

Aircraft Maintenance Manual
Revo
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AMMENDMENTS NOTE

Manuals can be revised in the future and pages and/or sections re-issued or a whole revision issued to the manual. Amendments will also be available on the 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 user.

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**THIS AIRCRAFT WAS MANUFACTURED IN ACCORDANCE WITH LIGHT
SPORT AIRCRAFT AIRWORTHINESS STANDARDS F 2317/F 2317M AND
DOES NOT CONFORM TO STANDARD CATEGORY AIRWORTHINESS
REQUIREMENTS**

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1 GENERAL

This manual contains recommended procedures and instructions for ground handling, servicing and maintaining the Apollo Revo 912 and Revo 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

- *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 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 Rrepairman 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 like this one.
- *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 certificated as special LSA aircraft. Authorized to perform the annual condition/100-h 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*—facility specifically authorized by the aircraft or component manufacturer to overhaul the product originally produced by that manufacturer.
- *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-h Inspection*—same as an *annual condition inspection*, except the interval of inspection is 100 h of operation instead of 12 calendar months. This inspection is utilized when the LSA is being used for commercial operations such as flight instruction or rental, or both.

Abbreviations:

AOI — Aircraft Operating Instructions

FTS — Flight Training Supplement

MIP — Maintenance and Inspection Procedures

PIC — Pilot In Command

C — Celsius

CAS — Calibrated air speed

F — Fahrenheit

Hg — Mercury
IAS — Indicated Air Speed
ISA — International Standard Atmosphere
Kg — Kilogram
km/hr — Kilometers per hour
MPH — Miles per hour
kt(s) — Nautical Mile per Hour (knot) (1 nautical mph = (1852/3600) m/s)
lb(s) — Pound(s) (1 lb = 0.4539 kg)
mm — Millimeter
cm — Centimeter
m — Metre
in — Inch
ft — Feet
sq. m — Square Metre
sq. ft — Square Feet
cu. in — Cubic Inches
cm³ — Centimeter Cube
mb — Millibars
N — Newton
Nm — Newton Meter
kW — KiloWatt
HP — Horse Power
RPM — Revolutions Per Minute
ft. lbs — Foot Pounds
in. lbs — Inch Pounds
psi — Pounds per Square Inch gage pressure
s — Seconds
min — Minute(s)
hr(s) — Hour(s)
SI — International System of units
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_x — Speed at which Best Angle of Climb is achieved
V_y — Speed at which Best Rate of Climb is achieved
V_T — Maximum Glider Towing Speed
TOSS — Take Off Safety Speed
Wsusp — Highest Trike Carriage Weight suspended under the wing
Wwing — Wing Weight
Wtkmt — Trike Carriage Empty Weight (including required minimum equipment, unusable fuel, maximum oil, and where appropriate, engine coolant, hangbolt and hydraulic fluid)

W_{MAX} — Maximum Design Weight ($W_{wing} + W_{susp}$)

WSC — Weight Shift Control (aircraft)

Max — Maximum

Min — Minimum

Units:

Speed: Kts (Knots) = 1.15 mph (miles per hour) = 1.84 km/hr

1 km/hr = 1.6 MPH

Pressure: PSI = Pounds per Square Inch

in Hg = inches of Mercury

mb = millibar

Distances: in. = inches = 25.4 millimeters

ft = foot (feet) = .305 meters

Weights: Kg = kilograms = 2.2 lbs = 2.2 pounds

Misc.

1 Pound (lb) = 0.4536 Kilogram (kg)

1 Pound per sq in (psi) = 6.895 Kilopascal (kPa)

1 Inch (in) = 25.4 Millimeters (mm)

1 Foot (ft) = 0.3048 Meter (m)

1 Statute mile = 1.609 Kilometres (km)

1 Nautical mile (NM) = 1.852 Kilometres (km)

1 Millibar (mb) = 1 Hectopascal (hPa)

1 Millibar (mb) = 0.1 Kilopascal (kPa)

1 Imperial gallon = 4.546 Liters (l)

1 US gallon = 3.785 Liters (l)

1 US quart = 0.946 Liter (l)

1 Cubic foot (ft³) = 28.317 Liters (l)

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

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

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

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.
- Open ended Metric Spanner set
- Torque wrench
- Air Pump

- Various petroleum lubricants
- Hydraulic disc brake fluid. Automatic Transmission Fluid (ATF)
- Hydraulic Disc system bleeder tool, available at most auto stores
- Dry Lubricant – lubricant which doesn't attract dust after application.
- UV Resistent 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 Wise 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, WD-40, CRC or another water displacement compound
- K&N air filter cleaning spray and oil
- Good flashlight
- 5x to 10x magnifying glass

1.2 Sources to Purchase Parts

Parts can be purchased from the following sources

Component	Source
Carriage Frame Items	<ul style="list-style-type: none"> • Evolution Trikes
Carriage Hardware, Tires	<ul style="list-style-type: none"> • Evolution Trikes • AN hardware of the correct size from reputable aircraft supply houses • McCreary Air Trac aircraft tires 7.00 x 6.00 (6-Ply) from aircraft supply houses • Carlise turf-glide tires from tire suppliers
Wing Components and Hardware	<ul style="list-style-type: none"> • Evolution Trikes • AN hardware of correct size from reputable aircraft supply houses
Propeller Parts	<ul style="list-style-type: none"> • Aero Prop • Sensenich Prop • Warp drive propeller
Aero-tuff	<ul style="list-style-type: none"> • Seatbelts

1.3 List of Disposable Replacement Parts

Dispose of all disposable parts properly following local laws and regulations

Part	Comment
Fuel Filters	Disposable fuel filters with metal mesh (60 microns) and clear plastic that is alcohol (ethanol) resistant is allowed
Air Filters	Generally 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	McCreary Air Trac aircraft tires 7.00 x 6.00 (6-Ply) and Carlise Turf-Glide 8.00 x 6.00 tires should be disposed properly according to local laws
Oil Filters	Oil filters should be properly disposed along with the oil at each oil change
Fuses	Aircraft uses circuit breakers
Fuel Line	When fuel line has to be replaced, the old one should be properly disposed
Battery	When the sealed maintenance free battery is to be replaced, the older battery should be properly recycled according to local laws

1.4 Engines

Revo is available with the following ASTM complaint engines:

1.4.1 Rotax 912 UL2



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 ULS2



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 Balance Information

Centre 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 centre of gravity. However, distribution of load in a trike carriage affects the attitude of the trike carriage in-flight in a minor way. Please refer to weight and loading document for airworthiness as well.

