AIRCRAFT OPERATING INSTRUCTIONS
Light Sport Aircraft

T-LITE - CORE NANOLIGHT
V-LITE – F2T NANOLIGHT

Approved: Date: 12th April 2012

Delegate of *A*irBorne WindSports Pty Ltd

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.

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AIRCRAFT OPERATING INSTRUCTIONS – DETAILS

Issued By	
Date	
For AirBorne WindSports Pty. Ltd.	

Table 1 Section 0. Aircraft Operating Instructions - Details

MANDATORY SERVICE BULLETINS

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

AMENDMENT RECORD SHEET

Amendment Date	Affected Sections	Affected Pages	Date Inserted	Signature
Issue 1.1 Remove Bailey 4V Add Bailey V5E Add Polini Thor 100	ALL	ALL	01-05-2012	

Table 3 Section 0. Amendment Record Sheet

Manuals will be revised from time to time and re-issue of amended pages will be achieved by sending the pages to the current owner registered on AirBorne's database. Amendments will also be available on the Airborne website (http://www.airborne.com.au/). The amended pages should be printed and the prior

page replaced in the manuals folder as soon as possible. The amendment table should at that time be updated with the appropriate details and date.

LOG OF EFFECTIVE PAGES

Page	Issue	Date	Page	Issue	Date	Page	Issue	Date

Table 4 Section 0. Log Of Effective Pages

CONTENTS

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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 in three configurations shown below:

BASE	WING	ENGINE
T-Lite	Core	Bailey 5VE
T-Lite	F2T	Polini Thor 100

Table 1 Section 1. T-Lite Base Configurations

All relevant information is supplied for these configurations.

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 Ration	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 2 Section 1. General Dimensions T-Lite / Core

1.1.4.2 T-Lite / F2T

DIMENSIONS	Metric	Imperial
Wing Span	10.1 m	33.1 ft
Wing Area	17.7 sq m	191 sq ft
Aspect Ratio	5.8	
Wing Weight	25 kg	55 lbs
Overall Height (Control Bar Fwd)	3.45 m	11.3 ft
Trike Width	1.25 m	4.10 ft
Trike Length	2.23 m	7.30 ft
Wheel Track	1.16 m	3.79 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	5.9 m	19.36 ft
Wing Length (Short Packed)	4.1 m	13.5 ft

Table 3 Section 1. General Dimensions T-Lite / F2T

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 singe 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.

Using the Fun2 hang glider as a design base, the F2T wing has been engineered to handle additional loads with MTOW 190kg. Similar to the Fun2, the F2T 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.

Please note that additional sleeving and reinforcements have been specifically designed for these wings, Load testing to ASTM 2317 has been performed on the airframes to prove their airworthiness at these take off weights. The control frame geometry has also been changed for the Trike configuration.

WARNING
USING AN UNREINFORCED AND UNMODIFIED HANG GLIDER WING AS A TRIKE WING IS UNSAFE.

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 available wings 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 (wing) and inside (base) a normal station wagon.

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

"CG" means the Centre of Gravity.

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

"FAA" United Stated Federal Aviation Administration

"fpm" means feet per minute.

"HGFA" means the Hang Gliding Federation of Australia.

"KCAS" means Knots Calibrated Airspeed

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

"kg" means weight in kilograms.

"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 4 Section 1. Imperial / Metric Conversion Factors

LIMITATIONS

2 LIMITATIONS

2.1 General

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

2.2 Airspeed Limitations

2.2.0.1 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 Core

2.2.0.2 T-Lite F2T

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 2 Section 2. Airspeed Limitations F2T

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 or F2T 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 – Bailey 5VE

Manufacturer: Bailey
Model: V5-E
Reduction ratio: 3.2 : 1

2.4.1.1 Engine Limitations

ENGINE LIMITATIONS	Metric		Imperial	
ENGINE SPEED				
Maximum Continuous	7800	rpm	7800	rpm
PERFORMANCE				
Take -off Performance	15.3	kW	20.5	hp
AMBIENT START & OPERATING TEMPERATURE				
Maximum	40	deg C	104	deg F
Minimum	0	deg C	32	deg F

Table 3 Section 2. Engine Limitations

2.4.1.2 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 4 Section 2. Fuel Specification

NOTE: Refer to section 2.6.7 for fuel capacities and limitations

2.4.1.3 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 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.

2.4.1.4 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 defection of 5-8mm is optimum; consult the engine manual for the drive belt checking and adjustment procedure.

2.4.2 Engine – Polini Thor 100

Manufacturer: Polini
Model: THOR 100
Reduction ratio: 3.43 : 1

2.4.2.1 Engine Limitations

ENGINE LIMITATIONS	Metric		Imperial	
ENGINE SPEED				
Take Off	8900	rpm	8900	rpm
Maximum Continuous	Not Specified – Dependent on CHT			
Maximum CHT Temp (Use Optional CHT Sensor)	240/250°C			
PERFORMANCE				
Take -off Performance	15.3	kW	20.5	hp
AMBIENT START & OPERATING TEMPERATURE				
Maximum	40	deg C	104	deg F
Minimum	0	deg C	32	deg F

Table 5 Section 2. Engine Limitations

2.4.2.2 Fuel Grades

FUEL	
Preferred Fuel Type	Leaded or Unleaded between 95 and 98 Octane with oil mix
Mix Oil	Add good 2% synthetic oil to the petrol (See engine manual for oils where 1.5% is possible)

Table 6 Section 2. Fuel Specification

NOTE: Refer to section 2.6.7 for fuel capacities and limitations

2.4.2.3 Lubricating Oil

The Polini engine uses oil in the reduction gearbox. See the maintenance section 9.2 fo instructions on checking the level. Use only API-GL4 for replenishment.

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.

ENGINE TYPE	PROP BLADE	PITCH
Bailey 5VE	HELIX 1.30M L-M-07-2	7 DEG (LH)
Polini Thor 100	HELIX 1.30M R-M-06-2	6 DEG (RH)

Table 7 Section 2. Engine Limitations

2.5 Weight Limits

2.5.3 Weight Limits T-Lite Core Variants

	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	50-110 kg	110-242 lb
Maximum behind seat storage load per bag	2kg	4 lb

Table 8 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.

2.5.4 Weight Limits T-Lite F2T Variant

	Metric	Imperial
Max take off weight	190 kg	418 lb
Typical empty weight [*1]	70 kg	154 lb
Maximum empty weight [*2 *3]	102.3 kg	270 lb
Permitted range of pilot weight	50-105 kg	110-231 lb
Maximum behind seat storage load per bag	2kg	4 lb

Table 9 Section 2. Weight Limits

[*1] Includes 0.5 litres (0.4kg) unusable fuel and F2T wing (25kg). 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.
[*3] Adding weight to empty aircraft may preclude operation under sub 70kg regulations.

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 Metric	Dimension Imperial
CORE wing	1635 mm +0/-15mm	64.37" +0/0-.59"
F2T wing	1657 mm +0/-15mm	65.23" +0/0-.59"

Table 10 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 11 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 12 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 13 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.

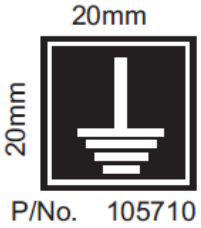
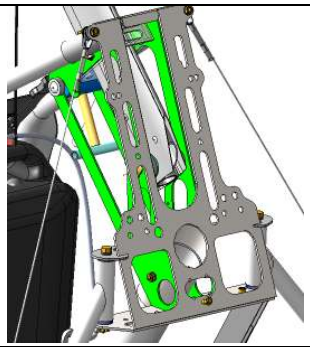
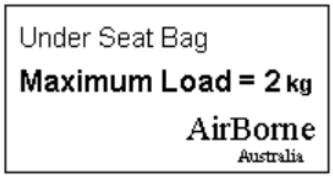
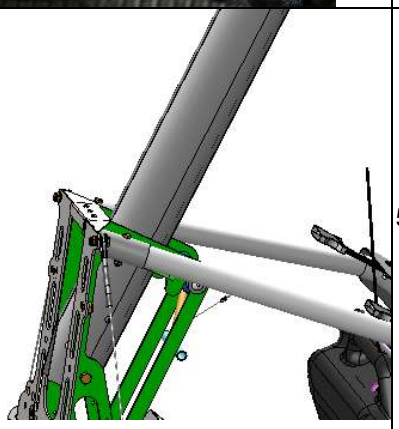
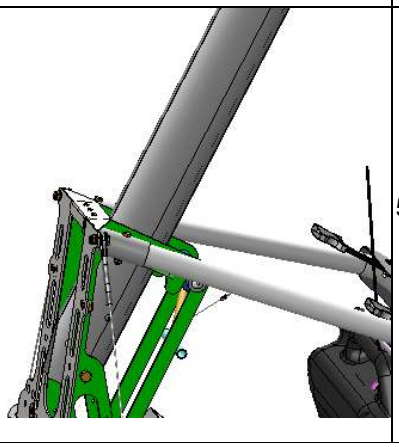
2.7 Placards

