


AIRCRAFT OPERATING INSTRUCTIONS

Light Sport Aircraft

T-LITE - CORE NANOLIGHT

Approved:


Delegate of AirBorne WindSports Pty Ltd

Date: 1st November 2011



Serial No. Base		
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.

AirBorne WindSports Pty Ltd

UNIT 22/30 KALAROO ROAD, REDHEAD, NSW 2290 AUSTRALIA

Phone (02) 4944 9199 International +61 2 4944 9199

Fax (02) 4944 9395 International +61 2 4944 9395

E mail fly@airborne.com.au

www.airborne.com.au

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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/](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**
- **T-Lite Maintenance Manual**
- **T-Lite Illustrated Parts Catalogue**
- **Wing Maintenance Manual**
- **Wing Illustrated Parts Catalogue**
- **Engine Owners Manual**
- **TinyTach Manual**
- **Variometer Manual – If Installed**
- **Parachute Manual – If Installed**

+

Table 2 Section 0. T-Lite 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/>

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1 GENERAL

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

This AOI contains information for the T-Lite base coupled with the Core wing. All relevant information is supplied for this configuration.

1.1 Introduction

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

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

The success of our aircraft 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 nanolight in a safe condition. Detailed maintenance requirements are outlined in the wing and base maintenance manuals. Please reference these manuals to ensure your nanolight is maintained correctly.

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 nanolight 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 book 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/NANOLIGHT/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/NANOLIGHT/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

(T-Lite / Core shown in photographs)



Figure 1 Section 1. Aircraft Front View



Figure 2 Section 1. Aircraft Side View

1.1.4 General Dimensions

1.1.4.1 T-Lite / Core

DIMENSIONS	Metric	Imperial
Wing Span	9.5 m	31.1 ft
Wing Area	15.60 sq m	168 sq ft
Aspect Ratio	5.7	
Wing Weight	34 kg	75 lbs
Overall Height (Control Bar Fwd)	3.45 m	11.3 ft
Trike Width	1.25 m	4.10 ft
Trike Length	2.22 m	7.28 ft
Wheel Track	1.15 m	3.77 ft
Wheel Base	1.65 m	5.41 ft
Trike Height	2.18 m	7.15 ft
Cockpit Width	0.54 m	1.77 ft
Wing (Packed) Length	5.7 m	18.7 ft
Wing Length (Short Packed)	4.1 m	13.5 ft

Table 1 Section 1. General Dimensions T-Lite / Core

1.1.5 General Description

1.1.5.1 Base

Designed to be an easily portable aircraft that is used for soaring, thermalling and general flying, the T-Lite provides the pilot with a very small, compact trike base that folds up to fit in the back of a station wagon.

The T-Lite is a single seat weight-shift controlled aircraft base. The wheels of the base are of tricycle configuration with a single, steerable wheel at the front. There is an optional brake. The pilot sits in front of the engine, and the propeller is in a pusher configuration. The passenger pod is suspended in a triangular frame that is hinged at the top around the pitch and roll axes to provide weight-shift control.

The cockpit is very minimal, consisting of footpegs, an upholstered seat and harness, with the only standard instrumentation being an engine rpm/hour meter, an airspeed indicator, and optional altimeter depending on local requirements. This cockpit configuration is designed to match suitable wings. Any wing used must be suitably matched, and tested for suitability by a qualified person.

1.1.5.2 Wing

Using the Sting 3 hang glider as a design base, the Core wing has been engineered to handle additional loads with MTOW 210kg. Similar to the Sting 3, the Core has great handling at low speed allowing very easy control authority right up to touch down, and takes advantage of that wing's excellent climbing and general flying characteristics.

An excellent sail "fit" produces a wing that has light handling with impressive "feel" in turbulence. The batten ends are a threaded clip design, which can be adjusted to vary tension for tuning the wing. The batten mechanism allows easy installation and removal of the battens. An airfoiled aluminium section is used for the down tubes and king post. Hardware is designed using state of the art engineering tooling that provides fittings that look smart and are positioned to achieve minimum drag.

1.1.5.3 Base and Wing

Combining the T-Lite base with the Core wing results in an aircraft that offers hang gliding, paragliding and trike flight characteristics, with the benefit of self-launching in nil to moderate wind, in a comfortable seated position, that packs away to be fit on top of a normal sedan.

1.2 Symbols Abbreviations and Terminology

In this book:

"**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**" (**All Up Weight**) 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 States 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.

"**km/hr**" means kilometres per hour.

"**kts**" means knots.

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

"**L/hr**" means litres per hour.

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

"**mph**" means miles per hour.

"**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.

"**RA-Aus**" 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.

“**V_{SUSP}**” means maximum suspended weight

1.3 Use of Imperial / Metric 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. Imperial / Metric Conversion Factors

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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

2.2.0.1 T-Lite Core

Speed	IAS			Comments
	mph	km/hr	knots	
Never Exceed Speed (V_{ne})	53	85	46	Do not exceed this speed in any operation
Maximum Manoeuvring Speed (V_a)	39	63	34	Do not make full or abrupt control movements above this speed

Table 1 Section 2. Airspeed Limitations

2.3 Airspeed Indicator markings

The Hall airspeed indicator that mounts on the control bar has a black on yellow placard with V_{ne} marked for the Core wing. The pilot should be aware of the combination of wing and base and be familiar with the appropriate V_{ne} marking.

2.4 Power Plant Limitations

2.4.1 Engine

Manufacturer: Baileys

Model: 4V-200

Reduction ratio: 3.2 : 1

2.4.2 Engine Limitations

ENGINE LIMITATIONS	Metric	Imperial
ENGINE SPEED		
Take Off	8200 rpm	8200 rpm
Maximum Continuous	7800 rpm	7800 rpm
PERFORMANCE		
Take -off Performance	16.4 kW	22 hp
AMBIENT START & OPERATING TEMPERATURE		
Maximum	40 deg C	104 deg F
Minimum	0 deg C	32 deg F

Table 2 Section 2. Engine Limitations

2.4.3 Fuel Grades

FUEL	
Preferred Fuel Type	Leaded or Unleaded minimum 98 Octane
Optional Fuel Type	The engine is capable of running on lower than 98 octane fuel rating but requires modification to the ignition timing and there will be a slight reduction in power. Contact Bailey Aviation for details.

Table 3 Section 2. Fuel Specification

NOTE

Refer to section 2.6.7 for fuel capacities and limitations

2.4.4 Lubricating Oil

The Baileys engine uses a minimum amount of oil to conserve weight but is also used for engine cooling so oil levels and change intervals are very important. Consult the Bailey manual for the correct type and grade of oil for the ambient operating temperature.

The specified oil is:

Castrol Power 1 Racing Motorcycle Oil 5W-40 fully synthetic.

OR

Shell Advance Ultra4 SAE 10W-40

NOTE

Strict adherence to oil type is recommended.

Check oil and replenish as required. Consult the Bailey engine manual for maintaining the oil and oil level.

Use caution around the hot exhaust when removing the oil top-up cap.

2.4.5 Drive Belt

Minimum drive belt tension is required to prevent slippage although some slippage at idle is normal and is confirmed by hearing an occasional chirping noise. Drive belt deflection of 5-8mm is optimum; consult the engine manual for the drive belt checking and adjustment procedure.

2.4.6 Propeller

The T-Lite propeller is a two-piece, two-bladed propeller. The two halves of the propeller form the hub once the propeller is fitted.

The propeller is fitted by slotting the two halves together. The propeller is then fitted onto the locating pins, ensuring the T-Lite stickers on each blade face rearward. The wash plate is then fitted and the securing bolt is then tightened and retaining pin fitted.

NOTE

Do not over-tighten the securing bolt. Tighten approx. ¼ turn after firm to line up with the slots on the wash plate.

2.5 Weight Limits

	Metric	Imperial
Max take off weight	210 kg	463 lb
Typical empty weight ^{*1}	90 kg	198 lb
Maximum empty weight ^{*2}	122.3 kg	270 lb
Permitted range of pilot weight	50-100 kg	110-220 lb
Maximum behind seat storage load per bag	2kg	4 lb

Table 4 Section 2. Weight Limits

^{*1} Includes 0.5 litres (0.4kg) unusable fuel and Core wing (34kg). Empty weight is defined in section 6.2.

^{*2} Includes 0.5 litres (0.4kg) unusable fuel and 86kg pilot. 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 T-Lite is therefore not critical in regards to centre of gravity although the distribution of load in the trike base has a minor affect on the in-flight attitude of the trike base.

Base Suspension Range (Measured from the line joining the leading edge nose bolts to the suspension point.)	Dimension	Dimension
	Metric	Imperial
CORE wing	1635 mm +0/-15mm	64.37" +0/0-.59"

Table 5 Section 2. Centre of Gravity Limits

NOTE

The front or rear hole of the U-bracket may be used as the suspension point for your aircraft, depending on test flight results. Check with your dealer or Instructor for confirmation of which hole to use.

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 pilot’s control and put both the aircraft and its occupant in extreme danger.

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

2.6.3 Bank Angle

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

2.6.4 Flight Load Factor Limits

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

Table 6 Section 2. Flight Load Factor Limits

2.6.5 Flight Crew Limits

Minimum and maximum flight crew is 1 person.

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 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 time piece are required. Additional equipment may be required for some overseas operations.

2.6.7 Fuel Limitations

Maximum Usable Fuel	9.5 litre	2.5 US Gal
Unusable Fuel capacity	0.5 litre	0.13 US Gal

Table 7 Section 2. Fuel Limitations

2.6.8 Maximum Passenger Seating Limits

No passenger allowed.

2.6.9 Minimum Pilot Weight

The nanolight aircraft must only be flown solo. Minimum pilot weight shall not be below 50 kg.

