Aircraft Maintenance Manual

REVOLT

Revision 1.2

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Amendments:

Date Of Amendment	Sections Affected	Pages Affected	Date Inserted	Signature
04/01/2022	2.3.4, 10, 11.1-11.3	38, 74-77	04/01/2022	LM
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AMMENDMENTS NOTE

Manuals can be revised in the future and pages and/or sections re-issued. Amendments will also be available on the distribution website www.evolutiontrikes.com **. The amended pages and/or sections should be printed and replaced in the manual at the earliest possible time for safety of flight. The amendment should be logged and recorded in the table above by the owner.**

THIS AIRCRAFT WAS MANUFACTURED IN ACCORDANCE WITH LIGHT SPORT AIRCRAFT AIRWORTHINESS STANDARDS F 2317/F 2317M-16a AND DOES NOT CONFORM TO STANDARD CATEGORY AIRWORTHINESS REQUIRMENTS.

TABLE OF CONTENTS

1 GENERAL

This manual contains recommended procedures and instructions for ground handling, servicing and maintaining the REVOLT aircraft. The procedures described are to be used in addition to the particular governing body's regulations for each country where the aircraft is being flown. Where a maintenance procedure contravenes local regulations, the procedures of the local governing body will take precedence.

This manual may refer you to the wing manual(s) for maintenance required for the relevant wing.

This manual may refer you to the engine manual(s) for maintenance required for the relevant engine.

Definitions used in this handbook such as **WARNING**, **CAUTION** and **NOTE** are employed in the following context.

WARNING
Procedures or instructions that if not followed correctly may result in injury or death.

CAUTION
Procedures or instructions that if not followed correctly may result in damage to the aircraft or its parts.

NOTE
Procedures or instructions which are essential to highlight.

Terminology:

- **Annual Condition Inspection** — detailed inspection accomplished once a year on a LSA in accordance with instructions provided in the maintenance manual supplied with the aircraft. The purpose of the inspection is to look for any wear, corrosion, or damage that would cause an aircraft to not be in a condition for safe operation.
- **A&P** — airframe and power plant mechanic as defined by 14 CFR Part 65 in the U.S. or equivalent certification in other countries.
- **FAA** — United States Federal Aviation Administration.
- **Heavy Maintenance** — Any maintenance, inspection, repair, or alteration that a manufacturer has designated that requires specialized training, equipment, or facilities.
- **Line Maintenance** — Any repair, maintenance, scheduled checks, servicing, inspections, or alterations not considered heavy maintenance that is approved by the manufacturer and is specified in the manufacturer's maintenance manual.
- **LSA (light sport aircraft)** — Aircraft designed in accordance with ASTM standards under the jurisdiction of Committee F37 Light Sport Aircraft, for example, Specification F 2244 for powered parachutes, Specification F 2245 for airplanes, and Specification F 2352 for gyroplanes.
- **LSA Repairman Inspection** — U.S. FAA-certificated repairman (light sport aircraft) with an inspection rating as defined by 14 CFR Part 65, authorized to perform the annual condition inspection on experimental light sport aircraft, or an equivalent rating issued by other civil aviation authorities. This requires a 16 hour course for Weight Shift Control category aircraft.
- **Discussion** — Experimental LSA do not require the individual performing maintenance to hold any FAA airman certificate in the U.S.
- **LSA Repairman Maintenance** — U.S. FAA-certificated repairman (light sport aircraft) with a maintenance rating as defined by 14 CFR Part 65, authorized to perform line maintenance on aircraft and the annual condition/100 hour inspection on an LSA, or an equivalent rating issued by other civil aviation authorities.
- **Maintenance Manual(s)** — Manual provided by an LSA manufacturer or supplier that specifies all maintenance, repairs, and alterations authorized by the manufacturer.
- **Major Repair, Alteration, or Maintenance** — Any repair, alteration, or maintenance for which instructions to complete the task excluded from the maintenance manual(s) supplied to the consumer are considered major.
- **Manufacturer** — Any entity engaged in the production of an LSA or component used on an LSA.
- **Minor Repair, Alteration, or Maintenance** — Any repair, alteration, or maintenance for which instructions provided for in the maintenance manual(s) supplied to the consumer of the product are considered minor.
- **Overhaul** — Maintenance, inspection, repair, or alterations that are only to be accomplished by the original manufacturer or a facility approved by the original manufacturer of the product.
- **Overhaul Facility** — A facility specifically authorized by the aircraft or component manufacturer to overhaul the product originally produced by that manufacturer.
- **Owner/ Operator** — A responsible owner who holds a pilot certificate but who has not received any specific authorized training.

- **Repair Facility** — Facility specifically authorized by the aircraft or component manufacturer to repair the product originally produced by that manufacturer.
- **14 CFR** — Code of Federal Regulations Title 14 Aeronautics and Space also know as the "FARs" or Federal Aviation Regulations.
- **100 Hour Inspection** — Same as an annual condition inspection, except the interval of inspection is 100 hours of operation instead of 12 calendar months. This inspection is utilized when the LSA is being used for commercial operations such as flight instruction, rental or both.

Abbreviations:

AGL — Altitude Above Ground Level
AOA — Angle of Attack
AOB — Angle of Bank
AOI — Aircraft Operating Instructions
ATC — Air Traffic Control
BRS — Ballistic Recovery Systems
C — Celsius
ELT — Emergency Locator Transmitter
F — Fahrenheit
FOD — Foreign Object Debris
ft. lbs — Foot Pounds
FTS — Flight Training Supplement
GPH — Gallons per hour
Hg — Mercury
HP — Horse Power
hr(s) — Hour(s)
in Hg — Inches of Mercury
in. lbs — Inch Pounds
IFR — Instrument Flight Rules
ISA — International Standard Atmosphere
kW — Kilowatt
Max — Maximum
mb — Millibars
Min — Minimum
min — Minute(s)
MIP — Maintenance and Inspection Procedures
MTOW — Maximum Take Off Weight
PIC — Pilot In Command
PIO — Pilot Induced Oscillations
PP WSC — Private Pilot Weight Shift Control (aircraft)
PSI — Pounds per Square Inch gage pressure
RPM — Revolutions per Minute
s — Seconds
SI — International System of units
SP WSC — Sport Pilot Weight Shift Control (aircraft)
TOSS — Take Off Safety Speed

VFR — Visual Flight Rules
W_{MAX} — Maximum Design Weight (W_{WING} + W_{SUSP})
W_{SUSP} — Highest Trike Carriage Weight suspended under the wing
W_{TKMT} — Trike Carriage Empty Weight (including required minimum equipment, unusable fuel, maximum oil, and where appropriate, engine coolant, hangbolt and hydraulic fluid)
W_{WING} — Wing Weight
WSC — Weight Shift Control (aircraft)

Airspeeds:

CAS — Calibrated air speed
IAS — Indicated Air Speed (All airspeeds in AOI unless otherwise noted)
KIAS — Knots Indicated Air Speed
km/hr — Kilometers per hour
kt(s) — Nautical mile per hour
MPH — Miles per hour

V Speeds:

V_A — Maneuvering Speed
V_C — Operating Cruising Speed
V_{DF} — Demonstrated Flight Diving Speed
V_H — Maximum Sustainable Speed in straight and level flight
V_{NE} — Never Exceed Speed
V_{S0} — Stalling Speed, or the minimum steady flight speed in the landing configuration
V_{S1} — Stalling Speed, or the minimum steady flight speed in a specific configuration
V_T — Maximum Glider Towing Speed
V_X — Speed at which Best Angle of Climb is achieved
V_Y — Speed at which Best Rate of Climb is achieved

Measurements:

cm — Centimeter
cu. in — Cubic Inches
cm3 — Centimeter Cube
ft — Feet
in — Inch
Kg — Kilogram
m — Meter
mm — Millimeter
N — Newton
Nm — Newton Meter
sq ft — Square Feet
sq m — Square Meter

Units:

Conversions:

Distances:

1 Inch (in) = 25.4 Millimeters (mm)
1 Foot (ft) = 0.3048 Meter (m)
1 Nautical mile (NM) = 1.852 Kilometers (km)
1 Statute mile = 1.609 Kilometers (km)

Pressure:

1 Millibar (mb) = 1 Hectopascal (hPa)
1 Millibar (mb) = 0.1 Kilopascal (kPa)
1 Pound per sq in (psi) = 6.895 Kilopascal (kPa)

Speed:

1 km/hr = 1.6 MPH
1 Kts (Knots) = 1.15 mph (miles per hour) = 1.84 km/hr
kt(s) — Nautical Mile per Hour (knot) (1 nautical mph = (1852/3600) m/s)

Temperature:

1 Degree Fahrenheit (F) = (1.8 X C)+32

Torque:

1 Foot Pound (ft lb) = 1.356 Newton Meters (Nm)
1 Inch Pound (in lb) = 0.113 Newton Meters (Nm)

Volume:

1 Cubic foot (ft_3) = 28.317 Liters (I)
1 Imperial gallon = 4.546 Liters (I)
1 US gallon = 3.785 Liters (I)
1 US quart = 0.946 Liter (I)

Weights:

1 Kg = kilograms = 2.2 lbs = 2.2 pounds
1 Pound (lb) = 0.4539 Kilogram (kg)

1.1 Equipment List

1.1.1 Tooling

Tooling required to do maintenance on this aircraft is listed below. Please note that the list may not be comprehensive.

- Loctite (243, 567 and Antisieze Lubricant # 76764) For the frame section, ACF-50, WD-40, High-Temp exhaust anti-seize
- The Rotax Maintenance Manual gives a list of consumable materials in section 2.5.
- Torque wrench
- Air Pump
- Various petroleum lubricants
- Automatic Transmission Fluid (ATF) for brakes
- Hydraulic Disc system pressure bleeder tool, available at most auto stores
- Dry Lubricant – lubricant which doesn't attract dust after application.
- WD40 for lubricating the hang block
- UV Resistant Tie wraps, and tooling
- Stainless Steel aircraft Cable and Swages and tooling
- SAE Hex key set
- Gasoline resistant thread sealant tape
- Various general care items
- Metric and SAE Socket Wrench Set
- Pliers and Vise Grips
- Phillips and Regular Screw Driver Set
- A hoist pulley system
- Flexible neck funnel
- Bettsometer (sail strength)
- Inspection telescopic extension mirrors
- Telescopic extension strong magnet

1.1.2 Other Possible Required Items

- Safety Rings
- Safety Pins
- ACF-50, CRC or another water displacement compound
- K&N air filter cleaning spray and oil
- Flashlight
- 5X-10X magnifying glass

1.2 Sources to Purchase Parts

Parts can be purchased from the following sources:

Component	Source
Carriage Frame Items	• Evolution Aircraft, Inc.
Carriage Hardware, Tires	• Evolution Aircraft, Inc. • AN hardware of the correct size from reputable aircraft supply. • Aero Classic 800 or 850 x 6.00 (4-Ply) from aircraft supply.
Wing Components and Hardware	• Evolution Aircraft, Inc. • AN hardware of correct size from any reputable aircraft supply.
Propeller Parts	• Sensenich Propeller • Warp Drive Propeller • E-Props Propeller
Seat belts	• Evolution Aircraft, Inc.

1.3 List of Disposable Replacement Parts

Dispose of all disposable parts properly following local laws and regulations.

