AIRCRAFT OPERATING INSTRUCTIONS
Light Sport Aircraft

EDGE XT 912 MK4 L - XRM MICROLIGHT
EDGE XT 912 MK4 L - XRK MICROLIGHT
EDGE XT 912 MK4 L - XRS MICROLIGHT

Approved: Date: 5th April 2018

Delegate of *A*irBorne WindSports Pty Ltd

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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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**	✚
• **XT912 Maintenance Manual**	
• **XT912 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. XT912 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: www.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	Issue	Pages Affected	Changes Summary	Date Released
October 2016	1.0	All	Initial Issue Mk3	26/10/2016
July 2017	2.0	All	Inclusion of XRM	31/07/2017
April 2018	3.0	All	Inclusion Mk4 80 and 100HP	05/04/2018

Table 3 Section 0. Amendment Record Sheet

Manuals will be revised from time to time and re-issued. Amendments will also be available on the Airborne website (http://www.airborne.com.au/).

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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 XT912 base coupled with compliant wings. All relevant information is supplied for current configuration. The operator must ensure that the correct data is referenced for the wing - base combination.

1.1 Introduction

This microlight series has been designed and manufactured in accordance with the ASTM designation 2317-M10 through F2317-M16 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

Figure 1 Section 1. Aircraft Front View

Figure 2 Section 1. Aircraft Side View

1.1.4 General Dimensions

DIMENSIONS - XT MK4		XR-S	XR-K	XR-M
Wing Span (inc winglets)	m	9.68	9.68	9.68
	ft	31.8	31.8	31.8
Wing Area	sq m	12.9	12.9	12.9
	sq ft	139	139	139
Aspect Ratio		7.3	7.3	7.3
Wing Weight	kg	57.0	52.0	49.0
	pound	126	115	108
Overall Height (Control bar forward)	m	3.1	3.75	3.75
	ft	10.1	12.3	12.3
Trike Width (To outside of wheels)	m	1.9	1.9	1.9
	ft	6.3	6.3	6.3
Trike Length	m	2.8	2.8	2.8
	ft	9.0	9.0	9.0
Wheel Track	m	1.7	1.7	1.7
	ft	5.6	5.6	5.6
Wheel Base	m	1.9	1.9	1.9
	ft	6.2	6.2	6.2
Trike Height (Mast Folded Down)	m	1.3	1.3	1.3
	ft	4.3	4.3	4.3
Cockpit Width	m	0.76	0.76	0.76
	ft	2.5	2.5	2.5
Wing (Packed) Length	m	5.3	5.3	5.3
	ft	17.4	17.4	17.4
Wing Length (Short Packed)	m	3.85	3.85	3.85
	ft	12.6	12.6	12.6

Table 1 Section 1. General Dimensions

1.1.5 General Description

1.1.5.1 Base

XT4 Base

The XT4 has essentially the same main frame as the previous model XT. The model is not intended as a ground breaking new model but is more of a continuation and refinement of the XT model, which has proven to be a leading design in the microlight world.

Refinements include a cockpit and windscreen redesign giving more foot room and improved airflow for both pilot and passenger. The MK4 version also has adjustable front foot rests as standard. Upholstered separate front and rear removable vinyl seats allow easy removal for cleaning and maintenance.

The dash area has been increased to allow a greater variety of instrumentation including an 8.5” MGL iEFIS. The redesign of the electrical system has resulted in a more flexible system allowing easy fitment of options such as strobes, radio, transponder and future options. A rear seat emergency ignition switch has been added in conjunction with the dash ignition switch.

The XT4 engine installation has been refined by offsetting the engine to reduce engine torque effect and now has the Rotax 100hp engine as an option. The increase in wheel spat area in conjunction with the engine offset results in significant improvement in tracking of the trike with all wings

1.1.5.2 XT912 XRM

The XRM wing is a single surface king posted wing and is the slower of the wing range. The lower stall speed and frame geometry result in short take off and landing ability. The XT4 XRM maintains good cross-country flying ability, as the top end speeds are still very respectable.

The XT4 XRM is suitable for aero towing high performance hang gliders, banner towing and as a training aircraft. Winglets are an option.

1.1.5.3 XT912 XRK

The XRK wing is a double surface king posted wing with intermediate performance. The XRK retains a low stall speed and relatively short take off and landing distance. Winglets are included as standard.

The XT4 XRK is a great all round aircraft suitable for training and cross country flying

1.1.5.4 XT912 XRS

The XRS wing is a double surface strutted high-performance wing. The XRS has the largest speed range of all wings due primarily to the reduction of drag achieved by the removal of the king post and top rigging. Winglets are included as standard. Winglets, a new sail cut and the changes to the base has resulted in improved tracking and handling in turbulence.

The XT4 XRS is an excellent cross-country machine. The nimble handling also makes the aircraft well suited as a training aircraft.

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 2 Section 1 Metric/Imperial Conversion Factor

LIMITATIONS

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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

PERFORMANCE		XRS	XRK	XRM	Comments
Never Exceed Speed (Vne) indicated	kts	85	85	66	Do not exceed this speed in any operation.
	mph	98	98	76	
	km/h	157	157	122	
Manoeuvring Speed (Va) indicated Never exceed in turbulent air	kts	73	73	66	Do not make full or abrupt control movements above this speed.
	mph	84	84	76	
	km/h	135	135	122	

Table 1 Section 2 Airspeed Limitations

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

POWER PLANT	912 UL	912 ULS
Make	Rotax	Rotax
Model	912 UL	912 UL
Power	80 HP	100 HP
Type	4 Stroke-1211cc	4 Stroke-1352cc
Ignition System	Dual Electronic	Dual Electronic
No Cylinders	4	4
Electric Start	Standard	Standard
Reduction Ratio	2.43:1	2.43:1

Table 2 Section 2 Engine Specifications

2.4.2 Engine Limitations

ENGINE LIMITATIONS		912 UL	912 ULS
ENGINE SPEED			
Take Off (Max 5 mins)	rpm	5800	5800
Maximum Continuous	rpm	5500	5500
PERFORMANCE			
Take -off Performance	kW	59.6	73.5
	hp	80	100
Maximum Continuous Performance	kW	58.0	69.0
	hp	78	95
OIL PRESSURE			
Max (Allowable for short period at cold start)	bar	7	7
	psi	102	102
Minimum (Below 3500 rpm)	bar	0.8	0.8
	psi	12	12
Normal (Above 3500 rpm)	bar	2.0 - 5.0	2.0 - 5.0
	psi	29 - 73	29 - 73
OIL TEMPERATURE			
Maximum	deg C	130	130
	deg F	266	266
Minimum (Note 1)	deg C	50	50
	deg F	120	120
Normal Operating Temperature	deg C	90-110	90 -110
	deg F	190-230	190-230
COOLANT TEMPERATURE			
Maximum	deg C	120	120
	deg F	248	248
EXHAUST GAS TEMPERATURE			
Maximum at Max TO power	deg C	880	880
	deg F	1620	1620
Maximum at Max Continuous Power	deg C	850	850
	deg F	1560	1560
Normal Temperature	deg C	800	800
	deg F	1472	1472
AMBIENT START & OPERATING TEMPERATURE			
Maximum	deg C	47	47
	deg F	116	116
Minimum	deg C	-25	-25
	deg F	13	13

Table 3 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.

CAUTION

IN TRIKES WITH ENGINE SERIAL NUMBER 6 770 937 AND HIGHER (BASE SERIAL XT-912-0436 AND HIGHER) COOLANT TEMPERATURE IS MEASURED, NOT CYLINDER HEAT TEMPERATURE.

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 4 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

The Edge XT912 MK3 engines use conventional coolant based on ethylene glycol with 50% water. This mixture provides sufficient protection against vapor bubble formation, freezing or thickening of the coolant within the operating limits. Use the coolant specified in the manufacturers documentation. It also gives excellent corrosion protection, especially for aluminium, and protection against freezing.

Owners and maintainers of Airborne Windsports 912 powered aircraft need to be aware that different coolants are available, and that mixing of coolants must not occur.

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 MGL Explorer IEFIs has comprehensive alarm limit thresholds. If these are reached an alarm box will flash on the screen.

The GX 2 instrument also has pre-set alarm limit thresholds. If any of these temperature or pressure limitations are reached the red light on the instrument panel will start to flash.

Engine Limitations can be found in section 2.4.2

2.5 Weight Limits

DESIGN LOADS		XR-S	XR-K	XR-M
Max take off weight	kg	472.5	472.5	472.5
(MTOW / W Max)	pound	1042	1042	1042
Wing Weight	kg	57	52	49
	pound	126	115	108
Max Base Weight (W susp)	kg	415.5	420.5	423.5
MTOW minus wing	pound	916	927	934
Typical Empty Weight (no options)	kg	241	236	233
Std XT4 80 hp 184kg (+4 kg 100 hp)	pound	531	520	514
Useable Load	kg	232	237	240
Optional Equipment Excluded	pound	510	521	528
Pilot weight range (Front Seat)	kg	55-115	55-115	55-115
(Max total load 215kg - 482lb)	pound	224-258	224-258	224-258
Pilot weight range (Rear Seat)	kg	0-115	0-115	0-115
(Max total load 215kg - 482lb)	pound	0-258	0-258	0-258

Table 5 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 effect 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.)		
XRS WING	mm inches	1245 /-20 49.0 /- 0.8
XRK WING	mm inches	1235 /-20 48.6 /- 0.8
XRM WING	mm inches	1275 /-20 50.2 /- 0.8

Table 6 Section 2 Base Suspension Range

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

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 7 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

Fuel Limitations		
Maximum Usable Fuel	L	56
	UK Gal	12.3
	US Gal	14.8
Unusable Fuel capacity	L	3
	UK Gal	0.66
	US Gal	0.8
Sump Capacity	mL	500
	UK Gal	0.11
	US Gal	0.13

Table 8 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

Other Limitations		
Maximum Cross Wind (See Note)	kts mph km/h	15 17 28
Maximum Wind Strength (See Note)	kts mph km/h	20 23 37
Maximum Ambient Operating Temperature	deg C deg F	47 116

Table 9 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/her 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.

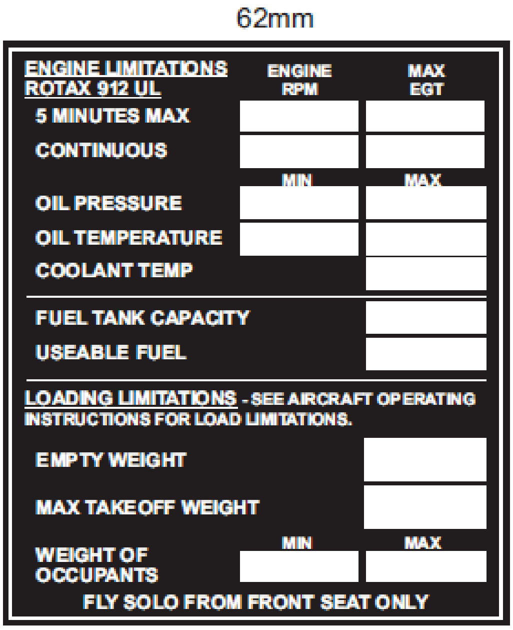
2.7 *Placards*

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.

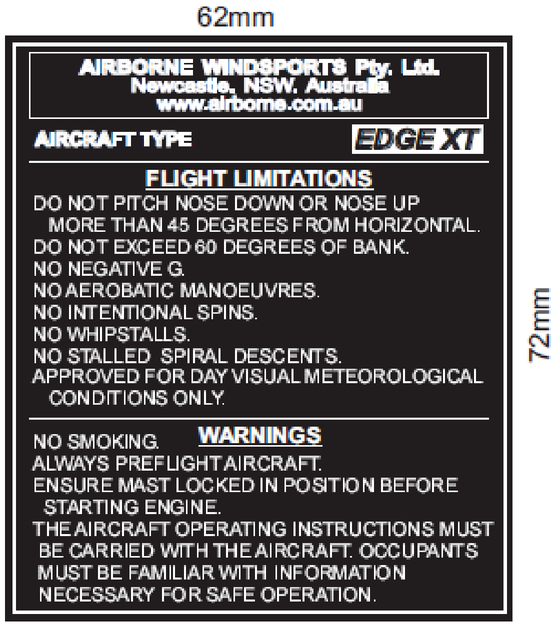
2.7.1 Flight Limitations Placards

NOTE

Rotax changed to measuring coolant temperature from engine serial number 6 770 937. Please note if your placard states maximum cylinder head or coolant temperature.