2.6.10 Other Limitations

Maximum Cross Wind	13 mph plus gust	11 knots plus gust	20 km/hr plus gust
Maximum Wind Strength	17 mph plus gust	15 knots plus gust	28 km/hr plus gust
Maximum Ambient Operating Temperature	104 deg F	40 deg C	

Table 8 Section2. Other Limitations

NOTE

A maximum gust factor of 3 – 5 knots is nominated to cover the range of expected pilot experience and skill. Less experienced pilots should use the lower limits.

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

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

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. A chamois or sponge is recommended to remove the water.

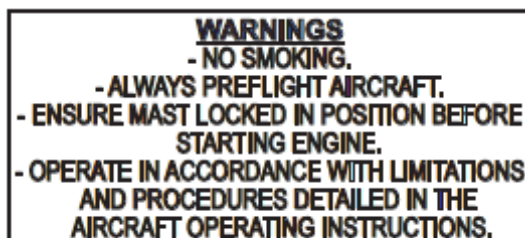
Continued operation in heavy rain is not recommended due to the abrasive effect of raindrops on the propeller. Do not use waterproofing agents on the wing as the consequent beading of water droplets can significantly increase the stall speed.

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

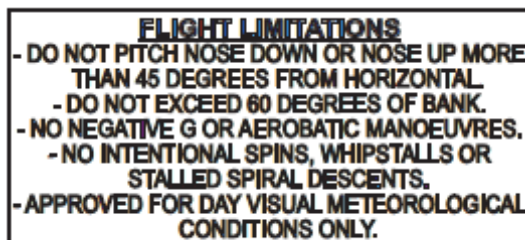
2.7 Placards

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



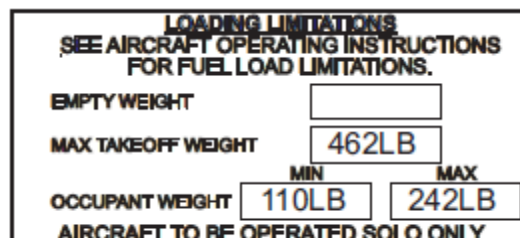
PART NO: 110763



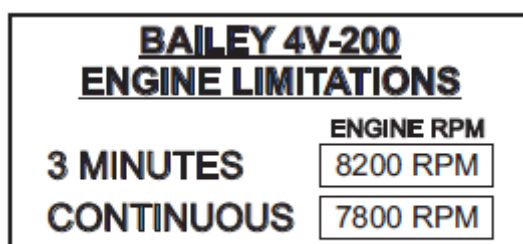
PART NO: 110762



PART NO: 110760



PART NO: 110761



PART NO: 110769

Location	The flight limitations placards are located along the trike base tube. Loading limitations placard option of metric 110760 or imperial 110761
Series	T-Lite Series

Table 9 Section 2. Flight Limitations Placards

2.7.2 Flight Limitations Placard Locations



Figure 1 Section 2. Warning and flight limitations placard locations.



Figure 2 Section 2. Loading and engine limitations placard locations.

2.7.3 Aircraft Operating Instructions Placard applicable for LSA

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

PART NO: 110766

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

PART NO: 110764

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

AIRCRAFT TYPE	T-LITE
FUEL TANK CAPACITY	10 LITRE
USEABLE FUEL	9.5 LITRE

PART NO: 110758

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

AIRCRAFT TYPE	T-LITE
FUEL TANK CAPACITY	2.6 US GAL
USEABLE FUEL	2.5 US GAL

PART NO: 110759

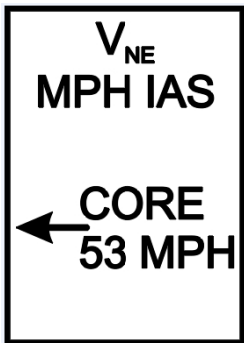
Location	The aircraft operating instructions placard 110766 is located on the right hand side of the mast above the mast block. The aircraft type and fuel capacity are combined on one placard and there are options for metric, placard 110758, and imperial, placard 110759. This placard is mounted below the AOI placard. The airworthiness placard 110764 is used on Australian LSA and is located on the left hand side of the mast above the mast block.
Series	T-Lite Series

Table 10 Section 2. Aircraft operating instructions, aircraft type & fuel capacity, and LSA placard locations.



Figure 3 Section 2. Aircraft operating instructions, aircraft type & fuel capacity, and LSA placard locations.

2.7.4 Wing V_{ne} ASI Placard



PART NO: 110835

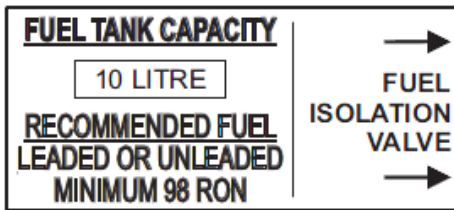
Location	The V_{ne} placard 110835 is located on the Hall air speed indicator and is mounted on the left side of the wing control bar.
Series	T-Lite Series

Table 11 Section 2. Wing V_{ne} ASI placard

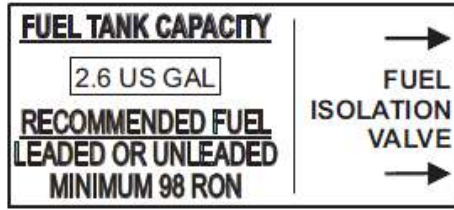


Figure 4 Section 2. Wing V_{ne} placard locations.

2.7.5 Fuel Type and Fuel Isolation Placard



PART NO: 110767



PART NO: 110768

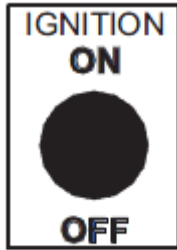
Location	The fuel type / isolation placard is adjacent to the fuel valve at the top of the seat frame on the left side of the aircraft. Metric part number is 110767, imperial is 110768.
Series	T-Lite Series

Table 12 Section 2. Fuel type / isolation placard



Figure 5 Section 2. Fuel tap / isolation placard locations.

2.7.6 Ignition Placard



PART NO: 110773

Location	The ignition placard 110773 is located on the right side of the base tube near the seat front, above the start button.
Series	T-Lite Series

Table 13 Section 2. Ignition placard



Figure 6 Section 2. Ignition placard locations.

2.7.7 Earth Placard



Location	The engine earth placard is located on the rear of the trike under the engine at the bottom of the engine mounting bracket.
Series	T-Lite Series

Table 14 Section 2. Earth placard

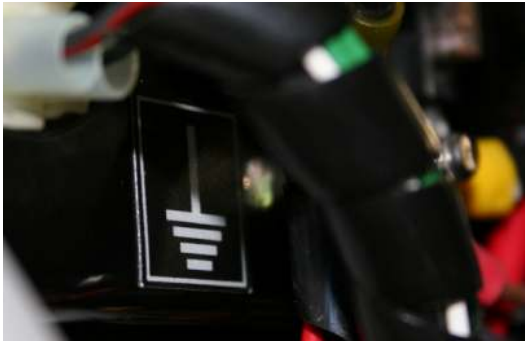


Figure 7 Section 2. Earth placard location.

2.7.8 Check Oil Placard



Location	The check oil placard is located on the oil tank on the right side of the engine. It is supplied with the engine.
Series	T-Lite Series

Table 15 Section 2. Check oil placard



Figure 8 Section 2. Check oil placard location.

2.7.9 Clear Prop Placard



PART NO: 110770

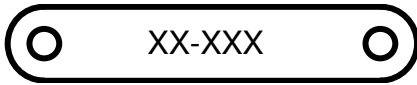
Location	The clear prop placard is located on the right and left side wheel struts
Series	T-Lite Series

Table 16 Section 2. Clear prop placard

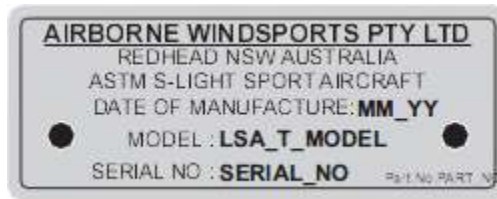


Figure 9 Section 2. Clear prop placard location.

2.7.10 Wing and Base Data Plates



WING PLATE PART NO 102358



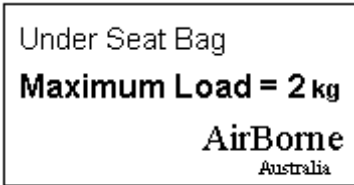
Location	The wing data plate 102358 is located on the universal bracket on the wing. The base data plate is located on the engine mount on the left side of the aircraft.
Series	T-Lite base and Core wing

Table 17 Section 2. Data plates



Figure 10 Section 2. Data plate placard locations.

2.7.11 Under Seat Bag Placard



P/N_o. 106674

Location	The under seat placard is located under and behind the front seat.
Series	T-Lite Series

Table 18 Section 2. Under seat bag placard



Figure 11 Section 2. Under seat bag placard location.

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3 EMERGENCY PROCEDURES

3.1 General

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

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

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

Always maintain correct airspeed and altitudes in the circuit area.

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

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

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

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

3.2 Airspeeds for Emergency Operations

3.2.1 T-Lite / Core

Speed IAS	mph	km/hr	knots
Maximum Manoeuvring Speed (V_a)	39 mph	63 km/hr	34 knots
Glide angle	7.82:1 @ 28mph	7.82:1 @ 45km/hr	7.82:1 @ 24mph

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** Fuel isolation valve connected
- I** Ignition 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 isolation valve disconnected
- S** **S**eat belt tight
- H** **H**elmet 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** Fuel isolation valve disconnected
- T** Full **T**hrottle (to exhaust engine system fuel as soon as possible and maximise slipstream to clear flames from pilot and airframe).

When fuel is exhausted then:

- I** Ignition off
- L** Forced **L**anding
- B** After landing release seat **B**elt
- E** Evacuate 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** Throttle closed
- I** Ignition Off
- B** After stopping release seat **B**elt
- F** Fuel isolation disconnected
- E** Evacuate 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** Throttle closed
- F** Fuel isolation disconnected
- I** Ignition 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 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

An emergency parachute can be fitted as an option.