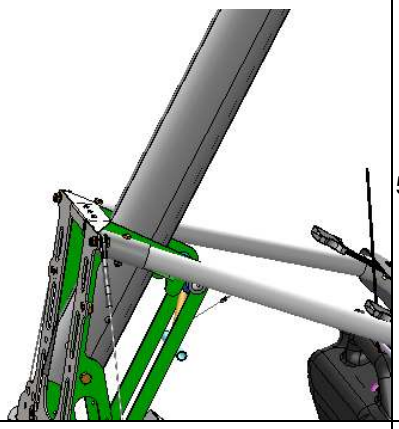
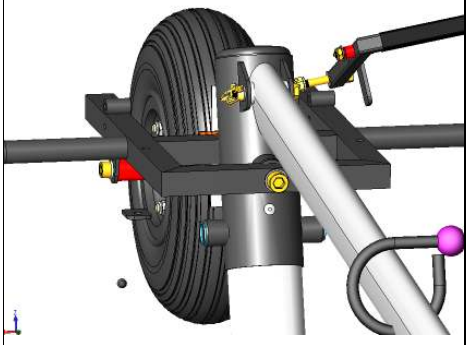
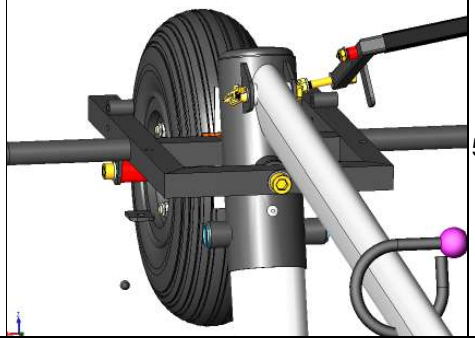
The placards on the aircraft are designed to provide information regarding general aircraft limitations and other details for the safe operation of the aircraft. Listed on the following pages are details of the placards fitted to each aircraft. To simplify this all placards are given for each type, so some are repeated.

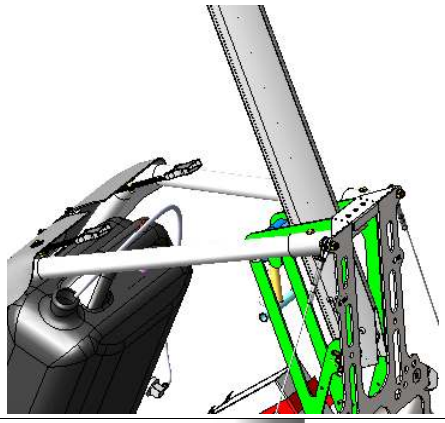
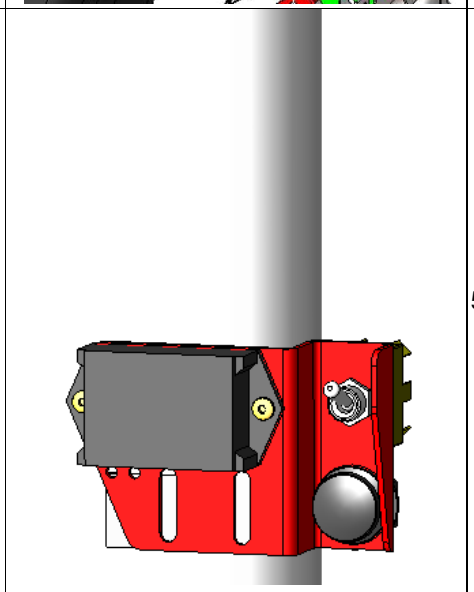
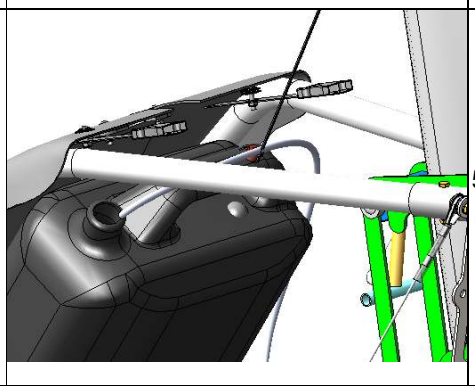
There are four different placard configurations available for the 5VE / CORE, and two available for the Polini Thor 100 / F2T.

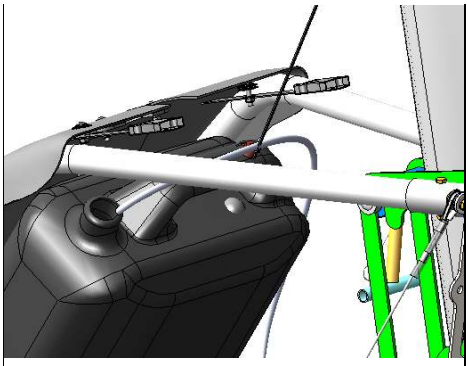
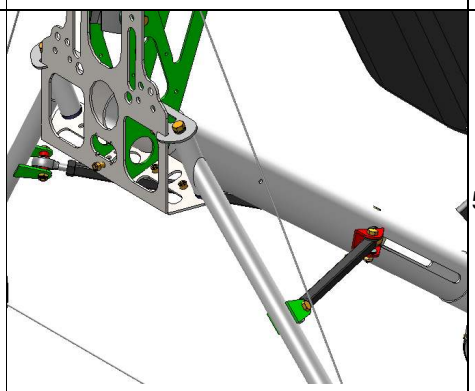
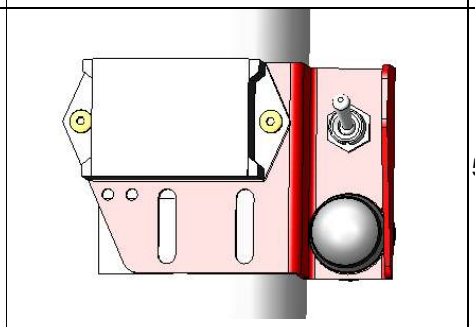
TLITE VERSION	5VE / CORE				T100 / F2T	
Certification Standard	PART 103 EXPORT	LSA AUST	LSA EXPORT	AUST 95.10	PART 103 EXPORT	AUST 95.8
Units	Imperial	Metric	Imperial	Metric	Imperial	Metric
Data Plate	111013	111014	111014	111013	111015	111015
Placard Aircraft Type	110759	110758	110759	110758	110759	110758
Placard Load Limits	110761	110760	110761	110760	111021	111020
Placard Flight Limits	110762	110762	110762	110762	110762	110762
Placard General Warning	110763	110763	110763	110763	110763	110763
Placards Cert Warning	-	110764	-	111022	-	-
Placard Aircraft Operating Inst	110766	110766	110766	110766	110766	110766
Placard Fuel Capacity	110768	110767	110768	110767	111019	111018
Placard Engine Limits	111016	111016	111016	111016	111017	111017
Placard Clear Prop	110770	110770	110770	110770	110770	110770
Placard Ignition Switch	110773	110773	110773	110773	110773	110773
Manual Pages AOI	110788	110788	110788	110788	110788	110788
Manual Pages Maint Manual	110789	110789	110789	110789	110789	110789
Placard VNE	110835	110835	110835	110835	111023	111023
Placard Earth	105710	105710	105710	105710	105710	105710