NOTE

The holes marked X (if any) from the manufacturer for trim setting of the wing should not be utilized

1.5.1 Centre 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)
Reflex 11	1320.8 mm - 1422.4 mm	52” – 56”
Reflex 13	1422.4 mm – 1498.6 mm	56” – 59”
Reflex 15	Reserved	Reserved

1.6 Tire Inflation Pressures

McCreary Air Trac 7.00 x 6.00 aircraft tires should be inflated to between 25 and 35 psi for both front and back tires. Turf-Glide tires should be between 10 and 18 psi. 14 to 16 psi is mostly adequate for most operations.

1.7 Approved Oils and Capacities

Please refer to Rotax engine manual for oil recommendations

1.8 Recommended Fastener Torque Values

Fastener	Metric	Imperial
Hang Bolt and Folding Mast Bolt	Hand tight ONLY with safety pin or ring	Hand tight ONLY with safety pin or ring
Axle Bolts	Snug tight with a wrench enough so the cotter pin can be inserted for safety (if applicable). If needed appropriate washers can be added	Snug tight with a wrench enough 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	Refer to the wing manual. If values are found in wing

	<p>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. We do not recommend more than 20 NM for nylock nuts on wings</p>	<p>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. We do not recommend more than 178 inch-pounds (15 foot pounds) for nylock nuts on wings</p>
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 percent. For older nuts and bolts 10 to 20 percent 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 spray. 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 engine with WD-40 or another water displacement compound also makes it easier to clean and maintain 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. Hence we recommend not setting any tools or fasteners inside the aircraft and instead using a project tray outside with all tools and fasteners/parts required.

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 body cavity 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.

1.9.1 Propeller

Propeller bolts should be checked for torque every 25 hours with an accurate torque wrench to propeller manufacturer values and pitch should be checked at every 25 hour interval as well. 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:

1.3.5.1 Lead Free 89 Octane US or higher for 912UL

1.3.5.2 Lead Free 91 Octane or higher for 912ULS

1.3.5.3 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 and requires use of non-synthetic oil only.

NOTE

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

1.9.3 Dimensions

Please refer to the POH (Aircraft Operating Instructions) for this info.

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.

While moving the aircraft take care to not put weight or excessive pressure on the front fairing or engine cowlings. Before moving the aircraft secure the wing's A-frame and move carefully negotiating the wind direction with the wing's position.

Pulling the trike: Moving the base (with or without the wing) is facilitated by lifting the front wheel and walking the base. Do not pull excessively hard on the compression strut or nose strut of the aircraft carriage. If a hard pull is needed, its best to push the aircraft from the prop hub (back). 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.

Pushing the trike: The trike can be pushed using pushing on the prop hub on even surface. Steering is slower and harder using this method except when using castering support on the front wheel

Parking: Parking the aircraft requires using chocks, applying parking brake (refer to POH) and securing the wing with the upwind wing down. In higher or gusty wind conditions, the wing should be tied down or if appropriate taken down or the trike should be moved indoors.

Please refer to section 4 of the Aircraft Operating Instructions or the POH for further information.

NOTE

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

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 and exhaust area. Full covers for the carriage and prop blades are advisable, which are available as after market items from the manufacturer. The engine manual should be consulted for long term storage practices for the engine. Generally emptying the carb bowls, fuel tank and using fogging oil inside the engine is recommended to keep engine free of rust etc. Consult the POH, section 4, 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 severely

1.9.5 Transporting the Aircraft

Refer to the Pilot Operating Handbook/Aircraft Operating Instructions

1.9.6 Approved Sources of Information and Maintenance

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

- Evolution Trikes (<http://www.evolutiontrikes.com/>)
- MGL Avionics. South Africa (<http://www.mglavionics.co.za/>) (Stratomaster Instrumentation)
- Aeros, Europe (<http://www.aeros.com.ua/>) (Profi wing)

- Aero-Tuff USA (<http://www.aero-tuff.com>) (Seatbelts)
- Rotax Austria and its authorized representatives (Rotax Engines)

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 Trikes in the following way

1) **Compose an e-mail** to apollonorthamerica@yahoo.com with subject “Safety Of Flight Issue – Evolution Trikes, Revo – Ser#xxxxxx”. Where xxxxxx is the aircraft’s serial number

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

Model:	Evolution Trikes Revo
Serial Number:	xxxxxx
Number of Hours:	Enter number of flight hours on aircraft
Wing:	List the wing model you have on the trike carriage
Name of 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

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-h inspections, as appropriate.

2.2 One time Inspections

2.2.1 Rotax 912 and 912S Motors

Run-in: The initial engine run-in of Rotax 912/S was carried out by the Rotax factory. The purging of the oil circuit, carburetor balancing was carried out by Apollo prior to delivery. During the first two (2) hours of use, we advise you to fly only solo, only use maximum power at 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 5300 RPM on the ground. Use the propeller manufacturer recommended procedure for any modification to the propeller pitch.

2.2.1.1 After One (1) hour

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.

Type	Action	Description	Personnel Authorized
Line Maintenance	Re-torque the exhaust manifold bolts and exhaust ball joint bolts	Re-torque the exhaust manifold bolts to engine manufacturer's specifications. Exhaust ball joint bolts should be checked for tightness and 1 to 3 threads should be showing on each bolt	<ul style="list-style-type: none"> • Owner • 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	<ul style="list-style-type: none"> • Owner • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Lubricate hardware on the	Use a spray lubricant and a water displacement	<ul style="list-style-type: none"> • Owner • LSA Repairman

	wing	compound on the joints and hardware of the wing, wiping away excess immediately with a soft cloth	Inspection (only if ELSA) <ul style="list-style-type: none"> • LSA Repairman Maintenance • A&P • Repair Station
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2.2.1.2 After first Twenty Five (25) hours

Pre-Requisites:

1. Take engine top cover and bottom back cowling off on the aircraft
2. Take the fiberglass bucket seat loose carefully so you can peak under the seat to look at the battery using the flashlight if necessary
3. Tools and materials necessary to perform this inspection are listed in section 1.1 of this manual
4. 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 On 912 and 912S motors there is a drain plug in the reservoir at the bottom (refer to Rotax information). To fill oil a flexible neck funnel is very useful so the remote oil reservoir can more easily accept oil. 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	<ul style="list-style-type: none"> • Owner • 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	<ul style="list-style-type: none"> • Owner • 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	<ul style="list-style-type: none"> • Owner • 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	<ul style="list-style-type: none"> • Owner • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Carburetors, carburetor supports and air filters secure	Check that the carburetors, carburetor supports and air filters are secure	<ul style="list-style-type: none"> • Owner • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Throttle cable tension	Check the tension and stops of the throttle cables	<ul style="list-style-type: none"> • Owner • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Idle RPM	Check Idle RPM. Consult engine manual	<ul style="list-style-type: none"> • Owner • 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	<ul style="list-style-type: none"> • Owner • LSA Repairman Inspection (only if ELSA)

		engine manual for spark plug gap and torque	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Owner • 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	<ul style="list-style-type: none"> • Owner • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Electric Wire Harness	Check the electric wire harness for abnormal wear or chafing	<ul style="list-style-type: none"> • Owner • 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)	<ul style="list-style-type: none"> • Owner • 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	<ul style="list-style-type: none"> • Owner • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station