When the pilot is seated, the parachute-deployment handle is located behind the head.

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, shut down engine, grasp the parachute handle. It is attached to a deployment bag that contains the parachute. Using the handle, throw the deployment bag toward clear air as firmly as possible. The parachute bridle should pay out of the deployment bag allowing the parachute to open in clear air; the parachute should then open, and slow the descent rate. The parachute allows the complete aircraft to be lowered to the ground. The aeroplane may descend with a steep nose-down attitude and tilted to the side. Further information can be found in section 7.14.

Proceed as follows:

- T Throttle closed
- I Ignition off
- S Seat belt tight
- D Deploy parachute
- L Forced Landing

3.3.10 Ignition Circuit Failure

The Bailey engine requires a short circuit on the ignition circuit to stop the engine. If the ignition circuit is broken it is possible to starve the engine by disconnecting the fuel line at the fuel isolation valve. This method will not immediately stop the engine as the fuel in the carburettor and fuel line will be consumed before the engine stalls.

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** Hold attitude - Do not attempt to pull control bar in
- P** Reduce **Power**
- O** As energy dissipates the aircraft will rotate nose down - keep control bar **Out**
- P** once the attitude lowers level the wings and increase **Power** to prevent over pitching
- R** Recover from dive and **Resume** 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 **Out**
- P** Apply **Power**
- R** Recover from dive and **Resume** desired flight path

3.3.13 **Instrument Failure**

The aircraft is equipped with an engine rpm meter. If there is a problem with the rpm meter the correct procedure is to fly 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 T-Lite / Core Speeds for Normal Operation

Trim Speed	28–32 mph	45-51 km/hr	24-28 knots
Stall Speed at MTOW (210kg)	20 mph	32 km/hr	17 knots
Take Off Safety Speed & Nominated Approach Speed at MTOW	28 mph	45 km/hr	24 knots
Maximum Speed in Turbulence (V_a)	39 mph	63 km/hr	34 knots
Maximum Level Speed (V_h)	53 mph	85 km/hr	46 knots
Max wind operating conditions (At ground level)	17 mph + gust	27 km/hr + gust	15 knots + gust
Cross winds of up to	13 mph	20 km/hr	11 knots

Table 1 Section 4. T-Lite / Core Speeds for Normal Operation

NOTE

A maximum gust factor of 3 – 5 knots is nominated to cover the range of expected pilot experience and skill. Less experienced pilots should use the lower limit.

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 nanolight.

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 – Core

The following instructions apply to the Core wing. This sequence of procedures assumes that the wing is packed up. Your instructor or dealer should demonstrate the correct assembly and disassembly procedures for your nanolight. 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.



Figure 1 Section 4. Unzip wing bag

4.2.2 Assemble Control Frame

Remove control bar and downtube padding. Spread the control bar down tubes out and insert the base bar onto the alloy knuckles. The pip pins are then inserted from front to back. Ensure they are secured. It should not be possible to remove a cap without depressing the pip pin button. Check that all the rigging wires are outside the control frame.



Figure 2 Section 4. Assemble control frame

4.2.3 Stand The Wing Up

Rotate the control frame to the vertical position so that the wing is resting on the control bar. Connect the nose catch. The glider bag can be removed, unclip all the wing straps. The nose batten can be inserted now or later after the tension has been pulled on the wing, it's easiest to do so now.



Figure 3 Section 4. Stand the wing up

4.2.4 Spread Leading Edges

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



Figure 4 Section 4. Spreading the leading edges

4.2.5 Raise King Post And Connect Reflex Bridle

Stand king post up from its lying position. Check that wires aren't tangled around the kingpost as you raise it. Connect the reflex bridle wishart clip to the top short wire at the top of the king post.



Figure 5 Section 4. Raise king post and connect reflex bridle

4.2.6 Insert Main Sail Battens

Remove the battens from the bag. Lay out the top surface battens (curved) in order of descending length toward the tip. Place the red tipped battens in the left wing (curve forwards), and the green tipped battens in the right. Insert all top surface except for the three outermost battens on both sides, starting with the battens at the keel. The battens are inserted into the pocket with gentle pressure until they meet resistance. When securing the battens, lift trailing edge, fit spade end into the batten tip pocket on the trailing edge and rotate fitting downward until you hear or feel it click to lock hinge.



Figure 6 Section 4. Insert main sail battens

4.2.7 Tension Cross Bars

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.



Figure 7 Section 4. Tensioning cross bar and shackle located in block

4.2.8 Insert Remaining Main Sail Battens

Remove tip bags. Insert remaining top surface battens.

4.2.9 Load Tip Strut – Clip Type



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

Figure 8 Section 4. Load tip strut

4.2.10 Insert Undersurface Battens

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

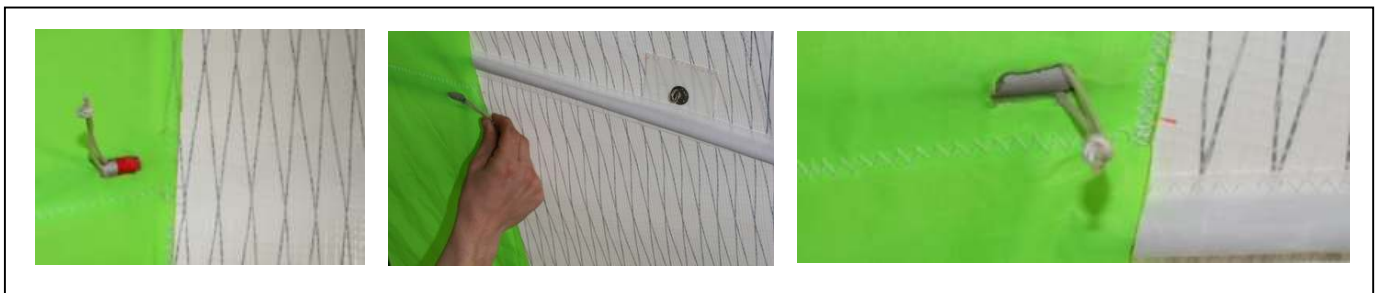


Figure 9 Section 4. Insert undersurface sail battens

4.2.11 Install Nose Nappy

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



Figure 10 Section 4. Install nose nappy

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	Core
Nose catch, nose bolts, sail tangs, nose batten.	√
Nose nappy aligned.	√
Leading edge tubing.	√
Crossbar hinge junction & cross bar tubing.	√
Centre undersurface zip.	√
Sail tips secure including webbing.	√
Battens secure and pockets free from damage.	√
Top rigging, kingpost, reflex bridle lines.	√
Cross bar pullback routing and catch.	√
Hang-point / universal bracket & bolts.	√
Control frame tubes, hinges, knuckles, & connections.	√
Control frame cables fittings & terminations both ends.	√
Leading edge to cross bar junction.	√
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.	√
Inspect all cables – Inspect for kinks fraying, corrosion – particularly around the NICO press fittings.	√

Table 2 Section 4. Wing pre-flight inspection

If the wing has been unused for longer periods, 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, 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.	√

Table 3 Section 4. Extended wing pre-flight

4.4 Attaching Wing to Base

Compared to two seat weight-shift microlights, the wing and base are much lighter and easier to move around. Attention still needs to be paid to prevailing winds, as the wing can easily be moved and potentially tipped over if the wind catches it from the underside while connecting it to the base.

4.4.1 Position The Wing And Trike

Position the wing on its control frame, facing into the wind with the nose on the ground. The wing can be carried by standing in the control frame with your back to the wing, putting your shoulders in the vee of the a-frame, and placing your arms around the downtubes, then lifting the wing by rotating your hands downwards making the nose raise.

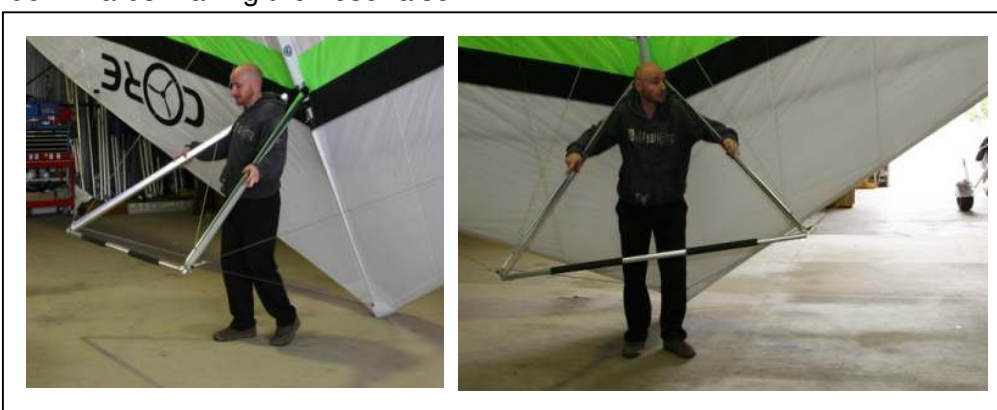


Figure 11 Section 4. Position the wing

Wheel the trike behind the wing, position the trike base directly in line with the keel of the wing. Roll the front wheel to just in front of the wing control bar. Turn the keel roller so that ends point straight down. Check the ignition switch is off.



Figure 12 Section 4. Positioning the trike and wing

4.4.2 Lower The Mast

Undo the safety pin, nut and bolt at the bottom of the front pole. Remove the over-centre lever holding the mast in place. Use the front pole to gently lower the mast until it sits close to or in the fork at the top of the seat.