Part	Comments
Fuel Filters	Evolution Aircraft supplied Gascolator filter
Air Filters	K&N air filters are used. They can be cleaned following K&N air filter cleaning guidelines but if appropriate, they can also be replaced with new ones and old ones disposed.
Tires	Aero Classic should be disposed properly according to local laws.
Oil Filters	Oil filters should be properly disposed along with the oil at each oil change.
Fuel sight gauge clear line	Tygothane fuel line replacement one should be properly disposed.
Fuel Line	When fuel line has to be replaced, the old one should be properly disposed.
Battery	When the Earth X Lithium Iron Phosphate battery is to be replaced, the old battery should be properly recycled according to local laws.

1.4 Engine Specifications

REVOLT is available with the following ASTM complaint engines:

1.4.1 Rotax 912 UL

Version	Performance			Torque			Max RPM
	kW	HP	RPM	Nm	ft. lb.	RPM	RPM
912 UL2	58.0	79	5500	103	75.9	4800	5800
Max 5 min (take-off)	59.6	81	5800				

Bore		Stroke		Displacement		Compression Ratio	
79.5 mm	3.13 in.	61 mm	2.4 in.	1211.2 cm^3	73.91 cu. in.	9.0:1	

1.4.2 Rotax 912 ULS

Version	Performance			Torque			Max RPM
	kW	HP	RPM	Nm	ft. lb.	RPM	RPM
912 ULS2	69.0	95	5500	128	94	5100	5800
Max 5 min (take-off)	73.5*	100*	5800*	* with Rotax airbox & exhaust system			

Bore		Stroke		Displacement		Compression Ratio	
84 mm	3.31 in.	61 mm	2.4 in.	1352 cm^3	82.6 cu. in.	10.5:1	

1.5 Weight and Loading Information

Center of gravity limits are not critical in a flex-wing weight shift control aircraft. The carriage attaches to the wing through a universal junction known as hang block assembly. Variations in cockpit and fuel loading cannot affect aircraft's balance significantly. The aircraft is therefore not critical in terms of center of gravity. However, distribution of load in a trike carriage affects the attitude of the trike carriage in-flight in a minor way and the hang block position on the wing's keel effects the wings CG.
Please refer to weight and loading document for airworthiness.

1.5.1 Center of Gravity Limits

Base Suspension Range (Measured from the front of the keel tube attached to the wing keel to the suspension point on the hang block)	**Dimension (Metric)**	**Dimension (Imperial/US)**
REVOLT 15m	1321 mm - 1422 mm	52" - 56"
Rival X 14m	1321 mm - 1448 mm	52" - 57"

1.6 Tire Inflation Pressures

Aero Classic 800 x 6.00 21" treaded aircraft tires should be inflated to between 18 and 35 PSI and recommended 20 PSI for both front and back tires.

AeroClassic 850 X 6.00 22" smooth aircraft tires should be inflated to between 6.5 and 12 PSI for both front and back tires **for soft field only**. For hard pavement the rear tire **MUST** be inflated to a **minimum** 28 PSI and the front a minimum of 6.5 PSI.

1.7 Approved Oils and Capacities

Rotax 912UL and 912ULS take 3L of AeroShell Sport Plus 4.

1.8 Recommended Fastener Torque Values

Fastener	Metric	Imperial
Hang Bolt and Folding Mast Bolt	Hand tight **snug** with safety pin or ring.	Hand tight **snug** with safety pin or ring.
Axle Bolts	Snug tight with a wrench then back off so the cotter pin can be inserted for safety (if applicable). If needed appropriate washers can be added.	Snug tight with a wrench then back off so the cotter pin can be inserted for safety (if applicable). If needed appropriate washers can be added.
Other Carriage Bolts and Nylock Nuts*	AN-4 (1/4-inch) bolts – 17 NM	AN-4 (1/4-inch) bolts – 156 inch -pounds
	AN-5 (5/16-inch) bolts – 22 NM	AN-5 (5/16-inch) bolts – 195 inch -pounds
	AN-6 (3/8-inch) bolts – 34 NM	AN-6 (3/8-inch) bolts – 300 inch -pounds
Propeller	Refer to the propeller Manual.	Refer to the propeller Manual.
Wing Fasteners	Refer to the wing manual. If values are found in wing manual they override these recommendations. If using Nylocks, they should not be torqued down but just kept snug tight with one to three threads showing. Do not torque any bolts that go through tubing or fittings.	Refer to the wing manual. If values are found in wing manual they override these recommendations. If using Nylocks, they should not be torqued down but just kept snug tight with one to three threads showing. Do not torque any bolts that go through tubing or fittings.
Engine Hardware	Please refer to engine Manual.	Please refer to engine Manual.

* In preparing this guide to torque values, the following basic assumptions have been made:

(a) Bolts and nuts are new, standard finish AN hardware and dry threads. Lubricated threads will require lower torque values by about 20%. For older nuts and bolts 10% to 20% lower torque specification should be used.
(b) The load will be 90% of the bolt yield strength.
(c) The coefficient of friction (μ) is 0.14
(d) The final tightening sequence is achieved smoothly and slowly, until the torque tool indicates full torque has been obtained.

1.9 General Safety Information

Qualifications for the person doing the maintenance vary from country to country. The operator/mechanic should be familiar with the local requirements. Maintenance requirements are outlined in the maintenance manual for the base unit and in the engine manuals for the engine.

NOTE
To protect hardware from elements it is highly recommended that a water displacement compound like ACF-50 be sprayed from time to time to prevent galvanic corrosion. This can be done by the owner. Excess should be wiped off immediately after spraying. Alternately compounds like Pennzoil Marine sprays after replacement of hardware can be used as they make a waxy film around the metal and protect it from the elements for up to 6 months or as advertised. Treating the engine with water displacement compounds makes it easier to clean and maintain the engine's appearance. Excess should be wiped off with a soft cloth.

NOTE
It is very important that FOD (Foreign Object Debris) be kept clearly out of the aircraft. We recommend not setting any tools or fasteners inside or on the aircraft and instead using a project tray outside with all tools and fasteners/parts required. Items such as the gas cap, tools and other objects should **NEVER** be placed on the seats, floor board or top of the engine where they can fly out during taxi or flight if forgotten.

It is also important to pay particular attention to chafing of lines and wires. Battery terminals should be disconnected while work is being performed. It is easy to drop fasteners into the any cavities of these aircraft unless conscious effort is made not to do so. A strong magnet pickup and a bright flashlight are good to have in such circumstances. Do **NOT** leave small objects such as nuts or bolts in any cavities which can escape during flight creating falling debris or impact the pusher propeller.

1.9.1 Propeller

The propeller should be checked for pitch consistency between the blades (< 0.3 degrees) and the bolts should be checked for torque the first 10 minutes, then 1 hour, then 25 hours and every 100 hours with an accurate torque wrench to propeller manufacturer values. Refer to the propeller manual for more details on maintaining the propeller.

1.9.2 Fuel to Use

The following fuels are preferred to be used on the aircraft:

- 912 UL Lead Free 89 Octane US. or higher
- 912 ULS Lead Free 91 Octane US. or higher
- 912 UL, 912 ULS Avgas 100LL

NOTE

Due to higher lead content in AVGAS, the wear of the valve seats and deposits in the combustion chamber will increase. Use of Avgas requires more frequent oil changes of every 25 hours and requires use of non-synthetic oil only.

NOTE

Please refer to the Rotax engine manuals for further information on fuel and oil to use with their engine.

1.9.3 Dimensions

Please refer to Section 1.4 of the Aircraft Operating Instructions (AOI) for this information.

1.9.4 Parking, Moving on the Ground and Storage

Make sure area is clear, ignition is OFF and if applicable BRS safety pin is in before moving the aircraft on the ground manually. Before moving the aircraft secure the wing's A-frame and move carefully negotiating the wind direction with the wing's position.

1.9.4.1 Pulling the Trike

Moving the base (with or without the wing) is facilitated by lifting the front wheel and walking the base. If a hard pull is needed, it's best to push the aircraft from the rear roll cage next to the prop hub. Steer the trike while manually moving by pushing the nose wheel or front steering in the desired direction. Alternately, the front wheel can be placed on a castering support and steered freely.

1.9.4.2 Pushing the Trike

The trike can be pushed using pushing on the rear roll cage on either side of the prop hub. Steering is slower and harder using this method except when using castering support on the front wheel.

NOTE

The trike carriage or base can be moved with or without the wing.

1.9.4.3 Parking the Trike

Parking the aircraft requires parking brake or using chocks and securing the wing with the upwind wing down. Using the front and rear lap belts it is recommended to run the front right seat belt in front of the control bar which is against the pilot seat back to the left rear lap belt and tighten the belts using the belt adjustment. After, connect the opposite belts the same way making an X pattern with the 2 lap belts. In higher or gusty wind conditions, where the trike cannot be moved indoors, the wing and trike carriage should be tied down or, if appropriate, the wing can be taken down.

1.9.4.4 Long Term Storage

Long term storage will require the supplied air filter(s) and exhaust be covered to prevent foreign objects getting in the air intake area. Full covers for the carriage and prop blades are advisable, which are available items from Evolution Aircraft Inc. It is recommended to disconnect the terminals of the battery, empty the carb bowls, fuel tank and using fogging oil inside the engine to keep engine free of rust etc. The engine manual should be consulted for long term storage practices for the engine. Refer to Section 4.11.4 of the AOI for further information regarding long-term storage.

NOTE

Do not store the trike outside for any appreciable length of time where it is exposed to the elements. This may reduce life of the sail and other items.

1.9.5 Transporting the Aircraft

Refer to Section 4.11.1 of the Aircraft Operating Instructions (AOI).

1.9.6 Approved Sources of Information and Maintenance

The following are the approved sources for further information regarding maintenance:

- Evolution Aircraft, Inc website www.evolutiontrikes.com
- MGL Avionics South Africa website www.mglavionics.co.za for the XTreme EFIS Instrumentation
- Rotax Austria and its authorized representatives Rotax 912 series engines at their website www.flyrotax.com/services/technical-documentation.html

1.9.7 Instructions for Reporting Possible Safety of Flight Concerns

If you discover any problems during maintenance of this aircraft that in your opinion can cause safety of flight issues, please report that concern to Evolution Aircraft, Inc in the following way:

1) Use the attached form in this manual or compose an e-mail to: evolutiontrikes@yahoo.com with subject:

   "Safety of Flight Issue – Evolution Trikes, REVOLT – Serial#_____

2) In the body of the message please follow this format:

Model:	Evolution Aircraft Inc. REVOLT
Serial Number:	xxxxxx
Number of Hours:	Enter number of flight hours on aircraft.
Wing:	Name the wing model you have on the trike carriage.
Part/Area:	Example, Mast/Pylon, Trike Base tube, Wing Keel etc.
Description:	Please describe the issue as best as you can Images/Pictures Please attach digital format pictures of the problem area(s)
Suggested Remedy:	Enter any suggested remedy if you have one
Name:	Enter your full name here
Title:	Enter your title here (owner/mechanic/inspector)
Qualification:	16-hour class, 110-hour class, A&P mechanic etc.
Address:	Enter your address here
Phone(s):	Enter phone number(s) we can contact you at
e-mail:	Enter your e-mail address if applicable

Or download our form from our website at: www.evolutiontrikes.com/bulletins-manuals.htm

Please note that if the concern is related to the engine internals, we may refer you to a certified engine service station.