NOTE: On Revo, Oil reservoir is accessed by taking off the back lower screen cover attached with quarter turn fasteners. Furthermore, the lower back fairing can be completely removed by unfastening the fasteners holding it in place. Oil reservoir is attached at an angle to a bracket with a strong band clamp which can be released to take the reservoir out and change oil per Rotax instructions

If you have never done a Rotax 912 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 <http://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

You will find more information and will be kept informed of the last Rotax instructions by consulting Internet site: <http://www.rotax-aircraft-engines.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 you should discover any possible irregularities. For that reason your attention is drawn to POH section 4 to the preflight checklists.

The maintenance of your machine should be carried out adhering to the component replacement cycle of each sub-component (Section X of this manual).

2.3.2.1 Fifty (50) hour Interval maintenance and inspection

Pre-Requisites:

1. Take engine top and bottom cowlings off (if applicable)
2. Take the fiberglass front seat cover off so you can get under the seat to look at the battery using the flashlight if necessary
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	<ul style="list-style-type: none"> • Owner • LSA Repairman Inspection (only)

		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.	<ul style="list-style-type: none"> • if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Apply ACF-50	Apply to folding mast joint area	<ul style="list-style-type: none"> • Owner • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P
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	<ul style="list-style-type: none"> • Owner • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station <p>WARNING: Please follow proper procedure for safety wiring the propeller and exhaust springs. If in doubt ask more qualified personnel or refer to FAA Advisory Circular AC 43.13-1B</p>
Line Maintenance	Change Oil if applicable (courtesy reminder only)	Refer to engine manual	<ul style="list-style-type: none"> • Owner • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Check coolant level in reservoir (courtesy reminder	Add coolant if necessary. We recommend 50/50	<ul style="list-style-type: none"> • Owner • LSA Repairman Inspection (only

	only)	Dexcool coolant. If water is used to make a 50/50 mix, it should always be distilled water only	<p>if ELSA)</p> <ul style="list-style-type: none"> • 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 decently 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	<ul style="list-style-type: none"> • Owner • 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	<ul style="list-style-type: none"> • Owner • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
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	<ul style="list-style-type: none"> • Owner • 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	<ul style="list-style-type: none"> • Owner • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance

			<ul style="list-style-type: none"> • 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 to protect finish	<ul style="list-style-type: none"> • Owner • 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.	<ul style="list-style-type: none"> • Owner • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station <p>WARNING If unsure of how to do this please refer this to a qualified mechanic</p>
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	<ul style="list-style-type: none"> • Owner • 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	<ul style="list-style-type: none"> • Owner • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P

			<ul style="list-style-type: none"> • Repair Station
Line Maintenance	Seatbelt condition	Check seatbelts for cuts and nicks. If any found replace the item (This should be done in every pre-flight as well)	<ul style="list-style-type: none"> • Owner • 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	<ul style="list-style-type: none"> • Owner • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Tire Tread	Check tires for abnormal wear	<ul style="list-style-type: none"> • Owner • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Idle RPM	Check Idle RPM. Consult engine manual	<ul style="list-style-type: none"> • Owner • 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	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	<ul style="list-style-type: none"> • Owner • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line	Clean the carriage	Follow the cleaning	<ul style="list-style-type: none"> • Owner

Maintenance		procedures in the POH to clean the trike carriage. Use good quality wax to protect after cleaning	<ul style="list-style-type: none"> • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
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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 for corrosion	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	<ul style="list-style-type: none"> • Owner • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station

		point on the keel tube. If any cracks are observed – REPLACE IMMEDIATELY!	
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.	<ul style="list-style-type: none"> • Owner • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
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 fairing and bottom surface (BS) of the sail that are not longer than 30 mm can be patched up with self-adhesive Dacron. 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 50 mm can be repaired in this manner, but more complicated repairs	<ul style="list-style-type: none"> • Owner • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station <p>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</p>

		<p>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 or plastic inserts are torn or heavily worn they must be replaced.</p> <p>NOTE Keep an eye on the sail grommets/eyelets and all areas of the sail that are subject to extra stress, especially the keel section, the nose section of leading edge and the outer tip section of leading edge.</p>	<p>wing sail repair</p>
<p>Line Maintenance</p>	<p>Check Cabling</p>	<p>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</p> <p>NOTE Use magnifying glass here if necessary</p>	<ul style="list-style-type: none"> • Owner • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station <p>WARNING The inspection can be done by the above personnel but if any repairs are required, they need to be carried</p>

			out by personnel authorized by the wing or trike manufacturer ONLY!
Line Maintenance	Check Tubing Visually	<p>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</p> <p>WARNING In case that there are cracks, dings or bends discovered in any tubing on the wing, GROUND THE WING AND CONSULT THE WING MANUFACTURER OR TRIKE MANUFACTURER IMMEDIATELY!</p>	<ul style="list-style-type: none"> • Owner • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station
Line Maintenance	Check the battens and symmetry	<p>Visually inspect the curvature of the wing very carefully to make sure its symmetrical. If a turn has developed please follow the wing manual suggestion to tune the turn out. Battens should produce a symmetrical shape on both sides of the wing. If any batten tips etc. are broken</p>	<ul style="list-style-type: none"> • Owner • LSA Repairman Inspection (only if ELSA) • LSA Repairman Maintenance • A&P • Repair Station

		<p>or worn, replace them before flight.</p> <p>CAUTION You may have to de-tension the wing to take battens out. Refer to the POH or the wing manual for instructions on de-rigging the wing. Don't try and force the batten out when the wing is tensioned</p>	
Line Maintenance	Clean the wing	<p>Follow wing manual procedures to clean and wash the wing. In absence of this procedure in the wing manual, proceed as follows:</p> <p>1) Cover the trike base and engine area with trike cover or plastic sheets so water does not fall inside of it. Disconnect wing from trike if desired</p> <p>2) Wash the wing with luke warm water with a regular garden hose pressure. DO NOT USE HARSH CHEMICALS OR DETERGENTS</p>	<ul style="list-style-type: none"> • Owner • 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 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 filled results saved and logged with aircraft logs to maintain airworthiness and SLSA status of your machine. Your life depends on it. 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 : Inspection

Authorization to Perform:

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

Note: Rotax engines require that a Rotax trained technician is used to do all engine inspections and maintenance. Thus it is not enough to simply be an A&P. An A&P or LSA-RM will have to have Rotax training as well to do the inspections.

