

Aeros-2/Cross Country ultralight

Maintenance Manual



Wing: Profi, Profi Tl, Still TL, StingRay

Engine: Rotax 912 UL

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AMENDMENTS

No.	Section	Page	Date of correction	Comments
1		2	11.01.2024	Amendments table added.
2	11	11 - 14	11.01.2024	Inspection and servicing schedules table is supplemented and changed for 100 hours / 1 year intervals

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1. GENERAL INFORMATION

This manual contains factory recommended procedures and instructions for maintenance, service and ground handling of the Aeros-2 ultralight.

The Aeros-2 trike will be used in conjunction with a certified wing, therefore the operator has to refer to the wing manual for any issues that are related to the wing component of the aircraft.

Definitions

Definitions used in this Manual such as WARNING, CAUTION and NOTE are employed in the following context:

WARNING

Operating procedures, techniques, etc., which if not followed correctly, may result in personal injury or death.

CAUTION

Operating procedures, techniques, etc., which if not strictly observed, may result in damage to the aircraft or its installed equipment.

NOTE

Operating procedures, techniques, etc. which considered essential to highlight.

2. DESCRIPTION OF THE AIRCRAFT

Aeros-2 is advanced two-seater (in line) weight shift controlled aircraft. It has been developed to provide the economy and durability combined with maximum safety and comfort.

Aeros-2 is designed for up to 472.5 kg maximum take-off weight. The aircraft has been designed with wide speed range allowing slow speed flight at very low fuel consumption, short take off and landing as well as cruising speeds up to 130 km/h. The electric trim system for trimming the aircraft in pitch gives precise fingertip control at the speed range of 80 – 110 km/h.

The power plant is a push arrangement and consists of Rotax 912 UL 80 HP engine and a three-blade ground adjustable Aerolux propeller.

It features a 54 liters fuel tank, allowing long cross-country touring.

The trike is attached to the wing by way of a universal joint which allows the free movement of the trike in pitch and roll by which control is affected. The trike includes the tricycle undercarriage, power plant and cockpit.

The engine is mounted to the engine platform at the base of the engine. The fuel tank is mounted beneath the engine platform.

The pilot cockpit is designed to allow for various size pilots.

The cockpit has a windscreen for improved wind deflection.

The Profi wing is the result of continued refinement of Aeros trike wings over the years since 1991. The wing is designed for two-seater trikes. It is the result of an extensive design and development program aimed at optimizing your level of safety and satisfaction as a pilot, through high performance and strength of construction.

This wing is safely controllable and stable at a wide range of operating speeds. The strength of the wing is sufficient for different conditions of flight with defined load. It is very stable, and has been designed primarily for cross-country flying.

The Profi sail has several cloth and Velcro shear ribs, which combined with an excellent sail fit,

produces a wing that has light handling and very comfortable in turbulence. The battens ends are designed to be adjustable to vary tension for tuning the wing. The batten mechanism allows effortless installation and removal the battens.

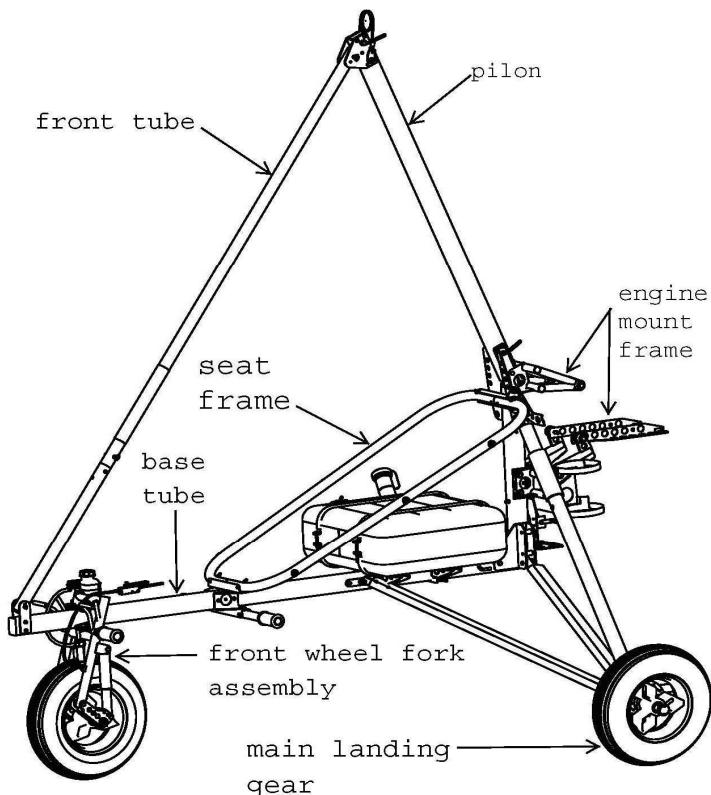
An airfoiled aluminium section is used for the down tubes and king post to achieve minimum drag.

3. COMPONENTS OVERVIEW

There are most important areas of the trike shown in this section to aid the maintenance personnel.

The list may not be comprehensive.

Trike structure:



Cockpit:



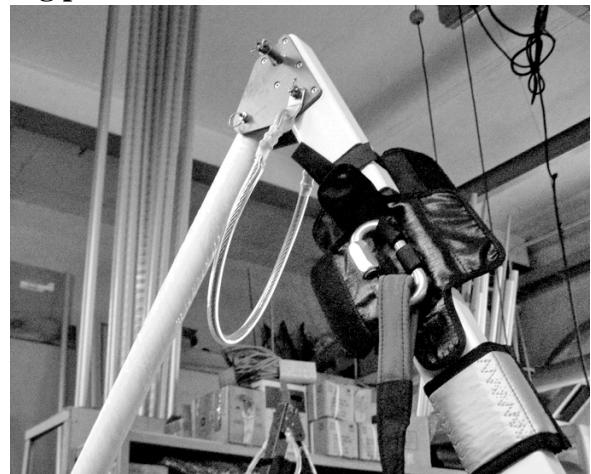
Engine:



Front fork assembly:



Hang point:



4. CENTRE OF GRAVITY

Trike:

Centre of gravity limits are not critical on the trike. With the trike attached to the wing, variations of cockpit loading and fuel loading cannot influence the aircraft balance. The Aeros-2 trike is therefore not critical in regards to centre of gravity, although the load distribution in the trike has a minor affect on the in-flight attitude of the trike.

Wing:

Aeros-2 trike with Profi wing should fly straight and level without any pilot input with a cruising speed of between 75 k/h and 90 k/h.

Moving the wing hang block forward on the wing keel tube will speed the wing up.

Swivel both wing tips down equally will speed the wing up.