1.9.8 Placard Replacement

If placards need to be replaced you can order them through the factory.

2 INSPECTIONS

2.1 General

This section covers instructions and checklists for the completion of periodic and annual condition/100 hour inspections, as appropriate.

2.2 One Time Inspections

2.2.1 Rotax 912UL and 912ULS

2.2.1.1 Break-In

The initial engine break-in of Rotax 912UL/ULS was carried out by the Rotax factory. The purging of the oil circuit, carburetor balancing, if applicable, was carried out by Evolution Aircraft Inc. prior to delivery. During the first two (2) hours of use, we advise you to fly only solo, only use maximum power on takeoffs if necessary, and avoid prolonged use at maximum power. Also, consult the engine manual. The propeller blades have been adjusted at the factory to not exceed 5650 RPM on the ground. Use the propeller manufacturer recommended procedure for any modification to the propeller pitch.

2.2.1.2 After One (1) Hour

Pre-Requisites:

1. Take engine cover, if applicable, and rear cowling section off the aircraft.
2. Tools and materials necessary to perform this inspection are listed in section 1.1 of this manual.

Type	Action	Description	Personnel Authorized
Line Maintenance	Re-torque the Exhaust manifold bolts.	Re-torque the exhaust manifold bolts to engine manufacturer's specifications.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Tighten hose clamps on radiator.	Check for any coolant leaks at inlet and exit of radiator.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Add air to the tires to keep 800 series within 18-35 PSI. 850 series within 6.5-12 PSI off field only. **Must use** 28 PSI rear tires for hard surface.	Check air pressure in tires.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Re-torque the propeller bolts and check the state of the propeller,	Re-torque the propeller bolts and check the state of the propeller. For procedure please look at the propeller manual.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Lubricate hardware on the wing.	Use a spray lubricant and a water displacement compound on the joints and hardware of the wing. Wipe away excess immediately with a soft cloth.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station

NOTE
If unsure about how to do a certain task we recommend that you refer to the factory for clarification. Generally this inspection will be done at the factory if the trike is a Special Light Sport after test flights. In this case it is not necessary for the owner to do these inspections.

2.2.1.3 After First Twenty Five (25) Hours

Pre-Requisites:

1. Tools and materials necessary to perform this inspection are listed in section 1.1 of this manual.
2. If unsure about how to do a certain task we recommend that you get clarification first.

Type	Action	Description	Personnel Authorized
Line Maintenance	Change Oil if applicable	Refer to engine manual. **NOTE** The REVOLT has a supplied oil filter wrench made to easily slip in between the frame to easily remove the filter. There is a Curtis quick drain on the bottom oil reservoir. The oil reservoir can be completely removed from the trike frame by un fastening the band holding it to the frame. No oil lines need to be disconnected.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Check oil filter for metal deposits.	Open the oil filter and check for the presence of metal deposits.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station

Type	Action	Description	Personnel Authorized
Line Maintenance	Tighten hose clamps on radiator	Check for any coolant leaks at inlet and exit of radiator	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Add air to the tires to keep 800 series within 18-35 PSI. 850 series within 6.5-12 PSI off field only. **Must use** 28 PSI rear tires for hard surface.	Check air pressure in tires	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station •
Line Maintenance	Magnetic pickup in gearbox cleaned.	Clean the magnetic 'pick-up' bolt in the gearbox housing.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Oil hose and connections.	Check the state of the oil hoses and the tightness of the oil connections.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Carburetors, carburetor supports and air filters secure, if applicable.	Check that the carburetors, carburetor supports and air filters are secure.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station

Type	Action	Description	Personnel Authorized
Line Maintenance	Throttle cable tension.	Check the tension and stops of the throttle cables.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Idle RPM	Check Idle RPM. 1350-1950.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Color and state of spark plugs.	Check the state and the color of the spark plugs (for a correct air/fuel mixture). Replace if necessary. Consult engine manual for spark plug gap and torque.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Bolts, nuts, safety pins	Check that no bolt, nut or safety pin is missing or loose or rusting.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Fuel System	Check the fuel system, hose connections, gascolator drain line, filter, pump (leaks – abnormal wear). Replace if necessary.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station

Type	Action	Description	Personnel Authorized
Line Maintenance	Electric wire Harness.	Check the electric wire harness for abnormal wear or chafing.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Liquid coolant level.	Check the level of the liquid coolant in the radiator reservoir (above the minimum mark – do not overfill).	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Brake condition	Check the ATF for the brake system. Check lines and fittings for leaks.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station

NOTE

If you have never done a Rotax 912 series oil change before, it is highly recommended that you follow Rotax engine oil change guidance.

Rotax has provided video instruction of the proper way of doing oil change and oil purging and carb synching at their website www.rotax- owner.com mouse over “Support” and select “Expanded Video Instructions” to see the e-training videos before doing these regular maintenance items. These videos may require you to become a member and pay a fee.

2.3 Routine Periodic Inspections and Maintenance

2.3.1 Rotax Motors

Consult the engine manuals, Technical bulletins and Service Information for getting the intervals to do routine maintenance on your engine.

NOTE
More information and Rotax instructions available at their website: www.flyrotax.com

2.3.2 Airframe

NOTE
If unsure about how to do a certain task we recommend that you refer to FAA AC 43.13-1B for details.

By consistently carrying out an effective **PREFLIGHT** this should uncover any possible irregularities. For that reason attention should be drawn to the AOI section 4.4 and 4.5 to the preflight checklists. The maintenance of the aircraft should be carried out adhering to the component replacement cycle of each sub-component in Section 2.3.5 of this manual.

2.3.2.1 Fifty (50) Hour Interval Maintenance and Inspection

Pre-Requisites:

1. Remove the engine cowling (if applicable) and rear section cowling.
2. Remove the seat pan.
3. Tools and materials necessary to perform this inspection are listed in section 1.1 of this manual.

Type	Action	Description	Personnel Authorized
Line Maintenance	Apply ACF-50	Apply to hardware, can be used on electrical connections. Spray inside of steel tubing. Excess wiped off with a soft cloth immediately after spraying. Can be used to lubricate any rotating free joint like front fork etc.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Apply ACF-50	Apply to folding mast joint area.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Check all bolts, nuts, safety wires and lock pins for condition and rust.	Safety wires if broken or rusted should be replaced. Lock pins should be in good condition and not bent or rusted. Replace if necessary.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station **WARNING:** **Please follow proper procedure for safety wiring the propeller and exhaust springs. If in doubt refer to FAA Advisory Circular AC 43.13-1B**

Type	Action	Description	Personnel Authorized
Line Maintenance	Change oil if applicable (courtesy reminder only).	Refer to engine manual.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Check Coolant level in reservoir (courtesy reminder only).	Add coolant if necessary. We recommend 50/50 Dexcool coolant. If water is used to make a 50/50 mix, it should always be distilled water only.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Check all hoses, clamps for leaks.	Check all hoses including oil, fuel and coolant lines for condition and leaks. Replace and/or tighten as necessary. Hose clamps should be snug but not overly tight. A force of 18 inch pounds (2 NM) is generally sufficient to make a good seal. Hoses replaced should be appropriate size and applicable to task. Fuel lines should be auto fuel lines resistant to alcohol/ethanol.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Check fuel filter/gascolator and fuel flow sensor if applicable.	Check visually for contamination and replace or clean if necessary.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station

Type	Action	Description	Personnel Authorized
Line Maintenance	Check Air Filter and clean if necessary.	Check K&N air filter and if necessary clean using cleaning spray and oil for K&N air filters. Follow directions of cleaning bottles.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Check Wiring behind the instrument panel for possible chafing.	Look under and behind the instrument panel with a flash light to see any chafing or irregularities.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Propeller checked and re-torqued.	Blades and hub bolts torque checked. Look for any cracks in the hub and de-lamination of propeller blades Clean propeller with mild detergent, water and sponge. Use wax protect finish.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Throttle and choke cables and stops.	Check operation of throttle and choke for smoothness. Cable has been oiled at factory but if necessary re-oil with light machine oil. Stops should be secured.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station **WARNING** **If unsure of how to do this please refer this to a qualified mechanic.**

Type	Action	Description	Personnel Authorized
Line Maintenance	Battery condition	Check battery voltage and condition. If below 12 volts, recharge. Voltage can be easily checked by turning on the glass cockpit without the engine running and noting the voltage. If the battery terminals need cleaning, clean them and apply di-electric grease or battery terminal protectant spray.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Wiring harness	Check wiring connections visually for obvious defects and arrange correction with a qualified person if necessary.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Seatbelt condition	Check seatbelts for cuts and nicks. If any found replace.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Hang bolt condition	Check. Replace based on condition if necessary or every 400 hours.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station

Type	Action	Description	Personnel Authorized
Line Maintenance	Tire tread	Check tires for irregular wear.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Idle RPM	Check Idle RPM. Consult engine manual.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Carburetors, carburetor supports and air filters secure. Sync carbs per Rotax instructions if applicable.	Check that the carburetors, carburetor supports and air filters are secure. Sync carbs per Rotax instructions. **NOTE** **Make sure that the choke is completely OFF before synching carbs and warm up the engine before making adjustments.**	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Clean the carriage	Follow the cleaning procedures in Section 8.13 of the AOI for cleaning the trike carriage. Use good quality wax to protect after cleaning.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station

2.3.3 Wing

NOTE
If unsure about how to do a certain task we recommend that you refer to FAA AC 43.13-1B for details.

2.3.3.1 Fifty (50) Hour Interval Maintenance and Inspection

Pre-Requisites:

1. Tools and materials necessary to perform this inspection are listed in section 1.1 of this manual.
2. Use magnifying glass where appropriate when checking sail and cabling and tubing.
3. It is not necessary to de-rig the wing to perform this inspection.