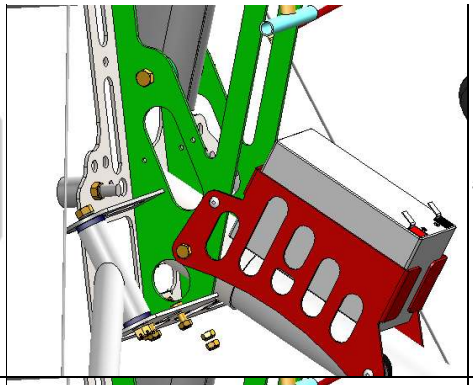
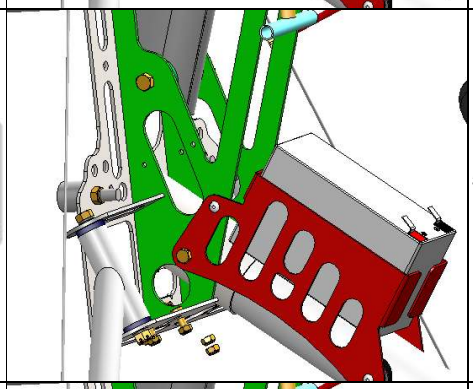
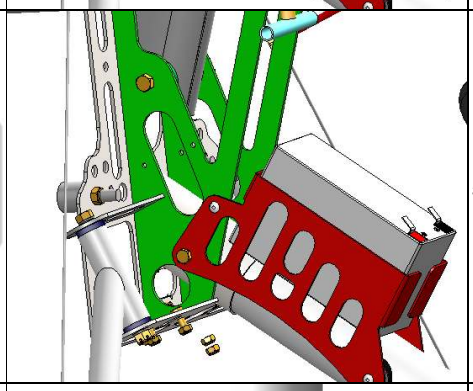
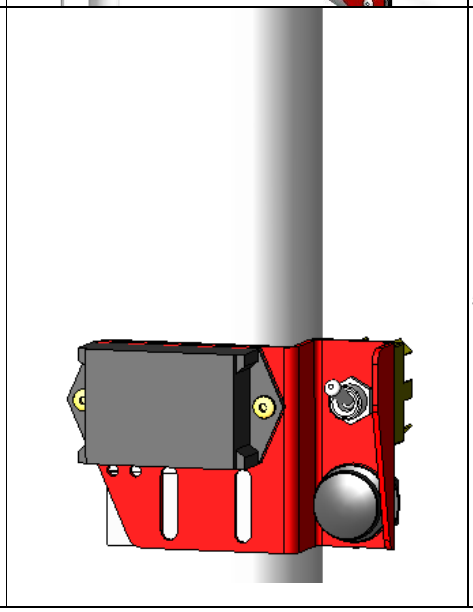
Table 14 Placard Matrix

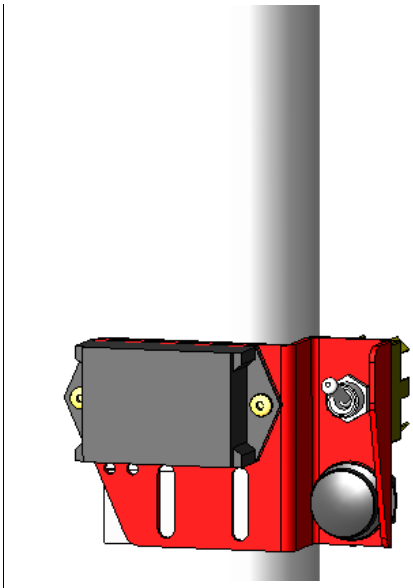
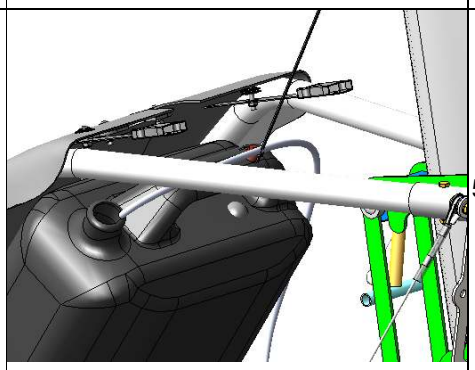
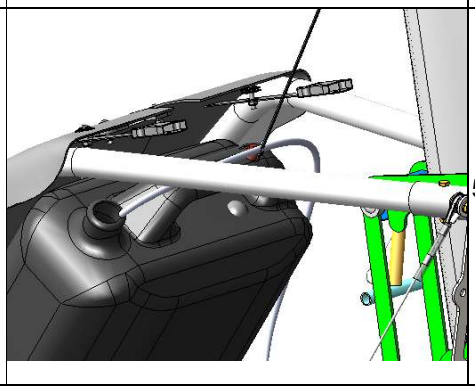
PART NO.	DESCRIPTION	IMAGE	LOCATION	5VE / CORE	T100 / F2T
105710	PLACARD EARTH BLACK			5VE / CORE ALL	T100 / F2T ALL
106674	PLACARD UNDER SEAT BAG MAXIMUM LOAD			5VE / CORE ALL	T100 / F2T ALL
110758	PLACARD AIRCRAFT TYPE N SERIES METRIC			5VE / CORE LSA AUSTRALIA	T100 / F2T ALL
110759	PLACARD AIRCRAFT TYPE N SERIES IMPERIAL			5VE / CORE LSA EXPORT PART 103 EXPORT	T100 / F2T PART 103 EXPORT

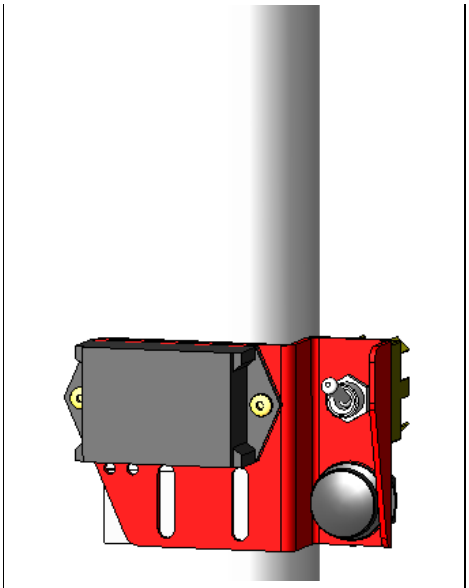
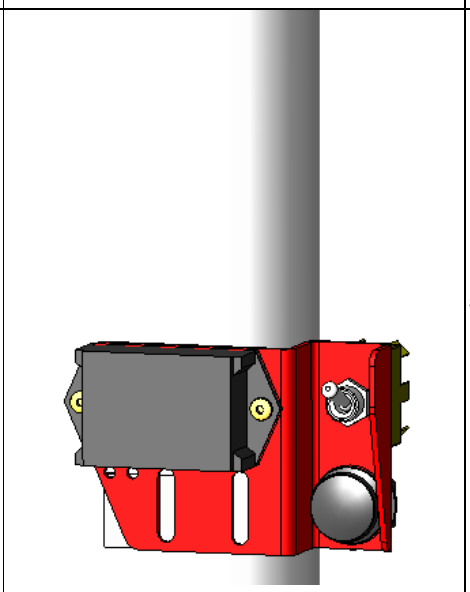
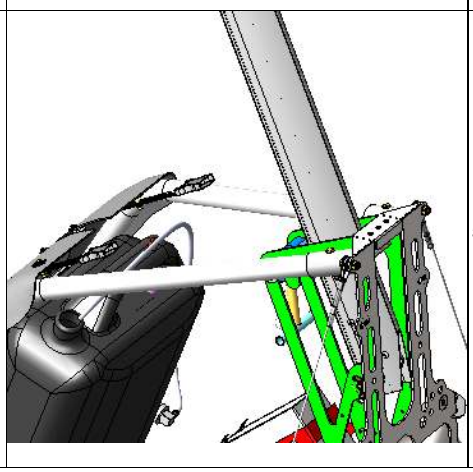
110760	PLACARD LOAD LIMITS TLITE METRIC	LOADING LIMITATIONS SEE AIRCRAFT OPERATING INSTRUCTIONS FOR FUEL LOAD LIMITATIONS. EMPTY WEIGHT MAX TAKEOFF WEIGHT 210KG MIN MAX OCCUPANT WEIGHT 50KG 110KG AIRCRAFT TO BE OPERATED SOLO ONLY		5VE / CORE LSA AUSTRALIA	T100 / F2T 95.10 AUSTRALIA
110761	PLACARD LOAD LIMITS TLITE IMPERIAL	LOADING LIMITATIONS SEE AIRCRAFT OPERATING INSTRUCTIONS FOR FUEL LOAD LIMITATIONS. EMPTY WEIGHT MAX TAKEOFF WEIGHT 462LB MIN MAX OCCUPANT WEIGHT 110LB 242LB AIRCRAFT TO BE OPERATED SOLO ONLY		5VE / CORE LSA EXPORT PART 103 EXPORT	T100 / F2T NO
110762	PLACARD FLIGHT LIMITS N SERIES	FLIGHT LIMITATIONS - DO NOT PITCH NOSE DOWN OR NOSE UP MORE THAN 45 DEGREES FROM HORIZONTAL. - DO NOT EXCEED 60 DEGREES OF BANK. - NO NEGATIVE G OR AEROBATIC MANOEUVRES. - NO INTENTIONAL SPINS, WHIPSTALLS OR STALLED SPIRAL DESCENTS. - APPROVED FOR DAY VISUAL METEOROLOGICAL CONDITIONS ONLY.		5VE / CORE ALL	T100 / F2T ALL
110763	PLACARD WARNING N SERIES	WARNINGS - NO SMOKING. - ALWAYS PREFLIGHT AIRCRAFT. - ENSURE MAST LOCKED IN POSITION BEFORE STARTING ENGINE. - OPERATE IN ACCORDANCE WITH LIMITATIONS AND PROCEDURES DETAILED IN THE AIRCRAFT OPERATING INSTRUCTIONS.		5VE / CORE ALL	T100 / F2T ALL