Please print these pages and perform the inspection as listed every 100 hours or annually 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 (which ever is less) or

____ After Hard Landing

Last Inspection performed when 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

- Remove or open all necessary inspection plates, fairings, and cowlings
- Separate wing from the carriage (See section 4 of POH if necessary)
- Remove seats to inspect systems under
- Thoroughly clean the aircraft and propulsion system

Mark “P” for pass or “F” fail at each line _____

WING

____ Cable System

The cables must be checked for broken/kincked wires (frays), corrosion, niko 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 eight (8) years or 950 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. Alternately they can be assembled to custom lengths and thicknesses by aviation supply stores such as Aircraft Spruce

A NOTE ABOUT CABLES AND CABLE MAINTENANCE

The cables which support the wing’s airframe are critical components of the wing’s structure, and must be maintained in an air worthy condition. It is a general practice in the design of aircraft structures to design to an ultimate strength of 1.5 times the highest expected load in normal service.

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 with every flight. Bottom side wires (if not using strutted wing) are subject to the highest loads in flight, and are therefore the most critical.

____ Sail Check-Up

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 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 2” (50 mm) 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.

Sail Strength

An annual Bettometer 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 more harsh and exposed environment warrants more frequent testing. In such cases every 200 operating hours regardless of time (annual or not), the Bettometer 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.

_____ 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.

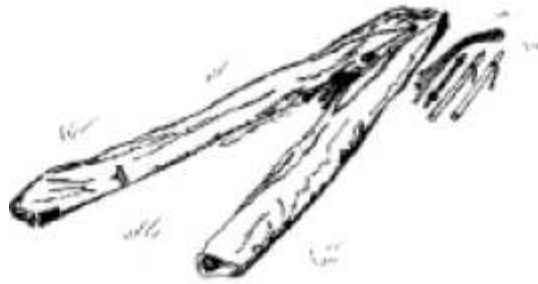
Full tubing inspection (at 500 hours since new and then every 250 hours thereafter)

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 plates or 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, loosen all fasteners, struts, cabling and 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

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. 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 cross tube tensioning cable attach point and the rear cable attachment point on the keel tube. If any cracks are observed – **REPLACE IMMEDIATELY!**

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

The batten profiles should be checked if the user complains of a turn against the template and the bends should be adjusted if necessary to the template. 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 aircraft maintenance log as such should be allowed to deviate from the manufacturer batten template. Battens are numbered in increasing order from the root outward starting from 0.

If any of the batten tightening cords are torn or heavily worn they must be replaced. This are 400 pound spear fishing line available at many scuba shops or can be ordered from the factory. 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 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 good.

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 straight edge may be used on the tubing to ascertain straightness. A water displacement compound or ACF-50 can be sprayed liberally inside the mast to prevent rusting. Wipe off excess

Compression Strut/Front Strut

General condition good with good upper and lower attachments. A straight edge may be used on the tubing to ascertain straightness

Base Tube/Trike Keel

General condition with structural attachments to front tube/triangle, mast/pylon, 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/pylon and base tube.

Landing Gear:

Main Landing Gear

General condition, security and operation. Aluminum plate (leaf) landing gear in good condition and properly secured. Bolts that secure landing gear to the trike keel tube (base tube). Bolts that secure axle brackets to leaf gear (no rust or corrosion)

Front Fork

Nose wheel steering, security and reasonable play. Front fork shocks and springs in good condition and not sagging excessively. Fasteners no rusted.

Hydraulic Disc Brakes

Check discs for abnormal wear, brake pads wear, lines and reservoir for leakage (if applicable)

Wheels

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

Tires

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

Brakes

Check for proper operation, adjustment, disk tolerances as appropriate for good operation

Cockpit:

Loose Unsecured Items/Cleanliness

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

Seats and Safety Belts

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

Windshield

Check for deterioration, breakage and security.

Instruments

Check for general condition, mounting, marking, and (where practicable) operation.

Flight controls

Check full range operation.

Belly scoop

The belly scoop can be cleaned easily with spraying water by taking the scoop grill off by undoing the fasteners holding it in place. A small hole can be drilled at the lowest point in the belly scoop fairing to facilitate drainage of water

Engine Throttles and Mixture (choke/primer)

Check for proper installation, smooth operation, locking.

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 engine manual)

Fuel System

Fuel tank general condition, fuel pick up screen, fuel tank vent, fuel lines to carburetor, primer bulb and primer system (if applicable), fuel flow sensor, fuel line condition, fuel filter and fuel system general condition and security.

NOTE

Replace/clean Fuel filter every 100 hours. Replace fuel lines every 400 hours ¼” and 5/16” fuel lines (ethanol resistant from auto stores are acceptable). The fuel lines with firesleeves have to be replaced with similar assemblies provided by the manufacturer.

Induction inlet boots

Check for cracks and leaks

Cylinder compression

Check as required. Record values (refer to 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. Torque to proper values.

Flexible Vibration Dampeners

Check for general condition and security. Look for large cracks in aged or dried out rubber. Replace every 400 hours with new ones from the factory. This will require hoisting the engine possibly

Engine Controls

Synchronize Carbs on Rotax engines (refer to Rotax manuals)

Check general condition, travel, and safe tied where required.

Lines, Hoses, and Clamps

Check for leaks, condition and looseness.

Exhaust pipes

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

NOTE

Replace exhaust hardware on condition

Nacelle or Cowling

Check for cracks, defects and security.

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.

Belts

Check condition and tension as required. Refer to engine manual

Control Cables

Check lubrication where appropriate.

Refer to Engine Manual

Follow 100 hour manufacture's maintenance specifications

Systems:

Radio and Electronic Equipment

Check for improper installation and secure mounting.