Type	Action	Description	Personnel Authorized
Line Maintenance	Check hardware.	Check all fasteners (bolts, screws, rollers, nuts, splint pins etc.) for corrosion or rust. Any corroded fasteners should be replaced. Bolts should not be worn and/or bent. Key bolts should be checked most thoroughly for cracks between the head and the bolt body. These are the bolts at the control bar side and bottom joints, the central spreader bar tensioning cable attach point and the rear cable attachment point on the keel tube. If any cracks are observed – **REPLACE IMMEDIATELY!**	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Apply ACF-50 or like compound	Apply to hardware and joints. Excess wiped off with a soft cloth immediately after spraying. Can be used to lubricate.	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station

Type	Action	Description	Personnel Authorized
Line Maintenance	Checking the sail surface and seams.	There should be no cuts, ruptures, threadbare holes and torn seams on the sail. Any torn seams should be re-stitched. Cuts and ruptures on the under surface of the sail that are not longer than 30 mm can be patched with self-adhesive Dacron/Mylar. The Dacron/ Mylar must be of a weight of not less than 100 g/m. Larger cuts and ruptures are to be repaired by stitching on a reinforcing piece of the same fabric (stitched along the edges). Any rupture shorter than 8" can be repaired in this manner, but more complicated repairs and all cuts near the trailing edge upper surface should be carried out in the workshop of producing company. If any of the batten tightening cords are torn or heavily worn they must be replaced. **NOTE** **Keep an eye on the sail grommets and all areas of the sail that are subject to extra stress, especially the keel section, the nose section of the leading edge and outer tip section of the leading edge.**	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station **WARNING** **The inspection can be done by the above personnel but any stitching or large cuts or trailing edge nicks and cuts should be fixed by personnel authorized by the wing or trike manufacturer ONLY! That have specialty knowledge of trike or hang glider wing sail repair.**

Type	Action	Description	Personnel Authorized
Line Maintenance	Check cabling	The cables must be checked for broken wires and corrosion. If any defect on a wire is observed, no matter how small, the cable in question **MUST BE REPLACED**. It is recommended that the entire cable system be replaced once every four years irrespective of service conditions. **NOTE** **Use magnifying glass here if necessary.**	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station **WARNING** **The inspection can be done by the above personnel but if any repairs are required, they need to be carried out by personnel authorized by the wing or trike manufacturer ONLY!**
Line Maintenance	Check tubing visually	Check all tubing joints and fastener locations carefully. Visually look inside the sail for any bends in tubes or any cracks in any brackets connected to the tubes. If any cracks, dings or bends are found consult the manufacturer. **WARNING** **In case of cracks, dings or bends discovered in any tubing on the wing, GROUND THE WING AND CONSULT THE WING MANUFACTURER OR TRIKE MANUFACTURER IMMEDIATELY!**	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station

Type	Action	Description	Personnel Authorized
Line Maintenance	Check the battens and symmetry.	Visually inspect the curvature of the wing very carefully to make sure it is symmetrical. If a turn has developed please follow the wing manual suggestion to tune the turn out. Battens should be checked on the batten chart. Note tuning of the wing involves changing the profiles of certain battens up to ¾". Note the asymmetrical battens in pencil on the chart. If any batten tips, etc. are broken or worn, replace them before flight. **CAUTION** **You may have to de-tension the wing to take battens out. Refer to the AOI or the wing manual for instructions on de-rigging the wing. Do not try and force the batten in or out when the wing is tensioned.**	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Clean the wing.	Follow wing manual procedures to clean and wash the wing. In absence of wing manual, proceed as follows: 1) Cover the trike base and engine area with trike cover or plastic sheets so water does not fall inside of it, or remove the wing from trike if desired. 2) Wash the wing with lukewarm water with a regular garden hose pressure. **DO NOT USE HARSH CHEMICALS OR DETERGENTS.**	• Owner (holds at least a sport pilot certificate) • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station

Please mark the aircraft logbook as "50-hour inspection completed"

2.3.4 Hundred (100) Hour/Annual Inspection (100-h)

NOTE
If unsure about how to do a certain task we recommend that you refer to FAA AC 43.13-1B for details.

NOTE
Please also refer to section 2.3.5 of the maintenance manual for component replacement schedule while performing this annual inspection.

WARNING
The checks listed in "Wing", "Carriage Structure" and "Landing Gear" in this list should also be performed if a hard landing has been experienced and filed results saved and logged with aircraft logs to maintain airworthiness and SLSA status of your machine. Any item showing deformation indicates the aircraft has experienced extreme loads and a qualified mechanic (A&P, LSA Repairman Maintenance or higher) needs to do further analysis before declaring it safe and airworthy.

Type: 100 Hour or Annual or After Hard Landing Inspection
Authorization to Perform:

- LSA Repairman Inspection (only if ELSA)
- LSA Repairman Maintenance (SLSA or ELSA)
- A&P or higher
- Repair Station

Please print these pages and perform the inspection as listed every 100 hours or annually or after hard landing whichever comes first to maintain SLSA status of your aircraft.

Condition Inspection Checklist based on FAA FAR 43 Appendix D

Aircraft Make/Model: _____ S/N: _____

Engine Make/Model: _____ S/N: _____

Wing Make/Model: _____ S/N: _____

Date of Inspection: _____

TT Airframe: _____

TT Engine: _____

TT Wing: _____

Inspector: _____

Check all that apply:

_____ Owner _____ Operator _____ Pilot _____ A&P

_____ LSA Repairman Inspection (only if ELSA) _____ LSA Repairman Maintenance

_____ 100 Hour OR _____ Annual (whichever is less)

_____ After Hard Landing

Last Inspection performed:

Date: _____ Hours: _____

Scope and Detail of Items (As Applicable to the Particular Aircraft) to be **Included in Annual and 100-Hour Inspections.**

Ready the aircraft to be inspected.

_____ Separate wing from the carriage (See section 4.9 of AOI if necessary).
_____ Thoroughly clean the aircraft and propulsion system.

Mark "P" for Pass or "F" Fail at each line ___

AIRCRAFT DATA

_____ Aircraft Data Accuracy

Verify data in aircraft logbooks matches the information found on data plate and registration.

WING

A NOTE ABOUT CABLES AND CABLE MAINTENANCE

The cables which support the wing's airframe are critical components of the wings structure, and must be maintained in an air worthy condition. Cables, like other structural components on the wing, are typically designed with a structural safety factor of only about 50% above the expected maximum load. No significant loss in cable strength can be tolerated. A cable with even a single broken strand must be replaced before the wing is flown again. A cable which has been bent sharply enough to have taken a permanent set must also be replaced immediately. Some degree of fatigue due to repeated bending of cables is almost unavoidable in an aircraft that is assembled and disassembled. Even though these cables are stainless steel they are susceptible to corrosion.

_____ Cable System

The cables must be checked for broken/nicked wires (frays), corrosion, Nico and thimble condition. If any defect is observed, no matter how small, the cable in question **MUST BE REPLACED**. It is recommended that the entire cable system be replaced once every five (5) years or 500 hours irrespective of service conditions except backup cabling. Cables can be obtained from the wing manufacturer or assembled by a repair station with proper expertise and equipment.

A NOTE ABOUT SAIL STRENGTH

An annual Bettsometer test with a 0.045 - 0.047 inch diameter needle, with wing sails fitted and tensioned for flight is to be conducted Upper & lower surface: 3 lbs Stitches: 3 lbs using a 0.045 - 0.047 inch diameter hook, pull upwards. Besides the annual check there are several criteria for testing of sails dependent on the conditions that the sail fabric is exposed to. The pilot/operator of the aircraft is responsible for determining the level of exposure that the sail experiences. UV is the killer of sail cloth and is to be avoided as much as possible. Annual testing is adequate except in cases where a harsh and exposed environment warrants more frequent testing. In such cases every 200 operating hours regardless of time (annual or not), the Bettsometer testing should be conducted to see if sail and stitch passes. Keep an eye on the sail grommets/eyelets and all areas of the sail that are subject to extra stress, especially the wing keel section, the nose section of leading edge and the outer tip section of leading edge.

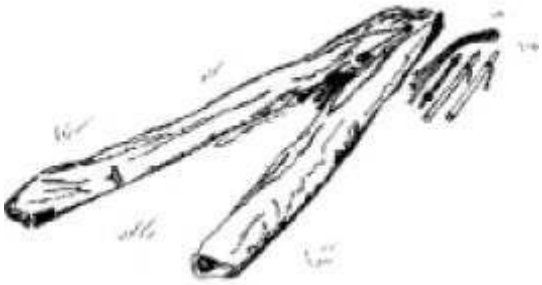
_____ Sail Check-Up

Checking the sail surface and seams.

There should be no cuts, ruptures, bare holes and torn seams on the sail. Any torn seams should be re-stitched. Cuts and ruptures on the leading edge and under of the sail that are not longer than 1.25” (30 mm) can be patched up with self- adhesive Dacron sail appropriately. The Dacron must be of a weight of not less than 100 g/m. Larger cuts and ruptures are to be repaired by stitching on a reinforcing piece of the same fabric (stitched along the edges). Any rupture shorter than 8” can be repaired in this manner, but more complicated repairs and **all cuts near the trailing edge** should be carried out in the workshop of producing company or approved service stations.

_____ Tubing and Structure

Check all nuts, bolts, safety pins, and hardware on the wing.
Check all tubing visually for corrosion, straightness, dings cracks etc. If there is absolutely any doubt, check the tubing as described below in full tubing inspection.
Check all brackets and connections in the structure for cracks etc.
Full tubing inspection (at 500 hours since new and then every 250 hours thereafter). At 500 hours and then every 250 hours thereafter or if it is known that the wing has had hard landing or the trike has flipped over due to adverse weather conditions when outside, it is imperative that tubing and brackets be inspected fully with sail-off in the following manner:
To check the condition of the wing tubes the sail should be removed from the wing frame by unlocking all the fasteners that secures outside cabling and/or struts to the wing structure, removing the hang block as applicable so the keel pocket can slide through the keel tube, close the wing in so its in packed position and snaking the fabric off the structure. Then the tubes should be detached at the joints. The tubes are to be inspected visually. When there is suspicion of damage, the points in question should be inspected using a magnifying glass of (5-10) X magnification.
A straight edge may be used on the tubing to ascertain straightness. There should be no trace of corrosion, cracks, bends or dents.



Take all battens out, remove rear lower flying wires from the keel, remove struts, Keel straps and hang block elements that hinder the sail from coming off the frame.

After closing the wing the sail can now be snaked out through the nose.

_____ Fasteners

Check all fasteners (bolts, screws, rollers, nuts, splint pins etc.) for corrosion. Any corroded/rusted fasteners should be replaced. Bolts should not be worn and/or bent. All bolts should be checked most thoroughly for cracks between the head and the bolt body. If any cracks are observed – **REPLACE IMMEDIATELY!**

_____ Battens/Ribs and Batten Tips and Trailing Edge Tips or Cords

The batten profiles should be checked against the template and the bends should be adjusted if necessary to the template. Please note the tuning of the wing may allow + or – of ¾" height difference on certain battens which should be documented on the template in pencil. Check all the plastic batten heads and tails and replace if necessary. The batten templates can be ordered from the manufacturer. Only those battens that are known to be bent beyond the original template for wing tuning purposes and logged in aircraft maintenance log as such should be allowed to deviate from the manufacturer batten template.
If any of the batten tightening cords are torn or heavily worn they must be replaced. Any batten trailing edge tips that are worn should be replaced if applicable.

CARRIAGE/ AIRFRAME

Carriage Structure:

_____ Hang Block Assembly

Hang block assembly should be checked for cracks, elongated holes, general condition and excessive unusual play. Bolts should be checked for bends and cracks where the head joins the rest of the bolt. Nuts should be checked for general condition and safety rings replaced if rusted or bent. Undercarriage hang block safety backup cable condition and attachments are in good condition. Hang block assembly including all the bolts and nuts should be replaced **based on condition** and can be ordered from the manufacturer.

_____ Mast

General condition, all structural attachments condition good, and security of all attachments, tubing not bent. A water displacement compound or ACF-50 can be sprayed liberally inside the mast tubes to prevent corrosion. Wipe off excess.

_____ Rear roll cage bars (above rear seat)

General condition good with good upper and lower attachments.

_____ Main frame rails

General condition with structural attachments to mast tubes and front/back landing gear. A straight edge may be used on the tubing to ascertain straightness.

_____ Seat Frame

General condition with secure attachments to mast tubes, main frame and rear engine fire wall hoop frame.

Landing Gear:

_____ Main Landing Gear

General condition, security and operation. Bolts that secure landing gear to the axle carrier and main frame not bent and no rust or corrosion.

_____ Front Fork

Nose wheel steering, security and reasonable play. Fasteners not rusted.

_____ Hydraulic Disc Brakes

Check for proper operation, adjustment, disk tolerances as appropriate for good operation. Check discs for abnormal wear, brake pad wear, brake lines for leakage. And hub drive lugs not backing out.