110764	PLACARD LSA WARNING AUSTRALIA N SERIES	THIS AIRCRAFT WAS MANUFACTURED IN ACCORDANCE WITH THE LIGHT SPORT AIRCRAFT AIRWORTHINESS STANDARDS AND DOES NOT CONFORM TO STANDARD CATEGORY AIRWORTHINESS REQUIREMENTS.		5VE / CORE LSA AUSTRALIA	T100 / F2T 95.8 AUSTRALIA
110766	PLACARD AIRCRAFT OPERATING INST N SERIES	THE AIRCRAFT OPERATING INSTRUCTIONS MUST BE CARRIED WITH THE AIRCRAFT. THE OCCUPANT MUST BE FAMILIAR WITH INFORMATION NECESSARY FOR SAFE OPERATION.		5VE / CORE ALL	T100 / F2T ALL
110767	PLACARD FUEL CAPACITY TLITE METRIC	FUEL TANK CAPACITY 10 LITRE RECOMMENDED FUEL LEADED OR UNLEADED MINIMUM 98 RON FUEL ISOLATION VALVE		5VE / CORE LSA AUSTRALIA PART 103 EXPORT	T100 / F2T NO

110768	PLACARD FUEL CAPACITY TLITE IMPERIAL	FUEL TANK CAPACITY 2.6 US GAL RECOMMENDED FUEL LEADED OR UNLEADED MINIMUM 98 RON FUEL ISOLATION VALVE		5VE / CORE LSA EXPORT PART 103 EXPORT	T100 / F2T NO
110770	PLACARD CLEAR PROP N SERIES	CLEAR PROP		5VE / CORE ALL	T100 / F2T ALL
110773	PLACARD IGNITION SWITCH N SERIES	IGNITION ON OFF		5VE / CORE ALL	T100 / F2T ALL
110835	PLACARD VNE CORE	V_{NE} MPH IAS CORE 53 MPH		5VE / CORE ALL	T100 / F2T No

111013	DATA PLATE TLITE TL-B5V-A	AIRBORNE WINDSPORTS PTY LTD REDHEAD NSW AUSTRALIA MODEL : MODEL SERIAL NO : SERIAL_NO Part No PART_NO		5VE / CORE PART 103 EXPORT	T100 / F2T 95.10 AUSTRALIA
111014	DATA PLATE TLITE TL-B5V-L LSA	AIRBORNE WINDSPORTS PTY LTD REDHEAD NSW AUSTRALIA ASTM S-LIGHT SPORT AIRCRAFT DATE OF MANUFACTURE: MM_YY MODEL : MODEL SERIAL NO : SERIAL_NO Part No PART_NO		5VE / CORE LSA AUSTRALIA LSA EXPORT	T100 / F2T NO
111015	DATA PLATE TLITE TL-T10-A	AIRBORNE WINDSPORTS PTY LTD REDHEAD NSW AUSTRALIA MODEL : MODEL SERIAL NO : SERIAL_NO Part No PART_NO		5VE / CORE NO	T100 / F2T ALL
111016	PLACARD ENGINE LIMITS BAILEY 5VE	**BAILEY 5VE** **ENGINE LIMITATIONS** ENGINE RPM CONTINUOUS 7800 RPM		5VE / CORE ALL	T100 / F2T NO

111017	PLACARD ENGINE LIMITS POLLINI T100	POLLINI THOR 100 ENGINE LIMITATIONS REFER AIRCRAFT OPERATING INSTRUCTIONS		5VE / CORE NO	T100 / F2T ALL
111018	PLACARD FUEL CAPACITY VLITE METRIC	FUEL TANK CAPACITY 10 LITRE RECOMMENDED FUEL UNLEADED 95 TO 98 RON MIXED WITH 2% (1 PART IN 50) FULLY SYNTHETIC 2-STROKE OIL FUEL ISOLATION VALVE		5VE / CORE NO	T100 / F2T 95.8 AUSTRALIA
111019	PLACARD FUEL CAPACITY VLITE IMPERIAL	FUEL TANK CAPACITY 2.6 US GAL RECOMMENDED FUEL UNLEADED 95 TO 98 RON MIXED WITH 2% (1 PART IN 50) FULLY SYNTHETIC 2-STROKE OIL FUEL ISOLATION VALVE		5VE / CORE NO	T100 / F2T PART 103 EXPORT

111020	PLACARD LOAD LIMITS VLITE METRIC	LOADING LIMITATIONS SEE AIRCRAFT OPERATING INSTRUCTIONS FOR FUEL LOAD LIMITATIONS. EMPTY WEIGHT MAX TAKEOFF WEIGHT 190KG MIN MAX OCCUPANT WEIGHT 50KG 105KG AIRCRAFT TO BE OPERATED SOLO ONLY		5VE / CORE NO	T100 / F2T 95.8 AUSTRALIA
111021	PLACARD LOAD LIMITS VLITE IMPERIAL	LOADING LIMITATIONS SEE AIRCRAFT OPERATING INSTRUCTIONS FOR FUEL LOAD LIMITATIONS. EMPTY WEIGHT MAX TAKEOFF WEIGHT 418LB MIN MAX OCCUPANT WEIGHT 110LB 231LB AIRCRAFT TO BE OPERATED SOLO ONLY		5VE / CORE NO	T100 / F2T PART 103 EXPORT
111022	PLACARD 95.10 WARNING AUSTRALIA TLITE	*WARNING* This aircraft has been constructed under the provisions of CAO 95.10. The Civil Aviation Safety Authority (CASA) and the Recreational Aviation Australia (RA-Aus) **DO NOT GUARANTEE** the **AIRWORTHINESS** of this aircraft. PILOTS OPERATE THIS AIRCRAFT AT THEIR OWN RISK		5VE / CORE NO	T100 / F2T 95.10 AUSTRALIA

111023	PLACARD VNE F2T	V_{NE} MPH IAS F2T 53 MPH		5VE / CORE NO	T100 / F2T ALL

Table 15 T-Lite Series Placards for all types, including location diagrams.

EMERGENCY PROCEDURES

3 EMERGENCY PROCEDURES

3.1 General

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

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

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

Always maintain correct airspeed and altitudes in the circuit area.

