve take off safety speed if the controls are relaxed.

Initial climb out should be made on full power for maximum take off weight. Approximately 2/3 of maximum take off power is considered comfortable for a minimum weight takeoff. Take off distance will be extended at reduced power.

Once climb is established power should be reduced to below maximum continuous power of 5500 rpm. A minimum of take off safety speed should be used. At this speed the aircraft would round out nicely into a glide should the engine fail.

Finally, the Cruze / Streak / SST / Arrow wing trimmer located on the lower right down tube should be in the fast trim position (see AOI Section 7.5).

9.6 Cruise and Stalls

Cruise and Stalls are covered in AOI Sections 4.9.8 and 4.9.9 respectively.

Stalls are very mild and in fact, very difficult to do unless the aircraft is heavily loaded. Recovery is the same as in other WSC aircraft.

9.7 Landing

See AOI Section 4.8.7-9 and 4.9.9-12 for descent and landing procedures.

It is not necessary to approach at a higher speed than trim speed unless conditions are extremely turbulent. Generally trim speed allows an adequate margin for landing. Set the wing trimmer in the fast trim position.

9.8 Emergency Procedures

See AOI Section 3 for emergency procedures.

9.9 Control Locations & Operation

9.9.1 Flight Controls

The XT 912 has standard WSC flight controls. See Section 7 for a complete description of the aircraft and its systems.

9.9.2 Engine Controls

Control	Location and Operation
Master Switch (turn on for starter and SkyDat instrument panel)	Lower right instrument panel. Use key to turn on. (See AOI Section 7.6)
Starter Button	Lower right instrument panel below Master Switch. Push button to engage starter. (See AOI Section 7.6)
Choke Lever	Left side of pilot mounted to seat frame. Push lever down to turn choke on.
Foot Throttle	Right foot above the nose wheel steering bar.
Ignition Switches	Right side of pilot mounted to seat frame. Switches moved forward to turn ignition on.
Hand Throttle	Right side of pilot mounted to seat frame above ignition switches. Push throttle up and forward to increase power.

9.9.3 Digital Instrument Panel (SkyDat GX2)

See AOI Section 7.16.1 for a complete description.

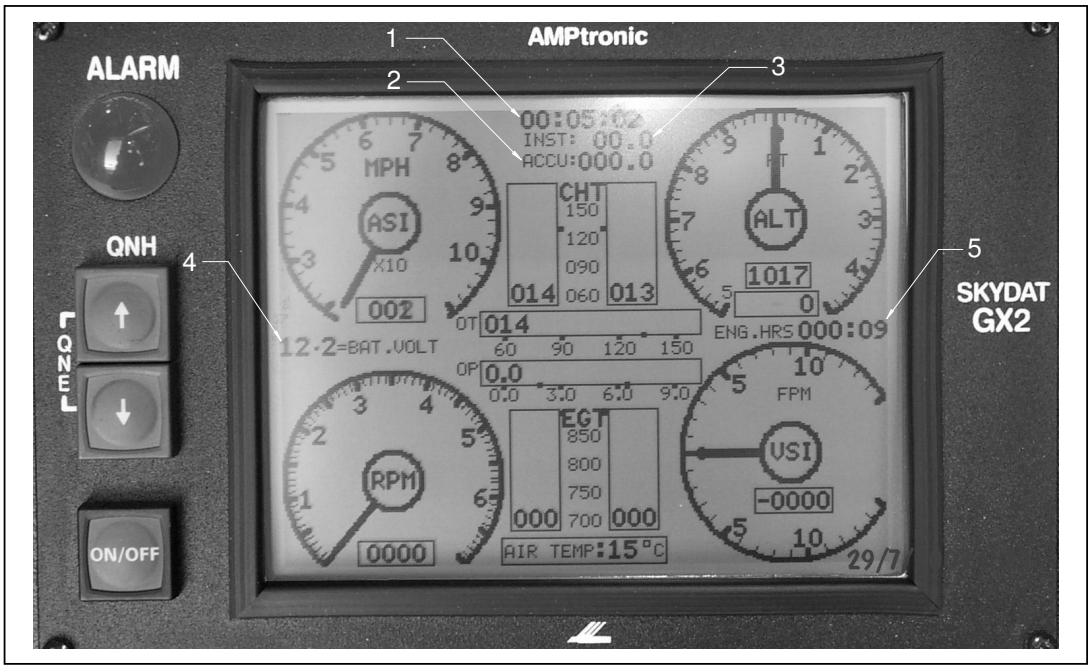

Figure 2 Section 9. Digital Instrument Panel (SkyDat GX2)

The initial display provides Timer and Cumulative Fuel reset options. To reset these counters press the corresponding QNH button.

After a few seconds the display will change to that depicted above. The following **primary instruments** are provided:

Instrument	Location
ASI	Top left corner
Altimeter	Top right corner (use up/down QNH buttons to adjust barometric pressure)
RPM (engine – the propeller is spinning at slightly less than half this value)	Lower left
VSI	Lower right
Voltmeter	Center left between ASI and RPM
OT / OP (Oil Tem / Oil Pressure)	Center
Hour Meter	Center right between ALT and VSI
CHT (Cylinder Head Temp)	Top center
EGT (Exhaust Gas Temp)	Bottom center

9.10 Aircraft Performance Data

See AOI Section 5 for detailed discussion on performance. The information provided below is based on standard atmospheric conditions at sea level at Maximum Takeoff Weight (MTOW):
Distances are specified for:

Sea Level with:

Max Take Off Power

A level dry runway

With short grass

Still wind

And temperature of 15 deg C.

	XT 912 - Arrow	XT 912 - SST	XT 912 - STREAK	XT 912 - CRUZE	XT 912 - MERLIN
Take off / Landing distance over 50' obstacle	235m (771') and 325m (1066') respectively	247m (810') and 325m (1066') respectively	247m (810') and 325m (1066') respectively	210m (689') and 306m (1004') respectively	204m (669') and 306m (1004') respectively
Stall at 450kg MTOW:	35 kt (40mph)	35 kt (40mph)	35 kt (40mph)	34 kt (39mph)	33.5 kt (38.5mph) @MTOW 27.7 kt @ 312kg
Glide Ratio	6.5:1 @ 54 kt (15%)	6.5:1 @ 54 kt (15%)	6.5:1 @ 54 kt (15%)	7.1:1 @ 45kt (14%)	6.9:1 @ 45kt (14.4%)
Average Fuel Burn at Cruise:	11 lt/hr (2.9 gph)	11 lt/hr (2.9 gph)	12 lt/hr (3.2 gph)	9.5 lt/hr (2.5 gph)	9.5 lt/hr (2.5 gph)

(Take off from a level grass surface at 1.4 x stall speed and climb to 50 ft with a 1.3 safety factor).
(Landing with front drum brake only)

9.11 Training Recommendations

The XT 912 handles predictably in all flight regimes so there are no unique training requirements in any area except landing. Like all WSC aircraft aerobatic maneuvers are strictly prohibited.

9.11.1 Landing

Most WSC pilots are unprepared for the speed of the XT 912's approach to landing. As previously stated, it is not necessary to pull the control bar in past the trim position unless a considerable amount of turbulence is encountered. Fly the final approach at trim speed and flare normally. You will notice that the approach is also flatter than most WSC aircraft allowing for a smoother, less abrupt flare out to land. Merlin approach speeds may be made at trim speed, where trim speed is 45 kt and greater.

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