5. PLACARDS

The placards on the aircraft are designed to provide necessary information for the safe operation of the aircraft. Details of the placards are listed below.

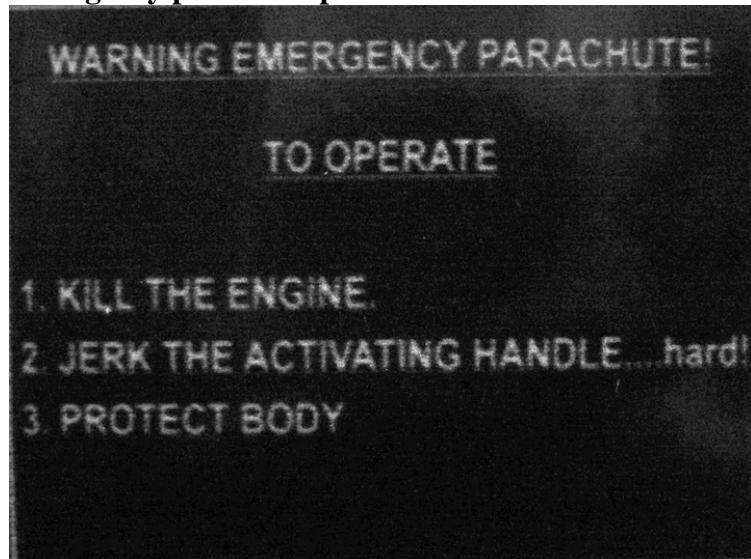
Flight limitations placards:

FLIGHT LIMITATIONS	
DO NOT PITCH NOSE DOWN OR NOSE UP	
MORE THAN 45 DEGREES FROM HORIZONTAL.	
DO NOT EXCEED 60 DEGREES OF BANK.	
NO NEGATIVE G.	
NO AEROBATIC MANOEUVRES.	
NO INTENTIONAL SPIN.	
NO WHIP STALLS.	
NO STALLED SPIRAL DESCENTS.	
APPROVED FOR DAY VISUAL METEOROLOGICAL CONDITIONS ONLY.	
WARNINGS	
NO SMOKING.	
ALWAYS PREFLIGHT AIRCRAFT.	
ENSURE MAST LOCKED IN POSITION BEFORE STARTING ENGINE.	
OPERATE IN ACCORDANCE WITH LIMITATIONS AND PROCEDURES DETAILED IN THE PILOTS OPERATING HANDBOOK.	

ENGINE LIMITATIONS	ENGINE RPM	MAX EGT
ROTAX 912 UL		
5 MINUTES MAX	5800	850° C
CONTINUOUS	5600	800° C
MIN		MAX
OIL PRESSURE	1.5 bar	7 bar
OIL TEMPERATURE	50° C	140° C
CYLINDER HEAD TEMPERATURE		150° C
FUEL TANK CAPACITY		54 Litres
USEABLE FUEL		54 Litres
LOADING LIMITATIONS		
EMPTY WEIGHT		
MAX TAKEOFF WEIGHT		472,5 kg
MIN		MAX
WEIGHT OF OCCUPANTS	55 kg	200 kg
FLY SOLO FROM FRONT SEAT ONLY		

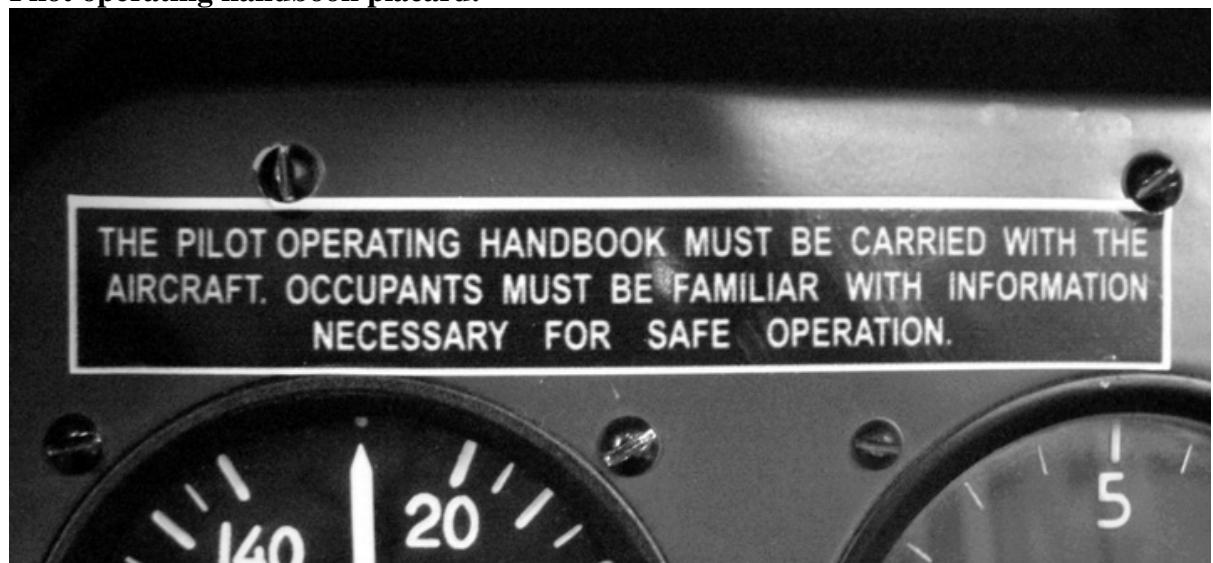
The flight limitations placards are located on the instrument panel.

Emergency parachute placard:



The emergency parachute placard is located on the instrument panel.

Pilot operating handbook placard:



The pilot operating handbook placard is located on the instrument panel.

Clear prop placard:



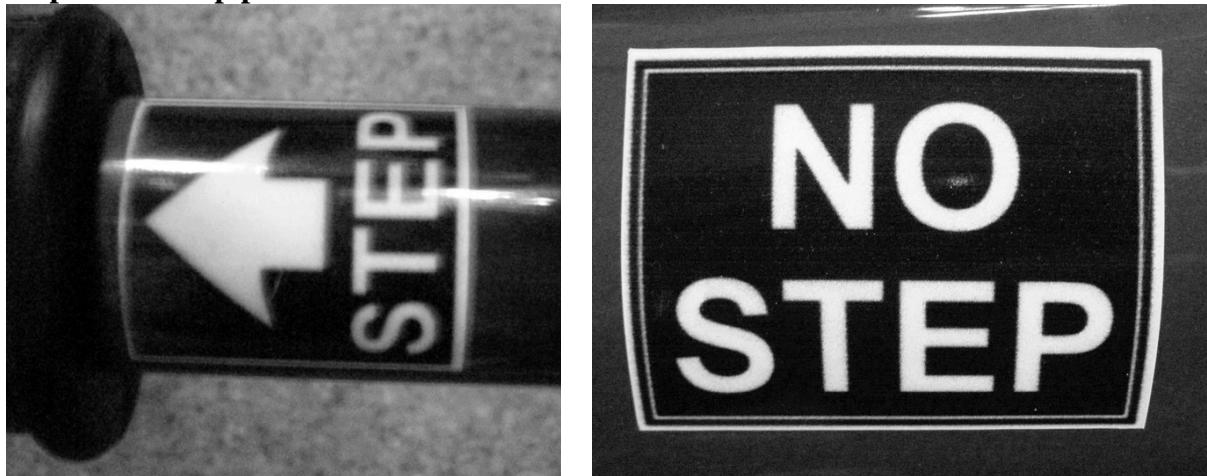
The clear prop placard is located on the left and right side landing gear struts.