PART No.112529
PLACARD ENG LIMITS
XT912 LSA GENERIC



PART No.112530
PLACARD FLIGHT LIMITS
& AOI EDGEXT LSA

Location	The flight and engine limitations placards are located at the bottom of the dash side by side. Engine limitations placard 112529 is a generic placard that has imperial or metric values added at time of aircraft QA. Flight limitations part 112530 includes AOI must be carried instruction.
Series	Edge XT912 MK3 Series

Table 10 Section 2. Flight Limitations Placards

2.7.2 Dash Placard Locations

Figure 1 Section 2. Dash Placard Locations L-R Magnetos, Flight Limitations, Engine Limitations, Switches, Master Switch, Park Brake (These locations are the same for all instrument options).

2.7.3 Aircraft Operating Instructions Placard applicable for LSA

Location	The airworthiness placard 109519 is used on Australian LSA and is located below the circuit breakers
Series	Edge XT912 MK3 Series

Table 11 Section 2. Hand Book and Airworthiness Placard

2.7.4 Wing V_{ne} ASI Placard

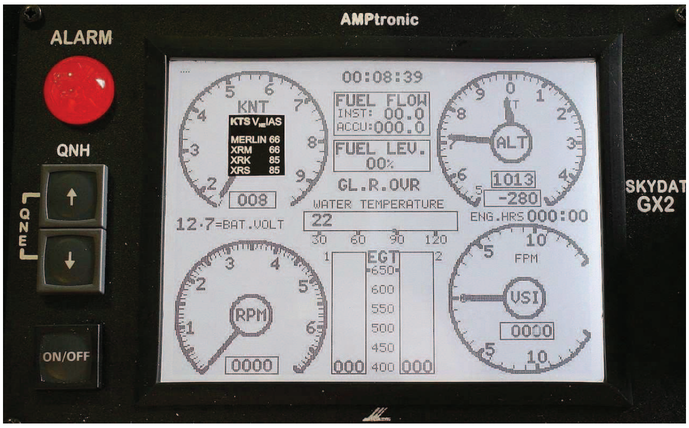
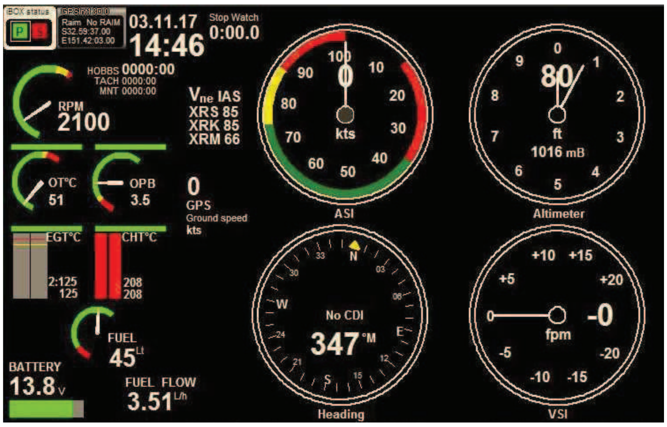
	
AMPtronic Instrument – VNE placard located in centre of ASI. Part 112978 Placard in Knots. Part 112981Placard in Mph	MGL INSTRUMENT – VNE is integrated into the instrument. Location is to the left of the ASI.
Series - Edge XT912 MK3 Series	

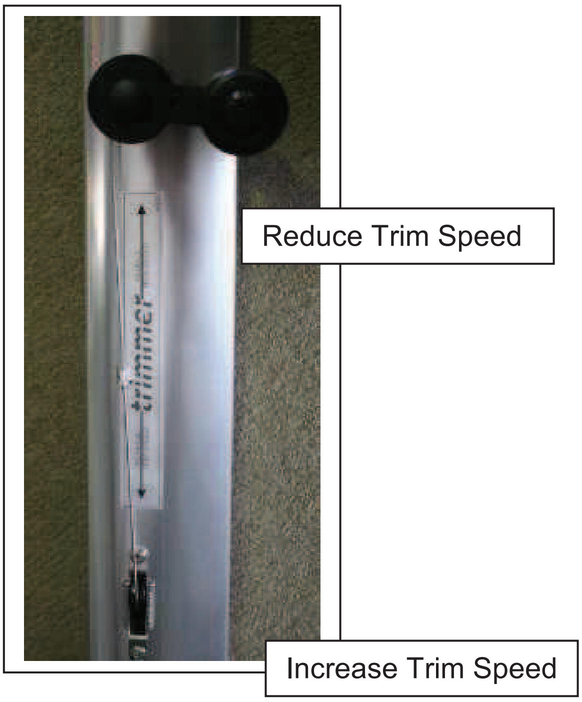
Table 12 Section 2. Wing V_{ne} ASI Placard

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.
Series	XRS, XRK

Table 13 Section 2. Wing Trimmer Operation Placard

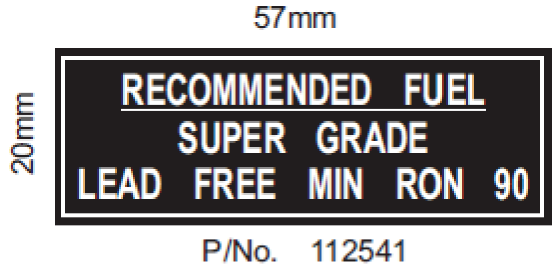
2.7.6 Trimmer Placard Location



NOTE
Ensure that the Placard is the correct orientation, as shown by the text boxes beside the photograph.

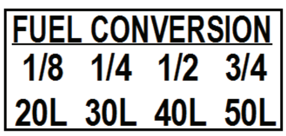
Figure 2 Section 2. Trimmer Placard Location

2.7.7 Fuel Placards



Location	The fuel capacity placard is located on the right side shock absorber. Metric or imperial placard required
Series	Edge XT912 MK3 Series

Table 14 Section 2. Fuel Conversion Placard



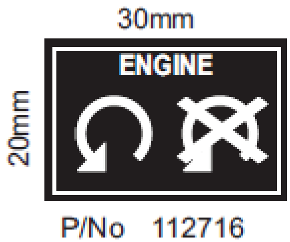
P/No. 112811

Location	The fuel capacity placard is located below the fuel gauge - optional
Series	Edge XT912 MK3 Series with Amptronic instrument fitted

Figure 3 Section 2. Fuel Conversion Placard Location

2.7.8 Pilots Right Seat Frame Placards

2.7.9 Rear Engine Stop Placard

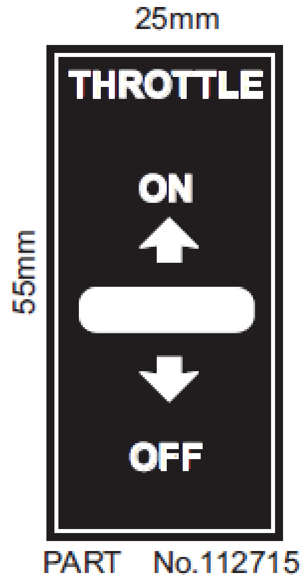


Location	The rear engine stop placard is located on the right hand side of the seat frame
Series	Edge XT Series

Table 15 Section 2. Rear Engine Stop Placard Location

Figure 4 Section 2. Engine Stop Placard Location

2.7.10 Hand Throttle Placard



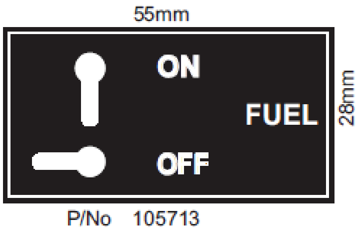
Location	The hand throttle placard is located on the right side seat frame adjacent to the hand throttle lever.
Series	Edge XT912 MK3 Series

Table 16 Section 2. Hand Throttle Placard

Figure 5 Section 2. Hand Throttle Placard Location

2.7.11 Pilots Left Seat Frame Placards

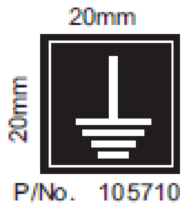
2.7.12 Fuel Tap, Shock Absorber and Earth Placard Locations



Location	The fuel tap placard is adjacent to the fuel tap on seat mast block on the left side of the aircraft.
Series	Edge XT912 MK3 Series

Table 17 Section 2. Fuel Tap Placard Location

2.7.13 Earth Placard



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

Table 18 Section 2. Mast Block Area Placard Locations

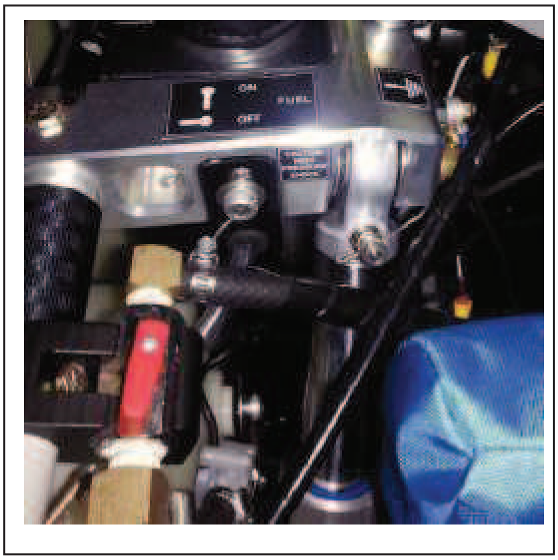
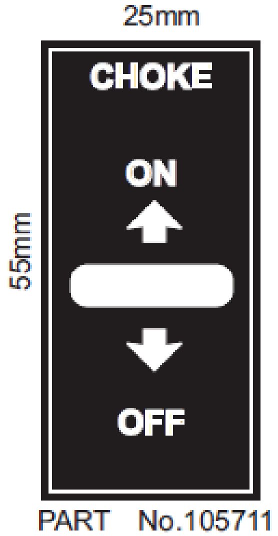


Figure 6 Section 2. Fuel Tap, Shock Absorber Pressure and Earth Placard Locations

2.7.14 Choke Placard

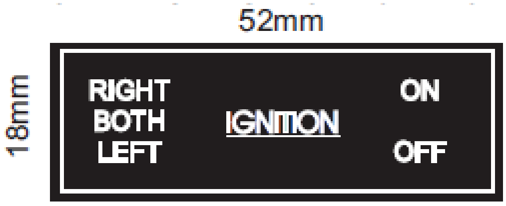


Location	The hand choke placard is located on the left side seat frame adjacent to the hand choke lever.
Series	Edge XT912 MK3 Series

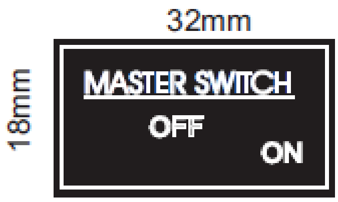
Table 19 Section 2. Choke Placard

Figure 7 Section 2. Choke Placard Location (Under Seat Bag Placard in Background)

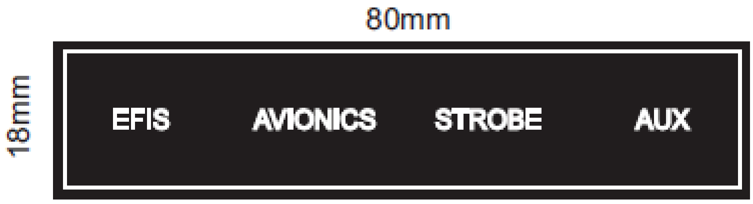
2.7.15 Ignition, Switches and Master Switch Placards



P/No. 112532



P/No. 112531

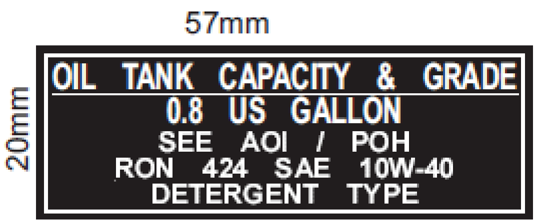


P/No. 112533

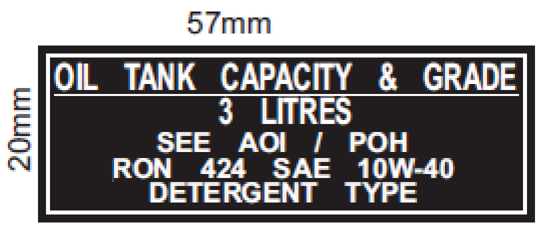
Location	The ignition placard is located on the left, the switches placard is located in the centre, and the master switch and park brake placard is located on the right side of the dash.
Series	Edge XT912 MK3 Series

Table 20 Section 2. Ignition, Switches and Master Switch 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 XT912 Series