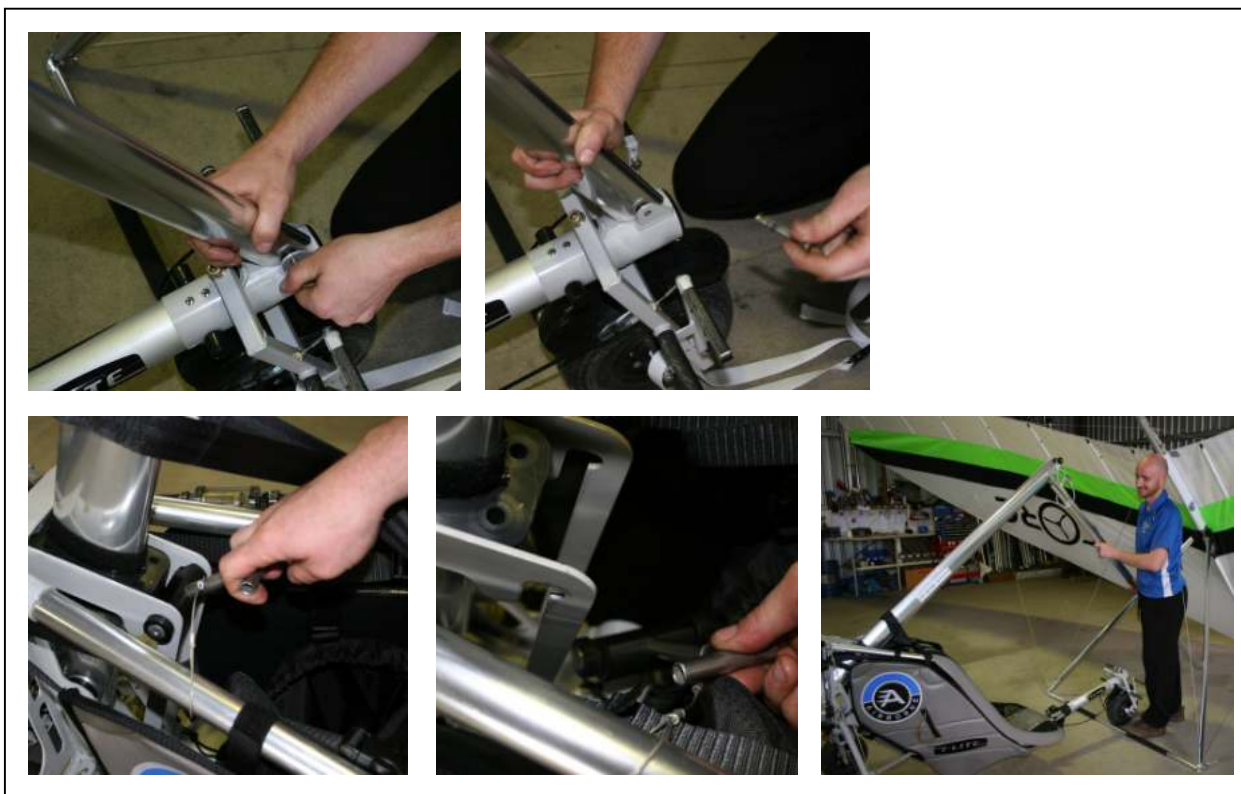


Figure 13 Section 4. Lowering the mast

4.4.3 Attach Wing

The standard position for the heart bolt in the U-bracket is generally in the rear hole. Insert heart bolt, tighten wingnut hand tight and attach safety pin.



Figure 14 Section 4. Attaching the wing

4.4.4 Attach Back Up Loop

Connect back up loop so that it goes around the keel. Place the shackle around the wire and close with the pip pin. Ensure pip pin is securely capped.



Figure 15 Section 4. Attaching the back up loop

4.4.5 Remove Keel Extension

Remove the keel extension and store with pack up gear. Rotate propeller so the blades are horizontal. Take care to only turn the prop the way it would turn when running.



Figure 16 Section 4. Remove Keel Extension

4.4.6 Attach Front Wheel Strap

When lifting and rotating the wing onto the base, the black strap is used to stop the trike base from rolling away or lifting its front wheel too far. Attach the strap to the front axle

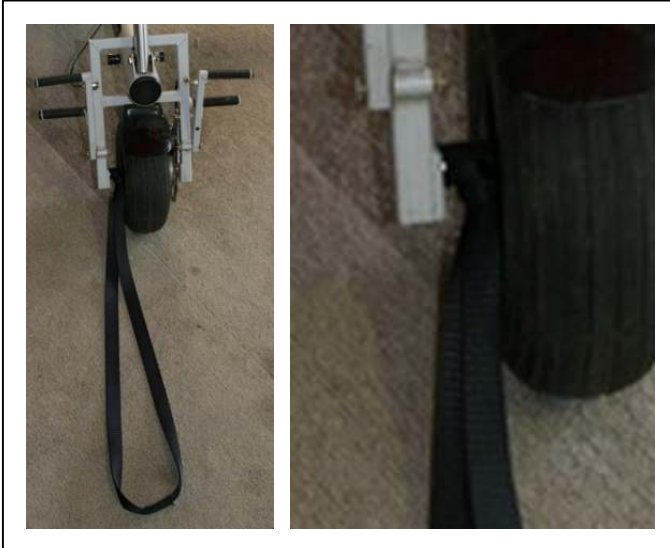


Figure 17 Section 4. Attach front wheel strap

4.4.7 Lift And Rotate Wing

1. Place the heel of your preferred foot into the back of the loop. Position your body facing the front of the trike, with the front pole resting on your shoulder. Grasp the control bar with both hands in a wide grip.
2. Lift and rotate the wing so that the keel rests gently on the mast.
3. Continue lifting until the mast is in the mast block; note the front wheel may lift off the ground.
4. Transfer one hand to the front pole. Lower the front pole and wing at the same time, guiding the front pole onto the front of the trike.

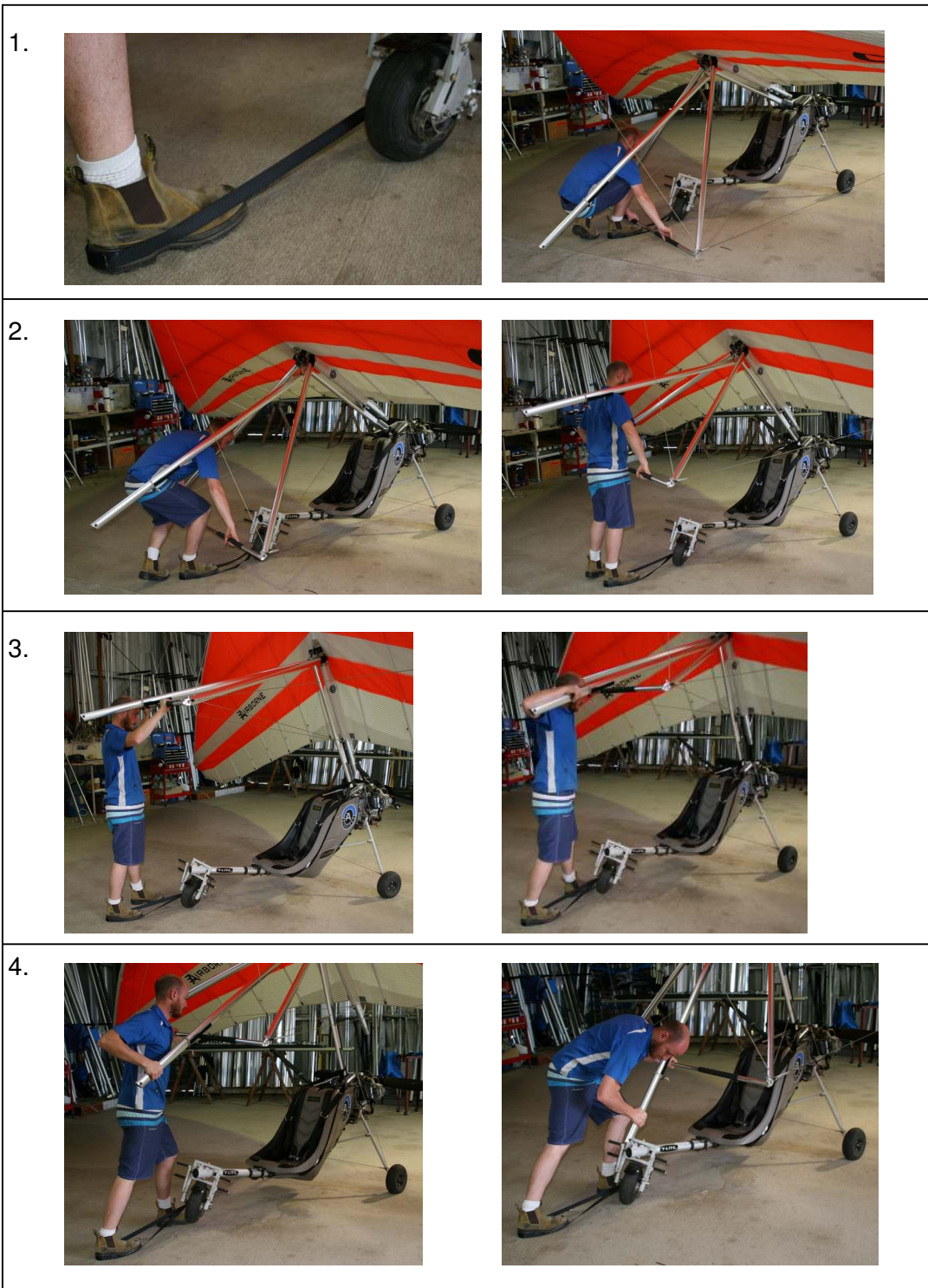


Figure 18 Section 4. Lifting and rotating the wing onto the base

4.4.8 Attach Front Pole

Bring front pole into position. Install bolt, nut and safety pin.