Fuel placard:



The fuel placard is located on the right side of the cockpit next to the filler neck.

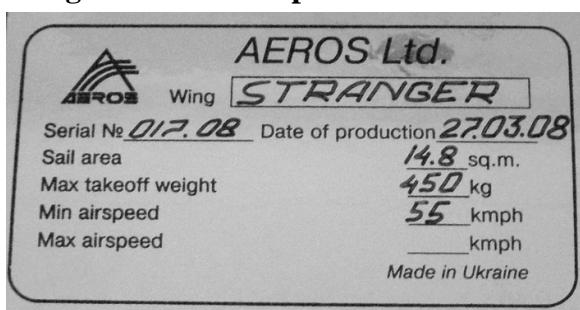
Step and no step placards:



The no step placards are located on the left and right side landing gear struts and on the left and right side of the cockpit.

The step placards are located on the left and right footrests.

Wing and trike data placards:



The wing placard is located on the keel tube of the wing.

The trike placard is located on the right front side of the base tube.

6. TOOLING

There are no specialized tools (except for the air shocks) required for the maintenance described in this Manual. Loctite will be required in certain locations and should always be renewed after disassembly.

There is a list of tools that may be required.

- Loctite 243
- Open ended spanner set
- Torque wrench
- Screw drivers flat head set
- Screw drivers cross head set
- Hex key set
- Pliers
- Tie wire and tooling
- Foot air pump
- Various general care items.

Note: This list may not be comprehensive.

WARNING! The Aeros 2 airframe is relatively simple, but like any other aircraft requires skilled and qualified service. It is not recommended self repair or reassembly by other than Aeros Ltd approved agent. No replacement parts should be fitted unless they are factory supplied and identified. All replacements and servicing should be entered into the aircraft log book and signed off by a qualified inspector.

7. SPECIAL HAZARDS

Propeller

Rotating propellers can cause potential danger. It is very hard to see; therefore special attention should be made to keep people or animals clear of the aircraft once the engine has been started. It is strictly forbidden to stand either in line with the arc of the propeller or behind it since there is always a possibility that stones or other objects can be picked up and thrown at great speed in any direction. In the event of the propeller strike turn off the engine immediately and do not restart until you are satisfied that no structural damage has been done to the propeller or airframe. If any damage is visible, do not fly until the damaged blade has been repaired or replaced and the engine has been inspected.

Exhaust system

WARNING: Do not touch parts of the exhaust system while the engine is running or directly after it has been shut down. It will cause serious burns if touched.

Inspect the entire exhaust system for cracks and damage before and after each flight.

Radiator

WARNING: The cooling system is pressurized when the engine is warm. Never open the cap until the engine is cooled down. The coolant in the system is very hot and will cause serious burns.

Running engine on the ground

Whenever you need to start the engine particular care must be taken to observe the following procedures:

- Move the aircraft to area clear of people, animals, etc.
- Check the ground around the propeller for loose stones etc. and remove any such objects.
- Make sure the aircraft is securely chocked.
- Carry out a full pre-start security check (see the aircraft operating handbook).
- Maintain an adequate look-out while running the engine: people and animals may approach from behind.

8. TORQUING PROCEDURES

This chapter provides required torque procedures that are to be used in all areas of the aircraft. The use of these procedures will ensure the security of installation and will prevent overstressing of components.

Side Strut

If your trike is equipped with the standard main wheel chock absorbers (spring damping) the upper bolt of the chock absorber should be tighten to allow the free movement in the joint. If your trike is equipped with the main wheel air damping (optional) there is no movement in the joint required, therefore the upper bolt should be tighten up.

The side strut lower bolt has to be tightened to allow a free movement in the joint.

Wishbone axle

The wishbone axle upper bolt has to be tightened to allow a free movement in the joint.

Upper pylon

The upper pylon lower bolt has to be tightened to allow a free rotational movement.

Front forks

The front forks main bolt has to be tightened to allow a light resistance against rotational movement. The same torque procedure is applied for all front fork bolts.

All other components of the trike are to be tightened to standard values.

9. SCREW LOCKING DEVICES

All bolts and nuts, except the self locking nuts, should be locked after installation. This prevents them from loosening in flight due to vibration.

There are following screw locking methods used in the aircraft.

Self locking nuts and **splints** are used for the joints that subject neither the nut nor the bolt to rotation in service. After a self locking nut has been tightened, at least one full thread pitch of the bolt must protrude through the nut locking feature.

Lock wire is used for securing fuel drain cock, oil tank clamp, oil relief fitting, engine mount bolts, radiator mount.

Loctite is used for bolts on the engine, brake discs, wheels and wheel fairings mounts.

WARNING: After repeated assembly and disassembly it is necessary to use Loctite for all self locking nuts.

10. CORROSION PROTECTION

During manufacturing all of the components have been protected with powder coat paint or anodized.

Any time when the components are removed or inspected the opportunity should be taken to inspect them for corrosion. If the aircraft is operated in coastal areas or ever been exposed to salt water you will need to clean all the components with the fresh water regularly and perform a careful check of all components for corrosion.

11. INSPECTION AND SERVICING SCHEDULES

All major repairs and spare part replacement must be done by authorized service personnel. However, you are encouraged to take care of preventative maintenance yourself. This includes: tire and wheel bearings replacements, safety wire replacement, safety harness replacement, light bulb replacement, fuel hose replacement, battery servicing and replacement, spark plugs replacement and air filter replacement.

The table below indicates recommended maintenance periods.