Table 21 Section 2. Tank Oil Capacity Placard

2.7.17 No Step Placard

55mm

42mm

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

30mm

30mm

P/No 105712

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

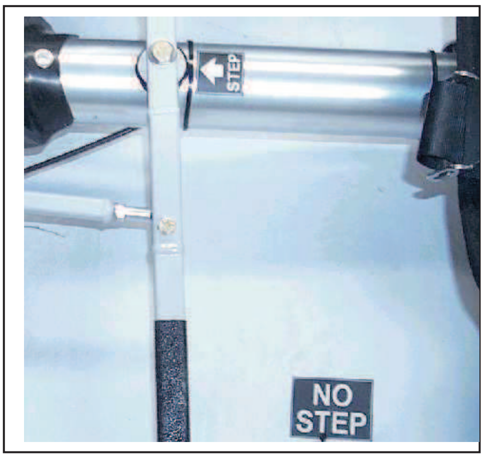
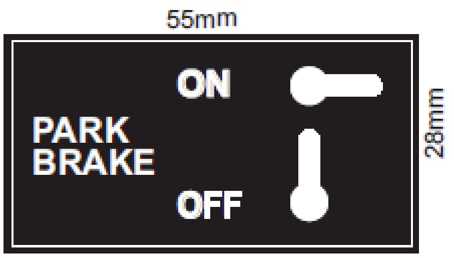


Figure 8 Section 2. Step and No Step Placards

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

2.7.20 Park Break Placard



P/No 113069
PLACARD PARK BRAKE

Location	The park brake is located on the base tube aft of rear steering
Series	Edge XT Series

Table 24 Section 2. Park Brake Placard

2.7.21 Clear Prop Placard

PART No. 105716

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

Table 25 Section 2. Clear Prop Placard

2.7.22 Shock Absorber Pressure Placard

P/No. 106397

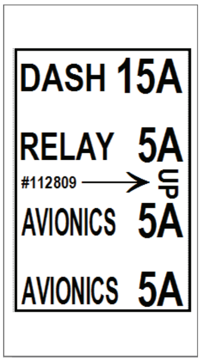
Location	The shock placard is located on the main block near the top of the shock
Series	Edge XT Series

Table 26 Section 2. Shock Absorber Pressure Placard

2.7.23 Right Hand Suspension Strut Placards

Figure 9 Section 2. Clear Prop and Fuel Spec Placards

2.7.24 Fuse Box 4 Way Placard



P/No. 112809

Location	The fuse box placard is located horizontally on the fuse box cover on the battery mount box, under the under seat enclosure
Series	Edge XT912 MK3 Series

Table 27 Section 2. Fuse Box Placard

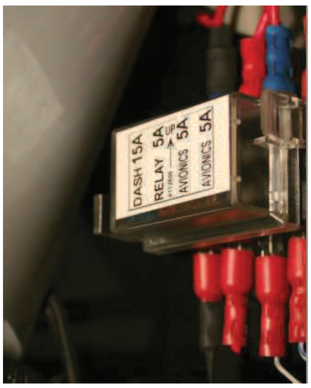
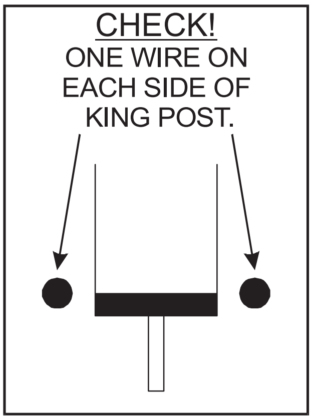


Figure 10 Section 2. Fuse Placard Location – (Pilots Left under seat)

2.7.25 King Post Placard

40MM



54MM

PART NO 104622

Location	The king post placard is located on the rear of the keel tube of the wing
Series	XRK, XRM

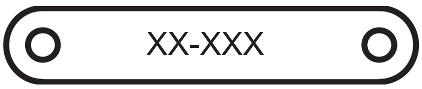
Table 28 Section 2. King Post Placard

2.7.26 Suspension Point Placard

Location	The Suspension Point Placard 111537 is located on the negative U-Bracket showing the standard suspension point position
Series	XRM, XRK, XRS

Table 29 Section 2. Data Plates

2.7.27 Wing and Base Data Plates



WING PLATE PART NO 102358

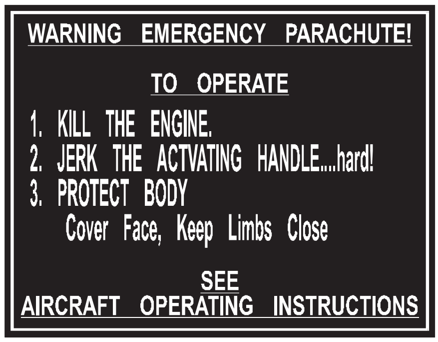
Location	The wing data plate 102358 is located on the negative block of the universal bracket. The base data plate 107566 is located on the seat mast block on the left side of the aircraft.
Series	XT base and applicable wing

Table 30 Section 2. Data Plates

2.7.28 Emergency Parachute

57mm

44mm



P/No. 107603

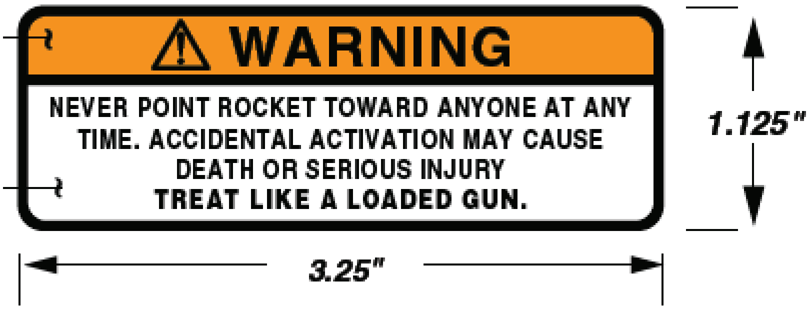
Location	The emergency parachute (when installed) placard is located on the inside left rear of the cockpit when the optional emergency parachute is fitted.
Series	Edge XT Series

Table 31 Section 2. Emergency Parachute

2.7.29 Emergency Parachute Placard Location

Figure 11 Section 2. Parachute Placard Location – (Pilots Left on Pod near to Seat Frame)

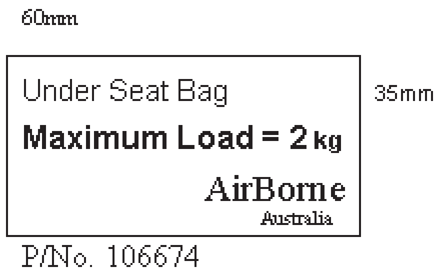
2.7.30 Emergency Parachute Warning Placard



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 32 Section 2 Emergency Parachute Warning

2.7.31 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 33 Section 2. Under Seat Placard

EMERGENCY PROCEDURES

EMERGENCY PROCEDURES 39

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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 couldn't 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

SPEED (Kts IAS)	XRS	XRK	XRM
Take Off Safety, Best Glide	49	45	45

Table 1 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).

If there is a problem with the digital system the correct procedure is to fly at trim speed (trim speed is found by having your hands loose around the control bar) to the nearest safe landing area and investigate the cause of the malfunction.

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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 Speeds for Normal Operation

SPEEDS NORMAL OPERATION		XRS	XRK	XRM
Trim Speed	kts	60-65	45-50	37-42
	mph	69-75	52-58	43-48
	km/h	111-120	83-92	68-78
Stall Speed MTOW	kts	35	34	33
	mph	40	39	38
	km/h	65	63	61
Stall Speed (370 kg)	kts	32	31	29
	mph	37	36	33
	km/h	59	57	54
Take-Off Safety	kts	49	45	45
Nominated Approach Speed	mph	56	52	52
	km/h	91	83	83

Table 1 Section 4. Speeds for Normal Operation

4.1.2 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 – All Wings

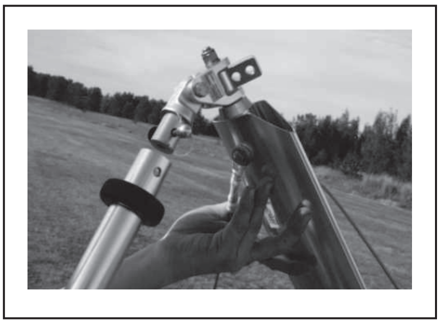
Wing assembly is easy and is similar for strutted (XRS) and king posted (XRK and XRM) wings, the main differences being fitting of the struts or king post respectively. The sequence of procedures assumes that the wing is packed up. If the wing and base were already assembled this section is not required. **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

4.2.3 Optional - Training Bars

If training bars are to be fitted to the control frame follow this procedure.
Attach the bottom clamp loosely to the control bar. Loosely attach the top clamp to the downtube using the following sequence:

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 sides of the down tube clamp contact. Ensure the training bars are held securely.
6. Safety Pin.

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

Removal is the reverse of this procedure.

Figure 2 Section 4. LHS Training Bar Attachment

4.2.4 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

4.2.5 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.

4.2.6 XRK and XRM Only - 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

4.2.7 XRS Only - 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.

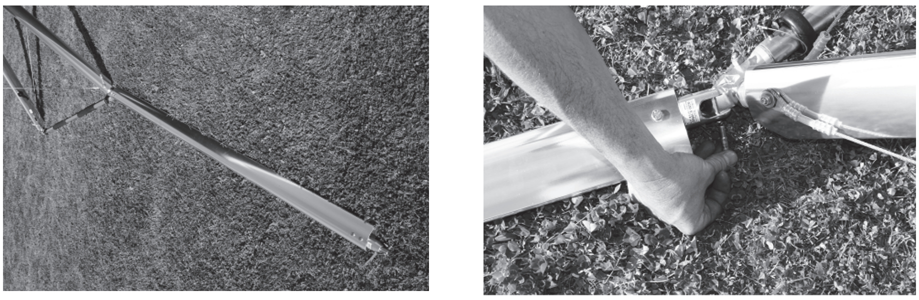
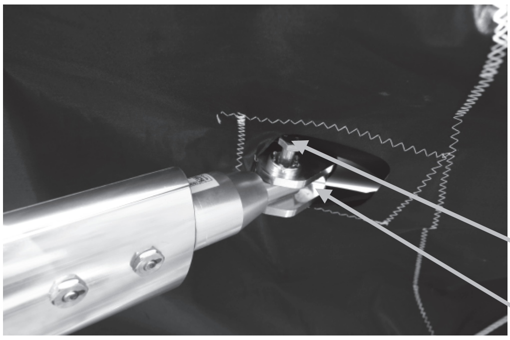


Figure 5 Section 4. Connect Control Frame To Wing Struts

4.2.8 XRS Only - 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 wing nut and safety pin. Repeat for the other side.

Ensure the strut hole is closest to the control frame when attaching the strut

The strut hole is off set from the

Cross bar attachment point.

Figure 6 Section 4. Connect Strut at Leading Edge

4.2.9 Insert Main Sail Battens

Battens are inserted starting at the keel working out to the wing tips. 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. 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.

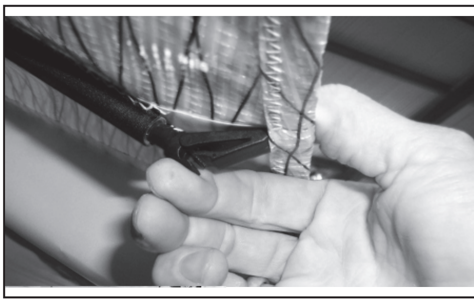
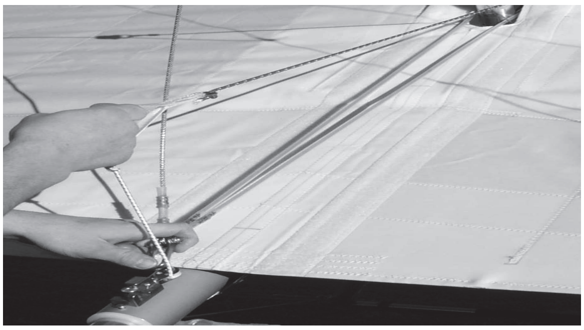


Figure 7 Section 4. Insert Main Sail Battens

4.2.10 Tension Cross Bars



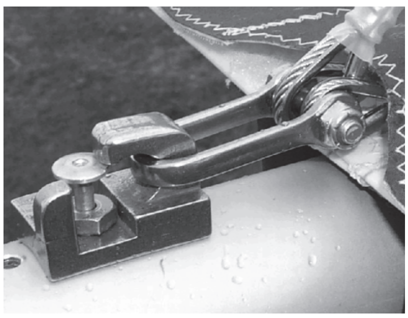


Figure 8 Section 4. Tensioning Cross Bar and Shackle Located in Block.