Radio Antenna Position

Check for security and operation. Replace antenna installation tape if applicable (Revo) and necessary with 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 and make sure connections are good there

Batteries

2.3.5 Component Replacement Schedule

Airframe	Lifespan	
Whole Hang block Assembly – including hang bolt	On condition	n/a
Hang Bolt (x1)	250 H	3 years
All nuts and bolts of mast/pylon	On condition	n/a
All brackets like the compression strut securing brackets etc.	On condition	n/a
Front suspension bolts/nuts		
Rear suspension securing bolts to base tube (x4)		
Rear axle bracket to landing gear securing bolts (x8)	On condition	
Rear axle to axle bracket securing bolt (x4 – 2 per axle)	or 600 H	6 years
Front Fork Shock Absorbers (rubber inside the fork tubing)	400 H	n/a
All airframe ball-joints, bolts and nuts	On condition	n/a
Brake lines	On condition	n/a
Mast/Pylon	1500 hours	n/a
Tires	On condition	6 years
Seatbelts	On condition	5 years
Flush and bleed the brakes using correct tool and Automatic Transmission Fluid from a sealed container (aka 5606 milspec) for Revo	If brakes start to feel spongy	4 years
All rear suspension components (landing gear)	1000 H	
	On condition for trike carriage and every 1500 for wing tubing skeleton and sail	
Metal Airframe components		
Wing Cables	As needed on condition or 950 hours or 8 years	

Propulsion Area	Lifespan	
Fuel – Line/hose	400 H	4 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 year
Battery	400 H	2 years
Hose – Oil (AeroEquip or Parker hose)	n/a	5 years
Hose – Coolant	n/a	5 years
Rubber Barry Mounts (all)	400 H	5 years
Cables and housing – Throttle and Choke	500 H	n/a
Engine Mount Nuts and bolts	600 H	n/a
Muffler hardware	600 H	

Aircraft Maintenance Manual – Evolution Trikes, Revo

All engine mount components	On Condition	
Fuel Tank	On condition	n/a

Propulsion Area – Replacement Items	Lifespan	
Engine overhaul or replacement	As specified by the engine manual	
Chute repack or replacement	6 years or as specified by manufacturer	
Propeller	As specified by propeller manufacturer	

Materials – Trike Carriage		
Frame	4130 Chromolly 0.065 wall thickness, TIG welded and heat treated for stress relief	
Landing Gear solid Leaf	7075-T6	
Steel Tubing In Engine Mount, front Fork etc.	4130 Chromolly 0.065 wall thickness, TIG welded and heat treated for stress relief	
Welding on Steel Tubing for engine mount, front fork	TIG	
Other welding	TIG	

3 STRUCTURES

3.1 General

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

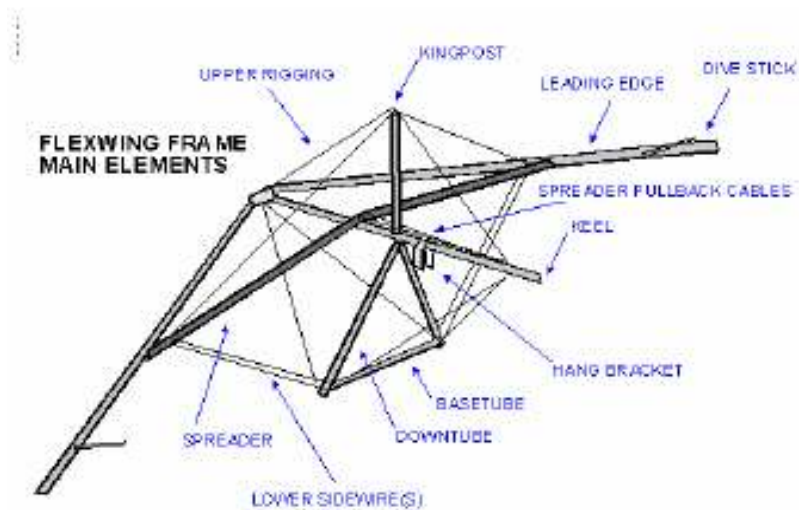
3.2 Structures

3.2.1 Wing

Revo can be flown with multiple trike wings approved by Evolution Trikes. 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.

The wing consists of a skeleton structure composed of

- 1) Wing keel
- 2) Leading edge tubes
- 3) Cross tube or cross bar
- 4) A-frame (2 downtubes and control bar)
- 5) King post (if cabled wing)
- 6) Cabling system including main flying wires, top rigging and luff lines
- 7) Struts (for topless wings, the replace the main side flying wires, king post on top and luff lines)
- 8) Sprogs (on strutted wings)
- 9) Hang block assembly
- 10) Battens or ribs



The sail of the wing is generally either Dacron, Polyester or Trylam. 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 luke 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, 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 2” (50 mm) 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: Line Maintenance

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

Description: An annual Bettometer 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 more harsh and exposed environment warrants more frequent testing. In such cases every 200 operating hours regardless of time (annual or not), the Bettometer 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.

Full tubing inspection

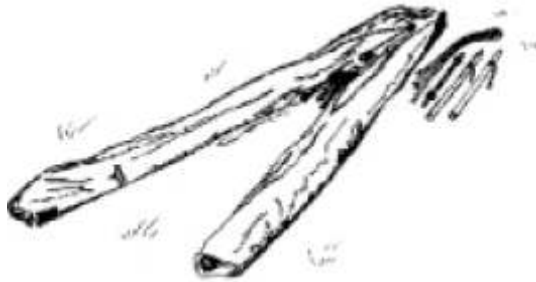
Type: Heavy Maintenance

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

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 plates or 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, loosen all fasteners, struts, cabling and 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, 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 joints, the cross tube tensioning cable attach point and the rear cable attachment point on the keel tube. If any cracks are observed – **REPLACE IMMEDIATELY!**

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

Type: Line Maintenance

Authorization to perform: Owner, 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 aircraft maintenance log as such should be allowed to deviate from the manufacturer batten template. Battens are numbered in increasing order from the root outward starting from 0.

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

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 Revo trike carriage is a two seat tandem WSC aircraft. The layout is typical for two seat trike design, with the pilot, passenger and pod being suspended by a triangular 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 and the wheel pants include large integrated aerodynamic fins to improve carriage yaw stability. The mast is also covered with an aerodynamic fin to reduce drag and further improve yaw stability of the carriage.

The main gear suspension consists of one piece Aluminum plate leaf like landing gear that is covered on either side with aerodynamic composite fairing.

Composite fairing body or pod is used extensively and the engine can be mostly but not fully covered by composite fairing, giving Revo its sleek and sporty look, envied by many.

Seats are composite bucket seats with custom purpose built cushion seats and upholstery attached for comfort and there is a 3-point harness system available to both pilot and passenger with the shoulder harness being a re-coil harness system.

All wheels are equipped with effective hydraulic disc brakes with fluid reservoir near the front fork.

There is space for baggage under the front seat on each side of the base tube (center bottom keel tube) of the trike carriage and this space can be further accessed from the front bucket seat by lifting off the Velcro attached cushion and loosening the screws of the bucket seat top surface.

Under the back seat is a 14+ gallon (US), 53+ liter fuel tank, securely mounted to the seat frame and base tube of the trike carriage.

Optionally an ASTM compliant model ballistic Chute can be fitted very cleanly inside the trike pod behind the fuel tank, whose handle is 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 the POH and following the replacement cycle

3.2.2.2 Repair

Mast/Pylon

Type: Line Maintenance

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

Description:

To prevent wear, and to allow a degree of flexibility during wing attachment, the lower mast hinge point is supported against a solid delrin block attached to a solid CNC Aluminum mast junction. It is locked in position by a custom fastener with a large handle for hand tightening. Care should be taken not to bend the mast or put undue stress on it during wing attachment or by parking the trike in an unsecured fashion outside which can

sway the wing side to side. In case of damage this item should be replaced by ordering one from the manufacturer.