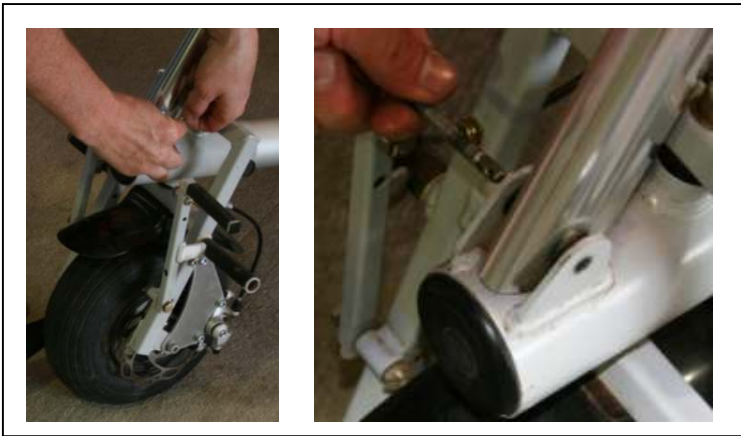


Figure 19 Section 4. Insert front pole

4.4.9 Insert And Load Mast Over-Centre Lever

Insert the over-centre lever so that the flat section faces the mast, and pull it up into the notches at the top of the bracket. Once the lever is located correctly, rotate the lever down until it is securely loaded.

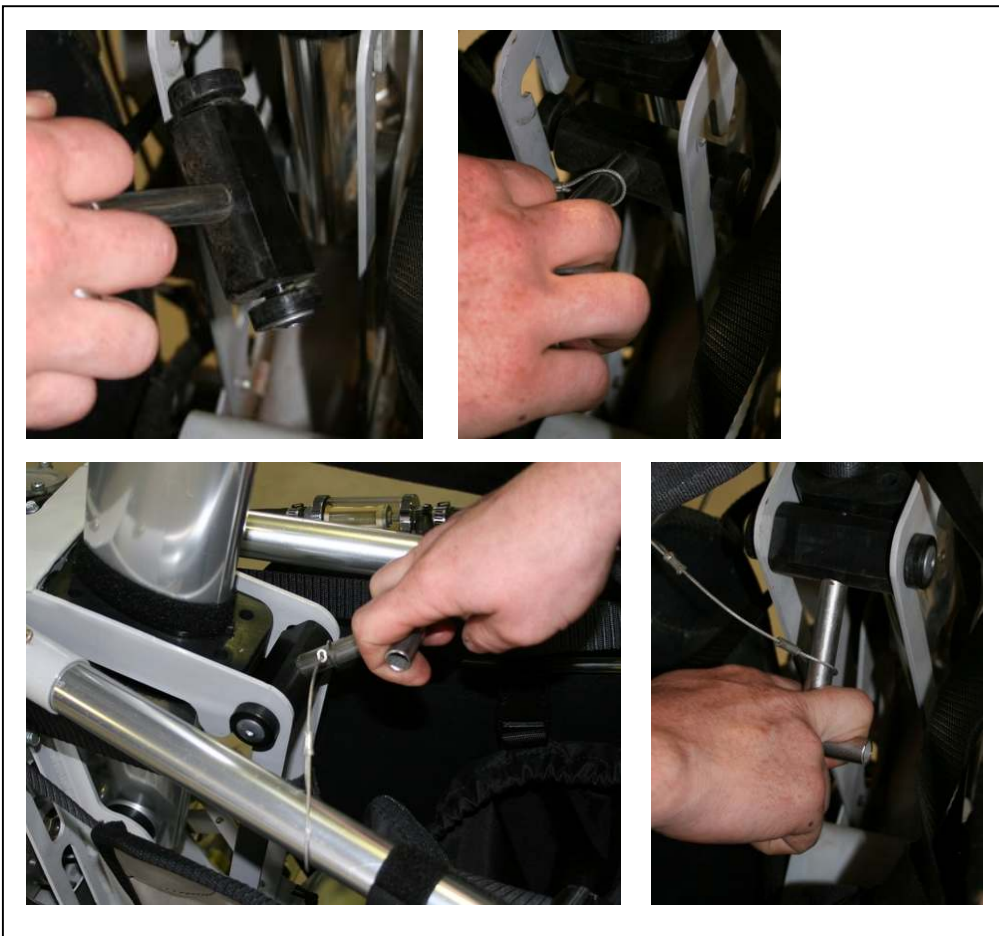


Figure 20 Section 4. Load Mast Lever

4.4.10 Park The Aircraft

The aircraft should be parked in a crosswind position with the wing's control bar secured to the front pole with the bungee supplied.

NOTE

The wingtip facing the wind should be lowered.



Figure 21 Section 4. Park the aircraft

4.5 Complete Trike Pre-Flight Inspection

Ensure that the ignition switch is off prior to inspection. Daily inspections as outlined in the Bailey Engine Maintenance Manual should be carried out in conjunction with the following inspections.

<u>Trike base pre-flight inspection</u>	
Water in fuel check - pour a small quantity into a clear container, let it settle and observe for water.	√
Fuel tank secure.	√
No leaks from fuel system and engine, fuel lines secure.	√
Fuel connection / isolation valve connected.	√
Fuel filter clean and operational.	√
Sufficient fuel for flight.	√
No leaks from oil system and engine.	√
Oil level OK.	√
Propeller: free of splitting, denting, delamination, nicks.	√
Propeller hub assembly secure and pin secure.	√
Condition of all wheels OK. No cracking in tyre treads, or evidence of cracking around the rim.	√
Rear end and rear wheel struts secure.	√
No bolts bent, fractured or evidence of corrosion.	√
Electrical & instrumentation system secure and operational.	√
Throttle operation. Verify free and full movement.	√
Seat belt attachments secure.	√
All engine components secure - air filter, exhaust and exhaust springs, plug leads, hose clamps.	√
Front pole bolt, wingnut and safety pin secure.	√
Mast over-centre latch loaded and secure.	√
Engine breather clear and not restricted.	√
Mechanical components. Rotate propeller anti-clockwise (viewed from the rear) and observe for noise or excessive resistance.	√
Wing & base universal bracket secure. Back up wire secure.	√
General inspection of complete trike.	√
	√

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 disconnection / isolation valve located behind and above the seat on the left hand side. Be sure this valve and fuel line is connected before starting engine.

Never refuel if fuel could be spilled on hot engine components. It's best to remove the fuel tank before refuelling. Use only safety approved fuel containers and never transport fuel in an unsafe manner.

The fuel tank is mounted behind the seat and is designed for easy removal for refilling, sampling and cleaning. The fuel system has an in-line fuel filter, which is mounted behind the fuel isolation / connection valve, near the mast block. 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

4.6.1 Fuel Tank Capacity

The T-Lite series fuel tank has a nominal capacity of 10L and an external fuel level hose to determine current fuel level.

4.6.2 Fuel Quantity

A sight gauge is provided on the starboard side of the aircraft that protrudes through the soft side. Its purpose is to provide the pilot with a visual indication of the quantity of remaining fuel. The level 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.

4.7 Helmet Recommendation

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

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

4.8 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	Completed
Safety Belt	Secure
Helmet	Secure
Brakes	On if fitted
Instrument(s) eg, ASI	Secure

Table 5 Section 4. Before Starting Engine Check

4.8.2 Starting Engine - Cold

Park brake	On if fitted
Fuel lines	Connected
Ignition switch	On
Throttle	Off - (Idle Position)
Propeller	Call "Clear Prop"
Depress Start Button	Push up to 5 seconds - When engine fires Release
Engine Running	Adjust RPM to just above idle for 30 seconds.
Engine ready for take off	After 1 minute's running. Avoid prolonged ground running to minimise prop and air filter damage.

Table 6 Section 4. Starting Engine Check

4.8.3 Starting Engine - Hot

Park brake	On if fitted
Fuel lines	Connected
Ignition switch	On
Throttle	Open ¼
Propeller	Call "Clear Prop"
Depress Start Button	Push up to 5 seconds - When engine fires Release
Engine Running	Adjust RPM to just above idle for 30 seconds.
Engine ready for take off	After 1 minute's running. Avoid prolonged ground running to minimise prop and air filter damage.

4.8.4 Before Take Off

Park Brake	On
Choke	Off (Engine has been running more than one minute)
Fuel Quantity	Check Sufficient for task
Instruments	Check
Harness	Secure
Helmet	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

4.8.5 Take Off and Initial Climb

Pitch Control	Neutral
Throttle	Full On
Directional Control	Nose Wheel Steering Straight
Rotate at TOSS	Core 28mph IAS

Table 8 Section 4. Take Off and Initial Climb Check

4.8.6 Climb

Throttle	Full On
RPM	8200 RPM (Reduce to 7800 rpm once climb established. No change if using a reduced power take off)
Airspeed	Core 28mph IAS

Table 9 Section 4. Climb Check

4.8.7 Cruise Speeds

Throttle	Adjust for Level Flight
Airspeed	Core 31mph IAS

Table 10 Section 4. Cruise Check

4.8.8 Descent

Throttle	Reduce	
Airspeed	Core	28mph IAS

Table 11 Section 4. Descent Check

4.8.9 Landing

Throttle	Off	
Airspeed	Core	28mph IAS
Directional Control	Nose Wheel Steering Straight	Directional Control
Braking	Off Then as required	

Table 12 Section 4. Landing Check

4.8.10 After Landing

Parking Brake / Chocks	On As required / Fitted
Ignition Switch	Off
Controls	Secure

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 throttle control is foot-operated (forward for full power and rearward for power off). The ignition switch is on the base tube near the bottom of the seat (forward for on and rearward for off).