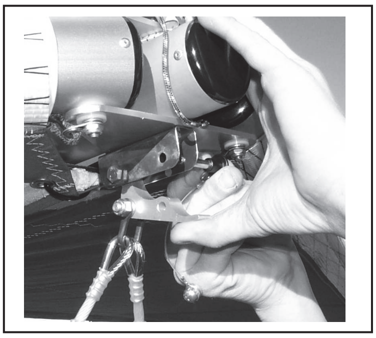
Pull the webbing handle to tension the crossbars. The handle pull back system gives a mechanical advantage of 2:1. Tension until the cross bar wire shackle is located in the quick clip block, behind the safety button.

4.2.11 Install Pull Back Cover

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

Figure 9 Section 4. Install Pull Back Cover

4.2.12 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 10 Section 4. Attach Nose Catch

4.2.13 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.

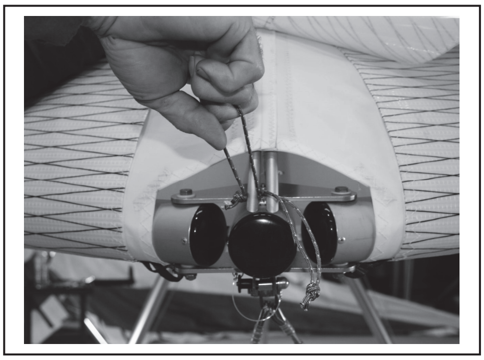


Figure 11 Section 4. Locate Nose Battens

4.2.14 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.

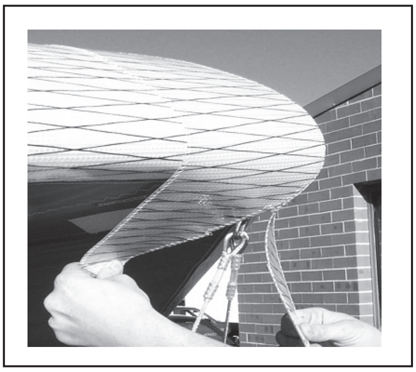


Figure 12 Section 4. Install Nose Fairing

4.2.15 Insert Remaining Main Sail Battens

Remove tip bags. Insert remaining main sail battens at the tips. Insert batten with clip end toward you, with the screw head facing up. The left hand side is pictured as a guide. Locate the screw head through the sail eyelet by moving the trailing edge. Close the over-centre lever along the shaft gently but firmly.

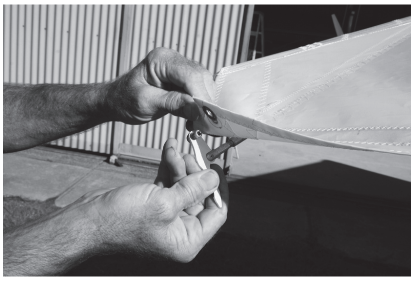


Figure 13 Section 4. Load Main Sail Battens

4.2.16 Load Tip Struts

Insert the carbon tip strut on the leading edge fitting. Keep the strut parallel to the leading edge whilst mounting on the fitting. Rotate the rear of the strut outward until it lines up with the locator eyelet.

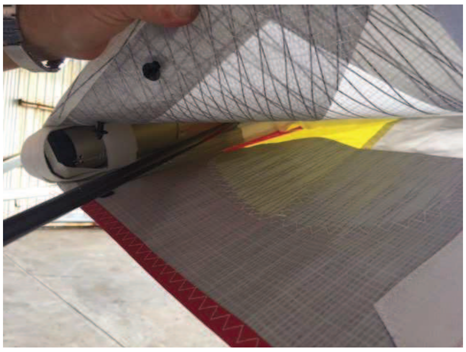



Figure 14 Section 4. Load Tip Struts

4.2.17 Attach Winglets

Option on XRM - Slide winglet into position with the leading edge. Line up rear ¼ turn fastener with rear hole depress and turn clockwise. Using the same procedure attach forward, inner and undersurface fasteners. Ensure all fasteners are secure.

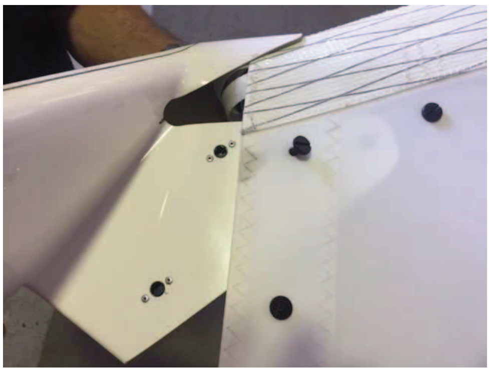


Figure 15 Section 4. Attach Winglets

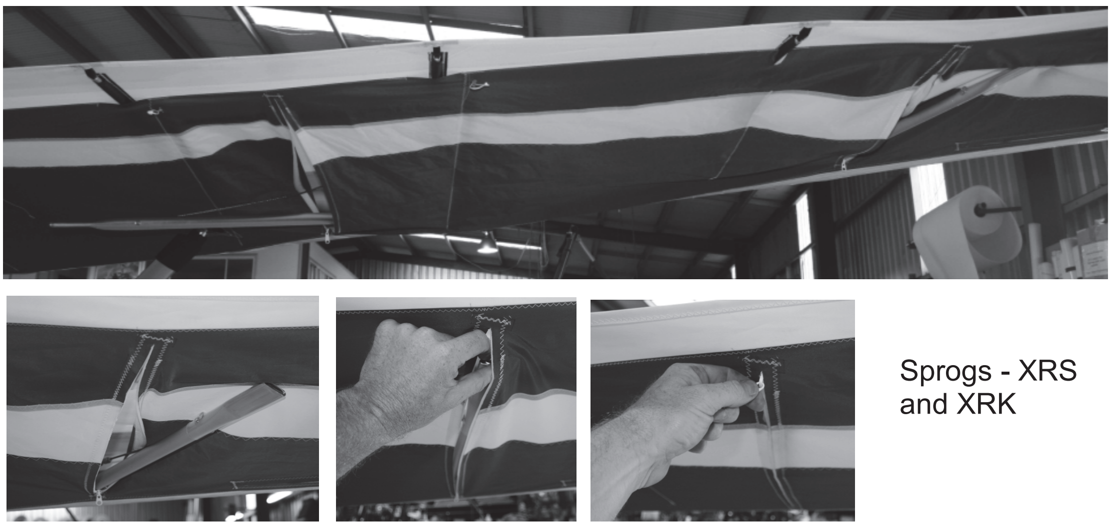
4.2.18 Attach Undersurface

Attach undersurface tip bungie to nylon disc on the underside of the tip strut. Close Velcro ensuring alignment with main sail is correct.

Figure 16 Sect 4. Attach Undersurface

4.2.19 Load Sprogs

XRS – XRK. Load the 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.



Sprogs - XRS and XRK

Figure 17 Section 4. Load Sprogs

4.2.20 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. The XRM wing does not require undersurface battens

Figure 18 Section 4. Insert Undersurface 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.

4.3 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	XRS	XRK & XRM
Nose catch, nose bolts, sail tangs, Nose battens.	√	√
Nose cone aligned.	√	√
Leading edge tubing.	√	√
Crossbar hinge junction & cross bar tubing.	√	√
Centre undersurface zip.	√	**N/A XRM**
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.	√	**N/A XRM**
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	√	**N/A XRM**
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.	√	√
Check security of Winglets. Ensure Velcro at tip is closed and bungie located	√	**Where applicable**

Table 2 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.	√

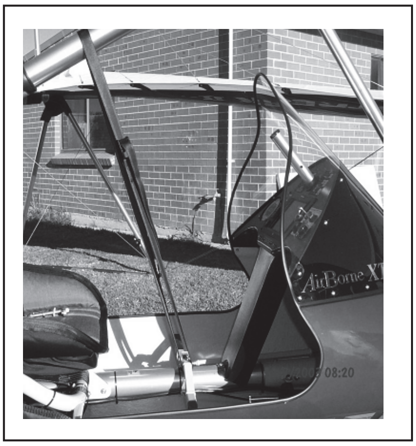
Table 3 Section 4. Extended Wing Pre-flight

4.4 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.

4.4.1 Attach Mast Retaining Strap



Undo 5 off ¼ turn fasteners to remove the windscreen. A wide blade screw driver or small coin can be used. Set windscreen aside.

Remove mast brace pip pins and slide mast brace up. Insert pip pin in mast brace to lock the two tubes together for assembly.

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 19 Section 4. Attach Mast Retaining Strap

4.4.2 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 20 Section 4. Position the Trike and Wing

4.4.3 Attach Mast To Wing U-Bracket

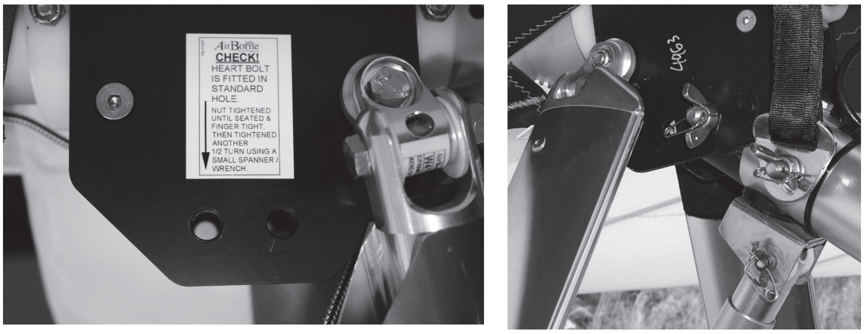


Figure 21 Section 4. Attach Wing to Wing U-Bracket

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 retainer.

The standard position for the heart bolt through the U-bracket is below the arrow on the Hang Point Placard on the keel roller. The heart bolt retainer is positioned in the other open hole to prevent rotation of the bolt.

Tighten wing nut until seated and finger tight, then **tighten another 1/2 turn** using a small spanner / wrench. Secure with safety pin. Remove mast-retaining strap from around the base tube and keel.

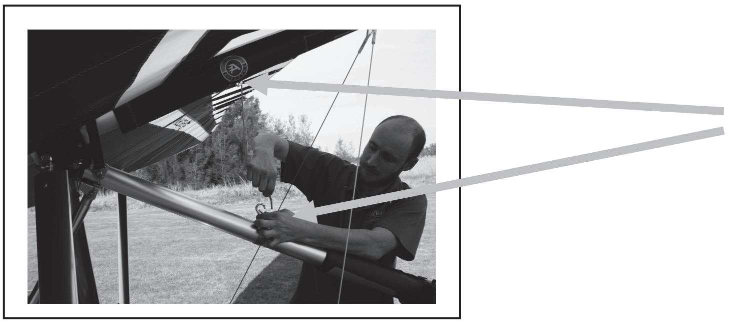
CAUTION
FAILURE TO TIGHTEN THE HEART BOLT ADEQUATELY WILL ALLOW THE BASE TO YAW INDEPENDENTLY RELATIVE TO THE WING RESULTING IN POOR HANDLING IN TURBULANCE

.

4.4.4 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.

4.4.5 XRS and XRK Only - Attach Trimmer To Mast



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

Figure 22 Section 4. Attach Trimmer to Mast

4.4.6 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.