Safety Cables

Type: Line Maintenance

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

Description:

The mast/pylon has an internal stainless steel safety cable. This cable travels the folding mast tube length and attaches to the safety strap fastener that goes 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

Type: Line Maintenance

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

Description:

The rear landing gear consists of a solid one piece Aluminum spring plate leaf that attaches to the base/keel tube of the trike via a steel bracket and fasteners. It provides suspension function as well and is clad under aerodynamic fiberglass fairing. If there is damage to the landing gear, it simply needs to be replaced by purchasing one from the manufacturer.

To remove the landing gear

- 1) Remove the wheel pant by undoing 4 fasteners holding it in place outside and inside of tire track. Be careful to disconnect the weather proof wiring connectors from the wheel pants if landing lights and/or Nav and strobe lights are affixed on the wheelpants
- 2) Using a pulley mechanism hoist the trike carriage up slightly with rope around the base of the engine mount (this way you can leave the wing on)
- 3) Unfasten the hydraulic disc brake calipers on the wheel
- 4) Take the wheel off completely
- 5) Unfasten the fastener at bottom holding the fiberglass fairing for the landing gear to the metal landing gear. Slide the landing gear fairing upward a bit. Remove the axle carrier by unfastening the 4 AN-4 bolts. This will allow the axle and axle carrier to come off the landing gear and can be fitted to the new landing gear if required
- 6) Remove the fiberglass fairing gently by pulling it out
- 7) Repeat 1-5 on the other side
- 8) Unfasten the 4 AN-5 bolts securing the gear to the trike's base tube. This may require loosening the moving the BRS out next to the trike carriage which may in turn require taking off the bucket seat on top and taking off BRS circular bands and sliding the BRS canister out slightly.
- 9) Carefully slide the main gear out
- 10) Simply repeat these in reverse to install a new main landing gear
- 11) Axles if bent can be replaced by simply taking them out of the axle carriers by undoing the AN-4 bolt holding the axle in place and putting the new axle from the manufacturer in. Thin slices of shims may be used to take up any slop between the axle and axle carriers.







Front and rear wheels

Type: Line Maintenance

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

Description:

Revo can have Carlisle Turfslide 4-Ply Tundra tires or McCreary Air Hawk high speed 7.00 x 6.00 6-ply aircraft tires.

Recommended pressure is 12 to 16 psi on the Tundra tire and between 25 and 30 psi on the Air Hawk tire. Both tires are used as **tubeless** on a heavy duty split wheel with an O-ring in the middle. The O-ring can be greased.

To change the tires

- 1) Take the wheel pant off (To do that it may be necessary to slide the landing gear fairing back by loosening bottom fastener and sliding fairing back).
- 2) Jack the plane up carefully so as to not destroy the fiberglass. A very small jack can be used at the axle carrier or a hoist to hang the trike up slightly can be used
- 3) Undo the wheel securing fasteners, and wheelpant bracket and take the wheel off. Note the rim is two piece held together by bolts and nuts with an O-ring in the middle for sealing. Brake calipers come off as well.
- 4) Take the old tire off after deflating it using a bead breaker
- 5) Put the new tire on one side of the rim and line up the filler valve with the rim notch
- 6) Slide the second side of the rim on by lining up with the bolts properly with greased O-ring in the center of the split rims
- 7) Fasten the nuts using a drop of removable blue loctite on them
- 8) Seal the tire against the rim on by pumping air into the tire. Its possible to use wheel talc to allow easy sealing

- 9) Gently slide the wheel pant back on and fasten all the fasteners using removable loctite where necessary. Install calipers and rotor as required.
- 10) Re-attach the wheelpant (connect electric plugs if necessary)







Front Fork

Type: Heavy Maintenance

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

Description:

The front fork is a moto cross inspired design on the Revo. Structure is mainly stainless steel with suspension rubber inside which is pre-loaded and brackets for holding the master cylinder for the hydraulic disc brakes and foot pedals. CNC Aluminum 6061-T6 Triple trees hold the SS legs together and clamp across the legs.

CNC Aluminum 6061-T6 axle knuckles hold a hardened ¾” hollow axle.

If the structure is damaged it should be replaced by ordering one from the manufacturer.

To take the fork off, the front wheel and brake assembly needs to be removed, the neoprene front fork cover removed by undoing the fasteners, cables unhooked on the foot pedals, swiveling bolt removed, fasteners undone and fork slid upwards into the cockpit.



Seats

Type: Line Maintenance

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

Description:

Seats are composite one piece molded bucket seats. The front seat has a pivoting back rest. Composite honeycomb structure provides floor board for the passenger to step into the trike carefully. For composite repair please consult a manual for fixing composites as it is out of the scope of this manual or consult a composite professional.

Seat Covers

Type: Line Maintenance

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

Description:

Manufactured of strong thick vinyl and foam shaped to contour human form and held in place by Velcro and press 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, LSA Repairman Inspection (only if ELSA), LSA Repairman Maintenance, A&P, Repair Station

Description:

Revo provides a 3-point harness with adjustable lap belts and re-coil shoulder harness 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.

NOTE

Do not use lap belts as the sole reliable mechanism for securing the wing while parked. They may not be enough if wind conditions pick-up

Trike Fairing/Pod

Type: Line Maintenance

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

Description:

Revo has a very clean and aerodynamic fairing made from fiberglass and carbon fiber. It requires washing and soft waxing at consistent intervals to maintain its finish. To repair it please consult a composite repair manual as that is out of the scope of this manual.

Instrument Console

Type: Line Maintenance

Authorization to perform: Task Specific – fiberglass repair expertise required from a professional shop

Description:

Is part of the fairing of the trike body and is made out of fiberglass and carbon fiber.

Compression Strut/Front Strut

Type: Line Maintenance

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

Description:

Made out of Stainless Steel, this tube experiences some tension in normal flight and possibly compression on hard landings. If damaged it should be replaced with another original by ordering it from the manufacturer.

Lower Trike Frame

Type: Heavy Maintenance

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

Description:

Made out of welded 0.065 wall thickness 4130 Chromolly, this is the main weight bearing structure of the carriage. If damaged it should be completely replaced with another one from the manufacturer. Welds can be fixed locally by a competent TIG welder by consulting with the manufacturer. Any welding should be heat treated to relieve stress and powder coating would have to be re-done.