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

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** Throttle - full and free movement
- Tyres - inflated and serviceable
- W** Wind - check direction and strength
- Wires - secure and airworthy
- M** Mixture - (auto-choke goes off after 30 seconds running)
- P** Pins - fitted and secured
- F** Fuel - On and sufficient
- I** Instruments - check, set and operational
- S** Switch - ignition check (switch on)
- C** Controls - pitch and roll has full and free movement
- Chocks - removed and clear of the aircraft
- H** Harness and Helmet in place and secure

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

WARNING
LOCK THE WHEEL BRAKE OR BRACE FEET
ON THE GROUND TO REDUCE ANY
POSSIBILITY OF DANGER TO ANY PERSON/S
DURING ENGINE STARTING.

4.9.2 Starting the engine

All controls should be checked with the ignition OFF. The engine should be started with the pilot in the seat. The following procedure should be used:

- Brake on if fitted / Feet braced on ground
- Fuel isolation valve connected
- Throttle off
- Switch ignition **ON**
- Check visually that the propeller area is clear and call "**Clear Prop**" out loud
- **Starting from cold:** Depress start button for a maximum of 5 seconds with throttle closed. If the engine refuses to start switch off the ignition before investigation
- **Starting from hot:** Open throttle $\frac{1}{4}$ and depress the start button for a maximum of 5 seconds.
- When the engine starts, increase the engine RPM to a little above idle
- Warm up / run the engine for 1 minute to ensure auto-choke goes off

CAUTION
REMEMBER CLEAR PROP!

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 fairly straight-forward.

With the engine idling: 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:

- **Headwind** conditions requires the nose of the wing to be lowered just below the trim position
- **Downwind** conditions requires the nose of the wing to be raised just above the trim position
- **Crosswind** conditions requires the upwind tip to be lowered

4.9.4 Before take off

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

CAUTION

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

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.

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.

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.

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

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. Take off distance will be extended at reduced power.

Once climb is established, power should be reduced to below maximum continuous power of 7800 rpm. A minimum of take off safety speed should be used. At this speed the aircraft would round out nicely into a glide should the engine fail.

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

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

4.9.7 Cruise

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

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.

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.

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 if fitted.

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.

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.

4.9.10 Cross Wind Landing and Take Off

Pilots should always try and land and take off into the wind, and 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 cross wind components up to 11 knots are quite safe and controllable, even to the inexperienced pilot.

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

After touchdown in cross wind conditions the relative airflow over the wing will become increasingly spanwise (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 crosswinds.

Because of the short take and landing requirements of the T-Lite it is often possible to crab across runways allowing the aircraft to point more directly into the wind, which reduces the cross wind component.

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 ignition should be switched off after 10 seconds idle. The Bailey engine has a very short exhaust system, and when the engine is switched off the propeller will continue to turn for a few revolutions due to the effect of the flywheel. This draws fuel through the engine and into the hot exhaust, causing a distinctive popping sound. 10 seconds running at idle stops this. Switching off at high RPM also floods the engine and makes restarting difficult.

4.10 After Landing / Securing

After landing and when in the parking area apply wheel chocks. Switch the ignition, and other equipment off. The aircraft should be parked in a crosswind position with the base tube secured to the mast brace with the bungee supplied.

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 use reverse procedure

- Turn propeller by hand to a horizontal position.
- Unload and remove the over centre latch.
- Undo securing safety pin, wingnut and bolt and the bottom of the front pole.
- Loop strap around front axle and foot.
- Grasp the front pole in one hand and the wing control bar in the other and lift smoothly up until the control bar is above your shoulders. The strap will tighten around your foot and the front wheel will lift off the ground.
- Place both hands on the control bar and move your body so the front pole rests on your shoulder.
- Lower the control bar to the ground.
- Let the front pole onto the ground.
- Unbolt the trike from the U-bracket; remove safety loop and wheel out the trike unit.
- Reinstall keel extension tube on the wing.

4.11 Wing Break Down Procedure – Core

This section assumes that the wing has been removed from the base. The wing should have the keel extension fitted. This section is intended as a reference only and assumes prior knowledge of the break down procedure, for example, as taught by your dealer / instructor.

4.11.1 Fit U-Bracket Cover

Unzip undersurface approximately 1 metre to allow better access to fit the U-bracket cover. Pull out sail paddings. Pass the cover up over the keel. Locate on hook and loop fasteners around each side of the keel roller, (photo shown is with the wing sitting on its nose).

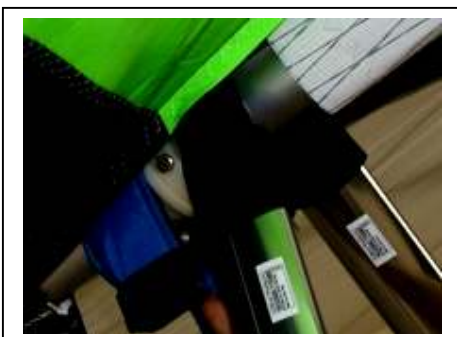


Figure 22 Section 4. Fit U-bracket cover

4.11.2 Unload Tip Struts – Clip Type

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



Figure 23 Section 4. De-tension tip strut

4.11.3 Remove Tip Battens

Remove outermost three tip battens. Unclip the pivot beak from the threaded end and remove from sail. Keep batten tips clipped closed when not in use to avoid accidental loss of the batten ends. To adjust batten load tension, release pivot beak from sail and rotate batten clip. See maintenance manual for adjustment details.

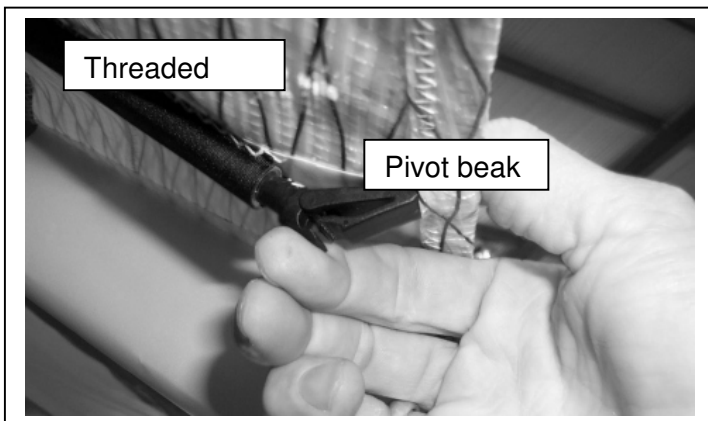


Figure 24 Section 4. Remove tip battens

4.11.4 Remove Undersurface Battens

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



Figure 25 Section 4. Remove undersurface battens

4.11.5 Fit Tip Bags

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



Figure 26 Section 4. Fit tip bags

4.11.6 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.

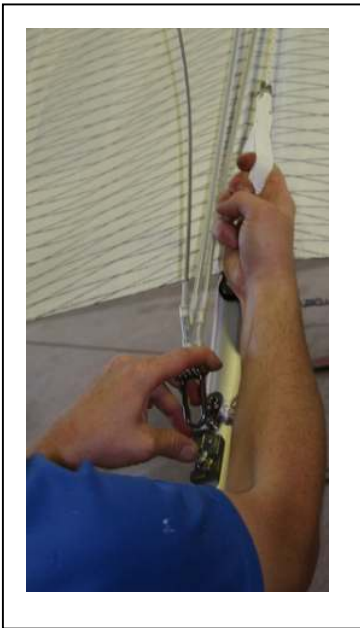


Figure 27 Section 4. De-tension pullback cable

4.11.7 Remove Main Sail Battens

Pull the leading edges together approximately 1/2 metre. Remove the remaining main sail battens. Place removed battens in the batten bag; group red to the left of the bag, green to the right, and straight battens in the outside pockets.

NOTE

It is optional to remove the nose battens but they do have to be unclipped from the locating pegs on the keel.



Figure 28 Section 4. Removing mainsail battens

4.11.8 Disconnect Reflex Bridle And Lower Kingpost

Disconnect the wishart clip connecting the reflex bridle to the top of the kingpost. Attach the clip to the sail at the kingpost hole to minimise tangling and kinking the bridle wires.



Figure 29 Section 4. Disconnecting reflex bridle

4.11.9 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 30 Section 4. Fold leading edges

4.11.10 Disconnect Front Bottom Wires And Remove Nose Nappy

Remove the nose nappy. Disconnect wires from the nose plate by depressing the clip and removing the ring.



Figure 31 Section 4. Disconnecting nose wires

4.11.11 Attach Straps

Once the leading edges are together attach a strap around both wings and keel approximately where the bottom rear wires attach to the keel. Attach remaining straps so that they are evenly spaced.

4.11.12 Fit Wing Bag

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

4.11.13 Roll Wing

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

4.11.14 Disconnect Control Bar

Depress pip pin button and remove pip pin from base bar. Fold downtubes together with control bar folded out. Reinsert the pip pin in the downtube knuckle.



Figure 32 Section 4. Disconnect control bar

4.11.15 Fit Padding

Fit the control bar and downtube covers. Velcro the control bar cover in place whilst holding the base bar in position.



Figure 33 Section 4. Fit padding

4.11.16 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.

4.11.17 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 34 Section 4. Position battens

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 chafing 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 weighs more than 20kg an appropriate set of racks are required to ensure safe carriage. Flat straps should be used for tie downs to avoid damage to leading edge Mylar.

Check that the back of the wing is well clear potential contact points if a trailer or van is being towed behind the vehicle carrying the wing. 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.

If the trike base is likely to be tipped when folded and transported, the carburettor must be drained. Refer to the engine manual for this procedure.

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

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

5.2 Take Off and Landing

5.2.1 Take Off T-Lite / Core

Performance at MTOW	Metric	Imperial
Take off Distance to 15 m (50 ft)	144 m	472 ft

Table 1 Section 5. T-Lite / Core Take Off

Takeoff distances are specified for:

Sea Level with:

Max Take Off Power

A level dry runway

With short grass

Still wind

And temperature of 15 deg C.