Maintenance **100 hours / annually** should be performed after 100 hours or annually (whichever comes first)

Trike	Pre-flight	First 10 hr	25hr	50hr	100hr / annually	Other
ENGINE MOUNT: check steel frame for cracking and wear. Check rubber mounts and all bolts for security.	check			check	check	Replace engine mount bolts and bushings every 300hours
CHOKE AND THROTTLE CABLES: Check the cables are correctly adjusted and full throttle opening is possible. Check all carburetors are synchronized in operation. Check the cable inner and outer for wear and damage. Any broken strands will require changing the cable assembly.		Service		check	check	
BRAKE SYSTEM: Check brakes for operation. Check the fluid for level and leaks. Check brake cable for corrosion or damage.		Service		check	check	
ELECTRICAL CONNECTIONS: Check all connections are tight and no corrosion is visible.				check	check	
AIRFILTERS: Check condition. Clean and re-oil as recommended by engine manufacturer.				check	check	
RADIATOR: Check coolant level. Check all hoses for condition and	Check			check	check	

security. There should be no signs of wear, fluid leakage.						
RADIATOR: Drain and flush the radiator.						Service Every 200hours

Engine See Rotax engine manual for detailed engine maintenance information	Pre-flight	First 10 hr	25 hr	50 hr	100 hr / annually	Other
In addition to Rotax manual:						
PLUGS (912): See Rotax manual for instructions				check	check	Replace after 200hrs
PLUGS (912S): See Rotax manual for instructions				check	Service	Replace after 100hrs
OIL AND FILTER: See Rotax manual for instructions					Renew	

Fuel System	Pre flight	First 10hr	25 hr	50 hr	100 hr / annually	Other
CARBURETTORS: check and clean. See Rotax Manual for instructions.		Inspect	Inspect		Inspect	
FUEL TANK: Flush out and check vents. Ensure that all bits of dirt inside the tank are removed. Ensure there is no water contamination.		Service		Service	Service	
FUEL FILTERS: Check for contamination, signs of dirt, if any found replace fuel filter.		check		Service	Service	
FUEL LINES: Check for cracking or leaks. Check torque on all connectors. Check the overall condition of the fuel line. If there any signs of cracking or wear it must be replaced.	check			check	check	

Propeller	Pre flight	First 10 hr	25 hr	50 hr	100 hr / annually	Other
PROPELLER: Check for cracks and delamination. Check along entire propeller for stone chips or damage. Check the propeller tape for security.	check					
Check security and re-torque mounting bolts. Check wire locking before each flight. Check re-torque and re-wirelock every 50 hours.	check			Service	Service	

Trike frame	Pre flight	First 10hr	25 hr	50 hr	100 hr / annually	Other
PYLON TUBE: Check for cracks and bends (also after every hard landing).				check	check	

Any damage require replacement.						
PYLON TUBE: Check all bolts for security, check plates for distortion.				check	check	
BASE TUBE: Check for cracks and bends (also after every hard landing) especially in the region of the front fork due to heavy landing. Any damage require replacement.				check	check	
FRONT STRUT: check for cracks and bends (also after every hard landing). Any damage require replacement.				check	check	
SEAT FRAME: Check for cracks and bends. Check for security and straightness.				check	check	
HANG POINT	check			check	check	
HANG BOLT: Hang bolt is straight, free of wear and corrosion. Vipe clean and lubricate.				check service	check service	Replace 500 hrs

Landing Gear	Pre flight	First 10hr	25 hr	50 hr	100 hr / annually	Other
TYRES: check entire tire condition, especially treads and sidewalls.	check			check	check	
TYRE PRESSURE: 2 atm. Check the inner tube valve sits properly through wheel.	check				check	
FRONT FORK: Check for damage. Check fork legs for straightness. Nose wheel should be parallel to fork.	check			check	check	
BRAKES: Check pads and shoes for wear.					check	Check as required
BRAKES: Check brake cables.				check	check	
WHEEL BEARINGS: Check condition.				check	check	
WHEEL HUBS: Check for corrosion and dents. Check for damage and wear after every hard landing.				check	check	
REAR SUSPENSION: Check rear struts and chock absorbers.	check			check	check	
LANDING GEAR SEMI-AXLES: Check the axle bend point for fatigue cracks with magnifying glass.				check*	check	Replace 500 hours (3000 landings)**

* - Inspection of semi-axles every 50 hours or after every 300 landings, whichever comes first.

** - This concerns all trikes up to serial number 02.12.207 only, with a total flight time of 500 hours or 3000 landings, whichever comes first. One-time replacement. Once semi-axles have been replaced with new parts, no further obligatory replacement after 500 hours (3000 landings) is required.

Wing	Pre flight	First 10 hr	25 hr	50 hr	100 hr / annually	Other
SAIL: Visually check wing sail. There should be no cuts, ruptures, threadbare holes and torn stitching on the sail.	check			check	check	
BATTENS: Check profiles and ensure they match with the template.				check	check	
CABLES: check all cables, including washout cables for damage, corrosion, broken strands, thimbles elongation. If any found the cable must be replaced.	check			check	check	Replace washout wires, all bottom wires, cross bar tensioning wire 4 years
NOSE PLATES: Check for wear and damage.	check			check	check	
TUBES: Visual check all tubes for signs of damage, bends, and corrosion. If any is found the part must be removed and given a full visual check. No damage is acceptable.				check	check	
CONTROL FRAME: Check base tube for fatigue cracks around holes, dents and bends. Check uprights for damage and straightness. Any damage is not acceptable. Check top and bottom uprights fittings security.				check	check	
KEEL TUBE: Check for wear at pivot point and for straightness.				check	check	
CROSS BAR: Check center plates and bolts for wear. Check cross bar – leading edge junction for wear. Check tubes for wear and straightness.				check	check	
HANG BRACKET: check whole bracket, bolts and holes for wear.				check	check	

Electric Trim Device	Pre flight	First 10 hr	25 hr	50 hr	100 hr / annually	Other
Connected, operates correctly, full and free movement.	Check					
Visual inspection of cables, corrosion, tightening and condition. Operational inspection for travel and free movement.					Check	

SAIL INSPECTION



WARNING

LEFT EXPOSED TO THE SUN WHEN NOT BEEN USED, YOUR SAIL WILL DETERIORATE RAPIDLY.

Traditionally, top surfaces of trike wings are made from woven polyester sailcloth (Dacron). The strength of this sailcloth degrades over time, especially when exposed to sunlight (due to its high ultraviolet light content). The Betts test is devised to determine the condition of this kind of sailcloth. For Dacron fabric the default Betts test applies. Stitching on Dacron sail has to be tested with bettsometer to 1360 grams.

More recently laminated sailcloth has been used for top surfaces of modern sails. Laminated sailcloth which is in use for Aeros trike wings comes in layers of film with high-strength strands integrated between them. Although, it is stronger and more durable than the Dacron sailcloth, laminated sailcloth can still be degraded by sunlight. The Betts test is not appropriate for this type of the sailcloth because on its construction.