_____ Wheels

Check for smooth operation, tightness, cracks, defects, condition of bearings and alignment.

_____ Tires

Check for pressure, wear, cuts and out of round.

Cockpit:

_____ Loose Unsecured Items/Cleanliness

Check for cleanliness and loose equipment that could become dislodged and go through the propeller.

_____ Safety Belts

Check for good condition, operation, secure attachment, and acceptable wear.

_____ Windshield

If equipped, check for deterioration, breakage/cracks and security.

_____ Instruments

Check for general condition and operation.

_____ Flight Controls

Check full range operation.

_____ Engine Throttles and Choke

Check for proper installation, smooth operation and locking. Use a cable oil applied with a cable oiler (commonly used on a dirt bike clutch cable) to use to lubricate throttle cable at the gas pedal end. Oiler may be used throughout the cable assembly to help lubricate in other area as well.

_____ Controls and Systems

Check all cockpit controls and systems for proper installation, general condition, apparent and obvious defects, and security of attachment.

_____ Certificates, Documents and Placards

All certificates, documents, placards, nameplates and airworthiness certificates are current and in aircraft.

Propulsion System:

NOTE
Please refer to the engine manual as well for the inspection sheet for the engine.

_____ Basic Maintenance

Basic maintenance items general condition and within recommended schedule (oils, cooling fluids, fuel filter/gascolator, air filters, and spark plugs as required).

_____ Leaks

Inspect engine section for visual evidence of excessive oil, fuel, exhaust or hydraulic leaks.

_____ Torque of Engine Components

Torque induction, exhaust, and cylinder heads to specifications as required. Refer to Rotax engine manual.

_____ Fuel System

Fuel tank general condition, fuel tank vent, fuel lines to carburetor/fuel rail, Fuel pump, fuel line condition, fuel filter in gascolator and fuel system general condition and security.

NOTE
Replace or clean fuel filter in the gascolator every 100 hours. Replace fuel lines every 5 years using Aeroquip fuel lines. The orange Teflon hoses on the engine itself do not need to be replaced every 5 years

_____ Induction Inlet Boots

Check for cracks and leaks

_____ Cylinder Compression

Check as required. Record values. Refer to Rotax engine manual

_____ Evidence of Metal Particles

Check for Metal particles or foreign matter on screens and sump drain plugs.

_____ Engine Mounts

Check for cracks, and security.

_____ Flexible Vibration Dampeners

Check for general condition and security. Look for large cracks in aged or dried out rubber.

_____ Engine Controls

Synchronize Carbs on Rotax engines if applicable (refer to Rotax manuals) Check general condition, travel, and safety wired where required.

_____ Lines, Hoses, and Clamps

Check for leaks, condition and looseness.

_____ Exhaust

Check for cracks, and proper attachment. Hardware in good condition.

NOTE
Replace exhaust hardware on condition.

_____ Propeller Assembly

Check assembly for cracks and nicks. Torque propeller and gearbox to specifications.

_____ Propeller Balance, Pitch and Tracking

Refer to propeller manual for tolerances.

_____ Accessories and Systems

Check for proper installation, general condition, defects, and secure attachment.

_____ Throttle and choke Cables

Check and lubricate.

_____ Refer to Rotax Engine Manual

Follow 100 hour manufacture’s maintenance specifications

Systems:

_____ Radio and Electronic Equipment

Check for secure mounting and working properly.

_____ Radio Antenna Position

Check for security and operation. Replace antenna installation tape, if applicable, and if necessary with a new one.

_____ Electric System Wiring

Check wiring and conduits for proper routing, secure mounting against vibration, and obvious defects. Check sensor wire ends at the RDAC module, if applicable, and make sure connections are good there.

_____ Batteries

Check for proper installation, and general condition Replace Lithium battery using EarthX ETX 680 **ONLY** as needed (recommended every 5-8 years). **DO NOT USE A DESULFINATING BATTERY CHARGER.**

_____ All Other Systems

Check for proper attachment, security, and operation.

_____ Ballistic Parachute

Check for proper attachment, routing, and general condition and schedule for re-packing or rocket replacement.

Other:

_____ Other Items

That are not listed here for proper installation, condition, operation or safety of flight.

Notes and explanations of any problems, or items found that could progress to a safety of flight issues (use additional sheets of necessary).

Date Completed and Airworthy _____

Inspector Name and Signature _____

2.3.5 Component Replacement Schedule

Airframe	**Lifespan**	
CNC Hang Block halves/ 4 AN6-34 bolts	3,000H/1,000H	10 yrs/ 5 yrs
Hang Bolt (x1)	400 H	3 yesrs
All nuts and bolts of mast/pylon	1000 H	5 years
All brackets like the compression strut securing brackets etc.	On condition	
All frame bolts Axle carrier bolts	1000H 1000H	5 years 5 years
All other airframe ball-joints, bolts and nuts	On condition	
Brake Lines	On condition	
Mast/Pylon head and ¼”plates	2000 hours	
Tires	On condition	
Seatbelts	On condition	
Flush and bleed the brakes using correct tool and automatic Transmission Fluid from a sealed container	If brakes start to feel spongy	5 Years
All rear suspension components (landing gear)	On condition	
Entire wing assembly	Every 1500 hours	
Wing Cables	On condition or every 500 hours or 5 years (whichever comes first).	

Propulsion Area	Lifespan	
Fuel – Line/hose	5 years	
Fuel sight gauge	2 years	
Fuel – Filter (Use only fuel filter element approved and proper for the type of fuels used like Ethanol based gas). Clean gascolator filter element. If its conditions is undamaged, it does not require replacement.	100 H	1 years
Battery lithium	On condition	
Hose – Oil (Aeroquip or Parker hose)	5 years	
Hose – Coolant	5 years	
Rubber motor mounts (all)	On condition	
Cables and housing – Throttle and Choke	500 H	
Engine mount nuts and bolts	1000 H	5 years
Muffle springs	500 H	
All engine mount components	On condition	
Fuel tank	On condition	

Propulsion Area – Replacements Items	Lifespan
Engine overhaul or replacement	As specified by the engine manual
BRS chute repack or replacement	As specified by manufacturer
Propeller	As specified by propeller manufacturer

Materials – Trike Carriage	
Frame	6061 T6 Aluminum 1.625 OD .125 wall and some areas are double sleeved
Front fork tubes	4130 Chrome Moly .090 wall
Mast	6061 T6 Aluminum 1.625 OD .125 wall and some areas are double sleeved
Engine mount	Rotax supplied cradle secured using Continental 0200 motor mounts to 6061 T6 CNC brackets
Welding	TIG (radiators)

3 STRUCTURES

3.1 General

This section provides a description of and instructions for the maintenance, repair, and alteration of the aircraft primary structures.

3.2 Structures

3.2.1 Wing

The REVOLT can be flown with multiple trike wings approved by Evolution Aircraft, Inc. The aircraft as typical of its category of aircraft has a universal connection point on which different wings can be secured on top of the mast/pylon.

NOTE

REVOLT wings may fit other trikes, however other trike wings most likely will NOT fit on a REVOLT. Special design elements have been used to ensure the down tubes and rear cables do not interfere with the mast and rear roll cage assembly.

The wing consists of a skeleton structure composed of:

1. Wing keel
2. Leading edge tubes
3. Cross tubes
4. Downtubes
5. Control bar
6. Cables
7. Struts
8. Sprogs
9. Hang block assembly
10. Battens
11. Dive sticks/washout tubes

The sail of the wing is generally either Dacron, Mylar or Trilam. PX-20 is also used to re-enforce the sail.

3.2.1.1 Maintenance

General maintenance of the wing can be accomplished using strategies suggested under inspections and in combination with the wing manual. Washing should be with warm low pressure garden hose water. ACF-50 or similar should be used in pivot areas and on hardware to prevent from corrosion and rust as suggested in the routine inspections checklists. For who can do this maintenance please refer to 50 hour interval maintenance checklists.

3.2.1.2 Repair

Sail Surface and Seams

Type: Line Maintenance
Authorization to perform: Owner (holds at least a sport pilot certificate), LSA Maintenance Inspection, LSA Maintenance Repairman, A&P, Repair Station

Description:
There should be no cuts, ruptures, threadbare holes and torn seams on the sail. Any torn seams should be re-stitched. Cuts and ruptures on the leading edge and bottom surface (BS) of the sail that are not longer than 1.25" (30 mm) can be patched up with self- adhesive Dacron sail appropriately. The Dacron must be of a weight of not less than 100 g/m. larger cuts and ruptures are to be repaired by stitching on a reinforcing piece of the same fabric (stitched along the edges). Any rupture shorter than 8" can be repaired in this manner.

Complicated Sail Repairs

Type: Heavy Maintenance
Authorization to perform: Task Specific, original wing manufacturing factory or a professional sail loft familiar with WSC wing sail repair.

Description:
More complicated repairs and all cuts near the trailing edge should be carried out in the workshop of producing company or approved service stations with specific knowledge and authorization to perform sail repair from the manufacturer.

Sail Strength Check

Type: Heavy Maintenance
Authorization to perform: LSA Repairman Maintenance, A&P, Repair Station

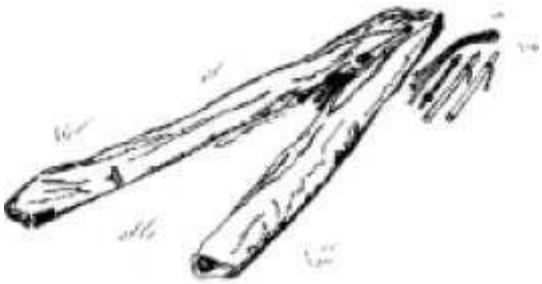
Description:
An annual Bettometer test with a 0.045 – 0.047 in diameter needle, with wing sails fitted and tensioned for flight is to be conducted.
Upper & lower surface: 3 lbs
Stiches: 3 lbs using a 0.045 – 0.047 in diameter hook, pull upwards.

Besides the annual check there are several criteria for testing of sails dependent on the conditions that the sail fabric exposed to. The pilot/operator of the aircraft is responsible for determining the level of exposure that the sail experiences. UV is the killer of sail cloth and is to be avoided as much as possible.
Annual testing is adequate except in cases where a harsher and exposed environment warrants more frequent testing. In such cases every 200 operating hours regardless of time (annual or not), the Bettsometer testing should be conducted to see if the sail and stitching passes.
Keep an eye on the sail grommets/eyelets and all areas of the sail that are subject to extra stress, especially the wing keel section, the nose section of the leading edge and the outer tip section of the leading edge.

Full Tubing Inspection

Type: Heavy Maintenance
Authorization to perform: LSA Repairman Maintenance, A&P, Repair Station

Description:
To check the condition of the wing tubes the sail should be removed from the wing frame by unlocking all the fasteners that secures outside cabling and /or struts to the wing structure. Removing the hang block, as applicable, so the keel tube can slide through the keel pocket. Close the wing in so it is in packed position and snaking the fabric off the structure. Then the tubes should be detached at the joints. The tubes are to be inspected visually. When there is suspicion of damage, the points in question should be inspected using a magnifying glass of 5-10X magnification.
A straight edge may be used on the tubing to ascertain straightness.
There should be no trace of corrosion cracks, bends or dents.



