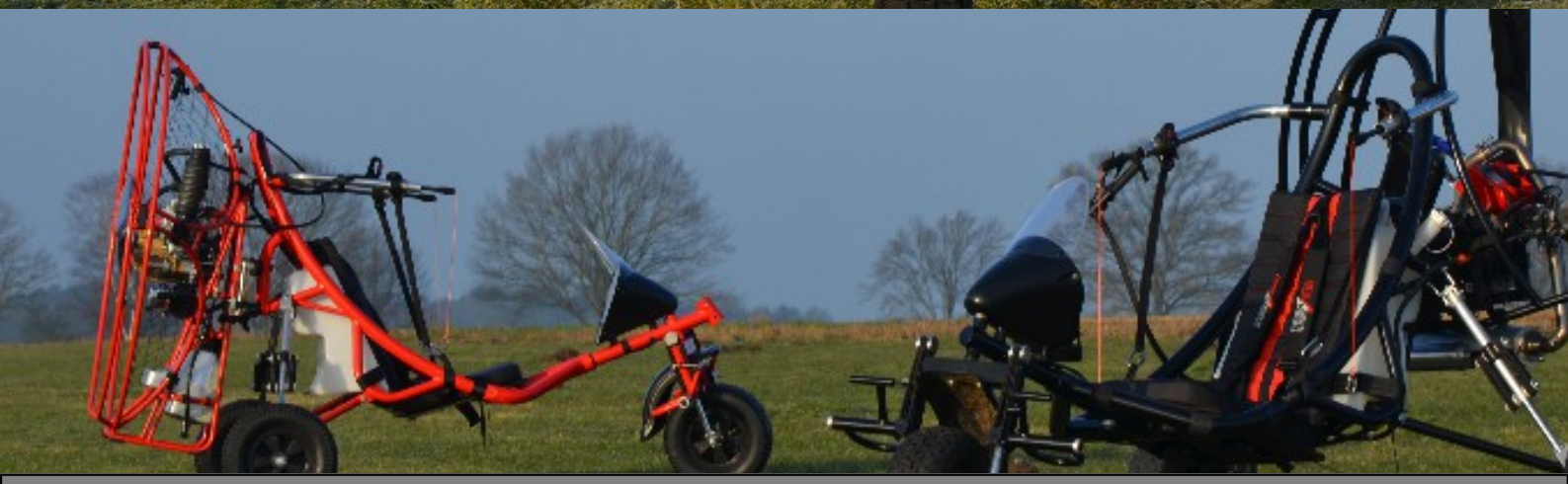
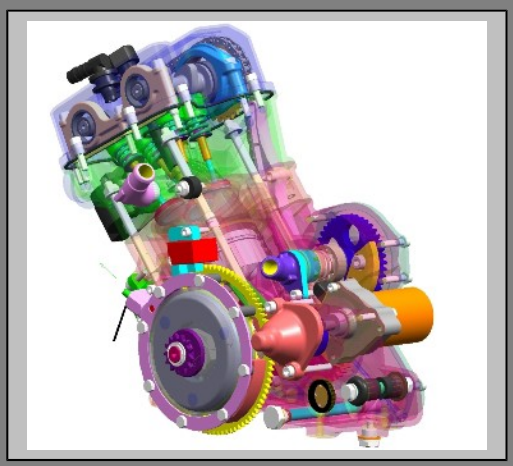


X-ONE 4T

Manual



Maintenance **Construction** **Operation**

X-ONE 4 T

INTRODUCTION

Prior to operation of this paramotor the pilot should familiar. themselves with this manual. It contains in addition to the essential legal information also information from the manufacter of the Paramotor.

The owner needs to become familiar with all aspect of operation and maintenance prior to use of this motor.The pilot is responsible for compliance with the laws and rules to their own country regarding flight restrictions and maintenance as well what is contained in this manual.

Additional laws have to consider like insurances. Aerobatics aren´t allowed with this paramotor.

Legally basics of the operation of ultralight paramotors are written in the accompanying law. All of the aspects in the law have to consider by operation.

Information regarding important updates to this model will be made available via your importer and published in the relevant national flying magazines under: http://www.freshbreeze.de/en/service/dfgdfg.html

The X-ONE is built and proved for paragliders according to the requirements for airworthinesss. (registrated under DGAC)

All paragliders which are registrated under DGAC in France have a type ertification and therefore legal to fly as well in Germany. All of them can be used for a flight with any motor/trike under 120 kg.

The document „Fiche D´Identification ULM De Class 1“ have to fill in from the pilot with his name and the serial number of the paraglider. The document have to signed and stamped from manufaturer of the glider.

PLEASE NOTE

- Do not make any flights in turbulent weather conditions. A paraglider in principle receives its shape only by the internal pressure. This can be established only when normal air flow conditions prevail.
- You need to fly with increased caution when thunderstorms are near by or forecasted.
- Under no circumstances a pilot should fly too close to the storm front.
- Land if ever in doubt.
- Other areas in your country will also have flight restrictions and laws of entry. These include for example military zones, controlled aircraft - and populated areas.
- Seek information about an area before taking flight as well as the appropriate licensing.

It is possible to upgrade the X-ONE with a Trailerkit. Then you can utilize the trike as a sporttrailer It enable the legal use on public roads. This kit contains:

- Draw Bar
- Light Bar
- Road Tires

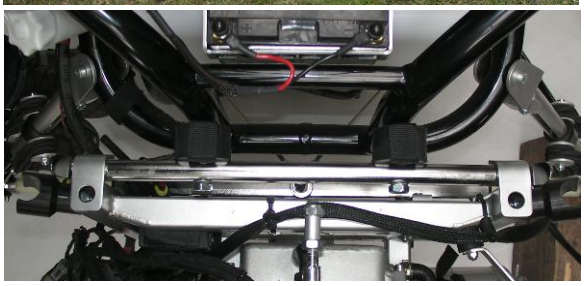
It is necessary to remove the draw bar before flying. There is an easy way to disassemle. The safety ring and both bolts have to remove. Then you pull out the draw bar with a downward movement.

The additional weight of the road tires are round about 12 kg(13,2 lb) So please use the road tires only for the transportation on the road.

The tires be plugged into the axis and assured with safety pins. Check the rear tires before you go on the road.
Lift up each side and check the bearing for strange noises. Water inside the bearing are very bad.

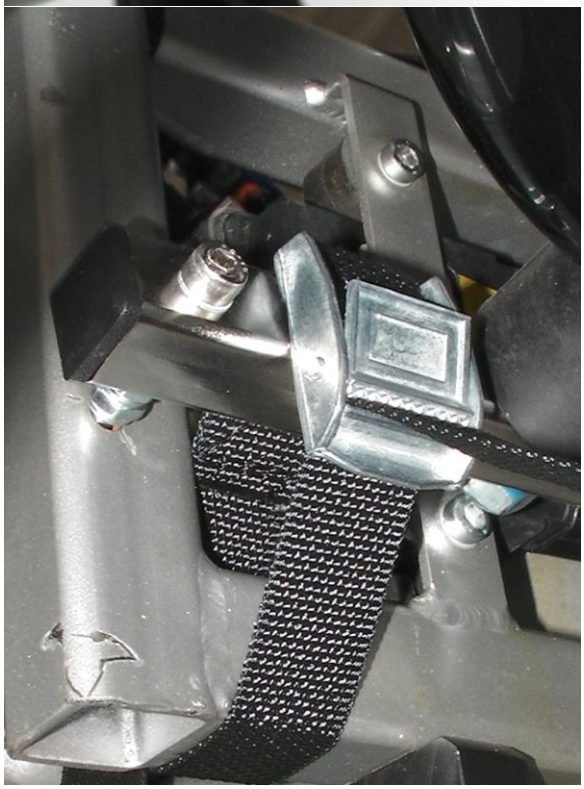
You can remove the engine from the trike easily.

The engine frame has two hooks where you can attach the motor on the engine support.



Please consider that the guiding bolt is placed in the frame.

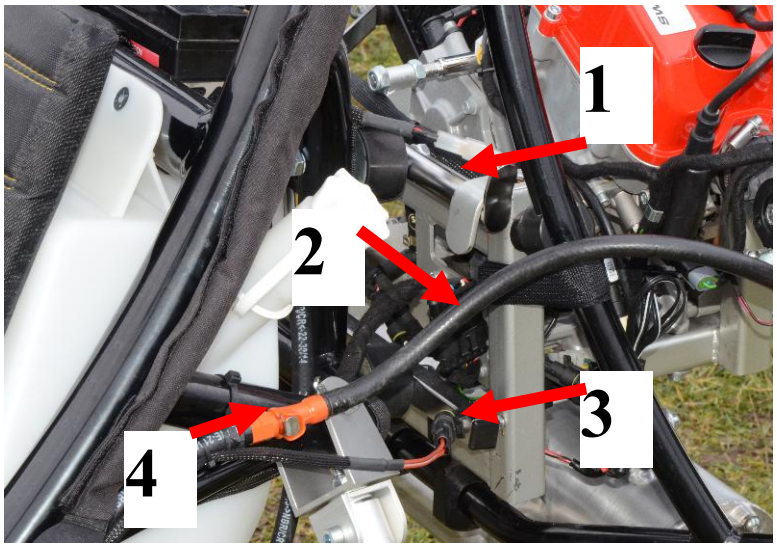
The engine will secured on both sides with the belt.



The front section can be adjust in the length. The screw will untighten and the front section can slide in or outside.

If the engine has been attached to the trike all cable and hoses shall be connected.

1 = Battery Cable
2 = Cockpit
3 = Fuel Pump
4 = Puel Pipe

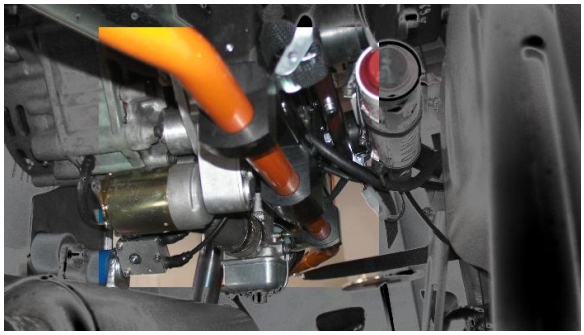


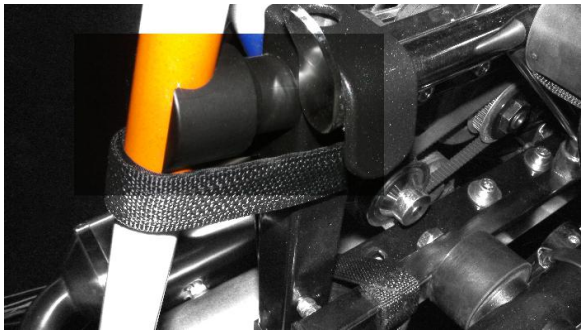
The battery is guarded with a 15 A fuse type "Mini"

Fixing cage for Propeller in140 cm

You can disassemble the propeller for an easy tranport

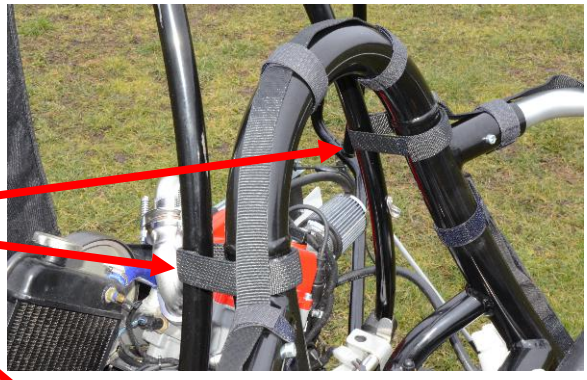
The cage bracket´s are located under the engine and …

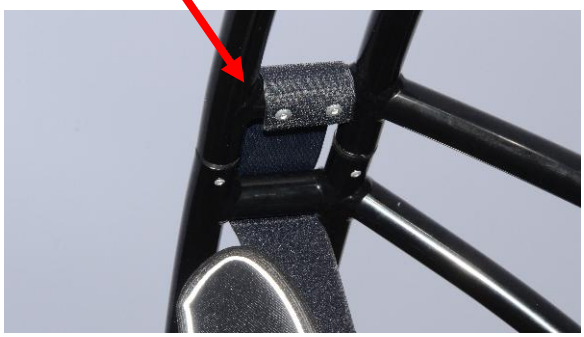




… sideways right and left on the engine support.

The cage will fixed with velcros.



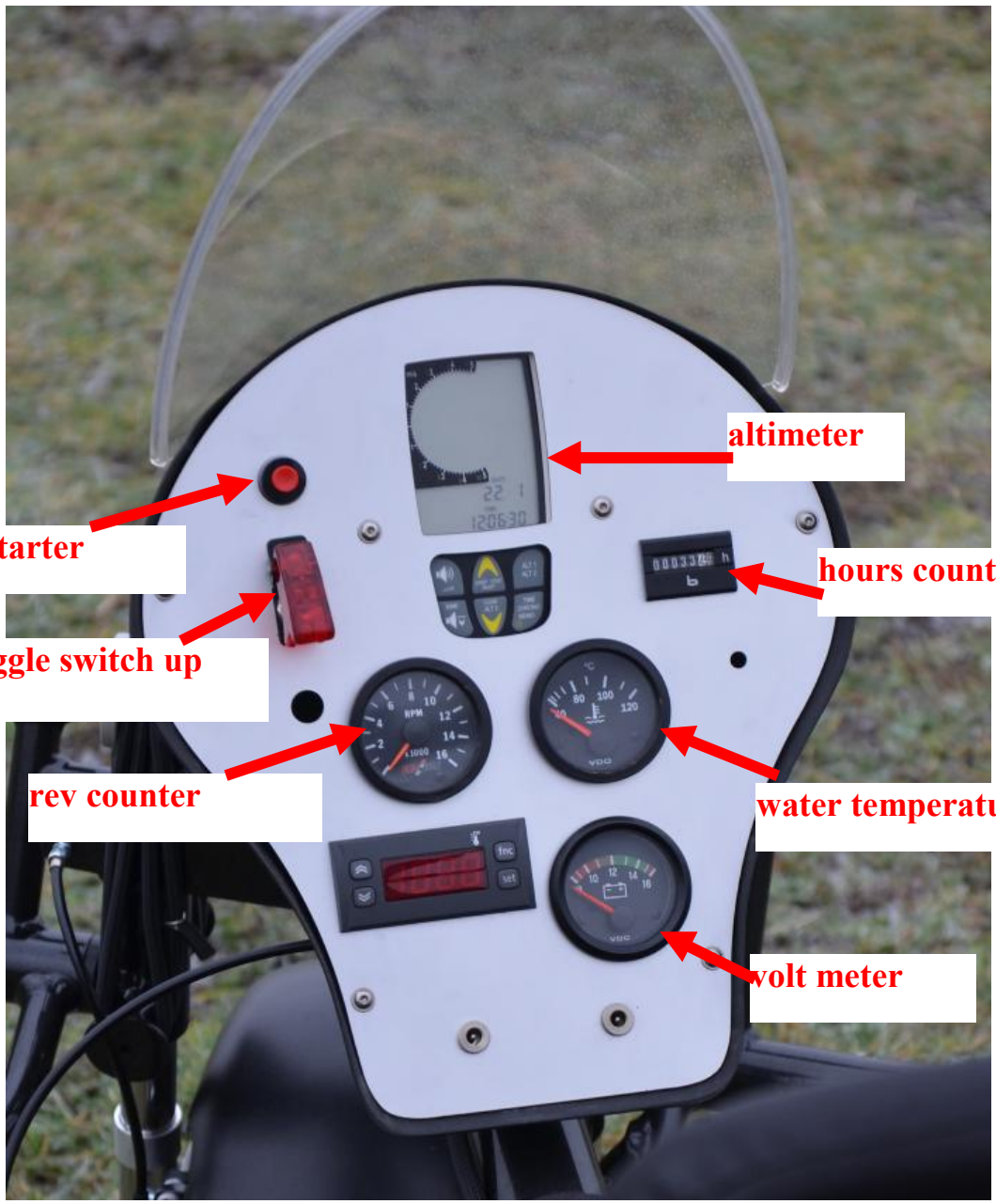


The aluminium tube with a rubber cord and hooks protect the glider lines against accidental contact with the propeller on the bottom.

These hooks will rest in the eye which are located in the hub of the back wheel.

The X-ONE 4T have a propeller with three baldes and a diameter of 140 cm. He is fixed with 6 screws (M8 x 40). The tightening torque amount 20 Nm.

Cockpit with possible technical configuration



The cockpit can be equipped entirely different. . Depending on which engine is used . Very useful are engine RPM and temperature instruments.

The X-One can be equipped with a throw by hand system or rocket rescue chute which have a ballistic trigger mechanism.
The installation of the chute can be done at the right or left side. According to that the V-lines should be laying like in the picture is demonstrated.

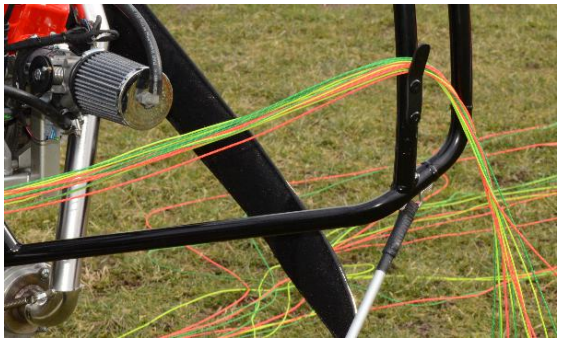
The handle must be unlocked only for flight and are used only in an emergency situation.

The gilder will hinged in this carabiner. The brake line should be run here by the lower pulley,so that the brake handle can reached in flight at any time.

The start aid line is hooked in the A-line. An additional ring is attached o the top of the A riser.

The correct lengh of the start aid line is essential to check.The red line of the start aid line must sag slightly when the strap is pulled 90° to the push rod.This must be explained/set by an expierienced instructor.

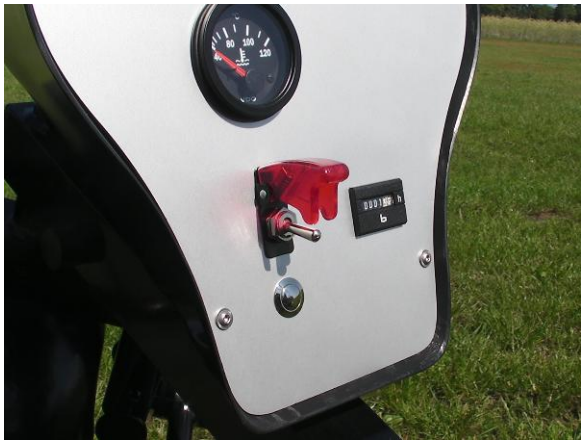
All lines from the glider should be placed in the holder before take off.



Seat belt

The trike has a 4-point seat belt system. The belt has 4 buckles and can herewith adjust for differnt body sizes. One central buckle to open the hole system is positioned in the amount of belly upon my torso

For start the engine open the red cover and set the toggle switch up.



The electric starter is activated by pressing the button. The engine have to started in the neutral position of the throttle lever.

To switch off the engine close the red cover.

The following points should be attend before every start

- Cage secure; Assured to the frame with velcro
- Is the cage in a correct shape and propeller clearence
- Propellerhub without any tolerances
- Fuel with minimum 95 Octane
- Ventilated gas cap screwed on the fuel tank?
- Check glider and all lines
- Pilotsuspension and straps witout any stress
- All rubbermount check for fissures
- Full throttle test (7800 1/min 4T),(7100 1/min Hyper ThoriX)
- Kill switch test
- Coolingsstyem, expansion tank; Level and leaky
- Fuel system; level and leaky
- Engine secured with webbingstraps
- Oil level (4T)

The following points should be attend each 10 h

- Fuelfilter and dirt inside
- Check exhaust spring
- Exhaust for fissures
- Check rubber elements from the air filter for fissures

The following points should attend each 25 h (4T)

After the first 25 h control valve for tappet clearance; Thereafter all 50 h
Intake valve: 0,05 mm up to 0,15 mm Outlet valve: 0,2 mm up to 0,3 mm

Oilchange Castrol Edge full systethic 0W-40(900ml)
BulliX 4T by FB, Castrol Edge, (it´s better to change it more often then it´s declared)

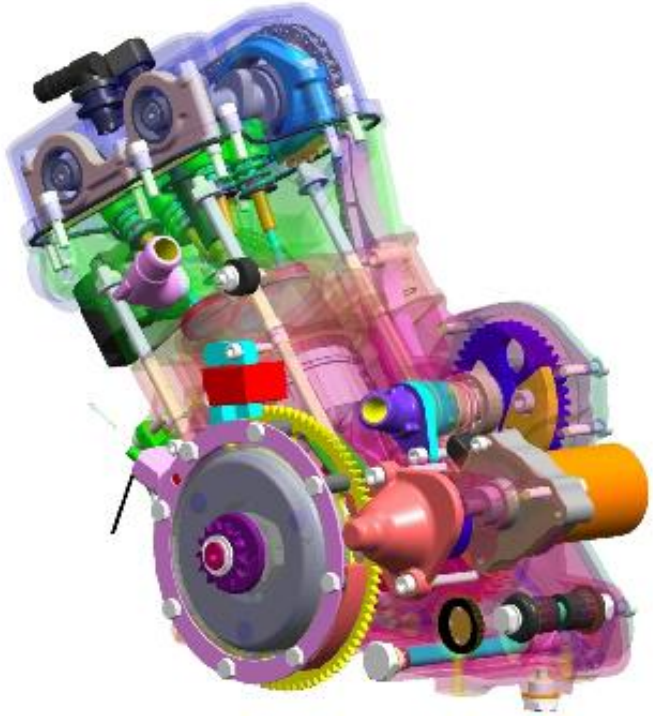
GLIDER
THE GLIDER SHOULD BE CHECKED ALL 2 YEARS. SEND TO THE MANUFACTURER
MOTOR
THE ENGINE SHOULD BE CHECKED EACH YEAR ALIKE HOW MUCH HOURS IT´S USE (This is only possible by Fresh Breeze or our authorized sales partners)

!!!
WITHOUT THESE CHECKS NO WARRENTY OR OTHER CLAIMS! PLEASE USE ONLY FRESH BREEZE GENUINE SPARPARTS.THIS WILL TAKEN POSSESSION ALL SAFETY AND STIFFNESS WHICH IS REQUIERED FROM DULV
!!!

BE SURE TO FOLLOW THIS SAFETY ADVICE EVERY TIME YOU USE FRESH BREEZE MOTORS !

- USE YOUR ENGINE CAREFULLY. DISREGARDING ANY SAFETY ADVICES AND INCAUTIOUS BEHAVIOUR MAY LEAD TO SERIOUS INJURIES.
- NEVER COME CLOSE OR GRAP INTO THE SPINNING PROPELLER. HIGH RISK OF SERIOUS INJURIES.
- THE ENGINE MAY NOT BE STARTED WHEN IT IS STANDING ON THE GROUND. HIGH RISK OF SERIOUS INJURIES.
- NEVER TOUCH HOT PARTS (ENGINE, EXHAUST). HIGH RISK OF BURNING.

Engine	1 Cylinder 4 stroke with balance countershaft
Cooling	Watercooled with integrated pump
Enginecase	Aluminium
Cylinder	Aluminimum with nikasil coated
Bore / stroke	75 / 56,5 mm
Capacity	249,6 ccm
Power	23 kw at 7800 1/min
Cylinderhead	4 valve per cylinder,2 overhead camshaft
Crankshaft	Forged steel
Piston	Aluminium forged
Rod	Steel forged
Lubrication	Integrated dry pump with diaphragm pump
Ignition	Digital ignition with rev limiter
Sparc plug	NGK C8E 16 M 10 x 1 12 Nm
Fuel system	Electronic fuel injection
Gearbox	Drive belt with centrifugal clutch Poly-V belt 775 8PK
Engine weight	15 kg incl. E-Starter
Weight trike total	93 kg without paraglider

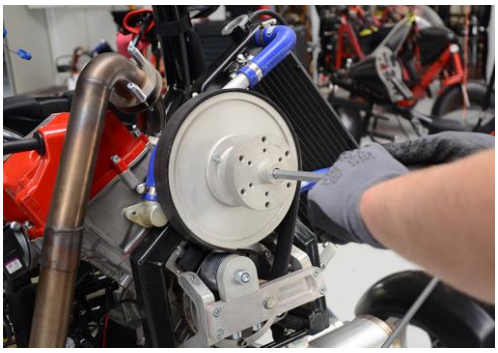


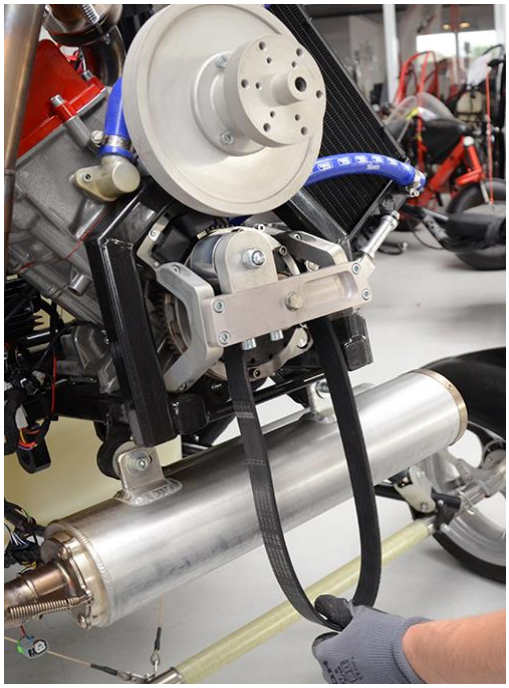
With 6 mm allen key open the clamping of the hub mounting...

…and with 10 mm allen key turn right the exccentric cam to tighten the belt.
(8PK 775 Optibelt) For loosen the belt turn left. Subsuquently tighten the clamping of the hub mounting.

Unscrew both clamping screws of the eccentric shaft. (6 mm Allen Key)

With an Allen Key (10 mm) release the tension of the belt turning against clockwise. Then pull off the belt.





Adjust the lower pulley with a feeler gauge.

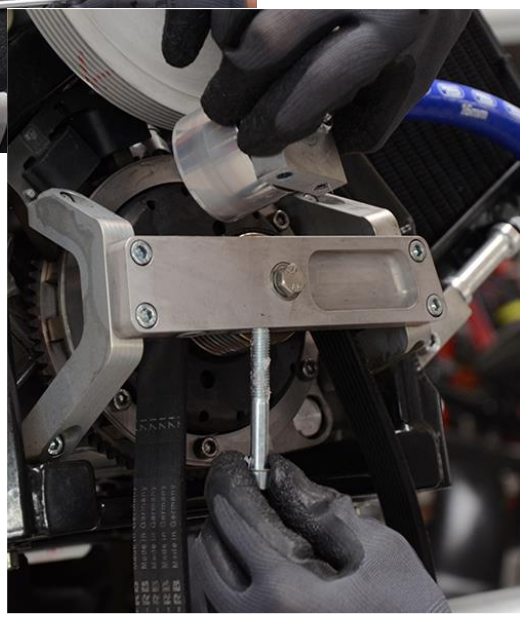
Press the pulley as much as possible to the engine and note the measurement.

Pull the pulley as much as possible against the engine. Note the measurement.

Take the average of both measurements. This is the distance you have to adjust the pulley from the holder brace.

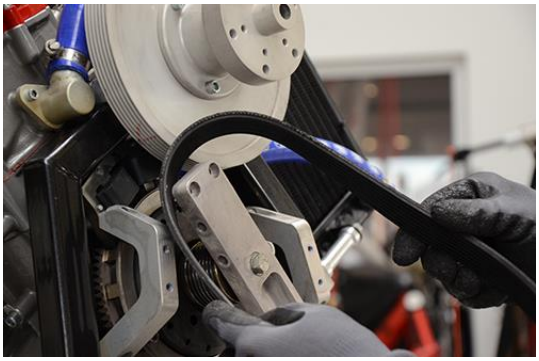
Tighten up the hex bolt and check the tension of the belt.

Unscrew the screws of the tensioner pulley holder (6mm Allen Key).



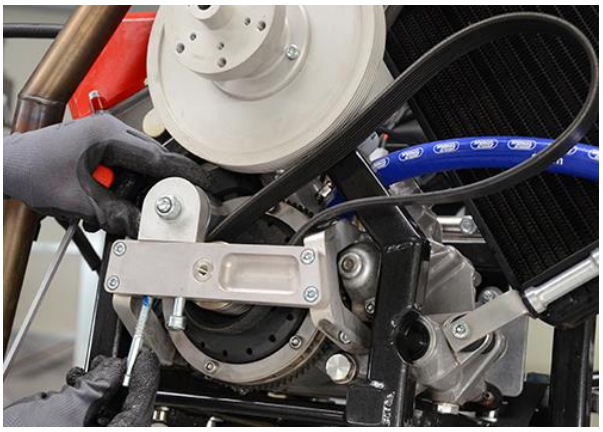
Release the 4 screws of the holder brace (Allen Key 5 mm) and turn it.
You don´t need to release the center hex bolt for replacing the belt.

Then take off the belt.



Take a new belt and pull in on.

Dip the four screws of the holder brace into “Loctite medium” and screw them in.

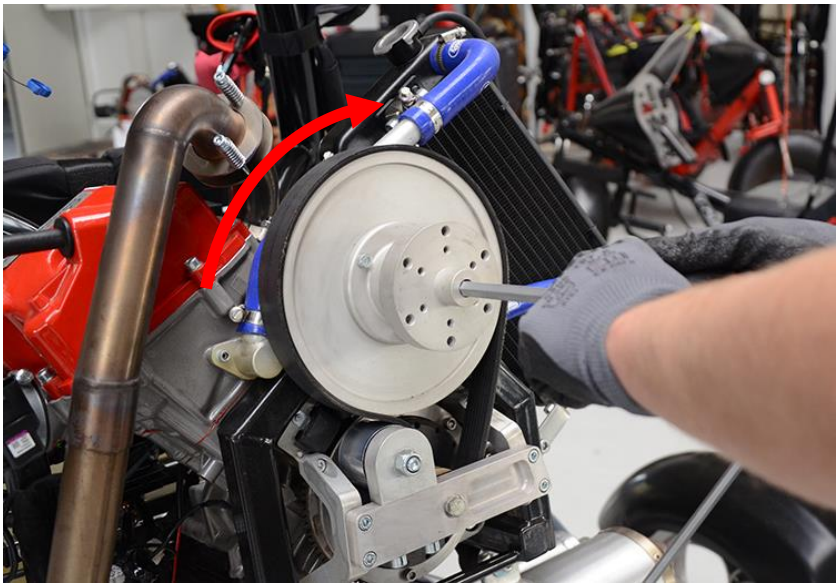


Put on the belt onto the big pulley, tighten and screw down the eccentric shaft.

Release both clamp screws for the eccentric shaft with an Allen Key (6mm)

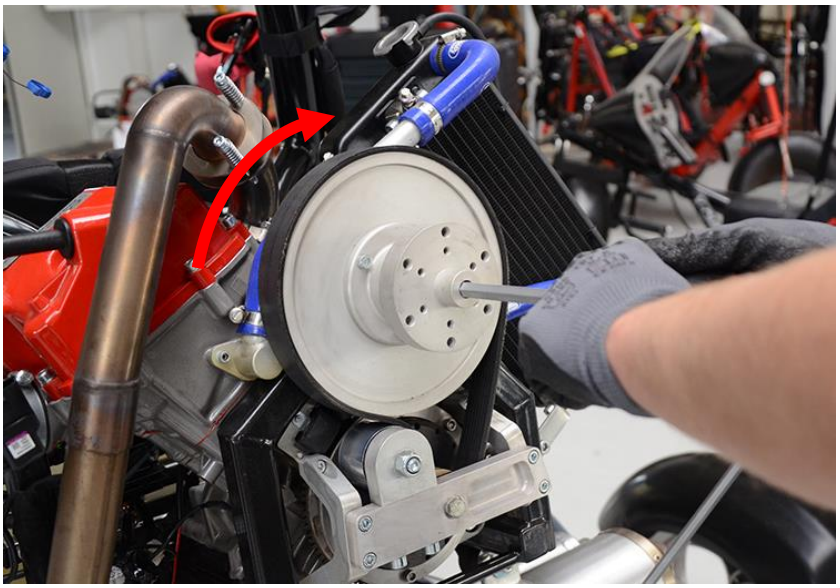
The 10 mm Allen Key
Bring the 10 mm Allen Key into the center hole of the propeller hub

To tighten the belt turn right
To loose the belt turn left

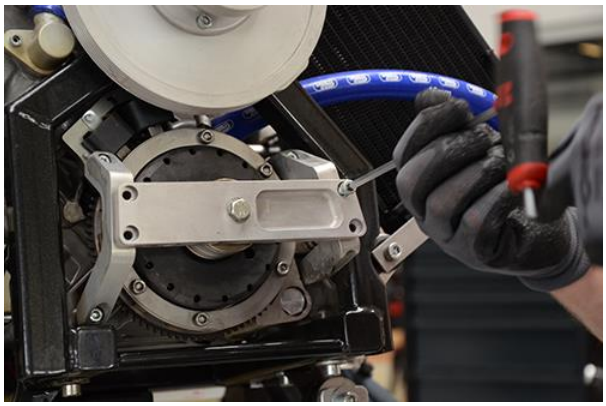


Release both clamp screws for the eccentric axis with an Allen Screw Diver (6mm)

Adjust the location of the eccentric hub to tighten the belt.
Right turn: tighten up
Left turn: release

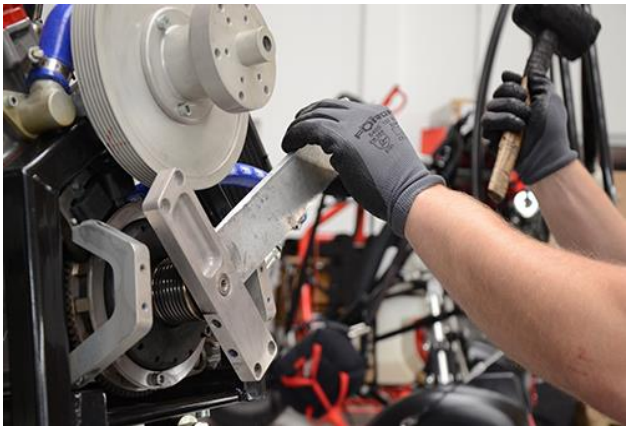


Pull off the belt.

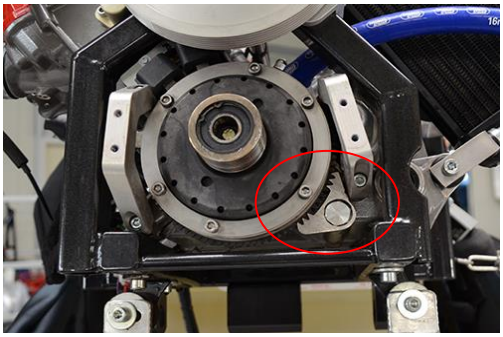


Unscrew the holder brace.

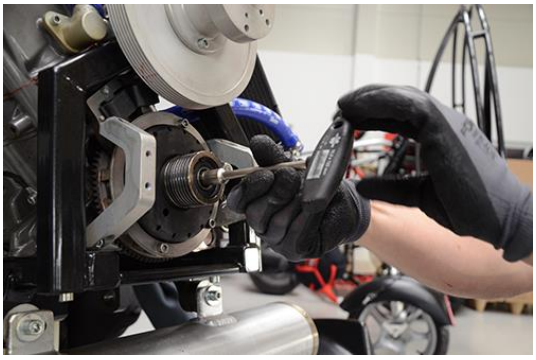
Because of dirt it could be that the holder brace is stucked and you can´t pull it off easily. You can use a rubber hammer and an alu wedge to loose it gently.
Clean the dirt with rust remover WD40.



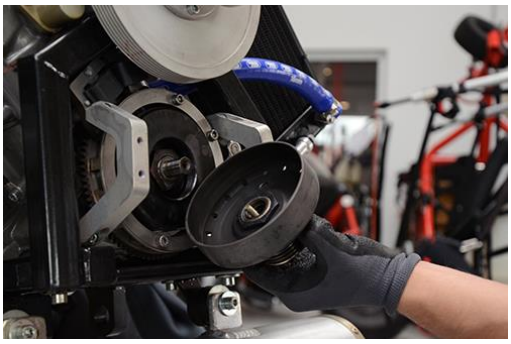
Block the crank shaft.

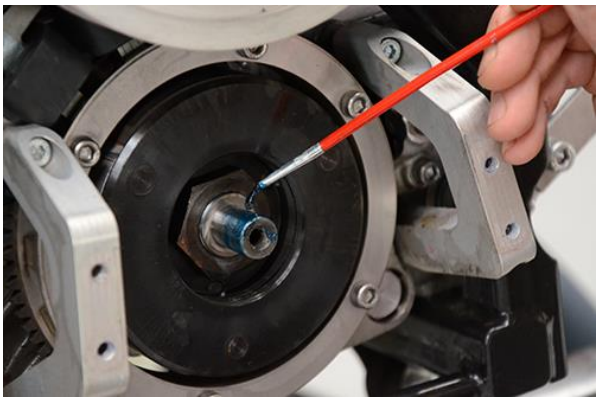


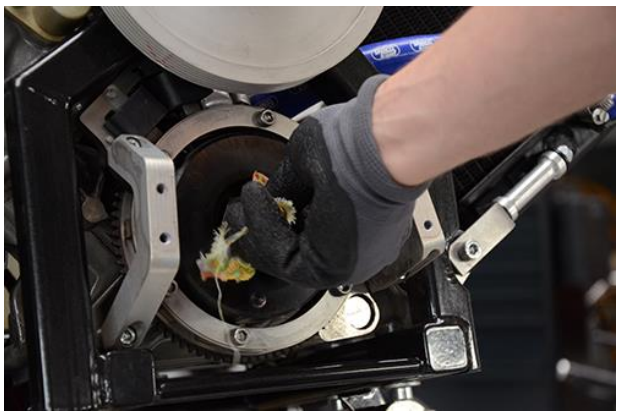
Uncrew the clutch bell.



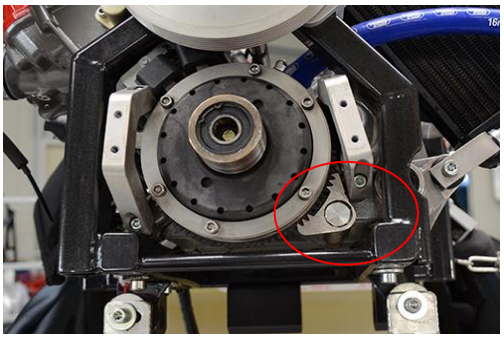
Clean the crank shaft journal with brake cleaner and grease it with ball bearing grease.



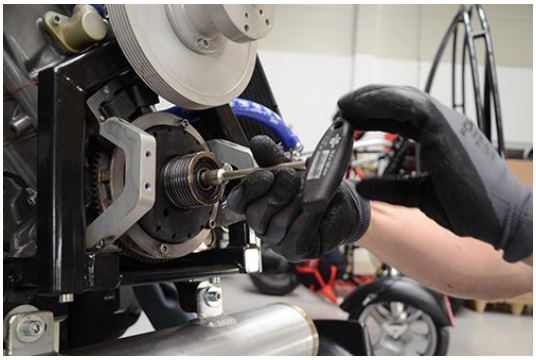




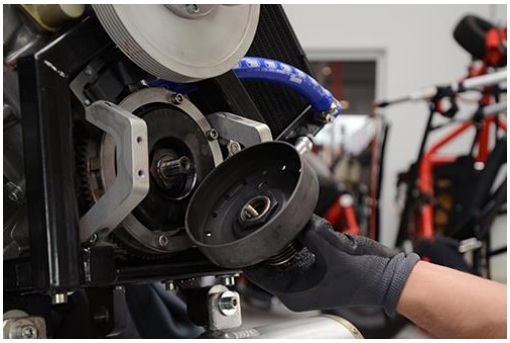
Block the crank shaft.

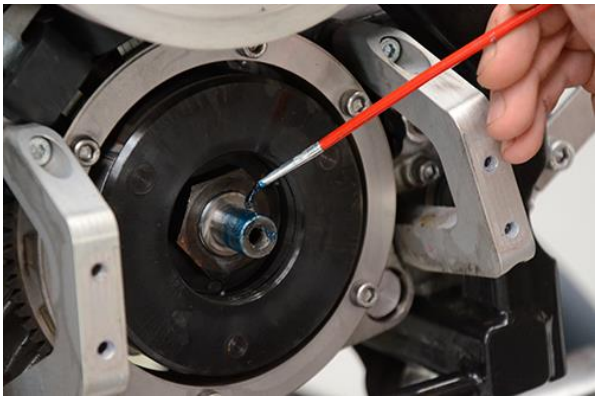


Uncrew the clutch bell with 10 mm T-Wrench



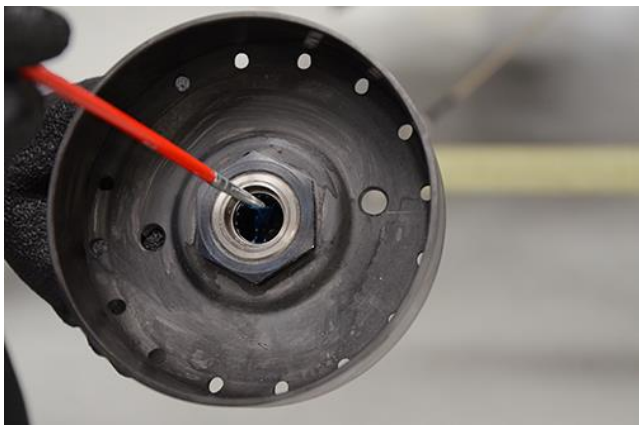
Clean the crank shaft journal with brake cleaner and grease it with ball bearing grease.

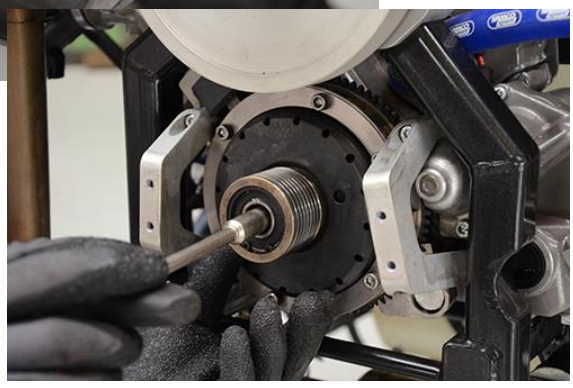




Clean the clutch bell with brake cleaner and grease the needle bearings from the inside.

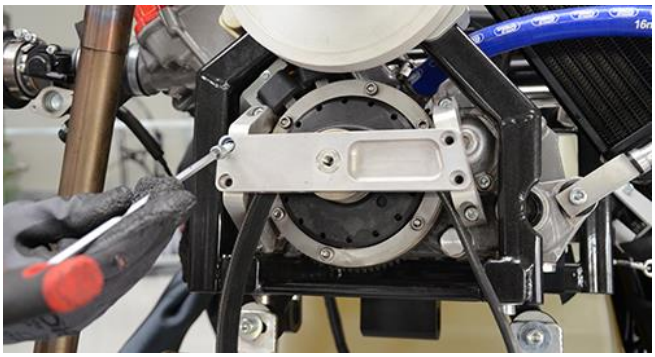
Dip the screw of the clutch bell into “Loctite medium” and then screw it back onto the crank shaft journal.



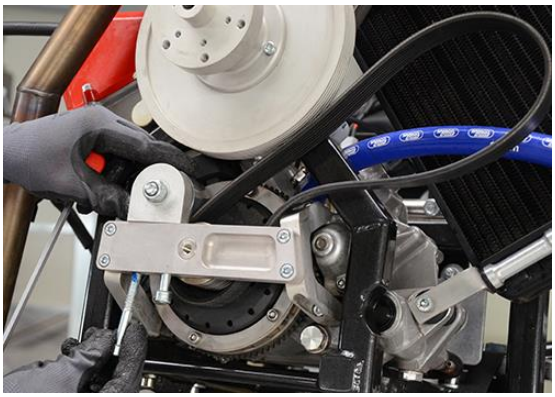


Take the belt and put it back on the pulley.

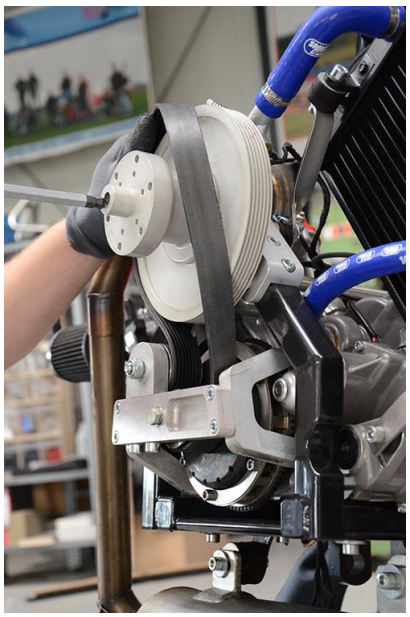
Screw down the holder brace. (“Loctite medium” for the screws)



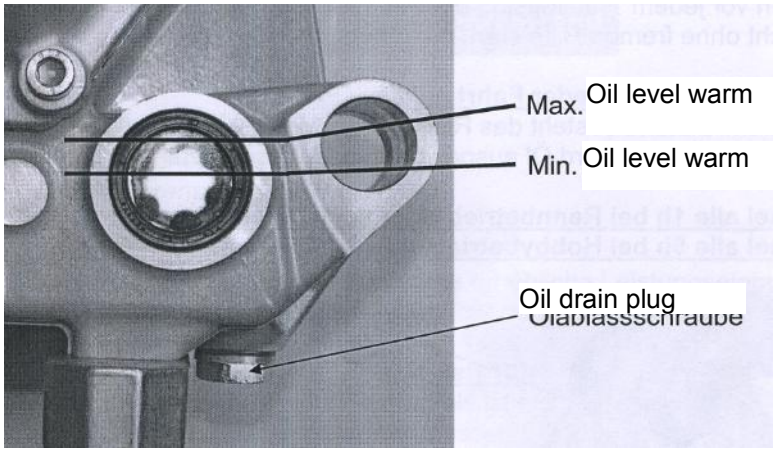
Screw down the tensioner pulley holder as well. (Don´t forget “Loctite”)



Put on the belt to the upper pulley.



Tighten the belt and screw down the clamping screws of the eccentric shaft.



The oil drain plug owns on the the upper end a magnet. This attracts metal shavings and must be cleaned at each oil change. This screw is tightened to 26 Nm. (M 14 x 1.5)

With every second oil change, clean this filter. Be aware that the filter will be returned correct so that it gets its functional.
This screw is tightened to 26 Nm.
The oil volume is 900 ml, the best oil is Castrol Edge Full Synthetic 0W-40 or BulliX 4T Full Synthetic 0W-40

TO PUT IN OPERATION AND TEST-FLYING

Paraglider spread for visual inspection

SPREADING

Place the paraglider with the upper surface against the ground and spread ihim out so that the leading edge is slightly curved.

Carefully separate all the lines and take care that no lines are underneath the canopy nor tangled are in any way.

PRE-FLIGHT INSPECTION

What to check before every take-off carefully:

- Are there any fissures or damages at the glider?
- Are all lines untangled?
- Are the brake lines clear and proper connected with the brake handle?
- Are the brake lines configured correctly?
- Are the shackles proper locked and secured with the rigging-lines and at the riser?
- Is the glider dry?
- Are the risers undamaged and all stittchings okay?
- Is the rescue handle released?

7-POINT-CHECK

Immidiatley before the take-off we recommend the **6-POINT-CHECK**:

1) Is the glider spread out in a slight curve and are all of the cell-openings clear?

2) Are all the lines untangled and take care that no lines are underneath the canopy

3) Are your clothes and helmet closed, can something fall out your pockets, is the safty belt secured properly ?

4) Are brake handles within reach of the pilot ?

5) Guarentee the weather conditions (wind direction and wind strenght) a harmless flight?

6) Are the air and start areas free?

7) Are the strabs unter the seatbord closed?

YOUR FIRST FLIGHT

IMPORTANT NOTE!

Your first flights should perform during calm weather and on a familiar airfield.

At the beginning lead your trike gently and dosed therewith you can slowly get accustomed the reaction of the glider.

ATTENTION! DANGER OF ACCIDENT!

Do not overestimate yourself. Do not be mislead through an esy paraglider or the behavior of other pilots to reckless behavior.

ADJUST THE MAIN BRAKE LINES

IMPORTANT NOTICE!

Before test-flying it´s necessary that an expert checks the main brake lines.

PROPER MODIFICATION

Properly installed brake lines have only little free motion.This means that the brakes starts beneath immediately until the trailing edge of the canopy begins to move downwards .This modification will be done on ground.

TOO LONG

If the brake lines are too long, the paraglider reacts slowly and it is difficult to land. It´s possible to compensate the problem during the flight by doing the brake lines one turn around your hand. After the landing please adjust the brake lines correct

Recommendation:

To flaire out, brake evenly. For drop down down the glider drag the lines the whole range. This procedure makes it easier to lay down the glider behind your trike while there is head wind.

Attention Danger Of Accident!

If the brake lines are too short there are this following dangers:

- The risk of early stall
- The glider has a bad take-off behavior, it exist the risk of constant stall
- The glider shows an extreme flight behaviour

CRUISE
The torque effect can compensated by means of the trimmer.
Even with this trim´s you can control the speed.
The cruise conrtol can be adjusted by means of the small lever to hold the desired rpm.

LANDING
The landing should always be against the wind.
Close the trims and reduce the engine speed. Take the brake handless, Start with the braking in ~5-8 m height. If the brakes started too early you can land with engine support.
The glider should after landing fall behind the trike.

Engine Stop
Idle running.
Switch off engine (Main Switch „Off‘).
Only leave the trike when the propeller not urning any more

GROUNDHANDLING
When maneuvering the trike on the ground, do not hit the cage with his hand down
The cage is not designed for this load direction

FLIGHTS UNDER SPECIAL CONDITIONS

RAIN:
Basically belongs to every conscientious flight preparation the look of the weather situation, so that "really" no flights in rain should be necessary.
Nevertheless, each pilot can fall into worse unpredictable weather conditions.
In general: No flights in the rain, as soon as possible to land!
In very light rain the flight can be continued at first. The increasingly becoming wet glider is correspondingly heavier and therefore must flown faster to generate the necessary lift. The stall speed increases accordingly. A stall is possible!
Therefore: Cautious flying, avoid abrupt maneuvers, do not fly too slow for landing.
In heavy rain always land, perform in need a safety landing.
Store away the glider only dry, they rot otherwise. A wet glider also starts slower and worse!

WIND:
Generally, each start and each landing must be performed whenever possible into the wind. The glider will always turn into the wind. Must be rolled diagonally to the wind, use the leeward brake line slightly to hold the glider in the right direction.
Must be landed in strong wind use the foot pedal brake. It prevent a back pulling effect of the trike. After touch down wind the brake line one time around your hand.
You will get a more efficience brake.
In turbulences do not fly at maximum speed. The reduced angle of attack allow a collapse of the glider in case of wind gusts. Close the trim´s.
Flights are not permitted at snowfall and have to stopped if necessary.
Extreme temperatures: Restrictions in "normal" temperatures between -10 and +35 ° C does not exist. “START PILOT” could simplify at low temperatures to start the engine. However, the cooling water must be mixed according to the manufacturers instructions of the engine with antifreeze. In warm weather please have special attention to the engine temperatures. The power consumption and flight speed increases in result for longer take off and landing roll distance.

START, FLIGHT, LANDING:

Here are some supplements that goes beyond the description of the first flight

If the glider falls too far on the side, do not continue the take off procedure.
It is better to cancel two times the start than one time to get up side down.
If the glider is already collapsed while pulling up try to get clear by pumping the brake lines.
Take off only with a complete opend glider and in center of the trike.

Experienced pilots can ride with in no wind a full circles with less than 50 m diameter.
The glider is herwith over the pilot.

FLYING UNDER TURBULENT CONDITIONS

Note!
Take care crossing your own vortexes!
Though the tendency to collapse is significantly reduced due to the high wing load of the X-ONE, in turbulent air you should fly it with the trim system set to slow. The stabilizing effect of the increased pressure inside the wing at higher speeds is more than counteracted by the smaller angle of attack.

Use both brake lines in turbulent air and keep them slightly pulled down (20%), and keep the canopy above you and centred with active work at the brake lines. This reduces the risk of a collapse.

If the canopy collapses anyway on one side, keep the direction with the brake lines (and, if necessary, fly away from any obstacles). Only if you fly stable “pump” the brake on the collapsed side to re-open the wing quicker. You may have to do it forcefully due to the high wing load.

If you fly into very thermal conditions fly slowly but don’t pull the brake too much to stay away from a dynamic stall. If you leave such a thermal area pull the brake lines to avoid a forward shooting canopy and the potential risk of a front collapse. You may give more gas as well to increase the angle of attack.

Note!
If the canopy collapses on one side brake the other side until the X-ONE is flying straight forward. But better use less than too much brake input!

LANDING WITH ENGINE SHUT OFF

In principle landing with the engine shut off is the same as if it is still running – always facing the wind. But the speed should be kept up high enough for a prop flaring. So hold the brake lines up until you are roughly 2 m high. You should win them 1 times around your hand to have more brake travel. In 2m altitude start to applied brake continuously. Just at touch down the brake lines should be completely pull down.
If due to the wind the canopy doesn't fall down behind the trike you may release the brake for a moment, wind them 1time more around the hand and pull it again. You may repeat this procedure until the glider comes down.
If the canopy pulls too much to the side the trike may finally roll over. Therefore keep the canopy centered as good as possible behind the trike.
If the wind is quite strong it may help to get the canopy down by not braking too much with the front wheel. Then the trike may roll back with the wind a little bit.

LANDING WITH THE HELP OF THE ENGINE

As the wing load of the X-ONE is quite high compared with a backpack motor, the glider should not be flown too slow prior to touch down. We recommend to keep the brake wide open until you reach roughly 2 m, and then pull it continuously down until you touch the ground. At this time the brake should be fully applied.

Please make sure that the brake line is perfectly adjusted to your X-ONE so you don't loose brake travel when landing.

You may use the engine to adjust the descent rate. Control altitude and speed with brake lines and gas.

Caution! Accident risk!

Being close to the ground watch your air speed carefully, don't fly too slow: Always much faster than your stall speed!

RAPID DESCENTS

There are many situations when you need to lose altitude rapidly to avoid potential dangers e.g. pulled up from a cumulus cloud, an approaching cold front, a storm front etc. Below we explain various ways to make a rapid descent which can be carried out safely with the X-ONE if the pilot has the necessary knowledge and if they are correctly executed.

NOTE!

With all rapid descent methods, the trim system should be completely set to slow and the rpm's reduced to idle.

All of the manoeuvres are more dynamic than when you fly with a backpack system or even without a motor due too the high wing load.

DEEP SPIRAL

The spiral dive is the classic method for making a rapid descent with a sink rate of up to 14 m/s in normal flight situations, and up to 20 m/s in extreme flight situations. It is particularly suitable where there is a high ascent rate and little wind. Spiral dives with a sink rate above 14 m/s are not tested on certification; this exceeds the manufacturers limits.

STARTING THE MANOEUVRE

Whilst flying at full speed, start to apply the brake on one side. This will steer the paraglider into a turn with a strong bank. You can tell that you are in a spiral dive if you are being pressed hard against your seat (high centrifugal force).

When you are in a spiral dive, you should steer very carefully because the paraglider will react immediately. Banking and rate of turn increase if braking efficiency increases. Look down before and during a spiral dive so that you always know how far you are away from the ground!

RECOVERY

Recover from the spiral dive slowly and carefully. If you release the brakes too quickly, the increased speed can cause the wing to climb, become unsettled, or partly collapse.

Due to the reduced possibility when flying in a trike to use weight-shifting, you must always recover actively from the spiral dive with the outside brake.

Caution! Accident risk!

Very high turn speeds can be reached with spiral dives, with high G-loads.

So be careful when you try this!

Do not continue the spiral dive too long; you could lose consciousness.

Never attempt this with less than 150 to 200 meters ground-clearance.

Spiral dives combined with other methods like B-stall or "big ears" are not possible with the X-ONE without any changes and are not allowed at all.

INSTRUCTIONS FOR EXTREME FLYING AND DANGEROUS SITUATIONS

Extreme flying with a motor trike and full gas are extremely dangerous and therefore cannot be tested. They must be avoided at all costs. Problems do not arise during a normal flight. However, pilot error during the flight or extreme wind conditions may force the wing into an unusual flying position. This may require the pilot to make corrections during flight to which he may not be used to. In this section we explain how to correct extreme situations if they do arise. The manoeuvres described below are based on the legal take-off weight as described in the technical data section.

NOTE!

These instructions do not replace safety training or specialised literature. We recommend that you undertake special safety training which will prepare you for extreme situations.

Always keep within the recommended limits. Do not perform aerobatics or extreme flying manoeuvres. This will prevent accidents caused by over-loading the glider.

DEEP STALL

Various things can cause a paraglider to deep stall, e.g. shrinkage of the C and D lines as a result of dampness or flying in the rain. The airflow from the front of the glider gradually breaks away towards the back and the canopy sags, with the glider remaining upright. Paragliders are particularly susceptible to deep stalls if the wing loading is too low. C and D lines which are too short, for example, can often be recognised because launch behaviour deteriorates. You can recognise a deep stall because there is less flight noise than normal. In addition, your sink rate will increase (6-8 m/s).

RECOVERY

The XWing couldn’t be deep-stalled at all during our test flights. The usual recovery procedure would be to decrease the angle of attack be shortening the A- and B-lines. But this would require huge forces at the X-ONE. Better would be to decrease the angle of attack be pulling both trim levers back.

Caution! Accident risk!

A wet canopy or flying in the rain increases the weight of the canopy and may cause a stall. You are not allowed to fly under these circumstances.

FRONTSTALL

Strong turbulence can cause part or all of the leading edge of the glider to fold or tuck under. Normally the glider will immediately recover into its normal flight position.

RECOVERY

If the XWing does not immediately recover from a frontal tuck, brake quickly and strongly with both steering-lines (brake lines) to reinflate the glider.

Any weather condition which causes a front stall is much outside the allowed and safe weather conditions. If you get into such weather land as soon as possible don´t continue before the weather got quieter!

ASYMMETRICAL TUCKS

In turbulent air, one side of the paraglider may collapse. Some of the cells deflate and the paraglider may collapse or spin.

During test flights the glider should self-recovered on release of the A-risers which were pulled down to initiate the collapse. It turned less than 90° and stabilised itself.

RECOVERY

- Counter-brake slightly on the side of the paraglider that is still inflated to stop it turning away and to stabilise it.
- Counter-brake just enough that the paraglider continues to fly straight ahead.
- If the wing has not yet self-recovered, pump with the brake on the side that has collapsed in order to open it, making use of the full brake travel.

Caution! Accident risk!

Counter-braking too strongly can result in a stall on the inflated side.

FULL STALL

A full stall could occur if full brake is applied during the flight. The paraglider slows down, surges backwards and deflates. If the brakes are held down, the canopy comes up over the pilot again. The result is an almost vertical descent with a sink rate of about 8-12m/s.

The delivered configutation X-ONE with all gliders is so far not been tested in flights. It is a very dynamic maneuver with high descent speed and high surface loading. We don´t recommend this manoeuver.

RECOVERY

Fully release the brakes within 3 seconds. If you release the brakes too slowly, the paraglider may spin. The spin stops automatically when the brakes are released completely. Is a recovery impossible: ignite salvation!

Caution! Accident risk!

If the canopy has gone backwards, you must hold the brakes down or the canopy can surge forward and in an extreme case end up underneath the pilot. Hold the brakes down until the canopy is above you again.

SPIN
Spins occur when one side of the canopy stalls. The other side still continues to fly forward, while the stalled side turns in the opposite direction.

RECOVERY

Quickly release the brakes.

Note!

If the spin does not stop:

1. Check whether you have released the brakes fully.

2. Is the spin still doesn’t stop, use your recovery system.

Caution! Accident risk!

In strong turbulence, always keep far enough away from rock faces and other obstacles. You need time and enough height to recover from extreme situations.

DAILY INSPECTION

The safety of an aircraft depends on his regular, diligent inspection and maintenance. We want to point out that all technical mistakes can be recognize in a Pre-Flight-Check. It is in your own interest to check your trike every day with great care.

1. Engine: Pay attention to spills.
2. Check propeller for tightness and damage and clearance
3. Check the frame for cracking, paying particular attention to the areas of the clutch and the engine mount.
4. Note oil and coolant level according to engine manual.
5. Lubrication, cooling and fuel system for leaks and connections
6. Electrical connections, spark plug, throttle cables
7. cable control of foot or throttle lever

NOTE:

A turning the engine by hand for testing purposes is not possible due to the built-in centrifugal clutch on the propeller.

8. Check Paraglider - All lines without knots or damage.
   No deformation, cracks or visible external damage
9. Check the entire pilot suspension
10. Check chassis for damage and rubber parts of the suspension
11. Check front brake and tire
12. Pedals free and cable o.k.?
13. Belts for Engine support
14. Check seat boards and belts for strength and damage
15. Tires and air pressure (front and rear wheel 1,8-2,5 bar)
16. Rear Glass Axle: Check for damages
17. Cable on Rear Glass Axle o.k.?

PERIODIC INSPECTION
Before every flight the responsible pilot has to do a visual check around the whole trike. The pilot will learn all expertises in the education and special details at the instruction of the trike.

Every 25 hours

- Visual inspection oft he screw connections
- Control the clearence of all movable parts especially wheel suspension and spring elements etc.
- Lubricate all parts where:
  a) metal touch on metal → machine oil
  b) metal touch on plastic →silicone spray
- Check the wheel brakes
- Ckeck the belt tension
- Ckeck the accelerator cable
- Check all belts, bucklings and pulleys
- Visual check welding seams to fissures
- Check all rubber/metal connections (rubber mounts) to fissures
- Check the cooling system level
- Check harness und connections
- Check the sealings oft he cooling system (water loosing, leakage)

Every 100 hours

Like the 25 hours inspection and in addition:

- change the spark plug

INSPECTION OBLIGATIONS

The trike has to check one time a year. This is set by law. (LuftGerPV §15)
In § 2 section 1 is declared that this time interval of 12 month can be extended in individual case if there are new technical developments.

Technical Information Hyper ThoriX 250

Engine: 1Cylinder, 2 Stroke
Coolingsystem: Liquid cooling. Liquid for aluminium engines always pink. Never mix it with liquids which have other colors!
Bore/Stroke: 72 x 60
Capacity: 244 ccm
Power: 26,5 kw
Compression: 11,5:1
Piston: 2 Ring Chrome
Inlet: controlled by membrane, Intake silencer
Carburettor Bing type 84: HD 160, idle 50,272, needle 8M1
Ignition: electronic
Alternator: 80 Watt at 5500 1/min
Spark plug: NKG BR9 ES / Champion RN2C
Petrol: 95 Oktane with 2% of oil
Gearbox: gear drives with 2,8:1 gear reduction
Clutch: cetrifugal clutch in oil 100 ml

- Elf Moto Gear Oil 10W40 Anti Slippage
- Shell Advance Gear SAE 10W40 API GL3

Carburettor Bing: HD 160; LD 50; ND 2,72; Needle 8M1 first edge from top
Propeller: H30F 1,25m R-L-12-2 ; H40F 1,40m R-Z-08-2
Battery: 12 Volt 8Ah
Water temperature: 50°-95°C
Exhaust temperature: 500-620° max 650°C
Air Fuel Ratio (Lambda): Max. 13,6 AFR
Rev: Max 7700 1/min

Torque in Nm for bolts / nuts
Bolt for head and cylinder: 12
Nut: 18
Clutch: 100
Crank shaft nut (side of ignition): 80
Propeller central nut: 80
Ignition left-handed threads: 20
Crank case bolts: 8
Intake adapter: 8
Exhaust connector: 18
Propeller M8: 14

Hyper ThoriX 250

This engine does not need any speciale procedures before you start to fly the first time.

If the engine is cold you can start it with the choke.
The lever of the choke is located at the carburettor (1) To take off the choke, switch off the engine.
You regulate the idling position with this speciale screw (2)
You can regulate the air fuel ratio with this screw (3)

- Screw in: the air fuel ratio is getting richer
- Screw out: the air fuel ratio is getting leaner

Before take off you should fwater the floating chamber. With the pump you can generate pressure.
We recommend a mixture of 1:50 (2%)
The Octane number not under 95.
We recommend our fully synthetic oil special 2blu

Hyper ThoriX 250

The cooling system is proved by the production factory until minus 30 °C.
If there is a bit to less liquid you can fill it up with normal tap water. But if there is a huge lack of liquid you should replace it with special liquid for aluminium engines. The color is pink.

Attention: Never mix pink with green liquid!

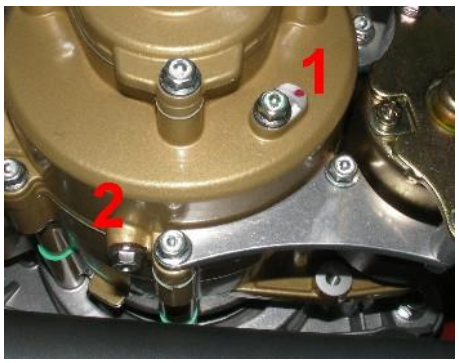
There should be always a little amount of cooling liquid in the expansion tank.

Attention: Only open the lid when the engine is cold and not running!

The temperature of cooling liquid while flying: in between 50°-95°C.
If the temperature is underneath 50°C you should cover a part of the cooling system.
There is a display in the cockpit which shows the temperature and rev.
This display switchs on itself when the motor is running.

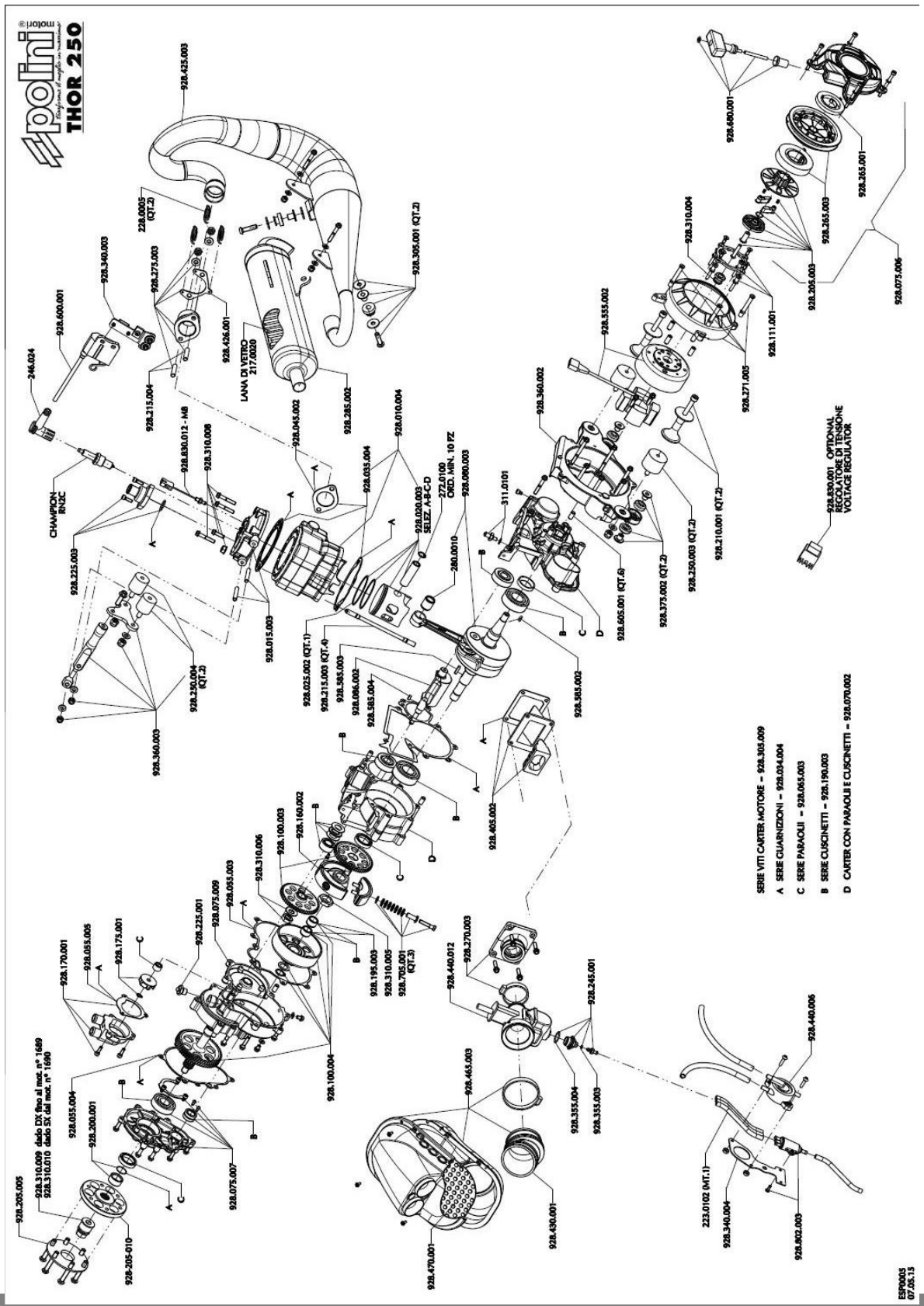
Hyper ThoriX 250

Pre flight control:	check all parts of the device before you start Check the level oft he cooling liquid
25 hours:	Check all screws for a thight position Clean the floating chamber Check the level of the gearbox oil Change the gearboxoil once (and then every 50 hours)
50 hours:	Spark plug (NGK BR9ES) Fuel filter Gearbox oil Keep a watch on the exhaust pipe for cracks
100 hours:	careful check the spark plug connector, carburettor needle, regulator, starter, fuel hoses, silencer
150 hours:	Change the rubbers of the engine halter and engine Change needle bearings and piston pin (piston? *Information Polini*) Check centrifugal clutch Change inlet membrane
300 hours:	Change all ball bearings (*crank shaft and cylinder? Information Polini*)



Check oil and fill up **(1)**
Screw for letting out oil **(2)**

Oil specification **Elf Moto Ger oil 10W40 Anti slpiiage clutch**
Shell Advance SAE 10W40 API GL3



X-ONE Hyper ThoriX

Technical Drawing