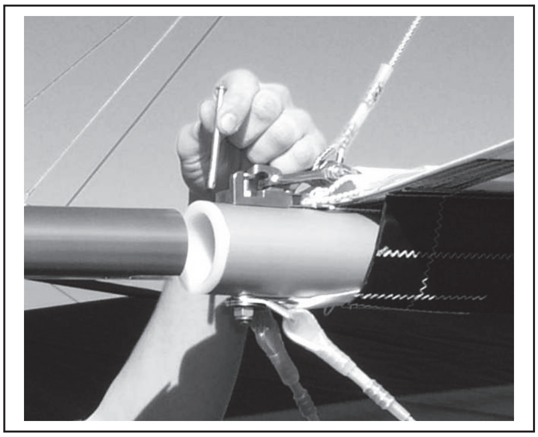


Figure 23 Section 4. Remove Keel Extension

4.4.7 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 24 Section 4. Rotating Wing

4.4.8 Insert Mast Lever

Insert the lever so that the flat section is facing toward the mast. Once the lever is located correctly rotate the lever down 180 degrees until it is securely loaded. Fold the seat back up into position

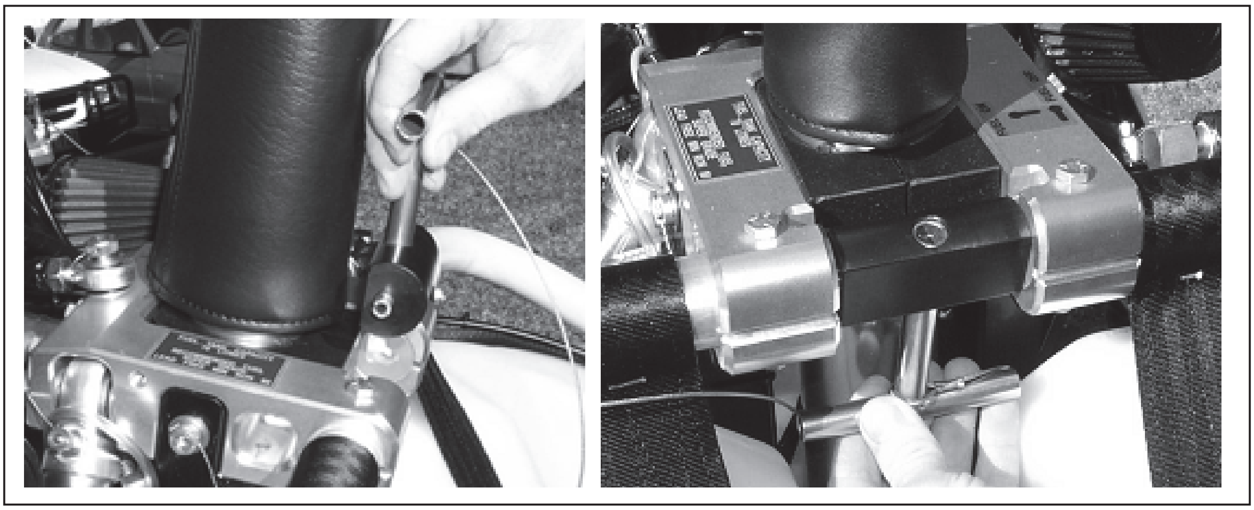


Figure 25 Section 4. Insert Mast Lever

4.4.9 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.

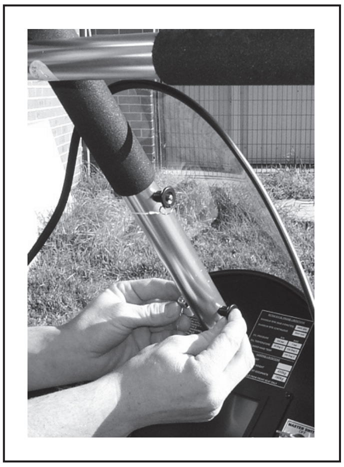


Figure 26 Section 4. Attach Mast Brace

4.4.10 Install Windscreen

Install windscreen starting from one side working toward the opposite side. Gentle inward pressure on the fasteners is required to seat the screen onto the rubber pad. Ensure all ¼ turn fasteners are properly located.

Figure 27 Section 4. Install Windscreen

4.4.11 Fit the Engine Cowl

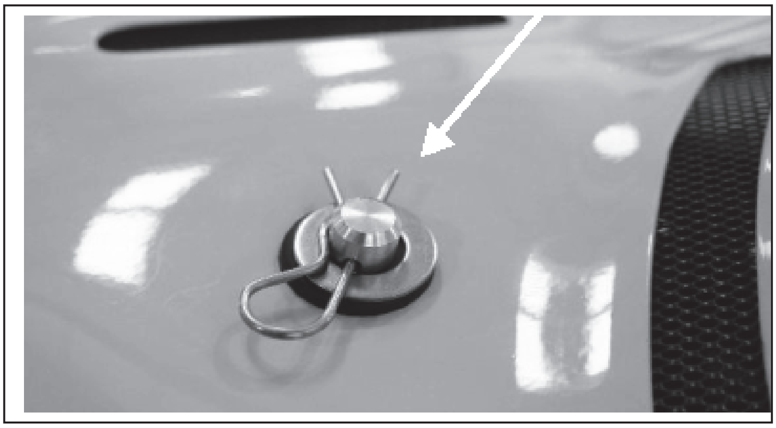


Figure 28 Section 4. Engine Cowl Retention Pin

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.

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.

Removal is the reverse of this procedure.

Figure 29 Section 4. Engine Cowl Retention Rubber Cord

4.4.12 Park The Aircraft

Figure 30 Section 4. 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.

4.5 Complete Trike Pre-Flight inspection

Ensure that the main ignition switch is 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	
Sitting in aircraft test brake system is operational with switch (Off). Depress lever and switch tap to (On) to engage park brake.	√
Check for leaks in brake system	√
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.	√
Coolant Level. Between max and min level on coolant bottle.	√
Oil Level. Check level as per Maintenance Manual (12.10.20)	√
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.	√
Front end secure. Ensure foot peg pip pins are 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 brace PIP pins secure.	√
Mast over centre latch loaded and secure.	√
Windscreen secured	√
Engine cowl secured	√
Vents: oil tank, fuel tank, Pitot entry.	√
Mechanical Components. Rotate propeller anti-clockwise and observe for noise or excessive resistance. Ensure ignition switch is off	√
General inspection of complete trike.	√
Wing & base universal bracket secure. Back up webbing strap secure.	√

Table 4 Section 4. Complete Trike Pre-Flight Inspection

4.6 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 XT3 series fuel levels are marked on the right rear side of the fuel tank. The fuel levels are marked at 10 litres, 20 litres, 30 litres, 40 litres, and 50 litres.

4.6.1 Fuel Tank Capacity

The properties of the fuel tank material cause an increase in capacity after the first 2 to 3 tanks of fuel. “Aged" capacity is 56 litres with 2-3 litres less for a new tank. The fuel level markings have been positioned for the fuel tank capacity up to 50 litres.

4.6.2 Fuel Quantity

A sight gauge is provided on the starboard side of the aircraft, visible from the rear of the tank. 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.

A fuel gauge is provided for in-flight use. The Amptronic dash has an analog gauge located to the left of the instrument. The MGL Explorer dash has fuel gauge display incorporated into the efis.

4.7 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.

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.

4.8 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.

4.8.1 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 5 Section 4. Before Starting Engine Check

4.8.2 Starting Engine

Park Brake	Ensure park brake is in the off position and apply foot brake before starting engine
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 6 Section 4. Starting Engine Check

4.8.3 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 7 Section 4. Before Take Off Check

4.8.4 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 Lift off	Take Off Safety Speed (TOSS)

Table 8 Section 4. Take Off and Initial Climb Check

4.8.5 Climb

Foot Throttle	Full On (Reduce for minimum TOW)
RPM	5800 RPM (Reduce to 5500 rpm once climb established. No change if using a reduced power take off)
Airspeed	Minimum of Take off Safety Speed (Toss). Up to trim speed

Table 9 Section 4. Climb Check

4.8.6 Cruise Speeds

Hand or Foot Throttle	Adjust for Level Flight
Airspeed	Trim speed or 5kts above

Table 10 Section 4. Cruise Check

4.8.7 Descent

Foot Throttle	Reduce
Hand Throttle	Off
Airspeed	Trim Speed

Table 11 Section 4. Descent Check

4.8.8 Landing

Hand Throttle	Off
Airspeed	Take Off Safety Speed (TOSS)
Directional Control	Nose Wheel Steering Straight
Braking	Off Then as required

Table 12 Section 4. Landing Check

4.8.9 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 13 Section 4. After Landing Check

4.9 Amplified Procedures

4.9.1 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 main ignition switch is on the left side of the dash (Up is run and down is engine stop). An additional ignition switch is on the right side rear seat frame for use by an instructor in an emergency (Forward is on with the missile cover closed. The cover is opened and the switch pushed rearwards for engine stop)

The ignition test switch is a momentary on switch with the centre position having both circuits on.

Never run the engine when not seated in the aircraft. 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.

4.9.2 Starting the engine

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

CAUTION
REMEMBER CLEAR PROP!

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

- Brake lever is depressed with park brake tap in the off position
- Fuel cock open
- Hand and foot throttle off
- Turn key switch and power up instrument
- Switch main 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.

4.9.3 Taxiing

Taxiing in normal conditions is straight forward.

With the engine idling the brake lever should be depressed. 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 require the nose of the wing to be lowered just below the trim position
- **Down Wind** conditions require the nose of the wing to be raised just above the trim position
- **Cross wind** conditions require the upwind tip to be lowered

4.9.4 Before take off

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.

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.
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.

4.9.5 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.

4.9.6 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.

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.

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.

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.

4.9.7 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.

4.9.8 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.

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.

> **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.**

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.

4.9.9 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.

4.9.10 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 5-10 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.

4.9.11 Baulked Landing

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

4.9.12 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 4.4 (Attaching Wing to Base)** and reverse the procedure.

- Apply park brake.
- **XRS and XRK only:** Undo the trimmer by unclipping it from the wichard clip on the mast. Remove pip pins from the front mast brace. 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 – All Wings

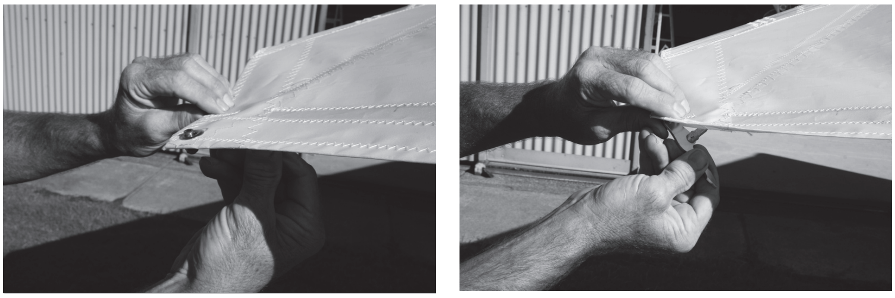
This section assumes that the wing has been removed from the base. The wing should have the keel extension fitted with the clevis pin and ring installed. This section is intended as a reference only and assumes prior knowledge of the break down procedure. Further reference for cover positioning can be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

4.11.1 Remove Winglets

Undo the ¼” turn fasteners and remove the winglets

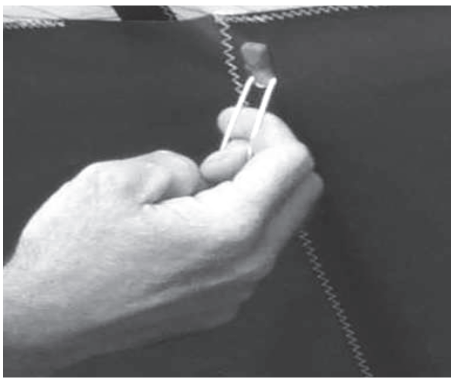
4.11.2 Remove Tip Battens

Remove tip strut and three tip battens per side.



4.11.3 Figure 31 Section 4. Unload 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 32 Section 4. Remove Undersurface Battens

4.11.5 XRS and XRK Only - Unload Sprogs

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

Figure 33 Section 4. Unload sprogs.

4.11.6 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 34 Section 4. Fit Tip Bags

4.11.7 Fit U-Bracket Cover

The U-Bracket flap cover stays in the sail when the wing is assembled. Unzip the center 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.

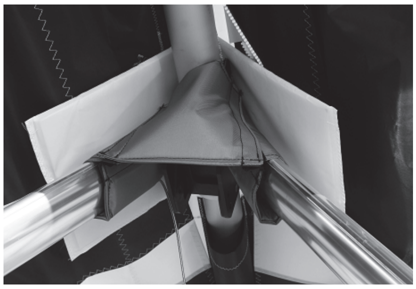


Figure 35 Section 4. Fit U-Bracket Face Cover

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.

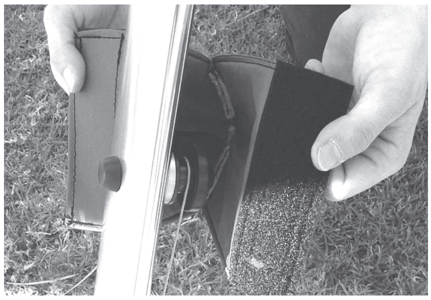


Figure 36 Section 4. Trimmer Cover

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.