Take all battens out, loosen all fasteners, struts, cabling, cross tube and leading edge junction, hardware, straps and hang block elements that hinder the sail from coming off the tube structure.

After closing the wing, the sail can now be snaked out through the nose.

Fasteners

Type: Line Maintenance
Authorization to perform: Owner (holds at least a sport pilot certificate), LSA Repairman Inspection (only if ELSA), LSA Repairman Maintenance, A&P, Repair Station

Description:
Check all fasteners (bolts, screws, rollers, nuts, splint pins, etc.) for corrosion. Any corroded fasteners should be replaced. Bolts should not be worn and/or bent. Key bolts should be checked most thoroughly for cracks between the head and the bolt body. These are the bolts at the control bar side and bottom points, the cross tube tensioning cable attach point and the rear cable attachments point on the keel tube. If any cracks are observed – **REPLACE IMMEDIATELY!**

Batten/Ribs and Batten Tips and Tailing Edge Tips or Cords

Type: Line Maintenance
Authorization to perform: Owner (holds at least a sport pilot certificate), LSA Repairman Inspection (only if ELSA), LSA Repairman Maintenance, A&P, Repair Station

Description:
The batten profiles should be checked against the template and the bends should be adjusted if necessary. Check all the plastic batten heads and tails and replace if necessary. Batten templates can be ordered from the manufacturer. Only those battens that are known to be bent beyond the original template for wing tuning purposes and logged in the aircraft maintenance log should be allowed to deviate from the manufacturers batten template. Battens are numbered in increasing order from the tip inward starting from 1.
If any of the batten tightening cords are torn or heavily worn they must be replaced. Any batten trailing edge tips that are worn should be replaced if possible.

3.2.1.3 Alteration

No alteration of the wing structure is allowed except by the manufacturer. All tubing should be bought from the wing manufacturer if replacement is deemed necessary.

3.2.2 Carriage

The REVOLT trike carriage is a two seat tandem WSC aircraft. The layout is typical for two seat trike design, with the pilot and passenger being suspended by a triangulated frame, hanging from the top of the mast about the pitch and roll axes, to provide for weight shift control. The cockpit has a quick release windscreen for improved wind deflection.

The seats are molded bucket seats with custom purpose built cushion/ upholstery attached for comfort and there is a lap belt harness system for both pilot and passenger.

The rear wheels are equipped with dual hydraulic disc brakes.

Storage space is available with optional saddle bags.

Under the back seat is a 18.7 gallon (US), 70 + liter fuel tank, rubber mounted to the frame of the trike carriage.

Optionally an ASTM compliant model ballistic chute can be fitted very cleanly above the engine, with two handles located to the side well within reach of the pilot and co-pilot.

3.2.2.1 Maintenance

The trike carriage can be maintained by following strategies and inspections as suggested in section 2 of this manual and in section 8.4 of the AOI and following the replacement cycle.

3.2.2.2 Repair

Mast Assembly

Type: Line Maintenance
Authorization to perform: LSA Repairman Maintenance, A&P, Repair Station

Description:
The mast consists of 2 6061 Aluminum vertical tubes that are joined by two ¼” aluminum plates that support the mast head which is a 4130 2X2” box tube and two Delrin bushings.

If any section of the mast assembly becomes bent, kinked or damaged, replacement of the entire assembly is the only option because this is an important structural section of the aircraft.

Removing the mast assembly, assuming the wing has been removed, consists of cutting the safety cable below the mast and removing the 2 hinge bolts. If applicable removal of the plastic plug for the speed trim can easily be removed using a pin puller. These plugs are GM factory plugs. The new mast assembly will include the mast head and bushings. The rear roll cage brackets can be re-used if they have no damage or excessive wear. Then install the new mast assembly with all new hardware. Run a fish down the mast tubes to run the trim cable, antenna, landing light and safety cable back through. Connect the new safety cable to the tang using the supplied hardware and swage on the new supplied Nico press.

Safety Cable

Type: Line Maintenance
Authorization to perform: LSA Repairman Maintenance, A&P, Repair Station

Description:
The mast assembly has an internal stainless steel safety cable. This cable travels the folding mast tube length and attaches to the mast plate after looping around the wing keel tube. If the cable ever needs replacement it can be re-made locally by an A&P and re-run through the mast. Please refer to FAA AC 43.13-1B for details on how to make steel and stainless steel aircraft cable assemblies.

Rear Landing Gear assembly

Type: Line Maintenance
Authorization to perform: LSA Repairman Maintenance, A&P, Repair Station

Description:
The rear landing gear consists of a 3 aluminum tubes which attach to the main frame and the rear axle carrier. They provide suspension. If there is damage to the landing gear, the assembly needs to be replaced by purchasing one from the manufacturer.

To remove the landing gear:

1. Hoist the carriage up using a soft tie around the hoop behind the rear seat and the right or left roll cage tube based on which side you wish to lift. Then use an engine hoist to lift the carriage so that the back wheel is off the ground.
2. Unbolt which ever tube needs to be replaced.
3. Secure new tube using new hardware.

Front and Rear Wheels

Type: Line Maintenance
Authorization to perform: Owner (holds at least a sport pilot certificate), LSA Repairman Maintenance, A&P, Repair Station

Description:
The REVOLT can have Aero Classic 800 or 850 series 4-ply aircraft tires.
Recommended pressure for the treaded 800 series is 18 to 25 PSI. The pressure for the smooth Tundra 850 series s is 6.5-12 PSI for soft field only. For hard pavement the rear tires **MUST** be inflated to **minimum** 28 PSI and the front a minimum of 6.5PSI. The 800 tires are used as tubeless and on a heavy duty 6 X 4 split wheel with an O-ring in the middle. The 850 tires require a specific tube which on a heavy duty 6 X 6 split wheel with an O-ring in the middle. The O-ring can be greased and bead seal is recommended for the tire/wheel contact point.

To change the tires:

1. Jack up the rear axle carrier.
2. Remove the axle cotter pin and nut.
3. Remove tire/wheel assembly.
4. Deflate tire by removing the valve stem.
5. Use bead breaker on the tire.
6. Unbolt the wheel halves.
7. Replace tire and tube (if applicable).
8. Reassemble wheel and inflate tire.
9. Reinstall wheel making sure to line up rear disc holes with the hub drive lugs.
10. Do not over tighten axle nut. Just snug the nut and then back off at least 1/16 of a turn until the cotter pin hole aligns.
11. Install a new cotter pin.
12. Repeat process for the other side.
13. Use a car jack with a towel over it to cushion the seat hoop under the instrument panel as a jack point. Simply lift the nose of the aircraft and slide the jack under it elevating the front tire at least 2” off the ground.
14. Remove the two AN3 through bolts that secure the fork bottoms to the fork tubes.
15. Slide the wheel assembly out and take to a work bench.
16. Loosen the ¼”-20 set screw on the bottom of one of the fork bottoms and slide the fork bottom off the axle.
17. Remove the axle spacer and wheel assembly.
18. Repeat steps 4-8.
19. Reassemble fork assembly.

Lower Fork Fittings Removed

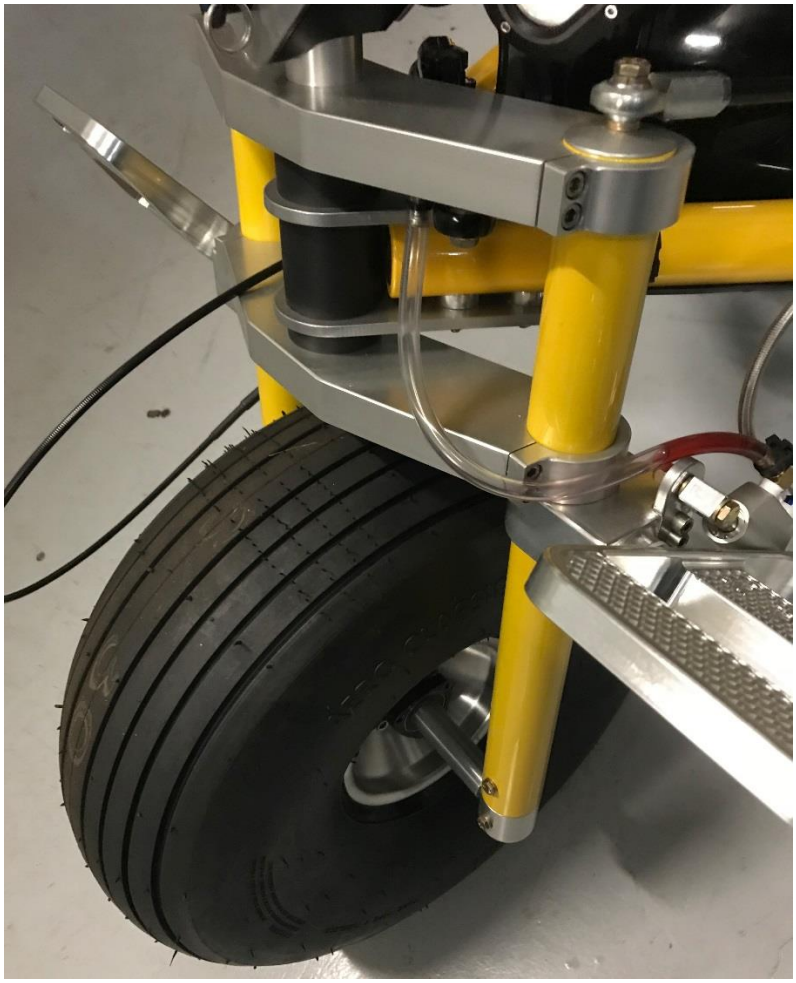
Through Bolt Secures Axle

Front Fork

Type: Heavy Maintenance
Authorization to perform: LSA Repairman Maintenance, A&P, Repair Station

Description:
The front fork is a telescopic design. The structure is 4130 Chromolly steel fork tubes. CNC Aluminum 6061-T6 Triple trees hold the fork tubes together and clamp across the legs. CNC Aluminum 6061-T6 axle knuckles hold a hardened ¾" hollow axle.

1. If the structure is damaged it should be replaced by ordering one from the manufacturer.
2. To take the fork off, the front wheel needs to be removed
3. Using a car jack with a towel over it to cusion the seat hoop under the instrument panel as a jack point.
4. Simply lift the nose of the aircraft and slide the jack under it elevating the front tire at least 2" off the ground.
5. Remove the two AN3 through bolts that secure the fork bottoms to the fork tubes.
6. Then the fork tubes will drop by loosening the 8 allen head bolts that clamp them into the triple trees.
7. The triple trees remove by removing the large ½" pivot bolt.



Front Fork Assembly

Seats

Type: Line Maintenance
Authorization to perform: Owner (holds at least a sport pilot certificate), LSA Repairman Inspection (only if ELSA), LSA Repairman Maintenance, A&P, Repair Station

Description:
Seats are molded one-piece molded bucket seats. The front and rear seat have a pivoting seat frame.

Seat Covers

Type: Line Maintenance
Authorization to perform: Owner (holds at least a sport pilot certificate), LSA Repairman Inspection (only if ELSA), LSA Repairman Maintenance, A&P, Repair Station

Description:
Manufactured of strong thick vinyl and foam shaped to contour are held in place by snaps. The seats can be taken off, cleaned if necessary. Any repairs can be done by a qualified seamstress.