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

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

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

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

3.2 Airspeeds for Emergency Operations

3.2.1 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 @ 24kts

Table 1 Section 3. Airspeeds for Emergency Operations for Core

3.2.2 T-Lite / F2T

Speed IAS	mph	km/hr	knots
Maximum Manoeuvring Speed (V_a)	39 mph	63 km/hr	34 knots
Glide angle	6.84:1 @ 28mph	6.84:1 @ 45km/hr	6.84:1 @ 24kts

Table 2 Section 3. Airspeeds for Emergency Operations for F2T

3.3 Emergency Procedures Check List

3.3.1 Engine Failure on Climb Out

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

C Maintain **C**ontrol

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

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

3.3.2 Engine Failure at Height

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

C Fuel **C**ontents

F **F**uel isolation valve connected

I **I**gnition on

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

3.3.3 Full Power Engine Shutdown (In Flight)

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

C Maintain **C**ontrol

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

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

I Switch off **I**gnition

L Prepare for forced **L**anding

3.3.4 Forced Landings

Proceed as follows:

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

T **T**hrottle Closed

I **I**gnition off

F **F**uel 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 **F**uel 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 **I**gnition off

L Forced **L**anding

B After landing release seat **B**elt

E **E**vacuate aircraft

3.3.6 On Ground Engine Fire

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

C Maintain **C**ontrol

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

T **T**hrottle closed

I **I**gnition Off

B After stopping release seat **B**elt

F **F**uel isolation disconnected

E **E**vacuate aircraft

3.3.7 Propeller Damage

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

C Maintain **C**ontrol

T **T**hrottle closed

F **F**uel isolation disconnected

I **I**gnition off

L Forced **L**anding

WARNING

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

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

Ensure that all items 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 **T**hrottle closed

I **I**gnition off

S **S**eat belt tight

D **D**eploy parachute

L Forced **L**anding

3.3.10 Ignition Circuit Failure

The Bailey and Polini engines require a short circuit to earth 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 **H**old attitude - Do not attempt to pull control bar in

P Reduce **P**ower

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

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

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

3.3.12.2 Nose Down Attitude

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

O Raise attitude - push **O**ut

P Apply **P**ower

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

3.3.13 Instrument Failure

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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NORMAL PROCEDURES

4 NORMAL PROCEDURES

4.1 General

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

WARNING

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

4.1.1 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 T-Lite / F2T Speeds for Normal Operation

Trim Speed	28–32 mph	45-51 km/hr	24-28 knots
Stall Speed at MTOW (210kg)	18 mph	30 km/hr	16 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 2 Section 4. T-Lite / F2T 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.

4.1.3 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 and F2T

The following instructions apply to the Core wing as well as the F2T the only notable exception is that the F2T does not have undersurface battens. 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.

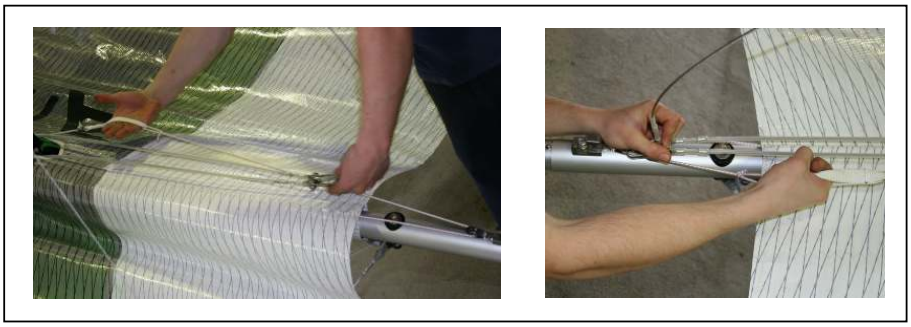

Figure 7 Section 4. Tensioning cross bar and shackle located in block

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 (Core wing only)

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.

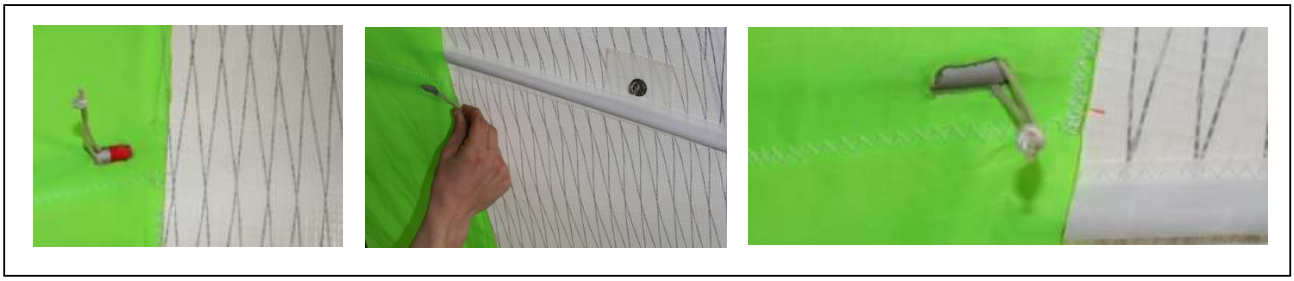

Figure 9 Section 4. Insert undersurface sail battens, Note: Core wing only.

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 / F2T
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 3 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 4 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.

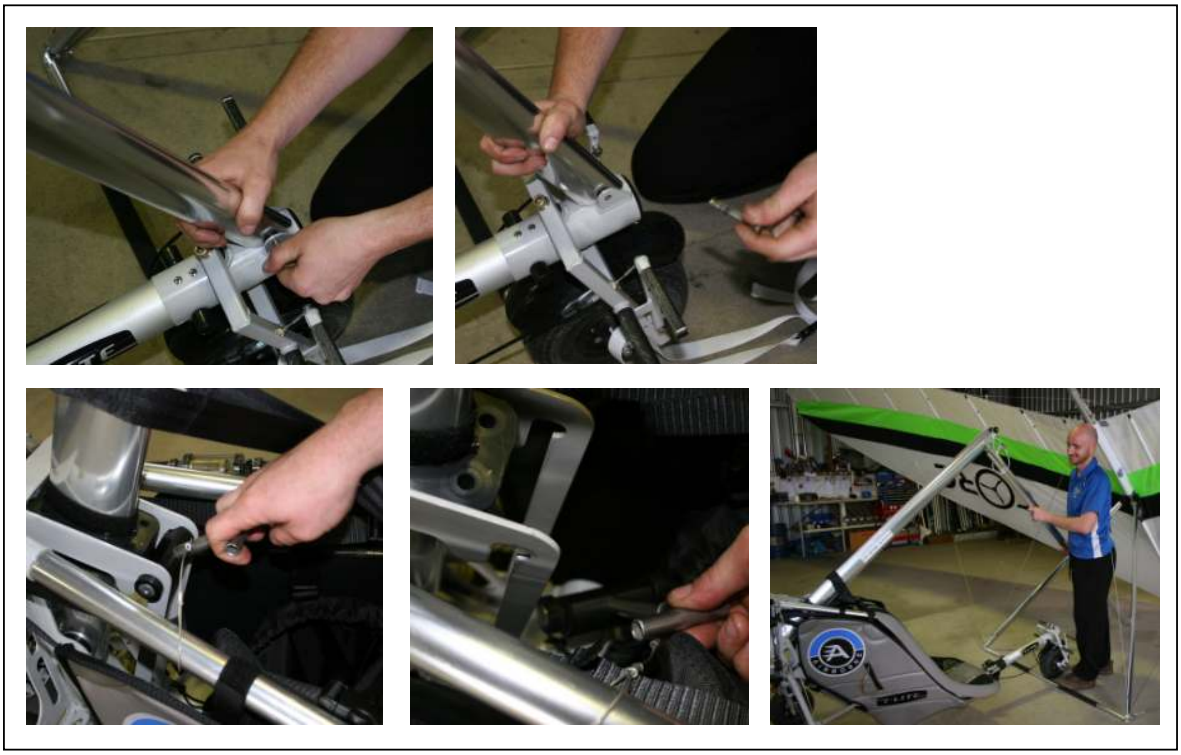

Figure 13 Section 4. Lowering the mast

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.

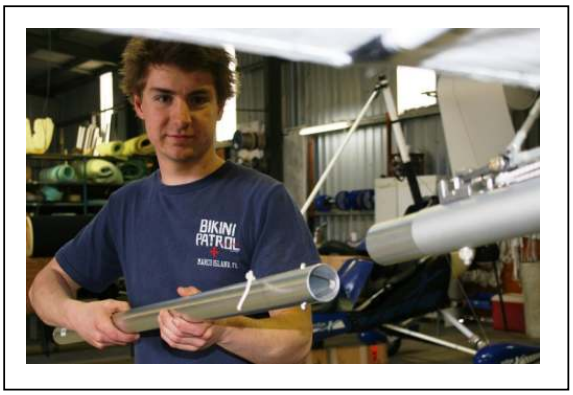

Figure 16 Section 4. Remove Keel Extension

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.