The following factors will increase takeoff distance:

Reduced Power Take Off

Higher drag runway surfaces such as wet or long grass

Tail wind

Uphill takeoff

OAT above 15 deg C

Runway altitude above sea level

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

5.2.2 Landing T-Lite / Core

Performance at MTOW	Metric	Imperial
Landing Distance from 15 m (50 ft)	218 m	715 ft

Table 2 Section 5. T-Lite / Core Landing

Landing distances are specified for:

- Sea Level with
- A level dry runway
- With short grass
- Still wind
- And temperature of 15 deg C

The following factors will increase landing distance:

- Lower drag runway surfaces such as tarmac
- Tail wind
- Down hill landing
- OAT above 15 deg C
- Runway altitude above sea level.

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

Crosswind components of up to 13 mph (11 knots) at maximum AUW are within aircraft operating limitations.

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

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

5.3 Climb

5.3.1 T-Lite / Core

Performance at MTOW	Metric	Imperial
Climb rate (28 mph)	1.6 m/sec	317 ft/min
Best Climb Speed	45 km/hr	28 mph

Table 3 Section 5. T-Lite / Core Climb

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

5.4 Airspeed Calibration

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

Indicated Air Speed (IAS mph)	Calibrated Air Speed (CAS mph)
20.0	20.2
30.0	29.7
40.0	39.6
50.0	50.2

Table 4 Section 5. Airspeed Calibration

5.5 Stall Speeds

5.5.1 T-Lite / Core

Stall Performance			
Stall Speed @ MTOW (210kg)	20 mph	32 km/hr	17 knots

Table 5 Section 5. T-Lite / Core Stall Speeds

5.6 *Glide*

Glide figures have been determined with the engine off at maximum take off weight.

5.6.1 T-Lite / Core

Performance – 28 mph MTOW	Metric	Imperial
Descent Rate	1.6 m/s	315 ft/m
Glide Distance from 1000ft AGL	2 km	1.2 miles

Table 6 Section 5. T-Lite / Core Glide

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

5.7 *Cruise Performance*

5.7.1 T-Lite / Core

Performance at MTOW			
Cruise Speed	36 mph	58 km/hr	31 knots
Typical Fuel Burn @ Cruise (See Note)	0.6 gal/hr	2.3 lt/hr	0.6 gal/hr
Range @ Cruise	149 miles	239 km	149 miles

Table 7 Section 5. T-Lite / Core Cruise

NOTE

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

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6 WEIGHT BALANCE AND EQUIPMENT

6.1 General

This aircraft must only be flown solo.

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

6.2 Aircraft Weight

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

6.2.1 Aircraft Weighing Information

Typical wing weights are Core 34kg

Aircraft Type: AirBorne WindSports T-Lite / Core				
	Serial No	Issue	Date	Empty * Weight (kg)
Trike Base	TL-	1		kg
Unusable Fuel	0.5 Litres	1		0.4 kg
Wing	-	1		kg
Issue 1 Aircraft Empty Weight*				kg
Trike Base	TL-	1		kg
Unusable Fuel	0.5 Litres	1		0.4 kg
Wing	-	1		kg
Issue 2 Aircraft Empty Weight*				kg

Table 1 Section 6. Aircraft Weight

*Empty Weight for the aircraft comprises of:

- Standard equipment as per section 6.2.2
- Optional equipment as per section 6.2.3
- Full 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	Bailey 4V-200
Engine Serial Number	
Airspeed Indicator	Std

Table 2 Section 6. Aircraft Weight Standard Equipment

6.2.3 Optional Equipment

OPTIONAL EQUIPMENT	FITTED (Yes/No)
Disk Brakes	
Emergency Parachute	
Variometer / altimeter	
Radio	

Table 3 Section 6. Aircraft Weight Optional Equipment

6.3 Typical Aircraft Weights

Typical Empty Weight including unusable fuel & Core wing (34kg)	90 kg	198 lb
Maximum Empty Weight including unusable fuel & 86 kg pilot	122.3 kg	270 lb

Table 4 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.

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The instruments consist of a combined hour meter / rpm meter; and a vertical tube airspeed indicator. 7

The hour/rpm meter is a Tiny Tach unit. It reads total hours any time the engine is not running and engine rpm any time the engine is running. 7

As well as instantaneous hours and rpm, the unit can display maximum rpm The unit also has two service counters for counting down hours to nominated service intervals and a job hour counter. 7

Pressing the SELECT button cycles through the available display modes at any time. 7

Total time cannot be reset. The other modes can be reset or changed. 7

Consult the Tiny Tach manual for further information. 7

The airspeed indicator is a Hall airspeed indicator. It is a simple, rugged, reliable airspeed indicator. It consists of a graduated vertical tube with an air entry and exit holes at the bottom and top. A red disk is held flat by a vertical wire inside the tube. As air enters the tube the disks rises as airspeed increases. Each airspeed indicator is individually calibrated and displays in miles per hour. It is held in place by a clamp. 7

Care must be taken to ensure the lower opening points directly into the airflow. 7

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

The Core is an intermediate performance wire-braced weight-shift controlled nanolight wing.

The keel, cross bars and inner leading edges are made from 6061-T6 multi sleeved aluminium tubing ranging in diameter from 42.45 - 47mm in the keel, and 59.95 - 63.5mm in the cross bars. The outer leading edges are made from 7075 T-6 aluminium tubing.

The leading edges use tubing ranging in diameter from 57.15 - 59.95mm for the inner leading edges, and 50 - 52mm in the rear leading edges. This construction, in combination with the sail luff curve preloads the leading edges and keeps trailing edge tension throughout the wing's defined speed envelope.

The sail is constructed using polyester laminate cloth. Combinations of cloths are used for their strength, weight, and stiffness characteristics. PX5 Mylar cloth is used for the inner top surface panels, helping to keep weight down, while on the leading and trailing edges PX10 Mylar cloth is used, which has excellent shape retention at the leading edge, and improves sail washout characteristics by minimising stretch. 4oz Dacron is used for the under surface. A Mylar film insert is placed in leading edge pockets providing stiffness at the front of the sail to help maintain camber. All these cloths have excellent sail life.

The AirBorne Core wing has been load tested in excess of 1080kg positive ultimate (positive 6g) to 1094kg, and in excess of 540kg negative ultimate (negative 3g) to 562kg. Excellent engineering contributes to the light weight of 34kg.

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 front of the engine. An engine mounting bracket is used to attach engine to the seat / mast frame. A 10L fuel tank is mounted between the pilot seat and engine platform.

The pilot cockpit is designed to allow for various size pilots. The instrumentation is very minimal, consisting of an engine rev meter and an analogue airspeed indicator in mph. The cockpit has soft sides attached to the pod and encloses the area from behind the seat to in front of the engine, including the trike base tube.

The optimum tyre pressure for general operations is 15 psi (103 kPa) and maximum tyre pressure is 35 psi (241kPa).

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

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
- Fuel isolation valve connected = Fuel on

7.5 Instrument panel

The instrument panel is very minimal and is located on the base tube near the seat front and consists of engine hourmeter / tachometer, ignition switch and engine start button.

A Hall airspeed indicator is mounted to the wing control bar for airspeed.



Figure 1 Section 7. Instrument Panel

7.6 Undercarriage System

The nanolight uses a tricycle undercarriage with optional braking system via a nose wheel disc brake unit. The rear undercarriage is wire-braced to maximise strength and minimise weight. The rear undercarriage is designed to be retracted to minimise space when transporting.

7.7 Seat Adjustment

The seat is a one-piece upholstered seat on a fibreglass mould and has no adjustment.

7.8 Occupant Restraint Harness

The seat is fitted with a 4-point restraint harness system. The shoulder harnesses are anchored to the mast and the lap belt anchors to the base tube. The shoulder harnesses loop onto the lap belt that uses a single-buckle for ease of fastening. The lap belt and shoulder harnesses have adjustment buckles to accommodate different sized occupants.



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

7.9 Engine

The power unit is a Bailey 4V-200 22HP engine designed and built in the United Kingdom. The Bailey 4V-200 is a 4-stroke, forced air-cooled, single cylinder, 4-valve, single overhead cam design of 200cc displacement. The Bailey engine is fitted with a belt reduction drive to deliver smooth progressive thrust. The engine is fitted with electric start, and a single carburettor with an external dry filter. This power unit is complemented with a twin-blade propeller designed for the engine.

7.10 Propeller

The aircraft is equipped with a 1.3m 2-blade composite propeller with set pitch. The propeller separates into two pieces that when joined form the hub. The propeller is fitted by sliding the two blades together to form the hub and then fitting to the engine.

Engine	Propeller	Reduction Drive Ratio	Tip Angle
Bailey 4V-200	1.3m	3.2	7°

Table 1 Propeller pitch and reduction ratio table

The propeller checking procedure is outlined in the base maintenance manual. The pitch setting is fixed and a part of certification of the aircraft.

7.11 Brake System

An optional front wheel disk brake system is used on the aircraft. Depressing the brake lever on the left hand side of the footrest actuates the brake.

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

7.12 Electrical System

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

The electrical circuits comprise:

- 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.

When stopping the engine the ignition switch should be switched off.

If necessary the motor can be stopped using the fuel isolation / disconnect as detailed in section 3.3.10 of this AOI.