Seat Belts

Type: Line Maintenance
Authorization to perform: Owner (holds at least a sport pilot certificate), LSA Repairman Inspection (only if ELSA), LSA Repairman Maintenance, A&P, Repair Station

Description:
REVOLT provides an adjustable lap belt for both pilot and passenger. The belts have quick release buckles and are ASTM compliant. Any cuts in the webbing require replacement of the belts.

Instrument Console

Type: Line Maintenance
Authorization to perform: Task Specific – fiberglass repair expertise required from a professional shop
Description:
This is made out of fiberglass.

Lower Trike Frame

Type: Heavy Maintenance
Authorization to perform: LSA Repairman Maintenance, A&P, Repair Station

Description:
Made out of welded .125 wall 6061 T6, this is the main weight bearing structure of the carriage. If damaged it should be completely replaced with another one from the manufacturer.

Seat Hoop Frame

Type: Heavy Maintenance
Authorization to perform: LSA Repairman Maintenance, A&P, Repair Station

Description:
Seat frame on REVOLT consists of curved T6 aircraft Aluminum tubing that secures to the main frame assembly. Damaged seat frames should be replaced by ordering a new one from the manufacturer. Please note the seat frame **IS** a structural component of the main frame.

To replace the seat frame:

1. Remove seat pan.
2. Drill out 4 SS rivets on each side of the mid-section of the body that is attached to the seat frame.
3. Remove the fasteners at the front.
4. Lower the mast and remove the plastic insert to expose the hardware that secures the rear seat frame.
5. Use a rubber mallet to gently slide the seat frame halves out. Note: if the seat frame is damaged, it may take excessive force to slide out.
6. If the seat frame is stuck, remove the lower CNC mast block by removing the 2 through bolts that secure it to the frame.

Seat Hoop Frame

Welded Brackets

Type: Line Maintenance
Authorization to perform: LSA Repairman Maintenance, A&P, Repair Station, Task Specific – 4130 Steel Welding

Description:
There are welded brackets to secure each seat that after welding have been powder coated. If any of these weld are damaged the entire frame must be replaced.

Engine Ring Mount

Type: Heavy Maintenance
Authorization to perform: LSA Repairman Maintenance, A&P, Repair Station

Description:
The engine ring mount is a Rotax part. It can be replaced by ordering one from the manufacturer.

Ballistic Parachute (optional)

Type: Line Maintenance
Authorization to perform: LSA Repairman Maintenance, LSA Repairman Inspection (only if ELSA), A&P, Repair Station

Description:
For maintenance of Ballistic Recovery Chute please follow instructions provided by BRS Aerospace.

Oil Change

Type: Line Maintenance
Authorization to perform: Owner (holds at least a sport pilot certificate), LSA Repairman Inspection (only if ELSA), LSA Repairman Maintenance, A&P, Repair Station

Description:
It is important to heat the oil to at least 190˚F. In order to do so without overheating the water, the aircraft should be flown or fast taxied. The REVOLT is equipped with a Curtis quick drain in the oil reservoir, place an jug or oil pan under the Curtis Quick Drain, turn the quick drain to empty the hot oil.

NOTE
The oil reservoir may be hot

NOTE
After oil has been drained and or filter has been removed DO NOT turn prop.

Move the oil pan below the oil filter to catch the oil from the oil filter before loosening it with the special REVOLT low profile oil filter wrench. Remove oil filter with the oil wrench and install new appropriate Rotax filter by lubing the O ring with some new oil (please see Rotax instructions for more detail).

Turn the Curtis quick drain valve to closed. Add 3 liters of Rotax recommended oil. Turn the prop 10 times by hand in the correct direction with the ignition off. Then crank the engine with the ignition off for 8 sec. Wait for 30 sec and start the engine with the EFIS on and verify minimum 28 psi within 10 sec. If oil pressure does not come up to 28 psi minimum within 10 sec, shut the engine off **immediately** and repeat. If the engine has oil pressure within range run the engine for at least 30 sec and shut off engine and check oil level. If oil is low add oil until the oil level is within range.

Brakes

Type: Line Maintenance
Authorization to perform: Owner (holds at least a sport pilot certificate), LSA Repairman Inspection (only if ELSA), LSA Repairman Maintenance, A&P, Repair Station

Description:
The REVOLT uses 3 hydraulic disc brakes that ATF (Automatic transmission fluid or milspec 5606).

WARNING
Using brake fluid in the REVOLT will destroy the seals and cause the brakes to fail!

The brakes should be checked in every pre-flight inspection for leaks and a solid, hard pedal. The brake pads and the whole brake system and its parts can be ordered from the manufacturer if needed.

To blead the brakes:

NOTE
This brake system MUST be pressure blead by design.

1. Make sure the brake fluid reservoir hose is empty.
2. Find a mechanism such as a hand pump oil can or garden pump sprayer and find a soft rubber hose that fits very tightly over the bleed nipple on the caliper.
3. Fill either ATF or 5606 into the pressure mechanism of choice.
4. Slide a ¼ closed wrench over the nipple on the back right caliper.
5. Press the soft rubber hose over the nipple.
6. Unscrew the nipple ¼ turn using the wrench already in place.
7. Start adding fluid to the first caliper.
8. Ensure enough fluid has filled the brake line all the way up to the T which is located at the back of the frame.
9. Repeat steps 4-7 for the left caliper, except this time the fluid must make it all the way up to the reservoir hose.
10. IF the brake pedal is not hard, then while creating pressure in the brake system by pushing down the brake pedal, the highest set screw on each of the double calipers should be backed out until fluid flows from the opening. It will be normal to hear air bubbles escape first. Tighten the blead screw before releasing the brake pedal pressure.
11. Confirm the brake pedal is hard when pushed down.

To replace the brake pads:

1. Remove the wheels (See remove wheels section above).
2. With the rotors just sitting in the caliper, twist the rotor gently and open the brake pads up.
3. The rotors are free to be removed by hand. There is just enough space to get it clear of the brake pads.
4. Remove the nonmoving brake pad first, then the piston side.
5. Place the new pads in.
6. Reverse the steps for assembly.

Battery

Type: Line Maintenance
Authorization to perform: Owner (holds at least a sport pilot certificate), LSA Repairman Inspection (only if ELSA), LSA Repairman Maintenance, A&P, Repair Station

Description:
Battery is located behind the rear seat in a special battery tray secured with a strap and two bolts. Only Earth X brand ETX680 model should be used. The battery should be kept charged. If storing the aircraft, the terminals of the battery should be disconnected and secured. Changing the battery is a simple matter of disconnecting the terminals, loosening the bracket bolts and sliding the battery out. Reverse these steps to install a new battery. The battery terminals should be kept clean and terminal protecting spray can be used which is available from most auto parts stores.

Rear Seat Battery Tray

3.2.2.3 Alterations

No alterations to the carriage structure are allowed except those made by the manufacturer and provided as options or for safety directives.

3.3.3 Engine

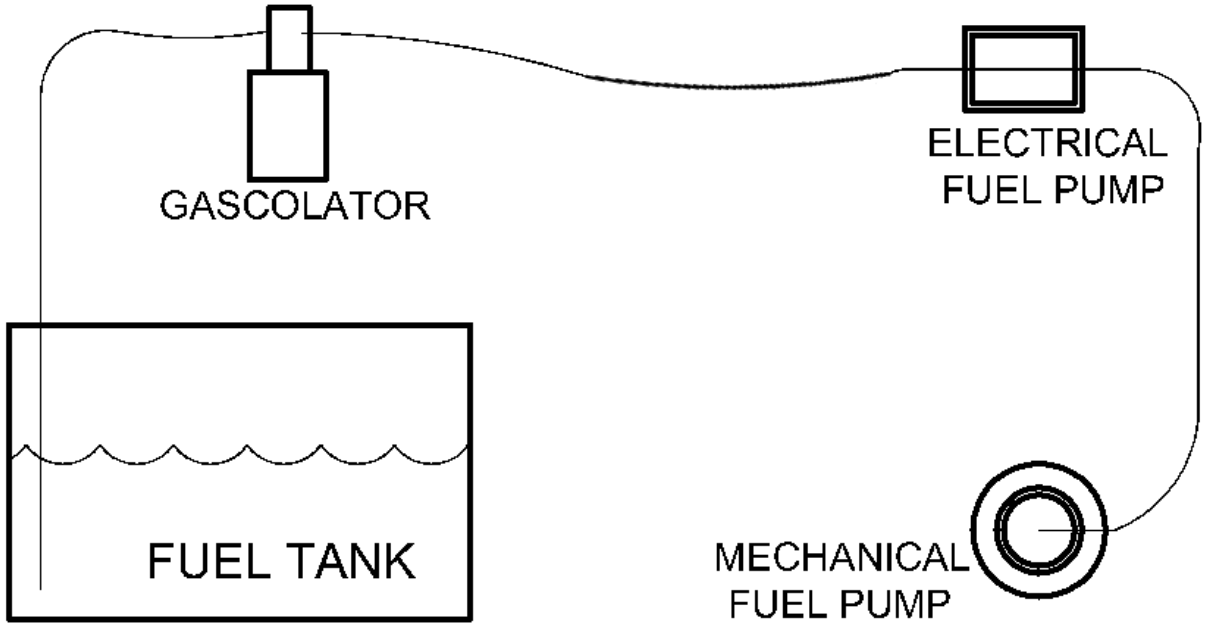
Please refer to the Rotax engine manual for description, maintenance and repair of the engine at their website www.flyrotax.com

Overhaul is 2000 hours of the 912UL and 912ULS.

4 FUEL SYSTEM

4.1 General

The fuel tank is a 18.7 US gallon (70 Liters) tank made out of 5051Aluminum tank. It contains a fuel level sender to display the fuel level at the instrument panel. Please see diagram below.



Fuel System Diagram

4.2 Maintenance

Maintain the fuel system by following the replacement cycle for fuel line, fuel pump (refer to Rotax manual) and fuel filter/gascolator cleaning at annual inspections and perform regular fuel system inspections for safety. Make sure that fuel level sender ground is grounded to the negative of the battery at all times. **This is critical.**

4.3 Alteration

No alteration is allowed for the fuel system.

5 PROPELLER

5.1 General

Please refer to the propeller manual for description, maintenance and repair of the propeller

6 INSTRUMENTS AND AVIONICS

These aircraft use MGL brand of instruments supplied by MGL Avionics. A full supplement manual for that instrument is provided. Please refer to that manual.
In addition, a transponder and panel mounted radio installation can be done at the factory or by a factory rep or an avionics licensed A&P in consultation with the factory.