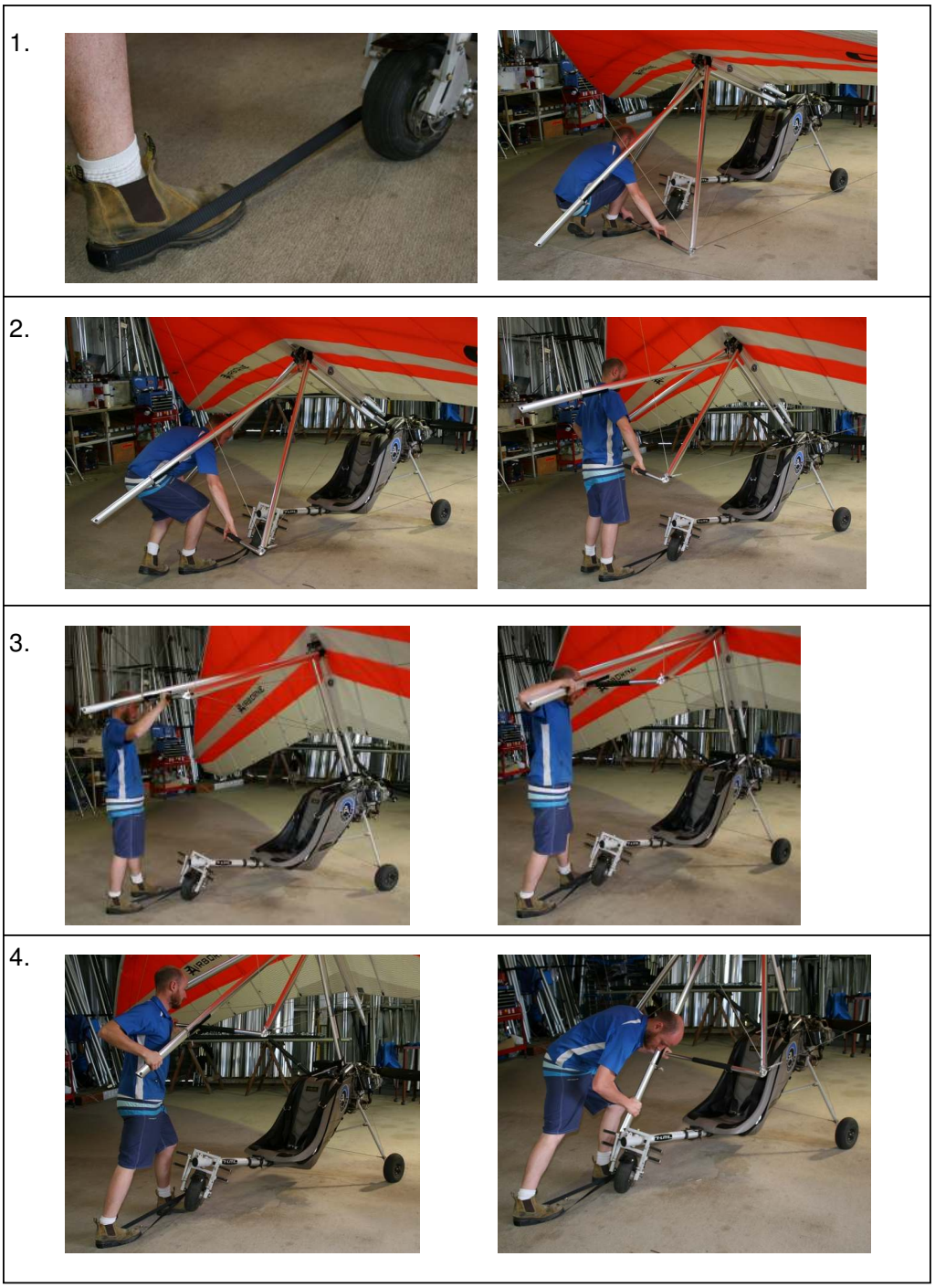

Figure 18 Section 4. Lifting and rotating the wing onto the base

4.4.8 Attach Front Pole

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

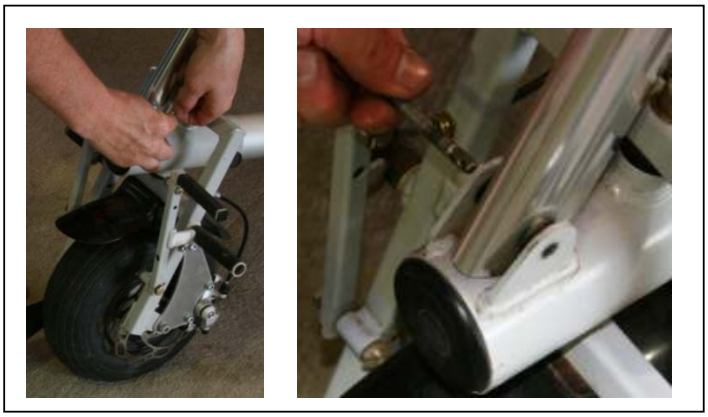

Figure 19 Section 4. Insert front pole

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.

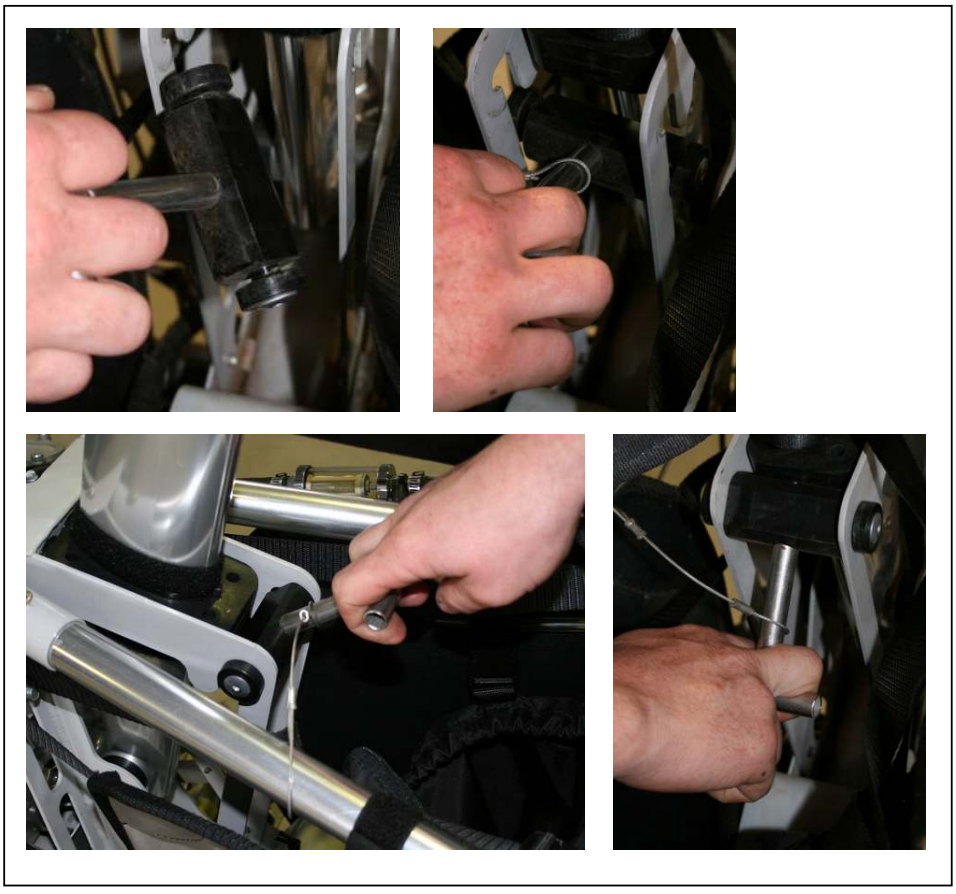

Figure 20 Section 4. Load Mast Lever

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 bungie 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.

Trike base pre-flight inspection	
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.	√
Bailey Oil level OK.	√
Polini Gearbox Oil level OK. (See manufacturer maintenance manual for interval)	√
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 5 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 in 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

WARNING

SEE SECTION 2.4 FOR THE CORRECT FUEL GRADES PER ENGINE.
THE POLINI 2 STROKE ENGINE MUST HAVE OIL MIXED INTO THE FUEL.