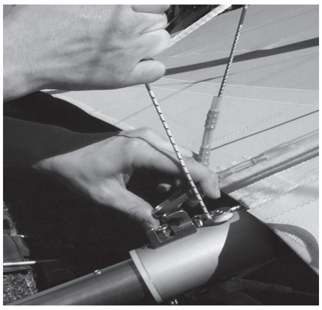
Figure 37 Section 4. Disconnect Nose Catch and Remove Nose Cone

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 38 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 39 Section 4. De-tension Pull Back Cable

4.11.12 XRS Only - 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 40 Section 4. Remove Strut to Leading Edge Connecting Bolt

4.11.13 XRS Only - 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.

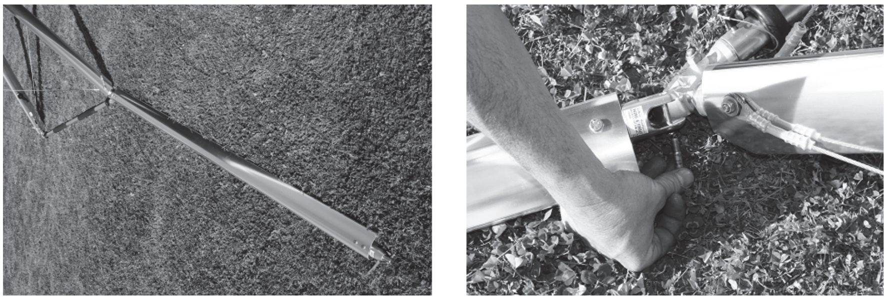
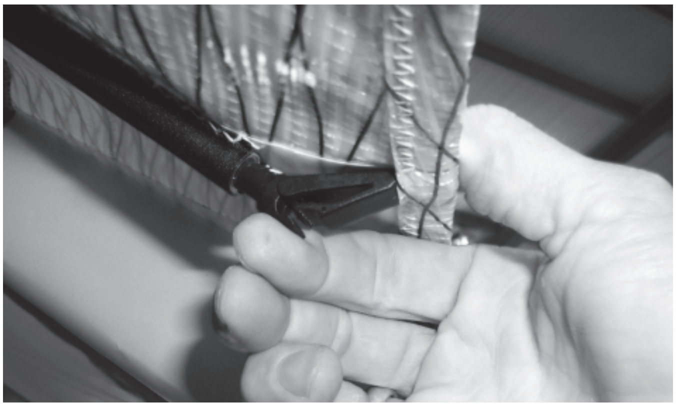


Figure 41 Section 4. Remove Control Frame Connecting Bolt

4.11.14 Remove Remaining Battens



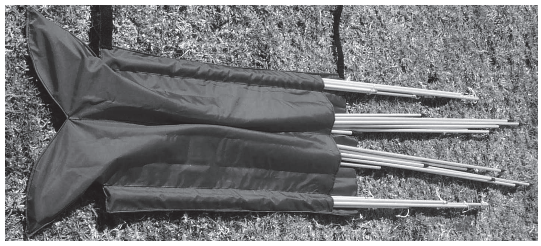
Remove remaining battens.

Ensure the locking latch is depressed adequately otherwise damage will occur to the latch

Rotate pivot beak and remove from sail as shown.

Figure 42 Section 4. Remove Next Outer Battens

4.11.15 Remove Main Sail Battens

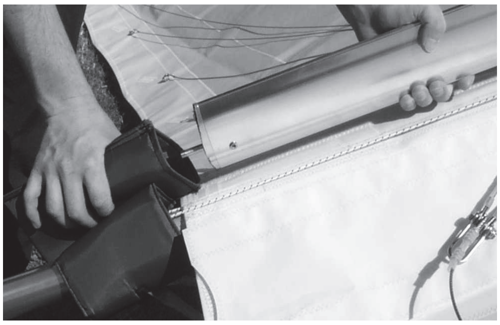


Pull the leading edges together approximately 1/2 metre. Remove the remaining main sail battens. Insert battens in the batten bag.

NOTE
The straight battens are inserted in separate pockets.

Figure 43 Section 4. Remove Main Sail Battens

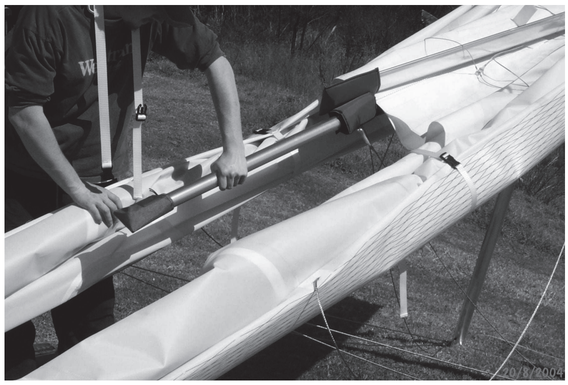
4.11.16 XRK and XRM Only - Remove Kingpost



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

Figure 44 Section 4. Remove Kingpost

4.11.17 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 45 Section 4. Fold Leading Edges

4.11.18 Attach Straps

Once the leading edges are together applying 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

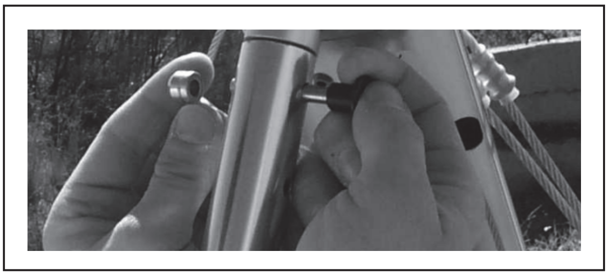
4.11.19 Fit Wing Bag

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

4.11.20 Roll Wing

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

4.11.21 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 46 Section 4. Disconnect Base Bar

4.11.22 Fit Padding

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

Figure 47 Section 4. Fit Padding

4.11.23 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.

4.11.24 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 48 Section 4. Position Battens

4.11.25 Position Struts

Place padding over the strut ends. Place the struts in rear of wing bag. Zip up bag.

Figure 49 Section 4. Fit Padding

4.12 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.

4.13 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

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5 PERFORMANCE ____ *80*

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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, altitude and aircraft condition will cause significant variation to these performance figures.

5.2 Take Off and Landing

The Take Off and Landing data below was established on a short grass runway, zero wind at 15 deg C

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.

5.2.1 Take Off 912 UL 80 HP

Rotax 912UL (80 HP)		TAKE OFF PERFORMANCE		XRS	XRK	XRM
	370 KG	**Distance - To 50 ft Altitude (15m)**	ft	603	529	504
		Sea Level ISA Conditions	m	184	161	154
	472 KG	**Distance - To 50 ft Altitude (15m)**	ft	804	705	672
		Sea Level ISA Conditions	m	245	215	205
		Distance - To 50 ft Altitude (15m)	ft	844	740	706
		1000m ISA Conditions	m	257	226	215

Table 1 Section 5. Take Off Distance 80 HP

5.2.2 Take Off 912 ULS 100 HP

Rotax 912UL (100 HP)		TAKE OFF PERFORMANCE		XRS	XRK	XRM
	370 KG	**Distance - To 50 ft Altitude (15m)**	ft	573	502	479
		Sea Level ISA Conditions	m	175	153	146
	472 KG	**Distance - To 50 ft Altitude (15m)**	ft	763	670	639
		Sea Level ISA Conditions	m	233	204	195
		Distance - To 50 ft Altitude (15m)	ft	824	724	690
		1000m ISA Conditions	m	251	221	210

Table 2 Section 5. Take Off Distance 100 HP

5.2.3 Landing

Rotax 912UL (80 & 100 HP)	LANDING PERFORMANCE			XRS	XRK	XRM
	370 KG	**Distance - From 50 ft Altitude (15m)**	ft	797	738	620
		Sea Level ISA Conditions	m	243	225	189
	472 KG	**Distance - From 50 ft Altitude (15m)**	ft	886	820	689
		Sea Level ISA Conditions	m	270	250	210
		Distance - From 50 ft Altitude (15m)	ft	956	886	744
		1000m ISA Conditions	m	292	270	227

Table 3 Section 5. Landing distance

CAUTION

TAKE OFF AND LANDING DISTANCES INCREASE WITH:
- **INCREASE IN ALTITUDE,**
- **TEMPERATURE INCREASE,**
- **TAIL WIND.**

5.3 Climb

Rotax 912UL (80 HP)		CLIMB PERFORMANCE		XRS	XRK	XRM
	370 KG	**Climb Rate**	ft/m	1200	1150	1000
		Sea Level ISA Conditions	m/s	6.1	5.8	5.1
	472 KG	**Climb Rate**	ft/m	900	850	800
		Sea Level ISA Conditions	m/s	4.6	4.3	4.1
		Climb Rate	ft/m	750	700	650
		1000m ISA Conditions	m/s	3.8	3.6	3.3

Table 4 Section 5. Climb Performance 80 HP

Rotax 912UL (100 HP)		CLIMB PERFORMANCE		XRS	XRK	XRM
	370 KG	**Climb Rate**	ft/m	1600	1550	1500
		Sea Level ISA Conditions	m/s	8.1	7.9	7.6
	472 KG	**Climb Rate**	ft/m	1200	1150	1100
		Sea Level ISA Conditions	m/s	6.1	5.8	5.6
		Climb Rate	ft/m	1000	950	900
		1000m ISA Conditions	m/s	5.1	4.8	4.6

Table 5 Section 5. Climb Performance 100 HP

5.4 Glide

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

PERFORMANCE		XRS	XRK	XRM
Descent Rate 49 kts @ MTOW	ft/m	650	700	720
	m/s	3.3	3.6	3.7
Glide Angle at 49 kts @ MTOW	angle	7.18	6.67	6.48
Glide Distance from 1000 ft	miles	1.4	1.3	1.2
	km	2.2	2.0	2.0

Table 6 Section 5. Glide

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

5.5 Cruise Performance

PERFORMANCE		XRS	XRK	XRM
Cruise Speed @ MTOW	kts	70	60	50
	mph	81	69	58
	km/h	130	111	93
Typical Fuel Burn @ Cruise (MTOW) - Note 3	Litre / hr	10.5	10.0	9.5
	US Gal / hr	2.8	2.6	2.5
Range @ Cruise	miles	384	353	317
Max useable fuel 67 litres (17.7US Gallon)	km	617	567	511

Table 7 Section 5. Cruise Performance

NOTE 3

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.

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WEIGHT BALANCE AND EQUIPMENT

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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 All Up Weight (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 weight information can be found in section 6.3.

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.

6.2.1 Aircraft Weighing Information

Typical wing weights are XRS (57kg), XRK (52kg), and XRM (49 kg).

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

Trike Base	XT-912-	2		kg
Unusable Fuel	3 Litres	2		2 kg
Wing	-	2		kg
Training Bars	1.4 kg (If applicable)	2		kg
			Issue 2 Aircraft Empty Weight *	kg
			Weighed By	
			Date	

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	
Engine Type ROTAX 912 ULS	
Engine Serial Number	
Carburettor Heating	Std
Amptronic GX2 Instrument	
MGL Explorer Instrument	
Engine Cowl	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 2.43 : 1	
MGL Explorer EFIS	
Propeller Type BOLLY BOS 68 INCH with BOS 3 hub **Hub Serial Number**	
Propeller Type Warp Drive 3 67.7 INCH Blade with Warp Drive hub **Hub Serial Number**	

Table 3 Section 6. Aircraft Alternate Equipment

6.2.4 Optional Equipment

OPTIONAL EQUIPMENT	FITTED (Yes/No)
BRS Emergency Parachute	
Radio	
Intercom	
Strobes	
Transponder	
Training Bars	

Table 4 Section 6. Aircraft Weight Optional Equipment

6.3 Typical Aircraft Weights

DESIGN LOADS		XR-S	XR-K	XR-M
Max take off weight	kg	472.5	472.5	472.5
(MTOW / W Max)	pound	1042	1042	1042
Wing Weight	kg	57	52	49
	pound	126	115	108
Max Base Weight (W susp)	kg	415.5	420.5	423.5
MTOW minus wing	pound	916	927	934
Typical Empty Weight (no options)	kg	241	236	233
Std XT480 hp 184kg (+4 kg 100 hp)	pound	531	520	514
Useable Load	kg	232	237	240
Optional Equipment Excluded	pound	510	521	528

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.

6.3.3 6.3.4 Fuel Conversions

Useful Fuel Conversions - Litres & Gallons to Kilograms	L	gall	kg
Minimum fuel (One hour) @ Cruise of 4900rpm	14	3.7	10.3
	15	4.0	11.1
	20	5.3	14.7
	25	6.6	18.4
	30	7.9	22.1
	35	9.2	25.8
	40	10.6	29.5
	45	11.9	33.2
	50	13.2	36.9
Fill tank from empty	55	14.5	40.5

Note: fuel conversion calculated using conversion factor of 0.737 g/L

Table 6 Section 6. Fuel Conversions

AIRCRAFT & SYSTEMS DESCRIPTION

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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 RA-Aus.