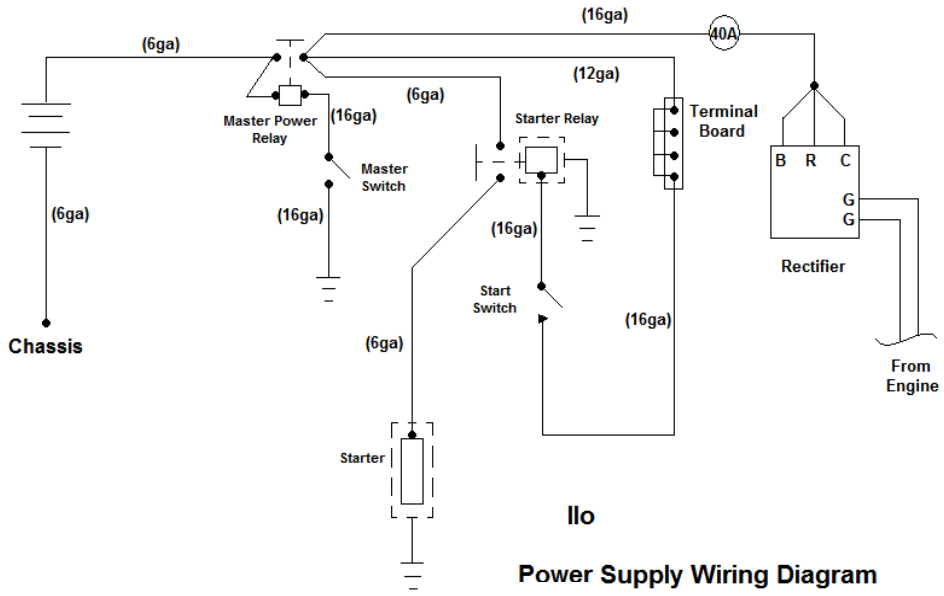
7 ELECTRICAL SYSTEM

7.1 General

The REVOLT uses a 912 series Rotax engine whose electrical system can be referenced from The Rotax 912 engine manual. The 912 Trike base has a 12V electrical system essentially comprising of a 12V battery, the Rotax alternator and accessories. The Rotax manual should be consulted for the maintenance of the engines electrical system (Rotax 912 UL and ULS).

7.1.1 REVOLT Rotax 912UL and 912ULS

An electrical diagram for the aircraft is shown below:



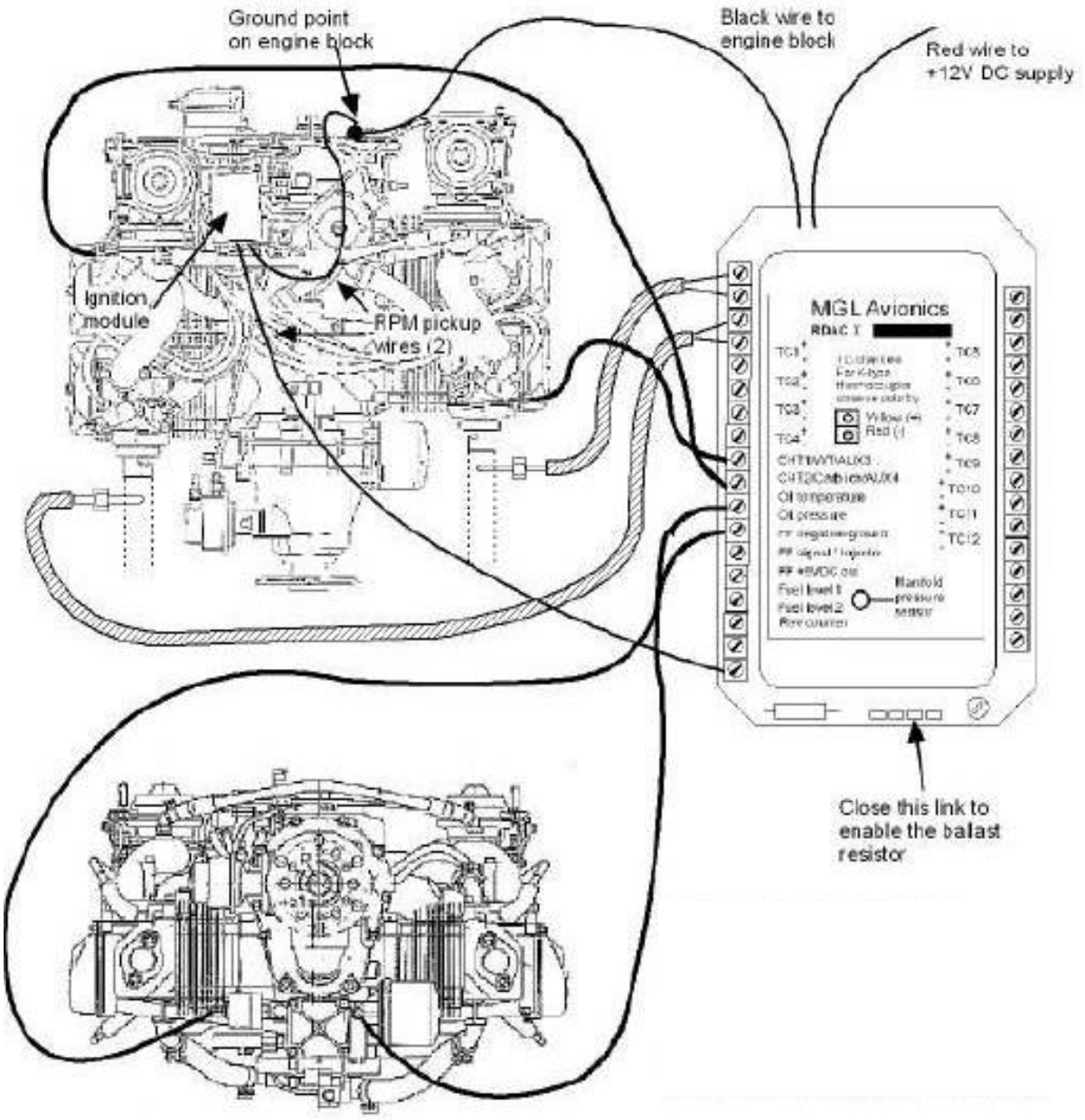
A ground seeking master solenoid has been employed instead of taking power from just the master switch. Power is then fed mainly to a terminal strip under the front of the cockpit from where it is guided to circuit breakers located at the dash which can be reset. A main charging fuse of 25 amps as per Rotax instructions is used in the charging circuit from the engine rectifier.

TEFZEL wiring is used throughout the aircraft wiring harness.

When stopping the engine the ignition key should be put into the off position for 912 UL and ULS. The master switch on the dash should then be turned to the off and other switches should be turned to the “off” position if applicable.

Below a drawing of how the engine is connected to the RDAC (Remote Data Acquisition Computer) is provided.

7.1.2 Connecting a Rotax 912UL and 912ULS



Principle wiring of the RDAC to a Rotax 912 engine, assuming two EGT probes are used (you can install 4, one per cylinder if so desired). This installation makes use of the two built in NTC type cylinder head temperature senders. Wiring for fuel flow and level are not included in this drawing.

7.2 Maintenance

The maintenance of the electrical system should include periodic inspection of the wiring loom for chafing and other damage through its entire length. Pay special attention to the areas that are subject to possible wear points such as sharp corners or proximity to parts which move. It should be noted that the electrical wires may be subject to wear through vibration in flight. Wiring that is damaged should be replaced and if any wear points are identified then a product such as spiral wrap should be used to cover the area. The advantage with the use of spiral wrap is that it allows inspection of the wires even after it is installed.

Some of the most common ailments are:

1. RDAC 1 failure message on glass panel screen → Check to see that the three data cable wires from RDAC make a solid and good connection to the back of the glass panel. Also make sure that RDAC ref ground is good.
2. Oil Pressure sender reading goes high on glass panel screen → Check to see that oil pressure sender is connected securely to the wire that has a solid unbroken connection to RDAC "OILP" terminal. Also make sure REF. GROUND from RDAC has a good solid and unbroken connection to the engine block however, it is somewhat common to see oil pressure sender failures from normal use.
3. A short circuit → Isolate and investigate.
4. The Xtreme heading is OFF →Check that if SP-2 Magnetic sensor is connected, it is facing the correct direction (arrow pointing forward). It is possible to move this sensor unknowingly with shoving too much storage under the seats. Re- calibrate the SP-2 sensor (swing the compass on compass rose locally from time to time).
5. Charging Circuit (Battery) Light does not shut down after engine starts → That means that charging circuit is no longer working and the battery is being drained. Check that the main charging circuit breaker. Also this condition may be caused by Rotax rectifier not being plugged in properly or the rectifier burning out. If so, fix the condition.

7.3 Alteration

No alteration is allowed in the electrical system.

8 STRUCTURAL REPAIR

No structural repair is authorized in the metal structure of the aircraft without consultation with the manufacturer in any part of the aircraft. The parts should be specific and bought from the manufacturer of aircraft carriage or wing as appropriate as long as the manufacturer(s) is able to supply them. Written authorization from the manufacturer is needed if this is to be overridden.

For further information on repairing parts please consult section 3 of this manual. A replacement of parts is the only correct way of fixing fatigued and bent parts. The parts must be original from the manufacture.

9 PAINTING AND COATINGS

9.1 General

The metal frame uses anodization on CNC Aluminum parts and powder coat on tubing, extrusions and gusset plates. The instrument pod is finished with gelcoat and can be re-painted by any qualified auto body shop or an aircraft paint shop. The powder coated parts can be cleaned via bead blasting and re-powder coated.

10 MAJOR REPAIRS AND ALTERATIONS

10.1 General

All major repairs or alterations made to aircraft subsequent to its initial design and production acceptance testing to applicable ASTM standards and sale to a consumer must be evaluated relative to the requirements of the applicable ASTM. Contact Evolution Aircraft for an evaluation of damage to maintain SLSA status for any repair or alteration not listed in the maintenance manual or addressed by Safety Directive/Alert or Safety Bulletins.

11 COMMUNICATION FORMS

11.1 Owner Contact Information

It is the Owner's responsibility to provide current Contact information to Evolution Aircraft, Inc. via email at evolutiontrikes@yahoo.com using the format of the following form for the purpose of receiving Safety information and notice of mandatory corrective action.

Owner Contact Information Form

Date Purchased: _____

Name: _____

Business (if applicable): _____

Email: _____

Phone: _____

Address: _____

_____

_____

Aircraft Model: _____

Aircraft N Number: _____

Aircraft Serial Number: _____

Wing Model: _____

Wing Serial Number: _____

Engine Serial Number: _____

11.2 Mandatory Notice Questions or Comments

The owner may submit written comments and questions regarding any mandatory notice to Evolution Aircraft, Inc. by submitting the following form via email at evolutiontrikes@yahoo.com

Mandatory Notice Questions or Comments

Date: _____

Safety Directive #: _____

Name: _____

Business (if applicable): _____

Email: _____

Phone: _____

Address: _____

_____

_____

Aircraft Model: _____

Aircraft N Number: _____

Aircraft Serial Number: _____

Wing Model: _____

Wing Serial Number: _____

Engine Serial Number: _____

Subject:

Description of comment/ concern (attach photos and more pages if applicable):

11.3 Mandatory Compliance with Notice of Corrective Actions

The current owner of this aircraft is responsible to read and comply, as specified within the Notice, with any notices of Corrective Action provided by the manufacturer as well as all applicable consensus standards and CAA regulations in regard to maintaining the airworthiness of the LSA.

11.4 Continued Operational Safety Reporting Form

Use this form format in case of any failure on your aircraft to help Evolution Aircraft, Inc obtain information to increase continuous reliability. After filling out the following form, email it to evolutiontrikes@yahoo.com.

Date: _____

Aircraft Serial Number: _____

Aircraft Model: _____

Aircraft N Number: _____

Total Flight Time: _____

Name: _____

Business (if applicable): _____

Email: _____

Phone: _____

Address: _____

_____

_____

Wing Model: _____

Wing Serial Number: _____

Engine Serial Number: _____

Subject: Description of Flight Safety issue or service difficulty