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 6 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)
Choke	On - only until started
Propeller	Call “Clear Prop”
Depress Start Button (Bailey Engines)	Push up to 5 seconds - When engine fires Release
Pull Starter Cord (Polini Engine)	Repeat if necessary.
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 7 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
Pull Starter Cord (Polini Engine)	Repeat if necessary.
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 8 Section 4. Starting Engine - Hot

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 9 Section 4. Before Take Off Check

4.8.4 Take Off and Initial Climb

Pitch Control	Neutral
Throttle	Full On
Directional Control	Nose Wheel Steering Straight
Rotate at TOSS	CORE 28Mph IAS
Rotate at TOSS	F2T 28Mph IAS

Table 10 Section 4. Take Off and Initial Climb Check

4.8.5 Climb

Throttle	Full On	
RPM Bailey 4V	8200 RPM (Reduce to 7800 rpm once climb established. No change if using a reduced power take off)	
RPM Bailey 5VE	8000 RPM (Reduce to 7800 rpm once climb established. No change if using a reduced power take off)	
RPM Polini Thor 100	Max RPM (Reduce rpm once climb established. No change if using a reduced power take off)	
Airspeed	Core	28mph IAS
Airspeed	F2T	28mph IAS

Table 11 Section 4. Climb Check

4.8.6 Cruise Speeds

Throttle	Adjust for Level Flight	
Airspeed	Core	36mph IAS
Airspeed	F2T	33mph IAS

Table 12 Section 4. Cruise Check

4.8.7 Descent

Throttle	Reduce	
Core	315 ft / min	28mph IAS
F2T	360 ft / min	28mph IAS

Table 13 Section 4. Descent Check

4.8.8 Landing

Throttle	Off	
Airspeed	Core	28mph IAS
Airspeed	F2T	28mph IAS
Directional Control	Nose Wheel Steering Straight	Directional Control
Braking	Off Then as required	

Table 14 Section 4. Landing Check

4.8.9 After Landing

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

Table 15 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.

WARNING

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

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

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

Tyres - inflated and serviceable

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

Wires - secure and airworthy

M **M**ixture - (auto-choke goes off after 30 seconds running) Applies to Bailey 4V only.

M **M**ixture - (Manual-choke turn off after 30 seconds running) Bailey 5VE / Polini Thor 100.

P **P**ins - fitted and secured

F **F**uel - On and sufficient

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

S **S**witch - ignition check (switch on)

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

Chocks - removed and clear of the aircraft

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

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

4.9.2 Starting the engine

All controls should be checked with the 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

CAUTION
REMEMBER CLEAR PROP!

- **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 ¼ 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, or turn manual choke off on Bailey 5VE and Polini Thor 100.

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.

WARNING

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

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

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

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

4.9.9 Descent, Approach and Landing

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

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

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

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.

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 bungie 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 / F2T

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.

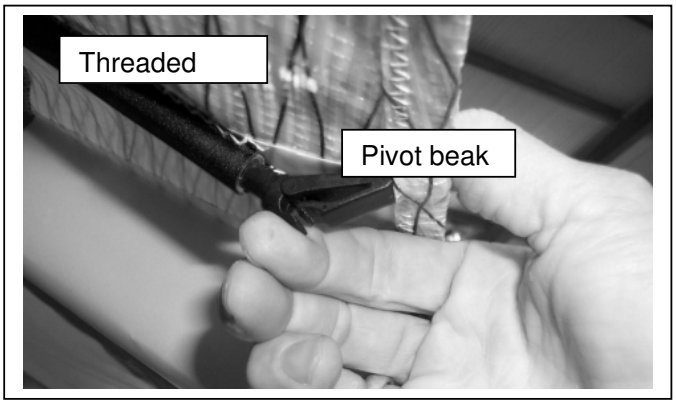

Figure 24 Section 4. Remove tip battens

4.11.4 Remove Undersurface Battens (Core wing only)

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.

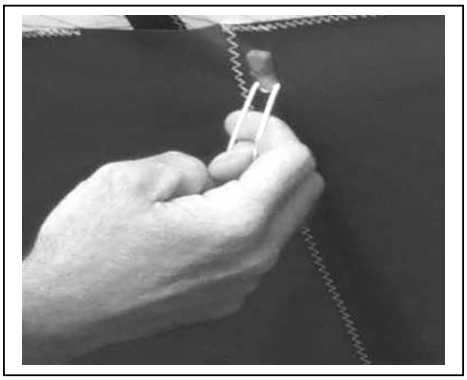

Figure 25 Section 4. Remove undersurface battens (Core wing only)

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.

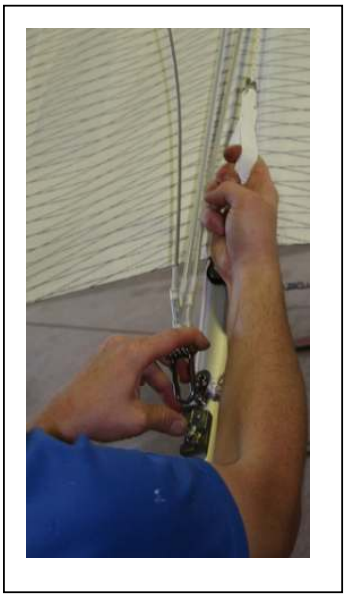

Figure 27 Section 4. De-tension pullback cable

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.

PERFORMANCE

5 PERFORMANCE

5.1 General

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

5.2 Take Off and Landing

5.2.1 Take Off 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

5.2.2 Take Off T-Lite / F2T

Performance at MTOW	Metric	Imperial
Take off Distance to 15 m (50 ft)	125 m	410 ft

Table 2 Section 5. T-Lite / F2T 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

5.2.3 Landing T-Lite / Core

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

Table 3 Section 5. T-Lite / Core Landing

5.2.4 Landing T-Lite / F2T

Performance at MTOW	Metric	Imperial
Landing Distance from 15 m (50 ft)	210 m	689 ft

Table 4 Section 5. T-Lite / F2T 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 5 Section 5. T-Lite / Core Climb

5.3.2 T-Lite / F2T

Performance at MTOW	Metric	Imperial
Climb rate (28 mph)	2.0 m/sec	390 ft/min
Best Climb Speed	43 km/hr	26 mph

Table 6 Section 5. T-Lite / F2T 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 7 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 8 Section 5. T-Lite / Core Stall Speeds

5.5.2 T-Lite / F2T

Stall Performance			
Stall Speed @ MTOW (190kg)	18 mph	30 km/hr	17 knots

Table 9 Section 5. T-Lite / F2T 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	2.38 km	1.47 miles

Table 10 Section 5. T-Lite / Core Glide

5.6.2 T-Lite / F2T

Performance – 28 mph MTOW	Metric	Imperial
Descent Rate	1.83 m/s	360 ft/m
Glide Distance from 1000ft AGL	2.08 km	1.3 miles

Table 11 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 12 Section 5. T-Lite / Core Cruise

5.7.2 T-Lite / F2T

Performance at MTOW			
Cruise Speed	33 mph	54 km/hr	29 knots
Typical Fuel Burn @ Cruise (See Note)	0.8 gal/hr	2.9 lt/hr	0.8 gal/hr
Range @ Cruise	109 miles	176 km	109 miles

Table 13 Section 5. T-Lite / F2T 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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WEIGHT BALANCE AND EQUIPMENT

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

6.2 Aircraft Weight

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

6.2.1 Aircraft Weighing Information

6.2.1.1 Typical wing weights for 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.

6.2.1.2 Typical wing weights for F2T 25kg

Aircraft Type: AirBorne WindSports T-Lite / F2T				
	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 2 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 T-Lite

STANDARD EQUIPMENT	Fitted (Yes/No)
Engine Type	Bailey 5VE
Engine Type	Polini Thor 100
Engine Serial Number	
Airspeed Indicator	Core or F2T

Table 3 Section 6. Aircraft Weight Standard Equipment

6.2.3 Optional Equipment

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

Table 4 Section 6. Aircraft Weight Optional Equipment

CAUTION
OPTIONAL EQUIPMENT MAY PRECLUDE OPERATION UNDER SUB 70KG CERTIFICATION.

6.3 Typical Aircraft Weights

T-LITE / CORE	Typical Empty Weight including unusable fuel & Core wing (34kg)	90 kg	198 lb
T-LITE / CORE	Maximum Empty Weight including unusable fuel & 86 kg pilot	122.3 kg	270 lb
T-LITE / F2T	Typical Empty Weight including unusable fuel & F2T wing (25kg)	70 kg	154 lb
T-LITE / F2T	Maximum Empty Weight including unusable fuel & 86 kg pilot	102.3 kg	225 lb

Table 5 Section 6. Typical Aircraft Weight

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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AIRCRAFT & SYSTEMS DESCRIPTION

7 AIRCRAFT & SYSTEMS DESCRIPTION

7.1 General

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

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

7.2 Airframe

Wing - Core

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 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.