7.2 Airframe

Wing

All wings are state of the art flex wings. The airframe is constructed from 6061-T6 multi sleeved aluminium tubing and the sail being constructed of a combination of dacron and laminate clots

Airborne wings are load tested in excess of 2450 kg. Excellent engineering contributes to the relatively light weight.

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 long-range fuel tank is mounted beneath the engine platform.

The pilot cockpit is designed to allow for various size pilots. The standard instrument used on the XT is a Skydat GX2 EFIS. A MGL EFIS optional. 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 XRS and XRK Wings

The trimmer system allows in flight trim adjustment by rotating the trimmer wheel on the right downtube. The swage on the trimmer wire is used as a pointer on the trimmer placard.

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 EFIS (electronic flight instrument system) mounted centrally in the dash, either an MGL Explorer or Amptronics GX2. A master switch and starter button can be found on the right side of the dash. Ignition switches and 12V DC outlet on found on the left Circuit breakers and isolation switches are below the efis. Radio/transponder can optionally be mounted to the left and right of the efis. A fuel gauge is provided on the left when the Amptronic instrument is selected.

Figure 1 Section 7. Instrument Panel

7.7 Undercarriage System

The microlight uses a tricycle undercarriage with a braking system via rear wheel disc brakes.
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 XT912 MK3 has two options for adjustment. The position of the cross tube and the foam wedge.

Figure 2 Section 7. Front Seat Adjustment.

Cross tube - To adjust the seat backrest forward the following procedure should be adopted:

1) Remove left and right supporting bolts from frame.
2) Lower the tube to move the back rest forward.
3) Replace the bolts.

Foam Wedge – The foam wedge can be removed completely to allow the seat back to move rearward.

A combination of the two adjustments can give a range to suit shorter and taller pilots

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 3 Section 7. Restraint harness, shoulder sash & buckle fitting.

7.10 Engine

The power unit is a Rotax 912UL 80hp and 100hp 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 propellers 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 80HP	Bolly	2.43	12°
912 UL 80 HP	Warp Drive	2.43	12°
912 ULS 100 HP	Bolly	2.43	15°
912 ULS 100 HP	Warp Drive	2.43	15°

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.

Engine	Gearbox Ratio	Rotax Gear Set Part Number
912 UL 80HP	2.43	887 680
912 UL 100HP	2.43	72104

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 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 park brake is provided. To engage depress lever and switch tap to (On).

Ensure Park brake is in off position and apply foot brake before starting.

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

7.14 Front Foot Rest Adjustment

The front foot rests are adjustable to suit various size pilots. Adjustments can be made for and aft to suit different height pilots. There is also adjustment to allow variation in the brake and throttle lever. The following outlines the adjustment method.

Following adjustment and before flight ensure the pilot has full movement range to operate the throttle and foot levers

Front Foot Rest Adjustment	
	The front end is adjusted by removing the pip pins which secure the foot rest assembly to the front fork. Remove the pip pins and adjust to suit the pilot. Replace both upper pip pins ensuring the caps are on securely. The lower pip pin can be positioned to vary the angle of the throttle and brake lever. Ensure all pins are secure
	The photo shows the foot pegs positioned for a short pilot. A taller pilot would have the foot pegs adjusted so the pegs move forward. Pip pins would be in the more rearward holes of the foot peg assembly for taller pilots Ensure all Pins are secure after adjustment. Ensure pilot has full range of brake and throttle lever movement

Figure 4 Section 7. Foot Rest Adjustment

7.15 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 12V DC supply is protected by a 20 amp fuse at the battery and a 10 amp circuit breaker mounted centrally on the dash. The master switch on the dash, when in the off position, disables the system electrics and the electric start push button; the flight instrument has a separate power supply;
- 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, the switch on the left side of the dash should be switched off (lower position). There is a second engine stop switch that can be reached from the back seat, located on the right hand side seat frame. Its position is normally on and can be operated by lifting the missile cover and switching the toggle forward. 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.

7.15.1 XT 912 Electrical Schematic

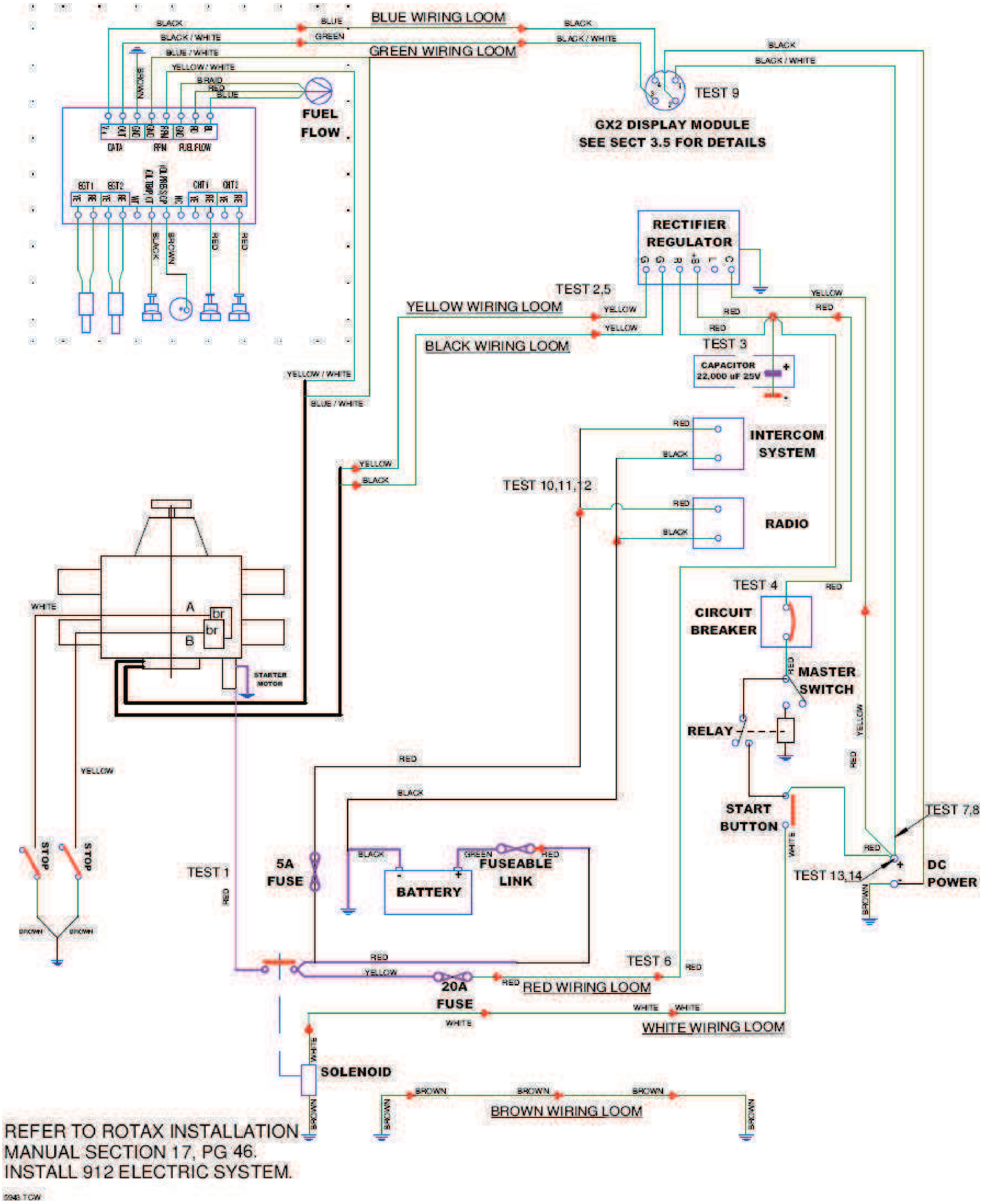

Figure 5 Section 7. Foot Rest Adjustment

7.16 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

7.17 Instrument Function

Standard instrumentation includes the AMPtronics GX2 Digital Flight instrument. The MGL Explorer efis is available as an option.

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. The MGL Explorer also has alarms, they will flash directly on the touch screen if thresholds are reached.

WARNING

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

7.17.1 GX2 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.

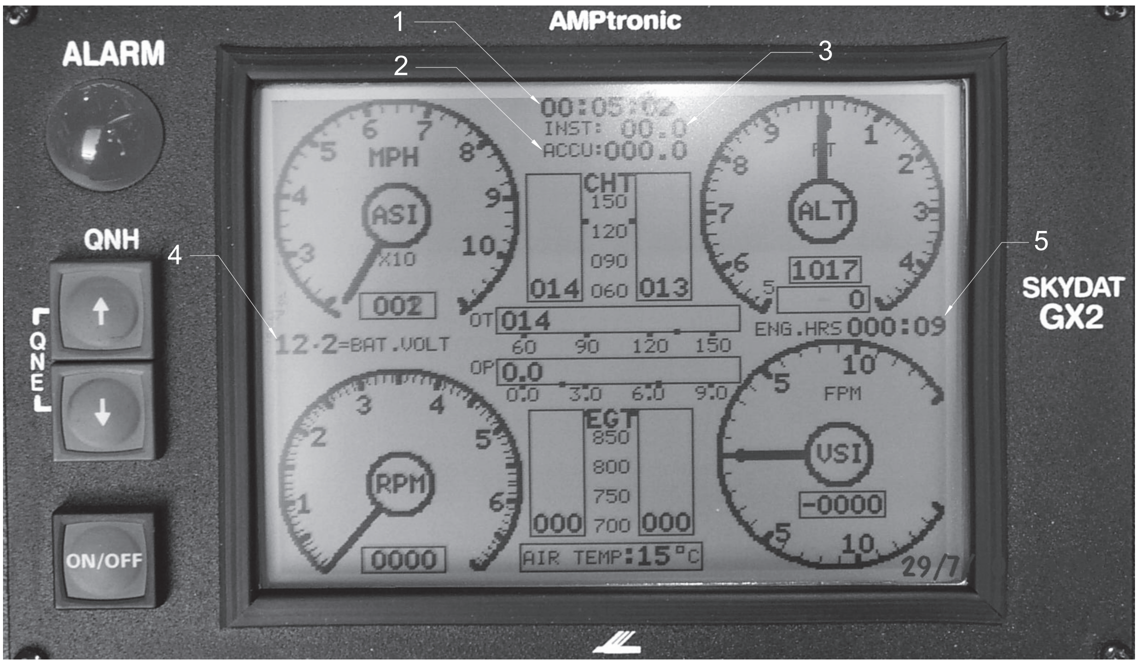

Figure 6 Section 7. GX2 Display

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) or Coolant Temperature in 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

7.17.2 Amptronics System Turn On

CAUTION

IN TRIKES WITH ENGINE SERIAL NUMBER GREATER THAN 6 770 937 (XT-912-0436 AND HIGHER) COOLANT TEMPERATURE IS MEASURED, NOT CYLINDER HEAT TEMPERATURE.

Turn key clockwise to the on position. Turn the EFIS switch up 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.

7.17.3 Explorer Description of Features

The MGL Explorer is a highly customizable efis that utilises multiple touch screens as well as rotary knobs and assignable buttons. The main functions are providing engine and fuel monitoring; attitude, speed and heading reference; and moving map GPS. It can also provide radio and transponder control, traffic awareness, GPS VOR.

Figure 7 Section 7. Explorer Display

The unit defaults to page 6 on start up where engine RPM, oil temperature and pressure, EGT, CHT and fuel are displayed to the left of the screen. Imitation analog instruments display air speed, altitude, compass and vertical air speed.