There is the visual inspection specified to inspect the top surface of the wing with laminated sailcloth. During the visual inspection look for direct signs of degradation such as delamination of the laminate, broken strands within the laminate, embrittlement of the laminate (typically evidenced by ‘crumbling’) and signs of distress around stitch holes at seams. Look for indirect signs of degradation such as fading or other changes in colour.

Stitching on laminated sail has to be Betts tested to 1360 grams.

We recommend choosing a stitching for testing on the batten pockets. If stitching fails accidentally this place is easy to repair.

If any stitching fails, the Owner may refer to Aeros for further investigation and a possible life extension.

Any cuts or tears through the trailing edge, sail fixing points or similar high load areas must be repaired at Aeros approved workshop.

TIME LIMIT FOR RUBBER PARTS

The following components and systems must be replaced every 5 years:

- venting hose of the carburetors;
- all rubber hoses of the cooling system;
- all rubber hoses of the fuel system;
- all rubber hoses of the lubrication system which are part of the engine supply volume
- carburetor sockets;
- diaphragm on both carburetors;
- rubber hoses on compensating tube.

CAUTION: This time limit must be followed independently and in addition to the visual inspections of the respective components.

TIME LIMIT FOR COOLANT

Coolant must be replaced as per manufacturer’s instructions, at the latest during overhaul or when the engine is replaced.

12. SPECIAL INSTRUCTIONS

FATIGUE

At maximum intervals of 300 hours the following components should be inspected for signs of fatigue crack damage, particularly at holes and joints:

Leading edges, keel, pylon, seat frame, trike base tube, front strut and channels, control frame top and bottom fittings, control bar end holes, leading edge – cross bar junction holes in the tubes, trike pylon fittings, trike base tube and seat frame bracket holes

The parts should be inspected by a qualified person using dye penetrant, radiographic or visual high magnification methods.

Any instance of fatigue cracking must be reported to the Aeros. No cracked parts may be returned to service. Unserviceable parts must be made unusable.

The following items have to be replaced as indicated:

Hang bolt – 500 hours. Grease hang point bolt with dry lubricant every time it is removed from the hang block.

Control frame top bolt – 500 hours.

UNSCHEDULED MAINTENANCE CHECKS

Unscheduled maintenance is required due to abnormal flight loads such as severe turbulence or heavy landings. The pilot is responsible for identification of these extreme operating conditions and identification of the effected components. Where damage is found further checks should be carried out upon areas that may be affected.

Thorough checks should be carried out after transportation and after extended storage periods of the aircraft.

INSPECTION AFTER HEAVY LANDING

Check all attachment points and parts of the suspension system. Check shock absorbers for normal operation. Check all welded parts for bending or cracking of paint, which may indicate permanent deformation of the area. If any permanent deformation is identified then more serious inspection of the aircraft is necessary, as permanent deformation indicates that extreme forces have been experienced by the aircraft.

CHECK CLEARENCE

Measured dimensions should be in range of 10 to 20 mm.

The dimensions should be measured with the wing off, no pilot in the seat, as this will alter dimensions.

If measured distance is lesser than the recommended distance this indicates significant deformation of the trike base tube and that the trike has been subjected to significant abnormal loads. The base tube should be replaced and thorough check of the rest of the aircraft should be performed.

ATTACHMENT POINTS

Check attachment points for the wing to the trike, including the main hang bolt, wheel axles and bearings. The wing should be also checked after any heavy landing.

Check the main structure including the base tube, landing gear attachment points and the engine mount.

Check that all other components attached to the trike are in place and properly secured.

SEAT FRAME

If the airframe has experienced unusual loads then the seat frame should be checked thoroughly. The weight of the pilot during impact may deform the seat frame.

INSPECTION AFTER HEAVY TURBULANCE

Check that all components attached to the base are in place and properly secured. Turbulence is most likely to structurally affect the wing of the aircraft than the trike. The wing manual should be referred for detailed instructions.

LIFTING THE TRIKE

The trike may be lifted using the main attachment point for the wing (the whole trike). Alternatively it can be partly lifted for local maintenance. In any case the wing should be taken off before lifting the trike. Be careful when front part of the trike is lifted from the ground to prevent the propeller from contacting the ground.

13. PERIODIC MAINTENANCE

GENERAL

The aircraft has been designed to permit its easy inspection and servicing. This section provides details necessary to carry out routine scheduled periodic maintenance and the servicing procedures necessary for service Aeros-2 aircraft and its equipment.

WARNING! The Aeros 2 airframe is relatively simple, but like any other aircraft requires skilled and qualified service. It is not recommended self repair or reassembly by other than Aeros Ltd approved agent. No replacement parts should be fitted unless they are factory supplied and identified. All replacements and servicing should be entered into the aircraft log book and signed off by a qualified inspector.

FUEL SYSTEM

The fuel system of Aeros-2 consists of the fuel tank located under the seat, fuel hoses and the fuel pump. All of the components for the engine are standard as per the Rotax manual should be consulted for maintenance information.

The fuel system features:

- single fuel tank, capacity of 54 liters;
- fuel drain tap;
- fuel filter;
- breather system;
- fuel gage.

CAUTION: The fuel gage reading can alter in flight due to the turbulence, pitch and bank angle. The emergency remaining fuel indicator starts lighting when 10 – 15 liters of fuel remains in the fuel tank.

Fuel filter has to be replaced within 200 hours.

There is a fuel drain tap at the rear and right of the fuel tank that may be used to check the fuel quality or to drain the fuel if it is necessary and to remove any water from the fuel tank.

The fuel should be regularly checked for water and contaminants by draining a sample of the fuel into a clear glass container. Any water present will sink to the bottom. If any water is found in the tank, check the carburetor fuel bowls for water before the next flight. If fuel was in a tank without use for extended period of time it is advisable to replace it for fresh one.

If the aircraft is not in use for more than one week it is necessary to drain the fuel from the fuel tank and also from the carburetors.

WARNING: Gasoline is extremely flammable and can be explosive under certain conditions. Do not perform any maintenance on the fuel system in conjunction with maintenance on the electrical system.

Whenever draining or refueling make sure the master switch is set to OFF (key in full left position).

Refuel in a well ventilated area with the engine stopped.

Never fill the tank so that the level rises into the filler neck. If the tank is overfilled, heat may cause the fuel to expand and overflow through the tank vents.

After fueling make sure the fuel cap is securely tighten.

Be careful not to spill fuel when refueling. If any fuel is spilled, make sure the area is dry before starting the engine.

Avoid prolonged or repeated contact with skin or breathing of vapor.

OIL SYSTEM

Before each flight it is necessary to visually check the oil system for leeks and the parts for possible damage.

Special attention should be paid to the gear box – crankcase junction, cylinder head – cylinder junction, cylinder – crankcase junction. Make sure there is no leek from the vent hole in the lower part of the crankcase under the water pump. Check the engine vent line.

The oil level in the oil tank should be between the two marks (max./min.) on the dip-stick, but must never fall below the min. mark and be higher the max. mark. Difference between max. and min. marks is 0.75 liters.

The oil replenishment time interval is after first 25 hours and then every 100 hours.

The oil specification is given in the Rotax Manual. In general use only synthetic or semi synthetic oil, API classification "SF" or "SG" or higher quality oils. Multigrade is recommended. These oil types are detergent types. Consult the current Rotax manual for correct grade of oil for the ambient operating temperature. Refer to the Rotax service instruction SI-18-1997 R5 or to the latest version of the Rotax service instruction.

Refer to Rotax Manual and Rotax Service Instructions which detail how to check and replenish the oil.

Consult the Rotax manual for the correct type and grade of oil.

The oil sump is drained by removing the sump plug. Ensure the sump plug is correctly replaced and lock wired before refilling the engine with oil. Measure the amount of oil to be replaced, refill, check the level, run the engine and recheck again.

Any time the oil is replaced the opportunity should be taken to replace the oil filter.

AIR FILTER

The condition of the air filter should be checked each 25 hrs as per the maintenance schedule, and also after any extended hangarage or after operating in extreme conditions.

Every 50 hours the air filters have to be cleaned as described below.

- Disconnect the air filter intake crimp hose.
- Disconnect the filters clamps and remove the receiver.
- Unscrew the screws from the receiver and remove the filter out.
- Spray K&N air filter cleaner onto the entire element and let soak for 10 minutes.
- Rinse air filter with warm low pressure water. Do it always from inside to outside, removing the dirt and not allowing soak it into the element.
- Let the element dry naturally.
- Apply K&N air filter oil to the filter after it is dry. Wait 20 minutes and re-oil any white spots left.

Assemble the air filter and receiver in the reverse order.



COOLING SYSTEM

Rotax recommends the coolant to be replaced within 2 years interval or after 200 hours. If the coolant needs to be replaced for any reasons refer to Rotax Manual and Service Instructions for details.

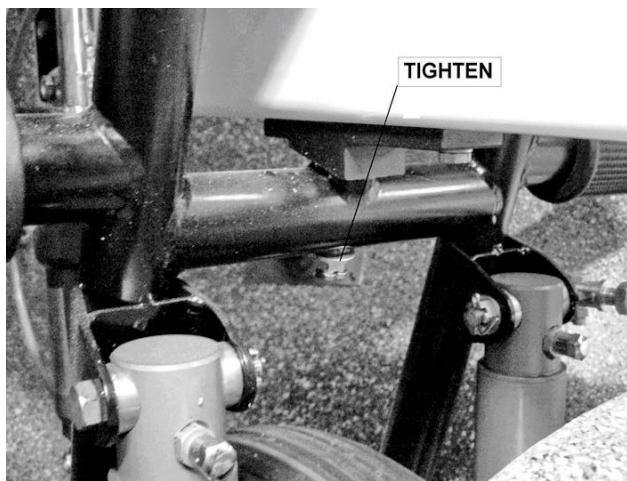
EXHAUST SYSTEM

The exhaust system inspection and reinstalling is simple and obvious. Inspect the condition of the exhaust system for corrosion and holes that may be present. Make sure that it is correctly secured. When reinstalling the exhaust system the Loctite should be used as recommended by Rotax. (See Rotax manual for detailed instructions). If any minor damage has occurred to the exhaust system it can be easily repaired. If a new component is required contact an Aeros dealer.

LANDING GEAR

The Aeros 2 landing gear is a tricycle type and consists of main undercarriage and front undercarriage.

Both the main and the front suspension incorporate air chocks. The life of air chocks should exceed that of the trike due to the minimal amount of travel they do on the ground. Nevertheless they have to be checked regularly for proper operation.



With the weight removed from each wheel check that each component is not loose. Check each of the bearings, tire wear and condition of the brake line. Each of the pivot components should not have more than 0.5 mm of movement when load is applied. For wheels and suspension pivots the wheels should be lifted from the ground when testing the movement.

To remove the extra movement in the front undercarriage fork assembly it is necessary to remove the splint, tighten the castle nut and splint it again (see figure).

Both the main and the front undercarriage allow for minor damage that does not result in dimensional changes of the components. Any permanent deformation should result in full checking of all possible affected parts.

TYRE INFLATION

The recommended tires inflation pressure is 2 Bar for both front and rear tires .When checking the tires pressure it is recommended to take the opportunity and to examine tires for wear, cuts, bruises, slippage and other defects.

LUBRICATION

All lubrication points should be lubricated as directed or every three months.

Most of the pivot points of the trike are lubricated with grease.

For the throttle, choke and brake cables lubrication use VD-40.

The wheels support guides have to be lubricated after 50 hours of air time. The lubrication procedure is described below.

- Remove the wheel spat.
- Lift up both the back sides of the trike with a winch.
- Turn off the wheel nut and remove the wheel with the wheel support guide.
- Clean out dirt and dust from the assembly and apply Litol 24 grease.
- Assemble the wheel and wheel support guide in the reverse order. Install the wheel spat.

ELECTRICAL SYSTEM

Electrical schematic for the ultralight is shown on the diagrams supplied with the trike.

The Electrical circuit consists of:

- instrumentation circuit. The 12 V DC supply is protected by a 25 amp fuse at the battery. The master switch on the dash, when in the off position, disables the DC power socket, flight instrument and the electric start push button;
- engine management circuit;
- ignition circuit.

It should be noted that the ignition circuit is a fail-safe system whereby the engine will run in the event of the ignition circuit becoming disconnected. Switching the coil to ground stops the engine.

When stopping the engine both switches on the dash should be switched off. The master switch on the dash should then be turned to the off position to remove supply to the accessories.

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

The electrical system of the aircraft consists of 12 V battery, the Rotax alternator and accessories. Electrical schematic is shown on the diagrams.

The electric system maintenance should include periodic inspection of the wiring for chafing and other damage through the entire length. Damaged wiring should be replaced.

For the maintenance of engine electrical system consult the Rotax manual.

BATTERY

Aeros -2 is supplied with 14AH led-acid battery with no maintenance required.

FUSES

The fuses for the electrical equipment are located on the instrument panel and, depending on the trike equipment, next to the battery (electric trimmer and battery).

PITOT STATIC SYSTEM

The main problems associated with Pitot static system are leaks, moisture and obstructions.

Other than that the maintenance is not required.