Wing – F2T

The F2T is an easy low 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 are made from 7075 T-6 aluminium tubing.

The leading edges use tubing ranging in diameter from 50- 52 mm 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 Dacron cloth. Combinations of cloths are used for their strength, weight, and stiffness characteristics. 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 (optional). All these cloths have excellent sail life.

The AirBorne F2T wing has been load tested in excess of 990kg positive ultimate (positive 6g) and in excess of 495kg negative ultimate (negative 3g). Excellent engineering contributes to the light weight of 25kg.

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 (Bailey Engines), and simply an ON / OFF switch for the Polini Engine.

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 Engines

- Bailey 5VE 20.5HP engine designed and built in the United Kingdom. The Bailey 5VE is a 4-stroke, forced air-cooled, single cylinder, 4-valve, single overhead cam design of 180cc displacement.

Bailey engines are 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.

- Polini Thor 100 20.5HP engine designed and built in Italy. The Polini Thor 100 is a 2-stroke, forced air-cooled, single cylinder, design of 110cc displacement. The Polini engine has a centrifugal clutch and a helical reduction gearbox. 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 5VE	HELIX 1.30M L-M-07-2	3.2	7 DEG (LH)
Polini Thor 100	HELIX 1.30M R-M-06-2	3.43	6 DEG (RH)

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 5VE Electrical Schematic

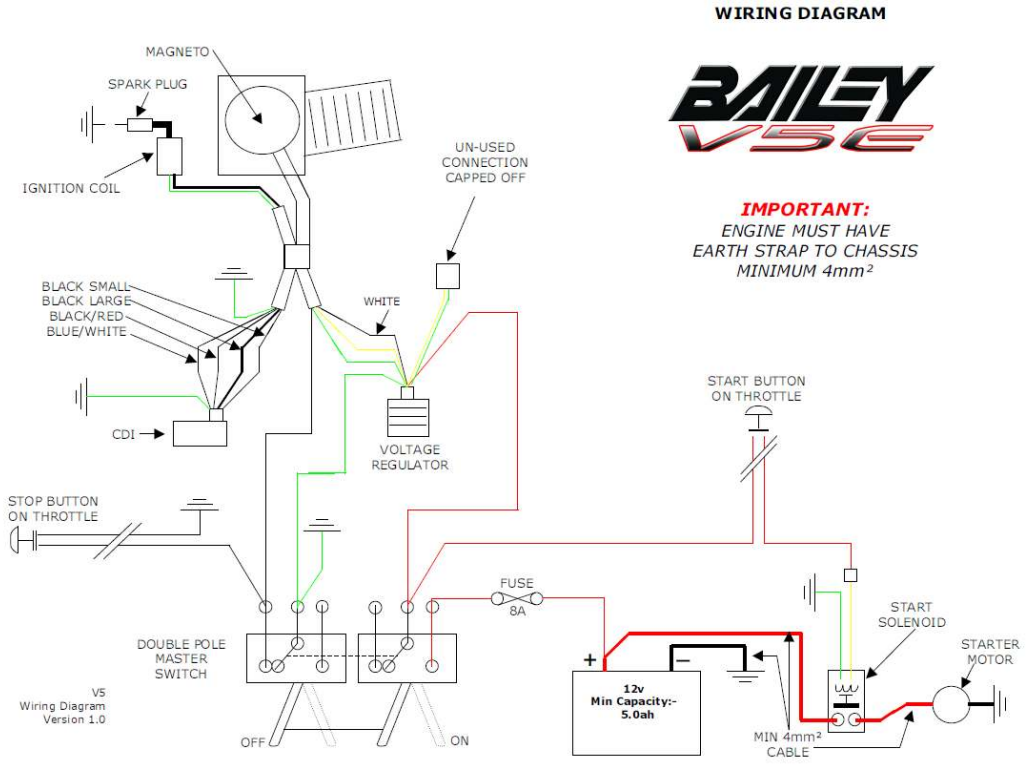

Figure 3 Section 7. T-Lite Bailey 5VE electrical schematic.

7.12.2 T-Lite Polini Thor 100 Electrical Schematic

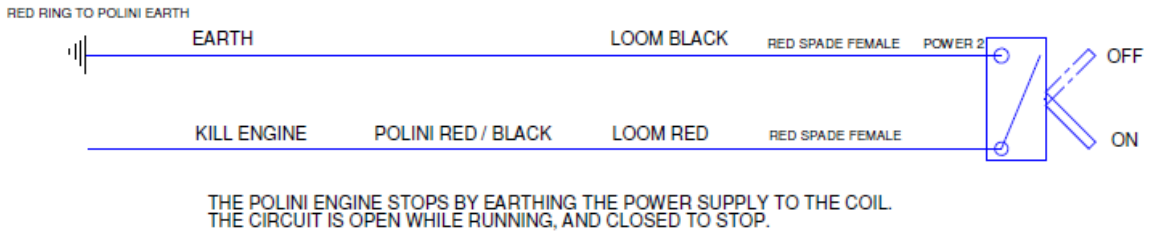

Figure 4 Section 7. T-Lite Polini Thor 100 electrical schematic.

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 (if installed).

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 (Bailey Engines only); 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 5 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 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.

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

Figure 6 Section 7. T-Lite airspeed indicator.

HANDLING SERVICE AND MAINTENANCE

8 HANDLING SERVICE AND MAINTENANCE

8.1 Introduction

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

WARNING

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

8.2 Identification Plate

The aircraft has two identification plates. The wing identification plate can be found on the 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 bungie 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 bungie 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 TYPES		
Bailey 5VE	Preferred Fuel Type	Leaded or unleaded. Minimum 98 octane RON
Polini Thor 100	Preferred Fuel Type	Good lead-free petrol purchased by a petrol station with a number of octane between 95 and 98. Add good 2% synthetic oil to the petrol. It is possible to use a 1,5% oil mixture with the following oils: MOTUL 800 - CASTROL 242 - BARDAL KXT - ELF 976 - ELF 909.

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 sever 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

8.6.1 Bailey 5VE

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.

8.6.2 Polini Thor 100

Check that the oil level reaches the lower edge of the level hole. The engine manual also details the oil change procedure. If there is not enough oil, top up as required through the breather hole located at the top (photo 3). After checking it, tighten the screws. Use API-GL4 oil. Please refer to the Engine manual for specific details.

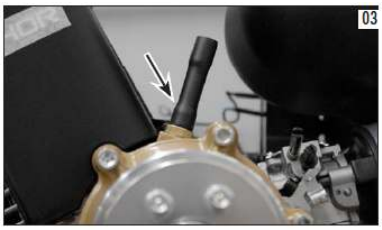

Figure 2 Section 8. Oil top-up.

8.6.3 Lubricating Oil Bailey Bailey 5VE

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.

8.6.4 Lubricating Oil Polini Thor 100

The Polini Thor 100 is a 2-stroke engine that needs oil/petrol mixture, see the petrol specification above.

8.7 Cooling System

The Bailey and Polini engines are forced air-cooled. Care should be taken to ensure the oil level is maintained to aid cooling (Bailey only). 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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SUPPLEMENTS

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. Bailey 5VE and Polini Thor 100 engines use manual chokes. 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 (Bailey Engine)	Lower right instrument panel below ignition switch. Push button to engage starter. (See AOI Section 7.5)
Choke Bailey 5VE	Manual
Choke Polini Thor 100	Manual
Foot Throttle	Right foot above the nose wheel steering bar.

Table 1 Engine Controls

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	T-Lite – F2T
Take off / Landing distance over 50' obstacle	144m (472') and 218m (715') respectively	125m (410') and 210m (689') respectively
Stall at MTOW:	20 mph (32km/hr)	18 mph (30km/hr)
Glide Ratio	7.82:1 @ 28 mph	6.84:1 @ 28 mph
Average Fuel Burn at Cruise:	2.3 lt/hr (0.6 gal/hr)	2.9 lt/hr (0.8 gal/hr)

Table 2 Aircraft Performance Data

(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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