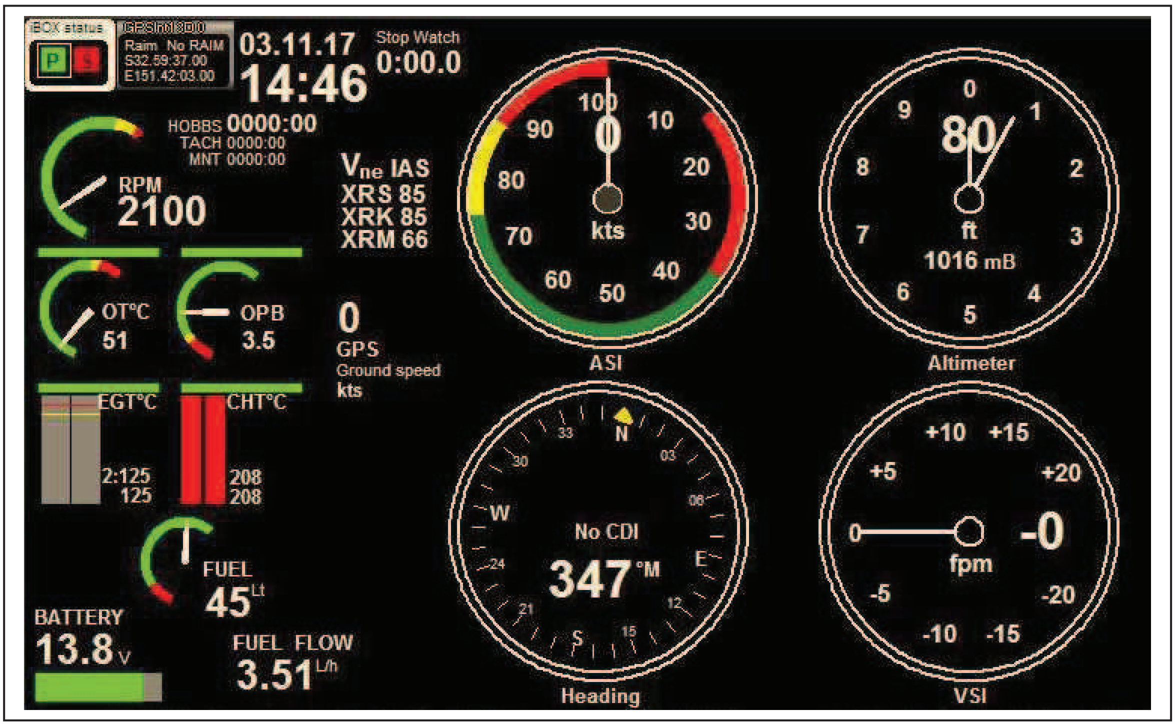

Figure 8 Section 7. Explorer Display

7.17.4 Explorer System Turn On, Altimeter Adjustment and Units Selection

Turn the dash Master Switch to on. Turn the EFIS switch upwards to on, the efis will turn on and conduct a self-test. During testing, engine monitoring indicators will have a cross through them, once testing is complete the crosses will disappear, and a test dialog box will briefly show then the system is ready for use.

- Altitude is set by turning the BARO rotary control,
- Moving maps etc are selected by turning the PAGE rotary control and
- Menus are selected by pressing the soft MENU key, where units can be selected.

Due to the high functionality of the instrument, refer to the IEFIS panel user manual for further operation details.

7.18 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.

7.19 Ignition Switches

The master switch is located on the right side of the dash, and the ignition switches are located on the left side. Operation is centre for both on (normal operation) and up to test left and down to test right ignition systems. There are two engine stop switches. The next switch on the left side of the dash is the normal engine stop switch, up is on, and down is off. The switch located on the right hand side of the seat frame under the missile cover is the second ignition switch. To stop the engine using it lift the cover and move the switch rearwards. Both switches must be on for the engine to run. 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

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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.

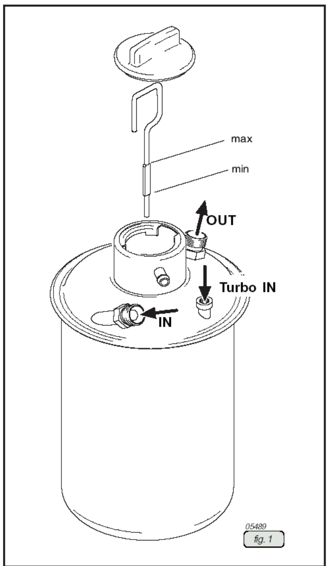
8.5.4 Checking Fuel
The fuel is checked for water and contaminants by draining a sample of the fuel into a clear glass container. Once a sample has been taken the quality of the fuel can be checked by looking for any water at the bottom of the glass, and checking for any other visual contaminants.

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 Maintenance Manual and Service Instructions should be consulted.

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

Historically, earlier Airborne trikes with Rotax 912 UL engines used high quality silicate free long life antifreeze coolant. Then waterless propylene glycol was specified as coolant from 23rd February 2005 as this has a higher boiling point though it results in slightly higher running temperatures.

On September 23, 2013 Rotax issued Service Instruction SI-912-016R6 that permits the use of conventional coolant based on ethylene glycol with 50% water content.

The **912 Operators Manual (OM Edition 3 / Rev. 0 September 01-2012) .. 2.3) Operating media-Coolant .. Conventional Coolant** states "Conventional coolant mixed with water has the advantage of a higher specific thermal capacity than water-less coolant." and **Application** states "When correctly applied, there is sufficient protection against vapor bubble formation, freezing or thickening of the coolant within the operating limits. Use the coolant specified in the manufacturers documentation."

It also gives excellent corrosion protection, especially for aluminium, and protection against freezing.

Rotax have directed that coolant type be specified by the aircraft manufacturer.

Airborne Windsports have decided to change back to conventional coolant based on ethylene glycol with 50% (distilled) water content for aircraft with base serial number commencing XT-912-0445, March 11, 2014 until further notice.

Owners and maintainers of Airborne Windsports 912 powered aircraft are not required to change coolant, but be aware that different coolants are available, and that mixing of coolants must not occur.

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.

8.10 Brake System

A 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 park brake is provided. To engage, depress foot lever and operate tap at the base of the front seat.

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 is located in section 4.

8.12 Circuit Breaker and Fuses

The circuit breakers and fuses for the electrical equipment are in two positions.

1. The dash has two circuit breakers. A 5amp breaker for the EFIS and a 10 amp for the dash supply
2. The fuse box is mounted on the front of the battery mounting box, under the front seat. This provides fusing for dash 15A, relay 5A, and avionics, two by 5A.

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.

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9 TRAINING SUPPLEMENT

9.1 XT912 MK3 Flight Training Supplement

This supplement is intended to outline the unique characteristics of the XT912 MK4 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.
Ensure that the heart bolt is tensioned sufficiently to reduce base / wing yaw. (see section 4.4.3)
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).

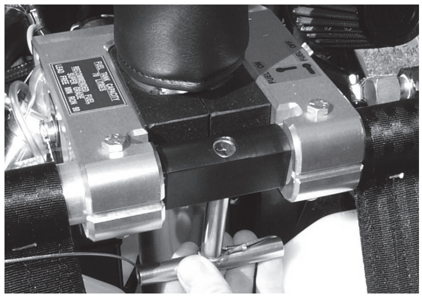

Figure 1 Mast Catch

Where winglets are fitted, ensure they are properly secured.

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

Ensure wing keel extension is removed

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 Start Up

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). Turn on EFIS switch. If an Explorer efis is fitted it will start up, once self-testing complete it is ready. If a GX2 instrument is fitted 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 the ignition switches are on BOTH ON. Check the seat frame ignition switch missile cover is closed. 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 wing trimmer (XRS, XRK only) 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 aircraft power)	Lower right instrument panel. Use key to turn on. (See AOI Section 7.6)
Starter Button	Top right instrument panel above 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	Left side of dash. Switches moved up to turn ignition on. Separate ignition circuits tested using the momentary on switch up and down
Hand Throttle	Right side of pilot mounted to seat frame above ignition switches. Push throttle up and forward to increase power.
Primary Engine Stop	Upper left instrument panel. Push switch down.
Secondary Engine Stop	Right hand side of passenger seat located on seat frame. Open missile cover, push switch rearwards.

9.9.3 Park Brake

A park brake is provided. To engage depress lever and switch tap to (On). Prior to starting ensure park brake is in off position and apply foot brake.

9.9.4 Digital Instrument Panel (SkyDat GX2)

See AOI Section 7.16.1 for a complete description.

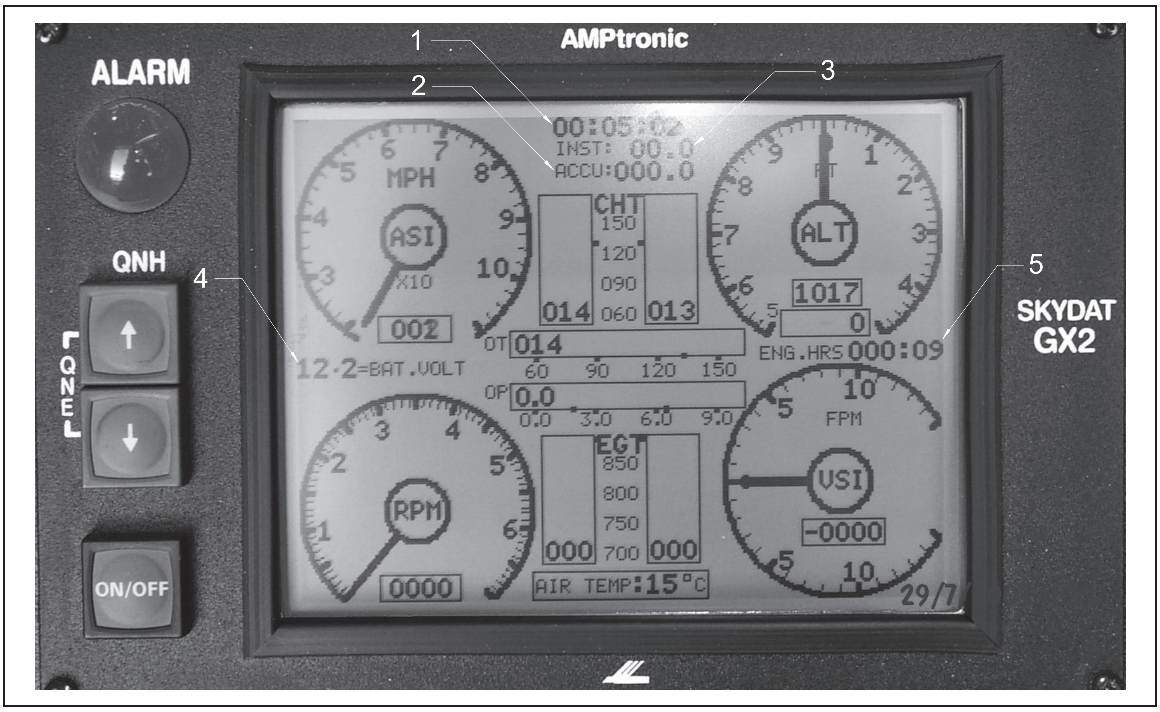

Figure 2 Section 9. Digital Instrument Panel (SkyDat GX2)

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
Coolant Temp or CHT (Cylinder Head Temp)	Top center
EGT (Exhaust Gas Temp)	Bottom center
Fuel	Bottom center alternating with Air Temp

CAUTION

IN TRIKES WITH ENGINE SERIAL NUMBER GREATER THAN 6 770 937 (XT-912-0436 AND HIGHER) COOLANT TEMPERATURE IS MEASURED, NOT CYLINDER HEAT TEMPERATURE.

9.9.5 Digital Instrument Panel (MGL Explorer)

See AOI Section 7.16.3 for a complete description.

Figure 3 Section 9. Digital Instrument Panel (MGL)

The unit defaults to page 6 on start up where engine RPM, oil temperature and pressure, EGT, CHT and fuel are displayed to the left of the screen. Imitation analog instruments display air speed, altitude, compass and vertical air speed.

Instrument	Location
ASI	Top Centre
Altimeter	Top Right corner (use up/down Baro knob to adjust barometric pressure)
Compass	Bottom Centre
VSI	Lower right
Hobbs / Stop watch	Top Left
RPM (engine – the propeller is spinning at slightly less than half this value)	Top left
OT / OP (Oil Tem / Oil Pressure)	Center Left
EGT / CHT	Centre Left
Fuel / Fuel Flow and Batter Voltage	Lower left

9.10 Aircraft Performance Data

See AOI Section 5 for detailed discussion on performance and varying weights and atmospheric conditions.

The information provided below is based on standard atmospheric conditions at sea level at Maximum Takeoff Weight (MTOW), Max Take Off Power, A level dry runway, With short grass, Still wind and temperature of 15 deg C.

PERFORMANCE at MTOW		XRS	XRK	XRM
XT MK4 80 HP	ft	804	705	672
Take off Distance to 15m (50ft) - Note 1	m	245	215	205
XT MK4 100 HP	ft	763	670	639
Take off Distance to 15m (50ft) - Note 1	m	233	204	195
Stall Speed @ 450kg (MTOW)	kts	35	34	33
	mph	40	39	38
	km/h	65	63	61
Glide Angle at 49 kts @ MTOW	angle	7.18	6.67	6.48
Typical Fuel Burn @ Cruise (MTOW)	Litre / hr	10.5	10.0	9.5
	US Gal / hr	2.8	2.6	2.5

(Take off from a level grass surface at 1.3 x stall speed and climb to 50 ft)

9.11 Training Recommendations

The XT 912 Mk4 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.

End of Aircraft Operating Instructions