The blockage or moisture can be removed from the Pitot static system by applying a pressure either to Pitot or static system. The system should be disconnected at both the instrument ends and blown in with clean, dry air from that end. Do not blow through by mouth as this will cause

moisture to get in. Never blow air through from the source end, particularly with the instruments connected as this will cause the instruments damage.

SEATS AND SEATBELTS

The seat structure of the aircraft consists of a seat frame assembly and the webbing. Soft padding and other seats areas are non-structural components.

The integrity of the webbing is critical for safe operation of the aircraft. All of the webbing should be inspected for signs of wear, cuts or any other damages, as well as any significant UV damage that may have occurred.

Pilot and passenger seats are fitted with seatbelts. The seatbelts, particularly the stitching and all attachment points, should be periodically checked for wear and correct operation along their entire length. Any damaged webbing or fittings should be replaced. This includes webbings that have been subject to extreme loads due to heavy landing.

NOTE: It is recommended to store the aircraft away from direct sunlight to avoid the UV damage of fabric parts.

CONTROL CABLES

The control cables on the aircraft include brake cables, throttle cables and choke cables. All of them need to be checked regularly for excessive friction and wear. The control cables may be lubricated with light oil if necessary. Wear is most likely to occur at the ends of the control cables at the attachment points.

PROPELLER

The pilot needs to check the condition of the propeller before each flight, as the propeller condition is important for safe flight.

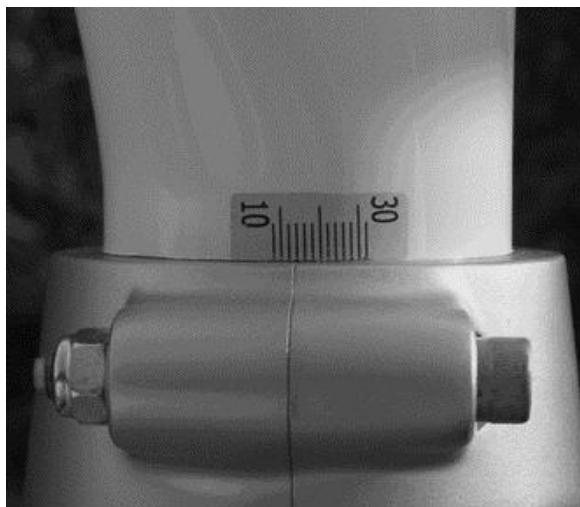
Deep scratches across the chord of the propeller are most significant. With the leading edge damage they may lead to delaminating.

Leading edge damage is repairable if it is not larger than the specified size and the blade is not delaminated.

If you have any doubts to the condition or repair procedure or if the balancing of the propeller is required either return the propeller to Aeros or consult a qualified engineer who has experience with composite materials.

The intervals at which the propeller should be removed for inspection are determined in the maintenance schedule.

With each of the propeller components removed the blades and the hub should be inspected for the damage, paying attention to those areas, which are not visible when the propeller is installed.



Check the whole surface of the hub for cracks and corrosion, the mounting of the hub for correct fit on the crankshaft, condition of the attachment bolts and nuts.

Check the holes for elliptical, rough edges or cracks.

After assembling the propeller adjust the necessary pitch angle as written in the propeller manual.

After adjustments or maintenance and before the flight the engine should be run to full rpm to check the propeller is running properly. The tracking of the propeller should be also checked.

Make sure the engine temperature is within required operation interval. Check the propeller is running with minimum vibration. With correctly adjusted propeller the engine should not exceed 5200rpm.

BRS RESCUE SYSTEM

If the aircraft is equipped with the rescue system then the rescue system manual will be supplied with the data package. The rescue system manual must be read prior to the aircraft operation and manufacturer's instructions must be followed for the maintenance and use of the rescue system. All maintenance work of rescue system must be recorded in the aircraft log book.

ENGINE MOUNT BOLTS AND RUBBER BUSHINGS REPLACEMENT

When reaching 300 hours of airtime on Aeros-2 trike with Rotax 912 engine it is recommended to replace the engine mount bolts and rubber bushings.

The engine is attached to the engine mount in four points with four bolts. Each attachment point has its own rubber bushing.

The replacement kit consists of four bolts and four rubber bushing sets. Each bushing has a metal insert.



There are metal washers on both sides of each bushing assembly. These washers are wear-free in the attachment points and not included in the replacement kit. Use washers from previous assembly.

There are several items have to be performed prior to the initial replacement procedure. Start with the following steps:

1. Dismount the carburetor and the intake receiver from the engine.



2. Screw off exhaust pipe bolts on both sides of the engine.



3. Dismount exhaust pipe/muffler mounting springs on the left side of the trike.



4. Screw off and replace engine mount bolts together with rubber bushings, working with one engine attachment point at a time. Bolts tightening torque is specified to 35 Hm.



ATTENTION! Replace bolts and bushings one after another, working with one engine attachment point at a time. Keep the same order when installing bolts, bushings and washers as it was installed before.

5. Lock bolts with lock wire as shown on the figure.



6. Place back the exhaust pipe/muffler mounting springs.
7. Bolt on the exhaust pipe bolts on both sides of the engine.
8. Place back carburetor and intake receiver.

14. WING TUNING

Profi wing should fly straight and level without any pilot input with a cruising speed of between 75 kph and 90 kph.

Before making any adjustments to the wing, first check that the wing is in the standard condition and that the battens all conform to the Profi batten profile.

If the wing is not new, check the condition of the frame especially the outer leading edge tubes. The best is to remove the leading edges and check that they have the same bend in them and when under load they flex equally.

Do not exceed the adjustment limitations.

Do one adjustment at a time and test fly each time to measure the effect of each change.

Note all adjustments and changes in the log book.

Only tune the wing in perfect flying weather.

Refer to the wing Manual for detailed information.

CG Adjustment

- Move the wing hang block forward on the wing keel will speed the wing up.
- Swivel both wing tips down equally will speed the wing up.

Turn Trim

Each wingtip has a slotted plastic end cap with a webbing strap over it. The plastic end is kept in place and at the correct angle with a small self-tapping screw.

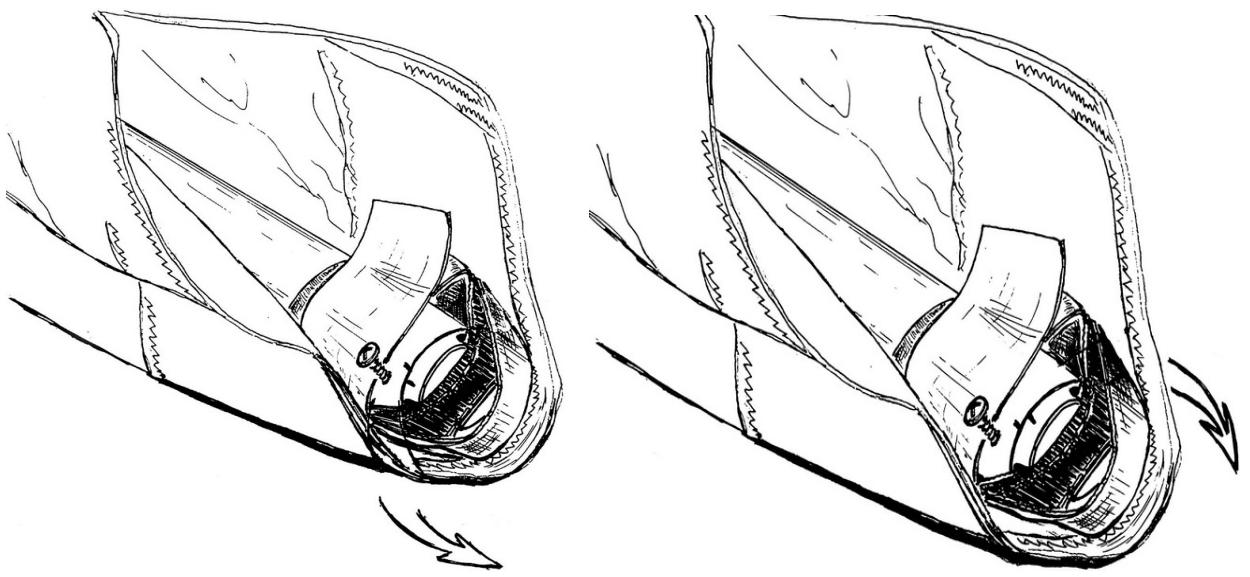
By adjusting a wingtip down, the lift on the end of that wing will be increased and that will lift that wing in flight. Adjust the screw down by 2 mm at a time.

Do not exceed 6 mm away from the original position.

By adjusting the wingtip up, the lift will be decreased on that side and the wing will drop on that side. Adjust the screw up by 3 mm at a time.

Do not exceed 6 mm away from the original position.

Adjust one wingtip at a time and test fly after each adjustment.



15. TRIKE ASSEMBLY AFTER SHIPPING PROCEDURE

The trike is shipped in a wooden box. Having used the specific techniques described in this manual you will perform the assembly procedure of your trike without any difficulties.

1. Remove the wooden bar installed near the universal junction of the trike.

ATTENTION! If your trike is equipped with the hydraulic brake system, before removing the box sides it is necessary to disconnect the axels in the box corners and temporarily tie them up to the engine to avoid the brake system lines damage.

2. Remove all box sides.
3. Take the 8 mm diameter heart bolt with the handle out of the plastic which is located next to the universal junction and insert the bolt in the hole of the universal junction.
4. Cut off the scotch tape and take out propeller blades, the windshield and other parts.
5. Cut away packaging material and take out the wheel cowls.
6. Carefully lift the pylon up. Take out the propeller hub and other parts from the rear seat.
7. Connect the strap with the braking load more than 300 kg to the heart bolt and lift up the trike with the box base using a winch.
8. Lay wooden boards under the box base and lower on them the box base with the trike.
9. Remove brackets fixing bolts at the box base.
10. Lift up both the back sides of the trike with a winch and the front side of the trike by hands and remove the box base from under the trike.
11. Dismount all parts from the box base and unpack them.

12. Place into position axels and landing gear with the support fixing brackets (wheel cowls).
 13. Mount the wheels onto the axels. Spread Locktite 243 on the thread and tighten the nut up to the stop.
 14. Lower the trike on the wheels.
 15. Mount the lower front support compression tube.
 16. Using the clamps, fix the airspeed tube to the lower part of the front support compression tube.
 17. Connect front support compression tube to the pylon.
 18. Remove the heart bolt with the handle from the hole of the universal junction, then lift the pylon up and connect the upper part of the front support compression tube to the lower part.
 19. Remove the front seat. Lift up the under seat base and fix it in such position with a strap.
 20. Mount the landing gear front struts.
- ATTENTION!** If your trike is equipped with the hydraulic brake system it is necessary to fix the brake line with the clamp to the landing gear strut to avoid it touching to the brake plate.
21. Lower the under seat base on place and mount the seat.
 22. Take the splint pins off the plastic bag, fixed to the front landing gear and splint the front wheal nuts.
 23. Assemble the propeller and mount it on the engine. Adjust the pitch angle of the blades as it is written in the Prop Manual.
- ATTENTION!** If your trike is equipped with a tow system, the flange with a bearing has to be installed on the prop hub.
24. Mount the wheel cowls. Install the bolt MDP 10.03.025 with the LOCKTITE 243, using a wrench, which can be found in the side pocket inside the cockpit.
 25. Check tires inflation in accordance with the trike owner/service manual.
 26. Conduct complete preflight trike inspection as outlined in the trike owner/service manual.

16. TOWING, TAXIING AND TRANSPORTATION

TOWING

It is possible to tow the trike with or without the wing by one person by pulling or pushing it.

TAXIING

It is possible to taxi with or without the wing attached to the trike. The trike should never be taxied faster than 5 km/h. Maintenance stuff without trike flying experience when working on

the trike should not attempt to taxi the trike as the pedals control may be different to what they have used to. (Refer to the Flight Manual for the complete taxiing procedure).

GROUND TRANSPORTATION

During transportation the trike should be securely tied down at both the front and the rear to prevent movement. If the trike is transported on the open trailer the propeller should be firmly secured to prevent any rotation from the incident air flow.

PARKING

The flight has not been successfully completed until the engine has been stopped, the aircraft has been securely parked and the pilot and passenger have disembarked.

The trike should be parked at 90 degrees to the anticipated wind direction with the brake on. The wing tip should be placed close to the ground on the side of prevailing wind direction. The base tube should be secured to the front pylon with the bungee cord or Velcro strap. If wind is stronger than 20 km/h the wing should be taken off the trike and packed up or the complete aircraft should be hangared.

17. CLEANING

Use pure water and a soft piece of cloth to clean the aircraft's exterior. If you are unable to remove certain spots, consider using mild detergents. Afterwards rinse the entire surface thoroughly with fresh water.

The interior is to be cleaned with a vacuum cleaner.

Cleaning the engine should be performed regularly to remove any oil and other residue. Periodic cleaning allows proper engine inspection and help to discover defects during inspection as well as reduce the engine fire potential during aircraft operation.

The propeller should be cleaned with water and mild detergent to remove dirt and bug stains.

Checking the propeller condition should be taken during the cleaning procedure as well as prior to the flight.

During cleaning the air filters, the rescue system and the electronics should be protected from water.