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

7.12.1 T-Lite Electrical Schematic

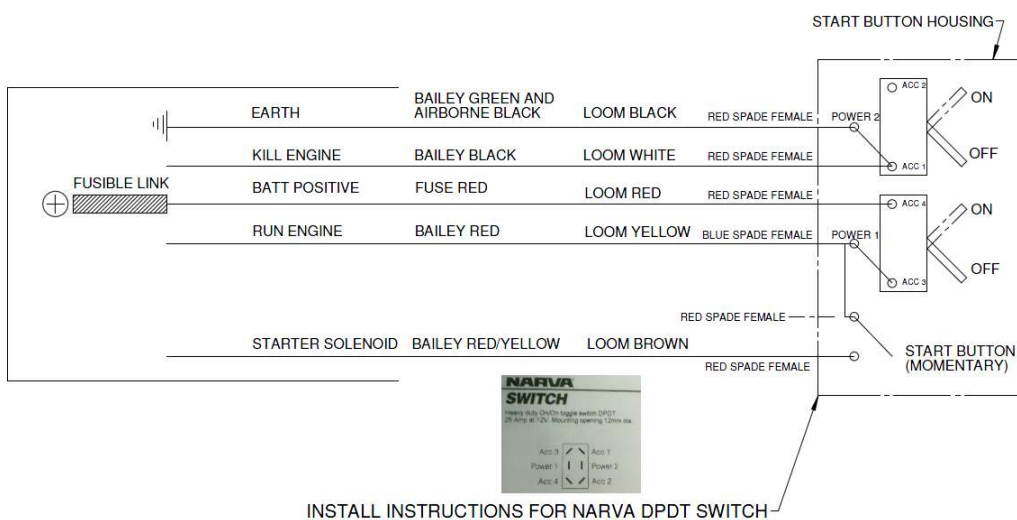


Figure 3 Section 7. T-Lite electrical schematic.

7.13 Instrument Function

The Hall **Air Speed Indicator** is a clear vertical graduated tube with an inlet and outlet for air. A red disc rises or sinks in the tube as the indicated airspeed increases or decreases.

NOTE

To work accurately the airspeed indicator must be placed so the inlet tube points directly to the front.

The **Hour Meter** and **Tachometer** is a combined digital display unit.

The optional **Altimeter** supplied by Airborne Windsports is digital and QNH is set using the buttons on the face of the unit.

7.14 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 parachute is attached to the trike base by a long bridle and is intended to slow the descent of pilot, trike base and wing without the need of free-fall by the pilot. The emergency parachute system is a manual mechanism. The parachute handle is located on the right side of the pilot, behind the head. A force of approximately 5kg pull on the handle is required to release the deployment bag containing the parachute from its holding container. The deployment bag is then vigorously thrown into clear air where the parachute can then open. If the parachute is slow to open and the bridle is paid out, jerking on the bridle may speed filling the parachute with air.

Emergency procedures for use of the parachute can be found in section 3.3.9 of this manual. Additional information including re-packing, service and maintenance requirements can be found in the parachute manual.

7.15 Ignition Switch

The ignition switch is located on the right side of the base tube near the seat. Operation is forward for on and rearward for off. When the switch is in the off position the switch shorts the engine coils to earth causing the engine to stop.

7.16 Instrument Panel

The instruments consist of a combined hour meter / rpm meter; and a vertical tube airspeed indicator.

The hour/rpm meter is a Tiny Tach unit. It reads total hours any time the engine is not running and engine rpm any time the engine is running.

As well as instantaneous hours and rpm, the unit can display maximum rpm. The unit also has two service counters for counting down hours to nominated service intervals and a job hour counter.

Pressing the SELECT button cycles through the available display modes at any time.

Total time cannot be reset. The other modes can be reset or changed.

Consult the Tiny Tach manual for further information.



Figure 4 Section 7. T-Lite rpm / hour meter.

The airspeed indicator is a Hall airspeed indicator. It is a simple, rugged, reliable airspeed indicator. It consists of a graduated vertical tube with an air entry and exit holes at the bottom and top. A red disk is held flat by a vertical wire inside the tube. As air enters the tube the disk rises as airspeed increases. Each airspeed indicator is individually calibrated and displays in miles per hour. It is held in place by a clamp.

Care must be taken to ensure the lower opening points directly into the airflow.



Figure 5 Section 7. T-Lite airspeed indicator.

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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 universal bracket. The base identification plate can be found on the left side of the engine mount. 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 Tank

The 10L fuel tank is designed to be removable for ease of transport, filling and fuel inspection. It hangs on a bracket behind the seat and is secured using a bungee around the handle, and a strap and clip around the body of the tank. The tank has a clear hose fitted to the side that allows easy indication of fuel level.

After unclipping the top of the soft sides, undo the retaining strap and bungee to remove the tank. It is easiest to fit and remove the tank from the same side as the fuel sight hose.

Do not transport the trike base with fuel in the tank and the tank fitted.

Fill to the neck of the fuel entrance.

8.5.2 Fuel Specification

FUEL

Preferred Fuel Type	Leaded or unleaded. Minimum 98 octane RON
---------------------	---

NOTE

AVGAS is not recommended.

Table 1 Section 8. Fuel Specification

FUEL TYPE TABLE		
Abbreviation	Definition	Notes
RON	Research Octane Number	Australia, UK, Europe, South Africa
MON	Motor Octane Number	Motor sports applications. Measured under more severe conditions than RON (higher rev etc). Usually 4-5 units lower than the RON. USA, Canada
PON	Pump Octane Number	Average of RON and MON. Usually 4-5 units lower than the RON. USA, Canada
Octane number, Octane rating or octane		Could refer to any of the above

Table 2 Section 8. Fuel Type Table

8.5.3 Fuel Sampling

The fuel tank is removable by design so there is no draincock. Remove the tank to check the quality of the fuel, and to drain fuel if necessary. It is especially important to remove any water that may have become introduced.

8.5.4 Checking Fuel

The fuel tank needs removing, rinsing and inverting every 50 hours to remove any debris and/or water.

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, remove the tank and pour into the receptacle. Ensure that there are no ignition sources and that the fuel is handled / disposed of correctly.

8.6 Engine Oil System Replenishment

The oil capacity is 600cc. This is checked using the sight level window at the rear of the engine. The oil is also used for internal engine cooling so oil level must be kept at its maximum level and be changed in accordance with the maintenance schedule of the engine manual. The top-up cap is located on the right hand side of the engine. The engine manual also details the oil change procedure.



Figure 1 Section 8. Oil top-up.

8.6.1 Lubricating Oil

The Bailey engine uses a minimum amount of oil to conserve weight but is also used for engine cooling so oil levels and change intervals are very important. Consult the engine manual for the correct type and grade of oil for the ambient operating temperature.

The specified oil is:

Castrol Power 1 Racing Motorcycle Oil 5W-40 fully synthetic

OR

Shell Advance Ultra4 SAE 10W-40

NOTE

Strict adherence to oil type is recommended.

Check oil and replenish as required. Consult the engine manual for maintaining the oil and oil level.

Use caution around the hot exhaust when removing the oil top-up cap.

8.7 Cooling System

The Bailey engine is forced air-cooled. Care should be taken to ensure the oil level is maintained to aid cooling. Prolonged ground running should be avoided.

8.8 Tyre Inflation

The recommended tyre inflation pressure is 15 PSI (103kPa) 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 Brake System

An optional front wheel disk brake system is used on the aircraft. Depressing the brake lever on the left hand side of the footrest actuates the brake.

Use wheel chocks when leaving aircraft unattended for a period of time.

Brake System Maintenance

Details of brake maintenance can be found in section 32.40.00 in the maintenance manual.

8.10 Parking and Ground Handling

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

8.11 Fusible Link and Fuses

A fusible link is mounted as close to the battery as possible to provide maximum short-circuit protection. It is the two green wires coming from the battery. The fusible link should be disconnected to isolate the battery when transporting.

The fuse for the electrical equipment, i.e. TinyTach, is located at the rear of the trike base, under the engine, on the engine mount. It is a 7.5Amp mini-spade type fuse.

8.12 Wing Daily Maintenance

If the wing is assembled and disassembled 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 T-Lite / Core Flight Training Supplement

This supplement is intended to outline the unique characteristics of the T-Lite 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 T-Lite are summarised 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 4.10.10-11 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 is designed to be assembled and then installed on the base by one person. 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 4.4.9 FOR FURTHER DETAILS.



Figure 1 Mast over-centre loaded and secure

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

9.3 Aircraft Operation

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

9.4 Start up

See AOI Sections 4.8 and 4.9.1-2 for engine start-up details. There is an auto-choke that operates for 30 seconds after start up. Increase rpm slightly above idle to smooth out engine running. When starting warm the choke will still operate and uneven idling will be experienced until the choke turns off. The engine is ready for take off after one minute's running.

9.5 Take-off

See AOI Section 4.8.4-6 and 4.9.4-6 (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. Take off distance will be extended at reduced power.

Once climb is established power should be reduced to below maximum continuous power of 8200 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.

9.6 Cruise and Stalls

Cruise and Stalls are covered in AOI Sections 4.8.7 and 4.9.7-8 (Amplified Procedures) 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 4.8.8-9 and 4.9.9 (Amplified Procedures) 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.

9.8 Emergency Procedures

See AOI Section 3 for emergency procedures.

9.9 Control Locations & Operation

9.9.1 Flight Controls

The T-Lite 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
Ignition Switch	Lower right instrument panel beside TinyTach rpm/hour meter. (See AOI Section 7.5)
Starter Button	Lower right instrument panel below ignition switch. Push button to engage starter. (See AOI Section 7.5)
Choke	Automatic.
Foot Throttle	Right foot above the nose wheel steering bar.

9.9.3 Instrument Panel (Tiny Tach and Hall Airspeed Indicator)

See AOI Section 7.16.1 for a complete description.



Figure 2 Section 9. Digital Instrument Panel (Tiny Tach & Hall airspeed indicator)

9.10 Aircraft Performance Data

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

Distances are specified for:

Sea Level with:

Max Take Off Power

A level dry runway

With short grass

Still wind

And temperature of 15 deg C.

	T-Lite - Core
Take off / Landing distance over 50' obstacle	144m (472') and 218m (715') respectively
Stall at 210kg MTOW:	20 mph (32km/hr)
Glide Ratio	7.82:1 @ 28 mph
Average Fuel Burn at Cruise:	2.3 lt/hr (0.6 gal/hr)

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

9.11 Training Recommendations

The T-Lite 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 pilots will need to remember 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 slow, and the round out is gentle.

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