Seat Frame

Type: Heavy Maintenance

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

Description:

Seat frame on Revo consists of curved 6061-T6 aircraft Aluminum tubing that secures into the mast and engine mount CNC joint block towards the rear and a steel bracket on the base tube of the trike towards the front. Damaged seat frame should be replaced by ordering a new one from the manufacturer.

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 along the base tube of the trike that after welding have been powder coated like the bracket for securing battery under the front seat. These can be re-welded by qualified welder.

Engine Mount

Type: Heavy Maintenance

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

Description:

The engine mount is a solid 6061-T6 aircraft Aluminum block CNC'ed into its shape and powder coated. It can be replaced by ordering one from the manufacturer.

Ballistic Chute (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 Chute manufacturer

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

Engine

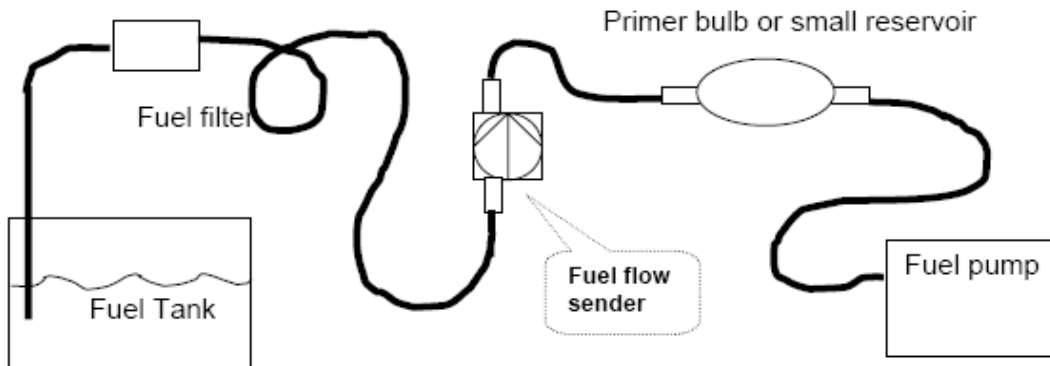
4.1 General

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

4 Fuel System

4.1 General

The fuel tank is a 14.4 US gallon (54 Liters) tank made out of Aluminum. It contains fuel level sender to display the fuel level at the instrument panel. The following diagram shows the fuel system installation. Please note that fuel flow sender is “optional” and fuel shutoff valve that resides just after the fuel filter and fuel return line that merges into the fuel line with a T-fitting just after the fuel flow sender is not shown. Primer bulb may not be used in most aircraft except ones equipped with 2-stroke engines instead after the fuel filter or gascolator a Facet electric fuel pump for Rotax 912 engine is used.



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 except for those authorized later by the manufacturer like replacing a gas tank optionally with a larger gas tank from the factory if one becomes available.

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 Stratomaster and 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.

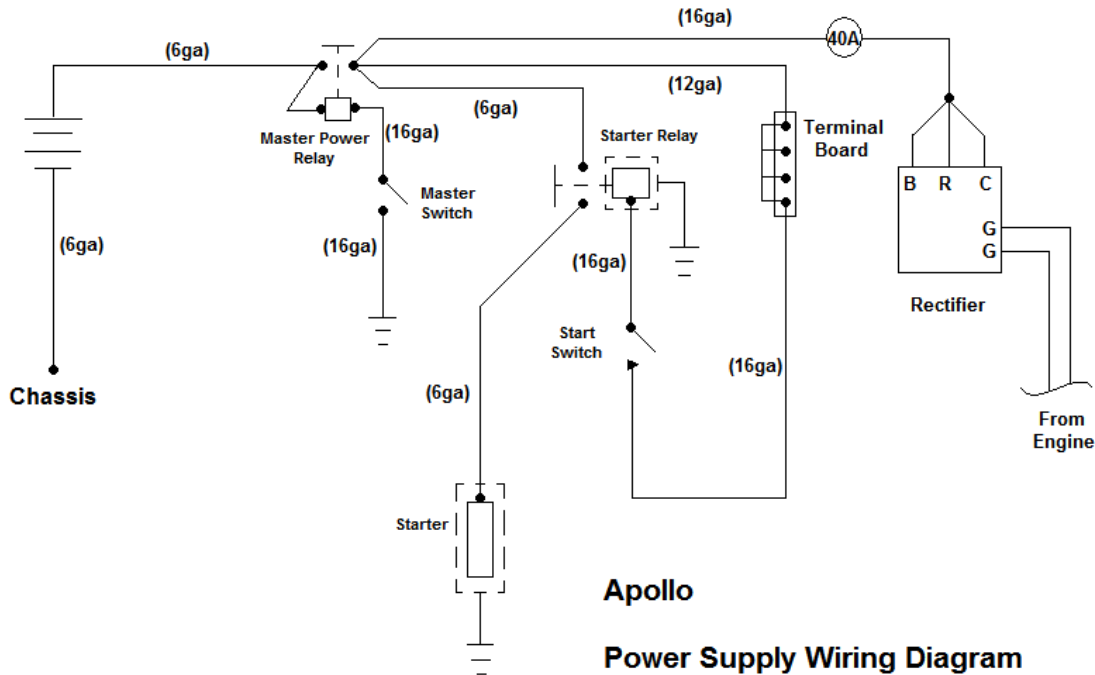
7 Electrical System

7.1 General

The Revo AS-III912S and Revo uses 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 or ULS).

An electrical diagram for the aircraft is shown below:



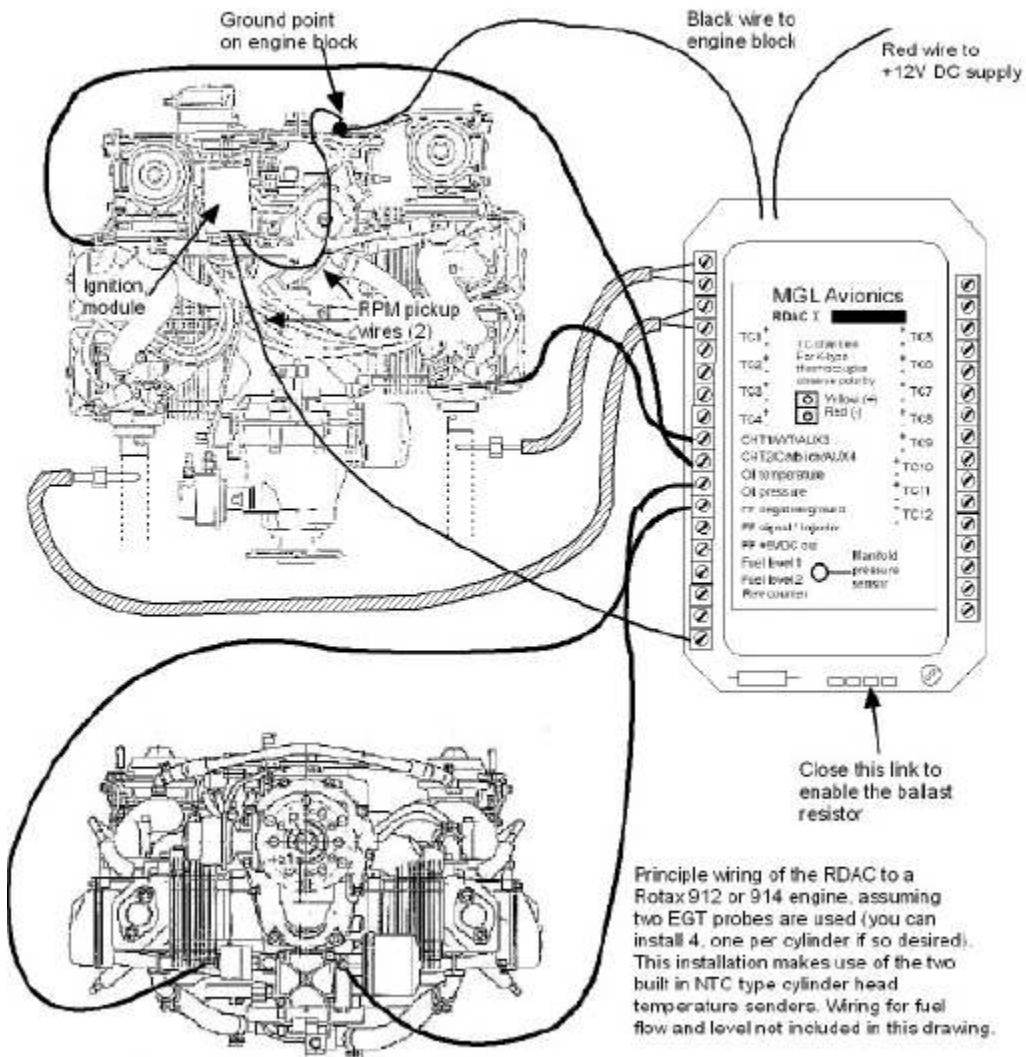
A ground seeking master solenoid has been employed instead of taking power from just the master switch. Power is then fed mainly to a terminal strip under the front of the cockpit from where it is guided to circuit breakers located at the dash which can be reset. A main charging circuit fuse of 30 amps as per Rotax instructions is used in the charging circuit from the engine rectifier.

TEFZEL wiring is used throughout the aircraft wiring harness.

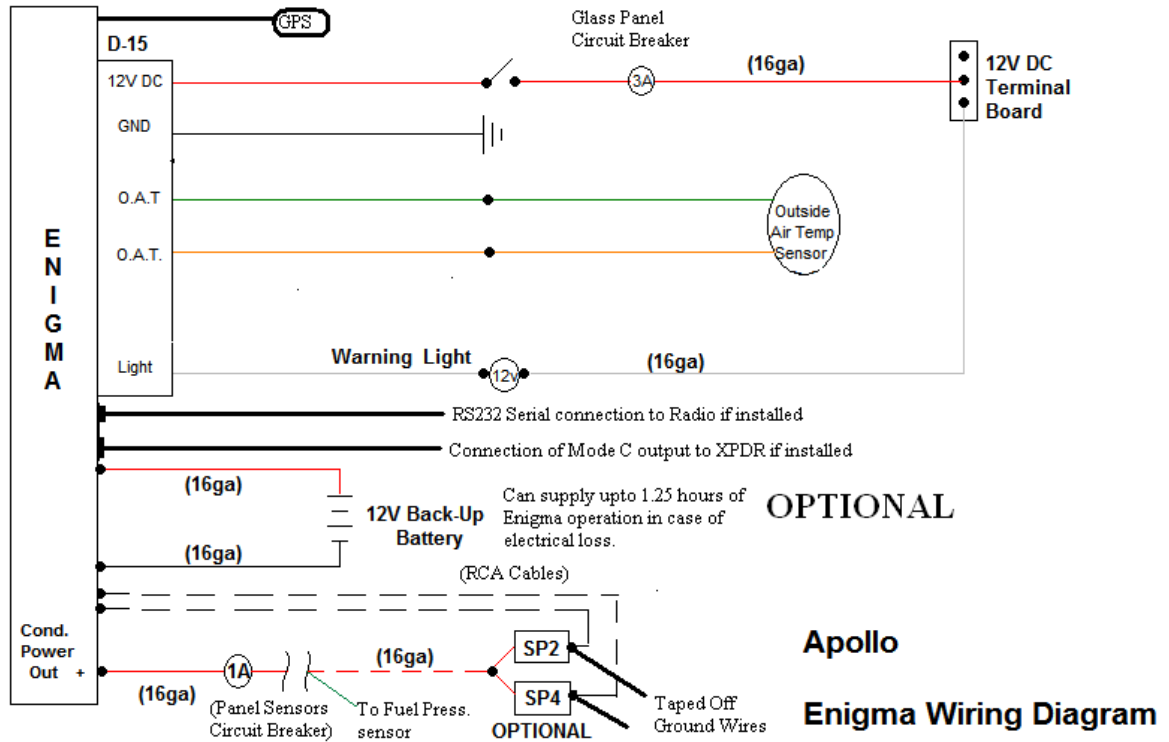
When stopping the engine the ignition key should be put into the off position. The master switch on the dash should then be turned to the off position and other switches should be turned to the "off" position if applicable.

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

Connecting a Rotax 912



Optionally aircraft can be fitted with a color glass EFIS which has an aviation moving map GPS built-in. This EFIS is capable of fully programmable multi screen display.



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
3. A short circuit → Isolate and investigate
4. The ENIGMA heading is OFF → Check that if SP-2 Magnetic sensor is connected, it is facing the right way (arrow pointing forward). Its 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 rectifier simply 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 should be original from the manufacturer.

9 *Painting and Coatings*

9.1 *General*

The metal frame uses anodization on Aluminum parts and powder coat on steel frame and the engine mount. The Fairing is finished with auto paint and can be re-painted by any qualified auto body shop or an aircraft paint shop. The inside of aircraft fairing is coated with truck bed liner black and can be easily touched up by a roll-on brush if needed. The painted parts if found rusted can be cleaned via bead blasting and re-powder coated.

11 Feedback Form

To provide feedback regarding this manual, please use this form, fill it out and send it out with supporting documentation and pictures to apollonorthamerica@yahoo.com

Name:

Address:

Phone Number:

e-mail:

Title:

Business (if applicable):

Aircraft model:

Serial Number:

Subject:

Description (attach more pages if necessary):

Dated:

Signature:

